Rugged PoE switch for rolling stocks

MP310-HV Series

Industrial 7+3G L2 Managed M12 PoE Switch

The managed MP310-HV switch is specially designed for fast and reliable infotainment and IP-surveillance networks on road and railway public transport. The switch provides 7 FE ports with intelligent PoE/PoE+ functionality and 3 Gigabit ports, one of which is PoE/PoE+ port and 2 Gigabit uplink ports with link bypass function ensuring network connectivity even in case of device/power fault. IP31 industrial hardware design with M12 rugged connectors eliminates the problems of vibration, shock, and temperature extremes. The switch is also equipped with M12 USB port for field configuration and trouble shooting.

PoE+ ERPS G.8032v2 bypass Cyber Security EN50155

Features & Benefits

High Throughput Ethernet Switching

- 10 Ethernet ports, including 7 Fast Ethernet ports and 3 Gigabit Ethernet ports
- **8-port PoE** , including **7 Fast Ethernet ports** and **1 Gigabit Ethernet port**
- 2 Gigabit Ethernet port with **link bypass** function
- **8K** MAC address table
- Stores and forwards with non-blocking Switch Fabric

Management Features

- Various configuration paths, including WebGUI, CLI, Telnet, SNMP v1/v2c/v3 and RMON
- IEEE **1588v2 PTP** time management
- LLDP topology control
- Modbus/TCP, Ethernet/IP for factory automation
- USB for easy field configuration and firmware update
- Software utility interface for LAN devices management
- NMS system for individual component monitoring

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

Enhanced Cyber Security for Critical Application

- **802.1X/RADIUS** port-based access control
- Port MAC secure learning
- Private VLAN/IP Security/Port Security
- HTTPs/SSH/ Management IP secure access

Extreme PoE Capability

- 8-port IEEE 802.3af/at compliant PoE, up to 30W/port
- Up to **100W** system power budget at **70℃** operating temperature
- Complete PoE management including per-port Power **Budget Control**, PoE **Scheduling and** PoE Status

Rugged Design for Surveillance in Rail, Rolling Stock applications

- **EN50155/IEC61373** railway certification
- Railway 110VDC(77~137.5V) on-board power design
- Outstanding mechanical design with good heat dispassion and lightweight
- Rugged **M12** connectors for harsh environments
- Wide operating temperature range from -40 ~ 70℃

Interfaces

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

Power Connector
- 1 x M12 4 pin A-Code

Ground Screw

Gigabit Uplink
- 3-port 100/1000Base-T M12 8-pin A-Code or X-Code
- 1-port with Gigabit PoE (Port 8)
- 2-port with Bypass Function (Port 9/10)

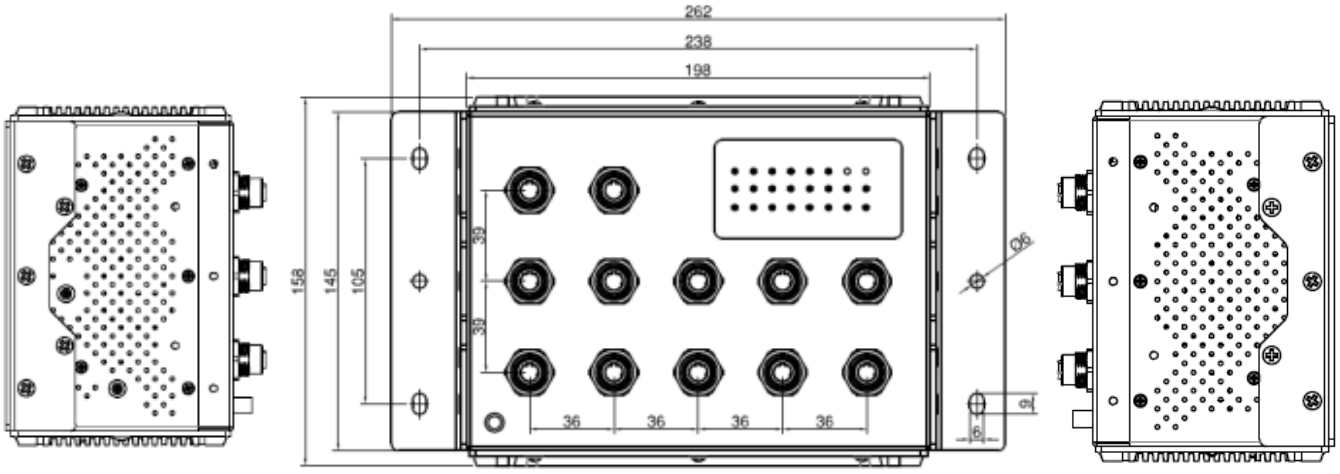
System LED
- 1 x Power
- 1 x System Status
- 1 x Ring Status
- 1 x ALM
- 10 x Ethernet Port
- 8 x PoE

IEEE 802.3 af/at PoE
- 7-port 10/100MBase-TX M12 4 pin D-Code

Wall Mount Screw Holes for Front/ Back Panel

Dimensions

(mm)



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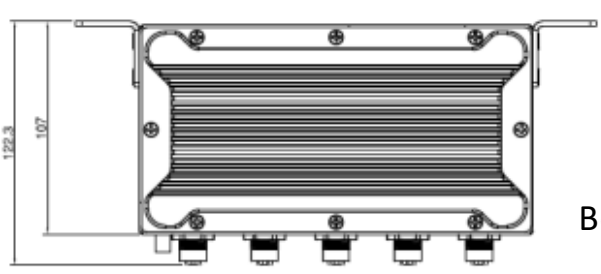

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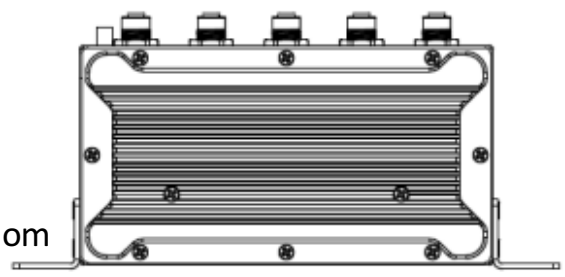

Specifications

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
	ITU-T G.8032 Ethernet ring protection switching (ERPS)
	IEEE 802.1Q Double Tag VLAN (QinQ)
	IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)
	IEEE 802.1S 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 v2
Performance	
Switch Technology	Store and Forward Technology with Non-Blocking Switch Fabric
Number of MAC Address	8K
Packet Buffer Memory	1M bits
Transfer performance	100Base-TX: 148,800pps, 1000Base-TX: 1,488,100pps
VLAN	256 VLANs
VLAN ID	1~4094
Class of Service	4 Priority Queues per Port
Watchdog	Hardware-based 10 seconds timer
Interface	
Ethernet Port	7 x 10/100BaseTX, M12 4 pin D-Code Female, Auto Negotiation, IEEE 802.3af/at PoE 3 x 100/1000Base-T, M12 8 pin A/X-Code Female, Auto Negotiation, 1 port (Port 8) IEEE 802.3af/at PoE, 2 ports (Port 9/10) link bypass **Pin Definition:** 4 pin D-Code Female: #1 (TX+/PoE V+), #2 (RX+/PoE V-), #3 (TX-/PoE V+), #4 (RX-/PoE V-) 8 pin X-Code Female: #1 (D1+/PoE V+), #2 (D1-/PoE V+), #3 (D2+/PoE V-), #4 (D2-/PoE V-), **(MP310-HV-X)** #5 (D4+), #6 (D4-), #7 (D3-), #8 (D3+) 8 pin A-Code Female: #1 (D3-), #2 (D4+), #3 (D4-), #4 (D1-/PoE V+), **(MP310-HV-A)** #5 (D2+/PoE V-), #6 (D1+/PoE V+), #7 (D3+), #8 (D2-/PoE V-) **Cable:** 100 Base-TX: 2-pair Cat.5E / Cat.6 FTP/STP cable, EIA/TIA 568B 100-Ohm, 100Meters 1000 Base-T: 4-pair Cat.5E/Cat.6 FTP/STP cable, EIA/TIA 568B 100Ohm, 100Meters *Recommend to use FTP/STP cable for the railway on-board applications

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 10 x Port: Link (Green On), Activity (Green Blinking) 8 x PoE: IEEE802.3af Powering (Green On), IEEE802.3af Detecting (Green Blinking), IEEE802.3at Powering (Blue On), IEEE802.3at Detecting (Blue Blinking)
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-)
Power Requirement	
Input Voltage	110VDC (77~137.5VDC)
Reverse Polarity Protect	Yes
Input Current	1.10A@110V
Power Consumption	Max 15.4W@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
Network Management	IPv4/IPv6, SNMP v1/v2c/v3/Trap, MIBs, RMON, LLDP, DHCP server/client/Option 82, TFTP, System Log, SMTP
Traffic Management	Flow Control, Port Trunk/802.3ad LACP, VLAN, Private VLAN, GVRP, GMRP, QinQ, Class of Service, Traffic Prioritize, IGMP Snooping v1/v2/v3, Rate Control, Port Mirror
Security	IEEE 802.1X/RADIUS, Port MAC Secure Learning, Management IP, Management VLAN, SSH, SSL
Redundancy	Rapid Spanning Tree Protocol (RSTP)/Multiple Spanning Tree Protocol (MSTP) ITU-T G.8032 v1/v2 Ethernet Ring Protection Switching (ERPS)
Mechanical	
Installation	Wall Mount
Enclosure Material	Steel Metal with Aluminum
Dimension	198 x 158 x 105 (W x H x D) / without Mounting Clip, 262 x 158 x 107 (W x H x D) / with Mounting Clip

Ingress Protection	IP31
Weight	3KG (device) / 3.5KG (full package)
Package	287mm(W)x220mm(L)x171mm(H)(package) 12pcs / carton 606mm(W)x473mm(L)x557mm(H) (1.5KG)
Environmental	
Operating Temperature & Humidity	-40°C~70°C , 0%~90% Non- Condensing
Storage Temperature	-40°C~80°C
Hi-Pot Insulation	AC 1.5KV
MTBF	>609,000 hrs
Warranty	5 years
Standard	
Safety	EN60950-1 Compliance
EMC	EN61000-6-2/4
EMI	CISPR 22, FCC part 15B Class A
EMS	EN61000-4-2 ESD: 8KV(Air), 6KV(Contact) EN61000-4-3 RS: 20V/m(80M~1GHz), 10V/m(1.4G~2.1GHz), 5V/m(2.1G~2.5GHz) EN61000-4-4 EFT: 2KV (Power, Signal Port, GND) EN61000-4-5 Surge: Power: 2KV/1KV(Line to Ground/Line to Line), Signal Port: 2KV(Line to Ground) EN61000-4-6 CS: 10Vrms(Power, Signal Port) EN61000-4-8 Magnetic Field: 30A/m continues/300A for 1~3s
Railway	EN50155 includes EN50121-3-2 EMC/ IEC61373 Vibration and Shock for railway

Ordering Information

Model Name	Description
MP310-HV-A	Industrial 7+3G L2 Managed M12 PoE Switch, 7xD-code FE+3xA-code GbE, 110VDC
MP310-HV-X	Industrial 7+3G L2 Managed M12 PoE Switch, 7xD-code FE+3xX-code GbE, 110VDC
	Package List
	1 x Product Unit
	1 x Wall Mount Kit (2 x Wall mount plates)
	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