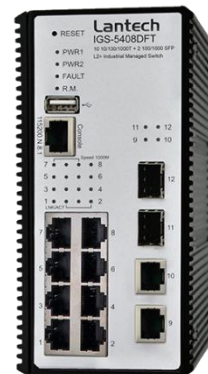


# IGS-5408DFT-PT

10 10/100/1000T + 2 Dual Speed SFP L2<sup>+</sup> Industrial Managed Switch

w/ Enhanced G.8032 Ring, PTP & Built-in MMS Server for Data Modeling

- Compliant with IEC61850-3\* & IEEE1613\*
- 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 8/16\* MSTI /RSTP
- Supports PTP IEEE1588 v2 two-step on GTX&GFX ports
- Built-in MMS server based on IEC61850-90-4 switch data modeling for power SCADA; Unique IEC packet counter for Goose message
- Miss-wiring avoidance & Repowered auto ring restore (node failure protection)
- User friendly UI, including auto topology drawing and DDM threshold with dB values\*\*\*; Complete CLI
- 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, HTTPS, INGRESS/EGRESS ACL L2/L3, IPv6, SMS
- Environmental monitoring to display inside switch temperature, voltage, current & send alerting when abnormal
- HV or DC input voltage model selection



## OVERVIEW

Lantech IGS-5408DFT-PT is a IEC61850-3 compliant\* high performance L2+ (Gigabit uplink) switch with 10 10/100/1000T + 2 100M/1000M Dual Speed SFP which provides L2 wire speed and advanced security function for network aggregation deployment. It delivers ITU G.8032 enhanced ring recovery less than 20ms including auto mode, enhanced mode & multiple VLAN mode\* for easy configuration, comprehensive QoS, QoS by VLAN, advanced security including INGRESS/EGRESS 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.

### Support IEC61850-90-4 switch data modeling with built-in MMS server

Lantech IGS-5408DFT-PT embeds a MMS server based on IEC61850-90-4 switch data modeling for power SCADA that allow power SCADA to control and monitor the switch without additional NMS.

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

### 2-Step PTP on all GigaT&FX ports

Lantech IGS-5408DFT-PT features hardware-based PTP

IEEE1588 v2 two-step function which can allow all Gigabit ports to synchronize the network with precise accuracy.

### Miss-wiring avoidance & Loop protection

The IGS-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 IGS-5408DFT-PT 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.

### Smart DHCP incl. port/VLAN based DHCP, MAC based DHCP & built-in DHCP Option 82 server

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 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 Option66 is also

supported

#### **Auto topology drawing, Intuitive UI, complete CLI**

The user friendly UI, innovative auto topology drawing and topology demo makes IGS-5408DFT-PT much easier to get hands-on. The switch also equips the RTC (real time clock) which can keep track of time always.

#### **Display converted dB values for DDM modules**

The IGS-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.

#### **Enhanced G.8032 ring covers multicast packets for various topologies; Support 8/16\* MSTI**

Lantech IGS-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 topology IES that covers double ring, multi-chain (under enhanced ring), train ring, basic 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 8/16\* MSTI.

#### **Editable config in text; Factory default reset button**

The configuration file of Lantech IGS-5408DFT-PT can 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.

#### **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.

#### **DIDO trigger alarm & send emails**

The IGS-5408DFT-PT 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 IGS-5408DFT-PT will immediately send an email & SMS text message to pre-defined addresses as well as SNMP Traps out. It provides 2DI and 2DO while 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 function to display switch inside info**

The exclusive environmental monitoring function provides real-time status for input voltage, current and switch inside ambient temperature where can set SMS text, email or trap alert when abnormal.

#### **Isolated input for DC & HV models; Meets with IEC61850-3**

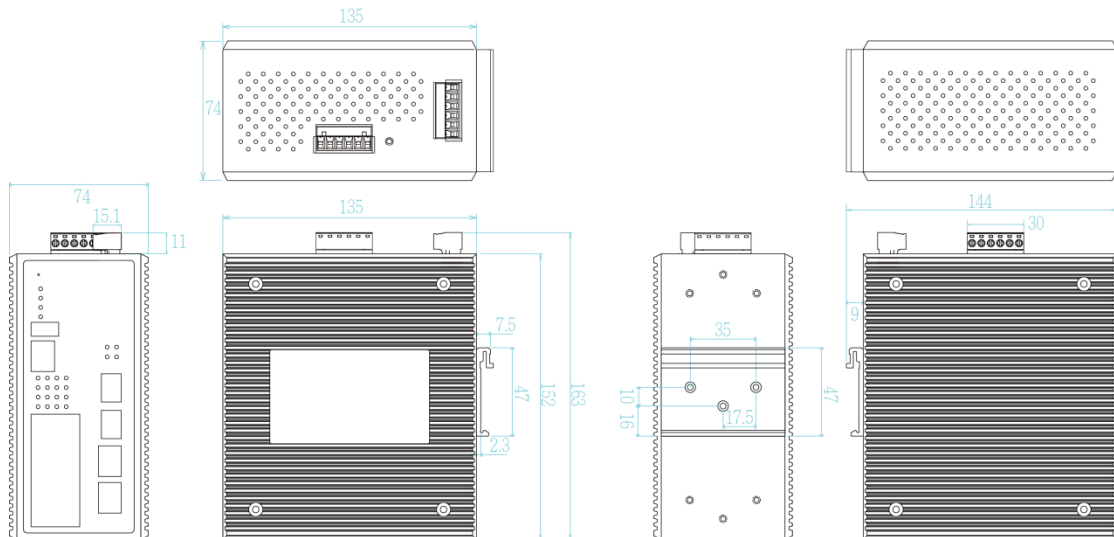
The Lantech IGS-5408DFT-PT has two isolated power inputs from DC48~72V and HV model offers one isolated 90~305VAC/120~430VDC power conversion. Featured with relay contact alarm function, the IGS-5408DFT-PT is able to connect with alarm system in case of power failure. The IGS-5408DFT-PT also provides  $\pm 4KV$  EFT,  $\pm 4KV$  surge and  $\pm 8KV$  contact / 15KV air ESD protections, which can reduce unstable condition caused by power line and Ethernet. It is compliant with IEC61850-3 standard and features high reliability and robustness coping with extensive EMI/RFI phenomenon, surge, inductive load switching environment usually found in substation, steel automation, mining and process control. Widely operational temperature capacity (standard model: -20°C~60°C / -E model: -40°C~75°C) ensures the IGS-5408DFT-PT runtime through the harsh environment

## FEATURES & BENEFITS

- **10 10/100/1000T + 2 100M 1000M Dual Speed SFP (Total 12 Ports Switch)**
- **Compliant with IEC61850-3\* & IEEE 1613\***
- **IEEE 1588 PTP v2 two-step at 12 Giga ports**
- **Unique Goose monitoring function (IEC packet) display counter of transmitted and received Goose message**
- **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
- **Goose monitoring for port counter of Goose message (IEC packets)**
- **Back-plane (Switching Fabric): 24Gbps**
- **16K MAC address table**
- **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 protection in 20ms < 256 switches**
  - Support various ring/chain topologies, including multi-ring & multi-VLAN ring\*
  - Enhanced G.8032 ring configuration with ease
  - Auto ring configuration(auto mode) for single ring
  - Ring covers multicast on different ports
- **Built-in RTC (Real Time Clock) to keep track of time**
- **Supports IEEE 802.1p Class of Service, per port provides 8 priority queues Port base, Tag Base and Type of Service Priority**

- IEEE 802.1d STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP VLAN redundancy
- 4K 802.1Q VLAN, Port based VLAN, GVRP\*, QinQ\*
- Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console/ Lantech™ InstaConfig\*\*/ Lantech™ InstaView\*\*
- DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server; Port/VLAN based DHCP distribution; DHCP Option 66
- 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
  - Email, traps, or SMS notification
- 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/HTTP firmware upgrade; Lantech™ InstaConfig\*\* for multiple 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.
  - 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 and 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
- Environmental monitoring for system input voltage, current, ambient temperature
- Dual DC input from 48V~72VDC
- One 90~305VAC/120~430VDC isolated power input (HV model)
- Provides EFT protection ±4K VDC for power line
- Supports ±8K contact/ 15K air Ethernet ESD protection
- Supports DIDO (Digital Input/Digital Output)
- IP30 metal housing with DIN rail and Wall-mount\*\* design

**DIMENSIONS (unit=mm)**



**SPECIFICATION**

**Hardware Specification**

|           |   |
|-----------|---|
| Standards | IEEE802.3 10Base-T Ethernet<br>IEEE802.3u 100Base-TX<br>IEEE802.3ab 1000Base-T Ethernet<br>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)<br>IEEE802.1AB Link Layer Discovery Protocol (LLDP)<br>IEEE802.1X User Authentication (Radius)<br>IEEE802.1p Class of Service<br>IEEE802.1Q VLAN Tag   |
| Switch Architecture   | Back-plane (Switching Fabric): 24Gbps   |
| Transfer Rate         | 14,880pps for Ethernet port<br>148,800pps for Fast Ethernet port<br>1,488,000pps for Gigabit Ethernet / Gigabit Fiber port  |
| CPU                   | Marvell 800Mhz  |
| RAM                   | 256M Byte   |
| Flash                 | 128M Byte   |
| Mac Address           | 16K MAC address table   |
| Jumbo frame           | 10KB on all ports   |
| Connectors            | 10/100/1000T: 10 x ports RJ-45 with Auto MDI/MDI-X function<br>Mini-GBIC: 2 x 100/1000 SFP socket with DDM<br>RS-232 connector: RJ-45 type<br>Power & Relay connector: 1 x 6-pole terminal block<br>DIDO : 1 x 6-pole terminal block  |
| Network Cable         | 10Base-T: 2-pair UTP/STP Cat. 3, 4, 5/ 5E/ 6 cable<br>EIA/TIA-568 100-ohm (100m)<br>100Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable<br>EIA/TIA-568 100-ohm (100m)<br>1000Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable<br>EIA/TIA-568 100-ohm (100m)   |
| Optical Cable         | <b>1.25Gbps:</b><br>Multi mode: 0 to 550 m, 850 nm (50/125 µm); 0 to 2 km, 1310 nm (50/125 µm)<br>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)<br><b>125Mbps:</b><br>Multi mode: 0 to 2 km/ 5 km, 1310 nm (62.5/125 µm)<br>Single mode: 0 to 30 km, 1310 nm (62.5/125 µm)<br><b>WDM 1.25Gbps:</b><br>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)<br><b>WDM 125Mbps:</b><br>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) |
| Protocol              | CSMA/CD   |
| LED                   | Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red)<br>Ethernet port: Link/Activity (Green), Speed (Green); Mini-GBIC: Link/Activity (Green)<br>R.M. indicator (Green)  |
| DI/DO                 | 2 Digital Input (DI) :<br>Level 0: -30~2V / Level 1: 10~30V<br>Max. input current:8mA<br>2 Digital Output(DO): Open collector to 40 VDC, 200mA  |
| Operating Humidity    | 5% ~ 95% (Non-condensing)   |
| Operating Temperature | -20°C~60°C / -4°F~140°F (Standard model)<br>-40°C~75°C / -40°F~167°F(-E model)  |
| Storage Temperature   | -40°C~85°C / -40°F~185°F  |
| Power Supply          | Dual isolated power input (48~72VDC) or one isolated 90~305VAC/120~430VDC (HV model)  |
| Power Consumption     | 10W   |
| Case Dimension        | Metal case. IP-30,<br>74 (W) x 135 (D) x 152 (H) mm   |
| Weight                | 900 g   |
| Installation          | DIN Rail and Wall Mount** Design  |
| EMI & EMS             | FCC Class A,<br>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   |
| Stability Testing     | IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-64 (Vibration)   |

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|-------------------------------|--|
| Compliance Report             | IEC61850-3*, IEEE1613  |
| MTBF                          | 289,712 hrs  |
| Warranty                      | 5 years  |
| <b>Software Specification</b> |  |
| Management                    | SNMP v1 v2c, v3/ Web/Telnet/CLI  |
| SNMP MIB                      | RFC 1215 Traps MIB*,<br>RFC 1213 MIBII<br>RFC 1158 MIBII<br>RFC 1157 SNMP MIB*,<br>RFC 1493 Bridge MIB*,<br>RFC 1573 IF MIB<br>RFC 2674 VLAN MIB,<br>Partial RFC 1757 RMON,<br>RFC 2674 Q-Bridge MIB*; Bridge MIB*,<br>LLDP MIB*<br>RSTP MIB*<br>Private MIB                               |
| MMS for data modeling         | IEC 61850 over MMS (TCP/IP Ethernet)<br>Provide .cid file type<br>Solicited data access through MMS read and write requests<br>Unsolicited data access through MMS information reports<br>Unique IEC packet counter to display transmitted & received Goose message                        |
| ITU G.8032                    | Support ITU G.8032 for Ring protection in less than 20ms for self-heal recovery (incl. multicast packets)<br>Support various ring/chain topology IES<br>Includes multi-ring & multi-VLAN ring*<br>Enhanced G.8032 ring configuration with ease<br>Ring covers multicast on different ports |
| PTP v2                        | Support hardware-based IEEE1588 PTPv2, End to End (2-step) and Peer to Peer (2-step) modes in Transparent Clock, with 12 Giga ports  |
| User friendly UI              | <ul style="list-style-type: none"> <li>■ Auto topology drawing</li> <li>■ Topology demo</li> <li>■ Auto configuration for G.8032(auto mode) for single ring</li> <li>■ DDM threshold with dB values***</li> <li>■ Complete CLI for professional setting</li> </ul>                         |
| 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<br>IEEE 802.1Q Tag VLAN / VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.)<br>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.<br>802.1X access control for port based and MAC based authentication/MAC-Port binding<br>Ingress/Egress INGRESS/EGRESS ACL L2/L3 L2/L3                                  |

|                        |  |
|------------------------|--|
|                        | SSL/ SSH for Management<br>HTTPS for secure access to the web interface<br>TACACS+* for Authentication   |
| IGMP                   | Support IGMP snooping v1,v2,v3; Supports IGMP static route; 1024 multicast groups; IGMP router port ; IGMP query; GMRP*, QinQ*, QOS QinQ*  |
| Static MAC-Port Bridge | Static multicast forwarding forward reversed<br>IGMP flow with multicast packets binding with ports for IP surveillance application  |
| Bandwidth Control      | Support ingress packet filter and egress packet limit.<br>The egress rate control supports all of packet type.<br>Ingress filter packet type combination rules are Broadcast/Multicast/Flooded Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all types of packet.<br>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. |
| RTC                    | Built-in Real Time Clock to keep track of time always  |
| 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.<br>Alarm Relay current carry ability: 1A @ DC24V   |
| Protection             | <ul style="list-style-type: none"> <li>■ Miss-wiring avoidance</li> <li>■ Repowered auto ring restore</li> </ul>   |

|                                   |  |
|-----------------------------------|--|
|                                   | <ul style="list-style-type: none"> <li>■ Loop protection</li> </ul>  |
| 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> |
| 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 firmware update, TFTP backup and restore; HTTP firmware upgrade; Lantech™ InstaConfig** for multiple upgrade   |
| Configuration upload and download | Supports text configuration file for system quick installation; Support factory reset button to restore all settings back to factory default   |
| IfAlias                           | Each port allows an alphabetic string of 128-byte assigned as its own unique name via the SNMP or CLI interface  |

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

## ORDERING INFORMATION

- **IGS-5408DFT-PT-DC.....P/N: 8350-8252**  
10 10/100/1000T + 2 Dual Speed SFP L2+ PTP Managed Industrial Switch; -20°C to 60°C; dual isolated power input 48~72VDC
- **IGS-5408DFT-PT-DC-E.....P/N: 8350-8253**  
10 10/100/1000T + 2 Dual Speed SFP L2+ PTP Managed Industrial Switch; -40°C to 75°C; dual isolated power input 48~72VDC
- **IGS-5408DFT-PT-HV.....P/N: 8350-8254**  
10 10/100/1000T + 2 Dual Speed SFP L2+ PTP Managed Industrial Switch; -20°C to 60°C; one 90~305VAC/120~430VDC isolated power input
- **IGS-5408DFT-PT-HV-E.....P/N: 8350-8255**  
10 10/100/1000T + 2 Dual Speed SFP L2+ PTP Managed Industrial Switch; -40°C to 75°C; one 90~305VAC/120~430VDC isolated power input

## OPTIONAL ACCESSORIES

### DIN Rail Power

- **MDR-40 Series** 40W Single Output Industrial Din Rail Power; 85-264VAC / 120-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 4% per degree from 60°C ~ 70°C)
- **MDR-20 Series** 20W Single Output Industrial Din Rail Power; 85-264VAC / 120-370VDC 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)

### Mini GBIC (SFP)

- |   |  |
|---|--|
| ■ <b>8330-162X</b> MINI GBIC 1000SX (LC/MM/0.5KM) Transceiver | ■ <b>8330-065</b> MINI GBIC 100Base (LC/MM/5KM) Transceiver      |
| ■ <b>8330-163X</b> MINI GBIC 1000SX2 (LC/MM/2KM) Transceiver  | ■ <b>8330-061</b> MINI GBIC 100Base (LC/SM/30KM) Transceiver     |
| ■ <b>8330-165X</b> MINI GBIC 1000LX (LC/SM/10KM) Transceiver  | ■ <b>8330-197</b> 1.25Gbps BiDi SFP 0.5KM Transceiver (WDM 1310) |
| ■ <b>8340-0591</b> MINI GBIC 1000LHX (LC/SM/40KM) Transceiver | ■ <b>8330-198</b> 1.25Gbps BiDi SFP 0.5KM Transceiver (WDM 1550) |
| ■ <b>8330-166</b> MINI GBIC 1000XD (LC/SM/50KM) Transceiver   | ■ <b>8330-195</b> 1.25Gbps BiDi SFP 2KM Transceiver (WDM 1310)   |
| ■ <b>8330-169</b> MINI GBIC 1000XD (LC/SM/60KM) Transceiver   | ■ <b>8330-196</b> 1.25Gbps BiDi SFP 2KM Transceiver (WDM 1550)   |
| ■ <b>8330-167</b> MINI GBIC 1000ZX (LC/SM/80KM) Transceiver   | ■ <b>8330-188</b> 1.25Gbps BiDi SFP 10KM Transceiver (WDM 1310)  |
| ■ <b>8330-170</b> MINI GBIC 1000EZx (LC/SM/120KM) Transceiver | ■ <b>8330-189</b> 1.25Gbps BiDi SFP 10KM Transceiver (WDM 1550)  |
| ■ <b>8330-168</b> MINI GBIC 10/100/1000T (100m) Transceiver   | ■ <b>8330-186</b> 1.25Gbps BiDi SFP 20KM Transceiver (WDM 1310)  |
| ■ <b>8330-060</b> MINI GBIC 100Base (LC/MM/2KM) Transceiver   | ■ <b>8330-187</b> 1.25Gbps BiDi SFP 20KM Transceiver (WDM 1550)  |



|                   |   |                   |   |
|-------------------|---|-------------------|---|
| ■ <b>8330-180</b> | 1.25Gbps BiDi SFP 40KM Transceiver (WDM 1310) | ■ <b>8330-068</b> | 125Mbps BiDi SFP 20KM (WDM 1550) Transceiver  |
| ■ <b>8330-182</b> | 1.25Gbps BiDi SFP 40KM Transceiver (WDM 1550) | ■ <b>8330-080</b> | 125Mbps BiDi SFP 40KM (WDM 1310) Transceiver  |
| ■ <b>8330-181</b> | 1.25Gbps BiDi SFP 60KM Transceiver (WDM 1310) | ■ <b>8330-082</b> | 125Mbps BiDi SFP 40KM (WDM 1550) Transceiver  |
| ■ <b>8330-183</b> | 1.25Gbps BiDi SFP 60KM Transceiver (WDM 1550) | ■ <b>8330-081</b> | 125Mbps BiDi SFP 60KM (WDM 1310) Transceiver  |
| ■ <b>8330-184</b> | 1.25Gbps BiDi SFP 80KM Transceiver (WDM 1490) | ■ <b>8330-083</b> | 125Mbps BiDi SFP 60KM (WDM 1550) Transceiver  |
| ■ <b>8330-185</b> | 1.25Gbps BiDi SFP 80KM Transceiver (WDM 1550) | ■ <b>8330-084</b> | 125Mbps BiDi SFP 80KM (WDM 1310) Transceiver  |
| ■ <b>8330-071</b> | 125Mbps BiDi SFP 2KM (WDM 1310) Transceiver   | ■ <b>8330-085</b> | 125Mbps BiDi SFP 80KM (WDM 1550) Transceiver  |
| ■ <b>8330-072</b> | 125Mbps BiDi SFP 2KM (WDM 1550) Transceiver   | ■ <b>8330-191</b> | Dual Speed SFP 100M/1000M-LX 10KM Transceiver |
| ■ <b>8330-069</b> | 125Mbps BiDi SFP 20KM (WDM 1310) Transceiver  |                   | All part no. with D are with DDM function     |

#### Wall Mount Bracket

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

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