

8-Port 10/100Mbps + 2-Port Gigabit TP/SFP Combo Managed Industrial Switch



Enhanced Reliability for Industrial Networks

The PLANET ISW-1022M Managed Industrial Ethernet Switch with multiple redundant ring technology is equipped with 8 10/100Mbps Fast Ethernet ports and 2 Gigabit TP/SFP combo interfaces delivered in a rugged high-strength case. It is an industrially (substation) hardened and fully managed Ethernet Switch specifically designed to operate reliably in electrically harsh and climatically demanding environments. The ISW-1022M is the most reliable choice for highly-managed and Fiber Ethernet application.

- Redundant Ethernet Network
- Manageable
- Power Redundant
- Gigabit / Fiber uplink capability

Fast Recovery to a Redundant Ethernet Network

The ISW-1022M features strong and rapid self-recovery capability to prevent interruptions and outside intrusions. It incorporates advanced redundant data Ring technology, Rapid Spanning Protocol (IEEE 802.1w RSTP) and redundant power supply system into customers' industrial automation network to enhance system reliability and uptime in the harsh factory environments. It also protects customer's industrial network connectivity with switching recovery capability that is used for implementing fault tolerant ring and mesh network architectures. If the Industrial network was interrupted accidentally, the fault recovery times could be less than 20ms to quickly bring the network back to normal operation.

Tough, Environmentally Hardened Design

With IP-30 aluminum industrial case protection, the ISW-1022M provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb side traffic control cabinets. The ISW-1022M also provides a wide range of power supply options suitable for multiple industries and for worldwide operation. The feature of operating temperature range from -10 to 60 Degree C allows the Managed Industrial Switch to be placed in almost any difficult environment.

Robust Layer 2 Features and Advanced Security

The ISW-1022M supports robust advanced features including IEEE 802.1Q VLAN, GVRP, Port link aggregation, QoS, broadcast storm control, MAC address filtering, IGMP snooping enhanced security and bandwidth utilization to fit a variety of applications. Via aggregation of supporting port, the ISW-1022M allows the operation of high-speed trunk combining multiple ports. Maximum up to 4 ports of the ISW-1022M can be assigned for 4 trunk groups and support fail-over as well. Additionally, its standard-compliant implementation ensures interoperability with equipments from other vendors.

Efficient and Centralized Management

The ISW-1022M provides the benefit of efficient and centralized management with the built-in console, WEB and SNMP management interfaces. The Web-based management of the ISW-1022M is an easy-to-use, platform-independent management and configuration facility supporting standard Simple Network Management Protocol (SNMP) and can be managed via any standard-based network management system. For text-based management, the ISW-1022M can be accessed via Telnet and the console port. The enhanced system reliability and advanced networking features offered by the ISW-1022M makes it ideally suited to build the Industrial Ethernet networks for mission-critical and real-time control applications.

Flexibility and Extension solution

The two mini-GBIC slots in the ISW-1022M are compatible with 1000Base-SX/LX/WDM and 100Base-FX through SFP (Small Form Factor Pluggable) fiber-optic transceivers. The fiber optical uplink capability guarantees the throughput to all nodes hooked into the network and the Gigabit Ethernet distance can be extended from 550 meters (Multi-Mode fiber cable) or up to 10/30/50/70/120 kilometers (Single-Mode fiber or WDM fiber cable). They are well suited for applications within the factory data centers and distributions.

Easy Installation

The ISW-1022M is packaged in a compact case that allows either DIN rail or panel mounting for efficient usage of cabinet space. It provides an integrated power supply with a wide range of voltages for worldwide operation. It also offers dual-redundant, reversible polarity 12V DC to 48V DC power supply inputs for high availability applications requiring dual or backup power inputs.

KEY FEATURES

PHYSICAL PORT

- 8-Port 10/100Base-TX RJ-45
- 2-Port Gigabit TP/SFP combo interface, SFP(Mini-GBIC) supports 100/1000 Dual Mode
- 1 RJ-45 Console interface for Switch basic management and setup

INDUSTRIAL CONFORMANCE

- 12 to 48V DC, redundant power with polarity reverse protect function
- 0 to 60 Degree C operation temperature
- IP-30 metal case
- Relay alarm for port breakdown, power failure
- Supports 4000 VDC Ethernet ESD protection
- FCC Class A, CE compatibility
- Free fall, Shock and Vibration Stability

RAPID RING

- Rapid Ring, Dual Homing, Coupling Topology
- Provides redundant backup feature and the recovery time less than 20ms

LAYER 2 FEATURES

- Complies with the IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z Gigabit Ethernet standards
- Supports Auto-negotiation and half duplex/full duplex modes for all 10Base-T/100Base-TX and 1000Base-T ports
- Auto-MDI/MDI-X detection on each RJ-45 port
- Prevents packet loss with back pressure (Half-Duplex) and IEEE 802.3x PAUSE frame flow control (Full-Duplex)
- Supports VLANs
 - IEEE 802.1Q Tagged based VLAN
 - Port-Based VLAN
 - GVRP
 - Up to 255 VLANs groups, out of 4K VLAN IDs
- Supports Spanning Tree Protocol
 - STP, IEEE 802.1D Spanning Tree Protocol
 - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
- Supports Link Aggregation
 - Up to 4 Trunk groups
 - Up to 4 ports per trunk group with 800Mbps bandwidth (Full Duplex mode)
 - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
 - Cisco ether-Channel (Static Trunk)

QUALITY OF SERVICE

- 4 priority queues on all switch ports
- Traffic classification by:
 - Port-Based priority
 - IEEE 802.1p Class of Service
 - IP TOS (Type of Service) priority
- Supports strict priority and Weighted Round Robin (WRR) policies
- Ingress/Egress Bandwidth control on each port

MULTICAST

- IGMP Snooping v1 and v2
- IGMP Query mode for Multicast Media application

SECURITY

- IEEE 802.1x Port-Based Authentication
- MAC address Filtering and MAC address Binding
- IP address security management to prevent unauthorized intruder
- Port Mirroring to monitor the incoming or outgoing traffic on a particular port

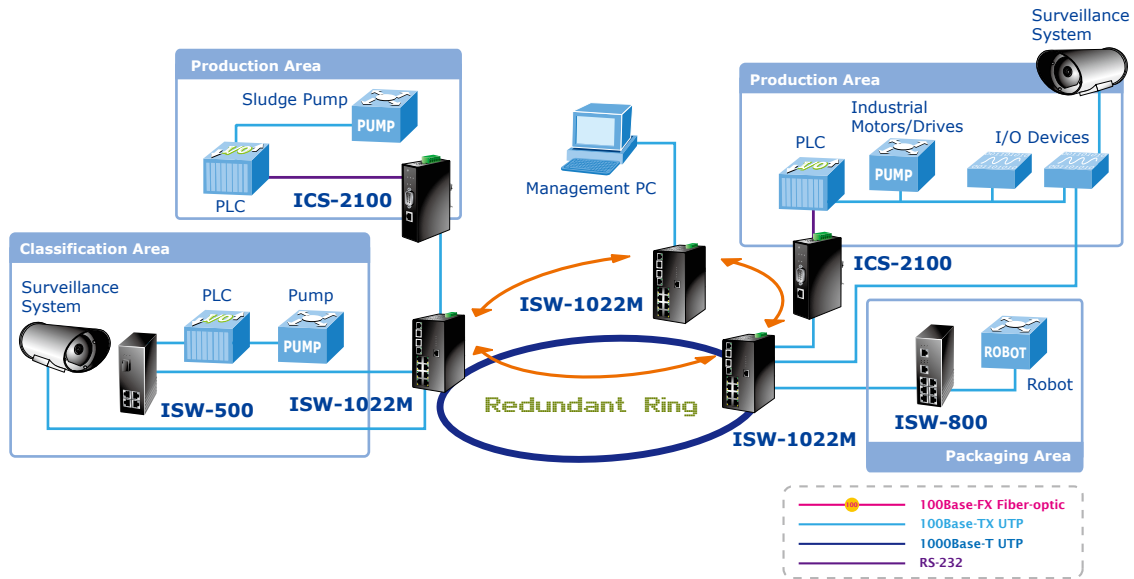
MANAGEMENT

- WEB-based, Telnet, Console Command Line management
- Access through SNMP v1, v2c and v3 set and get requests
- SNMP Trap / SMTP email for alarm notification of events
- System Log Server / Client
- Configuration backup / restore
- E-mail event alert
- TFTP firmware upgrade
- Support LLDP to allow switch to advise its identification and capability on the LAN

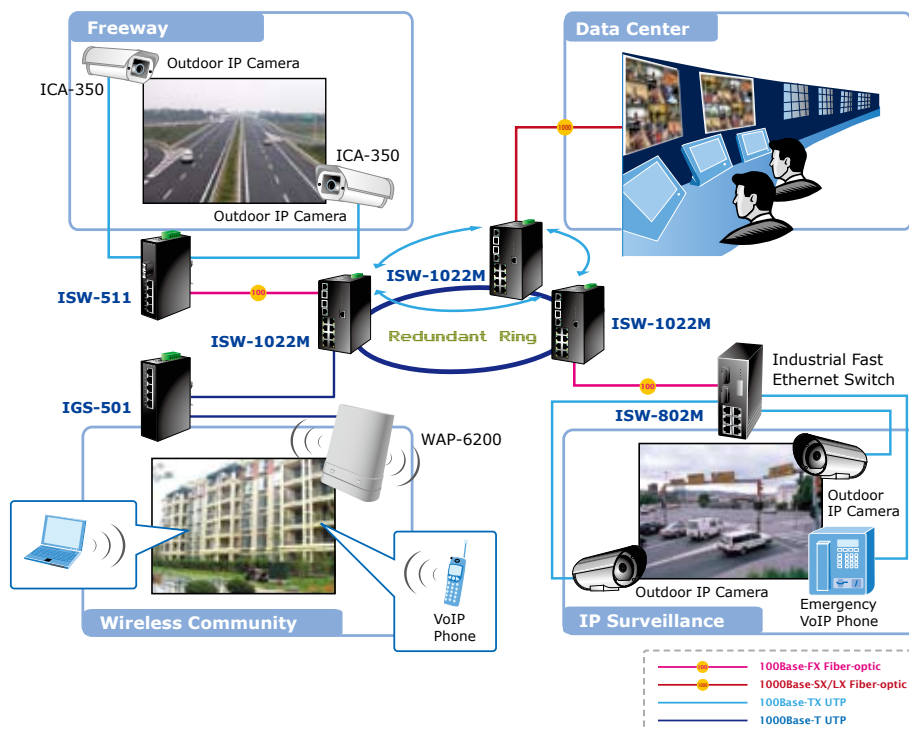
APPLICATIONS

PLANET's Managed Industrial Ethernet Switch, ISW-1022M, offers high reliability and security to make sure the continuous industrial operation in harsh environments such as control cabinet of transportation, factory floors, outdoor space, and extreme low or high temperatures. In the industrial networking environments, each networked device is required to keep running continuously in the hazardous status. If industrial equipment fails to connect to the network, it might influence the entire operation of industrial systems and thus cause incredible financial losses. By adopting the ISW-1022M Managed Industrial Switch which complies with all the requirements of industrial applications, customers may enjoy high reliability, fast recovery capability, and safe Ethernet network operation.

■ **Factory Redundant Ring Application**



■ **Transportation Networking and Public Wireless Service**



SPECIFICATION

Product	8-Port 10/100Mbps + 2-Port Gigabit TP/SFP Managed Industrial Switch
Model	ISW-1022M
Hardware Specification	
10/100Mbps Copper Ports	8 10/ 100Base-TX RJ-45 Auto-MDI/MDI-X ports
10/100/1000Mbps Copper Ports	2 10/100/1000Base-T RJ-45 Auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 1000Base-SX / LX / BX, shared with Port-9~Port-10, compatible with 100Base-FX SFP
Switch Architecture	Store-and-Forward
Switch Fabric	5.6Gbps / non-blocking
Switch Throughput	8.3Mpps
Address Table	8K entries
Share Data Buffer	1Mbit
Maximum Frame Size	1522 Bytes packet
Flow Control	Back pressure for half duplex, IEEE 802.3x Pause Frame for full duplex
LED	Per unit: Power (Green), Power 1 (Green), Power 2 (Green), Fault (Red) 8 port 10/100: Link/Activity (Green), Full duplex/Collision (Yellow) SFP port: LNK/ACT(Green), 1000T: LNK/ACT(Green), 1000M(Green)
Console Interface	One RJ-45-to -RS-232 male connector for switch management
Power Input	12 to 48V DC, Redundant power with polarity reverse protection function
Power Consumption	8.16Watts max.
Operating environment	-10 ~ 60 Degree C
Storage environment	-40 ~ 85 Degree C
Dimension (W x D x H)	72 x 105 x 152 mm
Weight	948g
Layer 2 Function	
Redundant Ring	5 ports for Redundant ring to provide redundant backup feature and the recovery time below 20ms. It supports ring modes as below: <ul style="list-style-type: none"> • Rapid Ring • Couple Ring • Dual Homing
Port Configuration	Port disable/enable Auto-negotiation 10/100Mbps full and half duplex mode selection. Flow Control disable / enable. Bandwidth control on each port.
Port Status	Display each port's speed duplex mode, link status, Flow control status. Auto negotiation status
VLAN	Port-Based VLAN, up to 9 VLAN groups IEEE 802.1q Tagged Based VLAN , 4K VLAN ID, up to 256 VLAN groups
Spanning Tree	IEEE 802.1d Spanning Tree IEEE 802.1w Rapid Spanning Tree
Link Aggregation	Supports 4 groups of 4-Port trunk support Traffic classification based on :
QoS	<ul style="list-style-type: none"> • Port Number • 802.1p priority • IP DSCP/TOS field in IP Packet
IGMP Snooping	v1 and v2 256 multicast groups and IGMP query Per port bandwidth control
Bandwidth Control	<ul style="list-style-type: none"> • Port-1~Port-8 rate range: 100 kbps to 102400 kbps • Port-9~Port-10 rate range: 100 kbps to 256000 kbps Storm control <ul style="list-style-type: none"> • Broadcast / Multicast / Unknown Unicast packet
Port Mirror	RX / TX / Both
Security	Port Security <ul style="list-style-type: none"> • Support 100 entries of MAC address for static MAC and another 100 for MAC filter

Management

Management Interface	Console, Telnet, Web Browser, SNMP v1, v2c and v3
Management IP Security	Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder
System Event Log	System Event Log <ul style="list-style-type: none"> • System Log Server/Client • SMTP E-mail Alert • Relay Alarm Output System Events
Alarm	Provides one relay output for port breakdown, power fail and link down port. Alarm Relay current carry ability: 1A @ DC 24V
SNMP MIBs	RFC-1213 MIB-II RFC 1157 SNMP MIB RFC-2863 Interface MIB RFC-1493 Bridge MIB RFC-2674 Extended Bridge MIB (Q-Bridge) RFC 1643, RFC 1757, RSTP MIB Private MIB

Standards Conformance

Regulation Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX / 100BASE-FX IEEE 802.3z Gigabit SX/LX IEEE 802.3ab Gigabit 1000T IEEE 802.3x Flow Control and Back pressure IEEE 802.1d Spanning tree protocol IEEE 802.1w Rapid spanning tree protocol IEEE 802.1p Class of service IEEE 802.1Q VLAN Tagging IEEE 802.1x Port Authentication Network Control
Stability	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)

ORDERING INFORMATION

ISW-1022M	8-Port 10/100Mbps + 2G TP/SFP Combo Managed Industrial Switch
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AVAILABLE MODULES

MGB-GT	SFP-Port 1000Base-T Module
MGB-SX	SFP-Port 1000Base-SX mini-GBIC module
MGB-LX	SFP-Port 1000Base-LX mini-GBIC module
MGB-L30	SFP-Port 1000Base-LX mini-GBIC module-30km
MGB-L50	SFP-Port 1000Base-LX mini-GBIC module-50km
MGB-L70	SFP-Port 1000Base-LX mini-GBIC module-70km
MGB-L120	SFP-Port 1000Base-LX mini-GBIC module-120km
MGB-LA10	SFP-Port 1000Base-LX (WDM,TX:1310nm) mini-GBIC module-10km
MGB-LB10	SFP-Port 1000Base-LX (WDM,TX:1550nm) mini-GBIC module-10km
MGB-LA20	SFP-Port 1000Base-LX (WDM,TX:1310nm) mini-GBIC module-20km
MGB-LB20	SFP-Port 1000Base-LX (WDM,TX:1550nm) mini-GBIC module-20km
MGB-LA40	SFP-Port 1000Base-LX (WDM,TX:1310nm) mini-GBIC module-40km
MGB-LB40	SFP-Port 1000Base-LX (WDM,TX:1550nm) mini-GBIC module-40km
MFb-FX	SFP-Port 100Base-FX Transceiver (1310nm) -2KM
MFb-F20	SFP-Port 100Base-FX Transceiver (1310nm) - 20KM
MFb-F40	SFP-Port 100Base-FX Transceiver (1310nm) - 40KM
MFb-F60	SFP-Port 100Base-FX Transceiver (1310nm) - 60KM
MFb-FA20	SFP-Port 100Base-BX Transceiver (WDM,TX:1310nm) -20KM
MFb-FB20	SFP-Port 100Base-BX Transceiver (WDM,TX:1550nm) -20KM