

# I(P)GS-5400-2P-PT

## 4 Modular Slots Industrial L2+ IEC61850-3 Managed (PoE) Switch

- IEC 61850-3 & IEEE1613 compliance
- High-density 28 x Gigabit Ethernet L2+ managed (PoE at/af) switch
- Support dual power redundancy AC&DC
- Enhanced G.8032 ring protection < 20ms for single ring. Supports auto mode, enhanced mode, train mode and basic mode; Enhanced G.8032 ring covers multicast packets; MSTP 16MSTI /RSTP; support MRP ring
- Support LACP link aggregation, IGMP v3/router port, MLD snooping, DHCP server & DHCP Option82; DHCP Snooping, Port-based DHCP distribution, Mac-based DHCP server, QoS by VLAN, SSH v2/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, QinQ
- Protocol-based VLAN; IPv4 Subnet-based VLAN
- Support relay contact & environmental monitoring
- Miss-wiring avoidance & Node failure protection (node failure protection)
- User-friendly UI, including auto topology drawing and DDM threshold monitoring with dB values\*\*\*
- MMS built-in
- Support USB dongle for automatic backup configuration



## OVERVIEW

Lantech I(P)GS-5400-2P-PT is a high-performance L2 + managed industrial Ethernet switch which provides L2 wire speed and advanced security function for network aggregation and backbone deployment. It delivers ITU G.8032 enhanced ring recovery less than 20ms in single ring while also supports train ring, enhanced mode, multiple VLAN mode with easy configuration. The comprehensive QoS, QoS by VLAN, advanced security including INGRESS/EGRESS ACL L2/L3, SSH v2/SSL, Mac-based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ are supported and also required in large network. It also supports Cisco Discovery Protocol (CDP) for Ciscoworks to detect the switch info and show on L2 map topology.

The highly flexible modular design consisting of maximum 24x Gigabit T+4xDual SFP, 24x Giga PoE at/af (IPGS-5400-2P-PT)+4xDual SFP, 28xGigabit/100M SFP, 18x100M ST/SC + 4 Gigabit SFP covers the widest deployment of applications.

The built-in MMS server allows SCADA to control & monitor switch for data modeling.

### **Built-in MMS server for IEC61850 data modeling for monitoring and control**

The built-in MMS (Manufacturing Messaging Specification) server can help SCADA to monitor and control switch by data

modeling. It covers system, power, port status, network configuration.

### **Enhanced G.8032 ring, 16 MSTI MSTP; MRP ring**

Lantech I(P)GS-5400-2P-PT features enhanced G.8032 ring which can be self-healed in less than 20ms for single ring topology protection covering Multicast packets. It also supports various ring topologies that covers double ring, multi-chain (under enhanced ring), train ring, basic ring, multiple-VLAN ring and auto-ring by easy setup than others. The innovative auto-Ring configurator (auto mode) can calculate owner and neighbor in one step. It supports MSTP that allows RSTP over VLAN for redundant links with 16 MSTI.

MRP (Media Redundancy Protocol) can be supported for industrial automation networks.

### **Miss-wiring avoidance, Loop protection, Node failure protection**

The I(P)GS-5400-2P-PT also embedded several features for stronger and reliable network protection in an easy and intuitive way. When the pre-set ring configuration failed or looped by miss-wiring, Lantech I(P)GS-5400-2P-PT is able to alert with the LED indicator and disable ring automatically. Node failure protection ensures the switches in a ring to survive after power breakout is back. The status can be shown in NMS when each

switch is back. This feature prevents the broken ring and keep ring alive without any re-configuration needed. Loop protection is also available to prevent the generation of broadcast storm when a dumb switch is inserted in a closed loop connection.

#### **QoS by VLAN for legacy device**

QoS by VLAN can allow switch to tag QoS by VLAN regardless the devices acknowledge QoS or not in which greatly enhance the bandwidth management in a network.

#### **QinQ, QoS and GVRP supported**

It supports the QinQ, QoS and GVRP for large VLAN segmentation.

#### **IGMPv3, GMRP, router port, MLD Snooping, static multicast forwarding and multicast Ring protection**

The unique multicast protection under enhanced G.8032 ring can offer immediate self-recovery instead of waiting for IGMP table timeout. It also supports IGMPv3, GMRP, router port, MLD snooping and static multicast forwarding binding by ports for video surveillance application.

#### **802.1X security by MAC address**

MAC-based port authentication is an alternative approach to 802.1x for authenticating hosts connected to a port. By authenticating based on the host's source MAC address, the host is not required to run a user for the 802.1x protocol. The RADIUS server that performs the authentication will inform the switch if this MAC can be registered in the MAC address table of switch.

#### **Reliable network protection, node failure protection**

The I(P)GS-5400-2P-PT also embedded several features for stronger and reliable network protection in an easy and intuitive way. When the pre-set ring configuration failed or looped by miss-wiring, Lantech I(P)GS-5400-2P-PT is able to alert with the LED indicator and send out an email or traps. Node failure protection ensures the switches in a ring to survive after power breakout is back. The status can be shown in NMS when each switch is back. This feature prevents the broken ring and keep ring alive without any re-configuration needed. Loop protection is also available to prevent the generation of broadcast storm when a dumb switch is inserted in a closed loop connection.

#### **DHCP option 82 & Port based, Mac based DHCP, Option66, DHCP Snooping, IPv6 DHCP server**

DHCP server can assign dedicated IP address by MAC or by port (Port based for single switch), it also can assign IP address by port for multiple switches with single DHCP option82 server. DHCP Snooping is supported. For the ending device which need to download file from TFTP server, DHCP Option66 server can offer IP address of TFTP server to DHCP client. Basic IPv6 DHCP service can be supported.

#### **Auto-provisioning for firmware/configuration update**

The switch supports auto-provisioning for switch to auto-check

the latest software image and configuration through TFTP server.

#### **User-friendly GUI, Auto topology drawing**

The user-friendly UI, innovative auto topology drawing and topology demo makes I(P)GS-5400-2P-PT much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line.

#### **Editable configuration file**

The configuration file of Lantech I(P)GS-5400-2P-PT can be exported and edited with word processor for the other switches configuration with ease. The factory reset button can restore the setting back to factory default. The built-in watchdog design can automatically reboot the switch when CPU is found dead.

#### **Environmental monitoring for switch inside information**

The environmental monitoring can detect switch overall temperature, total PoE load, voltage and current where can send the SNMP traps and email when abnormal.

The PoE modules support advanced PoE management including PoE detection and scheduling. PoE detection can detect if the connected PD is hang up then restart the PD; PoE scheduling is to allow pre-set power feeding schedule upon routine time table. It also supports per-port PoE status including current, voltage, watt and temperature information.

#### **Event log & message; 2 DI + 2 DO**

In case of event, the I(P)GS-5400-2P-PT is able to send an email to pre-defined addresses as well as SNMP Traps out immediately. It provides 2DI and 2DO. When disconnection of the specific port was detected; DO will activate the signal LED to alarm. DI can integrate the sensors for events and DO will trigger the alarm while sending alert information to IP network with email and traps.

#### **Various dual power conversions redundancy, high ESD protection**

Lantech I(P)GS-5400-2P-PT chassis and modules are designed for easy maintenance and installation; It also supports dual power redundancies with isolated 100~240VAC/120~370VDC power conversion and isolated 16.8~137.5VDC power conversion to increase the network reliability. It also supports a terminal block for connecting DC 48V PoE power source (IPGS-5400-2P-PT).

Lantech I(P)GS-5400-2P-PT features high reliability and robustness compliant with IEC-61850-3 & IEEE 1613 withstanding extensive EMI/RFI phenomenon, ±4kV surge, inductive load switching, high ESD (±8kV contact/ ±15kV air), 4kV EFT, high fault current environment usually found in Substation, Steel automation, Mining and Process control etc. IGS-5400-2P-E can run under operational temperatures ranging from -40°C~75°C in the harsh and critical environments.

## FEATURES & BENEFITS

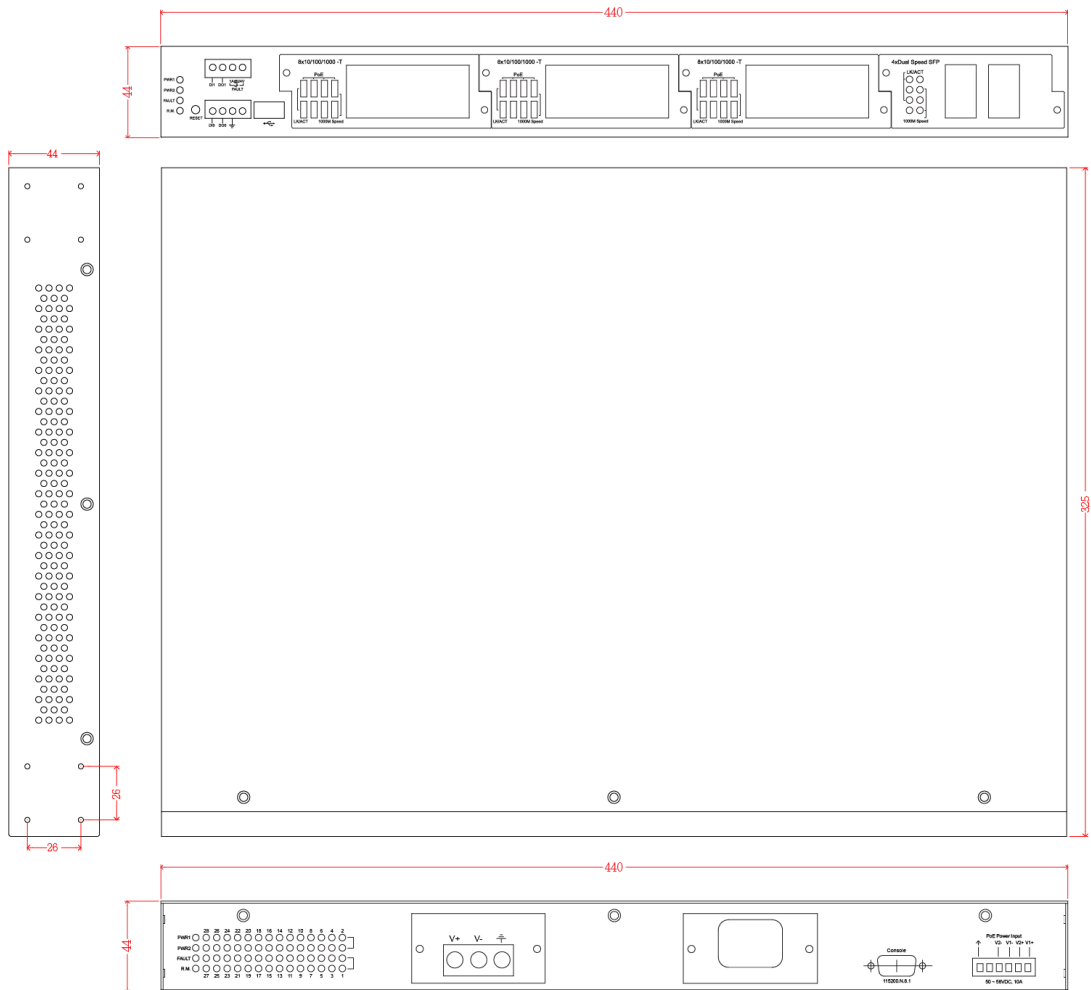
### ■ System Interface/Performance

- IEC-61850 & IEEE1613 Compliance

- maximum 24x Gigabit T+4xSFP, 24x Giga PoE at/af+4xSFP (IPGS-5400-2P), 28xGigabit/100M SFP, 18x100M ST/SC + 4 Gigabit SFP
- 16K MAC Address Table

- Backplane: 56Gbps
  - Dual isolated power conversions for 1600V DC (16.8V~137.5V)
  - Dual isolated power conversions for  $\pm 3000$  V (100V~240VAC/120V~370VDC)
  - Rear terminal block for PoE power source (DC48V) for IPGS-5400-2P-PT
  - Various modules are available incl. Gigabit/100M SFP; Gigabit T; PoE at/af Giga T(up to 30W@); 100MST/SC modules
  - FAN less design
- **MMS server built-in for SCADA monitoring/control**
  - **10KB jumbo frame supported on all ports**
  - **User-friendly UI, Auto topology drawing, topology demo**
  - **IP v6/v4 supported**
  - **Enhanced G.8032 Ring protection in 20ms < 256 switches**
    - Support various ring/chain topologies, including train ring
    - Enhanced G.8032 ring configuration with ease
    - Auto ring configuration(auto mode) for single ring
    - Ring covers multicast on different ports
  - **DDM to support SFP diagnostic function\*\*\***
    - Automatically convert the raw data into dB values for TX power/RX power, making it easier to measure the fiber distance
  - **256 groups MSTP over VLAN**
  - **VLAN**
    - 4K 802.1Q Vlan, Port Based VLAN, GVRP, QinQ
  - **Port Trunk with LACP 14 trunks with automatic link failover**
  - **LACP link aggregation to add bandwidth**
  - **QoS (Quality of Service)**
    - Supports IEEE 802.1p CoS
    - Per port provides 8 priority queues
    - Port-base, Tag-base, and TOS Priority
    - Strict priority and WRR
  - **Security**
    - SSL/SSH v2/ACL L2&L3
    - MAC address table: MAC address entries/Filter/MAC-Port binding
    - IP Security: IP address security management to prevent unauthorized intruders.
- Management access control with priority
  - Login Security: IEEE802.1X/RADIUS
  - HTTPS for secure access to the web interface
- **Miss-wiring avoidance**
    - LED indicator
    - Email or traps notification
  - **Node failure protection**
    - Ensure the switches in a ring to survive after power breakout is back
    - The status can be shown in NMS when each switch is back
  - **SNTP, NTP supported**
  - **IGMPv1,v2,v3 with Query mode for multimedia; GMRP**
  - **IGMP router to select another Query mode and support IGMP static routing for reversed IGMP flow to bind with port for IP surveillance application**
  - **Supports IEEE802.1ab LLDP, Cisco CDP**
  - **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server; Port based DHCP server; DHCP Snooping, DHCP Option 66; basic IPv6 DHCP server**
  - **Mac based DHCP server to assign IP address**
  - **MLD Snooping for IPv6 Multicast stream**
  - **Bandwidth Control**
    - Ingress Packet Filter and Egress Rate Limit
    - Broadcast/Multicast Packet Filter Control
  - **System Event Log, Email alert and SNMP Trap for alarm support**
  - **Diagnostic including Ping / DDM information**
  - **Environmental sensor built-in to detect temperature, voltage, current and total PoE load (IPGS-5400-2P-PT) and send out SNMP traps and emails if there is abnormal events**
  - **TFTP/FTP Firmware upgrade**
  - **Reset / Factory default button to restore factory setting**
  - **Watchdog design to reboot switch if CPU is found dead**
  - **Provides 4kV EFT protection**
  - **Provides  $\pm 8$ kV (Contact) and  $\pm 15$ kV (Air) ESD protection**
  - **Provides  $\pm 4$ kV Surge protection**
  - **2 DI/DO and 1 relay contact alarm**
  - **Support USB dongle for automatic backup / easily write configuration**
  - **Auto Provision to verify switch firmware with the latest or certain version**

**DIMENSIONS (unit=mm)**



**SPECIFICATION**

**Hardware Specification**

IEEE Standards	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Ethernet IEEE 802.3ab 1000Base-T Ethernet IEEE 802.3z Gigabit Fiber IEEE 802.3x Flow Control Capability ANSI/IEEE 802.3 Auto-negotiation IEEE 802.1Q VLAN IEEE 802.1p Class of Service IEEE 802.1X Access Control IEEE 802.1D Spanning Tree IEEE 802.1w Rapid Spanning Tree IEEE 802.1s Multiple Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.1x User Authentication (Radius) IEEE 802.3af/at PoE (IPGS)	Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Ethernet / Gigabit Fiber port
Switch Architecture	Back-plane (Switching Fabric): 56Gbps	CPU	Marvell 800Mhz
		RAM	256M Byte
		Flash	128M Byte
		MAC Address	16K MAC address table
		Jumbo frame	10KB on all ports
		Connectors	Max. 24 10/100/1000T RJ-45 with auto MDI/MDI-X+4 SFP sockets Max 28 100M Mini-GBIC : SFP sockets Max 28 1000M Mini-GBIC : SFP sockets RS-232 console: Female DB-9 USB for automatic backup and easy write up configuration
		LED	Per unit: Power 1 (Green), Power 2 (Green), Alarm (Red), R.M (Green) Link/Activity (Green), Full duplex/collision (Yellow), MINI GBIC (Link/Activity) (Green)

Power Supply	Two power sockets for the switch system VAC/VDC isolated 4000V 100V~240VAC/120~370VDC DC isolated 1600V 16.8~137.5VDC (-DCI model) 1x isolated AC/DC 100~240VAC/120V~370VDC power conversion + 1x isolated DC 16.8~137.5VDC power supply (-HV model) PoE power dual input for 48VDC(IPGS-5400-2P)	ITU G.8032	Support ITU G.8032 v2/2012 for Ring protection in less than 20ms for self-heal recovery (single ring) Support various ring/chain topologies covering multi-cast and data packets Includes train ring & double ring 12 topologies etc Enhanced G.8032 ring configuration with ease Co-exist with RSTP on different ports																		
Power Consumption	17.5 W@DC, 21.5W @VAC	MMS Data Modeling	<ul style="list-style-type: none"> <li>■ System info</li> <li>■ Environmental monitoring</li> <li>■ Power</li> <li>■ Device event report</li> <li>■ Port status</li> <li>■ Port statistic</li> <li>■ Port event report</li> <li>■ Firmware upgrade</li> <li>■ Network configuration</li> </ul>																		
PoE Budget	Max. 720W at rear side with external dual 48VDC input (50-56VDC input is recommended for 802.3at 30W applications)	PoE Management	PoE Detection to check if PD hangs then restart the PD; PoE configuration; PoE monitoring; PoE Scheduling to On/OFF PD upon routine time table																		
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V	Per Port PoE Status	Enable/Disable, voltage, current, watts, temperature																		
DI/DO	2 Digital Input (DI) : Level 0: -30~2V / Level 1: 10~30V Max. input current:8mA 2 Digital Output(DO): Open collector to 40 VDC, 200mA	User-friendly UI	<ul style="list-style-type: none"> <li>■ Auto topology drawing</li> <li>■ Topology demo</li> <li>■ DDM threshold monitoring with dB values***</li> <li>■ Complete CLI for professional setting</li> </ul>																		
Case Dimension	19" Metal case, IP-30; 440mm(W)x325mm(D)x44mm(H)	Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups/Maximum 8 trunk members																		
Weight	2.9 kgs	LLDP	Supports LLDP to allow switch to advise its identification and capability on the LAN																		
Operating Humidity	5%~95% (Non-condensing)	CDP	Cisco Discovery Protocol for topology mapping																		
Operating Temperature	Standard: -20°C ~60°C -E model: -40°C ~75°C	Environmental Monitoring	System status for input voltage, current and ambient temperature to be shown in GUI and sent alerting if any abnormal status(-M model)																		
Storage Temperature	-40°C ~85°C	VLAN	Port Based VLAN IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096) GVRP, QinQ, Protocol-based VLAN; IPv4 Subnet-based VLAN																		
EMI & EMS	FCC Class A, CE EN55032 Class A, CE EN55024, <table border="1" data-bbox="422 985 742 1422"> <thead> <tr> <th></th> <th>IEC 61850-3</th> <th>IEEE 1613</th> </tr> </thead> <tbody> <tr> <td>IEC 61000-4-2 ESD</td> <td>Contact: ± 6 kV; Air: ±8 kV</td> <td>Contact: ± 8 kV; Air: ±15 kV</td> </tr> <tr> <td>IEC 61000-4-3 RS</td> <td>80 to 3000 MHz: 10 V/m</td> <td>80 to 1000 MHz: 20 V/m</td> </tr> <tr> <td>IEC 61000-4-4 EFT</td> <td>220VAC: Power: 4 kV; Signal: 4 kV 48VDC: Power: 4 kV</td> <td></td> </tr> <tr> <td>IEC 61000-4-5 Surge</td> <td>DC power: Line to line: ± 1 kV; Line to earth: ±2 kV AC power: Line to line: ± 2 kV; Line to earth: ±4 kV Signal: Line to line: ±2 kV; Line to earth: ±4 kV</td> <td></td> </tr> <tr> <td>IEC 61000-4-6 CS</td> <td>220VAC: Power: 10V; Signal: 10V 48VDC: Power: 10V</td> <td></td> </tr> </tbody> </table> IEC 61000-4-8 PFMF IEC 61000-4-11 DIPs CE EN61000-6-2 CE EN61000-6-4 CE EN61000-6-5		IEC 61850-3	IEEE 1613	IEC 61000-4-2 ESD	Contact: ± 6 kV; Air: ±8 kV	Contact: ± 8 kV; Air: ±15 kV	IEC 61000-4-3 RS	80 to 3000 MHz: 10 V/m	80 to 1000 MHz: 20 V/m	IEC 61000-4-4 EFT	220VAC: Power: 4 kV; Signal: 4 kV 48VDC: Power: 4 kV		IEC 61000-4-5 Surge	DC power: Line to line: ± 1 kV; Line to earth: ±2 kV AC power: Line to line: ± 2 kV; Line to earth: ±4 kV Signal: Line to line: ±2 kV; Line to earth: ±4 kV		IEC 61000-4-6 CS	220VAC: Power: 10V; Signal: 10V 48VDC: Power: 10V		RSTP/MSTP	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree with 16 MSTI
	IEC 61850-3	IEEE 1613																			
IEC 61000-4-2 ESD	Contact: ± 6 kV; Air: ±8 kV	Contact: ± 8 kV; Air: ±15 kV																			
IEC 61000-4-3 RS	80 to 3000 MHz: 10 V/m	80 to 1000 MHz: 20 V/m																			
IEC 61000-4-4 EFT	220VAC: Power: 4 kV; Signal: 4 kV 48VDC: Power: 4 kV																				
IEC 61000-4-5 Surge	DC power: Line to line: ± 1 kV; Line to earth: ±2 kV AC power: Line to line: ± 2 kV; Line to earth: ±4 kV Signal: Line to line: ±2 kV; Line to earth: ±4 kV																				
IEC 61000-4-6 CS	220VAC: Power: 10V; Signal: 10V 48VDC: Power: 10V																				
MTBF	572,361hrs	Quality of Service	The quality of service determined by port / CoS / ToS / VLAN / 61375-3-4																		
Stability Testing	IEC 60068-2-6: 2007 (Vibration) IEC 60068-2-27: 2008 (Shock)	Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues																		
Safety	EN IEC 62368-1	MLD Snooping	Support IPv6 Multicast stream																		
Railway verification	EN50121-4	Login Security	Supports IEEE802.1X Authentication/RADIUS																		
Power Automation	IEC 61850-3, IEEE 1613, IEC 60255-5	Port Mirror	Support 3 mirroring types: "RX, TX and Both packet"																		
Warranty	5 years	Network Security	Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruders. 802.1X access control for port-based and MAC-based authentication/MAC-Port binding Management access control with priority Ingress/Egress ACL L2/L3 SSL/ SSH v2 for Management HTTPS for secure access to the web interface MAC filter																		
<b>Software Specification</b>		IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 256 multicast groups; IGMP router port ; IGMP query; GMRP, QinQ, QOS by VLAN																		
Management	SNMP v1 v2c, v3/ Web/Telnet/CLI	Static MAC-Port bridge	Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application																		
SNMP MIB	MIB MIBII SNMP MIB Bridge MIB IF MIB RMON MIB Private MIB	Bandwidth Control	Support ingress packet filter and egress packet limit. The egress rate control supports all of packet type. Ingress filter packet type combination rules are Broadcast/Multicast/Flooded Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all types of packet. The packet filter rate can be set an accurate																		

	value through the pull-down menu for the ingress packet filter and the egress packet limit.	DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82/Port-based DHCP; DHCP Option 66; DHCP Snooping, basic IPv6 DHCP server
RTC	Built-in Real Time Clock to keep track of time always	Mac-based DHCP Server	Assign IP address by Mac
Flow Control	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex	DNS	Provide DNS client feature
System Log	Supports System log record and remote system log server(RFC3164)	Diagnostic	Support Ping and DDM information
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V	SNTP	Supports Dual NTP server to synchronize system clock in Internet
Protection	<ul style="list-style-type: none"> <li>■ Miss-wiring avoidance</li> <li>■ Node failure protection</li> <li>■ Loop protection</li> </ul>	Firmware Update	Supports TFTP firmware update, TFTP backup and restore; HTTP firmware upgrade
SNMP Trap	Up to 10 trap stations; trap types including: <ul style="list-style-type: none"> <li>■ Device cold start</li> <li>■ Authorization failure</li> <li>■ Port link up/link down</li> <li>■ DI/DO open/close</li> <li>■ Typology change(ITU ring)</li> <li>■ Power failure</li> <li>■ Environmental abnormal</li> </ul>	Configuration backup & restore	Supports text configuration file for system quick installation N-key** for mass firmware auto-backup, editable restoration and auto-upgrade USB port to upload/download firmware by USB dongle
		Auto Provision	To verify switch firmware with the latest or certain version

\*Future Release  
\*\*Optional  
\*\*\*Optional DDM SFP required

## ORDERING INFORMATION

- **IGS-5400-2P-PT-HV-E.....P/N: 8388-1001TEL**  
4 Modular Slots L2 plus Industrial IEC-61850 Switch Chassis  
Built-in 1x isolated AC/DC 100~240VAC/120V~370VDC power conversion + 1x isolated DC 16.8~137.5VDC power supply; -40°C to 75°C
- **IGS-5400-2P-PT-DCI-E.....P/N: 8388-1183**  
4 Modular Slots L2 plus Industrial Switch IEC 61850-3 Chassis  
Built-in 1x isolated DC 16.8~137.5VDC power supply + 1x optional power socket; -40°C to 75°C
- **IPGS-5400-2P-PT-HV-E.....P/N: 8388-1301**  
4 Modular Slots L2 plus Industrial IEC 61853-3 PoE Switch Chassis  
Built-in 1x isolated AC/DC 100~240VAC/120V~370VDC power conversion + 1x optional power socket + 1x 48VDC PoE power input; -40°C to 75°C
- **IPGS-5400-2P-PT-DCI-E.....P/N: 8388-1384**  
4 Modular Slots L2 plus Industrial Switch Chassis  
Built-in 1x isolated DC 16.8~137.5VDC power supply + 1x optional power socket + 1x 48VDC PoE power input; -40°C to 75°C

### Modules for Slot 1-3 Note: the modules will be factory pre-installed.

- **8xGIGA T Module.....P/N: 8380-1055**  
8x 10/100/1000T Module; -40°C to 75°C
- **8xGIGA T-PoE at/af Module.....P/N: 8380-1145**  
8x 10/100/1000T PoE at/af Module; -40°C to 75°C
- **8x SFP Module.....P/N: 8380-1065**  
8x Dual Speed SFP module for 100M SFP or Gigabit SFP; -40°C to 75°C
- **4x GIGA T + 4x SFP Module.....P/N: 8380-1075**  
4x 10/100/1000T + 4 x 100/1000M Dual Speed SFP Module ; -40°C to 75°C

### Modules for Slot 4 Note: the modules will be factory pre-installed.

- **4x SFP Module.....P/N: 8380-1155**  
4x Dual Speed SFP module for 100M SFP or Gigabit SFP; -40°C to 75°C

## OPTIONAL ACCESSORIES

### Power

#### EOTH000701

Isolation Power 100-240VAC, 120-370VDC 2.0A max, 47-63HZ



#### EOTH000708

Power Input Module 16.8-137.5VDC





EOTH000709

Isolation Power 100-240VAC, 120-370VDC 2.0A max, 47-63HZ

**DIN Rail Power**

- **NDR-480 Series** 480W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C)
- **NDR-240 Series** 240W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C)
- **NDR-120 Series** 120W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C; For 115VAC, please refer to derating curve on NDR-120 Series datasheet)
- **NDR-75 Series** 75W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C; For 115VAC, please refer to derating curve on NDR-120 Series datasheet)

**Mini GBIC (SFP)**

- |                       |  |                      |   |
|-----------------------|--|----------------------|---|
| ■ <b>8330-162-V1</b>  | MINI GBIC 1000SX (LC/MM/0.5KM) Transceiver     | ■ <b>8330-187-V1</b> | 1.25Gbps BiDi SFP 20KM Transceiver (WDM 1550) |
| ■ <b>8330-163-V1</b>  | MINI GBIC 1000SX2 (LC/MM/2KM) Transceiver      | ■ <b>8330-180-V1</b> | 1.25Gbps BiDi SFP 40KM Transceiver (WDM 1310) |
| ■ <b>8330-165-V1</b>  | MINI GBIC 1000LX (LC/SM/10KM) Transceiver      | ■ <b>8330-182-V1</b> | 1.25Gbps BiDi SFP 40KM Transceiver (WDM 1550) |
| ■ <b>8340-0591-V1</b> | MINI GBIC 1000LHX (LC/SM/40KM) Transceiver     | ■ <b>8330-181-V1</b> | 1.25Gbps BiDi SFP 60KM Transceiver (WDM 1310) |
| ■ <b>8330-166-V1</b>  | MINI GBIC 1000XD (LC/SM/50KM) Transceiver      | ■ <b>8330-183-V1</b> | 1.25Gbps BiDi SFP 60KM Transceiver (WDM 1550) |
| ■ <b>8330-169-V1</b>  | MINI GBIC 1000XD (LC/SM/60KM) Transceiver      | ■ <b>8330-184-V1</b> | 1.25Gbps BiDi SFP 80KM Transceiver (WDM 1490) |
| ■ <b>8330-167-V1</b>  | MINI GBIC 1000ZX (LC/SM/80KM) Transceiver      | ■ <b>8330-185-V1</b> | 1.25Gbps BiDi SFP 80KM Transceiver (WDM 1550) |
| ■ <b>8330-170-V1</b>  | MINI GBIC 1000EZ (LC/SM/120KM) Transceiver     | ■ <b>8330-071-V1</b> | 125Mbps BiDi SFP 2KM (WDM 1310) Transceiver   |
| ■ <b>8330-168-V1</b>  | MINI GBIC 10/100/1000T (100m) Transceiver      | ■ <b>8330-072-V1</b> | 125Mbps BiDi SFP 2KM (WDM 1550) Transceiver   |
| ■ <b>8330-060-V1</b>  | MINI GBIC 100Base (LC/MM/2KM) Transceiver      | ■ <b>8330-069-V1</b> | 125Mbps BiDi SFP 20KM (WDM 1310) Transceiver  |
| ■ <b>8330-065-V1</b>  | MINI GBIC 100Base (LC/MM/5KM) Transceiver      | ■ <b>8330-068-V1</b> | 125Mbps BiDi SFP 20KM (WDM 1550) Transceiver  |
| ■ <b>8330-061-V1</b>  | MINI GBIC 100Base (LC/SM/30KM) Transceiver     | ■ <b>8330-080-V1</b> | 125Mbps BiDi SFP 40KM (WDM 1310) Transceiver  |
| ■ <b>8330-197-V1</b>  | 1.25Gbps BiDi SFP 0.5KM Transceiver (WDM 1310) | ■ <b>8330-082-V1</b> | 125Mbps BiDi SFP 40KM (WDM 1550) Transceiver  |
| ■ <b>8330-198-V1</b>  | 1.25Gbps BiDi SFP 0.5KM Transceiver (WDM 1550) | ■ <b>8330-081-V1</b> | 125Mbps BiDi SFP 60KM (WDM 1310) Transceiver  |
| ■ <b>8330-195-V1</b>  | 1.25Gbps BiDi SFP 2KM Transceiver (WDM 1310)   | ■ <b>8330-083-V1</b> | 125Mbps BiDi SFP 60KM (WDM 1550) Transceiver  |
| ■ <b>8330-196-V1</b>  | 1.25Gbps BiDi SFP 2KM Transceiver (WDM 1550)   | ■ <b>8330-084-V1</b> | 125Mbps BiDi SFP 80KM (WDM 1310) Transceiver  |
| ■ <b>8330-188-V1</b>  | 1.25Gbps BiDi SFP 10KM Transceiver (WDM 1310)  | ■ <b>8330-085-V1</b> | 125Mbps BiDi SFP 80KM (WDM 1550) Transceiver  |
| ■ <b>8330-189-V1</b>  | 1.25Gbps BiDi SFP 10KM Transceiver (WDM 1550)  | ■ <b>8330-191-V1</b> | Dual Speed SFP 100M/1000M-LX 10KM Transceiver |
| ■ <b>8330-186-V1</b>  | 1.25Gbps BiDi SFP 20KM Transceiver (WDM 1310)  |                      |   |

All SFP# ended with D are with DDM function

**Lantech Communications Global Inc.**

www.lantech.com.tw  
info@lantech.com.tw

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