



SmartAX MA5878

Multi-service Access Module



V800R017C00



Product Overview

The SmartAX MA5878 multi-service access module (MA5878 for short) is an optical network unit (ONU) developed by Huawei.

The MA5878 is a 1 U-high box-shaped device in which some service boards are mountable. It is mainly used on the fiber to the building (FTTB) and fiber to the curb (FTTC) networks.



Product Highlights

10G GPON Upstream Transmission

- 10G PON ports allow higher access bandwidth and meet high-bandwidth service requirements.
- 10G GPON networks can coexist with the current PON networks to fully use the existing optical distribution network (ODN) resources.
- The 10G GPON transmission complies with ITU-T Recommendation G.987 and ITU-T Recommendation G.988.

Flexible Board Mountable for Various Scenarios

- Supports 3 service flows, which provides flexible GE and POTS configurations, facilitating user configurations according to their density to achieve optimum return on investment (ROI).
- Reserved upstream slots for further XGS-PON (symmetric 10G GPON rate) and TWDM PON smooth evaluation by installing the upstream board.

Superior Maintainability and Manageability

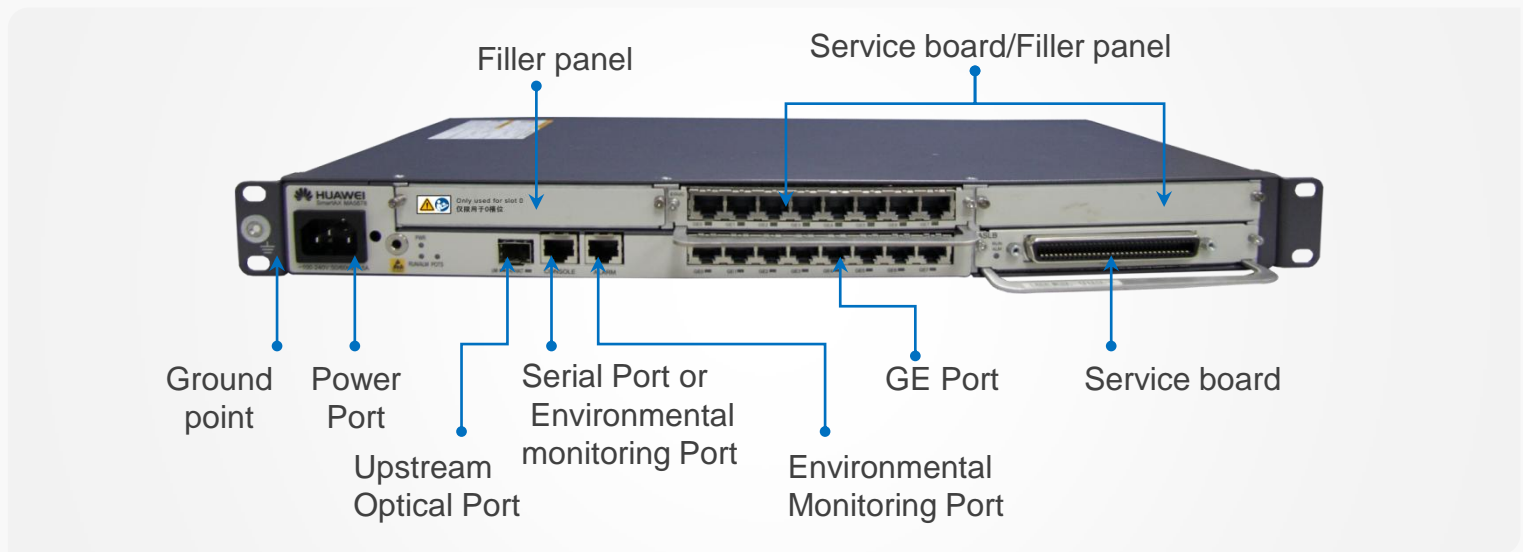
- One-stop deployment and PnP: Supports offline deployment and PnP when PON is used for upstream transmission; supports configuration obtainment from the NMS, automatic configuration validity, and automatic connection and report to the NMS.
- Precise fault locating and remote troubleshooting.
- Network performance monitoring: network optimization and user monitoring.

Carrier-Class Reliability Design

- The hardware has passed the electrostatic discharge (ESD) test.
- Surge protection capability
 - DC-powered port: differential mode 2 kV; common mode 4 kV
 - User LAN port: differential mode 0.5 kV; common mode 4 kV.
 - POTS port: 4 kV in horizontal direction and 4 kV in vertical direction.

Product Hardware

Based on the power port, the MA5878 devices are classified into 2 types: AC-powered MA5878 and DC-powered MA5878. The following uses an AC-powered MA5878 as an example to introduce the device.



The following figure shows the layout of the MA5878 subrack.

0	Filler panel	1	GE/POTS/Filler panel	2	GE/POTS/Filler panel
	Control board		4		8GE

Port Description

Port Name	Silk Screen	Number of Ports	Function
AC/DC power port	-	1	Draws in 220 V AC or –48 V DC power.
Upstream optical port	-	1	Supports 10G GPON (asymmetric), GPON, GE, and 10GE upstream transmission.
Environment monitoring port	ALARM	1	Connects to 4 digital sensors and supports user-defined monitoring,
Serial port or environment monitoring port	CONSOLE	1	<ul style="list-style-type: none"> Serves only as a maintenance serial port or maintenance network port. In the BIOS loading phase, it functions only as a maintenance serial port. In EMU mode, it connects to an environment monitoring unit (EMU) to report monitored environment parameters to the control board.
GE port	GE0-GE7	8	Supports GE access and provides 10 Mbit/s, 100 Mbit/s, and 1000 Mbit/s autonegotiation Ethernet access rates.
Service board	-	-	<p>Support 3 slots for service slots, which can house EGUC and ASNB.</p> <ul style="list-style-type: none"> EGUC: Supports 8-channel GE access. It cannot be inserted to slot 3. ASNB: Supports 16-channel POTS access. It can be inserted into any slot for service boards.



Product Specifications

Technical Specifications

Dimensions			
Weight	Width	Depth	High
Full configuration: ≤ 4.3 kg	442 mm (without mounting ears) 482.6 mm (with mounting ears for the 19-inch subrack)	245mm	43.6mm

Environment Specifications			
Operating Environment Temperature	Operating Environment Humidity	Atmospheric Pressure	Altitude
-40°C ~ +65°C*	5%RH ~ 95%RH	70kPa ~ 106kPa	< 4000 m**

*The MA5878 is able to start up at a lowest temperature of -25°C and run at a lowest temperature of -40°C.
**The air density varies with the altitude, which affects the heat dissipation capability of the MA5878. Therefore, the operating temperature of the MA5878 changes with the altitude.

Power Consumption			
Typical Configurations	Static Power Consumption	Typical Power Consumption	Maximum Power Consumption
Broadband-only configuration: 24 GE	29W	34W	36W
Broadband and narrowband configurations: 16 GE+16 POTS	30W	37W	47W

Power Specifications		
Power Supply Mode	Operating Voltage Range	Maximum Input Current
220 V AC power supply	90 V AC to 264 V AC	1.5 A
-48 V DC power supply	-48 V DC to -60 V DC	2 A

PON Port Indicators

Parameter	GPON	10G GPON
Port working mode	Single-mode	Single-mode
Connector type	SC/UPC (PC)	SC/UPC (PC)
Maximum transmission reach	20km	20km
Extinction ratio	10dB	8.2dB
Rx sensitivity	-27dBm	-28dBm
Overload optical power	-8dBm	-8dBm
Center wavelength	Rx : 1490nm Tx : 1310nm	Rx : 1577nm Tx : 1270nm
Tx optical power	0.5dBm ~ 5.0dBm	2dBm ~ 7dBm

GE Optical Port Indicators

Parameter	GE Single-mode Optical Port					10GE Single-mode Optical Port
	Single-fiber bidirectional transmission	Single-fiber bidirectional transmission	Single-fiber bidirectional transmission	Single-fiber bidirectional transmission	Dual-fiber bidirectional transmission	Dual-fiber bidirectional transmission
Optical module type	Single-fiber bidirectional transmission	Single-fiber bidirectional transmission	Single-fiber bidirectional transmission	Single-fiber bidirectional transmission	Dual-fiber bidirectional transmission	Dual-fiber bidirectional transmission
Connector type	LC	LC	LC	LC	LC	LC
Transmission reach	40km	40km	10km	10km	10km	10km
Center wavelength	Rx : 1490nm Tx : 1310nm	Rx : 1310nm Tx : 1490nm	Rx : 1310nm Tx : 1490nm	Rx : 1490nm Tx : 1310nm	1310nm	1310nm
Tx optical power	-2dBm ~ 3dBm	-2dBm ~ 3dBm	-9dBm ~ -3dBm	-9dBm ~ -3dBm	-9dBm ~ -3dBm	-8.2dBm ~ -0.5dBm
Extinction ratio	9dB	9dB	9dB	9dB	9dB	3.5dB
Maximum Rx sensitivity	-23dBm	-23dBm	-19.5dBm	-19.5dBm	-19dBm	-14.4dBm

Cable Indicators

Item	AC Power Cable	DC Power Cable	PGND Cable	Local Maintenance Serial Port Cable	Network Cable	POTS Subscriber Cable
Connector type	PI straight male/C13 straight female	OT terminal/cord end terminal	Ring terminal/ring terminal	DB-9 female + 8-pin RJ45/DB-25 female	RJ45 connector	Champ 64pin
Cable type	External power cable	Electronic and electrical cable	Electronic and electrical cable	Symmetrical twisted-pair cable	Category 3 or 5 unshielded twisted pair (UTP-3 or UTP-5) or shielded twisted pair (STP)	Symmetrical twisted-pair cable
Characteristic impedance	N/A	N/A	N/A	N/A	100.Ω	100.Ω
Core diameter	N/A	N/A	N/A	0.38mm	0.51mm	0.40mm
Wire gauge	1.0 mm ²	18 AWG (cross-sectional area ≈ 0.82 mm ²)	10 AWG (cross-sectional area ≈ 5.2 mm ²)	28 AWG (cross-sectional area ≈ 0.08 mm ²)	N/A	26 AWG (cross-sectional area ≈ 0.128 mm ²)
Direct current resistance of the inner conductor	N/A	4.95Ω/km	N/A	N/A	93.8Ω/km	145Ω/km
Frequency range	N/A	N/A	N/A	N/A	0 ~ 100MHz	Default
Frequency attenuation	N/A	N/A	N/A	N/A	22dB/100m @100MHz	≤2.95 dB/100m(1 MHz)



Primary Function List

Layer 2 Management

- MAC address management
- VLAN attribute management
- Service flow
- VLAN+MAC forwarding
- Layer 2 isolation
- Layer 2 interoperation
- Transparent transmission of protocol packets

QoS

- Traffic classification policy
- Priority-based processing
- Traffic policing
- Congestion management
- Access control list (ACL) rules

Voice

- H.248
- SIP
- SPC
- Voice service test
- Voice service reliability

Emulation Service

- PPPoE dialup emulation

- DHCP dialup emulation
- Multicast service emulation
- Voice call service emulation

Layer 3 Features

- DHCP client
- ARP
- DNS client
- Static route

Multicast Features

- IGMP v2/v3 proxy
- IGMP snooping
- Multicast log
- Multicast call admission control (CAC)
- Multicast authentication
- Multicast preview

IPv6

- IPv6 traffic classification
- IPv6 ACL
- DHCPv6 L2
- Basic IPv6 protocol stack
- Basic IPv6 routing
- IPv6 neighbor discovery (ND)
- IPv6 security
- IPv6 multicast listener

discovery (MLD)

User Security

- PITP
- DHCP option 82
- 802.1x authentication
- RAIO
- MAC address anti-duplication
- MAC address anti-spoofing
- IP address anti-spoofing
- Ring check

System Security

- MAC address filtering
- Denial of service (DoS) anti-attack
- ICMP/IP packet anti-attack
- Source route filtering
- Firewall
- Blacklist
- Permitted/Denied IP address segment
- Service overload control

OAM

- Ethernet OAM CFM
- Ethernet OAM EFM
- Ethernet OAM PM