H901MPLA Control Board: 240G Switching Capacity - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

Product Name: Huawei H901MPLA Main Control Board

Product Model: H901MPLA

Product Type: Integrated Main Control and Switching Board

Target Platform: Huawei SmartAX MA5800 Series OLT (MA5800-X7, MA5800-X15, MA5800-X17)

This document provides a comprehensive technical overview and detailed specification for the H901MPLA control board. As the central processing and switching engine for the MA5800 series OLT, the H901MPLA integrates main control, service processing, and switching functions, providing robust performance for high-density fiber access networks. Designed for carrier-grade environments, it offers high reliability, rich protocol support, and flexible uplink capabilities.



CORE INTERNAL TOPOLOGY

The H901MPLA board serves as the core of system control and service switching and aggregation for the MA5800 OLT. It facilitates communication with service boards through master/slave serial ports and in-band GE/10GE channels. The board's architecture is built around a high-capacity switching fabric, providing a non-blocking forwarding plane to ensure line-rate performance for all connected services.

The control plane manages system configuration, monitoring, and control, while the data plane handles high-throughput packet forwarding. The board supports both active/standby and load-sharing modes. In load-sharing mode, two MPLA boards can operate in parallel to double the forwarding plane performance.

It connects to the service boards via high-speed backplane channels. The H901MPLA provides up to 17 x 50GE channels to service/upstream interface boards, delivering 100 Gbit/s bandwidth per slot in load-sharing mode. The board also features four integrated 10GE/GE SFP+/SFP uplink/ cascading ports, enabling flexible upstream connectivity.

SWITCHING SUBSYSTEM CAPABILITIES

The H901MPLA is engineered for high-performance Layer 2 and Layer 3 switching, featuring substantial table sizes and forwarding capacities:

- Switching Capacity: 480 Gbps
- Forwarding Rate: 240 Mpps
- Bandwidth per Slot: 100 Gbit/s (load sharing mode)
- MAC Address Table: 262,143 entries
- IPv4 Routing Table: 65,536 entries
- IPv6 Routing Table: 16,384 entries
- ARP Table: Scalable up to 131,072 entries (software version dependent)

High-Density Subscriber Support:

- Access ONTs: 17,408

- Multicast Users: 17,408

- Service Ports: 139,264

The non-blocking architecture ensures that all subscribers receive full wire-speed throughput, making the H901MPLA ideal for triple-play services including high-definition IPTV, VoIP, and high-speed data. The large MAC and routing tables enable efficient traffic management and forwarding in complex, large-scale networks.

OPERATIONAL ADVANTAGES

Redundancy and High Availability

The H901MPLA supports 1+1 active/standby redundancy at the control plane and load sharing on the forwarding plane. This provides exceptional reliability and minimizes service interruption. In case of an active board failure, the standby board seamlessly takes over. In-service software upgrade (ISSU) further enhances availability by allowing upgrades without traffic disruption.

Advanced Timing and Synchronization

- Synchronous Ethernet (SyncE): Supports precise frequency synchronization for

networks requiring tight timing.

- IEEE 1588v2 (Precision Time Protocol): Enables accurate time synchronization for applications like mobile backhaul and financial trading.

- 1588 ACR (Adaptive Clock Recovery): Provides additional timing recovery capabilities.

Management and Maintenance

The board provides comprehensive management interfaces for local and remote maintenance:

- CON (RJ-45): Management serial port

- ETH (RJ-45): Management Ethernet port

- ESC (RJ-45): Environment monitoring serial port

These interfaces allow full configuration, monitoring, and troubleshooting of the OLT system.



PROTOCOL SUPPORT MATRIX

The H901MPLA supports a comprehensive suite of Layer 2 and Layer 3 protocols necessary for modern carrier and enterprise networks:

Layer 2 Features

- VLAN (IEEE 802.1Q)

- QinQ (VLAN Stacking)

- Link Aggregation (LACP)

- Spanning Tree Protocol (STP/RSTP/MSTP)

- GVRP

Layer 3 Features

- IPv4 and IPv6 routing

- Static routing

- Routing Information Protocol (RIP)

- Open Shortest Path First (OSPF)

- Border Gateway Protocol (BGP)

- Virtual Router Redundancy Protocol (VRRP)

- Policy-Based Routing (PBR)

- Virtual Routing and Forwarding (VRF) for L3 VPN

Multicast

- IGMP Snooping

- IGMP Proxy

- Protocol Independent Multicast (PIM-SM/DM)

Quality of Service

- Traffic classification and marking

- Queue scheduling (SP, WRR, DRR, WFQ)

- Congestion avoidance (WRED)

- Traffic shaping and policing

Security

- Access Control Lists (ACLs)

- 802.1x authentication

- MAC address authentication

- ARP anti-spoofing

- IP Source Guard

TECHNICAL SPECIFICATIONS

System Specifications

| Parameter | Specification |

|---|---|

| Model | H901MPLA |

| Function | Main control, service processing, switching |

| Switching Capacity | 480 Gbps |

| Forwarding Rate | 240 Mpps |

| Bandwidth per Slot | 100 Gbit/s (load sharing mode) |

| Service Ports | 4 x 10GE/GE SFP+/SFP |

Parameter	**Specification**
Model	H901MPLA
Function	Main control, service processing, switching
Switching Capacity	480 Gbps

Forwarding Rate	240 Mpps
Bandwidth per Slot	100 Gbit/s (load sharing mode)
Service Ports	4 x 10GE/GE SFP+/SFP
MAC Address Table	262,143
IPv4 Routing Table	65,536
IPv6 Routing Table	16,384
ARP Table	Up to 131,072
Access ONTs	17,408
Multicast Users	17,408
Power Consumption (Static)	≤ 62 W
Power Consumption (Maximum)	≤ 117 W
Operating Temperature	-40°C to +65°C
Dimensions (W x D x H)	31.0 mm x 258.9 mm x 399.1 mm
Weight	2.2 kg
Maximum Frame Size (Jumbo)	9,216 bytes

Memory and Table Sizes

| Table | Size |

|---|---|

| MAC Address Table | 262,143 |

| IPv4 Routing Table | 65,536 |

| IPv6 Routing Table | 16,384 |

| ARP Table | Up to 131,072 |

| ND Table | 16,384 |

| ACL Rules | 1,042 |

Subscriber Capacity

| Parameter | Capacity |

|---|---|

| Access ONTs | 17,408 |

| Multicast Users | 17,408 |

| Configurable Multicast Channels | 8,192 |

| Concurrent Multicast Channels (IPv4/IPv6) | Up to 8,000 / 2,000 |

| Service Ports | 139,264 |

Physical Characteristics

| Parameter | Specification |

|---|---|

| Dimensions (W x D x H) | 31.0 mm x 258.9 mm x 399.1 mm |

| Weight | 2.2 kg |

Power Consumption

Mode	Power Consumption
Static	≤ 62 W
Maximum	≤ 117 W

Environmental Specifications

Parameter	Specification
Operating Temperature	-40°C to +65°C
Storage Temperature	-40°C to +70°C
Operating Humidity	5% to 95% RH (non-condensing)

Frame Specifications

Parameter	Specification
Maximum Frame Size (Standard)	2,052 bytes
Maximum Frame Size (Jumbo Frame Enabled)	9,216 bytes

Standards and Compliance

Standard	Compliance
IEEE 802.3	Yes
IEEE 802.1Q	Yes
IEEE 802.1ad (QinQ)	Yes
IEEE 802.3ad (LACP)	Yes
IEEE 802.1D/w/s (STP/RSTP/MSTP)	Yes
IEEE 1588v2	Yes
Synchronous Ethernet	Yes
RFC 2544 (Benchmarking)	Yes
Y.1564 (SAM)	Yes

ORDERING SKU INFORMATION

SKU	Description
H901MPLA	Main Control Board for MA5800-X7/X15/X17

| Compatibility |

|---|

| Chassis | Huawei MA5800-X7, MA5800-X15, MA5800-X17 |

RELATED DOCUMENTATION

For more information, refer to the following documents:

- Huawei MA5800 Series OLT Hardware Description
- Huawei MA5800 Series OLT Configuration Guide
- Huawei MA5800 Series OLT Maintenance Guide

DISCLAIMER

The information in this document is subject to change without notice. Every effort has been made to ensure the accuracy of the content, but this document is provided 'as is' without warranty of any kind. For the most current specifications, please refer to the official Huawei documentation.