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

802.3at PoE+ & 10G Uplink DIN-rail Solution for Harsh Industrial Environment

PLANET IGS-5225-8P2S2X is the **smallest 10G uplink managed PoE switch** in the industrial networking industry. Based on its **10Gbps** big pipe connectivity to core networks, the IGS-5225-8P2S2X, equipped with 8 Gigabit ports featuring **36-watt 802.3at PoE+** and **two 10Gbps SFP+** uplink slots, meets the demands of high power consumption and high bandwidth for **11ac Gigabit Wi-Fi APs**, other PoE applications or those requiring heavy traffic loading.

With a rugged metal case and wide temperature range from -40 to 75 degrees C, the IGS-5225-8P2SXIP30 is able to stably operate in heavy Industrial demanding environments. Thus, the IGS-5225-8P2S2X 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. The IGS-5225-8P2S2X also allows either DIN rail or wall mounting for efficient use of cabinet space.

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-5225-8P2S2X supports **dual speed** and **10GBASE-SR/LR or 1000BASE-SX/LX**. 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. The IGS-5225-8P2S2X provides broad bandwidth and powerful processing capacity.

Physical Port

- Eight 10/100/1000BASE-T Gigabit Ethernet RJ45 ports with IEEE 802.3at PoE+ Injector
- Two 100/1000BASE-X mini-GBIC/SFP slots for SFP type auto detection
- Two 10GBASE-SR/LR SFP+ slots, backward compatible with 1000BASE-SX/LX/BX SFP
- 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

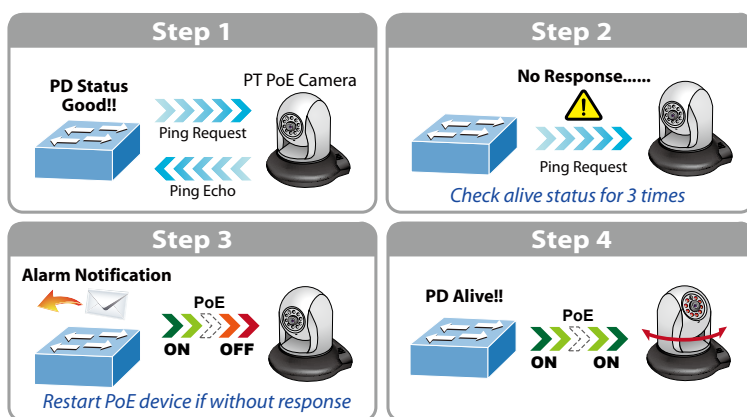## Industrial Case & Installation

- IP30 aluminum case
- DIN rail and wall-mount design
- 48~56V DC, redundant power with polarity reverse protect function
- Supports 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

High Power PoE for Security and Public Service Applications

To fulfill the demand of High Power PoE for network applications with Gigabit speed transmission and wide temperature range, the IGS-5225-8P2S2X 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 Cat.5E/6 Ethernet cable. With a total **240-watt** PoE budget on the whole system, the IGS-5225-8P2S2X 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 by providing PoE power, doubling that of the current conventional 802.3af PoE.
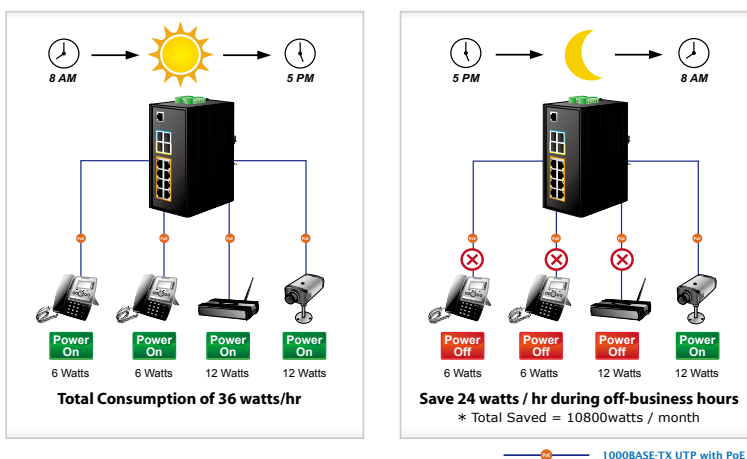
Intelligent Alive Check for Powered Device

The IGS-5225-8P2S2X 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-5225-8P2S2X 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

PD Status Good!! PT PoE Camera
Ping Request
Ping Echo

Step 2

No Response......
Ping Request
Check alive status for 3 times

Step 3

Alarm Notification
PoE
ON   OFF
Restart PoE device if without response

Step 4

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-5225-8P2S2X 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 — 6 Watts
Power On — 6 Watts
Power On — 12 Watts
Power On — 12 Watts

Total Consumption of 36 watts/hr

5 PM → 8 AM

Power Off — 6 Watts
Power Off — 6 Watts
Power Off — 12 Watts
Power Off — 12 Watts

Save 24 watts / hr during off-business hours
＊ Total Saved = 10800watts / month

1000BASE-TX UTP with PoE

Digital Input & 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
- 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 22Gbps 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

Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization

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Scheduled Power Recycling

The IGS-5225-8P2S2X 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.
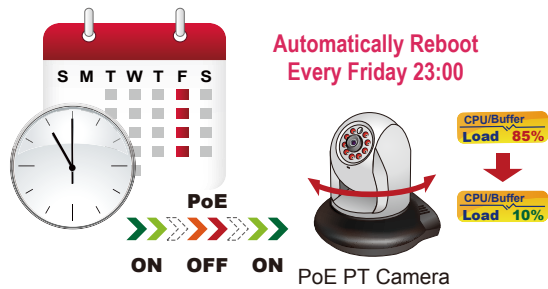
SMTP/SNMP Trap Event Alert

The IGS-5225-8P2S2X provides an 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
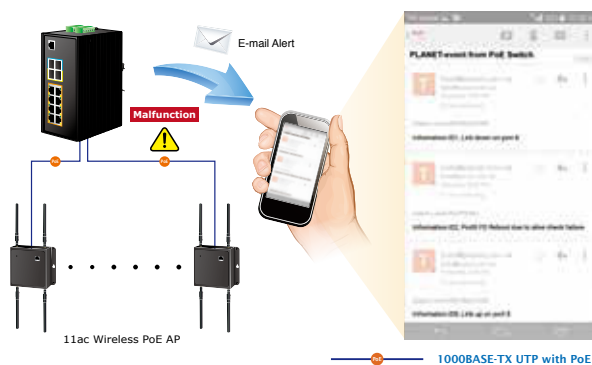
Digital Input and Digital Output for External Alarm

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

Digital Output
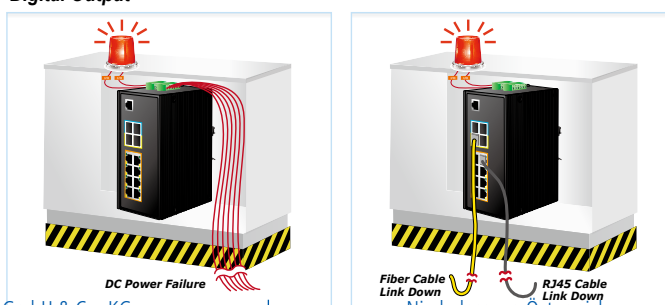
Quality of Service

- 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 IGMP snooping v1, v2 and v3
- Supports MLD snooping v1 and v2
- Querier mode support
- IGMP 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

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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.

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 SNMPv3 connection which encrypts the packet content at each session.

Management

- Switch Management Interfaces
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1 and v2c switch management
  - SSH/SSL 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
- DHCP Option 82
- User Privilege levels control
- Network Time Protocol (NTP)
- Link Layer Discovery Protocol (LLDP)
- SFP-DDM (Digital Diagnostic Monitor)
- 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

Flexibility and Extension Solution

The additional two mini-GBIC slots built in the IGS-5225-8P2S2X 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 550m to 2km (multi-mode fiber), or even going up to 10/20/30/40/50/60/70/120km (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 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)

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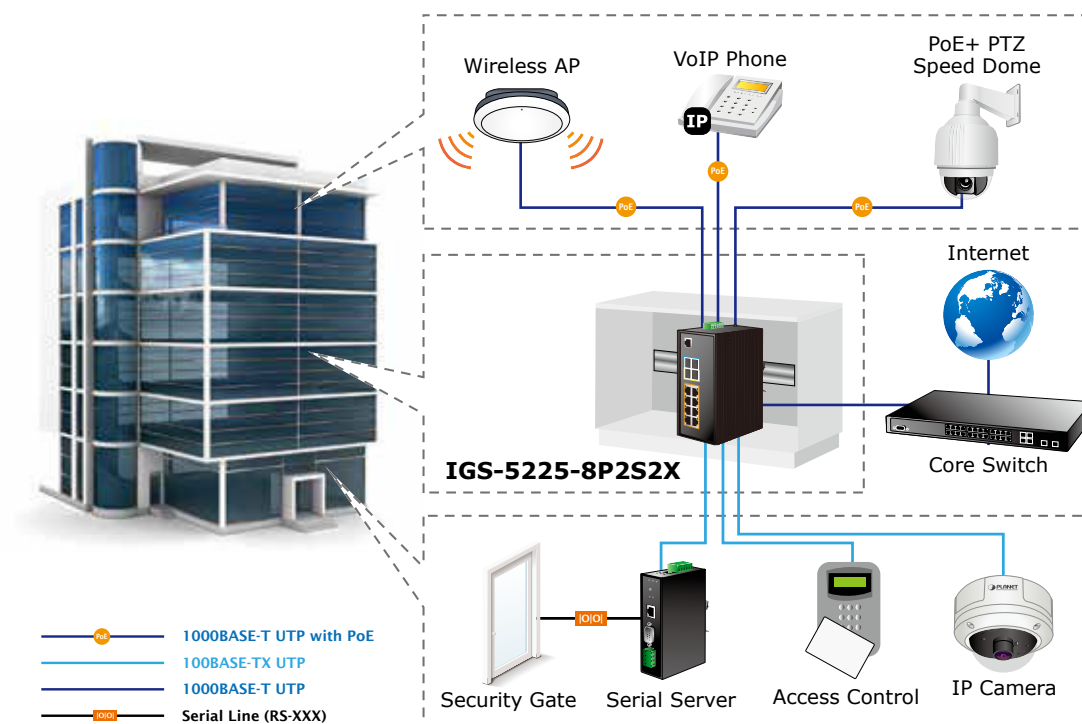Spectra (Schweiz) AG
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Modbus TCP provides Flexible Network Connectivity for Factory Automation

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

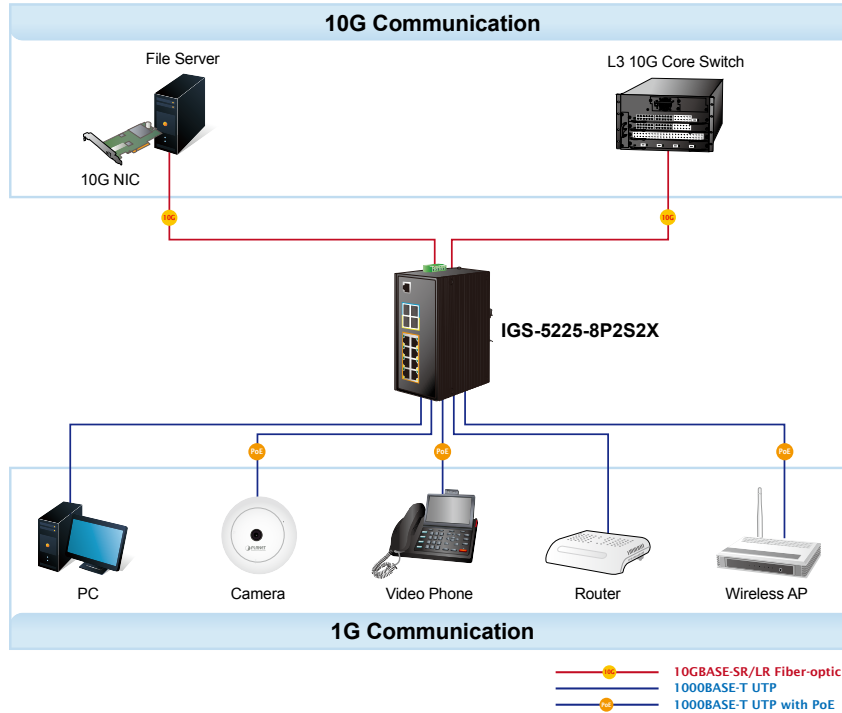## Industrial Area Department/Workgroup PoE Switch

Providing up to 8 PoE+, in-line power interfaces, the IGS-5225-8P2S2X 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-5225-8P2S2X makes the installation of IP cameras or wireless AP easier and more efficient.

Wireless AP   VoIP Phone   PoE+ PTZ Speed Dome

Internet

IGS-5225-8P2S2X   Core Switch

1000BASE-T UTP with PoE
100BASE-TX UTP
1000BASE-T UTP
Serial Line (RS-XXX)

Security Gate   Serial Server   Access Control   IP Camera

Excellent 10Gbps High Bandwidth Solution to Core Network

The IGS-5225-8P2S2X 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-5225-8P2S2X 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.
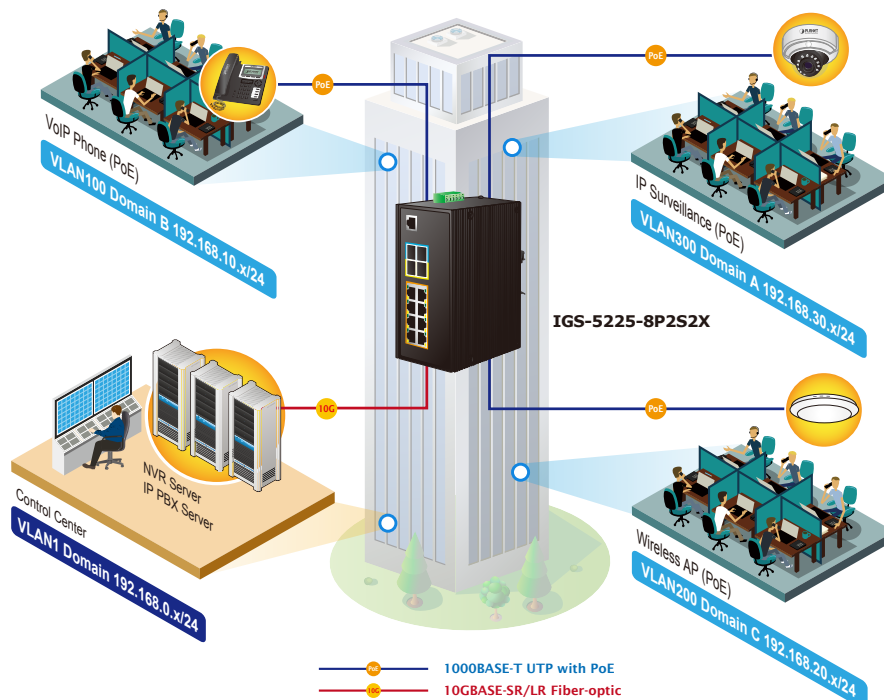
High Performance Server Service

10G Communication

File Server — 10G NIC — IGS-5225-8P2S2X — L3 10G Core Switch

PC · Camera · Video Phone · Router · Wireless AP

1G Communication

- 10GBASE-SR/LR Fiber-optic
- 1000BASE-T UTP
- 1000BASE-T UTP with PoE

Layer 3 VLAN Routing and 10G Uplink Application

With the built-in, robust Layer 3 routing protocols, the IGS-5225-8P2S2X ensures reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 32 routing entries. The IGS-5225-8P2S2X, certainly an ideal solution for industries, offers greater security, control and bandwidth conservation, and high-speed uplink.

VLAN Routing + PoE Applications

VoIP Phone (PoE)
VLAN100 Domain B 192.168.10.x/24

IP Surveillance (PoE)
VLAN300 Domain A 192.168.30.x/24

IGS-5225-8P2S2X

NVR Server
IP PBX Server
Control Center
VLAN1 Domain 192.168.0.x/24

Wireless AP (PoE)
VLAN200 Domain C 192.168.20.x/24

- 1000BASE-T UTP with PoE
- 10GBASE-SR/LR Fiber-optic

Specifications

Product	IGS-5225-8P2S2X
Hardware Specifications	
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
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	60Gbps/non-blocking
Throughput (packet per second)	44.642Mpps@ 64Bytes packet
Address Table	16K entries, automatic source address learning and aging
Shared Data Buffer	32Mbits
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)
	  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)
	Per SFP+ Interface:
	  10G LNK/ACT (Orange)
	  1000 LNK/ACT (Green)

Dimensions (W x D x H)	72 x 107x 152 mm
Weight	1684g
Power Requirements	Dual 48~56V DC (>51V DC for PoE+ output recommended)
Power Consumption	Max. 11.1 watts/37.87BTU (Power on without any connection) Max. 306 watts/1043.46BTU (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 watts
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

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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	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 RFC3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB
Layer 3 Function	
IP Interfaces	Max. 128 VLAN interfaces
Routing Table	Max. 32 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
	IEEE 802.3af Power over Ethernet
	IEEE 802.3at Power over Ethernet Plus
	RFC 768 UDP
	RFC 793 TFTP
	RFC 791 IP
	RFC 792 ICMP
	RFC 2068 HTTP
	RFC 1112 IGMP v1
	RFC 2236 IGMP v2
Environment	
Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Humidity	5 ~ 95% (non-condensing)

Diagram

Dimensions (unit = mm)
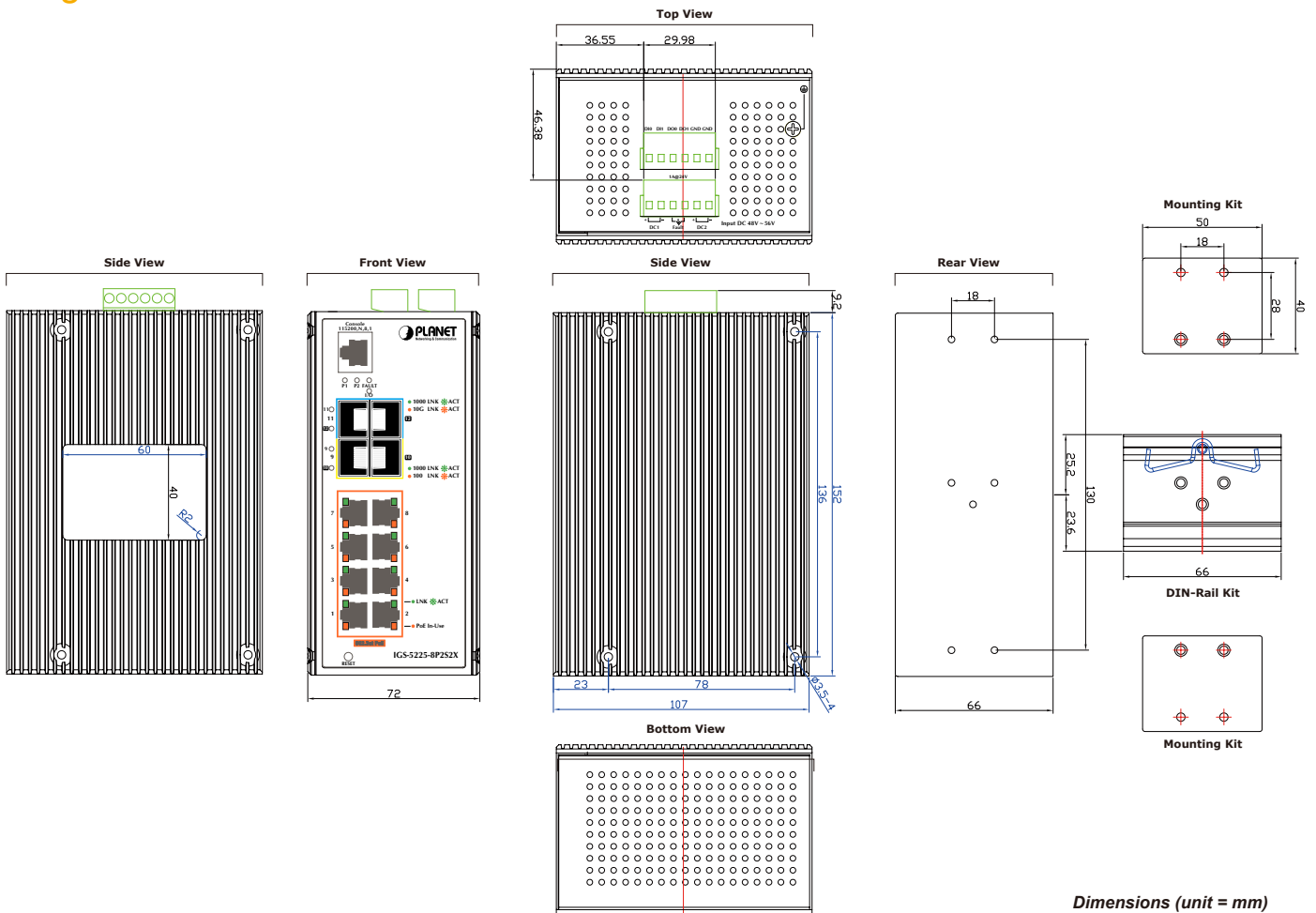
Ordering Information

IGS-5225-8P2S2X	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)

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