IPGS-5408DFT-PT

10 10/100/1000T + 2 Dual Speed SFP w/ 8 10/100/1000T PoE af/at

IEC 61850-3 Managed Ethernet Switch w/ Enhanced Ring & MMS, LTDP**, PTPv2

- *Compliant with IEC61850-3 & IEEE1613*
- *Supports PTP IEEE1588v2 two-step on Giga ports*
- *Built-in MMS server based on IEC61850-90-4 switch data modeling for SCADA with monitoring and control*
- *IEC packet counter for GOOSE monitoring*
- *QoS for GOOSE packet***
- *LTDP** (Link Train Discovery Protocol) to auto-assign IP as well as inherit the configuration in replaced switch*
- *Support IEEE802.3at/af up to 30W per port*
- *PoE management incl. Detection and Scheduling*
- *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***
- Miss-wiring avoidance & node failure protection
- *User friendly UI, including auto topology drawing and DDM threshold monitoring with dB values***; Complete CLI.*
- *Support LACP link aggregation, IGMP v3/router port, DHCP server & DHCP Option82; Port based DHCP distribution, Mac based DHCP server, QoS by VLAN, SSH/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, TACACS+*, QinQ**, SMS***
- *Protocol based VLAN** ; IPv4/IPv6 Subnet based VLAN***
- *Environmental Monitoring for temp, voltage and current*
- *Wide range dual DC input from ±45V~57V; HV mode with isolated 90~305VAC/120~430VDC*
- *Optional InstaView** for centralized backup, editing the configuration file and upgrade firmware*
- *USB port to backup, restore the configuration file and upgrade firmware (-U model)*
- *HV or DC input voltage model selection*

IEC 61850-3 | PTP V2 | ITU G.8032 | Environmental Monitoring | USB Restore &Backup | PoE AT 30W | FCC | CE | RoHS2

OVERVIEW

Lantech IPGS-5408DFT-PT is a high performance L2+ (Gigabit uplink) switch with 8 10/100/1000T + 2 10/100/1000T + 2 Dual Speed SFP that complies with IEC 61850-3 & IEEE 1613. It delivers ITU G.8032 enhanced ring recovery less than 20ms in single ring while also supports train ring, enhanced mode, multiple VLAN model with easy configuration.

The built-in MMS server allows SCADA to control & monitor switch for data modeling, it also support hardware 2 step PTP (Precision Time Protocol) with IEEE 1588v2 standard.

GOOSE monitoring packet counter; Built-in MMS server for IEC61850 data modeling for monitoring and control; Optional QoS for GOOSE packet

The exclusive GOOSE monitoring function (IEC packet) can display the counter of GOOSE message transmitted and received by port.

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, environmental monitoring, networks configuration.

Optional QoS scheme for Goose packet to ensure low latency in the data patch.

LTDP**(Link Train Discovery Protocol) for zero- touch maintenance

Lantech IPGS-5208GF (IP67/IP54) features LTDP protocol in single ring topology that can help to get the same IP for replaced switch or restore the same configuration with zero-touch.

Miss-wiring avoidance, Repowered auto ring restore, Loop protection

The IPGS-5408DFT-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 IPGS-5408DFT-PT is able to alert with the LED indicator and disable ring automatically. 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.

Enhanced G.8032 ring, 16 MSTI MSTP; Optional MRP ring**
Lantech IPGS-5408DFT-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 with easy setup. The innovative auto-Ring configurator (auto mode) can calculate owner and neighbor in one step. It supports MSTP that allows spanning tree over VLAN for redundant links with 16 MSTI.

DHCP option 82 & Port based, Mac based DHCP, Option66, IPv6 DHCP server**
DHCP option 82 and Port based DHCP function 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 policy 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. DHCP option 66 is also supported. Optional IPv6 address resolution for DHCP server can be supported

QoS by VLAN for legacy devices
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 QinQ** and GVRP** supported
It supports the QinQ**, QoS QinQ**, 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.

User friendly GUI, Auto topology drawing
The user friendly UI, innovative auto topology drawing and topology demo makes IPGS-5408DFT-PT much easier to get hands-on. The IPGS-5408DFT-PT 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. The complete CLI enables professional engineer to configure setting by command line.

Editable configuration file; USB port for configuration upload & download; InstaView** for mass deployment
The configuration file of Lantech IPGS-5408DFT-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 and built-in watchdog design can automatically reboot the switch when CPU is found dead.

The built-in USB port can have configuration upload & download by USB dongle.

With optional InstaView, the configuration files can be mass backup, mass-editable deployed and auto upgrading firmware in batch make maintenance easy.

Event log & message; 2 DI / 2 DO
In case of event, the IPGS-5408DFT-PT is able to send an email & SMS** text message to pre-defined addresses as well as SNMP Traps our immediately. It provides 2 DI and 2 DO. 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.

Environmental monitoring for switch inside information
The environmental monitoring can detect switch overall temperature, voltage and current where can send the SNMP traps, email and SMS** alert when abnormal.

Wide range dual DC powered input; Relay contact alarm
The Lantech IPGS-5408DFT-PT has dual power inputs from ±DC45~57V and HV model offers one isolated 90~305VAC/120~430VDC power conversion. Featured with relay contact alarm function, the IPGS-5408DFT-PT is able to connect with alarm system in case of power failure or port disconnection. The IPGS-5408DFT-PT also provides ±2500V EFT, ±4000V Surge and ±8000V ESD air protection, which can reduce unstable situation caused by power line and Ethernet.

Industrial hardened design for extended temperature operation
Lantech IPGS-5408DFT-PT features high reliability and robustness coping with extensive EMI/RFI phenomenon, environmental vibration and shocks usually found in factory, substation, steel automation, aviation, mining and process control. It is the best solution for Automation, transportation, surveillance, Wireless backhaul, Semi-conductor factory and assembly lines.

FEATURES & BENEFITS

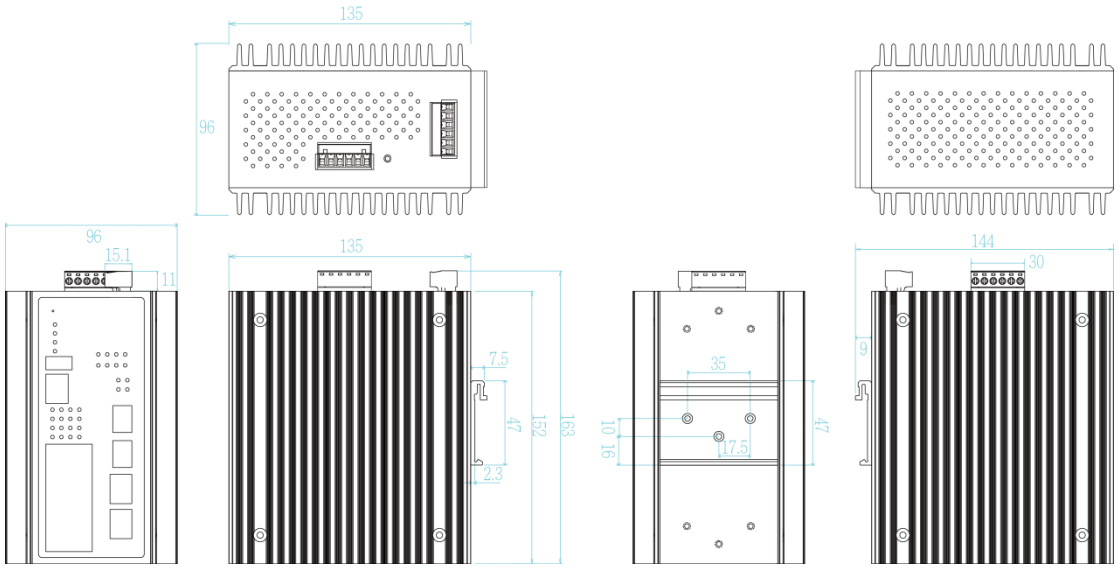
- **10 10/100/1000T + 2 100M 1000M Dual Speed SFP w/8 PoE 802.3af/at Injectors (Total 12 Ports Switch)**
- **Embedded 8 PoE Injectors IEEE802.3af/at function to feed power up to 30W for active mode operation.**

Max. PoE budget: 120W

- **Compliant with IEC61850-3 & IEEE 1613**
- **IEEE 1588 PTP v2 two-step at 12 Giga ports**
- **Support IEC 61850 over MMS (TCP/IP Ethernet)**
  - *Provide .cid file type*
  - *Solicited data access through Manufacturing Message Specification (MMS) Read and Write requests*
  - *Unsolicited data through MMS Information Reports*
- **Back-plane (Switching Fabric): 24Gbps**
- **16K MAC address table**
- **Built-in MMS server for SCADA data-modeling with control and monitoring**
  - System info
  - Environmental monitoring
  - Power
  - Device event report
  - Port status
  - Port statistic
  - Port event report
  - Firmware upgrade
  - Network configuration
- **Two-step hardware PTP compliant with IEEE 1588 v2 for Gigabit ports**
- **Optional QoS for Goose packet**
- **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*
- **10KB Jumbo frame supported on all ports**
- **User friendly UI, auto topology drawing, topology demo, complete CLI for professional setting**
- **Enhanced G.8032 Ring recovery < 20ms in single ring**
  - *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*
  - *Covers multi-cast and data packets*
- **Provides EFT protection ±2500 VDC for power line.**
- **Supports ±8000 VDC ESD air protection**
- **±4000V Surge for signal port**
- **provides 8 priority queues Port base, Tag Base and Type of Service Priority**
- **Supports IEEE 802.1p Class of Service, per port**
- **IEEE 802.1d STP, IEEE 802.1w RSTP,802.1s MSTP VLAN redundancy with with 16 MSTI**
- **4K 802.1Q VLAN, Port based VLAN, GVRP**, QinQ**, QoS QinQ****
- **Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console/ Lantech™ InstaView****
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server Port based DHCP server; DHCP Option 66; IPv6 address resolution for DHCP server****
- **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*
- **Relay alarm output system events**
- **Miss-wiring avoidance**
  - *LED indicator*
- **Repowered auto ring restore**
  - *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*
- **TFTP/ SFTP**/HTTP firmware upgrade; Lantech™ InstaView** for multiple upgrade**
- **Configuration backup and restoration**
  - *Supports text configuration file for system quick installation*
  - *USB port for upload / download configuration by USB dongle*
  - *InstaView** for centralized configuration deployment, backup & upgrade*
- **System Event Log, SMTP Email alert, SMS** mobile (text) and SNMP Trap for alarm support; 32 RMON counters**
- **Security**
  - *SSL/SSH/INGRESS/EGRESS ACL L2/L3*
  - *Port Security: MAC address entries/Filter/MAC-Port binding*
  - *IP Security: IP address security management to prevent unauthorized intruder.*
  - *TACACS+**
  - *Login Security: IEEE802.1X/RADIUS*
  - *HTTPS for secure access to the web interface*
- **Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application**
- **Multicast static route for non- IGMP camera to prevent flooding; IGMP router port to assign query in ring for reversed multicast video flow**
- **IGMPv1,v2,v3 with Query mode for multimedia; GMRP****
- **Factory reset button to restore setting to factory default**
- **Watchdog design to auto reboot switch CPU is found dead**
- **LTDP** (Link Train Discovery Protocol) with Port based DHCP can assign the same IP address and configuration to replacing switches in single ring. It can also keep the config file when switches being swapped**
- **Supports DIDO (2 Digital Input / 2 Digital Output)**
- **Dual DC input from ±45V~57VDC**
- **One 90~305VAC/120~430VDC isolated power input (HV model)**
- **Environmental monitoring for system input voltage, current and ambient temperature.**
- **IP30 metal housing with DIN rail and Wall-mount****

design

DIMENSIONS (unit=mm)



SPECIFICATION

Hardware Specification

Standards	IEEE802.3 10Base-T Ethernet IEEE802.3u 100Base-TX IEEE802.3ab 1000Base-T Ethernet IEEE802.3z Gigabit fiber IEEE802.3x Flow Control and Back Pressure IEEE802.3ad Port trunk with LACP IEEE802.1d Spanning Tree IEEE802.1w Rapid Spanning Tree IEEE802.1s Multiple Spanning Tree IEEE802.3ad Link Aggregation Control Protocol (LACP) IEEE802.1AB Link Layer Discovery Protocol (LLDP) IEEE802.1X User Authentication (Radius) IEEE802.1p Class of Service IEEE802.1Q VLAN Tag IEEE802.3at/af Power over Ethernet
Switch Architecture	Back-plane (Switching Fabric): 24Gbps
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	10/100/1000T: 10 x ports RJ-45 with Auto MDI/MDI-X function Mini-GBIC: 2 x 100/1000 SFP socket with DDM RS-232 connector: RJ-45 type Power & Relay connector: 1 x 6-pole terminal block DIDO : 1 x 6-pole terminal block
Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m) 1000Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m)
Optical Cable	**1.25Gbps:** Multi mode: 0 to 550 m, 850 nm (50/125 µm); 0 to 2 km, 1310 nm (50/125 µm) Single mode: 0 to 10 km/ 30 km/ 40 km, 1310 nm (9/125 µm); 0 to 50 km/ 60 km/ 80km/ 120 km, 1550 nm (9/125 µm)
	125Mbps: Multi mode: 0 to 2 km/ 5 km, 1310 nm (62.5/125 µm) Single mode: 0 to 30 km, 1310 nm (62.5/125 µm) **WDM 1.25Gbps:** Single mode: 0 to 10 km/ 20 km/ 40 km/ 60 km, 1310 nm (9/125 µm); 0 to 80 km, 1490 nm (9/125 µm); 0 to 10 km/ 20 km/ 40 km/ 60 km/ 80 km, 1550 nm (9/125 µm) **WDM 125Mbps:** Single mode: 0 to 20 km/ 40 km/ 60 km/ 80 km, 1310 nm (9/125 µm); 0 to 20 km/ 40 km/ 60 km/ 80 km, 1550 nm (9/125 µm)
LED	Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red) Ethernet port: Link/Activity (Green), Speed (Green); Mini-GBIC: Link/Activity (Green) R.M. indicator (Green) PoE : Active (Green)
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
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-40°C~75°C / -40°F~167°F
Storage Temperature	-40°C~85°C / -40°F~185°F
Power Supply	Dual power input (±45~57VDC) or one isolated 90~305VAC/120~430VDC (HV model)
PoE Budget	Max. 120W (54V input is recommended for PTZ or heater applications)
PoE pin assignment	RJ-45 port # 1~ # 8 support IEEE 802.3at/af End-point. Per port provides up to 30W Positive (VCC+): RJ-45 pin 1,2 Negative (VCC-): RJ-45 pin 3,6
Power Consumption	18.5W
Case Dimension	Metal case. IP-30, 96 (W) x 135 (D) x 152 (H) mm
Weight	900 g
Installation	DIN Rail and Wall Mount** Design
EMI & EMS	FCC Class A, CE EN55032 Class A, CE EN55024, CE EN61000-4-2, CE EN61000-4-3, CE

	EN61000-4-4, CE EN61000-4-5, CE EN61000-4-6, CE N61000-4-8 EN50121-4
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-64 (Vibration)
Railway verification	EN50121-4 , EN55022 (EMV) EN50125-3 (environmental conditions)
Substation Verification	IEC 61375
MTBF	289,712 hrs (standards: IEC 62830)
Warranty	5 years

Software Specification

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
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 1757 RMON, RFC 2674 Q-Bridge MIB*; Bridge MIB*, LLDP MIB* RSTP MIB* Private MIB
MMS for data modeling	IEC 61850 over MMS (TCP/IP Ethernet) Provide .cid file type Solicited data access through MMS read and write requests Unsolicited data access through MMS information reports
ITU G.8032	Support ITU G.8032 for Ring protection in less than 20ms for self-heal recovery (incl. multicast packets) Support various ring/chain topology IES Includes multi-ring & multi-VLAN ring* Enhanced G.8032 ring configuration with ease Ring covers multicast on different ports
LTDP** in ring topology	Support zero-touch maintenance to get same IP or restore the config file to replaced switch in ring topology
MMS Data Modeling	● System info ● Environmental monitoring ● Power ● Device event report ● Port status ● Port statistic ● Port event report ● Firmware upgrade ● Network configuration
IEEE 1588 v2	Two step hardware based PTP on Gigabit ports
QoS for Goose**	■ Weighted fair queuing ■ Strict priority
User friendly UI	■ Auto topology drawing ■ Topology demo ■ Auto configuration for G.8032(auto mode) for single ring ■ DDM threshold with dB values*** ■ Complete CLI for professional setting
Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups/Maximum 8 trunk members
LLDP	Supports LLDP to allow switch to advise its identification and capability on the LAN
CDP	Cisco Discovery Protocol for topology mapping
VLAN	Port Based VLAN IEEE 802.1Q Tag VLAN / VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.) GVRP*, QinQ*, QOS QinQ*
IPv6/4	Present
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree
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.
Login Security	Supports IEEE802.1X Authentication/RADIUS
Port Mirror	Support 3 mirroring types: “RX, TX and Both packet”
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 Ingress/Egress INGRESS/EGRESS ACL L2/L3 L2/L3 SSL/ SSH for Management HTTPS for secure access to the web interface TACACS+* for Authentication
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. 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.
Flow Control	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex
System Log	Supports 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
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
Protection	■ Miss-wiring avoidance ■ Repowered auto ring restore ■ Loop protection
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/Port based/VLAN based DHCP distribution (DHCP relay agent); DHCP Option 66
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.
SNTP	Supports SNTP to synchronize system clock in Internet
Environmental Monitoring	Internal sensor to detect temperature, voltage and current and send SNMP traps, SMS** and emails if any abnormal events
Firmware Update	Supports TFTP/SFTP** firmware update, TFTP backup and restore; HTTP firmware upgrade; Lantech™ InstaView** for multiple upgrade

Configuration backup & restore	Supports text configuration file for system quick installation USB port to upload/download firmware by USB dongle Optional InstaView for mass backup, editing configuration and upgrade

*Future release
**Optional
***Optional DDM SFP required

ORDERING INFOMATION

- **IPGS-5408DFT-PT-DC……P/N: 8350-602**
  10 10/100/1000T + 2 Dual Speed SFP w/ 8 10/100/1000T PoE af/at IEC61850-3 Managed Ethernet Switch; w/ USB slot, Enhanced Ring & MMS, PTP v2, environmental monitoring, w/ dual ±45V~57VDC input; -40°C to 75°C
- **IPGS-5408DFT-PT-HV……P/N: 8350-603**
  10 10/100/1000T + 2 Dual Speed SFP w/ 8 10/100/1000T PoE af/at IEC61850-3 Managed Ethernet Switch; w/ USB slot, Enhanced Ring & MMS, PTP v2, environmental monitoring, w/ One isolated 90~305VAC/120~430VDC input; -40°C to 75°C

OPTIONAL ACCESSORIES

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)

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

All part no. with D are with DDM function

Wall Mount Bracket

MBAK19003	Wall mount bracket for 74(W) x 105 (D) x 152 (H) mm / 96 (W) x 105 (D) x 152 (H) mm Industrial switches
MBAK19004	19" Rack Mounting Kit for 74x105x152mm/74x135x152mm Industrial Switch

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