

## Industrial 8-Port 10/100/1000T 802.3af PoE + 2-Port 100/1000X SFP Managed Switch with Wide Operating Temperature



### Environmentally Hardened Design

The Industrial 8-Port Gigabit 802.3af PoE Switch, IGS-10020PT is equipped with rugged IP30 metal case for stable operation in heavy Industrial demanding environments. With IP30 industrial case protection, the IGS-10020PT 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. Being able to operate in wide temperature range from -40 to 75 degrees C, the IGS-10020PT can be placed in almost any difficult environment. The IGS-10020PT also allows either DIN rail or wall mounting for efficient use of cabinet space.



### Redundant Ring, Fast Recovery for Surveillance System

The IGS-10020PT supports redundant ring technology and features strong rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced Redundant Ring technology, Spanning Tree Protocol (802.1w RSTP), and redundant power supply system into customer's industrial automation network to enhance system reliability and uptime in harsh factory environments. The IGS-10020PT 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 50ms to quickly bring the network back to normal operation.

### Physical Port

- 8-Port 10/100/1000Base-T Gigabit Ethernet RJ-45 with IEEE 802.3af PoE Injector
- 2 100/1000Base-X mini-GBIC/SFP slots, SFP type auto detection
- One RJ-45 console interface for basic management and setup

### Power over Ethernet

- Complies with IEEE 802.3af Power over Ethernet End-Span PSE
- Up to 8 IEEE 802.3af devices powered
- Supports PoE Power up to 15.4 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
  - 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
  - Temperature Threshold Control
  - PoE Usage Threshold Control
  - PD Alive Check
  - PoE Schedule
  - PD Power Recycling Schedule

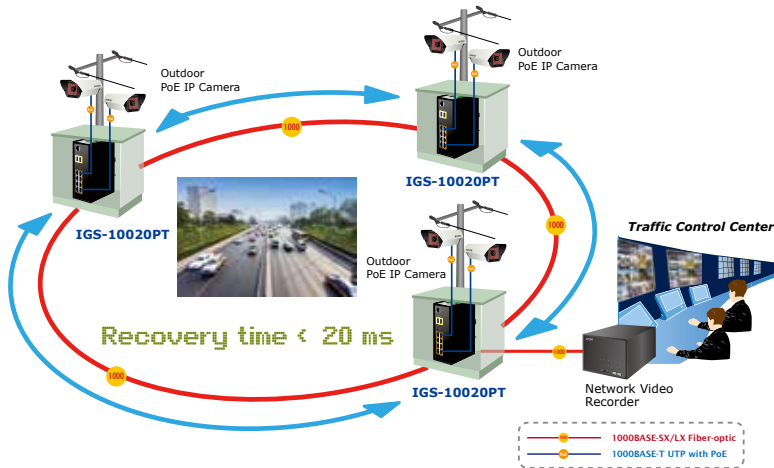
### Industrial Case / Installation

- IP30 Aluminum metal case protection
- DIN Rail and Wall Mount Design
- 48V DC, redundant power with polarity reverse protect function
- Supports EFT protection 6000V DC for power line
- Supports 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

### Digital Input / Digital Output

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

### ERPS Ring for Video Transmission Redundancy



### Built-in Unique PoE Functions for Powered Devices Management

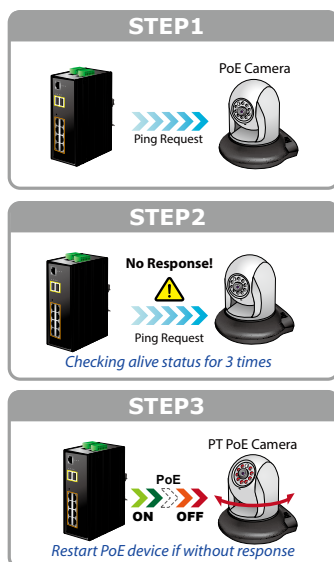
As a managed PoE Switch for surveillance, wireless and VoIP network, the IGS-10020PT features three intelligent PoE Management functions:

- PD ALIVE Check
- Schedule Power Recycle
- PoE Schedule

### Intelligent Alive Check for Powered Device

The IGS-10020PT can be configured to monitor the connected PD (Powered Device) status in real-time via ping action. Once the PD stops working and responding, the IGS-10020PT will resume the PoE port power and bring the PD back to work. It will greatly enhance the network reliability through the PoE port resetting the PD's power source and reducing administrator management burden.

#### PoE PD Alive-checking



### Layer 2 Features

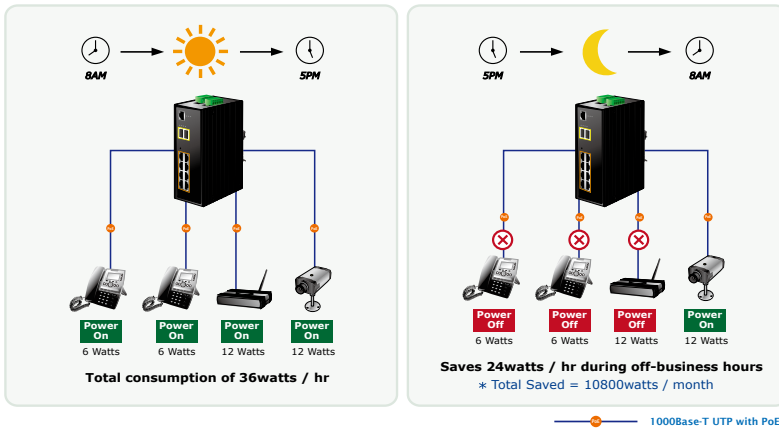
- Prevents packet loss with back pressure (Half-Duplex) and IEEE 802.3x PAUSE frame flow control (Full-Duplex)
- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
  - Broadcast / Multicast / 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
  - STP, IEEE 802.1D Spanning Tree Protocol
  - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
  - MSTP, IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
  - BPDU Guard
- Supports Link Aggregation
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (Static Trunk)
  - Maximum 5 trunk groups, up to 8 ports per trunk group
  - Up to 16Gbps 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)

### 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

**PoE Schedule for Energy Saving**

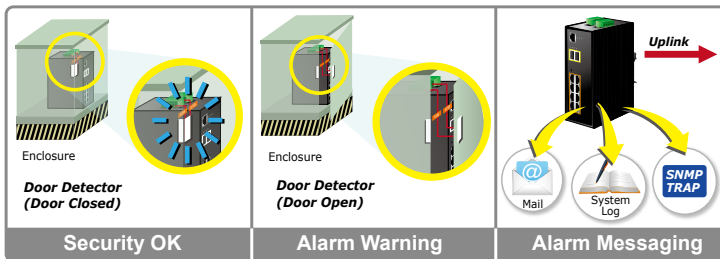
Under the trend of energy saving worldwide and contributing to environmental protection, the IGS-10020PT can effectively control the power supply besides its capability of giving high watts power. The built-in “PoE schedule” function helps you to enable or disable PoE power feeding for each PoE port during specified time intervals and it is a powerful function to help SMB or Enterprise save power and money.



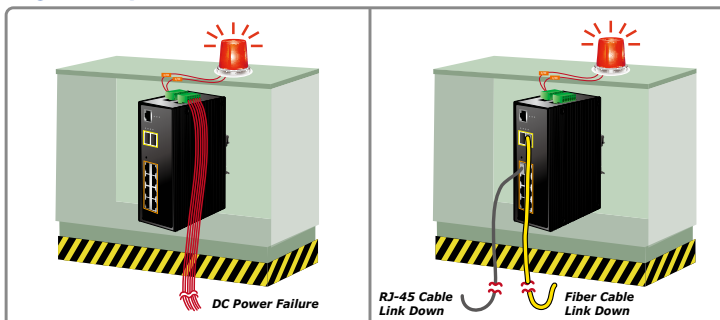
**Digital Input and Digital Output for external Alarm**

The IGS-10020PT supports Digital Input, and Digital Output on its front panel. This external alarm enables users to use Digital Input to detect, 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-10020PT port is link down, link up or power failure.

**Digital Input**



**Digital Output**



**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 co-operate 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 untrusted 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**

- 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
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) Protocol
- 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 deploy management

### Robust Layer 2 Features

The IGS-10020PT can be programmed for advanced switch management function, 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/MLD snooping. The IGS-10020PT provides 802.1Q tagged VLAN and the VLAN groups allowed will be maximally up to 255. The IGS-10020PT not only allows the operation of a high-speed trunk combining multiple ports, but also supports connection fail-over.

### Efficient Management

For efficient management, the IGS-10020PT managed switch is equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, the IGS-10020PT offers an easy-to-use, platform independent management and configuration facility. The IGS-10020PT supports SNMP and it can be managed via any based on standard of SNMP v1 and v2 management software. For text-based management mode, the IGS-10020PT can be accessed via Telnet and the console port. Moreover, the IGS-10020PT offers remote secure management by supporting SSH, SSL and SNMPv3 connection which can be encrypted the packet content at each session.

### Powerful Security

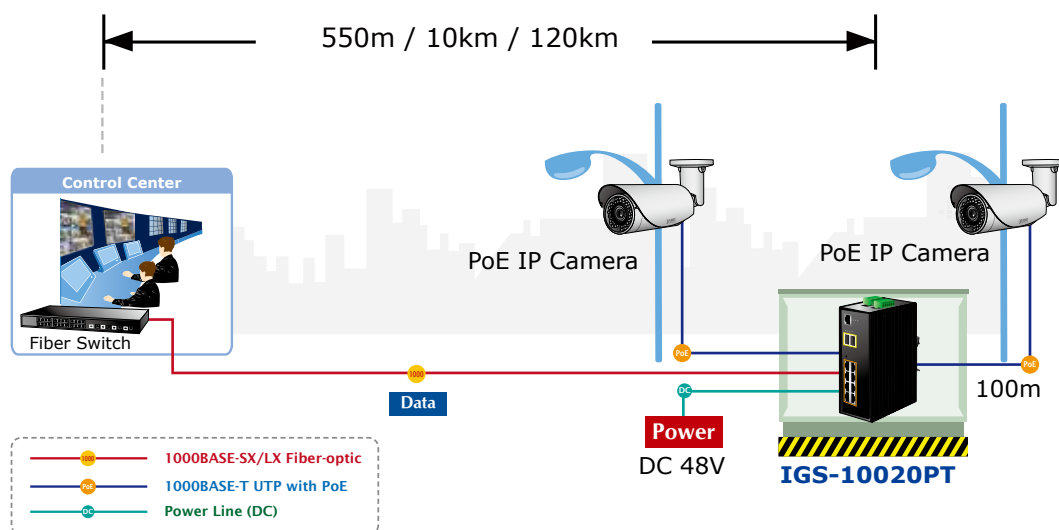
The IGS-10020PT offers comprehensive layer 2 to layer 4 access control list (ACL) for enforcing security to the edge. It can be used to restrict to network access by denying packets based on source and destination IP address, TCP/UDP port number or defined typical network applications. Its protection 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 IGS-10020PT also provides DHCP Snooping, IP Source Guard and Dynamic ARP Inspection functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrator can now construct highly secured corporate networks with considerably less time and effort than before.

### Flexibility and Extension Solution

The two mini-GBIC slots built in the IGS-10020PT supports dual speed, 100Base-FX and 1000Base-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules. Now the administrator 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 to 2km (Multi-Mode fiber) up to above 10/20/30/40/50/70/120 kilometers (Single-Mode fiber or WDM fiber). They are well suited for applications within the enterprise data centers and distributions.

### Perfect Integration Solution for Outdoor IP PoE Camera and NVR System

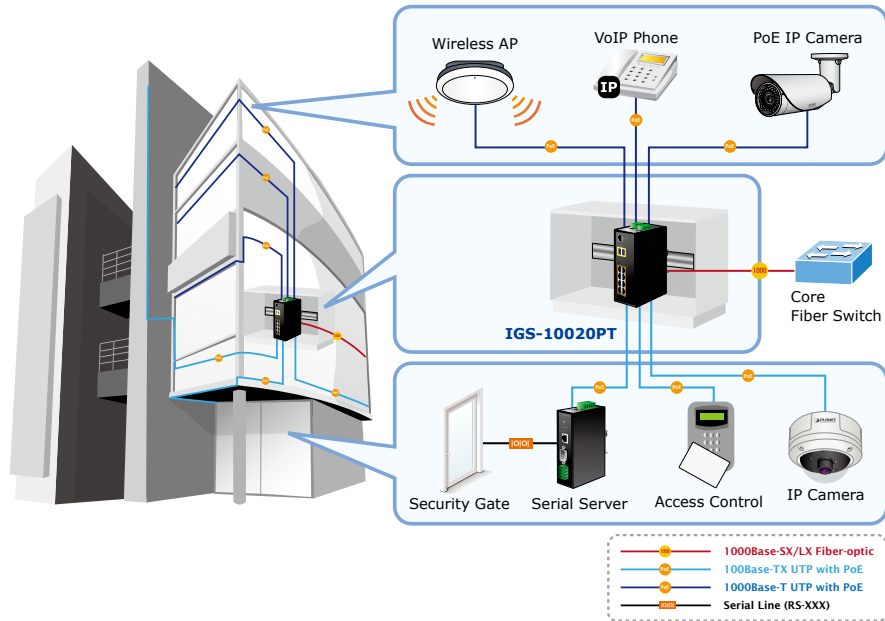
The IGS-10020PT provides 8 10/100/1000Mbps 802.3af PoE ports and can offer sufficient PoE power for 8 PoE IP cameras at the same time. In addition, with the 2-Port 100/1000Base-X SFP interfaces, the IGS-10020PT can connect to core fiber switch and send video stream to NVR and monitor center. Through the high performance switch architecture, the IGS-10020PT facilitates the recorded video files from the 8 PoE IP cameras to be saved in the NVR systems. Furthermore, the NVR systems can be controlled and monitored both in the local LAN and the remote site via Internet. The IGS-10020PT undoubtedly brings an ideal secure surveillance system with lower total cost.



## Applications

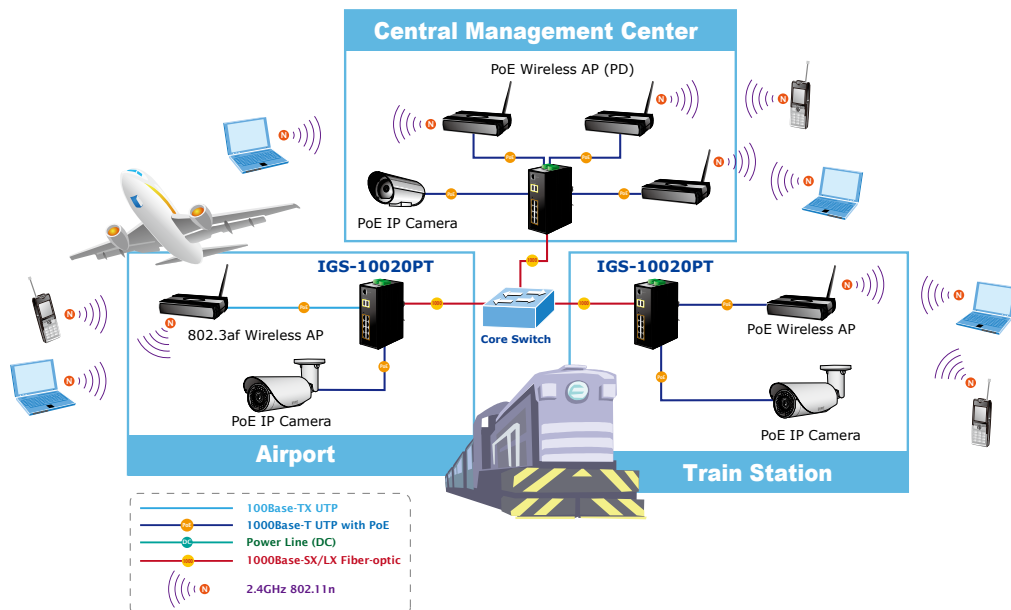
### Industrial Area Department / Workgroup PoE Switch

Providing up to 8 PoE, in-line power interface, the IGS-10020PT can easily build a power centrally controlled 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-10020PT makes the installation of IP cameras or Wireless AP easier and more efficient.



### Transportation – Wireless and IP Surveillance

In modern times, Internet service is mostly demanded during travel times, either for business or for leisure. Besides the wired Internet network, the wireless LAN would be more efficient for the transportation station to provide high-speed and wide area Internet services for travelers. With the PoE wireless LAN APs connected to the IGS-10020PT that provides long distance fiber capability, people can experience the wireless LAN roaming service within the Wi-Fi coverage even when the transportation itself like train, bus or ship moving on the way. By adopting PoE Wireless LAN structure, the transportation authority gains benefit from costing less while providing better Internet services in wider areas for the travelers. On the other hand, the PoE IP Surveillance system deployed helps watch the transportation security and PoE IP Telephony system improves the voice communicating in the station with lower cost.



## Product Specifications

Model	IGS-10020PT
<b>Hardware Specification</b>	
Copper Ports	8 10/100/1000Base-T RJ-45 Auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	<b>2 1000Base-SX/LX/BX SFP interfaces (Port-9 and Port-10) Compatible with 100Base-FX SFP</b>
Console	1 x RJ-45-to-RS-232 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	20Gbps / non-blocking
Throughput (packet per second)	14.8Mpps@ 64Bytes packet
Address Table	8K entries, automatic source address learning and ageing
Share 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 > 10 sec: Factory Default
ESD Protection	6KV DC
EFT Protection	6KV DC
Enclosure	IP30 Aluminum 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 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 fail. Alarm Relay current carry ability: 1A @ DC 24V
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 24VDC, 100mA max.
LED Indicator	<b>System:</b> Power 1 (Green) Power 2 (Green) Fault Alarm (Green) Ring (Green) Ring Owner (Green) <b>Per 10/100/1000T RJ-45 Ports:</b> PoE In-Use (Orange) LNK/ACT (Green) <b>Per SFP Interface:</b> 1000 (Orange) LNK/ACT (Green)
Dimensions (W x D x H)	152 x 107x 72 mm
Weight	1684g
Power Requirements	DC 48V
Power Consumption	31.9 watts / 108.78BTU (Full loading without PoE function) 161.9 watts / 522.08BTU (Full loading with PoE function)
<b>Power Over Ethernet</b>	
PoE Standard	IEEE 802.3af Power over Ethernet / PSE
PoE Power Supply Type	End-Span
PoE Power Output	Per Port 48V DC, 350mA . Max. 15.4 watts
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Budget	130W maximum (depends on power input)
Max. number of Class 2 PD	8
Max. number of Class 3 PD	8
<b>Layer 2 Function</b>	
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 5 groups of 8-Port trunk support
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
<b>Standards Conformance</b>	
Regulation 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 802.1x Port Authentication Network Control IEEE 802.1ab LLDP IEEE 802.3af Power over Ethernet RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP version 1 RFC 2236 IGMP version 2

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

## Ordering Information

IGS-10020PT	Industrial 8-Port 10/100/1000T 802.3af PoE + 2-Port 100/1000X SFP Managed Switch with Wide Operating Temperature
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## Available Modules for IGS-10020PT

### 1000Mbps SFP transceiver modules

MGB-GT	SFP-Port 1000Base-T Module
MGB-SX	SFP-Port 1000Base-SX mini-GBIC module - 550m
MGB-SX2	SFP-Port 1000Base-SX mini-GBIC module - 2km
MGB-LX	SFP-Port 1000Base-LX mini-GBIC module - 10km
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
MGB-TSX	SFP-Port 1000Base-SX mini-GBIC module - 550m (-40 ~ 75 degrees C)
MGB-TLX	SFP-Port 1000Base-LX mini-GBIC module - 10km (-40 ~ 75 degrees C)
MGB-TL30	SFP-Port 1000Base-LX mini-GBIC module - 30km (-40 ~ 75 degrees C)
MGB-TL70	SFP-Port 1000Base-LX mini-GBIC module - 70km (-40 ~ 75 degrees C)

### 100Mbps SFP transceiver modules

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
MFB-TFX	SFP-Port 100Base-FX Transceiver (1310nm) - 2km (-40 ~ 75 degrees C)
MFB-TF20	SFP-Port 100Base-FX Transceiver (1310nm) - 20km (-40 ~ 75 degrees C)

### Available PD for IGS-10020PT

ICA-2200	Full HD PoE Box IP Camera
ICA-2500	5 Mega-Pixel PoE Box IP Camera
ICA-3250V	Full HD Outdoor IR PoE IP Camera
ICA-3350V	3 Mega-Pixel Vari-Focal Bullet IR IP Camera
ICA-4200V	Full HD 20M IR Vari-Focal Dome IP Camera
ICA-5350V	3 Mega-Pixel Vandalproof IR IP Camera
ICA-8350	3 Mega-Pixel Vandalproof Fisheye IP Camera
ICA-HM126	H.264 Full HD Box IP Camera
ICA-HM127	3 Mega-Pixel H.264 Box IP Camera



ICA-HM131	H.264 Full-HD Fixed Dome IP Camera
ICA-HM131R	H.264 Real Time Full-HD Fixed Dome IP Camera
ICA-HM132	H.264 2 Mega-Pixel 20M IR Vari-Focal Dome IP Camera
ICA-HM136	H.264 2 Mega-Pixel 20M IR Vandalproof Dome IP Camera
ICA-HM312	2 Mega-Pixel 25M IR Outdoor Bullet PoE IP Camera
ICA-HM316	2 Mega-Pixel Outdoor IR PoE IP Camera
ICA-HM351	2 Mega-Pixel 35M IR Outdoor Box PoE IP Camera
ICA-HM835	2 Mega-Pixel Vandalproof Fish-Eye IP Camera
POE-152S	IEEE 802.3af Power over Ethernet Splitter
POE-162S	IEEE 802.3af Gigabit High Power over Ethernet Splitter
POE-E101	IEEE 802.3af Power over Ethernet Extender
POE-E201	IEEE 802.3af Power over Ethernet Extender
WNAP-C3220	802.11n Wireless Ceiling Mount PoE Access Point
WNAP-1120PE	802.11n Wireless Access Point with PoE
ICF-1700	Touch Screen Internet Multimedia Phone
VIP-255PT	Multi-Language PoE IP Phone
VIP-256PT	802.3af PoE SIP IP Phone
VIP-360PT	Business PoE IP Phone
VIP-361PE	Professional PoE IP Phone (5-Line)
VIP-560PT	Professional PoE IP Phone
PWR-120-48	120W 48V DC Single Output Industrial DIN Rail Power Supply(-10~60 degrees C)
PWR-240-48	240W 48V DC Single Output Industrial DIN Rail Power Supply(-10~70 degrees C)
PWR-480-48	480W 48V DC Single Output Industrial DIN Rail Power Supply(-25~70 degrees C)

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