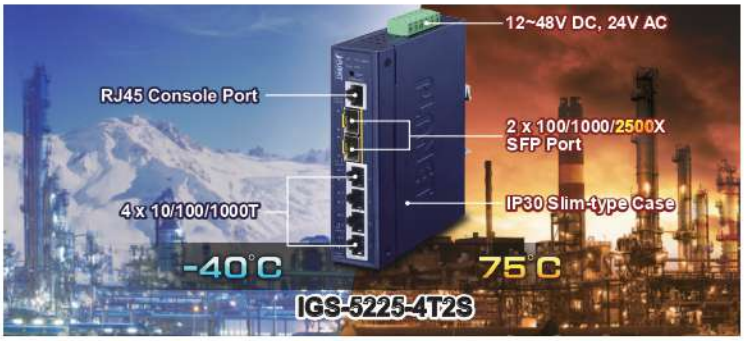
L2+ Industrial 4-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Ethernet Switch

For Harsh and Space-limited Environments

PLANET IGS-5225-4T2S, **the smallest**, **fully-managed Gigabit fiber switch** for harsh environments, features 4 10/100/1000Mbps copper ports, **2 100/1000/2500X SFP** ports and redundant power system in an IP30 rugged but compact-sized case. The IGS-5225-4T2S can be installed in any difficult environment as it can operate stably under the temperature range from **-40** to **75 degrees C**. With such a slim enclosure, it does not need a big space to install. The switch features user-friendly yet advanced **IPv6/IPv4 management** interfaces, abundant **L2/L4 switching functions** and Layer 3 static routing capability. It allows either DIN-rail or wall mounting for efficient use of cabinet space. With **2 dual-speed SFP fiber slots**, it can be flexibly applied to extend the connection distance.



Physical Port

- **4 10/100/1000BASE-T** Gigabit Ethernet RJ45 ports
- **2 100/1000/2500BASE-X SFP** slots for SFP type auto detection
- One RJ45 console interface for basic management and setup

Industrial Case and Installation

- IP30 metal case
- DIN-rail and wall-mount designs
- 12~48V DC, redundant power with reverse polarity protection
- 24V AC power input acceptable
- Supports 6KV DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization
- Routing interface provides per VLAN routing mode

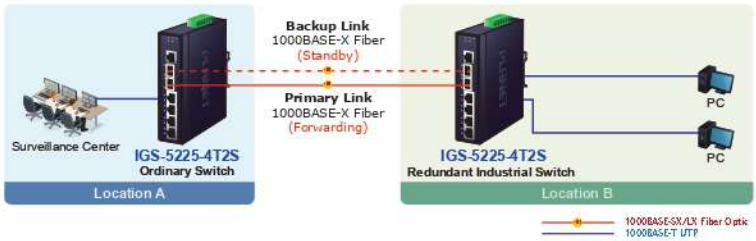
Layer 2 Features

- 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
  - Provider Bridging (IEEE 802.1ad VLAN Q-in-Q) support
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN
  - MAC-based VLAN
  - Voice VLAN
  - GVRP (GARP VLAN Registration Protocol)
- Supports **Spanning Tree Protocol**
  - 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
  - 802.3ad Link Aggregation Control Protocol (LACP)

Port Backup Mode

Via the managed interface, the IGS-5225-4T2S can be configured for port backup. When in the port backup mode, it provides rapid copper/fiber redundancy of link for highly critical Ethernet applications. The port backup mode also supports auto-recovering function. If the destination port of a packet is link-down, it will forward the packet to the other port of the backup pair.

Site to Site Port Backup

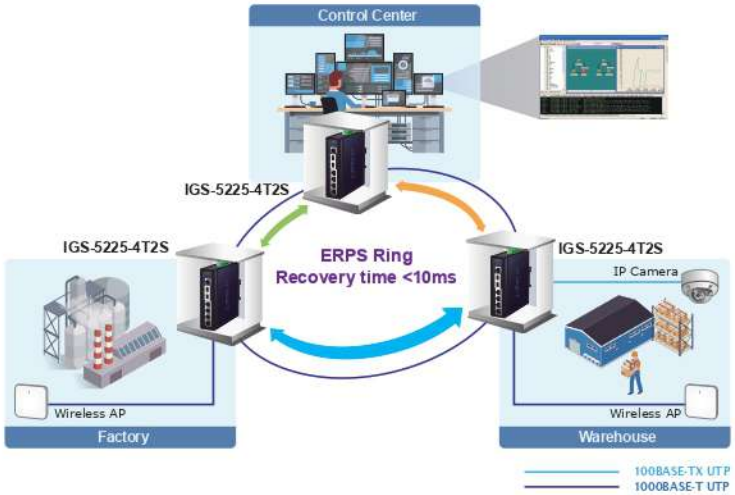


Network with Cybersecurity Helps Minimize Security Risks

The IGS-5225-4T2S comes with enhanced cybersecurity to fend off cyberthreats and cyberattacks. It supports SSHv2, TLSv1.2 and SNMPv3 protocols to provide strong protection against advanced threats. Served as a key point to transmit data to customer's critical equipment in a business network, the cybersecurity feature of the IGS-5225-4T2S protects the management and enhances the security of the mission-critical network without any extra deployment cost and effort.

Redundant Ring, Fast Recovery for Critical Network Applications

The IGS-5225-4T2S supports redundant ring technology and features strong, rapid self-recovery capability 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 **redundant power** input system into customer's industrial automation network to enhance system reliability and uptime in harsh factory environments. In a certain simple Ring network, the recovery time of data link can be as fast as 10ms.



- Cisco ether-channel (static trunk)
- Maximum 4 trunk groups with 4 ports per trunk group
- Up to 8Gbps bandwidth (duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring to monitor the incoming or outgoing traffic on a particular port
- 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)
- IEEE 802.3ah OAM

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

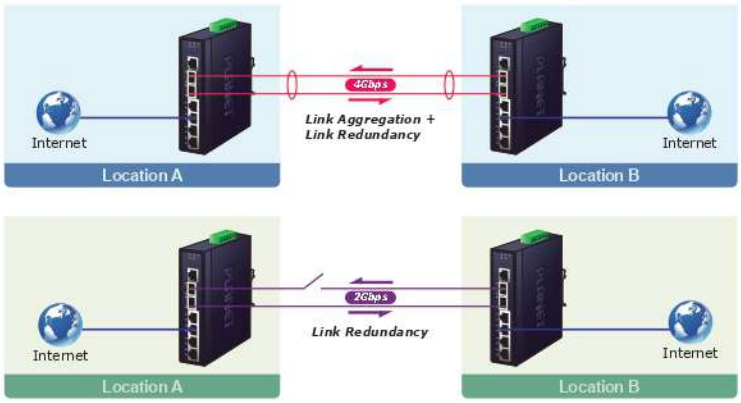
Multicast

- 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

- Authentication
  - IEEE 802.1X Port-based/MAC-based network access authentication
  - Built-in RADIUS client to cooperate with the RADIUS servers
  - TACACS+ login users access authentication
  - RADIUS/TACACS+ users access authentication
  - Guest VLAN assigns clients to restricted VLAN with limited

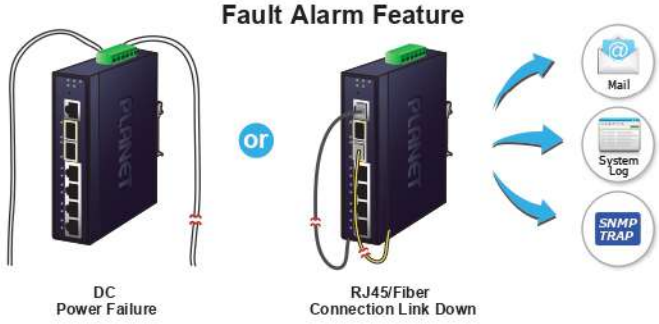
Site to Site Fiber Link Redundancy



SMTP/SNMP Trap Event Alert and Fault Alarm

The IGS-5225-4T2S provides event alert function to help to diagnose the abnormal device owing to whether or not there is a break of the network connection, or the rebooting response. It supports a Fault Alarm feature which can alert the users when there is something wrong with the switches. With this ideal feature, the users would not have to waste time finding where the problem is. It will help to save time and human resource.

Fault Alarm Feature



Layer 3 IPv4 and IPv6 Software VLAN Routing for Secure and Flexible Management

To help customers stay on top of their businesses, the IGS-5225 series not only provides ultra high transmission performance and excellent Layer 2 technologies, but also IPv4/IPv6 software VLAN routing feature which allows to cross over different VLANs and different IP addresses for the purpose of having a highly-secure, flexible management and simpler networking application.

Robust Layer 2 Features

The IGS-5225 Series can be programmed for advanced Layer 2 switch management functions such as dynamic port link aggregation, 802.1Q tagged VLAN, Q-in-Q VLAN, private VLAN, Multiple Spanning Tree Protocol (MSTP), Layer 2 to Layer 4 QoS, bandwidth control, IGMP snooping and MLD snooping. Via the aggregation of supporting ports, the IGS-5225 Series allows the operation of a high-speed trunk group that comes with multiple ports and supports fail-over as well.

services

- Access Control List
  - IP-based Access Control List (ACL)
  - MAC-based Access Control List
- Source MAC/IP address binding
- DHCP snooping to filter distrusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP Source Guard prevents IP spoofing attacks
- IP address access management to prevent unauthorized intruder

Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1 and v2c switch management
  - SSHv2, TLSv1.2 and SNMP v3 secure access
- SNMP Management
  - Four RMON groups (history, statistics, alarms, and events)
  - SNMP trap for interface Link Up and Link Down notification
- IPv6 IP address/NTP/DNS management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance
  - Firmware upload/download via HTTP/TFTP
  - Reset button for system reboot or reset to factory default
  - Dual images
- DHCP Relay and Option 82
- DHCP Server
- User Privilege levels control
- Network Time Protocol (NTP)
- Network Diagnostic
  - SFP-**DDM** (Digital Diagnostic Monitor)
  - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
  - ICMPv6/ICMPv4 remote IP ping
- SMTP, Syslog and SNMP trap remote alarm
- Local System Log
- PLANET Smart Discovery Utility for deployment management
- PLANET NMS(Universal Network Management) system and CloudViewer for deployment management

Efficient Management

For efficient management, the IGS-5225-4T2S is equipped with CLI, Web GUI and SNMP management interfaces.

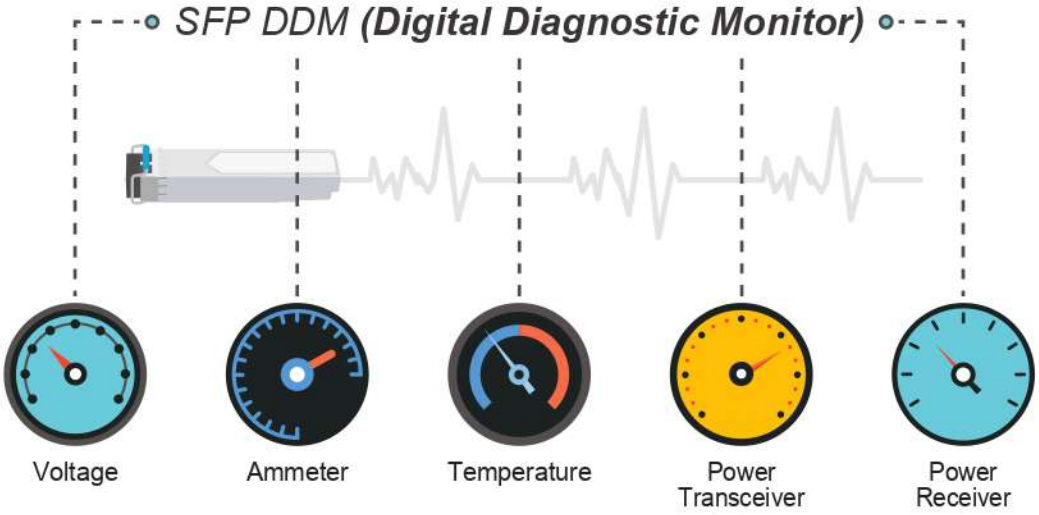
- With the built-in **Web-based** management interface, it offers an easy-to-use, platform-independent management and configuration facility.
- For **text-based** management, it can be accessed via Serial console interface/Telnet/SSH.
- For standard-based monitor and management software, it offers SNMPv3 connection which encrypts the packet content at each session for secure remote management.

Powerful Security

The IGS-5225 series offers comprehensive Layer 2 to Layer 4 Access Control List (ACL) for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism also comprises 802.1X Port-based and MAC-based user and device authentication. With the private VLAN function, communication between edge ports can be prevented to ensure user privacy.

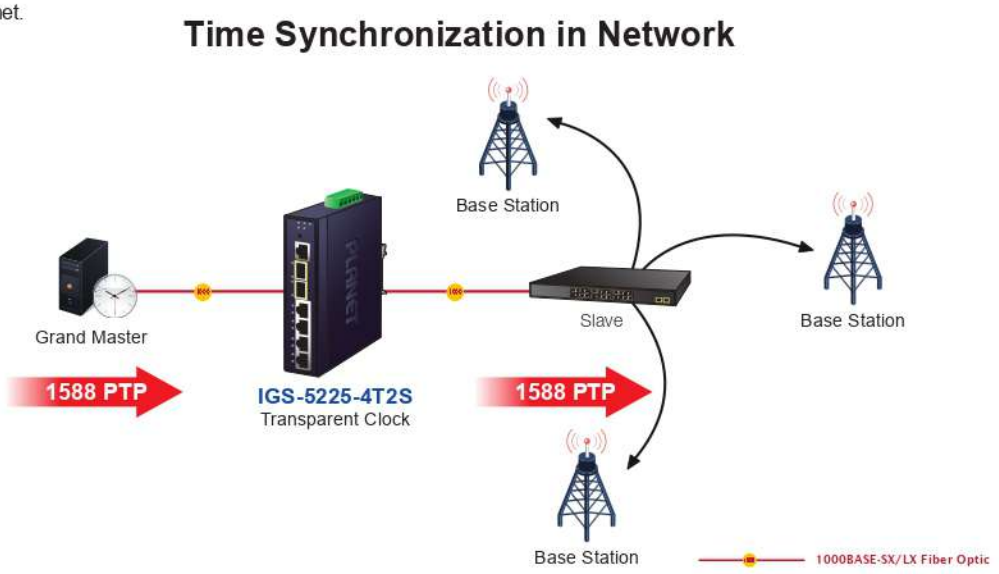
Intelligent SFP Diagnosis Mechanism

The IGS-5225 series supports SFP-**DDM** (Digital Diagnostic Monitor) function that greatly helps network administrator to easily monitor real-time parameters of the SFP, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.



1588 Time Protocol for Industrial Computing Networks

The IGS-5225 series is ideal for telecom and Carrier Ethernet applications, supporting MEF service delivery and timing over packet solutions for IEEE 1588 and synchronous Ethernet.



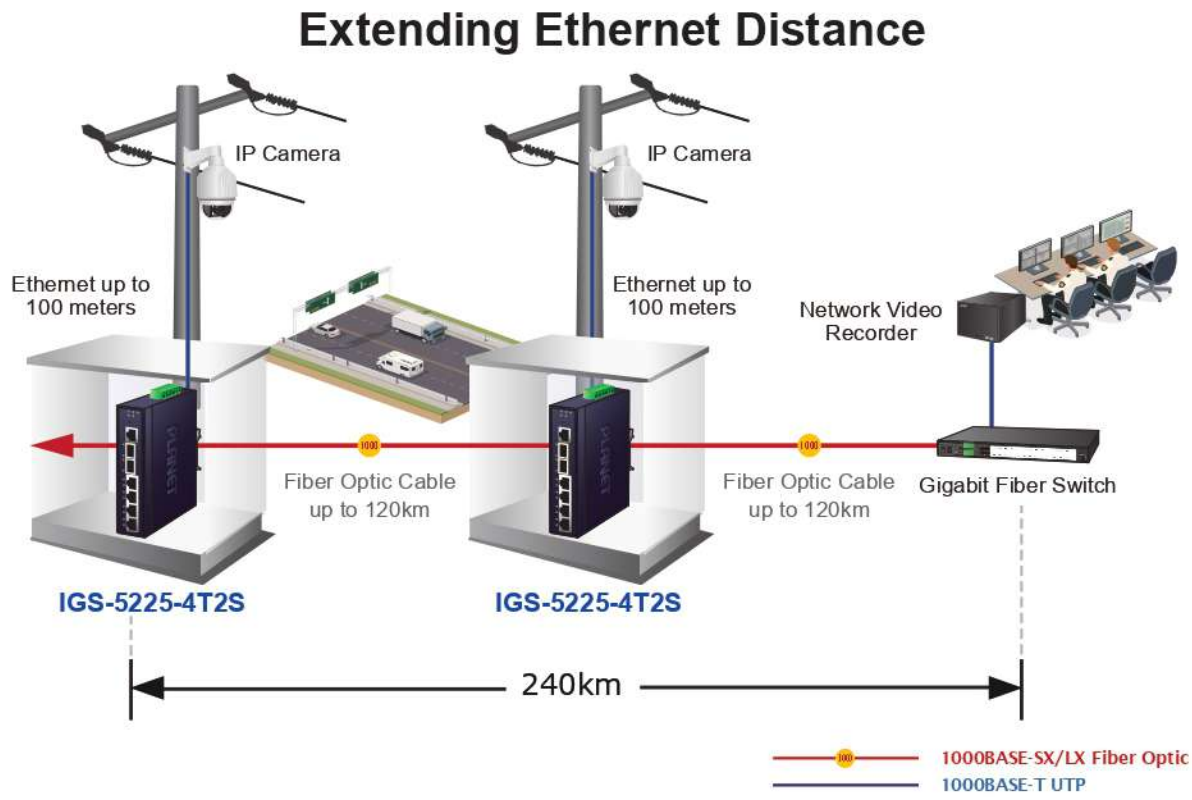
Modbus TCP provides Flexible Network Connectivity for Factory Automation

With the supported **Modbus TCP/IP** Protocol, the IGS-5225 series can be easily integrated with **SCADA** systems, **HMI** systems and other data acquisition systems in factory floors. It enables administrators to remotely monitor the industrial Ethernet switch's **operating information**, **port information** and **communication status**, thus easily achieving enhanced monitoring and maintenance of the entire factory.

Applications

Model that Withstands Harsh Operation

The IGS-5225-4T2S is made to withstand any harsh operation in such environments as traffic control cabinets, factory floors, and indoor and outdoor locations where temperatures are extremely high or low. With a non-blocking design and compact size, the installation of the IGS-5225-4T2S is easy and helpful to build a Gigabit high-bandwidth switched network quickly.



Specifications

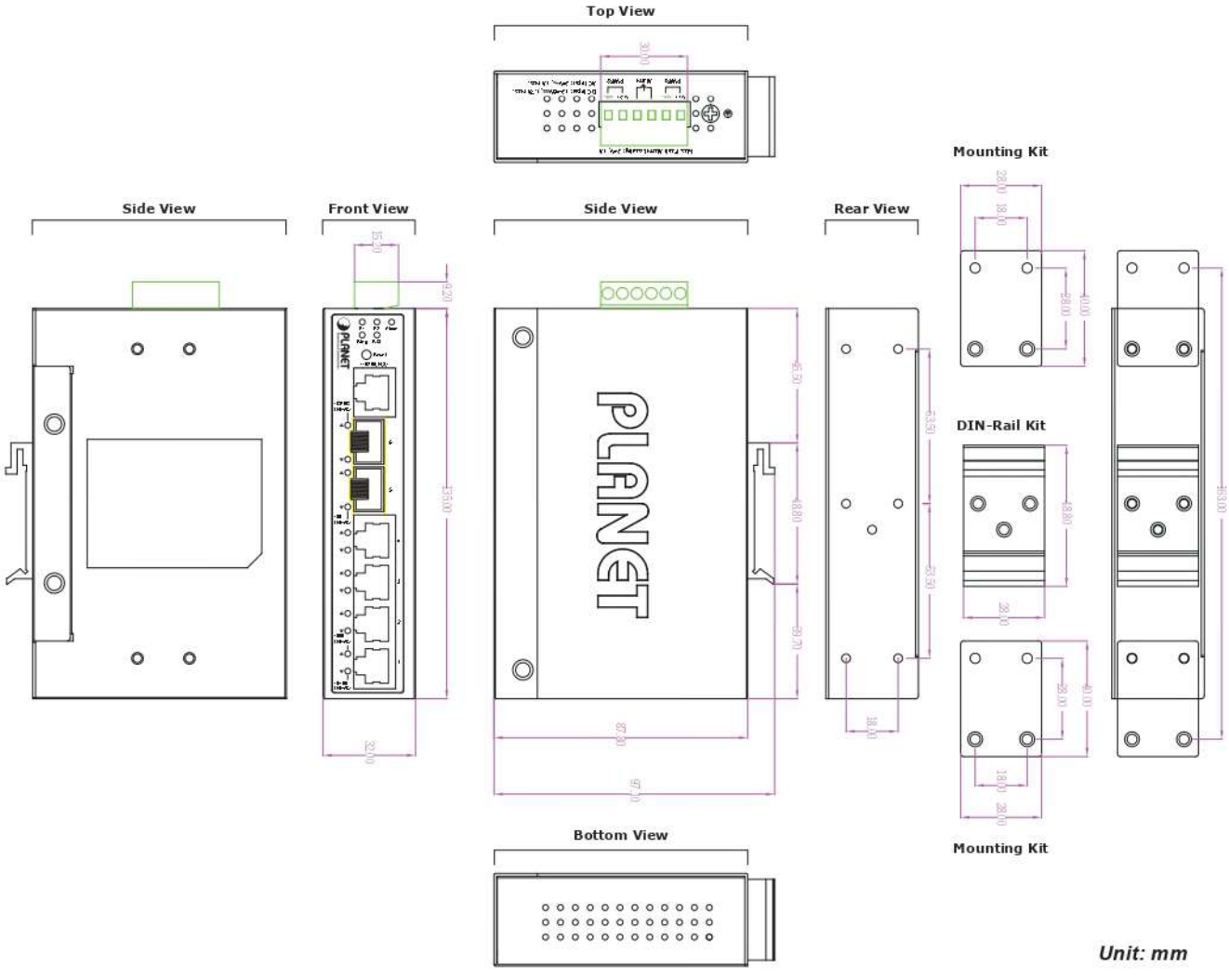
Product	IGS-5225-4T2S
Hardware Specifications	
Hardware version	3
Copper Ports	4 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 1000/2500BASE-SX/LX/BX SFP interfaces (Port-5 to Port-6) Compatible with 100BASE-FX SFP
Console	1 x RJ45-to-RS232 serial port (115200, 8, N, 1)
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
ESD Protection	Air 8KV, Contact 6KV
Enclosure	IP30 metal case
Installation	DIN-rail kit and wall-mount kit
Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1, Pin 3/4 for fault alarm, Pin 5/6 for Power 2
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC
LED Indicator	**System:** Power 1 (Green) Power 2 (Green) Fault Alarm (Red) Ring (Green) Ring Owner (Green) **Per 10/100/1000T RJ45 Ports:** 10/100Mbps LNK/ACT (Amber) 1000 LNK/ACT (Green) **Per SFP Interface:** 100 LNK/ACT (Amber) 1000/2500 LNK/ACT (Green)

Dimensions (W x D x H)	32 x 87x 135 mm
Weight	442g
Power Requirements	Dual 12~48V DC 24V AC
Power Consumption	Max. 4.8 watts/16.4 BTU (Power on without any connection) Max. 8.5 watts/29.2 BTU (Full loading)
Switching Specifications	
Switch Architecture	Store-and-Forward
Switch Fabric	18Gbps/non-blocking
Throughput (packet per second)	13.39Mpps@ 64 bytes packet
Address Table	8K entries, automatic source address learning and aging
Shared Data Buffer	4Mbits
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	9Kbytes
Layer 3 Function	
IP Interface	Max. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software static routing IPv6 software static routing
Layer 2 Function	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Power saving mode control
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status
Port Mirroring	TX/RX/both Many to 1 monitor Rmirror – Remote Switch Port Analyzer (Cisco RSPAN)
VLAN	IEEE 802.1Q tag-based VLAN IEEE 802.1ad Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN VLAN Translation Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 4K VLAN groups, out of 4094 VLAN IDs
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 4 trunk groups with 4 ports per trunk group
IGMP Snooping	IPv4 IGMP (v1/v2/v3) snooping IPv4 IGMP querier mode support Up to 255 multicast groups
MLD Snooping	IPv6 MLD (v1/v2) snooping IPv6 MLD querier mode support Up to 255 multicast groups
Bandwidth Control	Per port bandwidth control Ingress: 500Kb~1000Mbps Egress: 500Kb~1000Mbps
RING	Supports ERPS, and complies with ITU-T G.8032 Recovery time < 10ms @ 3 units Recovery time < 50ms @16 units
Synchronization	IEEE 1588v2 PTP(Precision Time Protocol) - Peer-to-peer transparent clock - End-to-end transparent clock

QoS	Traffic classification based, strict priority and WRR 8-level priority for switching - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP/TOS field in IP packet
Security Functions	
Access Control List	IP-based ACL/MAC-based ACL ACL based on: - MAC Address - IP Address - Ethertype - Protocol Type - VLAN ID - DSCP - 802.1p Priority Up to 256 entries
Security	Port Security IP source guard Dynamic ARP inspection Command line authority control based on user level
AAA	RADIUS client TACACS+ client
Network Access Control	IEEE 802.1x port-based network access control MAC-based authentication Local/RADIUS authentication
Switch Management	
Basic Management Interfaces	Console interface; Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3
System Management	Firmware upgrade by HTTP protocol through Ethernet network Configuration upload/download through HTTP Remote syslog System log LLDP protocol NTP PLANET Smart Discovery Utility PLANET CloudViewer app
Event Management	Remote syslog Local system log SMTP
SNMP MIBs	RFC 1213 MIB-II RFC 2863 IF-MIB RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2737 Entity MIB RFC 2819 RMON MIB (Groups 1, 2, 3 and 9) RFC 2618 RADIUS Client MIB RFC 3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC60068-2-32 (free fall) IEC60068-2-27 (shock) IEC60068-2-6 (vibration)

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 802.3ad port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1Q VLAN tagging IEEE 802.1ad Q-in-Q VLAN stacking IEEE 802.1X Port Authentication Network Control IEEE 802.1ab LLDP	IEEE 802.3ah OAM IEEE 1588 PTPv2 RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP version 3 RFC 2710 MLD version 1 RFC 3810 MLD version 2 ITU-T G.8032 ERPS Ring
Environment		
Operating Temperature	-40 ~ 75 degrees C	
Storage Temperature	-40 ~ 85 degrees C	
Humidity	5 ~ 95% (non-condensing)	

Dimensions



Unit: mm

Ordering Information

IGS-5225-4T2S	L2+ Industrial 4-Port 10/100/1000T + 2-Port 1000/2500X SFP Managed Ethernet Switch (-40~75 degrees C)

Related Products

IGS-5225-8T2S2X	L2+ Industrial 8-Port 10/100/1000T + 2-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch (-40~75 degrees C)
IGS-5225-8P2S2X	L2+ Industrial 8-Port 10/100/1000T 802.3at PoE + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch (-40~75 degrees C)
IGS-12040MT	L2+ Industrial 8-Port 10/100/1000T + 4-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)
IGS-10020HPT	L2+ Industrial 8-Port 10/100/1000T 802.3at PoE + 2-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)
IGS-10020MT	L2+ Industrial 8-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)

Available Modules

MGB2G-Series Transceiver	2500BASE-SX/LX Transceiver
MGB-Series Transceiver	1000BASE-SX/LX Transceiver
MFB-Series Transceiver	100BASE-FX SFP Transceiver

Related Power Supply

IGS-5225-8T2S2X	L2+ Industrial 8-Port 10/100/1000T + 2-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch
IGS-10020MT	L2+ Industrial 8-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)

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