Rugged M12 PoE Switch on Layer 3 Network

MP614 Series

Industrial 14G Layer 3 Managed M12 PoE Switch

MP614 series is the leading edge M12 full Gigabit routing PoE switch designed for Layer 3 controlling network on rail public transport. Equipped with 14 rugged Gigabit M12 ports, 8 of which supply intelligent PoE/PoE+ and 2 of which support link bypass function for sustainable connectivity even in case of device/power fault. The advanced Layer 3 routing protocols such as IP/VLAN routing, RIP, OSPF, VRRP are fully compatible with your backbone network. Full 14 Gigabit ports deliver ultra-speed connectivity without any bottleneck. The comprehensive Cyber Security design safeguards the network from outside intrusion.

L3 | 802.3 at PoE+ | ERPS G.8032v2 | bypass | Cyber Security | EN50155 | EN45545

Features & Benefits

Full Giga Switching and Ultra High Throughput

- **14-port Full-Giga** Ethernet with 8-port PoE and 2-port **link bypass** function
- **16K** MAC address table
- **1.5MBytes** packet buffer memory for H.264 burst
- **9K** jumbo frame
- Store and forward with non-blocking switch fabric

ITU-T G.8032 v1/v2 ERPS Ring Redundancy

- An ITU standard Ring redundancy Protocol
- Provide sub-50ms protection and recovery switching for Ethernet traffic
- **Interoperate** with 3rd party industrial switch and still remain fast recovery time
- Interoperate with commercial switch instead of STP/RSTP
- Efficient network interconnection and topology with **ERPS Chain, multiple chains**

Dynamic Routing with Redundancy Protection

- Support **RIPv2, OSPFv2** for intra-domain routing within an autonomous system
- **Unicast and multicast* static routing** for efficient routing requirement
- Support **VRRP** to guarantee sustainable routing in single point of failure

Management Features

- Various configuration path including **WebGUI, CLI, SNMP and RMON**
- Support IEEE **1588v2 PTP** time management
- LLDP topology control
- Support USB for field side easy configuration and firmware update
- Software utility interface for LAN devices management
- NMS system for individual component monitoring in network management framework

IEC62443-4-2 Level 3 / 4 Cyber Security

- L2-L7 Access Control List (ACL), parsing up to 128bytes/packet
- DHCP Snooping, IP Source Guard, Dynamic ARP Inspection
- 802.1Q VLAN, Private VLAN
- Multi-Level user passwords
- HTTPS/SSH/SFTP, 256-bit AES encryption
- 802.1X MAB for non-802.1X compliant end devices
- RADIUS/TACACS+ centralized password authentication

Extreme PoE Capability

- Provides 8-port IEEE 802.3af/at compliance PoE, up to 30W per port
- Up to **100W** system power budget at **70˚C** operating temperature
- Complete PoE management including per-port Power **Budget Control**, PoE **Scheduling and** PoE Status
- Rugged **M12** connectors for harsh environment

Rugged Design for Surveillance in Rail, Rolling Stock application

- **EN50155/IEC61373** railway certification compliance
- **EN45545-2** Fire protection on railway vehicle
- Outstanding mechanical design: good heat dispassion and lightweight: 100W Power feeding even in 70˚C
- Wide range operating temperature from **-40 ~ 70˚C**
- CE marking
- Emission: CISPR 22/ FCC part 15B class A

Interfaces

System LED
- 1 x Power
- 1 x System Status
- 1 x Ring Status
- 1 x ALM
- 14 x Ethernet Port
- 8 x PoE

Power Connector
- 1 x M12 4 pin A-Code

IEEE 802.3 af/at PoE
- 8-port 100/1000MBase-T M12 8-pin A-Code or X-Code

Wall Mount Screw Holes for Front/ Back Panel

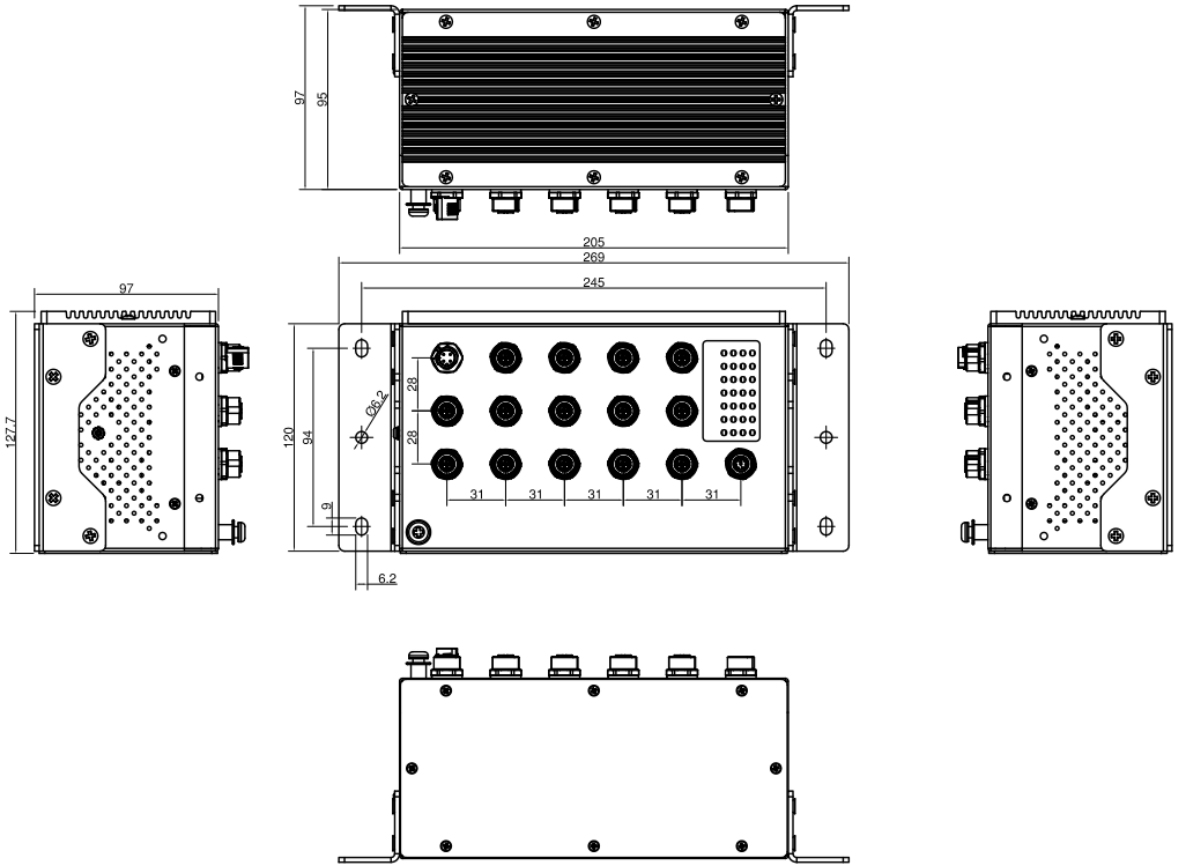
Ground Screw

Gigabit Ethernet
- 6-port 100/1000MBase-T M12 8-pin A-Code or X-Code
- 2-port with Bypass Function (Port 13/14)

Easy System Management
- 1 x M12 8 pin A-Code
- USB for Configuration/Firmware update
- RS232 console

Dimensions

(mm)



Technology	
Standard	IEEE 802.3af/at Power over Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Gigabit Ethernet Copper
	IEEE 802.3x Flow Control and back-pressure
	IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
	IEEE 802.1p Class of Service (CoS)
	IEEE 802.1Q VLAN and GVRP
	IEEE 802.1Q Double Tag VLAN (QinQ)
	ITU-T G.8032 Ethernet ring protection switching (ERPS)
	IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)
	IEEE 802.1Q-2005 Multiple Spanning Tree Protocol (MSTP)
	IEEE 802.3ad Link Aggregation Control Protocol (LACP)
	IEEE 802.1X Port based Network Access Protocol
	IEEE 1588 Precision Time Protocol v1/v2
Performance & Scalability	
Switch Technology	Store and Forward Technology with 40Gbps Non-Blocking Switch Fabric Internal Packet Buffer: 1.5MBytes Forwarding rate: 20.83Mpps (14*1,488,000pps/port)
Number of MAC Address	16K
Packet Buffer Memory	1.5MBytes
Jumbo Frame	9216 Bytes
Transfer performance	100Base-TX: 148,800pps, 1000Base-TX: 1,488,000pps
VLAN	256 VLANs, VLAN ID: 1-4094
IGMP Group	512
Class of Service	8 Priority Queues per Port
Interface	
Ethernet Port	14 x 100/1000Base-T, M12 8 pin A/X-Code Female, Auto Negotiation, 8 ports (Port 1~8) IEEE 802.3af/at PoE, 2 ports (Port 13/14) link bypass **Pin Definition:** 8 pin X-Code Female: #1 (D1+/PoE V+), #2 (D1-/PoE V+), #3 (D2+/PoE V-), #4 (D2-/PoE V-), #5 (D4+), #6 (D4-), #7 (D3-), #8 (D3+) 8 pin A-Code Female:#1 (D3-), #2 (D4+), #3 (D4-), #4 (D1-/PoE V+), #5 (D2+/PoE V-), #6 (D1+/PoE V+), #7 (D3+), #8 (D2-/PoE V-) **Cable:** 1000 Base-T: 4-pair Cat.5E/Cat.6 FTP/STP cable, EIA/TIA 568B 100Ohm, 100Meters *Recommended uses FTP/STP cable for the railway on-board application
System LED	1 x PWR: Green On 1 x SYS: Ready: Green On, Firmware Updating: Green Blinking 1 x Ring: Off: Ring disabled, Green On: Ring normal (Not RPL Owner), Green Blinking: Ring normal (RPL Owner), Amber On: Ring abnormal, Amber Blinking: Ring port fail 1 x ALM: Red On 14 x Port: Link (Green On), Active (Green Blinking) 8 x PoE: Amber On
Console	1 x M12 8 pin A-Code Female RS232 Console Baud Rate: 115200.n.8.1 **Pin Definition:** #1 (TxD), #2 (RxD), #3 (Signal Ground), #5 (USB DATA+), #6 (USB DATA-), #7 (USB 5V), #8 (USB GND)
USB	
Power Input	M12 4 pin A-Code Male with polarity reverse protection **Pin Definition:** #1 (V+), #2 (V+), #3 (V-), #4 (V-)
Watchdog	Hardware-based 10 seconds timer

Power Requirement	
Operating Voltage	HV: 110VDC (77~137.5VDC) MV: 54VDC (46~57VDC) WV:24/48/110VDC(16.8~137.5VDC)
Reverse Polarity Protect	Yes
Input Current	1.10A@110V
Power Consumption	Max 14.3W@110VDC full traffic without PD loading, suggest to reserve 15% tolerance
PoE	
Power forwarding mode	Alternative A
PoE Power Budget	System: Max.100W@70°C Per Port: Max. 30W
PoE Standard	IEEE 802.3af/at
Management	System/Port Power Budget Control, PD Alive Check, PoE Scheduling, PoE Status
Software	
Management Interface	CGI WebGUI, Command Line Interface (CLI), Telnet, SNMP
Time Management	NTP, IEEE 1588 Precision Time Protocol v1/v2
Network Management	IPv4/IPv6, SNMP v1/v2c/v3/Trap, MIBs, RMON, LLDP, DHCP server/client/Option 82, DHCP Snooping, TFTP, System Log, SMTP
Traffic Management	Flow Control, Port Trunk/802.3ad LACP, VLAN, Private VLAN, GVRP, GMRP, QinQ, QoS, IGMP Snooping v1/v2/v3, Rate Control, Storm Control, Port Mirror
Security	IEEE 802.1X/RADIUS, Private VLAN, ACL(MAC/IP filter), HTTPs/SSH secure login
Redundancy	Rapid Spanning Tree Protocol (RSTP)/Multiple Spanning Tree Protocol (MSTP) ITU-T G.8032 v1/v2 Ethernet Ring Protection Switching (ERPS) Virtual Router Redundancy Protocol (VRRP)
L3 Routing	Static/Dynamic IP Routing(64 entries), RIPv2, OSPFv2, Static Multicast Route*, VRRPv2
Mechanical	
Installation	Wall Mount
Enclosure Material	Steel Metal with Aluminum
Dimension	205 x 127.7 x 95mm (W x H x D) without Wall mount plate
Ingress Protection	IP31
Weight	3KG (device) / 3.5KG (full package)
Package	290(W)x220(L)x150(H)mm (package) 6pcs / carton 410(W)x 550(L)x490(H)mm (1.5KG)
Environmental	
Operating Temperature & Humidity	-40°C~70°C , 0%~95% Non- Condensing
Storage Temperature	-40°C~85°C
Hi-Pot Insulation	AC 1KV
MTBF	>485,000 hrs
Warranty	5 years
Standard	
Safety	IEC60950-1 Compliance
EMC	EN61000-6-2/EN61000-6-4
EMI	CISPR 22, FCC part 15B Class A
EMS	EN61000-4-2 ESD, EN61000-4-3 RS, EN61000-4-4 EFT, EN61000-4-5, EN61000-4-6 CS, EN61000-4-8 Magnetic Field
Railway	EN50155 includes EN50121-3-2 EMC/ IEC61373 Vibration and Shock for railway EN45545-2 Fire protection on railway vehicle

Ordering Information

Model Name	Description
MP614-HV-X	Industrial 14G L3 Managed M12 X-code PoE Switch, 110V
MP614-MV-X	Industrial 14G L3 Managed M12 X-code PoE Switch, 54V
MP614-WV-X	Industrial 14G L3 Managed M12 X-code PoE Switch, 24-110V
	Package List
	1 x Product Unit
	1 x Wall Mount Kit (2 x Wall mount plate)
	1 x Quick Installation Guide

Optional Accessory

Item	
USB-1-4	M12 A-code 4Gb USB disk for device configuration, firmware update
CBL-F9MM12A-1M	Console Cable DB9 Male to M12-A-code Male, 1Meter
MC-1-4	Field assembled M12 connector, 4-pin, A-code