I(P)GS-5400-2P

4 Modular Slots L2+ Industrial Managed (PoE at) Switch w/PTP V2

- *High-density 28 x Gigabit Ethernet L2+ managed (PoE at/af) switch*
- *Enhanced G.8032 ring protection < 20ms with easy configuration; Dynamic coupling ring; Aggregation ring**
- *Supports PTPv2 (under 1μs) IEEE 1588 and built-in RTC(Real Time Clock)*
- *Support LACP link aggregation, IGMP v3/router port, DHCP server & DHCP Option82 for Port&VLAN based DHCP distribution, Mac based DHCP server, QoS by VLAN, SSH/SSL, TACAS+*, HTTPS, ACL, IPv6, SMS*
- *Miss-wiring avoidance & Repowered auto ring restore*
- *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 I(P)GS-5400-2P is a high performance L2 + managed industrial 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 including dynamic coupling ring, enhanced mode for easy configuration and aggregation ring*, comprehensive QoS, QoS by VLAN, advanced security including ACL L2/L3, SSH/SSL, Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ* (double tag VLAN) which are important features required in train and large network. It also supports Cisco Discovery Protocol (CDP) and LLDP 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 with PTP v2 function covers the widest deployment of applications.

Lantech I(P)GS-5400-2P features enhanced G.8032 ring which can be self-healed in less than 20ms for ring/chain topologies which covers dynamic coupling ring & aggregation ring* protection. The innovative auto-Ring configurator (auto mode) can calculate owner and neighbor in one step. The enhanced mode and dynamic coupling mode ring configuration have never been easier. It supports MSTP that allows RSTP over Vlan for redundant links. The ITU G.8032 Ring and RSTP can be co-existed in the same switch with different ports for the most flexible 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, traps or a SMS text. Repowered auto ring restore function(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 and relay agent function (port&vlan based DHCP distribution) can offer the same IP address on port base or vlan base where there is need to replace the new device connecting to Lantech switches to avoid any network disruption. The built-in DHCP Option 82 server offers the convenience of police setting on the switch. Mac based DHCP server function assigns an IP address according to its MAC address to include dumb switches in DHCP network.

The user friendly UI, innovative auto topology drawing and topology demo makes I(P)GS-5400-2P much easier to get hands-on. The I(P)GS-5400-2P supports DMI interface that can correspond with DDM SFPs (Digital diagnostic monitor) to display the five parameters in Lantech's UI, including optical output power, input power, temperature, laser bias current and transceiver supply voltage***. The TX power/RX power raw data is automatically converted to dB values for installer, making it easier to calculate the fiber distance. Complete CLI support allows professional setting.

Lantech I(P)GS-5400-2P configuration file can also be exported in text file so that it can be edited and configured back to switch

with ease for mass deployment. The factory reset button can restore the setting back to factory default and built-in watchdog design can automatically reboot the switch when cpu is found dead. The USB slot allows user to backup/ restore configuration.

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.

Lantech I(P)GS-5400-2P model features hardware-based PTP IEEE1588 v2 function which can allow each modules Gigabit, PoE or 100FX to synchronize the network with precise accuracy (under 1μs). It has RTC (Real Time Clock) inside that can keep track of current time.

The environmental monitoring can detect switch temperature, voltage and current where can send the SNMP traps, email and SMS alert 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.

The I(P)GS-5400-2P DIDO function can support additional open/close physical contact for designate applications besides Port / Power events, for example, DIDO function can trigger alarm if the switch was moved or stolen. In case of events, the I(P)GS-5400-2P will immediately send an email to pre-defined addresses as well as SNMP Traps out. It provides 2DO while disconnections of the specific port was detected and relay contact will activate the alarm. 2 DI can integrate the sensors into the auto alarm system and transfer the alarm information to IP network with email, SMS and SNMP.

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 85~265VAC/100~370VDC) 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/ ±4000V EFT), high fault current environment usually found in Steel automation, Mining and Process control etc. IGS-5400-2P can run under operational temperature ranging from -20°C~60°C for the harsh and critical environment.

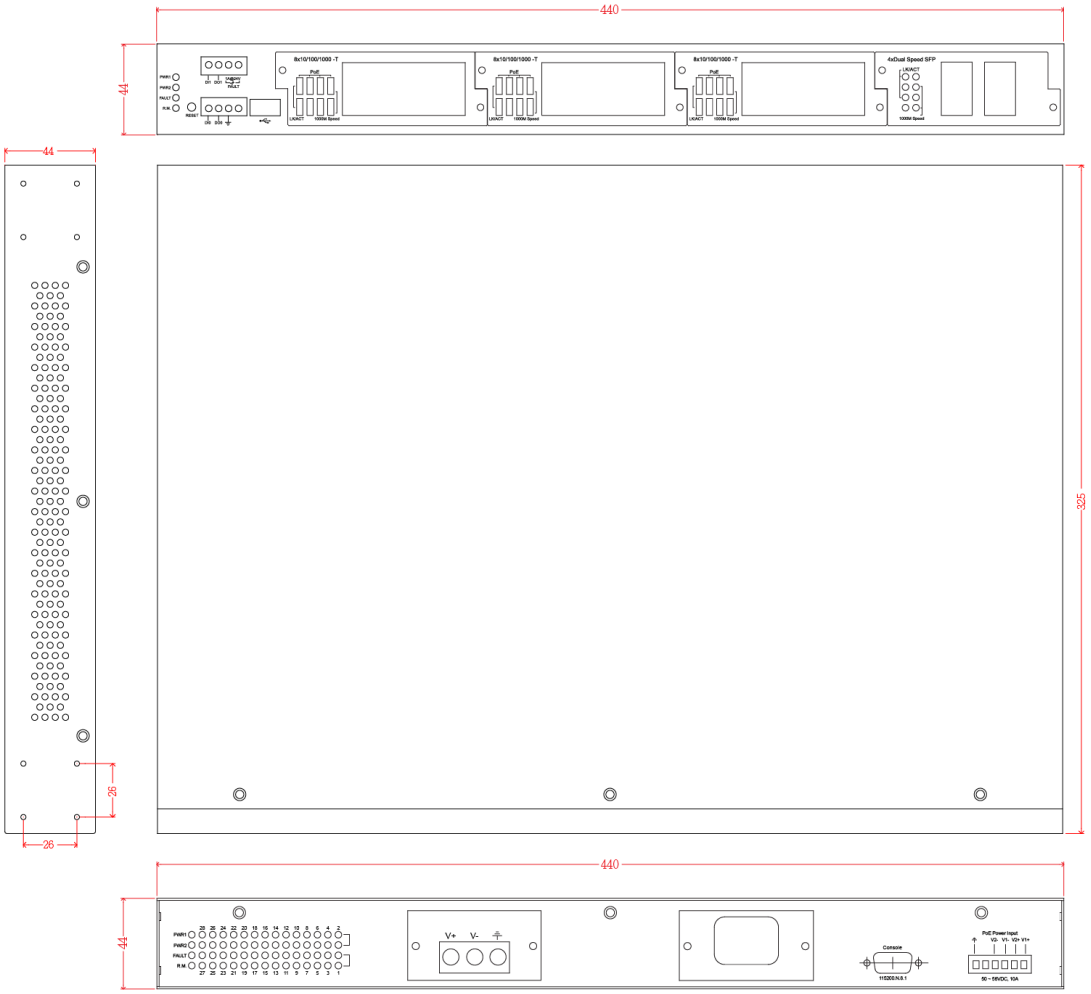
FEATURES & BENEFITS

- **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 Supplies for isolated ±4000 V (85V~265VAC/100V~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 PTP modules*
  - *FAN less design*
- **9KB Jumbo frame supported on all ports**
- **User friendly UI, Auto topology drawing, topology demo, Complete CLI supported**
- **IP v6/v4 supported**
- **Enhanced G.8032 Ring protection in 20ms < 256 switches**
  - *Support various ring/chain topologies, including dynamic coupling ring& aggregation ring**
  - *Enhanced G.8032 ring configuration with ease*
  - *Auto ring configuration(auto mode) for single ring*
  - *Co-exist with RSTP on different ports*
- **Aggregation ring for ring redundancy and bandwidth combination***
- **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/ACL L2&L3*
  - *Port Security: 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*
- **Miss-wiring avoidance**
  - *LED indicator*
  - *Email, traps, or SMS notification*
- **Repowered auto ring restore (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

- **PTP IEEE 1588 v2 <1us, SNTP,NTP supported**
- **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 (MVR) to bind with port for IP surveillance application**
- **IEEE 1588 PTP v2(under 1μs) for every modules; SNTP, NTP supported**
- **Supports IEEE802.1ab LLDP, Cisco CDP**
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server for Port&Vlan based DHCP distribution**
- **Mac based DHCP server to assign IP address that includes dumb switches in DHCP network**
- **Bandwidth Control**
  - *Ingress Packet Filter and Egress Rate Limit*
  - *Broadcast/Multicast Packet Filter Control*
- **System Event Log, Email alert, SMS(mobile text) and SNMP Trap for alarm support**
- **Environmental sensor to detect temperature, voltage, current and watts that will send out SNMP traps , SMS and emails if there is abnormal events**
- **TFTP/HTTP firmware upgrade; LantechTM InstaConfig** for multiple upgrade; USB for edited restoration and auto backup**
- **Reset / Factory default button to restore factory setting**
- **Watch dog design to reboot switch if CPU is found dead**
- **Provides EFT protection ±4000 VDC for power line**
- **Supports ±8000 VDC Ethernet ESD protection**
- **2 DI/DO and 1 relay contact alarm**

DIMENSIONS (unit=mm)



SPECIFICATION

Hardware Specification

IEEE Standards	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Ethernet IEEE 802.3ab 1000Base-TX Ethernet IEEE 802.3z 1000Base-X Ethernet 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 1588 Precision Time Protocol v2 IEEE 802.3at/af PoE (IPGS-5400-2P)
Switch Architecture	Back-plane (Switching Fabric): 56Gbps Packet throughput ability (Full-Duplex): 71.43Mpps @64bytes
Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Ethernet port
CPU	Marvell 800Mhz
RAM	256M Byte
Flash	128M Byte
MAC Address	16K MAC address table
Jumbo frame	9KB on all ports
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
Protocol	CSMA/CD
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	2 X VAC/VDC isolated 4000V 85V~265VAC/100~370VDC 2x VDC isolated 1600V 36~75VDC Dual input for 12V~56VDC PoE power dual input for 45~56VDC (55V input is recommended for 802.3at 30W applications)(IPGS-5400-2P)
Power Consumption	Full load: 30W/ Unload: 13W
PoE Budget(IPGS-5400-2P)	Max. 720W at rear side with dual 45~56VDC input (55V input is recommended for 802.3at 30W applications)
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)
Operating Humidity	5%~95% (Non-condensing)
Operating Temperature	-20˚C ~60˚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 EN61000-4-12, CE EN61000-6-2, CE EN61000-6-4
MTBF	245,432hrs
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)
Warranty	5 years

Software Specification

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI Management
SNMP MIB	RFC 1215 Traps MIB, RFC 1213 MIBII RFC 1158 MIBII RFC 1157 SNMP MIB, RFC 1493 Bridge MIB, RFC 1573 IF MIB RFC 2674 VLAN MIB, Partial RFC 1643 EtherLike, Partial RFC 1757 RMON, RFC 2674 Q-Bridge MIB; Bridge MIB, RFC 2790 Host Resource MIB LLDP MIB* RSTP MIB* Private MIB
VLAN	Port based VLAN, up to 28 groups IEEE802.1Q Tag VLAN Static VLAN groups up to 256, Dynamic VLAN group up to 2048, VLAN ID from 1 to 4096 GVRP up to 256 groups* GMRP*. Multicast VLAN registration*, QinQ*
Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups/Maximum 24 trunk members Aggregation ring for ring redundancy and bandwidth combination*
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 (basic mode) Support various ring/chain topologies Includes dynamic coupling ring & aggregation ring* Enhanced G.8032 ring configuration with ease Co-exist with RSTP on different ports
User friendly UI	■ Auto topology drawing ■ Topology demo ■ Auto configuration for G.8032* ■ 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	Support IEEE802.1d Spanning Tree,IEEE802.1w Rapid Spanning Tree, IEEE 802.1s MSTP
Quality of Service	The quality of service determined by port, Tag and IPv4 Type of service, IPv4 Differentiated Services Code Points - DSCP
Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues
QoS by VLAN	Tagged QoS by VLAN for all devices in the network
IP Security	Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.
Port Mirror	Support 3 mirroring types: "RX, TX and Both packet"
IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route and IGMP router port 256 multicast groups and IGMP query
MVR	Static multicast forwarding forward reversed IGMP flow (MVR) 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 256 Policy based Access Control List SSL/ SSH for Management HTTPS for secure access to the web interface TACACS+ for Management Authentication*

Flow Control	Support Flow Control for Full-duplex and Back Pressure for Half-duplex
Protection	■ Miss-wiring avoidance ■ Repowered auto ring restore(node failure protection) ■ Loop protection
System Log	Support System log record and remote system log server
SMTP/Text SMS	Supports SMTP Server and 8 e-mail accounts for receiving event alert; can send SMS text alert via mobile
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) ● PoE ping failure ● Power failure ● Environmental abnormal
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based&VLAN based DHCP distribution (DHCP relay agent)
Mac based DHCP Server	Assign IP address by Mac that can include dumb switch in DHCP network
DNS	Provide DNS client feature and support Primary and Secondary DNS server.
PTP v2	Support hardware-based IEEE1588 PTPv2 in 1μs, End to End (2-step) and Peer to Peer (2-step) modes in Transparent Clock
SNTP	Support SNTP to synchronize system clock in Internet
RTC	Built-in real time clock to keep track of time always
Environmental Monitoring	Internal sensor to detect temperature, voltage and current and send SNMP traps, SMS 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	Support TFTP /FTP firmware upgrade and restore/ InstaConfig 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

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

ORDERING INFOMATION

- **IGS-5400-2P-HV …….....P/N: 8380-100**
  4 Modular Slots L2 plus Industrial Switch Chassis
  Built-in 1x isolated AC/DC 85~265VAC/100V~370VDC power supply + 1x additional power socket; -20°C to 60°C
- **IGS-5400-2P-LDC ……..……..P/N: 8380-101**
  4 Modular Slots L2 plus Industrial Switch Chassis
  Built-in x1 isolated DC 36~75VDC power supply + 1x additional power socket; -20°C to 60°C
- **IPGS-5400-2P-HV ……..……..P/N: 8380-130**
  4 Modular Slots L2 plus Industrial PoE Switch Chassis
  Built-in 1x isolated AC/DC 85~265VAC/100V~370VDC power supply + 1x additional power socket + 1x 48VDC PoE power input; -20°C to 60°C
- **IPGS-5400-2P-LDC ……..……..……..P/N: 8380-131**
  4 Modular Slots L2 plus Industrial PoE Switch Chassis

Built-in 1x isolated DC 36~85VDC power supply + 1x additional 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 Switch Chassis
  Built-in 1x isolated AC85~265VAC IEC320 power supply + 1x additional power socket; -20°C to 60°C
- **IPGS-5400-2P-AC ……..P/N: 8380-136**
  4 Modular Slots L2 plus Industrial Switch Chassis
  Built-in 1x isolated AC85~265VAC IEC320 power supply + 1x additional 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 Switch Chassis
  Built-in 1x DC 12~56VDC power supply + 1x additional power socket; -20°C to 60°C
- **IPGS-5400-2P-DC ……..P/N: 8380-138**
  4 Modular Slots L2 plus Industrial Switch Chassis
  Built-in 1x DC 12~56VDC power supply + 1x additional power socket + 1x 48VDC PoE power input; -20°C to 60°C
- **6x100M-SC-MM-PTP Module……..P/N: 8380-102**
  6x 100M-SC-MM 2KM PTPv2 1μs Module ; -40°C to 75°C
- **6x100M-SC-SM-PTP Module……P/N: 8380-103**
  6x 100M-SC-SM 30KM PTPv2 1μs Module ; -40°C to 75°C
- **6x100M-ST-MM-PTP Module……..P/N: 8380-109**
  6x 100M-ST-MM 2KM PTPv2 1μs Module ; -40°C to 75°C
- **6x100M-ST-SM-PTP Module……P/N: 8380-110**
  6x 100M-ST-SM 30KM PTPv2 1μs Module ; -40°C to 75°C
- **8xGIGA T-PTP Module……..P/N: 8380-105**
  8x 10/100/1000T Module; Support PTP v2 under 1μs; -40°C to 75°C
- **8xGIGA T-PoE-PTP at/af Module……..P/N: 8380-114**
  8x 10/100/1000T PoE at/af Module; Support PTP v2 under 1μs; -40°C to 75°C
- **8x SFP-PTP Module……..P/N: 8380-106**
  8x Dual Speed SFP module for 100M SFP or Gigabit SFP; Support PTP v2 under 1μs ; -40°C to 75°C
- **4x SFP-PTP Module……..P/N: 8380-115**
  4x Dual Speed SFP module for 100M SFP or Gigabit SFP; Support PTP v2 under 1μs ; -40°C to 75°C
- **4x GIGA T + 4x SFP-PTP Module……..P/N: 8380-107**
  4x 10/100/1000T + 4 x 100/1000M Dual Speed SFP Module ; Support PTP v2 under 1μs -40°C to 75°C

OPTIONAL ACCESSORIES

Power

EOTH000701

Isolation Power 85-265VAC, 100-370VDC 1.5A , 47-63HZ

EOTH000702

Isolation Power 36-75VDC, 2.5A

EOTH000703

Power 85-265VAC IEC320 socket, 1.5A , 47-63HZ

EOTH000704

Power Input Module 12-56VDC, 2.5A

Mini GBIC (SFP)

- **8330-162** MINI GBIC 1000SX (LC/0.5km) Transceiver
- **8330-163** MINI GBIC 1000SX2 (LC/2km) Transceiver
- **8330-165** MINI GBIC 1000LX (LC/10km) Transceiver
- **8340-0591** MINI GBIC 1000LHX (LC/40km) Transceiver
- **8330-166** MINI GBIC 1000XD (LC/50km) Transceiver
- **8330-169** MINI GBIC 1000XD (LC/60km) Transceiver
- **8330-167** MINI GBIC 1000ZX (LC/80km) Transceiver
- **8330-170** MINI GBIC 1000EZX (120km) Transceiver
- **8330-168** MINI GBIC 10/100/1000T (100m) Transceiver
- **8330-060** 100Base FX 2KM, Multi-mode, LC Transceiver
- **8330-065** 100Base FX 5KM, Multi-mode, LC Transceiver
- **8330-061** 100Base LX 30KM, Single-mode, LC Transceiver
- **8330-188** LTSFP-1000BX-10KM Transceiver (WDM 1310)
- **8330-189** LTSFP-1000BX-10KM Transceiver (WDM 1550)
- **8330-186** LTSFP-1000BX-20KM Transceiver (WDM 1310)
- **8330-187** LTSFP-1000BX-20KM Transceiver (WDM 1550)
- **8330-180** LTSFP-1000BX-40KM Transceiver (WDM 1310)
- **8330-182** LTSFP-1000BX-40KM Transceiver (WDM 1550)
- **8330-181** LTSFP-1000BX-60KM Transceiver (WDM 1310)
- **8330-183** LTSFP-1000BX-60KM Transceiver (WDM 1550)
- **8330-184** LTSFP-1000BX-80KM Transceiver (WDM 1490)
- **8330-185** LTSFP-1000BX-80KM Transceiver (WDM 1550)

DDM SFP are all above p/n# ended with “D”

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