L2+ Industrial 8-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T+ 2-Port 100/1000X SFP Managed Ethernet Switch

Physical Ports

- **8 10/100/1000BASE-T** Gigabit Ethernet RJ45 ports with **IEEE 802.3at PoE**+ Injector
- **2 10/100/1000BASE-T** Gigabit Ethernet RJ45 ports
- **2 100/1000BASE-X mini-GBIC/SFP** slots for SFP type auto detection
- One RJ45 console interface for basic management and setup
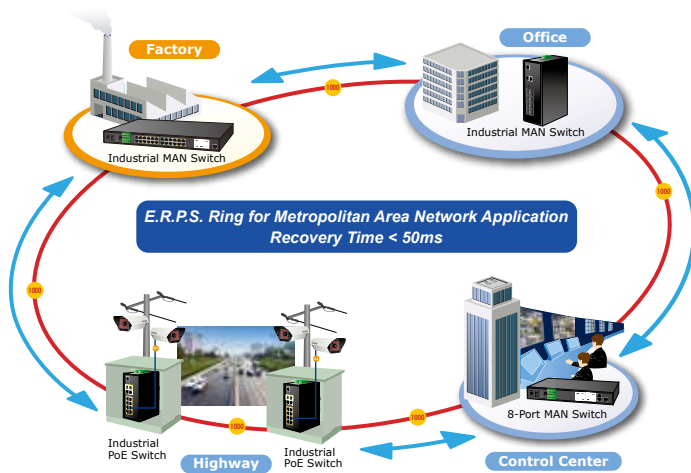
Power over Ethernet

- Complies with IEEE 802.3at Power over Ethernet Plus/end-span PSE
- Up to 8 IEEE 802.3af/802.3at devices powered
- 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
- 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 limit
  - PD classification detection
- Intelligent PoE features
  - Temperature threshold control
  - PoE usage threshold control
  - PD alive check
  - PoE schedule

Industrial Protocol

- Modbus TCP for real-time monitoring in a SCADA system
- IEEE 1588v2 PTP (Precision Time Protocol)

Industrial Case and Installation

- IP30 aluminum case
- DIN rail and wall-mount design
- 48~56V DC, redundant power with polarity reverse protect function
- Supports 5000V DC Ethernet ESD protection

Environmentally Hardened Design

PLANET Industrial 8-port Gigabit 802.3at PoE+ Switch, IGS-5225-8P2T2S, is equipped with a rugged IP30 metal case for stable operation in heavy industrial demanding environments. Thus, the IGS-5225-8P2T2S provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curbside traffic control cabinets.

Being able to operate under wide temperature range from -40 to 75 degrees C, the IGS-5225-8P2T2S can be placed in almost any difficult environment. The IGS-5225-8P2T2S also allows either DIN rail or wall mounting for efficient use of cabinet space.

Redundant Ring, Fast Recovery for Critical Network Applications

The IGS-5225-8P2T2S 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 20ms.

Factory

Office

Industrial MAN Switch

Industrial MAN Switch

1000

1000

E.R.P.S. Ring for Metropolitan Area Network Application
Recovery Time < 50ms

1000

1000

8-Port MAN Switch

Industrial
PoE Switch

Highway

Industrial
PoE Switch

Control Center

High Power PoE for Security and Public Service Applications

To fulfill the demand of High Power PoE for network applications with Gigabit speed transmission under wide temperature, the IGS-5225-8P2T2S provides 8 10/100/1000Mbps ports featuring **IEEE 802.3at** Power over Ethernet Plus (PoE+) that combines up to **36-watt** power output and data per port over one Cat5E/6 Ethernet cable. As the whole system comes with a total **240-watt** PoE budget, the IGS-5225-8P2T2S is designed specifically to satisfy 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, doubling that of the current conventional 802.3af PoE.

Convenient and Smart ONVIF Devices with Detection Feature

PLANET has newly developed an awesome feature -- ONVIF Support -- which is specifically designed for co-operating with video IP surveillances. From the IGS-5225-8P2T2S' GUI, you just need one click to search and show all of the ONVIF devices via network application. In addition, you can upload floor images to the switch and can remotely monitor or inspect an assembly line. Moreover, you can get real-time surveillance information and online/offline status; the PoE reboot can be controlled from the GUI.

- -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
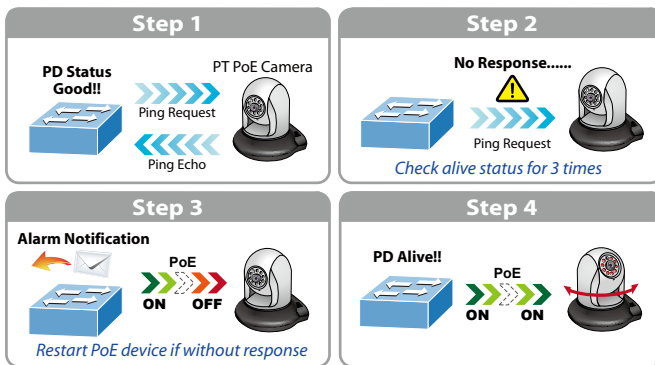- Transfer alarm to IP network via email and SNMP trap

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 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 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**
  – 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 4 ports per trunk group
  – Up to 8Gbps bandwidth (duplex mode)
  – Provides port mirror (1-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
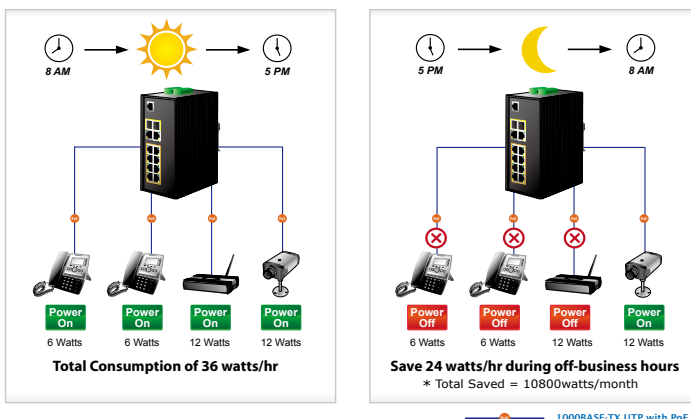
Intelligent Alive Check for Powered Device

The IGS-5225-8P2T2S PoE Switch can be configured to monitor connected PD's status in real time via ping action. Once the PD stops working and responding, the IGS-5225-8P2T2S will recycle the PoE port power and bring the PD back to work. It also greatly enhances the reliability in that the PoE port will reset the PD power, thus reducing administrator's management burden.

Step 1	Step 2
PD Status Good!! PT PoE Camera / Ping Request / Ping Echo	No Response...... / Ping Request / Check alive status for 3 times
Step 3	Step 4
Alarm Notification / PoE ON OFF / Restart PoE device if without response	PD Alive!! / PoE ON ON

PoE Schedule for Energy Saving

Under the trend of energy saving worldwide and contributing to environmental protection on the Earth, the IGS-5225-8P2T2S can effectively control the power supply besides its capability of giving high watts power. The built-in "PoE schedule" function helps you to enable or disable PoE power feeding for each PoE port during specified time intervals and it is a powerful function to help SMBs or enterprises save power and money.

8 AM ⟶ ☀ ⟶ 5 PM

Power On / Power On / Power On / Power On
6 Watts / 6 Watts / 12 Watts / 12 Watts
Total Consumption of 36 watts/hr

5 PM ⟶ 🌙 ⟶ 8 AM

Power Off / Power Off / Power Off / Power On
6 Watts / 6 Watts / 12 Watts / 12 Watts
Save 24 watts/hr during off-business hours
∗ Total Saved = 10800watts/month

— 1000BASE-TX UTP with PoE

– Link Layer Discovery Protocol (LLDP)

Layer 3 IP Routing Features

• Supports maximum 32 static routes and route summarization

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
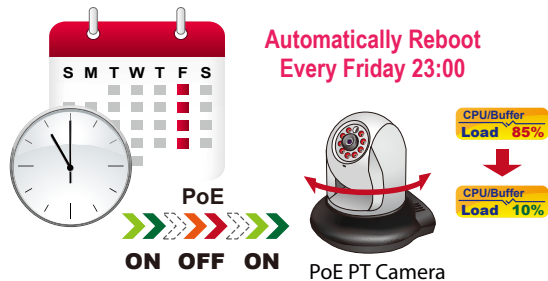• Traffic-policing policies on the switch port
• DSCP remarking

Multicast

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

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
• 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

Scheduled Power Recycling

The IGS-5225-8P2T2S allows each of the connected PoE IP cameras or PoE wireless access points to reboot at a specific time each week. Therefore, it will reduce the chance of IP camera or AP crash resulting from buffer overflow.

Automatically Reboot Every Friday 23:00

S M T W T F S

PoE

ON OFF ON

PoE PT Camera

CPU/Buffer Load 85%

CPU/Buffer Load 10%

SMTP/SNMP Trap Event Alert

The IGS-5225-8P2T2S 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

IGS-5225-8P2T2S

E-mail Alert

Malfunction

PLANET-event from PoE Switch

PoE IP Camera   PoE IP Camera
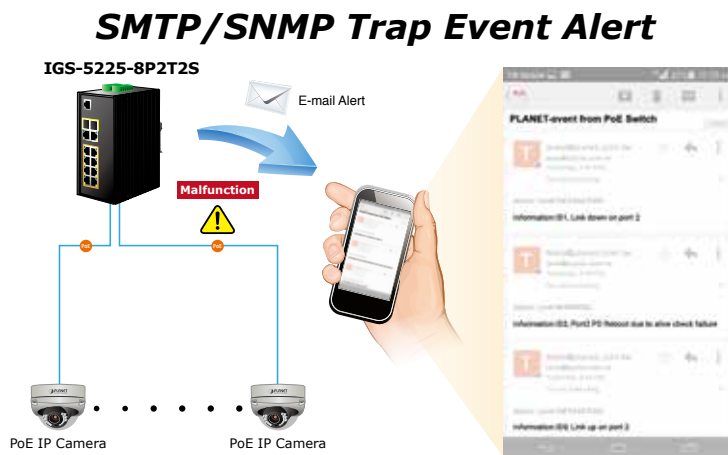
Management

- Switch Management Interfaces
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1 and v2c switch management
  - SSH/TLS and SNMP v3 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
- Firmware upload/download via HTTP/TFTP
- DHCP Relay and DHCP Option 82
- DHCP Server
- User Privilege levels control
- Network Time Protocol (NTP)
- Link Layer Discovery Protocol (LLDP)
- SFP-**DDM** (Digital Diagnostic Monitor)
- Network Diagnositc
  - ICMPv6/ICMPv4 Remote Ping
  - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
- Reset button for system reboot or reset to factory default
- PLANET Smart Discovery Utility for deployment management

Effective Alarm Alert for Better Protection

The IGS-5225-8P2T2S 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.
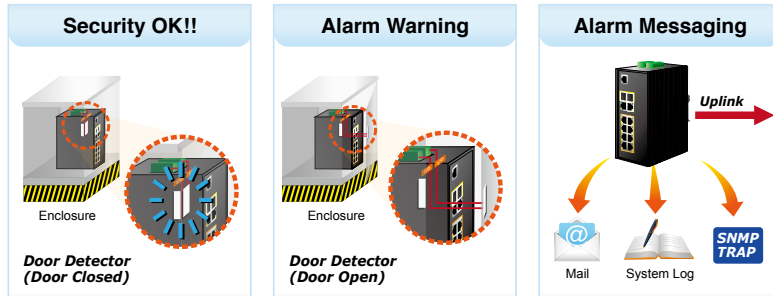
Fault Alarm Feature

DC/DC Power Failure

Fiber/RJ45 Connection Link Down

or

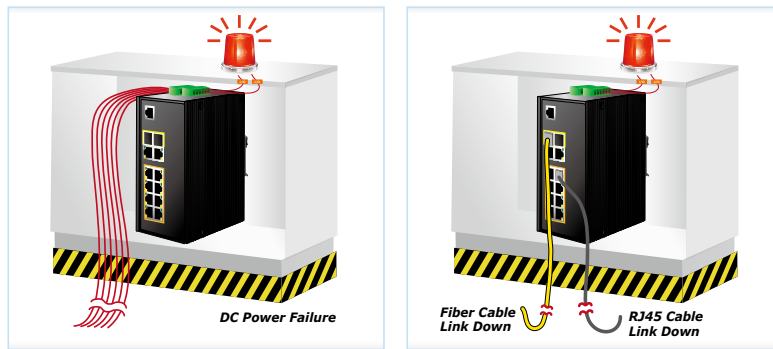Mail   System Log   SNMP TRAP
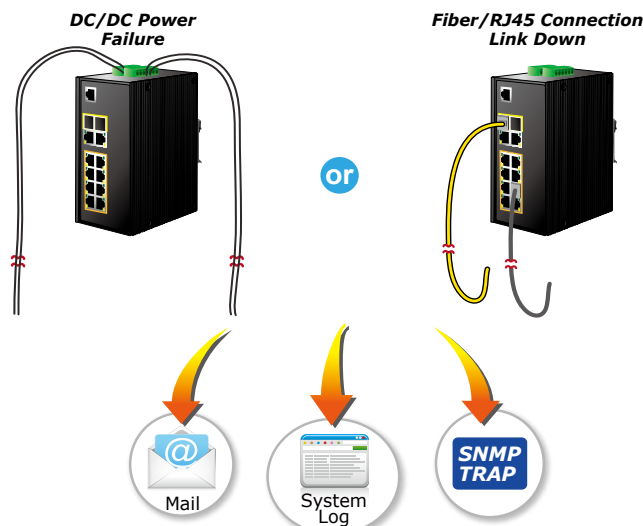
Digital Input and Digital Output for External Alarm

The IGS-5225-8P2T2S supports Digital Input and Digital Output on its upper 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-5225-8P2T2S 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

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

To help customers stay on top of their businesses, the IGS-5225-8P2T2S 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.

Robust Layer 2 Features

The IGS-5225-8P2T2S 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-5225-8P2T2S provides 802.1Q tagged VLAN, and the VLAN groups allowed will be maximally up to 255. Via aggregation of supporting ports, the IGS-5225-8P2T2S allows the operation of a high-speed trunk combining multiple ports. It enables a maximum of up to 6 trunk groups with 4 ports per trunk group, and supports fail-over as well.

L2/L4 Managed Switch   MSTP   LACP   Q-in-Q   QoS   LLDP   MLD   IGMP   L2/L4 Managed Switch
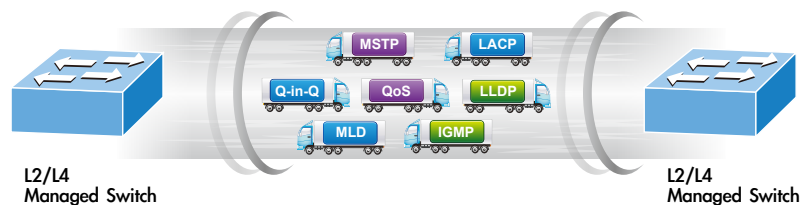
Efficient Management

For efficient management, the IGS-5225-8P2T2S is equipped with console, Web and SNMP management interfaces. With the built-in Web-based management interface, the IGS-5225-8P2T2S offers an easy-to-use, platform-independent management and configuration facility. For text-based management, the IGS-5225-8P2T2S can be accessed via Telnet and the console port. Moreover, it also offers secure remote management via any standard-based management software by supporting SNMPv3 connection which encrypts the packet content at each session.

Computer

Powerful Security

The IGS-5225-8P2T2S 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.

Modbus TCP provides Flexible Network Connectivity for Factory Automation

With the supported **Modbus TCP/IP** protocol, the IGS-5225-8P2T2S can easily integrate with **SCADA** systems, **HMI** systems and other data acquisition systems in factory floors. It enable 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.

Flexibility and Extension Solution

The additional four mini-GBIC slots built in the IGS-5225-8P2T2S support dual speed, 100BASE-FX and 1000BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules, meaning the administrator now can flexibly choose the suitable SFP transceiver according to not only the transmission distance but also the transmission speed required. The distance can be extended from 550 meters (multi-mode fiber) to 10/50/70/120 kilometers (single-mode fiber or WDM fiber). They are well suited for applications within the enterprise data centers and distributions.

Intelligent SFP Diagnosis Mechanism

The IGS-5225-8P2T2S 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.
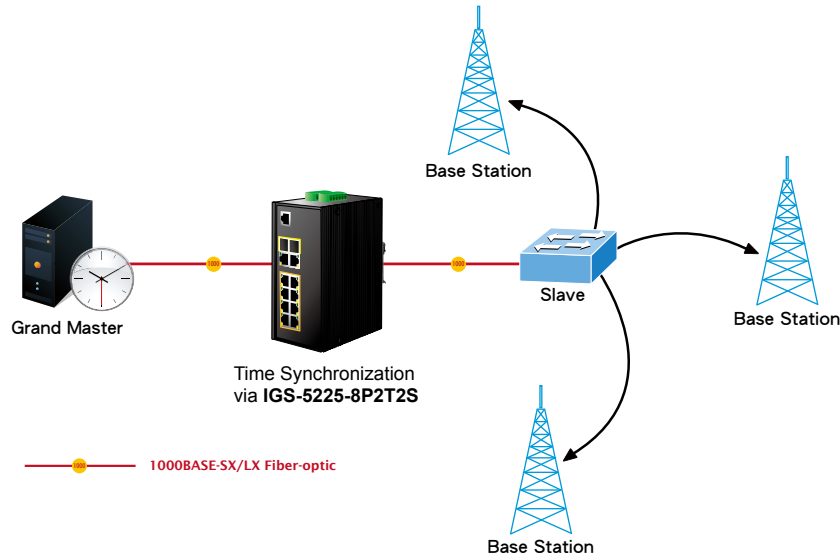
Digital Diagnostic Monitor *(DDM)*

1588 Time Protocol for Industrial Computing Networks

The IGS-5225-8P2T2S is ideal for telecom and Carrier Ethernet applications, supporting MEF service delivery and timing over packet solutions for IEEE 1588 and synchronous Ethernet.
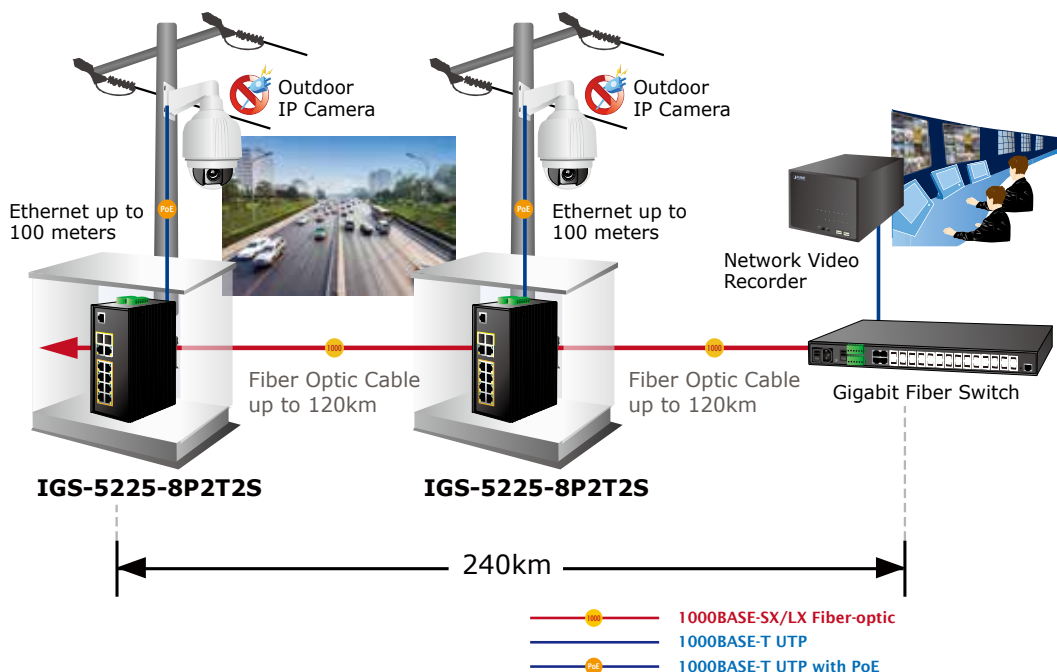
Time Synchronization in Network

Applications

Industrial Area Department/Workgroup PoE Switch

Providing up to 8 PoE+, in-line power interfaces, the IGS-5225-8P2T2S can easily build a power centrally controlled for IP phone system, IP camera system, or wireless AP group for Industrial network. For instance, 8 PoE IP cameras or wireless access points can be easily installed around the corner in the industrial environment for surveillance demands or for a wireless roaming network. Without the power-socket limitation, the IGS-5225-8P2T2S makes the installation of IP cameras or wireless AP easier and more efficient.

Extending Ethernet Distance

Specifications

Product	IGS-5225-8P2T2S
Hardware Specifications	
Copper Ports	8 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports 2 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports(Port-9 to Port-10)
SFP/mini-GBIC Slots	2 1000BASE-SX/LX/BX SFP interfaces (Port-11 to Port-12) Compatible with 100BASE-FX SFP
PoE Injector Port	8 ports with 802.3at/af PoE injector function with Port-1 to Port-8
Console	1 x RJ45-to-RS232 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	**24**Gbps/non-blocking
Throughput (packet per second)	17.85Mpps@ 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
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
ESD Protection	5KV 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) Ring Owner (Green) DIDO (Red) Per 10/100/1000T RJ45 PoE+ Ports: PoE-in-Use (Orange) LNK/ACT (Green) Per SFP Interface: 100 LNK/ACT (Orange) 1000 LNK/ACT (Green)
Dimensions (W x D x H)	72 x 107 x 152 mm
Weight	991g
Power Requirements	Dual 48~56V DC (>51V DC for PoE+ output recommended)
Power Consumption	Max. 7.3 watts/25.04BTU (Power on without any connection) Max. 252.3 watts/865.64BTU (Full loading with PoE function)
Power Over Ethernet	
PoE Standard	IEEE 802.3at Power over Ethernet Plus/PSE
PoE Power Supply Type	End-span
PoE Power Output	IEEE 802.3af Standard - Per port 48V~51V DC (depending on the power supply), max. 15.4 watts IEEE 802.3at Standard - Per port 51V~56V DC (depending on the power supply), max. 36 watt
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Budget	Dual power input: 240W maximum (depending on power input)
Max. Number of Class 2 PDs	8
Max. Number of Class 3 PDs	8
Max. Number of Class 4 PDs	8
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 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 1 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 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 6 trunk groups with 4 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	IPv4 IGMP (v1/v2/v3) snooping, up to 255 multicast groups IPv4 IGMP querier mode support
MLD Snooping	IPv6 MLD (v1/v2) snooping, up to 255 multicast groups IPv6 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 (Groups 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. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software static routing IPv6 software 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 802.3x 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

Standards Compliance	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 802.3af Power over Ethernet
	IEEE 802.3at Power over Ethernet Plus
	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
	ITU G.8032 ERPS Ring
Environment	
Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Humidity	5 ~ 95% (non-condensing)

Diagram
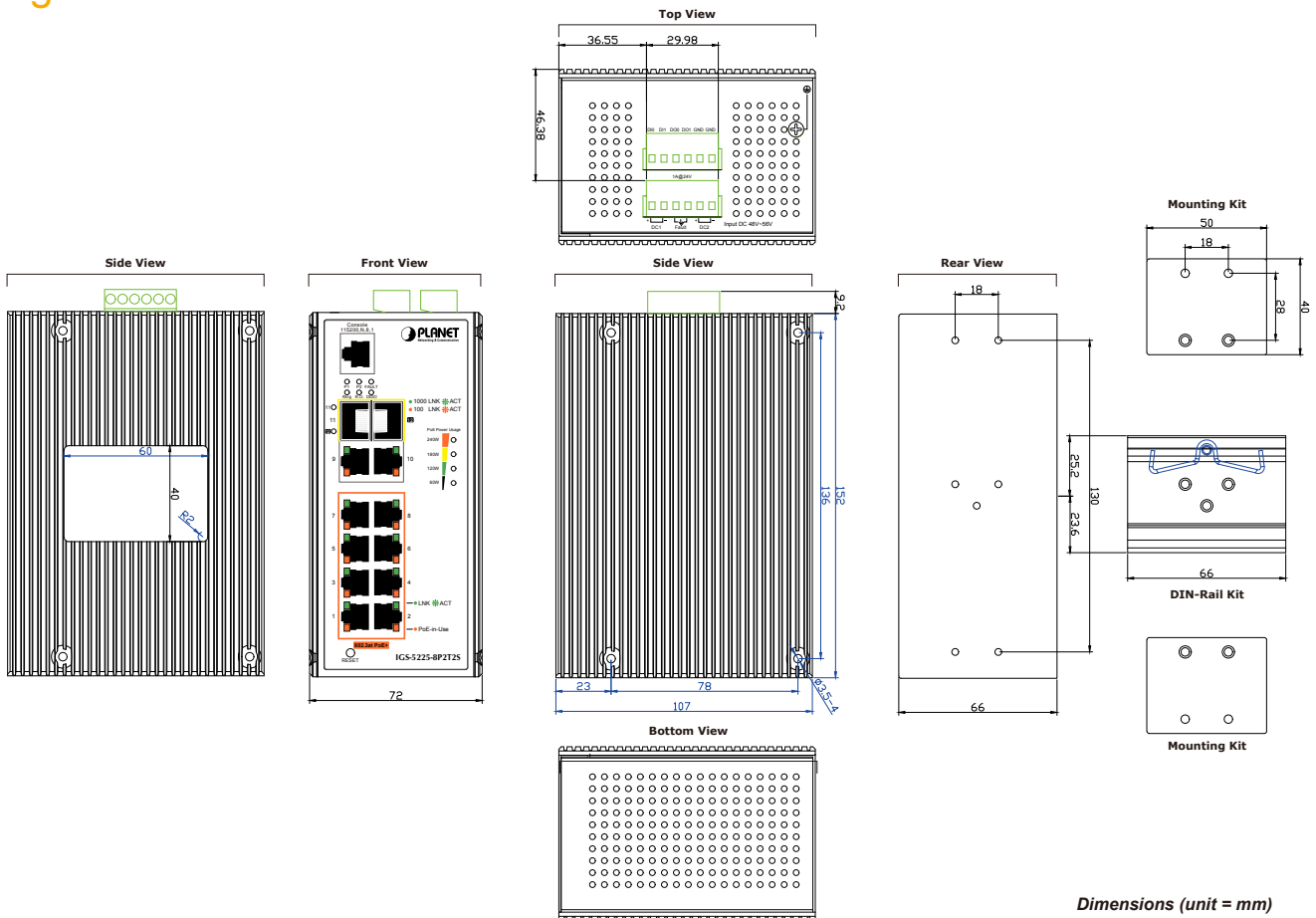
Dimensions (unit = mm)

Ordering Information

| IGS-5225-8P2T2S | L2+ Industrial 8-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T+ 2-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C) |

Related Products

IGS-5225-8P4S	L2+ Industrial 8-Port 10/100/1000T 802.3at PoE + 4-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)
IGS-5225-4P2S	L2+ Industrial 4-Port 10/100/1000T 802.3at PoE + 2-Port 100/1000X 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-5225-8P2T2S