

# Industrial L3 16-Port 10/100/1000T 802.3at PoE M12 + 2-Port 10GBASE-T M12 Bypass Managed Ethernet Switch



## Advanced Layer 3 Managed PoE Switch for Railway Transportation and Harsh Environments

PLANET ITS-6326 Industrial Managed Switch Series, featuring PoE and 10G M12 connector, is specifically designed for railway system. Compliant with **EN50155**, **EN45545-2**, and **IEC 61373** standards, it offers robust features tailored to excel in demanding environments. This series supports dual-stack management for both IPv6 and IPv4, incorporates built-in Layer 3 OSPFv2 dynamic routing, and is powered by a high-performance Layer 2/Layer 4 Gigabit switching engine.

This series provides extensive functionality, making it ideal for both railway and heavy industrial applications. Equipped with M12 X-code connectors for each port, it ensures reliable and stable performance. With the capability to operate seamlessly in extreme temperatures ranging from -40 to 70°C, it offers exceptional adaptability, durability, and silent operation, making it suitable for the harshest industrial conditions.

Also, this series is available in two distinct models, as detailed in the table below. This variety provides users with the flexibility to choose the model that best meets their specific needs.

	ITS-6326-16P2TB-WV	ITS-6326-16P2T-WV
10/100/1000BASE-T, M12, 8-pin X-coded Connector with 802.3at PoE+	16	16
10G/5G/2.5G/1GBASE-T, M12, 8-pin X-coded Connector	2	2
Power Failure Bypass Pair; Link Speed up to 10GBASE-T	1-Pair (Ports 17-18)	-
Power Input Voltage	24 to 110 VDC	

## High-performance 10Gbps Ethernet Capability

Some models in the ITS-6326 series include **two 10G M12** ports, designed with a high-performance switch architecture that provides non-blocking switch fabric and wire-speed throughput of up to **72Gbps**. This robust capability effectively simplifies LAN upgrades to accommodate increasing bandwidth demands.

## Physical Port

### ITS-6326-16P2TB-WV

- **16 x 10/100/1000BASE-T** M12 ports (**Ports 1 to 16**) with **IEEE 802.3at PoE+** injector function
- **2 x 10GBASE-T** M12 ports (**Ports 17 to 18**) with **bypass relay**, backward compatible with 5G/2.5G/1Gbps data rate
- One M12 A-coded 5-pin male connector for USB data to RS232 console interface for basic management and setup
- One M12 A-coded 5-pin male connector with alarm, digital input and digital output functions
- One M23 A-coded 5-pin male connector with **input voltage range of 24 to 110 VDC (Operating voltage: 16.8 to 137.5 VDC)**

### ITS-6326-16P2T-WV

- **16 x 10/100/1000BASE-T** M12 ports (**Ports 1 to 16**) with **IEEE 802.3at PoE+** injector function
- **2 x 10GBASE-T** M12 ports (**Ports 17 to 18**), backward compatible with 5G/2.5G/1Gbps data rate
- One M12 A-coded 5-pin male connector for USB data to RS232 console interface for basic management and setup
- One M12 A-coded 5-pin male connector with alarm, digital input and digital output functions
- One M23 A-coded 5-pin male connector with **input voltage range of 24 to 110 VDC (Operating voltage: 16.8 to 137.5 VDC)**

## Industrial Case and Installation

- IP40 metal case
- Wall-mount design
- Dual DC input
  - Overload current protection
  - Reverse polarity protection
- -40 to 70 degrees C operating temperature

## Power over Ethernet

- Complies with IEEE 802.3at Power over Ethernet Plus, end-span PSE
- Power up to **16** IEEE 802.3at devices.
- Supports PoE power up to 36 watts for each PoE port.
- Auto detects powered device (PD).
- Circuit protection prevents power interference between ports.
- Remote power feeding up to 100m in standard mode and 250m in extended mode

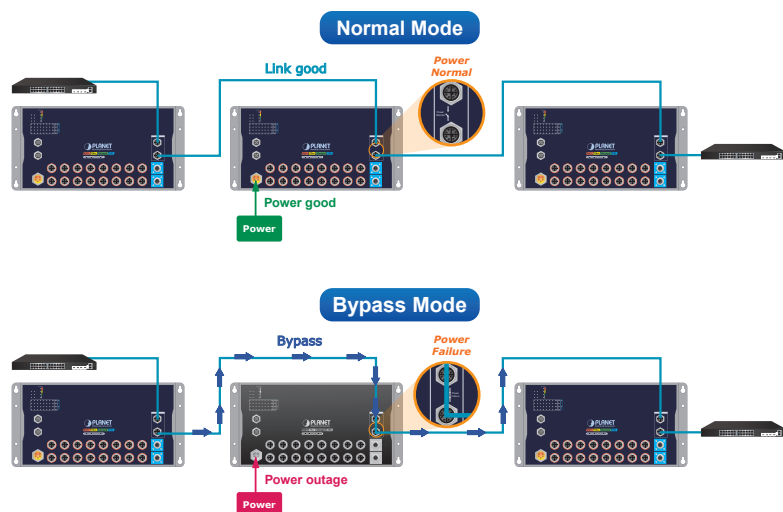
Each 10G M12 port supports four transmission speeds: **1GBASE-T, 2.5GBASE-T, 5GBASE-T, and 10GBASE-T**, offering administrators the flexibility to choose the appropriate speed for efficient network expansion. Engineered for reliability in challenging conditions, it serves as the ideal solution for railway on-board and trackside applications, as well as for vehicles and other demanding industrial environments.

### High Power PoE for Security and Public Service Applications

As the whole system comes up to a total **100-watt PoE budget**, this series is designed specifically to fulfill the growing demand of higher power consuming network PDs (powered devices) such as multi-channel (802.11a/b/g/n) wireless LAN access points, PTZ (pan, tilt, zoom) speed dome network cameras and other PoE network devices.

### Optional Bypass Relay Prevents Link Failure During Power Loss

The bypass relay is designed to bypass the failed switch to the next normal switch to prevent the network from power loss. Some models in this series support the bypass relay function on a pair of 10 Gigabit ports. When the switch is functioning normally, the 10 Gigabit ports operate like the other ports, processing and forwarding Ethernet packets. In the event of a power outage, the bypass relay ports ensure that network traffic continues to flow uninterrupted. Once power is restored and the switch has fully booted up, the system can revert to the normal mode, thus preventing further network disruptions.



### Redundant Ring, Fast Recovery for Critical Network Applications

The ITS-6326 series supports redundant ring technology and features robust, rapid self-recovery capabilities to prevent interruptions and external intrusions. It incorporates advanced **ITU-T G.8032 ERPS (Ethernet Ring Protection Switching)** technology, Spanning Tree Protocol (802.1s MSTP), and **dual power input** and an into customer's industrial automation network the customer's enhance system reliability and uptime in harsh factory environments. In a simple ring network, the recovery ring of data link can of the as fast as 10ms.

- PoE management features
  - Total PoE power budget control
  - Per port PoE function enable/disable
  - PoE admin-mode control
  - PoE port power feeding priority
  - Per PoE port power limitation
  - PD classification detection
  - PoE extension
- Intelligent PoE features
  - Temperature threshold control
  - PoE usage threshold control
  - PD alive check
  - PoE schedule
  - PD recycling schedule

### Industrial Protocol

- Modbus TCP for real-time monitoring in the SCADA system
- Supports IEEE 1588v2 PTP (Precision Time Protocol) transparent clock mode.

### Digital Input and Digital Output

- One digital input (DI)
- One digital output (DO)
- Integrate sensors into auto alarm system.
- Transfer alarm to IP network via SNMP trap.

### Layer 3 IP Routing Features

- Supports maximum 128 static routes and route summarization.
- IPv4 dynamic routing protocol supports RIPv2 and OSPFv2.
- IPv6 dynamic routing protocol supports OSPFv3.
- IPv4/IPv6 hardware static routing
- Routing interface provides per VLAN routing mode.

### Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex).
- High performance of Store-and-Forward architecture, and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth.
- Storm Control support
  - Broadcast/Multicast/Unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - UP to 4K VLANs groups, out of 4094 VLAN IDs
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN
  - MAC-based VLAN
  - Voice VLAN
  - GVRP (GARP VLAN Registration Protocol)
- Supports **Spanning Tree Protocol**



### Cybersecurity Network Solution to Minimize Security Risks

Supporting SSHv2, TLS and SSL protocols to provide strong protection against advanced threats, it includes a range of cybersecurity features such as **DHCP Snooping**, **IP Source Guard**, **ARP Inspection** Protection, **802.1x port-based** and **MAC-based** network access control, RADIUS and TACACS+ user accounts management, SNMPv3 authentication, and so on to complement it as an all-security solution.

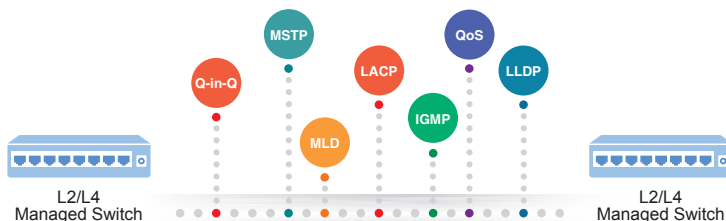


### Layer 3 Routing Support

The ITS-6326 series empowers administrators to enhance network efficiency by manually configuring Layer 3 IPv4/IPv6 VLAN static routing or automatically setting up RIP (Routing Information Protocol) and OSPF (Open Shortest Path First). The RIP uses hop count as a routing metric and prevents routing loops by limiting the number of hops permitted in a path from source to destination. The OSPF, a dynamic interior routing protocol for autonomous systems, operates based on link-state information. It builds a link-state database through the exchange of link-state data among Layer 3 switches and applies the Shortest Path First algorithm to generate a route table from this database.

### Robust Layer 2 Features

The ITS-6326 series can be programmed for advanced switch management functions such as dynamic port link aggregation, 802.1Q VLAN and Q-in-Q VLAN, Multiple Spanning Tree protocol (MSTP), loop and BPDU guard, IGMP snooping, and MLD snooping. Via the link aggregation, the ITS-6326 series allows the operation of a high-speed trunk to combine with multiple ports, and supports fail-over as well. Also, the Link Layer Discovery Protocol (LLDP) is the Layer 2 protocol included to help discover basic information about neighboring devices on the local broadcast domain.



- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), spanning tree by VLAN
- BPDU Guard
- Supports **Link Aggregation**
  - IEEE 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (Static Trunk)
  - Maximum 10 trunk groups with 20 ports per trunk group
  - Up to 8Gbps bandwidth (duplex mode)
- Provides port mirror (many-to-1)
- Loop protection to avoid broadcast loops
- Supports ERPS (Ethernet Ring Protection Switching)
- Compatible with Cisco **Uni-directional link detection** (UDLD) that monitors a link between two switches and blocks the ports on both ends of the link if the link fails at any point between the two devices
- Link Layer Discovery Protocol (LLDP)

### Quality of Service

- Ingress Shaper and Egress Rate Limit per port bandwidth control
- 8 priority queues on all switch ports
- Traffic classification
  - IEEE 802.1p CoS
  - IP TOS/DSCP/IP precedence
  - IP TCP/UDP port number
  - Typical network application
- Strict priority and Weighted Round Robin (WRR) CoS policies
- Supports QoS and In/Out bandwidth control on each port
- Traffic-policing on the switch port
- DSCP remarking

### Multicast

- Supports IPv4 IGMP snooping v1, v2 and v3
- Supports IPv6 MLD snooping v1 and v2
- Querier mode support
- IPv4 IGMP snooping port filtering
- IPv6 MLD snooping port filtering
- MVR (Multicast VLAN Registration)

### Security

- Storm Control support
  - Broadcast / Multicast / Unknown Unicast
- Authentication
  - Built-in RADIUS client to co-operate with the RADIUS servers
  - DHCP Option 82
  - RADIUS/TACACS+ login user access authentication
- Access Control List
  - IPv4/IPv6 IP-based ACL