Industrial L3 8-Port 10/100/1000T + 2-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch

Environmentally Hardened Design

PLANET IGS-5225-8T2S2X is an industrial Layer 2+ managed Gigabit Switch that features 8 10/100/1000Mbps copper ports, 2 additional **100/1000X SFP** ports and **2 10G SFP+** ports, and supports **static Layer 3 routing** in a rugged IP30 aluminum case for stable operation in heavy industrial demanding environments. With **10Gbps uplink**, the IGS-5225-8T2S2X can handle extremely large amounts of data in a secure topology linking to an enterprise backbone or high capacity servers. The IGS-5225-8T2S2X is capable of providing non-blocking switch fabric and wire-speed throughput as high as **60Gbps** without any packet loss and CRC error. It greatly simplifies the tasks of upgrading the enterprise LAN for catering to increasing bandwidth demands. Being able to operate under wide temperature range from -40 to 75 degrees C, the IGS-5225-8T2S2X can be placed in almost any difficult environment. The IGS-5225-8T2S2X also allows either DIN rail or wall mounting for efficient use of cabinet space.

Redundant Ring, Fast Recovery for Surveillance System

The IGS-5225-8T2S2X 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.

Physical Port

- **8 10/100/1000BASE-T** Gigabit Ethernet RJ45 ports
- **2 100/1000BASE-X mini-GBIC/SFP** slots for SFP type auto detection
- **2 10GBASE-SR/LR SFP+ slots**, backward compatible with 1000BASE-SX/LX/BX SFP
- One RJ45 console interface for basic management and setup

Industrial Case and Installation

- IP30 aluminum case
- DIN rail and wall-mount design
- Redundant power design
  - 12~48V DC, redundant power with polarity reverse protect function
  - 24V AC power input acceptable
- Supports 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

Digital Input and Digital Output

- 2 Digital Input (DI)
- 2 Digital Output (DO)
- Integrate sensors into auto alarm system
- Transfer alarm to IP network via email and SNMP trap

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 that eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
  - Broadcast/Multicast/Unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4095 VLAN IDs
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)

ERPS Ring for Video Transmission Redundancy
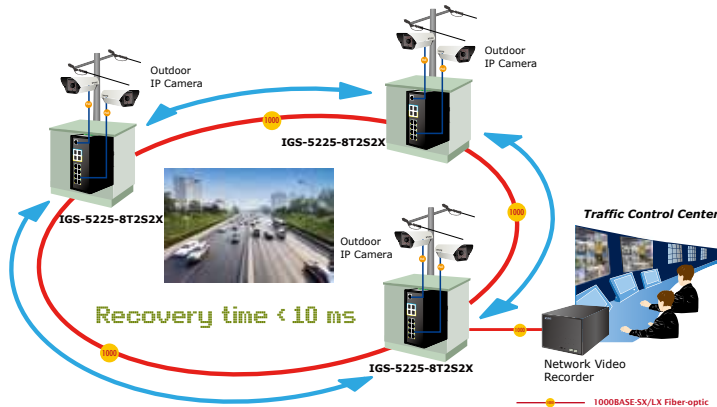
Flexible and Extendable 10Gb Ethernet Solution

10G Ethernet is a big leap in the evolution of Ethernet. Each of the 10G SFP+ slots in the IGS-5225-8T2S2X supports **dual speed** and **10GBASE-SR/LR or 1000BASE-SX/LX**, providing broad bandwidth and powerful processing capacity. With its 2-port, 10G Ethernet link capability, the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the network efficiently.

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.

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 crossover different VLANs and different IP addresses for the purpose of having a highly-secure, flexible management and simpler networking application.

Cybersecurity Network Solution to Minimize Security Risks

The new generation of IGS-5225 series has the cybersecurity feature to protect the switch management and enhance the security for mission-critical network without extra deployment cost and effort. The IGS-5225 series expands its memory and upgrades the kernel of SSH 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. The network administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

- – Protocol-based VLAN
- – MAC-based VLAN
- – Voice VLAN
- 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)
  - – Cisco ether-channel (static trunk)
  - – Maximum 6 trunk groups with 8 ports per trunk group
  - – Up to 16Gbps 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

Layer 3 IP Routing Features

- IP interfaces (Max. 128 VLAN interfaces)
- Routing table (Max. 128 routing entries)
- Routing Protocols (IPv4/IPv6 hardware static routing)

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
  - – TOS/DSCP/IP precedence of IPv4/IPv6 packets
  - – 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 policies on the switch port
- DSCP remarking

Multicast

- Supports IGMP snooping v1, v2 and v3
- Supports MLD snooping v1 and v2

Robust Industrial Layer3 10G Managed Switch for Sophisticated Networks

Effective Alarm Alert for Better Protection

The IGS-5225 series 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.
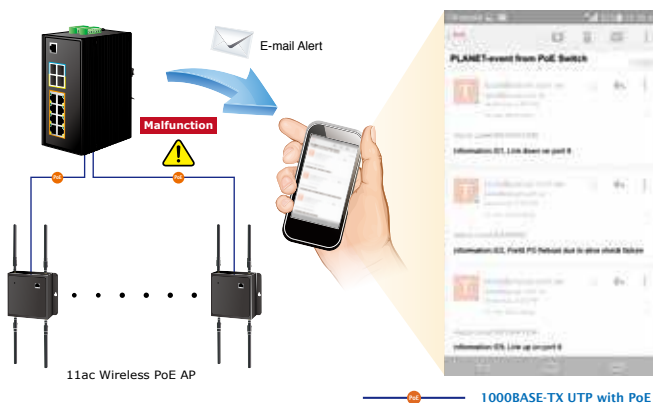
Fault Alarm Feature

DC/DC Power Failure

Fiber/RJ45 Connection Link Down

or

Mail

System Log
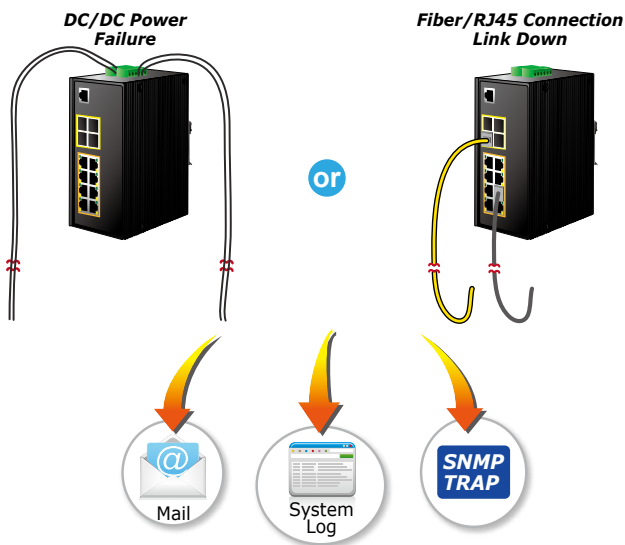
SNMP TRAP

SMTP/SNMP Trap Event Alert

The IGS-5225 series 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.

SMTP/SNMP Trap Event Alert

E-mail Alert

Malfunction

PLANET-event from PoE Switch

11ac Wireless PoE AP

1000BASE-TX UTP with PoE

- Querier mode support
- IGMP snooping port filtering
- MLD snooping port filtering
- Multicast VLAN Registration (MVR) support

Security

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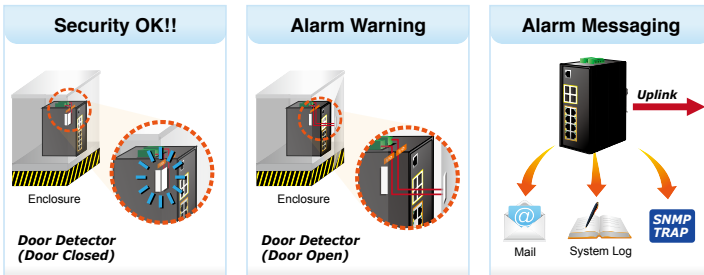- IP address access management to prevent unauthorized intruder

Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
   – Console/Telnet Command Line Interface
   – Web switch management
   – SNMP v1, v2c and v3 switch management
   – SSH/SSL secure access
- Four RMON groups (history, statistics, alarms, and events)
- **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 Server
- DHCP Relay
- DHCP Option 82
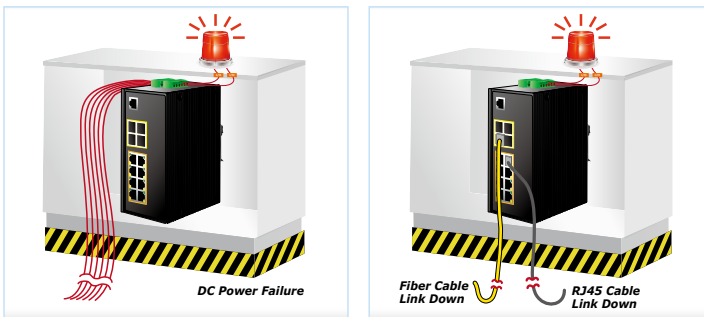- Network Time Protocol (NTP)

Digital Input and Digital Output for External Alarm

The IGS-5225 series supports Digital Input and Digital Output on its front panel. This external alarm enables users to use Digital Input to detect and log external device status (such as door intrusion detector), and send event alarm to the administrators. The Digital Output could be used to alarm the administrators if the IGS-5225 series port shows link down, link up or power failure.

Digital Input

Security OK!!	Alarm Warning	Alarm Messaging
Enclosure	Enclosure	Uplink
Door Detector (Door Closed)	Door Detector (Door Open)	Mail System Log SNMP TRAP

Digital Output

DC Power Failure

Fiber Cable Link Down   RJ45 Cable Link Down

- User Privilege levels control
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network Diagnostic
  - ICMPv6/ICMPv4 Remote Ping
  - Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues
- SMTP/Syslog remote alarm
- System Log
- SNMP trap for interface Link up and Link down notification
- SFP-**DDM** (Digital Diagnostic Monitor)
- Reset button for system reboot or reset to factory default
- ONVIF Supports
- Precision Time Protocol (PTP) Clock transparent
- PLANET Smart Discovery Utility for deployment management

Robust Layer 2 Features

The IGS-5225 series can be programmed for advanced switch management functions such as dynamic port link aggregation, Q-in-Q VLAN, private VLAN, Rapid Spanning Tree Protocol, Layer 2 to Layer 4 QoS, bandwidth control and IGMP snooping. The IGS-5225 series provides 802.1Q tagged VLAN, and the VLAN groups allowed will be maximally up to 255. Via aggregation of supporting ports, the IGS-5225 series allows the operation of a high-speed trunk combining multiple ports. It enables a maximum of up to 6 trunk groups with 8 ports per trunk group, and supports fail-over as well.

MSTP   LACP
Q-in-Q   QoS   LLDP
MLD   IGMP

L2/L4 Managed Switch   L2/L4 Managed Switch
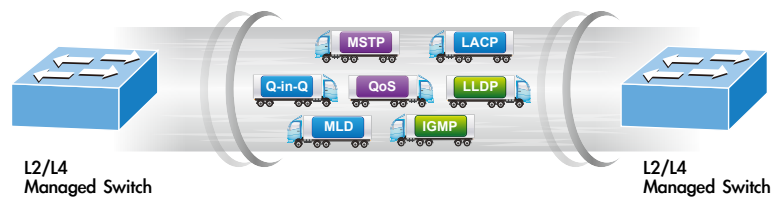
Efficient Management

For efficient management, the IGS-5225 Managed Ethernet Switch series is equipped with console, Web and SNMP management interfaces. With the built-in Web-based management interface, the IGS-5225 series offers an easy-to-use, platform-independent management and configuration facility. For text-based management, the IGS-5225 series can be accessed via Telnet and the console port. Moreover, it also offers secure remote management via any standard-based management software by supporting SNMP v3 connection which encrypts the packet content at each session.

Secure Management

Computer

SSL   SNMPv3   SSH

4

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. The network administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

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.

Digital Diagnostic Monitor (DDM)

Modbus TCP provides Flexible Network Connectivity for Factory Automation

With the supported **Modbus TCP/IP** protocol, the IGS-5225 series can easily integrate 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

Excellent 10Gbps High Bandwidth Solution to Core Network

The IGS-5225-8T2S2X performs 60Gbps non-blocking switch fabric, so it can easily provide a local 10Gbps high bandwidth Ethernet network for the backbone of your department. With the two built-in SFP+ ports, the IGS-5225-8T2S2X provides the uplink to the backbone network through the 10G Ethernet LR/SR SFP+ modules. It further improves the network efficiency and protects the network clients by offering the security and QoS features.

High Performance Server Service
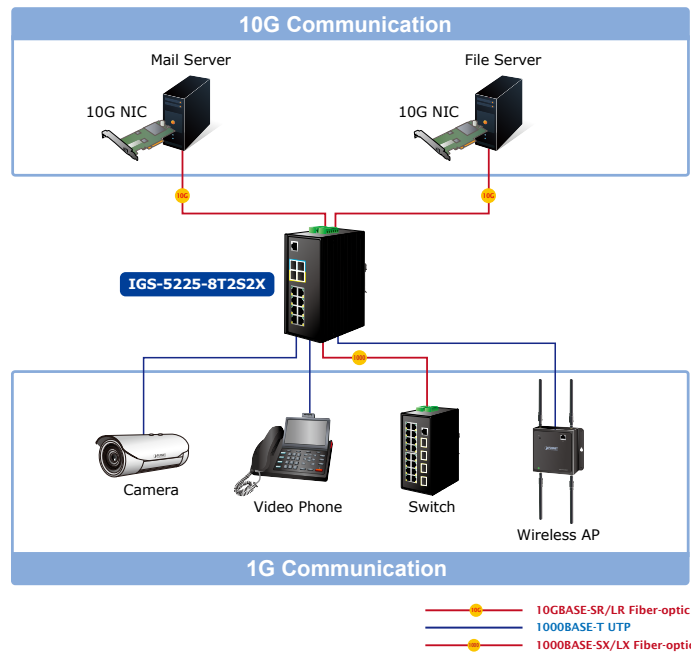
FTTx/MAN Edge Switch

By means of improving the technology of Optical Fiber Ethernet with highly-flexible, highly-extendable and easy-to-install features, the IGS-5225-8T2S2X offers up to 10Gbps data exchange speed via Optical Fiber interface and the transmission distance can be extended to 120km. The IGS-5225-8T2S2X is the ideal solution for service providers such as ISPs and telecoms to build Metropolitan Area Network (MAN) based on the fiber technology.

Specifications

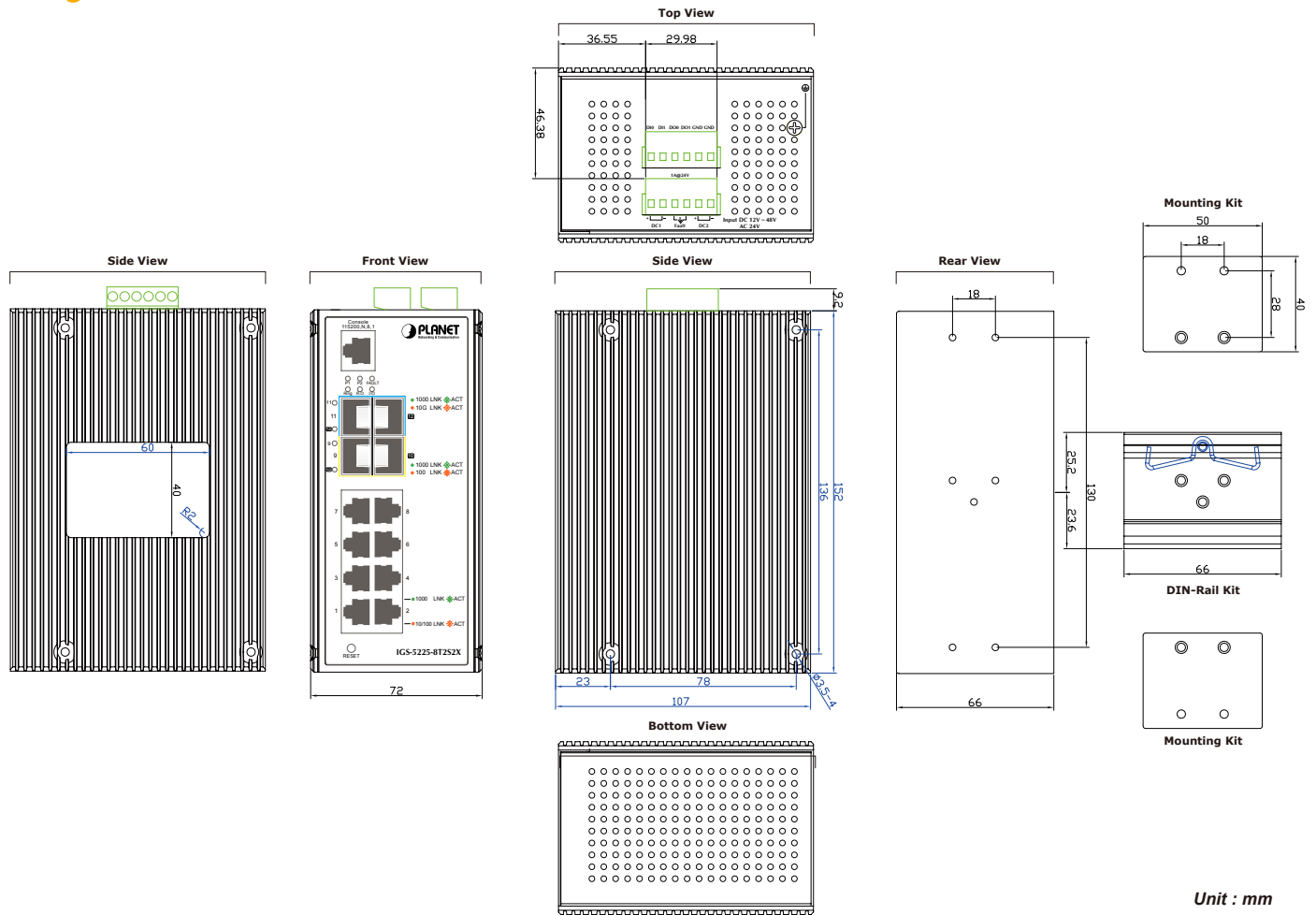| Product	IGS-5225-8T2S2X
Hardware Specifications	
Hardware Version	3
Copper Ports	8 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 1000BASE-SX/LX/BX SFP interfaces (Port-9 and Port-10) Compatible with 100BASE-FX SFP
SFP+ Slots	2 10GbBASE-SR/LR SFP+ interfaces (Port-11 and Port-12) Compatible with 1000BASE-SX/LX/BX SFP transceiver
Console	1 x RJ45-to-RS232 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	60Gbps/non-blocking
Throughput (packet per second)	44.642Mpps@ 64Bytes packet
Address Table	32K entries, automatic source address learning and aging
Shared Data Buffer	16Mbits
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10Kbytes
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
ESD Protection	6KV DC
Enclosure	IP30 aluminum 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 Removable 6-pin terminal block for DI/DO interface Pin 1/2 for DI 1 & 2, Pin 3/4 for DO 1 & 2, Pin 5/6 for GND
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC
DI/DO	2 Digital Input (DI): Level 0: -24V~2.1V (±0.1V) Level 1: 2.1V~24V (±0.1V) Input load to 24V DC, 10mA max.
	2 Digital Output (DO): Open collector to 24V DC, 100mA max.
LED Indicator	System: Power 1 (Green) Power 2 (Green) Fault Alarm (Red) Ring (Green) R.O. (Green) DIDO (Red) Per 10/100/1000T RJ45 Ports: 10/100 LNK/ACT (Orange) 1000 LNK/ACT (Green) Per SFP Interface: 100 LNK/ACT (Orange) 1000 LNK/ACT (Green) Per SFP+ Interface: 10G LNK/ACT (Orange) 1000 LNK/ACT (Green)
Dimensions (W x D x H)	72 x 107 x 152 mm
Weight	1070g
Power Requirements	Dual 12~48V DC 24V AC
Power Consumption	Max. 10.1 watts/34.51BTU (Power on without any connection) Max. 16.36 watts/55.79BTU (Full loading)
Layer 2 Function	
Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMP v3
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable
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	
VLAN	802.1Q tagged based VLAN, up to 255 VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN Registration) Up to 255 VLAN groups, out of 4095 VLAN IDs	
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 6 trunk groups with 8 ports per trunk group	
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	
IGMP Snooping	IGMP (v1/v2/v3) snooping, up to 255 multicast groups IGMP querier mode support	
MLD Snooping	MLD (v1/v2) snooping, up to 255 multicast groups MLD querier mode support	
Access Control List	IP-based ACL/MAC-based ACL Up to 123 entries	
Bandwidth Control	Per port bandwidth control Ingress: 500Kb~1000Mbps Egress: 500Kb~1000Mbps	
SNMP MIBs	RFC-1213 MIB-II IF-MIB RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2819 RMON MIB (Group 1, 2, 3 and 9)	RFC 2737 Entity MIB RFC 2618 RADIUS Client MIB RFC 2933 IGMP-STD-MIB RFC 3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB

Layer 3 Function

IP Interfaces	Max. 128 VLAN interfaces
Routing Table	Max. 128 routing entries
Routing Protocols	IPv4 hardware static routing IPv6 hardware static routing

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 802.3ae 10Gb/s Ethernet 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 802.1x Port Authentication Network Control IEEE 802.1ab LLDP 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 v3 RFC 2710 MLD v1 FRC 3810 MLD v2

Environment

Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Humidity	5 ~ 95% (non-condensing)

Diagram

Top View

Side View

Front View

Side View

Rear View

Mounting Kit

DIN-Rail Kit

Mounting Kit

Bottom View

Unit : mm

Ordering Information

IGS-5225-8T2S2X	Industrial L3 8-Port 10/100/1000T + 2-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch (-40~75 degrees C)

Related Products

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

Available Modules for IGS-5225-8T2S2X

10Gigabit Ethernet Transceiver (10GBASE-X SFP+)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MTB-RJ	10G	Copper	--	30m	--	0 ~ 70 degrees C
MTB-SR	10G	LC	Multi Mode	300m	850nm	0 ~ 60 degrees C
MTB-LR	10G	LC	Single Mode	10km	1310nm	0 ~ 60 degrees C
MTB-TSR	10G	LC	Multi Mode	300m	850nm	-40 ~ 75 degrees C
MTB-TLR	10G	LC	Single Mode	10km	1310nm	-40 ~ 75 degrees C

10Gigabit Ethernet Transceiver (10GBASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MTB-LA20	10G	WDM(LC)	Single Mode	20km	1270nm	1330nm	0 ~ 60 degrees C
MTB-LB20	10G	WDM(LC)	Single Mode	20km	1330nm	1270nm	0 ~ 60 degrees C
MTB-LA40	10G	WDM(LC)	Single Mode	40km	1270nm	1330nm	0 ~ 60 degrees C
MTB-LB40	10G	WDM(LC)	Single Mode	40km	1330nm	1270nm	0 ~ 60 degrees C
MTB-LA60	10G	WDM(LC)	Single Mode	60km	1270nm	1330nm	0 ~ 60 degrees C
MTB-LB60	10G	WDM(LC)	Single Mode	60km	1330nm	1270nm	0 ~ 60 degrees C

Gigabit Ethernet Transceiver (1000BASE-X SFP)

Model	DDM	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-GT	--	1000	Copper	--	100m	--	0 ~ 60 degrees C
MGB-SX(V2)	YES	1000	LC	Multi Mode	550m	850nm	0 ~ 60 degrees C
MGB-SX2(V2)	YES	1000	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C
MGB-LX(V2)	YES	1000	LC	Single Mode	20km	1310nm	0 ~ 60 degrees C
MGB-L40	YES	1000	LC	Single Mode	40km	1310nm	0 ~ 60 degrees C
MGB-L80	YES	1000	LC	Single Mode	80km	1550nm	0 ~ 60 degrees C
MGB-L120(V2)	YES	1000	LC	Single Mode	120km	1550nm	0 ~ 60 degrees C
MGB-TSX	YES	1000	LC	Multi Mode	550m	850nm	-40 ~ 75 degrees C
MGB-TSX2	YES	1000	LC	Multi Mode	2km	1310nm	-40 ~ 75 degrees C
MGB-TLX(V2)	YES	1000	LC	Single Mode	20km	1310nm	-40 ~ 75 degrees C
MGB-TL40	YES	1000	LC	Single Mode	40km	1310nm	-40 ~ 75 degrees C
MGB-TL80	YES	1000	LC	Single Mode	80km	1550nm	-40 ~ 75 degrees C

Gigabit Ethernet Transceiver (1000BASE-BX, Single Fiber Bi-directional SFP)

Model	DDM	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-LA10(V2) MGB-LB10(V2)	YES	1000	WDM(LC)	Single Mode	10km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-LA20(V2) MGB-LB20(V2)	YES	1000	WDM(LC)	Single Mode	20km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-LA40(V2) MGB-LB40(V2)	YES	1000	WDM(LC)	Single Mode	40km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-LA80 MGB-LB80	YES	1000	WDM(LC)	Single Mode	80km	1490nm 1550nm	1550nm 1490nm	0 ~ 60 degrees C
MGB-TLA10(V2) MGB-TLB10(V2)	YES	1000	WDM(LC)	Single Mode	10km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C
MGB-TLA20 MGB-TLB20	YES	1000	WDM(LC)	Single Mode	20km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C
MGB-TLA40 MGB-TLB40	YES	1000	WDM(LC)	Single Mode	40km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C
MGB-TLA80 MGB-TLB80	YES	1000	WDM(LC)	Single Mode	80km	1490nm 1550nm	1550nm 1490nm	-40 ~ 75 degrees C

Fast Ethernet Transceiver (100BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MFB-FX	100	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C
MFB-F20	100	LC	Single Mode	20km	1310nm	0 ~ 60 degrees C
MFB-F40	100	LC	Single Mode	40km	1310nm	0 ~ 60 degrees C
MFB-F60	100	LC	Single Mode	60km	1310nm	0 ~ 60 degrees C
MFB-F120	100	LC	Single Mode	120km	1310nm	0 ~ 60 degrees C
MFB-TFX	100	LC	Multi Mode	2km	1310nm	-40 ~ 75 degrees C
MFB-TF20	100	LC	Single Mode	20km	13100nm	-40 ~ 75 degrees C

Fast Ethernet Transceiver (100BASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MFB-FA20	100	WDM(LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 degrees C
MFB-FB20	100	WDM(LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 degrees C
MFB-TSA	100	WDM(LC)	Multi Mode	2km	1310nm	1550nm	-40 ~ 75 degrees C
MFB-TSB	100	WDM(LC)	Multi Mode	2km	1550nm	1310nm	-40 ~ 75 degrees C
MFB-TFA20	100	WDM(LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 75 degrees C
MFB-TFB20	100	WDM(LC)	Single Mode	20km	1550nm	1310nm	-40 ~ 75 degrees C
MFB-TFA40	100	WDM(LC)	Single Mode	40km	1310nm	1550nm	-40 ~ 75 degrees C
MFB-TFB40	100	WDM(LC)	Single Mode	40km	1550nm	1310nm	-40 ~ 75 degrees C

IGS-5225-8T2S2X