



Huawei
AR100&AR120&AR150&AR160&AR200&AR1200&
AR2200&AR3200&AR3600 series Access Routers

Hardware Description

Issue 13
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About This Document

Intended Audience





This document describes hardware components of the AR series access routers, including the chassis, power modules, fan modules, cards, cables, and optical modules. You can find useful information about hardware components from this document.


This document is intended for:

- Network planning engineers
- Hardware installation engineers
- Commissioning engineers
- Onsite maintenance engineers
- System maintenance engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
 NOTE	<p>Calls attention to important information, best practices and tips.</p> <p>NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.</p>

Reference Standards and Protocols

To obtain reference standards and protocols, log in to [Huawei official website](#), search for "protocol compliance list", and download the *Huawei AR Series Standard and Protocol Comply Table*.

Declaration

- This manual is only a reference for you to configure your devices. The contents in the manual, such as web pages, command line syntax, and command outputs, are based on the device conditions in the lab. The manual provides instructions for general scenarios, but do not cover all usage scenarios of all product models. The contents in the manual may be different from your actual device situations due to the differences in software versions, models, and configuration files. The manual will not list every possible difference. You should configure your devices according to actual situations.
- The specifications provided in this manual are tested in lab environment (for example, the tested device has been installed with a certain type of boards or only one protocol is run on the device). Results may differ from the listed specifications when you attempt to obtain the maximum values with multiple functions enabled on the device.
- In this document, public IP addresses may be used in feature introduction and configuration examples and are for reference only unless otherwise specified.
- In this document, AR series access routers include AR100&AR120&AR150&AR160&AR200&AR1200&AR2200&AR3200&AR3600 Series.

Change History

Changes between document issues are cumulative. The latest document issue contains all changes made to previous issues.

Issue 13 (2019-05-31)

This issue has the following updates:

The following content is modified:

- [3.8.19 AR2240](#)
- [3.9.1 AR3260](#)

The following content is added:

- [SRU-100H](#)
- [SRU-200H](#)
- [SRU-400H](#)
- [SRU-600H](#)
- [1V35B-AM](#)

Issue 12 (2019-04-30)

This issue has the following updates:

The following content is modified:

- [6.3 Ethernet LAN Card](#)
- [6.4 Ethernet WAN Card](#)

The following content is added:

- [3.8.13 AR2204E-D-27GE](#)

Issue 11 (2019-03-)

This issue has the following updates:

The following content is added:

- [7.19 2VDSL2 Cable](#)

The following content is modified:

- [6.13.6 2VDSL2 \(2-Port VDSL2 over POTS with Bonding WAN Interface Card\)](#)

Issue 10 (2018-08-25)

This issue has the following updates:

The following content is added:

- [3.5.33 AR169JFVW-4B4S](#)

Issue 09 (2018-07-30)

This issue has the following updates:

The following content is modified:

- [3.1 Naming Conventions](#)

Issue 08 (2018-05-18)

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- [6.4 Ethernet WAN Card](#)

Issue 07 (2018-03-23)

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- [8.4.1 SFP-FE-SX-MM1310](#)
- [8.4.2 eSFP-FE-LX-SM1310](#)

Issue 06 (2018-01-05)

This issue has the following updates:

The following content is modified:

- [3.8.16 AR2220-AC](#)
- [3.8.17 AR2220-DC](#)

Issue 05 (2017-10-13)

This issue has the following updates:

The following content is modified:

- [Cards](#)

Issue 04 (2017-08-04)

This issue has the following updates:

The following content is added:

- [AR129CV](#)
- [AR168F-4P](#)
- [AR169JFVW-4B4S](#)
- [AR2204XE](#)
- [DGP](#)
- [Power Supplies](#)
- [Fan Modules](#)

The following content is modified:

- [Pluggable Modules for Interfaces](#)
- [Cards](#)

Issue 03 (2017-06-22)

This issue has the following updates:

The following content is added:

- [3.5.16 AR161G-U](#)
- [3.7.1 AR1220-8GE](#)
- [3.8.4 AR2204-24GE](#)

- [3.8.7 AR2204-48GE-P](#)

Issue 02 (2017-04-06)

This issue has the following updates:

The following content is modified:

- [6.2 SRU](#)

Issue 01 (2017-02-28)

Initial commercial release.

Contents

About This Document.....	ii
1 Using the Hardware Query Tool and the Hardware Configuration Tool.....	1
2 Version Requirements for Components.....	3
3 Chassis.....	4
3.1 Naming Conventions.....	4
3.2 AR100 Series.....	9
3.2.1 AR109.....	9
3.2.2 AR109W.....	15
3.2.3 AR109GW-L.....	22
3.3 AR120 Series.....	31
3.3.1 AR121.....	31
3.3.2 AR121GW-L.....	37
3.3.3 AR121W.....	45
3.3.4 AR129.....	52
3.3.5 AR129CV.....	58
3.3.6 AR129CVW.....	65
3.3.7 AR129CGVW-L.....	73
3.3.8 AR129GW-L.....	82
3.3.9 AR129W.....	91
3.4 AR150 Series.....	98
3.4.1 AR151.....	98
3.4.2 AR151G-C.....	104
3.4.3 AR151G-HSPA+7.....	112
3.4.4 AR151W-P.....	120
3.4.5 AR156.....	127
3.4.6 AR156W.....	134
3.4.7 AR157.....	142
3.4.8 AR157G-HSPA+7.....	149
3.4.9 AR157VW.....	157
3.4.10 AR157W.....	166
3.4.11 AR158E.....	173
3.4.12 AR158EVW.....	180

3.5 AR160 Series.....	188
3.5.1 AR161.....	188
3.5.2 AR161EW.....	194
3.5.3 AR161EW-M1.....	201
3.5.4 AR161F.....	209
3.5.5 AR161F-DGP.....	215
3.5.6 AR161FG-L.....	222
3.5.7 AR161FG-Lc.....	230
3.5.8 AR161FGW-L.....	239
3.5.9 AR161FGW-La.....	248
3.5.10 AR161FGW-Lc.....	257
3.5.11 AR161FV-IP.....	266
3.5.12 AR161FW.....	274
3.5.13 AR161FW-P-M5.....	281
3.5.14 AR161G-L.....	290
3.5.15 AR161G-Lc.....	298
3.5.16 AR161G-U.....	305
3.5.17 AR161W.....	313
3.5.18 AR162F.....	319
3.5.19 AR168F.....	327
3.5.20 AR168F-4P.....	334
3.5.21 AR169.....	342
3.5.22 AR169-P-M9.....	348
3.5.23 AR169CVW.....	357
3.5.24 AR169CVW-4B4S.....	366
3.5.25 AR169EW.....	376
3.5.26 AR169EGW-L.....	383
3.5.27 AR169F/AR169BF.....	393
3.5.28 AR169FGW-L.....	400
3.5.29 AR169FGVW-L.....	410
3.5.30 AR169FVW.....	421
3.5.31 AR169FVW-8S.....	431
3.5.32 AR169G-L.....	440
3.5.33 AR169JFVW-4B4S.....	448
3.5.34 AR169JFVW-2S.....	458
3.5.35 AR169W.....	466
3.5.36 AR169RW-P-M9.....	473
3.5.37 AR169W-P-M9.....	483
3.6 AR200 Series.....	493
3.6.1 AR201.....	493
3.6.2 AR201VW-P.....	499
3.6.3 AR206.....	507

3.6.4 AR207.....	514
3.6.5 AR207G-HSPA+7.....	521
3.6.6 AR207V.....	529
3.6.7 AR207V-P.....	538
3.6.8 AR207VW.....	546
3.6.9 AR208E.....	554
3.7 AR1200 Series.....	561
3.7.1 AR1220-8GE.....	561
3.7.2 AR1220-AC.....	570
3.7.3 AR1220-DC.....	578
3.7.4 AR1220C.....	587
3.7.5 AR1220E.....	595
3.7.6 AR1220EV.....	604
3.7.7 AR1220EVW.....	612
3.7.8 AR1220F.....	622
3.7.9 AR1220L.....	631
3.7.10 AR1220V.....	639
3.7.11 AR1220W.....	647
3.7.12 AR1220VW.....	657
3.8 AR2200 Series.....	667
3.8.1 AR2201-48FE.....	667
3.8.2 AR2202-48FE.....	676
3.8.3 AR2204.....	687
3.8.4 AR2204-24GE.....	696
3.8.5 AR2204-27GE.....	703
3.8.6 AR2204-27GE-P.....	710
3.8.7 AR2204-48GE-P.....	718
3.8.8 AR2204-51GE.....	725
3.8.9 AR2204-51GE-P.....	732
3.8.10 AR2204-51GE-R.....	740
3.8.11 AR2204E.....	747
3.8.12 AR2204E-D.....	754
3.8.13 AR2204E-D-27GE.....	761
3.8.14 AR2204XE.....	768
3.8.15 AR2204XE-DC.....	777
3.8.16 AR2220-AC.....	784
3.8.17 AR2220-DC.....	793
3.8.18 AR2220E.....	802
3.8.19 AR2240.....	812
3.8.20 AR2240C.....	816
3.9 AR3200 Series.....	826
3.9.1 AR3260.....	826

3.10 AR3600 Series.....	831
3.10.1 AR3670.....	831
4 Power Supplies.....	836
4.1 Types of Power Supplies.....	837
4.2 24 W Integrated Power Adapter.....	837
4.3 24 W Separate Power Adapter.....	840
4.4 24 W Industrial Power Adapter.....	841
4.5 4-pin 36 W Power Adapter.....	844
4.6 1-pin 36 W Power Adapter.....	846
4.7 60 W Power Adapter.....	848
4.8 100 W PoE Power Adapter.....	850
4.9 150 W RPS Power Supply.....	853
4.10 350 W AC Power Module.....	856
4.11 350 W DC Power Module.....	859
4.12 850 W AC PoE Power Module.....	862
4.13 700 W AC Power Module.....	865
5 Fan Modules.....	868
5.1 AR2240-FAN.....	868
5.2 AR3260-FAN.....	871
5.3 AR3670-FAN.....	874
6 Cards.....	878
6.1 Basic Concepts of Cards.....	878
6.1.1 Card Structure and Dimensions.....	878
6.1.2 Port Numbering.....	881
6.2 SRU.....	881
6.2.1 SRU40.....	881
6.2.2 SRU60.....	888
6.2.3 SRU80.....	896
6.2.4 SRU100.....	903
6.2.5 SRU200.....	910
6.2.6 SRU400.....	918
6.2.7 SRU100E.....	927
6.2.8 SRU200E.....	934
6.2.9 SRUX5.....	941
6.2.10 SRU-100H.....	948
6.2.11 SRU-200H.....	954
6.2.12 SRU-400H.....	961
6.2.13 SRU-600H.....	967
6.3 Ethernet LAN Card.....	973
6.3.1 8FE1GE (8-Port 100M-RJ45+1-Port 1000M-RJ45-L2 Ethernet Electrical Interface Card).....	973
6.3.2 9ES2 (8-Port 100BASE-RJ45 and 1-Port 1000BASE-RJ45 L2 Ethernet Interface Card).....	979

6.3.3 24GE (24-Port 1000M-RJ45-L2 Ethernet Electrical Interface Card).....	984
6.3.4 24ES2GP (24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card).....	990
6.3.5 4GE-2S (4-Port 1000BASE-SFP-L2 Ethernet Interface Card).....	994
6.3.6 4ES2G-S (4-Port 1000BASE-RJ45 L2 Ethernet Interface Card).....	999
6.3.7 4ES2GP-S (4-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card).....	1004
6.4 Ethernet WAN Card.....	1009
6.4.1 1GEC (1-Port-GE Combo WAN Interface Card).....	1009
6.4.2 4GECS (4-Port GE Combo WAN Interface Card).....	1013
6.4.3 2FE (2-Port-FE WAN Interface Card).....	1018
6.4.4 2X10GL (2-Port 10GE Optical Ports Interface Card).....	1022
6.4.5 4GEW-T (4-Port 1000BASE-RJ45-L3 Ethernet WAN Interface Card).....	1026
6.4.6 4GEW-S (4-Port 1000BASE-SFP-L3 Ethernet WAN Interface Card).....	1031
6.5 E1/T1 Card.....	1035
6.5.1 1E1/T1-M (1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card).....	1036
6.5.2 2E1/T1-M (2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - SIC).....	1040
6.5.3 2E1/T1-M-W (2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - WSIC).....	1045
6.5.4 4E1/T1-M (4-Port Channelized E1/PRI Multiflex Trunk Interface Card).....	1050
6.5.5 8E1/T1-M (8-Port Channelized E1/PRI Multiflex Trunk Interface Card).....	1054
6.5.6 1E1/T1-F (1-Port Fractional Channelized E1/T1 WAN Interface Card).....	1058
6.5.7 2E1/T1-F (2-Port Fractional Channelized E1/T1 WAN Interface Card).....	1062
6.5.8 4E1/T1-F (4-Port Fractional Channelized E1 WAN Interface Card).....	1066
6.5.9 8E1/T1-F (8-Port Fractional Channelized E1 WAN Interface Card).....	1071
6.5.10 4E1-IMA (4-Port-E1 ATM IMA Interface Card).....	1075
6.6 E3/T3 Card.....	1079
6.6.1 1E3/CE3/T3/CT3 (1-Port Channelized/Unchannelized E3/T3 WAN Interface Card).....	1079
6.7 Synchronous/Asynchronous Card.....	1083
6.7.1 1SA (1-Port Synchronous/Asynchronous WAN Interface Card).....	1083
6.7.2 2SA (2-Port Synchronous/Asynchronous WAN Interface Card).....	1087
6.7.3 8SA (8-Port Synchronous/Asynchronous WAN Interface Card).....	1092
6.7.4 8AS (8-Port-Asynchronous WAN Interface Card).....	1097
6.8 3G/LTE Card.....	1101
6.8.1 3G-HSPA+7 (3G WCDMA HSPA+7 Interface Card).....	1101
6.8.2 3G-EVDO (3G CDMA2000 EVDO Interface Card).....	1107
6.8.3 1LTE-L (WCDMA LTE Interface Card).....	1112
6.8.4 1LTE-LV (WCDMA LTE Interface Card).....	1117
6.8.5 1LTEC (TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Interface Card).....	1123
6.8.6 1LTE-Lt (TDD/FDD/TD-SCDMA/UMTS/EVDO Interface Card).....	1128
6.8.7 1LTE-Lt-7 (TDD/FDD/TD-SCDMA/UMTS/EVDO Interface Card).....	1134
6.8.8 1LTE-Lo (FDD/HSPA+ Interface Card).....	1139
6.8.9 1LTE-Lc (TDD/FDD/TD-SCDMA/HSPA+ Interface Card).....	1145
6.9 E&M Card.....	1150
6.9.1 6E&M (6-Port E&M (RJ45) Trunk Interface Card).....	1150

6.10 POS/CPOS Card.....	1156
6.10.1 1CPOS-155M (1-Port 155M Channelized POS Optical Interface Card).....	1156
6.10.2 1CPOS-155M-W (1-Port Channelized POS Interface Card).....	1160
6.10.3 1STM1 (1-Port 155M Packet over SDH/SONET Optical Interface Card).....	1164
6.10.4 1STM4 (1-Port 622M Packet over SDH/SONET Optical Interface Card).....	1168
6.10.5 4STM1 (4-Port 155M Packet over SDH/SONET Optical Interface Card).....	1172
6.11 ISDN S/T WAN Card.....	1176
6.11.1 1BST (1-Port-ISDN S/T WAN Interface Card).....	1176
6.12 Voice Card.....	1180
6.12.1 2BST (2-Port ISDN S/T Voice Interface Card).....	1180
6.12.2 2BST-W (2-Port ISDN S/T Voice Interface Card - WSIC).....	1184
6.12.3 4FXS1FXO (4-Port FXS + 1-Port FXO Voice Interface Card).....	1188
6.12.4 16FXS (16-Port FXS Voice Interface Card).....	1194
6.12.5 32FXS (32-Port FXS Voice Interface Card).....	1197
6.12.6 4FXO (4-Port FXO Voice Interface Card).....	1201
6.12.7 1VE1 (1-Port Voice E1 Interface Card).....	1205
6.13 xDSL Card.....	1209
6.13.1 1ADSL-A/M (1-Port ADSL2+ ANNEX A/M WAN Interface Card).....	1209
6.13.2 1ADSL-B/J (1-Port ADSL2+ ANNEX B/J WAN Interface Card).....	1213
6.13.3 4G.SHDSL (1-Port 4 Pair G.SHDSL WAN Interface Card).....	1217
6.13.4 1GBIS4W (1-Port 4 Pair G.SHDSL WAN Interface Card - WSIC).....	1221
6.13.5 VDSDL2 (1-Port VDSDL2 over POTS WAN Interface Card).....	1225
6.13.6 2VDSDL2 (2-Port VDSDL2 over POTS with Bonding WAN Interface Card).....	1229
6.13.7 1V35B-AM (1-Port VDSDL2 ANNEX A&M WAN Interface Card).....	1234
6.14 xPON Card.....	1238
6.14.1 1PON (1-Port GPON/EPON Dual-Mode Interface Card).....	1238
6.15 Capacitor Card.....	1242
6.15.1 DGP (Dying Gasp Capacitor Card).....	1242
7 Cables.....	1246
7.1 Power Cables.....	1247
7.1.1 AC Power Cable.....	1247
7.1.2 DC Power Cable.....	1249
7.2 RPS150 Power Cables.....	1250
7.2.1 RPS150 Power and Communication Cable.....	1250
7.2.2 RPS150 AC Power Cable.....	1251
7.3 Ground Cable.....	1253
7.4 Console Cable.....	1254
7.5 Ethernet Cable.....	1255
7.6 Optical Fiber.....	1258
7.7 E1/T1 Cable.....	1262
7.7.1 75-Ohm DB9-to-BNC Cable (Dedicated for E1).....	1262
7.7.2 75-Ohm RJ45-to-BNC Cable (Dedicated for E1).....	1264

7.7.3 120-Ohm DB9-to-RJ45 Cable (Dedicated for E1).....	1267
7.7.4 120-Ohm RJ45-to-RJ45 Cable (Dedicated for E1).....	1269
7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1).....	1272
7.8 E3/T3 Cable.....	1274
7.9 SA Cable.....	1275
7.9.1 V.24 DTE Cable.....	1275
7.9.2 V.24 DCE Cable.....	1277
7.9.3 V.35 DTE Cable.....	1279
7.9.4 V.35 DCE Cable.....	1281
7.9.5 X.21 DTE Cable.....	1283
7.9.6 X.21 DCE Cable.....	1285
7.9.7 RS449 DTE Cable.....	1286
7.9.8 RS449 DCE Cable.....	1288
7.9.9 RS530 DTE Cable.....	1290
7.9.10 RS530 DCE Cable.....	1293
7.10 8AS Cable.....	1295
7.11 G.SHDSL Cable.....	1302
7.12 ISDN Cable.....	1304
7.12.1 Standard ISDN S/T Cable.....	1304
7.12.2 Crossover ISDN S/T Cable.....	1305
7.13 HDMI Video Cable.....	1307
7.14 VGA Video Cable.....	1308
7.15 Serial Cable (CON/RS232).....	1310
7.16 E&M Trunk Cable.....	1311
7.17 Antennas.....	1314
7.17.1 LTE Whip Antenna.....	1314
7.17.2 LTE Indoor Remote Antenna (27011299).....	1315
7.17.3 LTE Indoor Remote Antenna (27012152).....	1317
7.17.4 3G Antenna.....	1319
7.17.5 Wi-Fi Antenna.....	1322
7.17.6 Bluetooth Antenna.....	1325
7.17.7 ZigBee Antenna.....	1327
7.18 Voice Cables.....	1329
7.18.1 32FXS Cable.....	1329
7.18.2 16FXS Cable.....	1332
7.18.3 Standard Telephone Cable.....	1334
7.19 2VDSL2 Cable.....	1336
8 Pluggable Modules for Interfaces.....	1339
8.1 Important Notes About Using Optical Modules Certified for Huawei Routers.....	1339
8.1.1 How to Identify Huawei-Certified Optical Modules.....	1339
8.1.2 Risks of Using Non-Huawei-Certified Optical Modules.....	1340
8.2 Understanding Optical Modules.....	1341

8.2.1 What Is an Optical Module.....	1341
8.2.2 Types of Optical Modules.....	1342
8.2.3 Parameter Description.....	1345
8.2.4 How to View Optical Module Parameters.....	1346
8.3 Understanding Copper Modules.....	1347
8.4 FE SFP/eSFP Optical Modules.....	1347
8.4.1 SFP-FE-SX-MM1310.....	1347
8.4.2 eSFP-FE-LX-SM1310.....	1348
8.4.3 S-SFP-FE-LH40-SM1310.....	1348
8.4.4 S-SFP-FE-LH80-SM1550.....	1349
8.4.5 SFP-FE-LX-SM1310-BIDI (Single-Fiber-Bidirectional Module).....	1349
8.4.6 SFP-FE-LX-SM1550-BIDI (Single-Fiber-Bidirectional Module).....	1350
8.5 GE eSFP Optical Modules.....	1351
8.5.1 eSFP-GE-SX-MM850.....	1351
8.5.2 SFP-GE-LX-SM1310.....	1352
8.5.3 S-SFP-GE-LH40-SM1310.....	1352
8.5.4 S-SFP-GE-LH40-SM1550.....	1353
8.5.5 S-SFP-GE-LH80-SM1550.....	1354
8.5.6 eSFP-GE-ZX100-SM1550.....	1354
8.5.7 SFP-GE-LX-SM1310-BIDI (Single-Fiber-Bidirectional Module).....	1355
8.5.8 SFP-GE-LX-SM1490-BIDI (Single-Fiber-Bidirectional Module).....	1355
8.5.9 LE2MGSC40DE0 (Single-Fiber-Bidirectional Module).....	1356
8.5.10 LE2MGSC40ED0 (Single-Fiber-Bidirectional Module).....	1357
8.6 GE-CWDM eSFP Optical Modules.....	1357
8.6.1 CWDM-SFPGE-1471.....	1357
8.6.2 CWDM-SFPGE-1491.....	1358
8.6.3 CWDM-SFPGE-1511.....	1359
8.6.4 CWDM-SFPGE-1531.....	1359
8.6.5 CWDM-SFPGE-1591.....	1360
8.7 GE-DWDM eSFP Optical Modules.....	1361
8.7.1 DWDM-SFPGE-1531-12.....	1361
8.7.2 DWDM-SFPGE-1531-90.....	1361
8.7.3 DWDM-SFPGE-1557-36.....	1362
8.7.4 DWDM-SFPGE-1558-17.....	1363
8.7.5 DWDM-SFPGE-1558-98.....	1363
8.7.6 DWDM-SFPGE-1559-79.....	1364
8.7.7 DWDM-SFPGE-1560-61.....	1365
8.8 GE SFP Copper Modules.....	1365
8.8.1 SFP-1000BaseT.....	1366
8.9 622M eSFP Optical Modules.....	1366
8.9.1 OST015N00.....	1366
8.9.2 OST040N00.....	1367

8.9.3 OST080N00.....	1367
8.10 GPON/EPON Optical Modules.....	1368
8.10.1 SFP-GPON-ONU.....	1368
8.11 10GE SFP+ Optical Modules.....	1369
8.11.1 OSXD22N00.....	1369
8.11.2 OMXD30000.....	1369
8.11.3 OSX010000.....	1370
8.11.4 OSX040N01.....	1371
9 Accessories.....	1372
9.1 16/32/64/128-Channel DSP Module.....	1372

1 Using the Hardware Query Tool and the Hardware Configuration Tool

Figure 1-1 shows the interface of the **Hardware Query Tool**. You can use this tool to query the power modules, fan modules, optical modules, and cards supported by each router model, as well as specifications of routers and modules. You can search router products or modules by part number, product model, or module type.

Figure 1-1 Web page of the Hardware Query Tool

Info+ Info-Finder
A collection of documentation tools for network products(enterprise network), a good assistant for bidding, network planning, project delivery, upgrade, and maintenance.

Search Packet Format **Hardware** Alarm Command Log License

Parts Query Compatibility Query

Product * Enter a product name All

Version * Select a version

Keyword BOM, order name, silkscreen, or description

Search Export

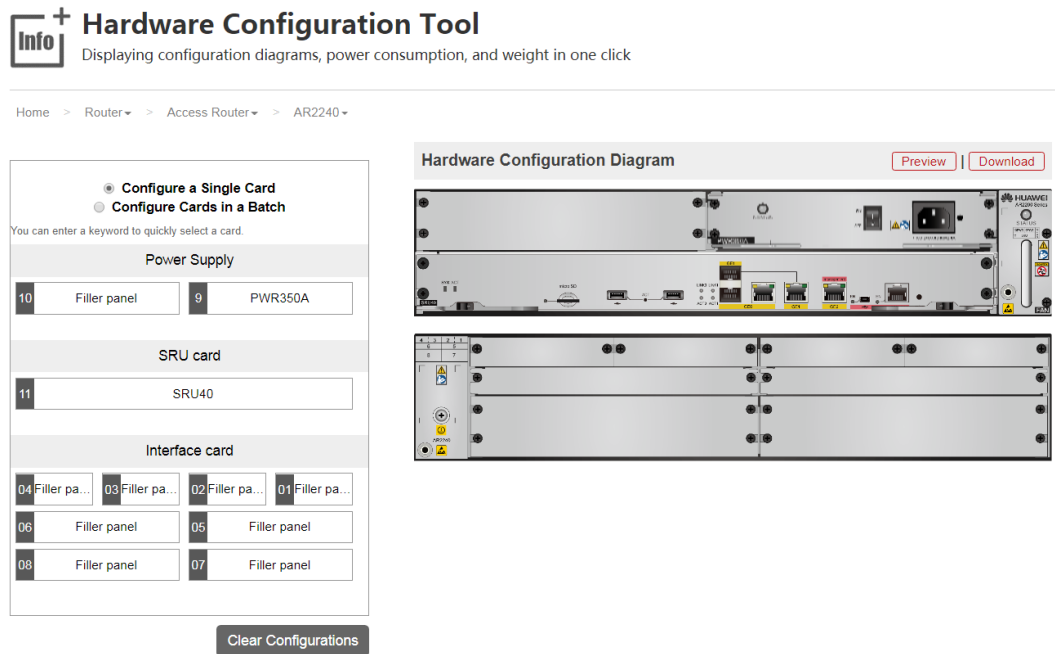
Figure 1-2 shows the web page of the **Hardware Configuration Tool**. You can use this tool to calculate the power consumption of a router.

NOTE

The heat consumption of a device can be calculated as follows based on its power consumption:

Heat consumption (BTUs per hour) = Power consumption (W) x 3.412

Figure 1-2 Web page of the Hardware Configuration Tool



2 Version Requirements for Components

This document describes all the device models and modules supported in a version. To obtain accurate subscription information, visit <http://e.huawei.com> or contact Huawei local sales offices. You can also pay attention to the product change notices (PCNs) and lifecycle management bulletins on this website.

The figures in this document are for reference only.

3 Chassis

About This Chapter

Huawei AR enterprise routers (AR routers for short) include AR100, AR120, AR150, AR160, AR200, AR1200, AR2200, AR3200 and AR3600 series routers. You can select different models according to your network requirements.

NOTE

- In this document, AR1220E series routers indicates AR1220E, AR1220EV, and AR1220EVW.
- In this document, AR2204E series routers indicates AR2204-51GE-P, AR2204-51GE-R, AR2204-27GE-P, AR2204-48GE-P, AR2204-27GE, AR2204-24GE, AR2204E-D, AR2204E-D-27GE, and AR2204E.

[3.1 Naming Conventions](#)

[3.2 AR100 Series](#)

[3.3 AR120 Series](#)

[3.4 AR150 Series](#)

[3.5 AR160 Series](#)

[3.6 AR200 Series](#)

[3.7 AR1200 Series](#)

[3.8 AR2200 Series](#)

[3.9 AR3200 Series](#)

[3.10 AR3600 Series](#)

3.1 Naming Conventions

AR100/AR120/AR150/AR160/AR200 Series

Figure 3-1 shows naming conventions of the AR100/AR120/AR150/AR160/AR200 series routers. **Table 3-1** describes the meaning of each letter or digit.

Figure 3-1 AR100/AR120/AR150/AR160/AR200 series routers naming conventions

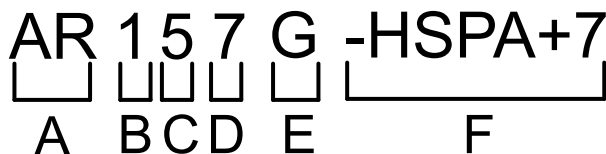


Table 3-1 AR100/AR120/AR150/AR160/AR200 series routers naming conventions

Field	Meaning	Description
A	Product name	AR: application and access routers
B	Hardware platform type. The value can be 1 or 2.	<ul style="list-style-type: none"> ● 1: four LAN interfaces ● 2: eight LAN interfaces
C	Combines with B to indicate different router series using the same hardware platform.	The following router series are available: <ul style="list-style-type: none"> ● 10: soho series ● 12/15: 4*FE LAN interface series ● 16: 4*GE LAN interface series ● 20: 8*FE LAN interface series
D	Type of major fixed uplink interfaces on the router	<ul style="list-style-type: none"> ● 1: FE or GE ● 2: SA ● 6: ADSL-B/J ● 7: ADSL-A/M ● 8: G.SHDSL ● 9: VDSL over POTS

Field	Meaning	Description
E	(Optional) Other interface types supported by the router	<ul style="list-style-type: none"> ● C: compact model developed based on a basic model (lower interface or feature performance) ● E: enhanced model developed based on a basic model (enhanced interface or feature performance) ● F: uplink GE combo interface ● G: uplink wireless interface (GPRS, 3G, or LTE) ● V: voice interface ● W: Wi-Fi interface ● J: VDSL 35B interface
F	(Optional) Extended information about the router NOTE This field starts with "-" and specifies supplementary interface descriptions or other possible configurations.	<ul style="list-style-type: none"> ● HSPA+7: WCDMA HSPA+7 3G standard ● C: CDMA2000 3G standard ● U: WCDMA 3G standard ● L: FDD-LTE, a European standard ● Lc: FDD/TDD-LTE, a China standard ● D: DC model ● P: PoE supported ● Mn: information about the multi-service open platform <ul style="list-style-type: none"> - M9: Serial Advanced Technology Attachment (SATA) hard disk supported ● nS: n FXS interfaces supported

AR1200/AR2200/AR3200 Series/AR3670

Figure 3-2 shows naming conventions of the AR1200/AR2200/AR3200 series/AR3670 routers. **Table 3-2** describes the meaning of each letter or digit.

Figure 3-2 AR1200/AR2200/AR3200 series/AR3670 routers naming conventions

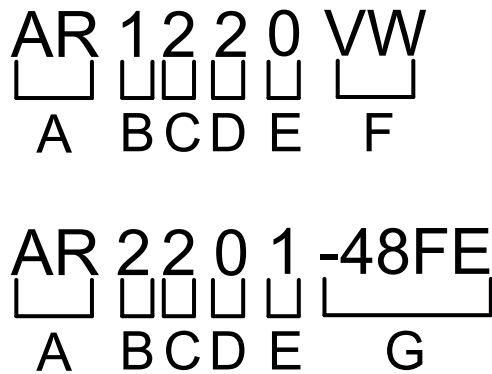


Table 3-2 AR1200/AR2200/AR3200 series/AR3670 routers naming conventions

Field	Meaning	Description
A	Product name	AR: application and access routers
B	Hardware platform series code	Currently, three router series are available: 1, 2 and 3. A larger value indicates higher performance.
C	Hardware platform type	<ul style="list-style-type: none"> ● 2: traditional router ● 6: router with the X86 open platform

Field	Meaning	Description
D	Maximum number of slots supported by the router	<ul style="list-style-type: none"> ● AR1200 series: D indicates the maximum number of service interface card (SIC) slots supported. ● AR2200/AR3200 series/AR3670: <ul style="list-style-type: none"> - Traditional router: D indicates the maximum number of extended service interface card (XSIC) slots supported. - Router with the X86 open platform: D indicates the maximum number of wide service interface card (WSIC) slots supported. <p>NOTE</p> <ul style="list-style-type: none"> ● D can be 0, indicating the cost-effective router model with fixed uplink interfaces or reduced number of slots. E represents the number of fixed uplink interfaces or reduced number of slots. If D is not 0, E is 0 by default. ● For details about SIC, WSIC, and XSIC, see Card Dimensions.
E	Fixed uplink interfaces on the router	<ul style="list-style-type: none"> ● 1: FE/GE ● 2: E1/SA ● 4: four SIC slots
F	(Optional) Series of the router and other interface types supported by the router	<ul style="list-style-type: none"> ● F: F series ● L: L series ● E: E series ● C: C series ● V: fixed voice interface ● W: fixed Wi-Fi interface
G	(Optional) Extended information about the router NOTE This field starts with "-" and specifies supplementary interface descriptions or other possible configurations.	<ul style="list-style-type: none"> ● A: AC model (AC is the default configuration, and this field can be omitted in AC models.) ● D: DC model ● 48FE: 48 fixed 100M switching ports ● X6: 6-core X86

Related Documents

Infographic:

- [A Quick Glance at AR Naming Conventions\(AR150/160/200 Series\)](#)
- [A Quick Glance at AR Naming Conventions\(AR1200/2200/3200 Series\)](#)

3.2 AR100 Series

3.2.1 AR109

Version Mapping

Table 3-3 lists the mapping between the AR109 router and software versions.

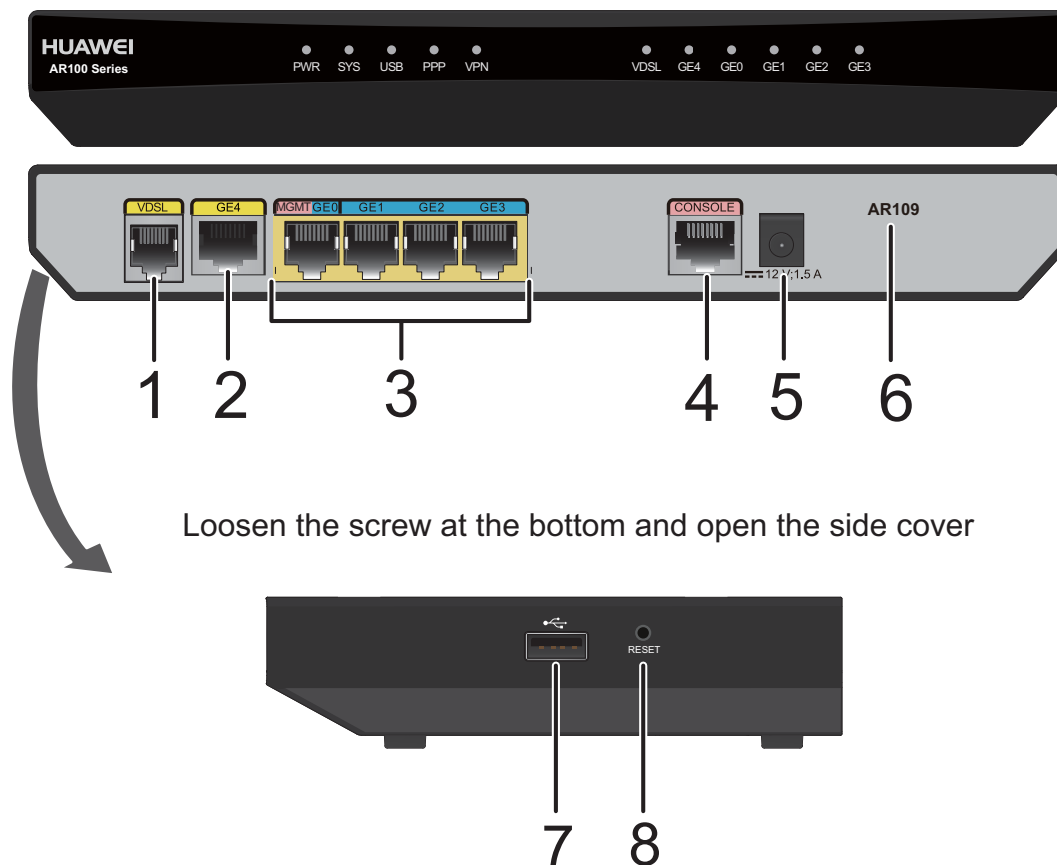
Table 3-3 Mapping between the AR109 router and software versions

Router Model	Software Version
AR109	V200R008C20 and later versions

Appearance and Structure

Figure 3-3 shows the appearance of the AR109 router.

Figure 3-3 AR109 appearance

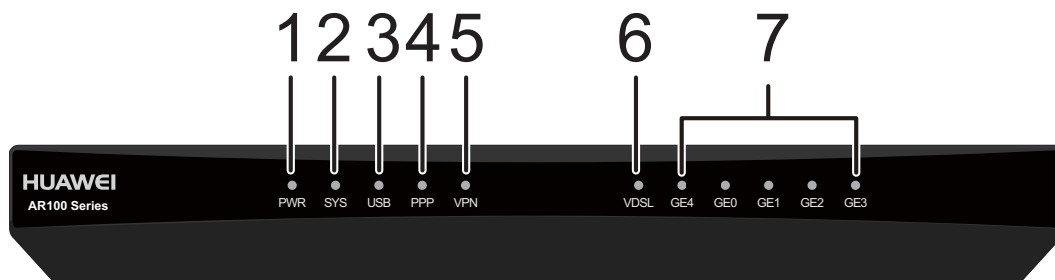


1	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.	2	WAN interface: one GE electrical interface
3	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	4	Console interface
5	Power jack NOTE The router uses a 24 W separate power adapter .	6	Product model silkscreen
7	USB interface (host)	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

Indicator Description

Figure 3-4 shows the indicators on the AR109 router.

Figure 3-4 Indicators on the AR109



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established.
			Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally.
			Off: The IPSec service is unavailable.
6	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
7	GE interface indicators (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-4](#) lists attributes of a console interface.

Table 3-4 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-5](#) lists attributes of a USB interface.

Table 3-5 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-6](#) lists attributes of a GE electrical interface.

Table 3-6 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-7](#) lists attributes of a VDSL interface.

Table 3-7 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-8](#) lists the technical specifications of the AR109 router.

Table 3-8 AR109 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB

Item	Specification
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 130 mm x 30 mm (9.1 in. x 5.1 in. x 1.2 in.), 1 U height
Weight	0.6 kg (1.32 lb)
Power specifications	
Rated input voltage (AC)	110 V AC to 220 V AC, 50/60 Hz
Maximum AC input voltage	90 V AC to 270 V AC, 45 Hz to 65 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	15 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE electrical interface and one VDSL interface LAN interfaces: four GE electrical interfaces
Extended slots	Not supported

Item	Specification
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010364

3.2.2 AR109W

Version Mapping

Table 3-9 lists the mapping between the AR109W router and software versions.

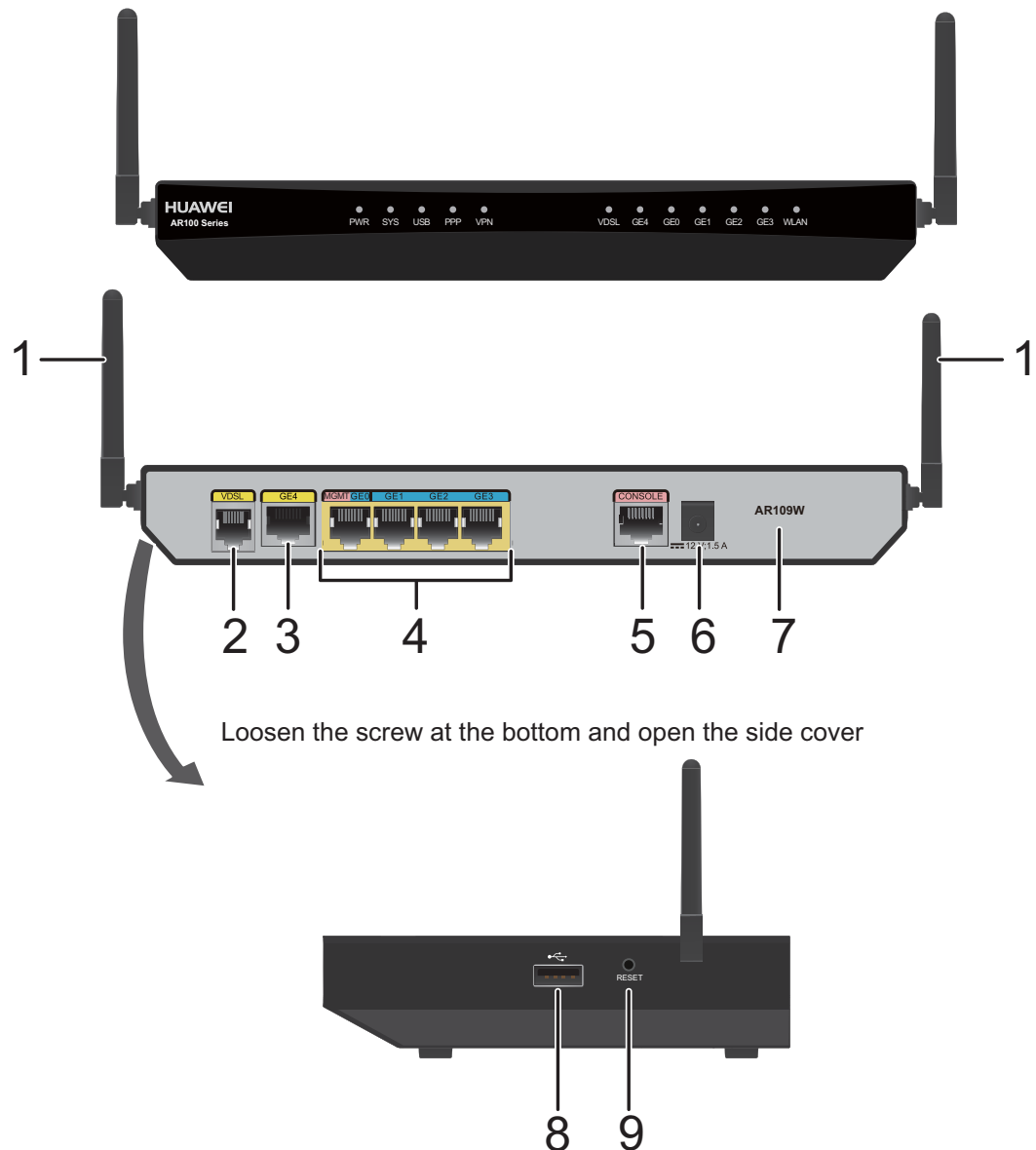
Table 3-9 Mapping between the AR109W router and software versions

Router Model	Software Version
AR109W	V200R008C20 and later versions

Appearance and Structure

Figure 3-5 shows the appearance of the AR109W router.

Figure 3-5 AR109W appearance



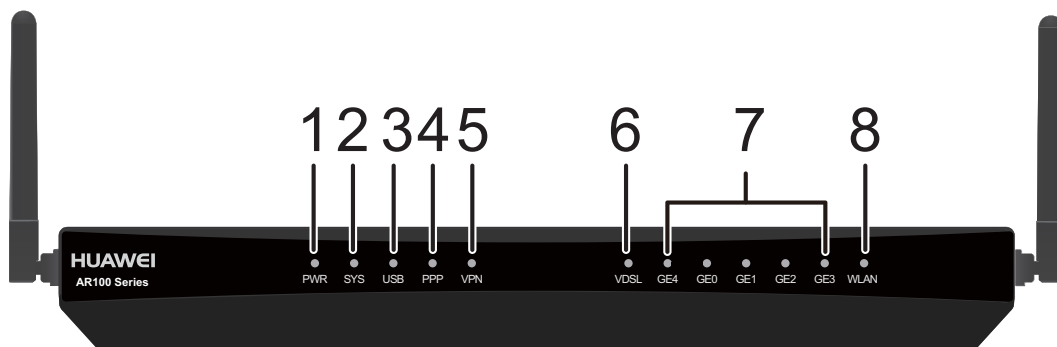
1	Two Wi-Fi antennas	2	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
3	WAN interface: one GE electrical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

5	Console interface	6	Power jack NOTE The router uses a 24 W separate power adapter .
7	Product model silkscreen	8	USB interface (host)
9	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 3-6 shows the indicators on the AR109W router.

Figure 3-6 Indicators on the AR109W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established.
			Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally.
			Off: The IPsec service is unavailable.
6	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
7	GE interface indicators (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.
8	WLAN	Green	Steady on: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link is shut down.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-10](#) lists attributes of a console interface.

Table 3-10 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-11](#) lists attributes of a USB interface.

Table 3-11 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-12](#) lists attributes of a GE electrical interface.

Table 3-12 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-13](#) lists attributes of a VDSL interface.

Table 3-13 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi antenna interface

NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-14](#) lists attributes of a Wi-Fi antenna interface.

Table 3-14 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11b/g/n

Attribute	Description
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	1.9 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Technical Specifications

Table 3-15 lists the technical specifications of the AR109W router.

Table 3-15 AR109W technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 130 mm x 30 mm (9.1 in. x 5.1 in. x 1.2 in.), 1 U height
Weight	0.6 kg (1.32 lb)
Power specifications	
Rated input voltage (AC)	110 V AC to 220 V AC, 50/60 Hz
Maximum AC input voltage	90 V AC to 270 V AC, 45 Hz to 65 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported

Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	15 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE electrical interface and one VDSL interface LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010365

3.2.3 AR109GW-L

Version Mapping

[Table 3-16](#) lists the mapping between the AR109GW-L router and software versions.

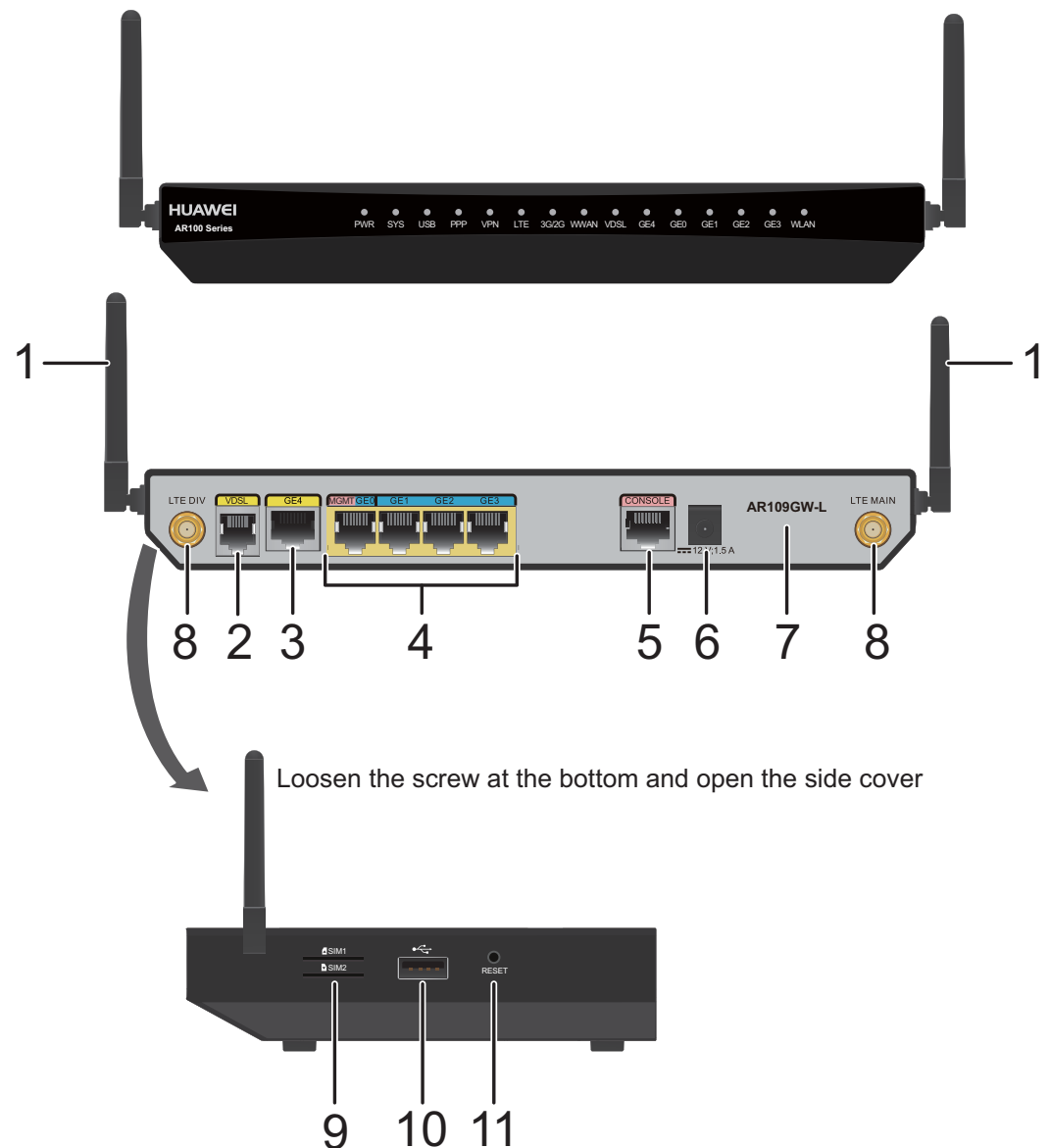
Table 3-16 Mapping between the AR109GW-L router and software version

Router Model	Software Version
AR109GW-L	V200R008C20 and later versions

Appearance and Structure

Figure 3-7 shows the appearance of the AR109GW-L router.

Figure 3-7 AR109GW-L appearance

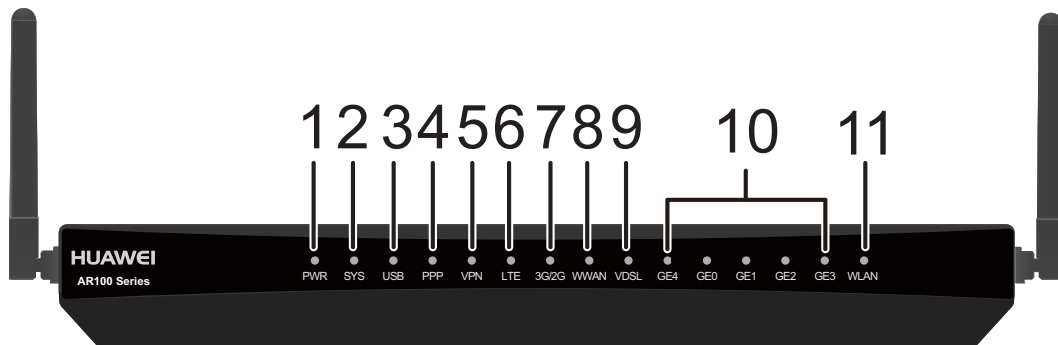


1	Two Wi-Fi antennas	2	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
3	WAN interface: one GE electrical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
5	Console interface	6	Power jack NOTE The router uses a 24 W separate power adapter .
7	Product model silkscreen	8	LTE antenna interface NOTE If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.
9	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	10	USB interface (host)
11	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 3-8 shows the indicators on the AR109GW-L router.

Figure 3-8 Indicators on the AR109GW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.

Number	Indicator	Color	Description
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
10	GE interface indicators (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.
11	WLAN	Green	Steady on: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-17](#) lists attributes of a console interface.

Table 3-17 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-18](#) lists attributes of a USB interface.

Table 3-18 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-19](#) lists attributes of a GE electrical interface.

Table 3-19 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-20](#) lists attributes of a VDSL interface.

Table 3-20 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-21](#) lists attributes of an LTE antenna interface.

Table 3-21 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Whip Antenna

Wi-Fi antenna interface

NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-22](#) lists attributes of a Wi-Fi antenna interface.

Table 3-22 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	1.9 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Technical Specifications

Table 3-23 lists the technical specifications of the AR109GW-L router.

Table 3-23 AR109GW-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 130 mm x 30 mm (9.1 in. x 5.1 in. x 1.2 in.), 1 U height
Weight	0.6 kg (1.32 lb)
Power specifications	
Rated input voltage (AC)	110 V AC to 220 V AC, 50/60 Hz
Maximum AC input voltage	90 V AC to 270 V AC, 45 Hz to 65 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	15 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	

Item	Specification
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE electrical interface, one VDSL interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010366

3.3 AR120 Series

3.3.1 AR121

Version Mapping

[Table 3-24](#) lists the mapping between the AR121 series routers and software versions.

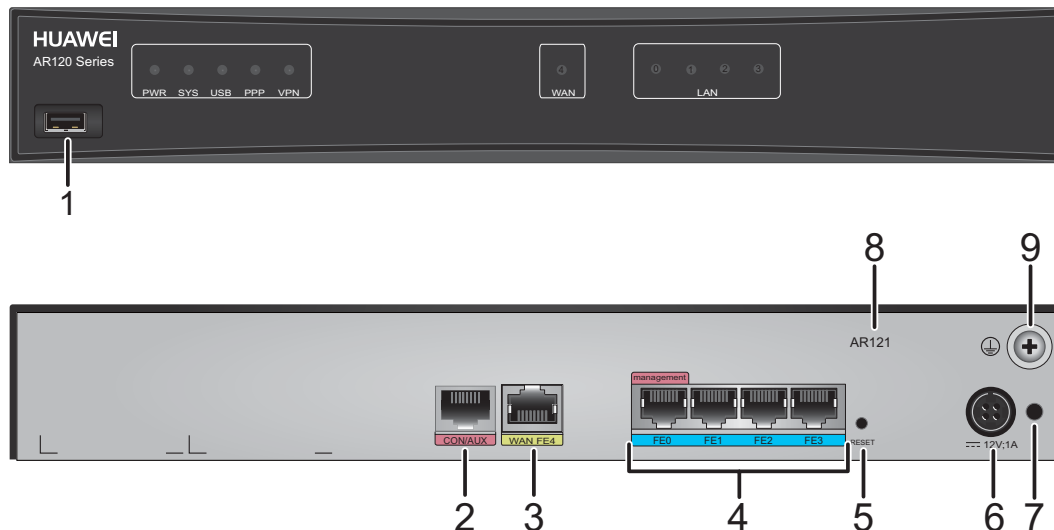
Table 3-24 Matching between AR121 series routers and software versions

Router Model	Software Version
AR121	V200R006C10 and later versions

Appearance and Structure

Figure 3-9 shows the appearance of the AR121 router.

Figure 3-9 AR121 appearance



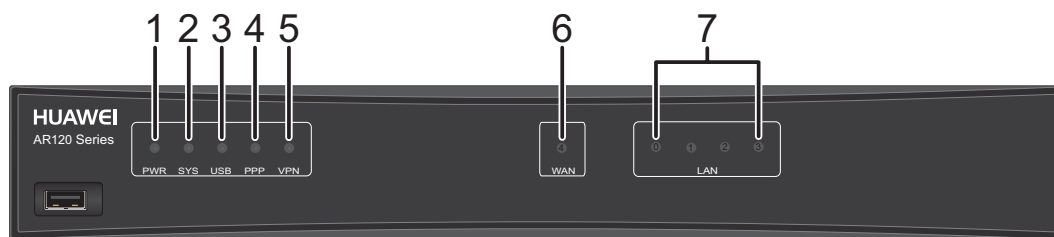
1	USB interface (host)	2	CON/AUX interface NOTE The AR121 does not support AUX login.
3	WAN interface: FE electrical interface	4	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE0 is a management interface and is used to upgrade the router. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Indicator Description

Figure 3-10 shows the indicators on the AR121 series routers.

Figure 3-10 Indicators on the AR121



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN (FE4)	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
7	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-25](#) lists the CON/AUX interface attributes.

Table 3-25 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-26](#) lists attributes of an FE electrical interface.

Table 3-26 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-27](#) lists attributes of a USB interface.

Table 3-27 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Technical Specifications

[Table 3-28](#) lists the technical specifications of the AR121 series routers.

Table 3-28 AR121 series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	9.3 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010217

3.3.2 AR121GW-L

Version Mapping

[Table 3-29](#) lists the mapping between the AR121GW-L and software versions.

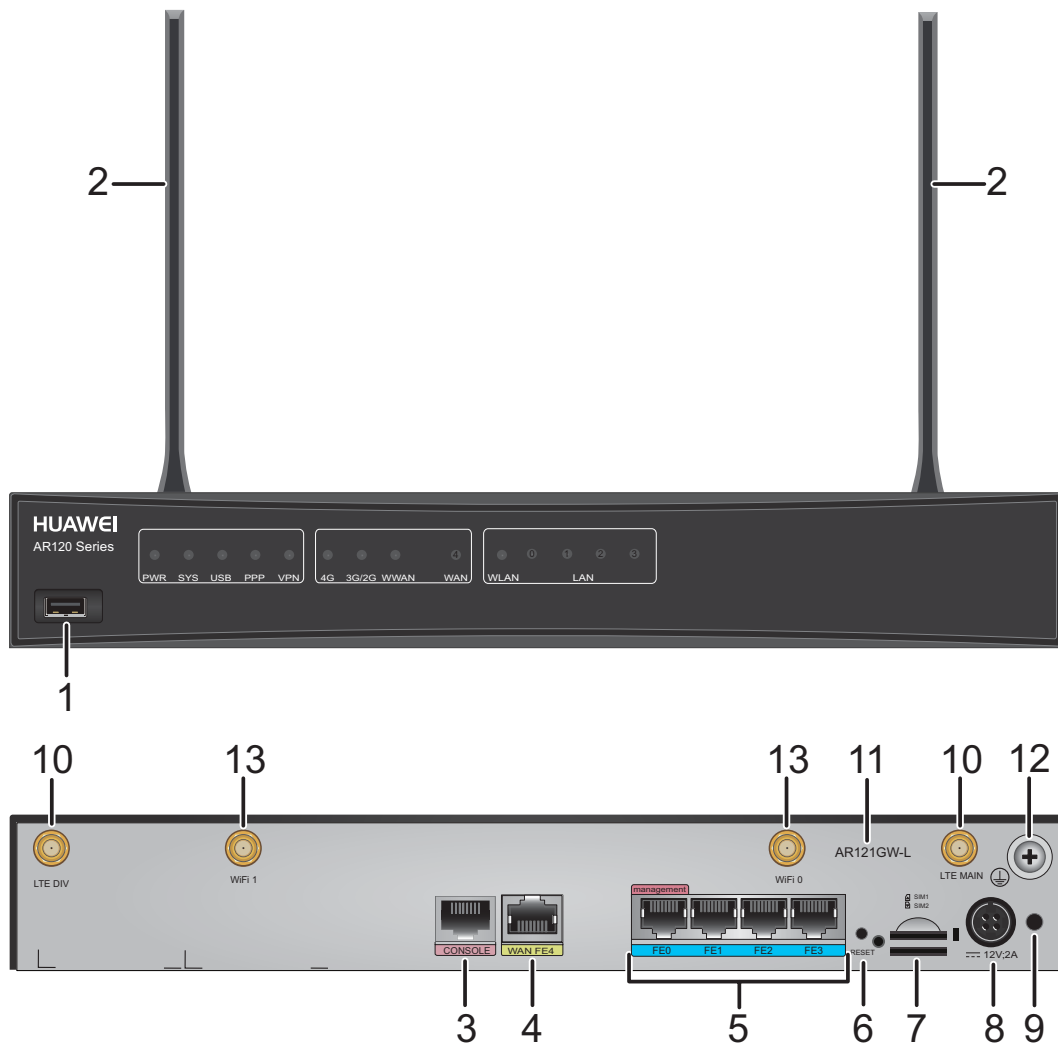
Table 3-29 Mapping between the AR121GW-L and software versions

Router Model	Software Version
AR121GW-L	V200R007C00 and later versions

Appearance and Structure

[Figure 3-11](#) shows the appearance of the AR121GW-L.

Figure 3-11 AR121GW-L appearance



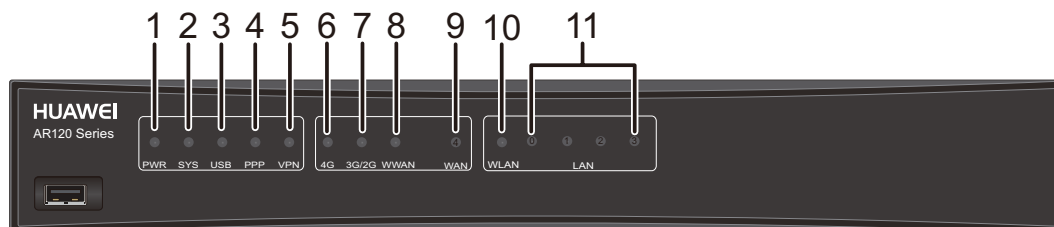
1	USB interface (host)	2	Two LTE antennas
3	Console interface	4	WAN interface: FE electrical interface
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE0 is a management interface and is used to upgrade the router. ● All FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

7	Two SIM card slots NOTE <ul style="list-style-type: none"> The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. The router supports double-card single-standby, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1. 	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	LTE antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
13	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-12 shows the indicators on the AR121GW-L.

Figure 3-12 Indicators on the AR121GW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.

Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	WAN	Green	Steady on: A WAN link has been established.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the WAN link. Off: No WAN link is established.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN (FE0 to FE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-30](#) lists attributes of a console interface.

Table 3-30 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-31](#) lists attributes of an FE electrical interface.

Table 3-31 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-32](#) lists attributes of a USB interface.

Table 3-32 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-33](#) lists attributes of a Wi-Fi antenna interface.

Table 3-33 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n

Attribute	Description
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-34](#) lists attributes of an LTE antenna interface.

Table 3-34 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s

Attribute	Description
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

Table 3-35 lists the technical specifications of the AR121GW-L.

Table 3-35 Technical specifications of the AR121GW-L

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	13.26 W

Item	Specification
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one FE electrical interface, and two LTE antenna interfaces LAN interfaces: four FE electrical interfaces, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010240

3.3.3 AR121W

Version Mapping

[Table 3-36](#) describes the matching relationship between the AR121W router and software versions.

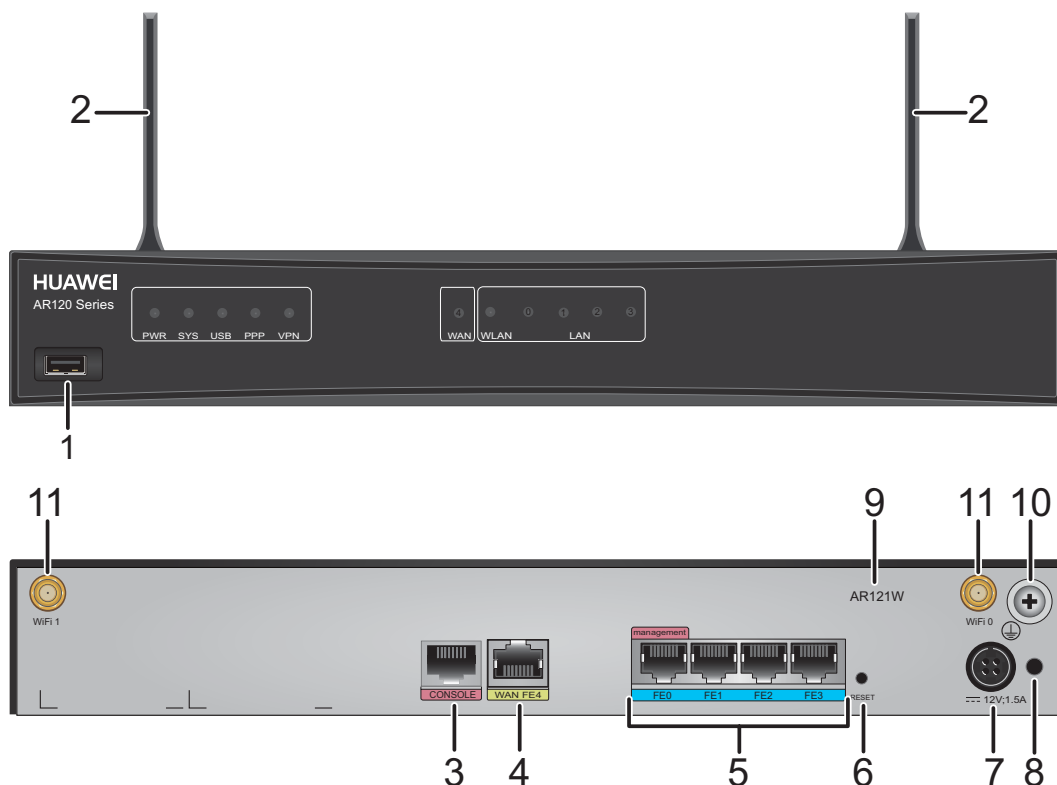
Table 3-36 Matching between AR121W router and software versions

Router Model	Software Version
AR121W	V200R006C10 and later versions

Appearance and Structure

Figure 3-13 shows the appearance of the AR121W router.

Figure 3-13 AR121W appearance



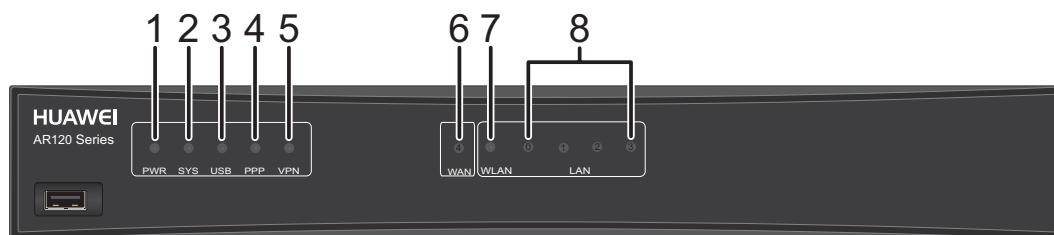
1	USB interface (host)	2	Two Wi-Fi antennas
3	Console interface	4	WAN interface: FE electrical interface
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> FE0 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

7	Power jack NOTE The router uses a 24 W integrated power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-14 shows the AR121W indicator.

Figure 3-14 Indicators on the AR121W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN (FE4)	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-37](#) lists attributes of a console interface.

Table 3-37 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-38](#) lists attributes of an FE electrical interface.

Table 3-38 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-39](#) lists attributes of a USB interface.

Table 3-39 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-40](#) lists attributes of a Wi-Fi antenna interface.

Table 3-40 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-41](#) lists the technical specifications of the AR121W router.

Table 3-41 AR121W router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg

Item	Specification
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	11.32 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010237

3.3.4 AR129

Version Mapping

Table 3-42 lists the mapping between the AR129 series routers and software versions.

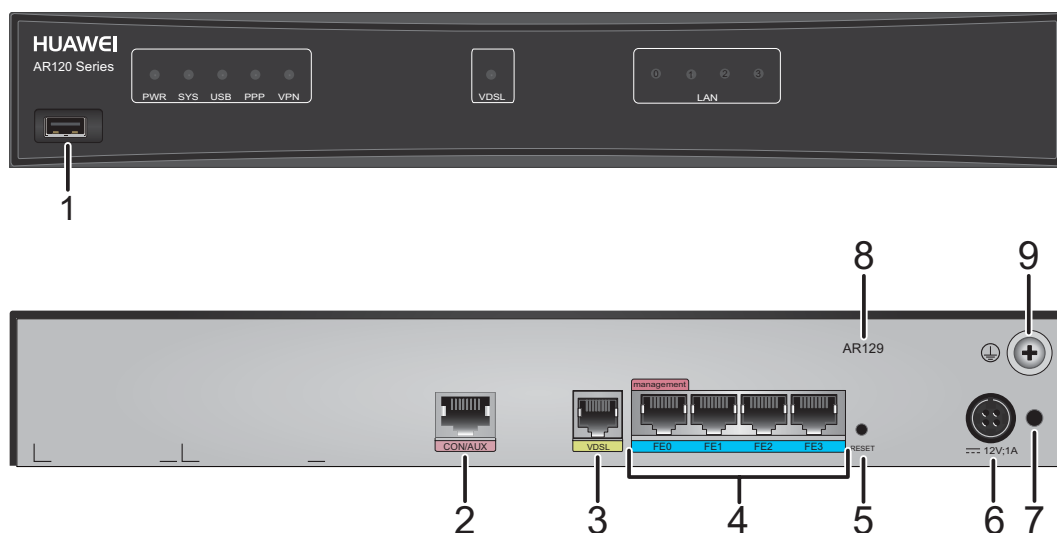
Table 3-42 Matching between AR129 series routers and software versions

Router Model	Software Version
AR129	V200R006C10 and later versions

Appearance and Structure

Figure 3-15 shows the appearance of the AR129 router.

Figure 3-15 AR129 appearance

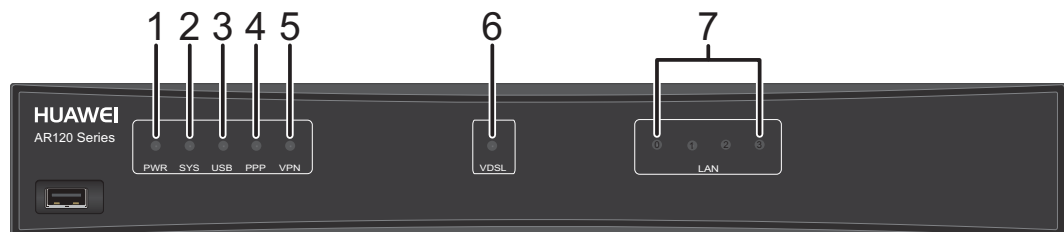


1	USB interface (host)	2	CON/AUX interface NOTE The AR129 does not support AUX login.
3	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE0 is a management interface and is used to upgrade the router. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-16 shows the indicators on the AR129 series routers.

Figure 3-16 Indicators on the AR129



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	VDSL	Green	Steady on: A link has been established on the VDSL interface. Off: No link is established on the VDSL interface.
7	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-43](#) lists the CON/AUX interface attributes.

Table 3-43 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-44](#) lists attributes of an FE electrical interface.

Table 3-44 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-45](#) lists attributes of a USB interface.

Table 3-45 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-46](#) lists attributes of a VDSL interface.

Table 3-46 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-47](#) lists the technical specifications of the AR129 router.

Table 3-47 AR129 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	9.7 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface LAN interfaces: four FE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010219

3.3.5 AR129CV

Version Mapping

[Table 3-48](#) lists the mapping between the AR129CV router and software versions.

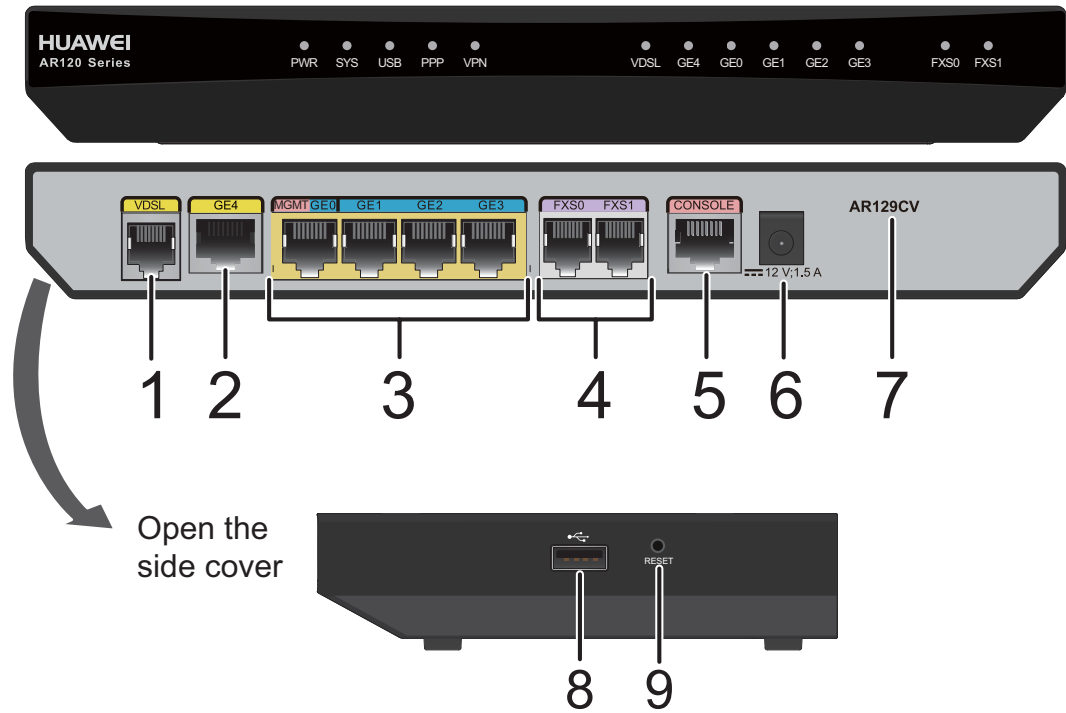
Table 3-48 Version mapping

Router Model	Software Version
AR129CV	V200R009C00 and later versions

Appearance and Structure

[Figure 3-17](#) shows the appearance of the AR129CV router.

Figure 3-17 AR129CV appearance



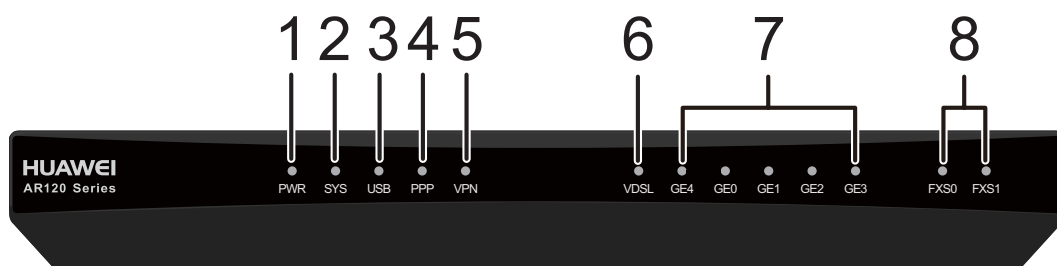
1	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.	2	WAN interface: one GE electrical interface
3	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	4	Two FXS interfaces
5	Console interface	6	Power jack NOTE The router uses a 24 W separate power adapter .
7	Product model silkscreen	8	USB interface (host)

9	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-
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Indicator Description

Figure 3-18 shows the indicators on the AR129CV router.

Figure 3-18 Indicators on the AR129CV router



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
7	GE interface indicators (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.
8	FXS interface indicators (FXS0 to FXS1)	Green	Steady on: There is an ongoing call on the corresponding FXS channel.
			Off: The corresponding FXS channel is idle.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-49](#) lists attributes of a console interface.

Table 3-49 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-50](#) lists attributes of a USB interface.

Table 3-50 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-51](#) lists attributes of a GE electrical interface.

Table 3-51 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-52](#) lists attributes of a VDSL interface.

Table 3-52 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-53](#) lists attributes of an FXS interface.

Table 3-53 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-54](#) lists the technical specifications of the AR129CV router.

Table 3-54 Technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 130 mm x 30 mm (9.06 in. x 5.12 in. x 1.18 in.), 1U height
Weight	0.6 kg (1.32 lb)
Power specifications	
Rated input voltage	110 V AC to 220 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 270 V AC, 45 Hz to 65 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	10 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

Item	Specification
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE electrical interface and one VDSL interface LAN interfaces: four GE electrical interfaces Voice interfaces: two FXS interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010406

3.3.6 AR129CVW

Version Mapping

[Table 3-55](#) lists the mapping between the AR129CVW router and software versions.

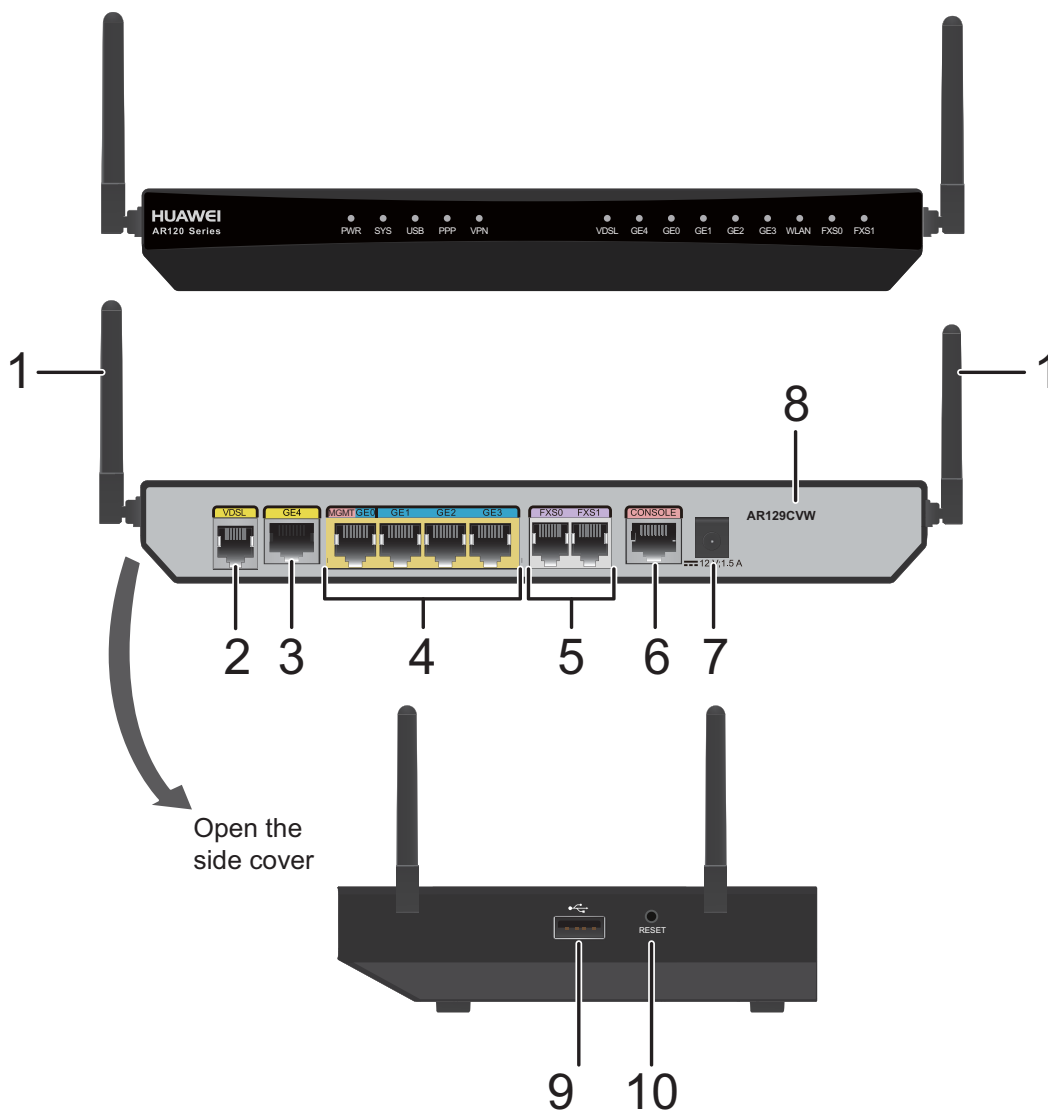
Table 3-55 Mapping between the AR129CVW router and software versions

Router Model	Software Version
AR129CVW	V200R008C50 and later versions

Appearance and Structure

[Figure 3-19](#) shows the appearance of the AR129CVW router.

Figure 3-19 AR129CVW appearance



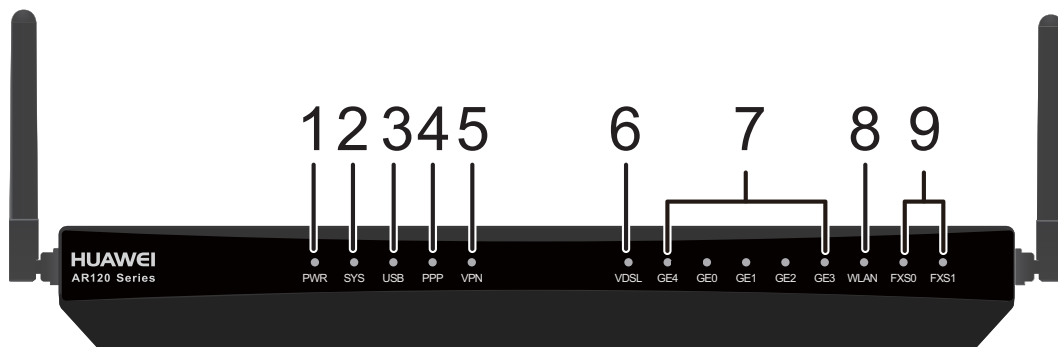
1	Four Wi-Fi antennas	2	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
3	WAN interface: one GE electrical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
5	Two FXS interfaces	6	Console interface

7	Power jack NOTE The router uses a 24 W separate power adapter .	8	Product model silkscreen
9	USB interface (host)	10	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

Indicator Description

Figure 3-20 shows the indicators on the AR129CVW router.

Figure 3-20 Indicators on the AR129CVW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.

Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
7	GE interface indicators (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.
8	WLAN	Green	Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
9	FXS interface indicators (FXS0 to FXS1)	Green	Steady on: The corresponding FXS channel is being occupied by a call.
			Off: The corresponding FXS channel is idle.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-56](#) lists attributes of a console interface.

Table 3-56 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-57](#) lists attributes of a USB interface.

Table 3-57 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-58](#) lists attributes of a GE electrical interface.

Table 3-58 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-59](#) lists attributes of a VDSL interface.

Table 3-59 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-60](#) lists attributes of an FXS interface.

Table 3-60 FXS interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi antenna interface

NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-61](#) lists attributes of a Wi-Fi antenna interface.

Table 3-61 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4 GHz: 1.9 dBi ● 5.0 GHz: 3.4 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Technical Specifications

[Table 3-62](#) lists the technical specifications of the AR129CVW router.

Table 3-62 AR129CVW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash memory	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 130 mm x 30 mm (9.06 in. x 5.12 in. x 1.18 in.)
Weight	0.6 kg (1.32 lb)
Power specifications	
Rated input voltage range (AC)	110 V to 220 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 270 V, 45 Hz to 65 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	13 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

Item	Specification
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE combo interface and one VDSL interface LAN interfaces: four GE electrical interfaces Voice interfaces: two FXS interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	<ul style="list-style-type: none"> ● AR129CVW: 50010387 ● AR129CVW (RCM) : 50010432

3.3.7 AR129CGVW-L

Version Mapping

[Table 3-63](#) lists the mapping between the AR129CGVW-L routers and software versions.

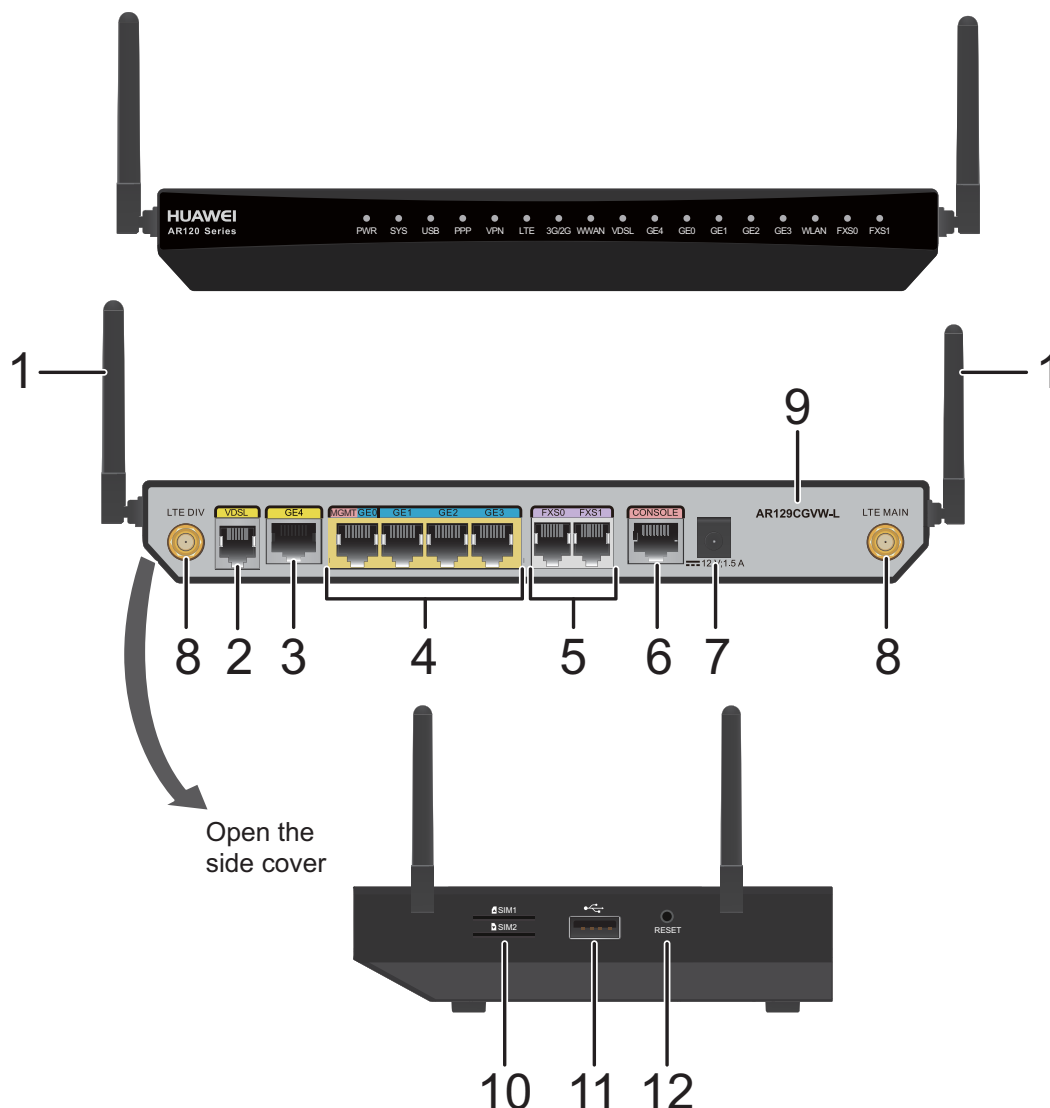
Table 3-63 Mapping between the AR129CGVW-L router and software versions

Router Model	Software Version
AR129CGVW-L	V200R008C20 and later versions

Appearance and Structure

[Figure 3-21](#) shows the appearance of the AR129CGVW-L router.

Figure 3-21 AR129CGVW-L appearance



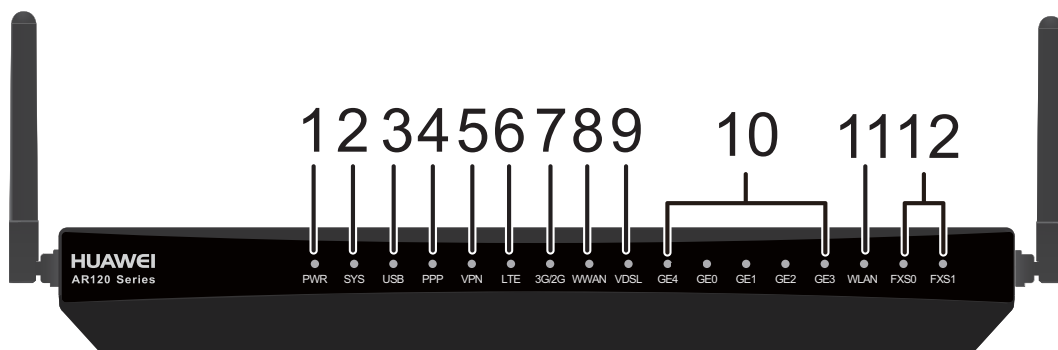
1	Four Wi-Fi antennas	2	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
3	WAN interface: one GE electrical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
5	Two FXS interfaces	6	Console interface

7	Power jack	8	LTE antenna interface NOTE If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.
9	Product model silkscreen	10	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
11	USB interface (host)	12	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

Indicator Description

Figure 3-22 shows the indicators on the AR129CGVW-L.

Figure 3-22 Indicators on the AR129CGVW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection. Off: The LTE/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A VDSL link has been established. Off: No VDSL link is established.
10	GE interface indicators (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted or received on the corresponding GE interface. If the indicator is off, no link is connected to the GE interface.
11	WLAN	Green	Steady on: The wireless link is transmitting data. Off: The wireless link is shut down.
12	FXS interface indicators (FXS0 to FXS1)	Green	Steady on: The corresponding FXS channel is being occupied by a call. Off: The corresponding FXS channel is idle.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-64](#) lists attributes of a console interface.

Table 3-64 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-65](#) lists attributes of a USB interface.

Table 3-65 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-66](#) lists attributes of a GE electrical interface.

Table 3-66 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-67](#) lists attributes of a VDSL interface.

Table 3-67 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-68](#) lists attributes of an FXS interface.

Table 3-68 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work

together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-69](#) lists attributes of an LTE antenna interface.

Table 3-69 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Whip Antenna

Wi-Fi antenna interface

 **NOTE**

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-70](#) lists attributes of a Wi-Fi antenna interface.

Table 3-70 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s

Attribute	Description
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4 GHz: 1.9 dBi ● 5.0 GHz: 3.4 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Technical Specifications

[Table 3-71](#) lists the technical specifications of the AR129CGVW-L routers.

Table 3-71 AR129CGVW-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 130 mm x 30 mm (9.06 in. x 5.12 in. x 1.18 in.), 1 U height
Weight	0.6 kg (1.32 lb)
Power specifications	
Rated AC input power	110 V AC to 220 V AC, 50/60 Hz
Maximum AC input voltage	90 V AC to 270 V AC, 45 Hz to 65 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported

Item	Specification
Power consumption	
Maximum power consumption	18 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE electrical interface, one VDSL interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces Voice interfaces: two FXS interfaces
Extended slots	Not supported
Environment parameters	
Operating environment temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	- 40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	<ul style="list-style-type: none"> ● AR129CGVW-L: 50010304 ● AR129CGVW-L: (RCM) :50010431

3.3.8 AR129GW-L

Version Mapping

Table 3-72 lists the mapping between the AR129GW-L and software versions.

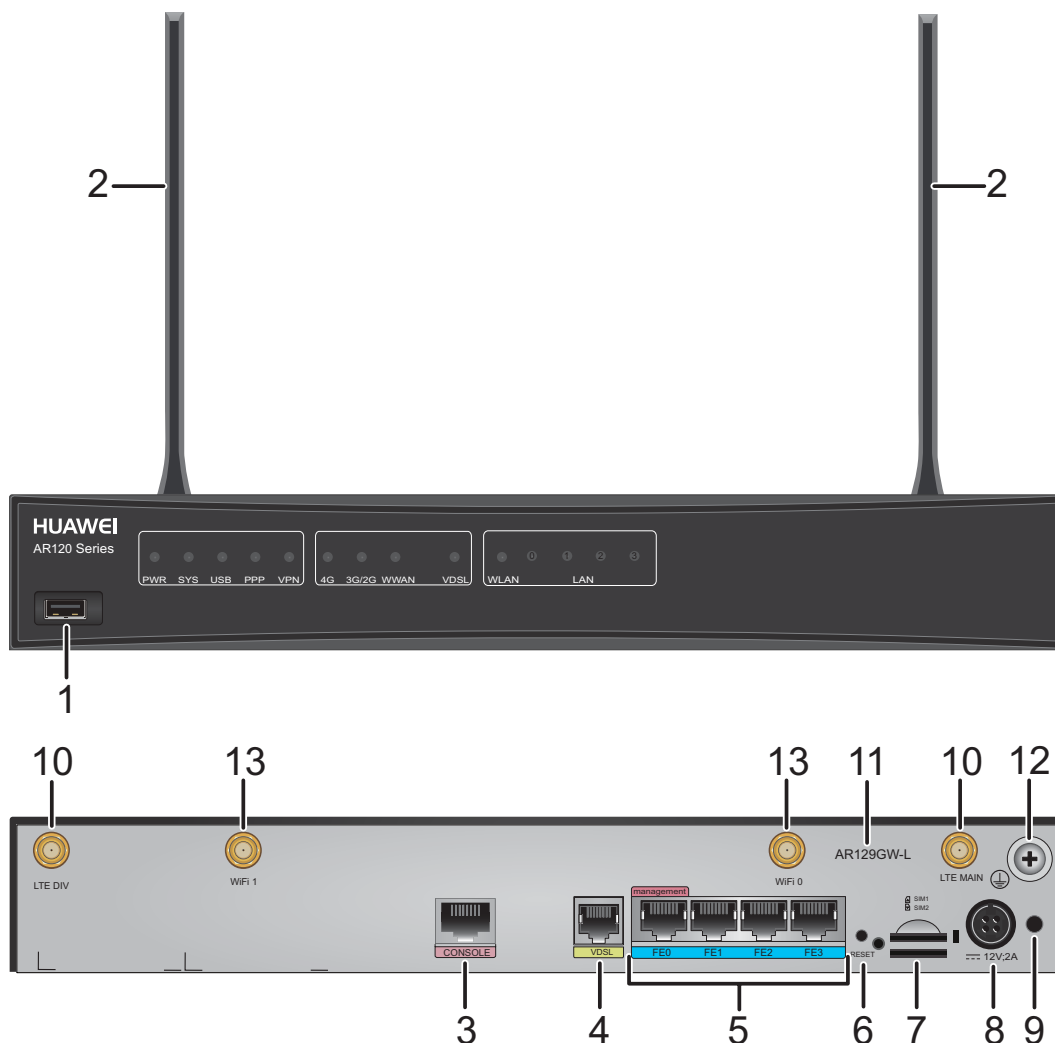
Table 3-72 Mapping between the AR129GW-L and software versions

Router Model	Software Version
AR129GW-L	V200R007C00 and later versions

Appearance and Structure

Figure 3-23 shows the appearance of the AR129GW-L.

Figure 3-23 AR129GW-L appearance



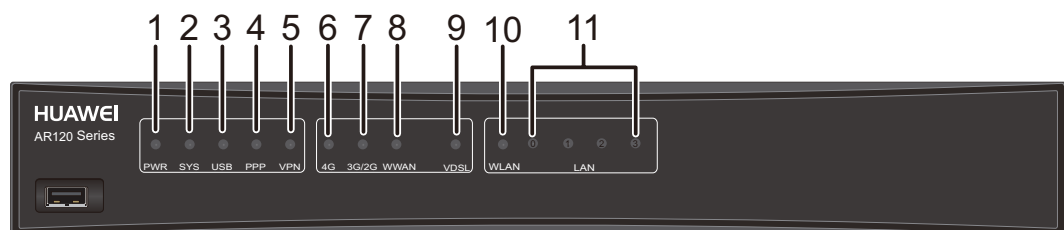
1	USB interface (host)	2	Two LTE antennas
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3	Console interface	4	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> FE0 is a management interface and is used to upgrade the router. All FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Two SIM card slots NOTE <ul style="list-style-type: none"> The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. The router supports double-card single-standby, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1. 	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	LTE antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
13	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-24 shows the indicators on the AR129GW-L.

Figure 3-24 Indicators on the AR129GW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.

Number	Indicator	Color	Description
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN (FE0 to FE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-73](#) lists attributes of a console interface.

Table 3-73 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-74](#) lists attributes of an FE electrical interface.

Table 3-74 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-75](#) lists attributes of a USB interface.

Table 3-75 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-76](#) lists attributes of a VDSL interface.

Table 3-76 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-77](#) lists attributes of a Wi-Fi antenna interface.

Table 3-77 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-78](#) lists attributes of an LTE antenna interface.

Table 3-78 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

[Table 3-79](#) lists the technical specifications of the AR129GW-L.

Table 3-79 Technical specifications of the AR129GW-L

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB

Item	Specification
Micro SD card	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	12.95 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface, and two LTE antenna interfaces LAN interfaces: four FE electrical interfaces, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010220

3.3.9 AR129W

Version Mapping

Table 3-80 describes the matching relationship between the AR129W series routers and software versions.

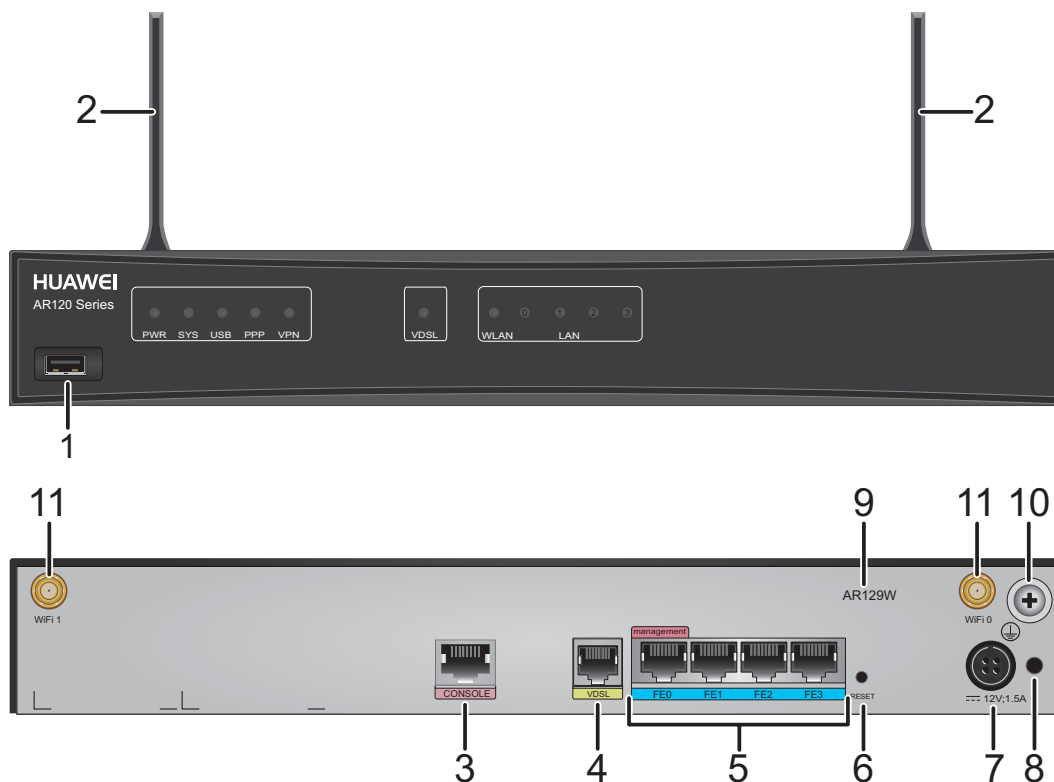
Table 3-80 Matching between AR129W series routers and software versions

Router Model	Software Version
AR129W	V200R006C10 and later versions

Appearance and Structure

Figure 3-25 shows the appearance of the AR129W router.

Figure 3-25 AR129W appearance



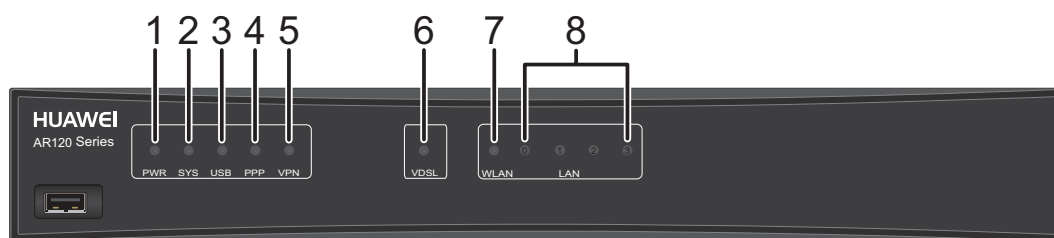
1	USB interface (host)	2	Two Wi-Fi antennas
3	Console interface	4	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> FE0 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 24 W integrated power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-26 shows the AR129W indicator.

Figure 3-26 Indicators on the AR129W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	VDSL	Green	Steady on: A link has been established on the VDSL interface. Off: No link is established on the VDSL interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-81](#) lists attributes of a console interface.

Table 3-81 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-82](#) lists attributes of an FE electrical interface.

Table 3-82 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-83](#) lists attributes of a USB interface.

Table 3-83 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-84](#) lists attributes of a VDSL interface.

Table 3-84 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-85](#) lists attributes of a Wi-Fi antenna interface.

Table 3-85 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

Table 3-86 lists the technical specifications of the AR129W series routers.

Table 3-86 AR129W series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	256 MB
Flash	256 MB
Micro SD card	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one VDSL interface LAN interfaces: four FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010248

3.4 AR150 Series

3.4.1 AR151

Version Mapping

Table 3-87 describes the matching relationship between the AR151 router and software versions.

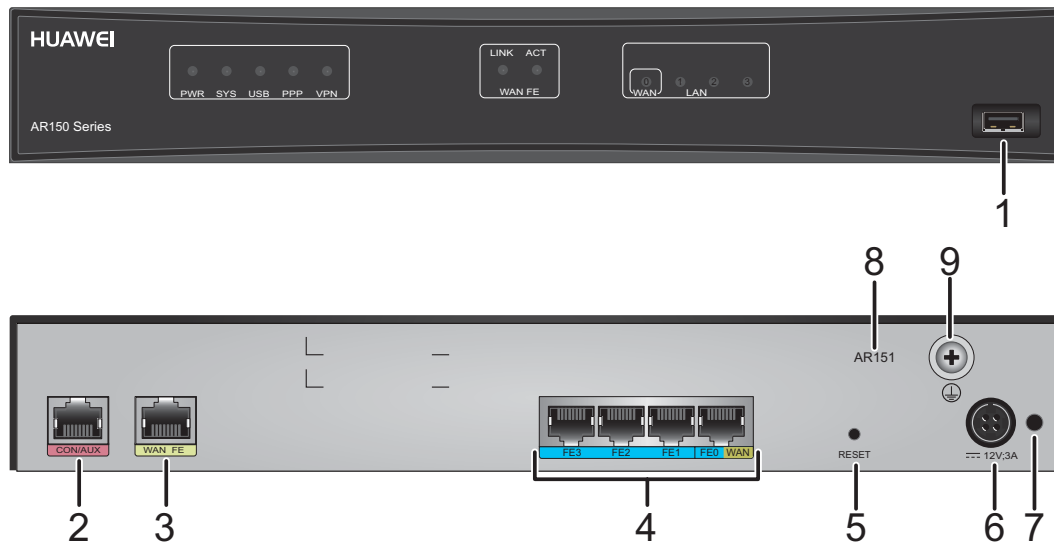
Table 3-87 Matching between AR151 router and software versions

Router Model	Software Version
AR151	V200R002C00 and later versions

Appearance and Structure

Figure 3-27 shows the appearance of the AR151 router.

Figure 3-27 AR151 appearance



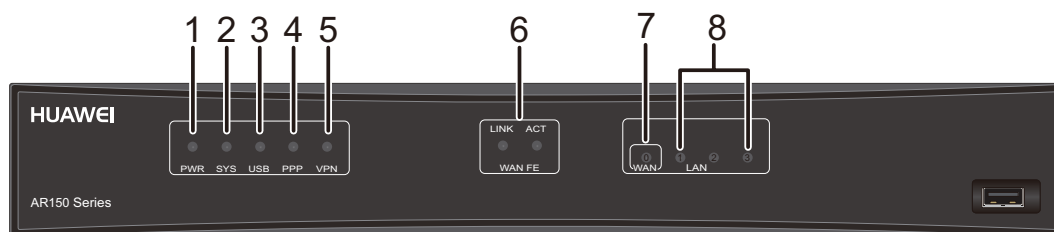
1	USB interface (host)	2	CON/AUX interface NOTE The AR151 does not support AUX login.
3	WAN interface: FE electrical interface	4	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .

7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-28 shows the AR151 indicator.

Figure 3-28 Indicators on the AR151



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-88](#) lists the CON/AUX interface attributes.

Table 3-88 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-89](#) lists attributes of an FE electrical interface.

Table 3-89 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-90](#) lists attributes of a USB interface.

Table 3-90 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Technical Specifications

Table 3-91 lists the technical specifications of the AR151 router.

Table 3-91 AR151 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported

Item	Specification
PoE	Not supported
Power consumption	
Maximum power consumption	11.6 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353847

3.4.2 AR151G-C

Version Mapping

[Table 3-92](#) lists the mapping between the AR151G-C and software versions.

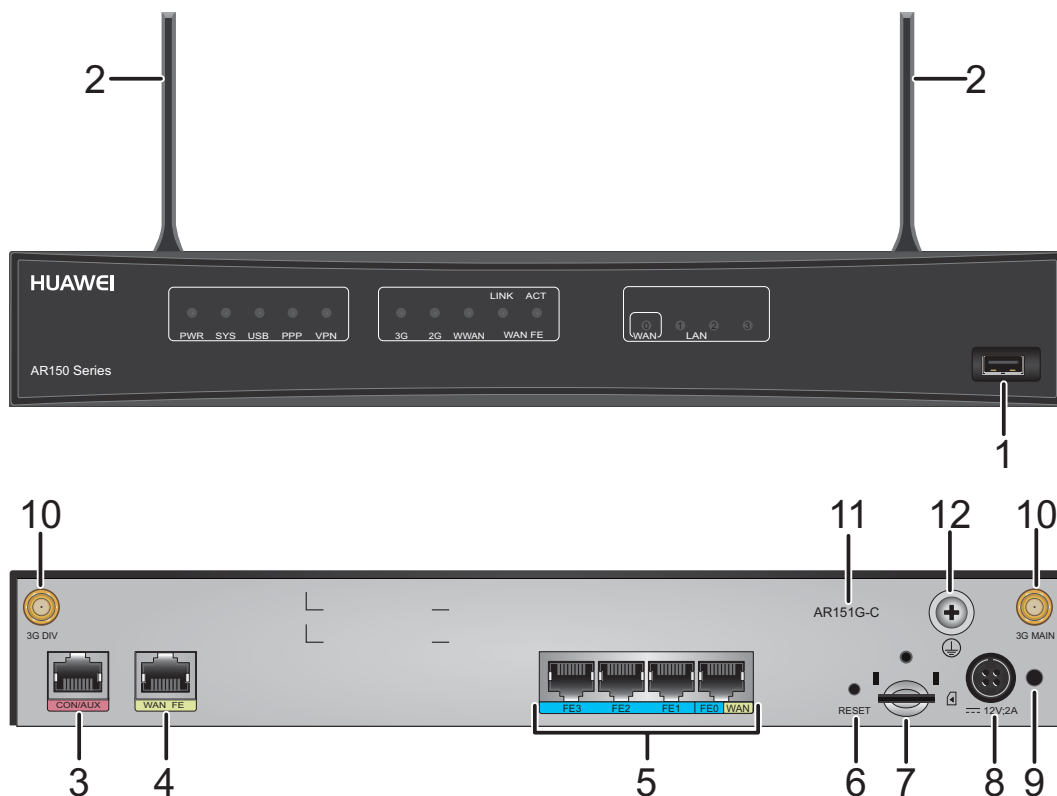
Table 3-92 Mapping between the AR151G-C and software versions

Router Model	Software Version
AR151G-C	V200R005C00 and later versions

Appearance and Structure

Figure 3-29 shows the appearance of the AR151G-C.

Figure 3-29 AR151G-C appearance



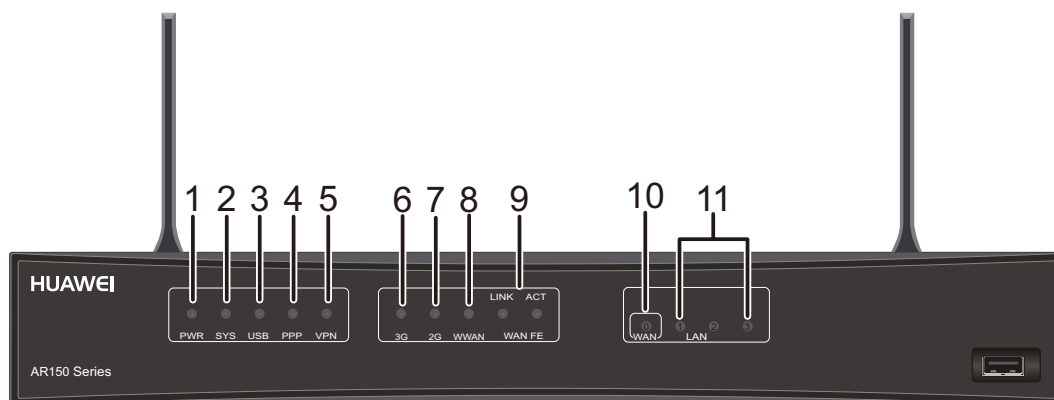
1	USB interface (host)	2	Two 3G antennas
3	CON/AUX interface NOTE The AR151G-C does not support AUX login.	4	WAN interface: FE electrical interface

5	<p>LAN interfaces: four FE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>
7	<p>SIM card slot</p> <p>NOTE</p> <p>The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.</p>	8	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 24 W integrated power adapter.</p>
9	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	10	<p>3G-EVDO antenna interface</p>
11	<p>Product model silkscreen</p>	12	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>

Indicator Description

Figure 3-30 shows the indicators on the AR151G-C.

Figure 3-30 Indicators on the AR151G-C



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high. Fast blinking: The 2G signal strength is medium. Slow blinking: The 2G signal strength is low. Off: No 2G signal is available.

Number	Indicator	Color	Description
8	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.
9	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-93](#) lists the CON/AUX interface attributes.

Table 3-93 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-94](#) lists attributes of an FE electrical interface.

Table 3-94 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-95](#) lists attributes of a USB interface.

Table 3-95 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

3G-EVDO Antenna Interface

3G-EVDO antenna interfaces of a router include a 3G MAIN interface (for the primary antenna) and a 3G DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, whereas the secondary antenna assists the primary antenna in signal receiving. [Table 3-96](#) lists attributes of a 3G-EVDO antenna interface.

Table 3-96 3G-EVDO antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● CDMA2000 1X: 800/1900 (MHz) ● CDMA2000 1X/EVDO Rev.0: 800/1900 (MHz) ● CDMA2000 1X/EVDO Rev A: 800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● CDMA2000 1X: uplink rate of 153.6 kbit/s and downlink rate of 153.6 kbit/s ● CDMA2000 1X/EVDO Rev.0: uplink rate of 153.6 kbit/s and downlink rate of 2.4 Mbit/s ● CDMA2000 1X/EVDO Rev A: uplink rate of 1.8 Mbit/s and downlink rate of 3.1 Mbit/s
Cable type	7.17.4 3G Antenna

Technical Specifications

[Table 3-97](#) lists the technical specifications of the AR151G-C.

Table 3-97 Technical specifications of the AR151G-C

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB

Item	Specification
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	12.4 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interfaces: one FE electrical interface, and two 3G-EVDO antenna interfaces LAN interfaces: four FE electrical interfaces. LAN interface FE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02356388

3.4.3 AR151G-HSPA+7

Version Mapping

Table 3-98 lists the mapping between the AR151G-HSPA+7 router and software versions.

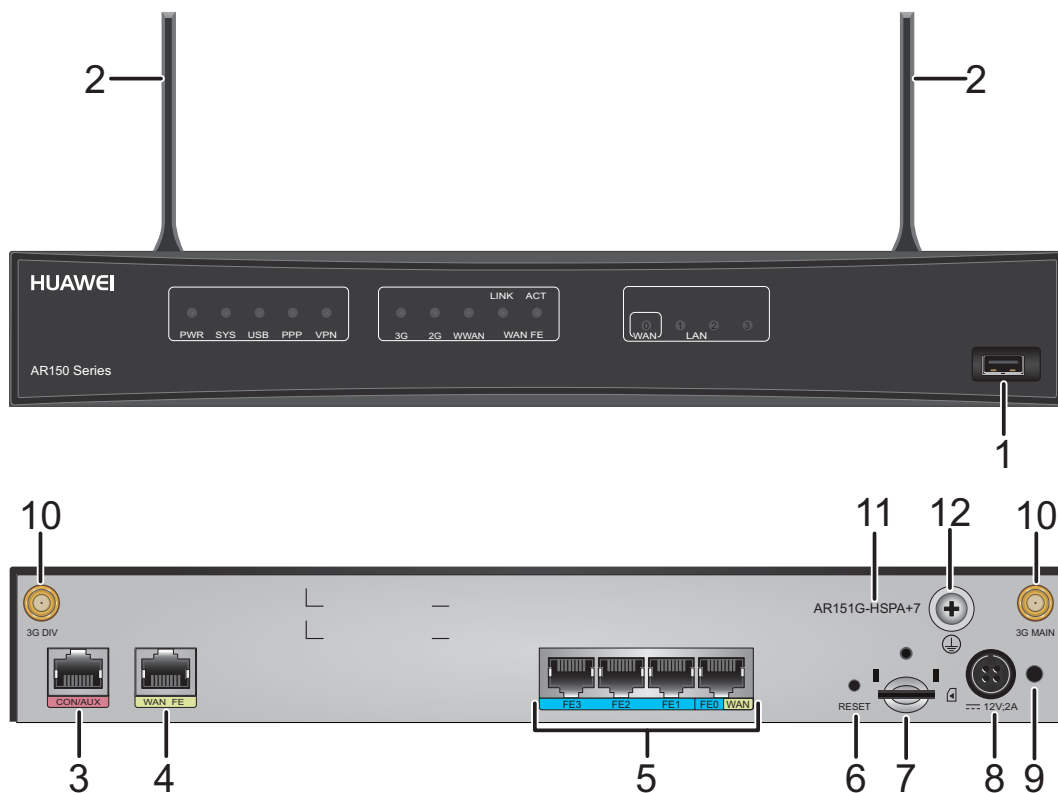
Table 3-98 Matching between AR151G-HSPA+7 router and software versions

Router Model	Software Version
AR151G-HSPA+7	V200R003C00 and later versions

Appearance and Structure

Figure 3-31 shows the appearance of the AR151G-HSPA+7 router.

Figure 3-31 AR151G-HSPA+7 appearance



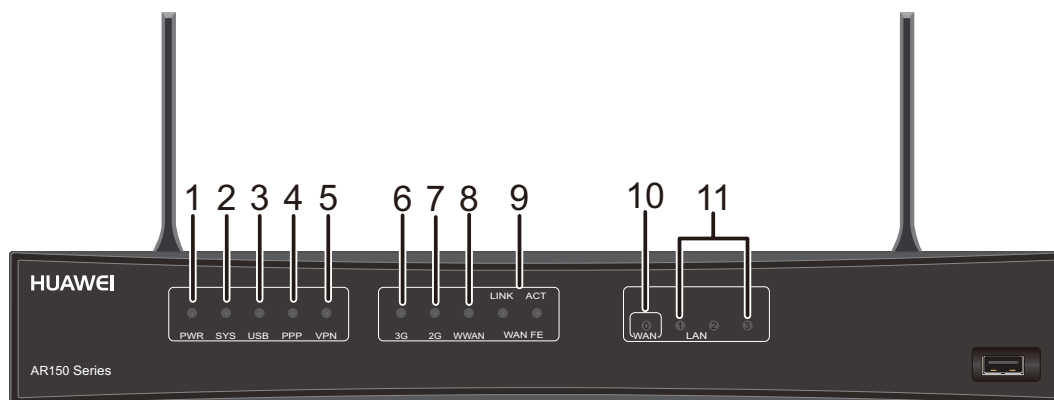
1	USB interface (host)	2	Two 3G antennas
3	CON/AUX interface NOTE The AR151G-HSPA+7 does not support AUX login.	4	WAN interface: FE electrical interface
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> FE3 is a management interface and is used to upgrade the router. LAN interface FE0 can be configured as a WAN interface. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	SIM card slot NOTE The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.	8	Power jack NOTE The router uses a 24 W integrated power adapter .

9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	3G-HSPA+7 antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-32 is a quick reference table for indicators of the AR151G-HSPA+7 router.

Figure 3-32 Indicators on the AR151G-HSPA+7 panel



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high. Fast blinking: The 2G signal strength is medium. Slow blinking: The 2G signal strength is low. Off: No 2G signal is available.
8	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.
9	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.

Number	Indicator	Color	Description
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-99](#) lists the CON/AUX interface attributes.

Table 3-99 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-100](#) lists attributes of an FE electrical interface.

Table 3-100 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-101](#) lists attributes of a USB interface.

Table 3-101 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

3G-HSPA+7 Antenna Interface

3G antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. [Table 3-102](#) lists attributes of a 3G antenna interface.

Table 3-102 3G antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● UMTS/HSPA: 900/2100 (MHz) ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Cable type	7.17.4 3G Antenna

Technical Specifications

[Table 3-103](#) lists the technical specifications of the AR151G-HSPA+7 router.

Table 3-103 AR151G-HSPA+7 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power	

Item	Specification
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	12.4 W
Heat dissipation	
Fan	Built-in fan, which is not pluggable
Airflow (facing the front panel)	Cold air flows into the router from the left side and is exhausted from the right side.
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interfaces: one FE electrical interface, two 3G-HSPA+7 antenna interfaces LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354245

3.4.4 AR151W-P

Version Mapping

Table 3-104 lists the mapping between the AR151W-P router and software versions.

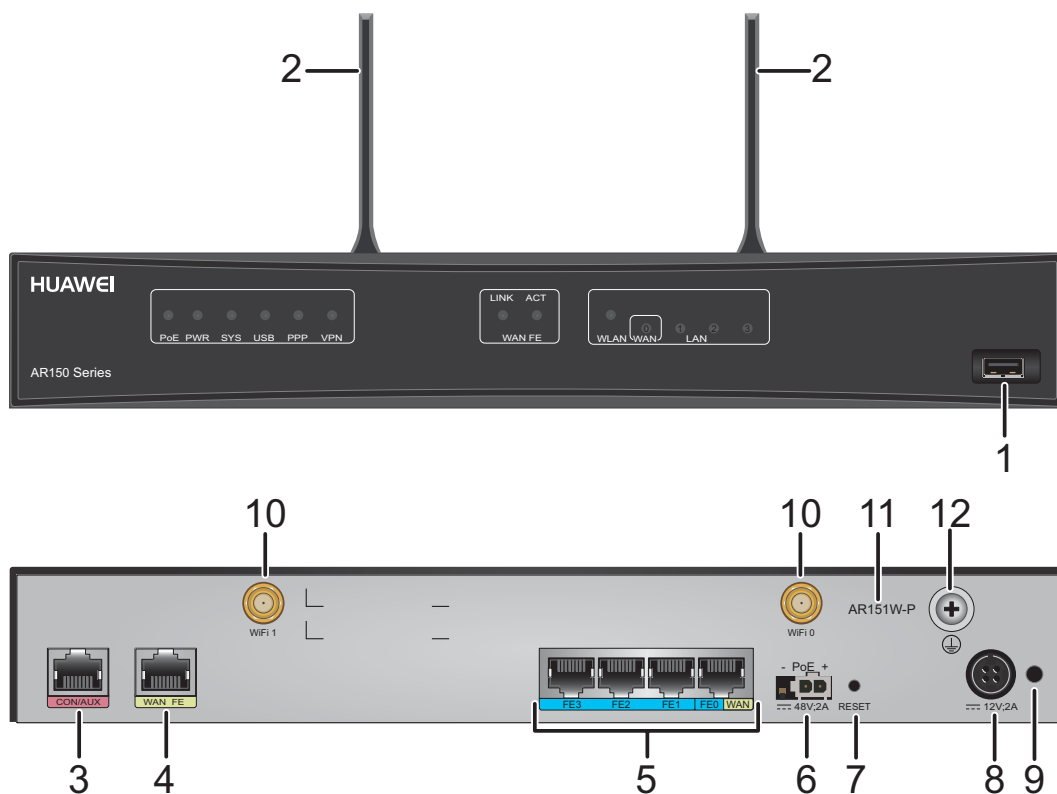
Table 3-104 Matching between AR151W-P router and software versions

Router Model	Software Version
AR151W-P	V200R003C00 and later versions

Appearance and Structure

Figure 3-33 shows the appearance of the AR151W-P router.

Figure 3-33 AR151W-P appearance

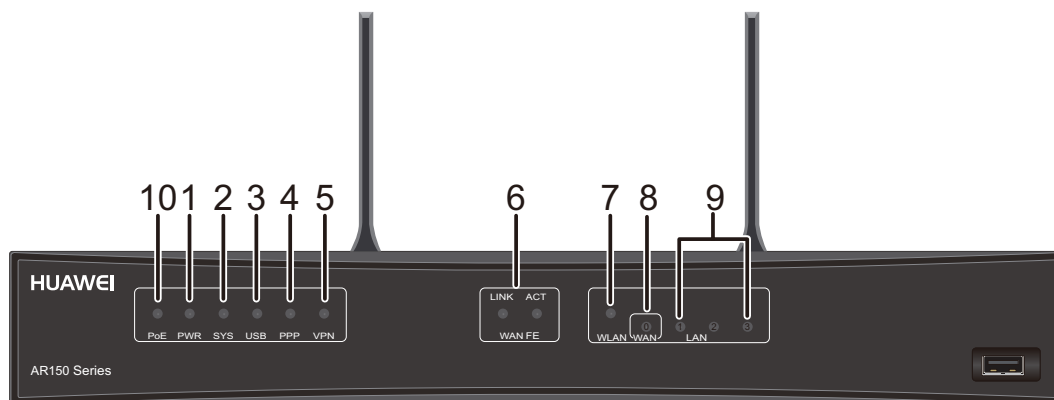


1	USB interface (host)	2	Two Wi-Fi antennas
3	CON/AUX interface NOTE The AR151W-P does not support AUX login.	4	WAN interface: FE electrical interface
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.
7	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	Two Wi-Fi antenna interfaces
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-34 is a quick reference table for indicators of the AR151W-P router.

Figure 3-34 Indicators on the AR151W-P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
4	PPP	Green	Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
			Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally.
			Off: The IPSec service is unavailable.

Number	Indicator	Color	Description
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.
10	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-105](#) lists the CON/AUX interface attributes.

Table 3-105 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-106](#) lists attributes of an FE electrical interface.

Table 3-106 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-107](#) lists attributes of a USB interface.

Table 3-107 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-108](#) lists attributes of a Wi-Fi antenna interface.

Table 3-108 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-109](#) lists the technical specifications of the AR151W-P router.

Table 3-109 AR151W-P router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None

Item	Specification
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Supported (FE0-FE3)
Power consumption	
Maximum power consumption	10.4 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface, and two Wi-Fi antenna interfaces

Item	Specification
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354246

3.4.5 AR156

Version Mapping

Table 3-110 lists the mapping between the AR156 router and software versions.

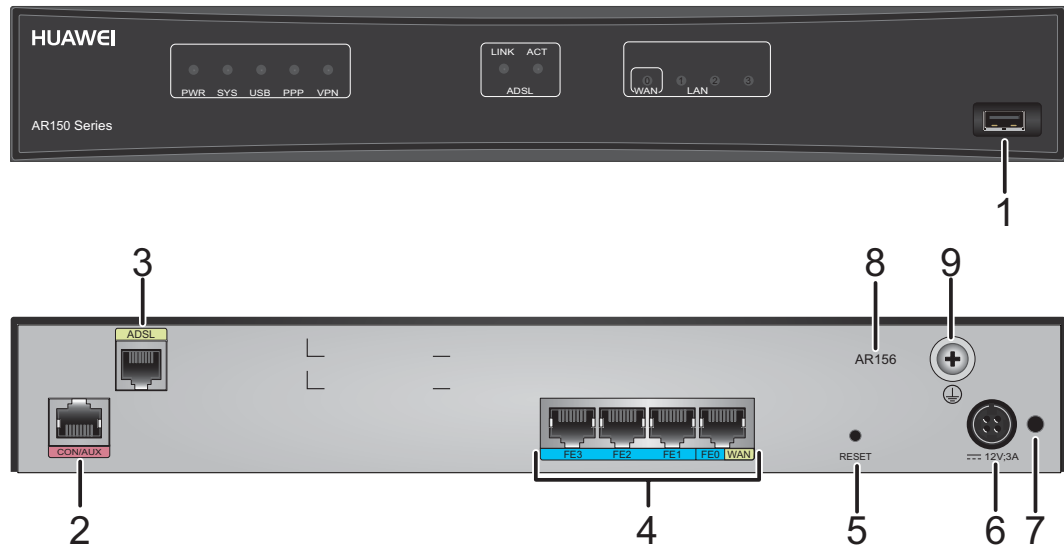
Table 3-110 Matching between AR156 router and software versions

Router Model	Software Version
AR156	V200R002C02 and later versions

Appearance and Structure

Figure 3-35 shows the appearance of the AR156 router.

Figure 3-35 AR156 appearance



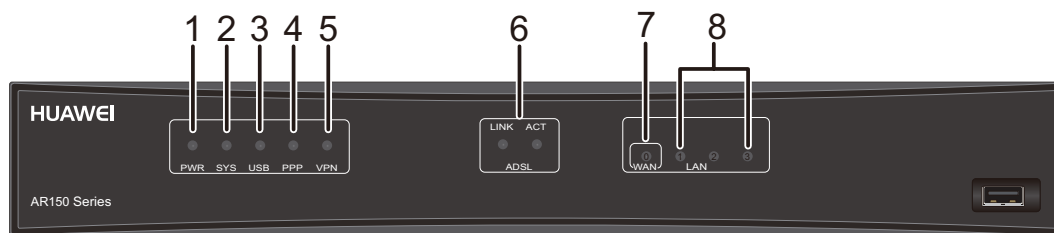
1	USB interface (host)	2	CON/AUX interface NOTE The AR156 does not support AUX login.
3	WAN interface: ADSL-B/J interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-	
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Indicator Description

Figure 3-36 shows the indicators on the AR156 router.

Figure 3-36 Indicators on the AR156



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-111](#) lists the CON/AUX interface attributes.

Table 3-111 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-112](#) lists attributes of an FE electrical interface.

Table 3-112 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-113](#) lists attributes of a USB interface.

Table 3-113 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-114](#) lists attributes of an ADSL-B/J interface.

Table 3-114 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-115](#) lists the technical specifications of the AR156 router.

Table 3-115 AR156 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None

Item	Specification
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	16.1 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-B/J interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported

Item	Specification
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354359

3.4.6 AR156W

Version Mapping

[Table 3-116](#) lists the mapping between the AR156W and software versions.

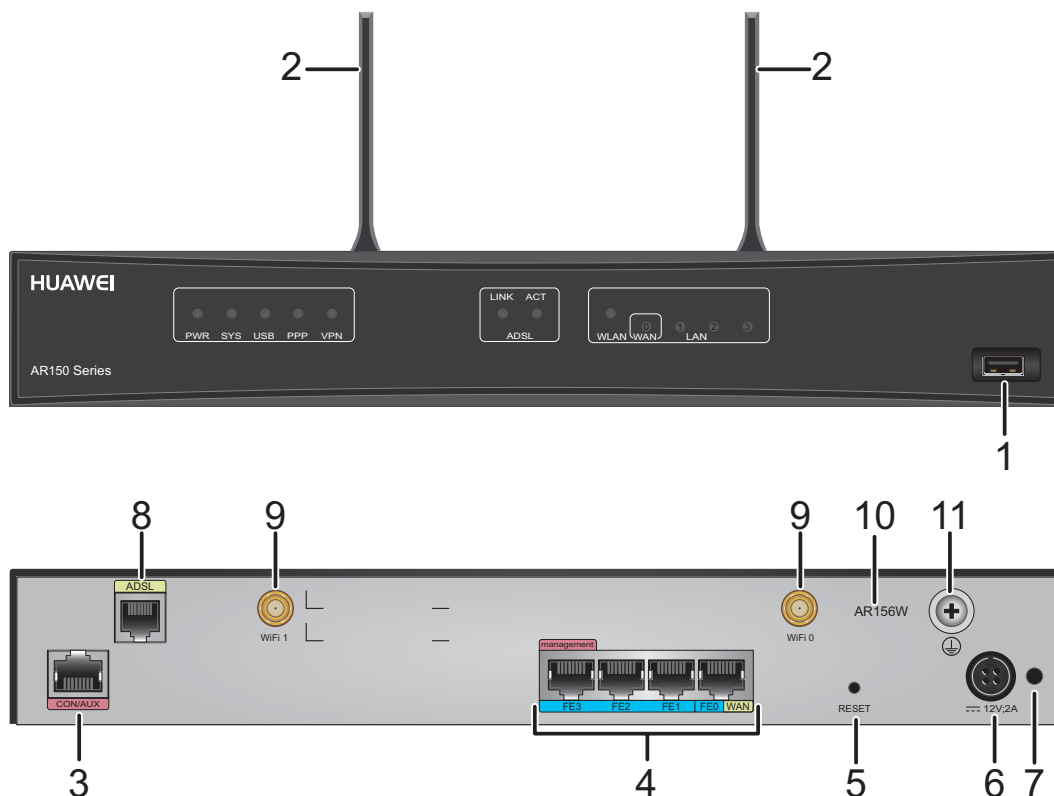
Table 3-116 Mapping between the AR156W and software versions

Router Model	Software Version
AR156W	V200R005C10 and later versions

Appearance and Structure

[Figure 3-37](#) shows the appearance of the AR156W.

Figure 3-37 AR156W appearance



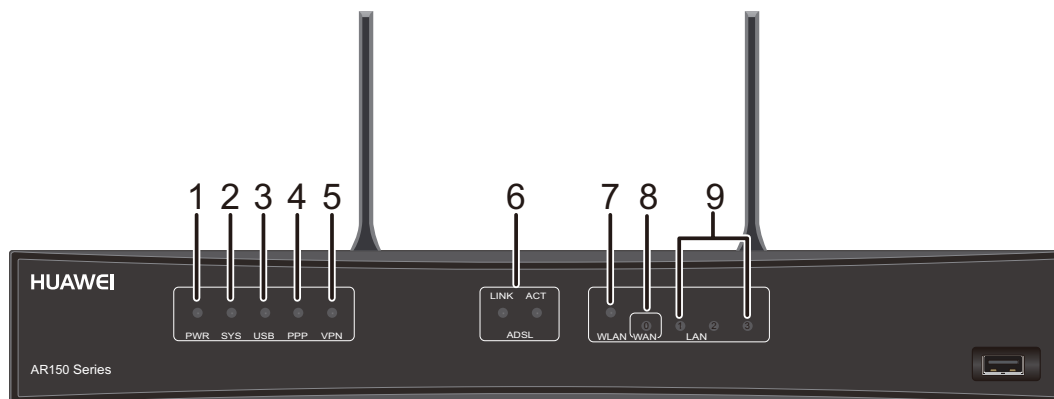
1	USB interface (host)	2	Two Wi-Fi antennas
3	CON/AUX interface NOTE The AR156W does not support AUX login.	4	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .

7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: ADSL-B/J interface NOTE This interface supports the dying gasp function.
9	Two Wi-Fi antenna interfaces	10	Product model silkscreen
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-38 shows the indicators on the AR156W.

Figure 3-38 Indicators on the AR156W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.

Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-117](#) lists the CON/AUX interface attributes.

Table 3-117 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-118](#) lists attributes of an FE electrical interface.

Table 3-118 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-119](#) lists attributes of a USB interface.

Table 3-119 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-120](#) lists attributes of a Wi-Fi antenna interface.

Table 3-120 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-121](#) lists attributes of an ADSL-B/J interface.

Table 3-121 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-122](#) lists the technical specifications of the AR156W.

Table 3-122 Technical specifications of the AR156W

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.7 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-B/J interface LAN interfaces: four FE electrical interfaces, LAN interface FE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02358327

3.4.7 AR157

Version Mapping

Table 3-123 lists the mapping between the AR157 router and software versions.

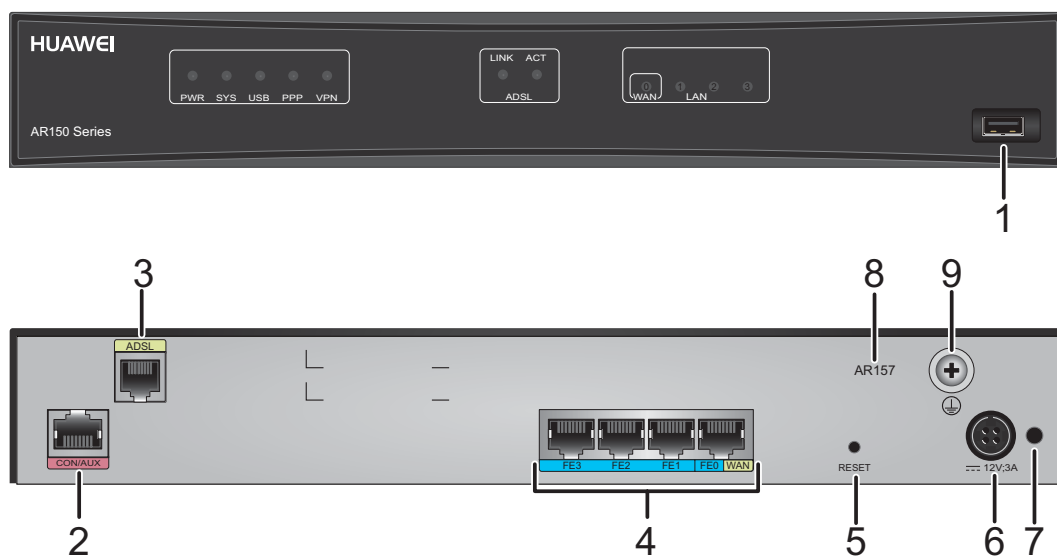
Table 3-123 Matching between AR157 router and software versions

Router Model	Software Version
AR157	V200R002C00 and later versions

Appearance and Structure

Figure 3-39 shows the appearance of the AR157 router.

Figure 3-39 AR157 appearance



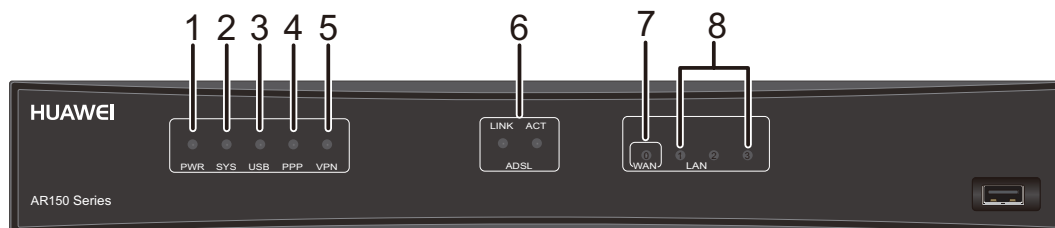
1	USB interface (host)	2	CON/AUX interface NOTE The AR157 does not support AUX login.
---	----------------------	---	---

3	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.	4 LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6 Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8 Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	- -

Indicator Description

Figure 3-40 shows the indicators on the AR157 router.

Figure 3-40 Indicators on the AR157



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
8	LAN (FE1- FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-124](#) lists the CON/AUX interface attributes.

Table 3-124 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-125](#) lists attributes of an FE electrical interface.

Table 3-125 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-126](#) lists attributes of a USB interface.

Table 3-126 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-127](#) lists attributes of an ADSL-A/M interface.

Table 3-127 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

Table 3-128 lists the technical specifications of the AR157 router.

Table 3-128 AR157 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)

Item	Specification
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	15.2 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353848

3.4.8 AR157G-HSPA+7

Version Mapping

Table 3-129 lists the mapping between the AR157G-HSPA+7 and software versions.

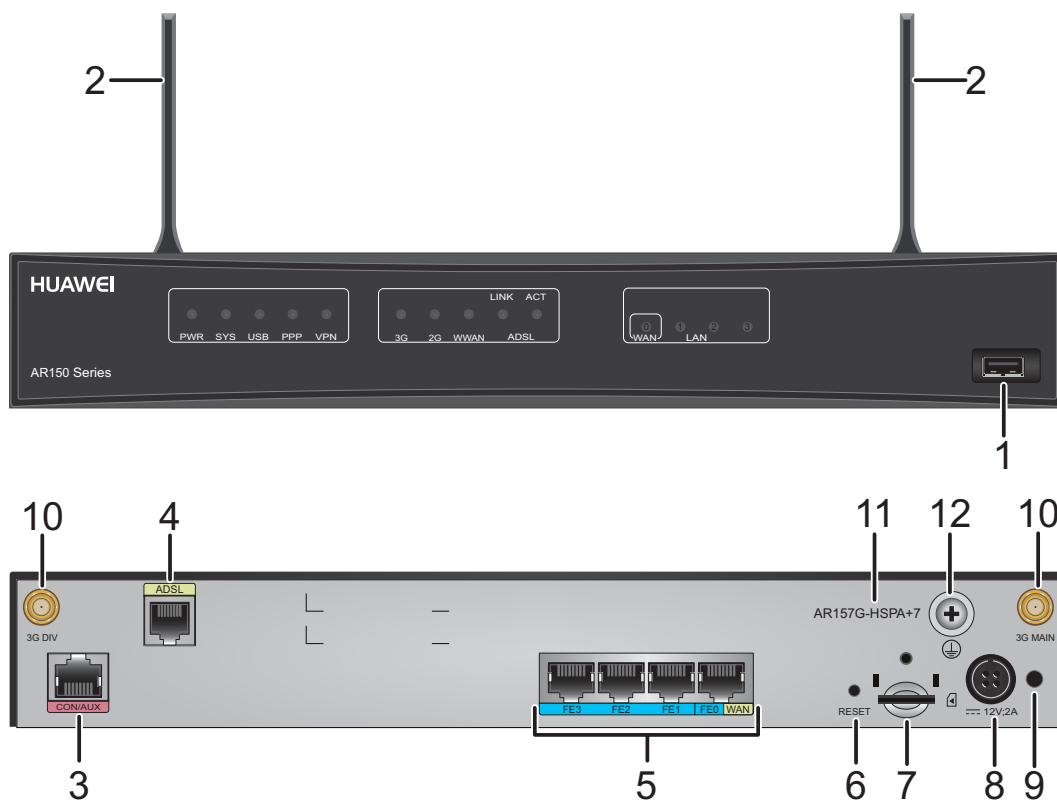
Table 3-129 Mapping between the AR157G-HSPA+7 and software versions

Router Model	Software Version
AR157G-HSPA+7	V200R003C00 and later versions

Appearance and Structure

Figure 3-41 shows the appearance of the AR157G-HSPA+7.

Figure 3-41 AR157G-HSPA+7 appearance

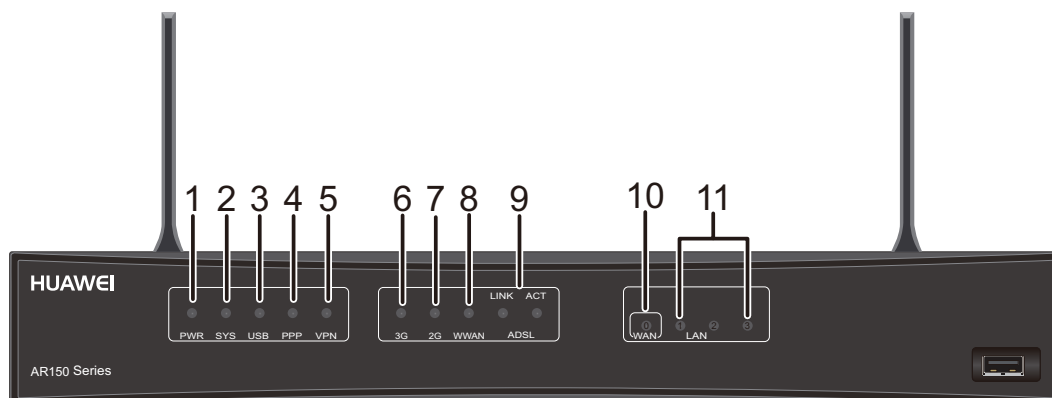


1	USB interface (host)	2	Two 3G antennas
3	CON/AUX interface NOTE The AR157G-HSPA+7 does not support AUX login.	4	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.
5	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> FE3 is a management interface and is used to upgrade the router. LAN interface FE0 can be configured as a WAN interface. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	SIM card slot NOTE The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	3G-HSPA+7 antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-42 shows the indicators on the AR157G-HSPA+7.

Figure 3-42 Indicators on the AR157G-HSPA+7



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high. Fast blinking: The 2G signal strength is medium. Slow blinking: The 2G signal strength is low. Off: No 2G signal is available.

Number	Indicator	Color	Description
8	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.
9	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-130](#) lists the CON/AUX interface attributes.

Table 3-130 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-131](#) lists attributes of an FE electrical interface.

Table 3-131 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-132](#) lists attributes of a USB interface.

Table 3-132 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

3G-HSPA+7 Antenna Interface

3G antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. [Table 3-133](#) lists attributes of a 3G antenna interface.

Table 3-133 3G antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● UMTS/HSPA: 900/2100 (MHz) ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Cable type	7.17.4 3G Antenna

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-134](#) lists attributes of an ADSL-A/M interface.

Table 3-134 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

Table 3-135 lists the technical specifications of the AR157G-HSPA+7.

Table 3-135 Technical specifications of the AR157G-HSPA+7

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)

Item	Specification
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.9 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one ADSL-A/M interface and two 3G-HSPA+7 antenna interfaces LAN interfaces: four FE electrical interfaces. LAN interface FE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354402

3.4.9 AR157VW

Version Mapping

Table 3-136 lists the mapping between the AR157VW router and software versions.

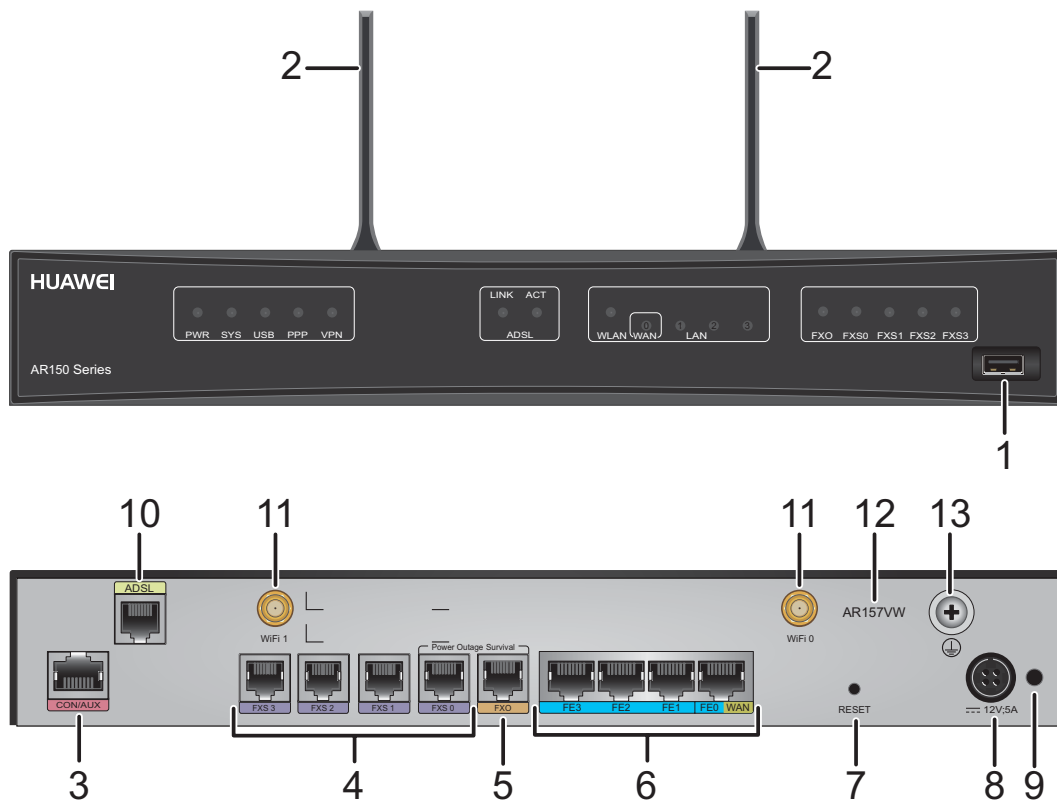
Table 3-136 Matching between AR157VW router and software versions

Router Model	Software Version
AR157VW	V200R003C00 and later versions

Appearance and Structure

Figure 3-43 shows the appearance of the AR157VW router.

Figure 3-43 AR157VW appearance

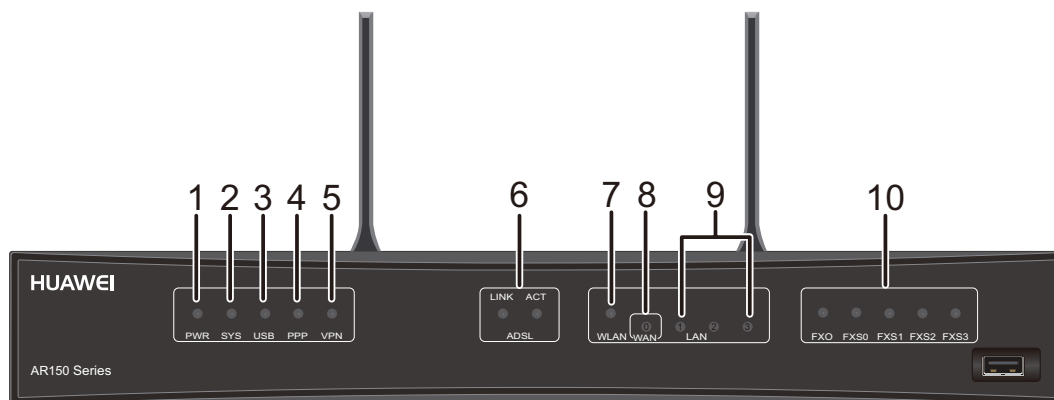


1	USB interface (host)	2	Two Wi-Fi antennas
3	CON/AUX interface NOTE The AR157VW does not support AUX login.	4	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .
5	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .	6	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
7	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack NOTE The router uses a 60 W power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.
11	Two Wi-Fi antenna interfaces	12	Product model silkscreen
13	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-44 is a quick reference table for indicators of the AR157VW router.

Figure 3-44 Indicators on the AR157VW panel



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally.
			Off: The IPsec service is unavailable.

Number	Indicator	Color	Description
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.
10	FXS0-FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-137](#) lists the CON/AUX interface attributes.

Table 3-137 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-138](#) lists attributes of an FE electrical interface.

Table 3-138 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-139](#) lists attributes of a USB interface.

Table 3-139 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-140](#) lists attributes of a Wi-Fi antenna interface.

Table 3-140 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-141](#) lists attributes of an ADSL-A/M interface.

Table 3-141 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5

Attribute	Description
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-142](#) lists attributes of an FXS interface.

Table 3-142 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-143](#) lists attributes of an FXO interface.

Table 3-143 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-144](#) lists the technical specifications of the AR157VW router.

Table 3-144 AR157VW router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz

Item	Specification
Maximum output current	5 A
Maximum output power	60 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	20.8 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface, and two Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces, one FXO interface
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354416

3.4.10 AR157W

Version Mapping

Table 3-145 lists the mapping between the AR157W router and software versions.

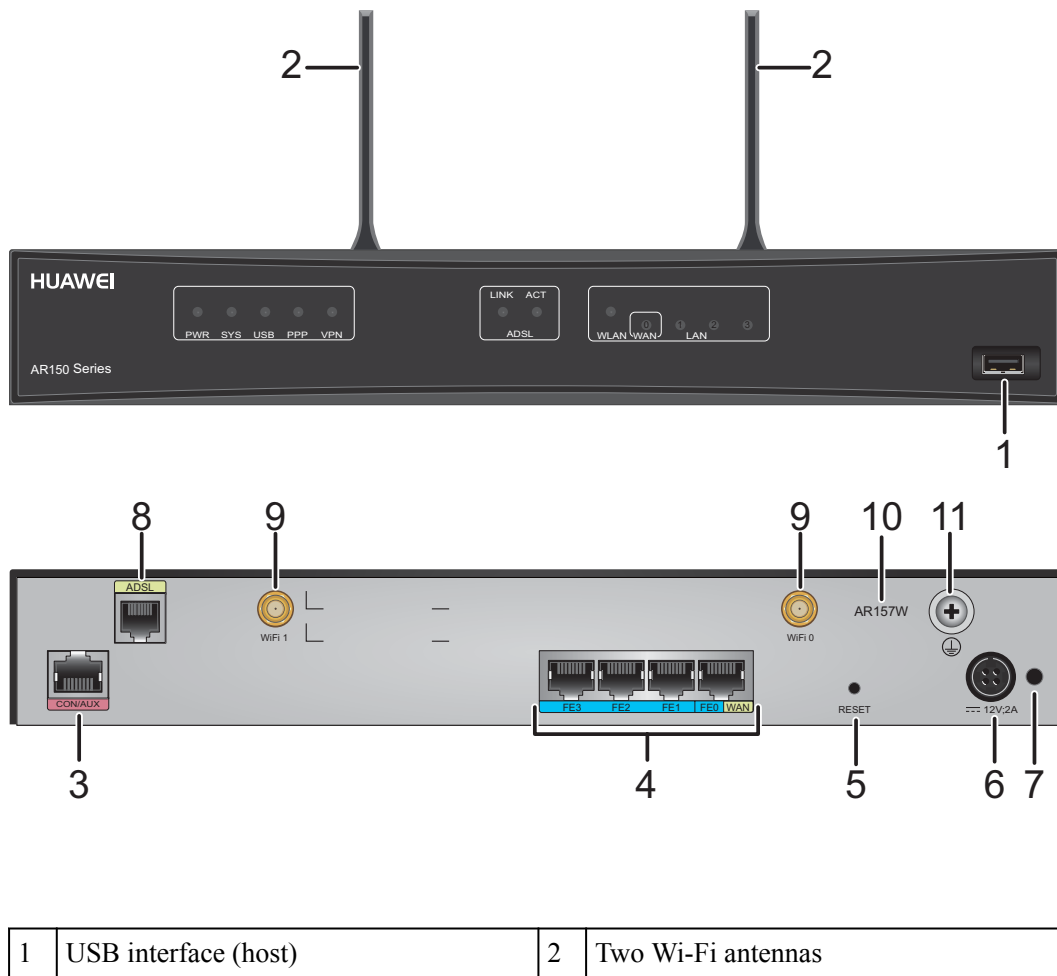
Table 3-145 Matching between AR157W router and software versions

Router Model	Software Version
AR157W	V200R003C00 and later versions

Appearance and Structure

Figure 3-45 shows the appearance of the AR157W router.

Figure 3-45 AR157W appearance

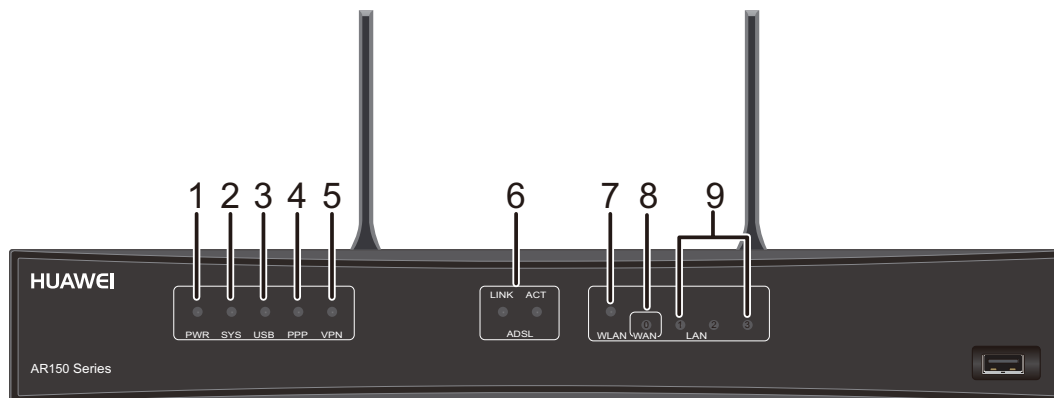


3	<p>CON/AUX interface</p> <p>NOTE</p> <p>The AR157W does not support AUX login.</p>	4	<p>LAN interfaces: four FE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	6	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 24 W integrated power adapter.</p>
7	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	8	<p>WAN interface: ADSL-A/M interface</p> <p>NOTE</p> <p>This interface supports the dying gasp function.</p>
9	Two Wi-Fi antenna interfaces	10	Product model silkscreen
11	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	-	-

Indicator Description

Figure 3-46 is a quick reference table for indicators of the AR157W router.

Figure 3-46 Indicators on the AR157W panel



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-146](#) lists the CON/AUX interface attributes.

Table 3-146 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-147](#) lists attributes of an FE electrical interface.

Table 3-147 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-148](#) lists attributes of a USB interface.

Table 3-148 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-149](#) lists attributes of a Wi-Fi antenna interface.

Table 3-149 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s

Attribute	Description
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-150](#) lists attributes of an ADSL-A/M interface.

Table 3-150 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-151](#) lists the technical specifications of the AR157W router.

Table 3-151 AR157W router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	16.7 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface, and two Wi-Fi antenna interfaces.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354247

3.4.11 AR158E

Version Mapping

[Table 3-152](#) lists the mapping between the AR158E router and software versions.

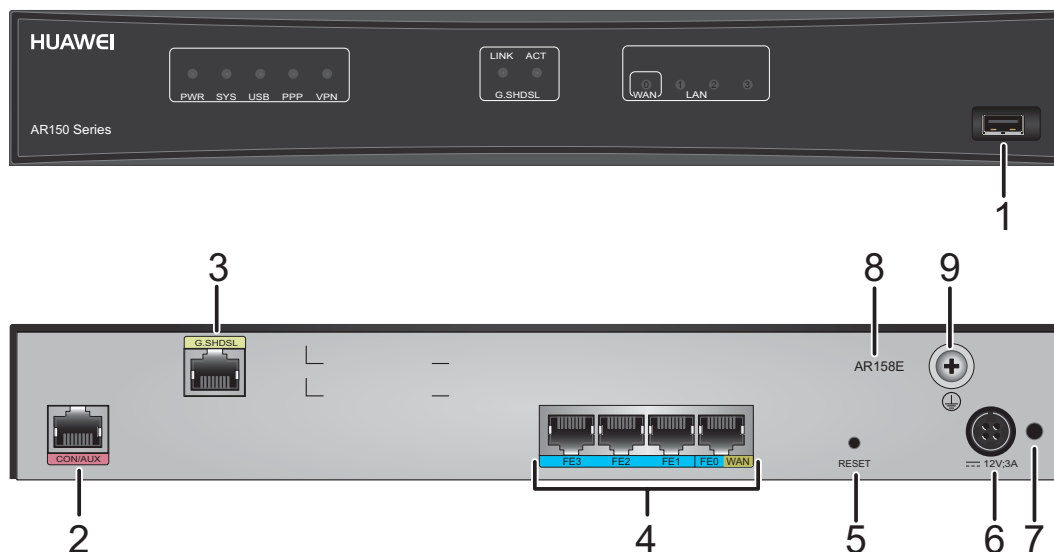
Table 3-152 Matching between AR158E router and software versions

Router Model	Software Version
AR158E	V200R002C02 and later versions

Appearance and Structure

[Figure 3-47](#) shows the appearance of the AR158E router.

Figure 3-47 AR158E appearance



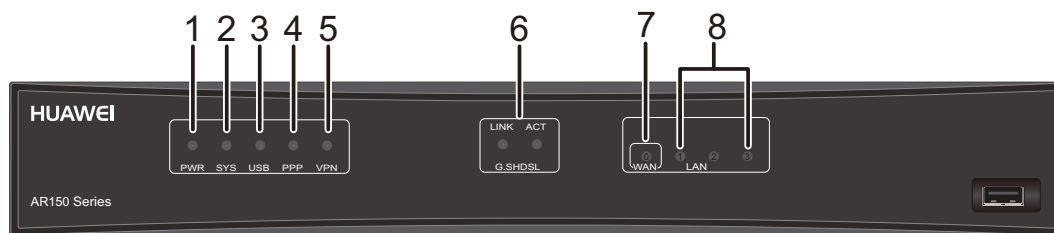
1	USB interface (host)	2	CON/AUX interface NOTE The AR158E does not support AUX login.
3	WAN interface: G.SHDSL interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-	
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Indicator Description

Figure 3-48 shows the indicators on the AR158E router.

Figure 3-48 Indicators on the AR158E



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-153](#) lists the CON/AUX interface attributes.

Table 3-153 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-154](#) lists attributes of an FE electrical interface.

Table 3-154 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-155](#) lists attributes of a USB interface.

Table 3-155 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 3-156](#) lists attributes of a G.SHDSL interface.

Table 3-156 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

Technical Specifications

[Table 3-157](#) lists the technical specifications of the AR158E router.

Table 3-157 AR158E router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height

Item	Specification
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	14.7 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one G.SHDSL interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354360

3.4.12 AR158EVW

Version Mapping

Table 3-158 lists the mapping between the AR158EVW and software versions.

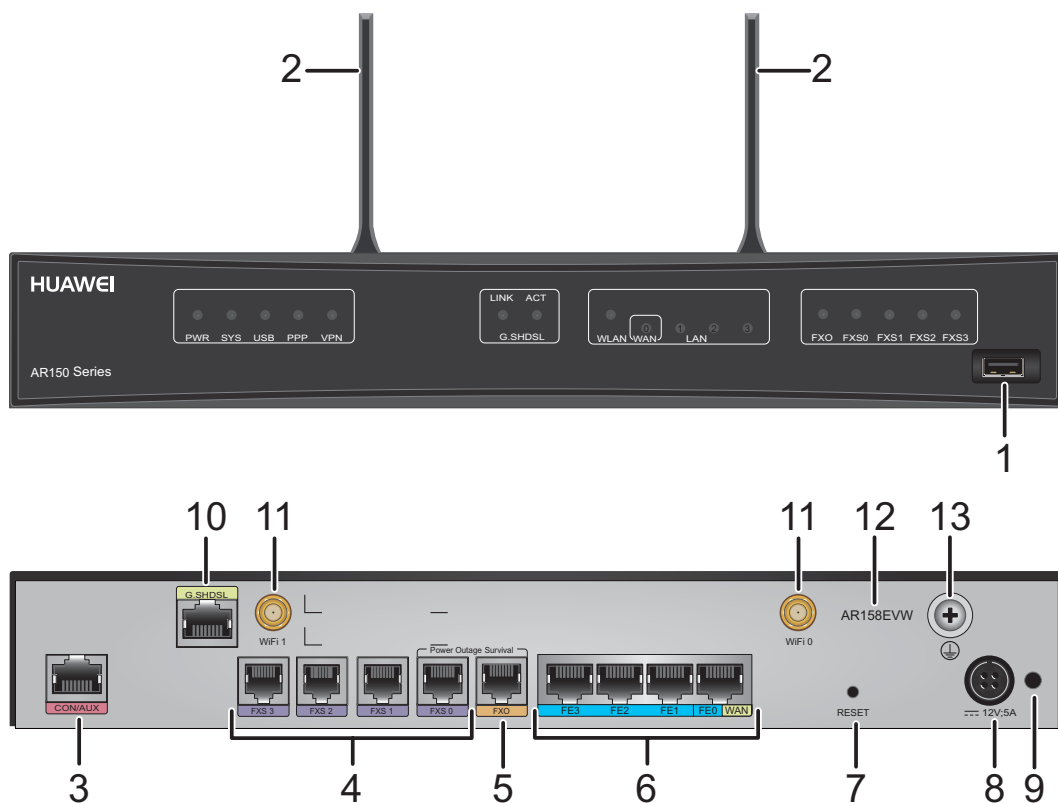
Table 3-158 Mapping between the AR158EVW and software versions

Router Model	Software Version
AR158EVW	V200R003C00 and later versions

Appearance and Structure

Figure 3-49 shows the appearance of the AR158EVW.

Figure 3-49 AR158EVW appearance

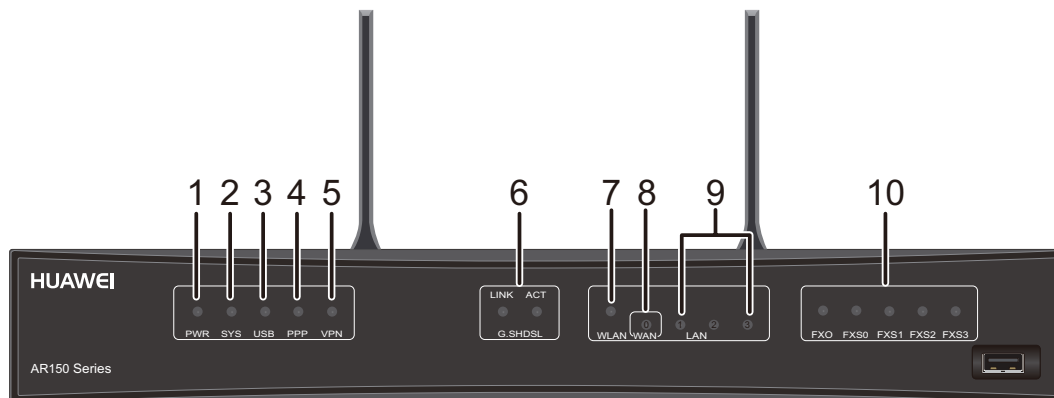


1	USB interface (host)	2	Two Wi-Fi antennas
3	CON/AUX interface NOTE The AR158EVW does not support AUX login.	4	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .
5	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .	6	LAN interfaces: four FE electrical interfaces NOTE <ul style="list-style-type: none"> ● FE3 is a management interface and is used to upgrade the router. ● LAN interface FE0 can be configured as a WAN interface. ● V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
7	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack NOTE The router uses a 60 W power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	WAN interface: G.SHDSL interface NOTE This interface supports the dying gasp function.
11	Two Wi-Fi antenna interfaces	12	Product model silkscreen
13	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-50 shows the indicators on the AR158EVW.

Figure 3-50 Indicators on the AR158EVW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
4	PPP	Green	Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
			Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally.
			Off: The IPSec service is unavailable.

Number	Indicator	Color	Description
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.
10	FXS0-FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-159](#) lists the CON/AUX interface attributes.

Table 3-159 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-160](#) lists attributes of an FE electrical interface.

Table 3-160 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-161](#) lists attributes of a USB interface.

Table 3-161 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-162](#) lists attributes of a Wi-Fi antenna interface.

Table 3-162 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 3-163](#) lists attributes of a G.SHDSL interface.

Table 3-163 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair

Attribute	Description
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-164](#) lists attributes of an FXS interface.

Table 3-164 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-165](#) lists attributes of an FXO interface.

Table 3-165 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

Table 3-166 lists the technical specifications of the AR158EVW.

Table 3-166 Technical specifications of the AR158EVW

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	19.9 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one G.SHDSL interface LAN interfaces: four FE electrical interfaces, LAN interface FE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces. Voice interfaces: four FXS interfaces, and one FXO interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354417

3.5 AR160 Series

3.5.1 AR161

Version Mapping

[Table 3-167](#) lists the mapping between the AR161 router and software versions.

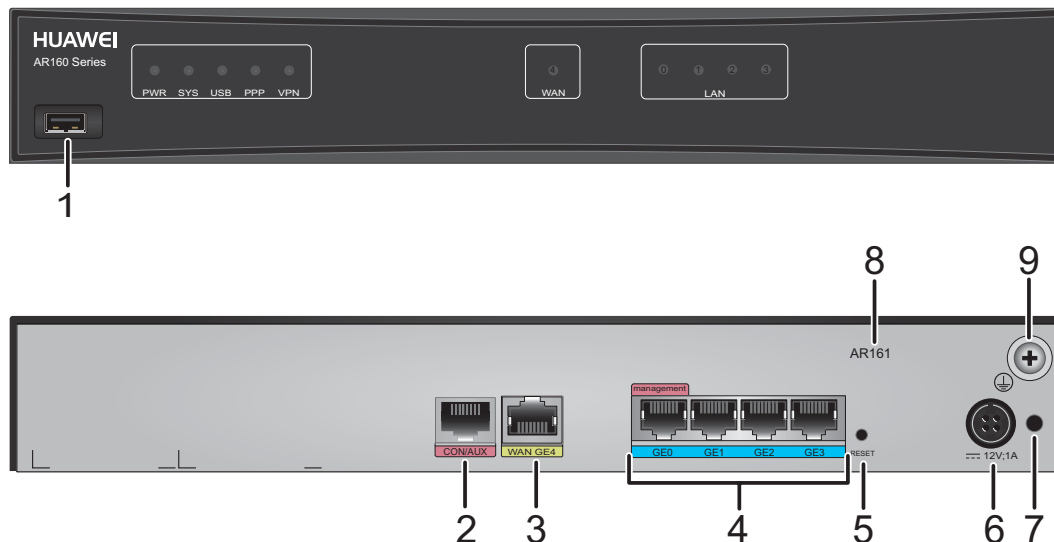
Table 3-167 Mapping between the AR161 router and software versions

Router Model	Software Version
AR161	V200R006C10 and later versions

Appearance and Structure

Figure 3-51 shows the appearance of the AR161 router.

Figure 3-51 AR161 appearance



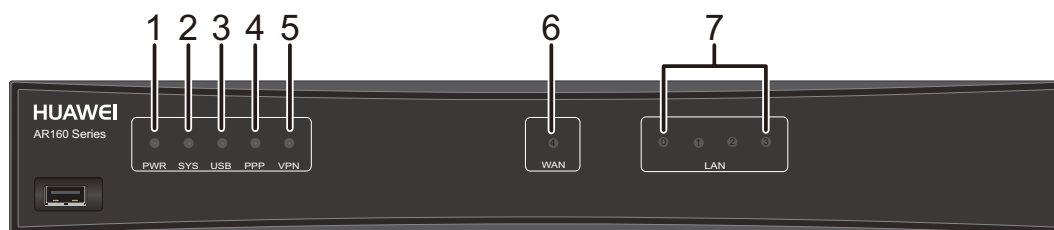
1	USB interface (host)	2	CON/AUX interface NOTE The AR161 does not support AUX login.
3	WAN interface: GE electrical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Indicator Description

Figure 3-52 shows the locations of AR161 indicators.

Figure 3-52 Indicators on the AR161



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN	Green	Steady on: A link has been established on the WAN interface.
			Blinking: Data is being transmitted or received on the WAN interface.
			Off: No link is established on the WAN interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-168](#) lists the CON/AUX interface attributes.

Table 3-168 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-169](#) lists attributes of a USB interface.

Table 3-169 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-170](#) lists attributes of a GE electrical interface.

Table 3-170 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 3-171](#) lists the technical specifications of the AR161 router.

Table 3-171 AR161 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB

Item	Specification
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	9.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interface: one GE electrical interface LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010212

3.5.2 AR161EW

Version Mapping

[Table 3-172](#) describes the mapping between the AR161EW router and software versions.

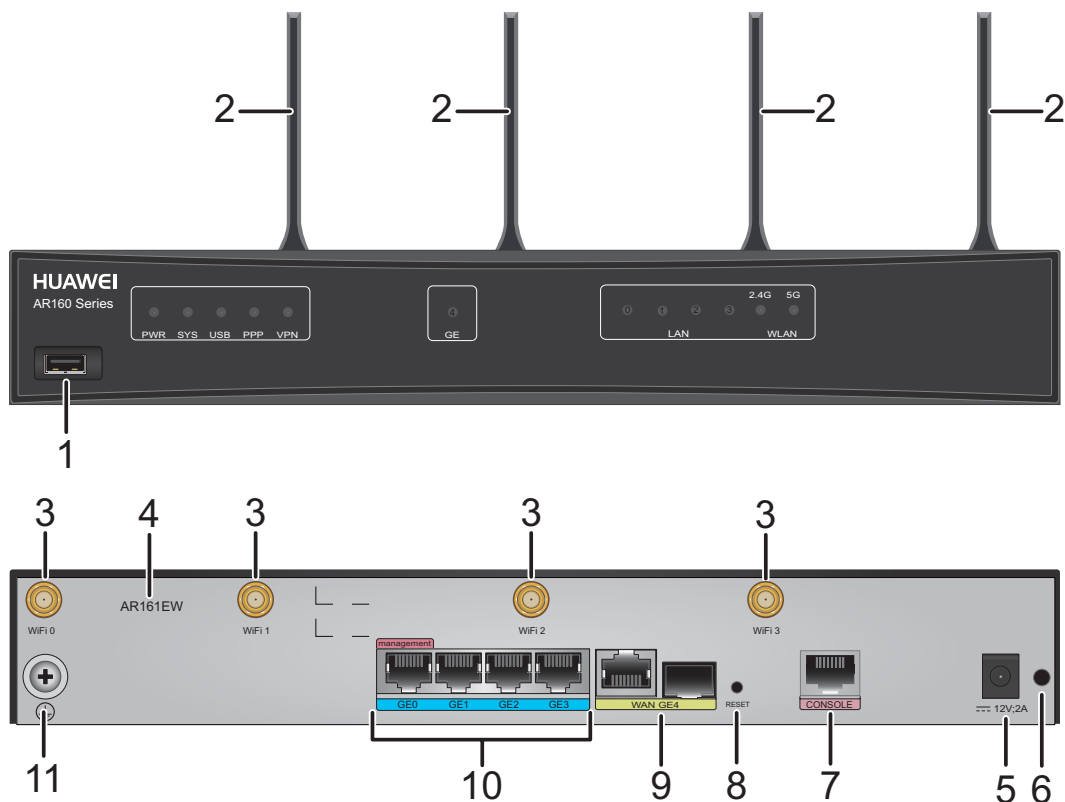
Table 3-172 Mapping between the AR161EW router and software versions

Router Model	Software Version
AR161EW	V200R008C50 and later versions

Appearance and Structure

[Figure 3-53](#) shows the appearance of the AR161EW router.

Figure 3-53 AR161EW appearance



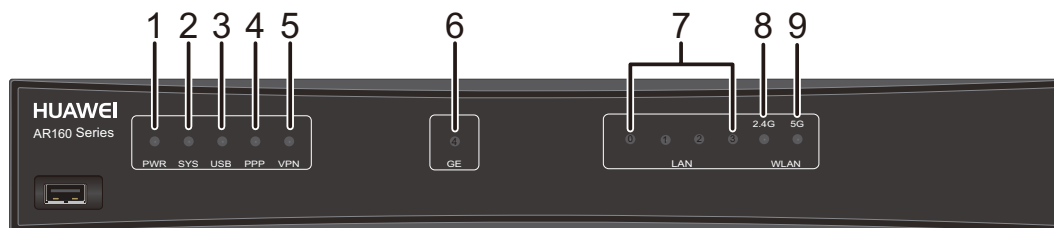
1	USB interface (host)	2	Four Wi-Fi antennas
3	Four Wi-Fi antenna interfaces	4	Product model silkscreen
5	Power jack NOTE The router uses a 1-pin 36 W power adapter .	6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
7	Console interface	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

9	WAN interface: GE combo interface	10	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-54 shows the indicators on the AR161EW router.

Figure 3-54 Indicators on the AR161EW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-173](#) lists attributes of a console interface.

Table 3-173 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-174](#) lists attributes of a USB interface.

Table 3-174 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB3.0, USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-175](#) lists attributes of a GE electrical interface.

Table 3-175 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive wireless traffic. [Table 3-176](#) lists attributes of a Wi-Fi antenna interface.

Table 3-176 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	2183 Mbit/s
MIMO mode (Tx x Rx)	4x4
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Attribute	Description
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

Table 3-177 lists the technical specifications of the AR161EW router.

Table 3-177 AR161EW technical specifications

Item	Description
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16 W

Item	Description
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces and four Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351BTJ

3.5.3 AR161EW-M1

Version Mapping

[Table 3-178](#) lists the mapping between the AR161EW-M1 router and software versions.

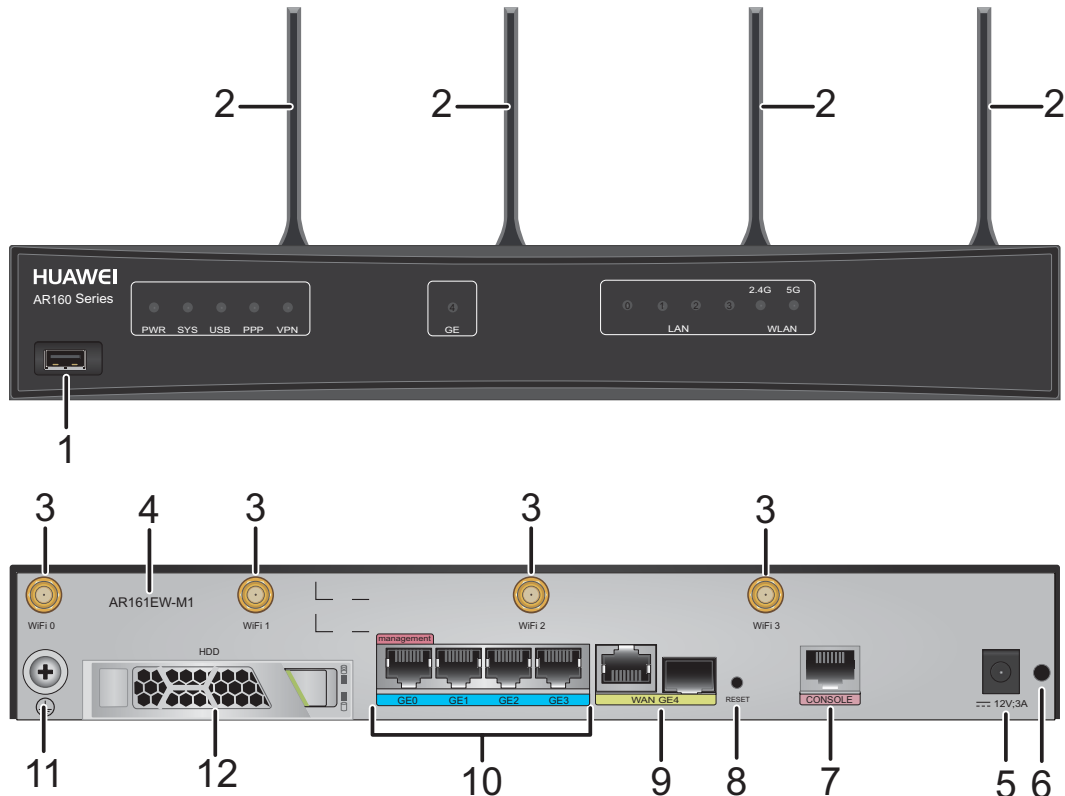
Table 3-178 Mapping between the AR161EW-M1 router and software versions

Router Model	Software Version
AR161EW-M1	V200R008C50 and later versions

Appearance and Structure

Figure 3-55 shows the appearance of the AR161EW-M1 router.

Figure 3-55 AR161EW-M1 appearance



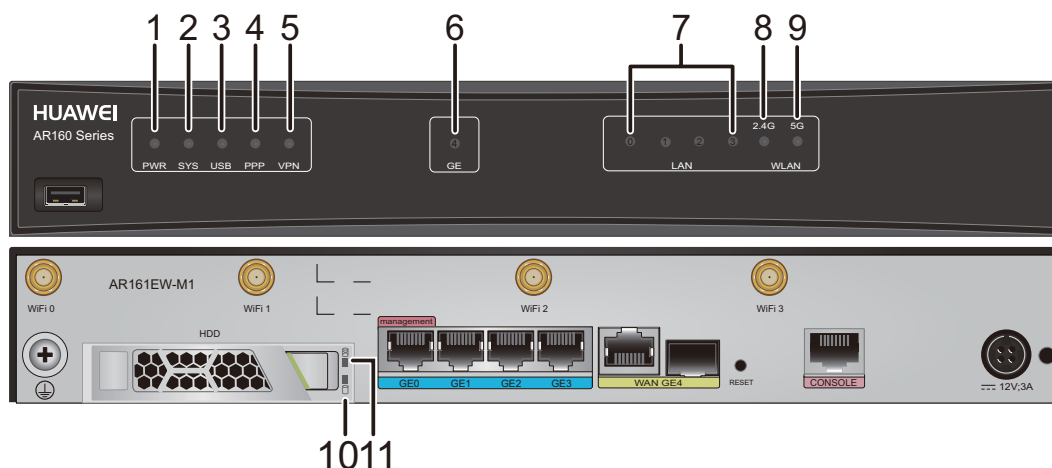
1	USB interface (host)	2	Four Wi-Fi antennas
3	Four Wi-Fi antenna interfaces	4	Product model silkscreen
5	Power jack NOTE The router uses a 1-pin 36 W power adapter .	6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
7	Console interface	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

9	WAN interface: GE combo interface	10	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	12	Hard disk drive interface NOTE 2.5-inch SATA hard disks are supported.

Indicator Description

Figure 3-56 shows the indicators on the AR161EW-M1 router.

Figure 3-56 Indicators on the AR161EW-M1



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

Number	Indicator	Color	Description
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
10 and 11	HDD	<ul style="list-style-type: none"> ● 10: green ● 11: red 	Green indicator steady on: A hard disk is available. Green indicator off: No hard disk is available. Red indicator steady on: The hard disk is faulty. Red indicator off: The hard disk is not faulty.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-179](#) lists attributes of a console interface.

Table 3-179 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-180](#) lists attributes of a USB interface.

Table 3-180 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB3.0, USB2.0

Attribute	Description
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-181](#) lists attributes of a GE electrical interface.

Table 3-181 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive wireless traffic. [Table 3-182](#) lists attributes of a Wi-Fi antenna interface.

Table 3-182 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	2183 Mbit/s
MIMO mode (Tx x Rx)	4x4
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-183](#) lists the technical specifications of the AR161EW-M1 router.

Table 3-183 AR161EW-M1 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	Supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	26 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces and four Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351BXA

3.5.4 AR161F

Version Mapping

Table 3-184 lists the mapping between the AR161F router and software versions.

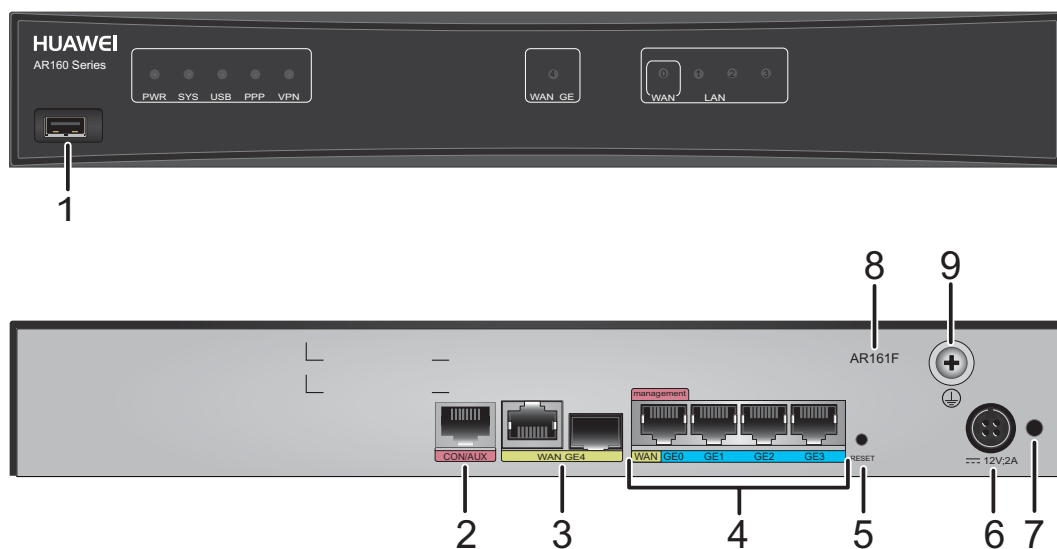
Table 3-184 Mapping between the AR161F router and software versions

Router Model	Software Version
AR161F	V200R005C30 and later versions

Appearance and Structure

Figure 3-57 shows the appearance of the AR161F router.

Figure 3-57 AR161F appearance

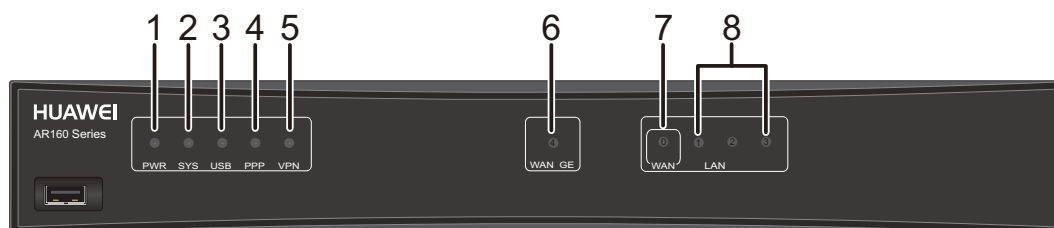


1	USB interface (host)	2	CON/AUX interface NOTE The AR161F does not support AUX login.
3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-58 shows the locations of AR161F indicators.

Figure 3-58 Indicators on the AR161F



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
8	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-185](#) lists the CON/AUX interface attributes.

Table 3-185 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-186](#) lists attributes of a USB interface.

Table 3-186 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-187](#) lists attributes of a GE electrical interface.

Table 3-187 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-188](#) lists the technical specifications of the AR161F routers.

Table 3-188 AR161F routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010197

3.5.5 AR161F-DGP

Version Mapping

[Table 3-189](#) lists the mapping between the AR161F-DGP router and software versions.

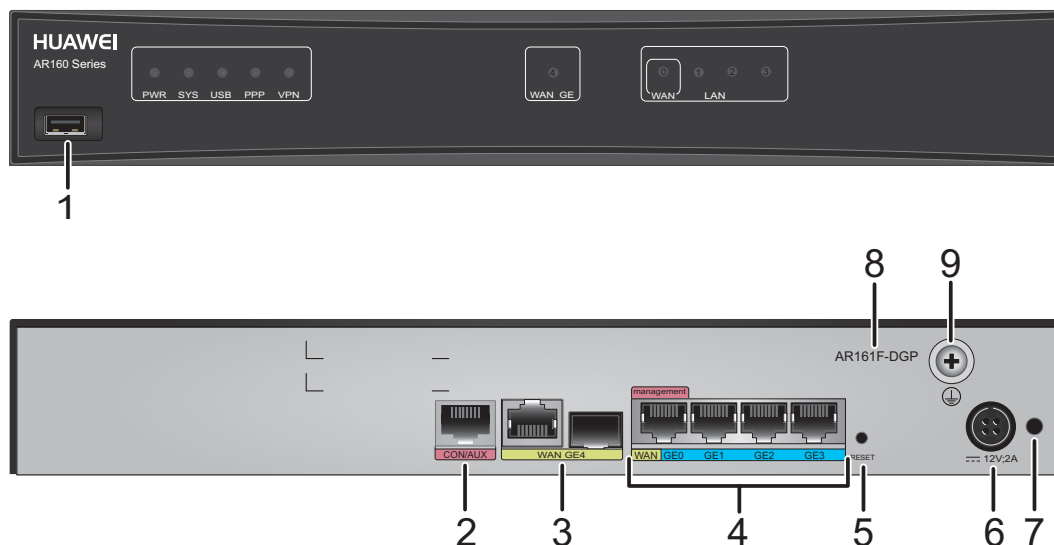
Table 3-189 Mapping between the AR161F-DGP router and software versions

Router Model	Software Version
AR161F-DGP	V200R008C50 and later versions

Appearance and Structure

[Figure 3-59](#) shows the appearance of the AR161F-DGP router.

Figure 3-59 AR161F-DGP appearance



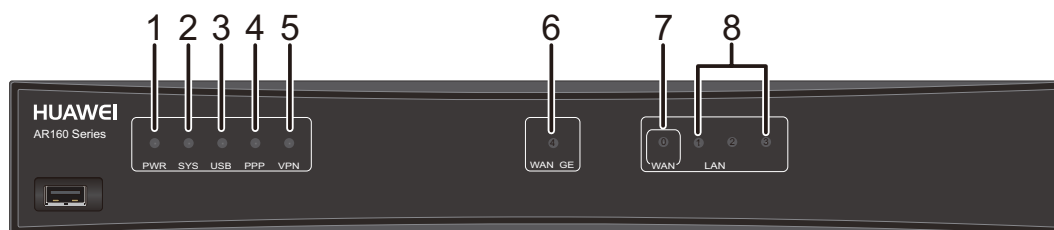
1	USB interface (host)	2	CON/AUX interface NOTE The AR161F-DGP does not support AUX login.
3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none">● GE0 is a management interface and is used to upgrade the router.● All GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none">● To restore the factory settings, hold down the button for at least 5 seconds.● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Indicator Description

Figure 3-60 shows the indicators on the AR161F-DGP router.

Figure 3-60 Indicators on the AR161F-DGP



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX interfaces

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-190](#) lists the CON/AUX interface attributes.

Table 3-190 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-191](#) lists attributes of a USB interface.

Table 3-191 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-192](#) lists attributes of a GE electrical interface.

Table 3-192 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-193](#) lists the technical specifications of the AR161F-DGP router.

Table 3-193 AR161F-DGP technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.)
Weight	3.0 kg (6.61 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.8 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)

Item	Specification
Part number	50010390

3.5.6 AR161FG-L

Version Mapping

Table 3-194 lists the mapping between the AR161FG-L and software versions.

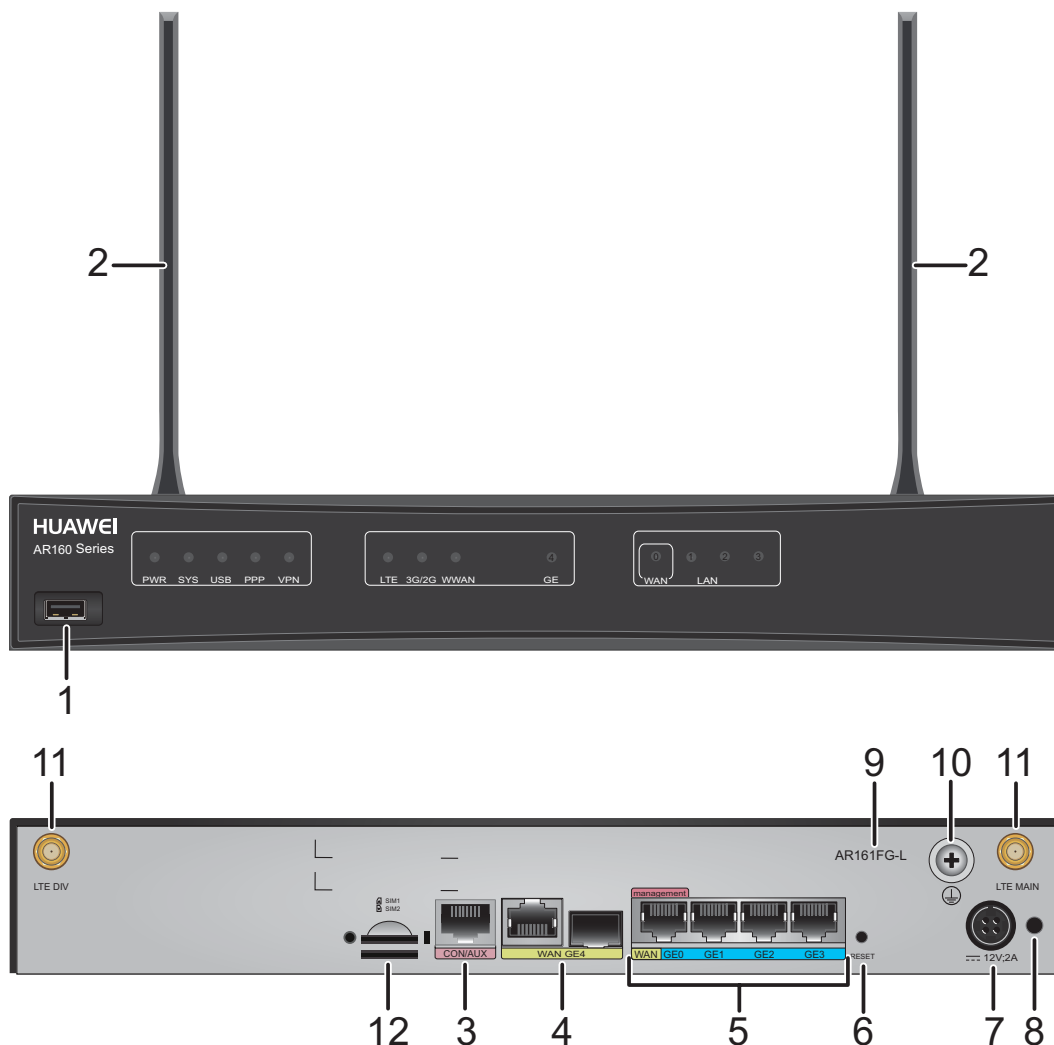
Table 3-194 Mapping between the AR161FG-L and software versions

Router Model	Software Version
AR161FG-L	V200R005C10 and later versions

Appearance and Structure

Figure 3-61 shows the appearance of the AR161FG-L.

Figure 3-61 AR161FG-L appearance



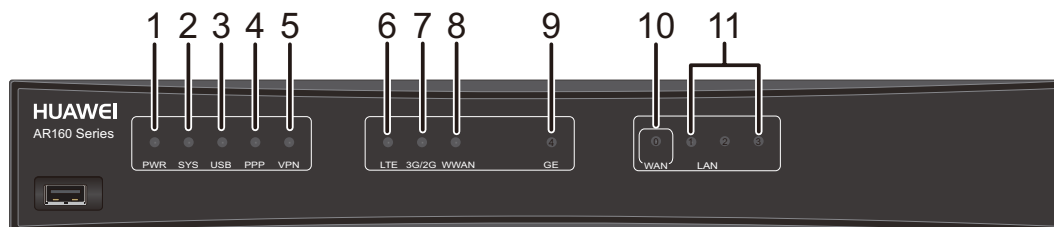
1	USB interface (host)	2	Two LTE antennas
3	CON/AUX interface NOTE The AR161FG-L does not support AUX login.	4	WAN interface: GE combo interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

7	Power jack Applicable power modules: <ul style="list-style-type: none"> ● 24 W Power Adapter (Standard configuration) ● 24 W DC power module (optional) 	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	LTE antenna interface	12	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-62 shows the indicators on the AR161FG-L.

Figure 3-62 Indicators on the AR161FG-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.

Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.

Number	Indicator	Color	Description
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-195](#) lists the CON/AUX interface attributes.

Table 3-195 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-196](#) lists attributes of a USB interface.

Table 3-196 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-197](#) lists attributes of an LTE antenna interface.

Table 3-197 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Whip Antenna

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-198](#) lists attributes of a GE electrical interface.

Table 3-198 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-199](#) lists the technical specifications of the AR161FG-L.

Table 3-199 AR161FG-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010156

3.5.7 AR161FG-Lc

Version Mapping

[Table 3-200](#) lists the mapping between the AR161FG-Lc router and software versions.

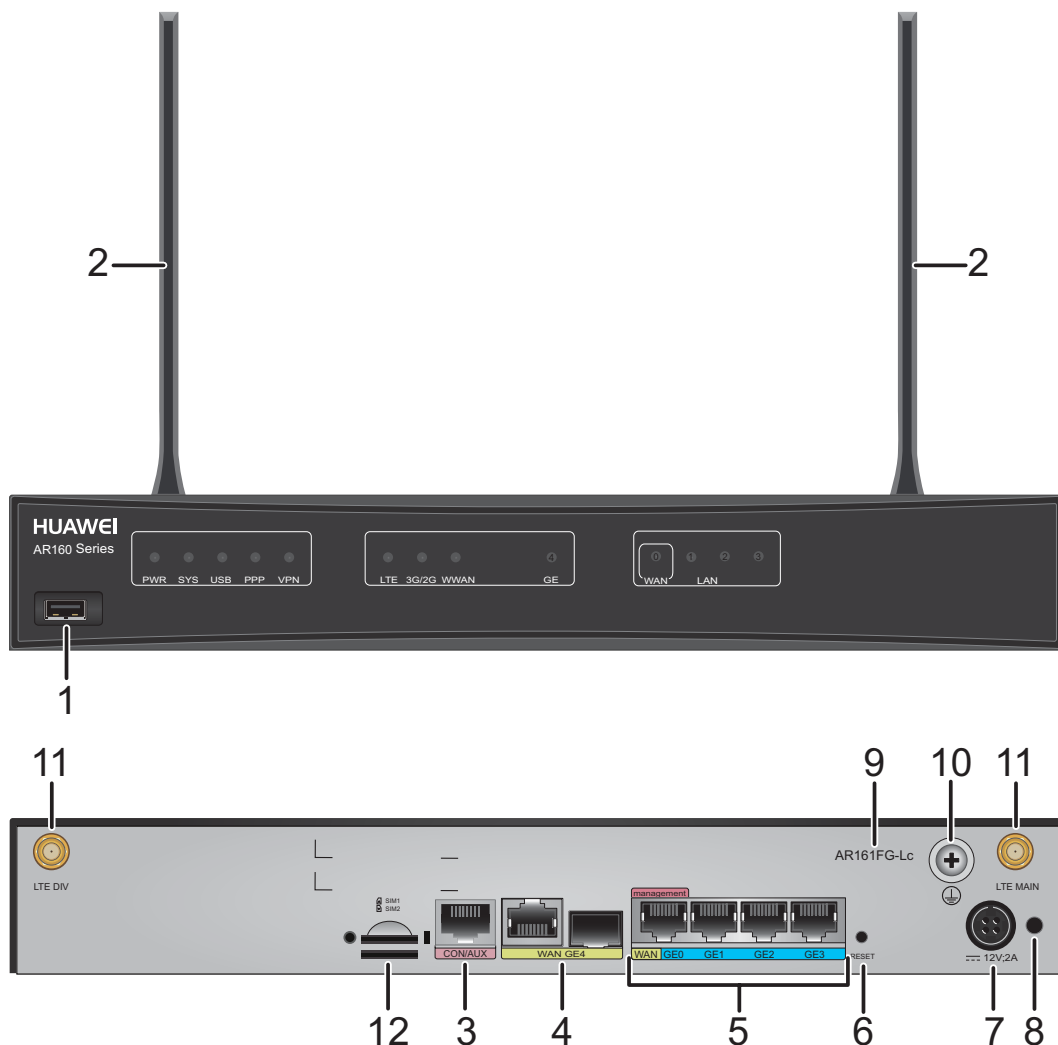
Table 3-200 Mapping between the AR161FG-Lc router and software versions

Router Model	Software Version
AR161FG-Lc	V200R008C50 and later versions

Appearance and Structure

[Figure 3-63](#) shows the appearance of the AR161FG-Lc router.

Figure 3-63 AR161FG-Lc appearance



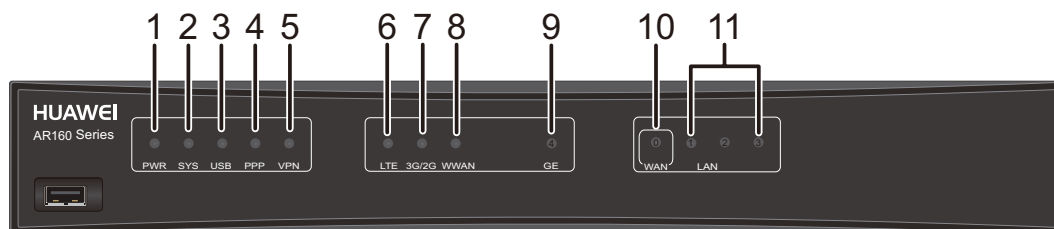
1	USB interface (host)	2	Two LTE antennas
3	CON/AUX interface NOTE The AR161FG-Lc does not support AUX login.	4	WAN interface: GE combo interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

7	Power jack NOTE The router uses a 24 W integrated power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	LTE antenna interface	12	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-64 shows the indicators on the AR161FG-Lc router.

Figure 3-64 Indicators on the AR161FG-Lc



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	LAN/WAN (GE0)	Green	Steady on: A link has been established on the LAN/WAN interface.
			Blinking: Data is being transmitted or received on the LAN/WAN interface.
			Off: No link is established on the LAN/WAN interface.
11	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-201](#) lists the CON/AUX interface attributes.

Table 3-201 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-202](#) lists attributes of a USB interface.

Table 3-202 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-203](#) lists attributes of an LTE antenna interface.

Table 3-203 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none">● FDD LTE: bands 1/3/8● TDD LTE: bands 38/39/40/41● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9● TD-SCDMA: bands 34/39● GSM/GPRS/EDGE: 900/1800 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	LTE whip antenna

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-204](#) lists attributes of a GE electrical interface.

Table 3-204 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-205](#) lists the technical specifications of the AR161FG-Lc router.

Table 3-205 AR161FG-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE combo interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010380

3.5.8 AR161FGW-L

Version Mapping

[Table 3-206](#) lists the mapping between the AR161FGW-L and software versions.

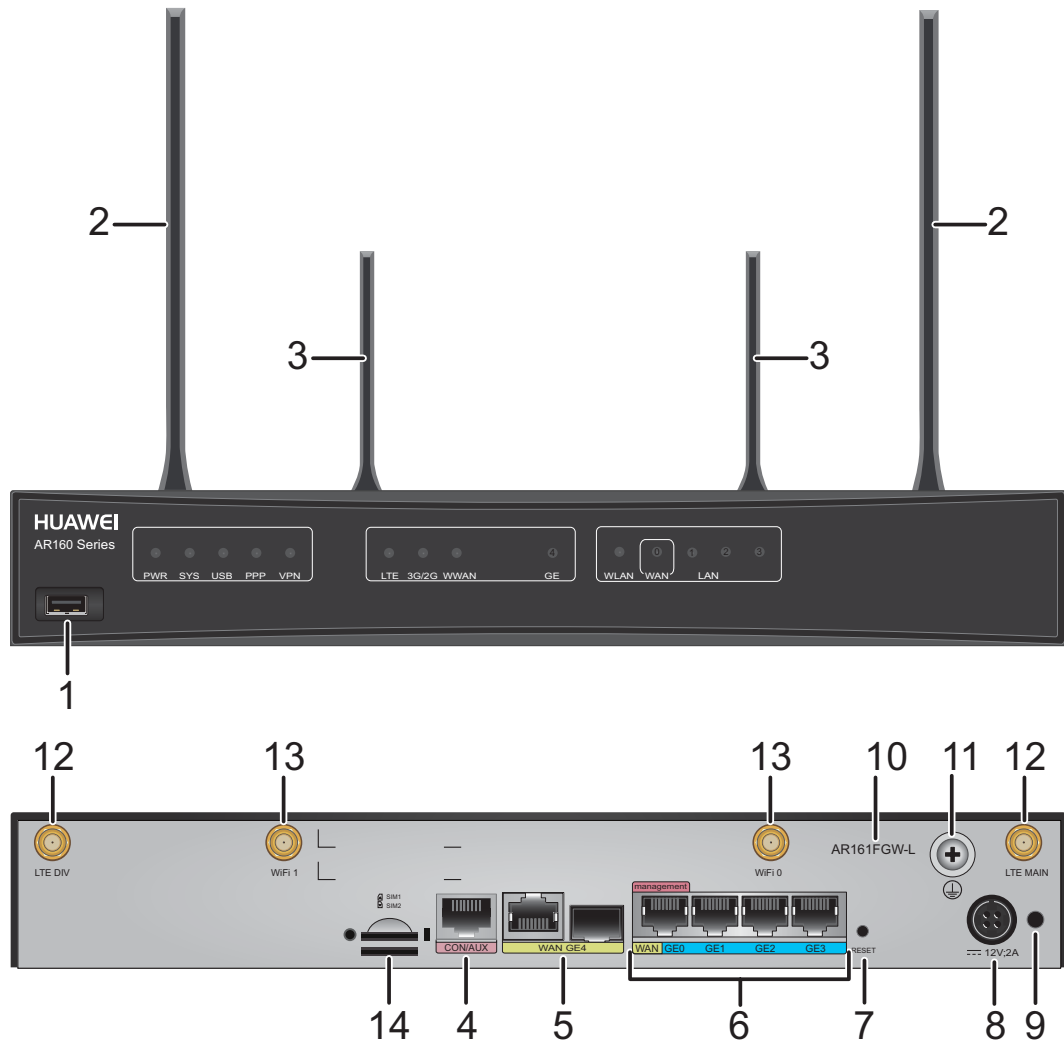
Table 3-206 Mapping between the AR161FGW-L and software versions

Router Model	Software Version
AR161FGW-L	V200R005C10 and later versions

Appearance and Structure

[Figure 3-65](#) shows the appearance of the AR161FGW-L.

Figure 3-65 AR161FGW-L appearance



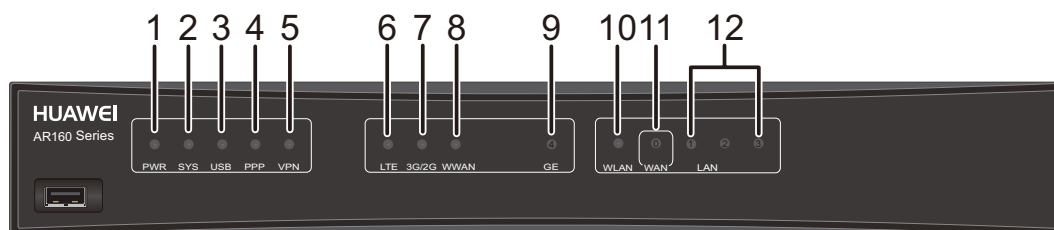
1	USB interface (host)	2	Two LTE antennas
3	Two Wi-Fi antennas	4	CON/AUX interface NOTE The AR161FGW-L does not support AUX login.
5	WAN interface: GE combo interface	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.

<p>7 RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	<p>8 Power jack NOTE The router uses a 24 W integrated power adapter.</p>
<p>9 Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.</p>	<p>10 Product model silkscreen</p>
<p>11 Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	<p>12 LTE antenna interface</p>
<p>13 Two Wi-Fi antenna interfaces</p>	<p>14 Two SIM card slots NOTE <ul style="list-style-type: none"> The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. The router supports double-card single-standby, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1. </p>

Indicator Description

Figure 3-66 shows the indicators on the AR161FGW-L.

Figure 3-66 Indicators on the AR161FGW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.

Number	Indicator	Color	Description
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
12	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-207](#) lists the CON/AUX interface attributes.

Table 3-207 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-208](#) lists attributes of a USB interface.

Table 3-208 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-209](#) lists attributes of an LTE antenna interface.

Table 3-209 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-210](#) lists attributes of a Wi-Fi antenna interface.

Table 3-210 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-211](#) lists attributes of a GE electrical interface.

Table 3-211 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-212](#) lists the technical specifications of the AR161FGW-L.

Table 3-212 Technical specifications of the AR161FGW-L

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	18.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010155

3.5.9 AR161FGW-La

Version Mapping

Table 3-213 lists the mapping between the AR161FGW-La router and software versions.

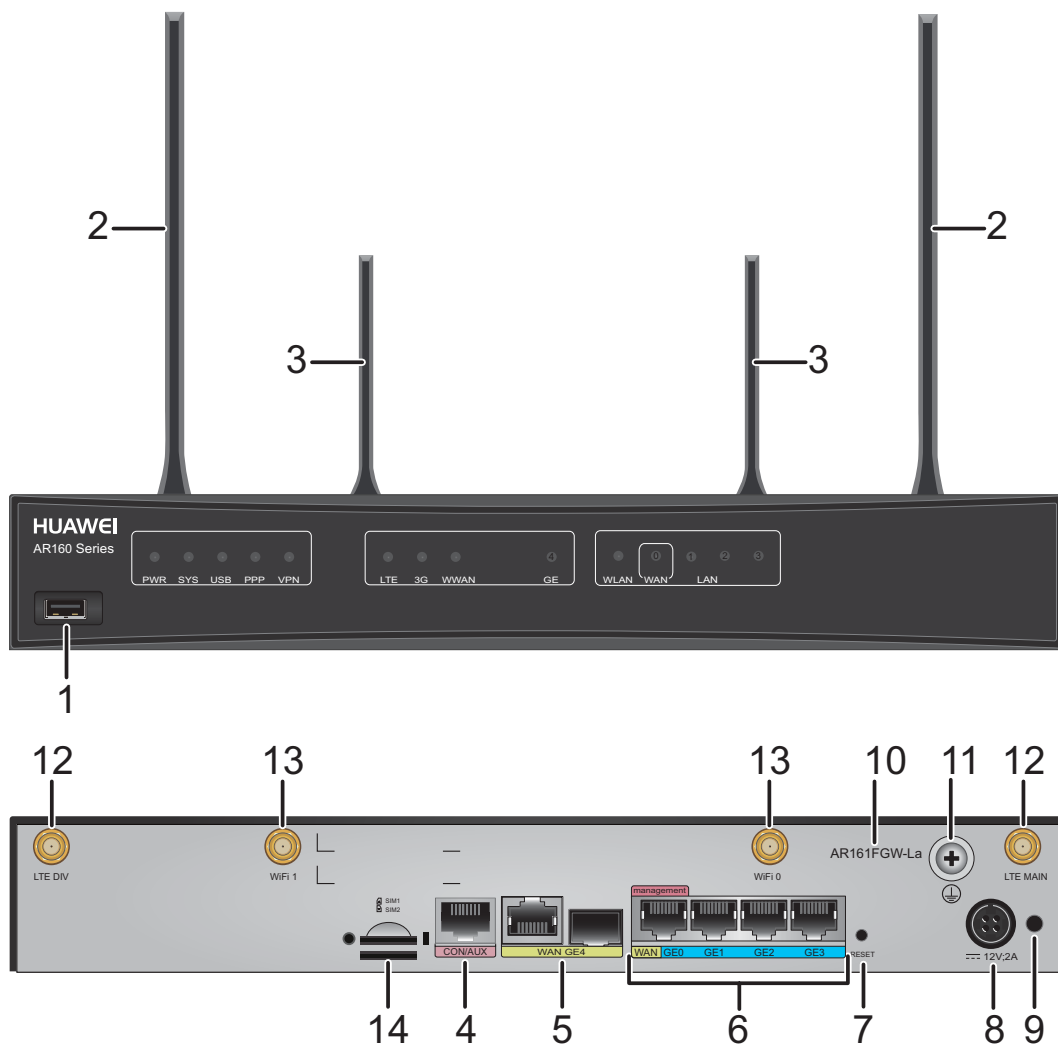
Table 3-213 Mapping between the AR161FGW-La router and software versions

Router Model	Software Version
AR161FGW-La	V200R007C00 and later versions

Appearance and Structure

Figure 3-67 shows the appearance of the AR161FGW-La router.

Figure 3-67 AR161FGW-La appearance



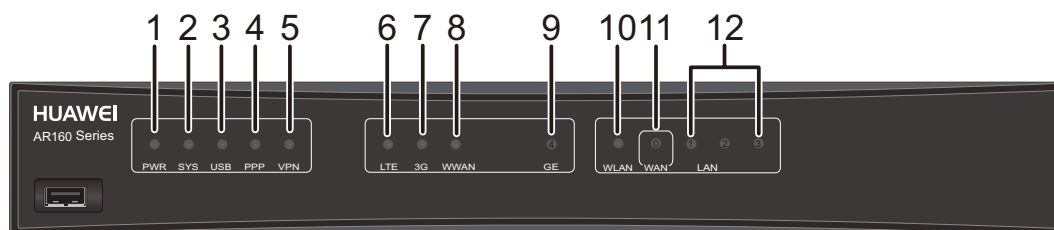
1	USB interface (host)	2	Two LTE antennas
3	Two Wi-Fi antennas	4	CON/AUX interface NOTE The AR161FGW-La does not support AUX login.
5	WAN interface: GE combo interface	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

<p>7 RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	<p>8 Power jack</p> <p>NOTE</p> <p>The router uses a 24 W integrated power adapter.</p>
<p>9 Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	<p>10 Product model silkscreen</p>
<p>11 Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	<p>12 LTE antenna interface</p>
<p>13 Two Wi-Fi antenna interfaces</p>	<p>14 Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-68 shows the indicators on the AR161FGW-La.

Figure 3-68 Indicators on the AR161FGW-La



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G	Green	Steady on: The 3G signal strength is high.
			Fast blinking: The 3G signal strength is medium.
			Slow blinking: The 3G signal strength is low.
			Off: No 3G signal is available.
8	WWAN	Green	Steady on: An LTE/3G link has been set up and is active.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
12	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-214](#) lists the CON/AUX interface attributes.

Table 3-214 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-215](#) lists attributes of a USB interface.

Table 3-215 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-216](#) lists attributes of an LTE antenna interface.

Table 3-216 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● WCDMA/HSPA/HSPA+/DC-HSPA+: bands 2/4/5 ● FDD LTE: bands 2/4/5/17

Attribute	Description
Rate	<ul style="list-style-type: none"> ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s
Cable type	7.17.3 LTE Indoor Remote Antenna (27012152)

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-217](#) lists attributes of a Wi-Fi antenna interface.

Table 3-217 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-218](#) lists attributes of a GE electrical interface.

Table 3-218 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-219](#) lists the technical specifications of the AR161FGW-La router.

Table 3-219 AR161FGW-La technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB

Item	Specification
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input power (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	18.8 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating environment temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010261

3.5.10 AR161FGW-Lc

Version Mapping

Table 3-220 lists the mapping between the AR161FGW-Lc router and software versions.

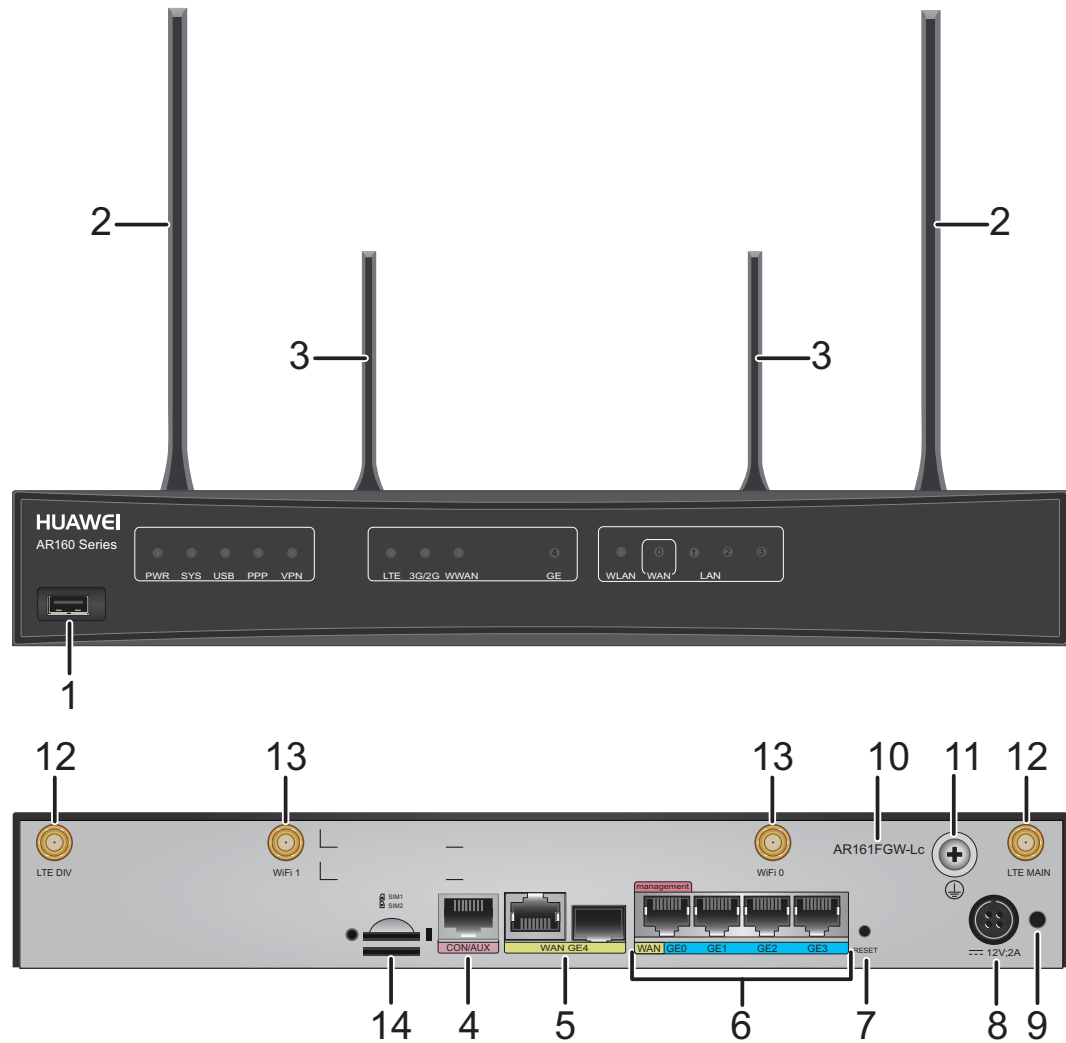
Table 3-220 Mapping between the AR161FGW-Lc router and software version

Router Model	Software Version
AR161FGW-Lc	V200R008C50 and later versions

Appearance and Structure

Figure 3-69 shows the appearance of the AR161FGW-Lc router.

Figure 3-69 AR161FGW-Lc appearance



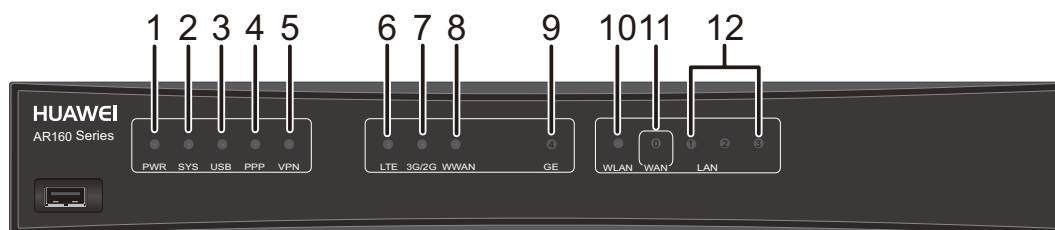
1	USB interface (host)	2	Two LTE antennas
3	Two Wi-Fi antennas	4	CON/AUX interface NOTE The AR161FGW-Lc does not support AUX login.
5	WAN interface: GE combo interface	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

<p>7 RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	<p>8 Power jack</p> <p>NOTE</p> <p>The router uses a 24 W integrated power adapter.</p>
<p>9 Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	<p>10 Product model silkscreen</p>
<p>11 Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	<p>12 LTE antenna interface</p>
<p>13 Two Wi-Fi antenna interfaces</p>	<p>14 Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-70 shows the indicators on the AR161FGW-Lc router.

Figure 3-70 Indicators on the AR161FGW-Lc



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.

Number	Indicator	Color	Description
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN/WAN (GE0)	Green	Steady on: A link has been established on the LAN/WAN interface.
			Blinking: Data is being transmitted or received on the LAN/WAN interface.
			Off: No link is established on the LAN/WAN interface.
12	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-221](#) lists the CON/AUX interface attributes.

Table 3-221 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-222](#) lists attributes of a USB interface.

Table 3-222 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-223](#) lists attributes of an LTE antenna interface.

Table 3-223 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	LTE whip antenna

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-224](#) lists attributes of a Wi-Fi antenna interface.

Table 3-224 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi

Attribute	Description
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-225](#) lists attributes of a GE electrical interface.

Table 3-225 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

Table 3-226 lists the technical specifications of the AR161FGW-Lc router.

Table 3-226 AR161FGW-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	

Item	Specification
Maximum power consumption	18.8 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE combo interface and two LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010381

3.5.11 AR161FV-1P

Version Mapping

[Table 3-227](#) lists the mapping between the AR161FV-1P and software versions.

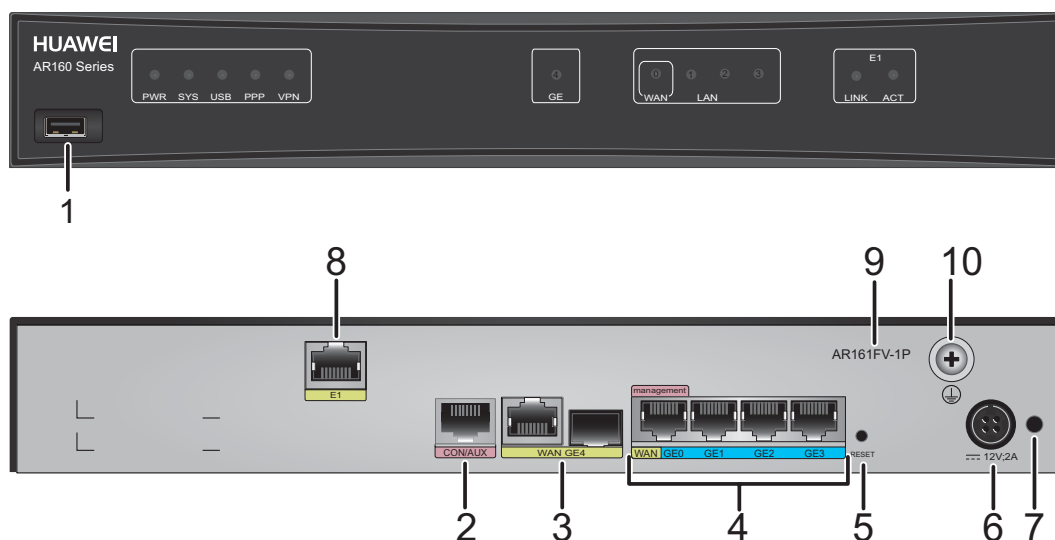
Table 3-27 Mapping between the AR161FV-1P and software versions

Router Model	Software Version
AR161FV-1P	V200R007C00 and later versions

Appearance and Structure

Figure 3-71 shows the appearance of the AR161FV-1P.

Figure 3-71 AR161FV-1P appearance



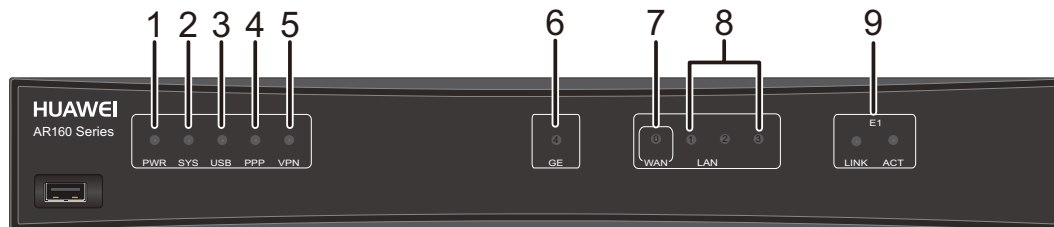
1	USB interface (host)	2	CON/AUX interface NOTE The AR161FV-1P does not support AUX login.
3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

<p>5 RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	<p>6 Power jack</p> <p>NOTE</p> <p>The router uses a 24 W integrated power adapter.</p>
<p>7 Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	<p>8 WAN interface: VE1 interface</p> <p>NOTE</p> <p>This interface can be connected to a wide area network using an E1/T1 cable.</p>
<p>9 Product model silkscreen</p>	<p>10 Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>

Indicator Description

Figure 3-72 shows the indicators on the AR161FV-1P.

Figure 3-72 Indicators on the AR161FV-1P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN-side GE combo interface indicator	Green	Steady on: A link has been established on the combo interface.
			Blinking: Data is being transmitted or received on the combo interface.
			Off: No link is established on the combo interface.
7	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
9	E1 LINK indicator	Green	Steady on: An E1 link has been established.
			Off: No E1 link is established.

Number	Indicator	Color	Description
	E1 ACT indicator	Green	Steady on: Data is being transmitted or received on the E1 interface. Off: No data is being transmitted or received on the E1 interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-228](#) lists the CON/AUX interface attributes.

Table 3-228 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-229](#) lists attributes of a USB interface.

Table 3-229 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-230](#) lists attributes of a GE electrical interface.

Table 3-230 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

VE1 Interface

A VE1 interface uses to transmit voice signals. [Table 3-231](#) describes the VE1 interface attributes.

Table 3-231 VE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface speed	2.048 Mbit/s
Working mode	VE1
Services provided	<ul style="list-style-type: none"> ● Backup ● Terminal access
Cable	7.7 E1/T1 Cable

Technical Specifications

[Table 3-232](#) lists the technical specifications of the AR161FV-1P.

Table 3-232 Technical specifications of the AR161FV-1P

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz

Item	Specification
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, and one E1 interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010242

3.5.12 AR161FW

Version Mapping

[Table 3-233](#) lists the mapping between the AR161FW and software versions.

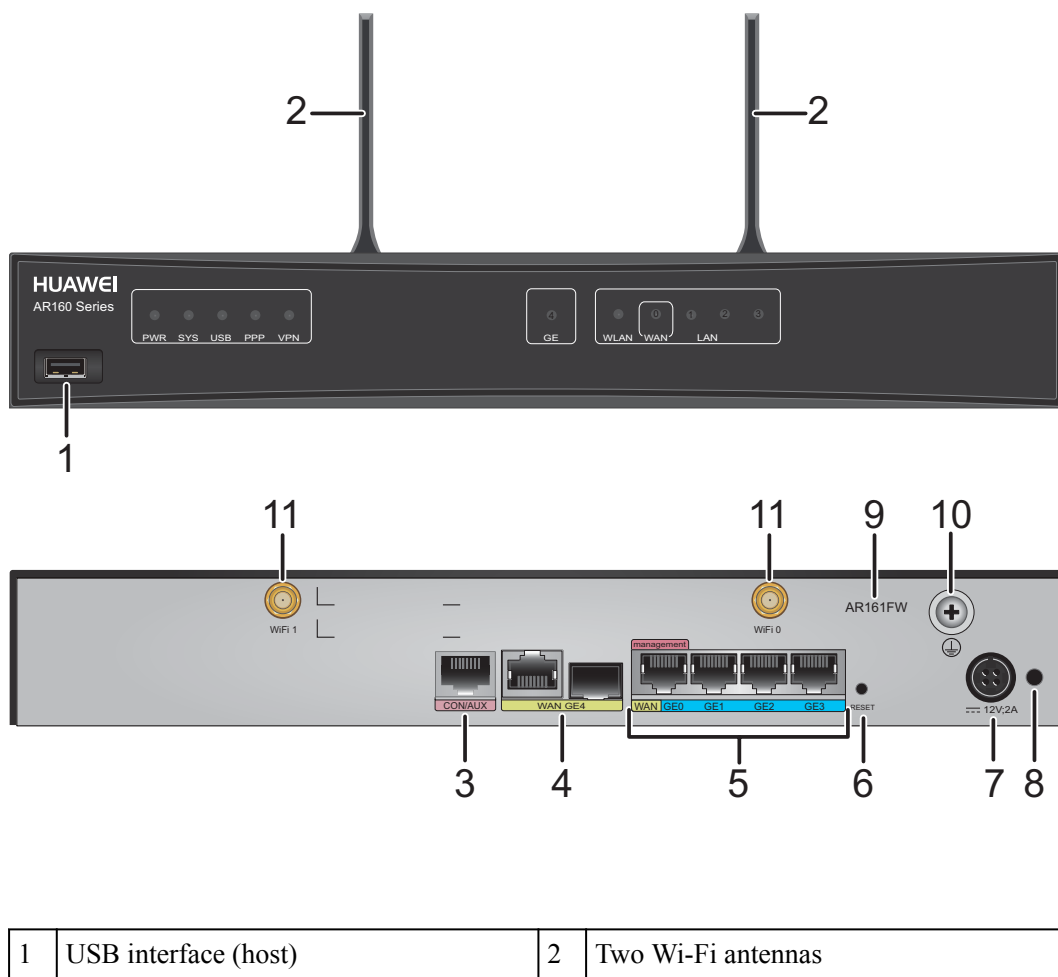
Table 3-233 Mapping between the AR161FW and software versions

Router Model	Software Version
AR161FW	V200R005C20, V200R006C10 and later versions

Appearance and Structure

[Figure 3-73](#) shows the appearance of the AR161FW.

Figure 3-73 AR161FW appearance

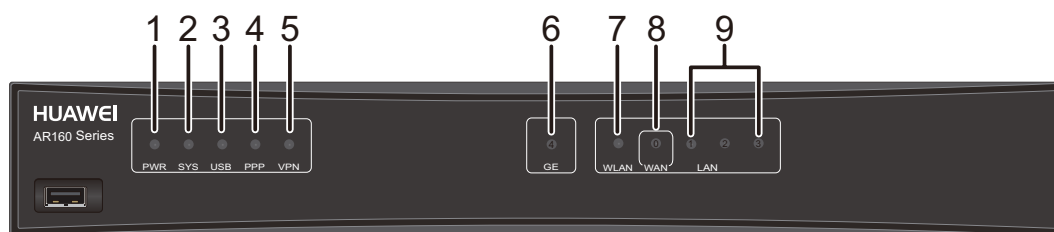


3	CON/AUX interface NOTE The AR161FW does not support AUX login.	4	WAN interface: GE combo interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 24 W integrated power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-74 shows the indicators on the AR161FW.

Figure 3-74 Indicators on the AR161FW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-234](#) lists the CON/AUX interface attributes.

Table 3-234 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-235](#) lists attributes of a USB interface.

Table 3-235 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-236](#) lists attributes of a GE electrical interface.

Table 3-236 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-237](#) lists attributes of a Wi-Fi antenna interface.

Table 3-237 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-238](#) lists the technical specifications of the AR161FW router.

Table 3-238 Technical specifications of the AR161FW

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	15.2 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)

Item	Specification
Part number	50010207

3.5.13 AR161FW-P-M5

Version Mapping

Table 3-239 lists the mapping between the AR161FW-P-M5 and software versions.

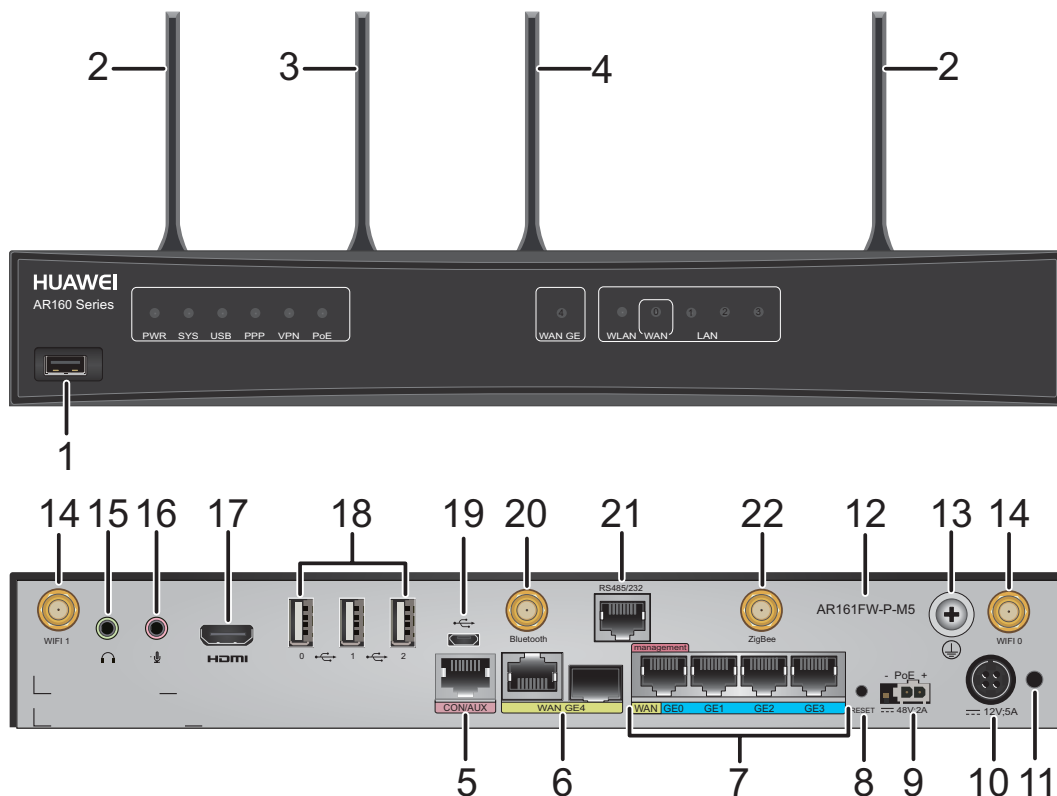
Table 3-239 Mapping between the AR161FW-P-M5 and software versions

Router Model	Software Version
AR161FW-P-M5	V200R005C30 and later versions

Appearance and Structure

Figure 3-75 shows the appearance of the AR161FW-P-M5.

Figure 3-75 AR161FW-P-M5 appearance

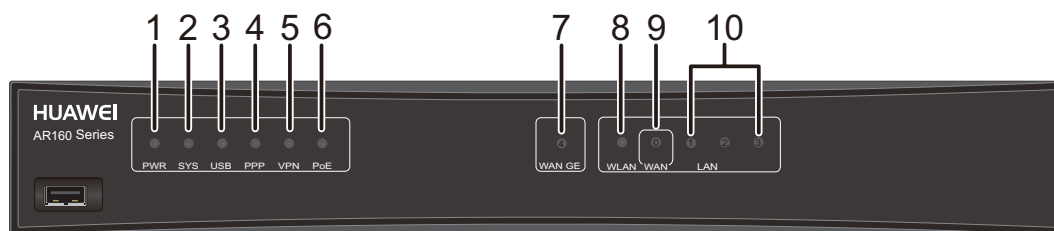


1	USB interface (host)	2	Two Wi-Fi antennas
3	ZigBee antenna	4	Bluetooth antenna
5	CON/AUX interface NOTE The AR161FW-P-M5 does not support AUX login.	6	WAN interface: GE combo interface
7	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	10	Power jack NOTE The router uses a 60 W power adapter .
11	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	12	Product model silkscreen
13	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	14	Two Wi-Fi antenna interfaces
15	Earphone jack	16	Microphone jack
17	HDMI video interface	18	Three USB interfaces (host)
19	USB interface (OTG)	20	Bluetooth antenna interface
21	RS485/232 interface	22	ZigBee antenna interface

Indicator Description

Figure 3-76 shows the indicators on the AR161FW-P-M5.

Figure 3-76 Indicators on the AR161FW-P-M5



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
4	PPP	Green	Off: No PPP connection is set up.
			Steady on: A PPP connection has been set up.
			Off: The IPSec service is unavailable.
			Steady on: The IPSec service is running normally.
5	VPN	Green	Off: No PoE power supply is available.
			Steady on: The PoE power supply is normal.
6	PoE	Green	Off: No PoE power supply is available.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
8	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
10	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-240](#) lists the CON/AUX interface attributes.

Table 3-240 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)

Attribute	Description
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-241](#) lists attributes of a GE electrical interface.

Table 3-241 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-242](#) lists attributes of a USB interface.

Table 3-242 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-243](#) lists attributes of a Wi-Fi antenna interface.

Table 3-243 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. [Table 3-244](#) lists attributes of an HDMI interface.

Table 3-244 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	HDMI video cable

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. [Table 3-245](#) lists attributes of a Micro USB interface.

Table 3-245 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. [Table 3-246](#) lists attributes of the Bluetooth interface.

Table 3-246 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	<ul style="list-style-type: none"> ● BT4.0 ● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	7.17.6 Bluetooth Antenna

RS485/232 Interface

An RS232/485 interface is a serial interface. [Table 3-247](#) lists attributes of an RS232/485 interface.

Table 3-247 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Baud rate (bit/s)	<ul style="list-style-type: none"> ● RS485: 19200 ● RS232: 9600
Cable type	7.15 Serial Cable (CON/RS232)

Technical Specifications

Table 3-248 lists the technical specifications of the AR161FW-P-M5.

Table 3-248 Technical specifications of the AR161FW-P-M5

Item	Specification
OSP daughter card system parameters	
Processor	Quad-core, 1.2 GHz
Memory	4 GB
Flash	2 GB
EMMC	32 GB
MPU system parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	

Item	Specification
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	32.4 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	<p>WAN interface: one GE combo interface</p> <p>LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface, two Wi-Fi antenna interfaces, one Bluetooth antenna interface, and one ZigBee antenna interface</p> <p>Multimedia service interfaces: one headset jack, one microphone jack, and one HDMI video interface</p>
Extended slots	Not supported
Environment parameters	
Operating temperature	<p>0°C to 40°C (32°F to 104°F)</p> <p>NOTE</p> <p>When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.</p>

Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010165

3.5.14 AR161G-L

Version Mapping

[Table 3-249](#) lists the mapping between the AR161G-L router and software versions.

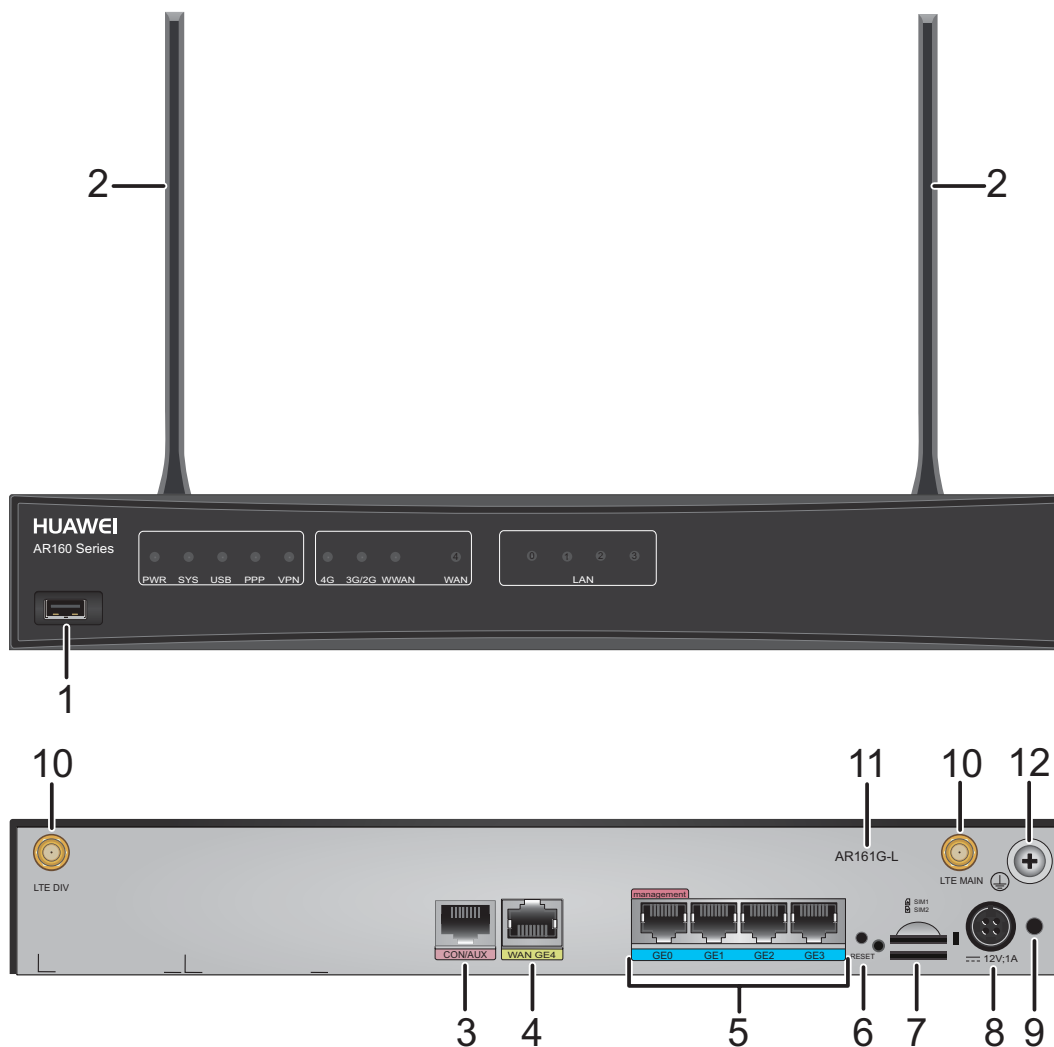
Table 3-249 Mapping between the AR161G-L router and software versions

Router Model	Software Version
AR161G-L	V200R006C10 and later versions

Appearance and Structure

[Figure 3-77](#) shows the appearance of the AR161G-L router.

Figure 3-77 AR161G-L appearance



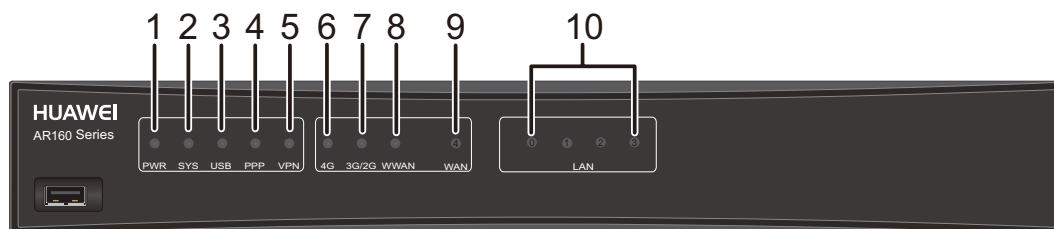
1	USB interface (host)	2	Two LTE antennas
3	CON/AUX interface NOTE The AR161G-L does not support AUX login.	4	WAN interface: GE electrical interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>

7	Two SIM card slots NOTE <ul style="list-style-type: none"> The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. The router supports double-card single-standby, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1. 	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	LTE antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-78 shows the locations of AR161G-L indicators.

Figure 3-78 Indicators on the AR161G-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	WAN	Green	Steady on: A WAN link has been established.
			Blinking: Data is being transmitted or received on the WAN link.

Number	Indicator	Color	Description
			Off: No WAN link is established.
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-250](#) lists the CON/AUX interface attributes.

Table 3-250 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-251](#) lists attributes of a USB interface.

Table 3-251 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-252](#) lists attributes of an LTE antenna interface.

Table 3-252 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Whip Antenna

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-253](#) lists attributes of a GE electrical interface.

Table 3-253 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 3-254](#) lists the technical specifications of the AR161G-L routers.

Table 3-254 AR161G-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.9 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010214

3.5.15 AR161G-Lc

Version Mapping

Table 3-255 lists the mapping between the AR161G-Lc router and software versions.

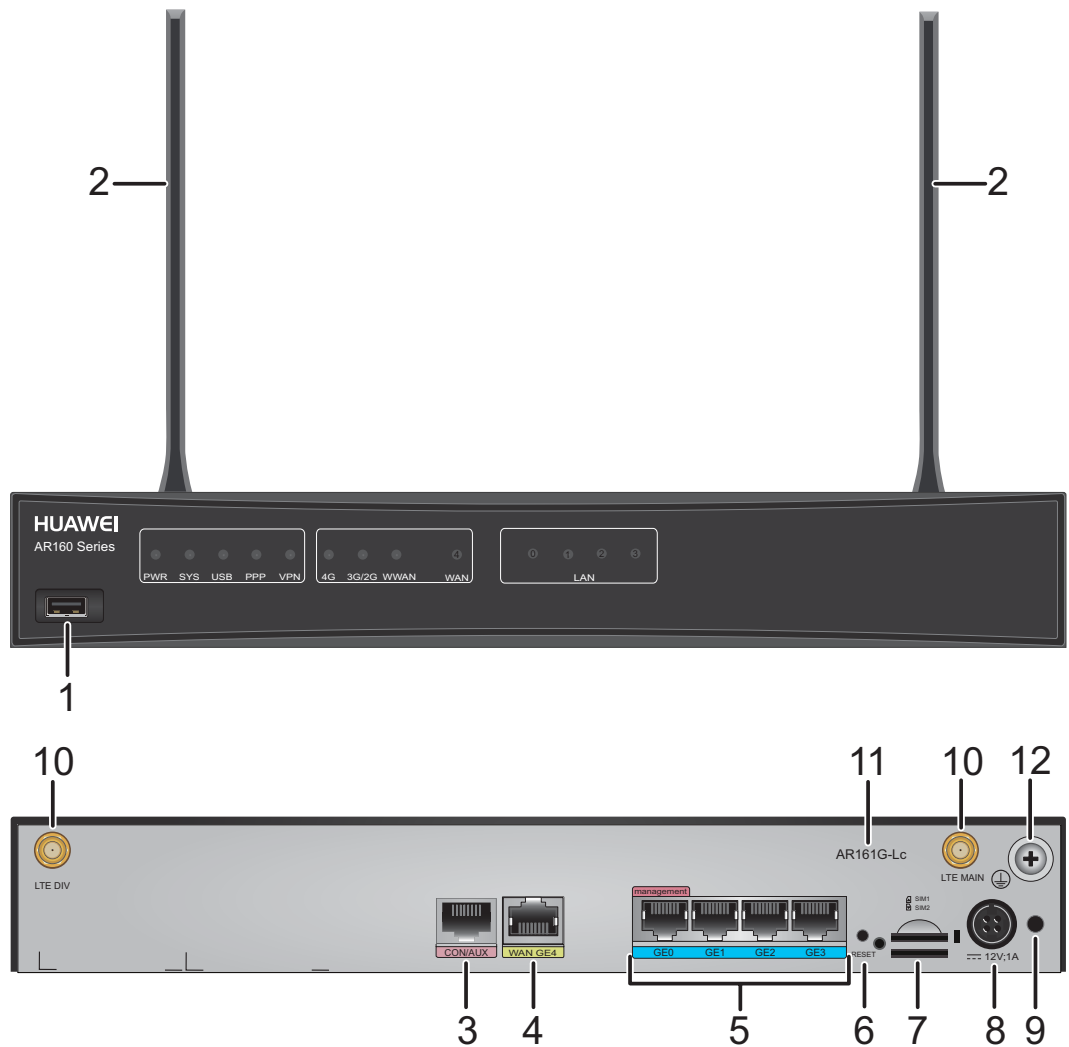
Table 3-255 Mapping between the AR161G-Lc router and software versions

Router Model	Software Version
AR161G-Lc	V200R008C50 and later versions

Appearance and Structure

Figure 3-79 shows the appearance of the AR161G-Lc router.

Figure 3-79 AR161G-Lc appearance

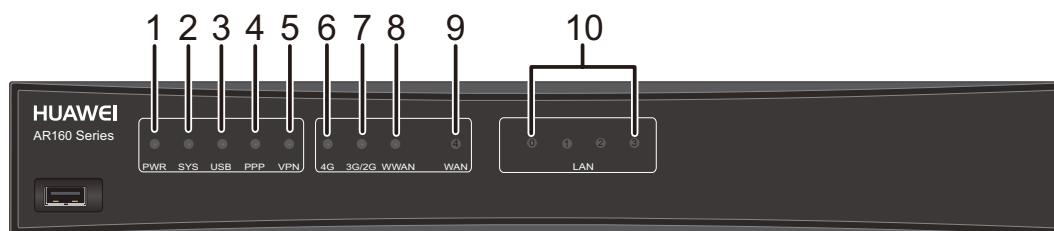


1	USB interface (host)	2	Two LTE antennas
3	CON/AUX interface NOTE The AR161G-Lc does not support AUX login.	4	WAN interface: GE electrical interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	LTE antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-80 shows the indicators on the AR161G-Lc router.

Figure 3-80 Indicators on the AR161G-Lc



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.

Number	Indicator	Color	Description
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	WAN	Green	Steady on: A WAN link has been established.
			Blinking: Data is being transmitted or received on the WAN link.
			Off: No WAN link is established.
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-256](#) lists the CON/AUX interface attributes.

Table 3-256 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-257](#) lists attributes of a USB interface.

Table 3-257 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-258](#) lists attributes of an LTE antenna interface.

Table 3-258 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none">● FDD LTE: bands 1/3/8● TDD LTE: bands 38/39/40/41● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9● TD-SCDMA: bands 34/39● GSM/GPRS/EDGE: 900/1800 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	LTE whip antenna

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-259](#) lists attributes of a GE electrical interface.

Table 3-259 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 3-260](#) lists the technical specifications of the AR161G-Lc router.

Table 3-260 AR161G-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported

Item	Specification
Power consumption	
Maximum power consumption	11.9 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE electrical interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010382

3.5.16 AR161G-U

Version Mapping

Table 3-261 lists the mapping between the AR161G-U and software versions.

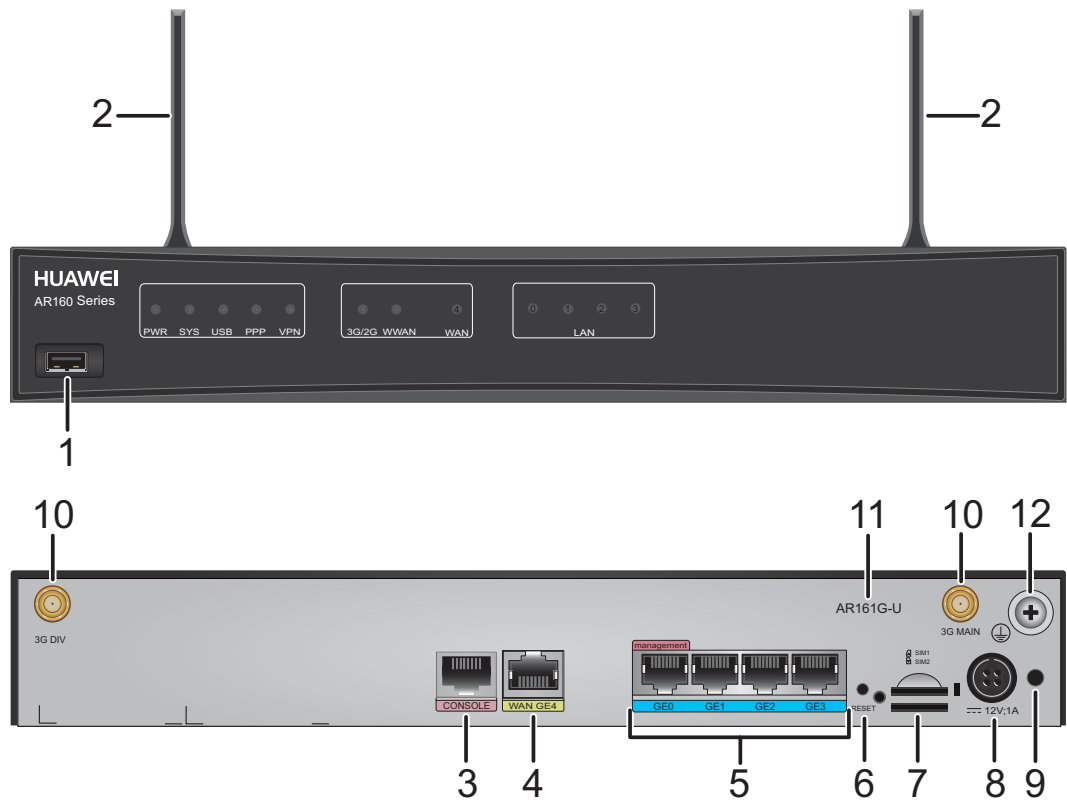
Table 3-261 Mapping between the AR161G-U and software versions

Router Model	Software Version
AR161G-U	V200R007C01, V200R008C50 and later versions

Appearance and Structure

Figure 3-81 shows the appearance of the AR161G-U.

Figure 3-81 AR161G-U appearance



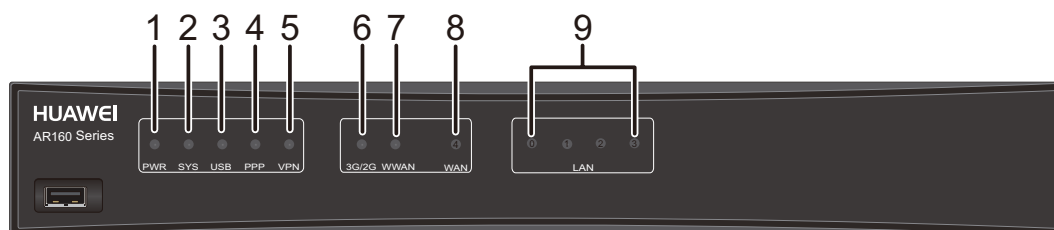
1	USB interface (host)	2	Two 3G antennas
3	Console interface	4	WAN interface: GE electrical interface

5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	8	Power jack NOTE <p>The router uses a 24 W integrated power adapter.</p>
9	Jack for power cable locking strap NOTE <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	10	3G-U antenna interface
11	Product model silkscreen	12	Ground point NOTE <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>

Indicator Description

Figure 3-82 shows the indicators on the AR161G-U.

Figure 3-82 Indicators on the AR161G-U



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
7	WWAN	Green	Steady on: Steady on: A 3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 3G/2G connection.
			Off: The 3G/2G connection has not been established or is inactive.

Number	Indicator	Color	Description
8	WAN	Green	Steady on: A WAN link has been established.
			Blinking: Data is being transmitted or received on the WAN link.
			Off: No WAN link is established.
9	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-262](#) lists attributes of a console interface.

Table 3-262 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-263](#) lists attributes of a USB interface.

Table 3-263 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0

Attribute	Description
Working mode	Host

3G-U Antenna Interface

3G antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. [Table 3-264](#) lists attributes of a 3G antenna interface.

Table 3-264 3G antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● UMTS/HSPA: 900/2100 (MHz) ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Cable type	7.17.4 3G Antenna

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-265](#) lists attributes of a GE electrical interface.

Table 3-265 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 3-266](#) lists the technical specifications of the AR161G-U.

Table 3-266 Technical specifications of the AR161G-U

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, and two 3G antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010241

3.5.17 AR161W

Version Mapping

Table 3-267 lists the mapping between the AR161W router and software versions.

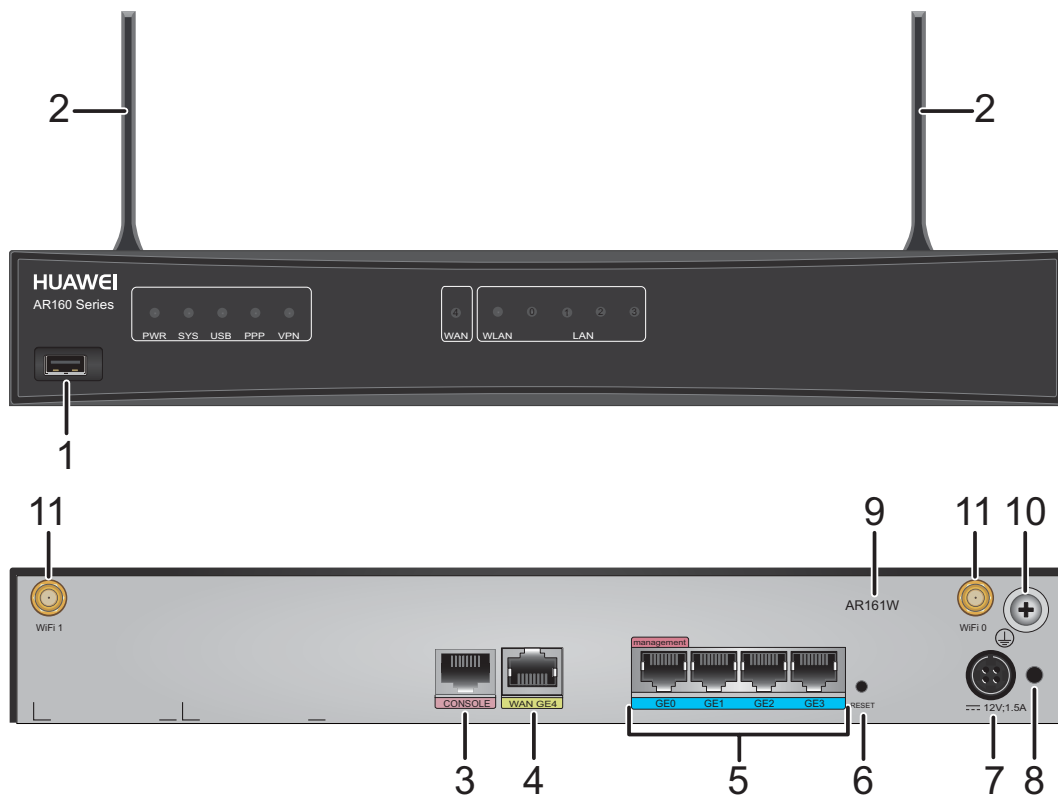
Table 3-267 Mapping between the AR161W router and software versions

Router Model	Software Version
AR161W	V200R006C10 and later versions

Appearance and Structure

Figure 3-83 shows the appearance of the AR161W router.

Figure 3-83 AR161W appearance



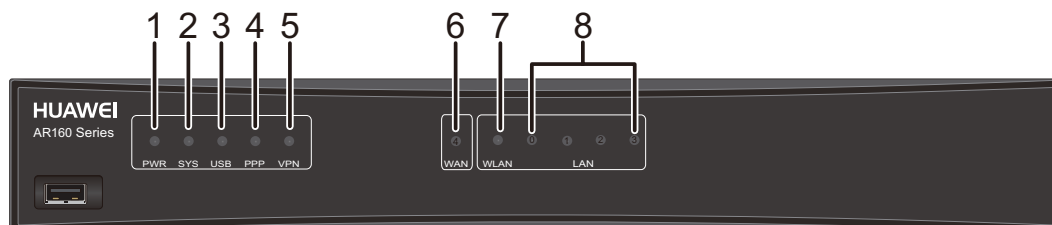
1	USB interface (host)	2	Two Wi-Fi antennas
3	Console interface	4	WAN interface: GE electrical interface

5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none">● GE0 is a management interface and is used to upgrade the router.● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.	6	RST button NOTE <p>This button is used to reset the router.</p> <ul style="list-style-type: none">● To restore the factory settings, hold down the button for at least 5 seconds.● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE <p>The router uses a 24 W integrated power adapter.</p>	8	Jack for power cable locking strap NOTE <p>Insert a power cable locking strap in this jack to secure the power cable.</p>
9	Product model silkscreen	10	Ground point NOTE <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>
11	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-84 shows the locations of AR161W indicators.

Figure 3-84 Indicators on the AR161W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.

Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	WAN	Green	Steady on: A link has been established on the WAN interface.
			Blinking: Data is being transmitted or received on the WAN interface.
			Off: No link is established on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-268](#) lists attributes of a console interface.

Table 3-268 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-269](#) lists attributes of a USB interface.

Table 3-269 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-270](#) lists attributes of a GE electrical interface.

Table 3-270 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-271](#) lists attributes of a Wi-Fi antenna interface.

Table 3-271 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-272](#) lists the technical specifications of the AR161W router.

Table 3-272 AR161W router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB

Item	Specification
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interface: one GE electrical interface LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010239

3.5.18 AR162F

Version Mapping

[Table 3-273](#) lists the mapping between the AR162F and software versions.

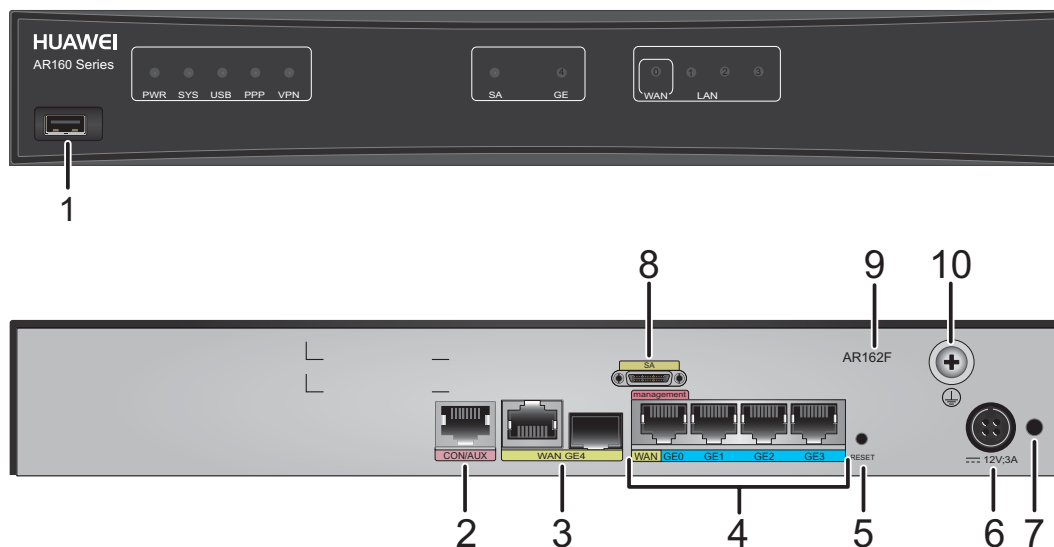
Table 3-273 Mapping between the AR162F and software versions

Router Model	Software Version
AR162F	V200R005C20 and later versions

Appearance and Structure

[Figure 3-85](#) shows the appearance of the AR162F.

Figure 3-85 AR162F appearance



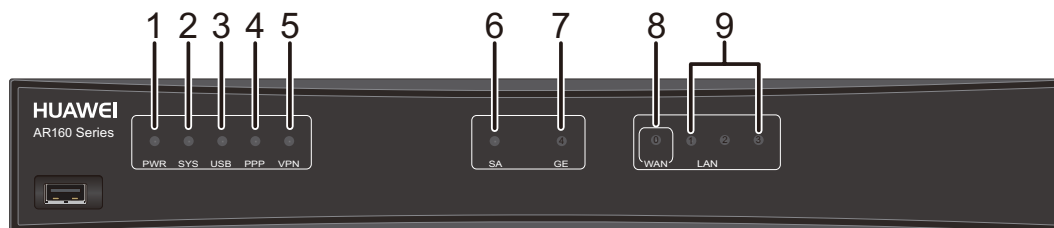
1	USB interface (host)	2	CON/AUX interface NOTE The AR162F does not support AUX login.
3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: SA interface

9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
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Indicator Description

Figure 3-86 shows the indicators on the AR162F.

Figure 3-86 Indicators on the AR162F



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	SA	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-274](#) lists the CON/AUX interface attributes.

Table 3-274 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-275](#) lists attributes of a USB interface.

Table 3-275 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-276](#) lists attributes of a GE electrical interface.

Table 3-276 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Attribute	Description
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

SA Interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. [Table 3-277](#) lists attributes of a SA interface.

Table 3-277 SA interface attributes

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Connector type	DB28		
Standards compliance and working mode	<ul style="list-style-type: none"> ● V.24 DTE ● V.24 DCE 	<ul style="list-style-type: none"> ● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE 	RS232

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		<ul style="list-style-type: none"> ● Modem dial-up ● Backup
	Terminal access		<ul style="list-style-type: none"> ● Asynchronous leased line ● Terminal access
Cable type	7.9 SA Cable		

Technical Specifications

Table 3-278 lists the technical specifications of the AR162F.

Table 3-278 Technical specifications of the AR162F

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	

Item	Specification
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.1 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one SA interface, and one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing

Item	Specification
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010160

3.5.19 AR168F

Version Mapping

Table 3-279 lists the mapping between the AR168F and software versions.

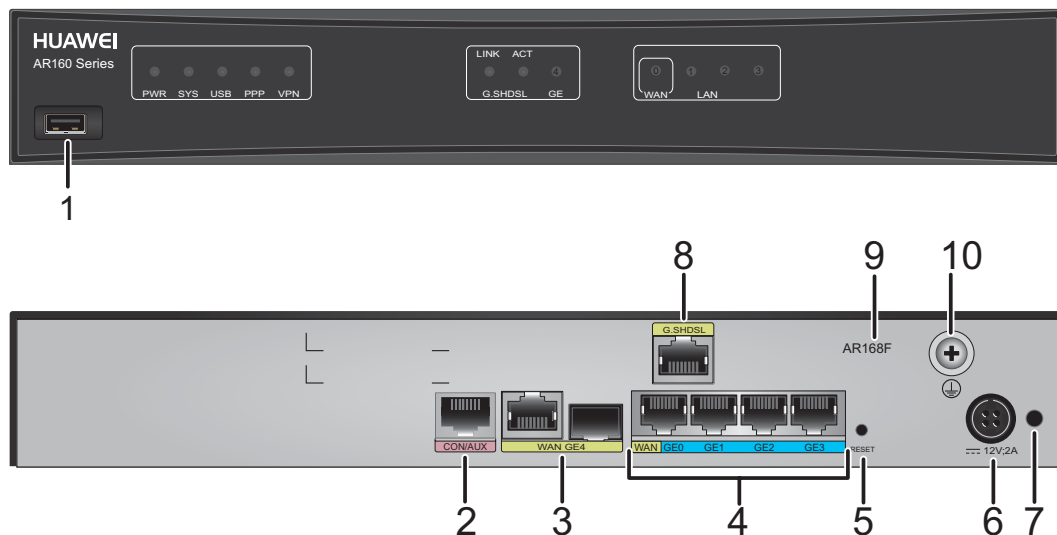
Table 3-279 Mapping between the AR168F and software versions

Router Model	Software Version
AR168F	V200R005C00 and later versions

Appearance and Structure

Figure 3-87 shows the appearance of the AR168F.

Figure 3-87 AR168F appearance



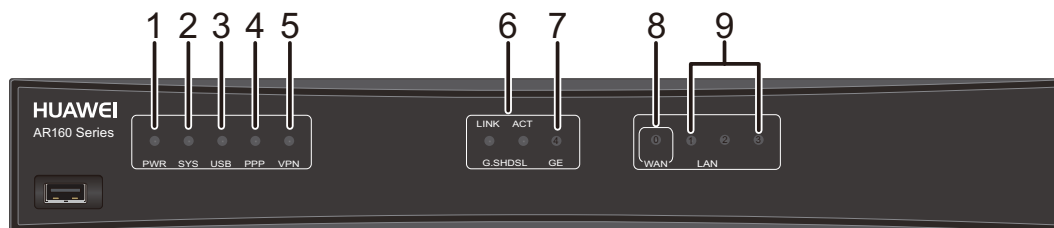
1	USB interface (host)	2	CON/AUX interface NOTE The AR168F does not support AUX login.
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3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none">● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface.● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE <p>This button is used to reset the router.</p> <ul style="list-style-type: none">● To restore the factory settings, hold down the button for at least 5 seconds.● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE <p>The router uses a 24 W integrated power adapter.</p>
7	Jack for power cable locking strap NOTE <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	8	WAN interface: G.SHDSL interface NOTE <p>This interface supports the dying gasp function.</p>
9	Product model silkscreen	10	Ground point NOTE <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>

Indicator Description

Figure 3-88 shows the indicators on the AR168F.

Figure 3-88 Indicators on the AR168F



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	G.SHDSL LINK indicator	Green	Steady on: All the four DSL channels are active.
			<ul style="list-style-type: none"> ● Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active. ● Stays on for 0.5 seconds and blinks twice in the next 0.5 seconds: Two DSL channels are active. ● Stays on for 0.75 seconds and blinks once in the next 0.25 seconds: Three DSL channels are active.
	G.SHDSL ACT indicator	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-280](#) lists the CON/AUX interface attributes.

Table 3-280 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-281](#) lists attributes of a USB interface.

Table 3-281 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 3-282](#) lists attributes of a G.SHDSL interface.

Table 3-282 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-283](#) lists attributes of a GE electrical interface.

Table 3-283 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

[Table 3-284](#) lists the technical specifications of the AR168F router.

Table 3-284 Technical specifications of the AR168F

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	<p>WAN interfaces: one G.SHDSL interface, and one GE combo interface.</p> <p>LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.</p>
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02356375

3.5.20 AR168F-4P

Version Mapping

[Table 3-285](#) lists the mapping between the AR168F-4P router and software versions.

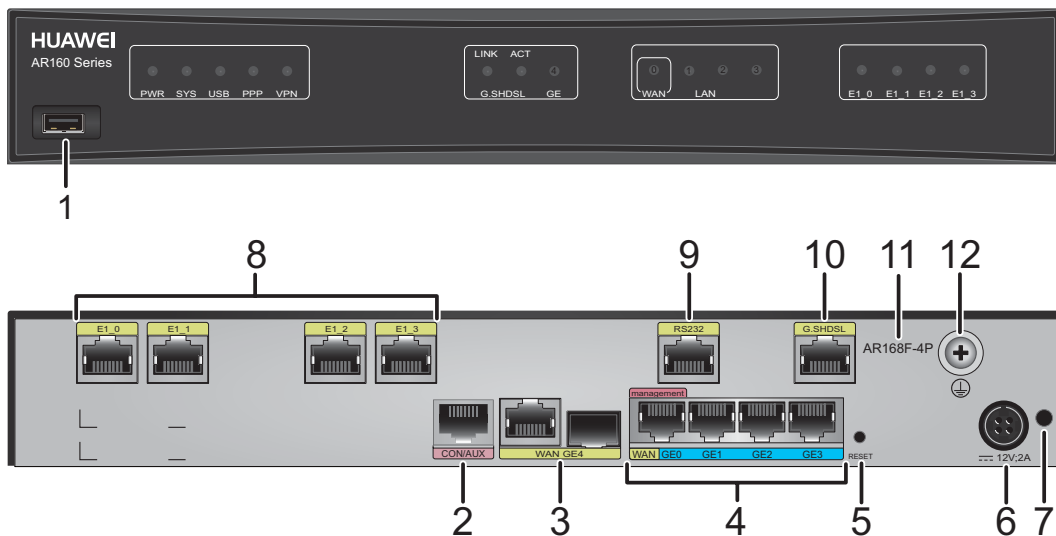
Table 3-285 Version mapping

Router Model	Software Version
AR168F-4P	V200R009C00 and later versions

Appearance and Structure

[Figure 3-89](#) shows the appearance of the AR168F-4P router.

Figure 3-89 AR168F-4P appearance

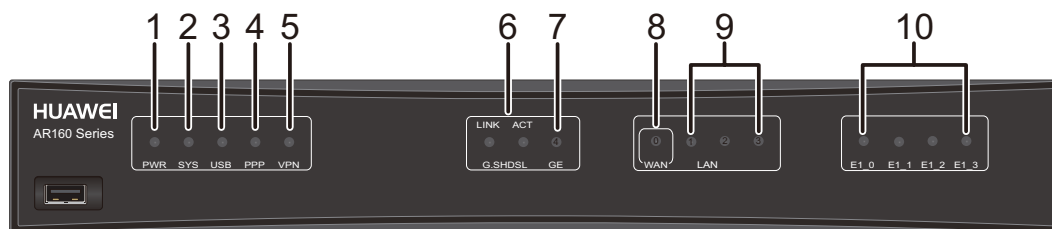


1	USB interface (host)	2	CON/AUX interface NOTE The AR168F-4P does not support AUX login.
3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interfaces: four E1 interfaces NOTE This interface can be connected to a wide area network using an E1/T1 cable .
9	RS232 interface	10	WAN interface: G.SHDSL interface NOTE This interface supports the dying gasp function.
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-90 shows the indicators on the AR168F-4P router.

Figure 3-90 Indicators on the AR168F-4P router



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	G.SHDSL LINK indicator	Green	Steady on: All the four DSL channels are active. <ul style="list-style-type: none"> ● Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active. ● Stays on for 0.5s and blinks twice in the next 0.5s: Two DSL channels are active. ● Stays on for 0.75s and blinks once in the next 0.25s: Three DSL channels are active. Off: All the four DSL channels are inactive.
	G.SHDSL ACT indicator	Yellow	Blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			Off: No data is being transmitted or received on the interface.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the LAN/WAN interface.
			Blinking: Data is being transmitted or received on the LAN/WAN interface.
			Off: No link is established on the LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
10	E1 (E1_0 to E1_3)	Green	Steady on: A link has been established on the corresponding E1 interface or data is being transmitted on the link.
			Off: No link is established on the E1 interface.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-286](#) lists the CON/AUX interface attributes.

Table 3-286 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-287](#) lists attributes of a USB interface.

Table 3-287 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

G.SHDSL interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 3-288](#) lists attributes of a G.SHDSL interface.

Table 3-288 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-289](#) lists attributes of a GE electrical interface.

Table 3-289 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

E1 interface

An E1 interface transmits data and image signals. [Table 3-290](#) lists attributes of an E1 interface.

Table 3-290 E1 interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	G.703, G.704
Rate	2.048 Mbit/s
Working mode	E1
Services provided	<ul style="list-style-type: none"> ● Backup ● Terminal access
Cable type	7.7 E1/T1 Cable

RS232 interface

An RS232 interface is a serial interface. [Table 3-291](#) lists attributes of an RS232 interface.

Table 3-291 RS232 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Baud rate (bit/s)	9600
Cable type	RS232 cable

Technical Specifications

[Table 3-292](#) lists the technical specifications of the AR168F-4P router.

Table 3-292 Technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1U height With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19 in. x 8.52 in. x 1.73 in.), 1U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	20 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one G.SHDSL interface, one GE combo interface, one RS232 interface, and four E1 interfaces LAN interfaces: four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	0°C to +45°C (32°F to 113°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010369

3.5.21 AR169

Version Mapping

Table 3-293 lists the mapping between the AR169 router and software versions.

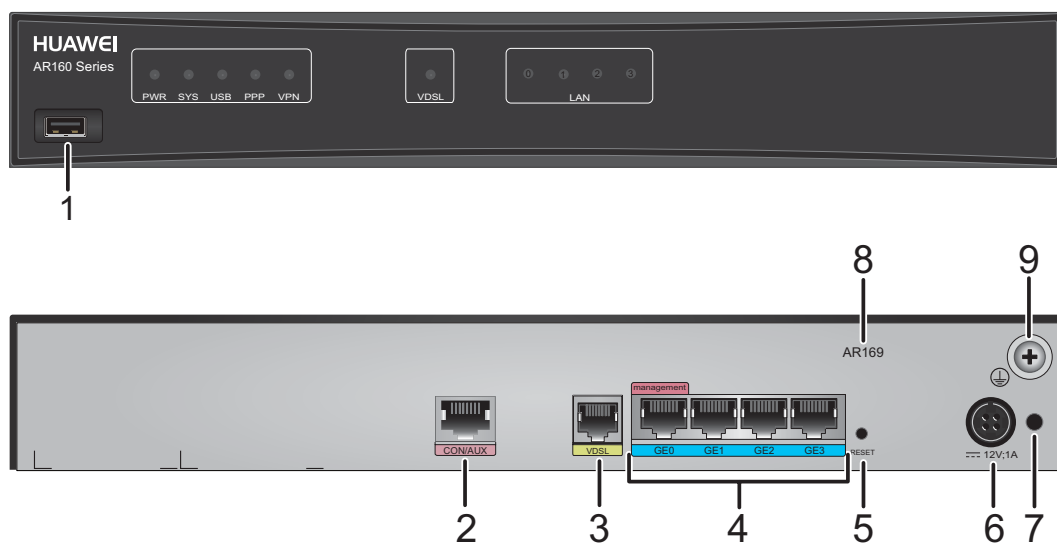
Table 3-293 Mapping between the AR169 router and software versions

Router Model	Software Version
AR169	V200R006C10 and later versions

Appearance and Structure

Figure 3-91 shows the appearance of the AR169 router.

Figure 3-91 AR169 appearance

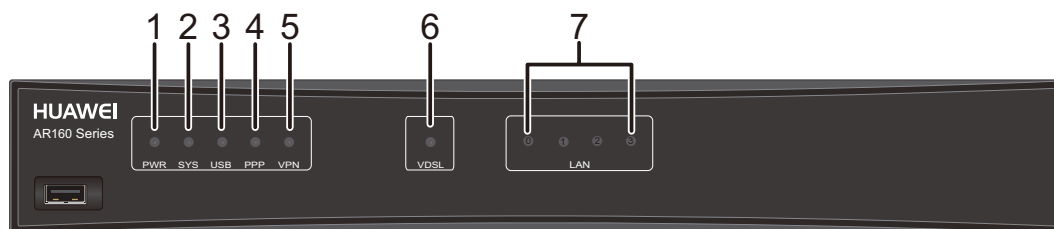


1	USB interface (host)	2	CON/AUX interface NOTE The AR169 does not support AUX login.
3	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-92 shows the locations of AR169 indicators.

Figure 3-92 Indicators on the AR169



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	VDSL	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-294](#) lists the CON/AUX interface attributes.

Table 3-294 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-295](#) lists attributes of a USB interface.

Table 3-295 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-296](#) lists attributes of a GE electrical interface.

Table 3-296 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-297](#) lists attributes of a VDSL interface.

Table 3-297 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-298](#) lists the technical specifications of the AR169 router.

Table 3-298 AR169 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	9.7 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one VDSL interface LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010215

3.5.22 AR169-P-M9

Version Mapping

[Table 3-299](#) lists the mapping between the AR169-P-M9 router and software versions.

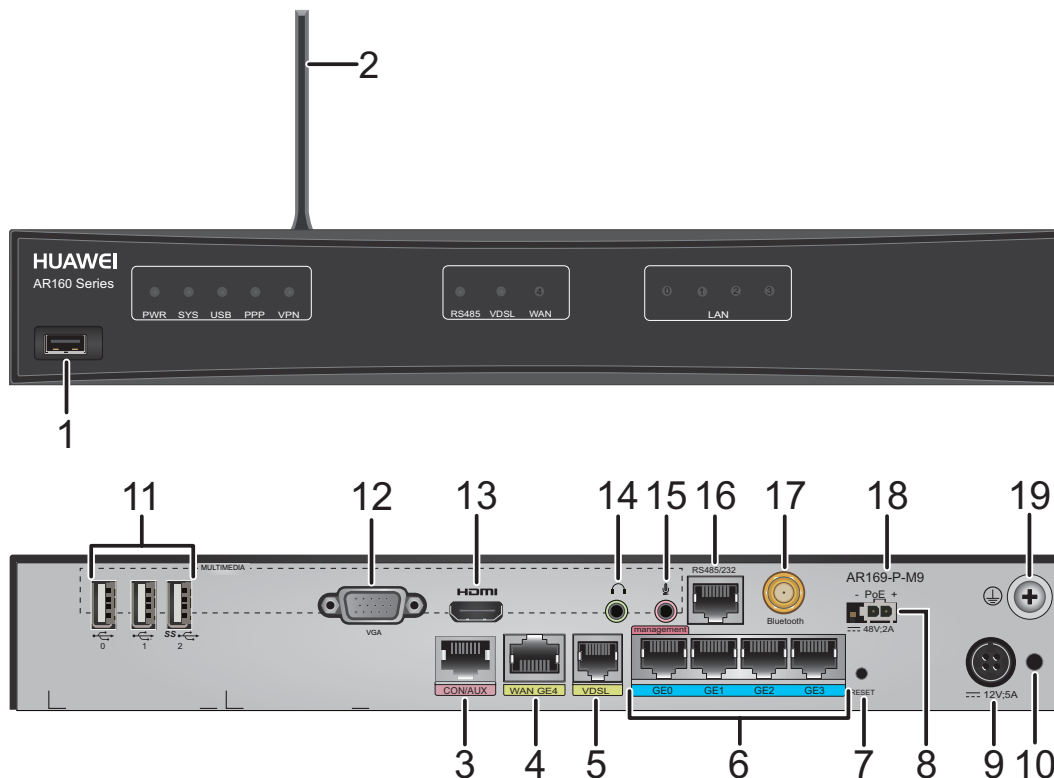
Table 3-299 Mapping between the AR169-P-M9 router and software versions

Router Model	Software Version
AR169-P-M9	V200R006C10 and later versions

Appearance and Structure

[Figure 3-93](#) shows the appearance of the AR169-P-M9 router.

Figure 3-93 AR169-P-M9 appearance



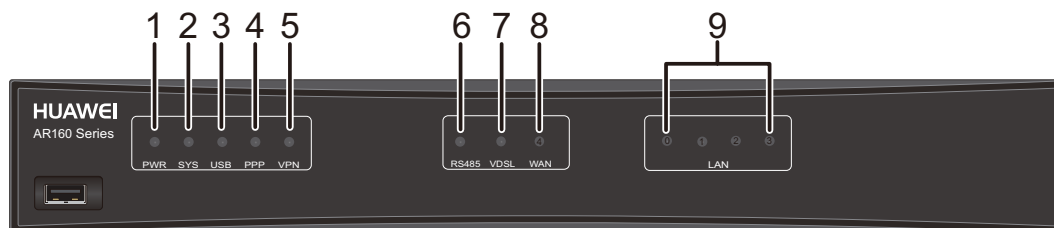
1	USB interface (host)	2	Bluetooth antenna
3	CON/AUX interface NOTE The AR169-P-M9 does not support AUX login.	4	WAN interface: GE electrical interface
5	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
7	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.

9	Power jack NOTE The router uses a 60 W power adapter .	10	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
11	Three USB interfaces (host)	12	VGA interface
13	HDMI video interface	14	Earphone jack
15	Microphone jack	16	RS485/232 interface
17	Bluetooth antenna interface	18	Product model silkscreen
19	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-94 shows the locations of AR169-P-M9 indicators.

Figure 3-94 Indicators on the AR169-P-M9



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	RS485	Green	Steady on: An RS485 link has been established and is working normally. Off: No RS485 link is established or a communication failure occurs on the link.
7	VDSL	Green	Steady on: A link has been established on the VDSL interface. Off: No link is established on the VDSL interface.
8	WAN	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
9	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-300](#) lists the CON/AUX interface attributes.

Table 3-300 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-301](#) lists attributes of a GE electrical interface.

Table 3-301 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-302](#) lists attributes of a USB interface.

Table 3-302 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-303](#) lists attributes of a VDSL interface.

Table 3-303 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. [Table 3-304](#) lists attributes of an HDMI interface.

Table 3-304 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal

Attribute	Description
Cable type	HDMI video cable

VGA Interface

A video graphics array (VGA) interface provides VGA video output. [Table 3-305](#) lists attributes of a VGA interface.

Table 3-305 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal
Cable type	VGA video cable

Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. [Table 3-306](#) lists attributes of the Bluetooth interface.

Table 3-306 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	<ul style="list-style-type: none">● BT4.0● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	7.17.6 Bluetooth Antenna

RS485/232 Interface

An RS232/485 interface is a serial interface. [Table 3-307](#) lists attributes of an RS232/485 interface.

Table 3-307 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Baud rate (bit/s)	<ul style="list-style-type: none"> ● RS485: 19200 ● RS232: 9600
Cable type	7.15 Serial Cable (CON/RS232)

Technical Specifications

Table 3-308 lists the technical specifications of the AR169-P-M9 router.

Table 3-308 AR169-P-M9 router technical specifications

Item	Specification
OSP daughter card system parameters	
Processor	Quad-core, 1.91 GHz
Memory	8 GB
Hard disk	64 GB NOTE The actual available disk space is less than this value because the router system software occupies some space.
MPU system parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	

Item	Specification
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	30.2 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and one VDSL interface LAN interfaces: four GE electrical interfaces and one Bluetooth antenna interface Multimedia service interfaces: one headset jack, one microphone jack, one HDMI video interface, and one VGA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010222

3.5.23 AR169CVW

Version Mapping

[Table 3-309](#) describes the mapping between the AR169CVW router and software versions.

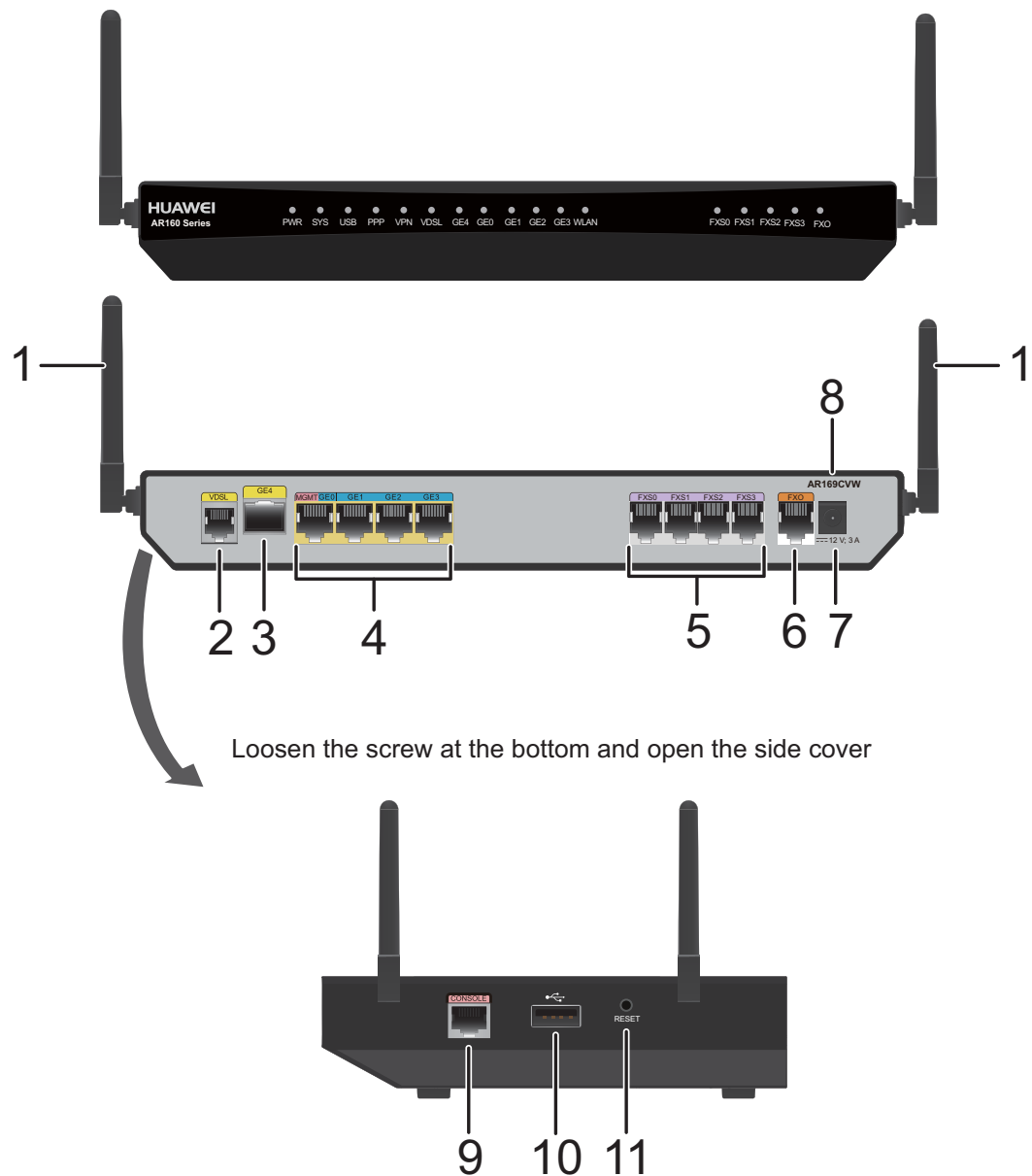
Table 3-309 Mapping between the AR169CVW router and software versions

Router Model	Software Version
AR169CVW	V200R008C50 and later versions

Appearance and Structure

[Figure 3-95](#) shows the appearance of the AR169CVW router.

Figure 3-95 AR169CVW appearance



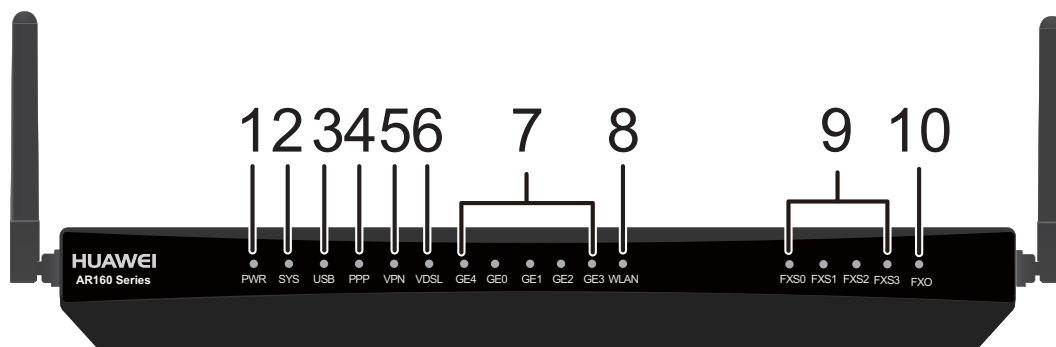
1	Four Wi-Fi antennas	2 WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
---	---------------------	---

3	WAN interface: GE optical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none">● GE0 is a management interface and is used to upgrade the router.● All GE LAN interfaces can be configured as WAN interfaces.
5	Four FXS interfaces	6	One FXO interface
7	Power jack NOTE The router uses a 1-pin 36 W power adapter .	8	Product model silkscreen
9	Console interface	10	USB interface (host)
11	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none">● To restore the factory settings, hold down the button for at least 5 seconds.● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 3-96 shows the indicators on the AR169CVW router.

Figure 3-96 Indicators on the AR169CVW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established.
			Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally.
			Off: The IPSec service is unavailable.
6	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
7	GE (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.
8	WLAN	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	FXS (FXS0 to FXS3)	Green	Steady on: The corresponding FXS channel is being occupied by a call.
			Off: The corresponding FXS channel is idle.

Number	Indicator	Color	Description
10	FXO	Green	Steady on: The FXO channel is being occupied by a call.
			Off: The FXO channel is idle.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-310](#) lists attributes of a console interface.

Table 3-310 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-311](#) lists attributes of a USB interface.

Table 3-311 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB3.0, USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-312](#) lists attributes of a GE electrical interface.

Table 3-312 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 3-313](#) lists attributes of a GE optical interface.

Table 3-313 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-314](#) lists attributes of a VDSL interface.

Table 3-314 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-315](#) lists attributes of an FXS interface.

Table 3-315 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-316](#) lists attributes of an FXO interface.

Table 3-316 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi antenna interface

 **NOTE**

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-317](#) lists attributes of a Wi-Fi antenna interface.

Table 3-317 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4 GHz: 1.9 dBi ● 5.0 GHz: 3.4 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Technical Specifications

[Table 3-318](#) lists the technical specifications of the AR169CVW router.

Table 3-318 AR169CVW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card	Not supported
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	270 mm x 155 mm x 30 mm (10.6 in. x 6.1 in. x 1.2 in.), 1 U height
Weight	0.76 kg (1.68 lb)
Power specifications	
Rated input voltage range (AC)	110 V to 220 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 270 V, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	18.1 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

Item	Specification
USB 3.0 interfaces	1
Service interfaces	WAN interfaces: one GE optical interface and one VDSL interface LAN interfaces: four GE electrical interfaces Voice interfaces: four FXS interfaces and one FXO interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010386

3.5.24 AR169CVW-4B4S

Version Mapping

Table 3-319 describes the mapping between the AR169CVW-4B4S router and software versions.

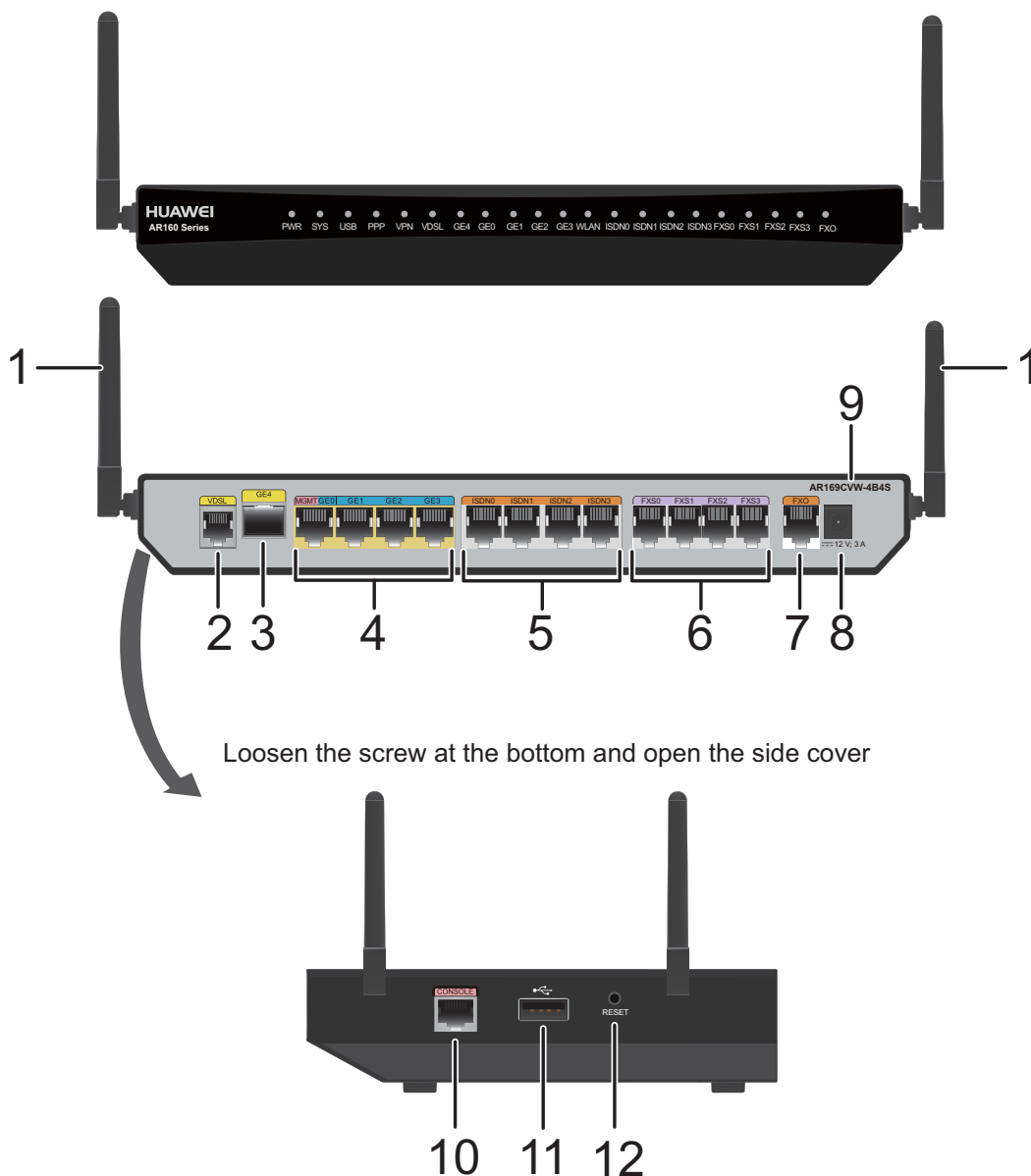
Table 3-319 Mapping between the AR169CVW-4B4S router and software versions

Router Model	Software Version
AR169CVW-4B4S	V200R008C50 and later versions

Appearance and Structure

Figure 3-97 shows the appearance of the AR169CVW-4B4S router.

Figure 3-97 AR169CVW-4B4S appearance



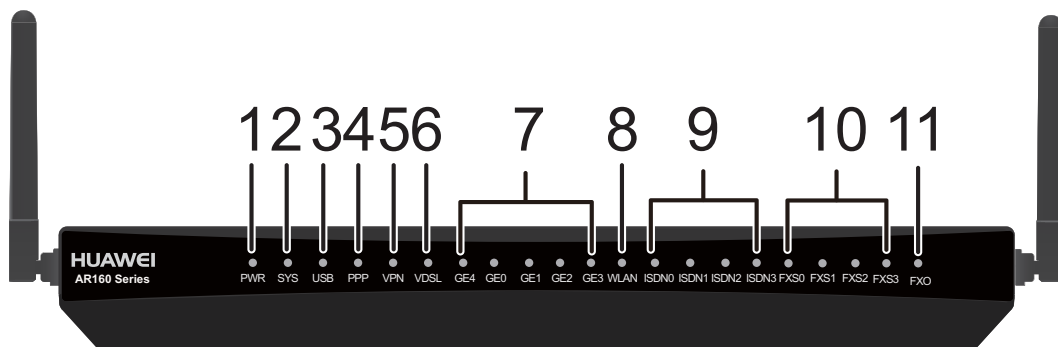
1	Four Wi-Fi antennas	2	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
3	WAN interface: GE optical interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

5	Four ISDN interfaces	6	Four FXS interfaces
7	One FXO interface	8	Power jack NOTE The router uses a 1-pin 36 W power adapter .
9	Product model silkscreen	10	Console interface
11	USB interface (host)	12	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

Indicator Description

Figure 3-98 shows the indicators on the AR169CVW-4B4S router.

Figure 3-98 Indicators on the AR169CVW-4B4S



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established.
			Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally.
			Off: The IPSec service is unavailable.
6	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
7	GE (GE0 to GE4)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established on the corresponding GE interface.
8	WLAN	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	ISDN (ISDN0 to ISDN3)	Green	Steady on: The corresponding ISDN channel is active.
			Blinking: Data is being transmitted on the corresponding ISDN channel.
			Off: The corresponding ISDN channel is inactive.
10	FXS (FXS0 to FXS3)	Green	Steady on: The corresponding FXS channel is being occupied by a call.
			Off: The corresponding FXS channel is idle.

Number	Indicator	Color	Description
11	FXO	Green	Steady on: The FXO channel is being occupied by a call.
			Off: The FXO channel is idle.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-320](#) lists attributes of a console interface.

Table 3-320 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-321](#) lists attributes of a USB interface.

Table 3-321 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB3.0, USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-322](#) lists attributes of a GE electrical interface.

Table 3-322 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 3-323](#) lists attributes of a GE optical interface.

Table 3-323 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-324](#) lists attributes of a VDSL interface.

Table 3-324 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

ISDN interface

An ISDN S/T interface can connect to an integrated services digital network (ISDN) to provide voice services. [Table 3-325](#) lists attributes of an ISDN S/T interface.

Table 3-325 ISDN S/T interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430 Q.921 Q.931
Rate	192 kbit/s
Bandwidth	0 MHz to 100 MHz
Cable type	7.12 ISDN Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-326](#) lists attributes of an FXS interface.

Table 3-326 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none">● Dual tone multiple frequency (DTMF) in accordance with GB3378● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-327](#) lists attributes of an FXO interface.

Table 3-327 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none">● Dual tone multiple frequency (DTMF) in accordance with GB3378● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi antenna interface

NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-328](#) lists attributes of a Wi-Fi antenna interface.

Table 3-328 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4 GHz: 1.9 dBi ● 5.0 GHz: 3.4 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Technical Specifications

Table 3-329 lists the technical specifications of the AR169CVW-4B4S router.

Table 3-329 AR169CVW-4B4S technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card	Not supported
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	270 mm x 155 mm x 30 mm (10.6 in. x 6.1 in. x 1.2 in.), 1 U height
Weight	0.8 kg (1.76 lb)
Power specifications	
Rated input voltage range (AC)	110 V to 220 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 270 V, 47 Hz to 63 Hz

Item	Specification
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	18.6 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	WAN interfaces: one GE optical interface and one VDSL interface LAN interfaces: four GE electrical interfaces Voice interfaces: four ISDN interfaces, four FXS interfaces, and one FXO interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010351

3.5.25 AR169EW

Version Mapping

Table 3-330 describes the mapping between the AR169EW router and software versions.

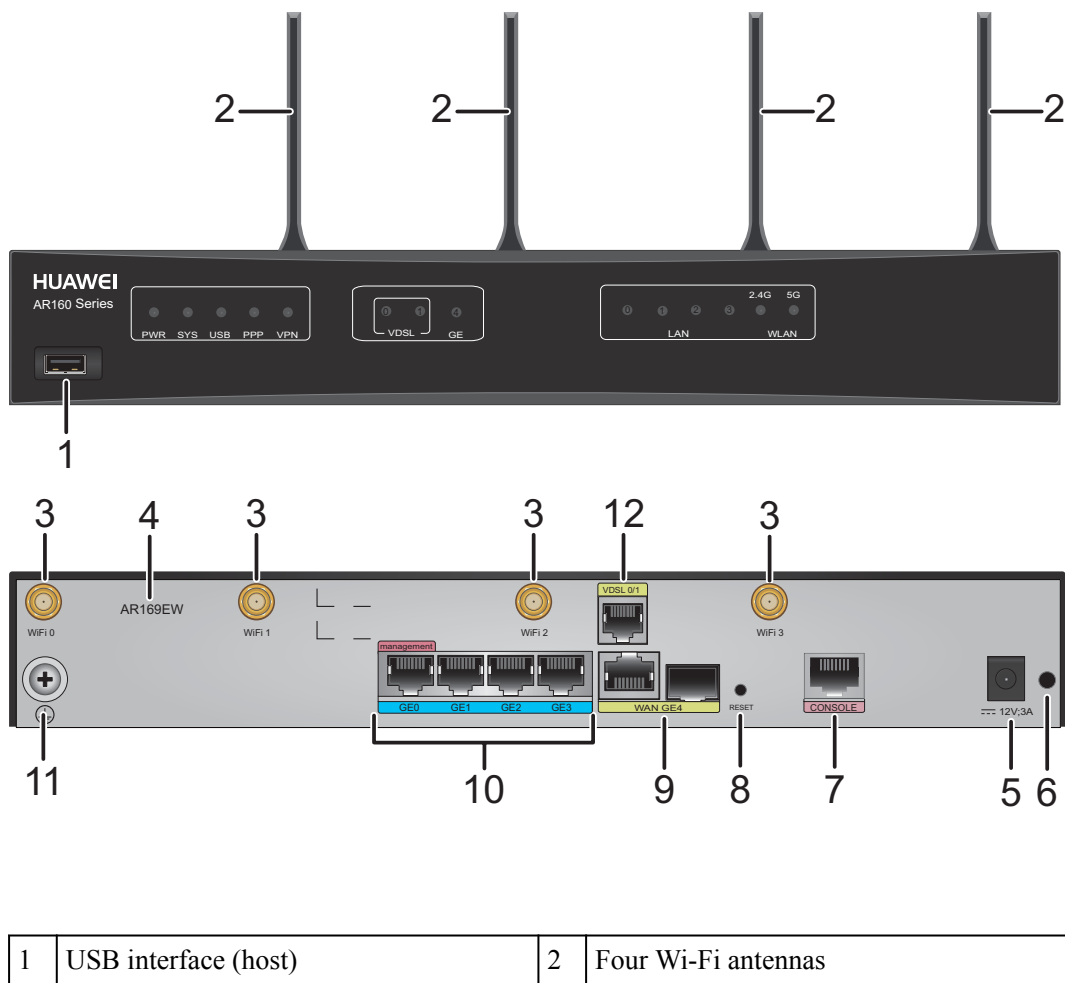
Table 3-330 Mapping between the AR169EW router and software versions

Router Model	Software Version
AR169EW	V200R008C50 and later versions

Appearance and Structure

Figure 3-99 shows the appearance of the AR169EW router.

Figure 3-99 AR169EW appearance

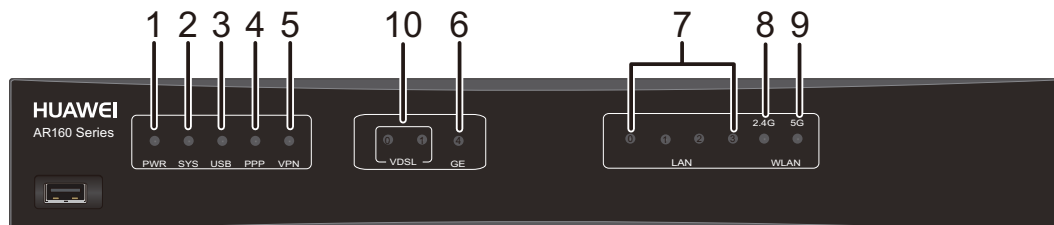


3	Four Wi-Fi antenna interfaces	4	Product model silkscreen
5	Power jack NOTE The router uses a 1-pin 36 W power adapter .	6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
7	Console interface	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	WAN interface: GE combo interface	10	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 is a management interface and is used to upgrade the router. All GE LAN interfaces can be configured as WAN interfaces.
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	12	WAN interface: VDSL interface NOTE <ul style="list-style-type: none"> By default, VDSL0 and VDSL1 are bundled and used together. VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. The VDSL interfaces support the dying gasp function.

Indicator Description

Figure 3-100 shows the indicators on the AR169EW router.

Figure 3-100 Indicators on the AR169EW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Number	Indicator	Color	Description
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
10	VDSL0/ VDSL1	Green	Steady on: A link has been established on interface VDSL0/VDSL1. Blinking: The link on interface VDSL0/VDSL1 is activating. Off: No link is established on interface VDSL0/VDSL1.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-331](#) lists attributes of a console interface.

Table 3-331 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-332](#) lists attributes of a USB interface.

Table 3-332 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB3.0, USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-333](#) lists attributes of a GE electrical interface.

Table 3-333 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive wireless traffic. [Table 3-334](#) lists attributes of a Wi-Fi antenna interface.

Table 3-334 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	2183 Mbit/s
MIMO mode (Tx x Rx)	4x4
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-335](#) lists attributes of a VDSL interface.

Table 3-335 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

Attribute	Description
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

Technical Specifications

[Table 3-336](#) lists the technical specifications of the AR169EW router.

Table 3-336 AR169EW technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	3 A

Item	Specification
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	25 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	WAN interfaces: one GE combo interface and one VDSL interface LAN interfaces: four GE electrical interfaces and four Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to +40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351BTH

3.5.26 AR169EGW-L

Version Mapping

Table 3-337 describes the mapping between the AR169EGW-L router and software versions.

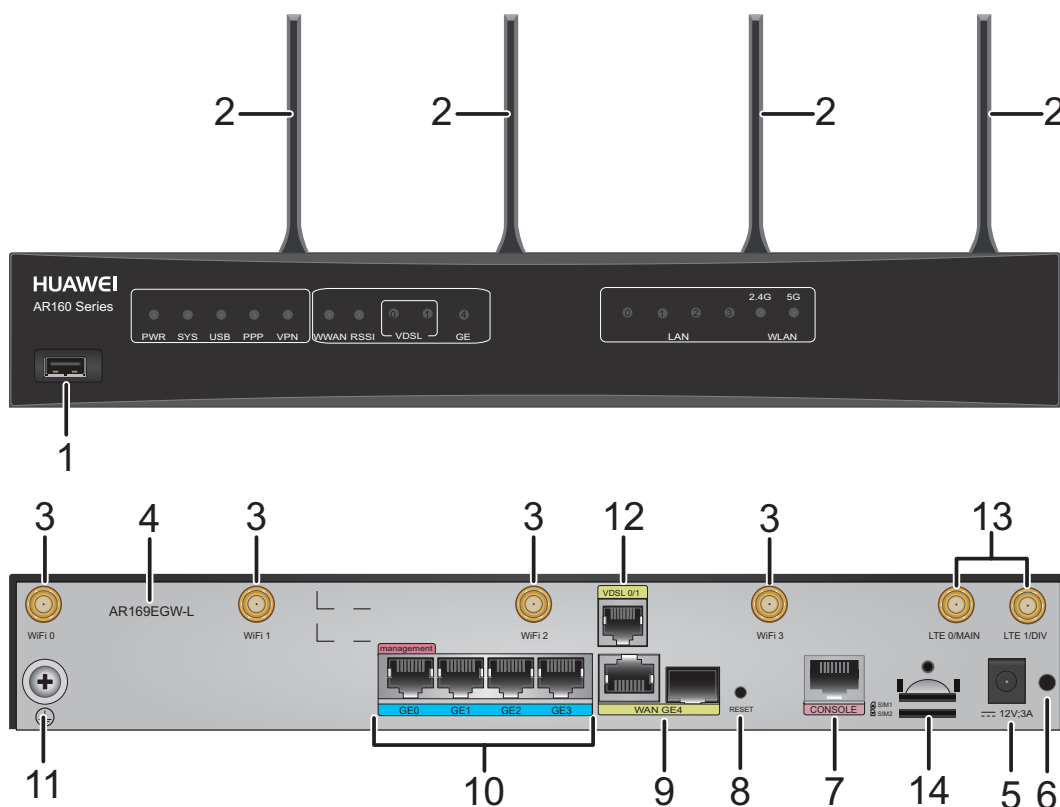
Table 3-337 Mapping between the AR169EGW-L router and software versions

Router Model	Software Version
AR169EGW-L	V200R008C50 and later versions

Appearance and Structure

Figure 3-101 shows the appearance of the AR169EGW-L router.

Figure 3-101 AR169EGW-L appearance



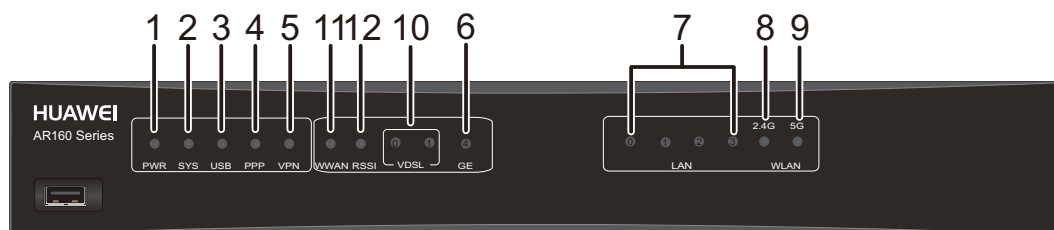
1	USB interface (host)	2	Four Wi-Fi antennas
3	Four Wi-Fi antenna interfaces	4	Product model silkscreen
5	Power jack NOTE The router uses a 1-pin 36 W power adapter .	6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

7	Console interface	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	WAN interface: GE combo interface	10	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 is a management interface and is used to upgrade the router. All GE LAN interfaces can be configured as WAN interfaces.
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	12	WAN interface: VDSL interface NOTE <ul style="list-style-type: none"> By default, VDSL0 and VDSL1 are bundled and used together. VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. The VDSL interfaces support the dying gasp function.
13	LTE antenna interface	14	Two SIM card slots NOTE <ul style="list-style-type: none"> The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw. The router supports double-card single-standby, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-102 shows the indicators on the AR169EGW-L router.

Figure 3-102 Indicators on the AR169EGW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.

Number	Indicator	Color	Description
			Off: No link is established on the corresponding LAN interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
10	VDSL0/ VDSL1	Green	Steady on: A link has been established on interface VDSL0/VDSL1. Blinking: The link on interface VDSL0/VDSL1 is activating. Off: No link is established on interface VDSL0/VDSL1.
11	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active. Blinking: Data is being transmitted over the LTE/3G/2G connection. Off: The LTE/3G/2G connection has not been established or is inactive.
12	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high. Fast blinking: The LTE/3G/2G signal strength is medium. Slow blinking: The LTE/3G/2G signal strength is low. Off: No LTE/3G/2G signal is available.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-338](#) lists attributes of a console interface.

Table 3-338 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-339](#) lists attributes of a USB interface.

Table 3-339 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB3.0, USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-340](#) lists attributes of a GE electrical interface.

Table 3-340 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive wireless traffic. [Table 3-341](#) lists attributes of a Wi-Fi antenna interface.

Table 3-341 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	2183 Mbit/s
MIMO mode (Tx x Rx)	4x4
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Attribute	Description
Cable type	7.17.5 Wi-Fi Antenna

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-342](#) lists attributes of a VDSL interface.

Table 3-342 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-343](#) lists attributes of an LTE antenna interface.

Table 3-343 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

[Table 3-344](#) lists the technical specifications of the AR169EGW-L router.

Table 3-344 AR169EGW-L technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.), 1 U height

Item	Specification
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	27 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	WAN interfaces: one GE combo interface, one VDSL interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces and four Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to +40°C (32°F to 104°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).

Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351AWN

3.5.27 AR169F/AR169BF

Version Mapping

Table 3-345 lists the mapping between the AR169F/AR169BF and software versions.

Table 3-345 Mapping between the AR169F/AR169BF and software versions

Router Model	Software Version
AR169F	V200R005C00 and later versions
AR169BF	V200R006C10 and later versions

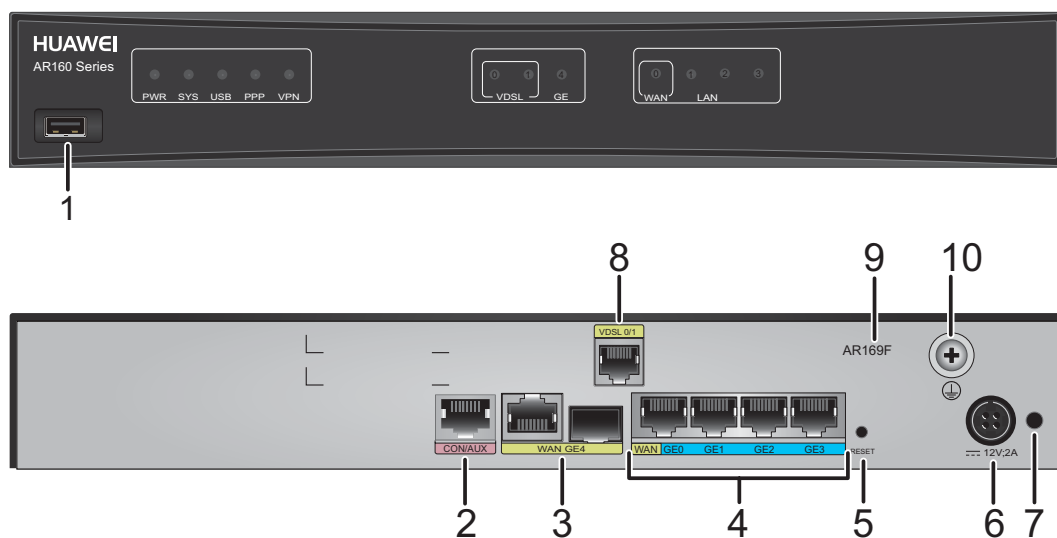
Appearance and Structure

NOTE

The AR169F and AR169BF have the same appearance but different silkscreens. The AR169F is used as an example here.

Figure 3-103 shows the appearance of the AR169F/AR169BF.

Figure 3-103 AR169F/AR169BF appearance

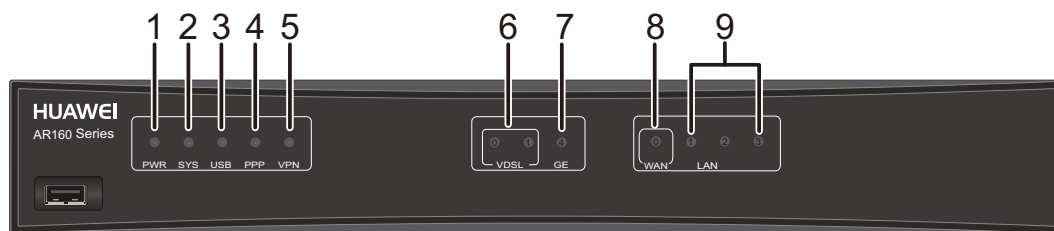


1	USB interface (host)	2	CON/AUX interface NOTE The AR169F/AR169BF does not support AUX login.
3	WAN interface: GE combo interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 24 W integrated power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: VDSL interface NOTE <ul style="list-style-type: none"> ● By default, VDSL0 and VDSL1 are bundled and used together. ● VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. ● The VDSL interfaces support the dying gasp function.
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-104 shows the indicators on the AR169F/AR169BF.

Figure 3-104 Indicators on the AR169F/AR169BF



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	VDSL (AR169F)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.

Number	Indicator	Color	Description
	VDSL (AR169BF)	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established. ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-346](#) lists the CON/AUX interface attributes.

Table 3-346 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-347](#) lists attributes of a USB interface.

Table 3-347 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-348](#) lists attributes of a VDSL interface.

Table 3-348 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-349](#) lists attributes of a GE electrical interface.

Table 3-349 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Technical Specifications

Table 3-350 lists the technical specifications of the AR169F/AR169BF.

Table 3-350 Technical specifications of the AR169F/AR169BF

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	<ul style="list-style-type: none"> ● AR169F: 512 MB ● AR169BF: 1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	<ul style="list-style-type: none"> ● AR169F: 17.8 W ● AR169BF: 17.0 W
Heat dissipation	
Fan module	None

Item	Specification
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface, and one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	<ul style="list-style-type: none"> ● AR169F: 02356376 ● AR169BF: 50010210

3.5.28 AR169FGW-L

Version Mapping

[Table 3-351](#) lists the mapping between the AR169FGW-L router and software versions.

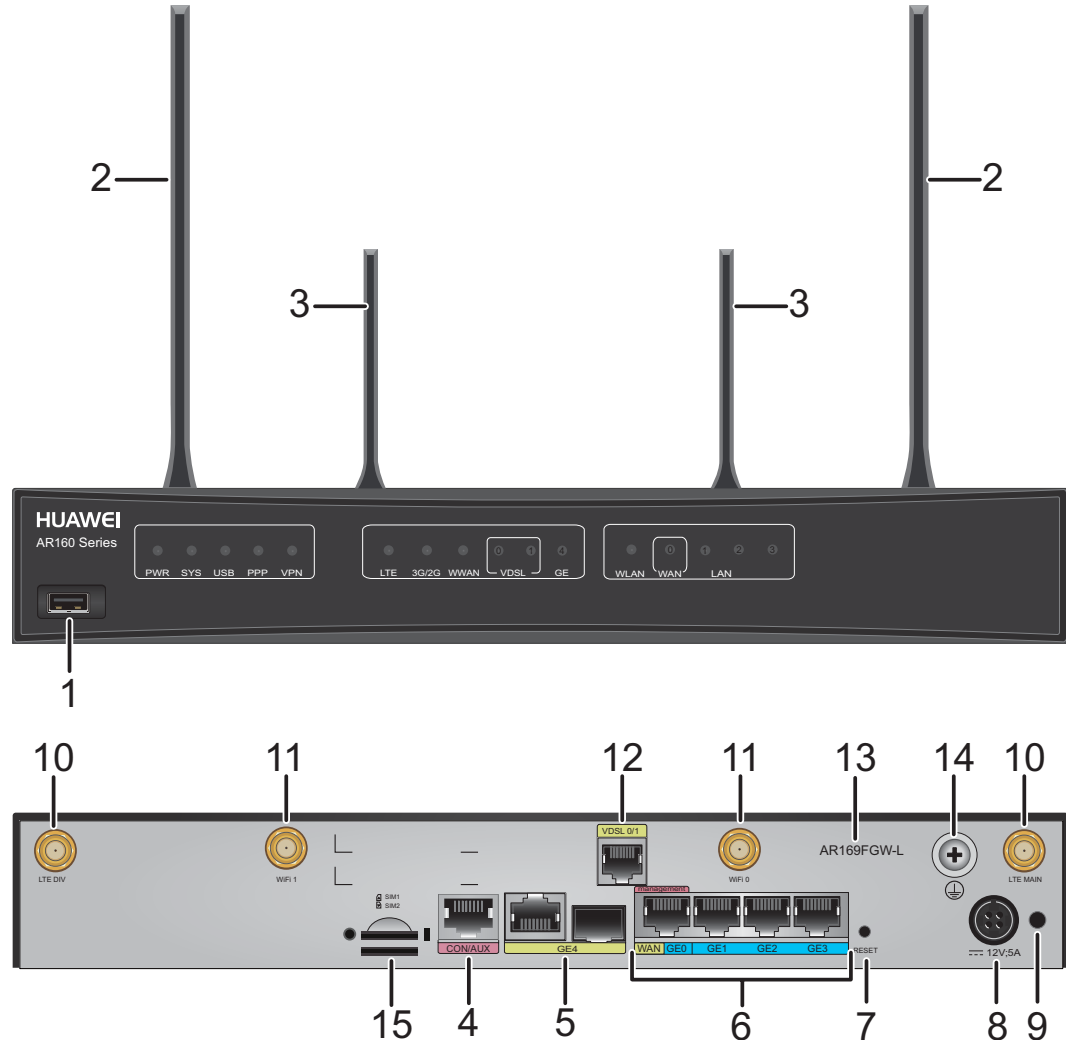
Table 3-351 Mapping between the AR169FGW-L router and software versions

Router Model	Software Version
AR169FGW-L	V200R005C30 and later versions

Appearance and Structure

Figure 3-105 shows the appearance of the AR169FGW-L router.

Figure 3-105 AR169FGW-L appearance



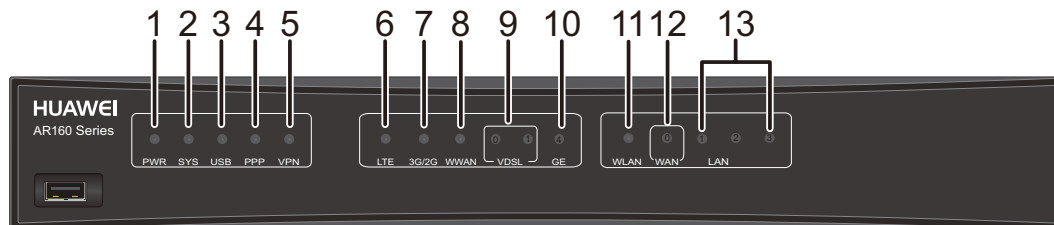
1	USB interface (host)	2	Two LTE antennas
3	Two Wi-Fi antennas	4	CON/AUX interface NOTE The AR169FGW-L does not support AUX login.

5	<p>WAN interface: GE combo interface</p>	6	<p>LAN interfaces: four GE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.
7	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	8	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 60 W power adapter.</p>
9	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	10	<p>LTE antenna interface</p>
11	<p>Two Wi-Fi antenna interfaces</p>	12	<p>WAN interface: VDSL interface</p> <p>NOTE</p> <ul style="list-style-type: none"> ● By default, VDSL0 and VDSL1 are bundled and used together. ● VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. ● The VDSL interfaces support the dying gasp function.
13	<p>Product model silkscreen</p>	14	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>
15	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	-	-

Indicator Description

Figure 3-106 shows the locations of AR169FGW-L indicators.

Figure 3-106 Indicators on an AR169FGW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
4	PPP	Green	Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
			Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally.
			Off: The IPSec service is unavailable.

Number	Indicator	Color	Description
6	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high. Fast blinking: The 3G/2G signal strength is medium. Slow blinking: The 3G/2G signal strength is low. Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active. Blinking: Data is being transmitted or received over the LTE/3G/2G connection. Off: The LTE/3G/2G connection has not been established or is inactive.
9	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
10	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
11	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
12	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
13	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-352](#) lists the CON/AUX interface attributes.

Table 3-352 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-353](#) lists attributes of a USB interface.

Table 3-353 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-354](#) lists attributes of a GE electrical interface.

Table 3-354 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-355](#) lists attributes of a Wi-Fi antenna interface.

Table 3-355 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-356](#) lists attributes of a VDSL interface.

Table 3-356 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-357](#) lists attributes of an LTE antenna interface.

Table 3-357 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

[Table 3-358](#) lists the technical specifications of the AR169FGW-L routers.

Table 3-358 AR169FGW-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB

Item	Specification
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	22 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one VDSL interface and two LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010200

3.5.29 AR169FGVW-L

Version Mapping

[Table 3-359](#) lists the mapping between the AR169FGVW-L router and software versions.

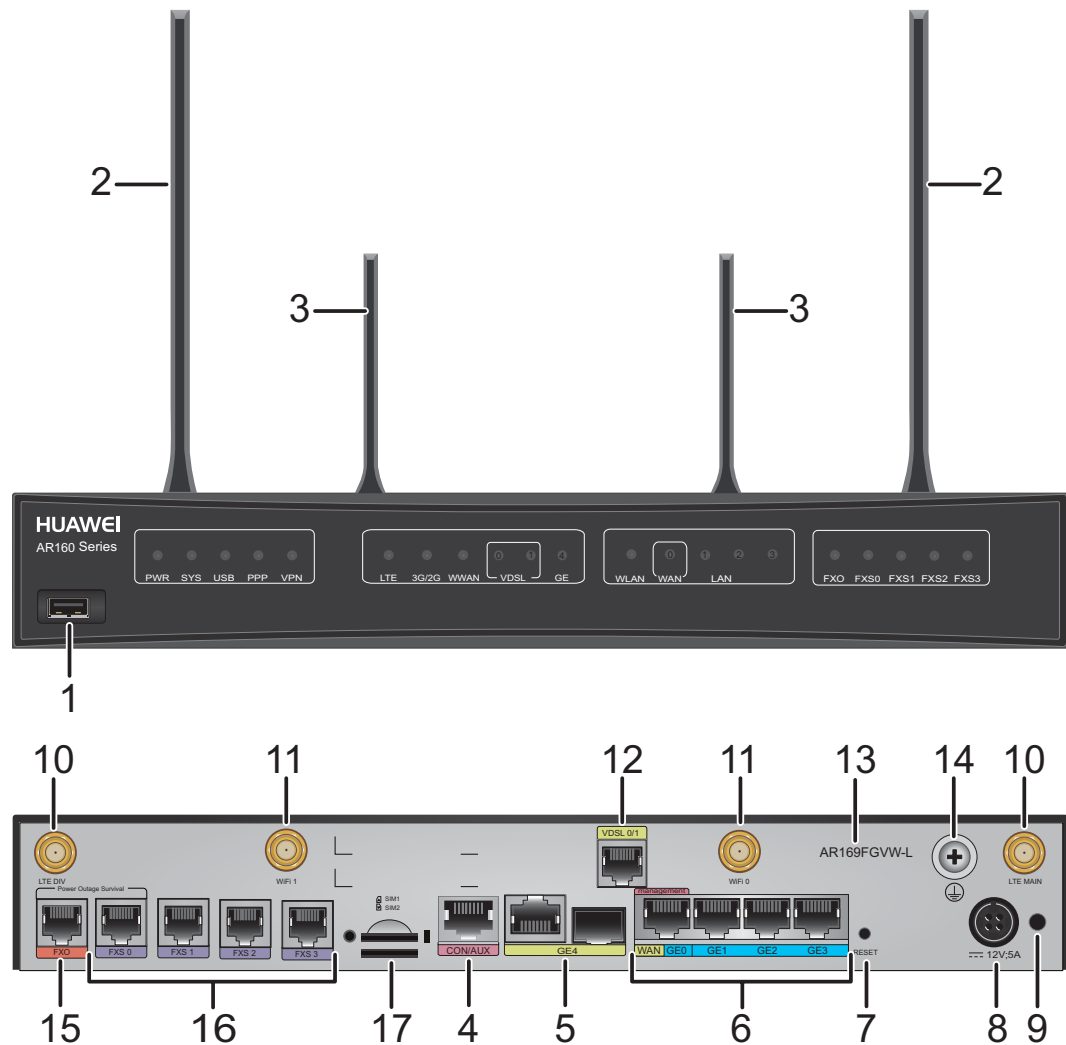
Table 3-359 Mapping between the AR169FGVW-L router and software versions

Router Model	Software Version
AR169FGVW-L	V200R005C30 and later versions

Appearance and Structure

[Figure 3-107](#) shows the appearance of the AR169FGVW-L router.

Figure 3-107 AR169FGVW-L appearance



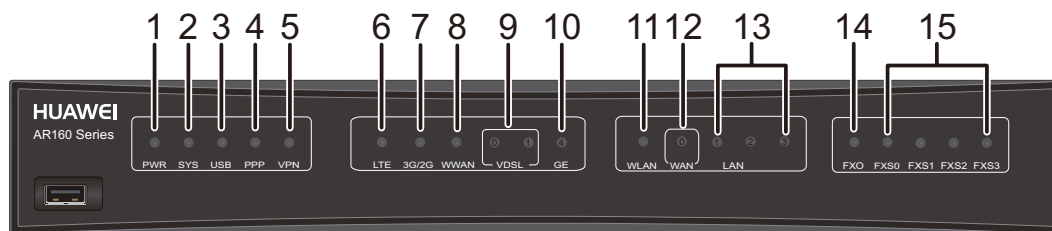
1	USB interface (host)	2	Two LTE antennas
3	Two Wi-Fi antennas	4	CON/AUX interface NOTE The AR169FGVW-L does not support AUX login.
5	WAN interface: GE combo interface	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. ● V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.

7	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	8	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 60 W power adapter.</p>
9	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	10	<p>LTE antenna interface</p>
11	<p>Two Wi-Fi antenna interfaces</p>	12	<p>WAN interface: VDSL interface</p> <p>NOTE</p> <ul style="list-style-type: none"> ● By default, VDSL0 and VDSL1 are bundled and used together. ● VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. ● The VDSL interfaces support the dying gasp function.
13	<p>Product model silkscreen</p>	14	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>
15	<p>One FXO interface</p> <p>NOTE</p> <p>The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable.</p>	16	<p>Four FXS interfaces</p> <p>NOTE</p> <p>The FXS interfaces can be connected to analog telephones using standard telephone cables.</p>
17	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	-	-

Indicator Description

Figure 3-108 shows the locations of AR169FGVW-L indicators.

Figure 3-108 Indicators on an AR169FGVW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
4	PPP	Green	Off: No PPP connection is set up.
			Steady on: A PPP connection has been set up.
			Off: No PPP connection is set up.
			Steady on: A PPP connection has been set up.
5	VPN	Green	Off: The IPSec service is unavailable.
			Steady on: The IPSec service is running normally.
6	LTE	Green	Off: No LTE signal is available.
			Slow blinking: The LTE signal strength is low.
			Fast blinking: The LTE signal strength is medium.
			Steady on: The LTE signal strength is high.

Number	Indicator	Color	Description
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high. Fast blinking: The 3G/2G signal strength is medium. Slow blinking: The 3G/2G signal strength is low. Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active. Blinking: Data is being transmitted or received over the LTE/3G/2G connection. Off: The LTE/3G/2G connection has not been established or is inactive.
9	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
10	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
11	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
12	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
13	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Number	Indicator	Color	Description
14	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.
15	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-360](#) lists the CON/AUX interface attributes.

Table 3-360 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-361](#) lists attributes of a USB interface.

Table 3-361 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-362](#) lists attributes of a GE electrical interface.

Table 3-362 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-363](#) lists attributes of a Wi-Fi antenna interface.

Table 3-363 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-364](#) lists attributes of a VDSL interface.

Table 3-364 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-365](#) lists attributes of an FXS interface.

Table 3-365 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none">● Dual tone multiple frequency (DTMF) in accordance with GB3378● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-366](#) lists attributes of an FXO interface.

Table 3-366 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none">● Dual tone multiple frequency (DTMF) in accordance with GB3378● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-367](#) lists attributes of an LTE antenna interface.

Table 3-367 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

Table 3-368 lists the technical specifications of the AR169FGVW-L routers.

Table 3-368 AR169FGVW-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	28.9 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one VDSL interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface, and two Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported

Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	<ul style="list-style-type: none"> ● AR169FGVW-L: 50010168 ● AR169FGVW-L (RCM) : 50010437

3.5.30 AR169FVW

Version Mapping

[Table 3-369](#) lists the mapping between the AR169FVW router and software versions.

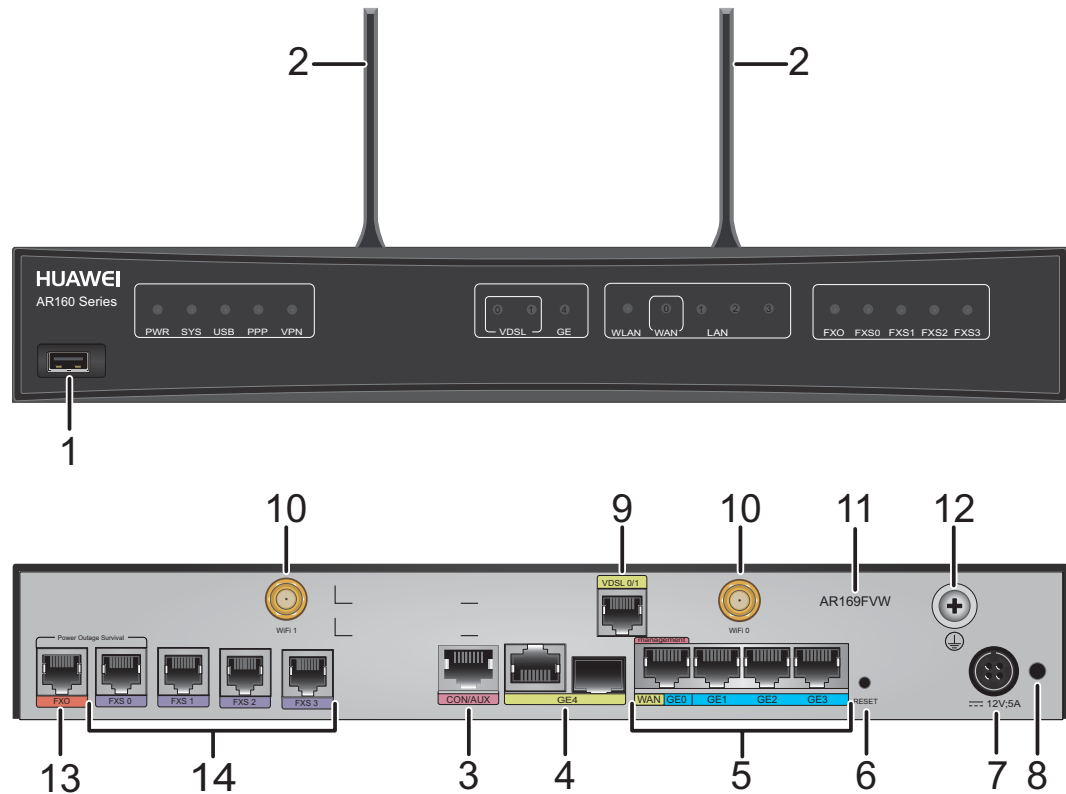
Table 3-369 Mapping between the AR169FVW router and software versions

Router Model	Software Version
AR169FVW	V200R005C30 and later versions

Appearance and Structure

[Figure 3-109](#) shows the appearance of the AR169FVW router.

Figure 3-109 AR169FVW appearance



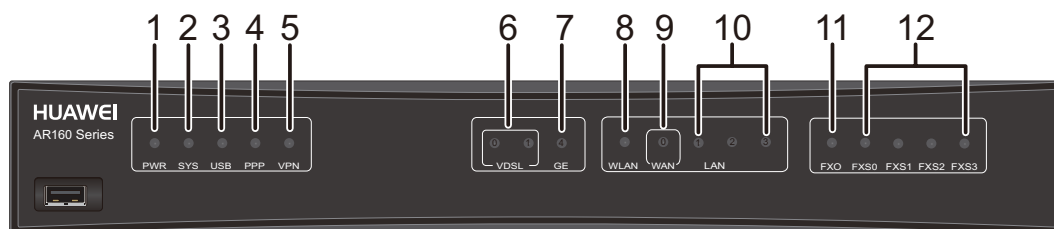
1	USB interface (host)	2	Two Wi-Fi antennas
3	CON/AUX interface NOTE The AR169FVW does not support AUX login.	4	WAN interface: GE combo interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 LAN is a management interface and is used to upgrade the router. It can be configured as a WAN interface. V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 60 W power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

9	WAN interface: VDSL interface NOTE <ul style="list-style-type: none"> By default, VDSL0 and VDSL1 are bundled and used together. VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. The VDSL interfaces support the dying gasp function. 	10	Two Wi-Fi antenna interfaces
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
13	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .	14	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .

Indicator Description

Figure 3-110 shows the locations of AR169FVW indicators.

Figure 3-110 Indicators on an AR169FVW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
8	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
10	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
11	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.
12	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-370](#) lists the CON/AUX interface attributes.

Table 3-370 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-371](#) lists attributes of a USB interface.

Table 3-371 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-372](#) lists attributes of a GE electrical interface.

Table 3-372 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-373](#) lists attributes of a Wi-Fi antenna interface.

Table 3-373 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-374](#) lists attributes of a VDSL interface.

Table 3-374 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

Attribute	Description
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-375](#) lists attributes of an FXS interface.

Table 3-375 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-376](#) lists attributes of an FXO interface.

Table 3-376 FXO interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-377](#) lists the technical specifications of the AR169FVW routers.

Table 3-377 AR169FVW routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A

Item	Specification
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	25.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	<p>WAN interfaces: one GE combo interface and one VDSL interface</p> <p>LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface</p> <p>Voice interfaces: four FXS interfaces and one FX0 interface</p>
Extended slots	Not supported
Environment parameters	
Operating temperature	<p>0°C to 45°C (32°F to 113°F)</p> <p>NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.</p>
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010167

3.5.31 AR169FVW-8S

Version Mapping

Table 3-378 describes the mapping between the AR169FVW-8S router and software versions.

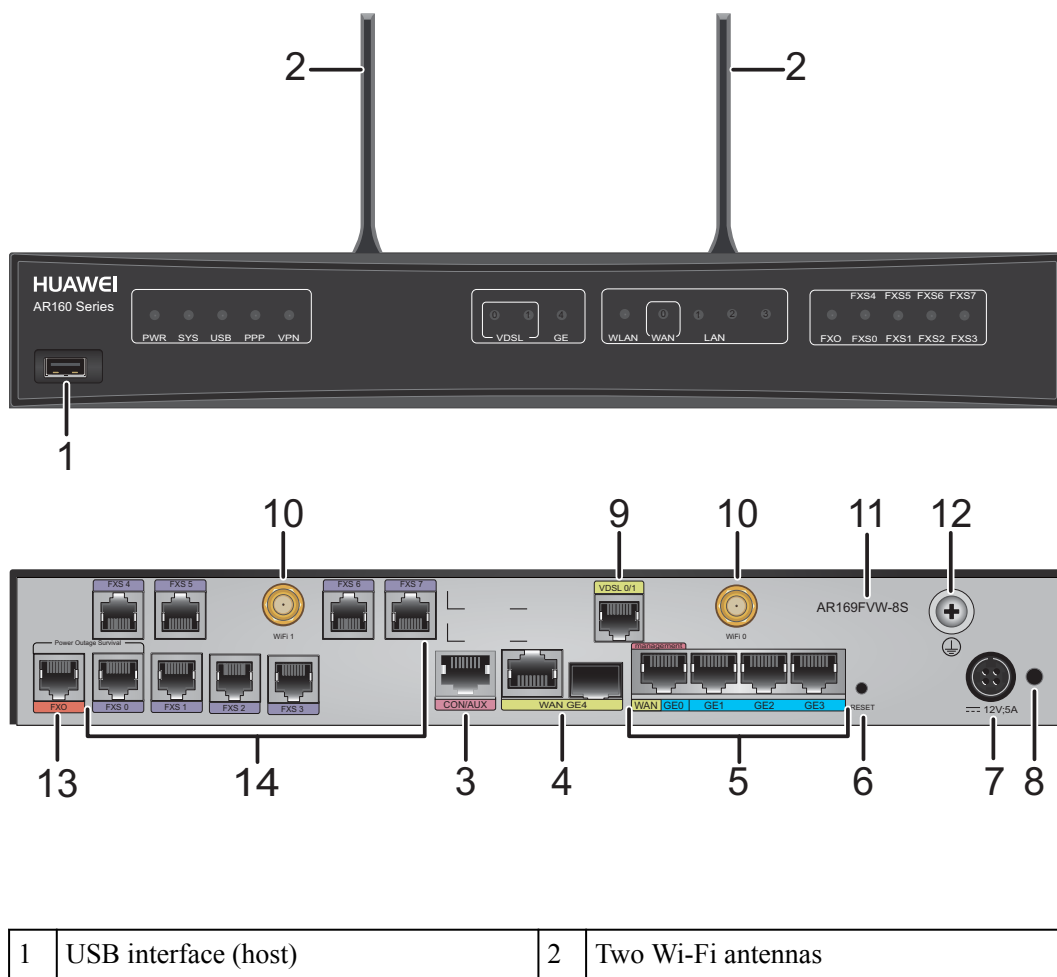
Table 3-378 Mapping between the AR169FVW-8S router and software versions

Router Model	Software Version
AR169FVW-8S	V200R008C20, V200R008C50 and later versions

Appearance and Structure

Figure 3-111 shows the appearance of the AR169FVW-8S router.

Figure 3-111 AR169FVW-8S appearance

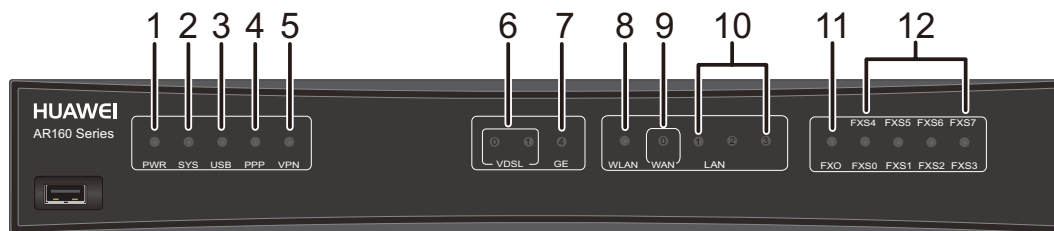


3	<p>CON/AUX interface</p> <p>NOTE</p> <p>The AR169FVW-8S does not support AUX login.</p>	4	<p>WAN interface: GE combo interface</p>
5	<p>LAN interfaces: four GE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	6	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>
7	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 60 W power adapter.</p>	8	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>
9	<p>WAN interface: VDSL interface</p> <p>NOTE</p> <ul style="list-style-type: none"> ● By default, VDSL0 and VDSL1 are bundled and used together. ● VDSL0 and VDSL1 can be unbundled. After unbundled, only VDSL0 is used to transmit data. ● The VDSL interfaces support the dying gasp function. 	10	<p>Two Wi-Fi antenna interfaces</p>
11	<p>Product model silkscreen</p>	12	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>
13	<p>One FXO interface</p> <p>NOTE</p> <p>The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable.</p>	14	<p>Eight FXS interfaces</p> <p>NOTE</p> <p>The FXS interfaces can be connected to analog telephones using standard telephone cables.</p>

Indicator Description

Figure 3-112 shows the indicators on the AR169FVW-8S router.

Figure 3-112 Indicators on the AR169FVW-8S



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.

Number	Indicator	Color	Description
6	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
8	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
10	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
11	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.
12	FXS0 to FXS7	Green	Steady on: The corresponding FXS channel is being occupied by a call. Off: The corresponding FXS channel is idle.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-379](#) lists the CON/AUX interface attributes.

Table 3-379 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-380](#) lists attributes of a USB interface.

Table 3-380 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-381](#) lists attributes of a GE electrical interface.

Table 3-381 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-382](#) lists attributes of a Wi-Fi antenna interface.

Table 3-382 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz

Attribute	Description
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-383](#) lists attributes of a VDSL interface.

Table 3-383 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-384](#) lists attributes of an FXS interface.

Table 3-384 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-385](#) lists attributes of an FXO interface.

Table 3-385 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-386](#) lists the technical specifications of the AR169FVW-8S router.

Table 3-386 AR169FVW-8S technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	33.8 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

Item	Specification
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: one GE combo interface and one VDSL interface LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface Voice interfaces: eight FXS interfaces and one FXO interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010370

3.5.32 AR169G-L

Version Mapping

[Table 3-387](#) lists the mapping between the AR169G-L router and software versions.

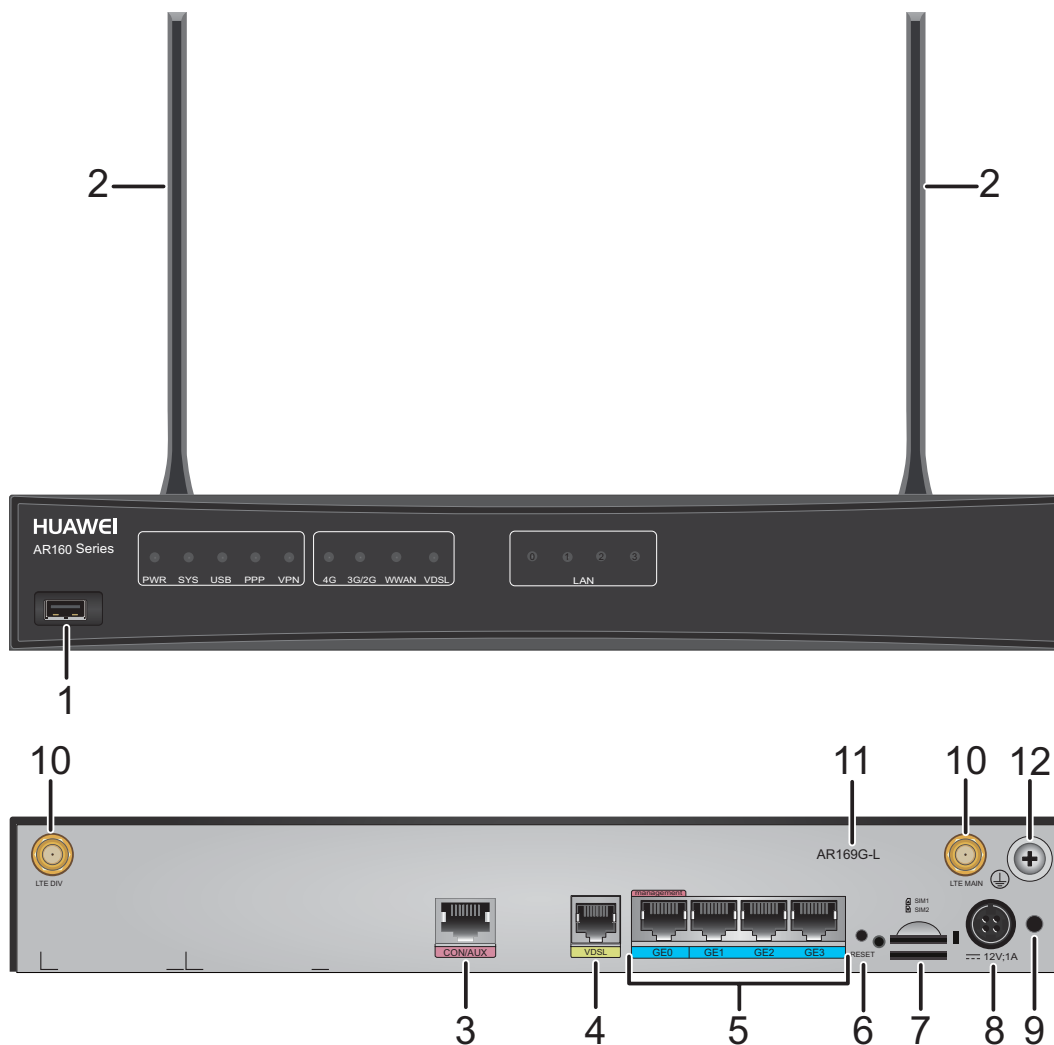
Table 3-387 Mapping between the AR169G-L router and software versions

Router Model	Software Version
AR169G-L	V200R006C10 and later versions

Appearance and Structure

[Figure 3-113](#) shows the appearance of the AR169G-L router.

Figure 3-113 AR169G-L appearance



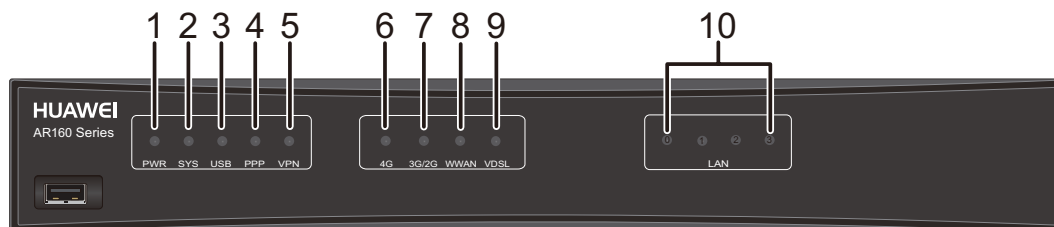
1	USB interface (host)	2	Two LTE antennas
3	CON/AUX interface NOTE The AR169G-L does not support AUX login.	4	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

7	Two SIM card slots NOTE <ul style="list-style-type: none"> The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws. The router supports double-card single-standby, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1. 	8	Power jack NOTE The router uses a 24 W integrated power adapter .
9	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	10	LTE antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-114 shows the locations of AR169G-L indicators.

Figure 3-114 Indicators on the AR169G-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.

Number	Indicator	Color	Description
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-388](#) lists the CON/AUX interface attributes.

Table 3-388 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-389](#) lists attributes of a USB interface.

Table 3-389 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 3-390](#) lists attributes of an LTE antenna interface.

Table 3-390 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Whip Antenna

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-391](#) lists attributes of a GE electrical interface.

Table 3-391 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-392](#) lists attributes of a VDSL interface.

Table 3-392 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-393](#) lists the technical specifications of the AR169G-L router.

Table 3-393 AR169G-L router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010216

3.5.33 AR169JFVW-4B4S

Version Mapping

[Table 3-394](#) lists the mapping between the AR169JFVW-4B4S router and software versions.

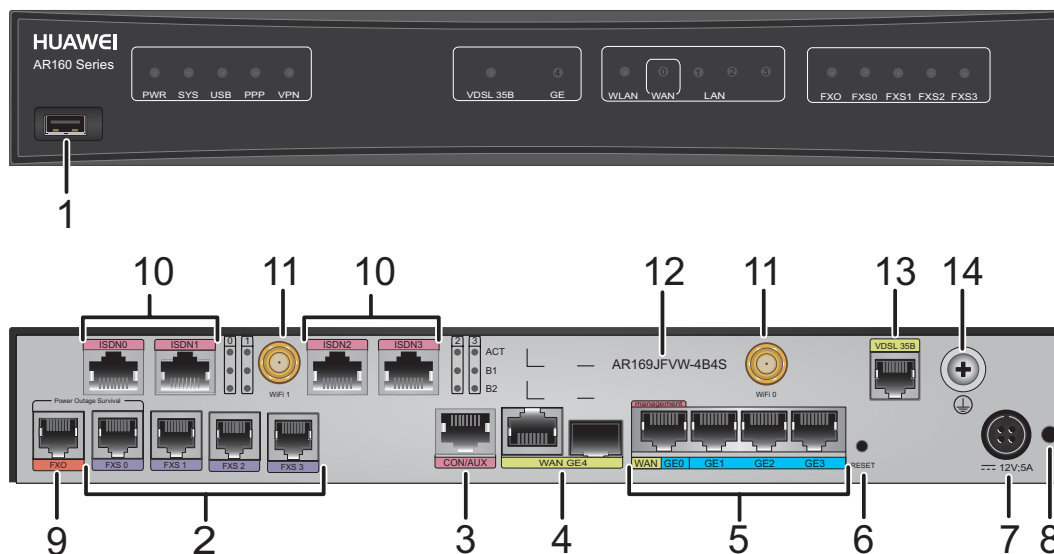
Table 3-394 Version mapping

Router Model	Software Version
AR169JFVW-4B4S	V200R009C00 and later versions

Appearance and Structure

[Figure 3-115](#) shows the appearance of the AR169JFVW-4B4S router.

Figure 3-115 AR169JFVW-4B4S appearance



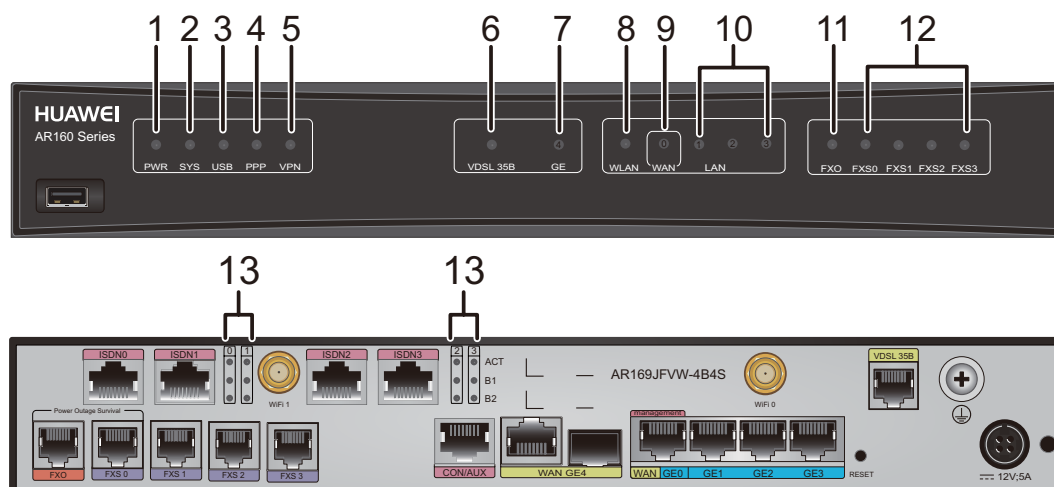
1	USB interface (host)	2	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .
3	CON/AUX interface NOTE The AR169JFVW-4B4S does not support AUX login.	4	WAN interface: GE combo interface
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 60 W power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .	10	Four ISDN interfaces

11	Two Wi-Fi antenna interfaces	12	Product model silkscreen
13	WAN interface: VDSL 35B interface	14	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-116 shows the indicators on the AR169JFVW-4B4S router.

Figure 3-116 Indicators on the AR169JFVW-4B4S router



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			<p>Blinking green: The system is being upgraded or configured using a USB flash drive.</p> <p>Steady red: The system fails to be upgraded or configured using a USB flash drive.</p> <p>Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.</p>
4	PPP	Green	<p>Steady on: A PPP connection has been established.</p> <p>Off: No PPP connection is established.</p>
5	VPN	Green	<p>Steady on: The IPsec service is running normally.</p> <p>Off: The IPsec service is unavailable.</p>
6	VDSL 35B	Green	<p>Steady on: A link has been established on the VDSL 35B interface.</p> <p>Blinking: The link on the VDSL 35B interface is activating.</p> <p>Off: No link is established on the VDSL 35B interface.</p>
7	GE combo interface indicator	Green	<p>Steady on: A link has been established on the GE combo interface.</p> <p>Blinking: Data is being transmitted or received on the GE combo interface.</p> <p>Off: No link is established on the GE combo interface.</p>
8	WLAN	Green	<p>Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.</p> <p>Off: The WLAN link is shut down.</p>
9	LAN/WAN (GE0)	Green	<p>Steady on: A link has been established on the LAN/WAN interface.</p> <p>Blinking: Data is being transmitted or received on the LAN/WAN interface.</p> <p>Off: No link is established on the LAN/WAN interface.</p>
10	LAN (GE1 to GE3)	Green	<p>Steady on: A link has been established on the corresponding LAN interface.</p> <p>Blinking: Data is being transmitted or received on the corresponding LAN interface.</p> <p>Off: No link is established on the corresponding LAN interface.</p>

Number	Indicator	Color	Description
11	FXO	Green	Steady on: There is an ongoing call on the FXO channel. Off: The FXO channel is idle.
12	FXS0 to FXS3	Green	Steady on: There is an ongoing call on the corresponding FXS channel. Off: The corresponding FXS channel is idle.
13	ISDN0 to ISDN3	ACT	Steady on: The corresponding ISDN channel is active. Off: The corresponding ISDN channel is inactive.
		B1	Blinking: The ISDN B1 channel is being occupied. Off: The ISDN B1 channel is idle.
		B2	Blinking: The ISDN B2 channel is being occupied. Off: The ISDN B2 channel is idle.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-395](#) lists the CON/AUX interface attributes.

Table 3-395 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-396](#) lists attributes of a USB interface.

Table 3-396 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-397](#) lists attributes of a GE electrical interface.

Table 3-397 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).

- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-398](#) lists attributes of a Wi-Fi antenna interface.

Table 3-398 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL 35B interface

A very-high-speed digital subscriber line (VDSL) 35B interface transmits service data from a LAN to an upstream device at a high speed over a twisted pair. [Table 3-399](#) lists attributes of a VDSL interface.

Table 3-399 VDSL 35B interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● VDSL 35B mode (G.992.1 G.DMT): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-400](#) lists attributes of an FXS interface.

Table 3-400 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-401](#) lists attributes of an FXO interface.

Table 3-401 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

ISDN interface

An ISDN S/T interface can connect to an integrated services digital network (ISDN) to provide voice services. [Table 3-402](#) lists attributes of an ISDN S/T interface.

Table 3-402 ISDN S/T interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430 Q.921 Q.931
Rate	192 kbit/s
Bandwidth	0 MHz to 100 MHz
Cable type	7.12 ISDN Cable

Technical Specifications

[Table 3-403](#) lists the technical specifications of the AR169JFVW-4B4S router.

Table 3-403 Technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB

Item	Specification
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1U height ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19 in. x 8.52 in. x 1.73 in.), 1U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	22 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1

Item	Specification
Service interfaces	WAN interfaces: one GE combo interface and one VDSL 35B interface LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface Voice interfaces: four FXS interfaces, one FXO interface, and four ISDN interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to +45°C (32°F to 113°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010389

3.5.34 AR169JFVW-2S

Version Mapping

[Table 3-404](#) lists the mapping between the AR169JFVW-2S router and software versions.

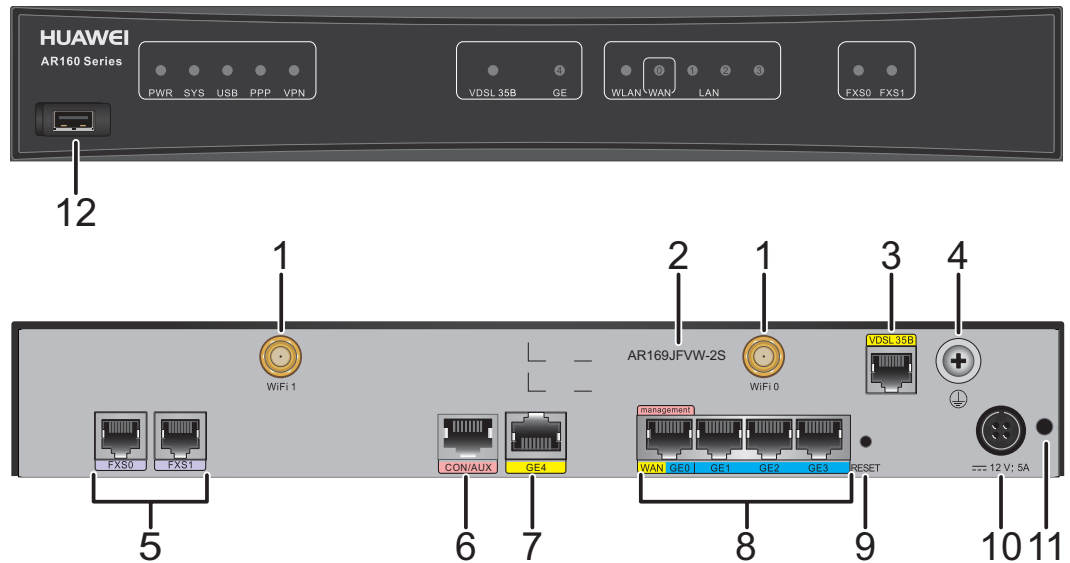
Table 3-404 Mapping between the AR169JFVW-2S router and software versions

Router Model	Software Version
AR169JFVW-2S	V300R003C10 and later versions

Appearance and Structure

[Figure 3-117](#) shows the appearance of the AR169JFVW-2S router.

Figure 3-117 AR169JFVW-2S appearance



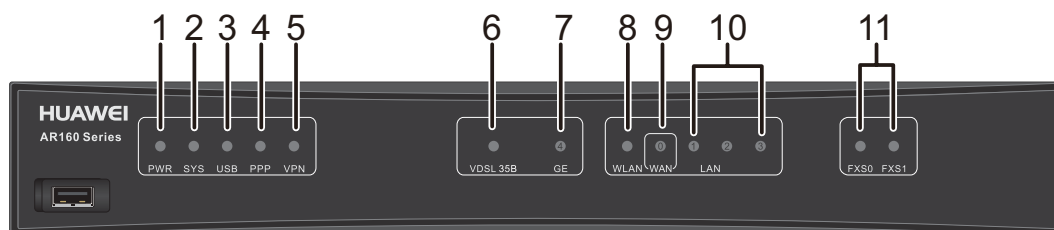
1	Two Wi-Fi antenna interfaces	2	Product model silkscreen
3	WAN interface: VDSL 35B interface	4	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	Two FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .	6	CON/AUX interface NOTE The AR169JFVW-2S does not support AUX login.
7	WAN interface: one GE electrical interface	8	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
9	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	10	Power jack NOTE The router uses a 60 W power adapter .

11	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	12	USB interface (host)
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Indicator Description

Figure 3-118 shows the indicators on the AR169JFVW-2S router.

Figure 3-118 Indicators on the AR169JFVW-2S router



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	VDSL 35B	Green	Steady on: A link has been established on the VDSL 35B interface. Blinking: The link on the VDSL 35B interface is activating. Off: No link is established on the VDSL 35B interface.
7	GE interface indicator	Green	Steady on: A link has been established on the GE interface. Blinking: Data is being transmitted or received on the GE interface. Off: No link is established on the GE interface.
8	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	LAN/WAN (GE0)	Green	Steady on: A link has been established on the LAN/WAN interface. Blinking: Data is being transmitted or received on the LAN/WAN interface. Off: No link is established on the LAN/WAN interface.
10	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
11	FXS0 and FXS1	Green	Steady on: There is an ongoing call on the corresponding FXS channel. Off: The corresponding FXS channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-405](#) lists the CON/AUX interface attributes.

Table 3-405 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-406](#) lists attributes of a USB interface.

Table 3-406 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-407](#) lists attributes of a GE electrical interface.

Table 3-407 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-408](#) lists attributes of a Wi-Fi antenna interface.

Table 3-408 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

VDSL 35B Interface

A very-high-speed digital subscriber line (VDSL) 35B interface transmits service data from a LAN to an upstream device at a high speed over a twisted pair. [Table 3-409](#) lists attributes of a VDSL interface.

Table 3-409 VDSL 35B interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● VDSL 35B mode (G.992.1 G.DMT): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-410](#) lists attributes of an FXS interface.

Table 3-410 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-411](#) lists the technical specifications of the AR169JFVW-2S router.

Table 3-411 AR169JFVW-2S technical specifications

Item	Description
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	1.632 kg (3.598 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	22 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Description
CON/AUX interfaces	1 (RJ45)
Service interfaces (standard configuration)	<p>WAN interfaces: one GE electrical interface and one VDSL 35B interface</p> <p>LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, among which LAN interface GE0 can be used as a WAN interface</p> <p>Voice interfaces: two FXS interfaces</p>
Extended slots	Not supported
Environment parameters	
Operating temperature	<p>0°C to 45°C (32°F to 113°F)</p> <p>NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).</p>
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010463

3.5.35 AR169W

Version Mapping

[Table 3-412](#) lists the mapping between the AR169W router and software versions.

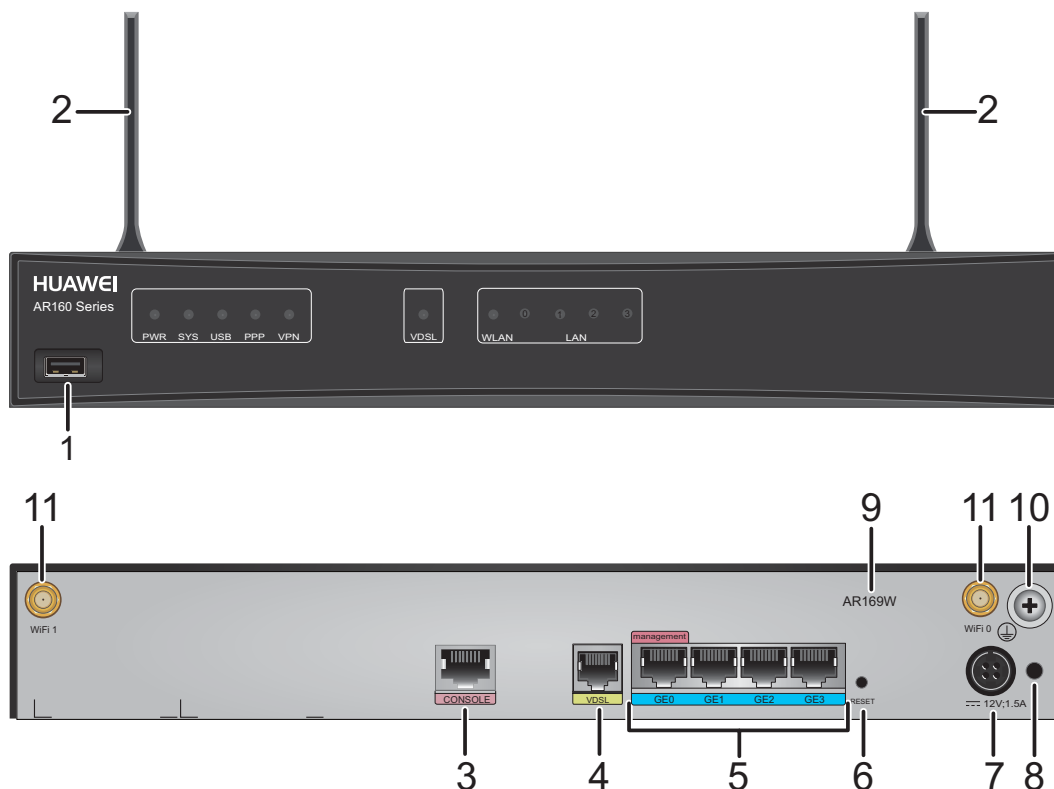
Table 3-412 Mapping between the AR169W router and software versions

Router Model	Software Version
AR169W	V200R006C10 and later versions

Appearance and Structure

[Figure 3-119](#) shows the appearance of the AR169W router.

Figure 3-119 AR169W appearance



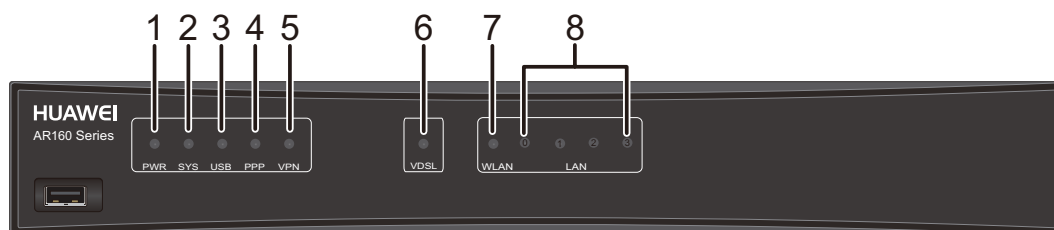
1	USB interface (host)	2	Two Wi-Fi antennas
3	Console interface	4	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 is a management interface and is used to upgrade the router. All GE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 24 W integrated power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 3-120 shows the locations of AR169W indicators.

Figure 3-120 Indicators on the AR169W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	USB	Red and green	Off: The system software is not running or is resetting.
			Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	VDSL	Green	Steady on: A link has been established on the VDSL interface.
			Blinking: Data is being transmitted or received on the VDSL interface.
			Off: No link is established on the VDSL interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-413](#) lists attributes of a console interface.

Table 3-413 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-414](#) lists attributes of a USB interface.

Table 3-414 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-415](#) lists attributes of a GE electrical interface.

Table 3-415 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-416](#) lists attributes of a VDSL interface.

Table 3-416 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-417](#) lists attributes of a Wi-Fi antenna interface.

Table 3-417 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

Table 3-418 lists the technical specifications of the AR169W router.

Table 3-418 AR169W router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one VDSL interface LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010238

3.5.36 AR169RW-P-M9

Version Mapping

Table 3-419 lists the mapping between the AR169RW-P-M9 and software versions.

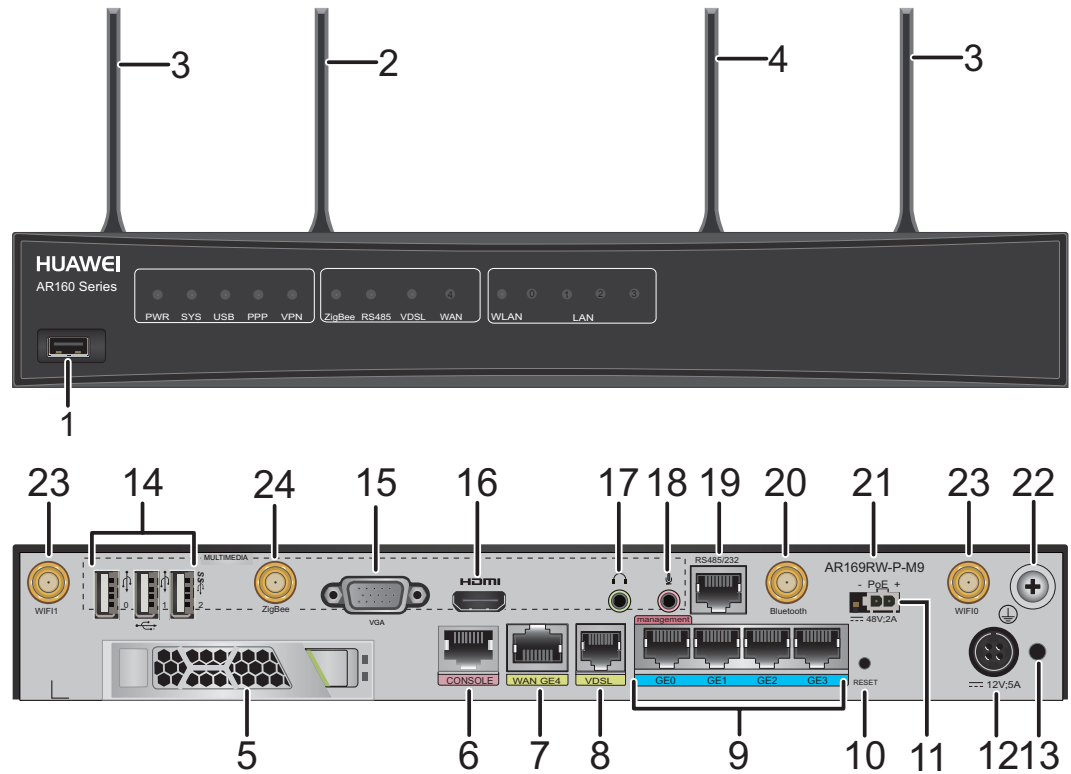
Table 3-419 Mapping between the AR169RW-P-M9 and software versions

Router Model	Software Version
AR169RW-P-M9	V200R007C00 and later versions

Appearance and Structure

Figure 3-121 shows the appearance of the AR169RW-P-M9.

Figure 3-121 AR169RW-P-M9 appearance



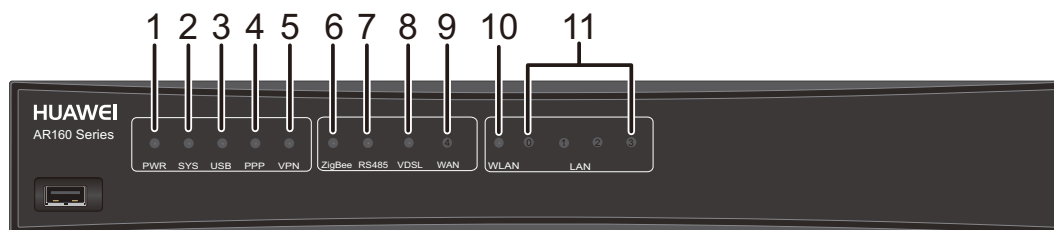
1	USB interface (host)	2	Bluetooth antenna
3	Two Wi-Fi antennas	4	ZigBee antenna
5	Hard disk drive interface NOTE 2.5-inch SATA hard disks are supported.	6	Console interface
7	WAN interface: GE electrical interface	8	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.
9	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> GE0 is a management interface and is used to upgrade the router. All GE LAN interfaces can be configured as WAN interfaces. 	10	RST button NOTE <ul style="list-style-type: none"> This button is used to reset the router. To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

11	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	12	Power jack NOTE The router uses a 60 W power adapter .
13	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	14	Three USB interfaces (host) NOTE The output power of the USB interface is 5 W. When a USB CD-ROM driver with high power consumption is connected to the USB interface, it must be powered by an independent external power source.
15	VGA interface	16	HDMI video interface
17	Earphone jack	18	Microphone jack
19	RS485/232 interface	20	Bluetooth antenna interface
21	Product model silkscreen	22	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
23	Two Wi-Fi antenna interfaces	24	ZigBee antenna interface

Indicator Description

Figure 3-122 shows the indicators on the AR169RW-P-M9.

Figure 3-122 Indicators on the AR169RW-P-M9



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB NOTE It is the indicator of the USB interface on the front panel.	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	ZigBee	Green	Steady on: The ZigBee link connection is normal. Blinking: The ZigBee link connection is normal, and data is being transmitted or received on the ZigBee link. Off: No ZigBee link is established.
7	RS485	Green	Steady on: An RS485 link has been established and is working normally. Off: No RS485 link is established or a communication failure occurs on the link.
8	VDSL	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.

Number	Indicator	Color	Description
9	WAN-side GE electrical interface indicator	Green	Steady on: A link has been established on the GE electrical interface. Blinking: Data is being transmitted or received on the GE electrical interface. Off: No link is established on the GE electrical interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-420](#) lists attributes of a console interface.

Table 3-420 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-421](#) lists attributes of a GE electrical interface.

Table 3-421 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-422](#) lists attributes of a USB interface.

Table 3-422 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-423](#) lists attributes of a VDSL interface.

Table 3-423 VDSL interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-424](#) lists attributes of a Wi-Fi antenna interface.

Table 3-424 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. [Table 3-425](#) lists attributes of an HDMI interface.

Table 3-425 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	HDMI video cable

VGA Interface

A video graphics array (VGA) interface provides VGA video output. [Table 3-426](#) lists attributes of a VGA interface.

Table 3-426 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal
Cable type	VGA video cable

Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. [Table 3-427](#) lists attributes of the Bluetooth interface.

Table 3-427 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	<ul style="list-style-type: none">● BT4.0● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	7.17.6 Bluetooth Antenna

RS485/232 Interface

An RS232/485 interface is a serial interface. [Table 3-428](#) lists attributes of an RS232/485 interface.

Table 3-428 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Baud rate (bit/s)	<ul style="list-style-type: none"> ● RS485: 19200 ● RS232: 9600
Cable type	7.15 Serial Cable (CON/RS232)

Technical Specifications

[Table 3-429](#) lists the technical specifications of the AR169RW-P-M9.

Table 3-429 Technical specifications of the AR169RW-P-M9

Item	Specification
OSP daughter card system parameters	
Processor	Quad-core, 1.91 GHz
Memory	8 GB
Hard disk	64 GB NOTE The actual available disk space is less than this value because the router system software occupies some space.
MPU system parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height

Item	Specification
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	42 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	<p>WAN interfaces: one GE electrical interface, and one VDSL interface</p> <p>LAN interfaces: four GE electrical interfaces, one Bluetooth antenna interface, two Wi-Fi antenna interfaces, and one ZigBee antenna interface</p> <p>Multimedia service interfaces: one headset jack, one microphone jack, one HDMI video interface, and one VGA interface</p>
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	<ul style="list-style-type: none"> ● With a hard disk installed: 5°C to 40°C (32°F to 104°F) ● With no hard disk installed: 0°C to 40°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	<ul style="list-style-type: none"> ● With a hard disk installed: < 3000 m (9843 ft.) ● With no hard disk installed: < 5000 m (16404.2 ft.)
Part number	50010252

Related Documents

Video: [Huawei ICT-Converged Smart Class Solution](#)

3.5.37 AR169W-P-M9

Version Mapping

Table 3-430 lists the mapping between the AR169W-P-M9 and software versions.

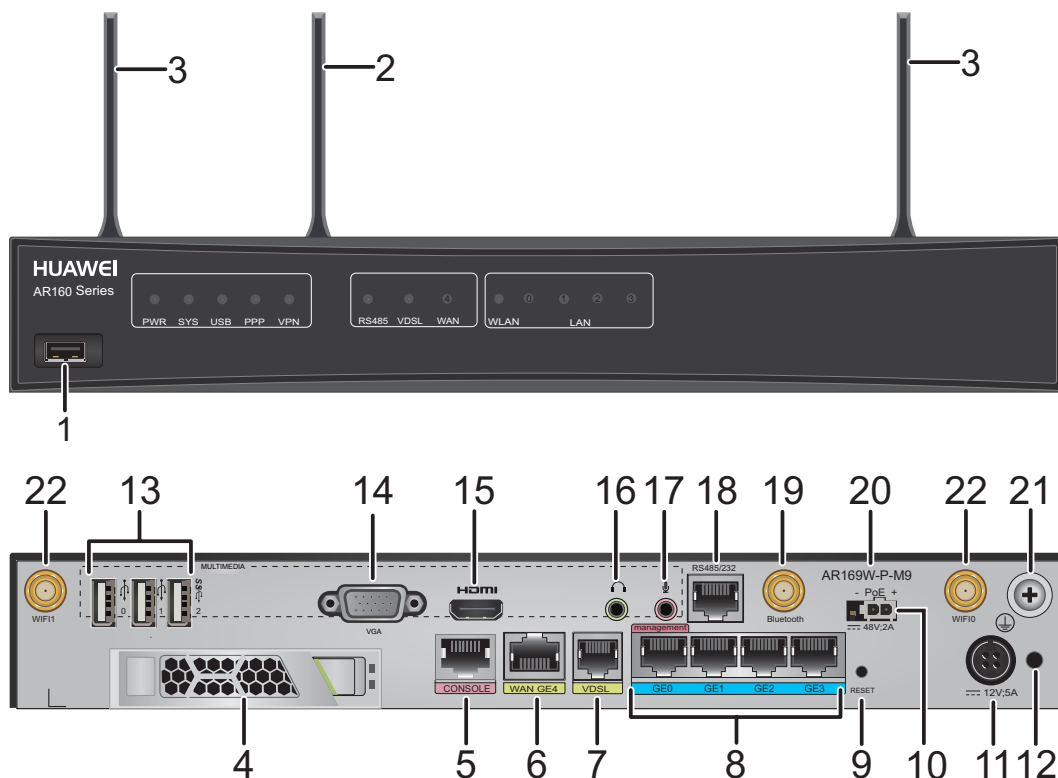
Table 3-430 Mapping between the AR169W-P-M9 and software versions

Router Model	Software Version
AR169W-P-M9	V200R007C00 and later versions

Appearance and Structure

Figure 3-123 shows the appearance of the AR169W-P-M9.

Figure 3-123 AR169W-P-M9 appearance



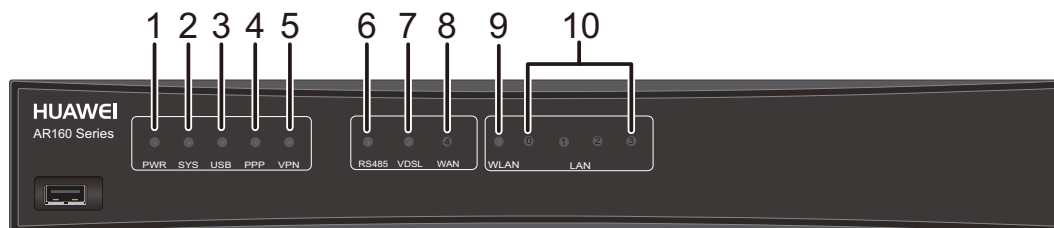
1	USB interface (host)	2	Bluetooth antenna
3	Two Wi-Fi antennas	4	Hard disk drive interface NOTE 2.5-inch SATA hard disks are supported.
5	Console interface	6	WAN interface: GE electrical interface
7	WAN interface: VDSL interface NOTE This interface supports the dying gasp function.	8	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.
9	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	10	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.

11	Power jack NOTE The router uses a 60 W power adapter .	12	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
13	Three USB interfaces (host) NOTE The output power of the USB interface is 5 W. When a USB CD-ROM driver with high power consumption is connected to the USB interface, it must be powered by an independent external power source.	14	VGA interface
15	HDMI video interface	16	Earphone jack
17	Microphone jack	18	RS485/232 interface
19	Bluetooth antenna interface	20	Product model silkscreen
21	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	22	Two Wi-Fi antenna interfaces

Indicator Description

Figure 3-124 shows the indicators on the AR169W-P-M9.

Figure 3-124 Indicators on the AR169W-P-M9



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.

Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.
3	USB NOTE It is the indicator of the USB interface on the front panel.	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	RS485	Green	Steady on: An RS485 link has been established and is working normally. Off: No RS485 link is established or a communication failure occurs on the link.
7	VDSL	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
8	WAN-side GE electrical interface indicator	Green	Steady on: A link has been established on the GE electrical interface. Blinking: Data is being transmitted or received on the GE electrical interface. Off: No link is established on the GE electrical interface.
9	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

Number	Indicator	Color	Description
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-431](#) lists attributes of a console interface.

Table 3-431 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-432](#) lists attributes of a GE electrical interface.

Table 3-432 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-433](#) lists attributes of a USB interface.

Table 3-433 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-434](#) lists attributes of a VDSL interface.

Table 3-434 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

Attribute	Description
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-435](#) lists attributes of a Wi-Fi antenna interface.

Table 3-435 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. [Table 3-436](#) lists attributes of an HDMI interface.

Table 3-436 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	HDMI video cable

VGA Interface

A video graphics array (VGA) interface provides VGA video output. [Table 3-437](#) lists attributes of a VGA interface.

Table 3-437 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal
Cable type	VGA video cable

Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. [Table 3-438](#) lists attributes of the Bluetooth interface.

Table 3-438 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	<ul style="list-style-type: none"> ● BT4.0 ● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	7.17.6 Bluetooth Antenna

RS485/232 Interface

An RS232/485 interface is a serial interface. [Table 3-439](#) lists attributes of an RS232/485 interface.

Table 3-439 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Baud rate (bit/s)	<ul style="list-style-type: none"> ● RS485: 19200 ● RS232: 9600
Cable type	7.15 Serial Cable (CON/RS232)

Technical Specifications

Table 3-440 lists the technical specifications of the AR169W-P-M9.

Table 3-440 Technical specifications of the AR169W-P-M9

Item	Specification
OSP daughter card system parameters	
Processor	Quad-core, 1.91 GHz
Memory	8 GB
Hard disk	64 GB NOTE The actual available disk space is less than this value because the router system software occupies some space.
MPU system parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Supported
Physical specifications	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	

Item	Specification
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	41 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, and one VDSL interface LAN interfaces: four GE electrical interfaces, one Bluetooth antenna interface, and two Wi-Fi antenna interfaces Multimedia service interfaces: one headset jack, one microphone jack, one HDMI video interface, and one VGA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● With a hard disk installed: 5°C to 40°C (32°F to 104°F) ● With no hard disk installed: 0°C to 40°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.

Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	<ul style="list-style-type: none">● With a hard disk installed: < 3000 m (9843 ft.)● With no hard disk installed: < 5000 m (16404.2 ft.)
Part number	50010223

Related Documents

Video: [Huawei ICT-Converged Smart Class Solution](#)

3.6 AR200 Series

3.6.1 AR201

Version Mapping

[Table 3-441](#) lists the mapping between the AR201 router and software versions.

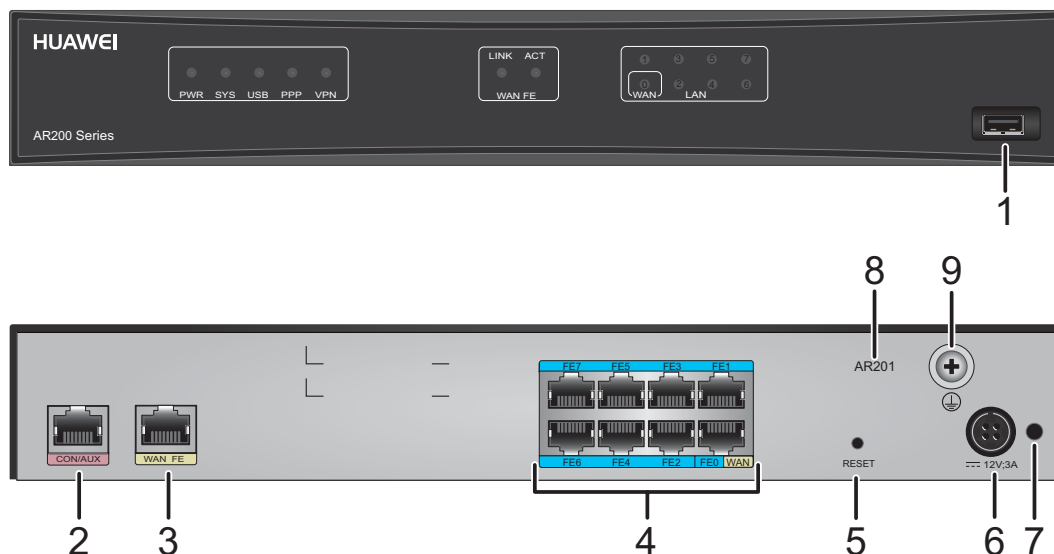
Table 3-441 Mapping between the AR201 router and software versions

Router Model	Software Version
AR201	V200R002C00 and later versions

Appearance and Structure

[Figure 3-125](#) shows the appearance of the AR201 router.

Figure 3-125 AR201 appearance



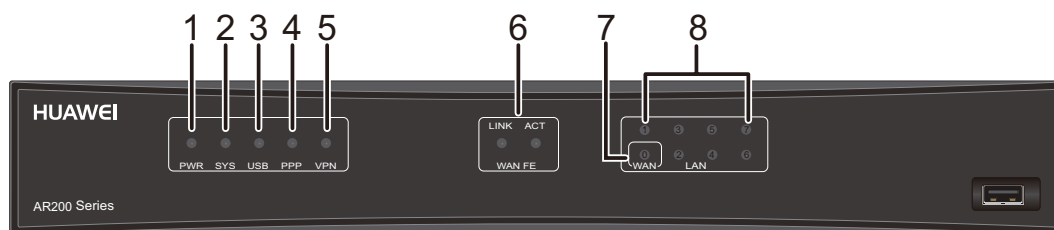
1	USB interface (host)	2	CON/AUX interface NOTE The AR201 does not support AUX login.
3	WAN interface: FE electrical interface	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Indicator Description

Figure 3-126 shows the locations of AR201 indicators.

Figure 3-126 Indicators on the AR201



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: The WAN interface is not transmitting or receiving data.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-442](#) lists the CON/AUX interface attributes.

Table 3-442 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-443](#) lists attributes of an FE electrical interface.

Table 3-443 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-444](#) lists attributes of a USB interface.

Table 3-444 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Technical Specifications

Table 3-445 lists the technical specifications of the AR201 router.

Table 3-445 AR201 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	12.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353839

3.6.2 AR201VW-P

Version Mapping

[Table 3-446](#) lists the mapping between the AR201VW-P router and software versions.

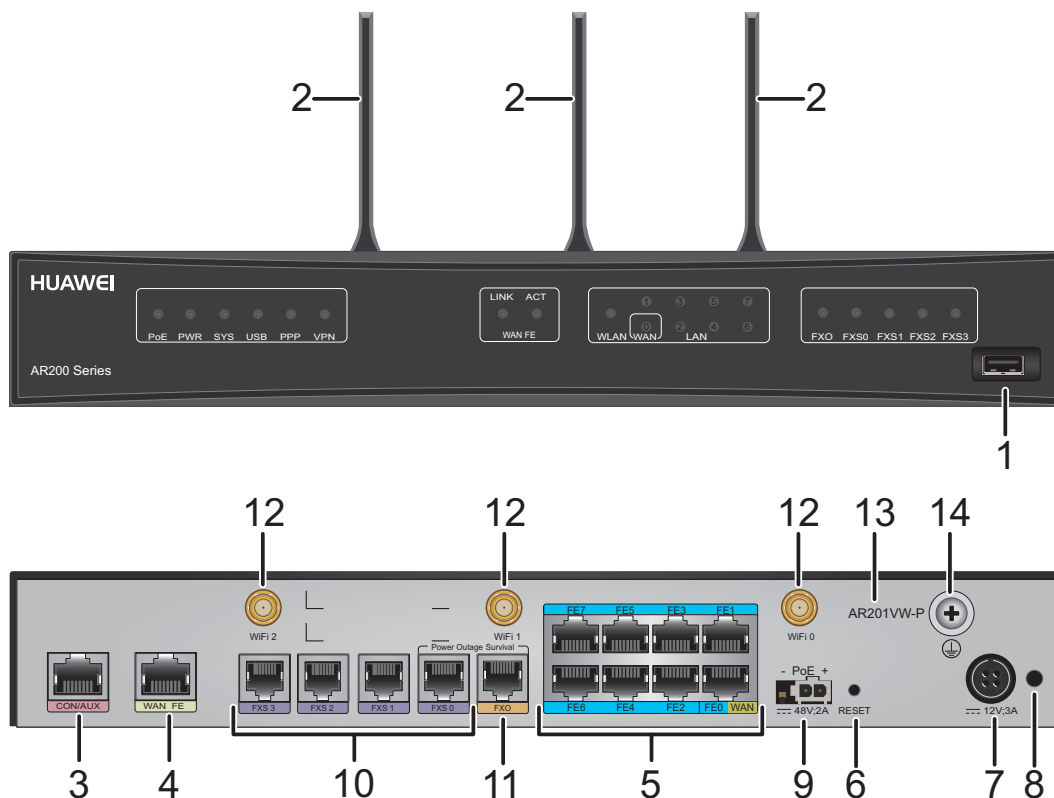
Table 3-446 Mapping between the AR201VW-P router and software versions

Router Model	Software Version
AR201VW-P	V200R003C00 and later versions

Appearance and Structure

[Figure 3-127](#) shows the appearance of the AR201VW-P router.

Figure 3-127 AR201VW-P appearance



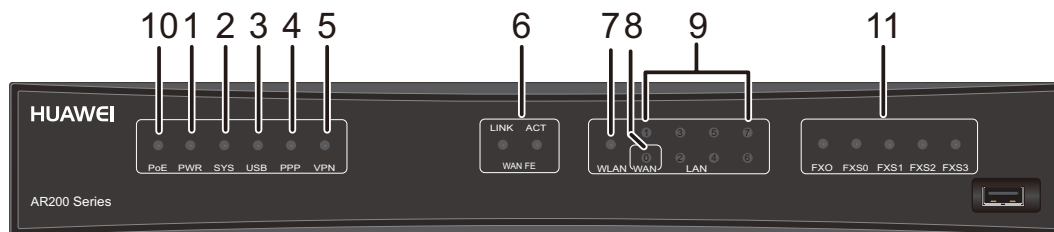
1	USB interface (host)	2	Three Wi-Fi antennas
3	CON/AUX interface NOTE The AR201VW-P does not support AUX login.	4	WAN interface: FE electrical interface
5	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 4-pin 36 W power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

9	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.	10	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .
11	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .	12	Three Wi-Fi antenna interfaces
13	Product model silkscreen	14	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-128 shows the indicators on the AR201VW-P router.

Figure 3-128 Indicators on the AR201VW-P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. Off: The system software is not running or is resetting.

Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: The WAN interface is not transmitting or receiving data.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Number	Indicator	Color	Description
10	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
11	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-447](#) lists the CON/AUX interface attributes.

Table 3-447 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-448](#) lists attributes of an FE electrical interface.

Table 3-448 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-449](#) lists attributes of a USB interface.

Table 3-449 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-450](#) lists attributes of an FXS interface.

Table 3-450 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection

Attribute	Description
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-451](#) lists attributes of an FXO interface.

Table 3-451 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-452](#) lists attributes of a Wi-Fi antenna interface.

Table 3-452 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency band supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	450 Mbit/s

Attribute	Description
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-453](#) lists the technical specifications of the AR201VW-P router.

Table 3-453 AR201VW-P technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W

Item	Specification
RPS power supply	Not supported
PoE power supply	Supported (FE0-FE7)
Power consumption	
Maximum power consumption	23 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: 1 FE electrical interface LAN interfaces: eight FE electrical interfaces, in which FE0 can be configured as a WAN interface and three Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces and one FXO interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354975

3.6.3 AR206

Version Mapping

Table 3-454 lists the mapping between the AR206 router and software versions.

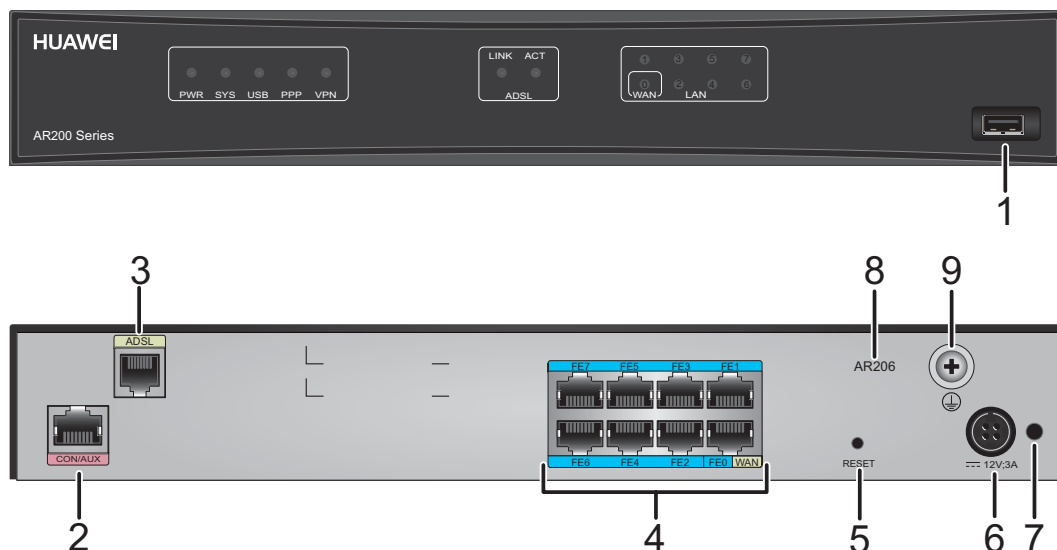
Table 3-454 Mapping between the AR206 router and software versions

Router Model	Software Version
AR206	V200R002C00 and later versions

Appearance and Structure

Figure 3-129 shows the appearance of the AR206 router.

Figure 3-129 AR206 appearance



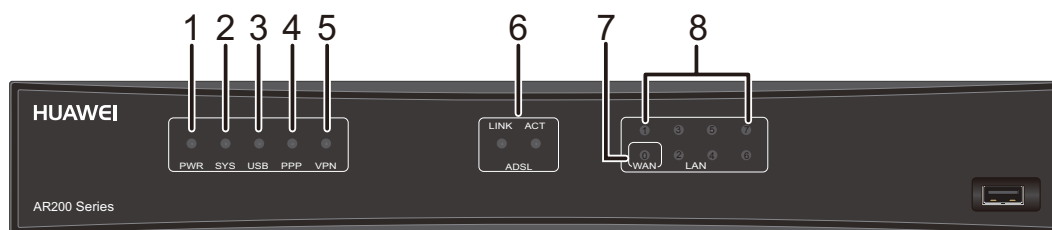
1	USB interface (host)	2	CON/AUX interface NOTE The AR206 does not support AUX login.
3	WAN interface: ADSL-B/J interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.

5	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	6	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 4-pin 36 W power adapter.</p>
7	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	8	Product model silkscreen
9	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	-	-

Indicator Description

Figure 3-130 shows the locations of AR206 indicators.

Figure 3-130 Indicators on the AR206



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	<p>Slow blinking green: The system is running properly.</p> <p>Fast blinking green: The system is being powered on or restarting.</p> <p>Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.</p>

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-455](#) lists the CON/AUX interface attributes.

Table 3-455 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-456](#) lists attributes of an FE electrical interface.

Table 3-456 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-457](#) lists attributes of a USB interface.

Table 3-457 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-458](#) lists attributes of an ADSL-B/J interface.

Table 3-458 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-459](#) lists the technical specifications of the AR206 router.

Table 3-459 AR206 router technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.1 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

Item	Specification
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-B/J interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353840

3.6.4 AR207

Version Mapping

Table 3-460 lists the mapping between the AR207 router and software versions.

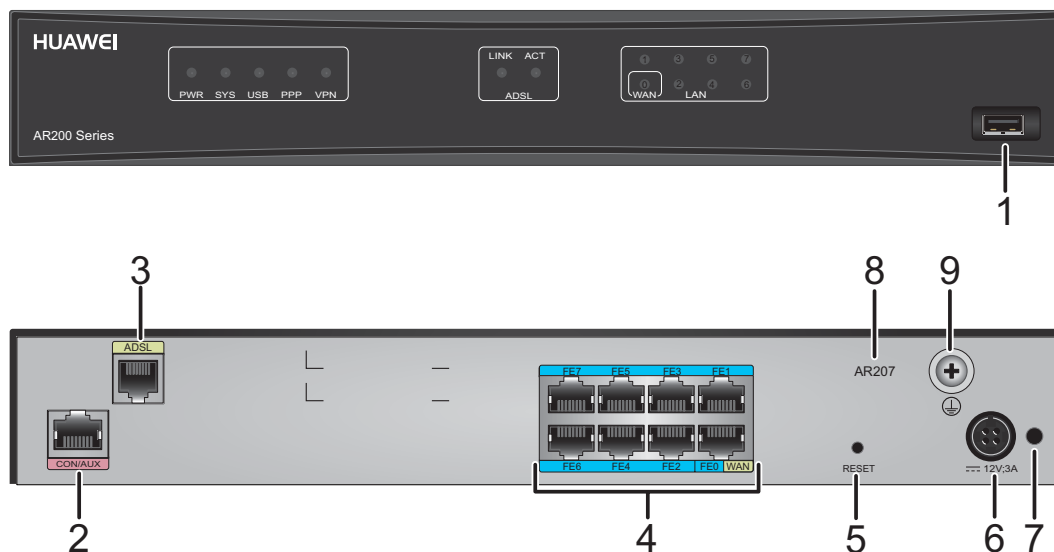
Table 3-460 Mapping between the AR207 router and software versions

Router Model	Software Version
AR207	V200R002C00 and later versions

Appearance and Structure

Figure 3-131 shows the appearance of the AR207 router.

Figure 3-131 AR207 appearance



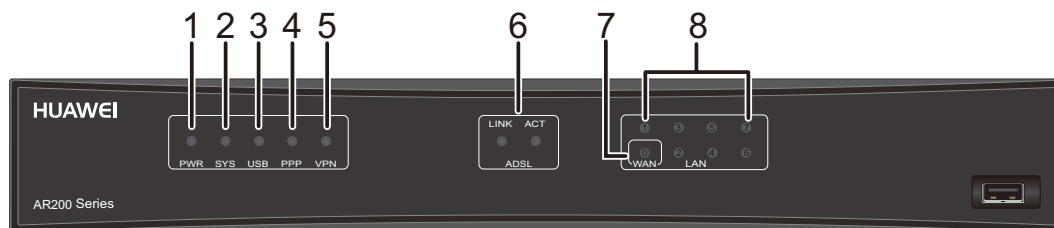
1	USB interface (host)	2	CON/AUX interface NOTE The AR207 does not support AUX login.
3	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Indicator Description

Figure 3-132 shows the locations of AR207 indicators.

Figure 3-132 Indicators on the AR207



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-461](#) lists the CON/AUX interface attributes.

Table 3-461 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-462](#) lists attributes of an FE electrical interface.

Table 3-462 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-463](#) lists attributes of a USB interface.

Table 3-463 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-464](#) lists attributes of an ADSL-A/M interface.

Table 3-464 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-465](#) lists the technical specifications of the AR207 router.

Table 3-465 AR207 router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported

Item	Specification
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.1 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353841

3.6.5 AR207G-HSPA+7

Version Mapping

[Table 3-466](#) lists the mapping between the AR207G-HSPA+7 router and software versions.

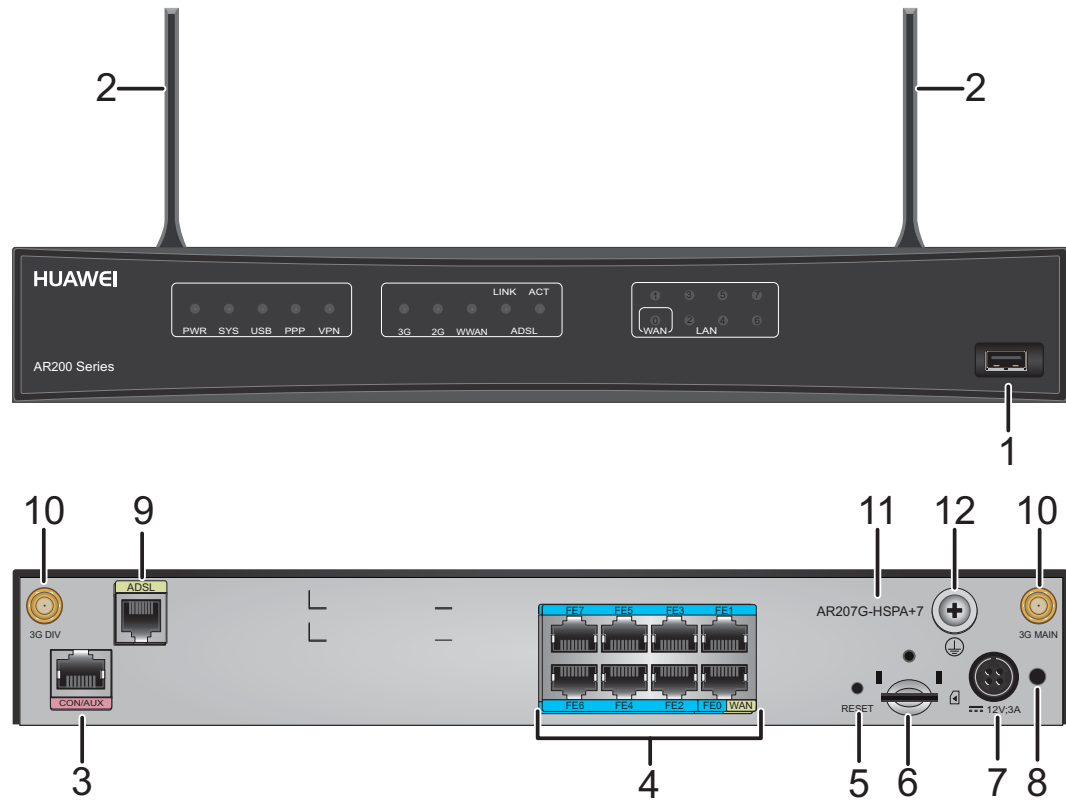
Table 3-466 Mapping between the AR207G-HSPA+7 router and software versions

Router Model	Software Version
AR207G-HSPA+7	V200R002C01 and later versions

Appearance and Structure

[Figure 3-133](#) shows the appearance of the AR207G-HSPA+7 router.

Figure 3-133 AR207G-HSPA+7 appearance



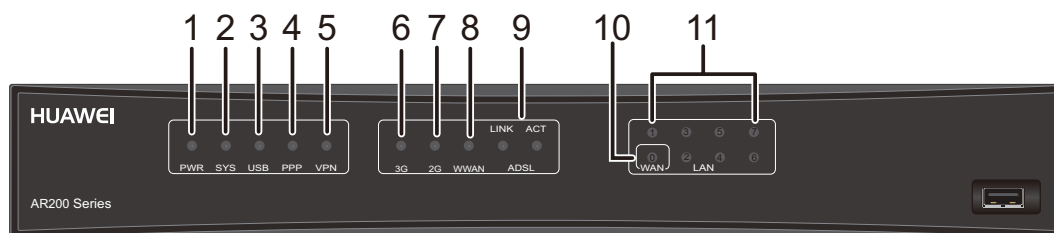
1	USB interface (host)	2	Two 3G antennas
3	CON/AUX interface NOTE The AR207G-HSPA+7 does not support AUX login.	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	SIM card slot NOTE The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.

7	Power jack NOTE The router uses a 4-pin 36 W power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.	10	3G-HSPA+7 antenna interface
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 3-134 shows the locations of AR207G-HSPA+7 indicators.

Figure 3-134 Indicators on the AR207G-HSPA+7



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
Off: The system software is not running or is resetting.			
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high.
			Fast blinking: The 3G signal strength is medium.
			Slow blinking: The 3G signal strength is low.
			Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high.
			Fast blinking: The 2G signal strength is medium.
			Slow blinking: The 2G signal strength is low.
			Off: No 2G signal is available.
8	WWAN	Green	Steady on: A 3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 3G/2G connection.
			Off: The 3G/2G connection has not been established or is inactive.
9	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.

Number	Indicator	Color	Description
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-467](#) lists the CON/AUX interface attributes.

Table 3-467 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-468](#) lists attributes of an FE electrical interface.

Table 3-468 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-469](#) lists attributes of a USB interface.

Table 3-469 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-470](#) lists attributes of an ADSL-A/M interface.

Table 3-470 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

3G-HSPA+7 Antenna Interface

3G antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. [Table 3-471](#) lists attributes of a 3G antenna interface.

Table 3-471 3G antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● UMTS/HSPA: 900/2100 (MHz) ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s

Attribute	Description
Cable type	7.17.4 3G Antenna

Technical Specifications

[Table 3-472](#) lists the technical specifications of the AR207G-HSPA+7 routers.

Table 3-472 AR207G-HSPA+7 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.1 W

Item	Specification
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one ADSL-A/M interface and two 3G-HSPA+7 antenna interfaces LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354074

3.6.6 AR207V

Version Mapping

[Table 3-473](#) lists the mapping between the AR207V router and software versions.

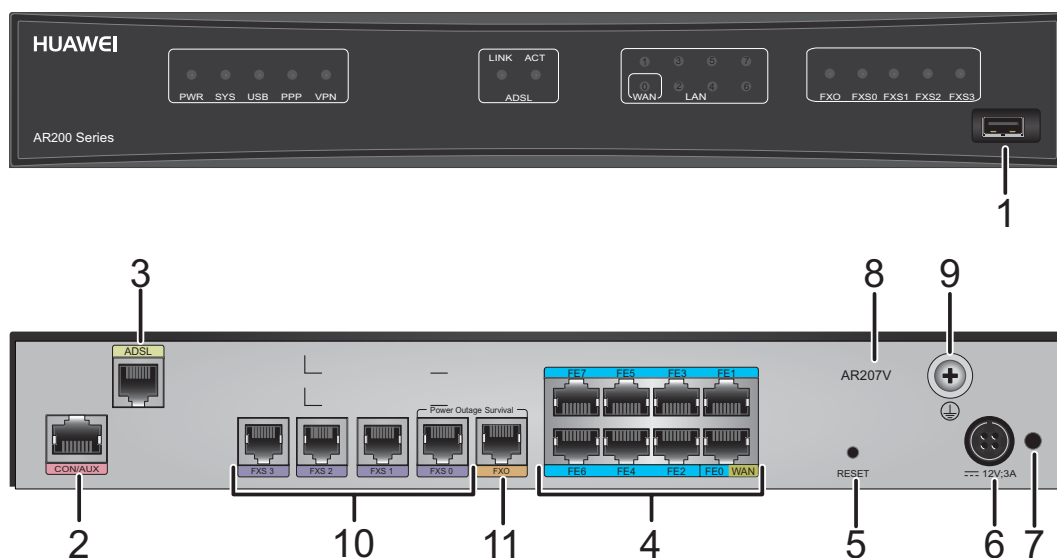
Table 3-473 Mapping between the AR207V router and software versions

Router Model	Software Version
AR207V	V200R002C00 and later versions

Appearance and Structure

Figure 3-135 shows the appearance of the AR207V router.

Figure 3-135 AR207V appearance



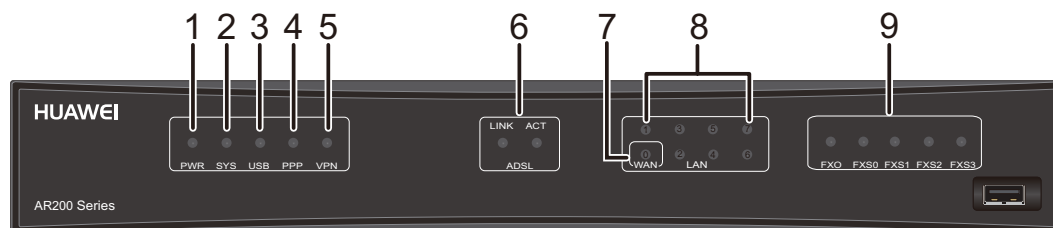
1	USB interface (host)	2	CON/AUX interface NOTE The AR207V does not support AUX login.
3	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.

5	<p>RST button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	6	<p>Power jack</p> <p>NOTE</p> <p>The router uses a 4-pin 36 W power adapter.</p>
7	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	8	<p>Product model silkscreen</p>
9	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	10	<p>Four FXS interfaces</p> <p>NOTE</p> <p>The FXS interfaces can be connected to analog telephones using standard telephone cables.</p>
11	<p>One FXO interface</p> <p>NOTE</p> <p>The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable.</p>	-	-

Indicator Description

Figure 3-136 shows the locations of AR207V indicators.

Figure 3-136 Indicators on the AR207V



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
9	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-474](#) lists the CON/AUX interface attributes.

Table 3-474 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-475](#) lists attributes of an FE electrical interface.

Table 3-475 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-476](#) lists attributes of a USB interface.

Table 3-476 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-477](#) lists attributes of an ADSL-A/M interface.

Table 3-477 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-478](#) lists attributes of an FXS interface.

Table 3-478 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-479](#) lists attributes of an FXO interface.

Table 3-479 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-480](#) lists the technical specifications of the AR207V router.

Table 3-480 AR207V router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz

Item	Specification
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	22.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353842

3.6.7 AR207V-P

Version Mapping

Table 3-481 lists the mapping between the AR207V-P router and software versions.

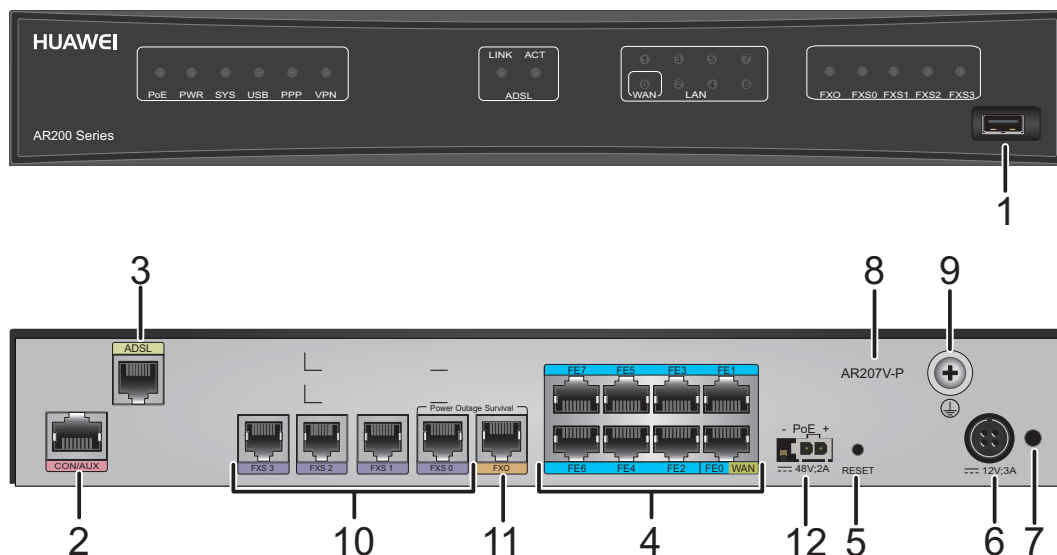
Table 3-481 Mapping between the AR207V-P router and software versions

Router Model	Software Version
AR207V-P	V200R002C00 and later versions

Appearance and Structure

Figure 3-137 shows the appearance of the AR207V-P router.

Figure 3-137 AR207V-P appearance



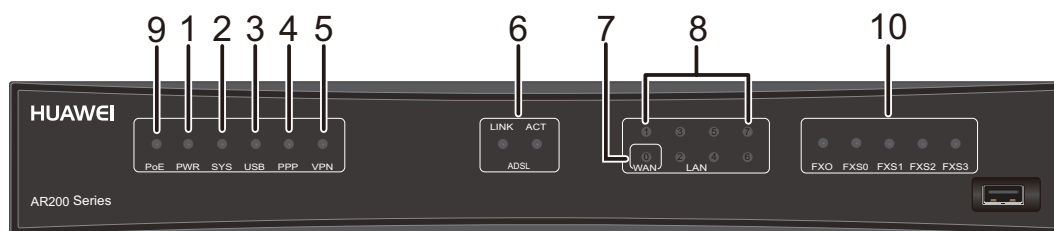
1	USB interface (host)	2	CON/AUX interface NOTE The AR207V-P does not support AUX login.
---	----------------------	---	---

3	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	10	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .
11	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .	12	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.

Indicator Description

Figure 3-138 shows the locations of AR207V-P indicators.

Figure 3-138 Indicators on the AR207V-P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
9	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
10	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-482](#) lists the CON/AUX interface attributes.

Table 3-482 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-483](#) lists attributes of an FE electrical interface.

Table 3-483 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-484](#) lists attributes of a USB interface.

Table 3-484 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-485](#) lists attributes of an ADSL-A/M interface.

Table 3-485 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-486](#) lists attributes of an FXS interface.

Table 3-486 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-487](#) lists attributes of an FXO interface.

Table 3-487 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 3-488](#) lists the technical specifications of the AR207V-P router.

Table 3-488 AR207V-P router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	

Item	Specification
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Supported (FE0-FE7)
Power consumption	
Maximum power consumption	22.6 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353843

3.6.8 AR207VW

Version Mapping

Table 3-489 lists the mapping between the AR207VW router and software versions.

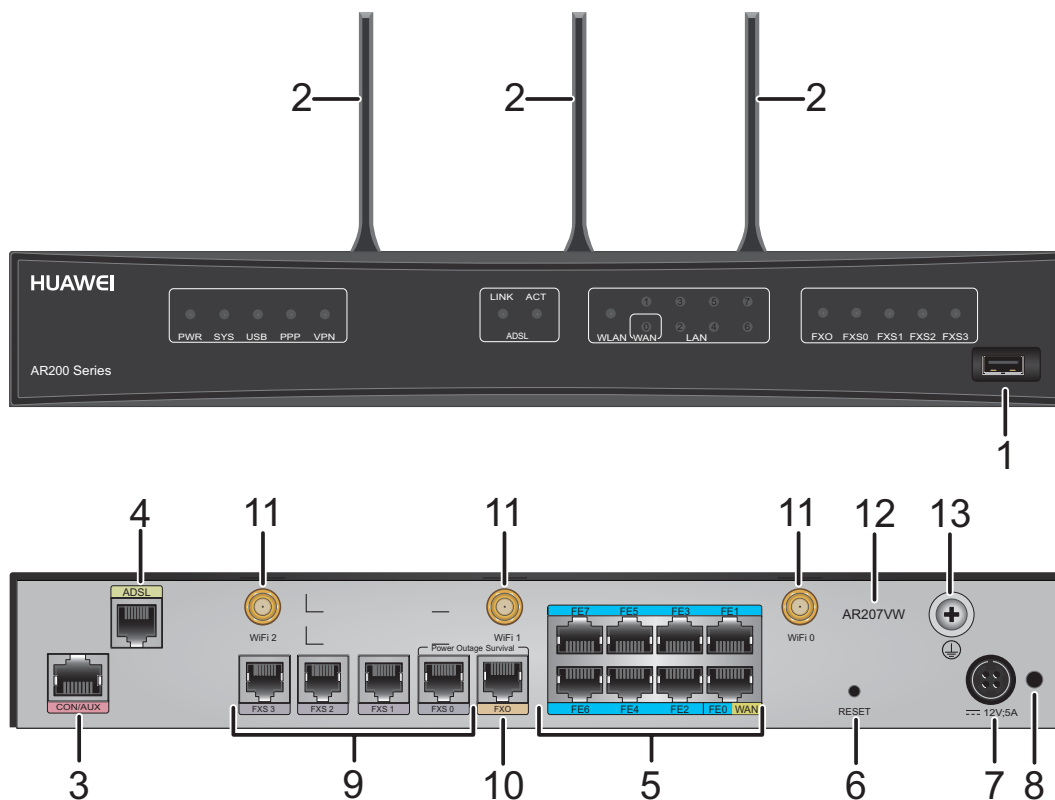
Table 3-489 Mapping between the AR207VW router and software versions

Router Model	Software Version
AR207VW	V200R003C00 and later versions

Appearance and Structure

Figure 3-139 shows the appearance of the AR207VW router.

Figure 3-139 AR207VW appearance

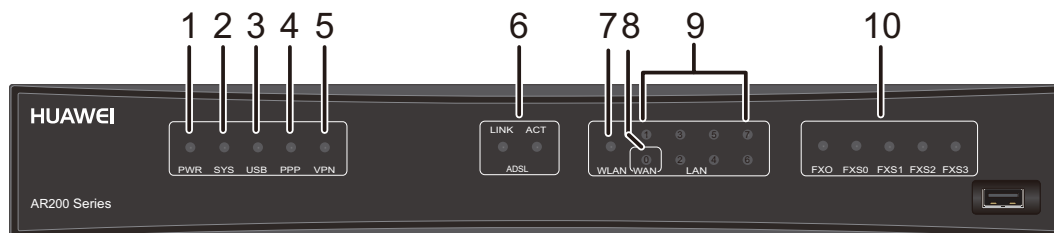


1	USB interface (host)	2	Three Wi-Fi antennas
3	CON/AUX interface NOTE The AR207VW does not support AUX login.	4	WAN interface: ADSL-A/M interface NOTE This interface supports the dying gasp function.
5	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces. 	6	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack NOTE The router uses a 60 W power adapter .	8	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
9	Four FXS interfaces NOTE The FXS interfaces can be connected to analog telephones using standard telephone cables .	10	One FXO interface NOTE The FXO interface can be connected to a public switched telephone network (PSTN) using a standard telephone cable .
11	Three Wi-Fi antenna interfaces	12	Product model silkscreen
13	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 3-140 shows the indicators on the AR207VW router.

Figure 3-140 Indicators on the AR207VW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The IPSec service is running normally. Off: The IPSec service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: The ADSL interface is not transmitting or receiving data.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.

Number	Indicator	Color	Description
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
10	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-490](#) lists the CON/AUX interface attributes.

Table 3-490 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-491](#) lists attributes of an FE electrical interface.

Table 3-491 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-492](#) lists attributes of a USB interface.

Table 3-492 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 3-493](#) lists attributes of an ADSL-A/M interface.

Table 3-493 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. [Table 3-494](#) lists attributes of an FXS interface.

Table 3-494 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO Interface

A foreign exchange office (FXO) interface is a loop trunk interface and can connect to a PSTN network. [Table 3-495](#) lists attributes of an FXO interface.

Table 3-495 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	<ul style="list-style-type: none"> ● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-496](#) lists attributes of a Wi-Fi antenna interface.

Table 3-496 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency band supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	450 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Technical Specifications

[Table 3-497](#) lists the technical specifications of the AR207VW router.

Table 3-497 AR207VW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	20.7 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which FE0 can be configured as a WAN interface and three Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces and one FXO interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354976

3.6.9 AR208E

Version Mapping

[Table 3-498](#) lists the mapping between the AR208E router and software versions.

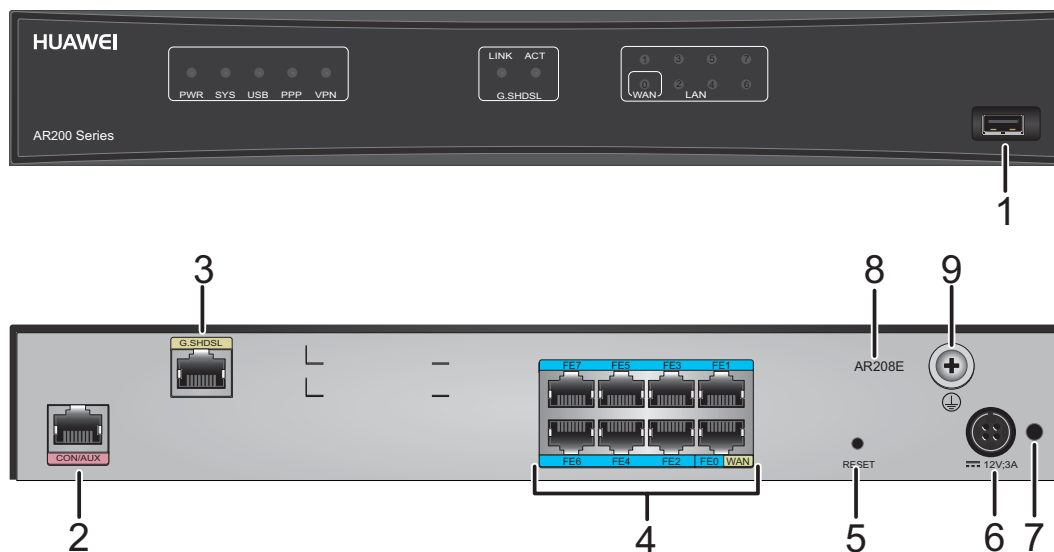
Table 3-498 Mapping between the AR208E router and software versions

Router Model	Software Version
AR208E	V200R002C00 and later versions

Appearance and Structure

[Figure 3-141](#) shows the appearance of the AR208E router.

Figure 3-141 AR208E appearance



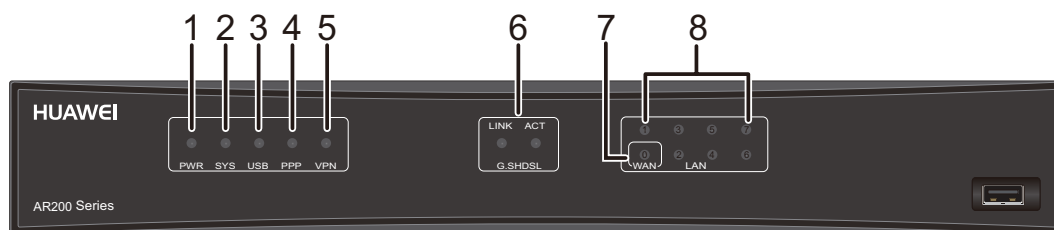
1	USB interface (host)	2	CON/AUX interface NOTE The AR208E does not support AUX login.
3	WAN interface: G.SHDSL interface NOTE This interface supports the dying gasp function.	4	LAN interfaces: eight FE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interface FE0 can be configured as a WAN interface. FE6 is a management interface and is used to upgrade the router. V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
5	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack NOTE The router uses a 4-pin 36 W power adapter .
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Indicator Description

Figure 3-142 shows the locations of AR208E indicators.

Figure 3-142 Indicators on the AR208E



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

Number	Indicator	Color	Description
5	VPN	Green	Steady on: The IPsec service is running normally. Off: The IPsec service is unavailable.
6	G.SHDSL: LINK	Green	Steady on: A link has been established on the G.SHDSL interface. Off: No link is established on the G.SHDSL interface.
	G.SHDSL: ACT	Green	Blinking: Data is being transmitted or received on the G.SHDSL interface. Off: No data is being transmitted or received on the G.SHDSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-499](#) lists the CON/AUX interface attributes.

Table 3-499 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-500](#) lists attributes of an FE electrical interface.

Table 3-500 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-501](#) lists attributes of a USB interface.

Table 3-501 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 3-502](#) lists attributes of a G.SHDSL interface.

Table 3-502 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

Technical Specifications

[Table 3-503](#) lists the technical specifications of the AR208E router.

Table 3-503 AR208E router technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.), 1 U height
Weight	2.8 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	14.7 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one G.SHDSL interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353844

3.7 AR1200 Series

3.7.1 AR1220-8GE

Version Mapping

Table 3-504 lists the mapping between the AR1220-8GE router and software versions.

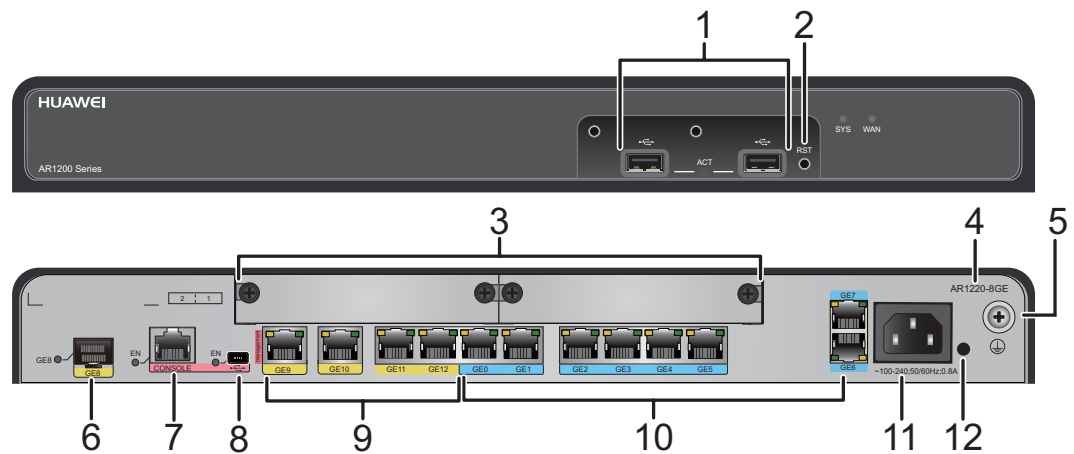
Table 3-504 Mapping between the AR1220-8GE router and software versions


Router Model	Software Version
AR1220-8GE	V200R007C00, V200R008C50 and later versions

Appearance and Structure

Figure 3-143 shows the appearance of the AR1220-8GE router.

Figure 3-143 AR1220-8GE appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen
5	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	6	WAN interface: GE optical interface
7	CONSOLE interface	8	<p>Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>
9	<p>WAN interfaces: four GE electrical interfaces</p> <p>NOTE</p> <p>GE9 is a management interface and is used to upgrade the router.</p>	10	<p>LAN interfaces: eight GE electrical interfaces</p> <p>NOTE</p> <p>All GE LAN interfaces can be configured as WAN interfaces.</p>
11	<p>AC power jack</p> <p>NOTE</p> <p>Use an AC power cable to connect the router to an external power source.</p>	12	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>

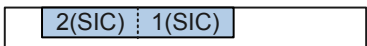
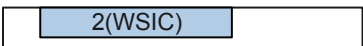
Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-144 shows the slot distribution of the AR1220-8GE router.

Figure 3-144 Slot distribution of the AR1220-8GE

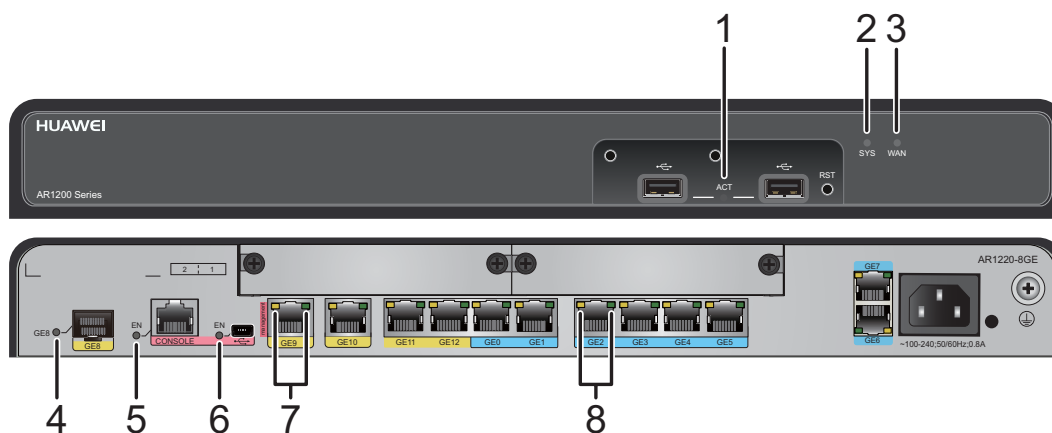
Device Model		Slot Distribution	Slot Combination
AR1220-8GE	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 can be combined into new slot 2.

Indicator Description

Figure 3-145 shows the indicators on the AR1220-8GE router.

Figure 3-145 Indicators on the AR1220-8GE



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The five GE interfaces are all disconnected or inactive.
4	GE optical interface indicator (WAN)	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the interface.
			Off: No link is established on the interface.
5	EN (console interface)	Green	Steady on: The console interface is enabled.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The console interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicator (WAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
8	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			Off: No data is being transmitted or received on the interface.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-505](#) lists attributes of a console interface.

Table 3-505 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-506](#) lists attributes of a Mini USB interface.

Table 3-506 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-507](#) lists attributes of a GE electrical interface.

Table 3-507 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 3-508](#) lists attributes of a GE optical interface.

Table 3-508 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-509](#) lists attributes of a USB interface.

Table 3-509 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220-8GE router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-510 lists the technical specifications of the AR1220-8GE routers.

Table 3-510 AR1220-8GE technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	0.8 A

Item	Specification
Maximum output power	25 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	14 W
Maximum power consumption	15 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces	WAN interfaces: four GE electrical interfaces and one GE optical interface LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351BXS

3.7.2 AR1220-AC

Version Mapping

Table 3-511 lists the mapping between the AR1220-AC router and software versions.

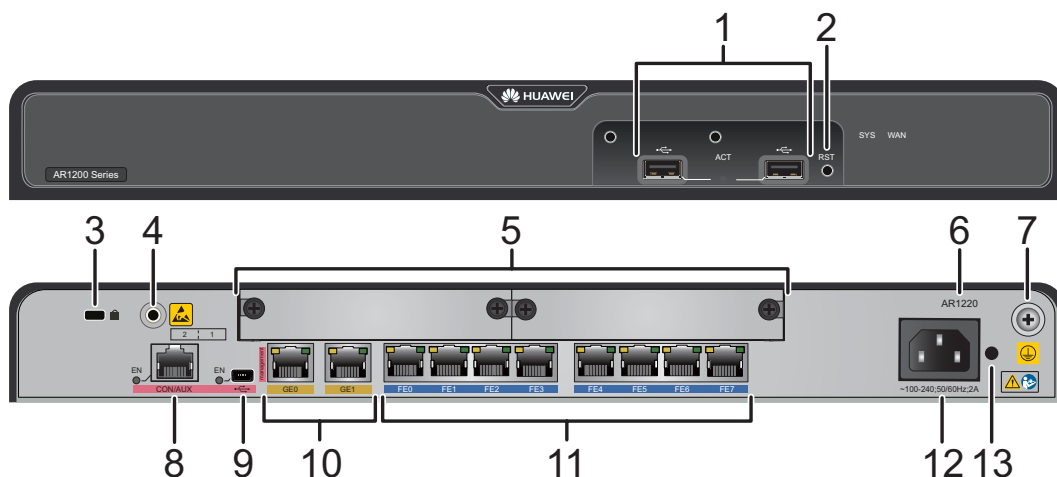
Table 3-511 Mapping between the AR1220-AC router and software versions


Router Model	Software Version
AR1220-AC	V200R001C00 and later versions

Appearance and Structure

Figure 3-146 shows the appearance of the AR1220-AC router.

Figure 3-146 AR1220-AC appearance



<p>1 Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	<p>2 RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
--	---

3	Security lock	4	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	8	CON/AUX interface NOTE The AR1220-AC does not support AUX login.
9	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	10	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
11	LAN interfaces: eight FE electrical interfaces NOTE V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.	12	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
13	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

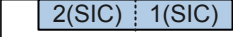

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-147 shows the slots layout on the AR1220-AC router.

Figure 3-147 Slot distribution of the AR1220-AC router

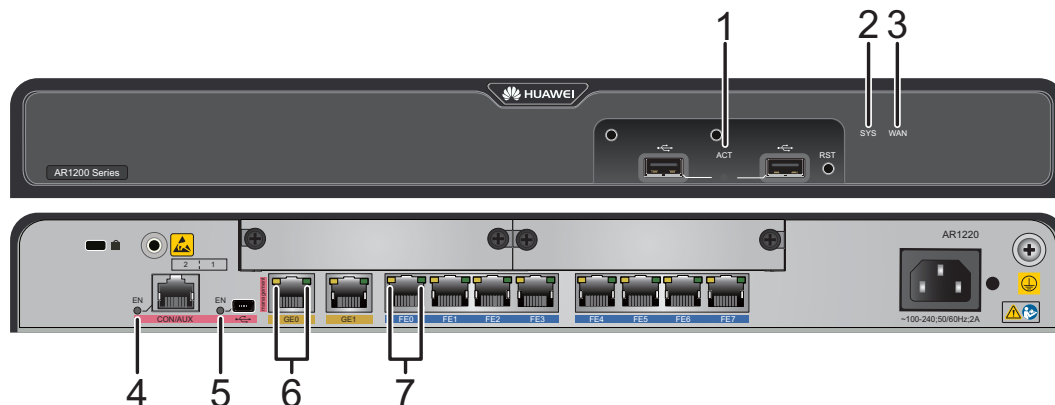
Device Model		Slot Distribution	Slot Combination
AR1220-AC	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-148 shows the indicators on the AR1220-AC router.

Figure 3-148 Indicators on the AR1220-AC



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.

Number	Indicator	Color	Description
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Number	Indicator	Color	Description
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-512](#) lists the CON/AUX interface attributes.

Table 3-512 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-513](#) lists attributes of a Mini USB interface.

Table 3-513 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-514](#) lists attributes of an FE electrical interface.

Table 3-514 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-515](#) lists attributes of a GE electrical interface.

Table 3-515 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

Attribute	Description
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-516](#) lists attributes of a USB interface.

Table 3-516 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220-AC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-149](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-149 Airflow



Technical Specifications

[Table 3-517](#) lists the technical specifications of the AR1220-AC router.

Table 3-517 AR1220-AC technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	27 W
Maximum power consumption	32 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352932

3.7.3 AR1220-DC

Version Mapping

[Table 3-518](#) lists the mapping between the AR1220-DC router and software versions.

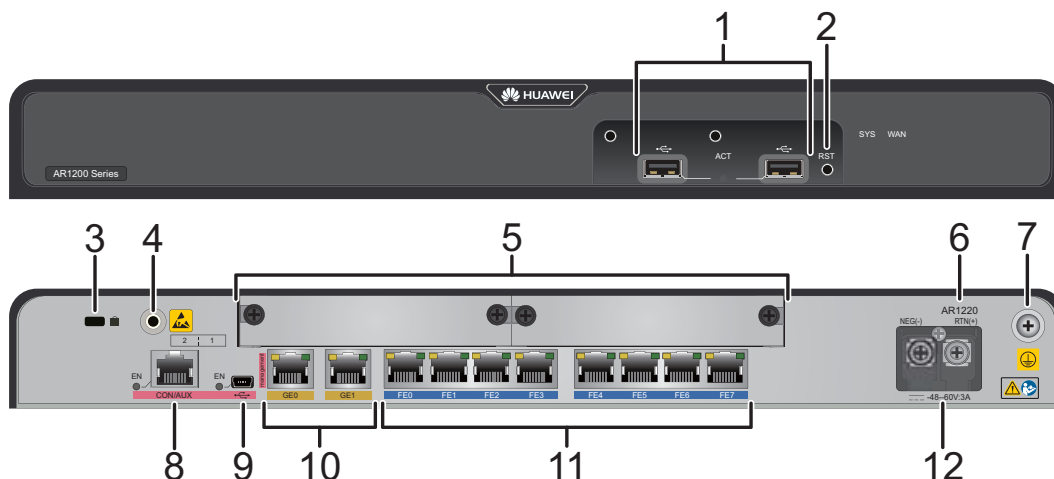
Table 3-518 Mapping between the AR1220-DC router and software versions


Router Model	Software Version
AR1220-DC	V200R001C01, V200R002C02 and later versions NOTE The AR1220-DC is not supported in V200R002C00 and V200R002C01.

Appearance and Structure

[Figure 3-150](#) shows the appearance of the AR1220-DC router.

Figure 3-150 AR1220-DC appearance



<p>1 Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	<p>2 RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
<p>3 Security lock</p>	<p>4 ESD jack</p> <p>NOTE</p> <p>When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.</p>
<p>5 Two SIC slots</p>	<p>6 Product model silkscreen</p>
<p>7 Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	<p>8 CON/AUX interface</p> <p>NOTE</p> <p>The AR1220-DC does not support AUX login.</p>
<p>9 Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>	<p>10 WAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface and is used to upgrade the router.</p>

11	LAN interfaces: eight FE electrical interfaces NOTE V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.	12	DC power terminals NOTE Use DC power cables to connect the router to an external power source.
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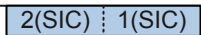

Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-151 shows the slot distribution of the AR1220-DC router.

Figure 3-151 Slot distribution of the AR1220-DC router

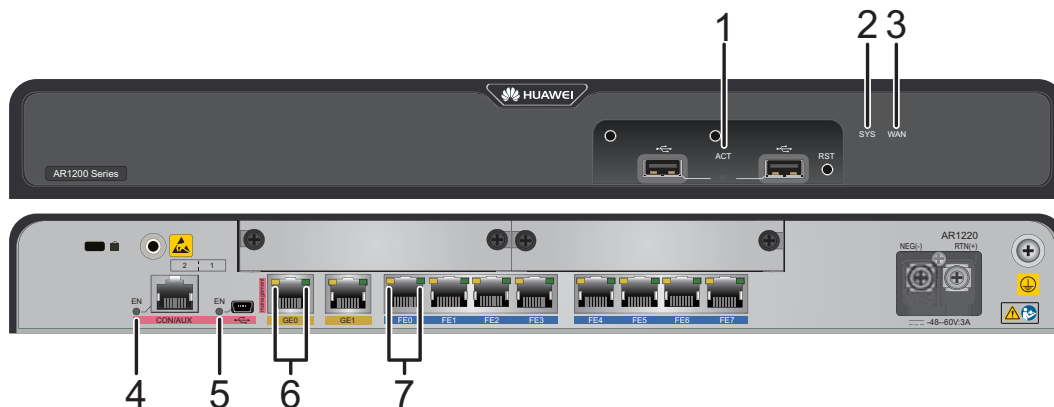
Device Model		Slot Distribution	Slot Combination
AR1220-DC	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-152 shows the indicators on the AR1220-DC router.

Figure 3-152 Indicators on the AR1220-DC



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-519](#) lists the CON/AUX interface attributes.

Table 3-519 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none">● Data circuit terminal equipment (DCE)● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-520](#) lists attributes of a Mini USB interface.

Table 3-520 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-521](#) lists attributes of an FE electrical interface.

Table 3-521 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-522](#) lists attributes of a GE electrical interface.

Table 3-522 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-523](#) lists attributes of a USB interface.

Table 3-523 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220-DC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-153](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-153 Airflow



Technical Specifications

[Table 3-524](#) lists the technical specifications of the AR1220-DC router.

Table 3-524 AR1220-DC technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash	256 MB
Micro SD card (default: sd1)	None

Item	Specification
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	3 A
Maximum output power	54 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	27 W
Maximum power consumption	32 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces

Item	Specification
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354271

3.7.4 AR1220C

Version Mapping

[Table 3-525](#) lists the mapping between the AR1220C router and software versions.

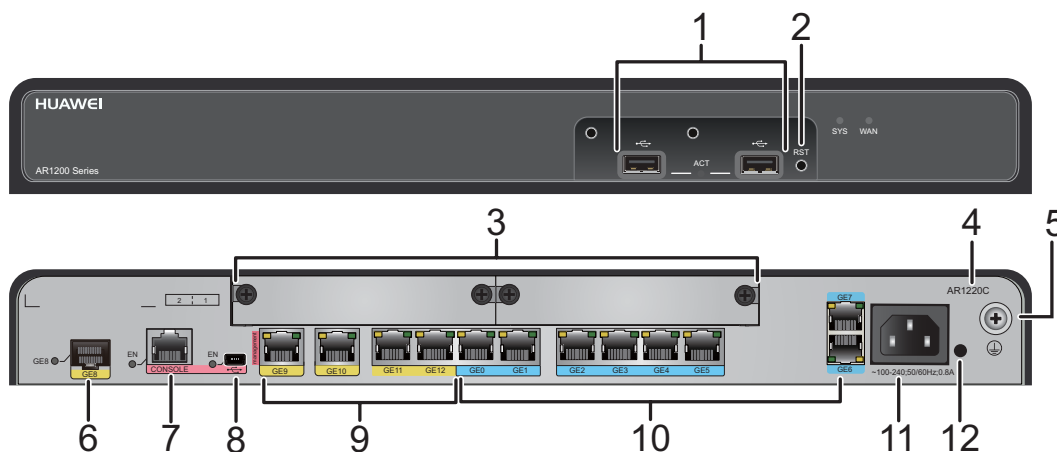
Table 3-525 Mapping between the AR1220C router and software versions


Router Model	Software Version
AR1220C	V200R007C00 and later versions

Appearance and Structure

[Figure 3-154](#) shows the appearance of the AR1220C router.

Figure 3-154 AR1220C appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen
5	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	6	WAN interface: GE optical interface
7	CONSOLE interface	8	<p>Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>
9	WAN interface: GE electrical interface	10	<p>LAN interfaces: eight GE electrical interfaces</p> <p>NOTE</p> <p>All GE LAN interfaces can be configured as WAN interfaces.</p>
11	<p>AC power jack</p> <p>NOTE</p> <p>Use an AC power cable to connect the router to an external power source.</p>	12	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>

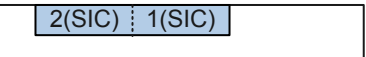
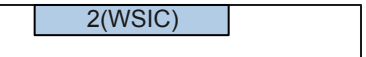
Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-155 shows the slot layout on the AR1220C.

Figure 3-155 Slot distribution of the AR1220C router

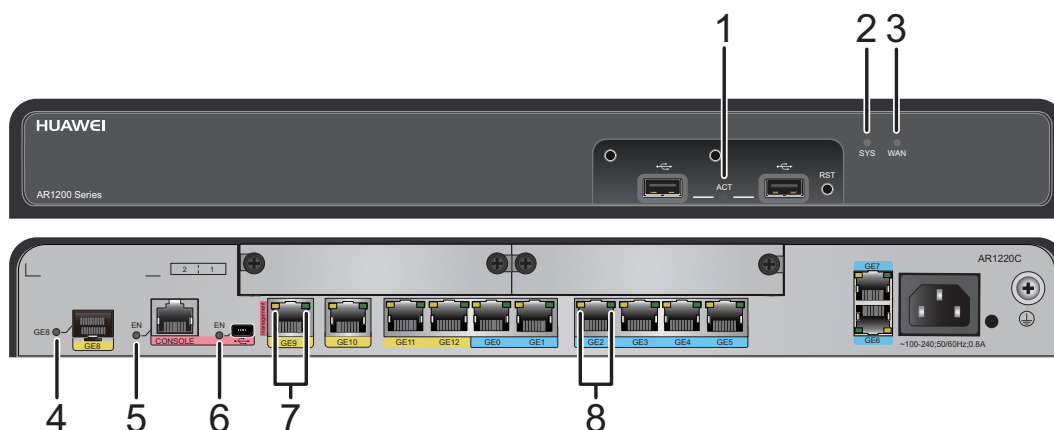
Device Model		Slot Distribution	Slot Combination
AR1220C	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-156 shows the indicators on the AR1220C router.

Figure 3-156 Indicators on the AR1220C



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The five GE interfaces are all disconnected or inactive.
4	GE optical interface indicators (WAN)	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.
5	EN (console interface)	Green	Steady on: The console interface is enabled.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The console interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-526](#) lists attributes of a console interface.

Table 3-526 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-527](#) lists attributes of a Mini USB interface.

Table 3-527 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-528](#) lists attributes of a GE electrical interface.

Table 3-528 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Optical Interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 3-529](#) lists attributes of a GE optical interface.

Table 3-529 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-530](#) lists attributes of a USB interface.

Table 3-530 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220C router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-531 lists the technical specifications of the AR1220C router.

Table 3-531 AR1220C technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	0.8 A
Maximum output power	25 W
RPS power supply	Not supported

Item	Specification
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	14 W
Maximum power consumption	15 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: four GE electrical interfaces and one GE optical interface LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350JGL

3.7.5 AR1220E

Version Mapping

Table 3-532 lists the mapping between the AR1220E router and software versions.

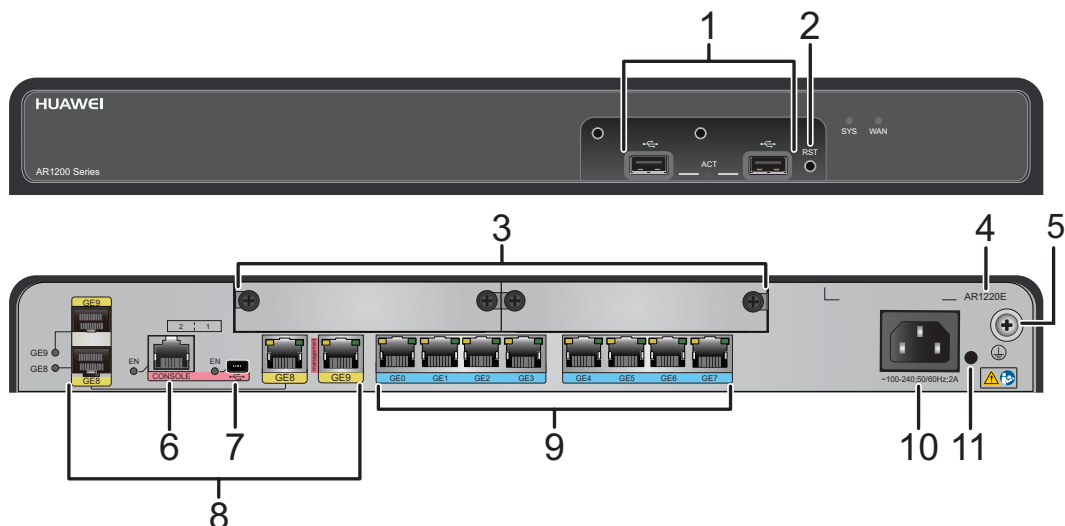
Table 3-532 Mapping between the AR1220E router and software versions


Router Model	Software Version
AR1220E	V200R006C10 and later versions

Appearance and Structure

Figure 3-157 shows the appearance of the AR1220E router.

Figure 3-157 AR1220E appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen

5	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	6	Console interface
7	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	8	WAN interface: GE combo interface
9	LAN interfaces: eight GE electrical interfaces NOTE V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.	10	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
11	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

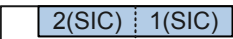
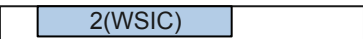
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-158 shows the slot distribution of the AR1220E.

Figure 3-158 Slot distribution of the AR1220E router

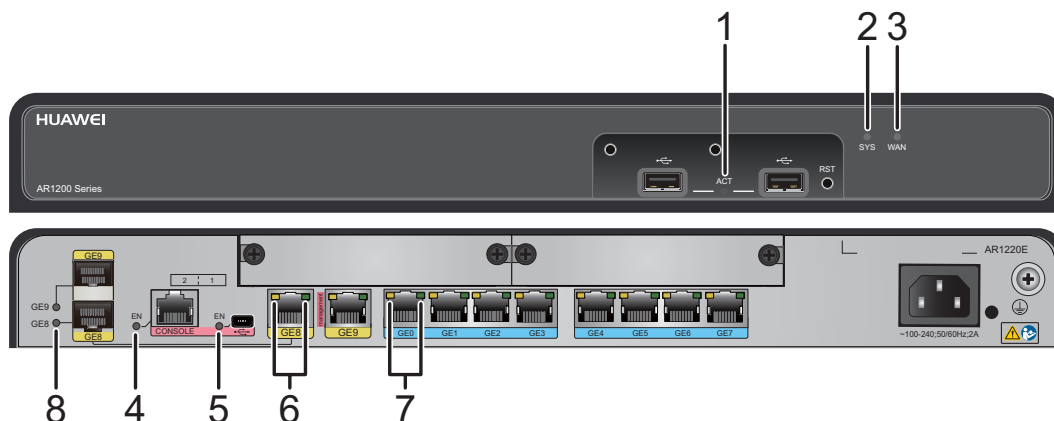
Device Model		Slot Distribution	Slot Combination
AR1220E	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-159 shows the indicators on the AR1220E router.

Figure 3-159 Indicators on the AR1220E



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.

Number	Indicator	Color	Description
4	EN (console interface) NOTE <ul style="list-style-type: none"> ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The console interface is enabled.
			Off: The console interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

Number	Indicator	Color	Description
			Off: No data is being transmitted or received.
8	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-533](#) lists attributes of a console interface.

Table 3-533 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-534](#) lists attributes of a Mini USB interface.

Table 3-534 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-535](#) lists attributes of a GE electrical interface.

Table 3-535 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-536](#) lists attributes of a USB interface.

Table 3-536 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220E router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-160](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-160 Airflow



Technical Specifications

[Table 3-537](#) lists the technical specifications of the AR1220E router.

Table 3-537 AR1220E technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	18 W
Maximum power consumption	20 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC
Environment parameters	

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350DQJ

3.7.6 AR1220EV

Version Mapping

Table 3-538 lists the mapping between the AR1220EV router and software versions.

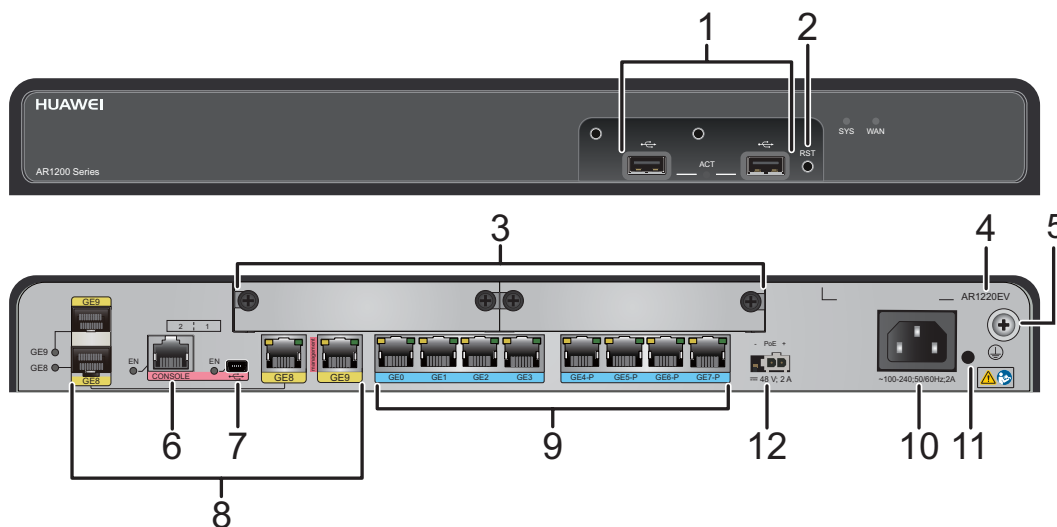
Table 3-538 Mapping between the AR1220EV router and software versions


Router Model	Software Version
AR1220EV	V200R006C10 and later versions

Appearance and Structure

Figure 3-161 shows the appearance of the AR1220EV router.

Figure 3-161 AR1220EV appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen
5	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	6	Console interface
7	<p>Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>	8	WAN interface: GE combo interface
9	<p>LAN interfaces: eight GE electrical interfaces</p> <p>NOTE</p> <p>V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.</p>	10	<p>AC power jack</p> <p>NOTE</p> <p>Use an AC power cable to connect the router to an external power source.</p>
11	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	12	<p>PoE power jack</p> <p>NOTE</p> <p>The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.</p>

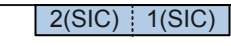
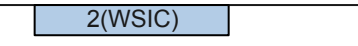
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-162 shows the slot distribution of the AR1220EV.

Figure 3-162 Slot distribution of the AR1220EV router

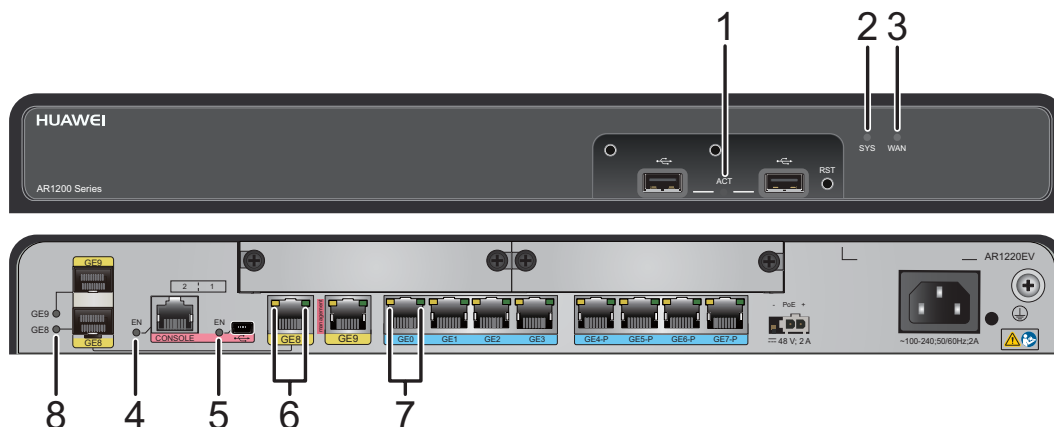
Device Model		Slot Distribution	Slot Combination
AR1220EV	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-163 shows the indicators on the AR1220EV router.

Figure 3-163 Indicators on the AR1220EV



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (console interface) NOTE <ul style="list-style-type: none"> ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The console interface is enabled.
			Off: The console interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.

Number	Indicator	Color	Description
6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-539](#) lists attributes of a console interface.

Table 3-539 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-540](#) lists attributes of a Mini USB interface.

Table 3-540 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-541](#) lists attributes of a GE electrical interface.

Table 3-541 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an **7.5 Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an **7.6 Optical Fiber**, **8.5 GE eSFP Optical Modules**, **8.6 GE-CWDM eSFP Optical Modules**, **8.7 GE-DWDM eSFP Optical Modules**, or **8.4 FE SFP/eSFP Optical Modules**.

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 3-542** lists attributes of a USB interface.

Table 3-542 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220EV router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 3-164**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-164 Airflow



Technical Specifications

Table 3-543 lists the technical specifications of the AR1220EV router.

Table 3-543 AR1220EV technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE4 to GE7)
Power consumption (empty chassis)	
Typical power consumption	21 W
Maximum power consumption	22 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	

Item	Specification
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350DQK

3.7.7 AR1220EVW

Version Mapping

[Table 3-544](#) lists the mapping between the AR1220EVW router and software versions.

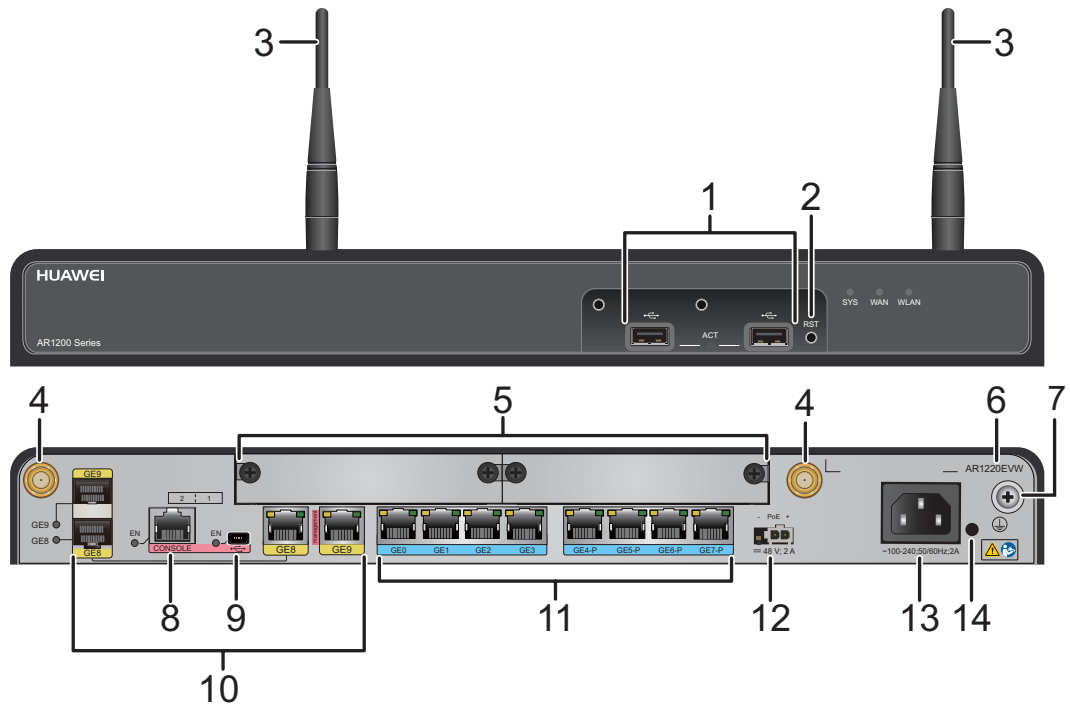
Table 3-544 Mapping between the AR1220EVW router and software versions


Router Model	Software Version
AR1220EVW	V200R006C10 and later versions

Appearance and Structure

[Figure 3-165](#) shows the appearance of the AR1220EVW router.

Figure 3-165 AR1220EVW appearance



<p>1 Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	<p>2 RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
<p>3 Two Wi-Fi antennas</p>	<p>4 Two Wi-Fi antenna interfaces</p>
<p>5 Two SIC slots</p>	<p>6 Product model silkscreen</p>
<p>7 Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	<p>8 Console interface</p>
<p>9 Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>	<p>10 WAN interface: GE combo interface</p>

11	LAN interfaces: eight GE electrical interfaces NOTE V200R007C00 and later versions: all GE LAN interfaces can be configured as WAN interfaces.	12	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
13	AC power jack NOTE Use an AC power cable to connect the router to an external power source.	14	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

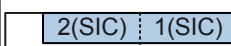
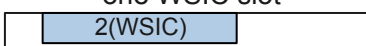
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-166 shows the slot distribution of the AR1220EVW router.

Figure 3-166 Slot distribution of the AR1220EVW router

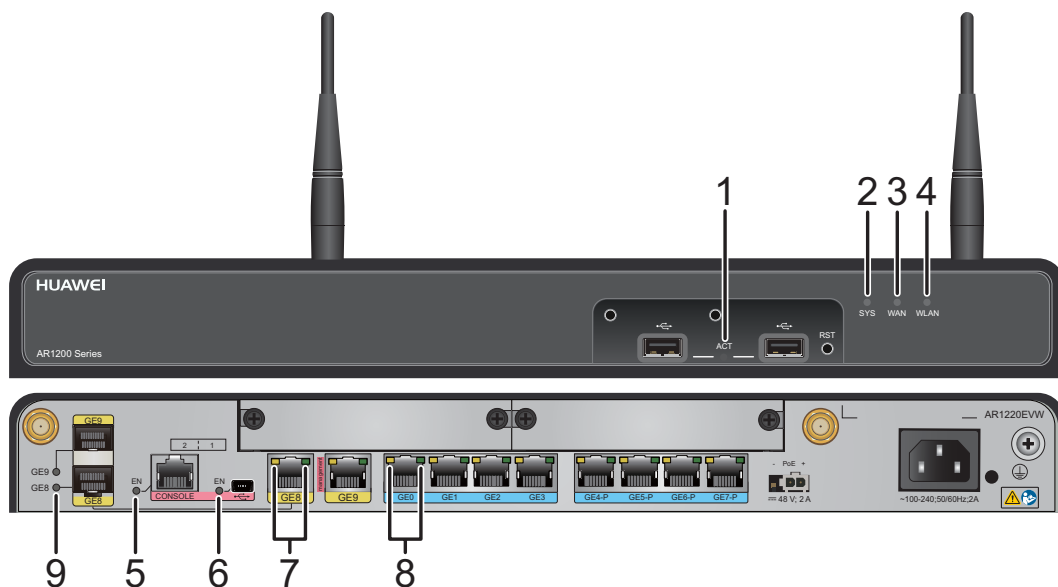
Device Model		Slot Distribution	Slot Combination
AR1220EVW	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-167 shows the indicators on the AR1220EVW router.

Figure 3-167 Indicators on the AR1220EVW



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.

Number	Indicator	Color	Description
			Off: The two GE interfaces are both disconnected or inactive.
4	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link has not been established or is inactive.
5	EN (console interface) NOTE <ul style="list-style-type: none"> ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The console interface is enabled.
			Off: The console interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

Number	Indicator	Color	Description
			Off: No data is being transmitted or received.
8	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
9	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-545](#) lists attributes of a console interface.

Table 3-545 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-546](#) lists attributes of a Mini USB interface.

Table 3-546 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-547](#) lists attributes of a GE electrical interface.

Table 3-547 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-548](#) lists attributes of a USB interface.

Table 3-548 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-549](#) lists attributes of a Wi-Fi antenna interface.

Table 3-549 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none">● Layer 2/3 wireless access● Wireless data encryption● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Heat Dissipation

The AR1220EVW router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-168](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-168 Airflow



Technical Specifications

[Table 3-550](#) lists the technical specifications of the AR1220EVW router.

Table 3-550 AR1220EVW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A

Item	Specification
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE4 to GE7)
Power consumption (empty chassis)	
Typical power consumption	22 W
Maximum power consumption	25 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350DQL

3.7.8 AR1220F

Version Mapping

Table 3-551 lists the mapping between the AR1220F router and software versions.

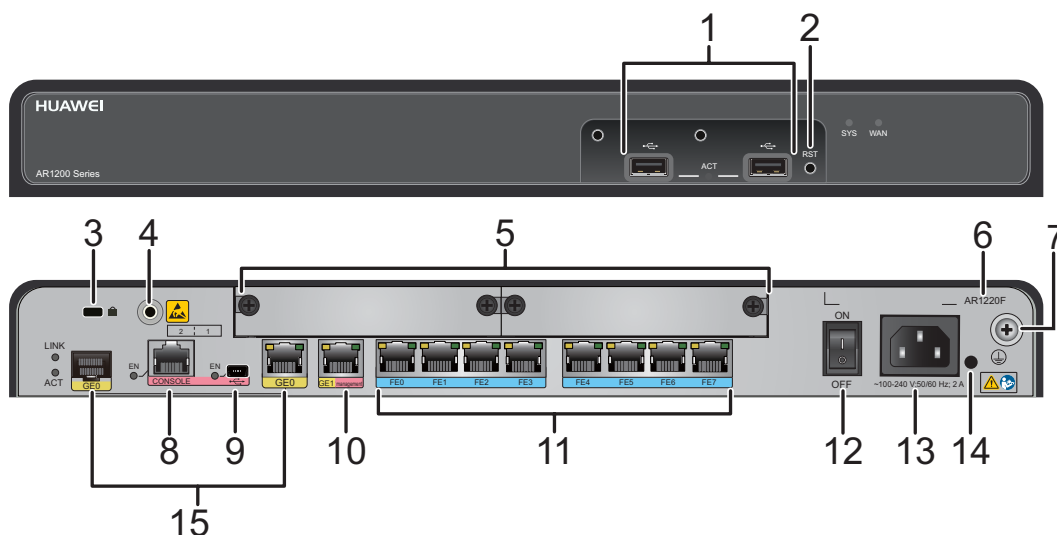
Table 3-551 Mapping between the AR1220F router and software versions


Router Model	Software Version
AR1220F	V200R005C10 and later versions

Appearance and Structure

Figure 3-169 shows the appearance of the AR1220F router.

Figure 3-169 AR1220F appearance



<p>1 Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	<p>2 RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
--	---

3	Security lock	4	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	8	Console interface
9	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	10	WAN interface: one GE electrical interface
11	LAN interfaces: eight FE electrical interfaces NOTE V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.	12	Power switch
13	AC power jack NOTE Use an AC power cable to connect the router to an external power source.	14	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
15	WAN interface: GE combo interface	-	-

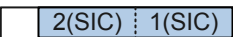
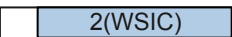
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-170 shows the slot distribution of the AR1220F router.

Figure 3-170 Slot distribution of the AR1220F router

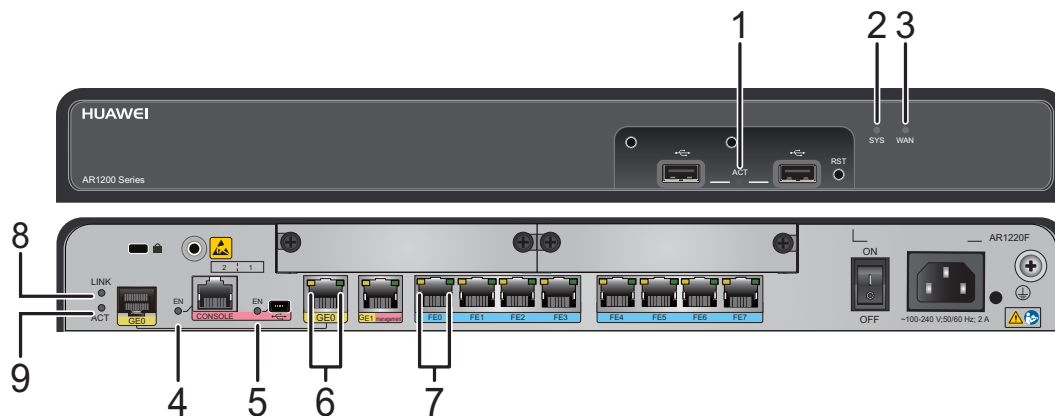
Device Model		Slot Distribution	Slot Combination
AR1220F	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-171 shows the indicators on the AR1220F router.

Figure 3-171 Indicators on the AR1220F



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.

Number	Indicator	Color	Description
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (console interface) NOTE <ul style="list-style-type: none"> ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The console interface is enabled.
			Off: The console interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Number	Indicator	Color	Description
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8 and 9	GE optical interface indicators <ul style="list-style-type: none"> ● 8: LINK indicator ● 9: ACT indicator 	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-552](#) lists attributes of a console interface.

Table 3-552 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-553](#) lists attributes of a Mini USB interface.

Table 3-553 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-554](#) lists attributes of an FE electrical interface.

Table 3-554 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-555](#) lists attributes of a GE electrical interface.

Table 3-555 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-556](#) lists attributes of a USB interface.

Table 3-556 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220F router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-172](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-172 Airflow



Technical Specifications

[Table 3-557](#) lists the technical specifications of the AR1220F router.

Table 3-557 AR1220F technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	20 W
Maximum power consumption	25 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and one GE combo interface LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing

Item	Specification
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02356381

3.7.9 AR1220L

Version Mapping

Table 3-558 lists the mapping between the AR1220L router and software versions.

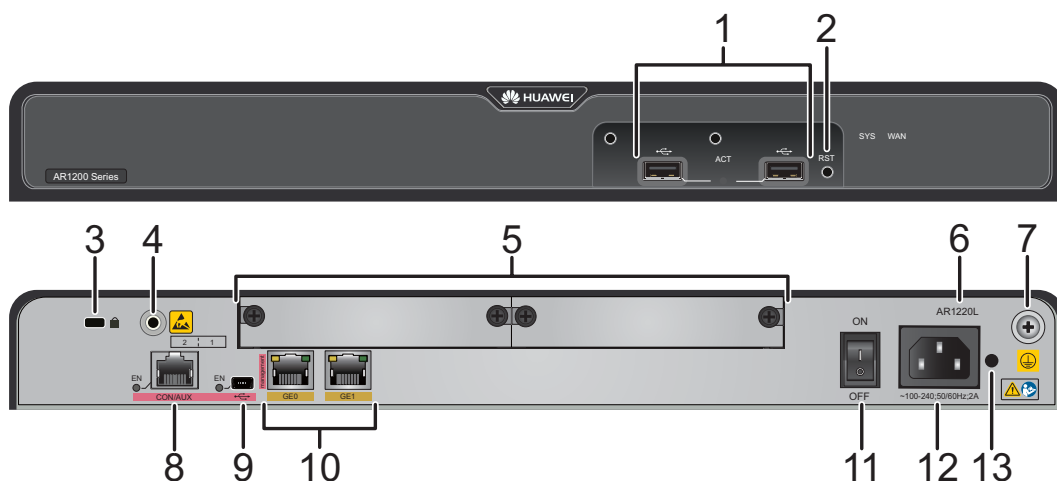
Table 3-558 Mapping between the AR1220L router and software versions


Router Model	Software Version
AR1220L	V200R002C01 and later versions

Appearance and Structure

Figure 3-173 shows the appearance of the AR1220L router.

Figure 3-173 AR1220L appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	<p>Security lock</p>	4	<p>ESD jack</p> <p>NOTE</p> <p>When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.</p>
5	<p>Two SIC slots</p>	6	<p>Product model silkscreen</p>
7	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	8	<p>CON/AUX interface</p> <p>NOTE</p> <p>The AR1220L does not support AUX login.</p>
9	<p>Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>	10	<p>WAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface and is used to upgrade the router.</p>
11	<p>Power switch</p>	12	<p>AC power jack</p> <p>NOTE</p> <p>Use an AC power cable to connect the router to an external power source.</p>
13	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>	-	-

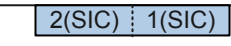
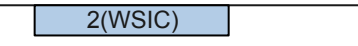
Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-174 shows the slot distribution of the AR1220L.

Figure 3-174 Slot distribution of the AR1220L router

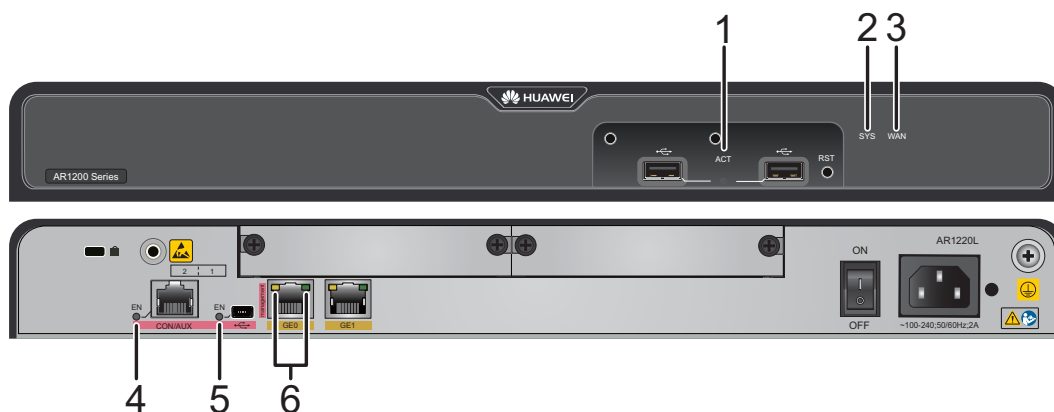
Device Model		Slot Distribution	Slot Combination
AR1220L	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-175 shows the indicators on the AR1220L router.

Figure 3-175 Indicators on the AR1220L



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.

Number	Indicator	Color	Description
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-559](#) lists the CON/AUX interface attributes.

Table 3-559 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-560](#) lists attributes of a Mini USB interface.

Table 3-560 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle

Attribute	Description
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-561](#) lists attributes of a GE electrical interface.

Table 3-561 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-562](#) lists attributes of a USB interface.

Table 3-562 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220L router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-176](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-176 Airflow



Technical Specifications

[Table 3-563](#) lists the technical specifications of the AR1220L router.

Table 3-563 AR1220L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing

Item	Specification
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354069

3.7.10 AR1220V

Version Mapping

Table 3-564 lists the mapping between the AR1220V router and software versions.

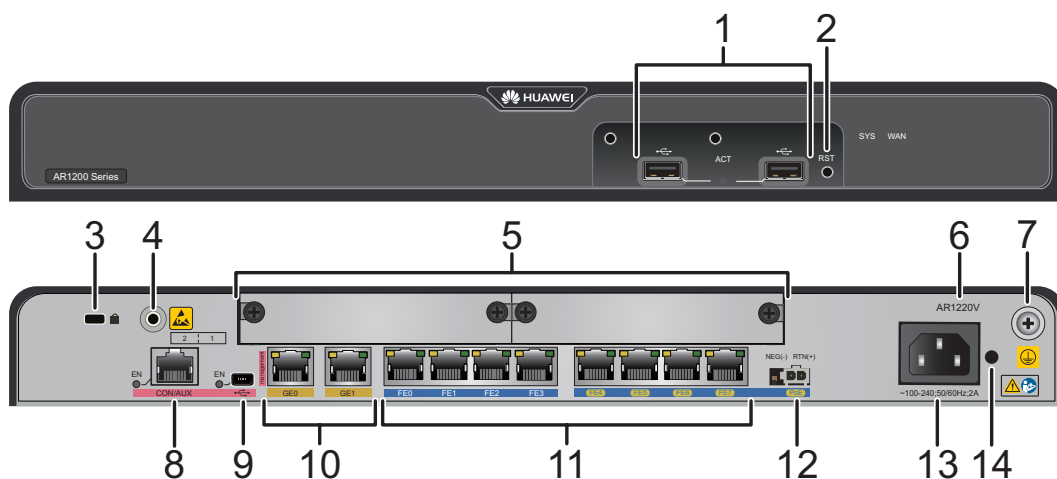
Table 3-564 Mapping between the AR1220V router and software versions


Router Model	Software Version
AR1220V	V200R001C00 and later versions

Appearance and Structure

Figure 3-177 shows the appearance of the AR1220V router.

Figure 3-177 AR1220V appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	<p>Security lock</p>	4	<p>ESD jack</p> <p>NOTE</p> <p>When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.</p>
5	<p>Two SIC slots</p>	6	<p>Product model silkscreen</p>
7	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>	8	<p>CON/AUX interface</p> <p>NOTE</p> <p>The AR1220V does not support AUX login.</p>
9	<p>Mini USB interface</p> <p>NOTE</p> <p>The Mini USB interface and console interface cannot be used at the same time.</p>	10	<p>WAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface and is used to upgrade the router.</p>
11	<p>LAN interfaces: eight FE electrical interfaces</p> <p>NOTE</p> <p>V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.</p>	12	<p>PoE power jack</p> <p>NOTE</p> <p>The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.</p>
13	<p>AC power jack</p> <p>NOTE</p> <p>Use an AC power cable to connect the router to an external power source.</p>	14	<p>Jack for power cable locking strap</p> <p>NOTE</p> <p>Insert a power cable locking strap in this jack to secure the power cable.</p>

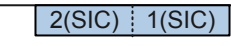
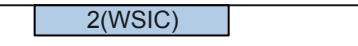
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-178 shows the slot distribution of the AR1220V router.

Figure 3-178 Slot distribution of the AR1220V router

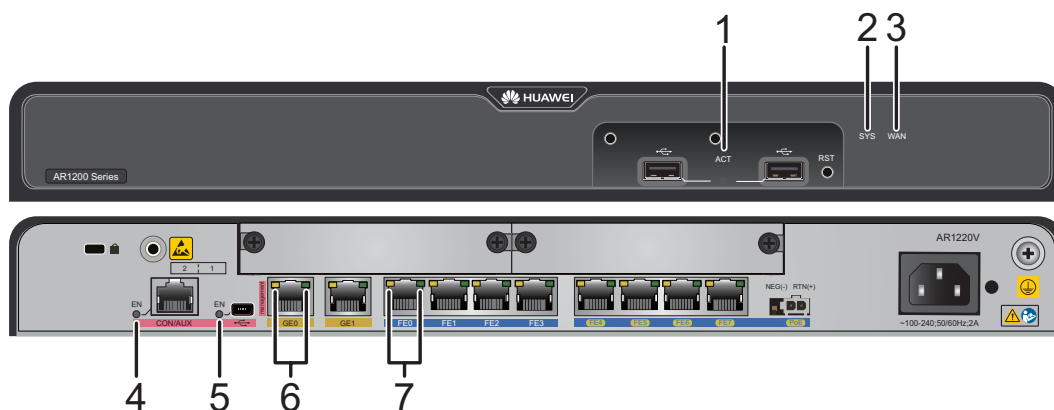
Device Model		Slot Distribution	Slot Combination
AR1220V	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-179 shows the indicators on the AR1220V router.

Figure 3-179 Indicators on the AR1220V



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.

Number	Indicator	Color	Description
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-565](#) lists the CON/AUX interface attributes.

Table 3-565 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-566](#) lists attributes of a Mini USB interface.

Table 3-566 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-567](#) lists attributes of an FE electrical interface.

Table 3-567 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-568](#) lists attributes of a GE electrical interface.

Table 3-568 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-569](#) lists attributes of a USB interface.

Table 3-569 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR1220V router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-180](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-180 Airflow



Technical Specifications

Table 3-570 lists the technical specifications of the AR1220V router.

Table 3-570 AR1220V technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 8.8 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces FE4 to FE7)
Power consumption (empty chassis)	
Typical power consumption	29 W
Maximum power consumption	34 W

Item	Specification
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352933

3.7.11 AR1220W

Version Mapping

[Table 3-571](#) lists the mapping between the AR1220W router and software versions.

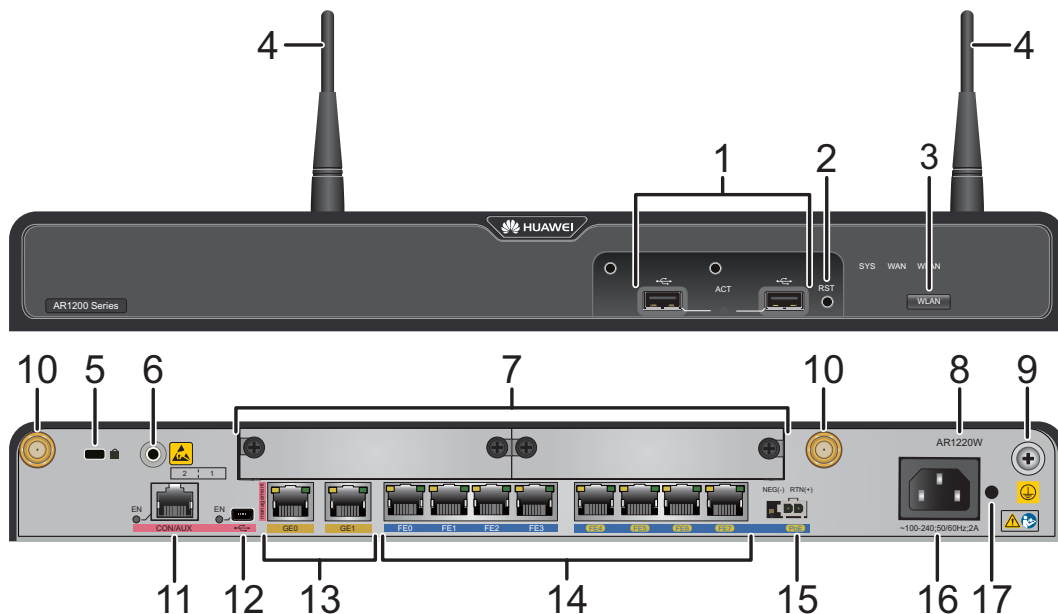
Table 3-571 Mapping between the AR1220W router and software versions


Router Model	Software Version
AR1220W	V200R001C01 and later versions

Appearance and Structure

Figure 3-181 shows the appearance of the AR1220W router.

Figure 3-181 AR1220W appearance



1	<p>Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	2	<p>RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	<p>WLAN button</p> <p>NOTE</p> <p>This button is used to enable and disable the WLAN function.</p>	4	<p>Two Wi-Fi antennas</p>
5	<p>Security lock</p>	6	<p>ESD jack</p> <p>NOTE</p> <p>When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.</p>
7	<p>Two SIC slots</p>	8	<p>Product model silkscreen</p>

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	10	Two Wi-Fi antenna interfaces
11	CON/AUX interface NOTE The AR1220W does not support AUX login.	12	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.
13	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	14	LAN interfaces: eight FE electrical interfaces NOTE V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
15	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.	16	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
17	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

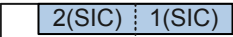
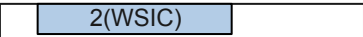
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-182 shows the slot distribution of the AR1220W router.

Figure 3-182 Slot distribution of the AR1220W router

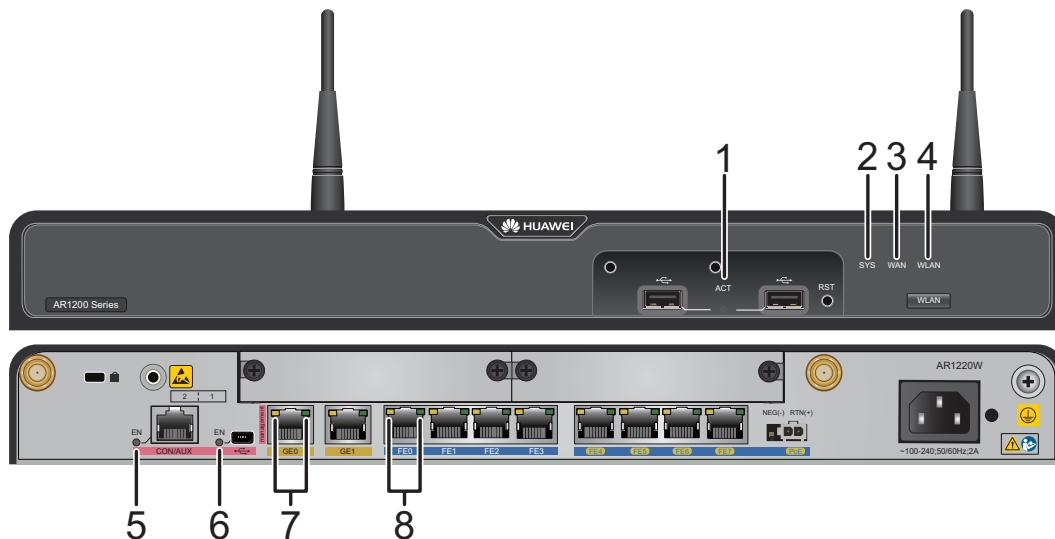
Device Model		Slot Distribution	Slot Combination
AR1220W	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-183 shows the indicators on the AR1220W router.

Figure 3-183 Indicators on the AR1220W



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link has not been established or is inactive.
5	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.

Number	Indicator	Color	Description
7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-572](#) lists the CON/AUX interface attributes.

Table 3-572 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-573](#) lists attributes of a Mini USB interface.

Table 3-573 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-574](#) lists attributes of an FE electrical interface.

Table 3-574 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-575](#) lists attributes of a GE electrical interface.

Table 3-575 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-576](#) lists attributes of a USB interface.

Table 3-576 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-577](#) lists attributes of a Wi-Fi antenna interface.

Table 3-577 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2

Attribute	Description
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Heat Dissipation

The AR1220W router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-184](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-184 Airflow



Technical Specifications

[Table 3-578](#) lists the technical specifications of the AR1220W router.

Table 3-578 AR1220W technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces FE4 to FE7)
Power consumption (empty chassis)	
Typical power consumption	36 W
Maximum power consumption	42 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	2xSIC

Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353527

3.7.12 AR1220VW

Version Mapping

[Table 3-579](#) lists the mapping between the AR1220VW router and software versions.

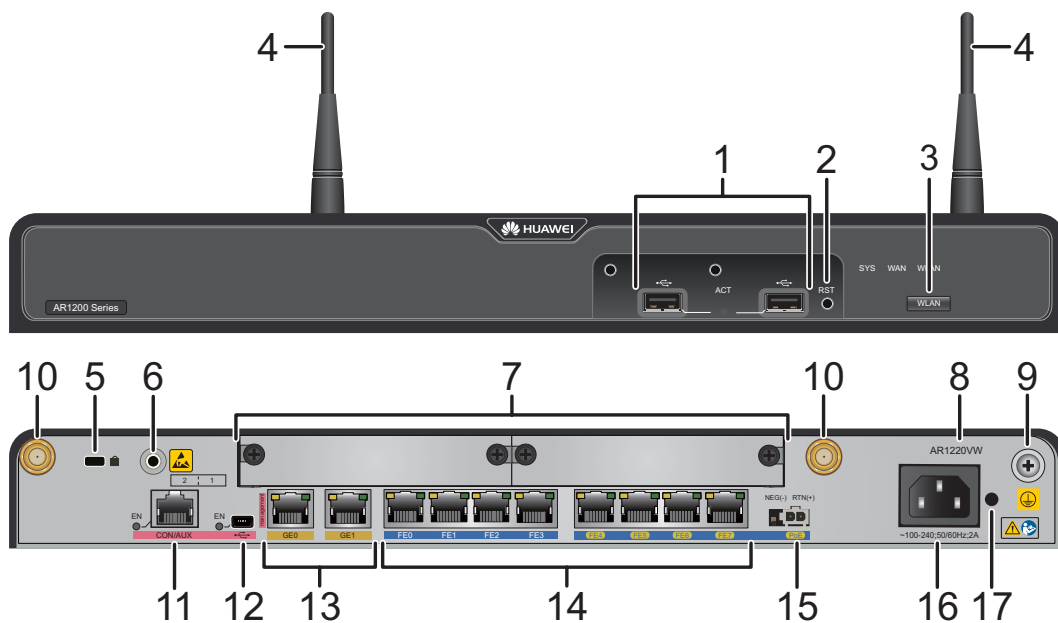
Table 3-579 Mapping between the AR1220VW router and software versions


Router Model	Software Version
AR1220VW	V200R001C01 and later versions

Appearance and Structure

[Figure 3-185](#) shows the appearance of the AR1220VW router.

Figure 3-185 AR1220VW appearance



<p>1 Two USB interfaces (host)</p> <p>NOTE</p> <p>After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.</p> 	<p>2 RST button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
<p>3 WLAN button</p> <p>NOTE</p> <p>This button is used to enable and disable the WLAN function.</p>	<p>4 Two Wi-Fi antennas</p>
<p>5 Security lock</p>	<p>6 ESD jack</p> <p>NOTE</p> <p>When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.</p>
<p>7 Two SIC slots</p>	<p>8 Product model silkscreen</p>

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	10	Two Wi-Fi antenna interfaces
11	CON/AUX interface NOTE The AR1220VW does not support AUX login.	12	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.
13	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	14	LAN interfaces: eight FE electrical interfaces NOTE V200R007C00 and later versions: all FE LAN interfaces can be configured as WAN interfaces.
15	PoE power jack NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.	16	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
17	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

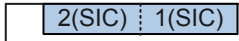
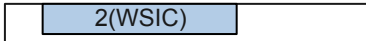
Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-186 shows the slot distribution of the AR1220VW router.

Figure 3-186 Slot distribution of the AR1220VW router

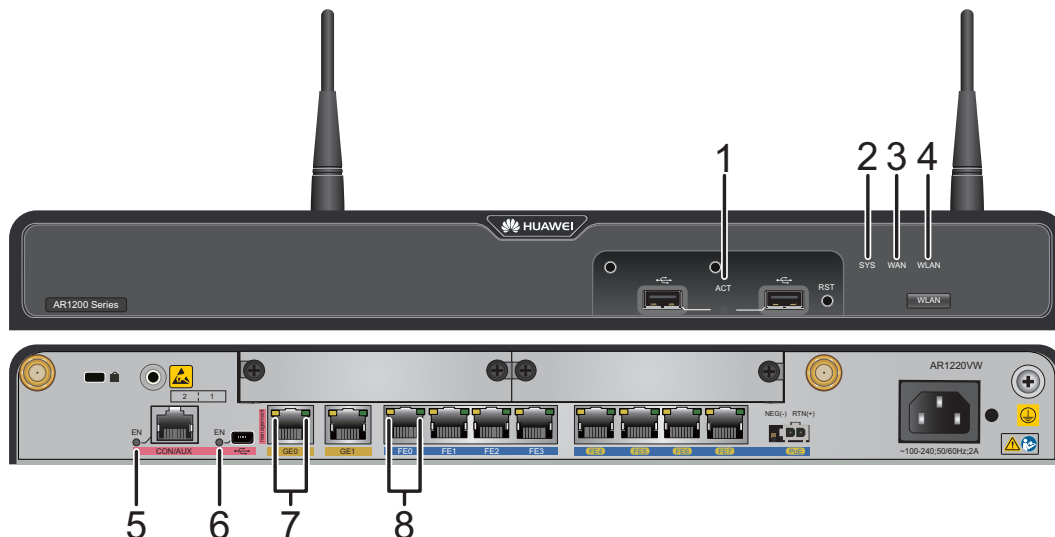
Device Model		Slot Distribution	Slot Combination
AR1220VW	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 3-187 shows the indicators on the AR1220VW router.

Figure 3-187 Indicators on the AR1220VW



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link has not been established or is inactive.
5	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.

Number	Indicator	Color	Description
7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-580](#) lists the CON/AUX interface attributes.

Table 3-580 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-581](#) lists attributes of a Mini USB interface.

Table 3-581 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-582](#) lists attributes of an FE electrical interface.

Table 3-582 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-583](#) lists attributes of a GE electrical interface.

Table 3-583 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-584](#) lists attributes of a USB interface.

Table 3-584 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-585](#) lists attributes of a Wi-Fi antenna interface.

Table 3-585 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency band supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2

Attribute	Description
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	7.17.5 Wi-Fi Antenna

Heat Dissipation

The AR1220VW router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-188](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-188 Airflow



Technical Specifications

[Table 3-586](#) lists the technical specifications of the AR1220VW router.

Table 3-586 AR1220VW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.), 1 U height
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces FE4 to FE7)
Power consumption (empty chassis)	
Typical power consumption	37 W
Maximum power consumption	42 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	2xSIC

Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353528

3.8 AR2200 Series

3.8.1 AR2201-48FE

Version Mapping

[Table 3-587](#) lists the mapping between the AR2201-48FE router and software versions.

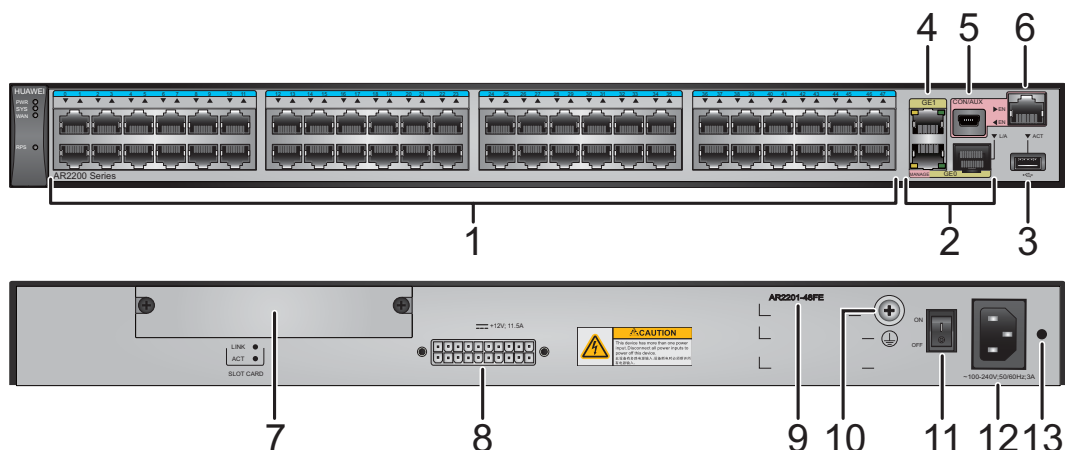
Table 3-587 Mapping between the AR2201-48FE router and software versions

Router Model	Software Version
AR2201-48FE	V200R003C00 and later versions

Appearance and Structure

[Figure 3-189](#) shows the appearance of the AR2201-48FE router.

Figure 3-189 AR2201-48FE appearance

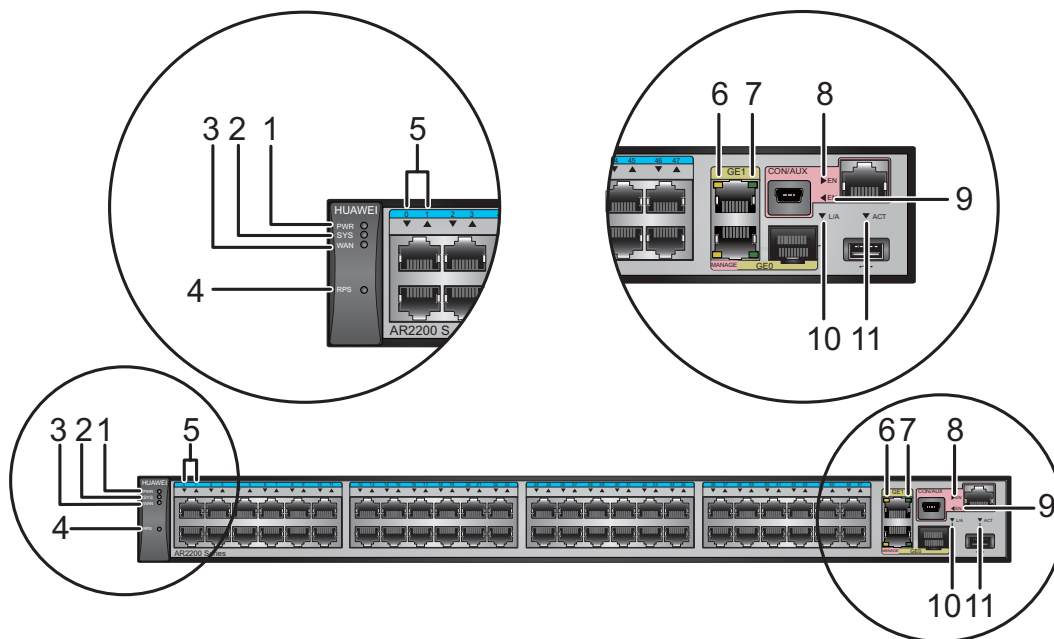


1	LAN interfaces: forty-eight FE electrical interfaces	2	WAN interface: GE combo interface
3	One USB interface (host)	4	WAN interface: one GE electrical interface
5	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	6	CON/AUX interface NOTE The AR2201-48FE does not support AUX login.
7	Extended card slot NOTE The slot is reserved, and no extended card is supported currently.	8	RPS power socket NOTE The router uses a 150 W RPS power supply .
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
11	Power switch	12	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
13	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

Indicator Description

Figure 3-190 shows the locations of AR2201-48FE indicators.

Figure 3-190 Indicators on the AR2201-48FE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: A WAN connection has been established and is active.
		Off	Off: No WAN connection is established or active.
4	RPS	Green	Steady on: An RPS is connected to the router.

Number	Indicator	Color	Description
		Yellow	Steady on: An RPS is connected to the router but is not working normally. Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
5	FE electrical interface indicators	Green	Steady on: A link has been established on the FE electrical interface.
			Blinking: Data is being transmitted or received on the FE electrical interface.
			Off: No link is established on the FE electrical interface.
6 and 7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	<p>NOTE</p> <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.
10	EN (SFP optical interface)	Green	Steady on: A link has been established on the SFP optical interface. Blinking: Data is being transmitted or received on the SFP optical interface. Off: No link is established on the SFP optical interface.
11	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-588](#) lists the CON/AUX interface attributes.

Table 3-588 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-589](#) lists attributes of a Mini USB interface.

Table 3-589 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-590](#) lists attributes of a GE electrical interface.

Table 3-590 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

FE Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-591](#) lists attributes of an FE electrical interface.

Table 3-591 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Attribute	Description
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-592](#) lists attributes of a USB interface.

Table 3-592 USB interface attributes

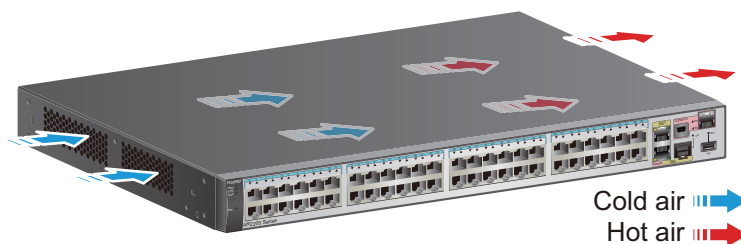
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2201-48FE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-191](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-191 Airflow



Technical Specifications

Table 3-593 lists the technical specifications of the AR2201-48FE routers.

Table 3-593 AR2201-48FE routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 314.9 mm x 43.6 mm (17.4 in. x 12.4 in. x 1.72 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 314.9 mm x 43.6 mm (19.0 in. x 12.4 in. x 1.72 in.), 1 U height
Weight	4.5 kg (9.92 lb)
Power specifications	
Rated AC input voltage	100 V/240 V, 50 Hz or 60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	60 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	35 W
Maximum power consumption	40 W

Item	Specification
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and one GE electrical interface LAN interfaces: 48 FE electrical interfaces
Extended slots	None
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354244

3.8.2 AR2202-48FE

Version Mapping

[Table 3-594](#) lists the mapping between the AR2202-48FE router and software versions.

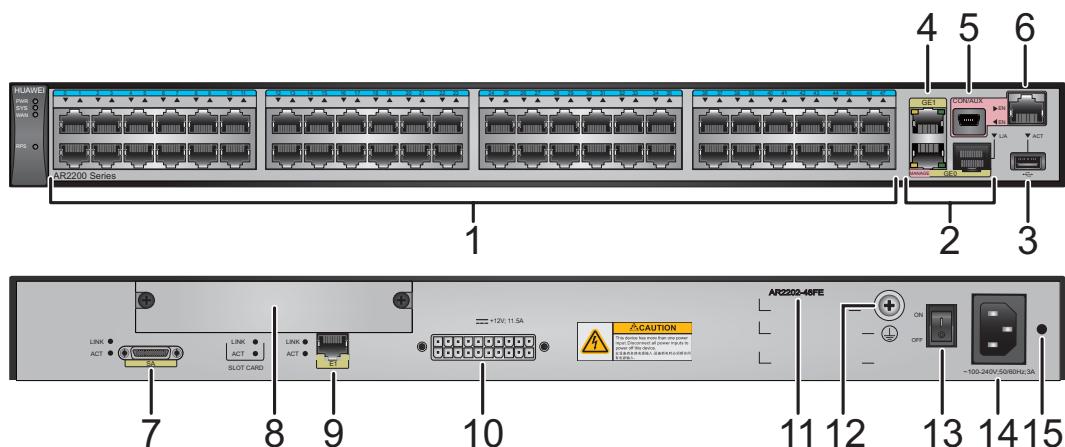
Table 3-594 Mapping between the AR2202-48FE router and software versions

Router Model	Software Version
AR2202-48FE	V200R003C00 and later versions

Appearance and Structure

Figure 3-192 shows the appearance of the AR2202-48FE router.

Figure 3-192 AR2202-48FE appearance



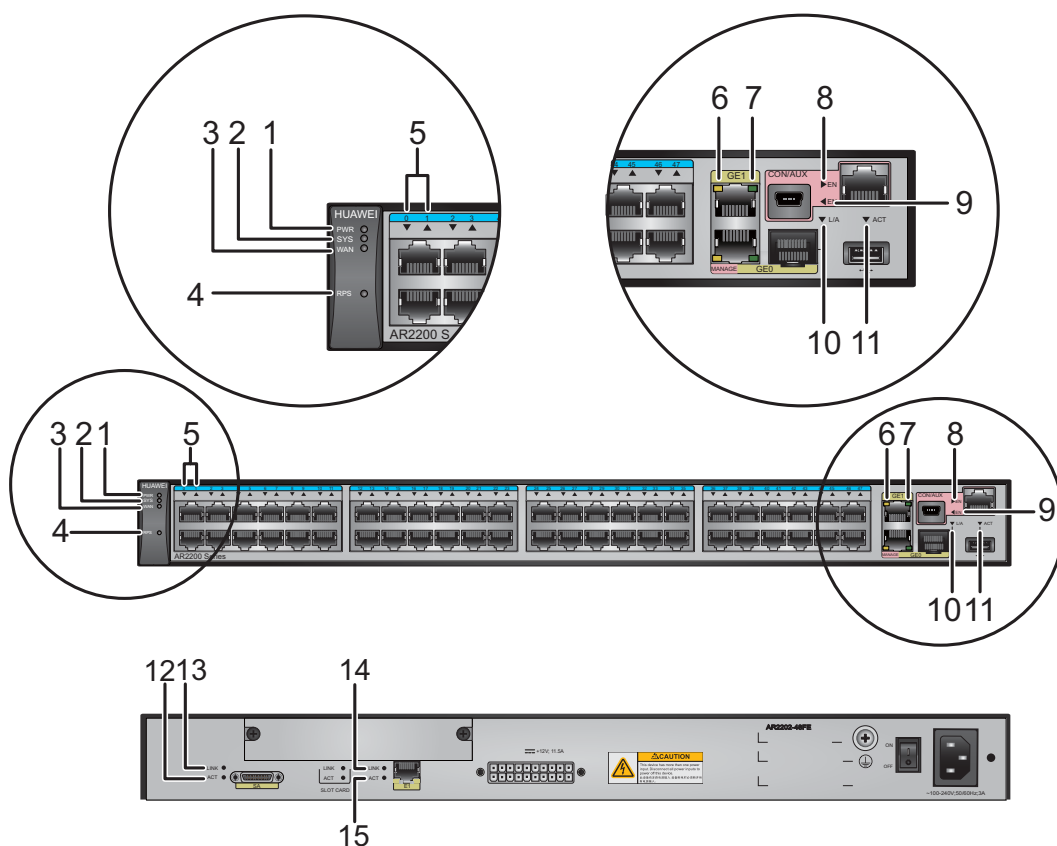
1	LAN interfaces: forty-eight FE electrical interfaces	2	WAN interface: GE combo interface
3	One USB interface (host)	4	WAN interface: one GE electrical interface
5	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	6	CON/AUX interface NOTE The AR2202-48FE does not support AUX login.
7	WAN interface: SA interface NOTE This interface can be connected to a wide area network using an SA cable .	8	Extended card slot NOTE The slot is reserved, and no extended card is supported currently.
9	WAN interface: E1 interface NOTE This interface can be connected to a wide area network using an E1/T1 cable .	10	RPS power socket NOTE The router uses a 150 W RPS power supply .
11	Product model silkscreen	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
13	Power switch	14	AC power jack NOTE Use an AC power cable to connect the router to an external power source.

15	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-
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Indicator Description

Figure 3-193 shows the locations of AR2202-48FE indicators.

Figure 3-193 Indicators on the AR2202-48FE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: A WAN connection has been established and is active.
			Off: No WAN connection is established or active.
4	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally. Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
5	FE electrical interface indicators	Green	Steady on: A link has been established on the FE electrical interface.
			Blinking: Data is being transmitted or received on the FE electrical interface.
			Off: No link is established on the FE electrical interface.
6 and 7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> • The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. • By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.
10	EN (SFP optical interface)	Green	Steady on: A link has been established on the SFP optical interface. Blinking: Data is being transmitted or received on the SFP optical interface. Off: No link is established on the SFP optical interface.
11	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
12 and 13	SA interface indicators: <ul style="list-style-type: none"> ● 13: LINK indicator, green ● 12: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
14 and 15	E1 interface indicators: <ul style="list-style-type: none"> ● 14: LINK indicator, green ● 15: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-595](#) lists the CON/AUX interface attributes.

Table 3-595 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-596](#) lists attributes of a Mini USB interface.

Table 3-596 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-597](#) lists attributes of a GE electrical interface.

Table 3-597 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

FE Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-598](#) lists attributes of an FE electrical interface.

Table 3-598 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an **7.5 Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an **7.6 Optical Fiber**, **8.5 GE eSFP Optical Modules**, **8.6 GE-CWDM eSFP Optical Modules**, **8.7 GE-DWDM eSFP Optical Modules**, or **8.4 FE SFP/eSFP Optical Modules**.

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 3-599** lists attributes of a USB interface.

Table 3-599 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

SA Interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. [Table 3-600](#) lists attributes of a SA interface.

Table 3-600 SA interface attributes

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Connector type	DB28		
Standards compliance and working mode	<ul style="list-style-type: none"> ● V.24 DTE ● V.24 DCE 	<ul style="list-style-type: none"> ● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		<ul style="list-style-type: none"> ● Modem dial-up ● Backup
	Terminal access		<ul style="list-style-type: none"> ● Asynchronous leased line ● Terminal access
Cable type	7.9 SA Cable		

E1 Interface

An E1 interface transmits data and image signals. [Table 3-601](#) lists attributes of an E1 interface.

Table 3-601 E1 interface attributes

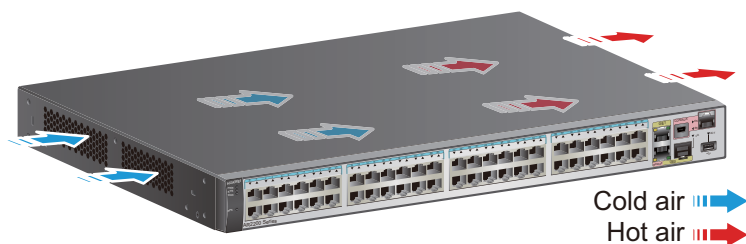
Attribute	Description
Connector type	RJ45
Standards compliance	G.703, G.704
Rate	2.048 Mbit/s
Working mode	E1
Services provided	<ul style="list-style-type: none"> ● Backup ● Terminal access
Cable type	7.7 E1/T1 Cable

Heat Dissipation

The AR2202-48FE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-194](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-194 Airflow



Technical Specifications

[Table 3-602](#) lists the technical specifications of the AR2202-48FE routers.

Table 3-602 AR2202-48FE routers technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 314.9 mm x 43.6 mm (17.4 in. x 12.4 in. x 1.72 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 314.9 mm x 43.6 mm (19.0 in. x 12.4 in. x 1.72 in.), 1 U height
Weight	4.5 kg (9.92 lb)
Power specifications	
Rated AC input voltage	100 V/240 V, 50 Hz or 60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	60 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	35 W
Maximum power consumption	40 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)

Item	Specification
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one GE electrical interface, one SA interface, and one E1 interface LAN interfaces: 48 FE electrical interfaces
Extended slots	None
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354243

3.8.3 AR2204

Version Mapping

[Table 3-603](#) lists the mapping between the AR2204 router and software versions.

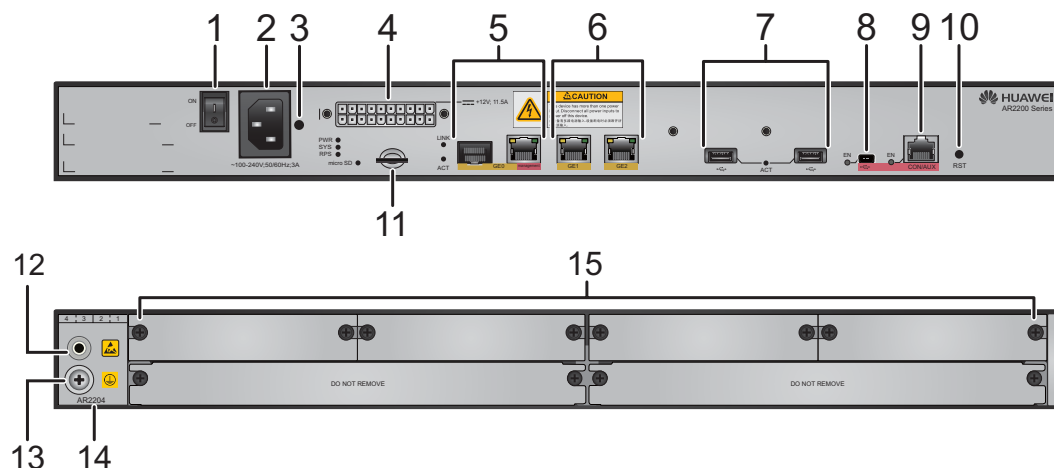
Table 3-603 Mapping between the AR2204 router and software versions


Router Model	Software Version
AR2204	V200R003C00 and later versions

Appearance and Structure

[Figure 3-195](#) shows the appearance of the AR2204 router.

Figure 3-195 AR2204 appearance



1	Power switch	2	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
3	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	4	RPS power socket NOTE The router uses a 150 W RPS power supply .
5	WAN interface: GE combo interface	6	WAN interfaces: two GE electrical interfaces
7	Two USB interfaces (host) NOTE After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	8	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.
9	CON/AUX interface NOTE The AR2204 does not support AUX login.	10	RST button NOTE <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.

11	Micro SD card slot	12	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
13	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	14	Product model silkscreen
15	Four SIC slots	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-196 shows slot distribution of the AR2204 routers.

Figure 3-196 Slot distribution of the AR2204 routers

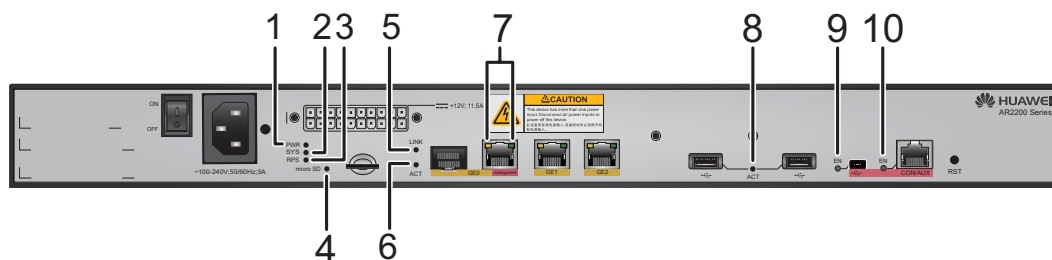
Device Model		Slot Distribution	Slot Combination
AR2204	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

Indicator Description

Figure 3-197 shows the locations of AR2204 indicators.

Figure 3-197 Indicators on the AR2204



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally.
			Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
4	Micro SD card indicator	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No Micro SD card is available.
5 and 6	GE optical interface indicators: ● 5: LINK indicator ● 6: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Number	Indicator	Color	Description
7	GE electrical interface indicators	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	<p>NOTE</p> <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-604](#) lists the CON/AUX interface attributes.

Table 3-604 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-605](#) lists attributes of a Mini USB interface.

Table 3-605 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-606](#) lists attributes of a GE electrical interface.

Table 3-606 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an **7.5 Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an **7.6 Optical Fiber**, **8.5 GE eSFP Optical Modules**, **8.6 GE-CWDM eSFP Optical Modules**, **8.7 GE-DWDM eSFP Optical Modules**, or **8.4 FE SFP/eSFP Optical Modules**.

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 3-607** lists attributes of a USB interface.

Table 3-607 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204 router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 3-198**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-198 Airflow



Technical Specifications

Table 3-608 lists the technical specifications of the AR2204 routers.

Table 3-608 AR2204 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 800 MHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	6 kg (13.23 lb)
Power specifications	
Rated AC input voltage	100 V/240 V, 50 Hz or 60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	150 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	35 W
Maximum power consumption	55 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	

Item	Specification
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02354250

Related Documents

Video:[Introduction to Huawei AR2204 Series](#)

3.8.4 AR2204-24GE

Version Mapping

Table 3-609 lists the mapping between the AR2204-24GE router and software versions.

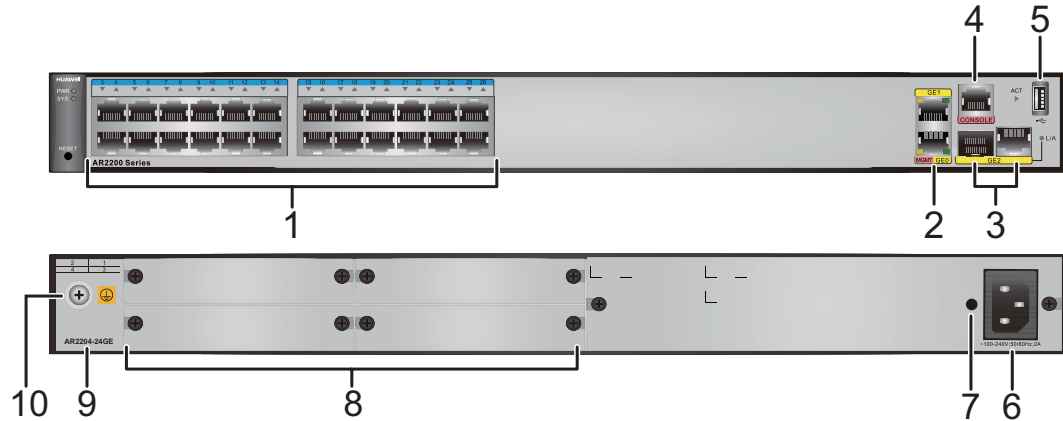
Table 3-609 Mapping between the AR2204-24GE router and software versions

Router Model	Software Version
AR2204-24GE	V200R007C00, V200R008C50 and later versions

Appearance and Structure

Figure 3-199 shows the appearance of the AR2204-24GE router.

Figure 3-199 AR2204-24GE appearance



1	LAN interfaces: twenty-four GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Four SIC slots
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Slot Distribution

Figure 3-200 shows the slot distribution of the AR2204-24GE router.

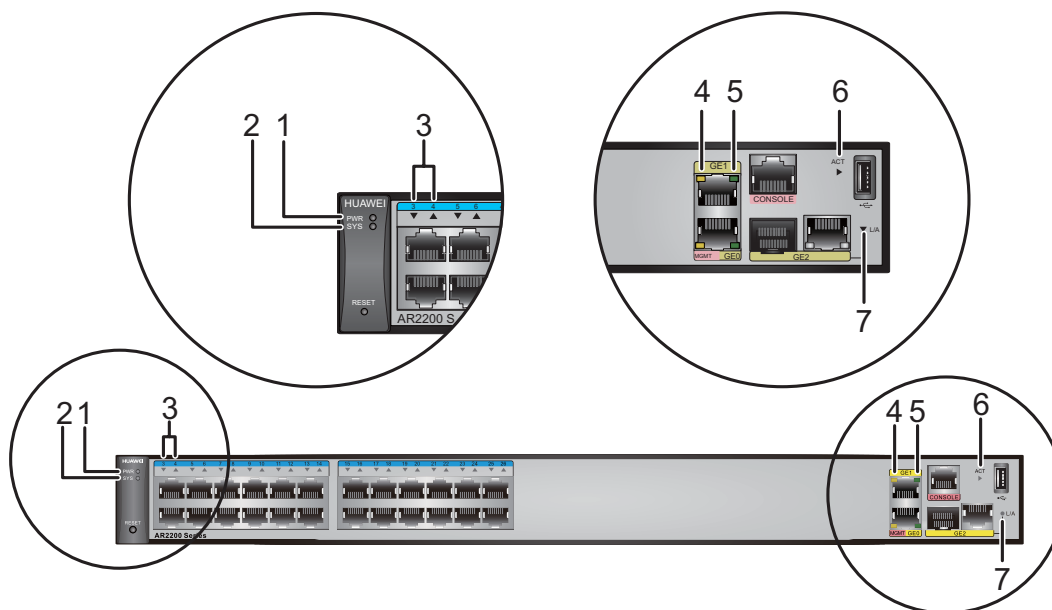
Figure 3-200 Slot distribution of the AR2204-24GE

Device Model		Slot Distribution	Slot Combination		
AR2204-24GE	Front view	NA	NA		
	Rear view	<table border="1" style="display: inline-table;"> <tr> <td>2(SIC); 1(SIC)</td> <td rowspan="2">NA</td> </tr> <tr> <td>4(SIC); 3(SIC)</td> </tr> </table>	2(SIC); 1(SIC)	NA	4(SIC); 3(SIC)
2(SIC); 1(SIC)	NA				
4(SIC); 3(SIC)					

Indicator Description

Figure 3-201 shows the indicators on the AR2204-24GE router.

Figure 3-201 Indicators on the AR2204-24GE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the built-in power module normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the interface.
			Off: No link is established on the interface.
4 and 5	GE electrical interface indicator (WAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
7	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-610](#) lists attributes of a console interface.

Table 3-610 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-611](#) lists attributes of a GE electrical interface.

Table 3-611 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-612](#) lists attributes of a USB interface.

Table 3-612 USB interface attributes

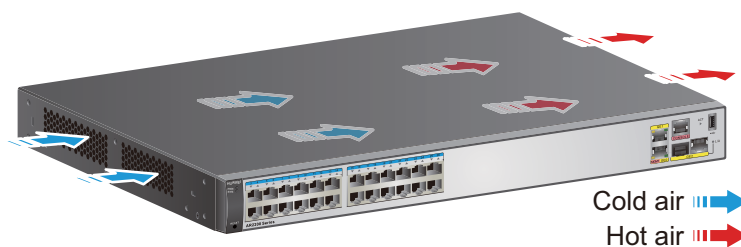
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-24GE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-202](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-202 Airflow



Technical Specifications

Table 3-613 lists the technical specifications of the AR2204-24GE router.

Table 3-613 AR2204-24GE technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W

Item	Specification
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: 2 GE electrical interfaces and 1 GE combo interface LAN interfaces: 24 GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351BXT

3.8.5 AR2204-27GE

Version Mapping

[Table 3-614](#) lists the mapping between the AR2204-27GE router and software versions.

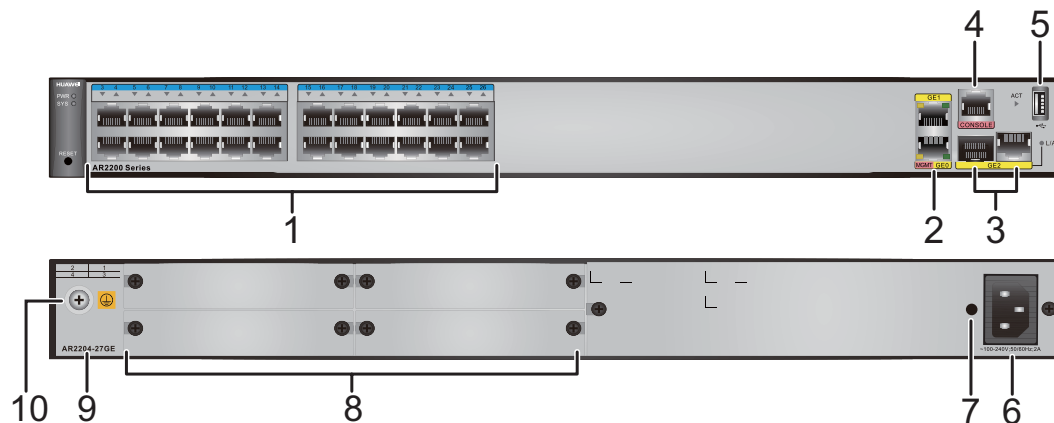
Table 3-614 Mapping between the AR2204-27GE router and software versions

Router Model	Software Version
AR2204-27GE	V200R007C00 and later versions

Appearance and Structure

Figure 3-203 shows the appearance of the AR2204-27GE router.

Figure 3-203 AR2204-27GE appearance




1	LAN interfaces: twenty-four GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Four SIC slots
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Slot Distribution

Figure 3-204 shows the slot distribution on the AR2204-27GE router.

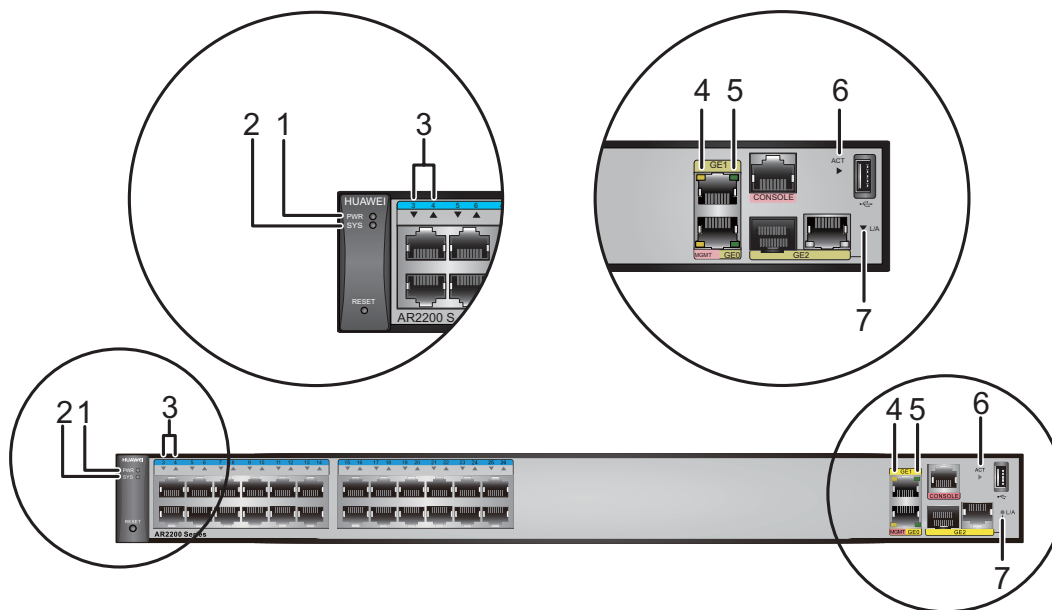
Figure 3-204 Slot distribution of the AR2204-27GE

Device Model		Slot Distribution	Slot Combination
AR2204-27GE	Front view	NA	NA
	Rear view		Not supported

Indicator Description

Figure 3-205 shows the locations of AR2204-27GE indicators.

Figure 3-205 Indicators on the AR2204-27GE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
4 and 5	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
7	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.

Number	Indicator	Color	Description
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-615](#) lists attributes of a console interface.

Table 3-615 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-616](#) lists attributes of a GE electrical interface.

Table 3-616 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

Attribute	Description
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-617](#) lists attributes of a USB interface.

Table 3-617 USB interface attributes

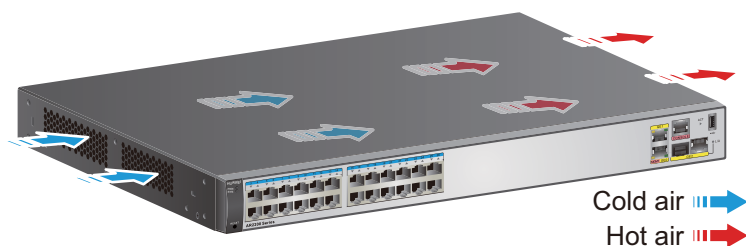
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-27GE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-206](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-206 Airflow



Technical Specifications

Table 3-618 lists the technical specifications of the AR2204-27GE routers.

Table 3-618 AR2204-27GE routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported

Item	Specification
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 24 GE electrical interfaces
Extended slots	4×SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350JGM

3.8.6 AR2204-27GE-P

Version Mapping

Table 3-619 lists the mapping between the AR2204-27GE-P router and software versions.

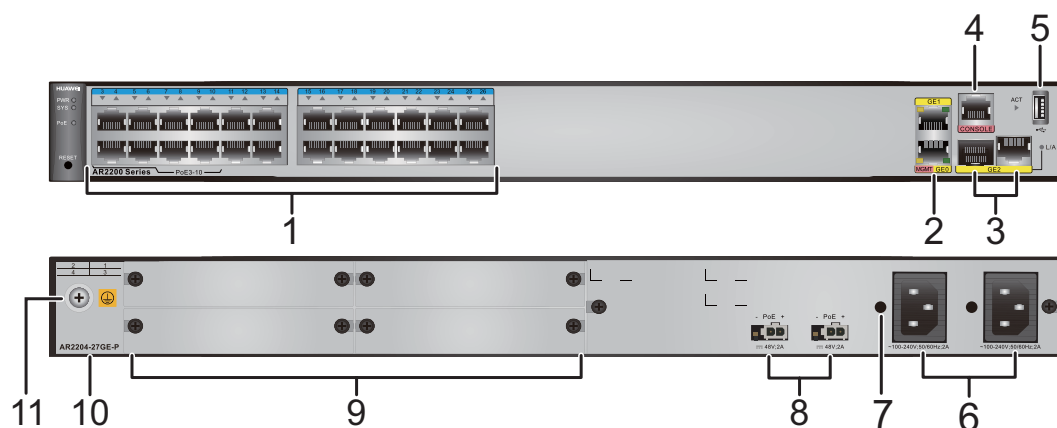
Table 3-619 Mapping between the AR2204-27GE-P router and software versions

Router Model	Software Version
AR2204-27GE-P	V200R007C00 and later versions

Appearance and Structure

Figure 3-207 shows the appearance of the AR2204-27GE-P router.

Figure 3-207 AR2204-27GE-P appearance



1	LAN interfaces: twenty-four GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	Two AC power jacks NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Two PoE power jacks NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
9	Four SIC slots	10	Product model silkscreen

11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Slot Distribution

Figure 3-208 shows the slot distribution on the AR2204-27GE-P router.

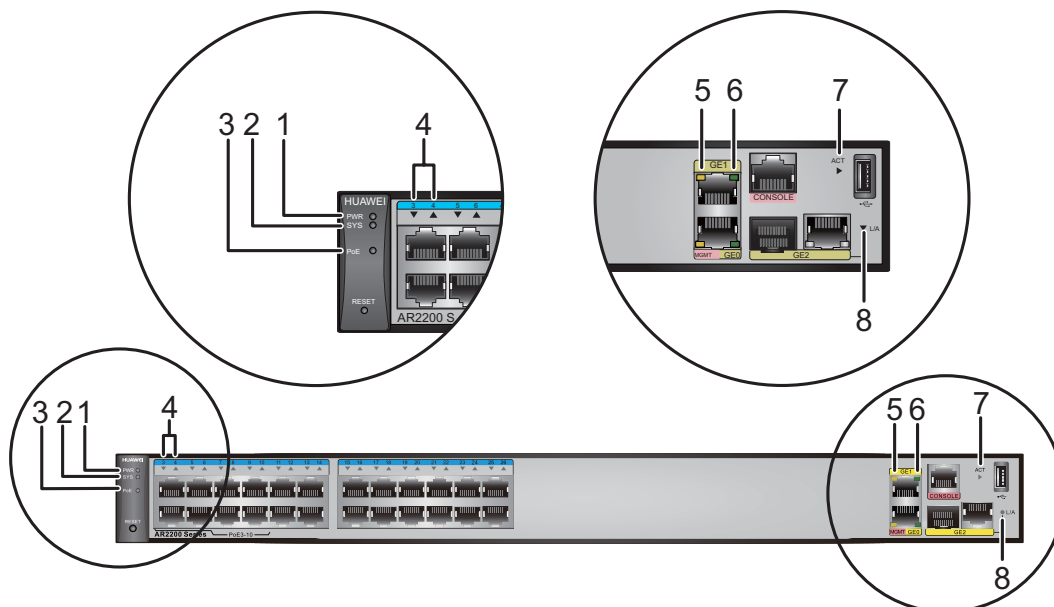
Figure 3-208 Slot distribution of the AR2204-27GE-P

Device Model		Slot Distribution	Slot Combination				
AR2204-27GE-P	Front view	NA	NA				
	Rear view	<table border="1" style="display: inline-table;"> <tr> <td style="background-color: #e0ffff;">2(SIC)</td> <td style="background-color: #e0ffff;">1(SIC)</td> <td rowspan="2" style="text-align: center;">NA</td> </tr> <tr> <td style="background-color: #e0ffff;">4(SIC)</td> <td style="background-color: #e0ffff;">3(SIC)</td> </tr> </table>	2(SIC)	1(SIC)	NA	4(SIC)	3(SIC)
2(SIC)	1(SIC)	NA					
4(SIC)	3(SIC)						

Indicator Description

Figure 3-209 shows the locations of AR2204-27GE-P indicators.

Figure 3-209 Indicators on the AR2204-27GE-P



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	PoE	Green	Steady on: The PoE power supply is normal.
			Off: No PoE power supply is available.
4	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
5 and 6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received on the link.
			Off: No data is being transmitted or received on the link.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-620](#) lists attributes of a console interface.

Table 3-620 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-621](#) lists attributes of a GE electrical interface.

Table 3-621 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-622](#) lists attributes of a USB interface.

Table 3-622 USB interface attributes

Attribute	Description
Connector type	Type A

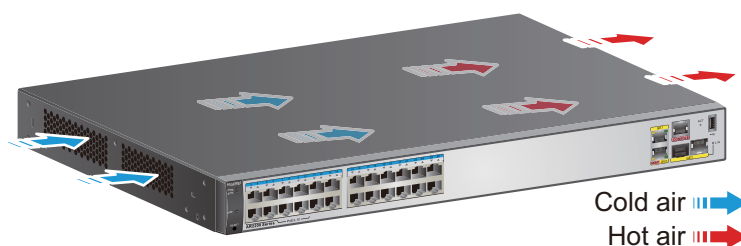
Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-27GE-P router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-210](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-210 Airflow



Technical Specifications

[Table 3-623](#) lists the technical specifications of the AR2204-27GE-P routers.

Table 3-623 AR2204-27GE-P routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height

Item	Specification
Weight	5 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE3 to GE10)
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 24 GE electrical interfaces
Extended slots	4×SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.

Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350JUD

3.8.7 AR2204-48GE-P

Version Mapping

Table 3-624 lists the mapping between the AR2204-48GE-P router and software versions.

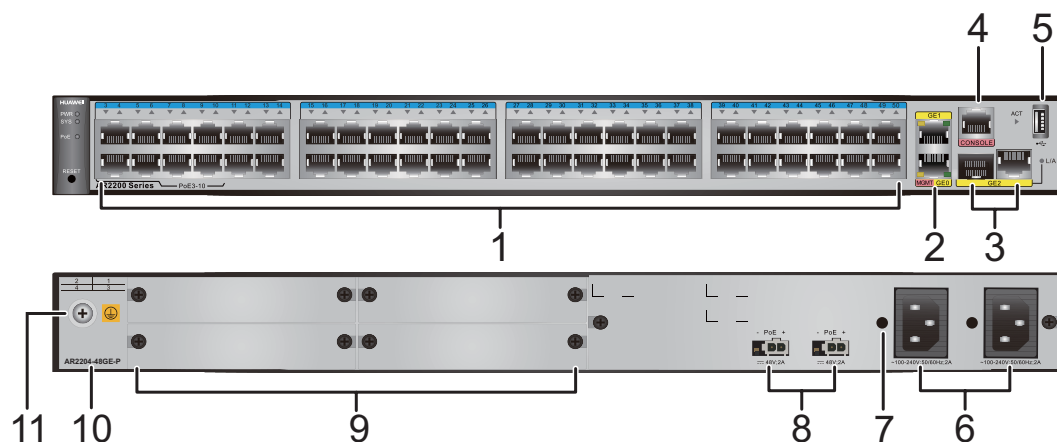
Table 3-624 Mapping between the AR2204-48GE-P router and software versions

Router Model	Software Version
AR2204-48GE-P	V200R007C00, V200R008C50 and later versions

Appearance and Structure

Figure 3-211 shows the appearance of the AR2204-48GE-P router.

Figure 3-211 AR2204-48GE-P appearance




1	LAN interfaces: forty-eight GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	Two AC power jacks NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Two PoE power jacks NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
9	Four SIC slots	10	Product model silkscreen
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Slot Distribution

Figure 3-212 shows the slot distribution of the AR2204-48GE-P router.

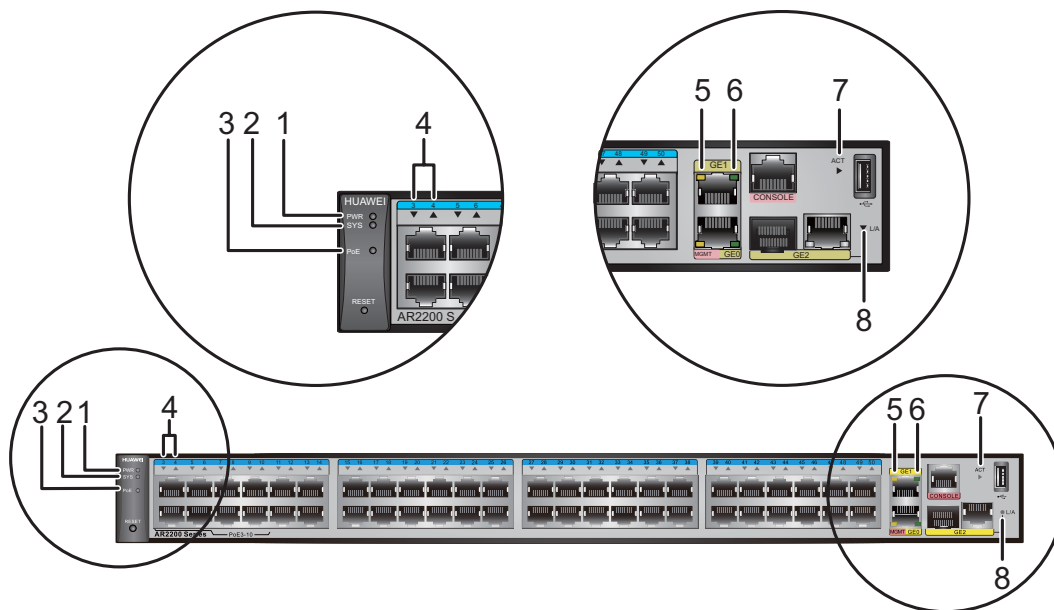
Figure 3-212 Slot distribution of the AR2204-48GE-P

Device Model		Slot Distribution	Slot Combination
AR2204-48GE-P	Front view	NA	NA
	Rear view		Not supported

Indicator Description

Figure 3-213 shows the indicators on the AR2204-48GE-P router.

Figure 3-213 Indicators on the AR2204-48GE-P



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the built-in power module normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	PoE	Green	Steady on: The PoE power supply is normal.
		Off	No PoE power supply is available.
4	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the interface.
		Blinking	Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			Off: No link is established on the interface.
5 and 6	GE electrical interface indicator (WAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-625](#) lists attributes of a console interface.

Table 3-625 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-626](#) lists attributes of a GE electrical interface.

Table 3-626 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).

- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-627](#) lists attributes of a USB interface.

Table 3-627 USB interface attributes

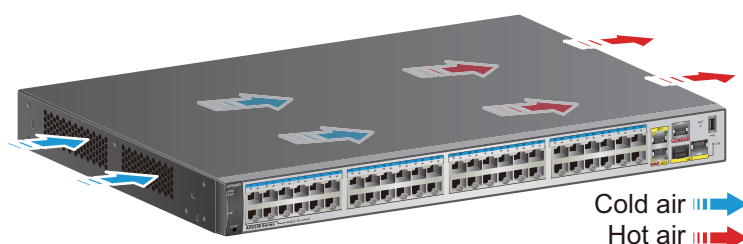
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-48GE-P router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-214](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-214 Airflow



Technical Specifications

[Table 3-628](#) lists the technical specifications of the AR2204-48GE-P routers.

Table 3-628 AR2204-48GE-P technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE3 to GE10)
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	35 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	

Item	Specification
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: 2 GE electrical interfaces and 1 GE combo interface LAN interfaces: 48 GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351BXU

3.8.8 AR2204-51GE

Version Mapping

[Table 3-629](#) lists the mapping between the AR2204-51GE router and software versions.

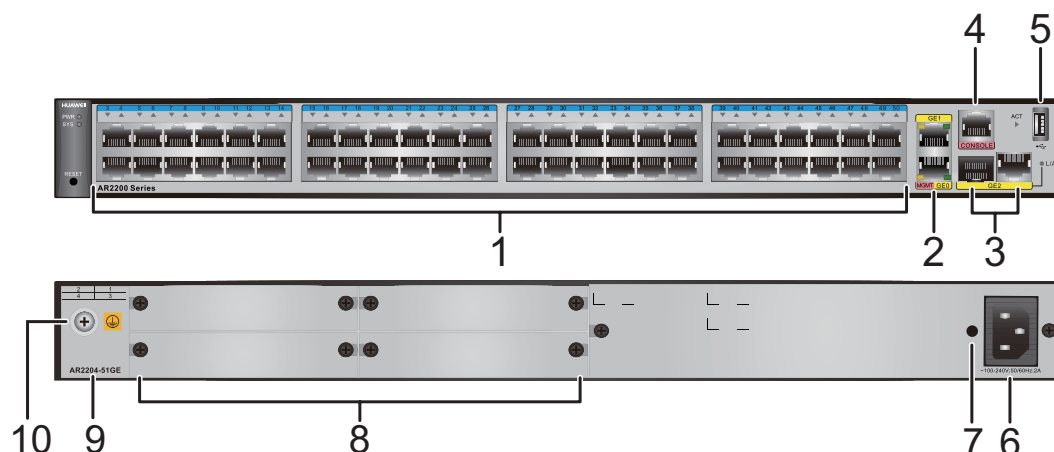
Table 3-629 Mapping between the AR2204-51GE router and software versions

Router Model	Software Version
AR2204-51GE	V200R007C00 and later versions

Appearance and Structure

[Figure 3-215](#) shows the appearance of the AR2204-51GE router.

Figure 3-215 AR2204-51GE appearance




1	LAN interfaces: forty-eight GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Four SIC slots
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Slot Distribution

Figure 3-216 shows the slot distribution of the AR2204-51GE router.

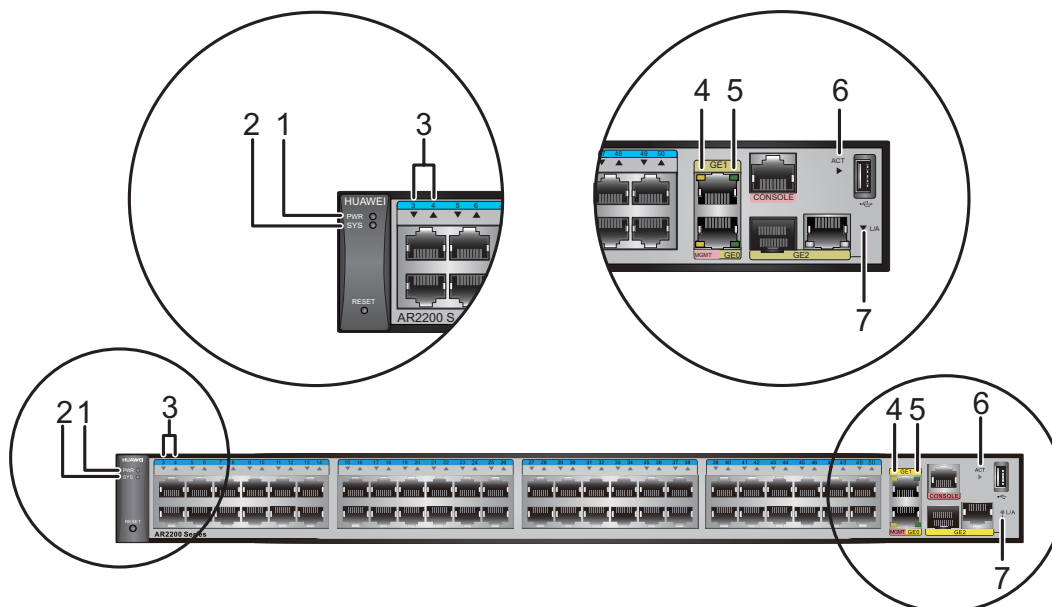
Figure 3-216 Slot distribution of the AR2204-51GE

Device Model		Slot Distribution	Slot Combination
AR2204-51GE	Front view	NA	NA
	Rear view		Not supported

Indicator Description

Figure 3-217 shows the indicators on the AR2204-51GE router.

Figure 3-217 Indicators on the AR2204-51GE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the built-in power module normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
4 and 5	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
7	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.

Number	Indicator	Color	Description
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-630](#) lists attributes of a console interface.

Table 3-630 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-631](#) lists attributes of a GE electrical interface.

Table 3-631 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

Attribute	Description
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-632](#) lists attributes of a USB interface.

Table 3-632 USB interface attributes

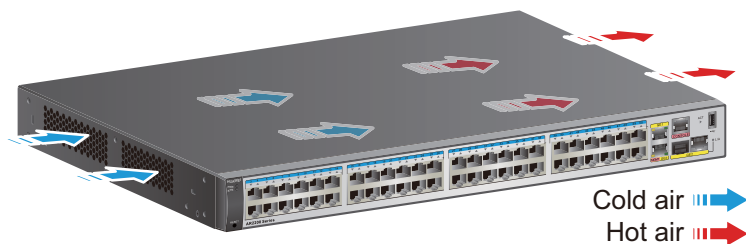
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-51GE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-218](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-218 Airflow



Technical Specifications

Table 3-633 lists lists the technical specifications of the AR2204-51GE router.

Table 3-633 AR2204-51GE technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.40 in. x 16.54 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.54 in. x 1.75 in.), 1 U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported

Item	Specification
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	35 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interface	1
Service interfaces	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 48 GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350QKD

3.8.9 AR2204-51GE-P

Version Mapping

[Table 3-634](#) lists the mapping between the AR2204-51GE-P router and software versions.

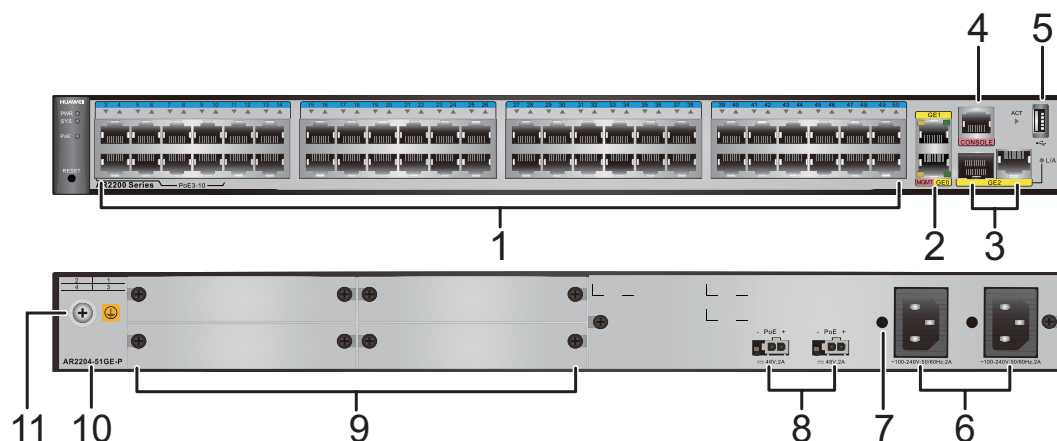
Table 3-634 Mapping between the AR2204-51GE-P router and software versions

Router Model	Software Version
AR2204-51GE-P	V200R007C00 and later versions

Appearance and Structure

Figure 3-219 shows the appearance of the AR2204-51GE-P router.

Figure 3-219 AR2204-51GE-P appearance



1	LAN interfaces: forty-eight GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	Two AC power jacks NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Two PoE power jacks NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
9	Four SIC slots	10	Product model silkscreen

11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-
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Slot Distribution

Figure 3-220 shows the slot distribution on the AR2204-51GE-P router.

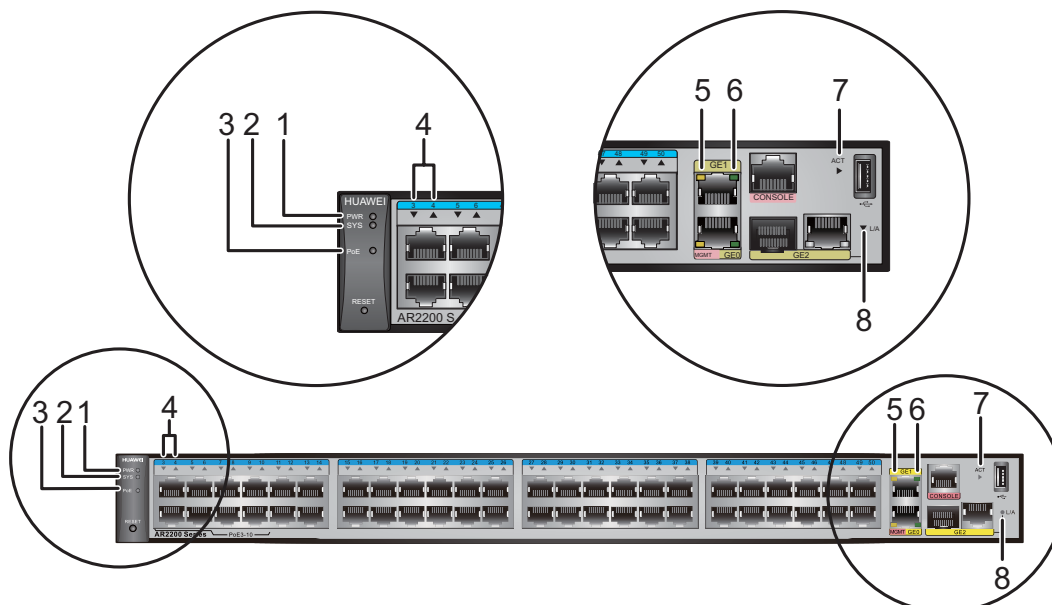
Figure 3-220 Slot distribution of the AR2204-51GE-P

Device Model		Slot Distribution	Slot Combination				
AR2204-51GE-P	Front view	NA	NA				
	Rear view	<table border="1" style="display: inline-table;"> <tr> <td style="background-color: #e0ffff;">2(SIC)</td> <td style="background-color: #e0ffff;">1(SIC)</td> <td rowspan="2" style="text-align: center;">NA</td> </tr> <tr> <td style="background-color: #e0ffff;">4(SIC)</td> <td style="background-color: #e0ffff;">3(SIC)</td> </tr> </table>	2(SIC)	1(SIC)	NA	4(SIC)	3(SIC)
2(SIC)	1(SIC)	NA					
4(SIC)	3(SIC)						

Indicator Description

Figure 3-221 shows the locations of AR2204-51GE-P indicators.

Figure 3-221 Indicators on the AR2204-51GE-P



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	PoE	Green	Steady on: The PoE power supply is normal.
			Off: No PoE power supply is available.
4	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
5 and 6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received on the link.
			Off: No data is being transmitted or received on the link.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-635](#) lists attributes of a console interface.

Table 3-635 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-636](#) lists attributes of a GE electrical interface.

Table 3-636 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-637](#) lists attributes of a USB interface.

Table 3-637 USB interface attributes

Attribute	Description
Connector type	Type A

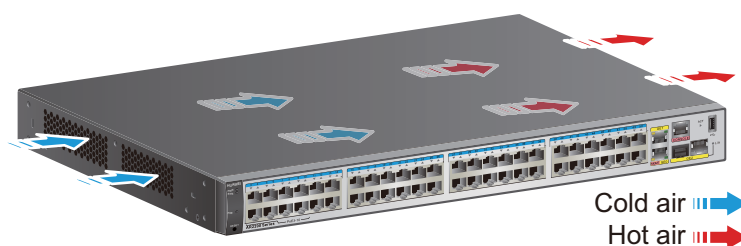
Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-51GE-P router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-222](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-222 Airflow



Technical Specifications

[Table 3-638](#) lists the technical specifications of the AR2204-51GE-P routers.

Table 3-638 AR2204-51GE-P routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height

Item	Specification
Weight	5 kg
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE3 to GE10)
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	35 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 48 GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.

Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350JUE

3.8.10 AR2204-51GE-R

Version Mapping

Table 3-639 lists the mapping between the AR2204-51GE-R router and software versions.

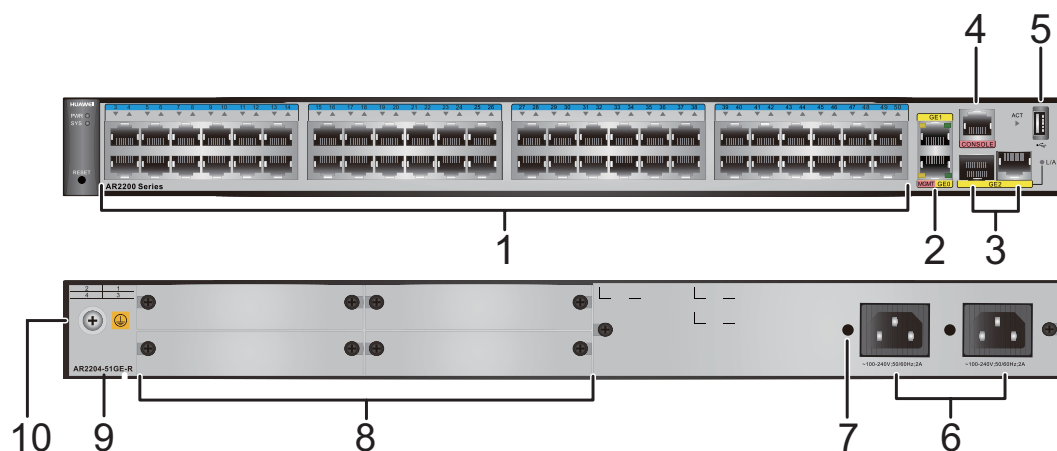
Table 3-639 Mapping between the AR2204-51GE-R router and software versions

Router Model	Software Version
AR2204-51GE-R	V200R007C01, V200R008C30, and later versions

Appearance and Structure

Figure 3-223 shows the appearance of the AR2204-51GE-R router.

Figure 3-223 AR2204-51GE-R appearance




1	LAN interfaces: forty-eight GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	Two AC power jacks NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	Four SIC slots
9	Product model silkscreen	10	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.

Slot Distribution

Figure 3-224 shows the slot distribution of the AR2204-51GE-R router.

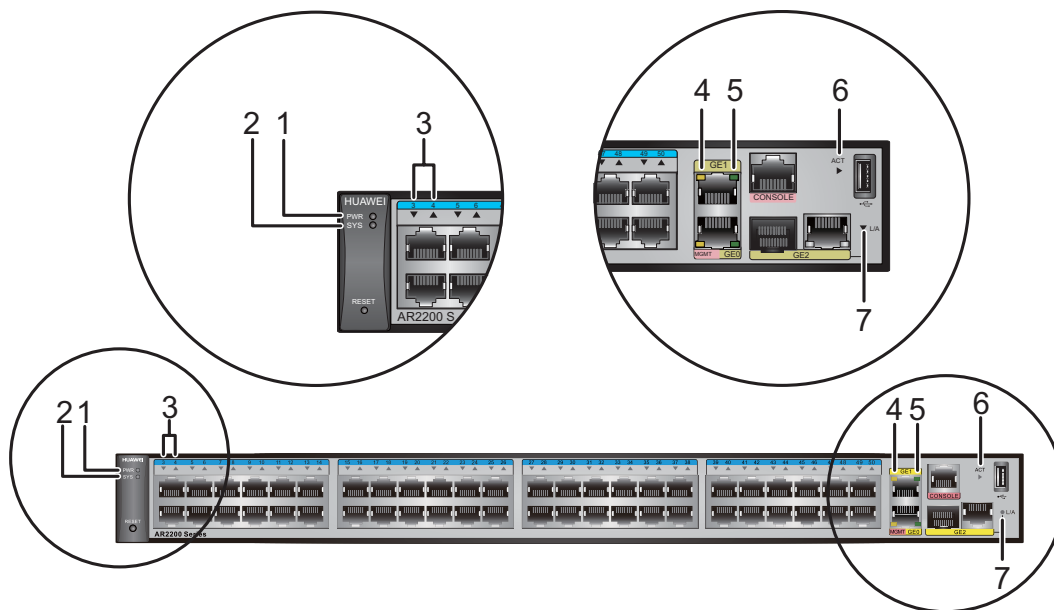
Figure 3-224 Slot distribution of the AR2204-51GE-R

Device Model		Slot Distribution	Slot Combination
AR2204-51GE-R	Front view	NA	NA
	Rear view		Not supported

Indicator Description

Figure 3-225 shows the the indicators on the AR2204-51GE-R router.

Figure 3-225 Indicators on the AR2204-51GE-R



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the built-in power module normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
		Blinking	Data is being transmitted or received on the GE electrical interface.
		Off	No link is established on the GE electrical interface.

Number	Indicator	Color	Description
4 and 5	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
7	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-640](#) lists attributes of a console interface.

Table 3-640 Console interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-641](#) lists attributes of a GE electrical interface.

Table 3-641 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP](#)

Optical Modules, 8.6 GE-CWDM eSFP Optical Modules, 8.7 GE-DWDM eSFP Optical Modules, or 8.4 FE SFP/eSFP Optical Modules.

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-642](#) lists attributes of a USB interface.

Table 3-642 USB interface attributes

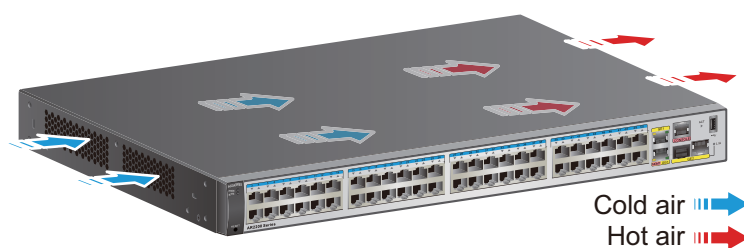
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204-51GE-R uses built-in fan modules for heat dissipation. These fan modules are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-226](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-226 Airflow



Technical Specifications

[Table 3-643](#) lists technical specifications of the AR2204-51GE-R router.

Table 3-643 AR2204-51GE-R technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	35 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	

Item	Specification
Management interface	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interface	1
Service interfaces	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 48 GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350SSJ

3.8.11 AR2204E

Version Mapping

[Table 3-644](#) lists the mapping between the AR2204E router and software versions.

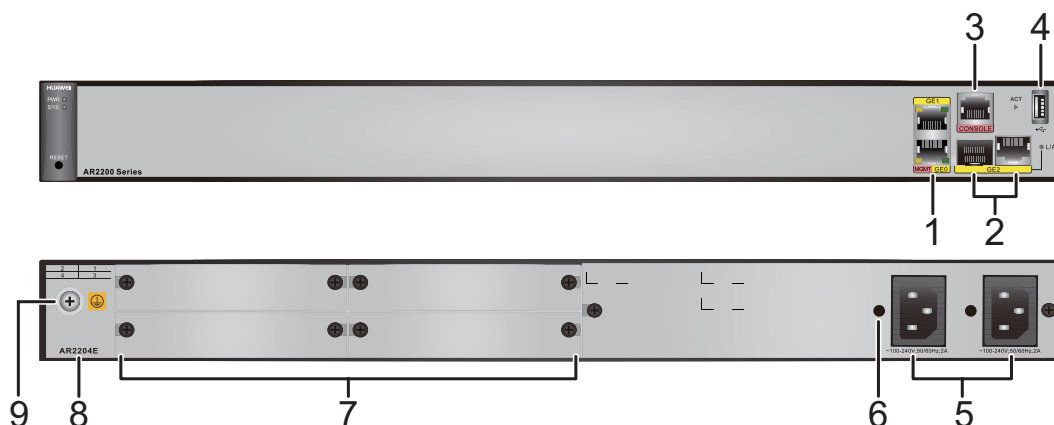
Table 3-644 Mapping between the AR2204E router and software versions

Router Model	Software Version
AR2204E	V200R007C00 and later versions

Appearance and Structure

[Figure 3-227](#) shows the appearance of the AR2204E router.

Figure 3-227 AR2204E appearance



1	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	2	WAN interface: GE combo interface
3	Console interface	4	One USB interface (host)
5	Two AC power jacks NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source. 	6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
7	Four SIC slots	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Slot Distribution

NOTE

- In V200R008C30 and later versions, two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-228 shows the slot distribution of the AR2204E router.

Figure 3-228 Slot distribution of the AR2204E

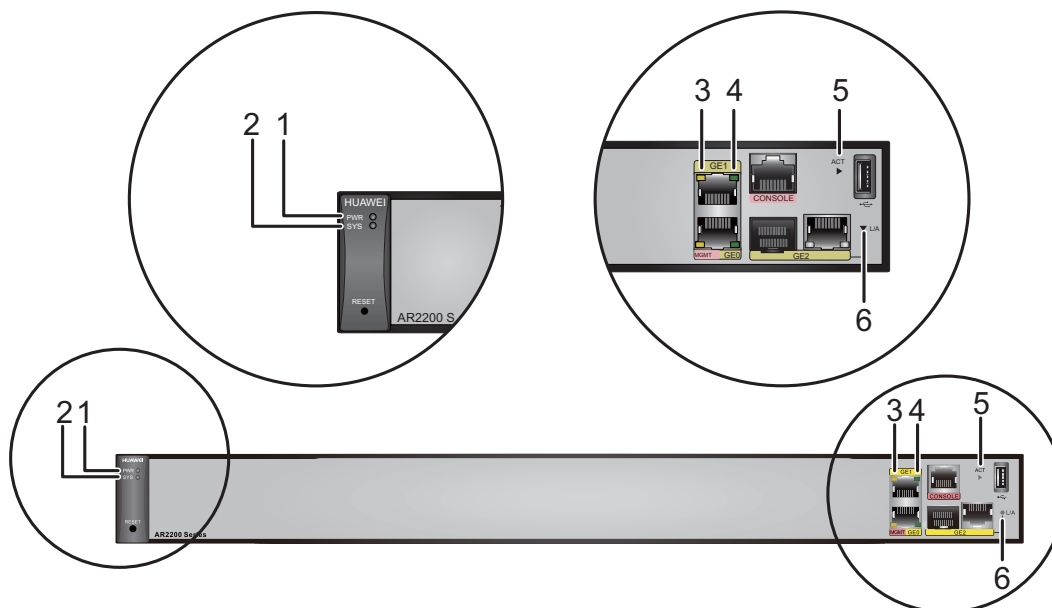
Device Model		Slot Distribution	Slot Combination							
AR2204E	Front view	NA	NA							
	Rear view	<table border="1"> <tr> <td>2(SIC)</td> <td>1(SIC)</td> <td rowspan="2">NA</td> </tr> <tr> <td>4(SIC)</td> <td>3(SIC)</td> </tr> </table>	2(SIC)	1(SIC)	NA	4(SIC)	3(SIC)	<table border="1"> <tr> <td>2(WSIC)</td> <td rowspan="2">NA</td> </tr> <tr> <td>4(WSIC)</td> </tr> </table>	2(WSIC)	NA
2(SIC)	1(SIC)	NA								
4(SIC)	3(SIC)									
2(WSIC)	NA									
4(WSIC)										

- Slot 1 and slot 2 can be combined into new slot 2.
- Slot 3 and slot 4 can be combined into new slot 4.

Indicator Description

Figure 3-229 shows the indicators on the AR2204E router.

Figure 3-229 Indicators on the AR2204E



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.

Number	Indicator	Color	Description
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3 and 4	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established. Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
5	ACT (USB)	Steady red: The system fails to be upgraded or configured using a USB flash drive.	
		Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.	
6	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-645](#) lists attributes of a console interface.

Table 3-645 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-646](#) lists attributes of a GE electrical interface.

Table 3-646 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The

electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-647](#) lists attributes of a USB interface.

Table 3-647 USB interface attributes

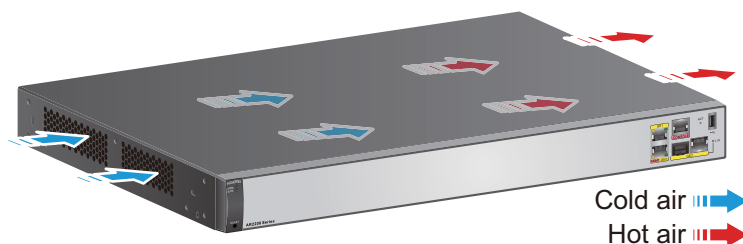
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204E router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-230](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-230 Airflow



Technical Specifications

Table 3-648 lists the technical specifications of the AR2204E routers.

Table 3-648 AR2204E routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans

Item	Specification
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350KGS

3.8.12 AR2204E-D

Version Mapping

Table 3-649 lists the mapping between the AR2204E-D router and software versions.

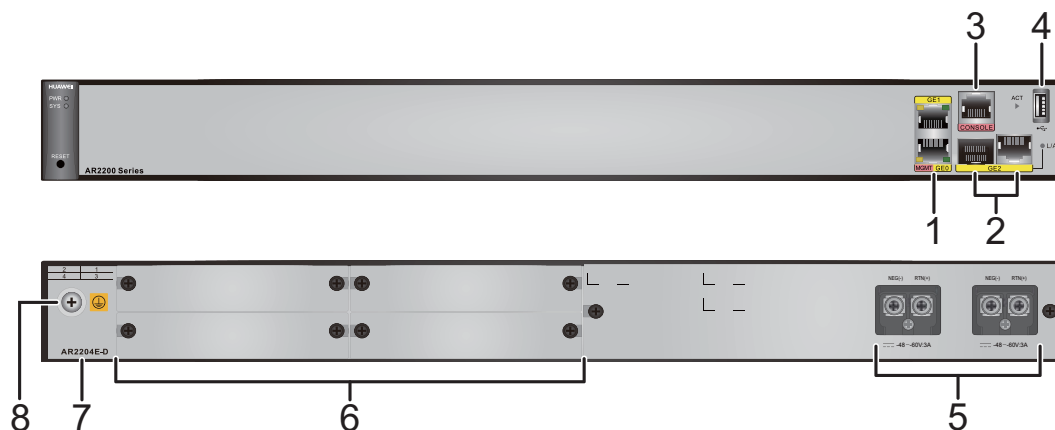
Table 3-649 Mapping between the AR2204E-D router and software versions

Router Model	Software Version
AR2204E-D	V200R007C01, V200R008C30, and later versions

Appearance and Structure

Figure 3-231 shows the appearance of the AR2204E-D router.

Figure 3-231 AR2204E-D appearance



1	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	2	WAN interface: GE combo interface
3	Console interface	4	One USB interface (host)
5	Two DC power terminals NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use DC power cables to connect the router to an external power source. 	6	Four SIC slots
7	Product model silkscreen	8	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.


Slot Distribution

NOTE

- In V200R008C30 and later versions, two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-232 shows the slot distribution of the AR2204E-D router.

Figure 3-232 Slot distribution of the AR2204E-D

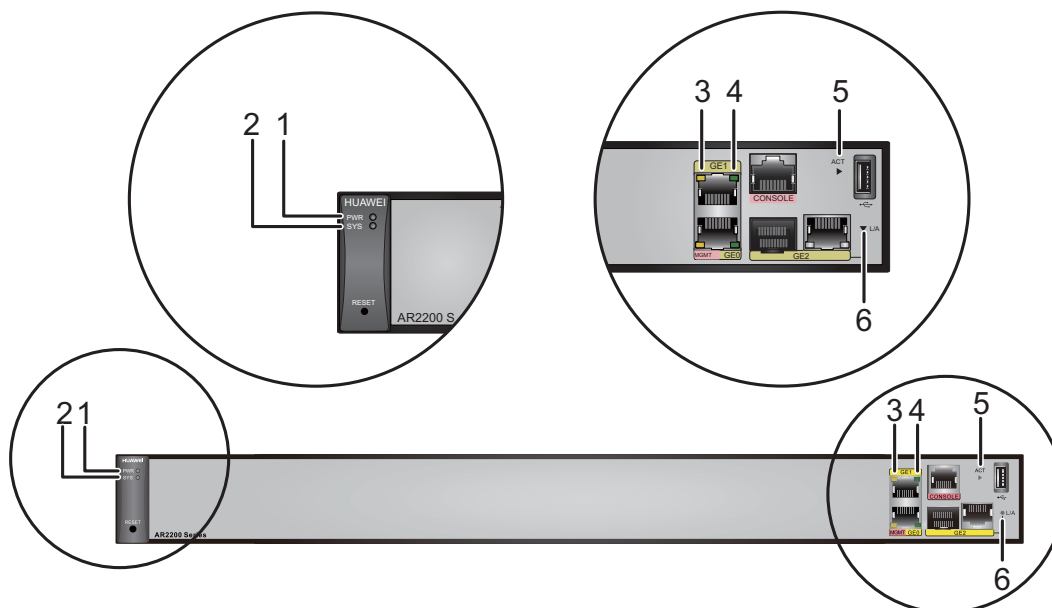
Device Model		Slot Distribution	Slot Combination
AR2204E-D	Front view	NA	NA
	Rear view		NA

- Slot 1 and slot 2 can be combined into new slot 2.
- Slot 3 and slot 4 can be combined into new slot 4.

Indicator Description

Figure 3-233 shows the indicators on the AR2204E-D router.

Figure 3-233 Indicators on the AR2204E-D



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the built-in power module normally.
		Off	The router is powered off.

Number	Indicator	Color	Description
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3 and 4	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
5	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
6	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-650](#) lists attributes of a console interface.

Table 3-650 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-651](#) lists attributes of a GE electrical interface.

Table 3-651 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The

electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-652](#) lists attributes of a USB interface.

Table 3-652 USB interface attributes

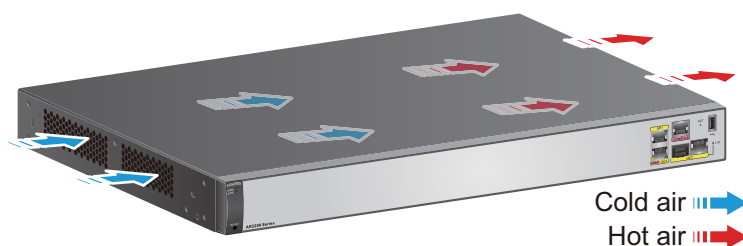
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204E-D uses built-in unpluggable fan modules to cool the system.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-234](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-234 Airflow



Technical Specifications

Table 3-653 lists technical specifications of the AR2204E-D router.

Table 3-653 AR2204E-D technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	3 A
Maximum output power	54 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	20 W
Maximum power consumption	25 W
Heat dissipation	
Fans	Built-in, unpluggable fans

Item	Specification
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interface	1
Service interfaces	WAN interfaces: two GE electrical interfaces and one GE combo interface
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350MSN

3.8.13 AR2204E-D-27GE

Version Mapping

[Table 3-654](#) lists the mapping between the AR2204E-D-27GE router and software versions.

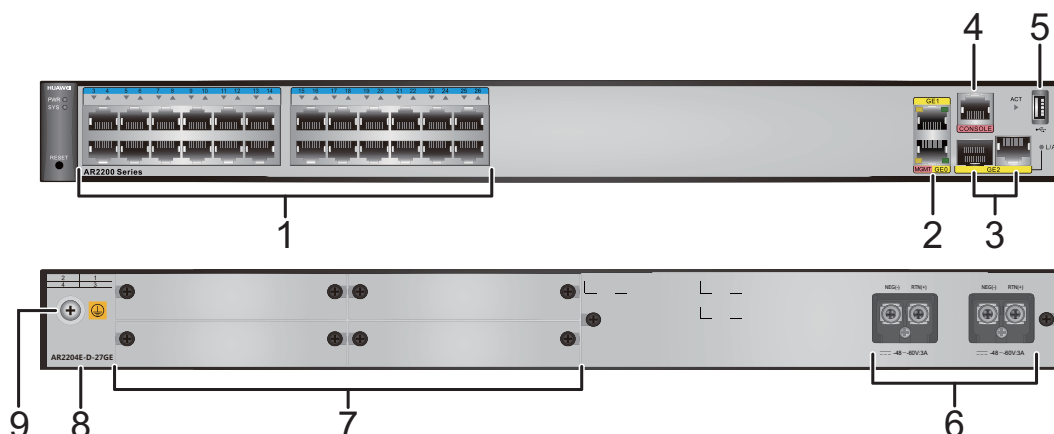
Table 3-654 Mapping between the AR2204E-D-27GE router and software versions

Router Model	Software Version
AR2204E-D-27GE	V200R010C00 and later versions

Appearance and Structure

[Figure 3-235](#) shows the appearance of the AR2204E-D-27GE router.

Figure 3-235 AR2204E-D-27GE appearance



1	LAN interfaces: twenty-four GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	2	WAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.
3	WAN interface: GE combo interface	4	Console interface
5	One USB interface (host)	6	Two DC power terminals NOTE <ul style="list-style-type: none"> Support double power supply (1:1 backup). Use DC power cables to connect the router to an external power source.
7	Four SIC slots	8	Product model silkscreen
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	-	-

Slot Distribution

Figure 3-236 shows the slot distribution on the AR2204E-D-27GE router.

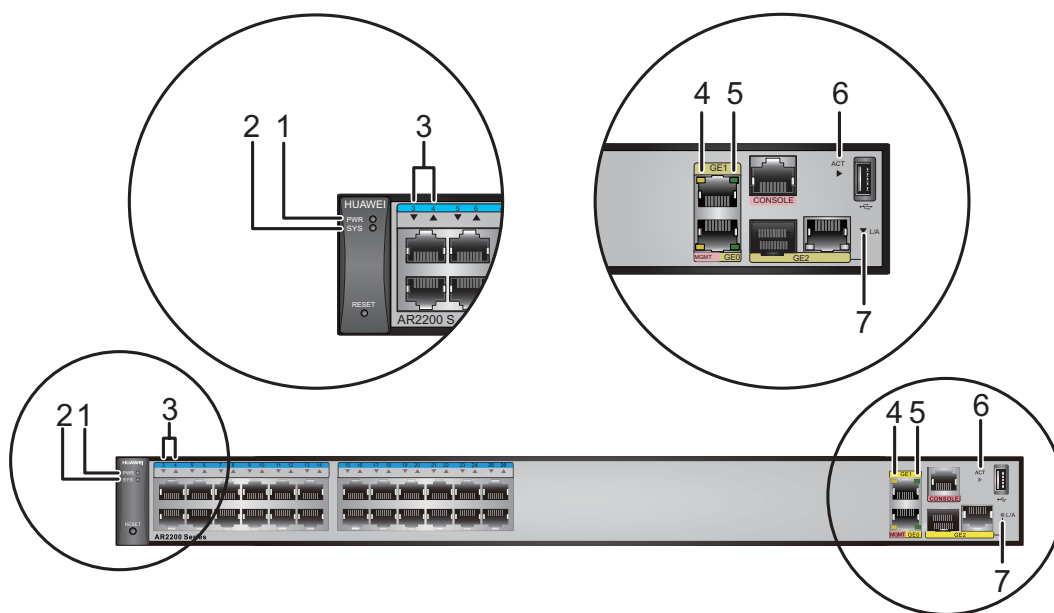
Figure 3-236 Slot distribution of the AR2204E-D-27GE

Device Model		Slot Distribution	Slot Combination				
AR2204E-D-27GE	Front view	NA	NA				
	Rear view	<table border="1" style="display: inline-table;"> <tr> <td style="background-color: #e0ffff;">2(SIC)</td> <td style="background-color: #e0ffff;">1(SIC)</td> <td rowspan="2" style="text-align: center;">NA</td> </tr> <tr> <td style="background-color: #e0ffff;">4(SIC)</td> <td style="background-color: #e0ffff;">3(SIC)</td> </tr> </table>	2(SIC)	1(SIC)	NA	4(SIC)	3(SIC)
2(SIC)	1(SIC)	NA					
4(SIC)	3(SIC)						

Indicator Description

Figure 3-237 shows the locations of AR2204E-D-27GE indicators.

Figure 3-237 Indicators on the AR2204E-D-27GE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
4 and 5	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
7	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.

Number	Indicator	Color	Description
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-655](#) lists attributes of a console interface.

Table 3-655 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-656](#) lists attributes of a GE electrical interface.

Table 3-656 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

Attribute	Description
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-657](#) lists attributes of a USB interface.

Table 3-657 USB interface attributes

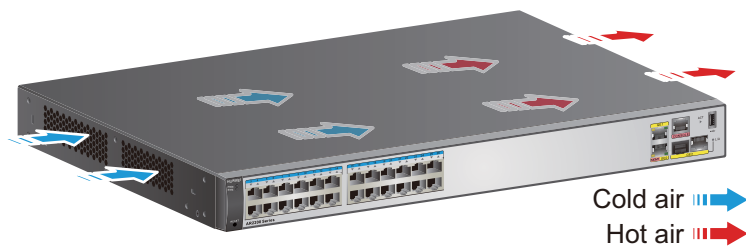
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204E-D-27GE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-238](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-238 Airflow



Technical Specifications

Table 3-658 lists the technical specifications of the AR2204E-D-27GE routers.

Table 3-658 AR2204E-D-27GE routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	5 kg
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	3 A
Maximum output power	54 W
RPS power supply	Not supported

Item	Specification
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 24 GE electrical interfaces
Extended slots	4×SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352QEU

3.8.14 AR2204XE

Version Mapping

[Table 3-659](#) lists the mapping between the AR2204XE series routers and software versions.

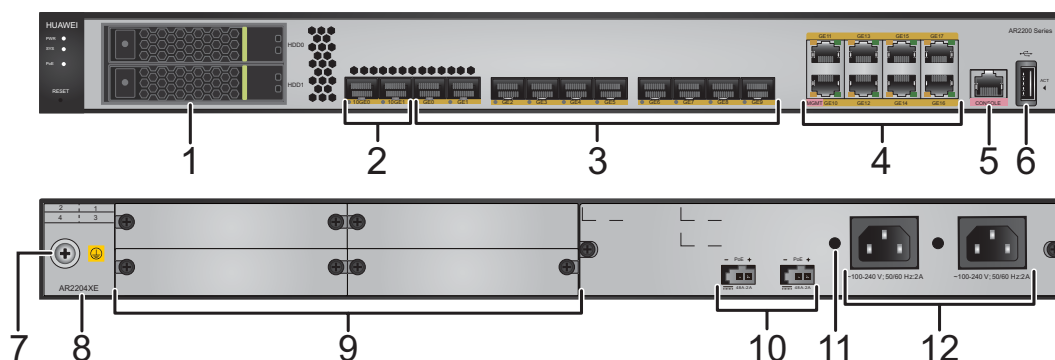
Table 3-659 Version mapping

Router Model	Software Version
AR2204XE	V200R009C00 and later versions

Appearance and Structure

Figure 3-239 shows the appearance of the AR2204XE router.

Figure 3-239 AR2204XE appearance



1	Two interfaces for SATA mechanical hard disks	2	WAN interfaces: two 10GE optical interfaces
3	WAN interfaces: ten GE optical interfaces	4	WAN interfaces: eight GE electrical interfaces NOTE GE10 is a management interface and is used to upgrade the router.
5	Console interface	6	One USB interface (host)
7	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	8	Product model silkscreen
9	Four SIC slots	10	Two PoE power jacks NOTE The PoE power jack connects to a 100 W PoE power adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.

11	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	12	Two AC power jacks NOTE <ul style="list-style-type: none"> ● Support double power supply (1:1 backup). ● Use an AC power cable to connect the router to an external power source.
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Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-240 shows the slot distribution on the AR2204XE router.

Figure 3-240 Slot distribution

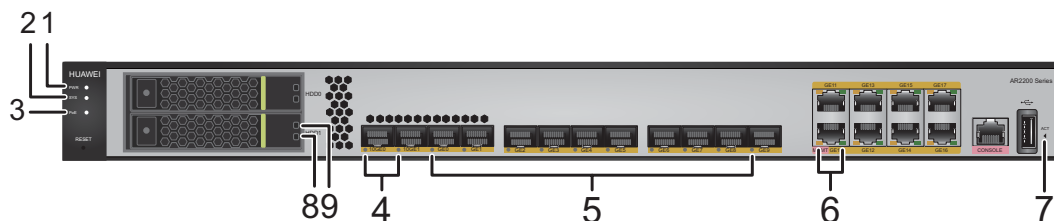
Device Model		Slot Distribution	Slot Combination
AR2204XE	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot

- Slot 1 and slot 2 can be combined into new slot 2.
- Slot 3 and slot 4 can be combined into new slot 4.
- Slot 2 and slot 4 can be combined into new slot 4.

Indicator Description

Figure 3-241 shows the indicators on the AR2204XE router.

Figure 3-241 Indicators on the AR2204XE router



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
4	10GE optical interface indicators (10GE0 to 10GE1)	Green	Steady on: A link has been established on the corresponding 10GE optical interface. Blinking: Data is being transmitted or received on the corresponding 10GE optical interface. Off: No link is established on corresponding 10GE optical interface.
5	GE optical interface indicators (GE0 to GE9)	Green	Steady on: A link has been established on the corresponding GE optical interface. Blinking: Data is being transmitted or received on the corresponding GE optical interface. Off: No link is established on corresponding GE optical interface.
6	GE electrical interface indicators (GE10 to GE17)	Green	Steady on: A link has been established on the corresponding GE electrical interface.
			Off: No link is established on the corresponding GE electrical interface.

Number	Indicator	Color	Description
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface. Off: No data is being transmitted or received on the corresponding GE electrical interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	Hard disk ACT indicator	Green	Steady on: A hard disk is present. Blinking: The system is performing read-write operation on the hard disk. Off: No hard disk is present.
9	Hard disk error indicator	Red	Steady on: The hard disk does not work normally. Off: The hard disk is working normally.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-660](#) lists attributes of a console interface.

Table 3-660 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-661](#) lists attributes of a GE electrical interface.

Table 3-661 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface can work in FE mode and can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 3-662](#) lists attributes of a GE optical interface.

 **NOTE**

For V200R010C00 and later versions, the GE optical interface configured with copper module only supports GE mode.

Table 3-662 GE optical interface attributes

Attribute	Description
Connector type	LC/PC

Attribute	Description
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. [Table 3-663](#) lists attributes of a 10GE optical interface.

Table 3-663 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules and 8.5 GE eSFP Optical Modules .
Standards compliance	IEEE802.3ae

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-664](#) lists attributes of a USB interface.

Table 3-664 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204XE router uses built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-242](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-242 Airflow



Technical Specifications

[Table 3-665](#) lists the technical specifications of the AR2204XE router.

Table 3-665 Technical specifications

Item	Specification
System parameters	
Processor	8-core, 1.5 GHz
Memory	4 GB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no rack-mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.40 in. x 16.54 in. x 1.75 in.), 1U height With rack-mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19 in. x 16.54 in. x 1.75 in.), 1U height
Weight	5 kg (11.02 lb)
Power specifications	
Rated input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A

Item	Specification
Maximum output power	150 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE10 to GE17)
Power consumption (empty chassis)	
Typical power consumption	70 W
Maximum power consumption	85 W
Heat dissipation	
Fans	Built-in, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
Console interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: 8 GE electrical interfaces, 2 10GE optical interfaces, and 10 GE optical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to +45°C (32°F to 113°F) NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351HLE

3.8.15 AR2204XE-DC

Version Mapping

Table 3-666 describes the matching relationship between the AR2204XE-DC router and software versions.

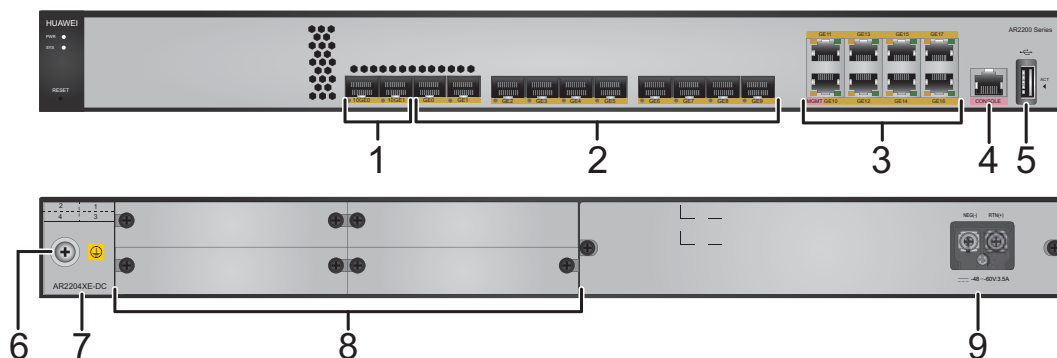
Table 3-666 Version mapping

Router Model	Software Version
AR2204XE-DC	V300R003C10 and later versions

Appearance and Structure

Figure 3-243 shows the appearance of the AR2204XE-DC router

Figure 3-243 AR2204XE-DC appearance



1	WAN interfaces: two 10GE optical interfaces	2	WAN interfaces: ten GE optical interfaces
3	WAN interfaces: eight GE electrical interfaces NOTE GE10 is a management interface and is used to upgrade the router.	4	Console interface
5	One USB interface (host)	6	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
7	Product model silkscreen	8	Four SIC slots

9	DC power terminals NOTE Use DC power cables to connect the router to an external power source.	-	-	
---	--	---	---	--

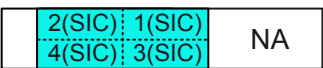
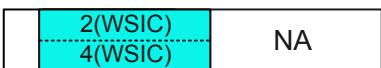
Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-244 shows the slot distribution of the AR2204XE-DC router.

Figure 3-244 Slot distribution of the AR2204XE-DC

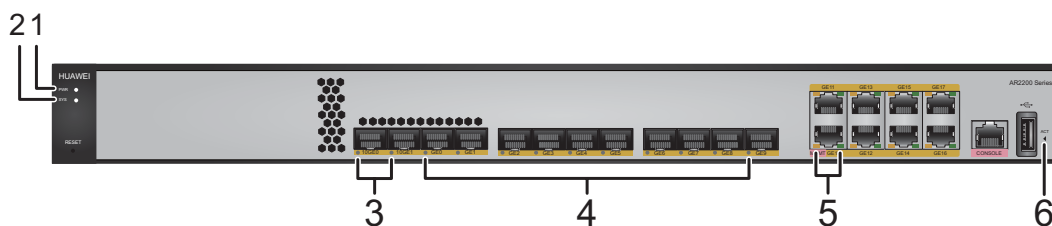
Device Model		Slot Distribution	Slot Combination
AR2204XE-DC	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- Slot 2 and slot 4 are combined into new slot 4.

Indicator Description

Figure 3-245 shows the indicators on the AR2204XE-DC router.

Figure 3-245 Indicators on the AR2204XE-DC



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The switch is not powered on.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	10GE optical interface indicators (10GE0 and 10GE1)	Green	Steady on: A link has been established on the corresponding 10GE optical interface. Blinking: Data is being transmitted or received on the corresponding 10GE optical interface. Off: No link is established on corresponding 10GE optical interface.
4	GE optical interface indicators (GE0 to GE9)	Green	Steady on: A link has been established on the corresponding GE optical interface. Blinking: Data is being transmitted or received on the corresponding GE optical interface. Off: No link is established on corresponding GE optical interface.
5	GE electrical interface indicators (GE10 to GE17)	Green	Steady on: A link has been established on the corresponding GE interface. Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link. Off: No data is being transmitted or received.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. [Table 3-667](#) lists attributes of a console interface.

Table 3-667 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-668](#) lists attributes of a GE electrical interface.

Table 3-668 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Optical Interface

A GE optical interface can work in FE mode and can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 3-669](#) lists attributes of a GE optical interface.

Table 3-669 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

10GE Optical Interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. [Table 3-670](#) lists attributes of a 10GE optical interface.

Table 3-670 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC

Attribute	Description
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules and 8.5 GE eSFP Optical Modules .
Standards compliance	IEEE802.3ae

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-671](#) lists attributes of a USB interface.

Table 3-671 USB interface attributes

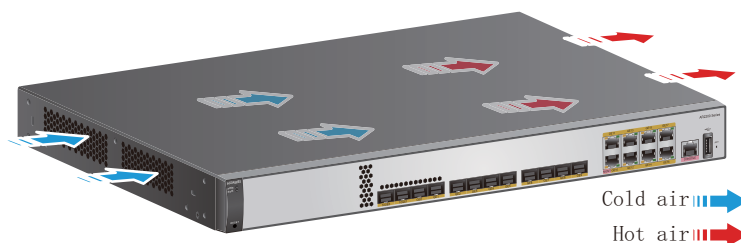
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2204XE-DC router uses built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-246](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-246 Airflow



Technical Specifications

[Table 3-672](#) lists technical specifications of the AR2204XE-DC router.

Table 3-672 AR2204XE-DC technical specifications

Item	Specification
System parameters	
Processor	8-core, 1.5 GHz
Memory	2 GB
Flash	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.54 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.4 mm (19.0 in. x 16.54 in. x 1.75 in.), 1 U height
Weight	4.75 kg (10.47 lb)
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	3.5 A
Maximum output power	100 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	33 W
Maximum power consumption	57 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	

Item	Specification
Management interface	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interface	1
Service interfaces (standard configuration)	WAN interfaces: eight GE electrical interfaces, two 10GE optical interfaces, and 10 GE optical interfaces
Extended slots	4 x SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 300 m (984.25 ft.).
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352EFT

3.8.16 AR2220-AC

Version Mapping

[Table 3-673](#) lists the mapping between the AR2220-AC router and software versions.

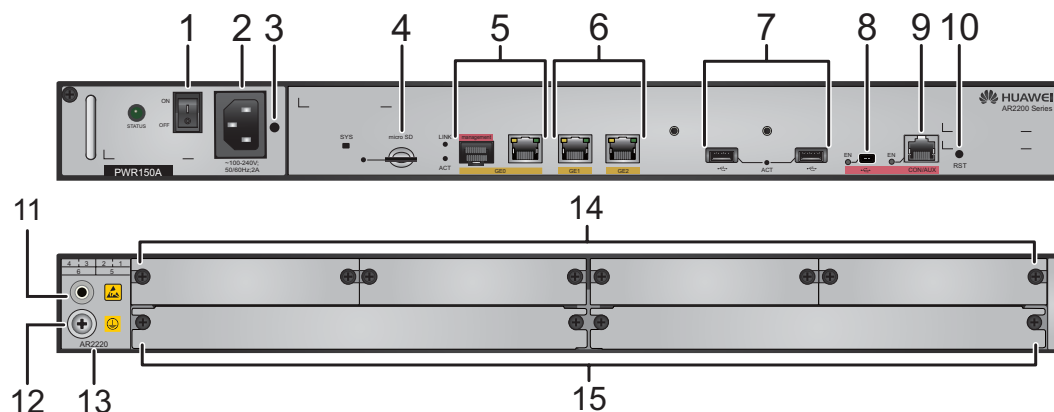
Table 3-673 Mapping between the AR2220-AC router and software versions


Router Model	Software Version
AR2220-AC	V200R001C00 and later versions

Appearance and Structure

[Figure 3-247](#) shows the appearance of the AR2220-AC router.

Figure 3-247 AR2220-AC appearance



1	Power switch	2	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
3	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	4	Micro SD card slot
5	WAN interface: GE combo interface	6	WAN interfaces: two GE electrical interfaces
7	Two USB interfaces (host) NOTE After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	8	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.
9	CON/AUX interface NOTE The AR2220-AC does not support AUX login.	10	RST button NOTE <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.

11	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	12	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
13	Product model silkscreen	14	Four SIC slots
15	Two WSIC slots	-	-

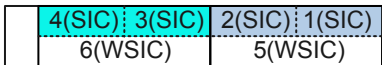
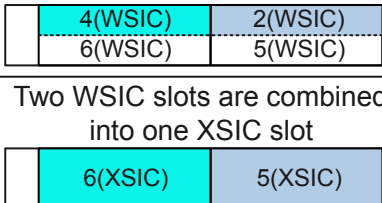
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-248 shows slot distribution of AR2220-AC routers.

Figure 3-248 Slot distribution of the AR2220-AC routers

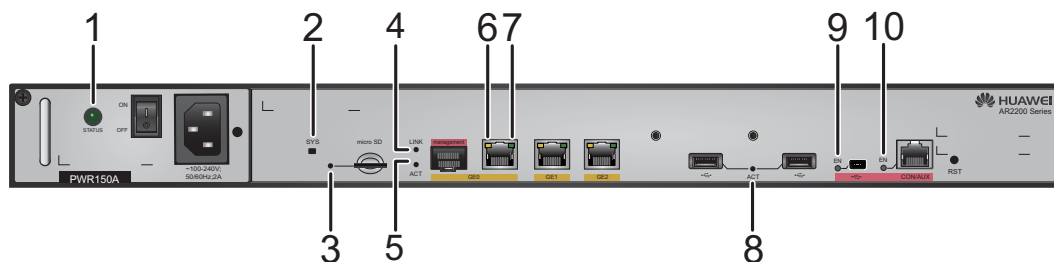
Device Model		Slot Distribution	Slot Combination
AR2220-AC	Front view	NA	NA
	Rear view	 4(SIC) : 3(SIC) 2(SIC) : 1(SIC) 6(WSIC) 5(WSIC)	Two SIC slots are combined into one WSIC slot  Two WSIC slots are combined into one XSIC slot 6(XSIC) 5(XSIC)

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 3-249 shows the locations of AR2220-AC indicators.

Figure 3-249 Indicators on the AR2220-AC



Number	Indicator	Color	Description
1	STATUS	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	Micro SD card indicator	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No Micro SD card is available.
4 and 5	GE optical interface indicators ● 4: LINK indicator ● 5: ACT indicator	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.

Number	Indicator	Color	Description
6 and 7	GE electrical interface indicators <ul style="list-style-type: none"> ● 6: ACT indicator ● 7: LINK indicator 	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.

Number	Indicator	Color	Description
10	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled. Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-674](#) lists the CON/AUX interface attributes.

Table 3-674 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-675](#) lists attributes of a Mini USB interface.

Table 3-675 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-676](#) lists attributes of a GE electrical interface.

Table 3-676 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-677](#) lists attributes of a USB interface.

Table 3-677 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2220-AC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-250](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-250 Airflow



Technical Specifications

Table 3-678 lists the technical specifications of the AR2220-AC routers.

Table 3-678 AR2220-AC routers technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 600 MHz
Memory	2 GB
Flash	16 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	7 kg
Power specifications	
Rated AC input voltage	100 V/240 V, 50 Hz or 60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	150 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	47 W
Maximum power consumption	65 W

Item	Specification
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	<ul style="list-style-type: none"> ● 4xSIC ● 2xWSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352934

3.8.17 AR2220-DC

Version Mapping

[Table 3-679](#) describes the matching relationship between the AR2220-DC series routers and software versions.

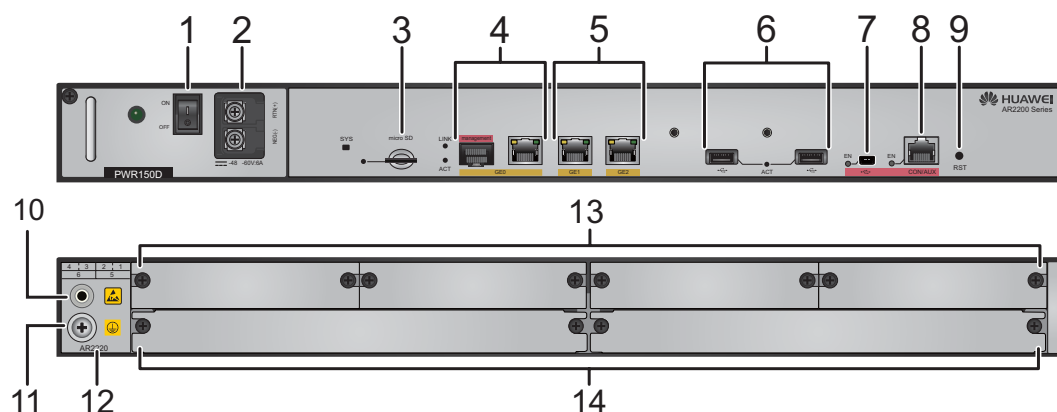
Table 3-679 Matching between AR2220-DC series routers and software versions


Router Model	Software Version
AR2220-DC	V200R001C01 and later versions

Appearance and Structure

Figure 3-251 shows the appearance of the AR2220-DC router.

Figure 3-251 AR2220-DC appearance



1	Power switch	2	DC power terminals NOTE Use DC power cables to connect the router to an external power source.
3	Micro SD card slot	4	WAN interface: GE combo interface
5	WAN interfaces: two GE electrical interfaces	6	Two USB interfaces (host) NOTE After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 
7	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	8	CON/AUX interface NOTE The AR2220-DC does not support AUX login.

9	RST button NOTE <ul style="list-style-type: none"> • This button is used to reset the router. • Resetting the router will interrupt services. Exercise caution when deciding to press this button. 	10	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	12	Product model silkscreen
13	Four SIC slots	14	Two WSIC slots

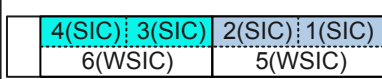

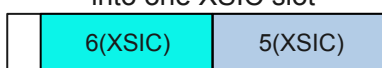
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-252 shows the slot distribution on the AR2220-DC router.

Figure 3-252 Slot distribution of the AR2220-DC

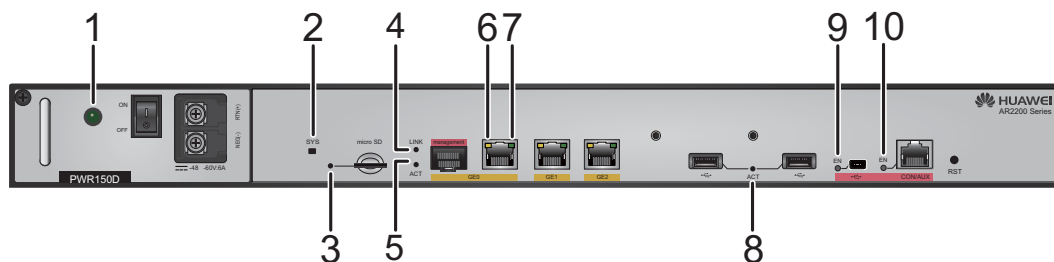
Device Model		Slot Distribution	Slot Combination
AR2220-DC	Front view	NA	NA
	Rear view		Two SIC slots are combined into one WSIC slot  Two WSIC slots are combined into one XSIC slot 

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 3-253 shows the AR2220-DC indicator.

Figure 3-253 Indicators on the AR2220-DC



Number	Indicator	Color	Description
1	STATUS	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	Micro SD card indicator	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No Micro SD card is available.
4 and 5	GE optical interface indicators ● 4: LINK indicator ● 5: ACT indicator	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.

Number	Indicator	Color	Description
6 and 7	GE electrical interface indicators <ul style="list-style-type: none"> ● 6: ACT indicator ● 7: LINK indicator 	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.

Number	Indicator	Color	Description
10	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled. Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-680](#) lists the CON/AUX interface attributes.

Table 3-680 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-681](#) lists attributes of a Mini USB interface.

Table 3-681 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-682](#) lists attributes of a GE electrical interface.

Table 3-682 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-683](#) lists attributes of a USB interface.

Table 3-683 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2220-DC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-254](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-254 Airflow



Technical Specifications

Table 3-684 lists the technical specifications of the AR2220-DC routers.

Table 3-684 AR2220-DC routers technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 600 MHz
Memory	2 GB
Flash	16 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	7 kg (15.43 lb)
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum DC input voltage	-38.4 V DC to -72 V DC
Maximum input current	6 A
Maximum output power	150 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	47 W
Maximum power consumption	65 W

Item	Specification
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	<ul style="list-style-type: none"> ● 4xSIC ● 2xWSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353540

3.8.18 AR2220E

Version Mapping

[Table 3-685](#) lists the mapping between the AR2220E router and software versions.

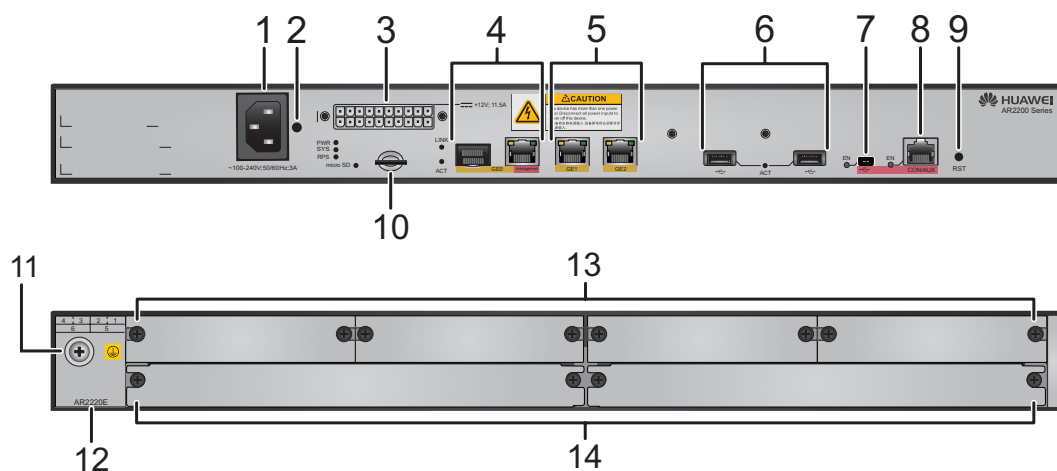
Table 3-685 Mapping between the AR2220E router and software versions

Router Model	Software Version
AR2220E	V200R006C10 and later versions


Appearance and Structure

Figure 3-255 shows the appearance of the AR2220E router.

Figure 3-255 AR2220E appearance



1	AC power jack NOTE Use an AC power cable to connect the router to an external power source.	2	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
3	RPS power socket NOTE Use an RPS150 power and communication cable to connect the router to a 150 W RPS power supply system.	4	WAN interface: GE combo interface

5	WAN interfaces: two GE electrical interfaces	6	Two USB interfaces (host) NOTE After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 
7	Mini USB interface NOTE The Mini USB interface and console interface cannot be used at the same time.	8	CON/AUX interface NOTE The AR2220E does not support AUX login.
9	RST button NOTE <ul style="list-style-type: none"> • This button is used to reset the router. • Resetting the router will interrupt services. Exercise caution when deciding to press this button. 	10	Micro SD card slot
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	12	Product model silkscreen
13	Four SIC slots	14	Two WSIC slots

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 3-256 shows slot distribution of the AR2220E routers.

Figure 3-256 Slot distribution of the AR2220E routers

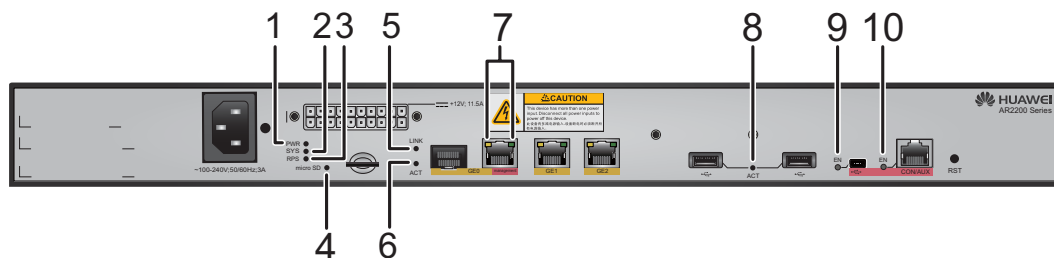
Device Model	Slot Distribution	Slot Combination					
AR2220E	Front view	NA					
	Rear view	<p>Two SIC slots are combined into one WSIC slot</p> <table border="1"> <tr> <td>4(SIC)</td> <td>2(SIC)</td> </tr> <tr> <td>6(WSIC)</td> <td>5(WSIC)</td> </tr> </table> <p>Two WSIC slots are combined into one XSIC slot</p> <table border="1"> <tr> <td>6(XSIC)</td> <td>5(XSIC)</td> </tr> </table>	4(SIC)	2(SIC)	6(WSIC)	5(WSIC)	6(XSIC)
4(SIC)	2(SIC)						
6(WSIC)	5(WSIC)						
6(XSIC)	5(XSIC)						

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 3-257 shows the indicators on the AR2220E router.

Figure 3-257 Indicators on the AR2220E



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.

Number	Indicator	Color	Description
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
3	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally. Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
4	Micro SD card indicator	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No Micro SD card is available.
		Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
Yellow	ACT indicator blinking: Data is being transmitted or received.		
	ACT indicator off: No data is being transmitted or received.		
7	GE electrical interface indicators	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.

Number	Indicator	Color	Description
			ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> • The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. • By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-686](#) lists the CON/AUX interface attributes.

Table 3-686 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> • Data circuit terminal equipment (DCE) • AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-687](#) lists attributes of a Mini USB interface.

Table 3-687 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-688](#) lists attributes of a GE electrical interface.

Table 3-688 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an **7.5 Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an **7.6 Optical Fiber**, **8.5 GE eSFP Optical Modules**, **8.6 GE-CWDM eSFP Optical Modules**, **8.7 GE-DWDM eSFP Optical Modules**, or **8.4 FE SFP/eSFP Optical Modules**.

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 3-689** lists attributes of a USB interface.

Table 3-689 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2220E router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 3-258**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-258 Airflow



Technical Specifications

Table 3-690 lists the technical specifications of the AR2220E routers.

Table 3-690 AR2220E routers technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1 GHz
Memory	1 GB
Flash	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.), 1 U height ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.), 1 U height
Weight	6 kg (13.23 lb)
Power specifications	
Rated AC input voltage	100 V/240 V, 50 Hz or 60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	150 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	27 W
Maximum power consumption	29 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	

Item	Specification
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	<ul style="list-style-type: none"> ● 4xSIC ● 2xWSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350DQM

3.8.19 AR2240

Version Mapping

Table 3-691 describes the matching relationship between the AR2240 series routers and software versions.

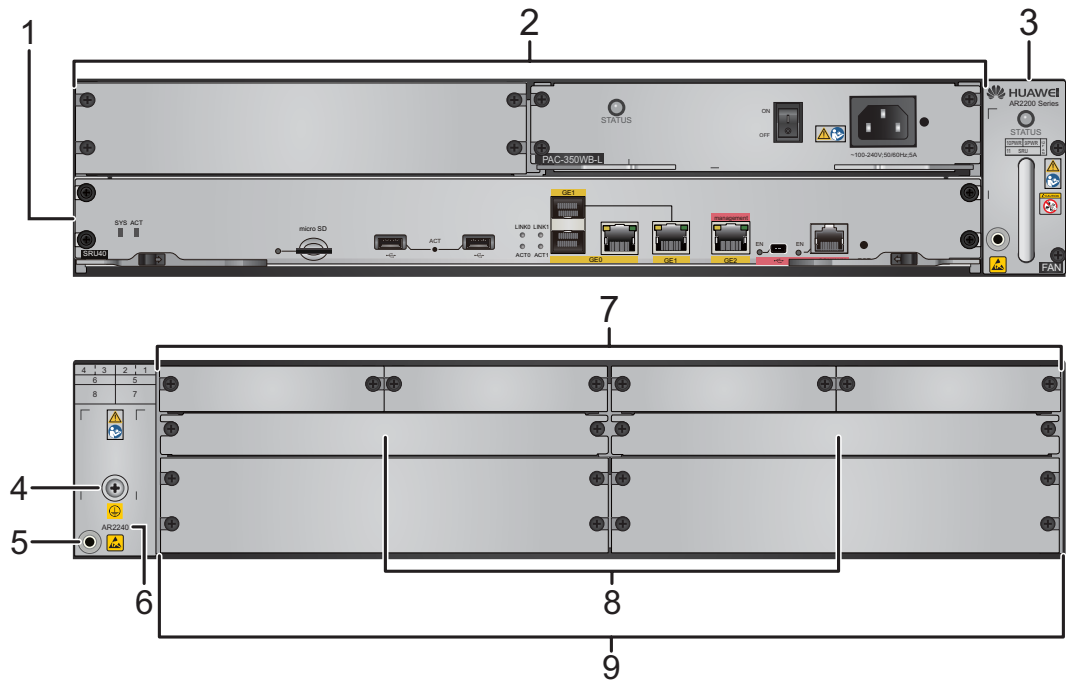
Table 3-691 Matching between AR2240 series routers and software versions

Router Model	Software Version
AR2240	V200R001C00 and later versions

Appearance and Structure

Figure 3-259 shows the appearance of the AR2240 router.

Figure 3-259 AR2240 appearance



<p>1 SRU slots</p> <p>Applicable SRUs:</p> <ul style="list-style-type: none"> ● SRU40 ● SRU60 ● SRU80 ● SRU100 ● SRU200 ● SRU400 ● SRU100E ● SRU200E ● SRU-100H ● SRU-200H ● SRU-400H ● SRU-600H 	<p>2 Two power module slots</p> <p>Applicable power modules:</p> <ul style="list-style-type: none"> ● 350 W AC Power Module ● 350 W DC Power Module ● 850 W AC PoE Power Module <p>NOTE</p> <p>AC and DC power modules cannot be used together in a router.</p>
<p>3 Fan module slot</p>	<p>4 Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>

5	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Four SIC slots	8	Two WSIC slots
9	Two XSIC slots	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 3-260 shows the slot distribution on the AR2240.

Figure 3-260 AR2240 slot distribution

Device Model		Slot Distribution	Slot Combination																						
AR2240	Front view	<table border="1"> <tr> <td>10(Power)</td> <td>9(Power)</td> <td rowspan="2">F A N</td> </tr> <tr> <td colspan="2">11(SRU)</td> </tr> </table>	10(Power)	9(Power)	F A N	11(SRU)		NA																	
	10(Power)	9(Power)	F A N																						
11(SRU)																									
	Rear view	<table border="1"> <tr> <td>4(SIC)</td> <td>3(SIC)</td> <td>2(SIC)</td> <td>1(SIC)</td> </tr> <tr> <td colspan="2">6(WSIC)</td> <td colspan="2">5(WSIC)</td> </tr> <tr> <td colspan="2">8(XSIC)</td> <td colspan="2">7(XSIC)</td> </tr> </table>	4(SIC)	3(SIC)	2(SIC)	1(SIC)	6(WSIC)		5(WSIC)		8(XSIC)		7(XSIC)		<p>Two SIC slots are combined into one WSIC slot</p> <table border="1"> <tr> <td>4(WSIC)</td> <td>2(WSIC)</td> </tr> <tr> <td>6(WSIC)</td> <td>5(WSIC)</td> </tr> <tr> <td>8(XSIC)</td> <td>7(XSIC)</td> </tr> </table> <p>Two WSIC slots are combined into one XSIC slot</p> <table border="1"> <tr> <td>6(XSIC)</td> <td>5(XSIC)</td> </tr> <tr> <td>8(XSIC)</td> <td>7(XSIC)</td> </tr> </table>	4(WSIC)	2(WSIC)	6(WSIC)	5(WSIC)	8(XSIC)	7(XSIC)	6(XSIC)	5(XSIC)	8(XSIC)	7(XSIC)
4(SIC)	3(SIC)	2(SIC)	1(SIC)																						
6(WSIC)		5(WSIC)																							
8(XSIC)		7(XSIC)																							
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6(WSIC)	5(WSIC)																								
8(XSIC)	7(XSIC)																								
6(XSIC)	5(XSIC)																								
8(XSIC)	7(XSIC)																								

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

All the indicators seen on the AR2240 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-261](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-261 Airflow



Technical Specifications

[Table 3-692](#) lists the technical specifications of the AR2240 router.

Table 3-692 AR2240 router technical specifications

Item	Specification
System parameters	Depending on the SRU that is used
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none">● Without rack-mounting bracket installed: 442.0 mm x 470.0 mm x 88.1 mm (17.40 in. x 18.50 in. x 3.47 in.), 2 U height● With rack-mounting brackets installed: 482.6 mm x 470.0 mm x 88.1 mm (19.0 in. x 18.50 in. x 3.47 in.), 2 U height
Weight	8.85 kg

Item	Specification
Power	AC input voltage <ul style="list-style-type: none"> ● Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz ● Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz DC input voltage <ul style="list-style-type: none"> ● Rated input voltage: -48 V DC to -60 V DC ● Maximum input voltage: -38.4 V DC to -72 V DC
Heat dissipation	
Fan module	Independent pluggable fan modules
Airflow (facing the front panel)	Cold air flows into the router from the left side and is exhausted from the right side.
Interface density	Depending on the SRU that is used
Extended slots	<ul style="list-style-type: none"> ● 4xSIC ● 2xWSIC ● 2xXSIC
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the operating temperature reduces 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02358546

3.8.20 AR2240C

Version Mapping

[Table 3-693](#) lists the mapping between the AR2240C router and software versions.

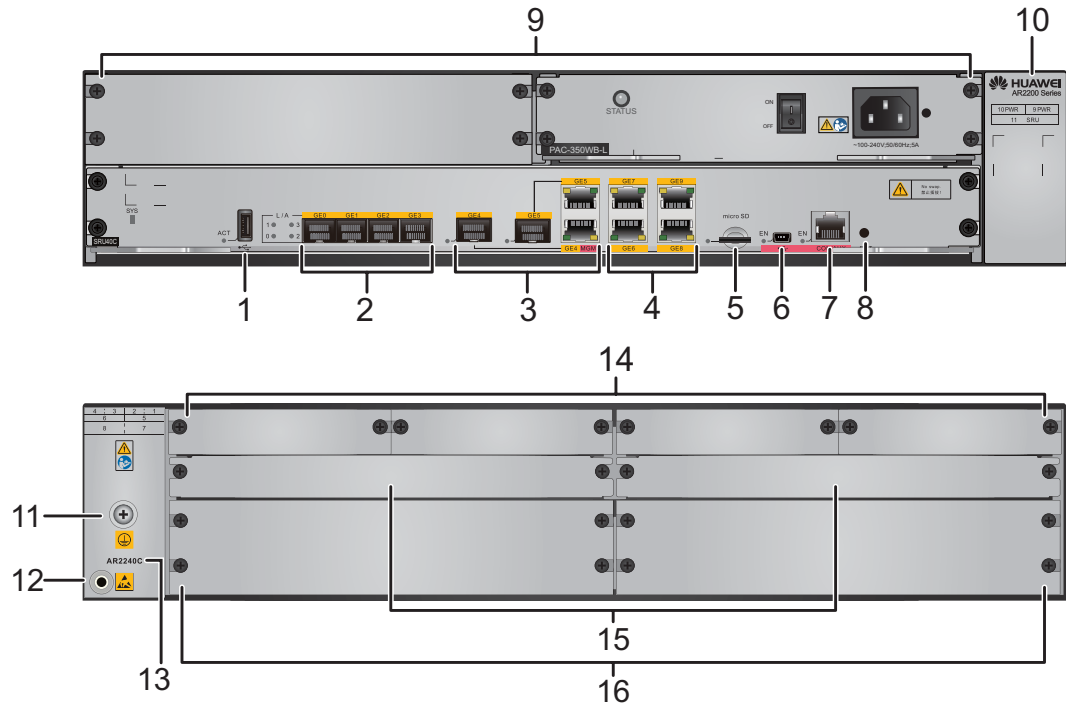
Table 3-693 Mapping between AR2240C router and software versions

Router Model	Software Version
AR2240C	V200R007C00 and later versions

Appearance and Structure

Figure 3-262 shows the appearance of the AR2240C router.

Figure 3-262 AR2240C appearance



1	USB interface (host)	2	WAN interfaces: four GE optical interfaces
3	WAN interfaces: two GE combo interfaces	4	WAN interfaces: four GE electrical interfaces
5	Micro SD card slot	6	Mini USB interface
7	CON/AUX interface	8	RST button NOTE <ul style="list-style-type: none"> ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.

9	Two power module slots Applicable power modules: <ul style="list-style-type: none"> ● 350 W AC power module ● 350 W DC power module ● 850 W AC PoE power module NOTE AC and DC power modules cannot be used together in a router.	10	Built-in fan module
11	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	12	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
13	Product model silkscreen	14	Four SIC slots
15	Two WSIC slots	16	Two XSIC slots

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 3-263 shows the slot distribution of the AR2240C.

Figure 3-263 Slot distribution of the AR2240C

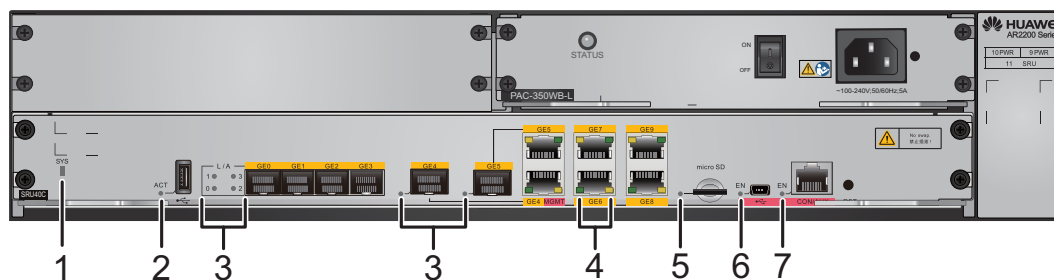
Device Model		Slot Distribution			Slot Combination																			
AR2240C	Front view	10(Power)	9(Power)	F	NA																			
		11(SRU)		A N																				
	Rear view	<table border="1"> <tr> <td>4(SIC)</td> <td>3(SIC)</td> <td>2(SIC)</td> <td>1(SIC)</td> </tr> <tr> <td colspan="2">6(WSIC)</td> <td colspan="2">5(WSIC)</td> </tr> <tr> <td colspan="2">8(XSIC)</td> <td colspan="2">7(WSIC)</td> </tr> </table>			4(SIC)	3(SIC)	2(SIC)	1(SIC)	6(WSIC)		5(WSIC)		8(XSIC)		7(WSIC)		Two SIC slots are combined into one WSIC slot <table border="1"> <tr> <td>4(WSIC)</td> <td>2(WSIC)</td> </tr> <tr> <td>6(WSIC)</td> <td>5(WSIC)</td> </tr> <tr> <td>8(XSIC)</td> <td>7(WSIC)</td> </tr> </table>		4(WSIC)	2(WSIC)	6(WSIC)	5(WSIC)	8(XSIC)	7(WSIC)
4(SIC)	3(SIC)	2(SIC)	1(SIC)																					
6(WSIC)		5(WSIC)																						
8(XSIC)		7(WSIC)																						
4(WSIC)	2(WSIC)																							
6(WSIC)	5(WSIC)																							
8(XSIC)	7(WSIC)																							
					Two WSIC slots are combined into one XSIC slot <table border="1"> <tr> <td>6(XSIC)</td> <td>5(XSIC)</td> </tr> <tr> <td>8(XSIC)</td> <td>7(XSIC)</td> </tr> </table>		6(XSIC)	5(XSIC)	8(XSIC)	7(XSIC)														
6(XSIC)	5(XSIC)																							
8(XSIC)	7(XSIC)																							

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 3-264 shows the indicators on the AR2240C router.

Figure 3-264 Indicators on the AR2240C



Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
3	GE optical interface indicator	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the interface.
			Off: No link is established on the interface.
4	GE electrical interface indicator	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
5	Micro SD	Green	Steady on: An SD card is installed. Blinking: The SD card is transmitting or receiving data. Off: No SD card is available.

Number	Indicator	Color	Description
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.
7	EN (CON/AUX interface) NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled. Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 3-694](#) lists the CON/AUX interface attributes.

Table 3-694 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 3-695](#) lists attributes of a Mini USB interface.

Table 3-695 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 3-696](#) lists attributes of a GE electrical interface.

Table 3-696 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

Attribute	Description
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface cannot work in FE mode and can transmit and receive service traffic at 1000 Mbit/s. [Table 3-697](#) lists attributes of a GE optical interface.

Table 3-697 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , and 8.7 GE-DWDM eSFP Optical Modules .
Standards compliance	IEEE 802.3z

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-698](#) lists attributes of a USB interface.

Table 3-698 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR2240C router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-265](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-265 Airflow



Technical Specifications

[Table 3-699](#) lists the technical specifications of the AR2240C router.

Table 3-699 AR2240C technical specifications

Item	Specification
System parameters	
Processor	6-core, 1.2 GHz
Memory	2 GB
Flash	32 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported

Item	Specification
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 470.0 mm x 88.1 mm (17.4 in. x 18.5 in. x 3.47 in.), 2 U height ● With mounting brackets installed: 482.6 mm x 470.0 mm x 88.1 mm (19.0 in. x 18.5 in. x 3.47 in.), 2 U height
Weight	12 kg (26.46 lb)
Power specifications	AC input voltage <ul style="list-style-type: none"> ● Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz ● Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz DC input voltage <ul style="list-style-type: none"> ● Rated input voltage: -48 V DC to -60 V DC ● Maximum input voltage: -38.4 V DC to -72 V DC
Power consumption (empty chassis)	
Typical power consumption	110 W
Maximum power consumption	125 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: four GE electrical interfaces, two GE combo interfaces, and four GE optical interfaces
Extended slots	<ul style="list-style-type: none"> ● 4xSIC ● 2xWSIC ● 2xXSIC
Environment parameters	

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	<ul style="list-style-type: none"> ● 02351CXL ● 02350KKF ● 02351YCH NOTE 02351YCH part number is supported in V200R010C00 and later versions.

3.9 AR3200 Series

3.9.1 AR3260

Version Mapping

Table 3-700 lists the mapping between the AR3260 router and software versions.

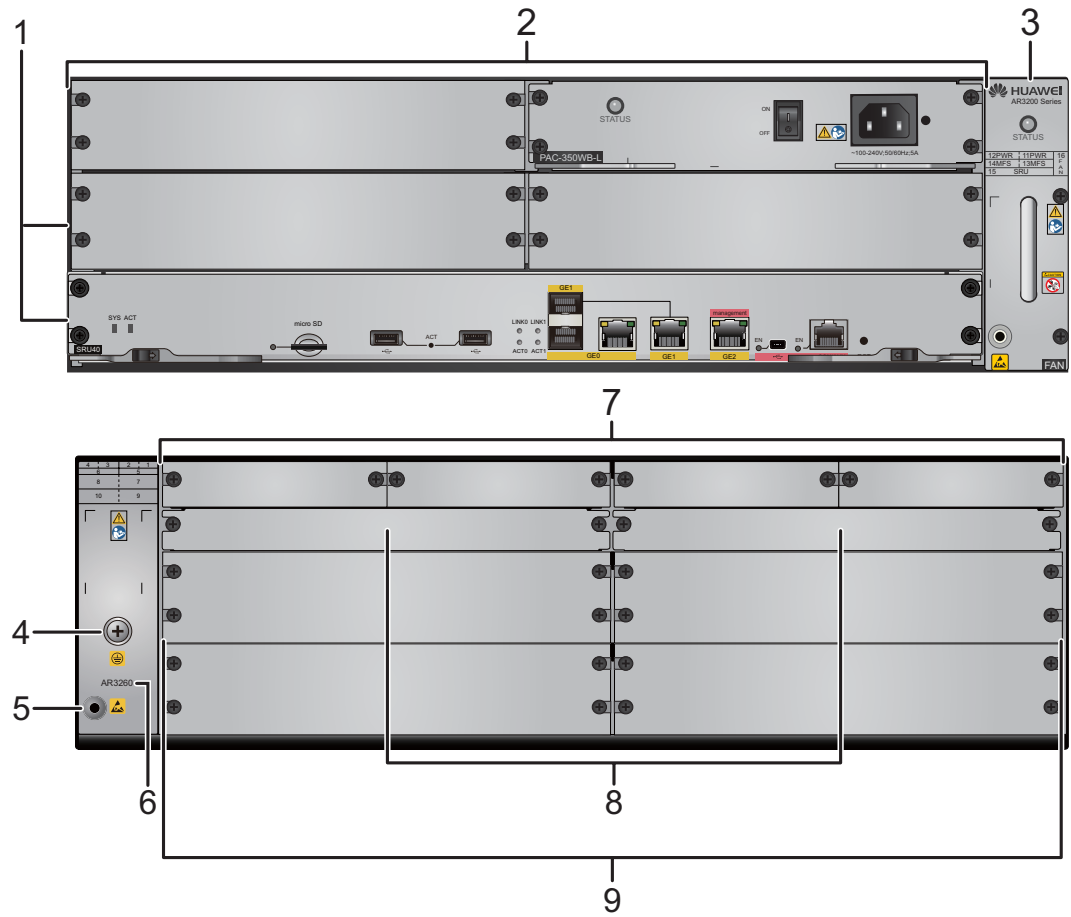
Table 3-700 Mapping between the AR3260 router and software versions

Router Model	Software Version
AR3260	V200R001C00 and later versions

Appearance and Structure

Figure 3-266 shows the appearance of the AR3260 router.

Figure 3-266 AR3260 appearance



1	<p>Two SRU slots</p> <p>Applicable SRUs:</p> <ul style="list-style-type: none"> ● SRU40 ● SRU60 ● SRU80 ● SRU100 ● SRU200 ● SRU400 ● SRU100E ● SRU200E ● SRU-100H ● SRU-200H ● SRU-400H ● SRU-600H <p>NOTE</p> <ul style="list-style-type: none"> ● Versions earlier than V200R005C00: support a single SRU and reserve the capability to support double SRUs. ● V200R005C00 and later versions: support double SRUs working in hot standby mode. 	2	<p>Two power module slots</p> <p>Applicable power modules:</p> <ul style="list-style-type: none"> ● 350 W AC Power Module ● 350 W DC Power Module ● 850 W AC PoE Power Module <p>NOTE</p> <p>AC and DC power modules cannot be used together in a router.</p> <p>It is recommended to configure dual power supplies for the double SRUs scenarios.</p>
3	Fan module slot	4	<p>Ground point</p> <p>NOTE</p> <p>Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.</p>
5	<p>ESD jack</p> <p>NOTE</p> <p>When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.</p>	6	Product model silkscreen
7	Four SIC slots	8	Two WSIC slots
9	Four XSIC slots	-	-

Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 3-267 shows the slot distribution of the AR3260.

Figure 3-267 AR3260 slot distribution

Device Model		Slot Distribution			Slot Combination																										
AR3260	Front view	12(Power)	11(Power)	F A N	12(Power)	11(Power)	F A N																								
		14(MFS)	13(MFS)		14(SRU)																										
		15(SRU)			15(SRU)																										
	Rear view	<table border="1"> <tr> <td>4(SIC)</td> <td>3(SIC)</td> <td>2(SIC)</td> <td>1(SIC)</td> </tr> <tr> <td colspan="2">6(WSIC)</td> <td colspan="2">5(WSIC)</td> </tr> <tr> <td colspan="2">8(XSIC)</td> <td colspan="2">7(XSIC)</td> </tr> <tr> <td colspan="2">10(XSIC)</td> <td colspan="2">9(XSIC)</td> </tr> </table>			4(SIC)	3(SIC)	2(SIC)	1(SIC)	6(WSIC)		5(WSIC)		8(XSIC)		7(XSIC)		10(XSIC)		9(XSIC)		<p>Two SIC slots are combined into one WSIC slot</p> <table border="1"> <tr> <td>4(WSIC)</td> <td>2(WSIC)</td> </tr> <tr> <td>6(WSIC)</td> <td>5(WSIC)</td> </tr> <tr> <td>8(XSIC)</td> <td>7(XSIC)</td> </tr> <tr> <td>10(XSIC)</td> <td>9(XSIC)</td> </tr> </table>			4(WSIC)	2(WSIC)	6(WSIC)	5(WSIC)	8(XSIC)	7(XSIC)	10(XSIC)	9(XSIC)
4(SIC)	3(SIC)	2(SIC)	1(SIC)																												
6(WSIC)		5(WSIC)																													
8(XSIC)		7(XSIC)																													
10(XSIC)		9(XSIC)																													
4(WSIC)	2(WSIC)																														
6(WSIC)	5(WSIC)																														
8(XSIC)	7(XSIC)																														
10(XSIC)	9(XSIC)																														
					<p>Two WSIC slots are combined into one XSIC slot</p> <table border="1"> <tr> <td>6(XSIC)</td> <td>5(XSIC)</td> </tr> <tr> <td>8(XSIC)</td> <td>7(XSIC)</td> </tr> <tr> <td>10(XSIC)</td> <td>9(XSIC)</td> </tr> </table>			6(XSIC)	5(XSIC)	8(XSIC)	7(XSIC)	10(XSIC)	9(XSIC)																		
6(XSIC)	5(XSIC)																														
8(XSIC)	7(XSIC)																														
10(XSIC)	9(XSIC)																														

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.
- New slot 13 and slot 14 are combined into new slot 14 to function as the standby SRU slot.

Indicator Description

All the indicators seen on the AR3260 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-268](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-268 Airflow



Technical Specifications

[Table 3-701](#) lists the technical specifications of the AR3260 router.

Table 3-701 AR3260 router technical specifications

Item	Specification
System parameters	Depending on the SRU that is used
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 470.0 mm x 130.5 mm (17.4 in. x 18.5 in. x 5.14 in.), 3 U height With mounting brackets installed: 482.6 mm x 470.0 mm x 130.5 mm (19.0 in. x 18.5 in. x 5.14 in.), 3 U height
Weight	11 kg
Power specifications	AC input voltage <ul style="list-style-type: none"> Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz DC input voltage <ul style="list-style-type: none"> Rated input voltage: -48 V DC to -60 V DC Maximum input voltage: -38.4 V DC to -72 V DC

Item	Specification
Heat dissipation	
Fans	Independent pluggable fan modules
Airflow (facing the front panel)	Left to right
Interface density	Depending on the SRU that is used
Extended slots	<ul style="list-style-type: none"> ● 4xSIC ● 2xWSIC ● 4xXSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02358545

3.10 AR3600 Series

3.10.1 AR3670

Version Mapping

[Table 3-702](#) lists the mapping between the AR3670 router and software versions.

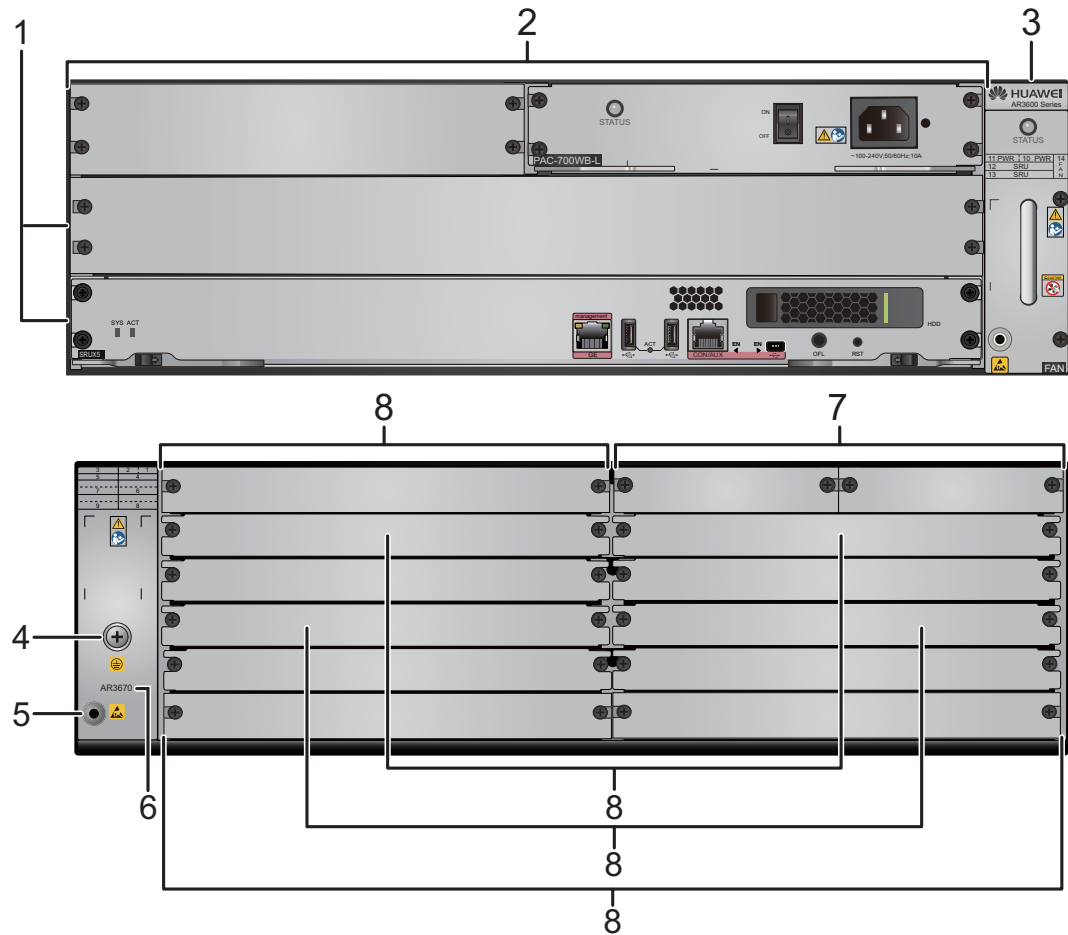
Table 3-702 Mapping between the AR3670 router and software versions

Router Model	Software Version
AR3670	V200R006C10 and later versions

Appearance and Structure

[Figure 3-269](#) shows the appearance of the AR3670 router.

Figure 3-269 AR3670 appearance



1	Two SRU slots Applicable SRUs: SRUX5	2	Two power module slots Applicable power modules: ● 700 W AC Power Module ● 850 W AC PoE Power Module
3	Fan module slot	4	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Two SIC slots	8	Seven WSIC slots

Slot Distribution

 **NOTE**

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 3-270 shows the slot distribution of the AR3670.

Figure 3-270 AR3670 slot distribution

Device Model		Slot Distribution			Slot Combination																			
AR3670	Front view	11(Power)	10(Power)	14	NA																			
		12(SRU)		F																				
		13(SRU)		A	Two SIC slots are combined into one WSIC slot <table border="1" style="margin-left: 20px;"> <tr> <td>3(WSIC)</td> <td>2(WSIC)</td> </tr> <tr> <td>5(WSIC)</td> <td>4(WSIC)</td> </tr> <tr> <td>7(WSIC)</td> <td>6(WSIC)</td> </tr> <tr> <td>9(WSIC)</td> <td>8(WSIC)</td> </tr> </table>		3(WSIC)	2(WSIC)	5(WSIC)	4(WSIC)	7(WSIC)	6(WSIC)	9(WSIC)	8(WSIC)										
3(WSIC)	2(WSIC)																							
5(WSIC)	4(WSIC)																							
7(WSIC)	6(WSIC)																							
9(WSIC)	8(WSIC)																							
	Rear view	<table border="1" style="margin-left: 20px;"> <tr> <td>3(WSIC)</td> <td>2(SIC)</td> <td>1(SIC)</td> </tr> <tr> <td>5(WSIC)</td> <td colspan="2">4(WSIC)</td> </tr> <tr> <td>7(WSIC)</td> <td colspan="2">6(WSIC)</td> </tr> <tr> <td>9(WSIC)</td> <td colspan="2">8(WSIC)</td> </tr> </table>			3(WSIC)	2(SIC)	1(SIC)	5(WSIC)	4(WSIC)		7(WSIC)	6(WSIC)		9(WSIC)	8(WSIC)		Two WSIC slots are combined into one XSIC slot <table border="1" style="margin-left: 20px;"> <tr> <td>5(XSIC)</td> <td>4(XSIC)</td> </tr> <tr> <td>7(XSIC)</td> <td>6(XSIC)</td> </tr> <tr> <td>9(XSIC)</td> <td>8(XSIC)</td> </tr> </table>		5(XSIC)	4(XSIC)	7(XSIC)	6(XSIC)	9(XSIC)	8(XSIC)
3(WSIC)	2(SIC)	1(SIC)																						
5(WSIC)	4(WSIC)																							
7(WSIC)	6(WSIC)																							
9(WSIC)	8(WSIC)																							
5(XSIC)	4(XSIC)																							
7(XSIC)	6(XSIC)																							
9(XSIC)	8(XSIC)																							

- Slot 1 and slot 2 are combined into new slot 2.
- New slot 2 and slot 4 are combined into new slot 4.
- Slot 3 and slot 5 are combined into new slot 5.
- Slot 6 and the vacant slot above it are combined into new slot 6.
- Slot 7 and the vacant slot above it are combined into new slot 7.
- Slot 8 and the vacant slot above it are combined into new slot 8.
- Slot 9 and the vacant slot above it are combined into new slot 9.

Indicator Description

All the indicators seen on the AR3670 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in [Figure 3-271](#). Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 3-271 Airflow



Technical Specifications

[Table 3-703](#) lists the technical specifications of the AR3670 router.

Table 3-703 AR3670 router technical specifications

Item	Specification
System parameters	Depending on the SRU that is used
Dimensions and weight	
Dimensions (W x D x H)	<ul style="list-style-type: none"> With no mounting bracket installed: 442.0 mm x 470.0 mm x 130.5 mm (17.4 in. x 18.5 in. x 5.14 in.), 3 U height With mounting brackets installed: 482.6 mm x 470.0 mm x 130.5 mm (19.0 in. x 18.5 in. x 5.14 in.), 3 U height
Weight	11 kg (24.25 lb)
Power specifications	AC input voltage <ul style="list-style-type: none"> Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz
Heat dissipation	
Fan module	Independent pluggable fan modules

Item	Specification
Airflow (facing the front panel)	Left-to-right
Interface density	Depending on the SRU that is used
Extended slots	<ul style="list-style-type: none">● 2xSIC● 7xWSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02114484

Related Documents

Video: [Huawei ICT-Converged Smart Class Solution](#)

4 Power Supplies

About This Chapter

NOTICE

- Do not use AC and DC power modules in the same router.
 - Do not use power modules of different power values in the same router.
 - A router can use only supported power modules. Using unsupported power modules will bring unexpected risks.
-

- 4.1 Types of Power Supplies
- 4.2 24 W Integrated Power Adapter
- 4.3 24 W Separate Power Adapter
- 4.4 24 W Industrial Power Adapter
- 4.5 4-pin 36 W Power Adapter
- 4.6 1-pin 36 W Power Adapter
- 4.7 60 W Power Adapter
- 4.8 100 W PoE Power Adapter
- 4.9 150 W RPS Power Supply
- 4.10 350 W AC Power Module
- 4.11 350 W DC Power Module
- 4.12 850 W AC PoE Power Module
- 4.13 700 W AC Power Module

4.1 Types of Power Supplies

Table 4-1 describes the types of power supplies supported by AR series routers. The actual power supplies applicable to a router vary depending on the product model.

Table 4-1 Types of power supplies

Power Supply Type	Description
Built-in power module	It is fixed in the chassis and has a power socket on the panel. Use a power cable to connect the power socket to a power source.
Power adapter	It is an external unit used to connect a router to a power source.
PoE power adapter	It is an external unit used to connect a router to a power source. Using the PoE power adapter, the router can supply power to attached powered devices (PDs).
Redundant power supply (RPS)	It is an independent power supply used to provide power redundancy for a router. Use an RPS cable to connect the router to the RPS, and then use a power cable to connect the RPS to a power source.
AC/DC power module	It is installed in a power slot of a router. Two power modules can work in 1+1 redundancy mode. Use power cables to connect the power modules to a power source.
AC PoE power module	It is installed in a power slot of a router. Two AC PoE power modules can work in 1+1 redundancy mode. Use power cables to connect the power modules to a power source. Then the router can supply power to attached PDs.

4.2 24 W Integrated Power Adapter

Product Support

Table 4-2 lists the device models that support a 24 W integrated power adapter.

Table 4-2 Product support

Module Name	Product Support
24 W integrated power adapter	AR121 AR121W AR121GW-L AR129 AR129GW-L

Module Name	Product Support
	AR151G-C AR151G-HSPA+7 AR151W-P AR156W AR157G-HSPA+7 AR157W
	AR161 AR161F AR161F-DGP AR161FG-L AR161FG-Lc AR161FGW-L AR161FGW-La AR161FGW-Lc AR161FV-1P AR161FW AR161G-L AR161G-Lc AR161G-U AR161W AR168F AR168F-4P AR169 AR169F/AR169BF AR169G-L

Appearance

Figure 4-1 shows the appearance of a 24 W integrated power adapter.

Figure 4-1 24 W integrated power adapter



Function

Table 4-3 describes functions of a 24 W integrated power adapter.

Table 4-3 Function description

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have built-in fans and uses nature heat dissipation.

Technical Specifications

Table 4-4 lists the technical specifications of a 24 W integrated power adapter.

Table 4-4 Technical specifications

Item	Specification
Dimensions (W x D x H)	51 mm x 86 mm x 28 mm (2.01 in. x 3.39 in. x 1.10 in.)
Weight	0.15 kg (0.33 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 0.8 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 24 W Maximum output current: 2 A

4.3 24 W Separate Power Adapter

Product Support

Table 4-5 lists the device models that support a 24 W separate power adapter.

Table 4-5 Product support

Module Name	Product Support
24 W separate power adapter	AR109 AR109W AR109GW-L
	AR129CV AR129CVW AR129CGVW-L

Appearance

Figure 4-2 shows the appearance of a 24 W separate power adapter.

Figure 4-2 24 W separate power adapter



Function

Table 4-6 describes functions of a 24 W separate power adapter.

Table 4-6 Function description

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have built-in fans and uses nature heat dissipation.

Technical Specifications

Table 4-7 lists the technical specifications of a 24 W separate power adapter.

Table 4-7 Technical specifications

Item	Specification
Dimensions (W x D x H)	88 mm x 50 mm x 27 mm (3.46 in. x 1.97 in. x 1.06 in.)
Weight	0.1 kg (0.22 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 0.8 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 24 W Maximum output current: 2 A

4.4 24 W Industrial Power Adapter

Product Support

Table 4-8 lists the device models that support a 24 W industrial power adapter.

Table 4-8 Product support

Module Name	Product Support
24 W industrial power adapter	AR161FG-L

Appearance

Figure 4-3 shows the appearance of a 24 W industrial power adapter.

Figure 4-3 24 W industrial power adapter



Function

Table 4-9 describes functions of a 24 W industrial power adapter.

Table 4-9 Function description

Function	Description
Input undervoltage protection	The power adapter can automatically resume power supply from this protection state.
Output overvoltage protection	The power adapter can automatically resume power supply from this protection state.
Output current limiting protection	The power adapter can automatically resume power supply from this protection state.
Output short-circuit protection	The power adapter can automatically resume power supply from this protection state.

Function	Description
Overtemperature protection	When the temperature of the power adapter exceeds a specified threshold, the power adapter stops supplying power. When the temperature falls into the normal range, the power adapter automatically resumes power supply.

Panel

Figure 4-4 shows the panel of a 24 W industrial power adapter.

Figure 4-4 Panel of a 24 W industrial power adapter

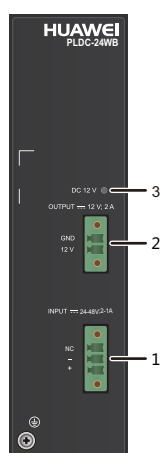


Table 4-10 Components on the panel

Number	Name	Description
1	3-pin DC power input socket	Connect the power adapter to an external power supply system using a power cable with a 3-pin plug.
2	2-pin DC output power socket	Connect the power cable to the router using a power cable with a 2-pin plug.
3	Power indicator (DC 12V)	<ul style="list-style-type: none"> ● Steady green: The power output is normal. ● Off: The power output is abnormal. ● Blinking green: The power adapter is in the hiccup protection state.

Technical Specifications

Table 4-11 describes technical specifications of a 24 W industrial power adapter.

Table 4-11 Technical specifications

Item	Specification
Dimensions (W x D x H)	40 mm x 133.5 mm x 150 mm (1.57 in. x 5.26 in. x 5.91 in.)
Weight	1 kg (2.20 lb)
Input	Rated input voltage range: 24 V DC to 48 V DC Maximum input voltage range: 18 V DC to 60 V DC Maximum input current: 2 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 24 W Maximum output current: 2 A

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-12 provides the 24 W industrial power adapter ordering information.

Table 4-12 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311QPU	PLDC-24WB	PLDC-24WB	24W Low DC Power Module

4.5 4-pin 36 W Power Adapter

Product Support

Table 4-13 lists the device models that support a 4-pin 36 W power adapter.

Table 4-13 Product support

Module Name	Product Support
4-pin 36 W power adapter	AR151 AR156 AR157 AR158E

Module Name	Product Support
	AR162F AR169CVW AR169CVW-4B4S
	AR201 AR201VW-P AR206 AR207 AR207G-HSPA+7 AR207V AR207V-P AR208E

Appearance

Figure 4-5 shows the appearance of a 4-pin 36 W power adapter.

Figure 4-5 4-pin 36 W power adapter



Function

Table 4-14 describes functions of a 4-pin 36 W power adapter.

Table 4-14 Function description

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have built-in fans and uses nature heat dissipation.

Technical Specifications

Table 4-15 lists the technical specifications of a 4-pin 36 W power adapter.

Table 4-15 Technical specifications

Item	Specification
Dimensions (W x D x H)	100 mm x 54 mm x 32 mm (3.94 in. x 2.13 in. x 1.26 in.)
Weight	0.2 kg (0.44 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 1 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 36 W Maximum output current: 3 A

4.6 1-pin 36 W Power Adapter

Product Support

Table 4-16 lists the device models that support a 1-pin 36 W power adapter.

Table 4-16 Product support

Module Name	Product Support
1-pin 36 W power adapter	AR161EW AR161EW-M1 AR169EW AR169EGW-L AR169CVW AR169CVW-4B4S

Appearance

Figure 4-6 shows the appearance of a 1-pin 36 W power adapter.

Figure 4-6 1-pin 36 W power adapter



Function

Table 4-17 describes functions of a 1-pin 36 W power adapter.

Table 4-17 Function description

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.

Function	Description
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.

Technical Specifications

Table 4-18 lists the technical specifications of a 1-pin 36 W power adapter.

Table 4-18 Technical specifications

Item	Specification
Dimensions (W x D x H)	100 mm x 54 mm x 32 mm (3.94 in. x 2.13 in. x 1.26 in.)
Weight	0.2 kg (0.44 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 1 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 36 W Maximum output current: 3 A

4.7 60 W Power Adapter

Product Support

Table 4-19 lists the device models that support a 60 W power adapter.

Table 4-19 Product support

Module Name	Product Support
60 W power adapter	AR157VW AR158EVW

Module Name	Product Support
	AR161FW-P-M5 AR169FVW AR169FVW-8S AR169JFVW-4B4S AR169JFVW-2S AR169FGW-L AR169FGVW-L AR169-P-M9 AR169W-P-M9 AR169RW-P-M9
	AR207VW

Appearance

[Figure 4-7](#) shows the appearance of a 60 W power adapter.

Figure 4-7 60 W power adapter



Function

[Table 4-20](#) describes functions of a 60 W power adapter.

Table 4-20 Function description

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.

Function	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have built-in fans and uses nature heat dissipation.

Technical Specifications

Table 4-21 lists the technical specifications of a 60 W power adapter.

Table 4-21 Technical specifications

Item	Specification
Dimensions (W x D x H)	62 mm x 110 mm x 31.5 mm (2.44 in. x 4.33 in. x 1.24 in.)
Weight	0.33 kg (0.73 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 1.5 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 60 W Maximum output current: 5 A

4.8 100 W PoE Power Adapter

Product Support

Table 4-22 lists the device models that support a 100 W PoE power adapter.

Table 4-22 Product support

Module Name	Product Support
100 W PoE power adapter	AR151W-P
	AR161FW-P-M5 AR169-P-M9 AR169W-P-M9 AR169RW-P-M9
	AR201VW-P AR207V-P
	AR1220EV AR1220EVW AR1220V AR1220W AR1220VW
	AR2204-27GE-P AR2204-48GE-P AR2204-51GE-P

Appearance

Figure 4-8 shows the appearance of a 100 W PoE power adapter.

Figure 4-8 100 W PoE power adapter



Function

Table 4-23 describes functions of a 100 W PoE power adapter.

Table 4-23 Function description

Function	Description
Input undervoltage protection	The power adapter can automatically resume power supply from this protection state.
Output overvoltage protection	The power adapter can automatically resume power supply from this protection state.
Output current limiting protection	The power adapter can automatically resume power supply from this protection state.
Output short-circuit protection	The power adapter can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power adapter exceeds a specified threshold, the power adapter stops supplying power. When the temperature falls into the normal range, the power adapter automatically resumes power supply.

Technical Specifications

Table 4-24 lists the technical specifications of a 100 W PoE power adapter.

Table 4-24 Technical specifications

Item	Specification
Dimensions (W x D x H)	72 mm x 171 mm x 40 mm (2.83 in. x 6.73 in. x 1.57 in.)
Weight	0.65 kg (1.43 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 2 A
Output	Rated output voltage: 48 V DC Maximum output voltage range: 45.6 V DC to 50.4 V DC Maximum output power: 100 W Maximum output current: 2.08 A

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-25 provides the 100 W PoE power adapter ordering information.

Table 4-25 Ordering information

Part Number	Model	Description
02220119	AR0MPSAP1000	100W AC-DC Power Adapter

4.9 150 W RPS Power Supply

Product Support

Table 4-26 lists the device models that support a 150 W RPS power supply.

Table 4-26 Product support

Module Name	Product Support
150 W RPS power supply	AR2201-48FE AR2202-48FE AR2204 AR2220E

Appearance

Figure 4-9 shows the appearance of a 150 W RPS power supply.

Figure 4-9 150 W RPS power supply



Function

Table 4-27 describes functions of a 150 W RPS power supply.

Table 4-27 Function description

Function	Description
Power redundancy	When the built-in power module of the router fails, the 150 W RPS power supply starts to provide power to the router. NOTE The 150 W RPS power supply can power only one router at a time.
Cold standby	When the built-in power module of the router starts to work again, the 150 W RPS power supply stops providing power to the router and switches to cold standby state.

Panel

Figure 4-10 shows the panel of a 150 W RPS power supply.

Figure 4-10 150 W RPS power supply panel

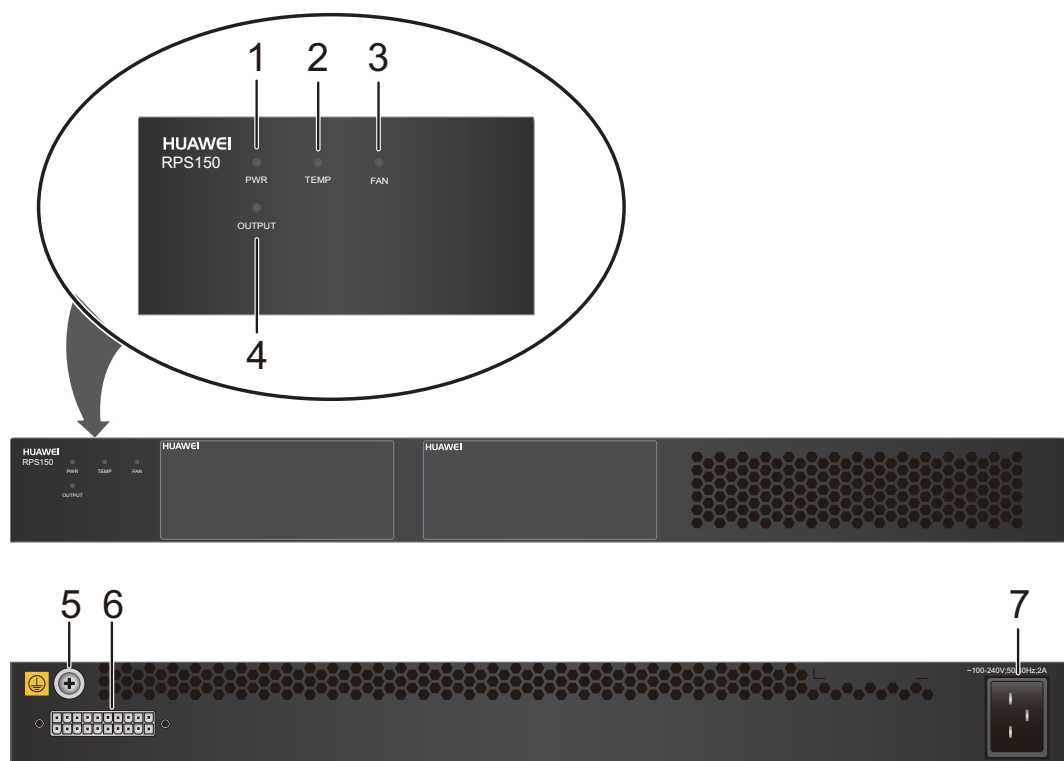


Table 4-28 Components on the panel

Number	Name	Description
1	PWR	<ul style="list-style-type: none"> ● Steady green: The power input is normal. ● Off: The RPS power supply is not powered on.
2	TEMP	<ul style="list-style-type: none"> ● Steady green: The temperature of the RPS power supply is within the normal range. ● Steady red: The temperature of the RPS power supply is out of the normal range. ● Off: The RPS power supply is not powered on.
3	FAN	<ul style="list-style-type: none"> ● Steady green: Fans of the RPS power supply are running normally. ● Steady red: Fans of the RPS power supply do not work normally. ● Off: The RPS power supply is not powered on.
4	OUTPUT	<ul style="list-style-type: none"> ● Steady green: The RPS power supply is in cold standby state. ● Blinking green: The RPS power supply is supplying power. ● Off: The RPS power supply is not powered on.
5	Ground point	To protect the RPS power supply from lightning and interference, reliably ground it by connecting a 7.3 Ground Cable to the ground point.
6	RPS power socket	Use an 7.2.1 RPS150 Power and Communication Cable to connect the RPS power supply to the router.
7	AC power socket	Use an 7.2.2 RPS150 AC Power Cable to connect the RPS power supply to a power supply system.

Technical Specifications

Table 4-29 lists the technical specifications of a 150 W RPS power supply.

Table 4-29 Technical specifications

Item	Specification
Dimensions (W x D x H)	442 mm x 310 mm x 43.6 mm (17.40 in. x 12.20 in. x 1.72 in.)
Weight	4 kg (8.82 LB)
Input	Rated input voltage range: 110 V AC to 220 V AC, 50 Hz/60 Hz Maximum input voltage range: 200 V AC to 240 V AC (220 V input) or 100 V AC to 120 V AC (110 V input), 47 Hz to 63 Hz Maximum input current: 2 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 150 W Maximum output current: 11.5 A

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-30 provides 150 W RPS power supply ordering information.

Table 4-30 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02355463	AR0MPSAR15A	RPS150	150W RPS Power Module

4.10 350 W AC Power Module

Product Support

Table 4-31 lists the device models that support a 350 W AC power module.

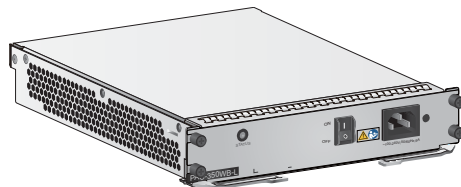
Table 4-31 Product support

Module Name	Product Support
350 W AC power module	AR2240 AR2240C AR3260

Appearance

Figure 4-11 shows the appearance of a 350 W AC power module.

Figure 4-11 350 W AC power module



Function

Table 4-32 describes functions of a 350 W AC power module.

Table 4-32 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 4-12 shows the panel of a 350 W AC power module.

Figure 4-12 Panel of a 350 W AC power module

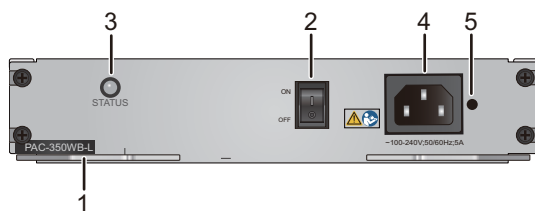


Table 4-33 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.
3	Power indicator (STATUS)	<ul style="list-style-type: none"> ● Steady green: The power output of the power module is normal. ● Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup protection state.)
4	AC power socket	Use an 7.1.1 AC Power Cable to connect the router to a power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Technical Specifications

[Table 4-34](#) lists the technical specifications of a 350 W AC power module.

Table 4-34 Technical specifications

Item	Specification
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg (3.31 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 5 A

Item	Specification
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 350 W Maximum output current: 29.2 A

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-35 provides 350 W AC power module ordering information.

Table 4-35 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131212	PAC-350WB-L	PAC-350WB-L	350W AC Power Module

4.11 350 W DC Power Module

Product Support

Table 4-36 lists the device models that support a 350 W DC power module.

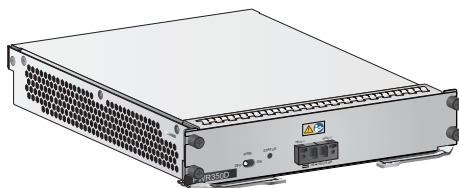
Table 4-36 Product support

Module Name	Product Support
350W DC power module	AR2240 AR2240C AR3260

Appearance

Figure 4-13 shows the appearance of a 350 W DC power module.

Figure 4-13 350 W DC power module



Function

Table 4-37 describes functions of a 350 W DC power module.

Table 4-37 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 4-14 shows the panel of a 350 W DC power module.

Figure 4-14 Panel of a 350 W DC power module

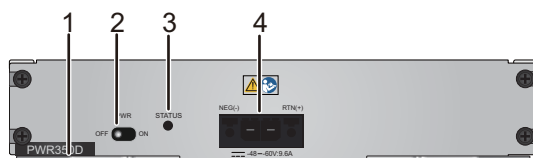


Table 4-38 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.
3	Power indicator (STATUS)	<ul style="list-style-type: none"> ● Steady green: The power output of the power module is normal. ● Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup protection state.)
4	DC power socket	Use DC power cables to connect the router to a power source.

Technical Specifications

Table 4-39 lists the technical specifications of a 350 W DC power module.

Table 4-39 Technical specifications

Item	Specification
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg (3.31 lb)
Input	Rated input voltage range: -48 V DC to -60 V DC Maximum input voltage range: -38.4 V DC to -72 V DC Maximum input current: 9.6 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 350 W

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-40 provides 350 W DC power module ordering information.

Table 4-40 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310FGS	AR0MPSPDP3 500	PWR350D	350W DC Power Module

4.12 850 W AC PoE Power Module

Product Support

Table 4-41 lists the device models that support an 850 W AC PoE power module.

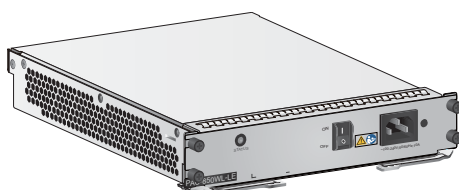
Table 4-41 Product support

Module Name	Product Support
850 W AC PoE power module	AR2240 AR2240C AR3260 AR3670

Appearance

Figure 4-15 shows the appearance of an 850 W AC PoE power module.

Figure 4-15 Appearance of an 850 W AC PoE power module



Function

Table 4-42 describes functions of an 850 W AC PoE power module.

Table 4-42 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 4-16 shows the panel of an 850 W AC PoE power module.

Figure 4-16 Panel of an 850 W AC PoE power module

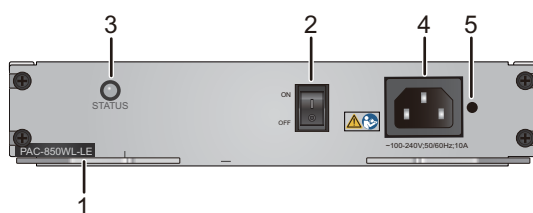


Table 4-43 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.

Number	Name	Description
3	Power indicator (STATUS)	<ul style="list-style-type: none"> ● Steady green: The power output of the power module is normal. ● Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup protection state.)
4	AC power socket	Use an 7.1.1 AC Power Cable to connect the router to a power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Technical Specifications

Table 4-44 lists the technical specifications of an 850 W AC PoE power module.

Table 4-44 Technical specifications

Item	Specification
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.85 kg (4.08 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 10 A
Output	Rated output voltage: 12 V DC or -53.5 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC or -51.895 V DC to -55.105 V DC Maximum output power: 850 W Maximum output current: 29.2 A or 9.35 A

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-45 provides 850 W AC PoE power module ordering information.

Table 4-45 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131247	PAC-850WL-LE	PAC-850WL-LE	850 W AC PoE Power Module

4.13 700 W AC Power Module

Product Support

Table 4-46 lists the device models that support a 700 W AC power module.

Table 4-46 Product support

Module Name	Product Support
700 W AC power module	AR3670

Appearance

Figure 4-17 shows the appearance of a 700 W AC power module.

Figure 4-17 700 W AC power module



Function

Table 4-47 describes functions of a 700 W AC power module.

Table 4-47 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.

Function	Description
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 4-18 shows the panel of a 700 W AC power module.

Figure 4-18 Panel of a 700 W AC power module

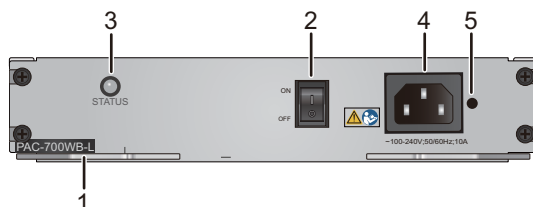


Table 4-48 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.
3	Power indicator (STATUS)	<ul style="list-style-type: none"> Steady green: The power output of the power module is normal. Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup protection state.)

Number	Name	Description
4	AC power socket	Use an 7.1.1 AC Power Cable to connect the router to a power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Technical Specifications

Table 4-49 lists the technical specifications of a 700 W AC power module.

Table 4-49 Technical specifications

Item	Specification
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.7 kg (3.75 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz Maximum input current: 10 A
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 700 W Maximum output current: 58.33 A

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-50 provides 700 W AC power module ordering information.

Table 4-50 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131206	PAC-700WB-L	PAC-700WB-L	700W AC Power Module

5 Fan Modules

About This Chapter

[5.1 AR2240-FAN](#)

[5.2 AR3260-FAN](#)

[5.3 AR3670-FAN](#)

5.1 AR2240-FAN

Product Support

Table 5-1 lists the device model that supports the AR2240-FAN module.

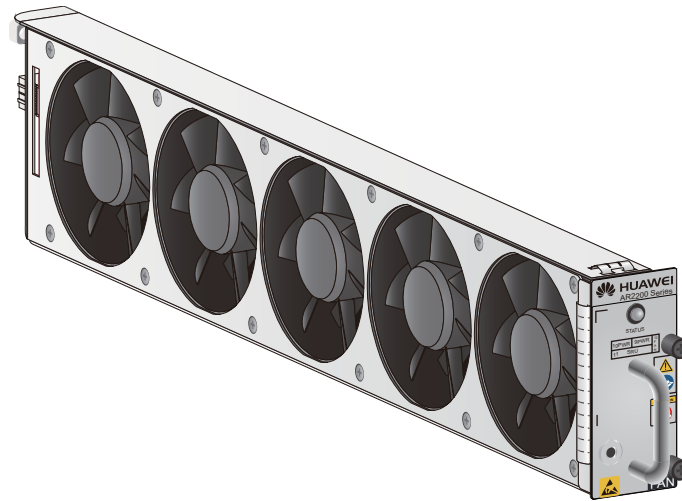
Table 5-1 Product support

Fan Module Name	Product Support
AR2240-FAN	AR2240

Appearance

Figure 5-1 shows the appearance of the AR2240-FAN module.

Figure 5-1 AR2240-FAN appearance



Function

The AR2240-FAN module contains five fans to cool the router.

This fan module is hot swappable.

Panel

Figure 5-2 shows the AR2240-FAN panel.

Figure 5-2 AR2240-FAN panel

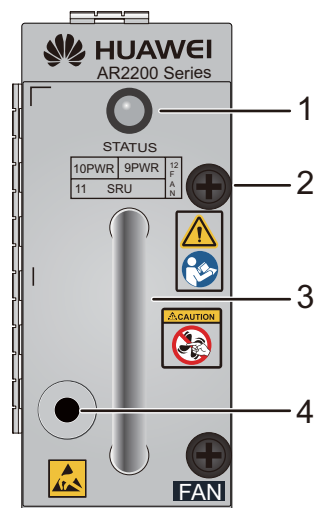


Table 5-2 AR2240-FAN panel

Number	Name	Description
1	STATUS indicator (red and green)	<ul style="list-style-type: none">● Slow blinking green: The fan module is running properly.● Fast blinking green: The fan module cannot communicate with the system.● Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 5-3 lists the technical specifications of the AR2240-FAN module.

Table 5-3 Technical specifications

Item	Specification
Dimensions (W x D x H)	27.4 mm x 478.6 mm x 84.3 mm (1.08 in. x 18.84 in. x 3.32 in.)
Fans	5
Weight	1.05 kg (2.31 lb)
Maximum power consumption	60 W
Maximum wind pressure	150 Pa
Maximum wind rate	400 cubic feet per minute (CFM)
Maximum noise	65.7 dB

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 5-4 provides the AR2240-FAN ordering information.

Table 5-4 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311DCJ	AR2240-FAN	AR2240-FAN	Fan Box For AR2240

5.2 AR3260-FAN

Product Support

Table 5-5 lists the device model that supports the AR3260-FAN module.

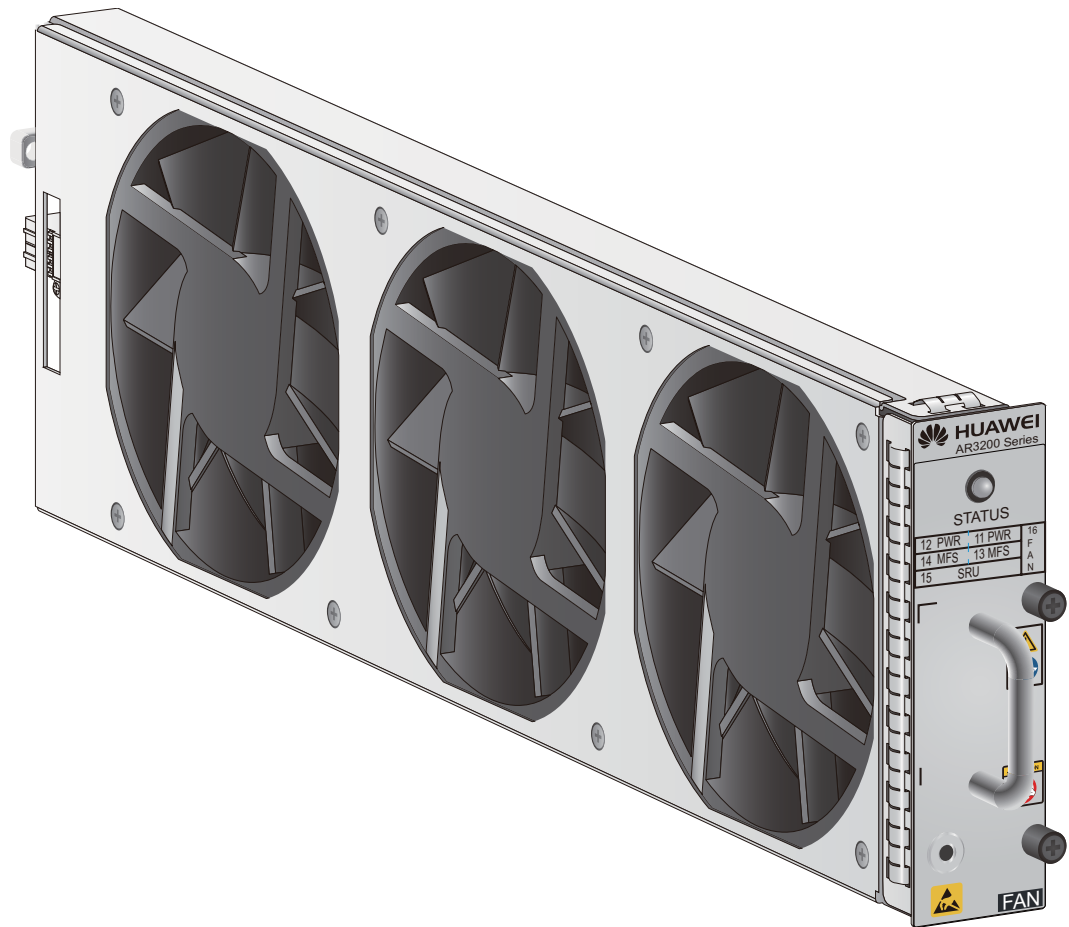
Table 5-5 Product support

Fan Module Name	Product Support
AR3260-FAN	AR3260

Appearance

Figure 5-3 shows the appearance of the AR3260-FAN module.

Figure 5-3 AR3260-FAN appearance



Function

The AR3260-FAN module contains three fans to cool the router.

This fan module is hot swappable.

Panel

[Figure 5-4](#) shows the AR3260-FAN panel.

Figure 5-4 AR3260-FAN panel

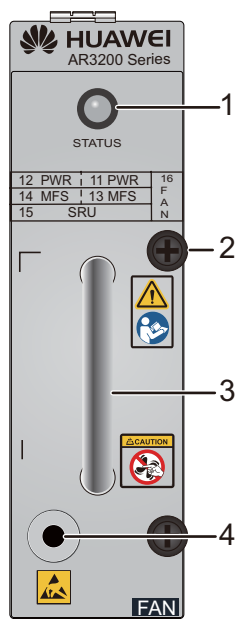


Table 5-6 AR3260-FAN panel

Number	Name	Description
1	STATUS indicator (red and green)	<ul style="list-style-type: none"> ● Slow blinking green: The fan module is running properly. ● Fast blinking green: The fan module cannot communicate with the system. ● Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 5-7 lists the technical specifications of the AR3260-FAN module.

Table 5-7 Technical specifications

Item	Specification
Dimensions (W x D x H)	27.4 mm x 478.6 mm x 125.7 mm (1.08 in. x 18.84 in. x 4.95 in.)

Item	Specification
Fans	3
Weight	1.45 kg (3.20 lb)
Maximum power consumption	90 W
Maximum wind pressure	226 Pa
Maximum wind rate	543 CFM
Maximum noise	75.2 dB

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 5-8 provides the AR3260-FAN ordering information.

Table 5-8 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311DCN	AR3260-FAN	AR3260-FAN	Fan Box For AR3260

5.3 AR3670-FAN

Product Support

Table 5-9 lists the device model that supports the AR3670-FAN module.

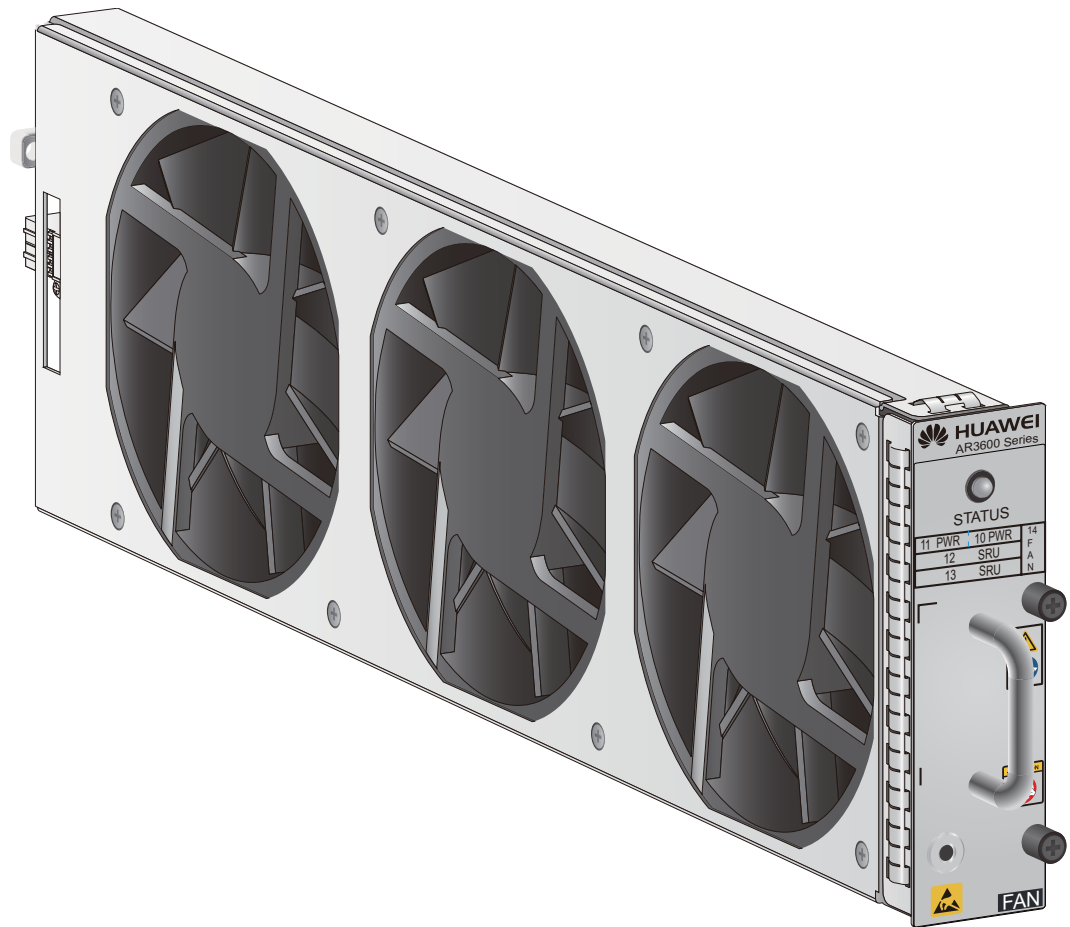
Table 5-9 Product support

Fan Module Name	Product Support
AR3670-FAN	AR3670

Appearance

Figure 5-5 shows the appearance of the AR3670-FAN module.

Figure 5-5 AR3670-FAN appearance



Function

The AR3670-FAN module contains three fans to cool the router.

This fan module is hot swappable.

Panel

Figure 5-6 shows the AR3670-FAN panel.

Figure 5-6 AR3670-FAN panel

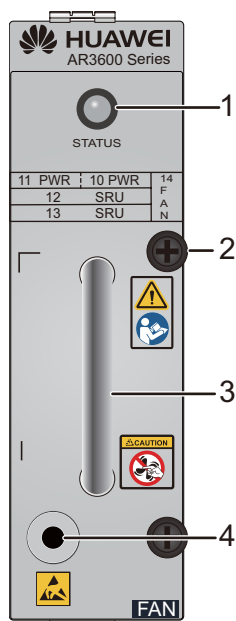


Table 5-10 AR3670-FAN panel

Number	Name	Description
1	STATUS indicator (red and green)	<ul style="list-style-type: none"> ● Slow blinking green: The fan module is running properly. ● Fast blinking green: The fan module cannot communicate with the system. ● Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 5-11 lists the technical specifications of the AR3670-FAN module.

Table 5-11 Technical specifications

Item	Specification
Dimensions (W x D x H)	27.4 mm x 478.6 mm x 125.7 mm (1.08 in. x 18.84 in. x 4.95 in.)

Item	Specification
Fans	3
Weight	1.45 kg (3.20 lb)
Maximum power consumption	90 W
Maximum wind pressure	226 Pa
Maximum wind rate	543 CFM
Maximum noise	75.2 dB

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 5-12 provides the AR3670-FAN ordering information.

Table 5-12 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311DCG	AR3670-FAN	AR3670-FAN	Fan Box For AR3670

6 Cards

About This Chapter

- 6.1 Basic Concepts of Cards
- 6.2 SRU
- 6.3 Ethernet LAN Card
- 6.4 Ethernet WAN Card
- 6.5 E1/T1 Card
- 6.6 E3/T3 Card
- 6.7 Synchronous/Asynchronous Card
- 6.8 3G/LTE Card
- 6.9 E&M Card
- 6.10 POS/CPOS Card
- 6.11 ISDN S/T WAN Card
- 6.12 Voice Card
- 6.13 xDSL Card
- 6.14 xPON Card
- 6.15 Capacitor Card

6.1 Basic Concepts of Cards

6.1.1 Card Structure and Dimensions

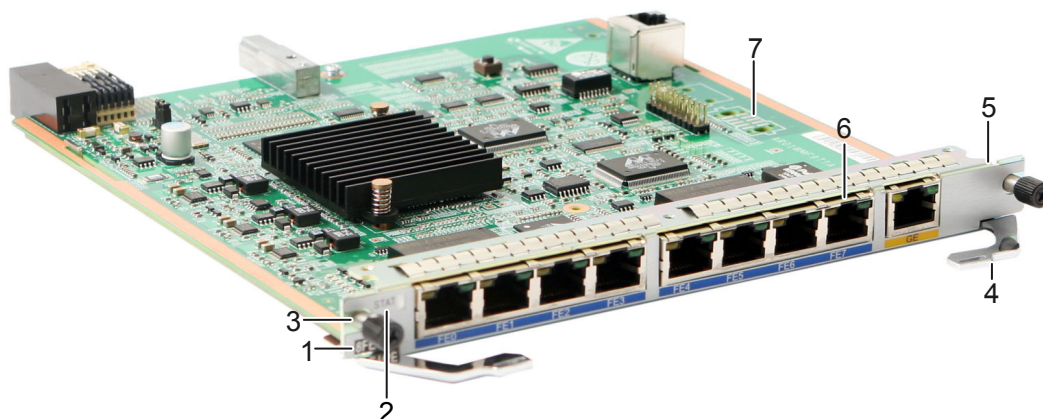
Card Structure

NOTE

The AR series routers support service interface card (SIC), wide service interface card (WSIC), extended service interface card (XSIC), and service and router unit (SRU) cards. These cards have the same structure, and a WSIC card is used as an example here.

Figure 6-1 shows the appearance of a WSIC card.

Figure 6-1 Appearance of a WSIC card



1. Card name silkscreen	2. Indicator	3. Captive screw
4. Handle	5. Front panel plate	6. Ports
7. Printed circuit board (PCB)	-	-

A card consists of:

- The PCB contains all the functional chips and is the core of the card. The PCB provides indicators, buttons, and ports on the front panel. PCBs of some cards provide space for installing daughter cards.

NOTE

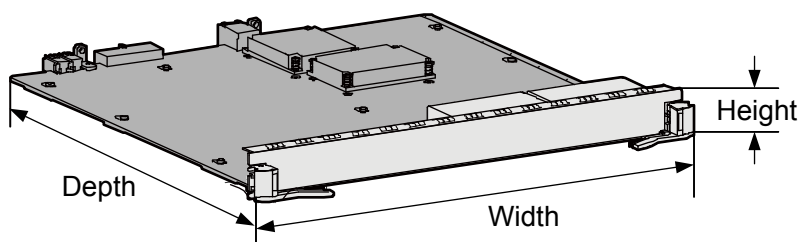
Different cards provide different indicators, buttons, and ports. Some cards support daughter cards, while some cards do not. For details, see the description of specific cards.

- Front panel, consisting of screws, ejector levers, and plate.
 - Screws: fix the card into the chassis.
 - Ejector lever: allows you to insert and remove the card.
 - Plate: connects the ejector levers and the PCB. Labels, such as the bar code and laser label, are also attached on the plate.

Card Dimensions

Figure 6-2 illustrates the dimensions of a card.

Figure 6-2 Card dimensions



NOTE

The card dimensions are defined as follows:

- Depth: distance between the top of an ejector lever and the end of the PCB
- Width: longest distance between the tops of two ejector levers
- Height: height of the front panel

Figure 6-3 shows the typical cards supported by the AR router and **Table 6-1** lists the card dimensions.

Figure 6-3 Card appearances

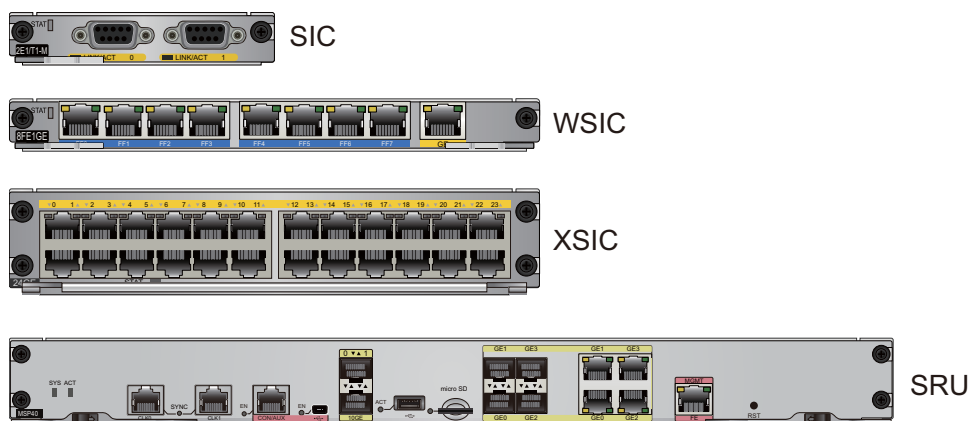


Table 6-1 Card dimensions

Card Type	Dimensions (W x D x H)
SIC card	100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.)
WSIC card	201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.)
XSIC card	201 mm x 223.5 mm x 40.14 mm (7.91 in. x 8.8 in. x 1.58 in.)
EXSIC card	402.8 mm x 223.5 mm x 40.14 mm (15.86 in. x 8.8 in. x 1.58 in.)

6.1.2 Port Numbering

On the AR router, interfaces are numbered in the format of slot ID/subcard ID/interface sequence number.

- Slot ID

The slot ID identifies the slot in which a card is installed.

 **NOTE**

- The SRU slot ID is 0.
- When slots are combined into one slot, the greater slot ID is used as the new slot ID. For example, when slot 1 and slot 2 are combined, slot ID 2 is used as the new slot ID.

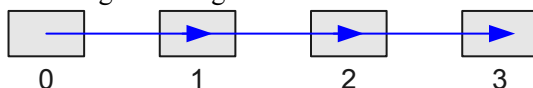
- Subcard ID

The subcard ID specifies the ID of a subcard. The AR router does not support subcards. Therefore, the subcard ID of the AR router is always 0.

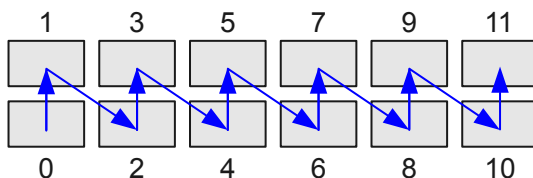
- Interface sequence number

The interface sequence number indicates the number of each interface on a card.

- If there is only one row of interfaces on a card, the interfaces are numbered from left to right starting with 0.



- If there are two rows of interfaces on a card, the interfaces are numbered from bottom to top and left to right starting with 0.



6.2 SRU

6.2.1 SRU40

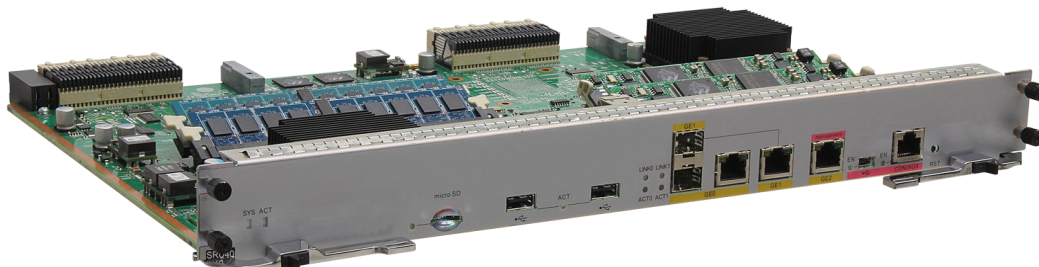
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-4 shows the appearance of an SRU40 card.

Figure 6-4 SRU40 card appearance



Version Mapping

Table 6-2 lists the device models and software versions supporting the SRU40.

Table 6-2 Version mapping

Card Name	Device Model
SRU40	AR2240
NOTE This SRU is supported in V200R001C00 and later versions.	AR3260

Functions and Features

Table 6-3 describes the functions and features of the SRU40.

Table 6-3 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions, including voice switching, data switching, and conversion between voice and data packets.
Power module	Provides power for other modules of the SRU.

Function and Feature	Description
Clock module	Provides synchronous clock signals for the voice card and local voice switching.

Panel

Figure 6-5 shows the indicators on an SRU40 card, and **Table 6-4** describes the indicator states and meanings.

Figure 6-5 SRU40 indicators

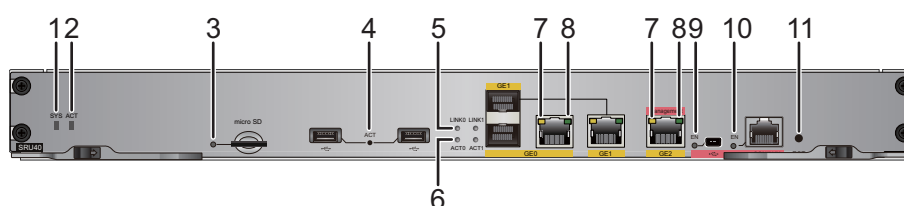


Table 6-4 Indicator description

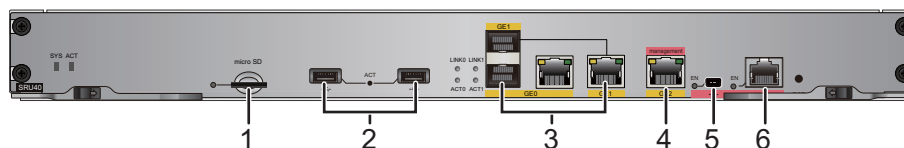
Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
		Off	Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
		Blinking	Blinking: Data is being transmitted or received.
		Off	Off: No SD card is installed or the SD card is damaged.

Number	Indicator	Color	Description
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: <ul style="list-style-type: none"> ● 5: LINK indicator, green ● 6: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
7 and 8	GE electrical interface indicators: <ul style="list-style-type: none"> ● 8: LINK indicator, green ● 7: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	<p>NOTE</p> <ul style="list-style-type: none"> The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.
11	RST button	<p>NOTICE</p> <p>This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.</p>	

Figure 6-6 shows the interfaces on the SRU40.

Figure 6-6 Interfaces on the SRU40



1. Micro SD interface	2. USB interface	3. GE combo interface
<p>NOTE</p> <p>This is an extended SD card slot, where an SD card can be installed.</p>		
4. GE electrical interface (management interface)	5. Mini USB interface	6. CON/AUX interface

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-5](#) lists attributes of a USB interface.

Table 6-5 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-6](#) lists attributes of a GE electrical interface.

Table 6-6 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-7](#) lists attributes of a Mini USB interface.

Table 6-7 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-8](#) lists the CON/AUX interface attributes.

Table 6-8 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Technical Specifications

Table 6-9 lists the technical specifications of the SRU40.

Table 6-9 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	8-core, 600 MHz
Memory	2 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 66.9 W ● Weight: 2.1 kg (4.63 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-10 provides the SRU40 ordering information.

Table 6-10 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022UFT	AR01SRU2C	SRU40	Service and Router Unit 40,3GE WAN(2GE Combo),2 USB,3 DSP Slots

6.2.2 SRU60

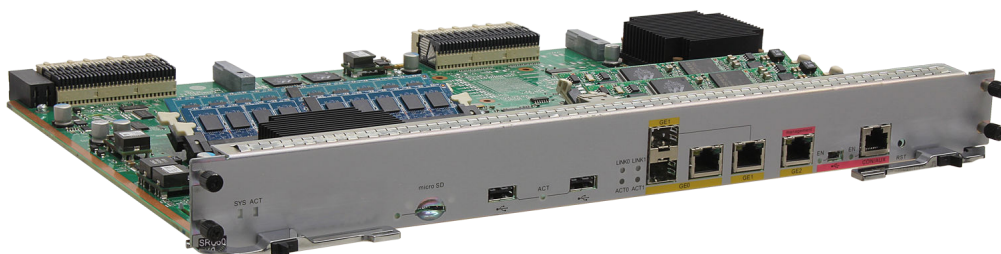
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-7 shows the appearance of an SRU60 card.

Figure 6-7 SRU60 card appearance



Version Mapping

Table 6-11 lists the device models and software versions supporting the SRU60.

Table 6-11 Version mapping

Card Name	Device Model
SRU60	AR2240
NOTE This SRU is supported in V200R003C00 and later versions.	AR3260

Functions and Features

Table 6-12 describes the functions and features of the SRU60.

Table 6-12 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.

Function and Feature	Description
Voice function	Supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions, including voice switching, data switching, and conversion between voice and data packets.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals for the voice card and local voice switching.

Panel

Figure 6-8 shows the indicators on an SRU60 card, and **Table 6-13** describes the indicator states and meanings.

Figure 6-8 SRU60 indicators

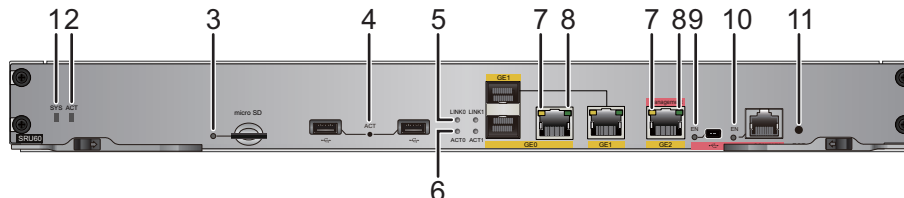


Table 6-13 Indicator description

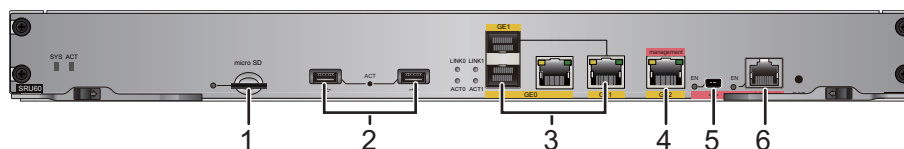
Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Number	Indicator	Color	Description
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: <ul style="list-style-type: none"> ● 5: LINK indicator, green ● 6: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
7 and 8	GE electrical interface indicators: <ul style="list-style-type: none"> ● 8: LINK indicator, green ● 7: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			ACT indicator off: No data is being transmitted or received on the interface.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN NOTE	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
			<ul style="list-style-type: none"> The CON/AUX interface and the Mini USB interface are multiplexed, and only either of them can be used at a time. By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.
11	RST button	NOTICE	This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.

Figure 6-9 shows the interfaces on the SRU60.

Figure 6-9 Interfaces on the SRU60



1. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.	2. USB interface	3. GE combo interface
4. GE electrical interface (management interface)	5. Mini USB interface	6. CON/AUX interface

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-14](#) lists attributes of a USB interface.

Table 6-14 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-15](#) lists attributes of a GE electrical interface.

Table 6-15 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-16](#) lists attributes of a Mini USB interface.

Table 6-16 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-17](#) lists the CON/AUX interface attributes.

Table 6-17 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Technical Specifications

[Table 6-18](#) lists the technical specifications of the SRU60.

Table 6-18 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	8-core, 600 MHz
Memory	2 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 66.9 W ● Weight: 2.1 kg (4.63 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

NOTE

The SRU60 is no longer sold since June 30, 2014.

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-19](#) provides the SRU60 ordering information.

Table 6-19 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021SCA	AR0MSRU60 A00	SRU60	Service and Router Unit 60,3GE WAN(2GE Combo),2 USB,3 DSP Slots

6.2.3 SRU80

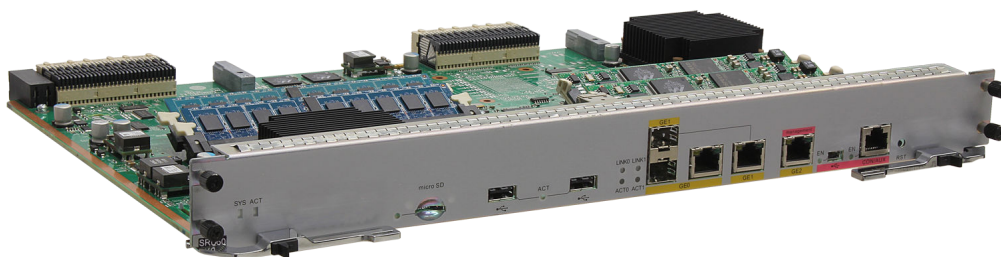
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-10 shows the appearance of an SRU80 card.

Figure 6-10 SRU80 card appearance



Version Mapping

Table 6-20 lists the device models and software versions supporting the SRU80.

Table 6-20 Version mapping

Card Name	Device Model
SRU80	AR2240

Card Name	Device Model
NOTE This SRU is supported in V200R001C00 and later versions.	AR3260

Functions and Features

Table 6-21 describes the functions and features of the SRU80.

Table 6-21 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions, including voice switching, data switching, and conversion between voice and data packets.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals for the voice card and local voice switching.

Panel

Figure 6-11 shows the indicators on an SRU80 card, and **Table 6-22** describes the indicator states and meanings.

Figure 6-11 SRU80 indicators

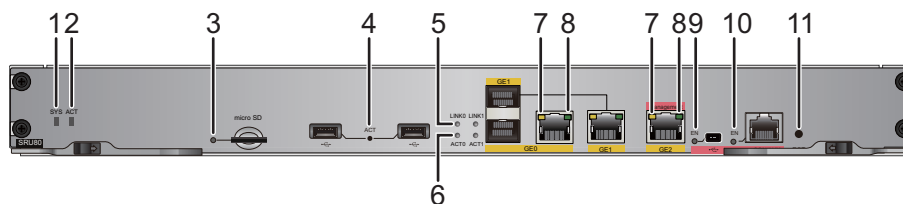


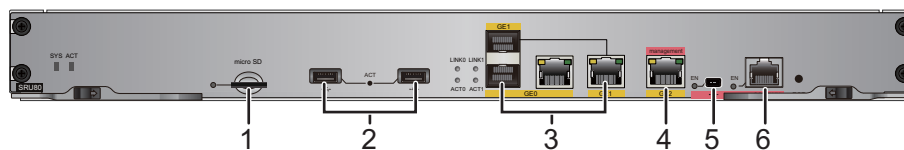
Table 6-22 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: ● 5: LINK indicator, green ● 6: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			ACT indicator off: No data is being transmitted or received on the interface.
7 and 8	GE electrical interface indicators: <ul style="list-style-type: none"> ● 8: LINK indicator, green ● 7: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only either of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
11	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 6-12 shows the interfaces on the SRU80.

Figure 6-12 Interfaces on the SRU80



1. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.	2. USB interface	3. GE combo interface
4. GE electrical interface (management interface)	5. Mini USB interface	6. CON/AUX interface

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-23](#) lists attributes of a USB interface.

Table 6-23 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-24](#) lists attributes of a GE electrical interface.

Table 6-24 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-25](#) lists attributes of a Mini USB interface.

Table 6-25 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-26](#) lists the CON/AUX interface attributes.

Table 6-26 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Technical Specifications

[Table 6-27](#) lists the technical specifications of the SRU80.

Table 6-27 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	12-core, 750 MHz
Memory	2 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 96.2 W ● Weight: 2.1 kg (4.63 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-28 provides the SRU80 ordering information.

Table 6-28 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022UFU	AR01SRU3B	SRU80	Service and Router Unit 80,3GE WAN(2GE Combo),2 USB,3 DSP Slots

6.2.4 SRU100

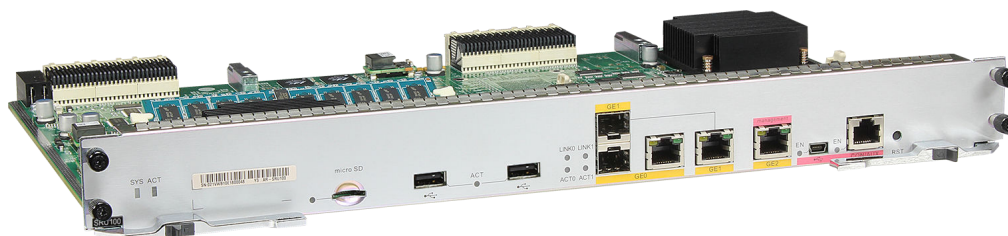
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-13 shows the appearance of the SRU100.

Figure 6-13 SRU100 appearance



Version Mapping

Table 6-29 lists the device models and software versions supporting the SRU100.

Table 6-29 Version mapping

Card Name	Device Model
SRU100	AR2240
NOTE This SRU is supported in V200R005C20 and later versions.	AR3260

Functions and Features

Table 6-30 describes the functions and features of the SRU100.

Table 6-30 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions, including voice switching, data switching, and conversion between voice and data packets.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals for the voice card and local voice switching.

Panel

Figure 6-14 shows the indicators on the SRU100 panel, and **Table 6-31** describes the indicator states and meanings.

Figure 6-14 SRU100 indicators

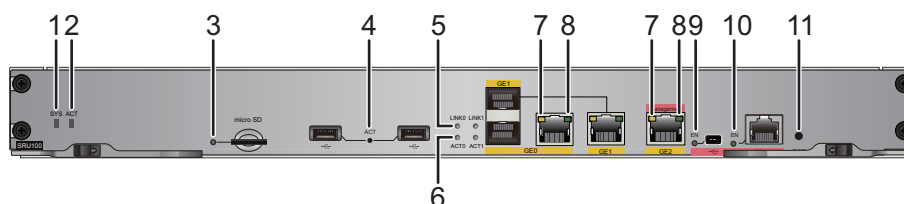


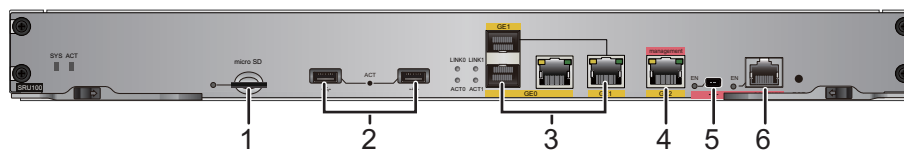
Table 6-31 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: ● 5: LINK indicator, green ● 6: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			ACT indicator off: No data is being transmitted or received on the interface.
7 and 8	GE electrical interface indicators: <ul style="list-style-type: none"> ● 8: LINK indicator, green ● 7: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
11	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 6-15 shows the interfaces on the SRU100.

Figure 6-15 Interfaces on the SRU100



1. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.	2. USB interface	3. GE combo interface
4. GE electrical interface (management interface)	5. Mini USB interface	6. CON/AUX interface

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-32](#) lists attributes of a USB interface.

Table 6-32 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-33](#) lists attributes of a GE electrical interface.

Table 6-33 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-34](#) lists attributes of a Mini USB interface.

Table 6-34 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 6-35** lists the CON/AUX interface attributes.

Table 6-35 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Technical Specifications

Table 6-36 lists the technical specifications of the SRU100.

Table 6-36 Technical specifications

Item	Specification
Card type	EXSIC
Hot swap	Supported
Processor	12-core, 750 MHz
Memory	2 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 96.2 W ● Weight: 2.1 kg (4.63 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-37 provides the SRU100 ordering information.

Table 6-37 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021VWB	AR-SRU100	SRU100	Service and Router Unit 100,3GE WAN(2GE Combo),2 USB,3 DSP Slots

6.2.5 SRU200

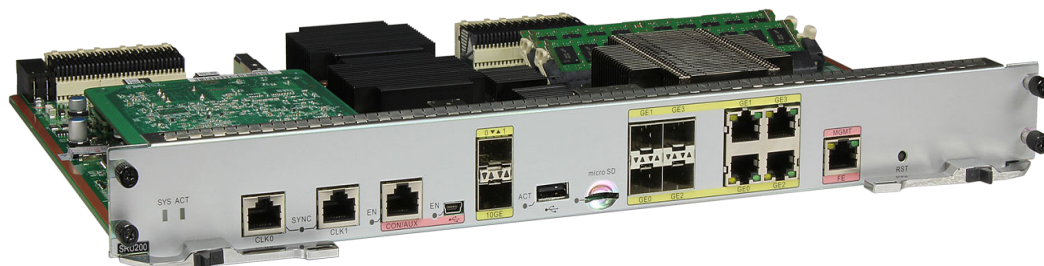
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-16 shows the appearance of an SRU200 card.

Figure 6-16 SRU200 card appearance



Version Mapping

Table 6-38 lists the device models and software versions supporting the SRU200.

Table 6-38 Version mapping

Card Name	Device Model
SRU200	AR2240
NOTE This SRU is supported in V200R005C10 and later versions.	AR3260

Functions and Features

Table 6-39 describes the functions and features of the SRU200.

Table 6-39 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals.

Panel

Figure 6-17 shows the indicators on the SRU200 card, and **Table 6-40** describes the indicator states and meanings.

Figure 6-17 SRU200 indicators

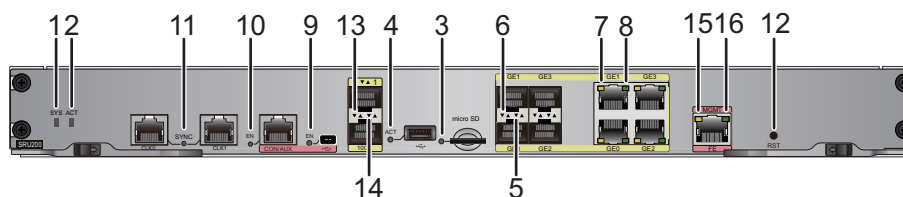


Table 6-40 Indicator description

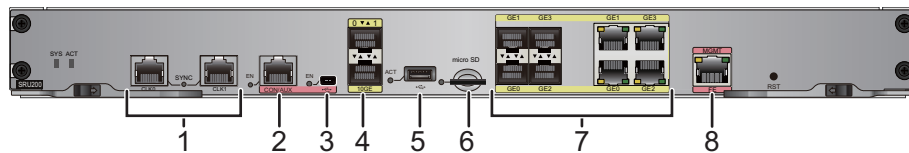
Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is available.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: ● 5: LINK indicator, green ● 6: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			ACT indicator off: No data is being transmitted or received on the interface.
7 and 8	GE electrical interface indicators: <ul style="list-style-type: none"> ● 8: LINK indicator, green ● 7: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only either of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
11	SYNC (clock synchronization indicator)	Green	Steady on: The system is synchronizing its clock.
			Off: The system is not synchronizing its clock.

Number	Indicator	Color	Description
12	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	
13 and 14	10GE optical interface indicators: ● 14: LINK indicator, green ● 13: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
15 and 16	FE electrical interface indicators: ● 16: LINK indicator, green ● 15: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.

Figure 6-18 shows the interfaces on the SRU200.

Figure 6-18 Interfaces on the SRU200



1. Two clock synchronization interfaces NOTE They are reserved hardware interfaces. The router does not support clock synchronization currently.	2. CON/AUX interface	3. Mini USB interface
4. Two 10GE optical interfaces	5. USB interface	6. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.
7. Four GE combo interfaces	8. FE electrical interface (management interface)	-

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-41](#) lists the CON/AUX interface attributes.

Table 6-41 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-42](#) lists attributes of a Mini USB interface.

Table 6-42 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle

Attribute	Description
Standards compliance	USB2.0
Working mode	Device

10GE optical interface

The 10GE optical interfaces cannot work in GE mode and can only transmit and receive service traffic at 10 Gbit/s. [Table 6-43](#) lists attributes of a 10GE optical interface.

Table 6-43 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules .
Standards compliance	IEEE802.3ae

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-44](#) lists attributes of a USB interface.

Table 6-44 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP](#)

Optical Modules, 8.6 GE-CWDM eSFP Optical Modules, 8.7 GE-DWDM eSFP Optical Modules, or 8.4 FE SFP/eSFP Optical Modules.

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 6-45](#) lists attributes of an FE electrical interface.

Table 6-45 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-46](#) lists the technical specifications of the SRU200.

Table 6-46 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	32-core, 1.2 GHz
Memory	4 GB

Item	Specifications
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 123 W ● Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-47 provides the SRU200 ordering information.

Table 6-47 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021XAM	AR-SRU200	SRU200	Service and Router Unit 200,4 GE WAN(4GE Combo),2 10GE WAN(2 SFP+),1 USB

6.2.6 SRU400

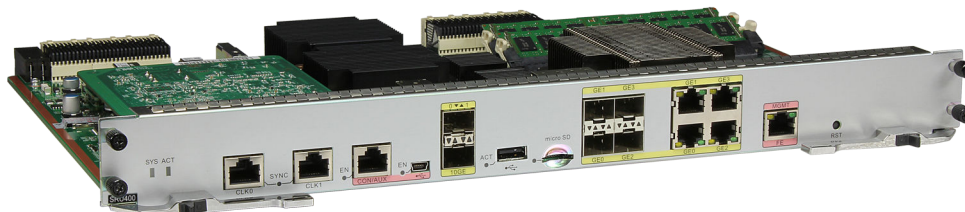
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-19 shows the appearance of an SRU400 card.

Figure 6-19 SRU400 card appearance



Version Mapping

Table 6-48 lists the device models and software versions supporting the SRU400.

Table 6-48 Version mapping

Card Name	Device Model
SRU400	AR2240
NOTE This SRU is supported in V200R005C10 and later versions.	AR3260

Functions and Features

Table 6-49 describes the functions and features of the SRU400.

Table 6-49 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.

Function and Feature	Description
Clock module	Provides synchronous clock signals.

Panel

Figure 6-20 shows the indicators on an SRU400 card, and **Table 6-50** describes the indicator states and meanings.

Figure 6-20 SRU400 indicators

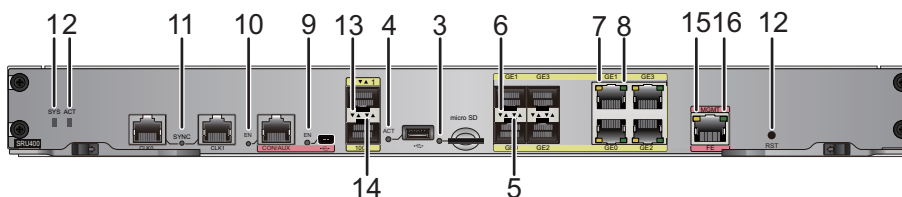


Table 6-50 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
		Off	The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
		Blinking	Data is being transmitted or received.
		Off	No SD card is available.

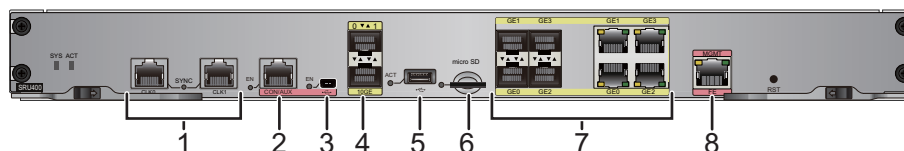
Number	Indicator	Color	Description
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: ● 5: LINK indicator, green ● 6: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
7 and 8	GE electrical interface indicators: ● 8: LINK indicator, green ● 7: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> The CON/AUX interface and the Mini USB interface are multiplexed, and only either of them can be used at a time. By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.
11	SYNC (clock synchronization indicator)	Green	Steady on: The system is synchronizing its clock.
			Off: The system is not synchronizing its clock.
12	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	
13 and 14	10GE optical interface indicators: <ul style="list-style-type: none"> 14: LINK indicator, green 13: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
15 and 16	FE electrical interface indicators: <ul style="list-style-type: none"> 16: LINK indicator, green 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.

Number	Indicator	Color	Description
	● 15: ACT indicator, yellow	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.

Figure 6-21 shows the interfaces on the SRU400.

Figure 6-21 Interfaces on the SRU400



1. Two clock synchronization interfaces NOTE They are reserved hardware interfaces. The router does not support clock synchronization currently.	2. CON/AUX interface	3. Mini USB interface
4. Two 10GE optical interfaces	5. USB interface	6. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.
7. Four GE combo interfaces	8. FE electrical interface (management interface)	-

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-51](#) lists the CON/AUX interface attributes.

Table 6-51 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-52](#) lists attributes of a Mini USB interface.

Table 6-52 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

10GE optical interface

The 10GE optical interfaces cannot work in GE mode and can only transmit and receive service traffic at 10 Gbit/s. [Table 6-53](#) lists attributes of a 10GE optical interface.

Table 6-53 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules .
Standards compliance	IEEE802.3ae

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-54](#) lists attributes of a USB interface.

Table 6-54 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 6-55](#) lists attributes of an FE electrical interface.

Table 6-55 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-56](#) lists the technical specifications of the SRU400.

Table 6-56 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	32-core, 1.2 GHz
Memory	4 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) Maximum power consumption: 123 W Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-57](#) provides the SRU400 ordering information.

Table 6-57 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022NPN	AR-SRU400	SRU400	Service and Router Unit 400 GE WAN(4GE Combo),2 10GE WAN(2 SFP+),1 USB

6.2.7 SRU100E

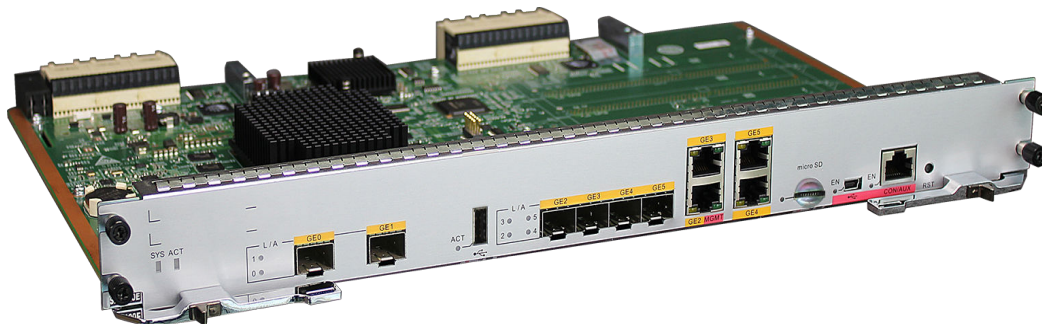
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-22 shows the appearance of an SRU100E card.

Figure 6-22 SRU100E card appearance



Version Mapping

Table 6-58 lists the device models and software versions supporting the SRU100E.

Table 6-58 Version mapping

Card Name	Device Model
SRU100E	AR2240

Card Name	Device Model
NOTE This SRU is supported in V200R007C00 and later versions.	AR3260

Functions and Features

Table 6-59 describes the functions and features of the SRU100E.

Table 6-59 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported.
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals.

Panel

Figure 6-23 shows the indicators on an SRU100E card, and **Table 6-60** describes the indicator states and meanings.

Figure 6-23 SRU100E indicators

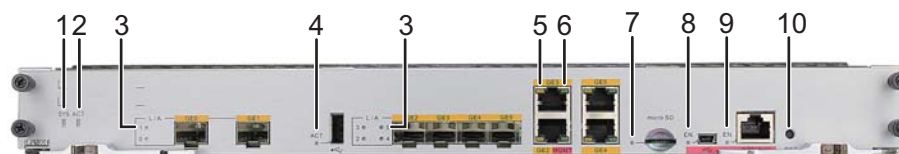


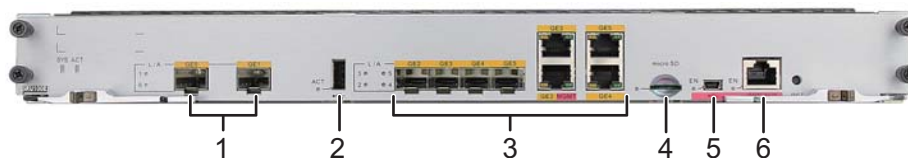
Table 6-60 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	GE optical interface indicator (L/A)	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the interface.
			Off: No link is established on the interface.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE electrical interface indicators: ● 6: LINK indicator, green ● 5: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.

Number	Indicator	Color	Description
			ACT indicator off: No data is being transmitted or received on the interface.
7	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
8	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
9	CON/AUX EN NOTE	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
10	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 6-24 shows the interfaces on the SRU100E.

Figure 6-24 Interfaces on the SRU100E



1. Two GE optical interfaces	2. USB interface NOTE This USB interface does not support USB1.1.	3. Four GE combo interfaces NOTE GE2 is a management interface used to upgrade the router.
4. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.	5. Mini USB interface	6. CON/AUX interface

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-61](#) lists the CON/AUX interface attributes.

Table 6-61 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-62](#) lists attributes of a Mini USB interface.

Table 6-62 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-63](#) lists attributes of a USB interface.

Table 6-63 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE optical interface

A GE optical interface cannot work in FE mode and can transmit and receive service traffic at 1000 Mbit/s. [Table 6-64](#) lists attributes of a GE optical interface.

Table 6-64 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , and 8.7 GE-DWDM eSFP Optical Modules .
Standards compliance	IEEE 802.3z

Technical Specifications

[Table 6-65](#) lists the technical specifications of the SRU100E.

Table 6-65 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	12-core, 1.2 GHz
Memory	4 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 62 W ● Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-66 provides the SRU100E ordering information.

Table 6-66 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03023SLR	AR-SRU100EE	SRU100E	Service and Router unit 100EE,6GE WAN(4GE Combo,2 SFP),1 USB.
03025HLL NOTE This part number is supported in V200R010C0 0 and later versions.	AR-SRU100EI	SRU100E	Service and Router unit 100EI,6GE WAN(4GE Combo,2 SFP),1 USB.

6.2.8 SRU200E

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-25 shows the appearance of an SRU200E card.

Figure 6-25 SRU200E card appearance



Version Mapping

Table 6-67 lists the device models and software versions supporting the SRU200E.

Table 6-67 Version mapping

Card Name	Device Model
SRU200E	AR2240
NOTE This SRU is supported in V200R007C00 and later versions.	AR3260

Functions and Features

Table 6-68 describes the functions and features of the SRU200E.

Table 6-68 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals.

Panel

Figure 6-26 shows the indicators on an SRU200E card, and **Table 6-69** describes the indicator states and meanings.

Figure 6-26 SRU200E indicators

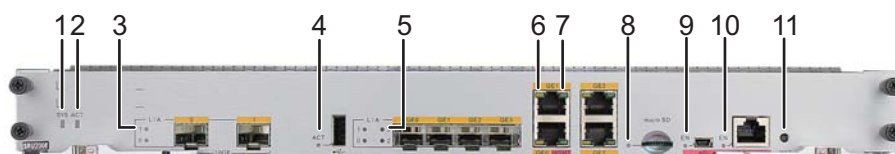


Table 6-69 Indicator description

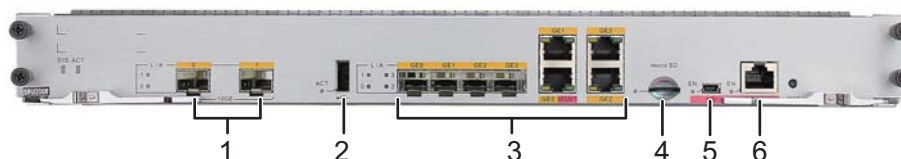
Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	10GE optical interface indicator (L/A)	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the interface.
			Off: No link is established on the interface.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5	GE optical interface indicator (L/A)	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the interface.
			Off: No link is established on the interface.

Number	Indicator	Color	Description
6 and 7	GE electrical interface indicators: <ul style="list-style-type: none"> ● 7: LINK indicator, green ● 6: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
8	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN NOTE <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only either of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.

Number	Indicator	Color	Description
11	RST button	NOTICE	This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.

Figure 6-27 shows the interfaces on the SRU200E.

Figure 6-27 Interfaces on the SRU200E



1. Two 10GE optical interfaces	2. USB interface NOTE This USB interface does not support USB1.1.	3. Four GE combo interfaces NOTE GE0 is a management interface used to upgrade the router.
4. Micro SD interface NOTE This is an extended SD card slot, where an SD card can be installed.	5. Mini USB interface	6. CON/AUX interface

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. [Table 6-70](#) lists the CON/AUX interface attributes.

Table 6-70 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)

Attribute	Description
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-71](#) lists attributes of a Mini USB interface.

Table 6-71 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-72](#) lists attributes of a USB interface.

Table 6-72 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE optical interface

The 10GE optical interfaces cannot work in GE mode and can only transmit and receive service traffic at 10 Gbit/s. [Table 6-73](#) lists attributes of a 10GE optical interface.

Table 6-73 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules .
Standards compliance	IEEE802.3ae

Technical Specifications

[Table 6-74](#) lists the technical specifications of the SRU200E.

Table 6-74 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	12-core, 1.2 GHz
Memory	4 GB
Flash	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 62 W ● Weight: 2.3 kg (5.07 lb)

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-75 provides the SRU200E ordering information.

Table 6-75 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03023SLS	AR-SRU200EE	SRU200E	Service and Router unit 200EE,4GE WAN(4GE Combo),2 10GE WAN(2 SFP+),1 USB

6.2.9 SRUX5

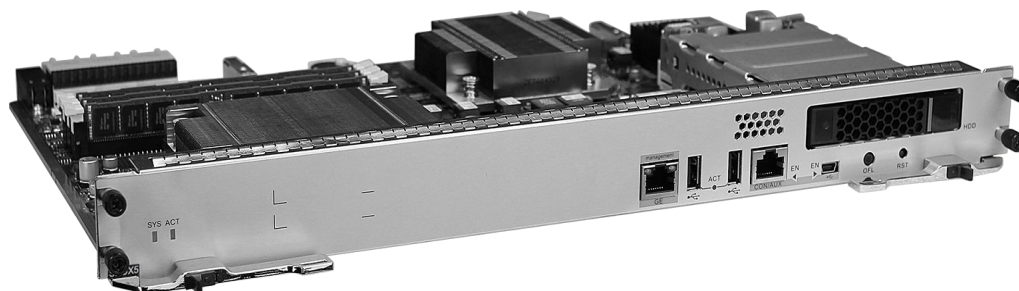
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-28 shows the appearance of an SRUX5 card.

Figure 6-28 SRUX5 card appearance



Version Mapping

Table 6-76 lists the device models and software versions supporting the SRUX5.

Table 6-76 Version mapping

Card Name	Device Model
SRUX5 NOTE This SRU is supported in V200R006C10 and later versions.	AR3670

Functions and Features

Table 6-77 describes the functions and features of the SRUX5.

Table 6-77 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Provides synchronous clock signals.

Panel

Figure 6-29 shows the indicators on an SRUX5 card, and **Table 6-78** describes the indicator states and meanings.

Figure 6-29 SRUX5 indicators

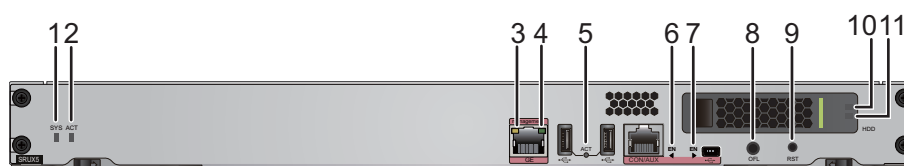


Table 6-78 Indicator description

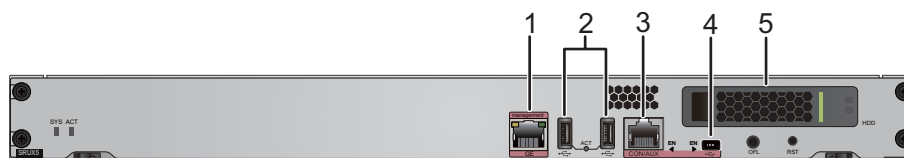
Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3 and 4	GE electrical interface indicators: <ul style="list-style-type: none"> ● 4: LINK indicator, green ● 3: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
5	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
6	CON/AUX EN	Green	Steady on: The CON/AUX interface is enabled.

Number	Indicator	Color	Description
	<p>NOTE</p> <ul style="list-style-type: none"> ● The CON/AUX interface and the Mini USB interface are multiplexed, and only either of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface. 		Off: The CON/AUX interface is disabled.
7	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
8	OFL	Blue	<p>Steady on: The OFL button has been held down for more than 4s, and the hard disk can be removed.</p> <p>Off: The hard disk cannot be removed.</p> <p>NOTE The OFL indicator only shows whether the hard disk can be removed while the power is on. It cannot identify service status in the hard disk.</p>
9	RST button	<p>NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.</p>	
10	Hard disk error indicator	Red	<p>Steady on: The hard disk does not work normally.</p> <p>Off: The hard disk is working normally.</p>

Number	Indicator	Color	Description
11	Hard disk ACT indicator	Green	Steady on: A hard disk is present. Blinking: The system is performing read-write operation on the hard disk. Off: No hard disk is present. NOTE This indicator keeps blinking during hard disk formatting after the formatting command is executed.

Figure 6-30 shows the interfaces on the SRUX5.

Figure 6-30 Interfaces on the SRUX5



1. GE electrical interface (management interface)	2. USB interface	3. CON/AUX interface
4. Mini USB interface	5. SATA interface NOTICE <ul style="list-style-type: none"> ● Before using a hard disk not certified by Huawei, format the hard disk. ● Do not power off or restart the router when it is performing read-write operating on the SATA hard disk. 	-

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. Table 6-79 lists the CON/AUX interface attributes.

Table 6-79 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	<ul style="list-style-type: none"> ● Data circuit terminal equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	7.4 Console Cable

Mini USB interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used at the same time. By default, the console interface works. [Table 6-80](#) lists attributes of a Mini USB interface.

Table 6-80 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

USB interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-81](#) lists attributes of a USB interface.

Table 6-81 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-82](#) lists attributes of a GE electrical interface.

Table 6-82 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-83](#) lists the technical specifications of the SRUX5.

Table 6-83 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	6-core, 2.2 GHz
Memory	8 GB
Flash	8 GB
Micro SD card (sd1 by default)	Not supported
Hard disk	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 130 W ● Weight: 2 kg (4.41 lb)

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-84 provides the SRUX5 ordering information.

Table 6-84 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022SLF	AR-SRUX5	SRUX5	Service and router unit X5

6.2.10 SRU-100H

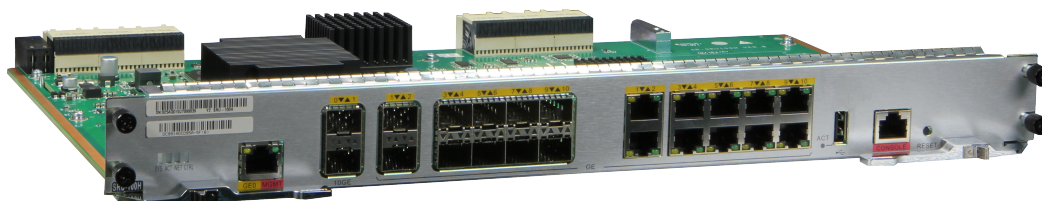
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-31 shows the appearance of an SRU-100H card.

Figure 6-31 SRU-100H card appearance



Version Mapping

Table 6-85 lists the device models and software versions supporting the SRU-100H.

Table 6-85 Version mapping

Card Name	Device Model
SRU-100H	AR2240
NOTE The SRU is supported in V300R019C00 and later versions.	AR3260

Functions and Features

Table 6-86 describes the functions and features of the SRU-100H.

Table 6-86 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 6-32 shows indicators on an SRU-100H card, and **Table 6-87** describes the indicator states and meanings.

Figure 6-32 SRU-100H indicators

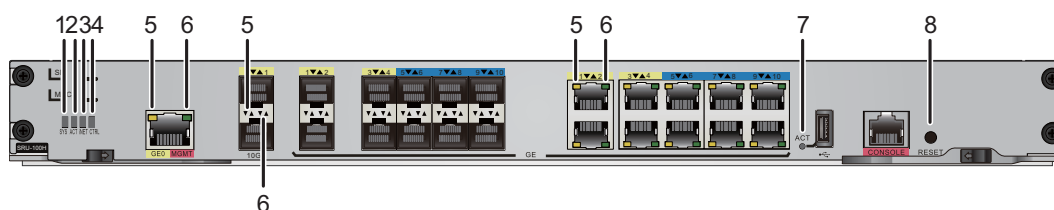


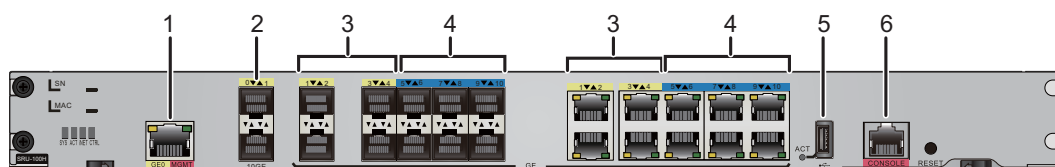
Table 6-87 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	GE optical/electrical interface indicators: ● 5: ACT indicator, yellow ● 6: LINK indicator, green	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 6-33 shows interfaces on the SRU-100H.

Figure 6-33 Interfaces on the SRU-100H



1. One GE electrical interface NOTE GE0 is a management interface used to upgrade the router.	2. Two 10GE optical interfaces NOTE GE optical modules can be inserted into these two optical interfaces.	3. WAN interfaces: four GE combo interfaces
4. LAN interfaces: six GE combo interfaces	5. USB 2.0 interface	6. Console interface

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. Table 6-88 lists attributes of a USB interface.

Table 6-88 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-89](#) lists attributes of a GE electrical interface.

Table 6-89 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. [Table 6-90](#) lists attributes of a 10GE optical interface.

Table 6-90 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules and 8.5 GE eSFP Optical Modules .
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 6-91](#) lists attributes of a console interface.

Table 6-91 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Technical Specifications

[Table 6-92](#) lists the technical specifications of the SRU-100H.

Table 6-92 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 1.85 GHz
Memory	4 GB

Item	Specifications
Flash	1 GB
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 62 W ● Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-93 provides the SRU-100H ordering information.

Table 6-93 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312GJM	SRU-100H	SRU-100H	Service and Router unit 100H, 11GE(10 GE Combo, 1GE Copper), 2 10GE(2 SFP+), 1 USB

6.2.11 SRU-200H

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-34 shows the appearance of an SRU-200H card.

Figure 6-34 SRU-200H card appearance



Version Mapping

Table 6-94 lists the device models and software versions supporting the SRU-200H.

Table 6-94 Version mapping

Card Name	Device Model
SRU-200H	AR2240
NOTE This SRU is supported in V300R019C00 and later versions.	AR3260

Functions and Features

Table 6-95 describes the functions and features of the SRU-200H.

Table 6-95 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions, including voice switching, data switching, and conversion between voice and data packets.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 6-35 shows the indicators on an SRU-200H card, and **Table 6-96** describes the indicator states and meanings.

Figure 6-35 SRU-200H indicators

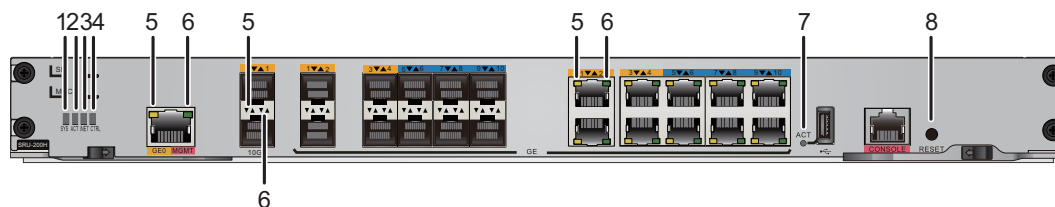


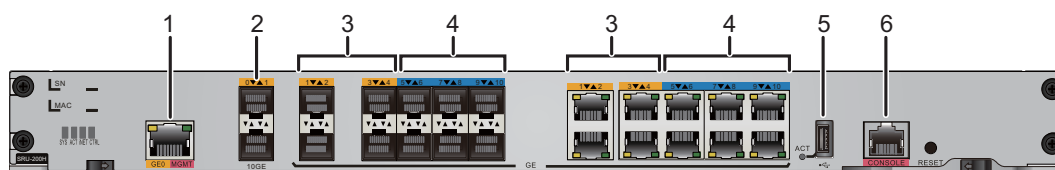
Table 6-96 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
		Off	The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	GE optical/electrical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.

Number	Indicator	Color	Description
	<ul style="list-style-type: none"> ● 5: ACT indicator, yellow ● 6: LINK indicator, green 	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 6-36 shows the interfaces on the SRU-200H.

Figure 6-36 Interfaces on the SRU-200H



1. One GE electrical interface NOTE GE0 is a management interface used to upgrade the router.	2. Two 10GE optical interfaces NOTE GE optical modules can be inserted into these two optical interfaces.	3. WAN interfaces: four GE combo interfaces
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4. LAN interfaces: six GE combo interfaces	5. USB 2.0 interface	6. Console interface
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USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-97](#) lists attributes of a USB interface.

Table 6-97 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE combo interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. It must be used with an [7.5 Ethernet Cable](#).
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with an [7.6 Optical Fiber](#), [8.5 GE eSFP Optical Modules](#), [8.6 GE-CWDM eSFP Optical Modules](#), [8.7 GE-DWDM eSFP Optical Modules](#), or [8.4 FE SFP/eSFP Optical Modules](#).

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-98](#) lists attributes of a GE electrical interface.

Table 6-98 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. [Table 6-99](#) lists attributes of a 10GE optical interface.

Table 6-99 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules and 8.5 GE eSFP Optical Modules .
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 6-100](#) lists attributes of a console interface.

Table 6-100 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Technical Specifications

[Table 6-101](#) lists technical specifications of the SRU-200H.

Table 6-101 Technical specifications

Item	Specification
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 1.85 GHz
Memory	4 GB
Flash	1 GB
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 62 W ● Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-102](#) provides the SRU-200H ordering information.

Table 6-102 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312HCA	SRU-200H	SRU-200H	SRU-200H, service and router unit 200H, 11*GE (10*GE combo, 1*GE copper), 2*10GE SFP+, 1*USB, 2*DSP slot

6.2.12 SRU-400H

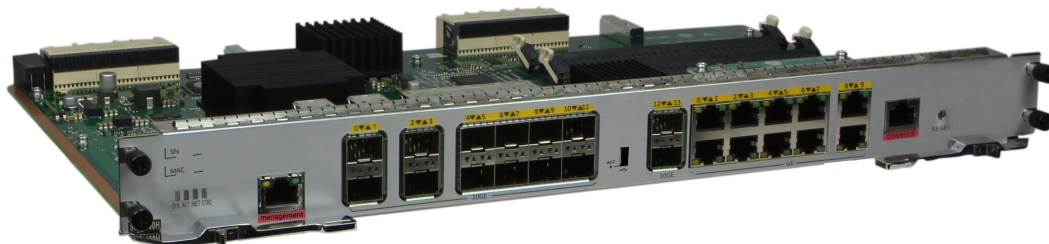
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-37 shows the appearance of an SRU-400H card.

Figure 6-37 SRU-400H card appearance



Version Mapping

Table 6-103 lists the device models and software versions supporting the SRU-400H.

Table 6-103 Version mapping

Card Name	Device Model
SRU-400H	AR2240

Card Name	Device Model
NOTE The SRU is supported in V300R019C00 and later versions.	AR3260

Functions and Features

Table 6-104 describes the functions and features of the SRU-400H.

Table 6-104 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 6-38 shows indicators on an SRU-400H card, and **Table 6-105** describes the indicator states and meanings.

Figure 6-38 SRU-400H indicators

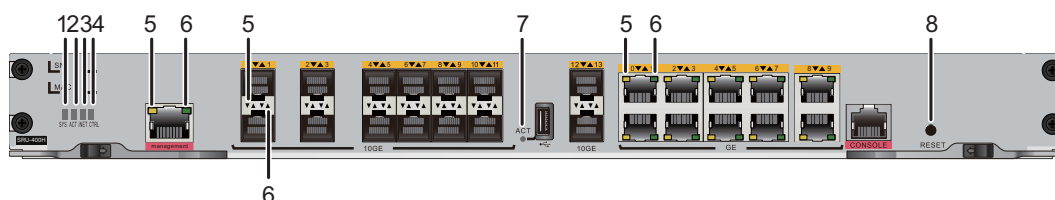


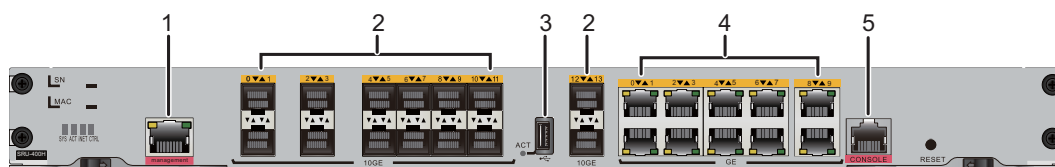
Table 6-105 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	10GE optical/GE electrical interface indicators: ● 5: ACT indicator, yellow ● 6: LINK indicator, green	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	RST button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 6-39 shows interfaces on the SRU-400H.

Figure 6-39 Interfaces on the SRU-400H



1. One GE electrical interface NOTE GE electrical interface is a management interface used to upgrade the router.	2. WAN interfaces: fourteen 10GE optical interfaces NOTE GE optical modules can be inserted into these fourteen optical interfaces.	3. USB 2.0 interface
4. WAN interfaces: ten GE electrical interfaces NOTE All GE WAN interfaces can be configured as LAN interfaces.	5. Console interface	-

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-106](#) lists attributes of a USB interface.

Table 6-106 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-107](#) lists attributes of a GE electrical interface.

Table 6-107 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. [Table 6-108](#) lists attributes of a 10GE optical interface.

Table 6-108 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC

Attribute	Description
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules and 8.5 GE eSFP Optical Modules .
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 6-109](#) lists attributes of a console interface.

Table 6-109 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Technical Specifications

[Table 6-110](#) lists the technical specifications of the SRU-400H.

Table 6-110 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	8 GB
Flash	2 GB
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported

Item	Specifications
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 122 W ● Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-111 provides the SRU-400H ordering information.

Table 6-111 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312NEU	SRU-400H	SRU-400H	Service and Router Unit 400H, 14*10GE(SFP+), 10*GE Copper, 1*USB2.0

6.2.13 SRU-600H

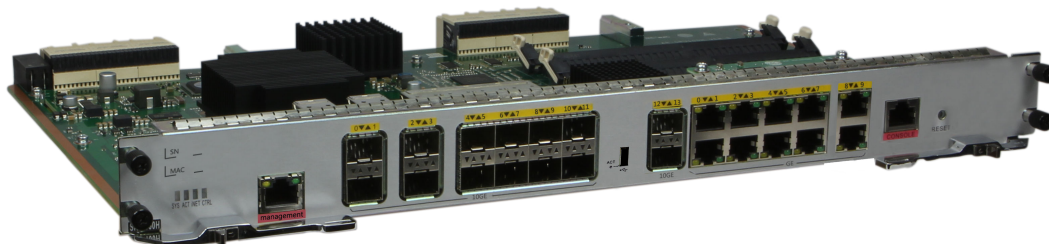
Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 6-40 shows the appearance of an SRU-600H card.

Figure 6-40 SRU-600H card appearance



Version Mapping

Table 6-112 lists the device models and software versions supporting the SRU-600H.

Table 6-112 Version mapping

Card Name	Device Model
SRU-600H	AR2240
NOTE The SRU is supported in V300R019C00 and later versions.	AR3260

Functions and Features

Table 6-113 describes the functions and features of the SRU-600H.

Table 6-113 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high-speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 6-41 shows indicators on an SRU-600H card, and **Table 6-114** describes the indicator states and meanings.

Figure 6-41 SRU-600H indicators

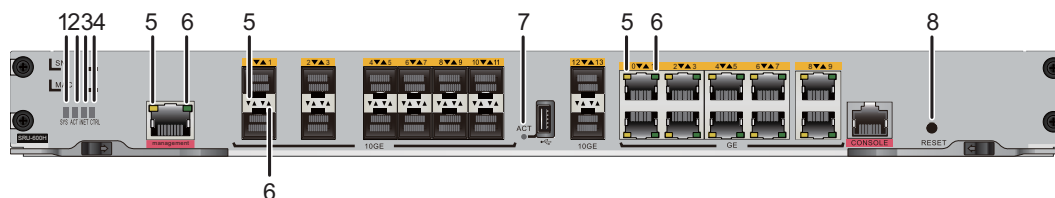


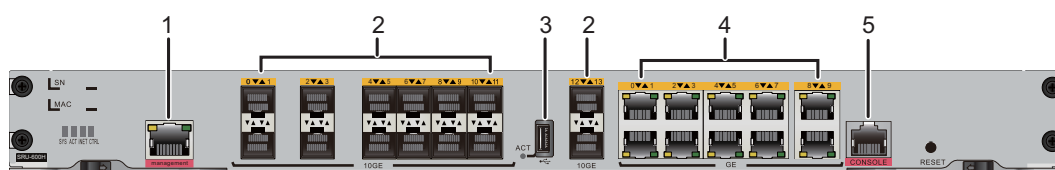
Table 6-114 Indicator description

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator)	Green	Steady on: The SRU is in active state.
		Off	Off: The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	10GE optical/GE electrical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.

Number	Indicator	Color	Description
	<ul style="list-style-type: none"> ● 5: ACT indicator, yellow ● 6: LINK indicator, green 	Yellow	<p>ACT indicator blinking: Data is being transmitted or received on the interface.</p> <p>ACT indicator off: No data is being transmitted or received on the interface.</p>
7	ACT (USB)	Red and green	<p>Steady green: The system has been upgraded or configured using a USB flash drive.</p> <p>Blinking green: The system is being upgraded or configured using a USB flash drive.</p> <p>Steady red: The system fails to be upgraded or configured using a USB flash drive.</p> <p>Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.</p>
8	RST button	<p>NOTICE</p> <p>This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.</p>	

Figure 6-42 shows interfaces on the SRU-600H.

Figure 6-42 Interfaces on the SRU-600H



<p>1. One GE electrical interface</p> <p>NOTE</p> <p>GE electrical interface is a management interface used to upgrade the router.</p>	<p>2. WAN interfaces: fourteen 10GE optical interfaces</p> <p>NOTE</p> <p>GE optical modules can be inserted into these fourteen optical interfaces.</p>	<p>3. USB 2.0 interface</p>
---	---	-----------------------------

4. WAN interfaces: ten GE electrical interfaces	5. Console interface	-
NOTE All GE WAN interfaces can be configured as LAN interfaces.		

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 6-115](#) lists attributes of a USB interface.

Table 6-115 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-116](#) lists attributes of a GE electrical interface.

Table 6-116 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. [Table 6-117](#) lists attributes of a 10GE optical interface.

Table 6-117 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules and 8.5 GE eSFP Optical Modules .
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. [Table 6-118](#) lists attributes of a console interface.

Table 6-118 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	7.4 Console Cable

Technical Specifications

[Table 6-119](#) lists the technical specifications of the SRU-600H.

Table 6-119 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	16 GB

Item	Specifications
Flash	4 GB
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 402.8 mm x 270.85 mm x 40.14 mm (15.86 in. x 10.66 in. x 1.58 in.) ● Maximum power consumption: 126 W ● Weight: 2.3 kg (5.07 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-120 provides the SRU-600H ordering information.

Table 6-120 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312NEV	SRU-600H	SRU-600H	Service and Router Unit 600H, 14*10GE(SFP+), 10*GE Copper, 1*USB2.0

6.3 Ethernet LAN Card

6.3.1 8FE1GE (8-Port 100M-RJ45+1-Port 1000M-RJ45-L2 Ethernet Electrical Interface Card)

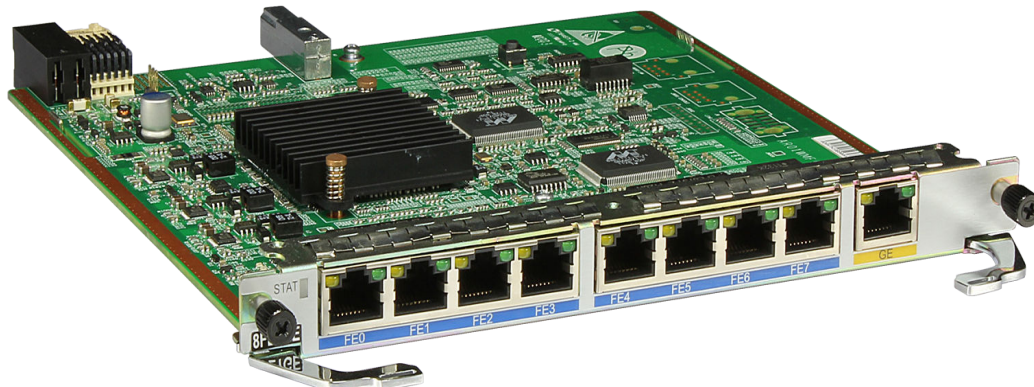
Card Overview

8FE1GE provides Ethernet access for medium- and small-scale enterprises and enterprise branches, and supports Layer 2 and Layer 3 line-rate switching and device management. It provides eight FE interfaces and one GE interface, which can connect to office terminals, PCs, IP phones, and switches.

An 8FE1GE card can be installed in a WSIC slot of a router.

Figure 6-43 shows the appearance of an 8FE1GE card.

Figure 6-43 8FE1GE card appearance



Version Mapping

Table 6-121 lists the device models and software versions supporting the 8FE1GE.

Table 6-121 Version mapping

Card Name	Device Series	Device Model	
8FE1GE NOTE This card is supported in V200R001C00 and later versions.	AR1200 series	All models in this series except the AR1220E series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
	AR2200 series	AR2204	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2204E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
		<p>AR2204XE</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.</p>
		<p>AR2204XE-DC</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.</p>
		<p>AR2220</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.</p>
		<p>AR2220E</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.</p>
		<p>AR2240</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.</p>
		<p>AR2240C</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.</p>
	AR3200 series	<p>All models in this series</p> <p>When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.</p>

Card Name	Device Series	Device Model
	AR3600 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.

Functions and Features

Table 6-122 describes the functions and features of an 8FE1GE card.

Table 6-122 Functions and features

Function and Feature	Description
Eight FE interfaces	Provide up to 100 Mbit/s line-rate switching.
One GE interface	Provides up to 1000 Mbit/s line-rate switching.
Duplex mode	Supports the half duplex mode and full duplex mode. The full duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link increasing the link bandwidth and improving link reliability.
VLANIF interface	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-44 shows the indicators on an 8FE1GE card, and **Table 6-123** describes the indicator states and meanings.

Figure 6-44 Indicators on an 8FE1GE card

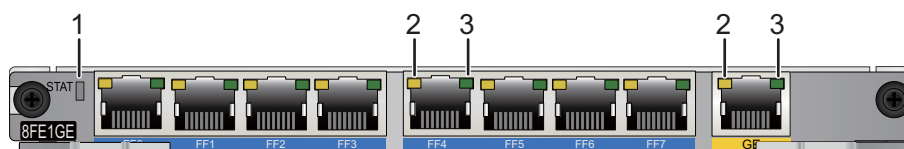
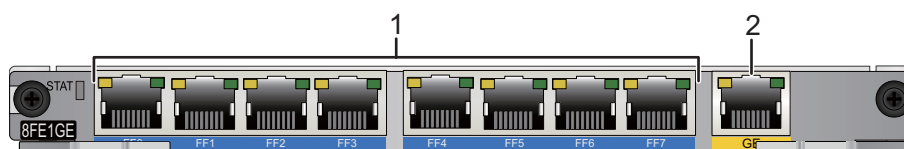


Table 6-123 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
3	LINK	Green	Steady on: A link has been established.
			Off: No link is established.

Figure 6-45 shows the interfaces on an 8FE1GE card.

Figure 6-45 Interfaces on the 8FE1GE



1. Eight FE electrical interfaces	2. One GE electrical interface
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FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 6-124** lists attributes of an FE electrical interface.

Table 6-124 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-125](#) lists attributes of a GE electrical interface.

Table 6-125 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

Table 6-126 lists the technical specifications of an 8FE1GE card.

Table 6-126 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.)● Maximum power consumption: 11.2 W● Weight: 0.6 kg (1.33 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-127 provides 8FE1GE card ordering information.

Table 6-127 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XTN	AR0MWMF9 TT00	8FE1GE	8-Port 10/100BASE(RJ45) and 1-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Switch Interface Card

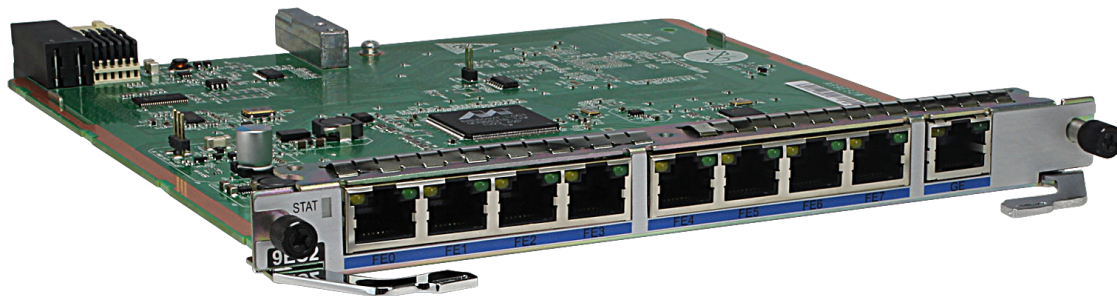
6.3.2 9ES2 (8-Port 100BASE-RJ45 and 1-Port 1000BASE-RJ45 L2 Ethernet Interface Card)

Card Overview

The 9ES2 card provides eight FE electrical interfaces and one GE electrical interface. This card is installed in a WSIC slot and provides line-rate Layer 2 and Layer 3 switching and device management functions.

Figure 6-46 shows the appearance of a 9ES2 card.

Figure 6-46 9ES2 card appearance



Version Mapping

Table 6-128 lists the device models and software versions supporting the 9ES2.

Table 6-128 Version mapping

Card Name	Device Series	Device Model
9ES2 NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	All models in this series except the AR1220E series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR2200 series	AR2204 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2204E When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR2220E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
		AR2240 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Functions and Features

Table 6-129 describes the functions and features of a 9ES2 card.

Table 6-129 Functions and features

Function and Feature	Specification
Eight FE interfaces	Provide up to 100 Mbit/s line-rate switching.
One GE electrical interface	Provides up to 1000 Mbit/s line-rate switching.
Switching between LAN and WAN ports	V200R009C00 and later versions, all LAN ports on 9ES2 card can switch to WAN ports.
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link, increasing the link bandwidth and improving link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-47 shows the indicators on a 9ES2 card, and **Table 6-130** describes the indicator states and meanings.

Figure 6-47 Indicators on a 9ES2 card

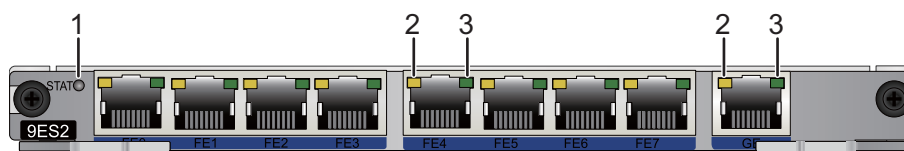
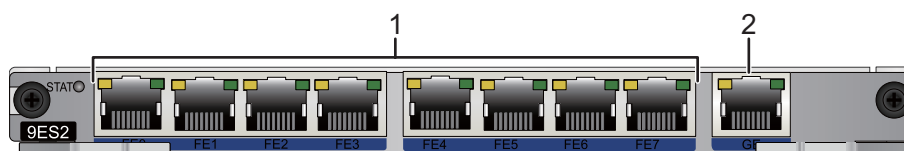


Table 6-130 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system software is running normally. Off: The card is not powered on.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data. Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.

Figure 6-48 shows the interfaces on a 9ES2 card.

Figure 6-48 Interfaces on a 9ES2 card



1. Eight FE electrical interfaces	2. One GE electrical interface
-----------------------------------	--------------------------------

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 6-131](#) lists attributes of an FE electrical interface.

Table 6-131 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-132](#) lists attributes of a GE electrical interface.

Table 6-132 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

Attribute	Description
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

Table 6-133 lists the technical specifications of a 9ES2 card.

Table 6-133 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7.6 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-134 provides 9ES2 card ordering information.

Table 6-134 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021UJL	AR-9ES2-W	9ES2	8 port 100BASE-RJ45 and 1 port 1000BASE-RJ45 L2 Ethernet interface card

6.3.3 24GE (24-Port 1000M-RJ45-L2 Ethernet Electrical Interface Card)

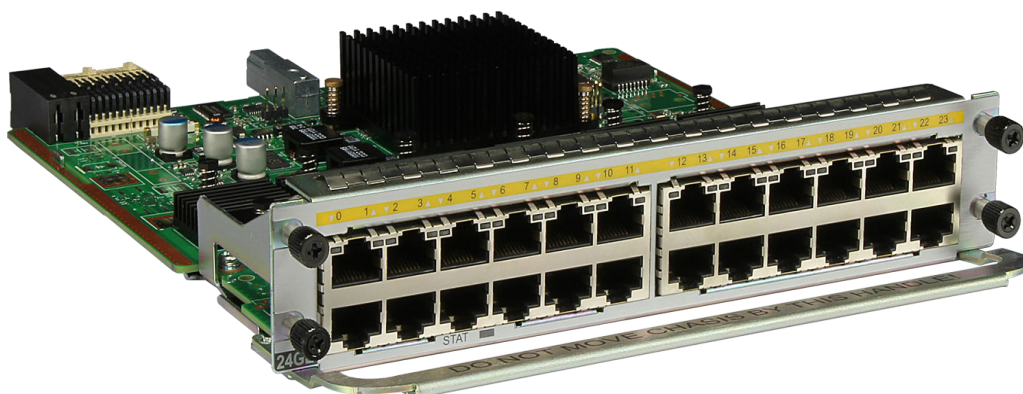
Card Overview

24GE provides 24 GE electrical interfaces, which extend Ethernet forwarding and Layer 2 and Layer 3 switching capabilities. The 24GE often applies to the enterprise headquarters and can connect to multiple devices by using the 24 GE interfaces.

A 24GE card can be installed in an XSIC slot of a router.

Figure 6-49 shows the appearance of a 24GE card.

Figure 6-49 24GE card appearance



Version Mapping

Table 6-135 lists the device models and software versions supporting the 24GE.

Table 6-135 Version mapping

Card Name	Device Series	Device Model
24GE NOTE This card is supported in V200R001C00 and later versions.	AR2200 series	AR2220 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220E When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
		AR2240C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 10 Gbit/s, respectively, due to the backplane bandwidth restriction.
	AR3600 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 10 Gbit/s, respectively, due to the backplane bandwidth restriction.

Functions and Features

Table 6-136 describes the functions and features of a 24GE card.

Table 6-136 Functions and features

Function and Feature	Description
24 GE interfaces	Provide up to 1000 Mbit/s line-rate switching.
Switching between LAN and WAN ports	V200R009C00 and V200R0010C00: Enables all LAN ports on 24GE cards to switch to WAN ports. NOTE In V300R003C00 and later versions, this function is not supported.
Duplex mode	Supports the half duplex mode and full duplex modes. The full duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link, increasing the bandwidth and improving link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.

Function and Feature	Description
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-50 shows the indicators on a 24GE card, and **Table 6-137** describes the indicator states and meanings.

Figure 6-50 Indicators on a 24GE card

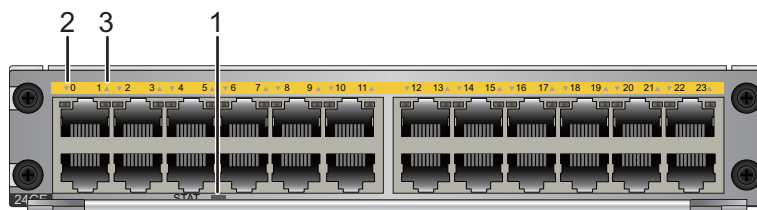


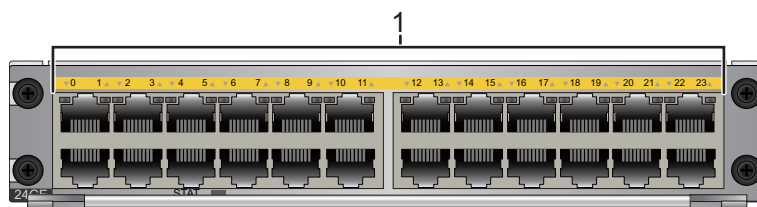
Table 6-137 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2, 3	One single-color indicator for each interface	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received.

Number	Indicator	Color	Description
	<p>NOTE</p> <ul style="list-style-type: none"> ● Down arrowhead: interfaces in the lower row ● Up arrowhead: interfaces in the upper row 		Off: No link is established.

Figure 6-51 shows the interfaces on a 24GE card.

Figure 6-51 Interfaces on a 24GE card



1. 24 GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. Table 6-138 lists attributes of a GE electrical interface.

Table 6-138 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	<p>MDI/MDIX</p> <p>NOTE</p> <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-139](#) lists the technical specifications of a 24GE card.

Table 6-139 Technical specifications

Item	Specifications
Card type	XSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 40.14 mm (7.91 in. x 8.8 in. x 1.58 in.) ● Maximum power consumption: 25.7 W ● Weight: 0.85 kg (1.87 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-140](#) provides 24GE card ordering information.

Table 6-140 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020MNS	AR0MXEGFT A00	24GE	24-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Switch Interface Card

6.3.4 24ES2GP (24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card)

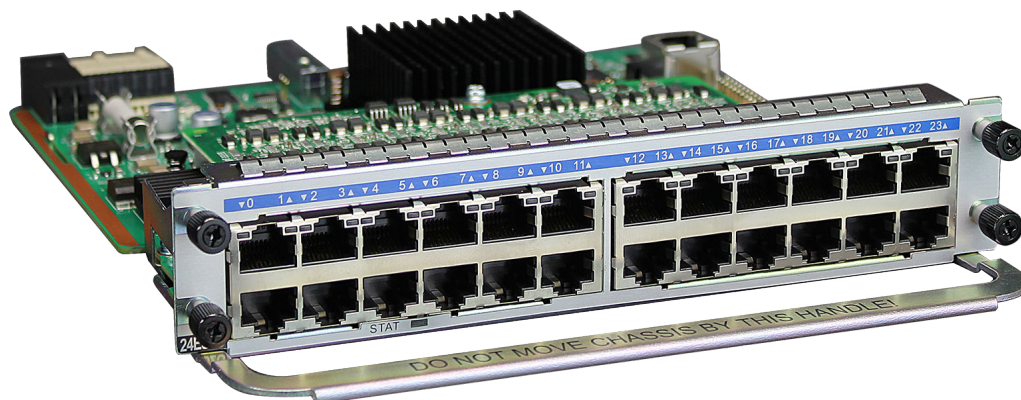
Card Overview

The 24ES2GP provides 24 GE electrical interfaces, which extend Ethernet forwarding and Layer 2 switching capabilities. The 24ES2GP often applies to the enterprise headquarters and can implement large-capacity, high-density GE Ethernet access. The GE electrical interfaces also support PoE.

A 24ES2GP card can be installed in an XSIC slot of a router.

Figure 6-52 shows the appearance of a 24ES2GP card.

Figure 6-52 24ES2GP card appearance



Version Mapping

Table 6-141 lists the device models and software versions supporting the 24ES2GP.

Table 6-141 Version mapping

Card Name	Device Series	Device Model
24ES2GP NOTE This card is supported in V200R007C00 and later versions.	AR2200 series	AR2240 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 10 Gbit/s, respectively, due to the backplane bandwidth restriction.
	AR3600 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 10 Gbit/s, respectively, due to the backplane bandwidth restriction.

Functions and Features

Table 6-142 describes the functions and features of a 24ES2GP card.

Table 6-142 Functions and features

Function and Feature	Description
24 GE interfaces	Provide up to 1000 Mbit/s line-rate switching.
PoE power supply	Provides power to powered devices (PDs) connected to the GE electrical interfaces.
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link, increasing the link bandwidth and improving link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-53 shows the indicators on a 24ES2GP card, and **Table 6-143** describes the indicator states and meanings.

Figure 6-53 Indicators on a 24ES2GP card

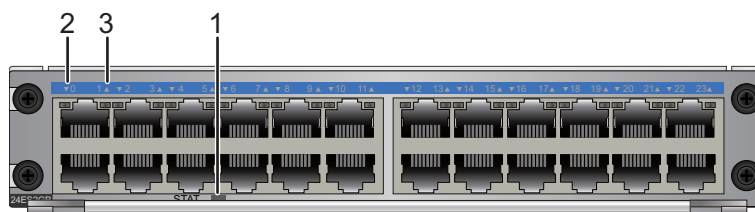
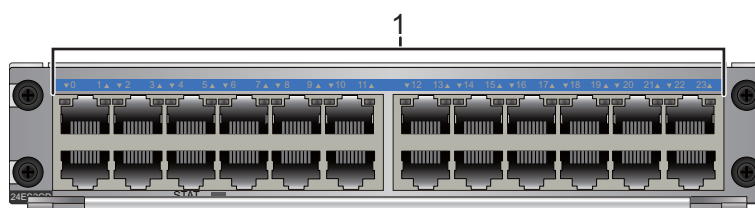


Table 6-143 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2 and 3	One single-color indicator for each interface NOTE <ul style="list-style-type: none"> ● Down arrowhead: indicates an interface at the bottom. ● Up arrowhead: indicates an interface at the top. 	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Figure 6-54 shows the interfaces on a 24ES2GP card.

Figure 6-54 Interfaces on a 24ES2GP card



1. 24 GE electrical interfaces

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-144](#) lists attributes of a GE electrical interface.

Table 6-144 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-145](#) lists the technical specifications of a 24ES2GP card.

Table 6-145 Technical specifications

Item	Specifications
Card type	XSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 40.14 mm (7.91 in. x 8.8 in. x 1.58 in.) ● Maximum power consumption: 30 W ● Weight: 0.85 kg

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: < 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-146 provides 24ES2GP card ordering information.

Table 6-146 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03023CNH	AR-24ES2GP-X	24ES2GP	24-port 1000BASE-RJ45 L2 PoE Ethernet electrical interface card

6.3.5 4GE-2S (4-Port 1000BASE-SFP-L2 Ethernet Interface Card)

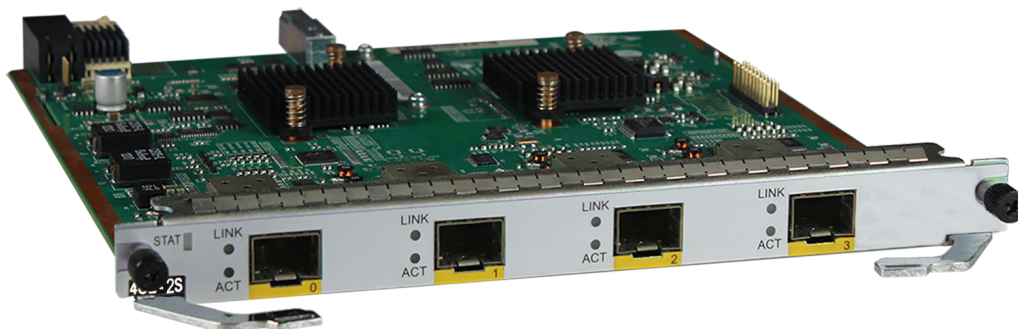
Card Overview

The 4GE-2S often applies to medium-sized enterprises and provides large-capacity gigabit Ethernet access. It provides four GE optical interfaces and can connect to optical interface switches.

A 4GE-2S card can be installed in a WSIC slot of a router.

Figure 6-55 shows the appearance of a 4GE-2S card.

Figure 6-55 4GE-2S card appearance



Version Mapping

Table 6-147 lists the device models and software versions supporting the 4GE-2S.

Table 6-147 Version mapping

Card Name	Device Series	Device Model	
4GE-2S NOTE This card is supported in V200R003C00 and later versions.	AR1200 series	All models in this series except the AR1220E series, AR1220-8GE, and AR1220C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
	AR2200 series	AR2204	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2204E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Functions and Features

Table 6-148 describes the functions and features of a 4GE-2S card.

Table 6-148 Functions and features

Function and Feature	Description
Four GE optical interfaces	Provide up to 1000 Mbit/s line-rate switching.
Duplex mode	Supports the half duplex mode and full duplex modes. The full duplex mode is more commonly used.
VLAN	Supports a maximum of 128 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services. The interfaces do not support the automatic mode.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces. Inter-card port isolation is not supported. Only intra-card port isolation is supported.
Layer 2 features	Support MAC, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-56 shows the indicators on a 4GE-2S card, and **Table 6-149** describes the indicator states and meanings.

Figure 6-56 Indicators on a 4GE-2S card

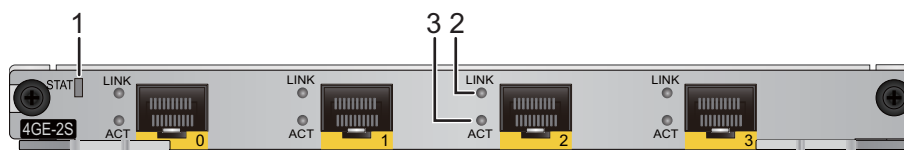
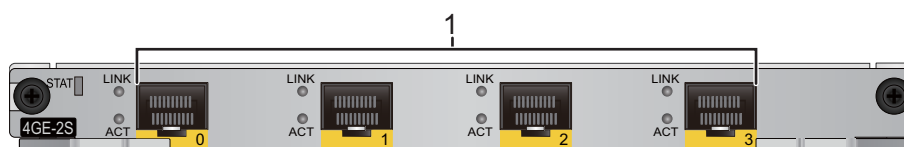


Table 6-149 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
		Off	Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
		Off	Off: No data is being transmitted or received.

Figure 6-57 shows the interfaces on a 4GE-2S card.

Figure 6-57 Interfaces on a 4GE-2S card



1. Four GE optical interfaces

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 6-150** lists attributes of a GE optical interface.

Table 6-150 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

Technical Specifications

Table 6-151 lists the technical specifications of a 4GE-2S card.

Table 6-151 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-152 provides 4GE-2S card ordering information.

Table 6-152 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RSM	AR01WEG4S B	4GE-2S	4-port 1000BASE-SFP-L2 Ethernet interface card

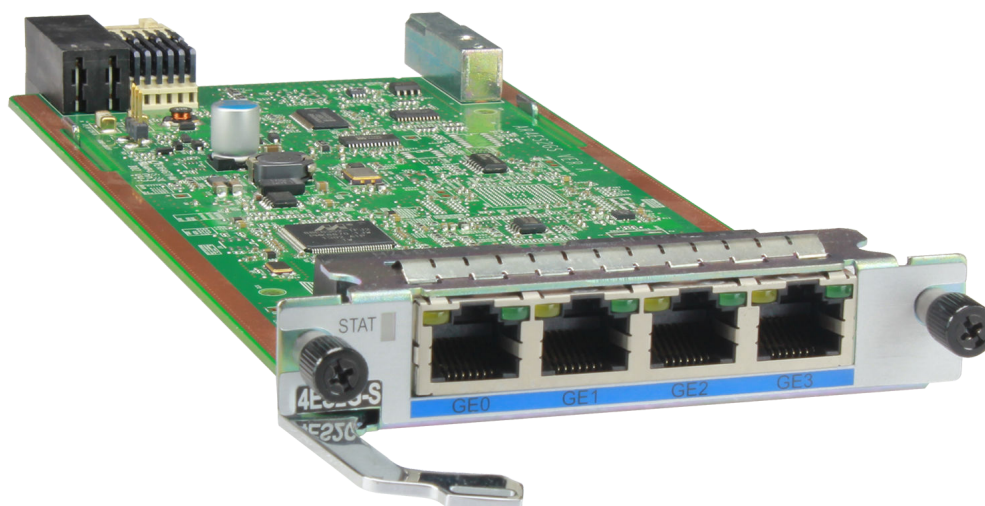
6.3.6 4ES2G-S (4-Port 1000BASE-RJ45 L2 Ethernet Interface Card)

Card Overview

A 4ES2G-S card provides four GE electrical interfaces. This card is installed in a SIC slot and provides line-rate Layer 2 and Layer 3 switching and device management functions.

Figure 6-58 shows the appearance of a 4ES2G-S card.

Figure 6-58 4ES2G-S card appearance



Version Mapping

Table 6-153 lists the device models and software versions supporting the 4ES2G-S.

Table 6-153 Version mapping

Card Name	Device Series	Device Model	
4ES2G-S NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	All models in this series except the AR1220E series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
	AR2200 series	AR2204XE	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction. NOTE This card is supported in V200R010C00 and later versions.
		AR2204	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2204E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2204E-D	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220L	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
		AR2220E When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Functions and Features

Table 6-154 describes the functions and features of a 4ES2G-S card.

Table 6-154 Functions and features

Function and Feature	Description
Four GE electrical interfaces	Provide up to 1000 Mbit/s line-rate switching.
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-59 shows the indicators on a 4ES2G-S card, and **Table 6-155** describes the indicator states and meanings.

Figure 6-59 Indicators on a 4ES2G-S card

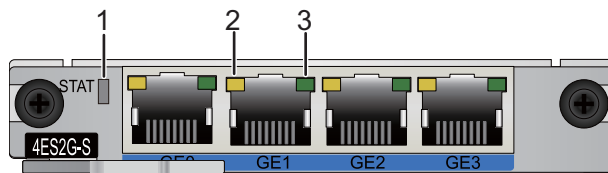
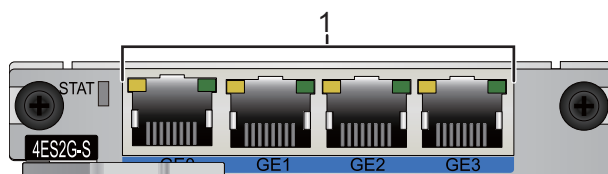


Table 6-155 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system software is running normally.
			Off: The card is not powered on.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Figure 6-60 shows the interfaces on a 4ES2G-S card.

Figure 6-60 Interfaces on a 4ES2G-S card



1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-156](#) lists attributes of a GE electrical interface.

Table 6-156 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-157](#) lists the technical specifications of a 4ES2G-S card.

Table 6-157 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 6.7 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-158 provides 4ES2G-S card ordering information.

Table 6-158 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021VCC	AR-4ES2G-S	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card (SIC)

6.3.7 4ES2GP-S (4-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card)

Card Overview

A 4ES2GP-S card provides four GE electrical interfaces. It provides line-rate Layer 2 switching and device management functions. The GE electrical interfaces also support PoE.

A 4ES2GP-S card can be installed in a SIC slot of a router.

Figure 6-61 shows the appearance of a 4ES2GP-S card.

Figure 6-61 4ES2GP-S card appearance



Version Mapping

Table 6-159 lists the device models and software versions supporting the 4ES2GP-S.

Table 6-159 Version mapping

Card Name	Device Series	Device Model
4ES2GP-S NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	AR1220V When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR1220W When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR1220VW When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR2200 series	AR2240 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Functions and Features

Table 6-160 describes the functions and features of a 4ES2GP-S card.

Table 6-160 Functions and features

Function and Feature	Specification
Four GE electrical interfaces	Provide up to 1000 Mbit/s line-rate switching.

Function and Feature	Specification
PoE	Provides power to four PDs that comply with IEEE 802.3af and 802.3at.
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, STP, RSTP, MSTP, and LLDP.

Panel

Figure 6-62 shows the indicators on a 4ES2GP-S card, and **Table 6-161** describes the indicator states and meanings.

Figure 6-62 Indicators on a 4ES2GP-S card

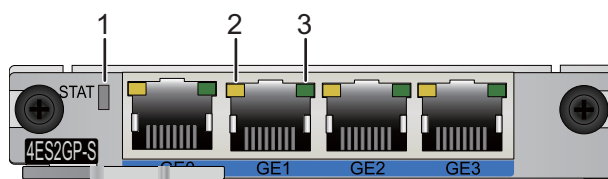


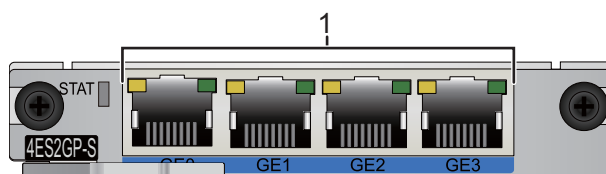
Table 6-161 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.

Number	Indicator	Color	Description
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Figure 6-63 shows the interfaces on a 4ES2GP-S card.

Figure 6-63 Interfaces on a 4ES2GP-S card



1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. Table 6-162 lists attributes of a GE electrical interface.

Table 6-162 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-163](#) lists the technical specifications of a 4ES2GP-S card.

Table 6-163 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 6.7 W ● Maximum PoE power on each GE electrical interface: 37 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-164](#) provides 4ES2GP-S card ordering information.

Table 6-164 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021WXP	AR-4ES2GP-S	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card (SIC)

6.4 Ethernet WAN Card

6.4.1 1GEC (1-Port-GE Combo WAN Interface Card)

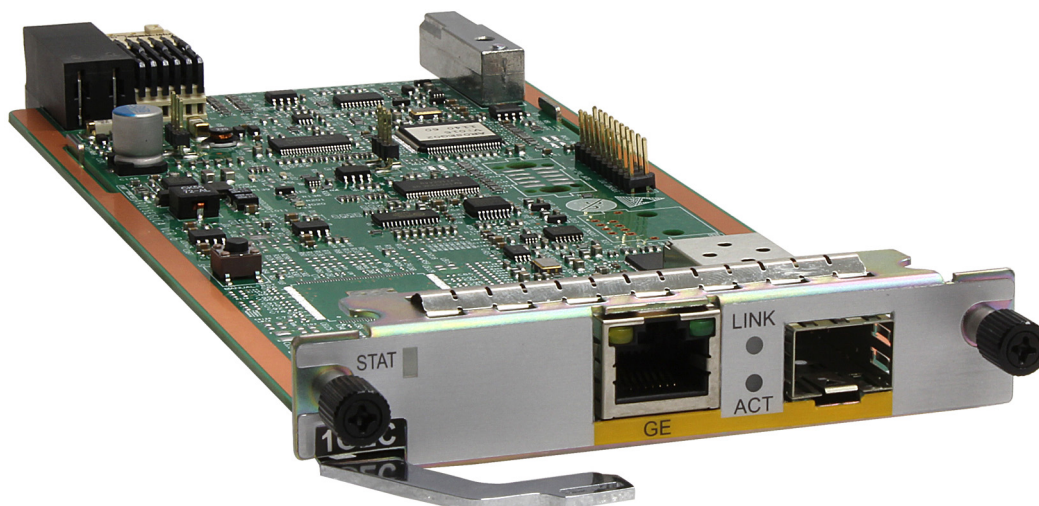
Card Overview

1GEC is a GE high-speed WAN access module and a combo interface that can function as the GE electrical or optical interface. You can flexibly select the interface to connect to a WAN.

A 1GEC card can be installed in a SIC slot of a router.

Figure 6-64 shows the appearance of a 1GEC card.

Figure 6-64 1GEC card appearance



Version Mapping

Table 6-165 lists the device models and software versions supporting the 1GEC.

Table 6-165 Version mapping

Card Name	Device Series	Device Model
1GEC NOTE This card is supported in V200R001C01 and later versions.	AR1200 series	All models in this series except the AR1220E series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series

Card Name	Device Series	Device Model
	AR3600 series	All models in this series

Functions and Features

Table 6-166 describes the functions and features of a 1GEC card.

Table 6-166 Functions and features

Function and Feature	Description
Basic functions	You can flexibly use the electrical or optical interface to connect to a network.
	The GE electrical or optical interface can connect to a WAN at the rate of 1000 Mbit/s to provide Layer 3 services.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 6-65 shows the indicators on a 1GEC card, and **Table 6-167** describes the indicator states and meanings.

Figure 6-65 Indicators on a 1GEC card

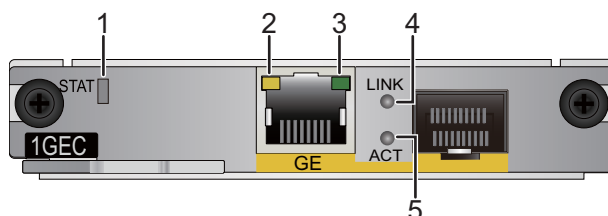


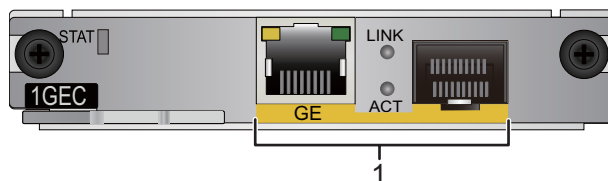
Table 6-167 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Number	Indicator	Color	Description
		Off	Off: The software is not running or is being reset.
2 and 3	GE electrical interface indicators: ● 2: ACT indicator ● 3: LINK indicator	Yellow	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Green	Steady on: A link has been established. Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Green	Steady on: A link has been established. Off: No link is established.
4 and 5	GE optical interface indicators: ● 5: ACT indicator ● 4: LINK indicator	Yellow	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Green	Steady on: A link has been established. Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Green	Steady on: A link has been established. Off: No link is established.

Figure 6-66 shows the interfaces on a 1GEC card.

Figure 6-66 Interfaces on a 1GEC card



1. One GE combo interface consisting of one GE electrical interface and one GE optical interface

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-168](#) lists attributes of a GE electrical interface.

Table 6-168 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface can work in FE mode and can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 6-169](#) lists attributes of a GE optical interface.

Table 6-169 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

Technical Specifications

[Table 6-170](#) lists the technical specifications of a 1GEC card.

Table 6-170 Technical specifications

Item	Specifications
Card type	SIC

Item	Specifications
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 3.2 W ● Weight: 0.25 kg (0.55 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-171 provides 1GEC card ordering information.

Table 6-171 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XTR	AR0MSEG1C A00	1GEC	1-Port GE Combo WAN Interface Card

6.4.2 4GECS (4-Port GE Combo WAN Interface Card)

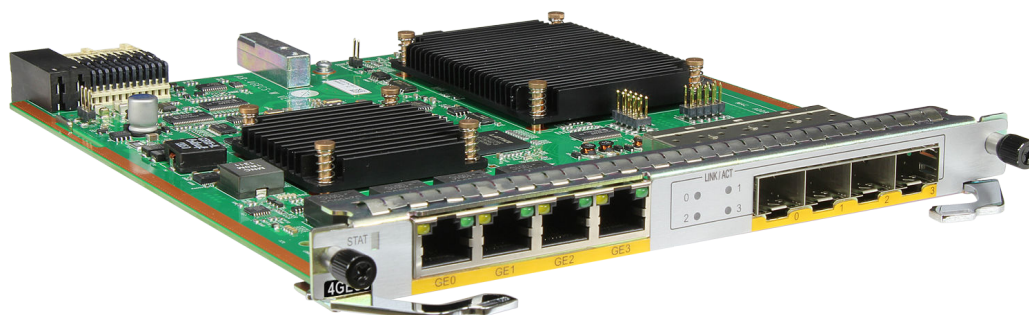
Card Overview

The 4GECS is a gigabit WAN access module. It provides four combo interfaces, which consist of four GE electrical interfaces and four GE optical interfaces on the panel. You can connect to the WAN through electrical or optical interfaces flexibly.

A 4GECS card can be installed in a WSIC slot of a router.

Figure 6-67 shows the appearance of a 4GECS card.

Figure 6-67 4GECS card appearance



Version Mapping

Table 6-172 lists the device models and software versions supporting the 4GECS.

Table 6-172 Version mapping

Card Name	Device Series	Device Model	
4GECS NOTE This card is supported in V200R005C10 and later versions.	AR1200 series	All models in this series except the AR1220E series, AR1220-8GE, and AR1220C When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
	AR2200 series	AR2204	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Card Name	Device Series	Device Model
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.
	AR3600 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.

Functions and Features

[Table 6-173](#) describes the functions and features of a 4GECS card.

Table 6-173 Functions and features

Function and Feature	Description
Basic functions	The card provides four GE optical interfaces and four GE electrical interfaces for data access and switching.
	You can connect to the WAN through optical or electrical interfaces flexibly.
	The card provides 1000 Mbit/s access to the WAN to implement Layer 3 services.
Layer 3 protocols	IPv4, IPv6, and MPLS.
Clock synchronization	This function ensures data synchronization on the entire network and makes an Ethernet network more stable.

Panel

[Figure 6-68](#) shows the indicators on a 4GECS card, and [Table 6-174](#) describes the indicator states and meanings.

Figure 6-68 Indicators on a 4GECS card

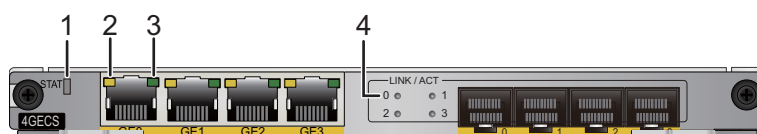
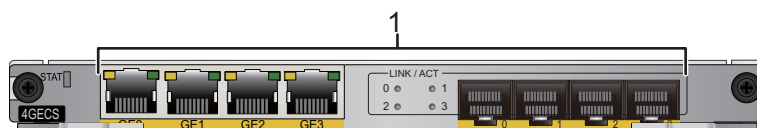


Table 6-174 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	GE electrical interface indicators: ● 2: ACT indicator ● 3: LINK indicator	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
		Green	Steady on: A link has been established.
			Off: No link is established.
4	One indicator for each GE optical interface NOTE One indicator shows the LINK and ACT states.	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No link is established or no data is being transmitted or received.

Figure 6-69 shows the interfaces on a 4GECS card.

Figure 6-69 Interfaces on a 4GECS card



1. Four GE combo interfaces consisting of four GE electrical interfaces and four GE optical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. [Table 6-175](#) lists attributes of a GE electrical interface.

Table 6-175 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

GE optical interface

A GE optical interface can work in FE mode and can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. [Table 6-176](#) lists attributes of a GE optical interface.

Table 6-176 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

Technical Specifications

[Table 6-177](#) lists the technical specifications of a 4GECS card.

Table 6-177 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 14 W ● Weight: 0.6 kg
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-178 provides 4GECS card ordering information.

Table 6-178 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022CPN	AR-4GECS-W	4GECS	4-Port GE Combo WAN Interface Card

6.4.3 2FE (2-Port-FE WAN Interface Card)

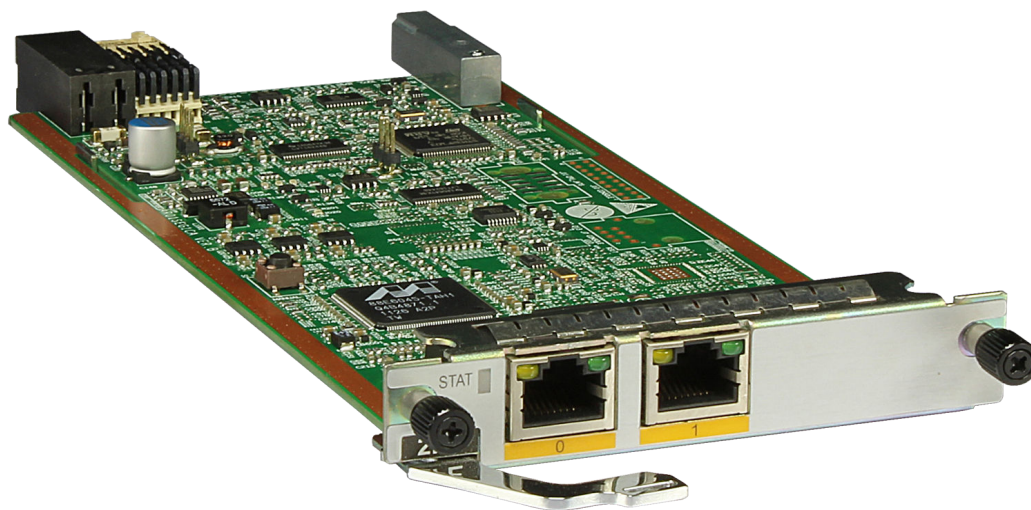
Card Overview

The 2FE is a high-speed Ethernet WAN access module and provides two FE electrical interfaces. It can connect to a WAN at the rate of 100 Mbit/s.

A 2FE card can be installed in a SIC slot of a router.

Figure 6-70 shows the appearance of a 2FE card.

Figure 6-70 2FE card appearance



Version Mapping

Table 6-179 lists the device models and software versions supporting the 2FE.

Table 6-179 Version mapping

Card Name	Device Series	Device Model
2FE NOTE This card is supported in V200R001C00 and later versions.	AR1200 series	All models in this series except the AR1220E series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-180 describes the functions and features of a 2FE card.

Table 6-180 Functions and features

Function and Feature	Description
Two FE electrical interfaces	The 2FE can connect to a WAN at the rate of 100 Mbit/s to provide Layer 3 services.
	Two FE electrical interfaces can comprise an uplink interface at the line speed of 200 Mbit/s.

Function and Feature	Description
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 6-71 shows the indicators on a 2FE card, and **Table 6-181** describes the indicator states and meanings.

Figure 6-71 Indicators on a 2FE card

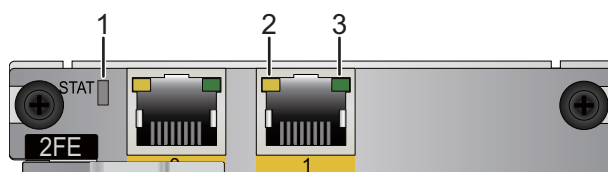
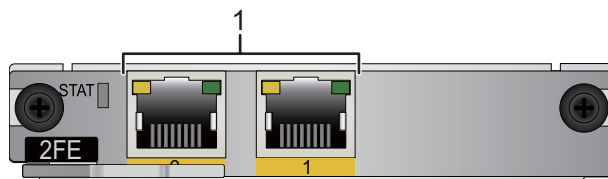


Table 6-181 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT	Yellow	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Green	Steady on: A link has been established. Off: No link is established.

Figure 6-72 shows the interfaces on a 2FE card.

Figure 6-72 Interfaces on a 2FE card



- | |
|---------------------------------|
| 1. Two FE electrical interfaces |
|---------------------------------|

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 6-182](#) lists attributes of an FE electrical interface.

Table 6-182 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	<ul style="list-style-type: none"> ● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-183](#) lists the technical specifications of a 2FE card.

Table 6-183 Technical specifications

Item	Specifications
Card type	SIC

Item	Specifications
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 3.1 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-184 provides 2FE card ordering information.

Table 6-184 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XTQ	AR0MSEF2T A00	2FE	2-Port FE WAN Interface Card

6.4.4 2X10GL (2-Port 10GE Optical Ports Interface Card)

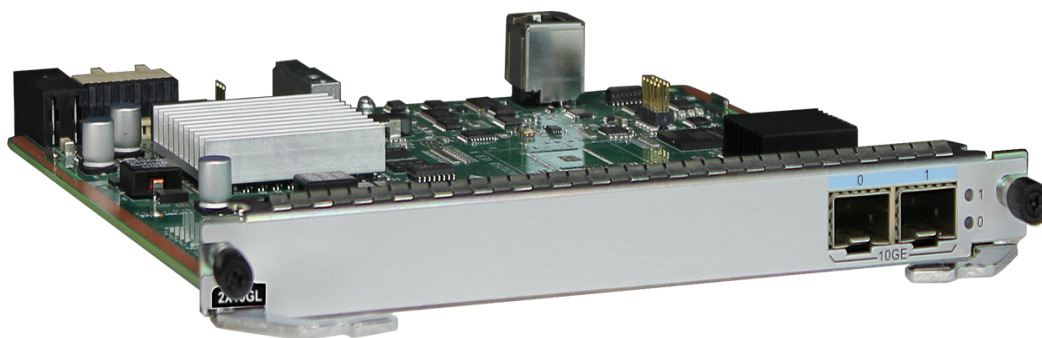
Card Overview

The 2X10GL is a high-speed WAN access module that provides two 10GE optical interfaces for high-speed uplink connection.

A 2X10GL card can be installed in a WSIC slot of a router.

Figure 6-73 shows the appearance of a 2X10GL card.

Figure 6-73 2X10GL card appearance



Version Mapping

Table 6-185 lists the device models and software versions supporting the 2X10GL.

Table 6-185 Version mapping

Card Name	Device Series	Device Model
2X10GL NOTE This card is supported in V200R007C00 and later versions.	AR2200 series	AR2240 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 10 Gbit/s, due to the backplane bandwidth restriction. NOTE <ul style="list-style-type: none"> When a router uses the SRU40, SRU60, or SRU80 main control unit, this card can be installed in slots 7 and 8. When a router uses the SRU200 or SRU400 main control unit, this card can be installed in slots 5 to 8.
	AR3200 series	AR3260 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 10 Gbit/s, due to the backplane bandwidth restriction. NOTE <ul style="list-style-type: none"> When a router uses the SRU40, SRU60, or SRU80 main control unit, this card can be installed in slots 8 and 10. When a router uses the SRU200 or SRU400 main control unit, this card can be installed in slots 5 to 10.
	AR3600 series	AR3670 When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 10 Gbit/s, due to the backplane bandwidth restriction. NOTE This card can be installed in slots 4 to 9.

Functions and Features

Table 6-186 describes the functions and features of a 2X10GL card.

Table 6-186 Functions and features

Function and Feature	Description
Two 10GE optical interfaces	The card provides 10G access to the WAN to implement Layer 3 services.
	The two 10GE optical interfaces provide 10 Gbit/s line-rate transmission to the upstream network.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 6-74 shows the indicators on a 2X10GL card, and **Table 6-187** describes the indicator states and meanings.

Figure 6-74 Indicators on a 2X10GL card

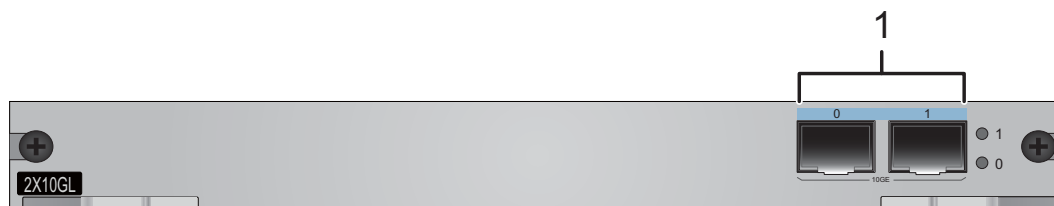


Table 6-187 Indicator description

Number	Indicator	Color	Description
0	LINK/ACT	Green	Steady on: A link has been established on 10GE/0. Blinking: Data is being transmitted or received on 10GE/0. Off: No link is established on 10GE/0.
1	LINK/ACT	Green	Steady on: A link has been established on 10GE/1. Blinking: Data is being transmitted or received on 10GE/1. Off: No link is established on 10GE/1.

Figure 6-75 shows the interfaces on a 2X10GL card.

Figure 6-75 Interfaces on a 2X10GL card



1. Two 10GE optical interfaces

10GE optical interface

The 10GE optical interfaces cannot work in GE mode and can only transmit and receive service traffic at 10 Gbit/s. [Table 6-188](#) lists attributes of a 10GE optical interface.

Table 6-188 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.11 10GE SFP+ Optical Modules .
Standards compliance	IEEE802.3ae

Technical Specifications

[Table 6-189](#) lists the technical specifications of a 2X10GL card.

Table 6-189 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 22.1 W ● Weight: 0.5 kg (1.3 lb)

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-190 provides 2X10GL card ordering information.

Table 6-190 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022STN	AR-2X10GL-W	2X10GL	2-Port 10GE Optical Ports Interface Card

6.4.5 4GEW-T (4-Port 1000BASE-RJ45-L3 Ethernet WAN Interface Card)

Card Overview

The 4GEW-T is a high-speed WAN access module and provides four GE electrical interfaces to connect to a WAN, which improves network reliability and increases bandwidth.

A 4GEW-T card can be installed in a WSIC slot of a router.

Figure 6-76 shows the appearance of a 4GEW-T card.

Figure 6-76 4GEW-T card appearance



Version Mapping

Table 6-191 lists the device models and software versions supporting the 4GEW-T.

Table 6-191 Version mapping

Card Name	Device Series	Device Model	
4GEW-T NOTE This card is supported in V200R002C01 and later versions.	AR1200 series	All models in this series except the AR1220E series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
	AR2200 series	AR2204	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	

Card Name	Device Series	Device Model
	AR3600 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.

Functions and Features

Table 6-192 describes the functions and features of a 4GEW-T card.

Table 6-192 Functions and features

Function and Feature	Description
Four GE electrical interfaces	The four GE electrical interfaces can connect to a WAN, which improves network reliability and increases bandwidth.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 6-77 shows the indicators on a 4GEW-T card, and **Table 6-193** describes the indicator states and meanings.

Figure 6-77 Indicators on a 4GEW-T card

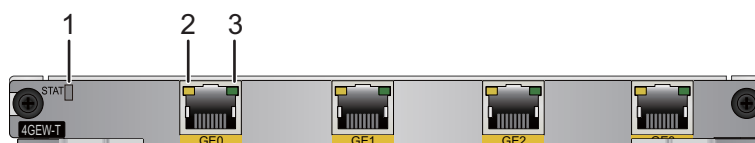


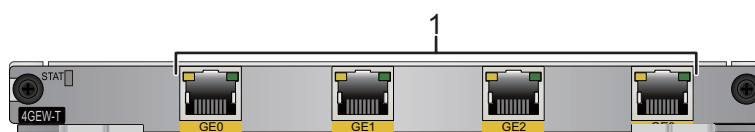
Table 6-193 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	GE electrical interface indicators: <ul style="list-style-type: none"> ● 3: LINK indicator ● 2: ACT indicator 	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Figure 6-78 shows the interfaces on a 4GEW-T card.

Figure 6-78 Interfaces on a 4GEW-T card



1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 6-194** lists attributes of a GE electrical interface.

Table 6-194 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	7.5 Ethernet Cable

Technical Specifications

[Table 6-195](#) lists the technical specifications of a 4GEW-T card.

Table 6-195 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 11 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-196](#) provides 4GEW-T card ordering information.

Table 6-196 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021LCU	AR01WEG4T A	4GEW-T	4-port 1000BASE-RJ45-L3 Ethernet WAN interface card

6.4.6 4GEW-S (4-Port 1000BASE-SFP-L3 Ethernet WAN Interface Card)

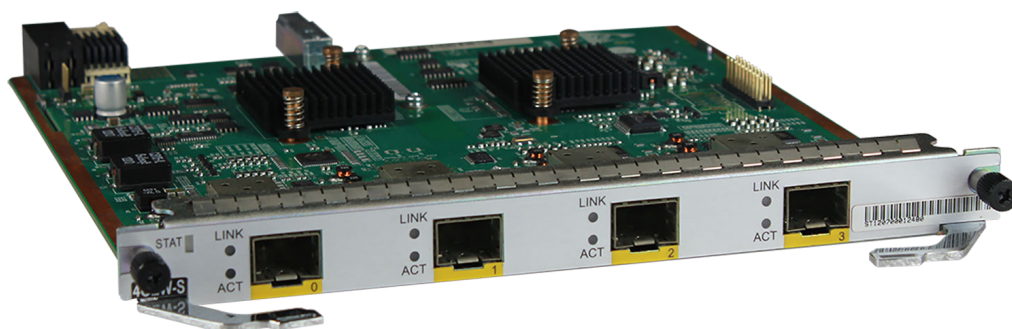
Card Overview

The 4GEW-S is a high-speed WAN access module and provides four GE optical interfaces to connect to a WAN, which improves network reliability, increases bandwidth, and implements long-distance transmission.

A 4GEW-S card can be installed in a WSIC slot of a router.

Figure 6-79 shows the appearance of a 4GEW-S card.

Figure 6-79 4GEW-S card appearance



Version Mapping

Table 6-197 lists the device models and software versions supporting the 4GEW-S.

Table 6-197 Version mapping

Card Name	Device Series	Device Model	
4GEW-S NOTE This card is supported in V200R002C01 and later versions.	AR1200 series	All models in this series except the AR1220E series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
	AR2200 series	AR2204	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2220E	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
		AR2240C	When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.
	AR3200 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	
AR3600 series	All models in this series When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.		

Functions and Features

Table 6-198 describes the functions and features of a 4GEW-S card.

Table 6-198 Functions and features

Function and Feature	Description
Four GE optical interfaces	The interfaces connect to an Ethernet WAN, which improves network reliability, increases bandwidth, and implements long-distance transmission.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 6-80 shows the indicators on a 4GEW-S card, and **Table 6-199** describes the indicator states and meanings.

Figure 6-80 Indicators on a 4GEW-S card

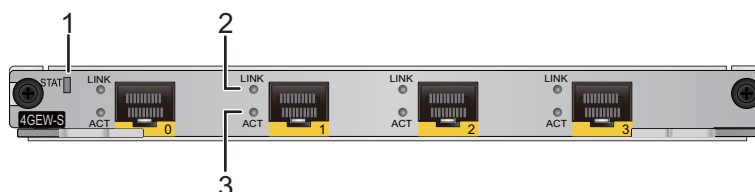


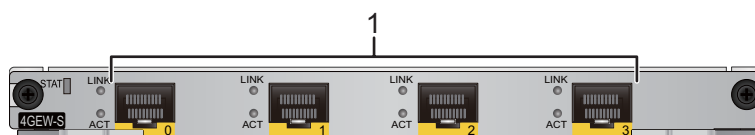
Table 6-199 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.

Number	Indicator	Color	Description
2 and 3	GE optical interface indicators: ● 2: LINK indicator. ● 3: ACT indicator.	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Figure 6-81 shows the interfaces on a 4GEW-S card.

Figure 6-81 Interfaces on a 4GEW-S card



1. Four GE optical interfaces

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 6-200** lists attributes of a GE optical interface.

Table 6-200 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.5 GE eSFP Optical Modules , 8.6 GE-CWDM eSFP Optical Modules , 8.7 GE-DWDM eSFP Optical Modules , 8.8 GE SFP Copper Modules , and 8.4 FE SFP/eSFP Optical Modules .
Standards compliance	IEEE 802.3z

Technical Specifications

Table 6-201 lists the technical specifications of a 4GEW-S card.

Table 6-201 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-202 provides 4GEW-S card ordering information.

Table 6-202 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021LXK	AR01WEG4S A	4GEW-S	4-Port 1000BASE-SFP-L3 Ethernet WAN interface card

6.5 E1/T1 Card

E1/T1 cards are classified into channelized and fractional channelized types. **Table 6-203** compares channelized and fractional channelized E1/T1 cards.

Table 6-203 E1/T1 card categories

Name Label (Silkscreen)	Card Category	Description
1E1/T1-M	Channelized E1/T1 card	One interface can be divided into 31 sub-interfaces. Each sub-interface corresponds to one sub-channel. The 31 sub-channels can be bound into multiple channels.
2E1/T1-M		
2E1/T1-M-W		

Name Label (Silkscreen)	Card Category	Description
4E1/T1-M		
8E1/T1-M		
1E1/T1-F	Fractional channelized E1/T1 card	One interface can be divided into 31 sub-interfaces. Each sub-interface corresponds to one sub-channel. Among the 31 sub-channels, a random number of sub-channels can be bound into one channel only once.
2E1/T1-F		
4E1/T1-F		
8E1/T1-F		

6.5.1 1E1/T1-M (1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card)

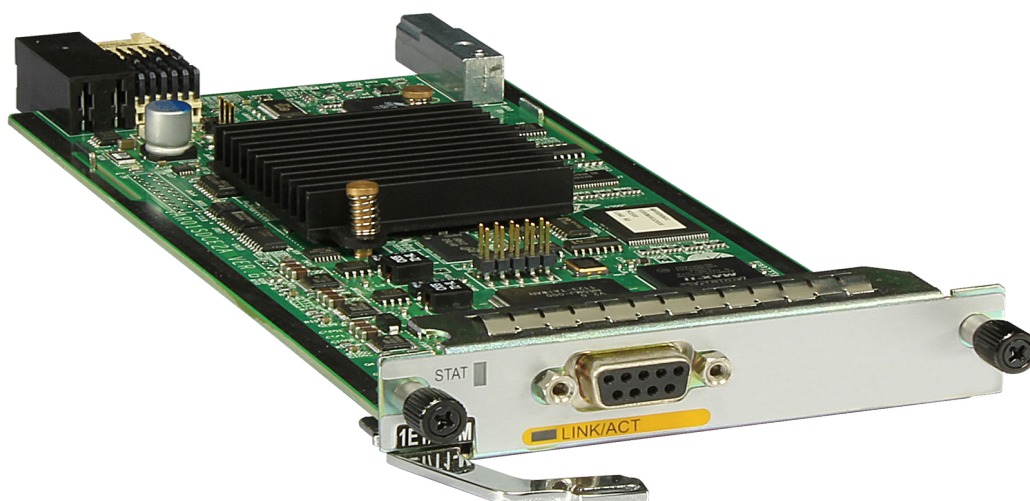
Card Overview

1E1/T1-M is a data and voice processing module for a router and provides one CE1/CT1/PRI/VE1 interface for WAN connection, digital and analog voice transmission, and ISDN dialup.

A 1E1/T1-M card can be installed in a SIC slot of a router.

[Figure 6-82](#) shows the appearance of a 1E1/T1-M card.

Figure 6-82 1E1/T1-M card appearance



Version Mapping

Table 6-204 lists the device models and software versions supporting the 1E1/T1-M.

Table 6-204 Version mapping

Card Name	Device Series	Device Model
1E1/T1-M NOTE This card is supported in V200R001C00 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-205 describes the functions and features of a 1E1/T1-M card.

Table 6-205 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interface to complete data transmission.
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/CT1/PRI/VE1 interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Works as a gateway to provide access to a PSTN or TDM PBX network, and supports a maximum of 30 call connections.

Function and Feature	Description
Investment protection	When working in VE1 mode, the interface can connect to a TDM PBX on an enterprise network. This protects customer investment and facilitates network expansion.

Panel

Figure 6-83 shows the indicators on a 1E1/T1-M card, and **Table 6-206** describes the indicator states and meanings.

Figure 6-83 Indicators on a 1E1/T1-M card

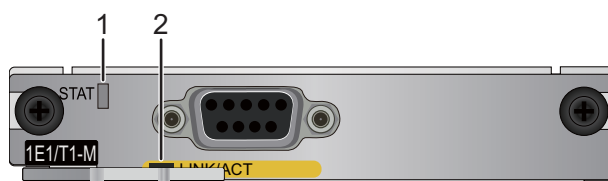
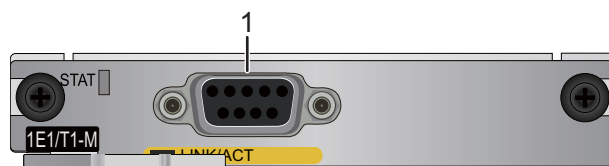


Table 6-206 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-84 shows the interface on a 1E1/T1-M card.

Figure 6-84 Interface on a 1E1/T1-M card



- | |
|----------------------------------|
| 1. One CE1/CT1/PRI/VE1 interface |
|----------------------------------|

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. [Table 6-207](#) lists attributes of a CE1 interface.

Table 6-207 CE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI, VE1
Cable type	7.7 E1/T1 Cable

CT1 interface (channelized)

A CT1 interface transmits voice, data, and image signals. [Table 6-208](#) lists attributes of a CT1 interface.

Table 6-208 CT1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1

Attribute	Description
Cable type	7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

Table 6-209 lists the technical specifications of a 1E1/T1-M card.

Table 6-209 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 4.7 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-210 provides 1E1/T1-M card ordering information.

Table 6-210 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNU	AR0MSDME 1A00	1E1/T1-M	1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card

6.5.2 2E1/T1-M (2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - SIC)

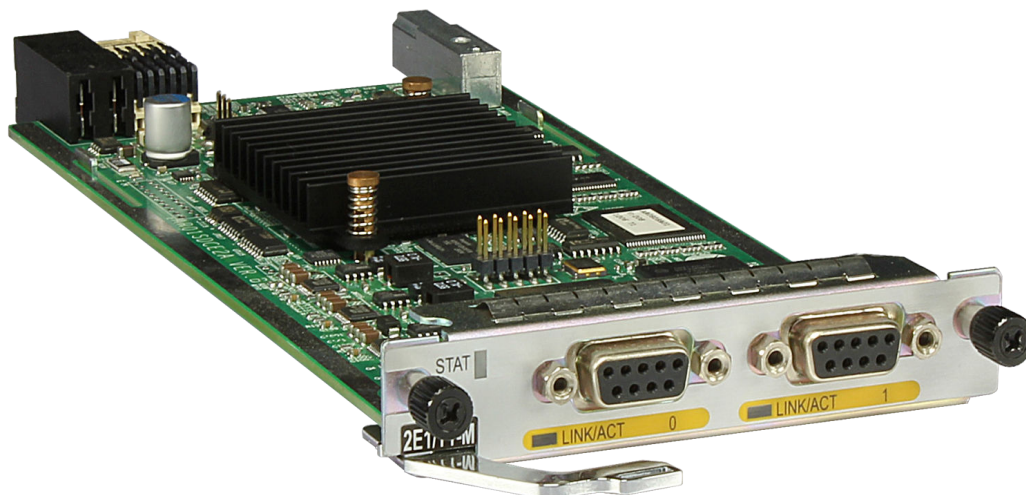
Card Overview

The 2E1/T1-M is a data and voice processing module for a router and provides two CE1/CT1/PRI/VE1 interfaces for WAN connection, WAN aggregation, digital and analog voice transmission, and ISDN dialup.

A 2E1/T1-M card can be installed in a SIC slot of a router.

Figure 6-85 shows the appearance of a 2E1/T1-M card.

Figure 6-85 2E1/T1-M card appearance



Version Mapping

Table 6-211 lists the device models and software versions supporting the 2E1/T1-M.

Table 6-211 Version mapping

Card Name	Device Series	Device Model
2E1/T1-M NOTE This card is supported in V200R001C00 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-212 describes the functions and features of a 2E1/T1-M card.

Table 6-212 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission.
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/CT1/PRI/VE1 interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Works as a gateway to provide access to a PSTN or TDM PBX network, and supports a maximum of 30 call connections.
Investment protection	When working in VE1 mode, the interfaces can connect to TDM PBXs on an enterprise network. This protects customer investment and facilitates network expansion.

Panel

Figure 6-86 shows the indicators on a 2E1/T1-M card, and **Table 6-213** describes the indicator states and meanings.

Figure 6-86 Indicators on a 2E1/T1-M card

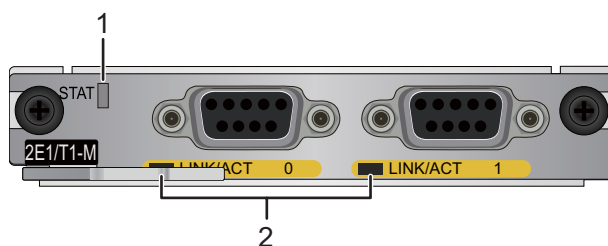
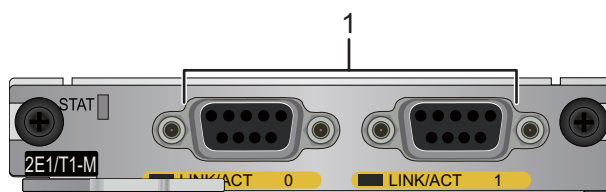


Table 6-213 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-87 shows the interfaces on a 2E1/T1-M card.

Figure 6-87 Interfaces on a 2E1/T1-M card



1. Two CE1/CT1/PRI/VE1 interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. **Table 6-214** lists attributes of a CE1 interface.

Table 6-214 CE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI, VE1
Cable type	7.7 E1/T1 Cable

CT1 interface (channelized)

A CT1 interface transmits voice, data, and image signals. [Table 6-215](#) lists attributes of a CT1 interface.

Table 6-215 CT1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1
Cable type	7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

[Table 6-216](#) lists the technical specifications of a 2E1/T1-M card.

Table 6-216 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 4.8 W ● Weight: 0.3 kg (0.66 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-217 provides 2E1/T1-M card ordering information.

Table 6-217 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNR	AR0MSDME 2A00	2E1/T1-M	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - SIC

6.5.3 2E1/T1-M-W (2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - WSIC)

Card Overview

The 2E1/T1-M-W is a data and voice processing module for a router and provides two CE1/CT1/PRI/VE1 interfaces for WAN connection, WAN aggregation, digital and analog voice transmission, and ISDN dialup.

A 2E1/T1-M-W card can be installed in a WSIC slot of a router.

Figure 6-88 shows the appearance of a 2E1/T1-M-W card.

Figure 6-88 2E1/T1-M-W card appearance



Version Mapping

Table 6-218 lists the device models and software versions supporting the 2E1/T1-M-W.

Table 6-218 Version mapping

Card Name	Device Series	Device Model
2E1/T1-M-W NOTE This card is supported in V200R002C00 and later versions.	AR1200 series	All models in this series
	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-219 describes the functions and features of a 2E1/T1-M-W card.

Table 6-219 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.

Function and Feature	Description
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/CT1/PRI/VE1 interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Works as a gateway to provide access to a PSTN or TDM PBX network, and supports a maximum of 30 call connections.
Investment protection	When working in VE1 mode, the interfaces can connect to TDM PBXs on an enterprise network. This protects customer investment and facilitates network expansion.

Panel

Figure 6-89 shows the indicators on a 2E1/T1-M-W card, and **Table 6-220** describes the indicator states and meanings.

Figure 6-89 Indicators on a 2E1/T1-M-W card

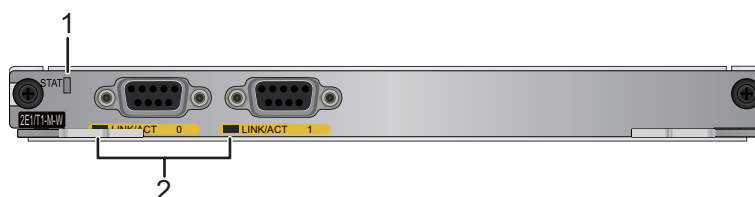


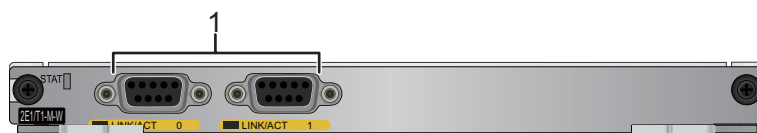
Table 6-220 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Number	Indicator	Color	Description
2	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected

Figure 6-90 shows the interfaces on a 2E1/T1-M-W card.

Figure 6-90 Interfaces on a 2E1/T1-M-W card



1. Two CE1/CT1/PRI/VE1 interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. Table 6-221 lists attributes of a CE1 interface.

Table 6-221 CE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI, VE1
Cable type	7.7 E1/T1 Cable

CT1 interface (channelized)

A CT1 interface transmits voice, data, and image signals. [Table 6-222](#) lists attributes of a CT1 interface.

Table 6-222 CT1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1
Cable type	7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

[Table 6-223](#) lists the technical specifications of a 2E1/T1-M-W card.

Table 6-223 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 4.8 W● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

NOTE

The 2E1/T1-M-W is no longer sold since December 31, 2013.

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-224](#) provides 2E1/T1-M-W card ordering information.

Table 6-224 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021MSX	AR0MWDME 2A00	2E1/T1-M-W	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - WSIC

6.5.4 4E1/T1-M (4-Port Channelized E1/PRI Multiflex Trunk Interface Card)

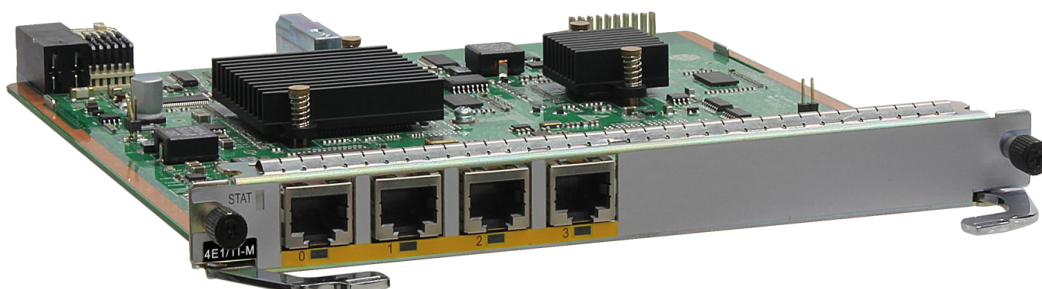
Card Overview

The 4E1/T1-M is a data and image signal processing module for a router and provides four CE1/PRI interfaces for WAN connection, WAN aggregation, and dialup.

A 4E1/T1-M card can be installed in a WSIC slot of a router.

Figure 6-91 shows the appearance of a 4E1/T1-M card.

Figure 6-91 4E1/T1-M card appearance



Version Mapping

Table 6-225 lists the device models and software versions supporting the 4E1/T1-M.

Table 6-225 Version mapping

Card Name	Device Series	Device Model
4E1/T1-M NOTE This card is supported in V200R003C00 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	AR2204
		AR2204E
		AR2204XE

Card Name	Device Series	Device Model
		AR2204XE-DC NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-226 describes the functions and features of a 4E1/T1-M card.

Table 6-226 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/PRI interface can be flexibly configured as a WAN interface or data interface, which simplifies networking.

Panel

Figure 6-92 shows the indicators on a 4E1/T1-M card, and **Table 6-227** describes the indicator states and meanings.

Figure 6-92 Indicators on a 4E1/T1-M card

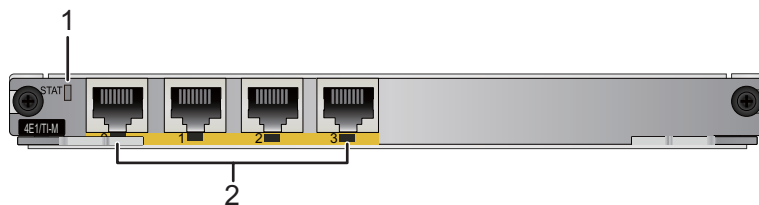
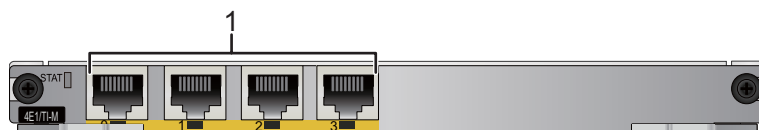


Table 6-227 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual-color indicator for each CE1 interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-93 shows the interfaces on a 4E1/T1-M card.

Figure 6-93 Interfaces on a 4E1/T1-M card



1. Four CE1/PRI interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. [Table 6-228](#) lists attributes of a CE1 interface.

Table 6-228 CE1 interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI
Cable type	7.7 E1/T1 Cable

Technical Specifications

[Table 6-229](#) lists the technical specifications of a 4E1/T1-M card.

Table 6-229 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 11 W● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-230](#) provides 4E1/T1-M card ordering information.

Table 6-230 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCR	AR01WDCE4 A	4E1/T1-M	4-Port Channelized E1/PRI Multiflex Trunk Interface Card

6.5.5 8E1/T1-M (8-Port Channelized E1/PRI Multiflex Trunk Interface Card)

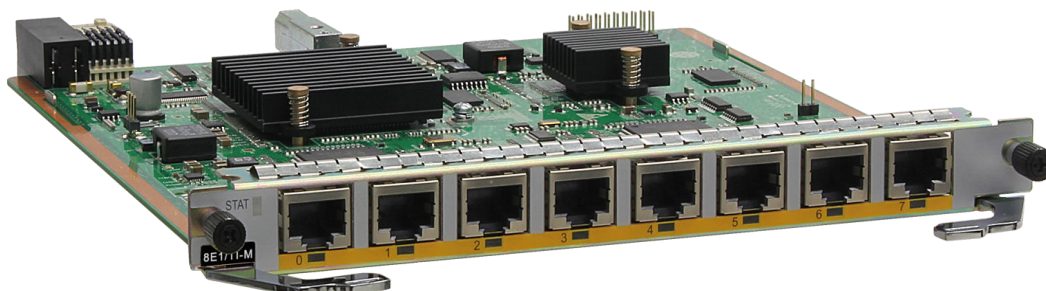
Card Overview

The 8E1/T1-M is a data and image signal processing module for a router and provides eight CE1/PRI interfaces for high-density WAN connection, WAN aggregation, and dialup.

An 8E1/T1-M card can be installed in a WSIC slot of a router.

Figure 6-94 shows the appearance of an 8E1/T1-M card.

Figure 6-94 8E1/T1-M card appearance



Version Mapping

Table 6-231 lists the device models and software versions supporting the 8E1/T1-M.

Table 6-231 Version mapping

Card Name	Device Series	Device Model
8E1/T1-M NOTE This card is supported in V200R003C00 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	AR2204
		AR2204E
		AR2204XE

Card Name	Device Series	Device Model
		AR2204XE-DC NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-232 describes the functions and features of an 8E1/T1-M card.

Table 6-232 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/PRI interface can be flexibly configured as a WAN interface or data interface, which simplifies networking.

Panel

Figure 6-95 shows the indicators on an 8E1/T1-M card, and **Table 6-233** describes the indicator states and meanings.

Figure 6-95 Indicators on an 8E1/T1-M card

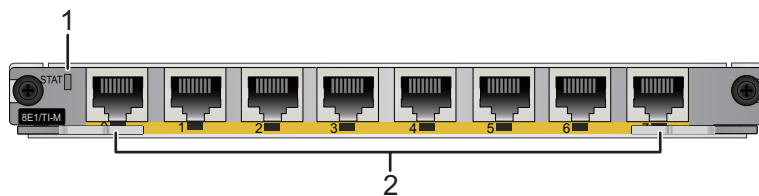
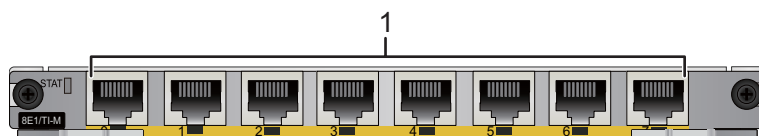


Table 6-233 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual-color indicator for each CE1 interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-96 shows the interfaces on an 8E1/T1-M card.

Figure 6-96 Interfaces on an 8E1/T1-M card



1. Eight CE1/PRI interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. [Table 6-234](#) lists attributes of a CE1 interface.

Table 6-234 CE1 interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI
Cable type	7.7 E1/T1 Cable

Technical Specifications

[Table 6-235](#) lists the technical specifications of an 8E1/T1-M card.

Table 6-235 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 12 W● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-236](#) provides 8E1/T1-M card ordering information.

Table 6-236 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021FXE	AR01WDCE8 A	8E1/T1-M	8-Port Channelized E1/PRI Multiflex Trunk Interface Card

6.5.6 1E1/T1-F (1-Port Fractional Channelized E1/T1 WAN Interface Card)

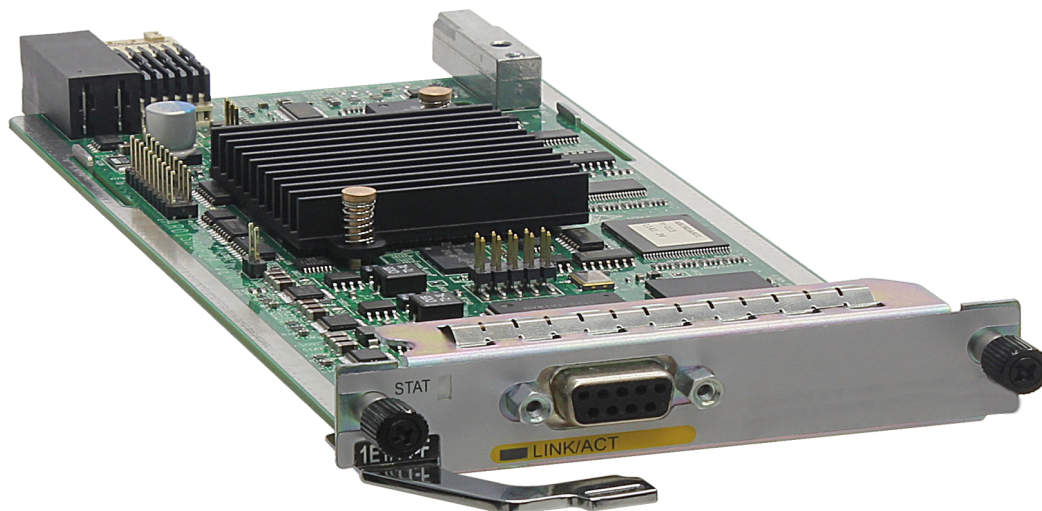
Card Overview

The 1E1/T1-F is a data and image signal processing module for a router and provides one E1/T1-F interface for WAN connection.

A 1E1/T1-F card can be installed in a SIC slot of a router.

[Figure 6-97](#) shows the appearance of a 1E1/T1-F card.

Figure 6-97 1E1/T1-F card appearance



Version Mapping

[Table 6-237](#) lists the device models and software versions supporting the 1E1/T1-F.

Table 6-237 Version mapping

Card Name	Device Series	Device Model
1E1/T1-F	AR1200 series	All models in this series

Card Name	Device Series	Device Model
NOTE This card is supported in V200R001C01 and later versions.	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-238 describes the functions and features of a 1E1/T1-F card.

Table 6-238 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interface to complete data transmission.
	A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	<ul style="list-style-type: none"> ● In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division. ● In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.

Panel

Figure 6-98 shows the indicators on a 1E1/T1-F card, and **Table 6-239** describes the indicator states and meanings.

Figure 6-98 Indicators on a 1E1/T1-F card

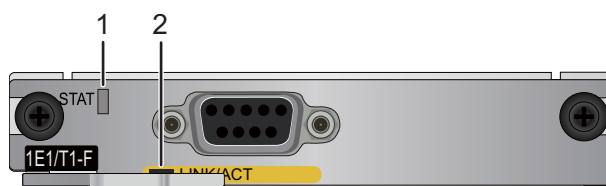
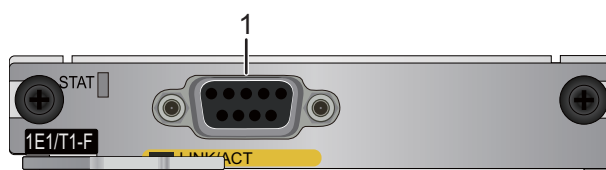


Table 6-239 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected

Figure 6-99 shows the interface on a 1E1/T1-F card.

Figure 6-99 Interface on a 1E1/T1-F card



1. One E1/T1-F interface

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. **Table 6-240** lists attributes of an E1-F interface.

Table 6-240 E1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	7.7 E1/T1 Cable

T1-F interface (fractional channelized)

A T1-F interface transmits data and image signals. [Table 6-241](#) lists attributes of a T1-F interface.

Table 6-241 T1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	Fractional channelized T1
Cable type	7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

[Table 6-242](#) lists the technical specifications of a 1E1/T1-F card.

Table 6-242 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 4.7 W ● Weight: 0.3 kg (0.66 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-243 provides 1E1/T1-F card ordering information.

Table 6-243 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNT	AR0MSDE11 A00	1E1/T1-F	1-Port Fractional Channelized E1/T1 WAN Interface Card

6.5.7 2E1/T1-F (2-Port Fractional Channelized E1/T1 WAN Interface Card)

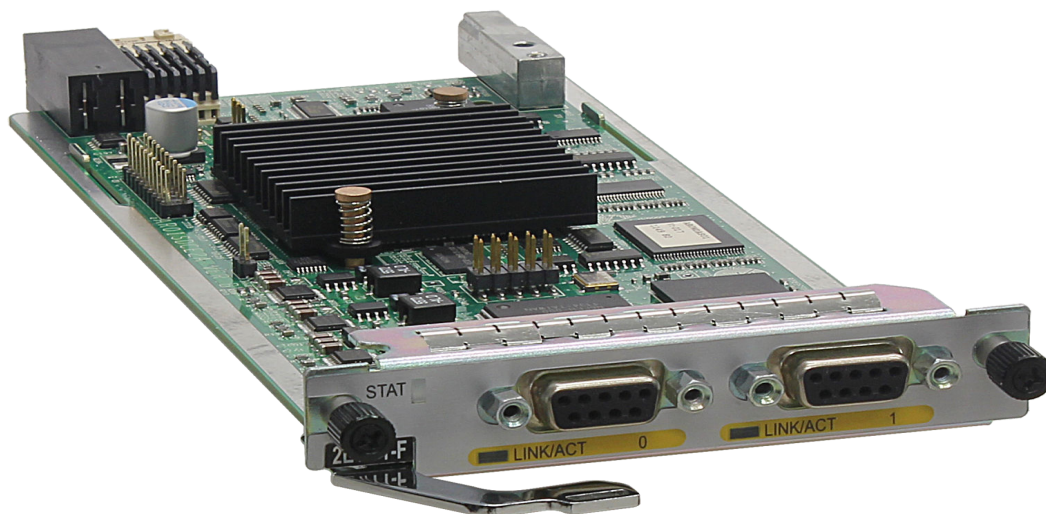
Card Overview

The 2E1/T1-F is a data and image signal processing module for a router and provides two E1/T1-F interfaces for WAN connection.

A 2E1/T1-F card can be installed in a SIC slot of a router.

Figure 6-100 shows the appearance of a 2E1/T1-F card.

Figure 6-100 2E1/T1-F card appearance



Version Mapping

Table 6-244 lists the device models and software versions supporting the 2E1/T1-F.

Table 6-244 Version mapping

Card Name	Device Series	Device Model
2E1/T1-F NOTE This card is supported in V200R001C01 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-245 describes the functions and features of a 2E1/T1-F card.

Table 6-245 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interfaces to complete data transmission.
	A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	<ul style="list-style-type: none"> ● In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division. ● In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.

Panel

Figure 6-101 shows the indicators on a 2E1/T1-F card, and **Table 6-246** describes the indicator states and meanings.

Figure 6-101 Indicators on a 2E1/T1-F card

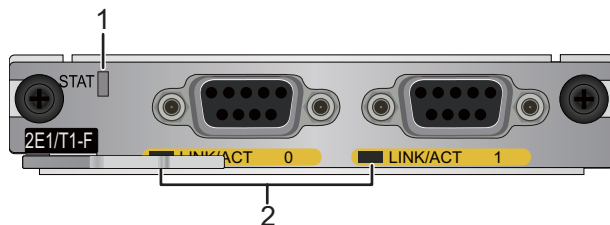
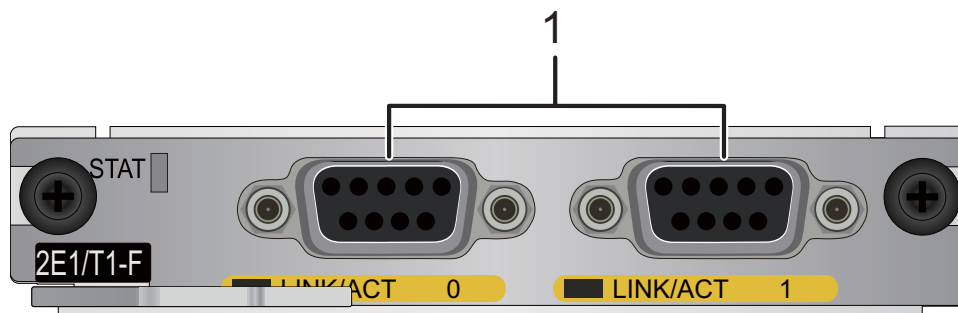


Table 6-246 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-102 shows the interfaces on a 2E1/T1-F card.

Figure 6-102 Interfaces on a 2E1/T1-F card



1. Two E1/T1-F interfaces

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. [Table 6-247](#) lists attributes of an E1-F interface.

Table 6-247 E1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	7.7 E1/T1 Cable

T1-F interface (fractional channelized)

A T1-F interface transmits data and image signals. [Table 6-248](#) lists attributes of a T1-F interface.

Table 6-248 T1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s

Attribute	Description
Working mode	Fractional channelized T1
Cable type	7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

Table 6-249 lists the technical specifications of a 2E1/T1-F card.

Table 6-249 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 4.8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-250 provides 2E1/T1-F card ordering information.

Table 6-250 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020UDU	AR0MSDE12 A00	2E1/T1-F	2-Port Fractional Channelized E1/T1 WAN Interface Card

6.5.8 4E1/T1-F (4-Port Fractional Channelized E1 WAN Interface Card)

Card Overview

The 4E1/T1-F is a data and image signal processing module for a router and provides four E1-F interfaces for WAN connection.

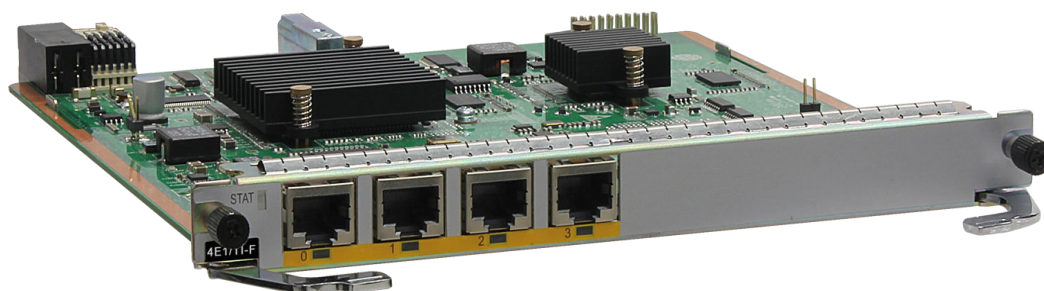
NOTE

This card does not support the T1-F interface mode.

A 4E1/T1-F card can be installed in a WSIC slot of a router.

Figure 6-103 shows the appearance of a 4E1/T1-F card.

Figure 6-103 4E1/T1-F card appearance



Version Mapping

Table 6-251 lists the device models and software versions supporting the 4E1/T1-F.

Table 6-251 Version mapping

Card Name	Device Series	Device Model	
4E1/T1-F NOTE This card is supported in V200R003C00 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE	
	AR2200 series	AR2204	
		AR2204E	
		AR2204XE	
		AR2204XE-DC	
		NOTE This card is supported in AR V300R019C00 and later versions.	
		AR2220	
		AR2220E	
		AR2240	
AR2240C			

Card Name	Device Series	Device Model
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-252 describes the functions and features of a 4E1/T1-F card.

Table 6-252 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interfaces to complete data transmission. A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	<ul style="list-style-type: none"> ● In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division. ● In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.

Panel

Figure 6-104 shows the indicators on a 4E1/T1-F card, and **Table 6-253** describes the indicator states and meanings.

Figure 6-104 Indicators on a 4E1/T1-F card

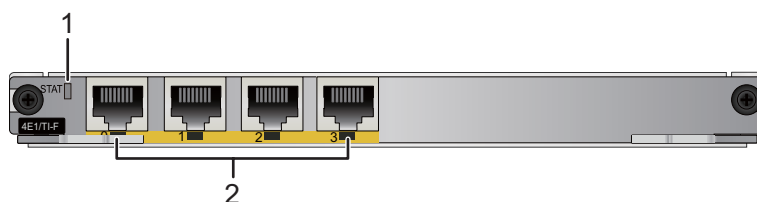
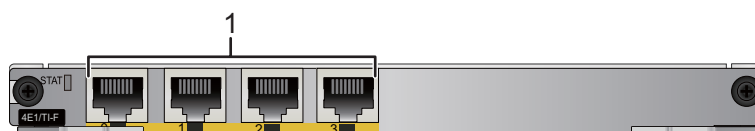


Table 6-253 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual-color indicator for each E1-F interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-105 shows the interfaces on a 4E1/T1-F card.

Figure 6-105 Interfaces on a 4E1/T1-F card



1. Four E1-F interfaces

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. **Table 6-254** lists attributes of an E1-F interface.

Table 6-254 E1-F interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	7.7 E1/T1 Cable

Technical Specifications

[Table 6-255](#) lists the technical specifications of a 4E1/T1-F card.

Table 6-255 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 11 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-256](#) provides 4E1/T1-F card ordering information.

Table 6-256 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCS	AR01WDFE4 A	4E1/T1-F	4-Port Fractional Channelized E1 WAN Interface Card

6.5.9 8E1/T1-F (8-Port Fractional Channelized E1 WAN Interface Card)

Card Overview

The 8E1/T1-F is a data and image signal processing module for a router and provides eight E1/T1-F interfaces for high-density WAN connection.

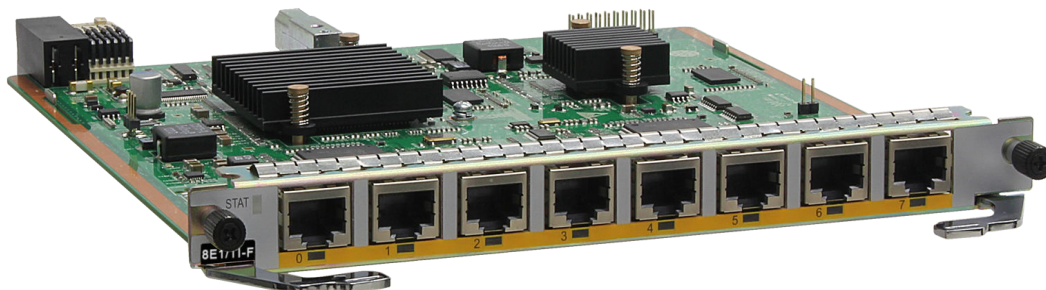
 **NOTE**

This card does not support the T1-F interface mode.

An 8E1/T1-F card can be installed in a WSIC slot of a router.

Figure 6-106 shows the appearance of an 8E1/T1-F card.

Figure 6-106 8E1/T1-F card appearance



Version Mapping

Table 6-257 lists the device models and software versions supporting the 8E1/T1-F.

Table 6-257 Version mapping

Card Name	Device Series	Device Model
8E1/T1-F	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	AR2204
		AR2204E

Card Name	Device Series	Device Model
NOTE This card is supported in V200R003C00 and later versions.		AR2204XE
		AR2204XE-DC
		NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
	AR2240C	
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-258 describes the functions and features of an 8E1/T1-F card.

Table 6-258 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interfaces to complete data transmission. A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	<ul style="list-style-type: none"> ● In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division. ● In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.
Pseudo wire emulation edge-to-edge (PWE3)	Allows users to smoothly connect to an IP network from their networks, without changing the original access methods.
	Connects networks that use different access methods to an IP network.

Panel

Figure 6-107 shows the indicators on an 8E1/T1-F card, and **Table 6-259** describes the indicator states and meanings.

Figure 6-107 Indicators on an 8E1/T1-F card

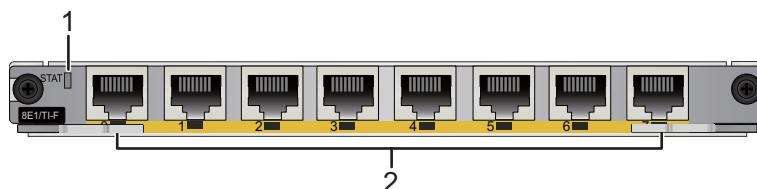
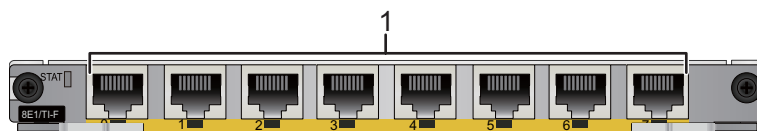


Table 6-259 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual-color indicator for each E1-F interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 6-108 shows the interfaces on an 8E1/T1-F card.

Figure 6-108 Interfaces on an 8E1/T1-F card



1. Eight E1-F interfaces

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. [Table 6-260](#) lists attributes of an E1-F interface.

Table 6-260 E1-F interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	7.7 E1/T1 Cable

Technical Specifications

[Table 6-261](#) lists the technical specifications of an 8E1/T1-F card.

Table 6-261 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 12 W● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-262 provides 8E1/T1-F card ordering information.

Table 6-262 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCQ	AR01WDFE8 A	8E1/T1-F	8-Port Fractional Channelized E1 WAN Interface Card

6.5.10 4E1-IMA (4-Port-E1 ATM IMA Interface Card)

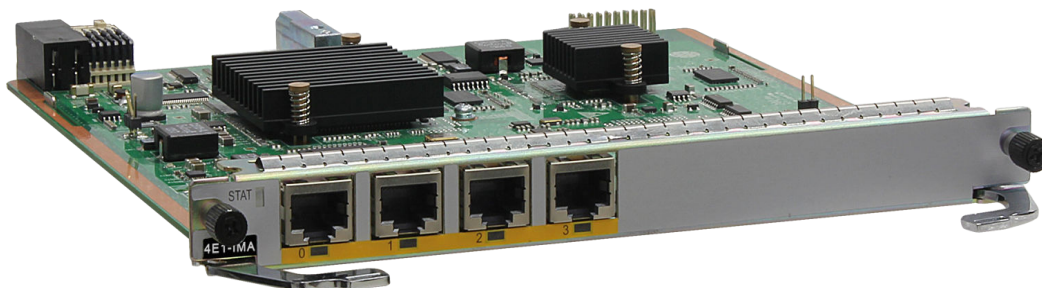
Card Overview

The 4E1-IMA is a WAN connection module. It uses inverse multiplexing over ATM (IMA) to bundle multiple E1 lines to form a high-bandwidth IMA group link. The IMA group link transmits multimedia services for enterprises.

A 4E1-IMA card can be installed in a WSIC slot of a router.

Figure 6-109 shows the appearance of a 4E1-IMA card.

Figure 6-109 4E1-IMA card appearance



Version Mapping

Table 6-263 lists the device models and software versions supporting the 4E1-IMA.

Table 6-263 Version mapping

Card Name	Device Series	Device Model
4E1-IMA NOTE This card is supported in V200R003C00 and later versions.	AR1200 series	All models in this series except the AR1220C, and AR1220-8GE
	AR2200 series	AR2204
		AR2204XE

Card Name	Device Series	Device Model
		AR2204XE-DC NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-264 describes the functions and features of a 4E1-IMA card.

Table 6-264 Functions and features

Function and Feature	Description
Basic functions	Uses IMA to transmit ATM cell streams at a high rate.
	<ul style="list-style-type: none"> ● Transmit end: Distributes ATM cell streams over multiple low-speed links. ● Receive end: Multiplexes the links to restore the cell streams.
Flexible bandwidth adjustment	Adds and deletes the multiplexed E1 links anytime, meeting various bandwidth requirements.
Low cost	Transmits ATM cell streams on multiple E1 lines at a high rate, preventing high expenses for network upgrade due to traffic burst.
ATM transmission advantages	Provides traffic management, fault tolerance capability, compatibility with traditional devices, and QoS.

Panel

Figure 6-110 shows the indicators on a 4E1-IMA card, and **Table 6-265** describes the indicator states and meanings.

Figure 6-110 Indicators on a 4E1-IMA card

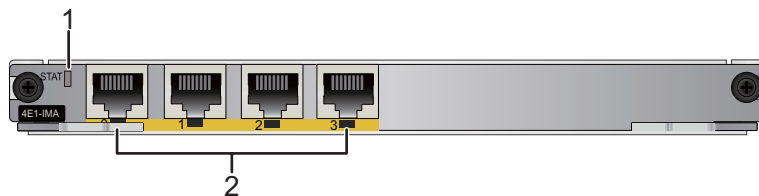
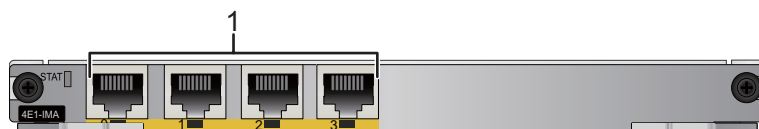


Table 6-265 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	E1-IMA interface indicator	Green	Steady on: A link has been established.
		Amber	Blinking: Data is being transmitted or received.
		Off	Off: There is no connection.

Figure 6-111 shows the interfaces on a 4E1-IMA card.

Figure 6-111 Interfaces on a 4E1-IMA card



1. Four E1-IMA interfaces

E1-IMA interface

An E1-IMA interface is used to transmit ATM cells at a high rate. [Table 6-266](#) lists attributes of an E1-IMA interface.

Table 6-266 E1-IMA interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-G.703, ITU-G.704
Interface rate	2.048 Mbit/s
Working mode	<ul style="list-style-type: none"> ● ATM E1 independent mode ● IMA bundling mode
Protocols	PPPoA, PPPoEoA, IPoA, IPoEoA
Service provided	CBR/VBR-RT/VBR-NRT/UBR
Function	AAL5
Cable type	7.7 E1/T1 Cable

Technical Specifications

[Table 6-267](#) lists the technical specifications of a 4E1-IMA card.

Table 6-267 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 12 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-268](#) provides 4E1-IMA card ordering information.

Table 6-268 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCT	AR01WAE14 A	4E1-IMA	4-port E1 Inverse Multiplexing for ATM Interface Card

6.6 E3/T3 Card

6.6.1 1E3/CE3/T3/CT3 (1-Port Channelized/Unchannelized E3/T3 WAN Interface Card)

Card Overview

The 1E3/CE3/T3/CT3 is a high-speed WAN access module. This card provides an unchannelized E3 interface, with a transmitter and a receiver to provide high-speed data transmission.

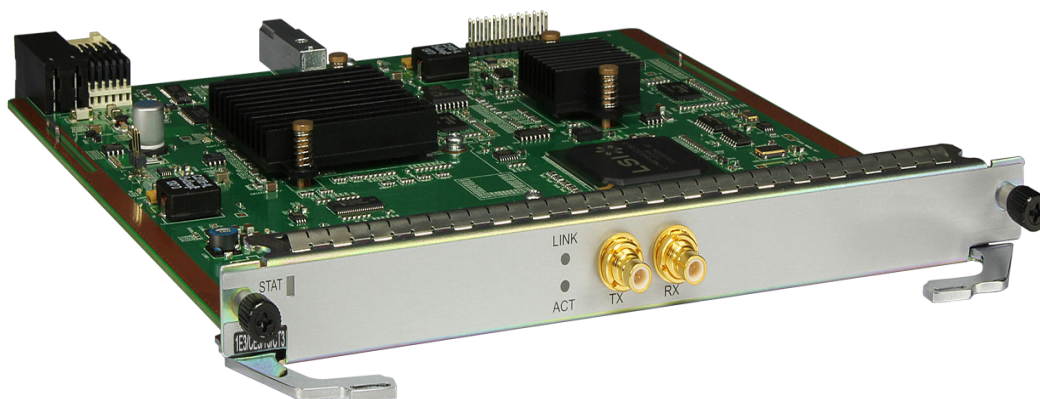
NOTE

Currently, the 1E3/CE3/T3/CT3 card provides only an unchannelized E3 interface. The card can provide CE3/T3/CT3 interface in later software releases after the software is upgraded.

A 1E3/CE3/T3/CT3 card can be installed in a WSIC slot of a router.

[Figure 6-112](#) shows the appearance of a 1E3/CE3/T3/CT3 card.

Figure 6-112 1E3/CE3/T3/CT3 card appearance



Version Mapping

[Table 6-269](#) lists the device models and software versions supporting the 1E3/CE3/T3/CT3.

Table 6-269 Version mapping

Card Name	Device Series	Device Model
1E3/CE3/T3/CT3 NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	AR1220E series
		AR1220F
	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
AR3600 series	All models in this series	

Functions and Features

Table 6-270 describes the functions and features of a 1E3/CE3/T3/CT3 card.

Table 6-270 Functions and features

Function and Feature	Specification
Data transmission	The E3 interface connects to a WAN to complete data transmission.
	The E3 interface provides a maximum bandwidth of 34.368 Mbit/s.
Protocol	Supports FR, PPP, and HDLC.
	Supports the G.751 frame format.

Panel

Figure 6-113 shows the indicators on a 1E3/CE3/T3/CT3 card, and **Table 6-271** describes the indicator states and meanings.

Figure 6-113 Indicators on a 1E3/CE3/T3/CT3 card

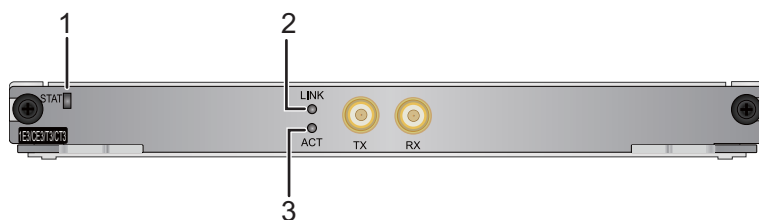
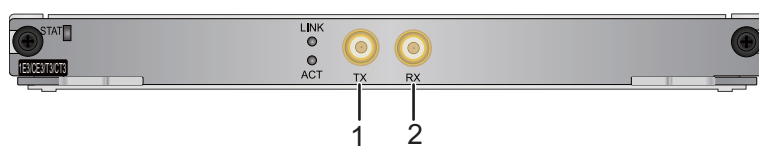


Table 6-271 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	LINK	Green	Steady on: A link has been established on the interface.
		Off	No link is established on the interface.
3	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
		Off	The interface is not transmitting or receiving data.

Figure 6-114 shows the interface on a 1E3/CE3/T3/CT3 card.

Figure 6-114 Interface on a 1E3/CE3/T3/CT3 card



1. Signal transmitter	2. Signal receiver
-----------------------	--------------------

E3/T3 interface

An E3/T3 interface transmits data and image signals. [Table 6-272](#) describes the E3/T3 interface attributes.

Table 6-272 E3/T3 interface attributes

Attribute	Specification
Connector type	SMB
Standards compliance	G.703, G.704, G.751, G.823
Interface speed	34.368 Mbit/s
Working mode	E3
Services provided	E3 leased line
Cable type	7.8 E3/T3 Cable

Technical Specifications

[Table 6-273](#) lists the technical specifications of a 1E3/CE3/T3/CT3 card.

Table 6-273 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 11.2 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-274](#) provides 1E3/CE3/T3/CT3 card ordering information.

Table 6-274 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021QFT	AR-1E3T3M-W	1E3/CE3/T3/C T3	1-Port Channelized/Unchannelized E3/T3 WAN Interface Card

6.7 Synchronous/Asynchronous Card

6.7.1 1SA (1-Port Synchronous/Asynchronous WAN Interface Card)

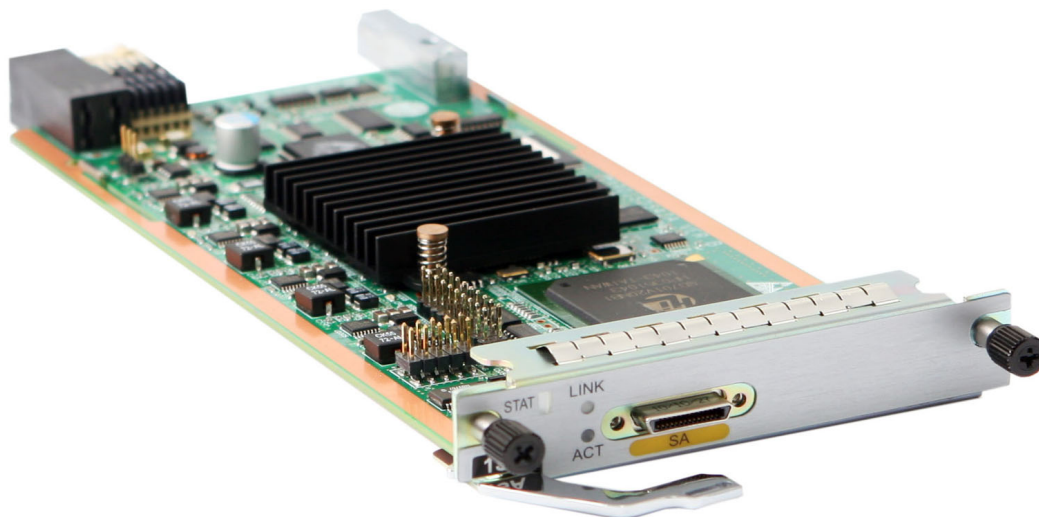
Card Overview

The 1SA is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

A 1SA card can be installed in a SIC slot of a router.

[Figure 6-115](#) shows the appearance of a 1SA card.

Figure 6-115 1SA card appearance



Version Mapping

[Table 6-275](#) lists the device models and software versions supporting the 1SA.

Table 6-275 Version mapping

Card Name	Device Series	Device Model
1SA NOTE This card is supported in V200R001C00 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-276 describes the functions and features of a 1SA card.

Table 6-276 Functions and features

Function and Feature	Description
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a DCE or DTE and supports multiple physical layer protocols, such as V.24, V.35, and X.21. It does not support the X.21 DCE mode.
	The maximum rate of V.24 is 64 kbit/s, and the maximum rate of V.35 is 2.048 Mbit/s.
	Supports link layer protocols PPP, FR, and HDLC.
	Supports the IP protocol.
Asynchronous mode	An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.
	An asynchronous serial interface works in protocol or flow mode.
	Supports the PPP and IP protocols in protocol mode.
	Does not support the PPP or IP protocol in flow mode.

Panel

Figure 6-116 shows the indicators on a 1SA card, and **Table 6-277** describes the indicator states and meanings.

Figure 6-116 Indicators on a 1SA card

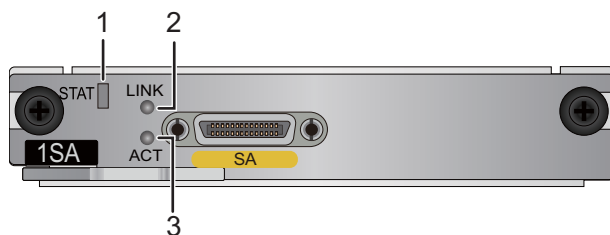
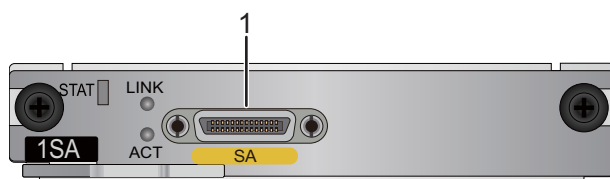


Table 6-277 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2 and 3	SA interface indicators: ● 2: LINK indicator, green ● 3: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.

Figure 6-117 shows the interface on a 1SA card.

Figure 6-117 Interface on a 1SA card



1. One SA interface

SA interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. [Table 6-278](#) lists attributes of a SA interface.

Table 6-278 SA interface attributes

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Connector type	DB28		
Standards compliance and working mode	<ul style="list-style-type: none"> ● V.24 DTE ● V.24 DCE 	<ul style="list-style-type: none"> ● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		<ul style="list-style-type: none"> ● Modem dial-up ● Backup
	Terminal access		<ul style="list-style-type: none"> ● Asynchronous leased line ● Terminal access
Cable type	7.9 SA Cable		

Technical Specifications

[Table 6-279](#) lists the technical specifications of a 1SA card.

Table 6-279 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 5.5 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-280 provides 1SA card ordering information.

Table 6-280 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNB	AR0MSDSA1 A00	1SA	1-Port Sync/Async Serial Port Interface Card

6.7.2 2SA (2-Port Synchronous/Asynchronous WAN Interface Card)

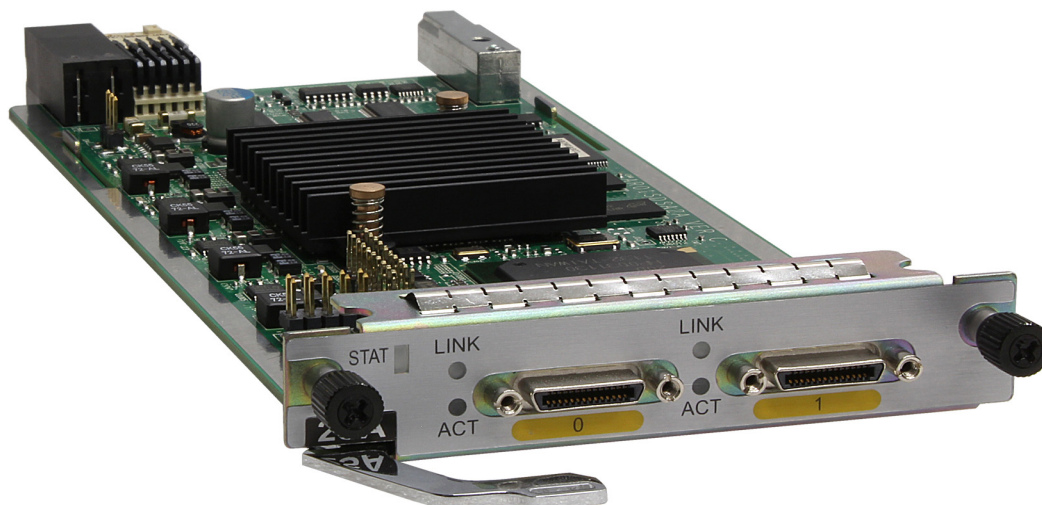
Card Overview

The 2SA is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

A 2SA card can be installed in a SIC slot of a router.

Figure 6-118 shows the appearance of a 2SA card.

Figure 6-118 2SA card appearance



Version Mapping

Table 6-281 lists the device models and software versions supporting the 2SA.

Table 6-281 Version mapping

Card Name	Device Series	Device Model
2SA NOTE This card is supported in V200R001C01 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-282 describes the functions and features of a 2SA card.

Table 6-282 Functions and features

Function and Feature	Description
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a DCE or DTE and supports multiple physical layer protocols, such as V.24, V.35, and X.21. It does not support the X.21 DCE mode.

Function and Feature	Description
	The maximum rate of V.24 is 64 kbit/s, and the maximum rate of V.35 is 2.048 Mbit/s.
	Supports link layer protocols PPP, FR, and HDLC.
	Supports the IP protocol.
Asynchronous mode	An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.
	An asynchronous serial interface works in protocol or flow mode.
	Supports the PPP and IP protocols in protocol mode.
	Does not support the PPP or IP protocol in flow mode.

Panel

Figure 6-119 shows the indicators on a 2SA card, and **Table 6-283** describes the indicator states and meanings.

Figure 6-119 Indicators on an 2SA card

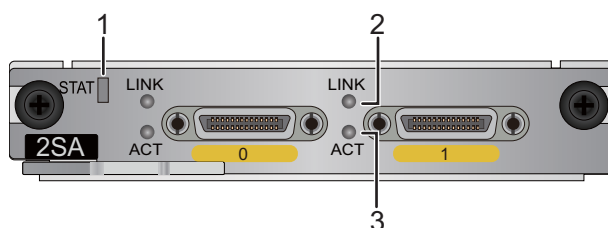


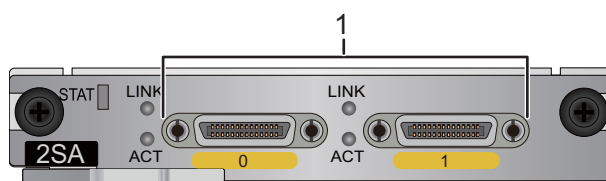
Table 6-283 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Number	Indicator	Color	Description
2 and 3	SA interface indicators: <ul style="list-style-type: none"> ● 2: LINK indicator, green ● 3: ACT indicator, yellow 	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.

Figure 6-120 shows the interfaces on a 2SA card.

Figure 6-120 Interfaces on a 2SA card



1. Two SA interfaces

SA interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. Table 6-284 lists attributes of a SA interface.

Table 6-284 SA interface attributes

Attribute	Description	
	Synchronous Serial Interface	Asynchronous Serial Interface
Connector type	DB28	

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Standards compliance and working mode	<ul style="list-style-type: none"> ● V.24 DTE ● V.24 DCE 	<ul style="list-style-type: none"> ● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		<ul style="list-style-type: none"> ● Modem dial-up ● Backup
	Terminal access		<ul style="list-style-type: none"> ● Asynchronous leased line ● Terminal access
Cable type	7.9 SA Cable		

Technical Specifications

Table 6-285 lists the technical specifications of a 2SA card.

Table 6-285 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 6.2 W ● Weight: 0.3 kg (0.66 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-286 provides 2SA card ordering information.

Table 6-286 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020SAY	AR0MSDSA2 A00	2SA	2-Port Sync/Async Serial Port Interface Card

6.7.3 8SA (8-Port Synchronous/Asynchronous WAN Interface Card)

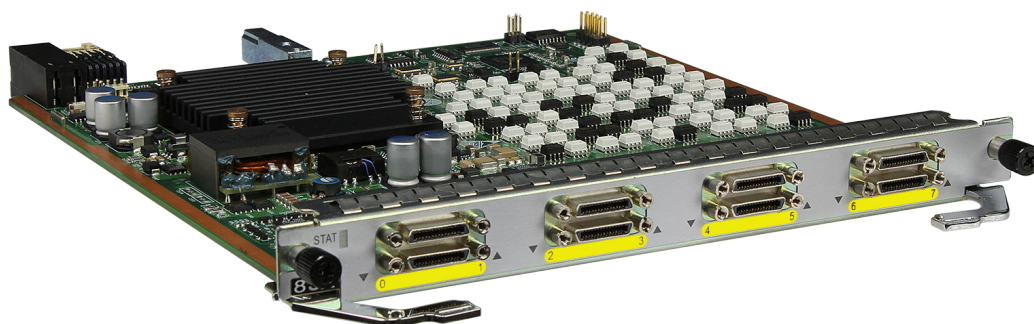
Card Overview

The 8SA card is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

An 8SA card can be installed in a WSIC slot of a router.

Figure 6-121 shows the appearance of an 8SA card.

Figure 6-121 8SA card appearance



Version Mapping

Table 6-287 lists the device models and software versions supporting the 8SA.

Table 6-287 Version mapping

Card Name	Device Series	Device Model
8SA NOTE This card is supported in V200R005C10 and later versions.	AR1200 series	All models in this series except the AR1220C, and AR1220-8GE
	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC
		AR2220
		AR2220E
		AR2240
	AR2240C	
AR3200 series	All models in this series	
AR3600 series	All models in this series	

Functions and Features

Table 6-288 describes the functions and features of an 8SA card.

Table 6-288 Functions and features

Function and Feature	Description
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a DCE or DTE. It supports multiple physical layer protocols, such as V.24, V.35, X.21, RS449, and RS530.
	Automatically identifies the rate of received signals.
	The maximum rate of V.24 is 64 kbit/s and the maximum rate of V.35/X.21/RS449/RS530 is 8.192 Mbit/s.
	Supports link layer protocols PPP, FR, and HDLC.
	Use IP as the network layer protocol.
	Support pseudo wire emulation edge-to-edge (PWE3).

Function and Feature	Description
Asynchronous mode	Support the RS232 protocol and provide a maximum transmission rate of 230.4 kbit/s.
	Works in protocol or flow mode.
	Supports the PPP and IP protocols in protocol mode.
	In flow mode, the interfaces do not support link layer protocols or IP.
	Supports PWE3.

Panel

Figure 6-122 shows the indicators on an 8SA card, and **Table 6-289** describes the indicator states and meanings.

Figure 6-122 Indicators on an 8SA card

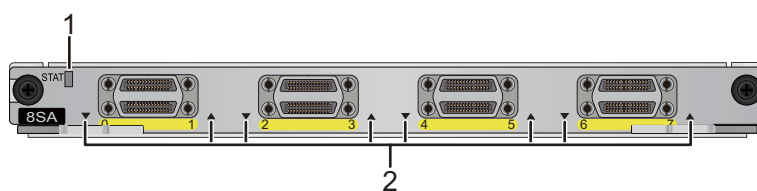


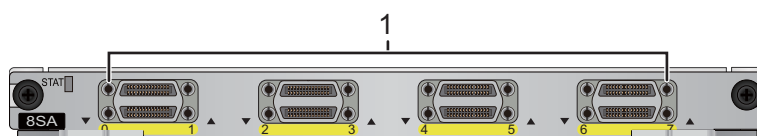
Table 6-289 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	One double-color indicator for each SA interface	Green	Steady on: A link has been established. Off: No link is established.

Number	Indicator	Color	Description
	NOTE <ul style="list-style-type: none"> Down arrowhead: interfaces in the lower row Up arrowhead: interfaces in the upper row 	Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	Off: There is no connection.

Figure 6-123 shows the interfaces on an 8SA card.

Figure 6-123 Interfaces on an 8SA card



1. Eight SA interfaces

Synchronous/Asynchronous serial (SA) interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. Table 6-290 describes the SA interface attributes.

Table 6-290 Attributes of SA serial interfaces

Attribute	Description	
	Synchronous Serial Interface	Asynchronous Serial Interface
Connector type	DB28	

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Standards compliance and working mode	<ul style="list-style-type: none"> ● V.24 DTE ● V.24 DCE 	<ul style="list-style-type: none"> ● V.35 DTE ● V.35 DCE ● X.21 DTE ● X.21 DCE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	8192000	230400
Services provided	DDN leased line		<ul style="list-style-type: none"> ● Modem dial-up ● Backup
	Terminal access		<ul style="list-style-type: none"> ● Asynchronous leased line ● Terminal access
Cable type	7.9 SA Cable		

Technical Specifications

Table 6-291 lists the technical specifications of an 8SA card.

Table 6-291 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 25 W ● Weight: 0.6 kg

Item	Specification
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-292 provides 8SA card ordering information.

Table 6-292 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022CPM	AR-8SA-W	8SA	8-port synchronous/asynchronous WAN interface card

6.7.4 8AS (8-Port-Asynchronous WAN Interface Card)

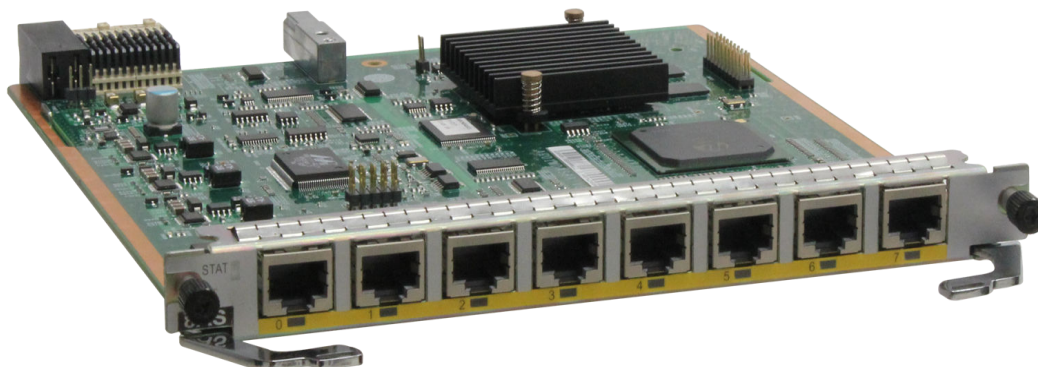
Card Overview

The 8AS is a high-speed asynchronous serial interface module and working in protocol or flow mode. It can connect to the PSTN through a modem or function as a serial port server to implement remote management for terminals.

An 8AS card can be installed in a WSIC slot of a router.

Figure 6-124 shows the appearance of an 8AS card.

Figure 6-124 8AS card appearance



Version Mapping

Table 6-293 lists the device models and software versions supporting the 8AS.

Table 6-293 Version mapping

Card Name	Device Series	Device Model
8AS NOTE This card is supported in V200R001C01 and later versions.	AR1200 series	All models in this series
	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC
		AR2220
		AR2220E
		AR2240
	AR2240C	
AR3200 series	All models in this series	
AR3600 series	All models in this series	

Functions and Features

Table 6-294 describes the functions and features of an 8AS card.

Table 6-294 Functions and features

Function and Feature	Description
Asynchronous serial interface	Connects to the PSTN through a modem or functions as a serial port server to implement remote management for terminals.
Basic functions	Functions as a dialup access server for small- and medium-sized ISPs when asynchronous serial interfaces are used for dialup.
	Supports redirection to other devices when the asynchronous serial interface functions as a serial port server.
Interface rate	Supports a maximum of 115.2 kbit/s transmission rate for each asynchronous serial interface.
Protocols supported	<ul style="list-style-type: none"> ● Supports the PPP and IP protocols in protocol mode. ● Does not support the PPP or IP protocol in flow mode.

Panel

Figure 6-125 shows the indicators on an 8AS card, and **Table 6-295** describes the indicator states and meanings.

Figure 6-125 Indicators on an 8AS card

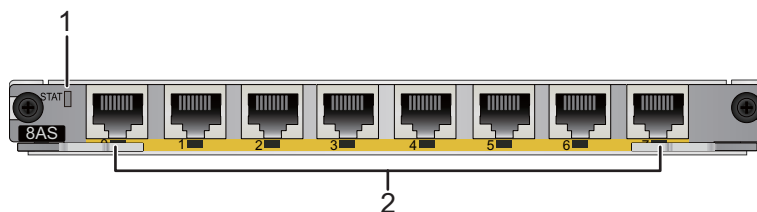
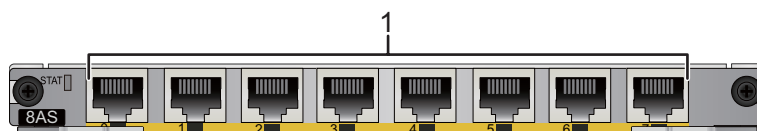


Table 6-295 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK (interface status indicator)	Green	Steady on: A link has been established.
		Off	Off: No link is established.

Figure 6-126 shows the interfaces on an 8AS card.

Figure 6-126 Interfaces on an 8AS card



1. Eight asynchronous serial interfaces (RJ45)

Asynchronous serial interface

An asynchronous serial interface is one of the most commonly used WAN interface. It can be used to establish an asynchronous leased line or is used for modem dial-up, data backup, or terminal access. [Table 6-296](#) lists attributes of the asynchronous serial interface.

Table 6-296 Attributes of the asynchronous serial interface

Attribute	Description
Connector type	RJ45
Standards compliance and working mode	RS232
Minimum baud rate	600 bit/s
Maximum baud rate	115.2 kbit/s
Cable type	Customized RJ45 cable
Function	<ul style="list-style-type: none"> ● Modem dial-up ● Backup ● Asynchronous leased line ● Terminal access
Cable type	7.10 8AS Cable

Technical Specifications

[Table 6-297](#) describes the technical specifications of an 8AS card.

Table 6-297 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 4.7 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-298 provides 8AS card ordering information.

Table 6-298 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XBH	AR0MWDAS 8A01	8AS	8-Port Async Serial Port Interface Card

6.8 3G/LTE Card

6.8.1 3G-HSPA+7 (3G WCDMA HSPA+7 Interface Card)

Card Overview

The 3G-HSPA+7 is a 3G access card. It can function as the primary or backup link of an enterprise to connect to the Internet and transmit voice, video, and data services.

A 3G-HSPA+7 card can be installed in a SIC slot of a router.

Figure 6-127 shows the appearance of a 3G-HSPA+7 card.

Figure 6-127 3G-HSPA+7 card appearance



Version Mapping

Table 6-299 lists the device models and software versions supporting the 3G-HSPA+7.

Table 6-299 Version mapping

Card Name	Device Series	Device Model
3G-HSPA+7 NOTE This card is supported in V200R002C01 and later versions.	AR1200 series	All models in this series except the AR1220C, and AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-300 describes the functions and features of a 3G-HSPA+7 card.

Table 6-300 Functions and features

Function and Feature	Description
Basic functions	Functions as the primary or backup link of an enterprise to connect to the Internet and transmit enterprise communication services.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
Good 3G experience	Implements on-demand dialup and provides wireless QoS.
	Automatically scans different 3G frequency bands.
	Transmits voice services in PS/CS domains.
	Uses advanced wireless technologies and provides super high-speed 3G wireless experience.
Flexible wireless standards	Flexibly switches between 2G and 3G.
	Supports GSM, GPRS, EDGE, WCDMA, HSPA and HSPA+.
	Provides wireless solutions on LTE migration for carriers and enterprises.

Panel

Figure 6-128 shows the indicators on a 3G-HSPA+7 card, and **Table 6-301** describes the indicator states and meanings.

Figure 6-128 Indicators on a 3G-HSPA+7 card

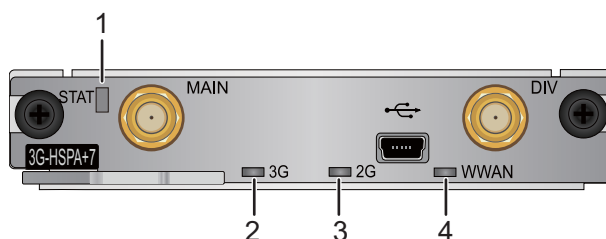
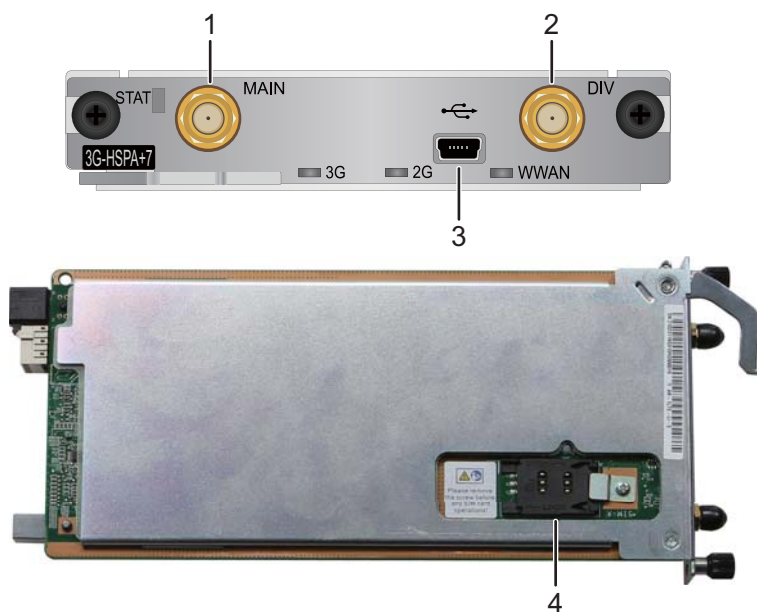


Table 6-301 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	3G	Green	Steady on: The 3G signal strength is high. Slow blinking: The 3G signals strength is low. Fast blinking: The 3G signals strength is medium. Off: No 3G signal is available.
3	2G	Green	Steady on: The 2G signal strength is high. Slow blinking: The 2G signals strength is low. Fast blinking: The 2G signals strength is medium. Off: No 2G signal is available.
4	WWAN	Green	Steady on: The 3G/2G connection is being established or is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.

Figure 6-129 shows the interfaces on a 3G-HSPA+7 card.

Figure 6-129 Interfaces on a 3G-HSPA+7 card



1. One primary 3G antenna interface	2. One secondary 3G antenna interface	3. One Mini USB interface	4. One SIM card slot NOTE Supports standard SIM card.
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3G-HSPA+7 antenna interface

3G-HSPA+7 antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. [Table 6-302](#) lists attributes of a 3G-HSPA+7 antenna interface.

Table 6-302 3G-HSPA+7 antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● UMTS/HSPA: 900/2100 (MHz) ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Cable type	7.17.4 3G Antenna

Mini USB interface

The Mini USB interface is used to debug a 3G card. [Table 6-303](#) lists attributes of the Mini USB interface.

Table 6-303 Attributes of the Mini USB interface

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

[Table 6-304](#) lists the technical specifications of a 3G-HSPA+7 card.

Table 6-304 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7 W ● Weight: 0.2 kg (0.44 lb)

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-305 provides 3G-HSPA+7 card ordering information.

Table 6-305 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310JVX	AR01SDGW1 A	3G-HSPA+7	3G WAN interface card

6.8.2 3G-EVDO (3G CDMA2000 EVDO Interface Card)

Card Overview

The 3G-EVDO is a CDMA2000 network access module, and provides high-speed wireless data transmission, enabling enterprise users to connect to CDMA2000 networks.

A 3G-EVDO card can be installed in a SIC slot of a router.

Figure 6-130 shows the appearance of a 3G-EVDO card.

Figure 6-130 3G-EVDO card appearance



Version Mapping

Table 6-306 lists the device models and software versions supporting the 3G-EVDO.

Table 6-306 Version mapping

Card Name	Device Series	Device Model
3G-EVDO NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	All models in this series except the AR1220C, and AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-307 describes the functions and features of a 3G-EVDO card.

Table 6-307 Functions and features

Function and Feature	Description
Basic functions	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
	Provides a primary link for Internet access.
Excellent 3G experience	Implements on-demand dialup and provides wireless QoS.
	Automatically scans different 3G frequency bands.
	Delivers fast 3G access service using industry-leading wireless technologies.
Flexible wireless format	Flexibly switches between 2G and 3G.
	Supports CDMA2000 1X, CDMA2000 EV-DO Rev 0, and CDMA2000 EV-DO Rev A.
	Provides CDMA2000 wireless access solution for carriers and enterprises.

Panel

Figure 6-131 shows the indicators on a 3G-EVDO card, and **Table 6-308** describes the indicator states and meanings.

Figure 6-131 Indicators on a 3G-EVDO card

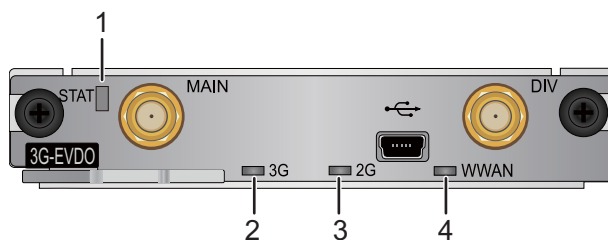


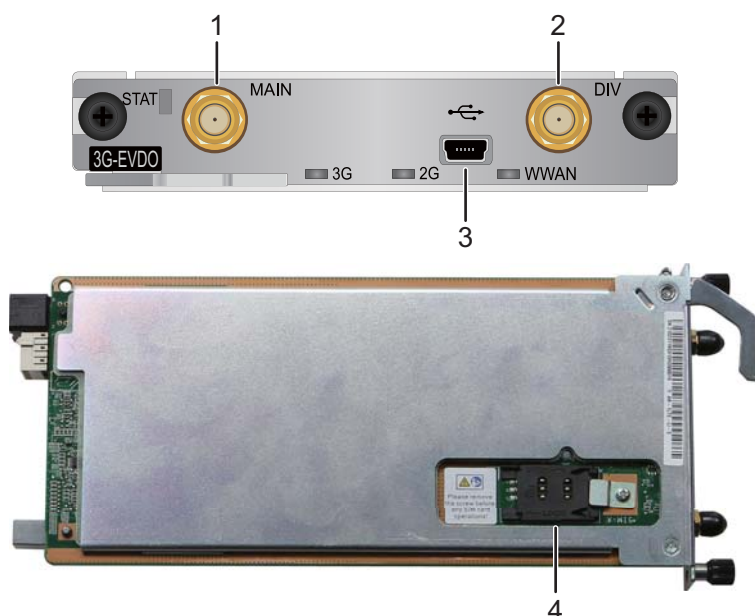
Table 6-308 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	3G	Green	Steady on: The 3G signal strength is high. Slow blinking: The 3G signal strength is low. Fast blinking: The 3G signal strength is medium. Off: No 3G signal is available.
3	2G	Green	Steady on: The 2G signal strength is high. Slow blinking: The 2G signal strength is low. Fast blinking: The 2G signal strength is medium. Off: No 2G signal is available.

Number	Indicator	Color	Description
4	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.

Figure 6-132 shows the interfaces on a 3G-EVDO card.

Figure 6-132 Interfaces on a 3G-EVDO card



1. One 3G primary antenna interface	2. One 3G secondary antenna interface	3. One Mini USB interface	4. One SIM card slot NOTE Supports standard SIM card.
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3G-EVDO antenna interfaces

3G-EVDO antenna interfaces of a router include a 3G MAIN interface (for the primary antenna) and a 3G DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, whereas the secondary antenna assists the primary antenna in signal receiving. Table 6-309 lists attributes of a 3G-EVDO antenna interface.

Table 6-309 3G-EVDO antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● CDMA2000 1X: 800/1900 (MHz) ● CDMA2000 1X/EVDO Rev.0: 800/1900 (MHz) ● CDMA2000 1X/EVDO Rev A: 800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● CDMA2000 1X: uplink rate of 153.6 kbit/s and downlink rate of 153.6 kbit/s ● CDMA2000 1X/EVDO Rev.0: uplink rate of 153.6 kbit/s and downlink rate of 2.4 Mbit/s ● CDMA2000 1X/EVDO Rev A: uplink rate of 1.8 Mbit/s and downlink rate of 3.1 Mbit/s
Cable type	7.17.4 3G Antenna

Mini USB interface

The Mini USB interface is used to debug a 3G card. [Table 6-310](#) lists attributes of the Mini USB interface.

Table 6-310 Attributes of the Mini USB interface

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

[Table 6-311](#) lists the technical specifications of a 3G-EVDO card.

Table 6-311 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7 W ● Weight: 0.2 kg (0.44 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-312 provides 3G-EVDO card ordering information.

Table 6-312 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310QBA	AR-1EVDO-S	3G-EVDO	3G EVDO interface card

6.8.3 1LTE-L (WCDMA LTE Interface Card)

Card Overview

The 1LTE-L is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1LTE-L card can be installed in a SIC slot of a router.

Figure 6-133 shows the appearance of a 1LTE-L card.

Figure 6-133 1LTE-L card appearance



Version Mapping

Table 6-313 lists the device models and software versions supporting the 1LTE-L.

Table 6-313 Version mapping

Card Name	Device Series	Device Model
1LTE-L NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-314 describes the functions and features of a 1LTE-L card.

Table 6-314 Functions and features

Function and Feature	Description
Basic function	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	Supports FDD LTE and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides Provides end-to-end QoS
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports FDD LTE, DC-HSPA+, HSPA+, HSPA, and WCDMA.
	Provides 4G wireless access solution for carriers and enterprises.

Function and Feature	Description
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-134 shows the indicators on a 1LTE-L card, and **Table 6-315** describes the indicator states and meanings.

Figure 6-134 Indicators on a 1LTE-L card

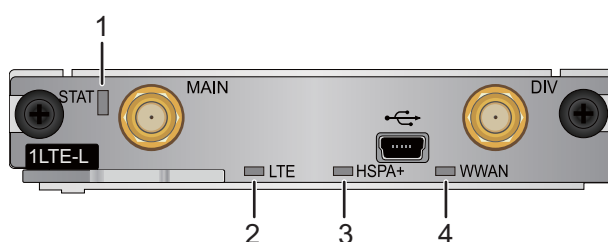


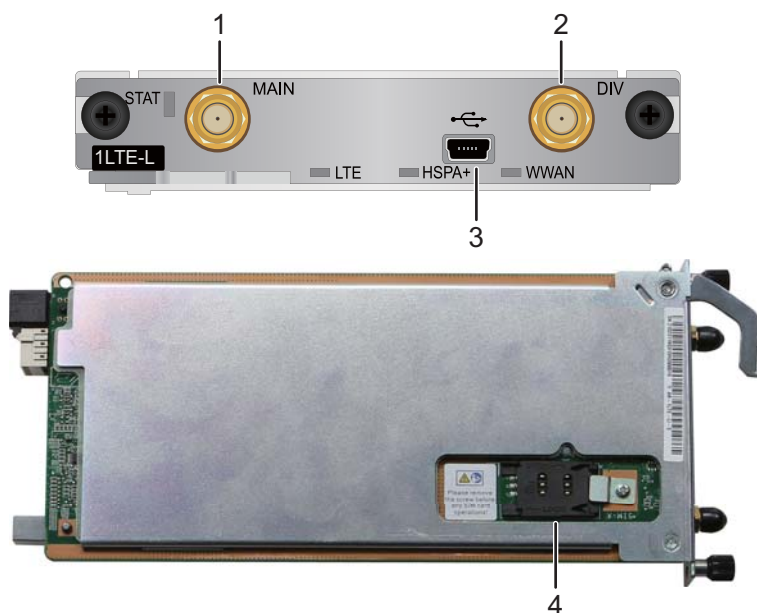
Table 6-315 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.

Number	Indicator	Color	Description
3	HSPA+	Green	Steady on: The HSPA+ signal strength is high. Fast blinking: The HSPA+ signal strength is medium. Slow blinking: The HSPA+ signal strength is low. Off: No HSPA+ signal is available.
4	WWAN	Green	Steady on: An LTE or HSPA+ link has been established and is active. Blinking: Data is being transmitted over the LTE or HSPA+ link. Off: The LTE or HSPA+ link is not established or is inactive.

Figure 6-135 shows the interfaces on a 1LTE-L card.

Figure 6-135 Interfaces on a 1LTE-L card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface	4. One SIM card slot NOTE Supports standard SIM card.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-316](#) lists attributes of an LTE antenna interface.

Table 6-316 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/2/3/4/5/7/8/20 ● WCDMA/HSPA/HSPA+/DC-HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	LTE Indoor Remote Antenna (27012152) LTE Whip Antenna

Mini USB interface

The Mini USB interface on an LTE card is used to commission the LTE module. [Table 6-317](#) lists attributes of a Mini USB interface.

Table 6-317 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

Table 6-318 lists the technical specifications of a 1LTE-L card.

Table 6-318 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 7 W● Weight: 0.2 kg (0.44 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-319 provides 1LTE-L card ordering information.

Table 6-319 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310QBB	AR-1LTE-L-S	1LTE-L	WCDMA LTE Interface Card

6.8.4 1LTE-LV (WCDMA LTE Interface Card)

Card Overview

The 1LTE-LV is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1LTE-LV card can be installed in a SIC slot of a router.

Figure 6-136 shows the appearance of a 1LTE-LV card.

Figure 6-136 1LTE-LV card appearance



Version Mapping

Table 6-320 lists the device models and software versions supporting the 1LTE-LV.

Table 6-320 Version mapping

Card Name	Device Series	Device Model
1LTE-LV NOTE This card is supported in V200R007C00 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-321 describes the functions and features of a 1LTE-LV card.

Table 6-321 Functions and features

Function and Feature	Description
Basic function	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.

Function and Feature	Description
High bandwidth	Supports FDD LTE and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports FDD LTE, DC-HSPA+, HSPA+, HSPA, and WCDMA.
	Provides 4G wireless access solution for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-137 shows the indicators on a 1LTE-LV card, and **Table 6-322** describes the indicator states and meanings.

Figure 6-137 Indicators on a 1LTE-LV card

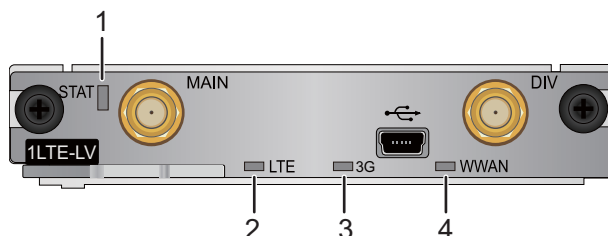


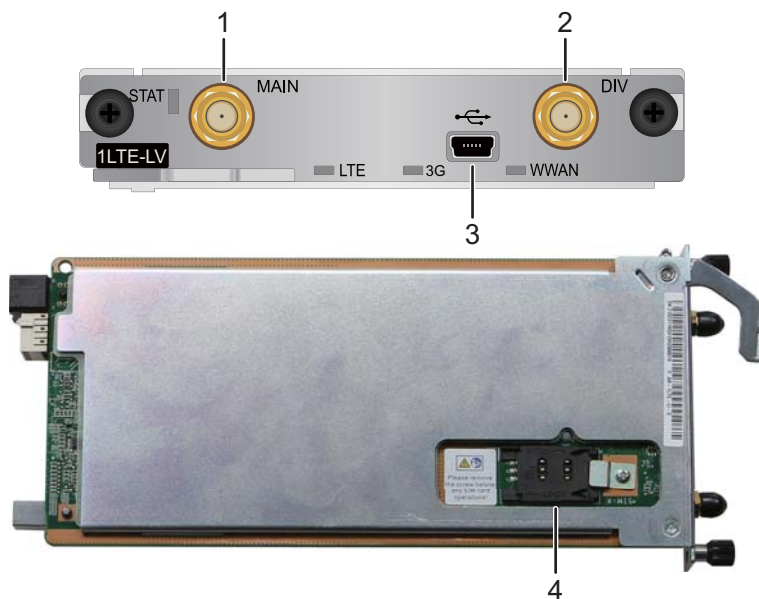
Table 6-322 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been established and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link is not established or is inactive.

Figure 6-138 shows the interfaces on a 1LTE-LV card.

Figure 6-138 Interfaces on a 1LTE-LV card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface	4. One SIM card slot NOTE Supports standard SIM card.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-323](#) lists attributes of an LTE antenna interface.

Table 6-323 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● WCDMA/HSPA/HSPA+/DC-HSPA+: bands 2/4/5 ● FDD LTE: bands 2/4/5/17

Attribute	Description
Rate	<ul style="list-style-type: none"> ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s
Cable type	7.17.1 LTE Whip Antenna

Mini USB interface

The Mini USB interface on an LTE card is used to commission the LTE module. [Table 6-324](#) lists attributes of a Mini USB interface.

Table 6-324 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

[Table 6-325](#) lists the technical specifications of a 1LTE-LV card.

Table 6-325 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 7 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-326 provides 1LTE-LV card ordering information.

Table 6-326 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311JGF	AR-1LTE-LV-S	1LTE-LV	WCDMA LTE Interface Card

6.8.5 1LTEC (TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Interface Card)

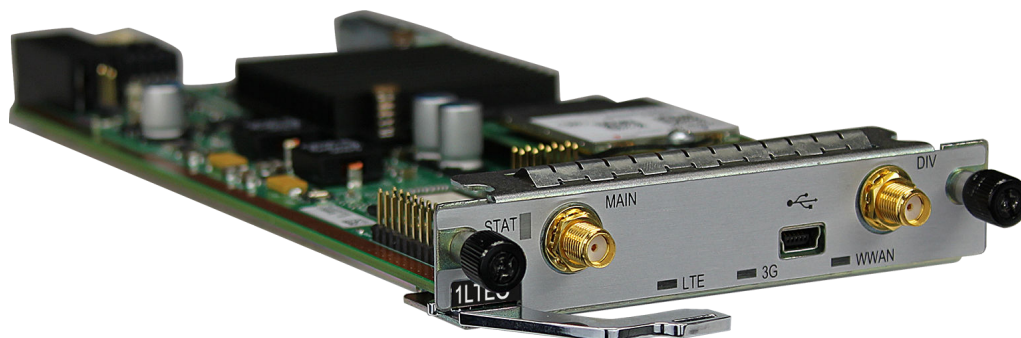
Card Overview

The 1LTEC can be used to connect to an LTE network to provide secure, reliable, and high-performance wireless services for enterprises.

A 1LTEC card can be installed in a SIC slot of a router.

Figure 6-139 shows the appearance of a 1LTEC card.

Figure 6-139 1LTEC card appearance



Version Mapping

Table 6-327 lists the device models and software versions supporting the 1LTEC.

Table 6-327 Version mapping

Card Name	Device Series	Device Model
1LTEC NOTE This card is supported in V200R006C10 and later versions.	AR1200 series	All models in this series except the AR1220C, and AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-328 describes the functions and features of a 1LTEC card.

Table 6-328 Functions and features

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	<ul style="list-style-type: none"> ● Supports FDD LTE and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate. ● Supports TDD LTE and provides up to 18 Mbit/s uplink rate and 61 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides wireless QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless format	Maintains compatibility with 3G services.
	Supports FDD LTE, TDD LTE, HSPA+, TD-SCDMA, and GSM.
	Provides 4G LTE wireless access solutions for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-140 shows the indicators on a 1LTEC card, and **Table 6-329** describes the indicator states and meanings.

Figure 6-140 Indicators on a 1LTEC card

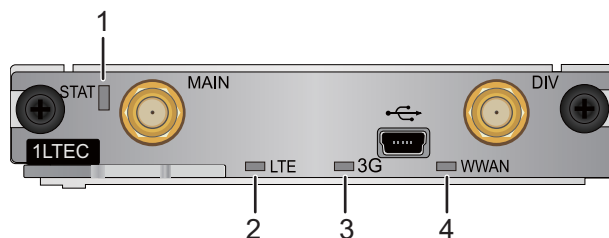


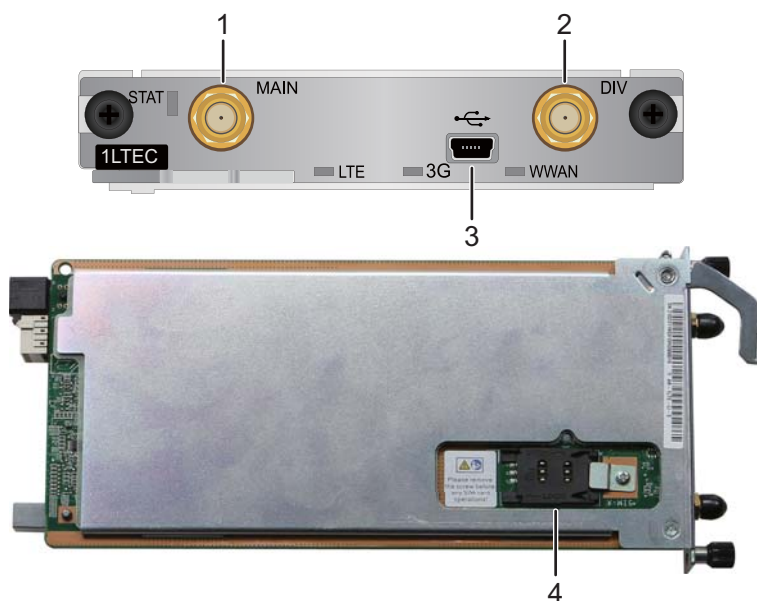
Table 6-329 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.

Number	Indicator	Color	Description
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 6-141 shows the interfaces on a 1LTEC card.

Figure 6-141 Interfaces on a 1LTEC card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface	4. One SIM card slot NOTE Supports standard SIM card.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-330](#) lists attributes of an LTE antenna interface.

Table 6-330 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/UMTS: bands 1/2/5/8 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● FDD LTE: 50 Mbit/s uplink rate and 100 Mbit/s downlink rate ● TDD LTE: 18 Mbit/s uplink rate and 61 Mbit/s downlink rate ● HSPA+: 5.76 Mbit/s uplink rate and 21.6 Mbit/s downlink rate ● DC-HSPA+: 5.76 Mbit/s uplink rate and 42 Mbit/s downlink rate ● TD-SCDMA: 384 kbit/s uplink rate and 384 kbit/s downlink rate ● TD-HSPA+: 2.2 Mbit/s uplink rate and 4.2 Mbit/s downlink rate ● GPRS: 85.6 kbit/s uplink rate and 85.6 kbit/s downlink rate ● Enhanced Data Rates for GSM Evolution (EDGE): 236.8 kbit/s uplink rate and 236.8 kbit/s downlink rate ● WCDMA circuit switched (CS): 64 kbit/s uplink rate and 64 kbit/s downlink rate ● WCDMA packet switched (PS): 384 kbit/s uplink rate and 384 kbit/s downlink rate
Network protocol	FDD LTE, TDD LTE, DC-HSPA+, HSPA+, UMTS, TD-SCDMA, and GSM
Cable type	7.17.1 LTE Whip Antenna

Mini USB interface

The Mini USB interface on an LTE card is used to commission the LTE module. [Table 6-331](#) lists attributes of a Mini USB interface.

Table 6-331 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0

Attribute	Description
Working mode	Device

Technical Specifications

Table 6-332 lists the technical specifications of a 1LTEC card.

Table 6-332 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 10.1 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-333 provides 1LTEC card ordering information.

Table 6-333 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311DVY	AR-1LTEC-S	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM interface Card

6.8.6 1LTE-Lt (TDD/FDD/TD-SCDMA/UMTS/EVDO Interface Card)

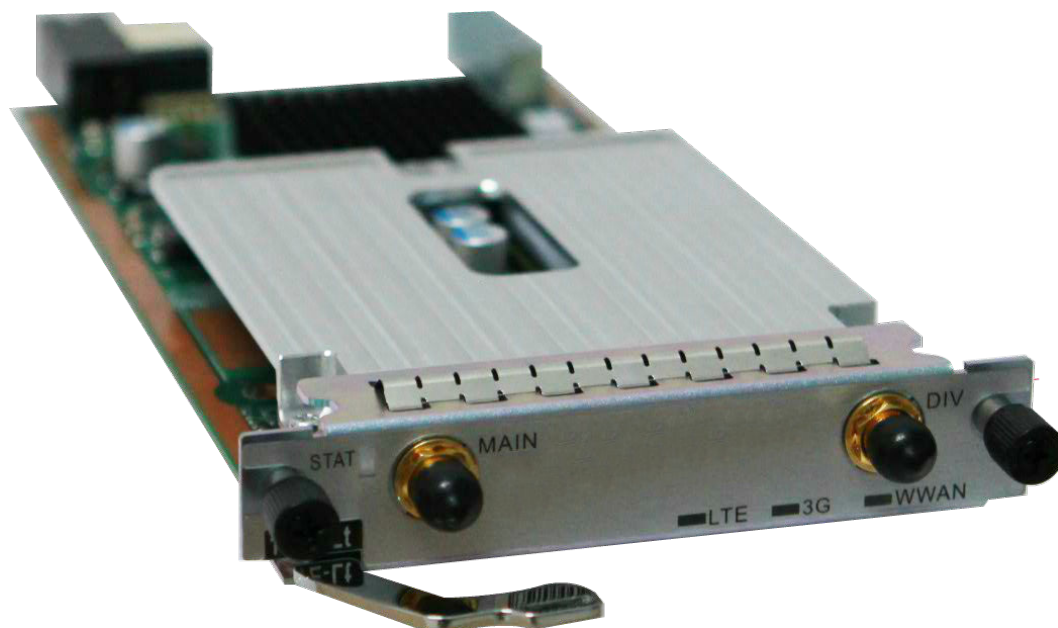
Card Overview

The 1LTE-Lt is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to all types of wireless networks.

A 1LTE-Lt card can be installed in a SIC slot of a router.

Figure 6-142 shows the appearance of a 1LTE-Lt card.

Figure 6-142 1LTE-Lt card appearance



Version Mapping

Table 6-334 lists the device models and software versions supporting the 1LTE-Lt.

Table 6-334 Version mapping

Card Name	Device Series	Device Model
1LTE-Lt NOTE This card is supported in V200R008C20 and later versions.	AR1200 series	AR1220E series
		AR1220F
		AR1220C
		AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-335 describes the functions and features of a 1LTE-Lt card.

Table 6-335 Functions and features

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	<ul style="list-style-type: none"> ● Supports FDD LTE and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate. ● Supports TDD LTE and provides up to 18 Mbit/s uplink rate and 61 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports the FDD LTE, TDD LTE, TD-SCDMA, UMTS, and EVDO standards.
	Provides wireless access solutions for carriers and enterprises, enabling users to connect to all types of wireless networks.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-143 shows the indicators on a 1LTE-Lt card, and **Table 6-336** describes the indicator states and meanings.

Figure 6-143 Indicators on a 1LTE-Lt card

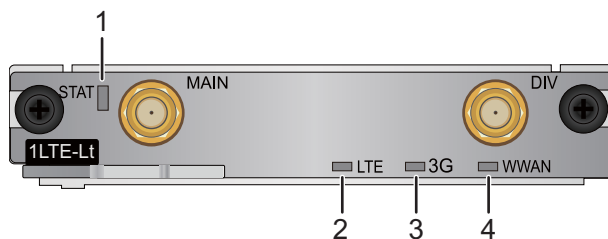


Table 6-336 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 6-144 shows the interfaces on a 1LTE-Lt card.

Figure 6-144 Interfaces on a 1LTE-Lt card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Two SIM card slots NOTE <ul style="list-style-type: none"> ● The card supports double-card single-standby, and SIM-A is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM-A. ● Supports standard SIM card.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-337](#) lists attributes of an LTE antenna interface.

Table 6-337 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3 ● TDD LTE: bands 38/39/40/41 ● TD-SCDMA: bands 34/39 ● UMTS: band 1 ● EVDO/CDMA1x: 800 MHz ● GSM: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 18 Mbit/s and downlink rate of 61 Mbit/s ● TD-SCDMA: uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s ● UMTS: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● EVDO: uplink rate of 5.4 Mbit/s and downlink rate of 14.7 Mbit/s
Cable type	7.17.1 LTE Whip Antenna

Technical Specifications

[Table 6-338](#) lists the technical specifications of a 1LTE-Lt card.

Table 6-338 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7.3 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-339](#) provides 1LTE-Lt card ordering information.

Table 6-339 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311NSX	AR-1LTE-Lt- S	1LTE-Lt	TDD/FDD/TD-SCDMA/UMTS/ EVDO interface card

6.8.7 1LTE-Lt-7 (TDD/FDD/TD-SCDMA/UMTS/EVDO Interface Card)

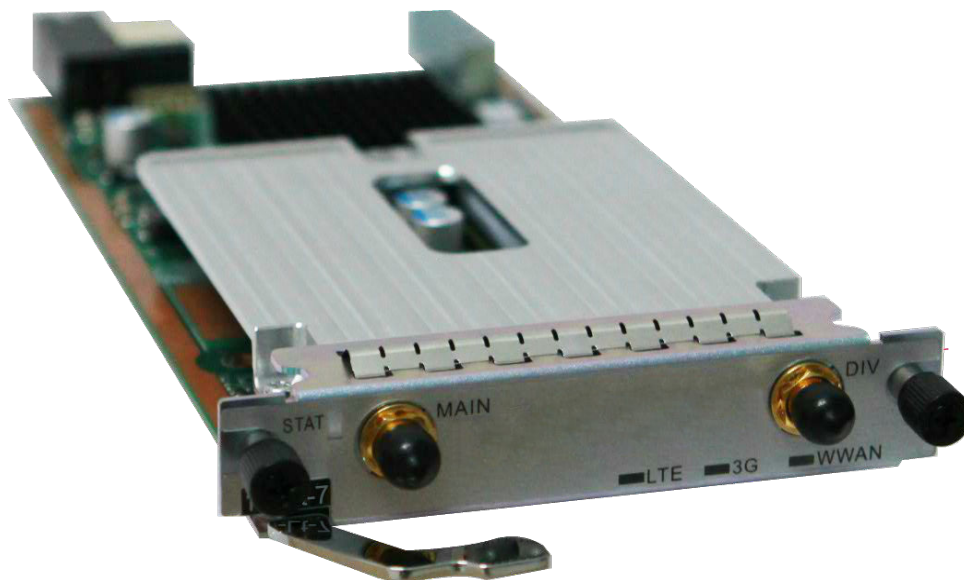
Card Overview

The 1LTE-Lt-7 is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to all types of wireless networks.

A 1LTE-Lt-7 card can be installed in a SIC slot of a router.

Figure 6-145 shows the appearance of a 1LTE-Lt-7 card.

Figure 6-145 1LTE-Lt-7 card appearance



Version Mapping

Table 6-340 lists the device models and software versions supporting the 1LTE-Lt-7.

Table 6-340 Version mapping

Card Name	Device Series	Device Model
1LTE-Lt-7 NOTE This card is supported in V200R008C50 and later versions.	AR1200 series	AR1220E series
		AR1220F
		AR1220C
		AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-341 describes the functions and features of a 1LTE-Lt-7 card.

Table 6-341 Functions and features

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	<ul style="list-style-type: none"> Supports FDD LTE and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate. Supports TDD LTE and provides up to 18 Mbit/s uplink rate and 61 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless working mode	Maintains compatibility with 3G services.
	Supports the FDD LTE, TDD LTE, TD-SCDMA, UMTS, and EVDO standards.
	Provides a wireless access solution for carriers and enterprises, enabling users to connect to all types of wireless networks.

Function and Feature	Description
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-146 shows the indicators on a 1LTE-Lt-7 card, and **Table 6-342** describes the indicator states and meanings.

Figure 6-146 Indicators on a 1LTE-Lt-7 card

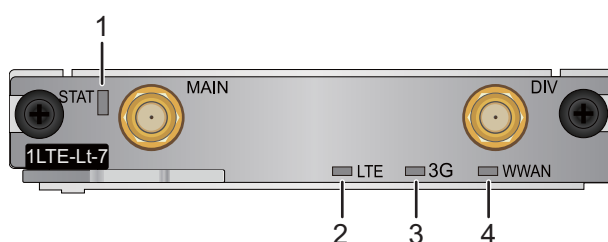


Table 6-342 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.

Number	Indicator	Color	Description
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 6-147 shows the interfaces on a 1LTE-Lt-7 card.

Figure 6-147 Interfaces on a 1LTE-Lt-7 card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Two SIM card slots NOTE <ul style="list-style-type: none"> ● The card supports double-card single-standby, and SIM-A is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM-A. ● Supports standard SIM card.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-343](#) lists attributes of an LTE antenna interface.

Table 6-343 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3 ● TDD LTE: bands 38/39/40/41 ● TD-SCDMA: bands 34/39 ● UMTS: band 1 ● EVDO/CDMA1x: 800 MHz ● GSM: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 18 Mbit/s and downlink rate of 61 Mbit/s ● TD-SCDMA: uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s ● UMTS: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● EVDO: uplink rate of 5.4 Mbit/s and downlink rate of 14.7 Mbit/s
Cable type	7.17.1 LTE Whip Antenna

Technical Specifications

[Table 6-344](#) lists the technical specifications of a 1LTE-Lt-7 card.

Table 6-344 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported

Item	Specification
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7.3 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-345 provides 1LTE-Lt-7 card ordering information.

Table 6-345 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311SFQ	AR-1LTE-Lt-7-S	1LTE-Lt-7	TDD/FDD/TD-SCDMA/UMTS/EVDO interface card

6.8.8 1LTE-Lo (FDD/HSPA+ Interface Card)

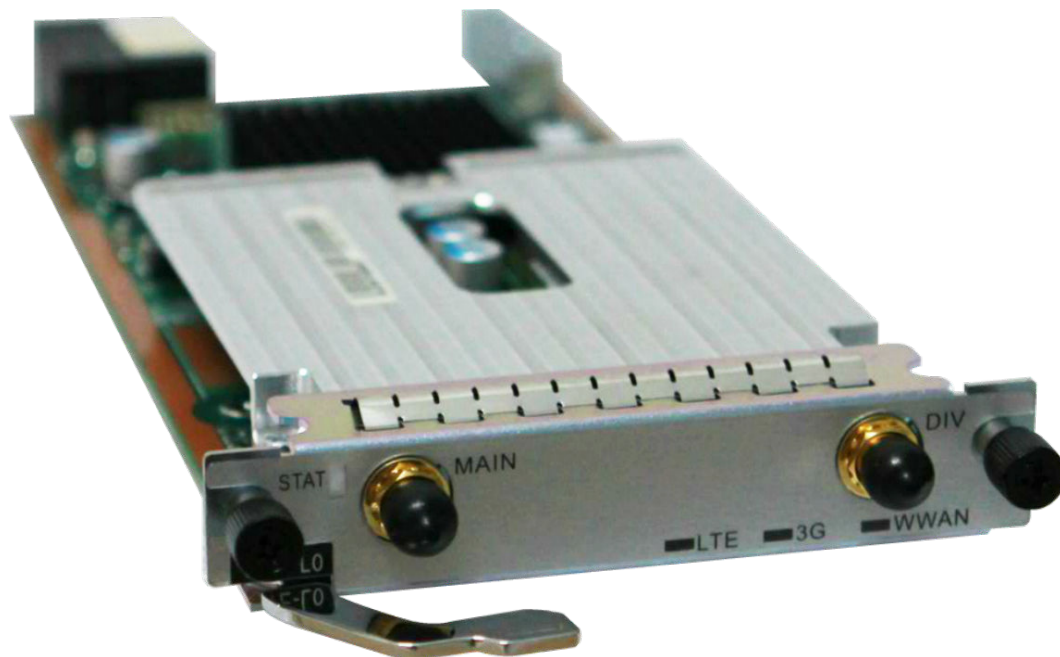
Card Overview

The 1LTE-Lo is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to LTE networks.

A 1LTE-Lo card can be installed in a SIC slot of a router.

Figure 6-148 shows the appearance of a 1LTE-Lo card.

Figure 6-148 1LTE-Lo card appearance



Version Mapping

Table 6-346 lists the device models and software versions supporting the 1LTE-Lo.

Table 6-346 Version mapping

Card Name	Device Series	Device Model
1LTE-Lo NOTE This card is supported in V200R008C20 and later versions.	AR1200 series	AR1220E series
		AR1220F
		AR1220C
		AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-347 describes the functions and features of a 1LTE-Lo card.

Table 6-347 Functions and features

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	Supports FDD LTE and provides up to 50 Mbit/s uplink rate at 20 MHz channel bandwidth (category 4) and 150 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports the FDD LTE and WCDMA standards.
	Provides 4G wireless access solutions for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-149 shows the indicators on a 1LTE-Lo card, and **Table 6-348** describes the indicator states and meanings.

Figure 6-149 Indicators on a 1LTE-Lo card

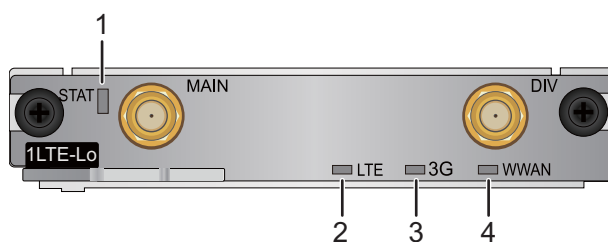


Table 6-348 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 6-150 shows the interfaces on a 1LTE-Lo card.

Figure 6-150 Interfaces on a 1LTE-Lo card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Two SIM card slots NOTE <ul style="list-style-type: none"> ● The card supports double-card single-standby, and SIM-A is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM-A. ● Supports standard SIM card.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-349](#) lists attributes of an LTE antenna interface.

Table 6-349 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20/28 ● DC-HSPA+/WCDMA/HSPA/HSPA+: bands 1/2/5/8 ● EDGE/GPRS/GSM: 1900/1800/900/850 MHz

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s @20M BW cat4 and downlink rate of 150 Mbit/s ● HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Cable type	LTE whip antenna

Technical Specifications

Table 6-350 lists the technical specifications of a 1LTE-Lo card.

Table 6-350 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7.3 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-351 provides 1LTE-Lo card ordering information.

Table 6-351 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311NSY	AR-1LTE-Lo-S	1LTE-Lo	FDD/HSPA+ interface card

6.8.9 1LTE-Lc (TDD/FDD/TD-SCDMA/HSPA+ Interface Card)

Card Overview

The 1LTE-Lc is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to LTE networks.

A 1LTE-Lc card can be installed in a SIC slot of a router.

Figure 6-151 shows the appearance of a 1LTE-Lc card.

Figure 6-151 1LTE-Lc card appearance



Version Mapping

Table 6-352 lists the device models and software versions supporting the 1LTE-Lc.

Table 6-352 Version mapping

Card Name	Device Series	Device Model
1LTE-Lc	AR1200 series	AR1220E series

Card Name	Device Series	Device Model
NOTE This card is supported in V200R008C20 and later versions.		AR1220F
		AR1220C
		AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-353 describes the functions and features of a 1LTE-Lc card.

Table 6-353 Functions and features

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	<ul style="list-style-type: none"> ● Supports FDD LTE and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate at 20 MHz channel bandwidth (category 4). ● Supports TDD LTE and provides up to 10 Mbit/s uplink rate and 112 Mbit/s downlink rate at 20 MHz channel bandwidth (category 4).
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports the FDD LTE, TDD LTE, DC-HSPA+, and GSM standards.
	Provides 4G wireless access solutions for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Panel

Figure 6-152 shows the indicators on a 1LTE-Lc card, and **Table 6-354** describes the indicator states and meanings.

Figure 6-152 Indicators on a 1LTE-Lc card

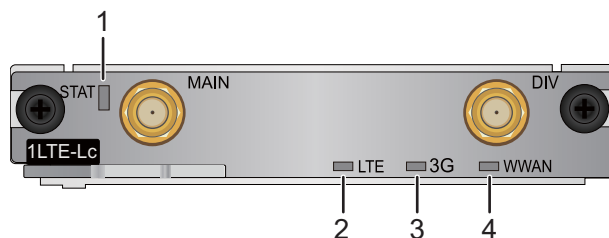


Table 6-354 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.

Number	Indicator	Color	Description
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 6-153 shows the interfaces on a 1LTE-Lc card.

Figure 6-153 Interfaces on a 1LTE-Lc card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Two SIM card slots NOTE <ul style="list-style-type: none"> The card supports double-card single-standby, and SIM-A is the default master card. If only one SIM card needs to be installed, install it in slot SIM-A.
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LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. [Table 6-355](#) lists attributes of an LTE antenna interface.

Table 6-355 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	LTE whip antenna

SIM card slot

Before installing a 1LTE-Lc card in a router, insert a SIM card complying with FDD LTE, TDD LTE, DC-HSPA+, or GSM in the 1LTE-Lc card. The SIM card should be installed in the SIM card slot on the rear side of the 1LTE-Lc card.

Technical Specifications

Table 6-356 lists the technical specifications of a 1LTE-Lc card.

Table 6-356 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.)● Maximum power consumption: 7.3 W● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-357 provides 1LTE-Lc card ordering information.

Table 6-357 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310VQS	AR-1LTE-Lc-S	1LTE-Lc	TDD/FDD/TD-SCDMA/HSPA+ interface card

6.9 E&M Card

6.9.1 6E&M (6-Port E&M (RJ45) Trunk Interface Card)

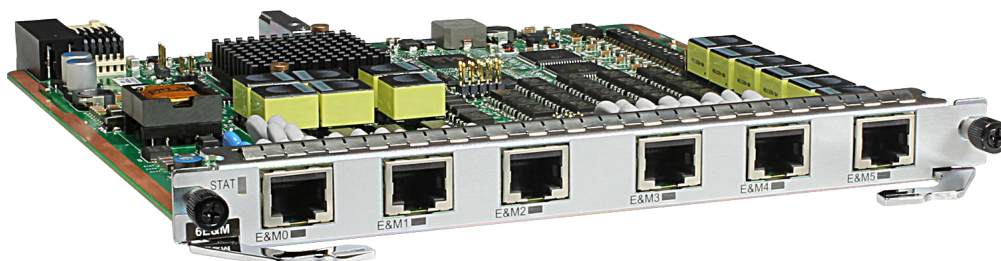
Card Overview

The 6E&M provides six E&M interfaces and is used for analog trunk access in small and medium-sized enterprises or enterprise branches, providing low-speed data switching and audio transmission.

A 6E&M card can be installed in a WSIC slot of a router.

Figure 6-154 shows the appearance of a 6E&M card.

Figure 6-154 6E&M card appearance



Version Mapping

Table 6-358 lists the device models and software versions supporting the 6E&M.

Table 6-358 Version mapping

Card Name	Device Series	Device Model
6E&M NOTE This card is supported in V200R005C20 and later versions.	AR2200 series	AR2204XE
		AR2204XE-DC
		NOTE This card is supported in V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
	AR2240C	
	AR3200 series	All models in this series

Functions and Features

Table 6-359 describes the functions and features of a 6E&M card.

Table 6-359 Functions and features

Function and Feature	Description
Basic functions	Provides the E&M trunk function.

Function and Feature	Description
	Provides six interfaces to receive and process 64 kbit/s signals.
	Supports E&M signaling of Bell1, Bell2, Bell3, Bell4, and Bell5.
Alarm and performance	Provides abundant alarms and performance logs for system maintenance and fault location.

Panel

Figure 6-155 shows the indicators on a 6E&M card, and **Table 6-360** describes the indicator states and meanings.

Figure 6-155 Indicators on a 6E&M card

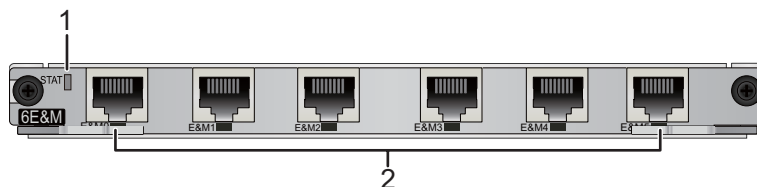
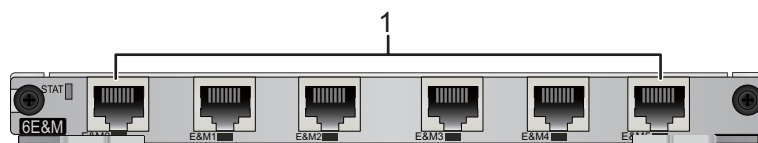


Table 6-360 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	E&M interface indicator	Green	Steady on: The line on the interface is occupied. Blinking: The line is being established on the interface. Off: The line on the interface is idle.

Figure 6-156 shows the interfaces on a 6E&M card.

Figure 6-156 Interfaces on a 6E&M card



1. Six E&M interfaces

E&M interface

An E&M interface sends and receives E&M signals. It can be connected to a PBX to provide audio transmission functions. **Table 6-361** describes the attributes of an E&M interface.

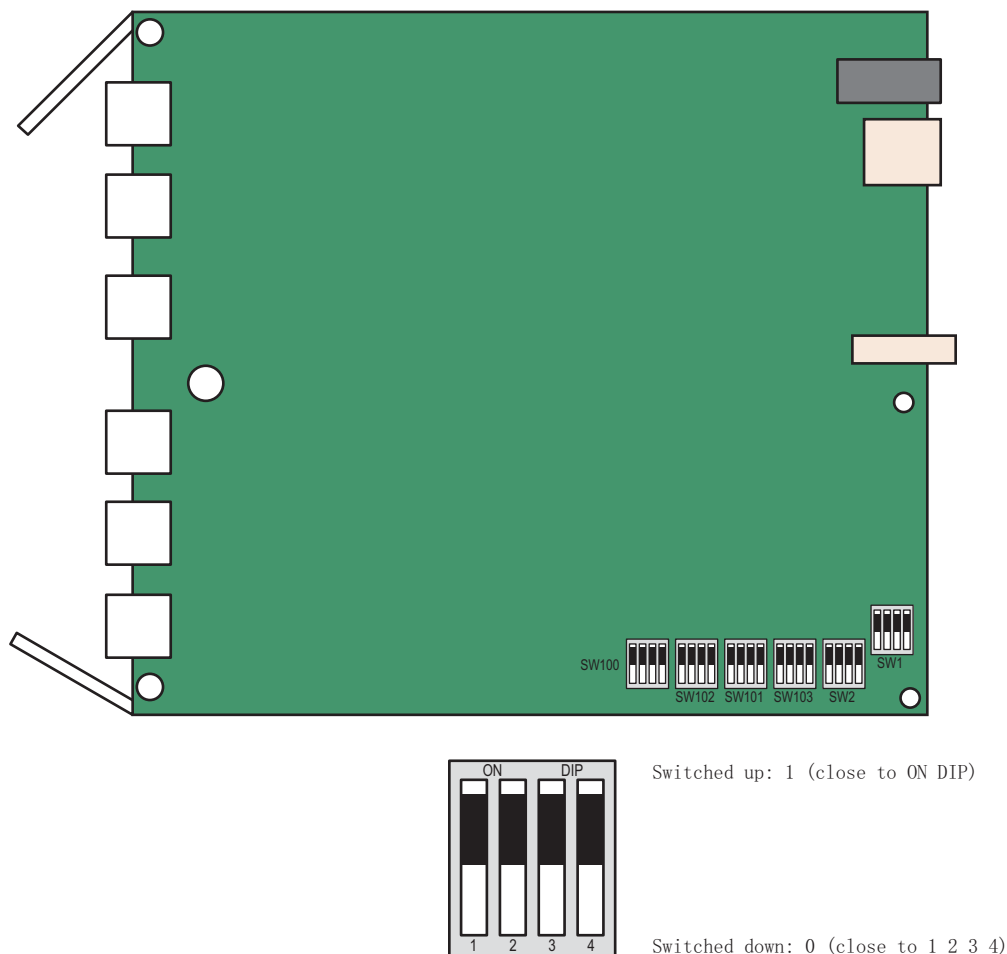
Table 6-361 Attributes of an E&M interface

Attribute	Description
Connector type	RJ45
Standards compliance	G.712
Interface rate	64 kbit/s
Protocols	<ul style="list-style-type: none">● Routing mode: Bell 1, Bell 2, Bell 3, Bell 4, and Bell 5● PBX mode: Bell 5
Interface frequency	201 Hz to 3513 Hz
Cable type	7.16 E&M Trunk Cable

DIP Switch Usage Instructions

Interfaces on a 6E&M card can work normally only after you turn the corresponding dual in-line package switches (DIP switches) to 2-wire or 4-wire mode. **Figure 6-157** shows the DIP switches on a 6E&M card.

Figure 6-157 DIP switches



NOTE

- Use tweezers to operate the DIP switches.
- On a DIP switch, the position close to **ON DIP** (top) represents **1**, and the position close to **1 2 3 4** (bottom) represents **0**.

After you turn the DIP switch of an E&M interface to 2-wire or 4-wire mode, the E&M interface can work normally. [Table 6-362](#) describes the DIP switches on a 6E&M card.

Table 6-362 Description of DIP switches

Interface Number	DIP Switch	Lines	Description	Factory Setting
E&M0	SW101	<ul style="list-style-type: none"> ● 1001: 2-wire mode ● 0110: 4-wire mode 	<ul style="list-style-type: none"> ● 2-wire mode: bars 1 and 4 are in the ON position; bars 2 and 3 are in the 	4-wire mode
E&M1	SW100			
E&M2	SW102			
E&M3	SW103			
E&M4	SW1			

Interface Number	DIP Switch	Lines	Description	Factory Setting
E&M5	SW2		OFF position. ● 4-wire mode: bars 1 and 4 are in the OFF position; bars 2 and 3 are in the ON position.	

Technical Specifications

Table 6-363 lists the technical specifications of a 6E&M card.

Table 6-363 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in) ● Maximum power consumption: 21 W ● Weight: 0.6 kg
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-364 provides 6E&M card ordering information.

Table 6-364 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022CPR	AR-6EM-W	6E&M	6-port E&M-RJ45 trunk interface card

6.10 POS/CPOS Card

6.10.1 1CPOS-155M (1-Port 155M Channelized POS Optical Interface Card)

Card Overview

The 1CPOS-155M is a WAN aggregation card. An enterprise branch connects to the SDH through an E1 line, and the enterprise headquarters connects to the E1 line through the 1CPOS. By doing this, the enterprise headquarters and branches are connected through a WAN.

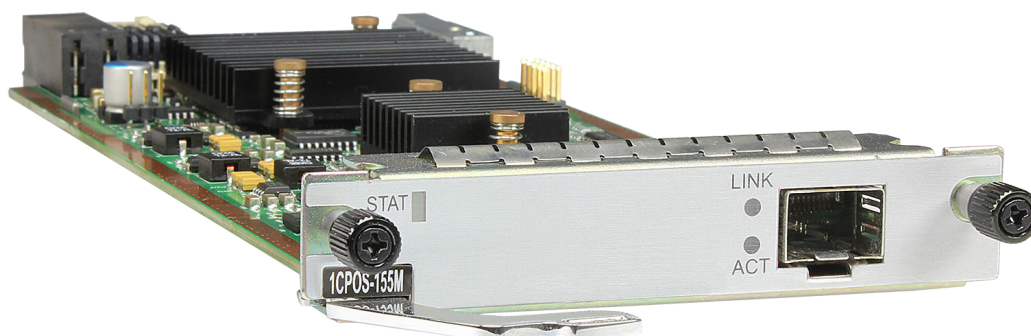
A 1CPOS-155M card can be installed in a SIC slot of a router.

NOTE

The CPOS card does not support the unchannelized mode and cannot interoperate with other POS cards.

Figure 6-158 shows the appearance of a 1CPOS-155M card.

Figure 6-158 1CPOS-155M card appearance



Version Mapping

Table 6-365 lists the device models and software versions supporting the 1CPOS-155M.

Table 6-365 Version mapping

Card Name	Device Series	Device Model
1CPOS-155M NOTE This card is supported in V200R001C01 and later versions.	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-366 describes the functions and features of a 1CPOS-155M card.

Table 6-366 Functions and features

Function and Feature	Description
One channelized POS interface	Supports 63 E1 channels or 84 T1 channels.
	Provides a bandwidth of up to 155 Mbit/s.
Basic functions	Connects to the SDH to transmit services on multiple E1/T1 lines of branches.
	Flexibly selects the bandwidth by bundling E1 channels and reduces enterprise operation costs.
Working mode	Works in channelized or non-channelized E1/T1 mode.
Protocols	Supports HDLC, PPP, and FR and a maximum of 1024 HDLC channels.

Panel

Figure 6-159 shows the indicators on a 1CPOS-155M card, and **Table 6-367** describes the indicator states and meanings.

Figure 6-159 Indicators on a 1CPOS-155M card

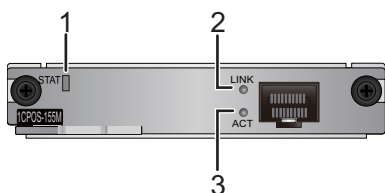
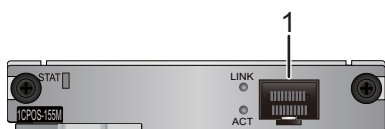


Table 6-367 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
		Off	Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
		Off	Off: No data is being transmitted or received.

Figure 6-160 shows the interfaces on a 1CPOS-155M card.

Figure 6-160 Interfaces on a 1CPOS-155M card



1. One Channelized POS interface

Channelized POS interface

A channelized POS interface transmits optical signals at a rate higher than 155 Mbit/s. [Table 6-368](#) lists attributes of the channelized POS interface.

Table 6-368 Attributes of the channelized POS interface

Attribute	Specification
Connector type	LC/PC

Attribute	Specification
Optical interface attributes	The optical interface attributes depend on the optical modules used. For details, see 8.4.1 SFP-FE-SX-MM1310 , 8.4.2 eSFP-FE-LX-SM1310 , 8.4.3 S-SFP-FE-LH40-SM1310 , and 8.4.4 S-SFP-FE-LH80-SM1550 .
Standards compliance	<ul style="list-style-type: none"> ● ITUT G.707 SONET OC-3 ● ITUT G.707 SDH STM-1
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

[Table 6-369](#) lists the technical specifications of a 1CPOS-155M card.

Table 6-369 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 11.9 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

NOTE

The 2E1/T1-M-W is no longer sold since June 30, 2014.

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-370](#) provides 1CPOS-155M card ordering information.

Table 6-370 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021AQU	AR0MSPC31 A00	1CPOS-155M	1-Port 155M Channelized POS Optical Interface Card

6.10.2 1CPOS-155M-W (1-Port Channelized POS Interface Card)

Card Overview

The 1CPOS-155M-W is a WAN aggregation card. An enterprise branch connects to the SDH through an E1 line, and the enterprise headquarters connects to the E1 line through the 1CPOS. By doing this, the enterprise headquarters and branch are connected through a WAN.

A 1CPOS-155M-W card can be installed in a WSIC slot of a router.

Figure 6-161 shows the appearance of a 1CPOS-155M-W card.

Figure 6-161 1CPOS-155M-W card appearance



Version Mapping

Table 6-371 lists the device models and software versions supporting the 1CPOS-155M-W.

Table 6-371 Version mapping

Card Name	Device Series	Device Model
1CPOS-155M-W NOTE This card is supported in V200R003C00 and later versions.	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
		AR2220
		AR2220E

Card Name	Device Series	Device Model
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-372 describes the functions and features of a 1CPOS-155M-W card.

Table 6-372 Functions and features

Function and Feature	Description
One channelized POS interface	Supports 63 E1 channels or 84 T1 channels.
	Provides a bandwidth of up to 155 Mbit/s.
Basic functions	Connects to the SDH to transmit services on multiple E1/T1 lines of branches.
	Flexibly selects the bandwidth by bundling E1 channels and reduces enterprise operation costs.
Working mode	Works in channelized or non-channelized E1/T1 mode.
Protocols	Supports HDLC, PPP and FR and a maximum of 1024 HDLC channels.

Panel

Figure 6-162 shows the indicators on a 1CPOS-155M-W card, and **Table 6-373** describes the indicator states and meanings.

Figure 6-162 Indicators on a 1CPOS-155M-W card



Table 6-373 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
		Off	Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
		Off	Off: No data is being transmitted or received.

Figure 6-163 shows the interfaces on a 1CPOS-155M-W card.

Figure 6-163 Interfaces on a 1CPOS-155M-W card



1. One Channelized POS interface

Channelized POS interface

A channelized POS interface transmits optical signals at a rate higher than 155 Mbit/s. [Table 6-374](#) lists attributes of the channelized POS interface.

Table 6-374 Attributes of the channelized POS interface

Attribute	Specification
Connector type	LC/PC

Attribute	Specification
Optical interface attributes	The optical interface attributes depend on the optical modules used. For details, see 8.4.1 SFP-FE-SX-MM1310 , 8.4.2 eSFP-FE-LX-SM1310 , 8.4.3 S-SFP-FE-LH40-SM1310 , and 8.4.4 S-SFP-FE-LH80-SM1550 .
Standards compliance	<ul style="list-style-type: none"> ● ITUT G.707 SONET OC-3 ● ITUT G.707 SDH STM-1
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

[Table 6-375](#) lists the technical specifications of a 1CPOS-155M-W card.

Table 6-375 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in) ● Maximum power consumption: 11.9 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (- 40°F to +158°F) ● Operating altitude: 0 to 4000 m (13123.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-376](#) provides 1CPOS-155M-W card ordering information.

Table 6-376 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021WWY	AR-1CSTM1-W	1CPOS-155M-W	1-Port 155M Channelized POS Optical Interface Card (WSIC)

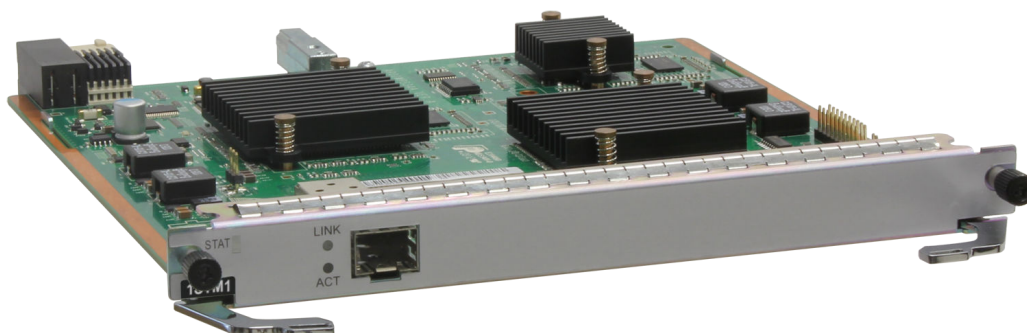
6.10.3 1STM1 (1-Port 155M Packet over SDH/SONET Optical Interface Card)

Card Overview

The 1STM1 is a high-speed MAN and WAN access module that provides 155 Mbit/s connection to a synchronous digital hierarchy (SDH) network. A 1STM1 card can be installed in a WSIC slot of a router.

Figure 6-164 shows the appearance of a 1STM1 card.

Figure 6-164 1STM1 card appearance



Version Mapping

Table 6-377 lists the device models and software versions supporting the 1STM1.

Table 6-377 Version mapping

Card Name	Device Series	Device Model
1STM1 NOTE This card is supported in V200R003C00 and later versions.	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC NOTE This card is supported in V300R019C00 and later versions.

Card Name	Device Series	Device Model
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-378 describes the functions and features of a 1STM1 card.

Table 6-378 Functions and features

Function and Feature	Description
Basic function	Provides 155 Mbit/s bandwidth for SDH network access.
	Provides high-speed connection to an SDH network to complete efficient, secure IP data transmission between enterprise headquarters and branches.
Protocols	Complies with SDH or synchronous optical network (SONET).
	Supports link-layer protocols HDLC, PPP, and FR.

Panel

Figure 6-165 shows the indicators on a 1STM1 card, and **Table 6-379** describes the indicator states and meanings.

Figure 6-165 Indicators on a 1STM1 card

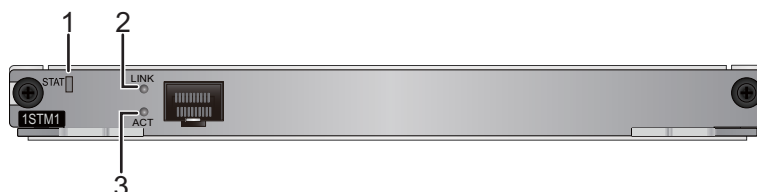


Table 6-379 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting. Steady on: The card has been powered on but the software is not running.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Orange	Steady on: The card is resent in the chassis.
2 and 3	SFP interface indicators: ● 2: LINK indicator ● 3: ACT indicator	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.

Figure 6-166 shows the interface on a 1STM1 card.

Figure 6-166 Interface on a 1STM1 card



1. One POS optical interface

POS optical interface

A Packet over SONET/SDH (POS) optical interface provides reliable a high-speed point-to-point IP data connection. **Table 6-380** lists attributes of a POS optical interface.

Table 6-380 POS optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical attributes	Depending on the optical module used. For details, see 8.4.1 SFP-FE-SX-MM1310 , 8.4.2 eSFP-FE-LX-SM1310 , 8.4.3 S-SFP-FE-LH40-SM1310 , and 8.4.4 S-SFP-FE-LH80-SM1550 .
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

Table 6-381 lists the technical specifications of a 1STM1 card.

Table 6-381 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 12 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-382 provides 1STM1 card ordering information.

Table 6-382 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RJW	AR-1STM1-W	1STM1	1-Port 155M Packet over SDH/Sonet Optical Interface Card

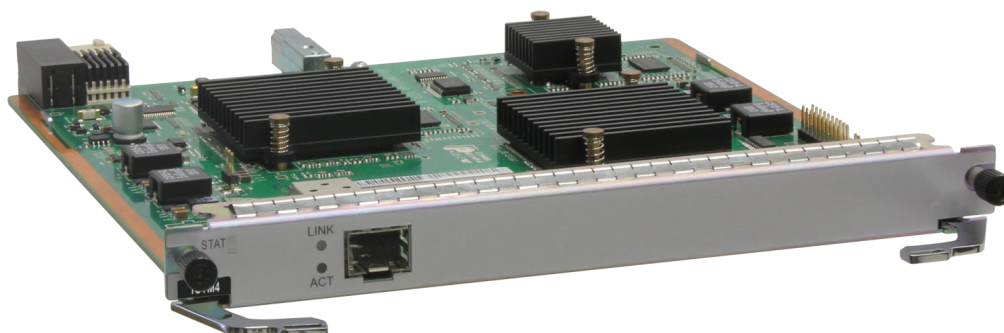
6.10.4 1STM4 (1-Port 622M Packet over SDH/SONET Optical Interface Card)

Card Overview

The 1STM4 is a high-speed MAN and WAN access module that provides 622 Mbit/s connection to a synchronous digital hierarchy (SDH) network. A 1STM4 card can be installed in a WSIC slot of a router.

Figure 6-167 shows the appearance of a 1STM4 card.

Figure 6-167 1STM4 card appearance



Version Mapping

Table 6-383 lists the device models and software versions supporting the 1STM4.

Table 6-383 Version mapping

Card Name	Device Series	Device Model
1STM4 NOTE This card is supported in V200R003C00 and later versions.	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC NOTE This card is supported in V300R019C00 and later versions.

Card Name	Device Series	Device Model
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-384 describes the functions and features of a 1STM4 card.

Table 6-384 Functions and features

Function and Feature	Description
Basic function	Provides 622 Mbit/s bandwidth for SDH network access.
	Provides high-speed connection to an SDH network to complete efficient, secure IP data transmission between enterprise headquarters and branches.
Protocols	Complies with SDH or synchronous optical network (SONET).
	Supports link-layer protocols HDLC, PPP, and FR.

Panel

Figure 6-168 shows the indicators on a 1STM4 card, and **Table 6-385** describes the indicator states and meanings.

Figure 6-168 Indicators on a 1STM4 card

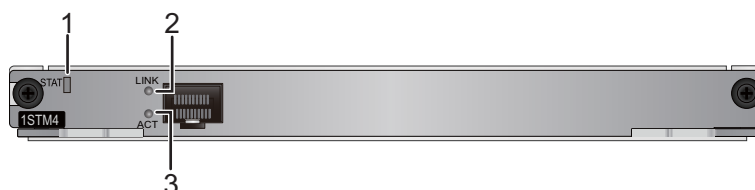


Table 6-385 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting. Steady on: The card has been powered on but the software is not running.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Orange	Steady on: The card is resent in the chassis.
2 and 3	SFP interface indicators: ● 2: LINK indicator ● 3: ACT indicator	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
			ACT indicator off: No data is being transmitted or received on the interface.

Figure 6-169 shows the interfaces on a 1STM4 card.

Figure 6-169 Interface on a 1STM4 card



1. One POS optical interface

POS optical interface

A Packet over SONET/SDH (POS) optical interface provides reliable a high-speed point-to-point IP data connection. **Table 6-386** lists attributes of a POS optical interface.

Table 6-386 POS optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical attributes	Depending on the optical module used. For details, see 8.9 622M eSFP Optical Modules .
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

[Table 6-387](#) lists the technical specifications of a 1STM4 card.

Table 6-387 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 12 W● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-388](#) provides 1STM4 card ordering information.

Table 6-388 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021XHD	AR-1STM4-W	1STM4	1-Port 622M Packet over SDH/Sonet Optical Interface Card

6.10.5 4STM1 (4-Port 155M Packet over SDH/SONET Optical Interface Card)

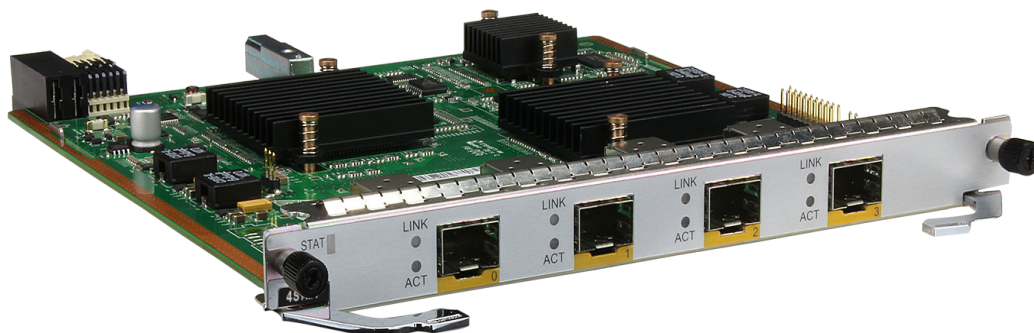
Card Overview

The 4STM1 is a high-speed WAN access module. Normally, a 4STM1 card provides 155 Mbit/s bandwidth on all the four interfaces for connection to a synchronous digital hierarchy (SDH) network. You can set the bandwidth on interface 0 to 622 Mbit/s by disabling interfaces 1-3. 4STM1 cards are often used for MAN or WAN connection.

A 4STM1 card can be installed in a WSIC slot of a router.

Figure 6-170 shows the appearance of a 4STM1 card.

Figure 6-170 4STM1 card appearance



Version Mapping

Table 6-389 lists the device models and software versions supporting the 4STM1.

Table 6-389 Version mapping

Card Name	Device Series	Device Model
4STM1	AR2200 series	AR2204
		AR2204XE

Card Name	Device Series	Device Model
NOTE This card is supported in V200R005C20, V200R006C10, and later versions.		AR2204XE-DC NOTE This card is supported in AR V300R019C00 and later versions.
		AR2220
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-390 describes the functions and features of a 4STM1 card.

Table 6-390 Functions and features

Function and Feature	Description
Basic functions	Provides high-speed connection to an SDH network to complete high-efficient, secure IP data transmission between enterprise branches.
	Supports transmission rates of 155 Mbit/s and 622 Mbit/s for you to select flexibly. NOTE You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.
Protocol	Conforms to synchronous digital hierarchy (SDH) or synchronous optical network (SONET) standards.
	Supports link layer protocols High-Level Data Link Control (HDLC), Point-to-Point Protocol (PPP), and Frame Relay (FR).

Panel

Figure 6-171 shows the indicators on a 4STM1 card, and **Table 6-391** describes the indicator states and meanings.

Figure 6-171 Indicators on a 4STM1 card

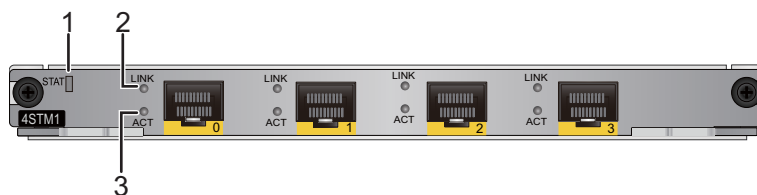
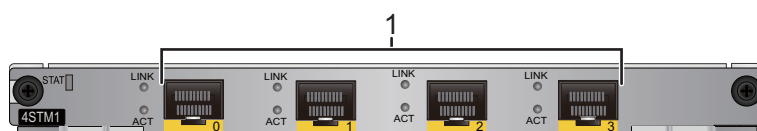


Table 6-391 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting. Steady on: The card has been powered on, but the software is not running.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Orange	The card has been properly installed and detected by the system.
2 and 3	SFP interface indicators: ● 2: LINK indicator ● 3: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Figure 6-172 shows the interfaces on a 4STM1 card.

Figure 6-172 Interfaces on a 4STM1 card



1. Four 155M POS optical interfaces

NOTE

You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.

POS optical interface

A Packet over SONET/SDH (POS) optical interface provides reliable a high-speed point-to-point IP data connection. [Table 6-392](#) lists attributes of a POS optical interface.

Table 6-392 POS optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical attributes	Depending on the optical module used. For details, see 8.4.1 SFP-FE-SX-MM1310 , 8.4.2 eSFP-FE-LX-SM1310 , 8.4.3 S-SFP-FE-LH40-SM1310 , and 8.4.4 S-SFP-FE-LH80-SM1550 .
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

[Table 6-393](#) lists the technical specifications of a 4STM1 card.

Table 6-393 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 16.6 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-394 provides 4STM1 card ordering information.

Table 6-394 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022STP	AR-4STM1-W	4STM1	4-Port 155M Packet over SDH/SONET Optical Interface Card

6.11 ISDN S/T WAN Card

6.11.1 1BST (1-Port-ISDN S/T WAN Interface Card)

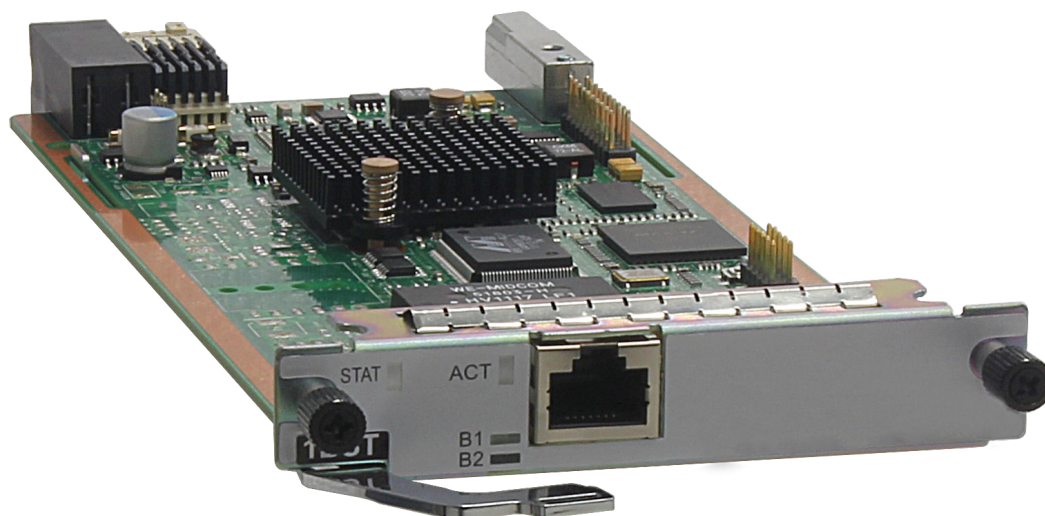
Card Overview

The 1BST is an ISDN access module that connects the enterprise headquarters and branches over the ISDN.

A 1BST card can be installed in a SIC slot of a router.

Figure 6-173 shows the appearance of a 1BST card.

Figure 6-173 1BST card appearance



Version Mapping

Table 6-395 lists the device models and software versions supporting the 1BST.

Table 6-395 Version mapping

Card Name	Device Series	Device Model
1BST NOTE This card is supported in V200R001C01 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-396 describes the functions and features of a 1BST card.

Table 6-396 Functions and features

Function and Feature	Description
One ISDN BRI interface	Connects to the ISDN through a Network Termination 1 (NT1) device.
	Provides 64 kbit/s or 128 kbit/s connections.
Basic functions	Provides the TE mode to transmit data services.
	Allows you to connect to the ISDN through the BRI leased line or dialup, protecting investments.
Protocols supported	Supports PPP, FR, and IP.

Panel

Figure 6-174 shows the indicators on a 1BST card, and **Table 6-397** describes the indicator states and meanings.

Figure 6-174 Indicators on a 1BST card

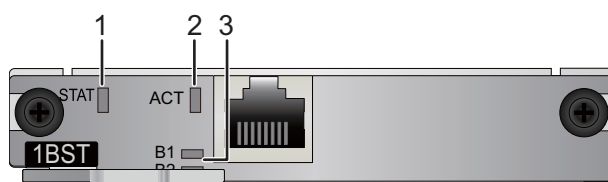
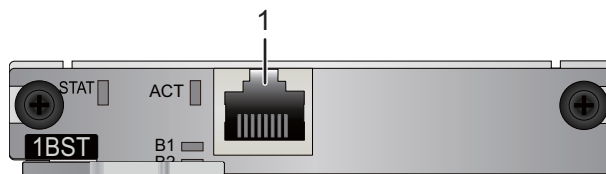


Table 6-397 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT (interface status indicator)	Green	Steady on: The ISDN channel has been activated.
		Off	Off: The ISDN channel is inactive.
3	B1/B2	Green	Blinking: The B1/B2 channel is used.
		Off	Off: The B1/B2 channel is idle.

Figure 6-175 shows the interfaces on a 1BST card.

Figure 6-175 Interfaces on a 1BST card



1. One ISDN S/T interface

ISDN S/T interface

The ISDN S/T interface connects to the ISDN to transmit data services. [Table 6-398](#) lists attributes of the ISDN S/T interface.

Table 6-398 Attributes of the ISDN S/T interface

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430, Q.921, Q.931
Transmission rate	192 kbit/s
Bandwidth	0 to 100 MHz
Cable type	7.12.1 Standard ISDN S/T Cable

Technical Specifications

[Table 6-399](#) lists the technical specifications of a 1BST card.

Table 6-399 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7.4 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-400](#) provides 1BST card ordering information.

Table 6-400 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YKE	AR0MSDS1X A00	1BST	1-Port ISDN S/T WAN Interface Card

6.12 Voice Card

6.12.1 2BST (2-Port ISDN S/T Voice Interface Card)

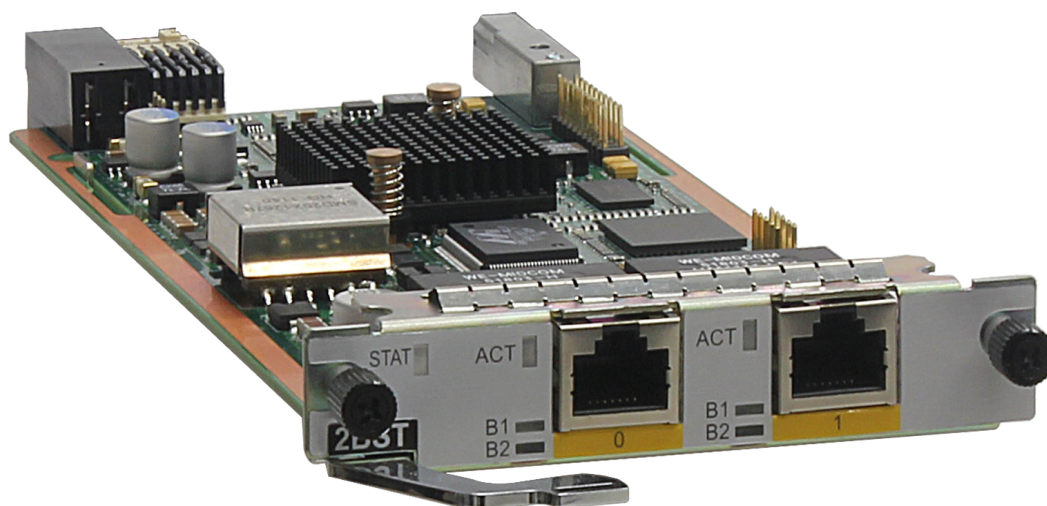
Card Overview

The 2BST is a voice service module for a router and can connect to an Integrated Services Digital Network (ISDN) network to enable voice communication between enterprise users and external ISDN users.

A 2BST card can be installed in a SIC slot of a router.

Figure 6-176 shows the appearance of a 2BST card.

Figure 6-176 2BST card appearance



Version Mapping

Table 6-401 lists the device models and software versions supporting the 2BST.

Table 6-401 Version mapping

Card Name	Device Series	Device Model
2BST NOTE This card is supported in V200R001C01 and later versions.	AR1200 series	AR1220V
		AR1220VW
		AR1220EV
		AR1220EVW

Card Name	Device Series	Device Model
	AR2200 series	AR2204
		AR2220
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-402 describes the functions and features of a 2BST card.

Table 6-402 Functions and features

Function and Feature	Description
Basic function	Works in network termination (NT) mode to support voice services.
	Connects to an ISDN network.
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Link backup	Uses an ISDN network as a backup of the VoIP network to ensure reliable voice communication.
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 2BST cards. Use of the 2BST cards protects previous investment of the enterprise and enables a convenient network upgrade.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Panel

Figure 6-177 shows the indicators on a 2BST card, and **Table 6-403** describes the indicator states and meanings.

Figure 6-177 Indicators on a 2BST card

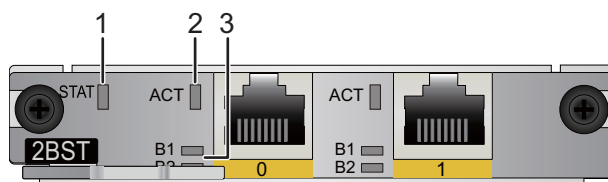
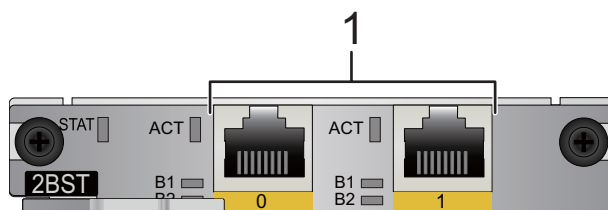


Table 6-403 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (interface status indicator)	Green	Steady on: The ISDN channel is active.
		Off	The ISDN channel is inactive.
3	B1/B2	Green	Blinking: The ISDN B1/B2 channel is being occupied.
		Off	The ISDN B1/B2 channel is idle.

Figure 6-178 shows the interfaces on a 2BST card.

Figure 6-178 Interfaces on a 2BST card



1. Two ISDN S/T interfaces

ISDN S/T interface

An ISDN S/T interface can connect to an integrated services digital network (ISDN) to provide voice services. [Table 6-404](#) lists attributes of an ISDN S/T interface.

Table 6-404 ISDN S/T interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430 Q.921 Q.931
Rate	192 kbit/s
Bandwidth	0 MHz to 100 MHz
Cable type	7.12 ISDN Cable

Technical Specifications

[Table 6-405](#) lists the technical specifications of a 2BST card.

Table 6-405 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 14.2 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-406](#) provides 2BST card ordering information.

Table 6-406 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310FVM	AR0MSVS2X A00	2BST	2-Port ISDN S/T Voice Interface Module

6.12.2 2BST-W (2-Port ISDN S/T Voice Interface Card - WSIC)

Card Overview

The 2BST-W is a voice service module for a router and can connect to an Integrated Services Digital Network (ISDN) network to enable voice communication between enterprise users and external ISDN users.

A 2BST-W card can be installed in a WSIC slot of a router.

Figure 6-179 shows the appearance of a 2BST-W card.

Figure 6-179 2BST-W card appearance



Version Mapping

Table 6-407 lists the device models and software versions supporting the 2BST-W.

Table 6-407 Version mapping

Card Name	Device Series	Device Model
2BST-W NOTE This card is supported in V200R002C00 and later versions.	AR1200 series	AR1220V
		AR1220VW
		AR1220EV
		AR1220EVW
	AR2200 series	AR2204

Card Name	Device Series	Device Model
		AR2220
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-408 describes the functions and features of a 2BST-W card.

Table 6-408 Functions and features

Function and Feature	Description
Basic function	Works in network termination (NT) mode to support voice services.
	Connects to an ISDN network.
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Link backup	Uses an ISDN network as a backup of the VoIP network to ensure reliable voice communication.
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 2BST-W cards. Use of the 2BST-W cards protects previous investment of the enterprise and enables a convenient network upgrade.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Panel

Figure 6-180 shows the indicators on a 2BST-W card, and **Table 6-409** describes the indicator states and meanings.

Figure 6-180 Indicators on a 2BST-W card

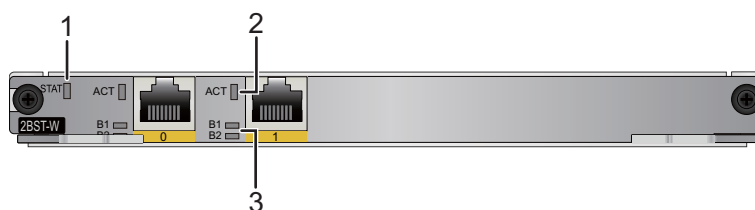


Table 6-409 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (interface status indicator)	Green	Steady on: The ISDN channel is active.
		Off	The ISDN channel is inactive.
3	B1/B2	Green	Blinking: The ISDN B1/B2 channel is being occupied.
		Off	The ISDN B1/B2 channel is idle.

Figure 6-181 shows the interfaces on a 2BST-W card.

Figure 6-181 Interfaces on a 2BST-W card



1. Two ISDN S/T interfaces

ISDN S/T interface

An ISDN S/T interface can connect to an integrated services digital network (ISDN) to provide voice services. **Table 6-410** lists attributes of an ISDN S/T interface.

Table 6-410 ISDN S/T interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430 Q.921 Q.931
Rate	192 kbit/s
Bandwidth	0 MHz to 100 MHz
Cable type	7.12 ISDN Cable

Technical Specifications

[Table 6-411](#) lists the technical specifications of a 2BST-W card.

Table 6-411 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 14.2 W● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

 **NOTE**

The 2BST-W is no longer sold since December 31, 2013.

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-412](#) provides 2BST-W card ordering information.

Table 6-412 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310HVC	AR0MWVS2 XA00	2BST-W	2-Port ISDN S/T Voice Interface Card - WSIC

6.12.3 4FXS1FXO (4-Port FXS + 1-Port FXO Voice Interface Card)

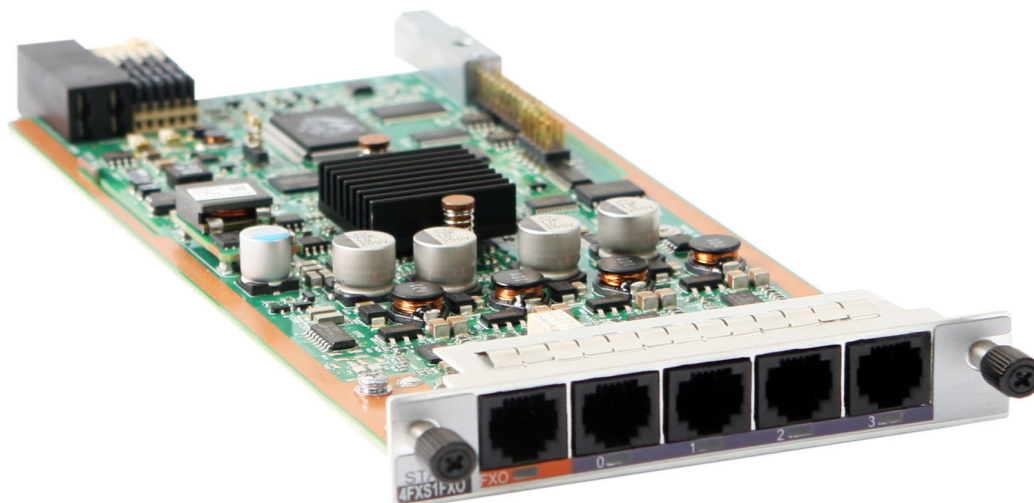
Card Overview

The 4FXS1FXO is a voice access module. It provides four FXS interfaces and one FXO interface that can connect to the PSTN and traditional telephone devices such as TDM PBXs, analog phones, and fax machines to transmit internal and external voice services.

A 4FXS1FXO card can be installed in a SIC slot of a router.

Figure 6-182 shows the appearance of a 4FXS1FXO card.

Figure 6-182 4FXS1FXO card appearance



As shown in **Figure 6-183**, enterprise users use FXS interfaces to transmit voice services. The FXO interface is used to transmit voice services exchanged between enterprise users and external users.

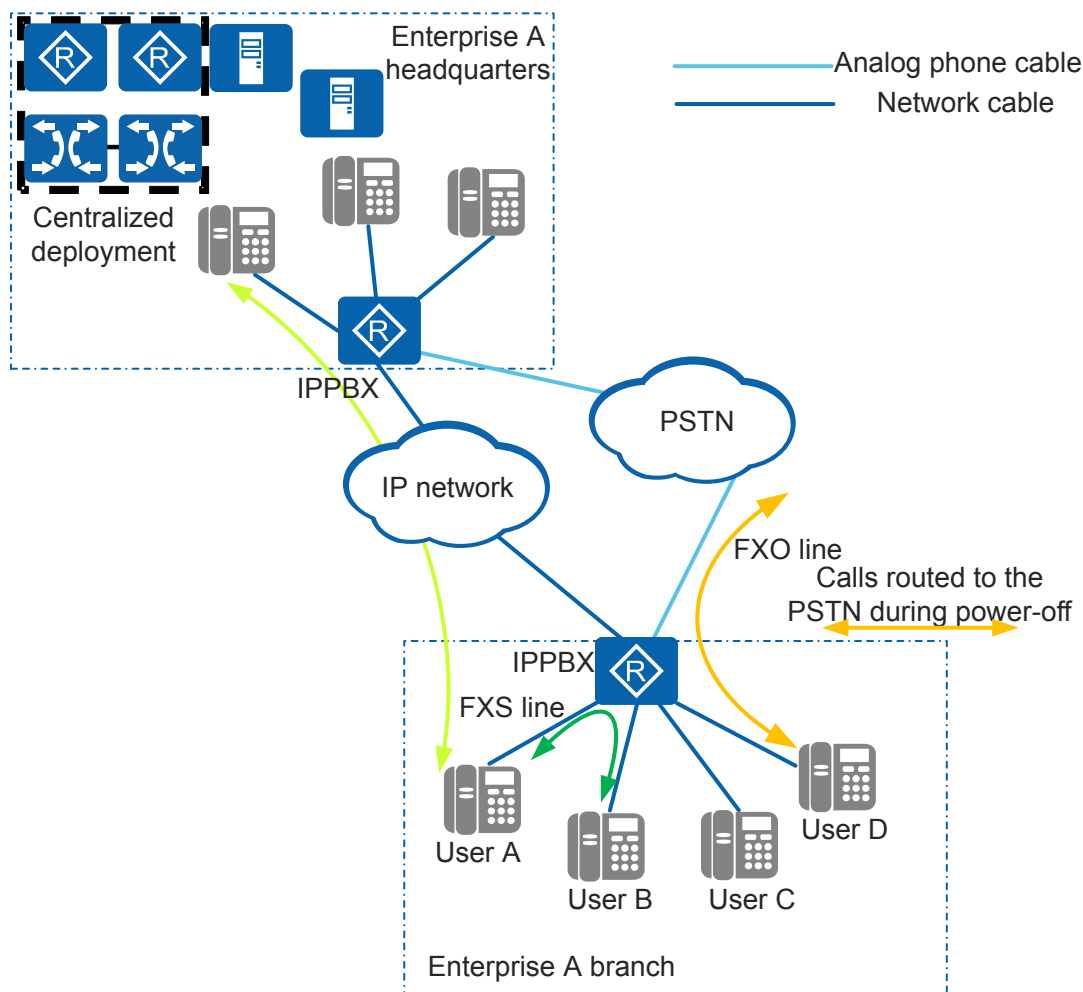
FXS interfaces connect to analog phones, fax machines, and branch IP PBX to transmit voice services exchanged between enterprise branch users and between the enterprise headquarters and branch.

The FXO interface connects to the PSTN. The link of the FXO interface can function as the branch egress and best-effort link of the VoIP network to transmit voice services exchanged between enterprise users and external users and to implement link backup.

Power outage survival and BEST:

- Power outage survival: When the router (IP PBX) is powered off, all IP phones are unavailable. In this case, power outage survival is enabled. Then the router connects the FXO line to the first FXS interface to ensure nonstop service communication.
- BEST: When a fault occurs on the WAN-side IP network, BEST configured on the router ensures voice communication.

Figure 6-183 4FXS1FXO card application



Version Mapping

Table 6-413 lists the device models and software versions supporting the 4FXS1FXO.

Table 6-413 Version mapping

Card Name	Device Series	Device Model
4FXS1FXO	AR1200 series	AR1220V

Card Name	Device Series	Device Model
NOTE This card is supported in V200R001C00 and later versions.		AR1220VW
		AR1220EV
		AR1220EVW
	AR2200 series	AR2204
		AR2220
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-414 describes the functions and features of a 4FXS1FXO card.

Table 6-414 Functions and features

Function and Feature	Description
Basic functions	Connects to common analog phones, IP phones, fax machines, and TDM PBXs.
	Connects to the PSTN.
Power outage survival	Implements power outage survival and ensures nonstop service transmission when the enterprise egress transmission channel becomes faulty.
BEST	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Link backup	Uses a PSTN network as a backup of the IP network to ensure reliable voice communication.
Smooth upgrade to VoIP	Implements the VoIP function on an enterprise's IP network by simply deploying 4FXS1FXO cards. This protects investments and facilitates expansion.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Extensive specialized services	Provides specialized services such as call center, secretary, wake-up, blacklist and whitelist, three-party conference, and ONLY. These services make daily work more convenient, secure, and efficient.

Function and Feature	Description
Diagnosis and maintenance	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Panel

Figure 6-184 shows the indicators on a 4FXS1FXO card, and **Table 6-415** describes the indicator states and meanings.

Figure 6-184 Indicators on a 4FXS1FXO card

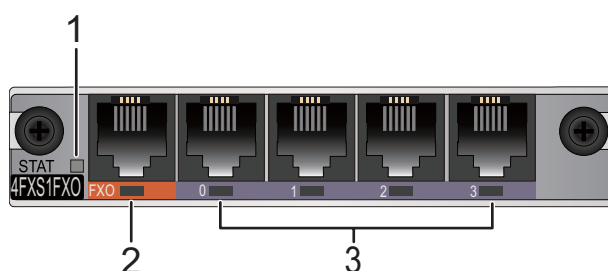
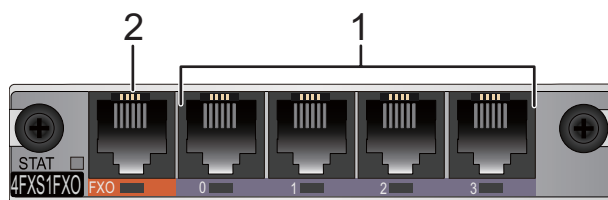


Table 6-415 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT (interface status indicator)	Green	Steady on: The FXO channel is being occupied by a call.
		Off	Off: The FXO channel is idle.
3	ACT (interface status indicator)	Green	Steady on: The FXS channel is being occupied by a call.
		Off	Off: The FXS channel is idle.

Figure 6-185 shows the interfaces on a 4FXS1FXO card.

Figure 6-185 Interfaces on a 4FXS1FXO card



1. Four FXS interfaces (RJ11)	2. One FXO interface (RJ11)
-------------------------------	-----------------------------

FXS interface (RJ11)

An FXS interface is a simulated subscriber line interface and provides access to analog phones and fax machines. [Table 6-416](#) lists attributes of the FXS interface.

Table 6-416 Attributes of the FXS (RJ11) interface

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for FXS interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	<ul style="list-style-type: none"> ● DTMF in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

FXO interface (RJ11)

An FXO interface is a loop trunk interface that can connect to the PSTN. [Table 6-417](#) lists attributes of the FXO interface.

Table 6-417 Attributes of the FXO (RJ11) interface

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	ITU Q.552 for FXO interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	<ul style="list-style-type: none"> ● DTMF in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

Table 6-418 lists the technical specifications of a 4FXS1FXO card.

Table 6-418 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 12.8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-419 provides 4FXS1FXO card ordering information.

Table 6-419 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020RMY	AR0MSVA4B 1A0	4FXS1FXO	4-Port FXS and 1-Port FXO Voice Interface Card

6.12.4 16FXS (16-Port FXS Voice Interface Card)

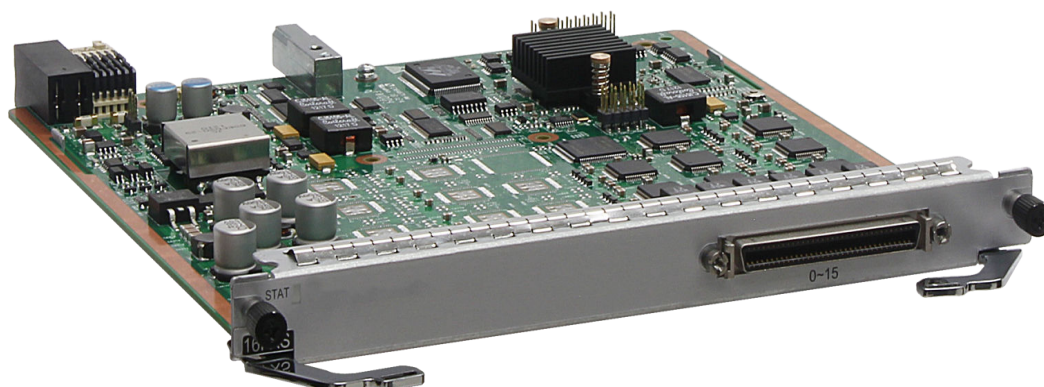
Card Overview

The 16FXS is a voice service module for a router and provides 16 FXS channels. Using 16FXS cards, an enterprise can connect a large number of analog voice terminals to its network.

A 16FXS card can be installed in a WSIC slot of a router.

Figure 6-186 shows the appearance of a 16FXS card.

Figure 6-186 16FXS card appearance



Version Mapping

Table 6-420 lists the device models and software versions supporting the 16FXS.

Table 6-420 Version mapping

Card Name	Device Series	Device Model
16FXS NOTE This card is supported in V200R002C02 and later versions.	AR1200 series	AR1220V
		AR1220VW
		AR1220EV
		AR1220EVW
	AR2200 series	AR2204
		AR2220
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-421 describes the functions and features of a 16FXS card.

Table 6-421 Functions and features

Function and Feature	Description
Basic function	Provides 16 FXS channels for analog voice terminals, delivering high-density voice services for an enterprise.
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 16FXS cards. Use of the 16FXS cards protects previous investment of the enterprise and enables a convenient network upgrade.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Extensive specialized services	Provides specialized services such as call center, secretary, wakeup, blacklist and whitelist, three-party conference, and one number link you (ONLY). These services make daily work more convenient, secure, and efficient.
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Panel

Figure 6-187 shows the indicators on a 16FXS card, and **Table 6-422** describes the indicator states and meanings.

Figure 6-187 Indicators on a 16FXS card



Table 6-422 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Figure 6-188 shows the interface on a 16FXS card.

Figure 6-188 Interface on a 16FXS card



- | |
|------------------------|
| 1. One 16FXS interface |
|------------------------|

16FXS interface

A 16FXS interface is a simulated subscriber line interface and provides 16 AT0 loop trunk channels for analog phones, fax machines, and telephone exchanges. **Table 6-423** lists attributes of a 16FXS interface.

Table 6-423 16FXS interface attributes

Attribute	Description
Connector type	DB68
Standards compliance	IEEE 1284C Interface as a 36 contact connector
Dialing mode	Dual-tone multifrequency system (DTMF) in accordance with GB3378 Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.2 16FXS Cable

Technical Specifications

Table 6-424 lists the technical specifications of a 16FXS card.

Table 6-424 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 37.2 W● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-425 provides 16FXS card ordering information.

Table 6-425 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021QSU	AR01WVAD XA	16FXS	16-Port FXS Voice Interface Card

6.12.5 32FXS (32-Port FXS Voice Interface Card)

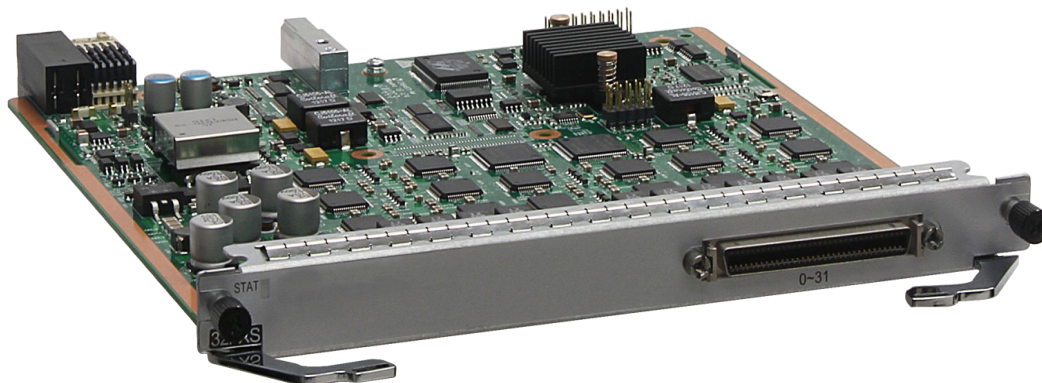
Card Overview

The 32FXS is a voice service module for a router and provides 32 FXS channels. Using 32FXS cards, an enterprise can connect a large number of analog voice terminals to its network.

A 32FXS card can be installed in a WSIC slot of a router.

Figure 6-189 shows the appearance of a 32FXS card.

Figure 6-189 32FXS card appearance



Version Mapping

Table 6-426 lists the device models and software versions supporting the 32FXS.

Table 6-426 Version mapping

Card Name	Device Series	Device Model
32FXS NOTE This card is supported in V200R002C02 and later versions.	AR2200 series	AR2204
		AR2220
		AR2220L
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-427 describes the functions and features of a 32FXS card.

Table 6-427 Functions and features

Function and Feature	Description
Basic function	Provides 32 FXS channels for analog voice terminals, delivering high-density voice services for an enterprise.
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.

Function and Feature	Description
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 32FXS cards. Use of the 32FXS cards protects previous investment of the enterprise and enables a convenient network upgrade.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Extensive specialized services	Provides specialized services such as call center, secretary, wakeup, blacklist and whitelist, three-party conference, and one number link you (ONLY). These services make daily work more convenient, secure, and efficient.
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Panel

Figure 6-190 shows the indicators on a 32FXS card, and **Table 6-428** describes the indicator states and meanings.

Figure 6-190 Indicators on a 32FXS card



Table 6-428 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Figure 6-191 shows the interface on a 32FXS card.

Figure 6-191 Interface on a 32FXS card



1. One 32FXS interface

32FXS interface

A 32FXS interface is a simulated subscriber line interface and provides 32 AT0 loop trunk channels for analog phones, fax machines, and telephone exchanges. **Table 6-429** lists attributes of a 32FXS interface.

Table 6-429 32FXS interface attributes

Attribute	Description
Connector type	DB68
Standards compliance	IEEE 1284C Interface as a 36 contact connector
Dialing mode	Dual-tone multifrequency system (DTMF) in accordance with GB3378 Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.1 32FXS Cable

Technical Specifications

Table 6-430 lists the technical specifications of a 32FXS card.

Table 6-430 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 37.2 W ● Weight: 0.6 kg (1.32 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-431 provides 32FXS card ordering information.

Table 6-431 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XJT	AR01WVAH XA	32FXS	32-Port FXS Voice Interface Card

6.12.6 4FXO (4-Port FXO Voice Interface Card)

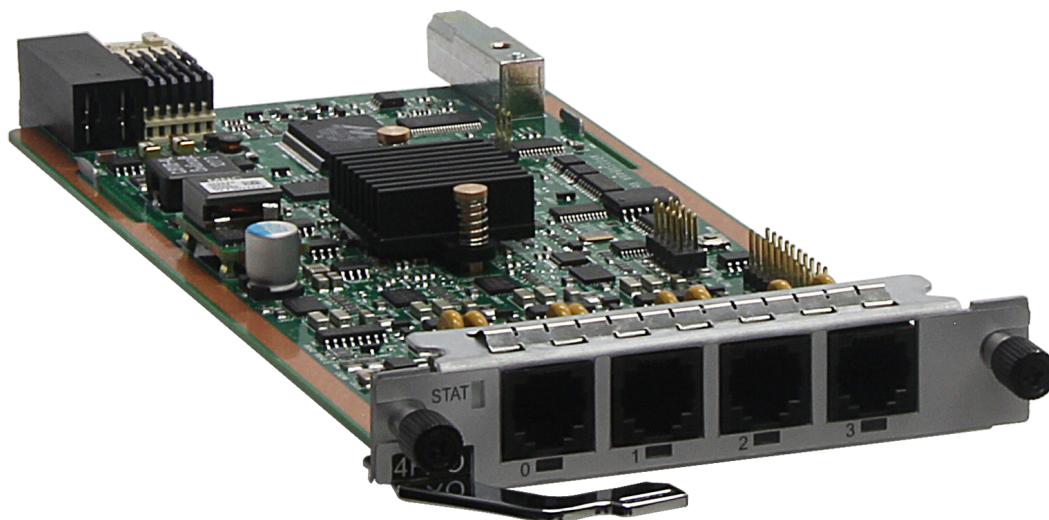
Card Overview

The 4FXO is a voice access module. It provides four FXO interfaces to connect to the PSTN to transmit voice services.

A 4FXO card can be installed in a SIC slot of a router.

Figure 6-192 shows the appearance of a 4FXO card.

Figure 6-192 4FXO card appearance



Version Mapping

Table 6-432 lists the device models and software versions supporting the 4FXO.

Table 6-432 Version mapping

Card Name	Device Series	Device Model
4FXO NOTE This card is supported in V200R002C02 and later versions.	AR1200 series	AR1220V
		AR1220VW
		AR1220EV
		AR1220EVW
	AR2200 series	AR2204
		AR2220
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-433 describes the functions and features of a 4FXO card.

Table 6-433 Functions and features

Function and Feature	Description
Basic functions	Provides multiple interfaces to connect to traditional PBXs, protecting investments.
	Provides multiple interfaces to connect to the PSTN.
BEST	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Link backup	Uses a PSTN network as a backup of the IP network to ensure reliable voice communication.
Smooth upgrade to VoIP	Implements the VoIP function on an enterprise's IP network by simply deploying 4FXO cards. This protects investments and facilitates expansion.
Low cost	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.

Function and Feature	Description
Extensive specialized services	Provides specialized services such as call center, secretary, wake-up, blacklist and whitelist, three-party conference, and ONLY. These services make daily work more convenient, secure, and efficient.
Diagnosis and maintenance	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Panel

Figure 6-193 shows the indicators on a 4FXO card, and **Table 6-434** describes the indicator states and meanings.

Figure 6-193 Indicators on a 4FXO card

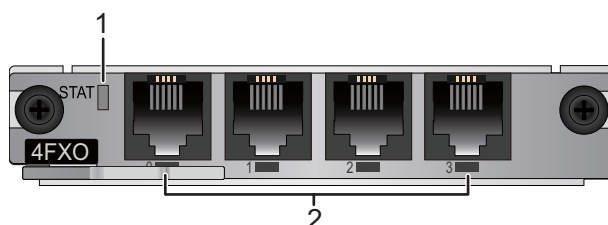
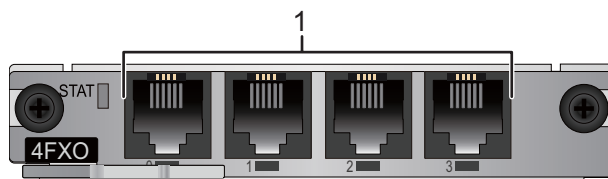


Table 6-434 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT (interface status indicator)	Green	Steady on: The FXO channel is being occupied by a call.
			Off: The FXO channel is idle.

Figure 6-194 shows the interfaces on a 4FXO card.

Figure 6-194 Interfaces on a 4FXO card



1. Four FXO interfaces (RJ11)

FXO interface (RJ11)

An FXO interface is a loop trunk interface that can connect to the PSTN. [Table 6-435](#) lists attributes of the FXO interface.

Table 6-435 Attributes of the FXO (RJ11) interface

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for FXO interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	<ul style="list-style-type: none"> ● DTMF in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 6-436](#) lists the technical specifications of a 4FXO card.

Table 6-436 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 6.6 W ● Weight: 0.1 kg (0.22 lb)

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-437 provides 4FXO card ordering information.

Table 6-437 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XJU	AR01SVB4X A	4FXO	4-Port FXO Voice Interface Card

6.12.7 1VE1 (1-Port Voice E1 Interface Card)

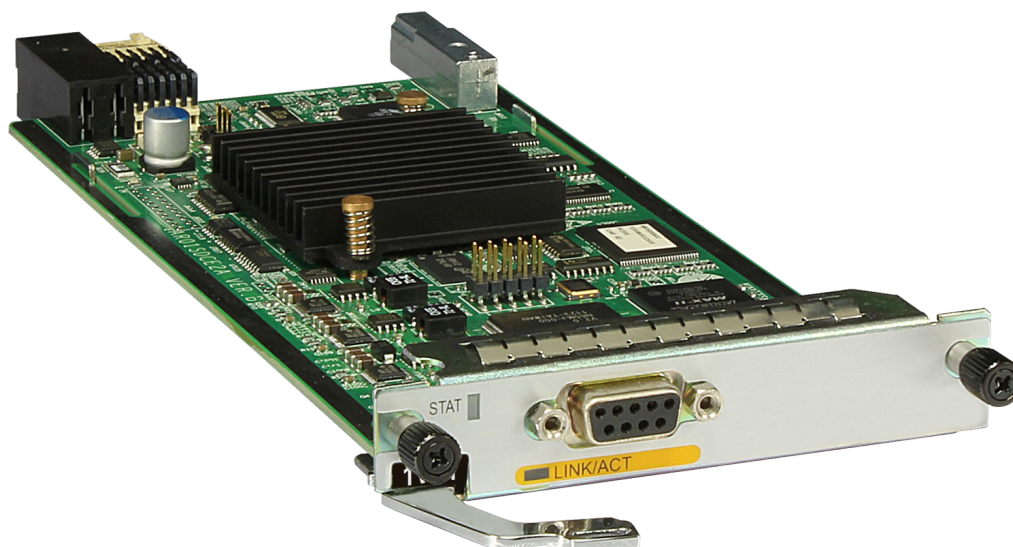
Card Overview

The 1VE1 is a voice processing module. It provides a VE1 interface and high-density analog voice service.

A 1VE1 card can be installed in a SIC slot of a router.

Figure 6-195 shows the appearance of a 1VE1 card.

Figure 6-195 1VE1 card appearance



Version Mapping

Table 6-438 lists the device models and software versions supporting the 1VE1.

Table 6-438 Version mapping

Card Name	Device Series	Device Model
1VE1 NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	AR1220V
		AR1220VW
		AR1220EV
		AR1220EVW
	AR2200 series	AR2204
		AR2220
		AR2220E
		AR2240
	AR3200 series	All models in this series

Functions and Features

Table 6-439 describes the functions and features of a 1VE1 card.

Table 6-439 Functions and features

Function and Feature	Description
Data transmission	The VE1 interface connects to a WAN to complete voice data transmission.
ISDN dial-up access	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Voice gateway	Works as a gateway to provide high-density access to a PSTN or TDM network, and supports a maximum of 30 call connections on a VE1 line.
Investment protection	1VE1 cards can connect to TDM PBX devices on an enterprise network. The use of 1VE1 cards protects customers' investment and facilitates network expansion.

Panel

Figure 6-196 shows the indicators on a 1VE1 card, and **Table 6-440** describes the indicator states and meanings.

Figure 6-196 Indicators on a 1VE1 card

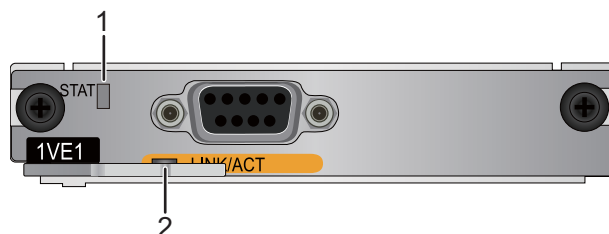
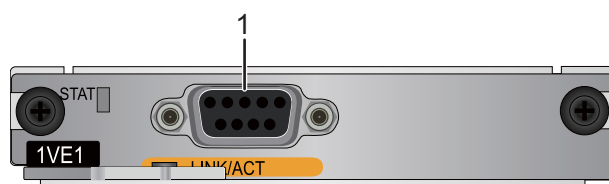


Table 6-440 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface.
		Yellow	Blinking: The interface is transmitting and receiving data.
		Off	No link is established on the interface.

Figure 6-197 shows the interfaces on a 1VE1 card.

Figure 6-197 Interfaces on a 1VE1 card



1. One VE1 interface

VE1 interface

A VE1 interface uses to transmit voice signals. [Table 6-441](#) describes the VE1 interface attributes.

Table 6-441 VE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface speed	2.048 Mbit/s
Working mode	VE1
Services provided	<ul style="list-style-type: none"> ● Backup ● Terminal access
Cable	7.7 E1/T1 Cable

Technical Specifications

[Table 6-442](#) lists the technical specifications of a 1VE1 card.

Table 6-442 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 4.7 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-443 provides 1VE1 card ordering information.

Table 6-443 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021WYL	AR-1VE1-S	1VE1	1-Port Voice E1 Interface Card

6.13 xDSL Card

6.13.1 1ADSL-A/M (1-Port ADSL2+ ANNEX A/M WAN Interface Card)

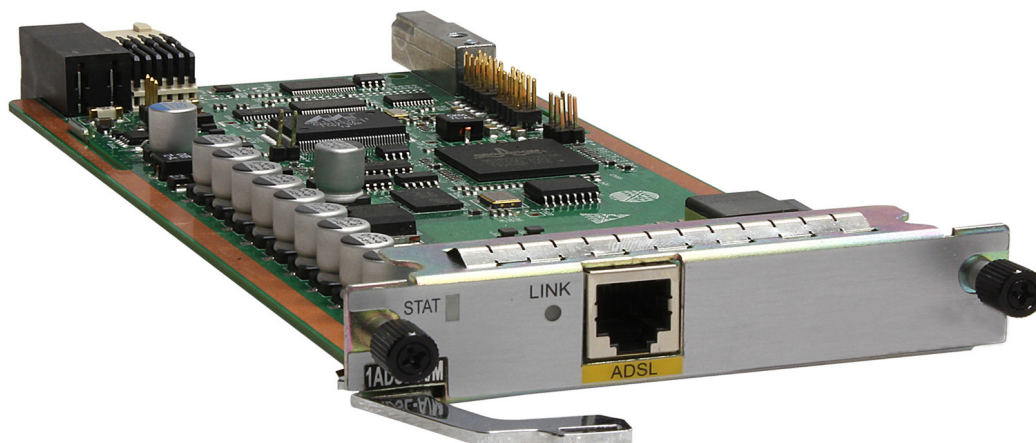
Card Overview

The 1ADSL-A/M is a WAN connection module that provides the ADSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 1ADSL-A/M card can be installed in a SIC slot of a router.

Figure 6-198 shows the appearance of a 1ADSL-A/M card.

Figure 6-198 1ADSL-A/M card appearance



Version Mapping

Table 6-444 lists the device models and software versions supporting the 1ADSL-A/M.

Table 6-444 Version mapping

Card Name	Device Series	Device Model
1ADSL-A/M NOTE This card is supported in V200R001C00 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-445 lists the functions and features of a 1ADSL-A/M card.

Table 6-445 Functions and features

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and video on demand (VoD) services.
	Provides asymmetrical uplink and downlink rates (up to 3 Mbit/s uplink rate and 24 Mbit/s downlink rate).
Compatibility with PSTN	The Internet access and voice services share the same telephone cable.
	Users can connect to the Internet and make a call over a telephone cable at the same time, with a high Internet access rate and good voice communication quality.
Easy installation	Users can connect to the Internet by simply connecting a telephone cable to a modem.
Quick fault identification	The ADSL channel can be manually activated or deactivated for fault location.
Standards compliance	G.992.1, G.992.3, G.992.5, T1.413

Panel

Figure 6-199 shows the indicators on a 1ADSL-A/M card, and **Table 6-446** describes the indicator states and meanings.

Figure 6-199 Indicators on a 1ADSL-A/M card

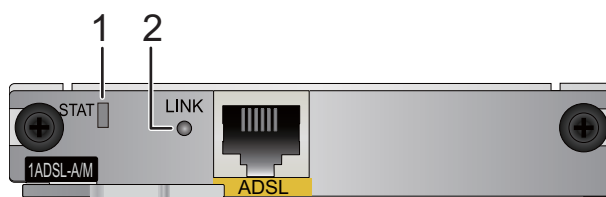
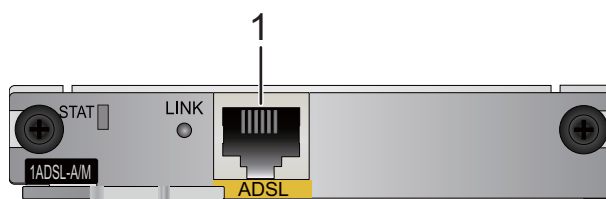


Table 6-446 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK	Green	Steady on: The ADSL channel has been activated.
		Off	The ADSL channel has not been activated.
		Fast blinking	The ADSL channel is being activated.

Figure 6-200 shows the interface on a 1ADSL-A/M card.

Figure 6-200 Interface on a 1ADSL-A/M card



1. One ADSL-A/M interface

ADSL-A/M interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. [Table 6-447](#) lists attributes of an ADSL-A/M interface.

Table 6-447 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 6-448](#) lists the technical specifications of a 1ADSL-A/M card.

Table 6-448 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 5.5 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-449 provides 1ADSL-A/M card ordering information.

Table 6-449 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310GAX	AR0MSLA1X A01	1ADSL-A/M	1-Port ADSL2+ ANNEX A/M WAN Interface Module

6.13.2 1ADSL-B/J (1-Port ADSL2+ ANNEX B/J WAN Interface Card)

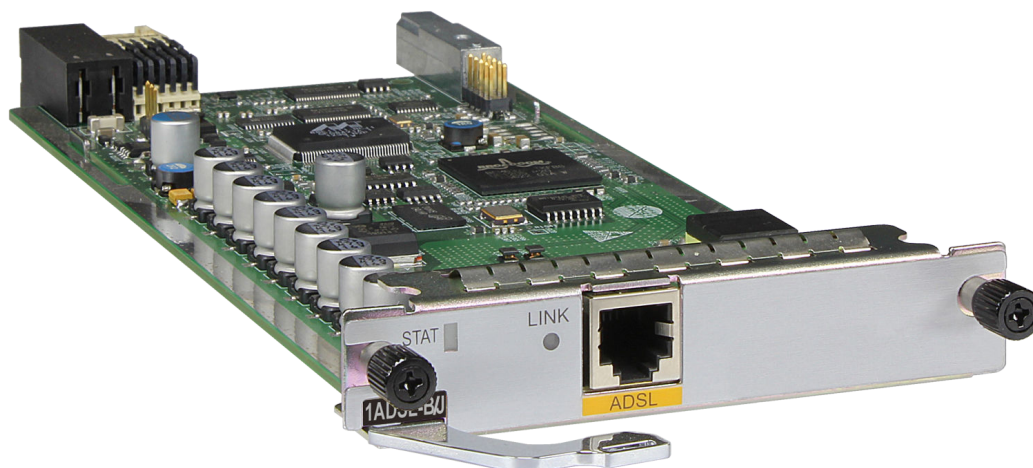
Card Overview

The 1ADSL-B/J is a WAN connection module that provides the ADSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 1ADSL-B/J card can be installed in a SIC slot of a router.

Figure 6-201 shows the appearance of a 1ADSL-B/J card.

Figure 6-201 1ADSL-B/J card appearance



Version Mapping

Table 6-450 lists the device models and software versions supporting the 1ADSL-B/J.

Table 6-450 Version mapping

Card Name	Device Series	Device Model
1ADSL-B/J NOTE This card is supported in V200R005C00 and later versions.	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-451 lists the functions and features of a 1ADSL-B/J card.

Table 6-451 Functions and features

Function and Feature	Description
Basic function	Dials up to the Internet to provide high-speed data communication and VoD services.
	Provides asymmetrical uplink and downlink rates (up to 3 Mbit/s uplink rate and 24 Mbit/s downlink rate).
Compatibility with PSTN	The Internet access and voice services share the same telephone cable.
	Users can connect to the Internet and make a call over a telephone cable at the same time, with a high Internet access rate and good voice communication quality.
Easy installation	Users can connect to the Internet by simply connecting a telephone cable to a modem.
Quick fault identification	The ADSL channel can be manually activated or deactivated for fault location.
Standards compliance	G.992.1, G.992.3, G.992.5, T1.413

Panel

Figure 6-202 shows the indicators on a 1ADSL-B/J card, and **Table 6-452** describes the indicator states and meanings.

Figure 6-202 Indicators on a 1ADSL-B/J card

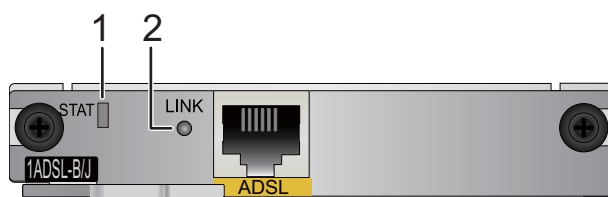
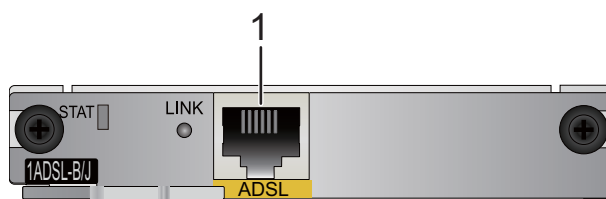


Table 6-452 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK	Green	Steady on: The ADSL channel has been activated.
		Off	The ADSL channel has not been activated.
		Fast blinking	The ADSL channel is being activated.

Figure 6-203 shows the interface on a 1ADSL-B/J card.

Figure 6-203 Interface on a 1ADSL-B/J card



1. One ADSL-B/J interface

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. **Table 6-453** lists attributes of an ADSL-B/J interface.

Table 6-453 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	<ul style="list-style-type: none"> ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 6-454](#) lists the technical specifications of a 1ADSL-B/J card.

Table 6-454 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 5.5 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-455](#) provides 1ADSL-B/J card ordering information.

Table 6-455 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021WWX	NA	1ADSL-B/J	1-Port ADSL2+ ANNEX B/J WAN Interface Card

6.13.3 4G.SHDSL (1-Port 4 Pair G.SHDSL WAN Interface Card)

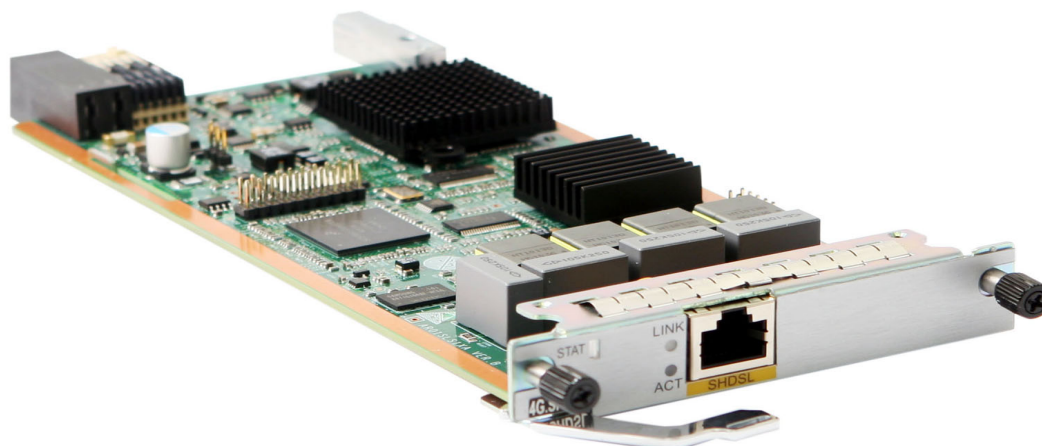
Card Overview

The 4G.SHDSL is a WAN connection module that provides the symmetrical high-speed digital subscriber line (SHDSL) service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 4G.SHDSL card can be installed in a SIC slot of a router.

Figure 6-204 shows the appearance of a 4G.SHDSL card.

Figure 6-204 4G.SHDSL card appearance



Version Mapping

Table 6-456 lists the device models and software versions supporting the 4G.SHDSL.

Table 6-456 Version mapping

Card Name	Device Series	Device Model
4G.SHDSL	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE

Card Name	Device Series	Device Model
NOTE This card is supported in V200R001C00 and later versions.	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-457 describes the functions and features of a 4G.SHDSL card.

Table 6-457 Functions and features

Function and Feature	Description
Basic function	Dials up to the Internet to provide high-speed data communication and VoD services.
Symmetrical uplink and downlink rates	Provides the same uplink and downlink rates and supports interface binding for bandwidth expansion.
Good compatibility	Maintains compatibility with DSL and other transmission technologies. This extends the transmission distance.
High-speed transmission	Provides various rates to meet diverse user requirements.
Long transmission distance and high anti-interference capability	Supports a longer transmission distance at the same rate in comparison with other DSL technologies.
High performance and wide variety of services	Provides comprehensive solutions for networks of small- and medium-scale enterprises and branch networks of large-scale enterprises, meeting diverse requirements of enterprises, such as security, VPN, and service extension. G.SHDSL also provides service providers with integrated communication services, including voice and video conferencing.

Panel

Figure 6-205 shows the indicators on a 4G.SHDSL card, and **Table 6-458** describes the indicator states and meanings.

Figure 6-205 Indicators on a 4G.SHDSL card

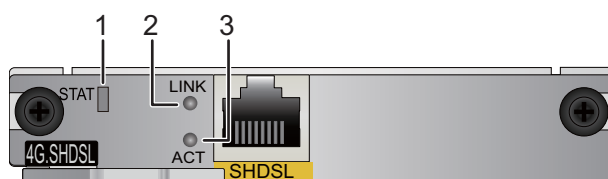
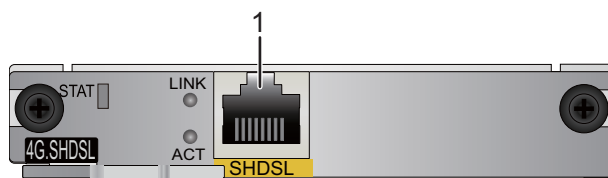


Table 6-458 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK	Green	Steady on: All the four DSL channels are active.
			Off: All the four DSL channels are inactive.
			<ul style="list-style-type: none"> ● Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active. ● Stays on for 0.5s and blinks twice in the next 0.5s: Two DSL channels are active. ● Stays on for 0.75s and blinks once in the next 0.25s: Three DSL channels are active.
3	ACT	Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.

Figure 6-206 shows the interface on a 4G.SHDSL card.

Figure 6-206 Interface on a 4G.SHDSL card



1. One G.SHDSL interface

G.SHDSL interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 6-459](#) lists attributes of a G.SHDSL interface.

Table 6-459 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

Technical Specifications

[Table 6-460](#) lists the technical specifications of a 4G.SHDSL card.

Table 6-460 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.)● Maximum power consumption: 8.2 W● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-461](#) provides 4G.SHDSL card ordering information.

Table 6-461 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310DRN	AR0MSLS1X A00	4G.SHDSL	1-Port 4 Pair G.SHDSL WAN Interface Module

6.13.4 1GBIS4W (1-Port 4 Pair G.SHDSL WAN Interface Card - WSIC)

Card Overview

A 1GBIS4W card is a WAN connection module that provides the SHDSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 1GBIS4W card can be installed in a WSIC slot of a router.

Figure 6-207 shows the appearance of a 1GBIS4W card.

Figure 6-207 1GBIS4W card appearance



Version Mapping

Table 6-462 lists the device models and software versions supporting the 1GBIS4W.

Table 6-462 Version mapping

Card Name	Device Series	Device Model
1GBIS4W NOTE This card is supported in V200R006C10 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	AR2204
		AR2204XE
		AR2204XE-DC
	AR2220	

Card Name	Device Series	Device Model
		AR2220E
		AR2240
		AR2240C
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-463 describes the functions and features of a 1GBIS4W card.

Table 6-463 Functions and features

Function and Feature	Description
Basic function	Dials up to the Internet to provide high-speed data communication and VoD services.
Symmetrical uplink and downlink rates	Provides the same uplink and downlink rates and supports interface binding for bandwidth expansion.
Good compatibility	Maintains compatibility with DSL and other transmission technologies. This extends the transmission distance.
High-speed transmission	Provides various rates to meet diverse user requirements.
Long transmission distance and high anti-interference capability	Supports a longer transmission distance at the same rate in comparison with other DSL technologies.
High performance and wide variety of services	Provides comprehensive solutions for networks of small- and medium-scale enterprises and branch networks of large-scale enterprises, meeting diverse requirements of enterprises, such as security, VPN, and service extension. G.SHDSL also provides service providers with integrated communication services, including voice and video conferencing.

Panel

Figure 6-208 shows the indicators on a 1GBIS4W card, and **Table 6-464** describes the indicator states and meanings.

Figure 6-208 Indicators on a 1GBIS4W card

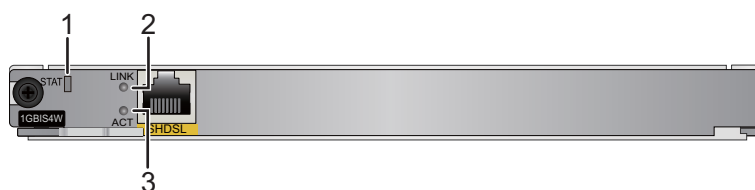


Table 6-464 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK	Green	Steady on: All the four DSL channels are active.
			Off: All the four DSL channels are inactive.
			<ul style="list-style-type: none"> ● Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active. ● Stays on for 0.5s and blinks twice in the next 0.5s: Two DSL channels are active. ● Stays on for 0.75s and blinks once in the next 0.25s: Three DSL channels are active.
3	ACT	Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.

Figure 6-209 shows the interface on a 1GBIS4W card.

Figure 6-209 Interface on a 1GBIS4W card



1. One G.SHDSL interface

G.SHDSL interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. [Table 6-465](#) lists attributes of a G.SHDSL interface.

Table 6-465 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296 Mbit/s per pair
Cable type	7.11 G.SHDSL Cable or 7.5 Ethernet Cable

Technical Specifications

[Table 6-466](#) lists the technical specifications of a 1GBIS4W card.

Table 6-466 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 7.8 W ● Weight: 0.35 kg (0.77 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-467](#) provides 1GBIS4W card ordering information.

Table 6-467 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311DVX	AR-1GBIS4W -W	1GBIS4W	1-Port 4 Pair G.SHDSL WAN Interface Card - WSIC

6.13.5 VDSL2 (1-Port VDSL2 over POTS WAN Interface Card)

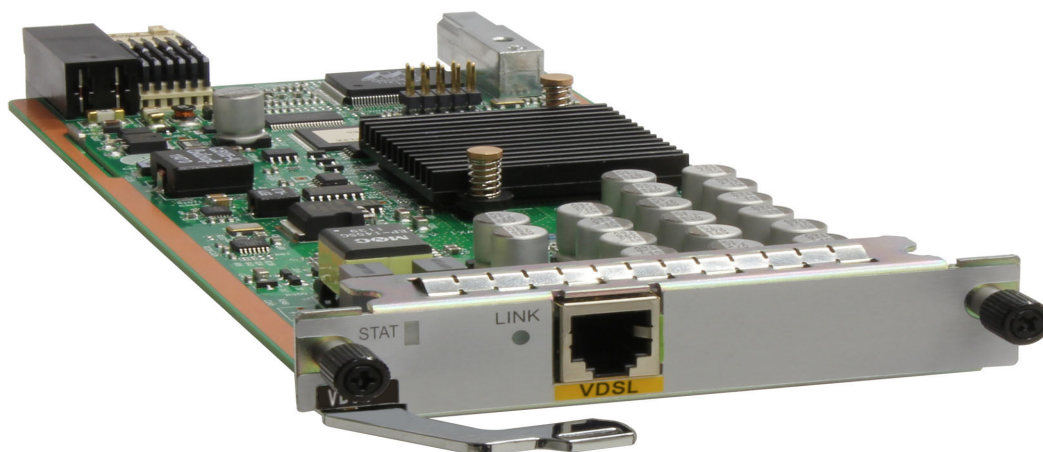
Card Overview

A VDSL2 card is a WAN connection module that provides the SHDSL services for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A VDSL2 card can be installed in a SIC slot of a router.

Figure 6-210 shows the appearance of a VDSL2 card.

Figure 6-210 VDSL2 card appearance



Version Mapping

Table 6-468 lists the device models and software versions supporting the VDSL2.

Table 6-468 Version mapping

Card Name	Device Series	Device Model
VDSL2	AR1200 series	All models in this series
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series

Card Name	Device Series	Device Model
NOTE This card is supported in V200R002C01 and later versions.	AR3600 series	All models in this series

Functions and Features

Table 6-469 describes the functions and features of a VDSL2 card.

Table 6-469 Functions and features

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and VoD services.
Flexible transmission modes	Provides both asymmetrical and symmetrical transmission.
Fast transmission rate	Provides asymmetrical uplink and downlink rates (up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate).
	Provides 10 Mbit/s uplink and downlink rates within a transmission distance of 1 km.
Good transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.
Low cost	Transmits signals over a copper twisted pair without deploying new lines or reconstructing the existing network.
Enhanced compatibility	Supports both traditional voice services and ISDN services. VDSL2 can use the same phone line with the existing phone line and ISDN.
Standard compliance	Works in VDSL2 mode that complies with ITU-T G.993.2 and supports profile 17a defined in G.993.2.
	Rolls back to ADSL2+ mode that complies with G.992.5.
Dying gasp	Sends a trap to the DSLAM upon a power failure.

Panel

Figure 6-211 shows the indicators on a VDSL2 card, and **Table 6-470** describes the indicator states and meanings.

Figure 6-211 Indicators on a VDSL2 card

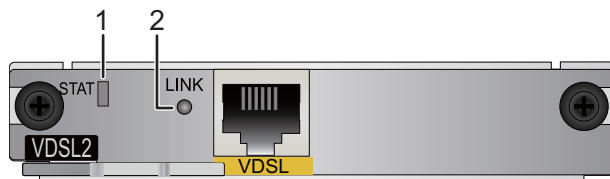
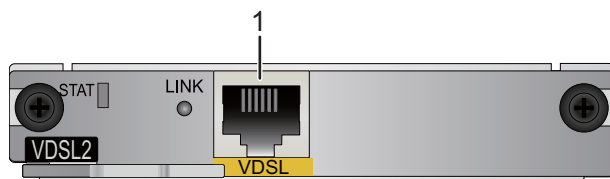


Table 6-470 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: The VDSL2 channel has been activated. Off: The VDSL2 channel has not been activated. Fast blinking: The VDSL2 channel is being activated.
		Green	Steady on: The VDSL2 channel has been activated.
		Green	Off: The VDSL2 channel has not been activated. Fast blinking: The VDSL2 channel is being activated.

Figure 6-212 shows the interface on a VDSL2 card.

Figure 6-212 Interfaces on a VDSL2 card



1. One VDSL2 interface

VDSL2 interface

A VDSL2 interface transmits service data from a LAN to an upstream device at a high speed through twisted cables. [Table 6-471](#) lists attributes of a VDSL2 interface.

Table 6-471 VDSL2 interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	VDSL2: ITU-T 993.2 ITU-T 992.5 ITU-T 992.3 ITU-T 992.1 G.DMT
Interface rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T 992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T 993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T 992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 6-472](#) lists the technical specifications of a VDSL2 card.

Table 6-472 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 9.5 W ● Weight: 0.2 kg (0.44 lb)

Item	Specifications
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-473 provides VDSL2 card ordering information.

Table 6-473 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310JLJ	AR01SLV1X A	VDSL2	1-Port VDSL2 over POTS WAN Interface card

6.13.6 2VDSL2 (2-Port VDSL2 over POTS with Bonding WAN Interface Card)

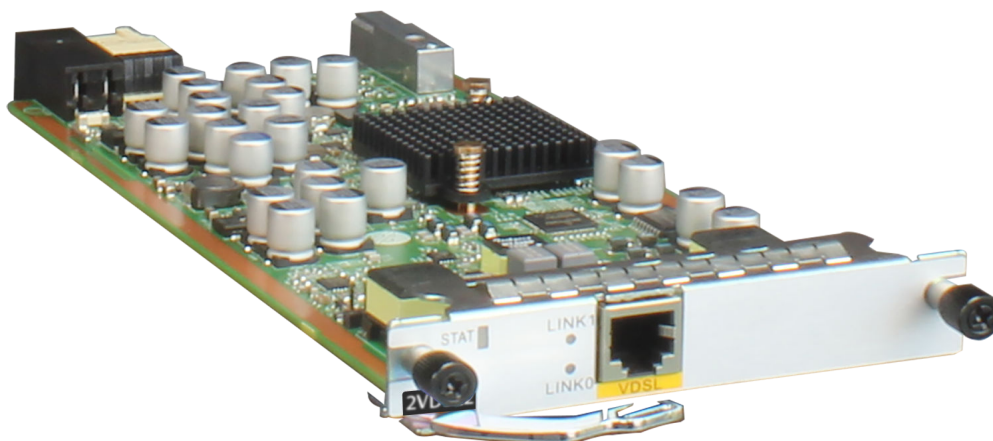
Card Overview

A 2VDSL2 card is a WAN connection module that provides the SHDSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 2VDSL2 card can be installed in a SIC slot of a router.

Figure 6-213 shows the appearance of a 2VDSL2 card.

Figure 6-213 2VDSL2 card appearance



Version Mapping

Table 6-474 lists the device models and software versions supporting the 2VDSL2.

Table 6-474 Version mapping

Card Name	Device Series	Device Model
2VDSL2 NOTE This card is supported in V200R008C20 and later versions.	AR1200 series	AR1220E series
		AR1220F
		AR1220C
		AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE
	AR3200 series	All models in this series
AR3600 series	All models in this series	

Functions and Features

Table 6-475 describes the functions and features of a 2VDSL2 card.

Table 6-475 Functions and features

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and VoD services.
Flexible transmission modes	Supports both asymmetrical transmission and symmetrical transmission.
Faster speed	Provides asymmetrical uplink and downlink rates (up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate).
	Provides over 10 Mbit/s of symmetrical uplink and downlink rates within a transmission distance of 1 km.
Link binding and unbinding	<ul style="list-style-type: none"> ● By default, the two VDSL2 lines are bound to improve bandwidth. ● If the remote device requires a low-speed link, the links can be unbound.
High transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.

Function and Feature	Description
Cost effectiveness	Transmits signals over a copper twisted pair without deploying new lines or reconstructing the existing network.
Good compatibility	Supports both traditional voice services and ISDN services. 2VDSL2 share transmission lines with traditional telephony and ISDN networks.
Standards compliance	Works in VDSL2 mode that complies with ITU-T G.993.2 and supports profile 17a defined in G.993.2.
	Supports rollback to ADSL2+ mode that complies with G.992.5.
Dying gasp	Sends a trap to the DSLAM upon a power failure.

Panel

Figure 6-214 shows the indicators on a 2VDSL2 card, and **Table 6-476** describes the indicator states and meanings.

Figure 6-214 Indicators on a 2VDSL2 card

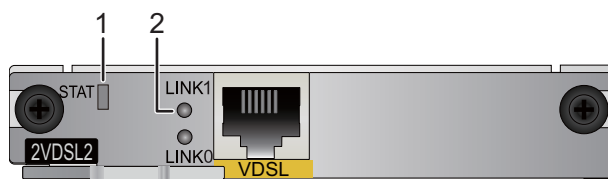


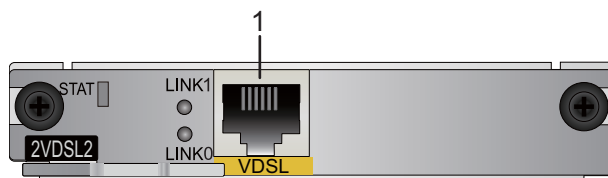
Table 6-476 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Number	Indicator	Color	Description
2	LINK0/LINK1	Green	Steady on: VDSL2 channel 0/1 is active.
			Off: VDSL2 channel 0/1 is inactive.
			Fast blinking: VDSL2 channel 0/1 is being activated.

Figure 6-215 shows the interface on a 2VDSL2 card.

Figure 6-215 Interface on a 2VDSL2 card



- | |
|-------------------------|
| 1. One 2VDSL2 interface |
|-------------------------|

VDSL2 interface

A VDSL2 interface transmits service data from a LAN to an upstream device at a high speed. **Table 6-477** lists attributes of a VDSL2 interface.

Table 6-477 VDSL2 interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● ITUT-993.2 ● ITU-T 992.3 ● ITU-T 992.5 ● ITU-T 992.1 G.DMT ● ANSI T1.413 Issue 2

Attribute	Description
Rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T 992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T 993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T 992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	7.19 2VDSL2 Cable

Technical Specifications

[Table 6-478](#) lists the technical specifications of a 2VDSL2 card.

Table 6-478 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7.5 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

[Table 6-479](#) provides 2VDSL2 card ordering information.

Table 6-479 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311MKM	AR-2VDSL2-S	2VDSL2	2-port VDSL2 over POTS with bonding WAN interface card

6.13.7 1V35B-AM (1-Port VDSL2 ANNEX A&M WAN Interface Card)

Card Overview

A 1V35B-AM card is a WAN connection module that provides the SHDSL services for enterprises, transmitting video, audio, and data services at a high speed over the Internet.

A 1V35B-AM card can be installed in a SIC slot of a router.

Figure 6-216 shows the appearance of a 1V35B-AM card.

Figure 6-216 1V35B-AM card appearance



Version Mapping

Table 6-480 lists the device models and software versions supporting the 1V35B-AM.

Table 6-480 Version mapping

Card Name	Device Series	Device Model
1V35B-AM NOTE This card is supported in V300R019C00 and later versions.	AR2200 series	AR2240 NOTE This card is only supported that the router SRU card is configured with SRU-100H, SRU-200H, SRU-400H, or SRU-600H.
	AR3200 series	AR3260 NOTE This card is only supported that the router SRU card is configured with SRU-100H, SRU-200H, SRU-400H, or SRU-600H.
	AR3600 series	AR3670

Functions and Features

Table 6-481 describes the functions and features of a 1V35B-AM card.

Table 6-481 Functions and features

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and VoD services.
Flexible transmission modes	Provides both asymmetrical and symmetrical transmission.
Fast transmission rate	Provides asymmetrical uplink and downlink rates (up to 40 Mbit/s uplink rate and 350 Mbit/s downlink rate).
	Provides 10 Mbit/s uplink and downlink rates within a transmission distance of 1 km.
Good transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.
Low cost	Transmits signals over a copper twisted pair without deploying new lines or reconstructing the existing network.
Enhanced compatibility	Supports both traditional voice services and ISDN services. 1V35B-AM can use the same phone line with the existing phone line and ISDN.
Standard compliance	Supports VDSL2 35B profile.
	Rolls back to ADSL2+ mode that complies with G.992.5.
Dying gasp	Sends a trap to the DSLAM upon a power failure.

Panel

Figure 6-217 shows the indicators on a 1V35B-AM card, and **Table 6-482** describes the indicator states and meanings.

Figure 6-217 Indicators on a 1V35B-AM card

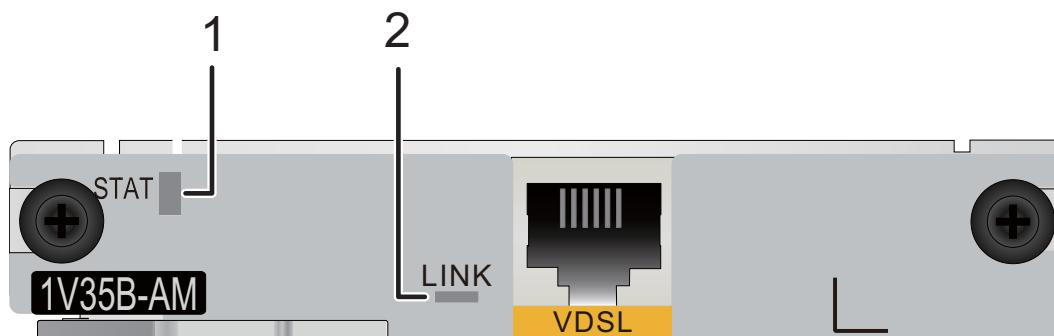
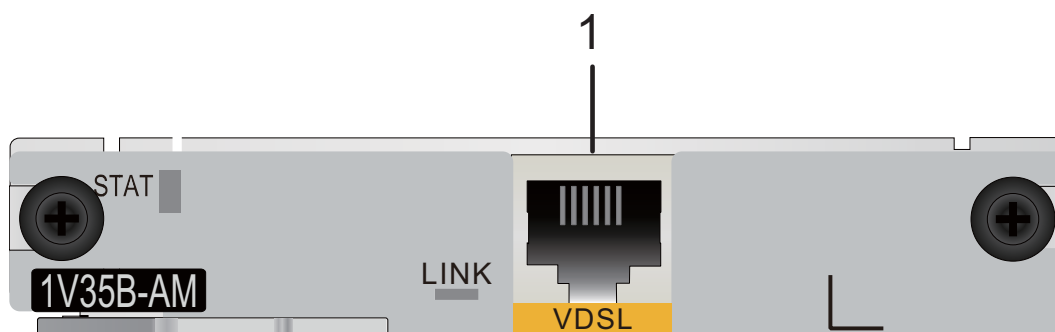


Table 6-482 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: The xDSL channel has been activated.
			Off: The xDSL channel has not been activated.
			Fast blinking: The xDSL channel is being activated.

Figure 6-218 shows the interface on a 1V35B-AM card.

Figure 6-218 Interfaces on a 1V35B-AM card



1. One VDSL interface

VDSL interface

A VDSL interface transmits service data from a LAN to an upstream device at a high speed through twisted cables. **Table 6-483** lists attributes of a VDSL interface.

Table 6-483 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ANSI T1.413 Issue 2 ITU-T G.992.1 G.DMT ITU-T G.993.2 ITU-T G.992.3 ITU-T G.992.5
Interface rate	<ul style="list-style-type: none"> ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● VDSL 35B mode (ITU-T G.992.1 G.DMT): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s
Cable type	7.18.3 Standard Telephone Cable

Technical Specifications

[Table 6-484](#) lists the technical specifications of a 1V35B-AM card.

Table 6-484 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 11 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-485 provides 1V35B-AM card ordering information.

Table 6-485 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312KBV	SIC-1V35B-AM	1V35B-AM	1-Port VDSL2 ANNEX A&M WAN Interface Card

6.14 xPON Card

6.14.1 1PON (1-Port GPON/EPON Dual-Mode Interface Card)

Card Overview

NOTE

- 1 port: There are two ports on the 1PON card, one of which is the backup port. Therefore, the 1PON card is also called the 1PON.
- One ARrouter can have only one PON installed. Excess PON cards cannot be powered on.

The 1PON is a WAN connection module that uses the point-to-multipoint optical access technology to transmit video, voice, and data services at a high speed over the Internet.

A 1PON card can be installed in a SIC slot of a router.

Figure 6-219 shows the appearance of a 1PON card.

Figure 6-219 1PON card appearance



Version Mapping

Table 6-486 lists the device models and software versions supporting the 1PON.

Table 6-486 Version mapping

Card Name	Device Series	Device Model
1PON NOTE This card is supported in V200R002C00 and later versions.	AR1200 series	All models in this series except the AR1220C and AR1220-8GE
	AR2200 series	All models in this series except the AR2201-48FE and AR2202-48FE NOTE For the AR2204XE-DC, this card is supported in V300R019C00 and later versions.
	AR3200 series	All models in this series
	AR3600 series	All models in this series

Functions and Features

Table 6-487 describes the functions and features of a 1PON card.

Table 6-487 Functions and features

Function and Feature	Description
Basic functions	Uses fibers to connect to the Internet so that services can be transmitted with high bandwidth and high reliability.
	Supports EPON/GPON but not GE.
	As FTTH becomes popular, PON access gradually becomes the mainstream mode.
High bandwidth	The PON network provides the bandwidth of 1 Gbit/s and allows migration to 10 Gbit/s.
High reliability	Compared with traditional leased lines, PON technology provides higher reliability and a longer transmission distance.
Optical interface shutdown	The CPU of the SD5103 implements optical interface shutdown.
Power-off alarm	If the card is powered off, the PON interface reports a power-off alarm to the OLT.
DDM detection	Detects the receiving optical power and monitors the transmitting optical power.

Function and Feature	Description
ONU function	<ul style="list-style-type: none"> ● Receives cells broadcast in TDM mode at a downlink rate of 1.25 Gbit/s (EPON) or 2.488 Gbit/s (GPON). ● Supports burst transmission in TDMA mode at an uplink rate of 1.25 Gbit/s (EPON) or 1.244 Gbit/s (GPON).

Panel

Figure 6-220 shows the indicators on a 1PON card, and **Table 6-488** describes the indicator states and meanings.

Figure 6-220 Indicators on a 1PON card

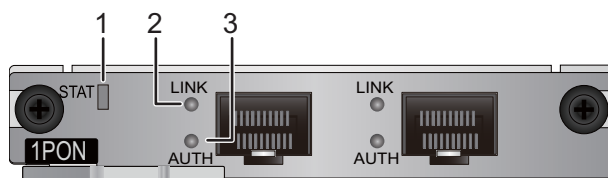


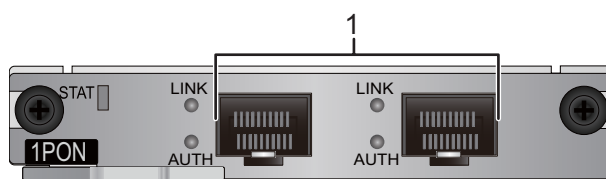
Table 6-488 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	PON interface indicators: ● Upper LINK indicator: indicates that optical signals are received from the downstream device. ● Lower ACT indicator:	Green	If both the LINK indicator and AUTH indicator are steady on, the ONU has registered successfully.
			If the LINK indicator is steady on and the AUTH indicator blinks fast, the ONU is registering.
			If both the LINK indicator and AUTH indicator blink fast, optical transmission from the ONU times out. That is, the ONU is a rogue ONU.

Number	Indicator	Color	Description
	indicates the authentication status.		If both the LINK indicator and AUTH indicator are off, the 1PON does not request data transmission.

Figure 6-221 shows the interfaces on a 1PON card.

Figure 6-221 Interfaces on a 1PON card



1. Two PON interfaces

PON interface

PON interfaces include EPON interfaces and GPON interfaces. They transmit data, voice, and video services. Table 6-489 lists attributes of a PON interfaces.

Table 6-489 PON interface attributes

Attribute	Description
Connector type	SC
PON interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 8.10 GPON/EPON Optical Modules.
Frame format	Ethernet_II, Ethernet_SNAP, IEEE 802.2, IEEE 802.3.
Network protocol	IP

Technical Specifications

Table 6-490 describes the technical specifications of a 1PON card.

Table 6-490 Technical specifications

Item	Specifications
Card type	SIC

Item	Specifications
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.8 in. x 0.78 in.)● Maximum power consumption: 8.8 W● Weight: 0.3 kg (0.66 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-491 provides 1PON card ordering information.

Table 6-491 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020TJE	AR0MSOPP2 A00	1PON	1-Port GPON/EPON Dual-mode Interface Card

6.15 Capacitor Card

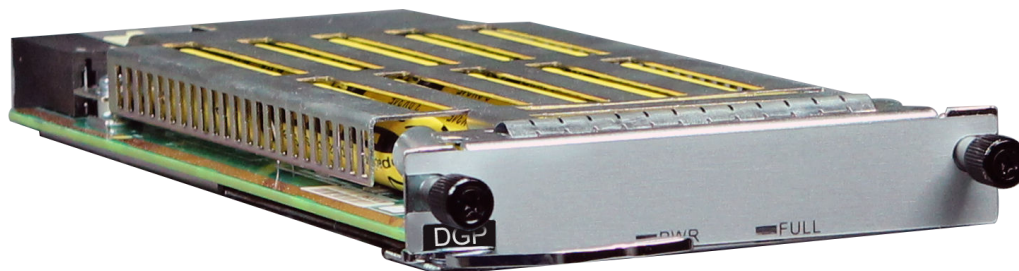
6.15.1 DGP (Dying Gasp Capacitor Card)

Card Overview

A DGP card provides capacitance to support the dying gasp function on a router and can be installed in a SIC slot.

Figure 6-222 shows the appearance of a DGP card.

Figure 6-222 DGP card appearance



Version Mapping

Table 6-492 lists the device models and software versions supporting the DGP.

Table 6-492 Version mapping

Card Name	Device Series	Device Model
DGP NOTE This card is supported in V200R009C00 and later versions.	AR1200 series	AR1220E
	AR2200 series	AR2220E
		AR2240C
AR3200 series	AR3260 (SRU80/SRU100E/SRU200)	

Functions and Features

Table 6-493 describes the functions and features of a DGP card.

Table 6-493 Functions and features

Function and Feature	Description
Capacitor recharge time	5 to 6 minutes NOTE If the router experiences a power outage before the capacitor on the DGP card is fully recharged, the dying gasp function may not take effect.
Capacitor power supply time	≥ 100 ms
Discharge channel	After the DGP card is removed from the router, the reserved energy can be released from the discharge channel.

Panel

Figure 6-223 shows the indicators on a DGP card, and **Table 6-494** describes the indicator states and meanings.

Figure 6-223 Indicators on a DGP card

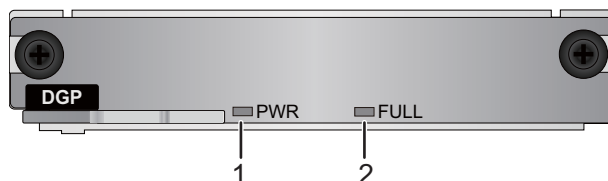


Table 6-494 Indicator description

Number	Indicator	Color	Description
1	PWR	Green	Steady green: The card has been powered on. Off: The card is not powered on.
2	FULL	Green	Steady green: The capacitor of the card has been fully recharged. Off: The capacitor of the card has not been fully recharged.

Technical Specifications

Table 6-495 lists the technical specifications of a DGP card.

Table 6-495 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: <ul style="list-style-type: none"> - Capacitor being recharged: 13 W - Capacitor fully recharged: 2 W ● Weight: 0.43 kg (0.95 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 6-496 provides DGP card ordering information.

Table 6-496 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311VFB	AR-DGP-S	DGP	Dying Gasp Capacitor Card

7 Cables

About This Chapter

- [7.1 Power Cables](#)
- [7.2 RPS150 Power Cables](#)
- [7.3 Ground Cable](#)
- [7.4 Console Cable](#)
- [7.5 Ethernet Cable](#)
- [7.6 Optical Fiber](#)
- [7.7 E1/T1 Cable](#)
- [7.8 E3/T3 Cable](#)
- [7.9 SA Cable](#)
- [7.10 8AS Cable](#)
- [7.11 G.SHDSL Cable](#)
- [7.12 ISDN Cable](#)
- [7.13 HDMI Video Cable](#)
- [7.14 VGA Video Cable](#)
- [7.15 Serial Cable \(CON/RS232\)](#)
- [7.16 E&M Trunk Cable](#)
- [7.17 Antennas](#)
- [7.18 Voice Cables](#)
- [7.19 2VDSL2 Cable](#)

7.1 Power Cables

7.1.1 AC Power Cable

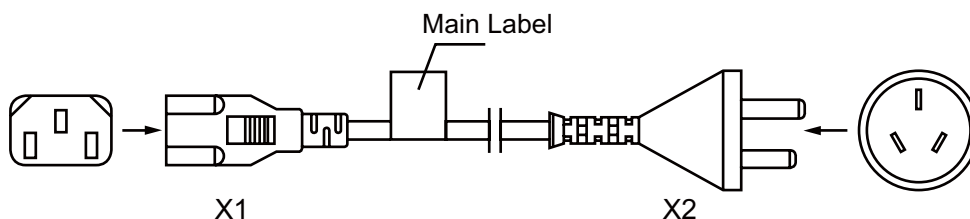
Description

An AC power cable has a C13 connector at one end, and the connector on the other end is determined based on the standard in the country or region to which the cable is delivered. This section describes the AC power cable used in China. [Table 7-1](#) lists the AC power cables applicable in different countries and regions.

Appearance and Structure

[Figure 7-1](#) shows the structure of an AC power cable used in China.

Figure 7-1 Structure of an AC power cable used in China



Connection

An AC power cable is connected as follows:

- The C13 straight female connector is connected to the AC power socket of a router.
- The PI straight male connector is connected to an external power source.

Ordering Information

[Table 7-1](#) provides the AC power ordering information.

Table 7-1 AC power cable ordering information

Country/ Region	Part Number	Description	Remarks
China	04041104	Power Cords Cable, China AC Power 250V10A, 3.0m, PISM, 227IEC53-1.0 ² (3C), C13SF, Black	Optional

Country/ Region	Part Number	Description	Remarks
China	04150254	Power Cords Cable, China AC Power 250V10A, 1.0m, PIAM, 227IEC53-1.0 ² (3C), C13SF, Black	Optional
Japan	04040887	Power Cable, Japan AC Power Cable 125V12A, 3.0m, PBSM, HVCTF-1.25mm ² (3C), C13SF, Black	Optional
Brazil	04150258	Power Cable, Brazil AC Power Cable 250V10A, 3.0m, PJSM-I, H05VV-F-1.0mm ² (3C), C13SF, Black	Optional
Europe	04041056	Power Cords Cable, Europe AC Power Cable 250V10A, 3m, PFSM, H05VVF 1.0 ² (3C), C13SF, Black	Optional
Australia	04040888	Power Cords Cable, Australia AC Power Cable 250V10A, 3.0m, PISM, H05VV-F-1.0mm ² (3C), C13SF, Black	Optional
South Africa	04040889	Power Cords Cable, South Africa AC Power Cable 250V10A, 3.0m, PDAM, H05VV-F-1.5mm ² (3C), C13SF, Black	Optional
America	04020728	Power Cable, America AC Power Cable 125V10A, 3.0m, PBSM, 18SJT(3C), C13SF, Black	Optional
Britain	04040890	Power Cable, Britain AC Power Cable 250V10A, 3.0m, PGAM, H05VV-F-1.0mm ² (3C), C13SF, Black	Optional
Switzerland	04041119	Power Cable, Switzerland AC Power Cable 250V10A, 3.0m, PJSM, H05VV-F-1.0mm ² (3C), C13SF, Black	Optional
Italy	04041120	Power Cable, Italy AC Power Cable 250V10A, 3.0m, PLSM, H05VV-F-1.0mm ² (3C), C13SF, Black	Optional
Argentina	04047785	Power Cords Cable, Argentina AC Power 250V10A, 3.0m, PISM, H05VV-F-1.0mm ² (3C), C13SF, Black	Optional
Korea	0405G028	Power Cords Cable, Korea AC Power 250V10A, 3m, PFSM, H05VV-F 3*1.0 ² (3C), C13SF, Black	Optional
Denmark	0405G02K	Power Cords Cable, Denmark AC Power 250V10A, 3m, PKSM, H05VV-F-3*1.0 ² (3C), C13SF, Black	Optional

Country/ Region	Part Number	Description	Remarks
India	04051035	Power Cords Cable, India AC Power 250V10A, 3.0m,PD-I AM, IS 694-1.0mm ² (3C), C13 SF, Black	Optional

7.1.2 DC Power Cable

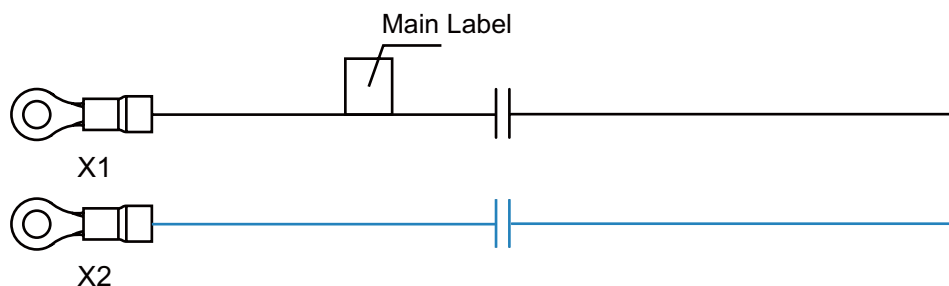
Description

DC power cables for a router include a -48 V return ground cable (blue) and a -48 V power cable (black), which are connected to the RTN(+) and NEG(-) terminals on the router's DC power module respectively.

Appearance and Structure

Figure 7-2 shows the structure of DC power cables.

Figure 7-2 Structure of DC power cables



Connection

An DC power cable is connected as follows:

- One end is connected to the matching DC power terminal on the DC power module of a router.
- The other end is connected to an external power source.

Ordering Information

Table 7-2 provides the DC power cable ordering information.

Table 7-2 DC power cable ordering information

Part Number	Description	Remarks
04150075	Power Cable, 3.0m, 1.0mm ² , (2*OT1-4), (18UL1007BL+18UL1007B), All products	Standard configuration

7.2 RPS150 Power Cables

7.2.1 RPS150 Power and Communication Cable

Description

The RPS150 power and communication cable is delivered with the 150 W RPS. It is used to connect the 150 W RPS to a router to provide backup RPS power supply.

Structure and Pin Assignments

Figure 7-3 shows the structure of an RPS150 power and communication cable.

Figure 7-3 Structure of an RPS150 power and communication cable

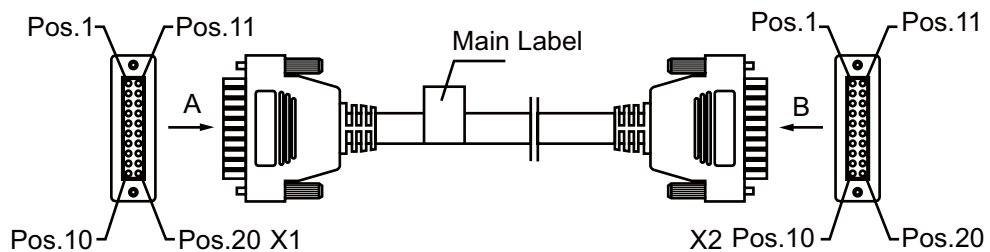


Table 7-3 lists the pin assignments of an RPS150 power and communication cable.

Table 7-3 Pin assignments of an RPS150 power and communication cable

X1 (20 Pins)	Signal	Direction	X2 (20 Pins)
1, 3, 5	-48V	→	1, 3, 5
2, 4, 6	RTN	←	2, 4, 6
9	IIC_SCL	→	9
10	IIC_SDA	↔	10
11	DEV_PRE	→	11
12	RPS_PRE	←	12

X1 (20 Pins)	Signal	Direction	X2 (20 Pins)
15	12V_DEV	→	15
16	FORCE_POWERU P	→	16
17, 19	12V_RPS	←	17, 19
18, 20	GND	-	18, 20

Connection

NOTE

An RPS150 power and communication cable is often used as a common power cable and is not hot swappable.

- Power-on: Connect the RPS150 power and communication cable to the router and RPS power supply, and then power on the router and RPS150 power supply.
- Power-off: Power off the router and RPS150 power supply, and then remove the RPS150 power and communication cable.

An RPS150 power and communication cable is connected as follows:

- One end (20 pins) is connected to the RPS connector on a router.
- The other end (20 pins) is connected to an RPS150 power supply.

Ordering Information

[Table 7-4](#) provides the ordering information of an RPS150 power and communication cable.

Table 7-4 RPS150 power and communication cable ordering information

Part Number	Description	Remarks
04151432	Power cable, 1.5m, H20(4.2), 13*18UL3385B +CC4P0.5PB(S), H20(4.2)	Standard configuration

7.2.2 RPS150 AC Power Cable

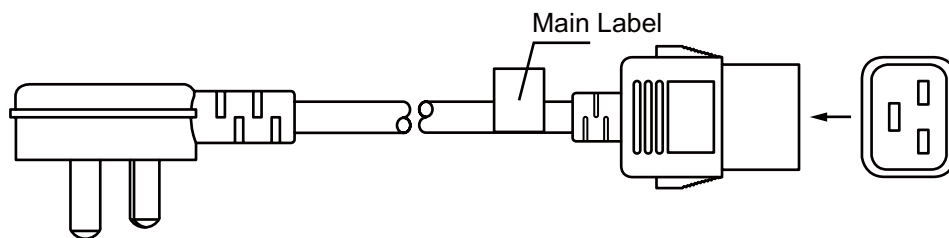
Description

An RPS150 AC power cable has a C19 connector at one end, and the connector on the other end is determined based on the standard in the country or region to which the cable is delivered. This section describes an RPS150 AC power cable used in China. [Table 7-5](#) lists the RPS150 AC power cables applicable in different countries and regions.

Appearance and Structure

[Figure 7-4](#) shows the structure of an RPS150 AC power cable used in China.

Figure 7-4 Structure of an RPS150 AC power cable used in China



Connection

An RPS150 AC power cable is connected as follows:

- The C19 straight female connector is connected to the AC power socket of an RPS150 power supply.
- The PI angle male connector is connected to an external power source.

Ordering Information

Table 7-5 provides the RPS150 AC power cable ordering information.

Table 7-5 RPS150 AC power cable ordering information

Country/ Region	Part Number	Description	Remarks
China	04043396	Power Cords Cable, China AC Power 250V16A, 3.0m, PIAM, 227IEC53-2.5mm ² (3C), C19SF, Black	Optional
Japan	04044600	Power Cable, Japan AC Power Cable 125V20A, 3.0m, PMAM, HVCTF-3.5mm ² (3C), C19SF, Black	Optional
Europe	04044598	Power Cords Cable, Europe AC Power 250V16A, 3.0m, PFAM, H05VV-F-1.5mm ² (3C), C19SF, Black	Optional
Britain	04050850	Power Cords Cable, Britain AC Power Cable, 250V13A, 3.0m, PG AM, H05VV-F-1.5mm ² (3C), C19 SF, Black	Optional
North America	04044603	Power Cords Cable, North America AC Power 125V20A, 3.0m, PMAM, 12SJT(3C), C19SF, Black	Optional
Australia	04045184	Power Cords Cable, Australia AC Power 250V16A, 3.0m, PISM, H05VV-F-2.5mm ² (3C), C19SF, Black	Optional

Country/ Region	Part Number	Description	Remarks
Brazil	04150259	Power Cords Cable, Brazil AC Power 250V16A, 3.0m, PJSM-I, H05VV-F-1.5mm ² (3C), C19SF, Black	Optional
South Africa	04044597	Power Cords Cable, South Africa AC Power 250V16A, 3.0m, PDAM, H05VVF-1.5mm ² (3C), C19SF, Black	Optional

7.3 Ground Cable

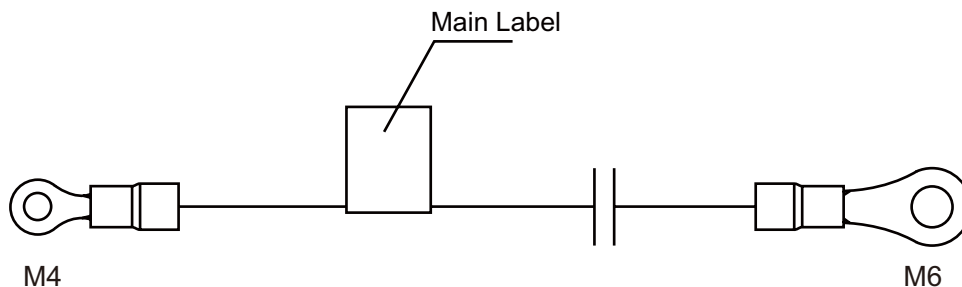
Description

A ground cable grounds a router to protect it from lightning and electromagnetic interference.

Appearance and Structure

Figure 7-5 shows the structure of a ground cable.

Figure 7-5 Structure of a ground cable



Connection

A ground cable is connected as follows:

- The M4 lug is connected to the ground point on a router.
- The M6 lug is connected to the ground point or equipotential terminal on a cabinet.

Ordering Information

Table 7-6 provides the ground cable ordering information.

Table 7-6 Ground cable ordering information

Part Number	Description	Remarks
04150052	Power Cable, 0.4m, 6mm ² , Yellow&Green, OT6-4, H07Z-K-6 ² G&Y, OT6-6, LSZH	Standard configuration

7.4 Console Cable

Description

A console cable connects the console interface of a router to the serial interface of a computer. The cable connects to the router through the RJ45 connector and connects to the PC through the DB9 connector.

Structure and Pin Assignments

Figure 7-6 shows the structure of a console cable.

Figure 7-6 Structure of a console cable

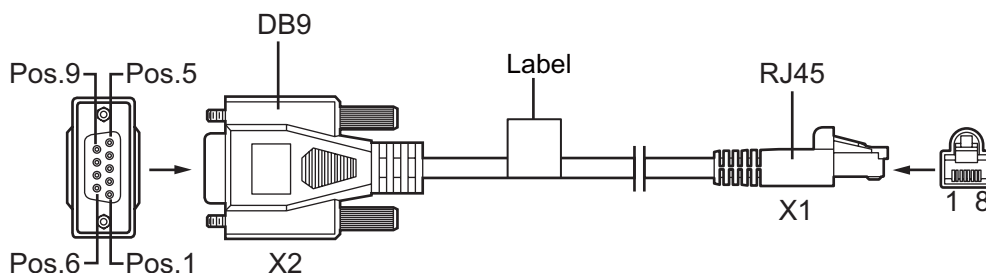


Table 7-7 lists the pin assignments of a console cable.

Table 7-7 Pin assignments of a console cable

X1 (RJ45)	Signal	Direction	X2 (DB9)
3	TXD	→	2
5	GND	-	5
6	RXD	←	3

 **NOTE**

- TXD and RXD are defined based on signal stream direction on the router, and the corresponding wires must be connected to the RXD and TXD wires on the remote device (computer).
- A console cable does not have an RTS, CTS, DSR, or DTR signal wire, and therefore does not support hardware-based flow control.
- Pins not listed in the table are not connected.

Connection

A console cable is connected as follows:

- The RJ45 connector is connected to the console interface of a router.
- The DB9 connector is connected to a maintenance terminal, generally a computer.

Ordering Information

[Table 7-8](#) provides the console cable ordering information.

Table 7-8 Console cable ordering information

Part Number	Description
04051113	Serial Port Cable, 3m, D9 FM, CC2P0.32PWG1U, MP8-I

7.5 Ethernet Cable

Description

An Ethernet cable consists of twisted pairs and RJ45 connectors at both ends. Pin assignments in the RJ45 connectors comply with the T568A or T568B standard. [Table 7-9](#) describes the two standards.

Table 7-9 T568A and T568B standards

T568A		T568B	
Pin	Wire Color	Pin	Wire Color
1	White and green	1	White and orange
2	Green	2	Orange
3	White and orange	3	White and green
4	Blue	4	Blue
5	White and blue	5	White and blue
6	Orange	6	Green

T568A		T568B	
Pin	Wire Color	Pin	Wire Color
7	White and brown	7	White and brown
8	Brown	8	Brown

Depending on whether RJ45 connectors at both ends comply with the same standard, Ethernet cables are classified into two types:

- Straight-through cable: The RJ45 connectors at both ends comply with the T568B standard.
- Crossover cable: One RJ45 connector complies with the T568A standard, and the other RJ45 connector complies with the T568B standard.

Structure and Pin Assignments

Figure 7-7 shows the structure of an Ethernet cable.

Figure 7-7 Structure of an Ethernet cable

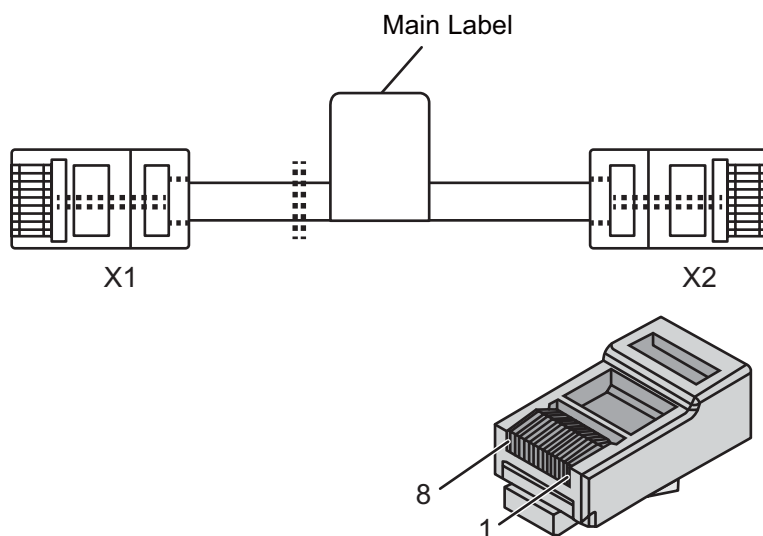


Table 7-10 lists the pin assignments of a straight-through cable.

Table 7-10 Pin assignments of a straight-through cable

X1 (RJ45)	Wire Color	X2 (RJ45)
1	White and orange	1
2	Orange	2
3	White and green	3

X1 (RJ45)	Wire Color	X2 (RJ45)
4	Blue	4
5	White and blue	5
6	Green	6
7	White and brown	7
8	Brown	8

Table 7-11 lists the pin assignments of a crossover cable.

Table 7-11 Pin assignments of a crossover cable

X1 (RJ45)	Wire Color	X2 (RJ45)
1	White and orange	3
2	Orange	6
3	White and green	1
4	Blue	4
5	White and blue	5
6	Green	2
7	White and brown	7
8	Brown	8

Connection

A straight-through cable can connect devices at different network layers in the following scenarios:

- Connect a switch or hub to a router.
- Connect a computer (server or workstation) to a switch or hub.
- Connect a switch to an upper-layer switch through an uplink interface.

A crossover cable can connect devices at the same network layer in the following scenarios:

- Connect a computer to a router.
- Connect two switches at the same layer.
- Connect two hubs.
- Connect two computers.
- Connect two routers.
- Connect an Ethernet interface of an ADSL modem to the network interface of a computer.

 **NOTE**

Most network devices support auto-negotiation on their interfaces. After auto-negotiation is enabled, the local and remote interfaces can automatically negotiate about communication parameters. In this case, the two interfaces can be connected by either a straight-through cable or a crossover cable.

Ordering Information

Select straight-through or crossover cables according to your network requirements. In an environment with severe electromagnetic interference, shielded Ethernet cables are recommended.

Table 7-12 provides the Ethernet cable ordering information.

Table 7-12 Ethernet cable ordering information

Part Number	Description	Remarks
04070050	Signal Cable, Shielded Straight Through Cable, 2.0m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04070006	Signal Cable, Shielded Straight Through Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04070007	Signal Cable, Shielded Crossover Network Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04024336	Single Cable, Straight Through Cable, 2.00m, MP8-I, CC4P0.5GY, MP8-I, Unshielded, DL3470d	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

7.6 Optical Fiber

Description

Determine the type and number of optical fibers based on the optical modules used:

- Single-mode optical modules must be used with single-mode optical fibers.
- Multimode optical modules must be used with multimode optical fibers.

- PON optical modules must be used with 1SC/PC-1SC/PC single-mode optical fibers.
- Each optical module with separate Tx and Rx channels must be used with two optical fibers of the same type.
- Each single-fiber-bidirectional optical module is used with only one optical fiber.

 **NOTE**

A single-mode optical fiber and a multimode optical fiber have the same appearance but different colors.
 A single-mode optical fiber is yellow and a multimode optical fiber is orange.

Structure and Pin Assignments

Figure 7-8 shows the structure of an LC/PC single-mode optical fiber.

Figure 7-8 Structure of an LC/PC single-mode optical fiber

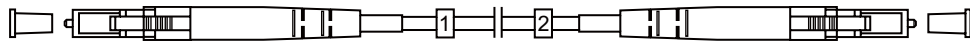


Figure 7-9 shows the structure of an SC/PC single-mode optical fiber.

Figure 7-9 Structure of an SC/PC single-mode optical fiber

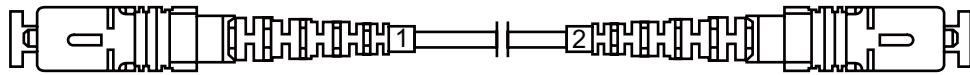


Figure 7-10 shows the structure of an LC/PC multimode optical fiber.

Figure 7-10 Structure of an LC/PC multimode optical fiber

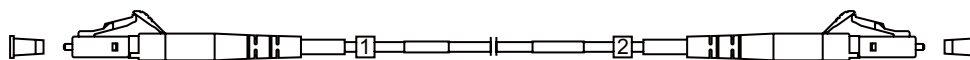


Table 7-13 lists the pin assignments of an optical fiber.

Table 7-13 Pin assignments of an optical fiber

Terminal on the Local Device	Signal Direction	Terminal on the Remote Device
Optical interface Tx terminal	->	Optical interface Rx terminal
Optical interface Rx terminal	<-	Optical interface Tx terminal

Connection

An optical fiber is a carrier of optical signals and transmits optical signals over a short distance. An optical fiber is connected as follows:

- One end is connected to an optical interface of router.
- The other end is connected to an optical distribution frame (ODF) or an optical interface of the upstream device or another device.

Ordering Information

Table 7-14 provides the optical fiber ordering information.

Table 7-14 Optical fiber ordering information

Part Number	Description	Remarks
14130221	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 10m	Optional
14130197	Patch Cord, FC/PC-LC/PC, Single mode, 2mm, 10m	Optional
14130222	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 10m	Optional
14130295	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 20m	Optional
14130199	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130251	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130223	Patch Cord, LC/PC-SC/PC, Multimode, A1b, 2mm, 10m	Optional
14130279	Patch Cord, LC/PC-SC/PC, Multimode, A1b, 2mm, 20m	Optional
14130196	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130280	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130276	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 30m	Optional

Part Number	Description	Remarks
14130277	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 30m	Optional
14130278	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 30m	Optional
14130282	Patch Cord, LC/PC-LC/PC, Single mode, G.652, 2mm, 30m	Optional
14130294	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 30m	Optional
14130273	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 20m	Optional
14130274	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130248	Adapter, LC/PC-LC/PC, 2, Blue, Square	Optional
14130001	Adapter, FC-FC, 2, Silvery white, Shell: Metal, Sleeve: Zirconia, Round	Optional
14130134	Adapter, SC-SC, 2, Blue, Square	Optional
14130253	Patch Cord, FC/PC-SC/PC, Single mode, G.652, 3mm, 10m	Optional
14130230	Patch Cord, SC/PC-SC/PC, Single mode, G.652, 3mm, 10m	Optional
14130275	Patch Cord, LC/PC, SC/PC, Multimode, 2mm, 30m	Optional
14130098	Patch Cord, SC/PC-SC/PC, Single mode, G.652D, 3mm, 5m	Optional
14130126	Patch Cord, 1SC/PC-1SC/PC, Single mode, 3mm, 15m	Optional
14130147	Patch Cord, 1SC/PC-1SC/PC, Single mode, 3mm, 20m	Optional

7.7 E1/T1 Cable

7.7.1 75-Ohm DB9-to-BNC Cable (Dedicated for E1)

Description

A 75-ohm DB9-to-BNC cable is applicable to the card models listed in [Table 7-15](#).

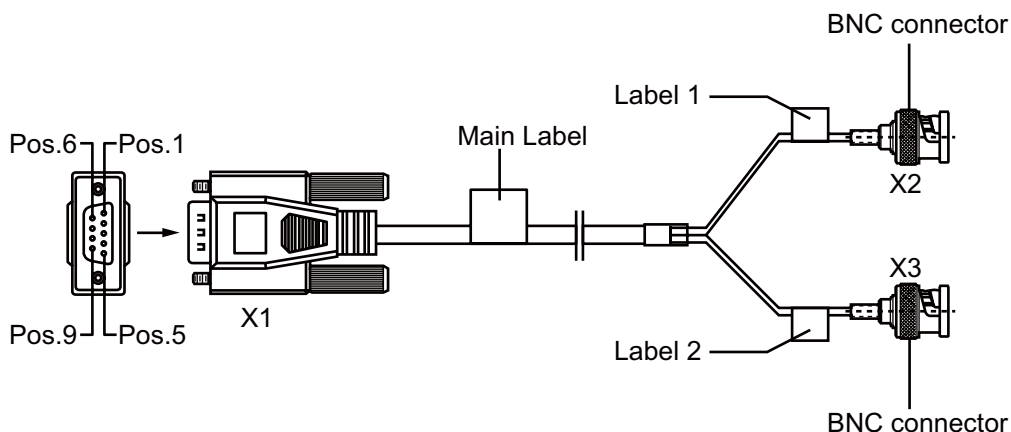
Table 7-15 Card models supporting a 75-ohm DB9-to-BNC cable

Cable	Card Model	Working Mode	Network Device Interface Type
75-ohm DB9-to-BNC cable	<ul style="list-style-type: none"> ● 1E1/T1-M ● 2E1/T1-M ● 2E1/T1-M-W 	E1/CE1/PRI	BNC
	<ul style="list-style-type: none"> ● 2E1/T1-F ● 1E1/T1-F 	E1-F	BNC
	1VE1	VE1	BNC

Structure and Pin Assignments

[Figure 7-11](#) shows the structure of a 75-ohm DB9-to-BNC cable.

Figure 7-11 Structure of a 75-ohm DB9-to-BNC cable



[Table 7-16](#) shows the pin assignments of a 75-ohm DB9-to-BNC cable.

Table 7-16 Pin assignments of a 75-ohm DB9-to-BNC cable

DB9		BNC		
Pin	Signal	Label	Pin	Signal
1	Rx +	R	Core wire	Rx
2	Rx -		Insulated wire	GND
6	Tx +	T	Core wire	Tx
7	Tx -		Insulated wire	GND

NOTE

- Tx stands for transmission, and Rx stands for receiving.
- The R and T tags on BNC coaxial cables indicate the signal directions on a router. The R and T BNC coaxial cables must be connected to the Tx and Rx interfaces on the remote device.

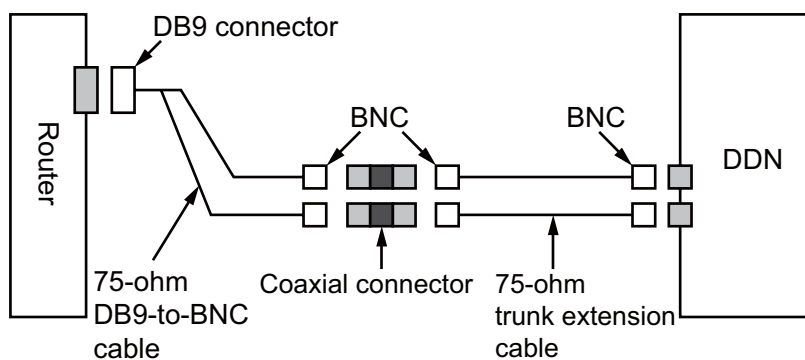
Trunk Extension Cable

NOTE

A 75-ohm DB9-to-BNC cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 75-ohm trunk extension cable as an extension cable.

When using a 75-ohm trunk extension cable to prolong a 75-ohm DB9-to-BNC cable, connect one BNC connector of the trunk cable to a coaxial connector and the other BNC connector to the remote device, as shown in [Figure 7-12](#).

Figure 7-12 Connection of a 75-ohm trunk extension cable



Connection

A 75-ohm DB9-to-BNC cable is connected as follows:

- The DB9 connector is connected to a router.
- The BNC connectors at the other end are connected to a network device.

Ordering Information

NOTE

If 75-ohm DB9-to-BNC cables need to be prolonged, configure two RF coaxial connectors and two 75-ohm trunk extension cables for each 75-ohm DB9-to-BNC cable.

Table 7-17 provides the 75-ohm DB9-to-BNC cable ordering information.

Table 7-17 75-ohm DB9-to-BNC cable ordering information

Part Number	Description	Remarks
04120275	Trunk Cable, 3m, 75ohm, 1E1, 2.2mm, D9M, SYFVZP75-1.2/0.25*4(S), 2*BNC75SM-V, For AR	Optional
04024299	Trunk Extension Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

7.7.2 75-Ohm RJ45-to-BNC Cable (Dedicated for E1)

Description

A 75-ohm RJ45-to-BNC cable is applicable to the card/router models listed in **Table 7-18**.

Table 7-18 Card/router models supporting a 75-ohm RJ45-to-BNC cable

Cable	Card/Router Model	Working Mode	Network Device Interface Type
75-ohm RJ45-to-BNC cable	<ul style="list-style-type: none"> ● 4E1/T1-M ● 8E1/T1-M 	E1/CE1/PRI	BNC
	<ul style="list-style-type: none"> ● 4E1/T1-F ● 8E1/T1-F 	E1-F	BNC
	4E1-IMA	ATM	BNC
	AR161FV-1P	VE1	BNC

Structure and Pin Assignments

Figure 7-13 shows the structure of a 75-ohm RJ45-to-BNC cable.

Figure 7-13 Structure of a 75-ohm RJ45-to-BNC cable

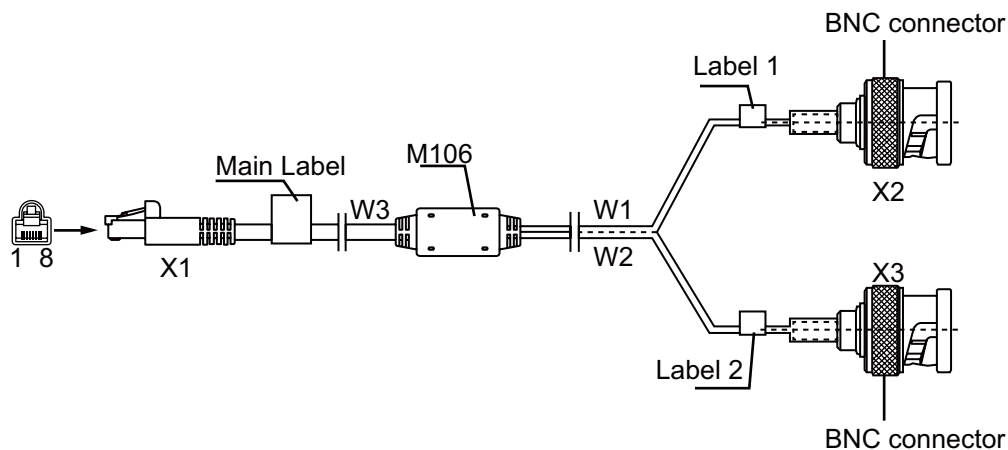


Table 7-19 shows the pin assignments of a 75-ohm RJ45-to-BNC cable.

Table 7-19 Pin assignments of a 75-ohm RJ45-to-BNC cable

RJ45		BNC		
Pin	Signal	Label	Pin	Signal
1	Rx -	R	Core wire	Rx
2	Rx +		Insulated wire	GND
4	Tx -	T	Core wire	Tx
5	Tx +		Insulated wire	GND

NOTE

- Tx stands for transmission, and Rx stands for receiving.
- The R and T tags on BNC coaxial cables indicate the signal directions on a router. The R and T BNC coaxial cables must be connected to the Tx and Rx interfaces on the remote device.

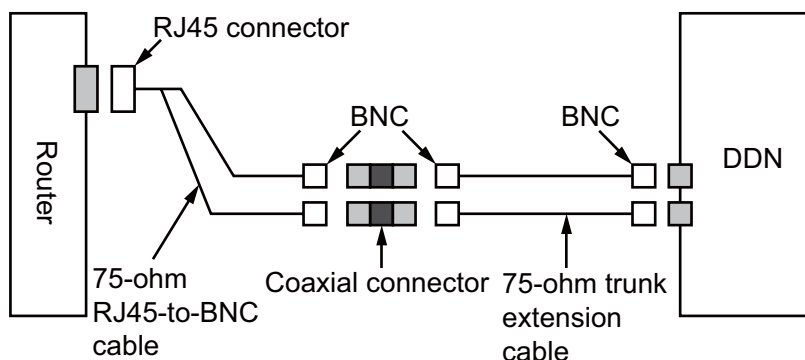
Trunk Extension Cable

NOTE

If the default length is not enough for cable connection, you can use a 75-ohm trunk extension cable as an extension cable.

When using a 75-ohm trunk extension cable to prolong a 75-ohm RJ45-to-BNC cable, connect one BNC connector of the trunk cable to a coaxial connector and the other BNC connector to the remote device, as shown in Figure 7-14.

Figure 7-14 Connection of a 75-ohm trunk extension cable



Connection

A 75-ohm RJ45-to-BNC cable is connected as follows:

- The RJ45 connector is connected to a router.
- The BNC connectors at the other end are connected to a network device.

Ordering Information

NOTE

If 75-ohm RJ45-to-BNC cables need to be prolonged, configure two RF coaxial connectors and two 75-ohm trunk extension cables for each 75-ohm RJ45-to-BNC cable.

Table 7-20 provides the 75-ohm RJ45-to-BNC cable ordering information.

Table 7-20 75-ohm RJ45-to-BNC cable ordering information

Part Number	Description	Remarks
04120387	Trunk Cable,3m,75ohm, 1*E1,2.2mm,2*BNC75SM- V, (2*SYFYZ75-1.2/0.26PWG 1U+120CC2P0.4P430U(S)- I),MP8-II,LSZH,120ohm to 75ohm cable	Optional
04120387-001	Trunk Cable,50m,75ohm, 1*E1,2.2mm,2*BNC75SM- V, (2*SYFYZ75-1.2/0.26PWG 1U+120CC2P0.4P430U(S)- I),MP8-II,LSZH,120ohm to 75ohm cable	Optional

Part Number	Description	Remarks
04120387-002	Trunk Cable,100m,75ohm, 1*E1,2.2mm,2*BNC75SM- V, (2*SYFYZ75-1.2/0.26PWG 1U+120CC2P0.4P430U(S)- I),MP8-II,LSZH,120ohm to 75ohm cable	Optional
04024299	Trunk Extension Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

7.7.3 120-Ohm DB9-to-RJ45 Cable (Dedicated for E1)

Description

A 120-ohm DB9-to-RJ45 cable is applicable to the card models listed in [Table 7-21](#).

Table 7-21 Card models supporting a 120-ohm DB9-to-RJ45 cable

Cable	Card Model	Working Mode	Network Device Interface Type
120-ohm DB9-to-RJ45 cable	<ul style="list-style-type: none"> ● 1E1/T1-M ● 2E1/T1-M ● 2E1/T1-M-W 	E1/CE1/PRI	RJ45
	<ul style="list-style-type: none"> ● 2E1/T1-F ● 1E1/T1-F 	E1-F	RJ45
	1VE1	VE1	RJ45

Structure and Pin Assignments

[Figure 7-15](#) shows the structure of a 120-ohm DB9-to-RJ45 cable.

Figure 7-15 Structure of a 120-ohm DB9-to-RJ45 cable

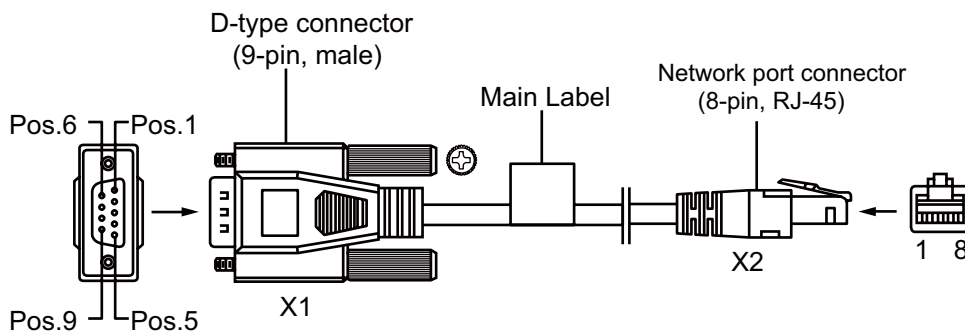


Table 7-22 shows the pin assignments of a 120-ohm DB9-to-RJ45 cable.

Table 7-22 Pin assignments of a 120-ohm DB9-to-RJ45 cable

DB9		RJ45	
Pin	Signal	Pin	Signal
1	Rx +	4	Rx +
2	Rx -	5	Rx -
6	Tx +	1	Tx +
7	Tx -	2	Tx -

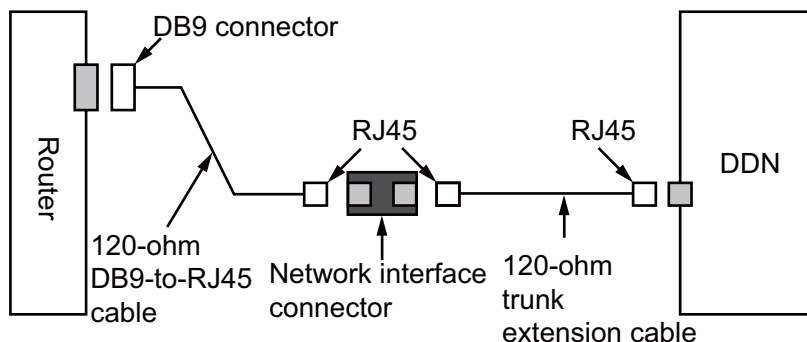
Trunk Extension Cable

NOTE

A 120-ohm DB9-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 120-ohm trunk extension cable as an extension cable.

When using a 120-ohm trunk extension cable to prolong a 120-ohm DB9-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in **Figure 7-16**.

Figure 7-16 Connection of a 120-ohm trunk extension cable



Connection

A 120-ohm DB9-to-RJ45 cable is connected as follows:

- The DB9 connector is connected to a router.
- The RJ45 connector is connected to a network device.

Ordering Information

NOTE

If 120-ohm DB9-to-RJ45 cables need to be prolonged, configure one network interface connector and one 120-ohm trunk extension cable for each 120-ohm DB9-to-RJ45 cable.

[Table 7-23](#) provides the 120-ohm DB9-to-RJ45 cable ordering information.

Table 7-23 120-ohm DB9-to-RJ45 cable ordering information

Part Number	Description	Remarks
04120276	Trunk Cable, 3m, 120ohm, 1E1, D9M, 120CC2P0.4P430U(S), MP8-II, For AR	Optional
04120278	Trunk Extension Cable, 15m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC2P0.4P430U(S), MP8-II.	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

7.7.4 120-Ohm RJ45-to-RJ45 Cable (Dedicated for E1)

Description

A 120-ohm RJ45-to-RJ45 cable is applicable to the card/router models listed in [Table 7-24](#).

Table 7-24 Card/router models supporting a 120-ohm RJ45-to-RJ45 cable

Cable	Card/Router Model	Working Mode	Network Device Interface Type
120-ohm RJ45-to-RJ45 cable	<ul style="list-style-type: none"> ● 4E1/T1-M ● 8E1/T1-M 	E1/CE1/PRI	RJ45

Cable	Card/Router Model	Working Mode	Network Device Interface Type
	<ul style="list-style-type: none"> ● 4E1/T1-F ● 8E1/T1-F 	E1-F	RJ45
	4E1-IMA	ATM	RJ45
	AR161FV-1P	VE1	RJ45

Structure and Pin Assignments

Figure 7-17 shows the structure of a 120-ohm RJ45-to-RJ45 cable.

Figure 7-17 Structure of a 120-ohm RJ45-to-RJ45 cable

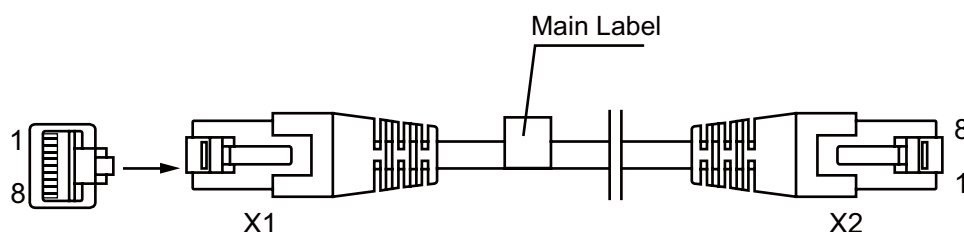


Table 7-25 shows the pin assignments of a 120-ohm RJ45-to-RJ45 cable.

Table 7-25 Pin assignments of a 120-ohm RJ45-to-RJ45 cable

X1		X2	
Pin	Signal	Pin	Signal
1	Rx -	4	Rx -
2	Rx +	5	Rx +
4	Tx -	1	Tx -
5	Tx +	2	Tx +

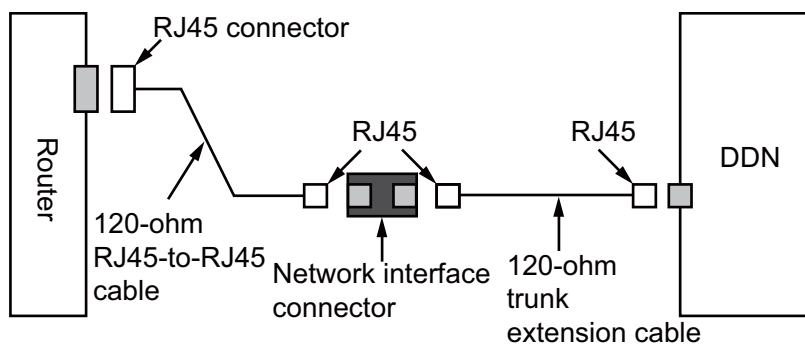
Trunk Extension Cable

NOTE

If the default length is not enough for cable connection, you can use a 120-ohm trunk extension cable as an extension cable.

When using a 120-ohm trunk extension cable to prolong a 120-ohm RJ45-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in Figure 7-18.

Figure 7-18 Connection of a 120-ohm trunk extension cable



Connection

A 120-ohm RJ45-to-RJ45 cable is connected as follows:

- One RJ45 connector is connected to a router.
- The other RJ45 connector is connected to a network device.

Ordering Information

NOTE

If 120-ohm RJ45-to-RJ45 cables need to be prolonged, configure one network interface connector and one 120-ohm trunk extension cable for each 120-ohm RJ45-to-RJ45 cable.

Table 7-26 provides the 120-ohm RJ45-to-RJ45 cable ordering information.

Table 7-26 120-ohm RJ45-to-RJ45 cable ordering information

Part Number	Description	Remarks
04040497	Trunk Cable, 3m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional
04040497-003	Trunk Cable, 50m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional
04040497-004	Trunk Cable, 100m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional

Part Number	Description	Remarks
04120278	Trunk Extension Cable, 15m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC2P0.4P430U(S), MP8-II.	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded	Optional

7.7.5 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Description

A 100-ohm DB9-to-RJ45 cable is applicable to the card models listed in [Table 7-27](#).

Table 7-27 Card models supporting a 100-ohm DB9-to-RJ45 cable

Cable	Card Model	Working Mode	Network Device Interface Type
100-ohm DB9-to-RJ45 cable	<ul style="list-style-type: none"> ● 1E1/T1-M ● 2E1/T1-M ● 2E1/T1-M-W ● 2E1/T1-F ● 1E1/T1-F 	T1	RJ45

Structure and Pin Assignments

[Figure 7-19](#) shows the structure of a 100-ohm DB9-to-RJ45 cable.

Figure 7-19 Structure of a 100-ohm DB9-to-RJ45 cable

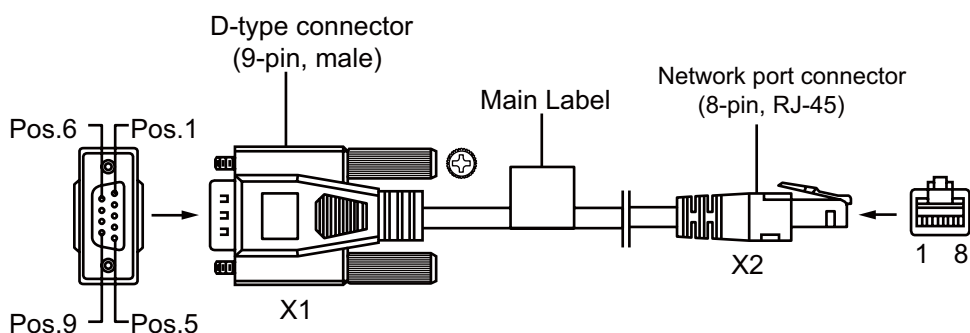


Table 7-28 shows the pin assignments of a 100-ohm DB9-to-RJ45 cable.

Table 7-28 Pin assignments of a 100-ohm DB9-to-RJ45 cable

DB9		RJ45	
Pin	Signal	Pin	Signal
1	Rx +	4	Rx +
2	Rx -	5	Rx -
6	Tx +	1	Tx +
7	Tx -	2	Tx -

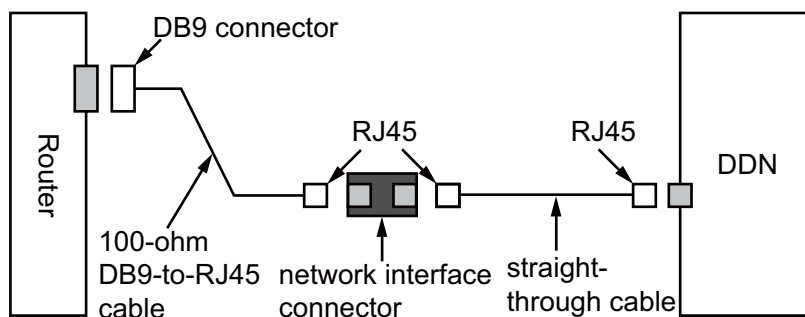
Straight-Through Cable

NOTE

A 100-ohm DB9-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a straight-through cable as an extension cable.

When using a straight-through cable to prolong a 100-ohm DB9-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in **Figure 7-20**.

Figure 7-20 Connection of a straight-through cable



Connection

A 100-ohm DB9-to-RJ45 cable is connected as follows:

- The DB9 connector is connected to a router.
- The RJ45 connector is connected to a network device.

Ordering Information

NOTE

If 100-ohm DB9-to-RJ45 cables need to be prolonged, configure one network interface connector and one straight-through cable for each 100-ohm DB9-to-RJ45 cable.

Table 7-29 provides the 100-ohm DB9-to-RJ45 cable ordering information.

Table 7-29 100-ohm DB9-to-RJ45 cable ordering information

Part Number	Description	Remarks
04120277	Trunk Cable, 3m, 100ohm, 1T1, 0.53mm, D9M, CC4P0.5P430U(S), MP8-IV, LSZH	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

7.8 E3/T3 Cable

Description

An E3/T3 cable connects a 1E3/CE3/T3/CT3 interface card to a remote device. The cable connects to the interface card through the SMB75 connector and connects to the remote device through the BNC connector.

Each 1E3/CE3/T3/CT3 interface card needs to be connected to a remote device using two E3/T3 cables.

Structure and Pin Assignments

Figure 7-21 shows the structure of an E3/T3 cable.

Figure 7-21 Structure of an E3/T3 cable

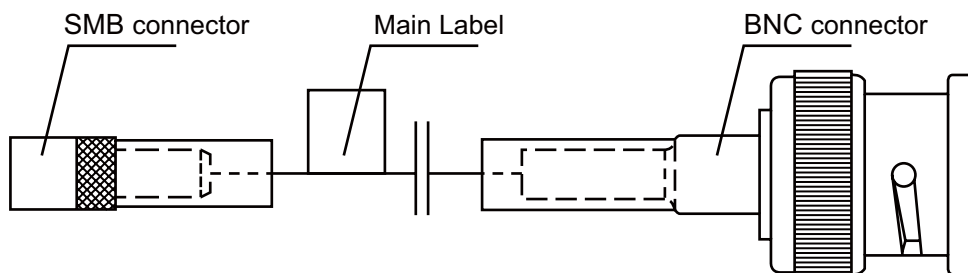


Table 7-30 lists the pin assignments of an E3/T3 cable.

Table 7-30 Pin assignments of an E3/T3 cable

SMB75		BNC	
Pin	Signal	Pin	Signal
Core wire	Signal wire	Core wire	Signal wire
Insulated wire	GND	Insulated wire	GND

Connection

- Connect the SMB75 connector of one E3/T3 cable to the Tx interface on the 1E3/CE3/T3/CT3 interface card, and the BNC connector to the Rx interface on the remote device.
- Connect the SMB75 connector of one E3/T3 cable to the Rx interface on the 1E3/CE3/T3/CT3 interface card, and the BNC connector to the Tx interface on the remote device.

Ordering Information

If the two devices to be connected are far from each other, you can use trunk cables to extend the E3/T3 cables. In this case, you also need to use a coaxial connector for each E3/T3 cable.

[Table 7-31](#) provides the E3/T3 cable ordering information.

Table 7-31 E3/T3 cable ordering information

Part Number	Description	Remarks
04042685	Single Cable, SMB75SF-IV, SYV75-2/0.34(S), BNC75SM-III, 10m, 75 ohm Clock Cable, MD5500	Optional
04024299	Trunk Extension Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

7.9 SA Cable

7.9.1 V.24 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-22 shows the structure of a V.24 DTE cable.

Figure 7-22 Structure of a V.24 DTE cable

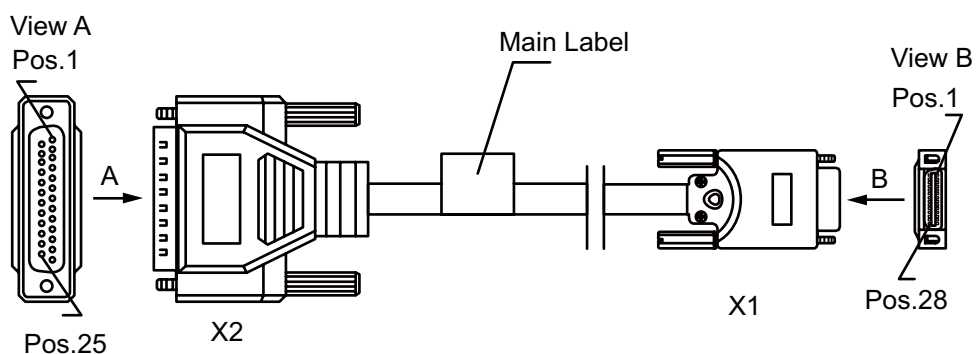


Table 7-32 lists the pin assignments of a V.24 DTE cable.

Table 7-32 Pin assignments of a V.24 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
1	TXD	→	2
19	RXD	←	3
13	RTS	→	4
23	CTS	←	5
27	DTR	→	20
25	DSR	←	6
11	DCD	←	8
22	LL	→	18
3	TXC	←	15
15	TXCE	→	24

X1 (DB28)	Signal	Direction	X2 (DB25)
17	RXC	←	17
21	GND	↔	1
6	GND	↔	7
10	MODE_DCE		
7	MODE0		

Connection

A V.24 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-33](#) provides the V.24 DTE cable ordering information.

Table 7-33 V.24 DTE cable ordering information

Part Number	Description	Remarks
04043589	Single Cable, V.24 Serial Port Cable, 3m, D25M, CC(5P+8C)0.32P296U(S), D28M, DTE	Optional

7.9.2 V.24 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-23 shows the structure of a V.24 DCE cable.

Figure 7-23 Structure of a V.24 DCE cable

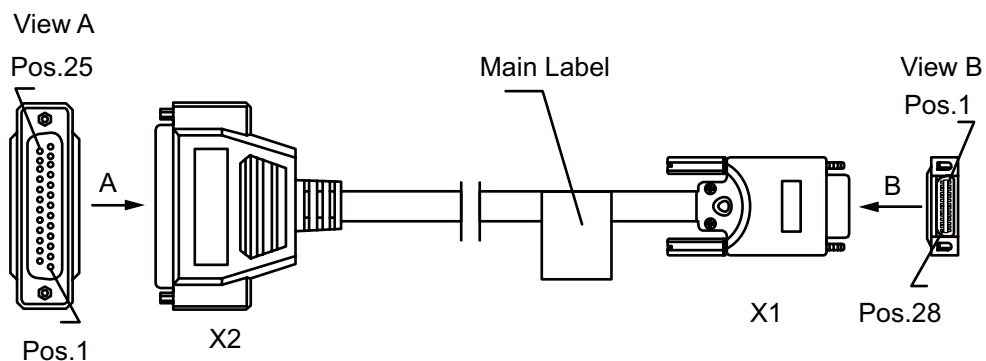


Table 7-34 lists the pin assignments of a V.24 DCE cable.

Table 7-34 Pin assignments of a V.24 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
19	RXD	←	2
1	TXD	→	3
23	CTS	←	4
13	RTS	→	5
25	DSR	←	20
27	DTR	→	6
11	DCD	→	8
22	LL	←	18
3	TXC	→	15
17	RXC	←	24
15	TXCE	→	17
21	GND	↔	1
6	GND	↔	7
7	MODE0		

Connection

A V.24 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 7-35 provides the V.24 DCE cable ordering information.

Table 7-35 V.24 DCE cable ordering information

Part Number	Description	Remarks
04043590	Single Cable, V.24 Serial Port Cable, 3m, D25F, CC(5P+8C)0.32P296U(S), D28M, DCE	Optional

7.9.3 V.35 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-24 shows the structure of a V.35 DTE cable.

Figure 7-24 Structure of a V.35 DTE cable

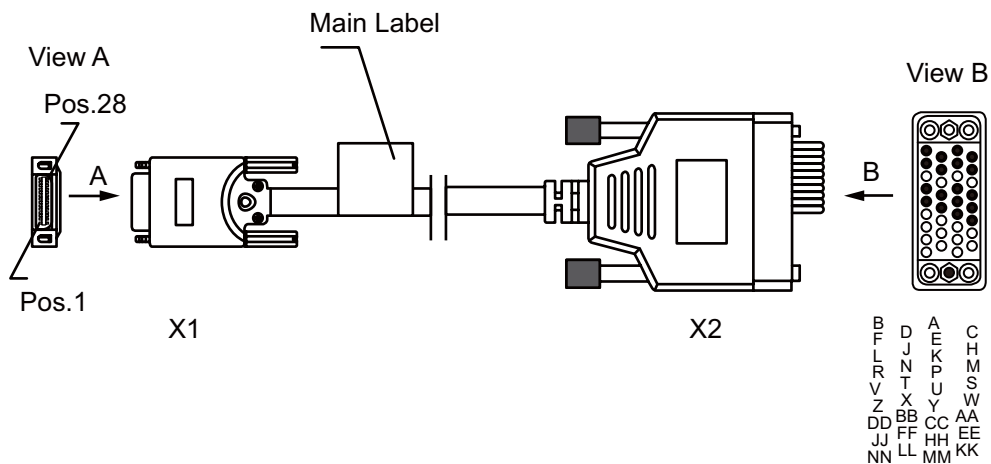


Table 7-36 lists the pin assignments of a V.35 DTE cable.

Table 7-36 Pin assignments of a V.35 DTE cable

X1 (DB28)	Signal	Direction	X2
1	TXD+	→	P
2	TXD-	→	S
19	RXD+	←	R
20	RXD-	←	T
17	RXC+	←	V
18	RXC-	←	X
3	TXC+	←	Y
4	TXC-	←	AA
15	TXCE+	→	U
16	TXCE-	→	W
11	DCD+	←	F
22	LL	→	J
13	RTS+	→	C
23	CTS+	←	D
27	DTR+	→	H
25	DSR+	←	E
21	GND	↔	B
6	GND	↔	A
10	MODE_DCE		
7	MODE0		
8	MODE1		

Connection

A V.35 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).

- If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 7-37 provides the V.35 DTE cable ordering information.

Table 7-37 V.35 DTE cable ordering information

Part Number	Description	Remarks
04043591	Single Cable, V.35 Serial Port Cable, 3m, D28M, CC(5P+8C)0.32P296U(S), D34M +D34PS, DTE	Optional

7.9.4 V.35 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-25 shows the structure of a V.35 DCE cable.

Figure 7-25 Structure of a V.35 DCE cable

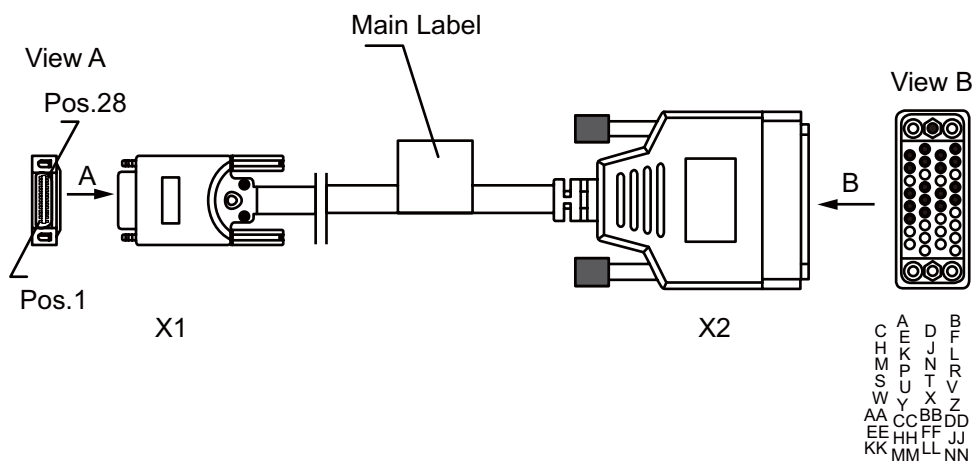


Table 7-38 lists the pin assignments of a V.35 DCE cable.

Table 7-38 Pin assignments of a V.35 DCE cable

X1 (DB28)	Signal	Direction	X2
19	RXD+	←	P
20	RXD-	←	S
1	TXD+	→	R
2	TXD-	→	T
15	TXCE+	→	V
16	TXCE-	→	X
3	TXC+	→	Y
4	TXC-	→	AA
17	RXC+	←	U
18	RXC-	←	W
11	DCD+	→	F
22	LL	←	J
23	CTS+	←	C
13	RTS+	→	D
25	DSR+	←	H
27	DTR+	→	E
21	GND	↔	B
6	GND	↔	A
7	MODE0		
8	MODE1		

Connection

A V.35 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 7-39 provides the V.35 DCE cable ordering information.

Table 7-39 V.35 DCE cable ordering information

Part Number	Description	Remarks
04043592	Single Cable, V.35 Serial Port Cable, 3m, D28M, CC(5P+8C)0.32P296U(S), D34F +D34PS, DCE	Optional

7.9.5 X.21 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-26 shows the structure of an X.21 DTE cable.

Figure 7-26 Structure of an X.21 DTE cable

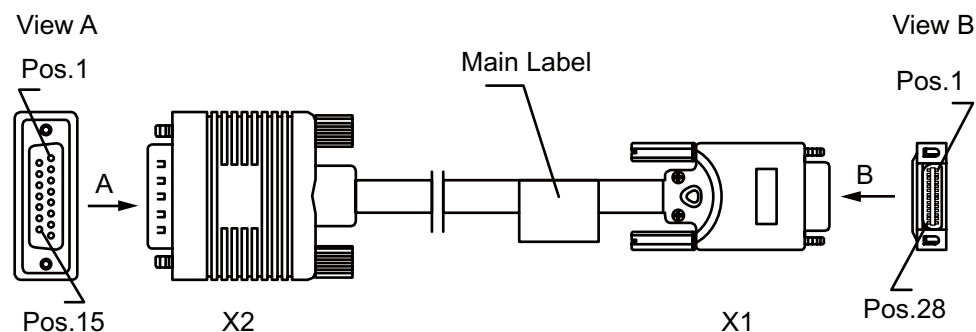


Table 7-40 lists the pin assignments of an X.21 DTE cable.

Table 7-40 Pin assignments of an X.21 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB15)
13	RTS+	→	3

X1 (DB28)	Signal	Direction	X2 (DB15)
14	RTS-	→	10
23	CTS+	←	5
24	CTS-	←	12
19	RXD+	←	4
20	RXD-	←	11
1	TXD+	→	2
2	TXD-	→	9
17	RXC+	←	6
18	RXC-	←	13
21	GND	↔	1
6	GND	↔	8
10	MODE_DCE		
9	MODE2		

Connection

An X.21 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB15) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-41](#) provides the X.21 DTE cable ordering information.

Table 7-41 X.21 DTE cable ordering information

Part Number	Description	Remarks
04043593	Single Cable, X.21 Serial Port Cable, 3m, D15M, CC(5P+8C)0.32P296U(S), D28M, DTE	Optional

7.9.6 X.21 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-27 shows the structure of an X.21 DCE cable.

Figure 7-27 Structure of an X.21 DCE cable

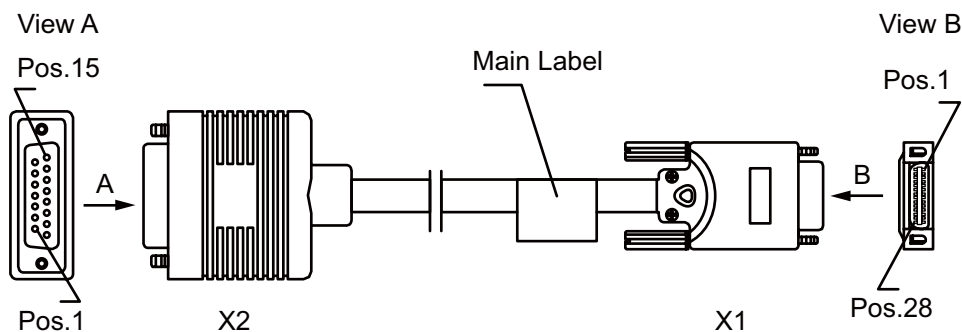


Table 7-42 lists the pin assignments of an X.21 DCE cable.

Table 7-42 Pin assignments of an X.21 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB15)
13	RTS+	→	5
14	RTS-	→	12
23	CTS+	←	3
24	CTS-	←	10
19	RXD+	←	2
20	RXD-	←	9
1	TXD+	→	4
2	TXD-	→	11
15	RXC+	→	6

X1 (DB28)	Signal	Direction	X2 (DB15)
16	RXC-	→	13
21	GND	→	1
6	GND	←→	8
9	MODE_DCE		

Connection

An X.21 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB15) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-43](#) provides the X.21 DCE cable ordering information.

Table 7-43 X.21 DCE cable ordering information

Part Number	Description	Remarks
04043594	Single Cable, X.21 Serial Port Cable, 3m, D15F, CC(5P+8C)0.32P296U(S), D28M, DCE	Optional

7.9.7 RS449 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

[Figure 7-28](#) shows the structure of an RS449 DTE cable.

Figure 7-28 Structure of an RS449 DTE cable

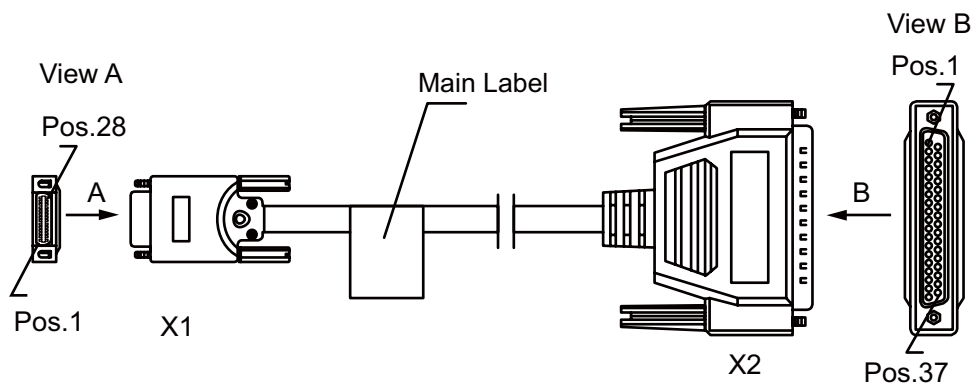


Table 7-44 lists the pin assignments of an RS449 DTE cable.

Table 7-44 Pin assignments of an RS449 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB37)
27	DTR+	→	12
28	DTR-	→	30
25	DSR+	←	11
26	DSR-	←	29
13	RTS+	→	7
14	RTS-	→	25
23	CTS+	←	9
24	CTS-	←	27
11	DCD+	←	13
12	DCD-	←	31
19	RXD+	←	6
20	RXD-	←	24
1	TXD+	→	4
2	TXD-	→	22
15	TXCE+	→	17
16	TXCE-	→	35
17	RXC+	←	8
18	RXC-	←	26

X1 (DB28)	Signal	Direction	X2 (DB37)
3	TXC+	←	5
4	TXC-	←	23
22	LL	←	10
21	GND	↔	1
6	GND	↔	19
8	MODE_DCE		
10	MODE1		

Connection

An RS449 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB37) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-45](#) provides the RS449 DTE cable ordering information.

Table 7-45 RS449 DTE cable ordering information

Part Number	Description	Remarks
04043595	Single Cable, RS449 Serial Port Cable, 3m, D28M, 100CC13P0.32P296U(S), D37M-I, DTE	Optional

7.9.8 RS449 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-29 shows the structure of an RS449 DCE cable.

Figure 7-29 Structure of an RS449 DCE cable

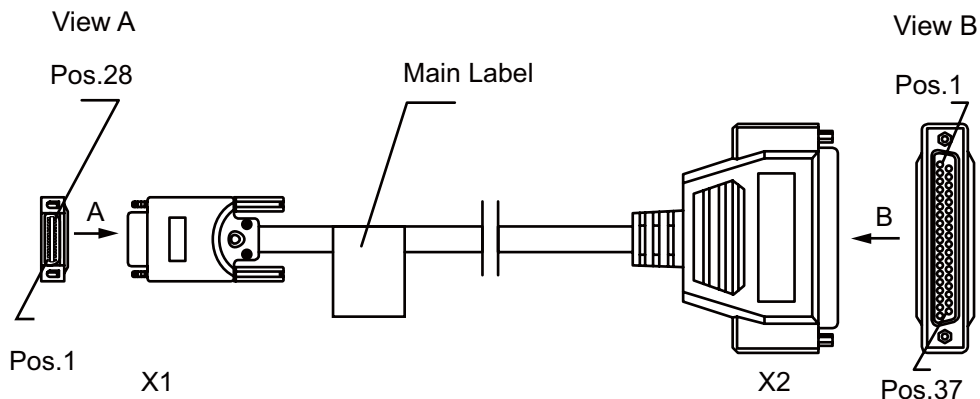


Table 7-46 lists the pin assignments of an RS449 DCE cable.

Table 7-46 Pin assignments of an RS449 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB37)
27	DTR+	→	11
28	DTR-	→	29
25	DSR+	←	12
26	DSR-	←	30
13	RTS+	→	9
14	RTS-	→	27
23	CTS+	←	7
24	CTS-	←	25
11	DCD+	→	13
12	DCD-	→	31
19	RXD+	←	4
20	RXD-	←	22
1	TXD+	→	6
2	TXD-	→	24
15	TXCE+	→	8
16	TXCE-	→	26

X1 (DB28)	Signal	Direction	X2 (DB37)
17	RXC+	←	17
18	RXC-	←	35
3	TXC+	→	5
4	TXC-	→	23
22	LL	→	10
21	GND	↔	1
6	GND	↔	19
8	MODE_DCE		

Connection

An RS449 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB37) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-47](#) provides the RS449 DCE cable ordering information.

Table 7-47 RS449 DCE cable ordering information

Part Number	Description	Remarks
04043596	Single Cable, RS449 Serial Port Cable, 3m, D28M, 100CC13P0.32P296U(S), D37F-I, DCE	Optional

7.9.9 RS530 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-30 shows the structure of an RS530 DTE cable.

Figure 7-30 Structure of an RS530 DTE cable

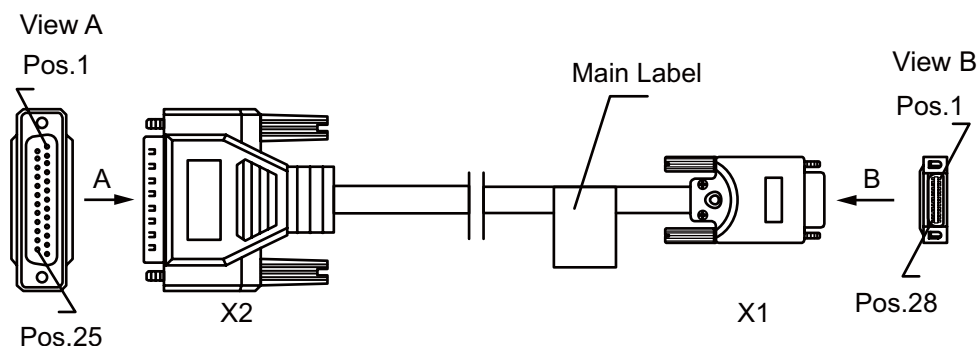


Table 7-48 lists the pin assignments of an RS530 DTE cable.

Table 7-48 Pin assignments of an RS530 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
27	DTR+	→	20
28	DTR-	→	23
25	DSR+	←	6
26	DSR-	←	22
13	RTS+	→	4
14	RTS-	→	19
23	CTS+	←	5
24	CTS-	←	13
11	DCD+	←	8
12	DCD-	←	10
19	RXD+	←	3

X1 (DB28)	Signal	Direction	X2 (DB25)
20	RXD-	←	16
1	TXD+	→	2
2	TXD-	→	14
15	TXCE+	→	24
16	TXCE-	→	11
17	RXC+	←	17
18	RXC-	←	9
3	TXC+	←	15
4	TXC-	←	12
22	LL	→	18
21	GND	↔	1
6	GND	↔	7
10	MODE_DCE		
7	MODE0		
9	MODE2		

Connection

An RS530 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-49](#) provides the RS530 DTE cable ordering information.

Table 7-49 RS530 DTE cable ordering information

Part Number	Description	Remarks
04043597	Single Cable, RS530 Serial Port Cable, 3m, D25M, 100CC13P0.32P296U(S), D28M, DTE	Optional

7.9.10 RS530 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 7-31 shows the structure of an RS530 DCE cable.

Figure 7-31 Structure of an RS530 DCE cable

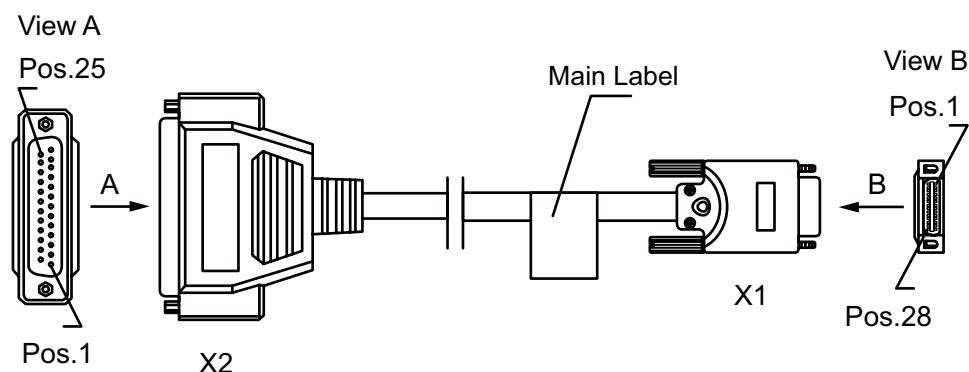


Table 7-50 lists the pin assignments of an RS530 DCE cable.

Table 7-50 Pin assignments of an RS530 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
27	DTR+	→	6
28	DTR-	→	22
25	DSR+	←	20
26	DSR-	←	23
13	RTS+	→	5
14	RTS-	→	13
23	CTS+	←	4
24	CTS-	←	19

X1 (DB28)	Signal	Direction	X2 (DB25)
11	DCD+	→	8
12	DCD-	→	10
19	RXD+	←	2
20	RXD-	←	14
1	TXD+	→	3
2	TXD-	→	16
15	TXCE+	→	17
16	TXCE-	→	9
17	RXC+	←	24
18	RXC-	←	11
3	TXC+	→	15
4	TXC-	→	12
22	LL	←	18
21	GND	↔	1
6	GND	↔	7
7	MODE0		
9	MODE2		

Connection

An RS530 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

[Table 7-51](#) provides the RS530 DCE cable ordering information.

Table 7-51 RS530 DCE cable ordering information

Part Number	Description	Remarks
04043770	Single Cable, RS530 Serial Port Cable, 3m, D25F, 100CC13P0.32P296U(S), D28M, DCE	Optional

7.10 8AS Cable

Description

An 8AS interface card can be used in four scenarios, where different cables are required. [Table 7-52](#) describes the scenarios and applicable cables.

Table 7-52 Types and application scenarios of 8AS cables

Cable Type	Application Scenario	Description
Straight-through cable	Financial dumb terminal	The pin assignments at both ends of the cable are the same.
Adapter cable plus straight-through cable	Telecommunications terminal	An adapter cable has an RJ45 male plug at one end and an RJ45 female socket at the other end. The cable converts the wire sequences on a dumb terminal to the standard wire sequences for telecommunications devices. The RJ45 male socket of the adapter cable is connected to a straight-through cable, which is connected to a terminal.
Adapter cable plus asynchronous serial cable	Common network device	An asynchronous serial cable has an RJ45 connector at one end and a DB25/DB9 connector at the other end.
Self-made cable	Serial port server	The wire sequences of twisted pairs in the two RJ45 connectors are determined by the type of signals transmitted from the connected terminal.

Straight-Through Cable: Connecting to a Financial Dumb Terminal

[Figure 7-32](#) shows the structure of a straight-through cable.

Figure 7-32 Structure of a straight-through cable

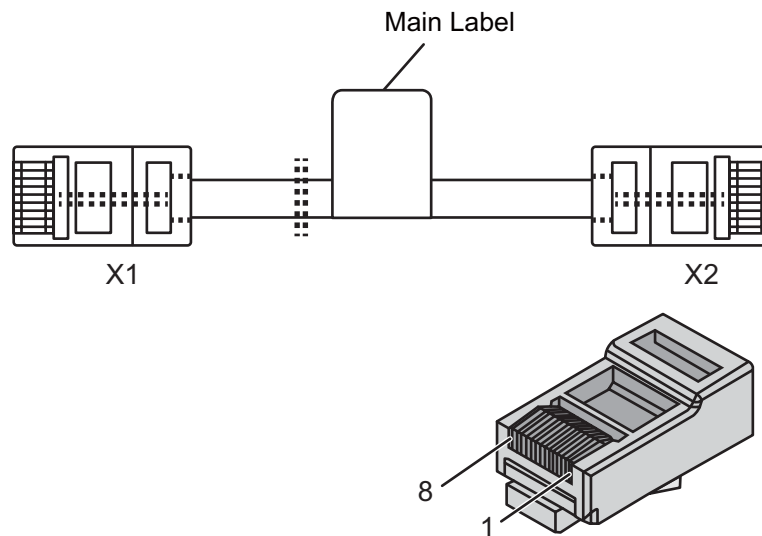


Table 7-53 lists the pin assignments of a straight-through cable.

Table 7-53 Pin assignments of a straight-through cable

X1 (RJ45)	Signal	Direction	X2 (RJ45)
1	DCD	←	1
2	DTR	→	2
3	DSR	←	3
4	GND	-	4
5	RXD	←	5
6	TXD	→	6
7	CTS	←	7
8	RTS	→	8

Adapter Cable plus Straight-Through Cable: Connecting to a Telecommunications Terminal

Figure 7-33 shows the structure of an adapter cable.

Figure 7-33 Structure of an adapter cable

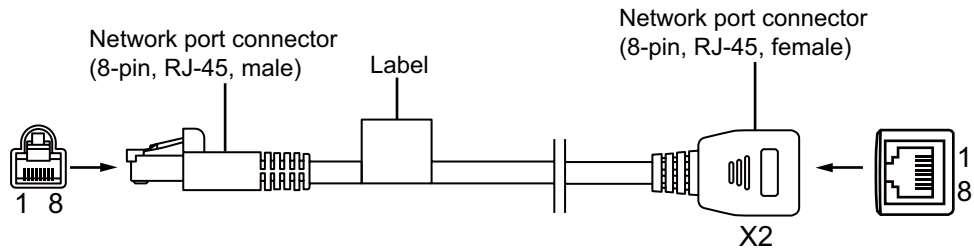


Table 7-54 lists the pin assignments of an adapter cable.

Table 7-54 Pin assignments of an adapter cable

X1 (Male)	Signal	Direction	X2 (Female)
1	DCD	←	Blue
2	DTR	→	Orange
3	DSR	←	White and brown
4	GND	-	White and blue
5	RXD	←	Green
6	TXD	→	White and green
7	CTS	←	Brown
8	RTS	→	White and orange

Figure 7-34 shows the structure of a straight-through cable.

Figure 7-34 Structure of a straight-through cable

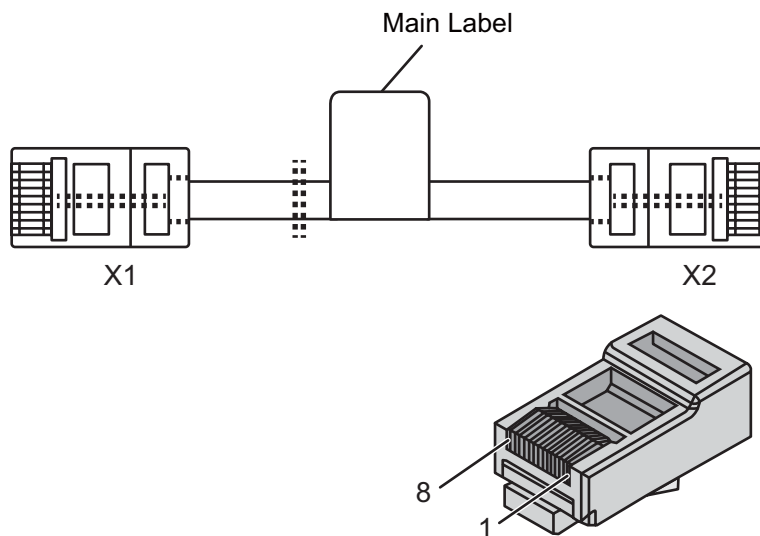


Table 7-55 lists the pin assignments of a straight-through cable.

Table 7-55 Pin assignments of a straight-through cable

X1 (RJ45)	Signal	Direction	X2 (RJ45)
1	DCD	←	1
2	DTR	→	2
3	DSR	←	3
4	GND	-	4
5	RXD	←	5
6	TXD	→	6
7	CTS	←	7
8	RTS	→	8

Adapter Cable plus Asynchronous Serial Cable: Connecting to a Common Network Device

Figure 7-35 shows the structure of an adapter cable.

Figure 7-35 Structure of an adapter cable

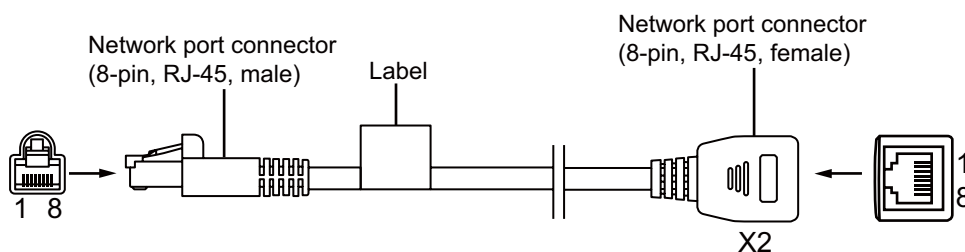


Table 7-56 lists the pin assignments of an adapter cable.

Table 7-56 Pin assignments of an adapter cable

X1 (Male)	Signal	Direction	X2 (Female)
1	DCD	←	Blue
2	DTR	→	Orange
3	DSR	←	White and brown
4	GND	-	White and blue

X1 (Male)	Signal	Direction	X2 (Female)
5	RXD	←	Green
6	TXD	→	White and green
7	CTS	←	Brown
8	RTS	→	White and orange

Figure 7-36 shows the structure of an asynchronous serial cable.

Figure 7-36 Structure of an asynchronous serial cable

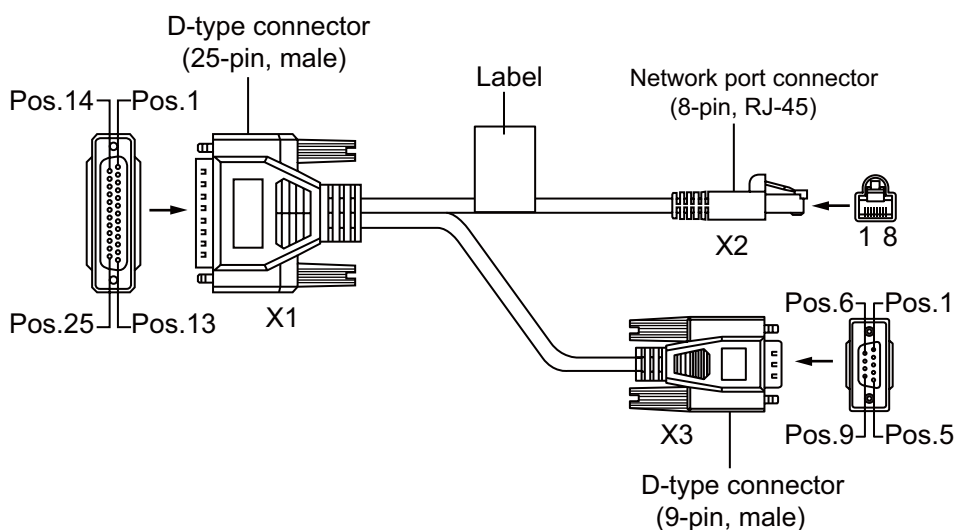


Table 7-57 lists the pin assignments of an asynchronous serial cable.

Table 7-57 Pin assignments of an asynchronous serial cable

X2 (RJ45)	Signal	Direction	X1 (DB25)	X3 (DB9)
1	RTS	→	4	7
2	DTR	→	20	4
3	TXD	→	2	3
4	DCD	←	8	1
5	GND	-	7	5
6	RXD	←	3	2
7	DSR	←	6	6
8	CTS	←	5	8

Self-made Cable: Connecting to a Serial Port Server

Figure 7-37 shows the structure of a self-made cable.

Figure 7-37 Structure of a self-made cable

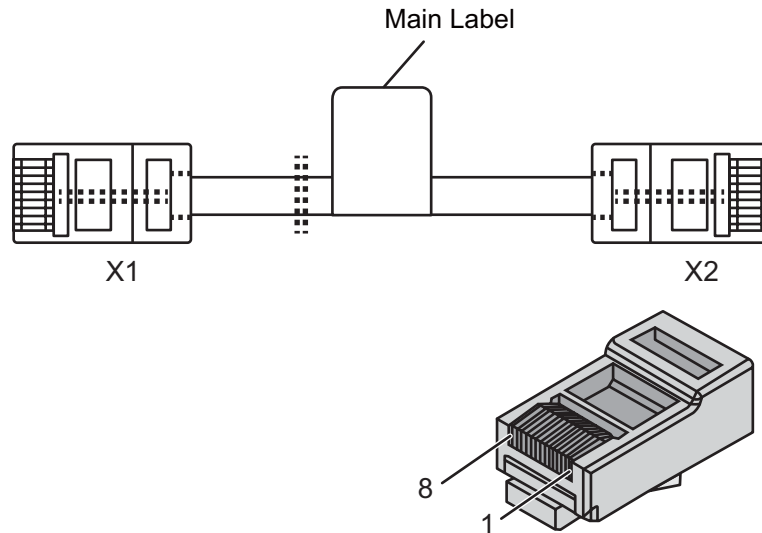


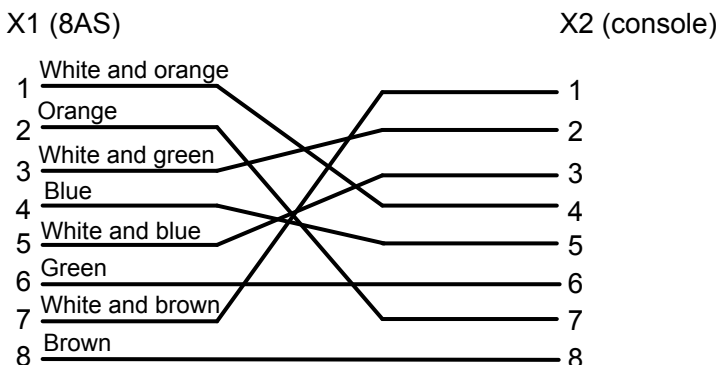
Table 7-58 lists the pin assignments of a self-made cable.

Table 7-58 Pin assignments of a self-made cable

X1 (8AS)	Signal	Direction	X2 (console)
1	DCD	←	4
2	DTR	→	7
3	DSR	←	2
4	GND	-	5
5	RXD	←	3
6	TXD	→	6
7	CTS	←	1
8	RTS	→	8

Figure 7-38 shows the pin connections of a self-made cable.

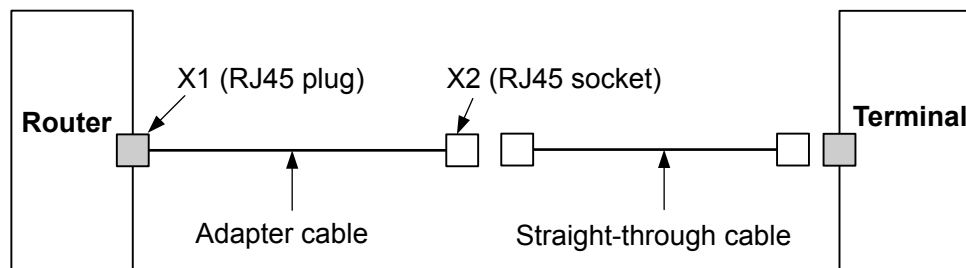
Figure 7-38 Pin connections of a self-made cable



Connection

- Financial dumb terminal connection: Connect one end of a straight-through cable to the 8AS interface card and the other end of the cable to the dumb terminal.
- Telecommunications terminal connection: Connect the X1 end (RJ45 male plug) of an adapter cable to the 8AS interface card and the other end to a straight-through cable. Then connect the other end of the straight-through cable to the telecommunications terminal. See [Figure 7-39](#).

Figure 7-39 Adapter cable and straight-through cable connection in a telecommunications scenario



- Common network device connection: Connect the RJ45 connector of an asynchronous serial cable to the 8AS interface card, and the DB9 or DB25 connector to a network device.
- Serial port server connection: Connect the X1 end (RJ45) of a self-made cable to the 8AS interface card, and the X2 end (RJ45) to the serial port server.

Ordering Information

[Table 7-59](#) provides the 8AS cable ordering information.

Table 7-59 8AS cable ordering information

Cable Type	Part Number	Description	Remarks
Straight-through cable	04070006	Signal Cable, Shielded Straight Through Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
Adapter cable	04042329	Single Cable, MP8(S)-III, CC8C0.32P296U(S), MP8-II, 0.12m, Transit Cable	Optional
Asynchronous serial cable	04021299	Single Cable, Auxiliary Port Cable, 3m, D25M, 2*CC4P0.32P296U(S), DB9M+MP8-VI, QuidwayR2501, W2215	Optional

7.11 G.SHDSL Cable

Description

A G.SHDSL cable connects a G.SHDSL interface to a DSLAM directly to provide broadband network access service for users. One G.SHDSL interface can connect to four telephone lines through a G.SHDSL cable.

Structure and Pin Assignments

Figure 7-40 shows the structure of a G.SHDSL cable.

Figure 7-40 Structure of a G.SHDSL cable

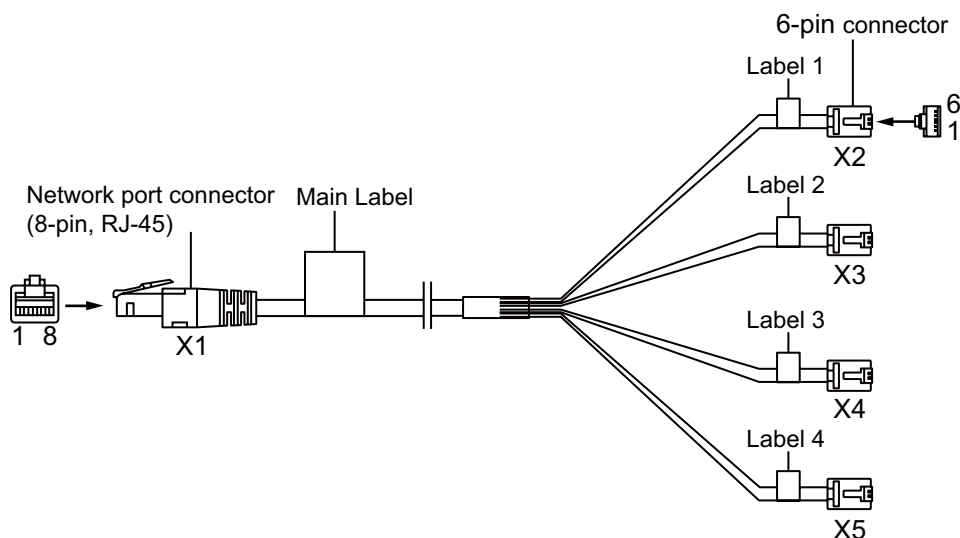


Table 7-60 lists the pin assignments of a G.SHDSL cable.

Table 7-60 Pin assignments of a G.SHDSL cable

X1 (RJ45)	Signal	X2/X3/X4/X5 (RJ11)
1	LINE1 A	2.3
2	LINE1 B	2.4
3	LINE2 A	3.3
6	LINE2 B	3.4
4	LINE0 A	4.3
5	LINE0 B	4.4
7	LINE3 A	5.3
8	LINE3 B	5.4

NOTE

As shown in **Table 7-60**, a G.SHDSL cable uses the standard pin assignments. It has four ports, each of which has two wires (A/B). The two wires in a port can be assigned in any sequence, but the wire pairs must be assigned in certain sequence.

Connection

A G.SHDSL cable is connected as follows:

- The RJ45 connector is connected to the G.SHDSL interface of a router.

- The RJ11 connectors are connected to network devices, usually DSLAMs.

Ordering Information

Table 7-61 provides the G.SHDSL cable ordering information.

Table 7-61 G.SHDSL cable ordering information

Part Number	Description	Remarks
04070136	Signal Cable, G.SHDSL, 3m, MP8-I, CC4P0.5GY, 4*MP6	Mandatory

7.12 ISDN Cable

7.12.1 Standard ISDN S/T Cable

Description

A 1BST interface card works in terminal equipment (TE) mode and supports only data services, but not voice services. The 1BST interface card uses a standard ISDN S/T cable (straight-through cable).

Structure and Pin Assignments

Figure 7-41 shows the structure of a standard ISDN S/T cable.

Figure 7-41 Structure of a standard ISDN S/T cable

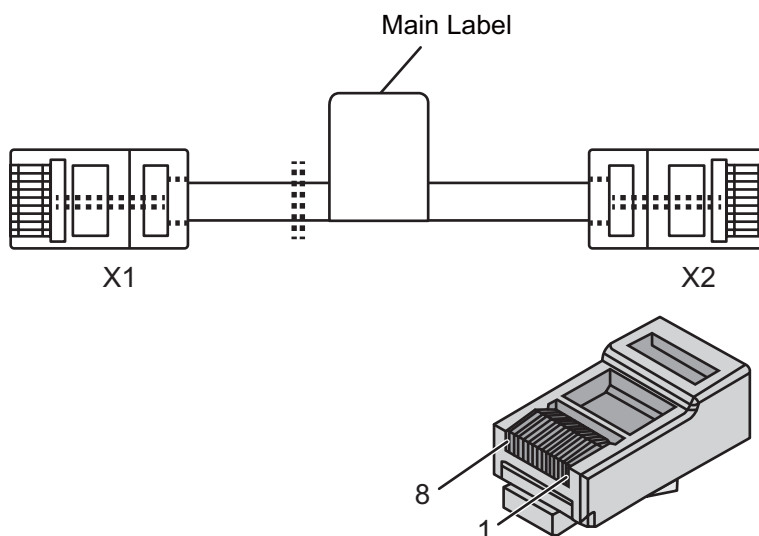


Table 7-62 shows the pin assignments of a standard ISDN S/T cable.

Table 7-62 Pin assignments of a standard ISDN S/T cable

X1 (RJ45)	Signal	X2 (RJ45)
1	-	1
2	-	2
3	Tx+	3
4	Rx+	4
5	Rx-	5
6	Tx-	6
7	-	7
8	-	8

Connection

A standard ISDN S/T cable is connected as follows:

- One RJ45 connector is connected to the ISDN interface on a 1BST interface card.
- The other RJ45 connector is connected to a network device.

Ordering Information

Table 7-63 provides the standard ISDN S/T cable ordering information.

Table 7-63 ISDN S/T cable ordering information

Part Number	Description	Remarks
04070050	Signal Cable, Shielded Straight Through Cable, 2.0m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional

7.12.2 Crossover ISDN S/T Cable

Description

A 2BST interface card works in network termination (NT) mode and supports only voice services, but not data services. The 2BST interface card uses a crossover ISDN S/T cable (adapter cable). A straight-through cable can be used as an extension cable for the crossover ISDN S/T cable.

Structure and Pin Assignments

Figure 7-42 shows the structure of a crossover ISDN S/T cable.

Figure 7-42 Structure of a crossover ISDN S/T cable

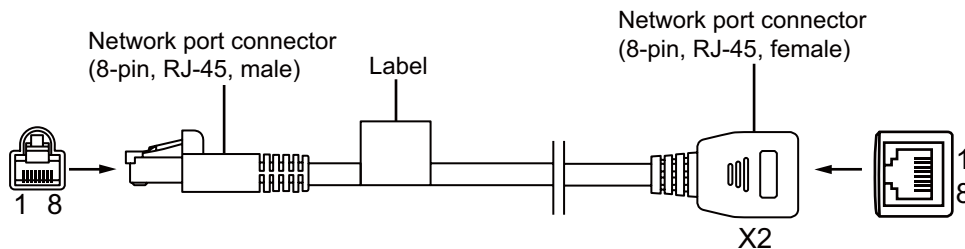


Table 7-64 shows the pin assignments of a crossover ISDN S/T cable.

Table 7-64 Pin assignments of a crossover ISDN S/T cable

X1 (TE)	Signal	X2 (NT)
1	-	1
2	-	2
3	Tx+	4
4	Rx+	3
5	Rx-	6
6	Tx-	5
7	-	7
8	-	8

NOTE

In a crossover ISDN S/T cable, pins 4 and 5 are used to transmit signals, and pins 3 and 6 are used to receive signals.

Connection

A crossover ISDN S/T cable is connected as follows:

- The RJ45 male plug is connected to the ISDN interface on a 2BST interface card.
- The other RJ45 female socket is connected to a network device.

Ordering Information

Table 7-65 provides the crossover ISDN S/T cable ordering information.

Table 7-65 Crossover ISDN S/T cable ordering information

Part Number	Description	Remarks
04070137	Signal Cable, ISDN-NT, 3m, MP8-IV, CC4P0.5P430U(S), MP8(S)-III	Standard configuration

7.13 HDMI Video Cable

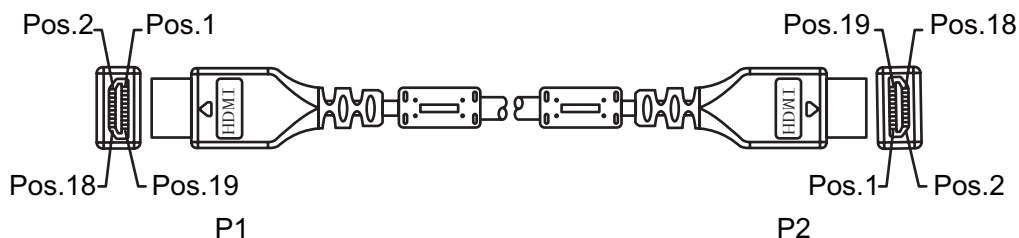
Description

An HDMI video cable connects a router to a video terminal. Both ends of the cable are HDMI connectors, which are connected to HDMI interfaces of the router and video terminal respectively.

Appearance and Structure

Figure 7-43 shows the structure of an HDMI video cable.

Figure 7-43 Structure of an HDMI video cable



Pin Assignments

Table 7-66 lists pin assignments of an HDMI video cable.

Table 7-66 Pin assignments of an HDMI video cable

Connector P1	Connector P2	Wire Color	Remarks
1	1	Blue	Twisted pair
2	2	Ground	
3	3	White	
4	4	Brown	Twisted pair
5	5	Ground	
6	6	White	

Connector P1	Connector P2	Wire Color	Remarks
7	7	Green	Twisted pair
8	8	Ground	
9	9	White	
10	10	Red	Twisted pair
11	11	Ground	
12	12	White	
13	13	White	-
14	14	Gray	-
15	15	Yellow	Twisted pair
16	16	Orange	
17	17	Purple	-
18	18	Red	-
19	19	Black	-

Connection

An HDMI video cable is connected as follows:

- The HDMI connector at the P1 end is connected to the HDMI video interface on a router.
- The HDMI connector at the P2 end is connected to the HDMI video interface on a video terminal, for example, an advertising screen.

Ordering Information

[Table 7-67](#) provides the HDMI video cable ordering information.

Table 7-67 HDMI video cable ordering information

Part Number	Description	Remarks
04051109	Audio Video&Control Signal Cable, HDMI-HDMI Cable, 1.3m, HDMI-A M, ((28AWG*1P+D+FAM)*4P+28AWG*1P+28AWG*5C)(S), HDMI-A M	Mandatory

7.14 VGA Video Cable

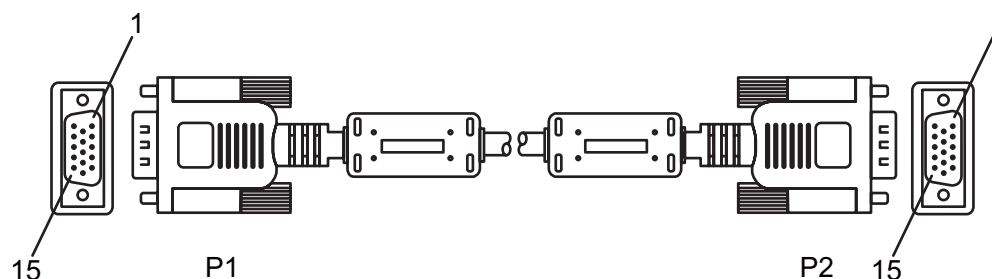
Description

A VGA video cable connects a router to a video terminal. Both ends of the cable are VGA connectors, which are connected to VGA interfaces of the router and video terminal respectively.

Appearance and Structure

Figure 7-44 shows the structure of a VGA video cable.

Figure 7-44 Structure of a VGA video cable



Pin Assignments

Table 7-68 lists pin assignments of a VGA video cable.

Table 7-68 Pin assignments of a VGA video cable

Connector P1	Wire Color	Connector P2
1	Red coaxial wire	1
6	Red coaxially wound wire	6
2	Green coaxial wire	2
7	Green coaxially wound wire	7
3	Blue coaxial wire	3
8	Blue coaxially wound wire	8
4	Red	4
5	Orange	5
9	Purple	9
10	Gray	10
11	Brown	11
12	Yellow	12
13	Black	13

Connector P1	Wire Color	Connector P2
14	Blue	14
15	Green	15

Connection

A VGA video cable is connected as follows:

- The VGA connector at the P1 end is connected to the VGA video interface on a router.
- The VGA connector at the P2 end is connected to the VGA video interface on a video terminal, for example, an advertising screen.

Ordering Information

Table 7-69 provides the VGA video cable ordering information.

Table 7-69 VGA video cable ordering information

Part Number	Description	Remarks
04051110	Audio Video&Control Signal Cable, VGA Cable, 0.6m, D15M-I, CC8P0.4B, D15M-I, Magnet both sides	Mandatory

7.15 Serial Cable (CON/RS232)

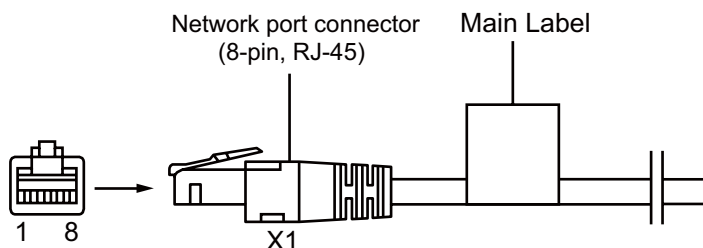
Description

A serial cable (CON/RS232) has an 8-pin RJ-45 connector at one end and an RJ-45 or another type of connector at the other end.

Appearance and Structure

Figure 7-45 shows the structure of a serial cable.

Figure 7-45 Structure of a serial cable (CON/RS232)



Pin Assignments

The X1 end of a serial cable is an RJ45 connector, and the other end is an RJ45 or another type of connector. Connect the serial cable according to the pin assignments of the X1 end, as listed in [Table 7-70](#).

Table 7-70 Pin assignment of a serial cable (CON/RS232)

X1	Signal Type
1	CON_RTS
2	CON_DTR
3	CON_TXD
4	CON_DCD
5	GND_RS232
6	CON_RXD
7	CON_DSR
8	CON_CTS

Connection

A serial cable (CON/RS232) has an 8-pin RJ45 connector at one end and an RJ45 or another type of connector at the other end. It is connected as follows:

- The 8-pin RJ45 connector is connected to a serial port of the router.
- The other end is connected to a serial port terminal.

Ordering Information

None

7.16 E&M Trunk Cable

Description

An E&M trunk cable has an RJ45 connector at one end, and the other end needs to have a connector made onsite according to the device connection requirements.

Structure and Pin Assignments

[Figure 7-46](#) shows the structure of an E&M trunk cable.

Figure 7-46 Structure of an E&M trunk cable

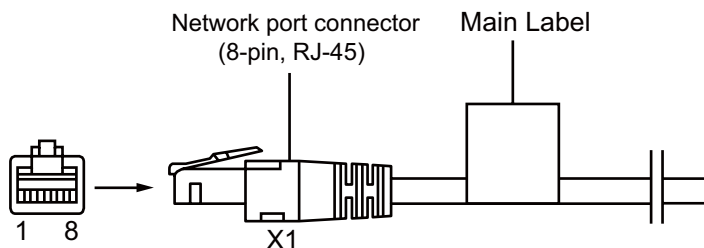


Table 7-71 lists the pin assignments of an E&M trunk cable.

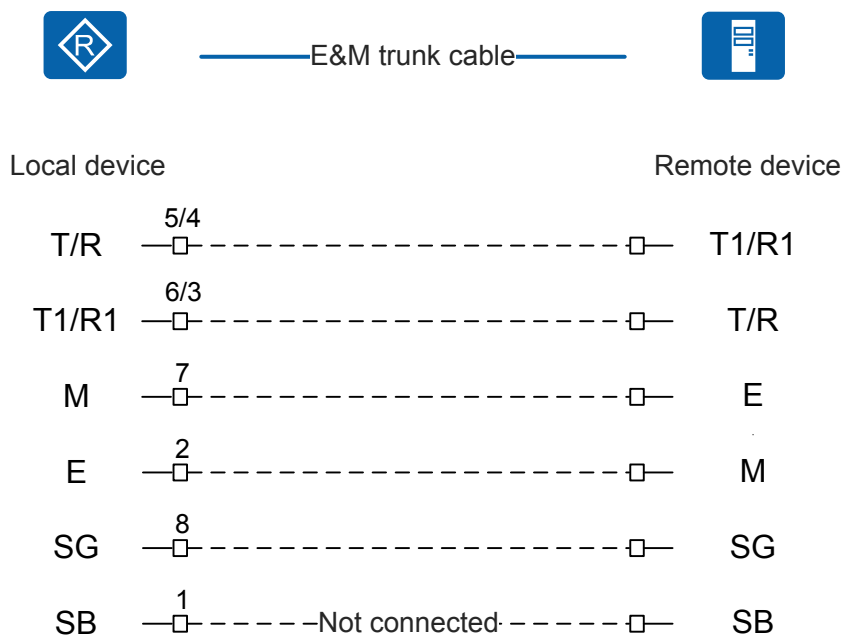
Table 7-71 Pin assignments of an E&M trunk cable

X1 (RJ45)	Wire Color	Pin Assignment	Pin Description
1	White and orange	SB	Isolated signal power output
2	Orange	E	Used by the PBX to receive control signals
3	White and green	R1	<ul style="list-style-type: none"> Two-wire mode: not connected Four-wire mode: ring transmission line
4	Blue	R	<ul style="list-style-type: none"> Two-wire mode: ring line Four-wire mode: ring receiving line
5	White and blue	T	<ul style="list-style-type: none"> Two-wire mode: tip line Four-wire mode: tip receiving line
6	Green	T1	<ul style="list-style-type: none"> Two-wire mode: not connected Four-wire mode: tip transmission line

X1 (RJ45)	Wire Color	Pin Assignment	Pin Description
7	White and brown	M	Pin used by the PBX to send control signals. The voltage of the M line is -48 V with a deviation of ± 3 V.
8	Brown	SG	Isolated signal ground

Figure 7-47 shows the E&M trunk cable connection between the local and remote devices.

Figure 7-47 E&M trunk cable connection



 **NOTE**

An E&M trunk cable can be a shielded or an unshielded cable.

- If a shielded network cable is used as the E&M trunk cable, the local and remote devices can be directly connected using this cable.
- If an unshielded network cable is used as the E&M trunk cable and does not need to be led outdoors, the local and remote devices can be directly connected using this cable.
- If an unshielded network cable is used as the E&M trunk cable and needs to be led outdoors, the local and remote devices must be connected using a cable management strip. For details on how to connect the devices through a cable management strip, see (Optional) Installing a Cable Management Strip and a Protective Unit.

Connection

An E&M trunk cable is connected as follows:

- The RJ45 connector is connected to the E&M interface of the local router.
- The other end is connected to the remote device through a network cable or cable management strip.

7.17 Antennas

7.17.1 LTE Whip Antenna

Description

An LTE whip antenna is delivered with a router or card that provides the LTE function. It is used on an LTE antenna interface to provide LTE access.

Appearance and Structure

[Figure 7-48](#) shows the appearance of an LTE whip antenna.

Figure 7-48 LTE whip antenna



Table 7-72 lists the technical specifications of an LTE whip antenna.

Table 7-72 Technical specifications of an LTE whip antenna

Item	Specification
Connector type	SMA-J
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	2 dBi/4.5 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 7-73 provides the LTE whip antenna ordering information.

Table 7-73 LTE whip antenna ordering information

Cable Type	Part Number	Description
LTE whip antenna	27011207	Isotropic Antenna,698MHz-960MHz/ 1420MHz-2690MHz,2.1dBi(max) (698-960/2110-2170MHz)/4.6dBi(max) (1710-1990/2500-2690MHz)

7.17.2 LTE Indoor Remote Antenna (27011299)

Description

An LTE indoor remote antenna has a 3 m feeder and is delivered with a router or card that provides the LTE function. It is used on an LTE antenna interface to provide LTE access.

Appearance and Structure

Figure 7-49 shows the appearance of an LTE indoor remote antenna.

Figure 7-49 LTE indoor remote antenna



Table 7-74 lists the technical specifications of an LTE indoor remote antenna.

Table 7-74 Technical specifications of an LTE indoor remote antenna

Item	Specification
Connector type	SMA-J
Cable length	3 m
Frequency bands supported	<ul style="list-style-type: none">● 698 MHz to 960 MHz● 1710 MHz to 2690 MHz
Maximum gain	<ul style="list-style-type: none">● 698 MHz to 960 MHz: 1 dBi● 1710 MHz to 2690 MHz: 0 dBi
Standing wave ratio	2.5

Item	Specification
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 7-75 provides the LTE indoor remote antenna ordering information.

Table 7-75 LTE indoor remote antenna ordering information

Antenna Type	Part Number	Description
LTE indoor remote antenna	27011299	Omni-directional Antenna, 698MHz-960MHz/1710MHz-2690MHz, 1.0dBi(698MHz-960MHz)&0dBi(1710MHz-2690MHz)

7.17.3 LTE Indoor Remote Antenna (27012152)

Description

An LTE indoor remote antenna has a 3 m feeder and is delivered with a router or card that provides the LTE function. It is used on an LTE antenna interface to provide LTE access.

Appearance and Structure

Figure 7-50 shows the appearance of an LTE indoor remote antenna.

Figure 7-50 LTE indoor remote antenna



Table 7-76 lists the technical specifications of an LTE indoor remote antenna.

Table 7-76 Technical specifications of an LTE indoor remote antenna

Item	Specification
Connector type	SMA-J
Cable length	3 m
Frequency bands supported	<ul style="list-style-type: none">● 698 MHz to 960 MHz● 1710 MHz to 2690 MHz
Maximum gain	<ul style="list-style-type: none">● 698 MHz to 960 MHz: 1dBi● 1710 MHz to 2690 MHz: 3dBi
Standing wave ratio	2.5
Polarization	Vertical

Item	Specification
Direction	Omnidirectional

Ordering Information

Table 7-77 provides the LTE indoor remote antenna ordering information.

Table 7-77 LTE indoor remote antenna ordering information

Antenna Type	Part Number	Description
LTE indoor remote antenna	27012152	Omni-directional Antenna, 698MHz-960MHz/1710MHz-2690MHz, 1.0dBi(698MHz-960MHz)&3dBi(1710MHz-2690MHz)
RF extension cable	04130824	Radio Frequency Cable,6m

7.17.4 3G Antenna

Description

3G antennas are classified into two types:

- 3G whip antenna: directly installed on a router. 3G whip antennas are recommended in desk mounting and wall mounting scenarios.
- 3G indoor remote antenna: delivered with a 3 m feeder. 3G indoor remote antennas are recommended in cabinet/rack mounting scenarios.

NOTE

- 3G whip antennas are delivered with a router.
- 3G indoor remote antennas are optional and need to be purchased separately if required.

Appearance and Structure

Figure 7-51 shows the appearance of a 3G whip antenna.

Figure 7-51 3G whip antenna



Table 7-78 lists the technical specifications of a 3G whip antenna.

Table 7-78 Technical specifications of a 3G whip antenna

Item	Specification
Connector type	SMA-M
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz
Maximum gain	1 dBi/2 dBi
Standing wave	3
Polarization	Vertical
Direction	Omnidirectional

Figure 7-52 shows the appearance of a 3G indoor remote antenna.

Figure 7-52 3G indoor remote antenna



Table 7-79 lists the technical specifications of a 3G indoor remote antenna.

Table 7-79 Technical specifications of a 3G indoor remote antenna

Item	Specification
Connector type	SMA-M
Cable length	3 m
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz
Maximum gain	1 dBi/2.5 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 7-80 provides the 3G antenna ordering information.

Table 7-80 3G antenna ordering information

Antenna Type	Part Number	Description	Remarks
3G whip antenna	27010809	Isotropic Antenna, 824-960/1710-2170MHz, 1dBi/2dBi, Vertical, Omni, 5W, 0r, SMA-Male, Do not need Bracket	Mandatory
3G indoor remote antenna	27010824	Isotropic Antenna, 824-960/1710-2170MHz, ≥ 1.0 dBi(824-960MHz)& ≥ 2.5 dBi(1710-2170MHz), Vertical, Omni, 10W, 0r, SMA-Male, do not need bracket	Optional

7.17.5 Wi-Fi Antenna

Description

Wi-Fi antennas are classified into two types:

- Wi-Fi rod antenna: applicable to the AR1200 series routers that support the Wi-Fi function.
- Wi-Fi whip antenna: applicable to the AR120/AR150/AR160/AR200 series routers that support the Wi-Fi function.

Appearance and Structure

Figure 7-53 shows the appearance of a Wi-Fi rod antenna.

Figure 7-53 Wi-Fi rod antenna



Figure 7-54 shows the appearance of a Wi-Fi whip antenna.

Figure 7-54 Wi-Fi whip antenna



Technical Specifications

Table 7-81 lists the technical specifications of a Wi-Fi rod antenna.

Table 7-81 Technical specifications of a Wi-Fi rod antenna

Item	Specification
Connector type	RP-SMA-M
Frequency bands supported	2400 MHz to 2500 MHz
Maximum gain	2 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Table 7-82 lists the technical specifications of a Wi-Fi whip antenna.

Table 7-82 Technical specifications of a Wi-Fi whip antenna

Item	Specification
Connector type	RP-SMA-M
Frequency bands supported	2400 MHz to 2500 MHz/5150 MHz to 5850 MHz
Maximum gain	2.15 dBi/3 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

A Wi-Fi antenna connects to the Wi-Fi interface of a router.

Ordering Information

Table 7-83 lists the Wi-Fi rod antenna ordering information.

Table 7-83 Wi-Fi rod antenna ordering information

Antenna Type	Part Number	Description	Remarks
Wi-Fi rod antenna	27010805	Isotropic Antenna, 2400-2500MHz, >2dBi, Vertical, Omni, 5W, RP-SMA-J, Do not need Bracket	Mandatory

Table 7-84 lists the Wi-Fi whip antenna ordering information.

Table 7-84 Wi-Fi whip antenna ordering information

Antenna Type	Part Number	Description	Remarks
Wi-Fi whip antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

7.17.6 Bluetooth Antenna

Description

Bluetooth antennas are classified into two types:

- Bluetooth whip antenna: applicable to the Bluetooth-capable AR169-P-M9 router
- Bluetooth remote sucker antenna: applicable to the Bluetooth-capable AR161FW-P-M5, AR169W-P-M9, and AR169RW-P-M9 routers

Appearance and Structure

Figure 7-55 shows the appearance of a Bluetooth whip antenna.

Figure 7-55 Bluetooth whip antenna



Table 7-85 lists the technical specifications of a Bluetooth whip antenna.

Table 7-85 Technical specifications of a Bluetooth whip antenna

Item	Specification
Connector type	SMA-J
Frequency bands supported	2400 MHz to 2500 MHz/5150 MHz to 5850 MHz
Maximum gain	2.15 dBi/3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Figure 7-56 shows the appearance of a Bluetooth remote sucker antenna.

Figure 7-56 Bluetooth remote sucker antenna



Table 7-86 lists the technical specifications of a Bluetooth remote sucker antenna.

Table 7-86 Technical specifications of a Bluetooth remote sucker antenna

Item	Specification
Connector type	SMA-J
Cable length	3 m
Frequency bands supported	2400 MHz to 2500 MHz
Maximum gain	3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 7-87 provides the Bluetooth antenna ordering information.

Table 7-87 Bluetooth antenna ordering information

Antenna Type	Part Number	Description	Remarks
Bluetooth whip antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

7.17.7 ZigBee Antenna

Appearance and Structure

Figure 7-57 shows the appearance of a ZigBee antenna.

Figure 7-57 ZigBee antenna



Table 7-88 lists the technical specifications of a ZigBee antenna.

Table 7-88 Technical specifications of a ZigBee antenna

Item	Specification
Connector type	SMA-J
Frequency bands supported	2400 MHz to 2500 MHz/5150 MHz to 5850 MHz
Maximum gain	2.15 dBi/3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 7-89 provides the ZigBee antenna ordering information.

Table 7-89 ZigBee antenna ordering information

Antenna Type	Part Number	Description	Remarks
ZigBee antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

7.18 Voice Cables

7.18.1 32FXS Cable

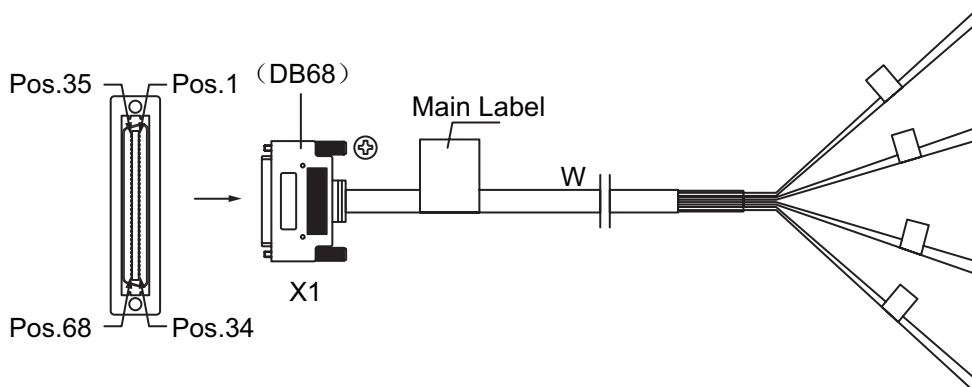
Description

A 32FXS cable connects a 32FXS interface card to analog telephones. The DB68 connector of the cable is connected to the 32FXS interface card, and the bare wires at the other end must be cramped with RJ11 connectors before they can be connected to telephones.

Structure and Pin Assignments

[Figure 7-58](#) shows the structure of a 32FXS cable.

Figure 7-58 Structure of a 32FXS cable



[Table 7-90](#) lists the pin assignments of a 32FXS cable.

NOTE

32FXS cables are bundled into four groups using bundle straps. Each group has eight twisted pairs with each twisted pair consisting of two core wires. Prepare RJ11 connectors based on the colors of core wires in twisted pairs. If the core wires of a twisted pair have been separated, you can strip the 32FXS cable of a specific length and make the core wires to form a twisted pair again.

Table 7-90 Pin assignments of a 32FXS cable

X1 (DB68)	Bundle Strap Color	Twisted Pair Color	Signal	Port
36	Blue	Blue	Tip(+)	1
35		White	Ring(-)	
38		Orange	Tip(+)	2
37		White	Ring(-)	
40		Green	Tip(+)	3
39		White	Ring(-)	
42		Brown	Tip(+)	4
41		White	Ring(-)	
44		Gray	Tip(+)	5
43		White	Ring(-)	
46		Blue	Tip(+)	6
45		Red	Ring(-)	
48		Orange	Tip(+)	7
47		Red	Ring(-)	
50		Green	Tip(+)	8
49		Red	Ring(-)	
2	Blue	Brown	Tip(+)	9
1		Red	Ring(-)	
4		Gray	Tip(+)	10
3		Red	Ring(-)	
6		Blue	Tip(+)	11
5		Black	Ring(-)	
8		Orange	Tip(+)	12
7		Black	Ring(-)	
10		Green	Tip(+)	13
9		Black	Ring(-)	
12		Brown	Tip(+)	14
11		Black	Ring(-)	
14		Gray	Tip(+)	15

X1 (DB68)	Bundle Strap Color	Twisted Pair Color	Signal	Port
13		Black	Ring(-)	16
16		Blue	Tip(+)	
15		Yellow	Ring(-)	
54	Orange	Blue	Tip(+)	17
53		White	Ring(-)	
56		Orange	Tip(+)	18
55		White	Ring(-)	
58		Green	Tip(+)	19
57		White	Ring(-)	
60		Brown	Tip(+)	20
59		White	Ring(-)	
62		Gray	Tip(+)	21
61		White	Ring(-)	
64		Blue	Tip(+)	22
63		Red	Ring(-)	
66		Orange	Tip(+)	23
65		Red	Ring(-)	
68		Green	Tip(+)	24
67	Red	Ring(-)		
20	Orange	Brown	Tip(+)	25
19		Red	Ring(-)	
22		Gray	Tip(+)	26
21		Red	Ring(-)	
24		Blue	Tip(+)	27
23		Black	Ring(-)	
26		Orange	Tip(+)	28
25		Black	Ring(-)	
28		Green	Tip(+)	29
27		Black	Ring(-)	

X1 (DB68)	Bundle Strap Color	Twisted Pair Color	Signal	Port
30		Brown	Tip(+)	30
29		Black	Ring(-)	
32		Gray	Tip(+)	31
31		Black	Ring(-)	
34		Blue	Tip(+)	32
33		Yellow	Ring(-)	

Connection

A 32FXS cable is connected as follows:

- The DB68 connector is connected to the 32FXS interface card.
- The RJ11 connectors at the other end are connected to analog telephones.

Ordering Information

A 32FXS cable is delivered without RJ11 connectors. RJ11 connectors need to be made onsite.

[Table 7-91](#) provides the 32FXS cable ordering information.

Table 7-91 32FXS cable ordering information

Part Number	Description	Remarks
04140090	Subscriber Cable, 32-Channel, 5m, 0.4mm, 64 cores, D68M-V, CC32P0.4P430U(S)-I	Optional

7.18.2 16FXS Cable

Description

A 16FXS cable connects a 16FXS interface card to analog telephones. The DB68 connector of the cable is connected to the 16FXS interface card, and the bare wires at the other end must be cramped with RJ11 connectors before they can be connected to telephones.

Structure and Pin Assignments

[Figure 7-59](#) shows the structure of a 16FXS cable.

Figure 7-59 Structure of a 16FXS cable

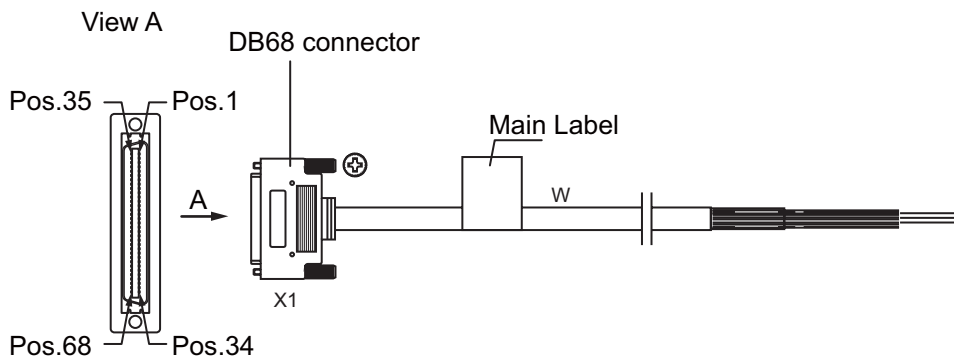


Table 7-92 lists the pin assignments of a 16FXS cable.

Table 7-92 Pin assignments of a 16FXS cable

X1 (DB68)	Wire Color	Signal	Port
36	Blue	Tip(+)	1
35	White	Ring(-)	
38	Orange	Tip(+)	2
37	White	Ring(-)	
40	Green	Tip(+)	3
39	White	Ring(-)	
42	Brown	Tip(+)	4
41	White	Ring(-)	
44	Gray	Tip(+)	5
43	White	Ring(-)	
46	Blue	Tip(+)	6
45	Red	Ring(-)	
48	Orange	Tip(+)	7
47	Red	Ring(-)	
50	Green	Tip(+)	8
49	Red	Ring(-)	
2	Brown	Tip(+)	9
1	Red	Ring(-)	
4	Gray	Tip(+)	10

X1 (DB68)	Wire Color	Signal	Port
3	Red	Ring(-)	
6	Blue	Tip(+)	11
5	Black	Ring(-)	
8	Orange	Tip(+)	12
7	Black	Ring(-)	
10	Green	Tip(+)	13
9	Black	Ring(-)	
12	Brown	Tip(+)	14
11	Black	Ring(-)	
14	Gray	Tip(+)	15
13	Black	Ring(-)	
16	Blue	Tip(+)	16
15	Yellow	Ring(-)	

Connection

A 16FXS cable is connected as follows:

- The DB68 connector is connected to the 16FXS interface card.
- The RJ11 connectors at the other end are connected to analog telephones.

Ordering Information

A 16FXS cable is delivered without RJ11 connectors. RJ11 connectors need to be made onsite.

[Table 7-93](#) provides the 16FXS cable ordering information.

Table 7-93 16FXS cable ordering information

Part Number	Description	Remarks
04140129	Subscriber Cable, 16-Channel, 5m, 0.4mm, 32 Cores, D68M-V,CC16P0.4P430U	Optional

7.18.3 Standard Telephone Cable

Description

A standard telephone cable is applicable to the interfaces listed in [Table 7-94](#).

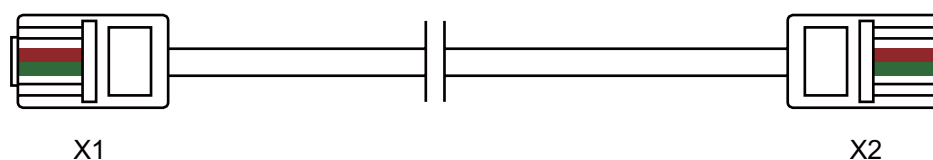
Table 7-94 Interfaces supporting a standard telephone cable

Cable	Interface Type
Standard telephone cable	FXS interface
	FXO interface
	ADSL interface
	VDSL2 interface

Appearance and Structure

[Figure 7-60](#) shows the structure of a standard telephone cable.

Figure 7-60 Structure of a standard telephone cable



Pin Assignments

[Table 7-95](#) lists the pin assignments of a standard telephone cable.

Table 7-95 Pin assignments of a standard telephone cable

X1 (RJ11)	Signal	Direction	X2 (RJ11)
1	-	-	1
2	-	-	2
3	Tip(+)	↔	3
4	Ring(-)	↔	4
5	-	-	5
6	-	-	6

Connection

A standard telephone cable is connected as follows:

- The RJ11 connector on one end is connected to a router.
- The RJ11 connector on the other end is connected to an analog telephone or fax machine.

Ordering Information

Table 7-96 provides the standard telephone cable ordering information.

Table 7-96 Standard telephone cable ordering information

Part Number	Description	Remarks
04026507	Single Cable, Phone Connection Line, 2.125m, MP6-II, 28UL20251, 2CW,MP6-II, W4773	Optional

7.19 2VDSL2 Cable

Description

A 2VDSL2 cable is applicable to the router or the board which supports VDSL interface bounding. **Table 7-97** lists the interface type of a 2VDSL2 cable.

Table 7-97 Interfaces supporting a 2VDSL2 cable

Cable	Interface Type
2VDSL2 cable	2VDSL2 interface

Structure and Pin Assignments

Figure 7-61 shows the structure of a 2VDSL2 cable.

Figure 7-61 Structure of a 2VDSL2 cable

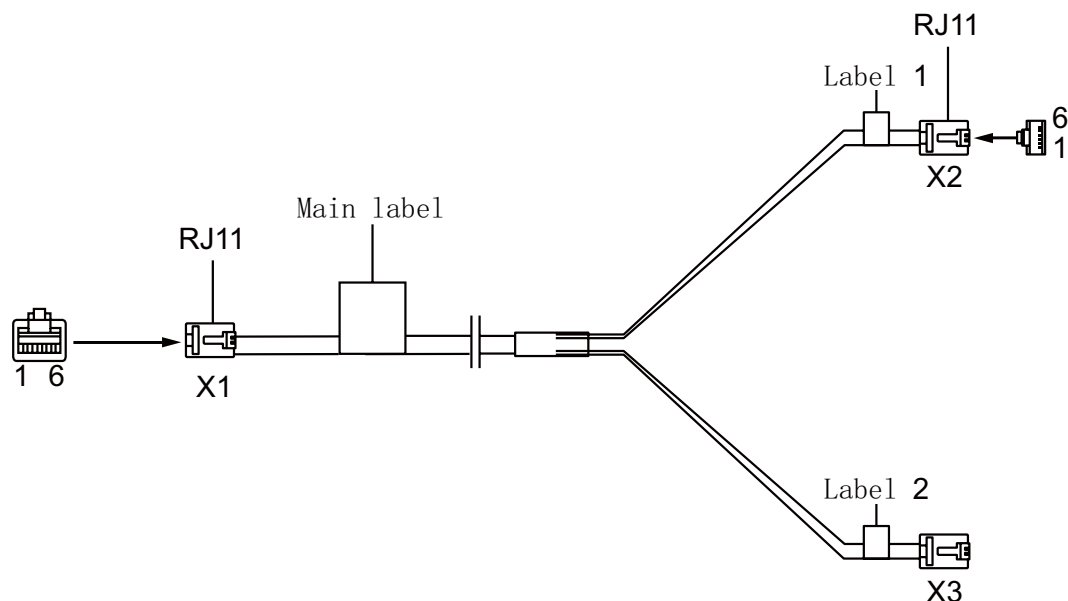


Table 7-98 lists the pin assignments of a 2VDSL2 cable.

Table 7-98 Pin assignments of a 2VDSL2 cable

X1 (RJ11)	Signal	Wire Color	X2 (RJ11)	X3 (RJ11)
3	Tip(+)	White	3	-
4	Ring(-)	Blue	4	-
2	Tip(+)	White	-	3
5	Ring(-)	Orange	-	4

Connection

A 2VDSL2 cable is connected as follows:

- The X1 (RJ11) connector on one end is connected to a router or a board.
- The X2 (RJ11) or X3 (RJ11) connector on the other end is connected to an analog telephone or fax machine.

Ordering Information

Table 7-99 provides the 2VDSL2 cable ordering information.

Table 7-99 2VDSL2 cable ordering information

Part Number	Description	Remarks
04070342	Signal Cable,VDSL Cable, 3.0m,MP6,CC2P0.48B(S),2*MP6	Optional

8 Pluggable Modules for Interfaces

About This Chapter

[8.1 Important Notes About Using Optical Modules Certified for Huawei Routers](#)

[8.2 Understanding Optical Modules](#)

[8.3 Understanding Copper Modules](#)

[8.4 FE SFP/eSFP Optical Modules](#)

[8.5 GE eSFP Optical Modules](#)

[8.6 GE-CWDM eSFP Optical Modules](#)

[8.7 GE-DWDM eSFP Optical Modules](#)

[8.8 GE SFP Copper Modules](#)

[8.9 622M eSFP Optical Modules](#)

[8.10 GPON/EPON Optical Modules](#)

[8.11 10GE SFP+ Optical Modules](#)

8.1 Important Notes About Using Optical Modules Certified for Huawei Routers

8.1.1 How to Identify Huawei-Certified Optical Modules

NOTICE

- Huawei routers must use Huawei-certified optical modules. Non-Huawei-certified optical modules cannot ensure transmission reliability and may affect service stability. Huawei is not responsible for any problem caused by the use of non-Huawei-certified optical modules and will not fix such problems.
- The methods provided here are only for reference. To confirm whether optical modules you use have been certified by Huawei, please contact technical support personnel.

If the optical modules you use are delivered after July 1, 2013, use either of the following methods to determine whether they have been certified by Huawei.

Method 1: Check for "HUAWEI" on the Label

If an optical module has been certified by Huawei, its label contains "HUAWEI", as shown in [Figure 8-1](#).

Figure 8-1 "HUAWEI" on the label of a Huawei-certified optical module



Method 2: Run the display transceiver Command

If an optical module meets the following conditions, it has been certified by Huawei. Otherwise, the optical module is not a Huawei-certified one.

- In the **display elabel** command output, the **Manufactured** field displays a date later than 2013-07-01.
- In the **display version** command output, the display version is V200R001C00 or later.
- In the **display transceiver** command output, the **Manufacturing Date** field displays a date later than 2013-07-01, and the **Vendor Name** field displays **HUAWEI**.

```
<Huawei> display transceiver
XGigabitEthernet2/0/0 transceiver information:
-----
Common information:
  Transceiver Type           :XFP-STM64-LX-SM1310
  Connector Type             :LC
  Wavelength (nm)           :1310
  Transfer Distance (m)      :100000 (9um)
  Digital Diagnostic Monitoring :YES
  Vendor Name                 :HUAWEI
  Vendor Part Number         :02315208
  Ordering Name              :
-----
Manufacture information:
  Manu. Serial Number        :210231520810E4000803
  Manufacturing Date         :2013-09-11
  Vendor Name                 :HUAWEI
```

8.1.2 Risks of Using Non-Huawei-Certified Optical Modules

During certification of optical modules for Huawei routers, Huawei completes comprehensive functionality verification to ensure quality of optical modules. The verified items include optical module plug/unplug, transmit optical power, receive optical power, signal transmission

quality, data reading, error tolerance, compatibility, electromagnetic compatibility (EMC), and environmental parameters.

Non-Huawei-certified optical modules may cause the following problems:

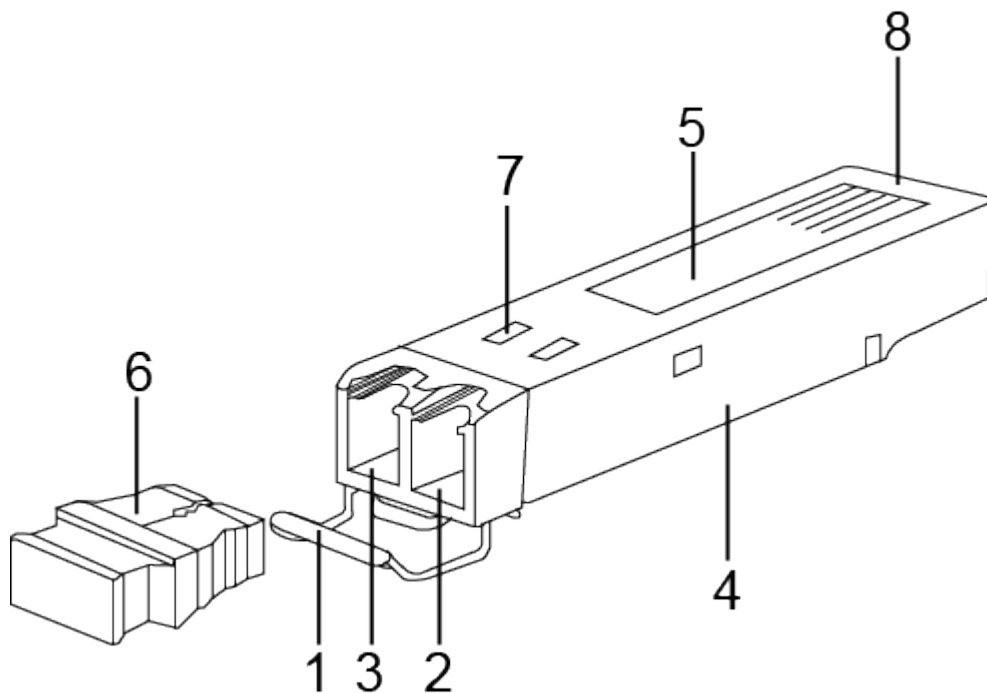
- Non-standard structure and size cause failures to install optical modules on adjacent optical interfaces.
Structures or sizes of some non-Huawei-certified optical modules do not comply with the Multi-Source Agreement (MSA). When such an optical module is installed on an optical interface, the size of this optical module hinders optical module installation on adjacent optical interfaces.
- Data bus defects cause suspension of a router's data bus.
Some non-Huawei-certified optical modules have defects in data bus designs. Using such an optical module on a router causes suspension of the connected data bus on the router. As a result, data on the suspended bus cannot be read.
- Improper edge connector size damages electronic devices of optical interfaces.
If a non-Huawei-certified optical module with improper edge connector size is used on an optical interface, electronic devices of the optical interface will be damaged by short circuits.
- Non-standard temperature monitoring causes incorrect alarms.
The temperature monitoring systems of some non-Huawei-certified optical modules do not comply with industry standards and report temperature values higher than the real temperature. When such optical modules are used on a router, the system will report incorrect temperature alarms.
- Improper register settings cause errors or failures in reading parameters or diagnostic information.
Some non-Huawei-certified optical modules have improper A0 register values, which can cause errors or failures when the system attempts to read parameters or diagnostic information from a data bus.
- Some non-Huawei-certified optical modules are not designed in compliance with EMC standards and have low anti-interference capability. Additionally, they bring electromagnetic interference to nearby devices.
- The operating temperature ranges of non-Huawei-certified optical modules cannot meet service requirements. When they are used under relatively high temperature, the optical power decreases, resulting in service interruption.

8.2 Understanding Optical Modules

8.2.1 What Is an Optical Module

On an optical network, a sender needs to convert electrical signals into optical signals before sending them to a receiver, and the receiver needs to convert received optical signals into electrical signals. An optical module is a component that completes electrical/optical conversion on an optical network. [Figure 8-2](#) shows the structure of an optical module.

Figure 8-2 Structure of an optical module



1. Handle	2. Receiver	3. Transmitter
4. Shell	5. Label	6. Dust plug
7. Spring	8. Connector	-

8.2.2 Types of Optical Modules

Optical modules are available in various types to meet diversified requirements.

- **Classified by transmission rates**

Depending on transmission rates, optical modules are classified into FE, GE, 10GE, and 40GE optical modules.

- **Classified by encapsulation types**

The higher transmission rate an optical module provides, the more complex structure it has. Optical modules are encapsulated in different modes to provide different structures. Huawei routers support optical modules of the following encapsulation types: SFP, eSFP, SFP+, XFP, and QSFP+.

- SFP: small form-factor pluggable. SFP optical modules support LC fiber connectors and are hot swappable.
- eSFP: enhanced small form-factor pluggable. An eSFP module is an SFP module that supports monitoring of voltage, temperature, bias current, transmit optical power, and receive optical power. Sometimes, eSFP is also called SFP.
- SFP+: small form-factor pluggable plus, SFP with a higher rate. SFP+ optical modules are more sensitive to electromagnetic interference (EMI) because they have a higher rate. To reduce EMI, SFP+ optical modules have more springs than SFP optical modules and the cages for SFP+ modules on a card are tighter.

- XFP: 10 Gigabit small form-factor pluggable. X is the Roman numeral 10, meaning that all XFP optical modules provide a 10 Gbit/s transmission rate. XFP optical modules support LC fiber connectors and are hot swappable. They are wider and longer than SFP+ optical modules.
 - QSFP+: quad small form-factor pluggable. QSFP+ optical modules support MPO fiber connectors and are larger than SFP+ optical modules.
- **Classified by physical layer standards**
 Different physical layer standards are defined to allow data transmission in different modes. Therefore, different types of optical modules are produced to comply with these standards. The **Standard** column of **Table 8-1** lists the physical layer standards.
 - **Classified by modes**
 Optical fibers are classified into single-mode and multimode fibers. Therefore, optical modules are also classified into single-mode and multimode modules to support different optical fibers.
 - Single-mode optical modules are used with single-mode fibers. Single-mode fibers support a wide band and large transmission capacity, and are used for long-distance transmission.
 - Multimode optical modules are used with multimode fibers. Multimode fibers have lower transmission performance than single-mode fibers because of modal dispersion, but their costs are also lower. They are used for small-capacity, short-distance transmission.

Table 8-1 provides optical module classification based on different factors.

Table 8-1 Optical module classification

Encapsulation Type	Rate	Standard	Description
SFP	FE	100BASE-FX (IEEE 802.3u)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 100 Mbit/s over a distance within 2 km.
eSFP	FE	100BASE-LX (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 100 Mbit/s over a distance within 80 km.
		100BASE-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 100 Mbit/s over a distance within 15 km.
	GE	1000BASE-SX (IEEE 802.3z)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 1 km.
		1000base-LX/LH (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 40 km.

Encapsulation Type	Rate	Standard	Description
		1000base-ZX (IEEE 802.3)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 100 km.
		1000base-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 40 km.
		CWDM (IEEE 802.3)	Coarse wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 80 km.
		DWDM (IEEE 802.3)	Dense wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 120 km.
SFP+	10GE	10Gbase-USR (IEEE 802.3)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 100 m.
		10Gbase-BX (IEEE 802.3)	Uses one single-mode fiber for bidirectional transmission at 10 Gbit/s over a distance within 10 km.
<ul style="list-style-type: none"> ● SFP+ ● XFP 	10GE	10GBASE-SR (IEEE 802.3ae)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 400 m.
		10GBASE-LR (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 10 km.
		10GBASE-ER (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 40 km.
		10Gbase-ZR (IEEE 802.3)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 80 km.

Encapsulation Type	Rate	Standard	Description
QSFP+	40GE	40Gbase-SR4 (IEEE 802.3ba)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 40 Gbit/s over a distance within 400 m.
		40Gbase-LR4 (IEEE 802.3ba)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 40 Gbit/s over a distance within 10 km.

8.2.3 Parameter Description

Transmit optical power Output optical power of an optical module when it is working properly. When two optical modules are connected, the transmit optical power of one end must be within the range of receive optical power on the other end.

Receive optical power Average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). The upper limit of this parameter is the overload optical power and the lower limit is the maximum receiver sensitivity. When two optical modules are connected, the receive optical power on one end determines the range of transmit optical power on the other end.

Maximum receiver sensitivity Minimum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). When two optical modules are connected, the maximum receiver sensitivity on one end determines the minimum value of transmit optical power on the other end.

Overload optical power Maximum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). When two optical modules are connected, the overload optical power on one end determines the maximum transmit optical power on the other end.

Extinction ratio Minimum ratio of the average optical power with signals transmitted against the average optical power without signals transmitted in complete modulation mode. The extinction ratio indicates the capability of an optical module to identify signal 0 and signal 1. This parameter is a quality indicator for optical modules. Optical modules with a large extinction ratio may not have good quality. Qualified optical modules should have an extinction ratio complying with IEEE 802.3.

Fiber mode Mode of optical fibers defined based on core diameters and features of optical fibers. Optical fibers are classified into single-mode and multimode fibers. Generally, multimode fibers have large core diameters and severe dispersion, so they transmit optical signals over short distances. Single-mode fibers have small dispersion and can transmit optical signals over long distances.

Modal bandwidth	Bandwidth measured at a point with transmit power several dB lower than that of the point with the peak center wavelength. Modal bandwidth reflects spectrum characteristics of multimode fibers. The higher modal bandwidth a multimode fiber has, the longer transmission distance the fiber supports.
Fiber diameter	Diameter of the core of a fiber. According to international standards for optical fibers, the diameter of a multimode fiber is 62.5 μm or 50 μm, and the diameter of a single-mode fiber is 9 μm. Select optical fibers with diameters supported by the optical modules.
Fiber class	Optical signals with different wavelengths have their best working windows in different optical fibers. To help efficiently adjust wavelengths or dispersion features of optical fibers and change their refractive indexes, the following fiber classes are defined: multimode fiber (G.651), common single-mode fiber (G.652), shifted dispersion fiber (G.653), and non-zero shifted dispersion fiber (G.655). G.651 and G.652 are commonly used fiber classes. Optical fibers of higher classes support longer transmission distances. When selecting optical fibers for optical modules, determine the classes of fibers based on the required transmission distances.
Connector type	Type of the interface on an optical module to accommodate a fiber. Commonly used connector types are LC (applicable to all the SFP, SFP+, and XFP modules), SC, and MPO (applicable to 150 m QSFP+ and CXP modules). Select optical fibers with connectors supported by the optical modules.
Transmission distance	Maximum distance over which optical signals can transmit. Optical signals sent from different types of sources can transmit over different distances because they have different dispersion and attenuation. When connecting optical interfaces, select optical modules and fibers according to the longest signal transmission distance.
Interface rate	Maximum rate of electrical signals that an optical component can transmit without bit errors. The interface rates defined in Ethernet standards include 125 Mbit/s, 1.25 Gbit/s, 10.3125 Gbit/s, and 41.25 Gbit/s. When connecting optical interfaces, select optical modules and fibers based on the maximum signal transmission rate.
Center wavelength	Wavelength measured at the midpoint of the half-amplitude line in the transmit spectrum. Two connected optical modules must have the same center wavelength.
MSA	Multi-Source Agreement, a non-profit organization jointly established by optical module manufacturers. This agreement defines the structure and dimensions of optical transceivers by referring to Optical Internetworking Forum (OIF) and International Telecommunication Union (ITU) standards.

8.2.4 How to View Optical Module Parameters

Viewing the Hardware Description

If you know the model or type of an optical module, you can view the section "Pluggable Modules for Interfaces" in the *Hardware Description* to look up parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

Using a Command

If an optical module is installed in a running router, you can run the **display transceiver** command to view parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

8.3 Understanding Copper Modules

Unlike optical modules, copper modules do not perform electrical-optical conversion. When two optical interfaces have copper modules installed, the interfaces can be connected using a copper cable. Currently, Huawei offers only GE copper modules with RJ45 interfaces. GE copper modules work with Category 5 network cables, comply with 1000BASE-T (IEEE 802.3ab), and support a maximum transmission distance of 100 m.

8.4 FE SFP/eSFP Optical Modules

8.4.1 SFP-FE-SX-MM1310

Table 8-2 Technical specifications

Item	Description
Transceiver form factor	SFP
Transmission speed	<ul style="list-style-type: none">● 100 Mbit/s● 155 Mbit/s
Center wavelength (nm)	1310
Standard compliance	100base-FX
Connector type	LC
Applicable cable and maximum transmission distance	Multimode fiber (50 μm or 62.5 μm diameter): 2 km
Transmit power (dBm)	-19.0 to -14.0
Maximum receiver sensitivity (dBm)	-30.0
Overload power (dBm)	-14.0
Extinction ratio (dB)	10
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315233

8.4.2 eSFP-FE-LX-SM1310

Table 8-3 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	<ul style="list-style-type: none">● 100Mbit/s● 155Mbit/s
Center wavelength (nm)	1310
Standard compliance	100base-LX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit power (dBm)	-15.0 to -8.0
Maximum receiver sensitivity (dBm)	-31.0
Overload power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315205

8.4.3 S-SFP-FE-LH40-SM1310

Table 8-4 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	100 Mbit/s
Center wavelength (nm)	1310
Standard compliance	100base-LX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km

Item	Description
Transmit power (dBm)	-5.0 to 0
Maximum receiver sensitivity (dBm)	-37.0
Overload power (dBm)	-10.0
Extinction ratio (dB)	10.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317344

8.4.4 S-SFP-FE-LH80-SM1550

Table 8-5 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	100 Mbit/s
Center wavelength (nm)	1550
Standard compliance	100base-LX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	-5.0 to 0
Maximum receiver sensitivity (dBm)	-37.0
Overload power (dBm)	-10.0
Extinction ratio (dB)	10.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317345

8.4.5 SFP-FE-LX-SM1310-BIDI (Single-Fiber-Bidirectional Module)

Table 8-6 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	100 Mbit/s
Center wavelength (nm)	Rx: 1550/Tx: 1310
Standard compliance	100base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit power (dBm)	-15.0 to -8.0
Maximum receiver sensitivity (dBm)	-32.0
Overload power (dBm)	-8.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315203

8.4.6 SFP-FE-LX-SM1550-BIDI (Single-Fiber-Bidirectional Module)

Table 8-7 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	FE
Center wavelength (nm)	Rx: 1310/Tx: 1550
Standard compliance	100base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit power (dBm)	-15.0 to -8.0

Item	Description
Maximum receiver sensitivity (dBm)	-32.0
Overload power (dBm)	-8.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315202

8.5 GE eSFP Optical Modules

8.5.1 eSFP-GE-SX-MM850

Table 8-8 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	GE
Center wavelength (nm)	850
Standard compliance	1000base-SX
Connector type	LC
Applicable cable and maximum transmission distance	<ul style="list-style-type: none"> ● Multimode fiber (with modal bandwidth of 160 MHz*km and diameter of 62.5 μm): 0.22 km ● Multimode fiber (OM1): 0.275 km ● Multimode fiber (with modal bandwidth of 400 MHz*km and diameter of 50 μm): 0.5 km ● Multimode fiber (OM2): 0.55 km ● Multimode fiber (OM3): 1 km
Transmit power (dBm)	-9.5 to -2.5
Maximum receiver sensitivity (dBm)	-17.0
Overload power (dBm)	0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315204

8.5.2 SFP-GE-LX-SM1310

Table 8-9 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1310
Standard compliance	1000base-LX/LH
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-9.0 to -3.0
Maximum receiver sensitivity (dBm)	-20.0
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315200

8.5.3 S-SFP-GE-LH40-SM1310

Table 8-10 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1310
Standard compliance	1000base-LX/LH
Connector type	LC

Item	Description
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-5.0 to 0
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317346

8.5.4 S-SFP-GE-LH40-SM1550

Table 8-11 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1550
Standard compliance	1000base-LX/LH
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-5.0 to 0
Maximum receiver sensitivity (dBm)	-22
Overload power (dBm)	-3.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317347

8.5.5 S-SFP-GE-LH80-SM1550

Table 8-12 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1550
Standard compliance	1000base-ZX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	-2.0 to 5.0
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317348

8.5.6 eSFP-GE-ZX100-SM1550

Table 8-13 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1550
Standard compliance	1000base-ZX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 100 km
Transmit power (dBm)	0-5

Item	Description
Maximum receiver sensitivity (dBm)	-30.0
Overload power (dBm)	-9.0
Extinction ratio (dB)	9.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315206

8.5.7 SFP-GE-LX-SM1310-BIDI (Single-Fiber-Bidirectional Module)

Table 8-14 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1490/Tx: 1310
Standard compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-9.0 to -3.0
Maximum receiver sensitivity (dBm)	-19.5
Overload power (dBm)	-3.0
Extinction ratio (dB)	6
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315285

8.5.8 SFP-GE-LX-SM1490-BIDI (Single-Fiber-Bidirectional Module)

Table 8-15 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1310/Tx: 1490
Standard compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-9.0 to -3.0
Maximum receiver sensitivity (dBm)	-19.5
Overload power (dBm)	-3.0
Extinction ratio (dB)	6
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315286

8.5.9 LE2MGSC40DE0 (Single-Fiber-Bidirectional Module)

Table 8-16 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1490/Tx: 1310
Standard compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-2.0 to +3.0
Maximum receiver sensitivity (dBm)	-23

Item	Description
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310KVV

8.5.10 LE2MGSC40ED0 (Single-Fiber-Bidirectional Module)

Table 8-17 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1310/Tx: 1490
Standard compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-2.0 to +3.0
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310KVU

8.6 GE-CWDM eSFP Optical Modules

8.6.1 CWDM-SFPGE-1471

Table 8-18 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1471
Standard compliance	CWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	0-5.0
Maximum receiver sensitivity (dBm)	-28.0
Overload power (dBm)	-9.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LPN

8.6.2 CWDM-SFPGE-1491

Table 8-19 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1491
Standard compliance	CWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	0-5.0
Maximum receiver sensitivity (dBm)	-28.0

Item	Description
Overload power (dBm)	-9.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LPK

8.6.3 CWDM-SFPGE-1511

Table 8-20 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1511
Standard compliance	CWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	0-5.0
Maximum receiver sensitivity (dBm)	-28.0
Overload power (dBm)	-9.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LPH

8.6.4 CWDM-SFPGE-1531

Table 8-21 Technical specifications

Item	Description
Transceiver form factor	eSFP

Item	Description
Transmission speed	1 Gbit/s
Center wavelength (nm)	1531
Standard compliance	CWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	0-5.0
Maximum receiver sensitivity (dBm)	-28.0
Overload power (dBm)	-9.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LPL

8.6.5 CWDM-SFPGE-1591

Table 8-22 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1591
Standard compliance	CWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	0-5.0
Maximum receiver sensitivity (dBm)	-28.0
Overload power (dBm)	-9.0
Extinction ratio (dB)	8.5

Item	Description
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LNT

8.7 GE-DWDM eSFP Optical Modules

8.7.1 DWDM-SFPGE-1531-12

Table 8-23 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1531.12
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LCR

8.7.2 DWDM-SFPGE-1531-90

Table 8-24 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1531.90
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LCQ

8.7.3 DWDM-SFPGE-1557-36

Table 8-25 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1557.36
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0

Item	Specification
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LLQ

8.7.4 DWDM-SFPGE-1558-17

Table 8-26 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1558.17
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LLJ

8.7.5 DWDM-SFPGE-1558-98

Table 8-27 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1558.98
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LLG

8.7.6 DWDM-SFPGE-1559-79

Table 8-28 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1559.79
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0

Item	Specification
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LLF

8.7.7 DWDM-SFPGE-1560-61

Table 8-29 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	1 Gbit/s
Center wavelength (nm)	1560.61
Standard compliance	DWDM
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 120 km
Transmit optical power (dBm)	0 to 4.0
Maximum receiver sensitivity (dBm)	-28.0
Overload optical power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310LLE

8.8 GE SFP Copper Modules

8.8.1 SFP-1000BaseT

Table 8-30 Technical specifications

Item	Description
Transceiver form factor	SFP
Transmission speed	The transmission speed varies depending on the port where the copper transceiver module is used
Standard compliance	1000Base-T
Connector type	RJ45
Surge protection	Common mode: ± 1 kV
Applicable cable and maximum transmission distance	Ethernet cable: 0.1 km
Part number	02314171

8.9 622M eSFP Optical Modules

8.9.1 OST015N00

Table 8-31 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	622 Mbit/s
Center wavelength (nm)	1310
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit optical power (dBm)	-15 to -8
Maximum receiver sensitivity (dBm)	-30
Overload optical power (dBm)	-8

Item	Specification
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310CQV

8.9.2 OST040N00

Table 8-32 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	622 Mbit/s
Center wavelength (nm)	1310
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit optical power (dBm)	-3 to +2
Maximum receiver sensitivity (dBm)	-30
Overload optical power (dBm)	-8
Extinction ratio (dB)	10.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310CRH

8.9.3 OST080N00

Table 8-33 Technical specifications

Item	Specification
Transceiver form factor	eSFP
Rate	622 Mbit/s

Item	Specification
Center wavelength (nm)	1550
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit optical power (dBm)	-3 to +2
Maximum receiver sensitivity (dBm)	-30
Overload optical power (dBm)	-8
Extinction ratio (dB)	10.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310CRL

8.10 GPON/EPON Optical Modules

8.10.1 SFP-GPON-ONU

Table 8-34 Technical specifications

Item	Specification
Transceiver form factor	SFP
Rate	RX: 2.488 Gbit/s; TX: 1.244 Gbit/s
Center wavelength (nm)	RX: 1490; TX: 1310
Standard compliance	1000base-PX20
Connector type	SC
Applicable cable and maximum transmission distance	Single-mode fiber: 20 km
Transmit optical power (dBm)	2.5 to 7.0
Maximum receiver sensitivity (dBm)	-30

Item	Specification
Overload optical power (dBm)	-6
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310TBV

8.11 10GE SFP+ Optical Modules

8.11.1 OSXD22N00

Table 8-35 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	1310
Standard compliance	10Gbase-LRM
Connector type	LC
Applicable cable and maximum transmission distance	<ul style="list-style-type: none"> ● Multimode fiber (with modal bandwidth of 400 MHz*km and diameter of 50 μm): 0.1 km ● Multimode fiber (with modal bandwidth of 500 MHz*km and diameter of 62.5 μm): 0.22 km ● Multimode fiber (OM1, OM2, OM3): 0.22 km
Transmit power (dBm)	-6.5 to 0.5
Maximum receiver sensitivity (dBm)	-6.5
Overload power (dBm)	1.5
Extinction ratio (dB)	3.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310CRM

8.11.2 OMXD30000

Table 8-36 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	850
Standard compliance	10Gbase-SR
Connector type	LC
Applicable cable and maximum transmission distance	<ul style="list-style-type: none"> ● Multimode fiber (with modal bandwidth of 160 MHz*km and diameter of 62.5 μm): 0.026 km ● Multimode fiber (OM1): 0.033 km ● Multimode fiber (with modal bandwidth of 400 MHz*km and diameter of 50 μm): 0.066 km ● Multimode fiber (OM2): 0.082 km ● Multimode fiber (OM3): 0.3 km ● Multimode fiber (OM4): 0.4 km
Transmit power (dBm)	-7.3 to -1.0
Maximum receiver sensitivity (dBm)	-11.1
Overload power (dBm)	-1.0
Extinction ratio (dB)	3.0
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02318169

8.11.3 OSX010000

Table 8-37 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	1310
Standard compliance	10Gbase-LR
Connector type	LC

Item	Description
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-8.2 to +0.5
Maximum receiver sensitivity (dBm)	-12.6
Overload power (dBm)	0.5
Extinction ratio (dB)	3.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02318170

8.11.4 OSX040N01

Table 8-38 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	1550
Standard compliance	10Gbase-ER
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-4.7 to 4.0
Maximum receiver sensitivity (dBm)	-14.1
Overload power (dBm)	-1.0
Extinction ratio (dB)	3.0
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310CNF

9 Accessories

About This Chapter

9.1 16/32/64/128-Channel DSP Module

9.1 16/32/64/128-Channel DSP Module

Card Overview

The 16/32/64/128-channel DSP module is a VoIP voice processing DIMM that provides the voice over IP (VoIP) functions.

Figure 9-1 shows the appearance of the 16/32/64/128-channel DSP module.

Figure 9-1 Appearance of the 16/32/64/128-channel DSP module



NOTICE

Only the DSP module supported by the AR router can be inserted into the DSP DIMM slot. The DDR3 memory board or unsupported DIMMs cannot be inserted; otherwise, the AR router may be damaged or does not function properly.

Version Mapping

Table 9-1 describes the mapping between the 16/32/64/128-channel DSP module and software versions.

Table 9-1 Mapping between the 16/32/64/128-channel DSP module and software versions

Card Name	AR2204	AR2220E	AR2220 AR2240	AR3260
16/32/64/128-channel DSP module NOTE This module is supported in V200R001C01 and later versions.	Y	Y	Y	Y

 **NOTE**

Y: supported.

Functions and Features

Table 9-2 describes the functions and features of the 16/32/64/128-channel DSP module.

Table 9-2 Functions and features of the 16/32/64/128-channel DSP module

Function and Feature	Description
Basic functions	Processes the dial tone.
	Parses telephone numbers.
	Generates interactive voice response (IVR) and signal voice.
	Encode, decode, and convert voice.
	Implements voice conferences and echo canceler (EC).
	Processes IP packets.

Technical Specifications

Table 9-3 describes the technical specifications of the 16/32/64/128-channel DSP module.

Table 9-3 Technical specifications of the 16/32/64/128-channel DSP module

Item	Specification
Physical specifications	<ul style="list-style-type: none">● Dimensions (width x height): 133.35 mm x 28 mm (5.25 in. x 1.1 in.)● Maximum power consumption: 3.5 W● Weight: 0.05 kg (0.11 lb)
Environment parameters	<ul style="list-style-type: none">● Operating temperature: 0°C to 45°C (32°F to 113°F)● Operating relative humidity: 5% to 95%, noncondensing● Storage temperature: -40°C to +70°C (-40°F to +158°F)● Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit <http://e.huawei.com/en/how-to-buy> to find the local supplier or submit your inquiries online.

Table 9-4 provides the ordering information.

Table 9-4 Ordering information

Part Number	Card Description
03021HWQ	16-channel voice DSP module
03021HWT	32-channel voice DSP module
03021HWU	64-channel voice DSP module
03020XPK	128-channel voice DSP module