I(P)GS-5400-2P

4 Modular Slots L2+ Industrial Managed (PoE at) Ethernet Switch

- *High-density 28 x Gigabit Ethernet L2+ managed (PoE at/af) Ethernet switch*
- *Enhanced G.8032 ring protection < 20ms for single ring. Supports auto mode, enhanced mode, train mode, multi-VLAN 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; Port based DHCP distribution, Mac based DHCP server, DHCP Snooping, QoS by VLAN, SSH v2/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, TACACS+**, QinQ*
- *Protocol based VLAN; IPv4 Subnet based VLAN*
- *Miss-wiring avoidance & node failure protection*
- *User friendly UI, including auto topology drawing and DDM threshold monitoring with dB values***; Complete CLI*
- *Support relay contact & environmental monitoring*
- *USB slot for edited restoration and auto backup*

OVERVIEW

Lantech IPGS-5400-2P 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, TACACS+**, 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) + 4xDual SFP, 28xGigabit/100M SFP, 18x100M ST/SC + 4 Gigabit SFP covers the widest deployment of applications.

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

Lantech I(P)GS-5400-2P 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 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 each spanning tree for each VLAN for redundant links with 16 MSTI.
MRP (Media Redundancy Protocol) can be supported for industrial automation networks.

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, 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 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 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 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. Optional 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 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 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, 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 + 2DO
In case of event, the I(P)GS-5400-2P 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 power input, high ESD protection
Lantech I(P)GS-5400-2P chassis and modules are designed for easy maintenance and installation; It also supports dual power supplies (DC12~48V/ isolated 36~75VDC) and (isolated 100~240VAC/120~370VDC) to increase the network reliability. It also supports terminal block for connecting DC 48V PoE power source (IPGS-5400-2P).

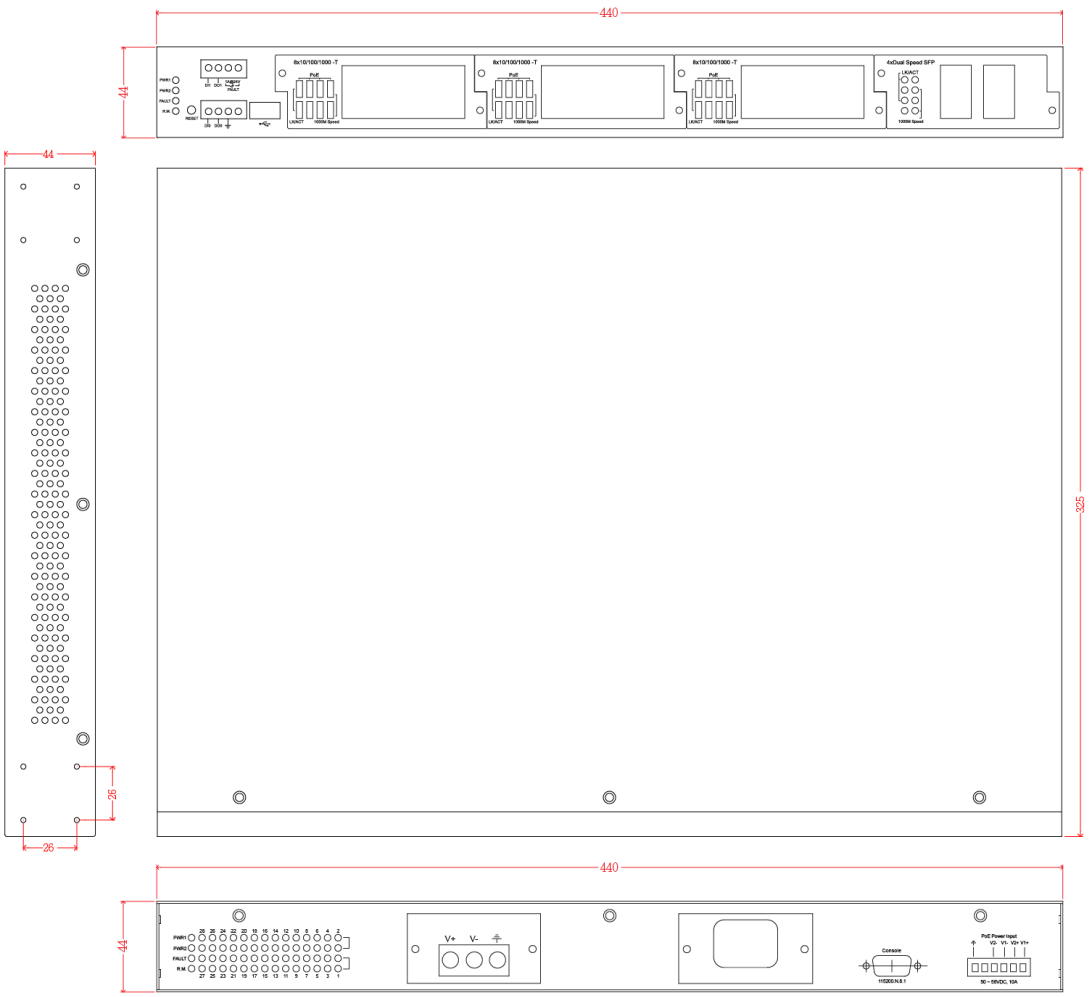
Lantech I(P)GS-5400-2P features high reliability and robustness withstanding extensive EMI/RFI phenomenon, inductive load switching, high ESD (±8000V ESD/ ±3000V EFT), high fault current environment usually found in Steel automation, Mining and Process control etc. IGS-5400-2P-E can run under operational temperature ranging from -40°C~75°C for the harsh and critical environment.

FEATURES & BENEFITS

- **System Interface/Performance**
  - *maximum 24x Gigabit T+4 Dual SFP,24x Giga PoE at/af +4Dual SFP(IPGS-5400-2P), 28xGigabit/100M SFP, 18x100M ST/SC + 4 Gigabit SFP*
  - *16K MAC Address Table*
  - *Backplane : 56Gbps*
  - *Dual Power Supplies for isolated 1600V DC(36V~75V)*
  - *Dual Power Conversions for isolated ±3000 V (100-240VAC/120V~370VDC)*
  - *Dual power supply terinal block for non-isolated power DC(12V~56V)*
  - *Terminal block for PoE power source(DC48V)for IPGS-5400-2P*
  - *Various modules available incl. Gigabit/100M SFP ; Gigabit T ;PoE at/af Giga T(up to 30W@) ; 100MST/SC modules*
  - *FAN less design*
- **10KB Jumbo frame**
- **User friendly UI, Auto topology drawing, topology demo, Complete CLI supported**
- **IPv6/v4 supported**
- **IEEE 802.1d STP, IEEE 802.1w RSTP,802.1s MSTP**
  VLAN redundancy with 16 MSTI
- **Enhanced G.8032 Ring protection in 20ms < 256 switches**
  - *Support various ring/chain topologies, including train ring, enhanced ring, basic ring, auto ring & multiple VLAN 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**
- **4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ, QoS**
- **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/INGRESS/EGRESS ACL L2/L3*
  - *MAC address table: MAC address entries/Filter/MAC-Port binding*
  - *IP Security: IP address security management to prevent unauthorized intruder.*
  - *Management access control with priority*
  - *Login Security: IEEE802.1X/RADIUS*
  - *HTTPS for secure access to the web interface*
  - *TACACS+***
- **Miss-wiring avoidance**
  - *LED indicator*
- **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**
- **Multicast static route for non- IGMP camera to prevent flooding; IGMP router port to assign query in ring for reversed multicast video flow**
- **IGMP v1,v2,v3 and Proxy for Multimedia Application; GMRP**
- **IGMP router port to select another Query mode and for reversed multicast video flow**
- **IGMP static route 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**
- **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**
- **Environmental sensor to detect temperature, voltage, current, watts and total PoE load that will send out SNMP traps and emails if there are abnormal events**
- **Configuration backup and restoration**
  - *Supports editable configuration file for system quick installation*
- **TFTP/HTTP firmware upgrade**
- **Diagnostic including Ping / DDM information**
- **MLD Snooping for IPv6 Multicast stream**
- **Reset / Factory default button to restore factory setting**
- **Watch dog design to reboot switch if CPU is found dead**
- **Provides EFT protection ±3000 VDC for power line**
- **Supports ±8000 VDC Ethernet ESD protection**
- **Galvanic isolation on -HV and -DCI models**
- **2 DI/DO and 1 relay contact alarm**
- **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 802.3at/af PoE (IPGS-5400-2P)
Switch Architecture	Back-plane (Switching Fabric): 56Gbps
Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Ethernet / Gigabit Fiber port
MAC Address	16K MAC address table
Jumbo frame	10KB
Connectors	Max. 28 10/100/1000T RJ-45 with auto MDI/MDI-X function 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 edited restoration configuration
LED	Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red), R.M (Green) Link/Activity (Green), Full duplex/collision (Yellow)), MINI GBIC (Link/Activity) (Green)
Power Supply	2 X VAC/VDC isolated 3000V 100~240VAC/120~370VDC 2x VDC isolated 1600V 36~75VDC Dual input for 12V~56VDC PoE power dual input for 45~56VDC (50-56VDC input is recommended for 802.3at 30W applications) (IPGS-5400-2P)

Power Consumption	Full load: 33W/ Unload: 13W
PoE Budget (IPGS-5400-2P)	Max. 720W at rear side with external dual 45~56VDC input (50-56VDC input is recommended for 802.3at 30W applications) Higher PoE budget can be applied upon request. **
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
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
Case Dimension	19" Metal case,IP-30; 440mm(W)x325mm(D)x44mm(H)
Weight	2.9 kgs
Operating Humidity	5%~95% (Non-condensing)
Operating Temperature	Standard: -20°C ~60°C -E model: -40°C ~75°C
Storage Temperature	-40°C ~85°C
EMI	FCC Class A, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN-61000-4-4 (EFT), CE EN61000-4-5 (Surge), CE EN61000-4-6 (CS), CE EN61000-4-8, CE EN61000-4-11, CE EN55032 Class A, CE EN55024
Railway verification	EN50121-4
Safety	EN IEC 62368-1
Stability Testing	IEC 60068-2-6: 2007 (Vibration) IEC 60068-2-27: 2008 (Shock)
MTBF	572,361hrs
Warranty	5 years

Software Specification

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI Management
SNMP MIB	MIB MIBII SNMP MIB Bridge MIB IF MIB RMON MIB Private MIB
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
Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups
LLDP	Support LLDP to allow switch to advise its identification and capability on the LAN
CDP	Cisco Discovery protocol for topology mapping
ITU G.8032	Support ITU G.8032 v2/2012 for Ring protection in less than 20ms for self-heal recovery (single ring enhanced mode) Support various ring/chain topologies Includes train ring, auto ring, basic single ring, enhanced ring, multiple-VLAN ring Enhanced G.8032 ring configuration with ease Cover multicast & data packets protection
User friendly UI	■ Auto topology drawing ■ Topology demo ■ DDM threshold monitoring with dB values*** ■ Complete CLI supported
PoE Management	■ PoE Detection to check if PD is hang up then restart the PD ■ PoE Scheduling to On/OFF PD upon routine time table ■ Per-port PoE status including current, voltage, watt and temperature
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree 16 MSTI
Quality of Service	The quality of service determined by port / CoS / ToS / VLAN
Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues
Port Mirror	Support 3 mirroring types: "RX, TX and Both packet"
IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 1024 multicast groups; IGMP router port ; IGMP query; GMRP
Static MAC-Port Bridge	Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application
Bandwidth Control	Support ingress packet filter and egress packet limit. The egress rate control supports all of packet type, the limit rates are 0~100Mbps. 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 from 0 to 100Mbps 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.
Network Security	Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder. 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 TACACS+** for Authentication
MLD Snooping	Support IPv6 Multicast stream
Flow Control	Support Flow Control for Full-duplex and Back Pressure for Half-duplex
Protection	■ Miss-wiring avoidance ■ Node failure protection ■ Loop protection
System Log	Support System log record and remote system log server
SNMP Trap	Up to 10 trap stations; trap types including: ● Device cold start ● Authorization failure ● Port link up/link down ● DI/DO open/close ● Typology change(ITU ring) ● Power failure ● Environmental abnormal
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82 (Client & Server)/Port based DHCP; DHCP Snooping, DHCP Option 66; basic IPv6 DHCP server
Mac based DHCP Server	Assign IP address by Mac
DNS	Provide DNS client feature

SNTP	Support SNTP to synchronize system clock in Internet
Diagnostic	Support Ping and DDM information
Environmental Monitoring	Internal sensor to detect temperature, voltage and current and send SNMP traps and emails if any abnormal events
Factory reset button & watch dog design	Factory reset button to restore back to factory default settings. Watch dog design can reboot switch automatically under certain circumstances

Firmware Update	Supports TFTP firmware update, TFTP backup and restore; HTTP firmware upgrade
USB Configuration backup and restore	Supports text editable configuration file for system quick installation to backup and restore USB dongle for automatic back up and editable restore
Auto Provision	To verify switch firmware with the latest or certain version

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

ORDERING INFORMATION

For optional power supply, add +DC, +DCI, +AC, or +HV to the part number.

- **IGS-5400-2P-HV …….....P/N: 8380-100**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x isolated AC/DC 100~240VAC/120~370VDC power conversion + 1x optional power socket; -20°C to 60°C
- **IGS-5400-2P-DCI ……..…….....P/N: 8380-101**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in x1 isolated DC 36~75VDC power supply + 1x optional power socket; -20°C to 60°C
- **IPGS-5400-2P-HV ……..……....P/N: 8380-130**
  4 Modular Slots L2 plus Industrial PoE Ethernet Switch Chassis
  Built-in 1x isolated AC/DC 100~240VAC/120~370VDC power conversion + 1x optional power socket + 1x 48VDC PoE power input; -20°C to 60°C
- **IPGS-5400-2P-DCI ……..……..…….....P/N: 8380-131**
  4 Modular Slots L2 plus Industrial PoE Ethernet Switch Chassis
  Built-in 1x isolated DC 36~75VDC power supply + 1x optional power socket + 1x 48VDC PoE power input; -20°C to 60°C
- **IGS-5400-2P-AC ……..……....P/N: 8380-116**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x isolated AC100~240VAC IEC320 power conversion + 1x optional power socket; -20°C to 60°C
- **IPGS-5400-2P-AC ……..……....P/N: 8380-136**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x isolated AC100~240VAC IEC320 power conversion + 1x optional power socket + 1x 48VDC PoE power input; -20° C to 60°C
- **IGS-5400-2P-DC ……..……....P/N: 8380-118**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x DC 12~56VDC power supply + 1x optional power socket; -20°C to 60°C
- **IPGS-5400-2P-DC ……..…….....P/N: 8380-138**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x DC 12~56VDC power supply + 1x optional power socket + 1x 48VDC PoE power input; -20°C to 60°C
- **IGS-5400-2P-HV-E……..…….....P/N: 8380-1001**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x isolated AC/DC 100~240VAC/120~370VDC power conversion + 1x optional power socket; -40°C to 75°C
- **IGS-5400-2P-DCI-E ……..……....P/N: 8380-1011**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in x1 isolated DC 36~75VDC power supply + 1x optional power socket; -40°C to 75°C
- **IPGS-5400-2P-HV-E ……..……....P/N: 8380-1301**
  4 Modular Slots L2 plus Industrial PoE Ethernet Switch Chassis
  Built-in 1x isolated AC/DC 100~240VAC/120~370VDC power conversion + 1x optional power socket + 1x 48VDC PoE power input; -40°C to 75°C
- **IPGS-5400-2P-DCI-E ……..……..…….....P/N: 8380-1311**
  4 Modular Slots L2 plus Industrial PoE Ethernet Switch Chassis
  Built-in 1x isolated DC 36~75VDC power supply + 1x optional power socket + 1x 48VDC PoE power input; -40°C to 75°C
- **IGS-5400-2P-AC-E ……..……....P/N: 8380-1161**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x isolated AC100~240VAC IEC320 power conversion + 1x optional power socket; -40°C to 75°C
- **IPGS-5400-2P-AC-E ……..……....P/N: 8380-1361**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis

Built-in 1x isolated AC100~240VAC IEC320 power conversion + 1x optional power socket + 1x 48VDC PoE power input; -40°C to 75°C

- **IGS-5400-2P-DC-E ……..……..P/N: 8380-1181**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x DC 12~56VDC power supply + 1x optional power socket; -40°C to 75°C
- **IPGS-5400-2P-DC-E ……...……..P/N: 8380-1381**
  4 Modular Slots L2 plus Industrial Ethernet Switch Chassis
  Built-in 1x DC 12~56VDC 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: 8380-105**
  8x 10/100/1000T Module; -40°C to 75°C
- **8xGIGA T-PoE at/af Module……..…….P/N: 8380-114**
  8x 10/100/1000T PoE at/af Module; -40°C to 75°C
- **8x SFP Module……..……..…….P/N: 8380-106**
  8x Dual Speed SFP module for 100M SFP or Gigabit SFP; -40°C to 75°C
- **4x GIGA T + 4x SFP Module……..…….P/N: 8380-107**
  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: 8380-115**
  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

EOTH000702

Isolation Power 36-75VDC, 2.5A

EOTH000703

Isolation Power 100-240VAC IEC320 socket, 2.0A max, 47-63HZ

EOTH000704

Power Input Module 12-56VDC, 2.5A

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)

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

All SFP# ended with D are with DDM function

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