



# 5014M12-L3-POE

## Datasheet

Aiming to create better and safer working environments and life experiences through the products we deliver.



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## Rugged M12 PoE Switch on Layer 3 Network

# 5014M12-L3-POE

### Industrial 14G Layer 3 Smart M12 PoE Switch

5014M12-L3-POE 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 bring forward an ultra speed connectivity without any bottleneck. The comprehensive Cyber Security design safeguards the network from outside intrusion.



### 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 RIPv1&v2, OSPFv1&v2 for intra-domain routing within an autonomous system
- Unicast/multicast static routing for efficient routing requirement
- Support VRRP to guarantee sustainable routing in single point of failure

### 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

### Management Features

- Various configuration path including web, command line, Telnet, SNMPv1/v2c/v3 and RMON setting
- Support IEEE 1588v1/v2 PTP time management
- LLDP topology control
- Modbus/TCP, Ethernet/IP for factory automation
- Support USB for field side easy configuration and firmware update
- Software utility interface for LAN devices management
- ANMS network management system

### IEC62443-4-2 Level 3 / 4 Cyber Security

- Support L2-L7 IPv4/IPv6 Access Control List (ACL)
- DHCP Snooping, IP Source Guard, Dynamic ARP Inspection
- 802.1Q VLAN, Private VLAN, Advanced Port Security
- 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

### Rugged Design for Surveillance in Rail, Rolling Stock application

- EN50155/IEC61373 railway certification compliance
- Railway 110VDC (77~137.5V) carriage power supply design
- Lightweight mechanism design for good heat dissipation function
- High-efficiency heat dissipation design for operating in -40~75°C environments
- Rugged M12 connectors for harsh environment



## Ordering Information .....

Model Name	Description
<b>5014M12-L3-POE</b>	14-Port Fully Managed Industrial Layer3 IP67 Ethernet Switch, 14 RJ45 Ports 10/100/1000Base-T(X), 8 RJ45 Ports Support POE/POE+, Support ITU-TG.8032, DIN-Rail, Dual Power Input 46-57VDC, -40°C-75°C
<b>5014M12-L3-POE-WV</b>	14-Port Fully Managed Industrial Layer3 IP67 Ethernet Switch, 14 RJ45 Ports 10/100/1000Base-T(X), 8 RJ45 Ports Support POE/POE+, Support ITU-TG.8032, DIN-Rail, Dual Power Input 17-137VDC, -40°C-75°C

Technology	
<b>Standard</b>	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	
<b>Switch Technology</b>	Store and Forward Technology with Non-Blocking Switch Fabric
<b>Number of MAC Address</b>	16K
<b>Packet Buffer Memory</b>	1.5MBytes
<b>Jumbo Frame</b>	9216 Bytes
<b>Transfer performance</b>	100Base-TX: 148,800pps, 1000Base-TX: 1,488,100pps
<b>VLAN</b>	256 VLANs
<b>VLAN ID</b>	1~4094
<b>Class of Service</b>	8 Priority Queues per Port
<b>Watchdog</b>	Hardware-based 10 seconds timer
Interface	
<b>Ethernet Port</b>	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 <b>Pin Definition:</b> 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-) <b>Cable:</b> 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
<b>System LED</b>	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
<b>Console</b>	1 x M12 8 pin A-Code Female RS232 Console Baud Rate: 115200.n.8.1 <b>Pin Definition:</b>
<b>USB</b>	#1 (Tx/D), #2 (Rx/D), #3 (Signal Ground), #5 (USB DATA+), #6 (USB DATA-), #7 (USB 5V), #8 (USB GND)
<b>Power Input</b>	M12 4 pin A-Code Male with polarity reverse protection <b>Pin Definition:</b> #1 (V-), #2 (V-), #3 (V+), #4 (V+)

Power Requirement	
<b>Operating Voltage</b>	HV: 110VDC (77~137.5VDC) MV: 54VDC (46~57VDC) WV:24/48/110VDC(16.8~137.5VDC)
<b>Reverse Polarity Protect</b>	Yes
<b>Input Current</b>	1.10A@110V
<b>Power Consumption</b>	Max 14.3W@110VDC full traffic without PD loading, suggest to reserve 15% tolerance
POE	
<b>Power forwarding mode</b>	Alternative A
<b>PoE Power Budget</b>	System: Max.100W@70°C Per Port: Max. 30W
<b>PoE Standard</b>	IEEE 802.3af/at
<b>Management</b>	System/Port Power Budget Control, PD Alive Check, PoE Scheduling, PoE Status
Software	
<b>Management Interface</b>	CGI WebGUI, Command Line Interface (CLI), Telnet, SNMP
<b>Time Management</b>	NTP, IEEE 1588 Precision Time Protocol v1/v2
<b>Network Management</b>	IPv4/IPv6, SNMP v1/v2c/v3/Trap, MIBs, RMON, LLDP, DHCP server/client/Option 82, TFTP, System Log, SMTP
<b>Traffic Management</b>	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
<b>Security</b>	IEEE 802.1X/RADIUS, Private VLAN, ACL(MAC/IP filter), HTTPs/SSH secure login
<b>Redundancy</b>	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)
<b>L3 Routing</b>	Static/Dynamic IP Routing, VLAN Routing, RIP v1/v2(64 entries), OSPF v1/v2, IGMP and Multicast Routing (64 entries)
Mechanical	
<b>Installation</b>	Wall Mount
<b>Enclosure Material</b>	Metal, Aluminum
<b>Dimension</b>	205 x 133 x 95mm (W x H x D) without Wall mount plate
<b>Ingress Protection</b>	IP31
<b>Weight</b>	3KG (device) / 3.5KG (full package)
<b>Package</b>	290(W)x220(L)x150(H)mm (package) 6pcs / carton 410(W)x 550(L)x490(H)mm (1.5KG)
Environmental	
<b>Operating Temperature &amp; Humidity</b>	-40°C~70°C , 0%~95% Non- Condensing
<b>Storage Temperature</b>	-40°C~85°C
<b>Hi-Pot Insulation</b>	AC 1KV
<b>MTBF</b>	>485,000 hours
<b>Warranty</b>	5 years

Standard	
<b>Safety</b>	IEC60950-1 Compliance
<b>EMC</b>	EN61000-6-2/EN61000-6-4
<b>EMI</b>	CISPR 22, FCC part 15B Class A
<b>EMS</b>	EN61000-4-2 ESD, EN61000-4-3 RS, EN61000-4-4 EFT, EN61000-4-5, EN61000-4-6 CS, EN61000-4-8 Magnetic Field
<b>Railway</b>	EN50155 includes EN50121-3-2 EMC/ IEC61373 Vibration and Shock for railway

## Function interface

**Power Connector**

- 1 x M12 4 pin A-Code

**IEEE 802.3 af/at PoE**

- 8-port 100/1000Base-T M12
- 8-pin A-Code or X-Code

**Gigabit Ethernet**

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

**System LED**

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

**Wall Mount Screw Holes for Front/ Back Panel**

**Ground**

**Easy System Management**

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



## Installation dimensions

