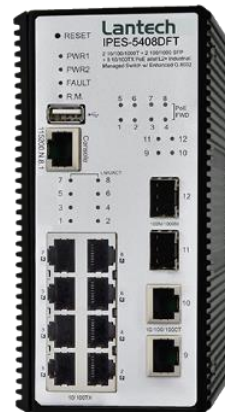


# IPES-5408DFT-PT

8 10/100TX + 2 10/100/1000T + 2 100/1000M SFP PoE at/af L2+

Industrial Managed Ethernet Switch w/ Enhanced G.8032 Ring & MMS

- Compliant with IEC61850-3 & IEEE1613
- Built-in MMS server based on IEC61850-90-4 switch data modeling for SCADA with monitoring and control
- Support IEEE802.3at/af up to 30W per port
- PoE management incl. Detection and Scheduling
- Enhanced G.8032 ring protection < 20ms with 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 for Port & VLAN based DHCP distribution, Mac based DHCP server, QoS by VLAN, QinQ VLAN, SSH/SSL, INGRESS/EGRESS ACL L2/L3
- ±48VDC input ranges from ±44V~±57V
- USB port and N-key\*\* to backup, restore the configuration file and upgrade firmware
- Environmental Monitoring for temp., voltage & current



## OVERVIEW

Lantech IPES-5408DFT is a high performance L2+ (Gigabit uplink) Ethernet switch with 8 10/100TX+2 10/100/1000T+2 Dual Speed 100/1000M SFP w/8 PoE 802.3at/af ports with total PoE budget 120W which complies with IEC 61850-3 & IEEE 1613. It provides L2 wire speed and advanced security function for network aggregation deployment. It delivers ITU G.8032 enhanced ring recovery less than 20ms covering multi-cast and data packets, 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 Cisco works to detect the switch info and show on L2 map topology.

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

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

The built-in MMS (Manufacturing Messaging Specification)

server can help SCADA to monitor and control switch by data modeling. It covers system, power, port status, environmental monitoring, network configuration.

### **Up to 8 PoE at/af ports w/advanced PoE management**

Compliant with 802.3at/af standard, the Lantech IPES-5408DFT is able to feed each PoE port up to 30 Watt, total PoE budget 120W. Lantech IPES-5408DFT supports advanced PoE management including PoE detection and scheduling. PoE detection can detect if the connected PD hangs then restart the PD; PoE scheduling is to allow pre-set power feeding schedule upon routine time table. Each PoE port can be Enabled/disabled, get the voltage, current, Watt, and temperature info displayed on WebUI.

### **Loop protection, Node Failure protection; Alert by Email/Traps**

The IPES-5408DFT 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 IPES-5408DFT 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.

**Enhanced G.8032 Ring < 20ms for single ring recovery; auto ring, double ring, multi-chain covering multicast packets; MSTP with 16 MSTI**

Lantech IPES-5408DFT 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 by easy setup than others. The innovative node failure protection can calculate owner and neighbor in one step. It supports MSTP that allows RSTP over VLAN for redundant links with 8 MSTI. The ITU G.8032 Ring and RSTP can be co-existed in the same switch with different ports for the most flexible protection.

**DHCP option 82 & port based, Mac based DHCP, Option66**

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 basic DHCP network.

**QoS by VLAN for legacy devices**

QoS by VLAN can allow switch to tag(C-tag and S-tag) QoS by VLAN regardless the devices acknowledge QoS or not in which greatly enhance the bandwidth management in a network.

**Auto topology drawing, User friendly UI, Complete CLI, DMI with dB value\*\*\***

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

**Exported configuration text file; Factory reset button; CPU watchdog; Built-in RTC**

The configuration file of Lantech IPES-5408DFT 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.

**USB port & N-key\*\* for back up, restore configuration and upgrade firmware**

The built-in USB port can upload/download the firmware through USB dongle for switch replacement

With optional N-key\*\*, the configuration file can be mass auto backup, editable restored and auto upgrade firmware for easy maintenance.

**2DI / 2DO relay to alarm and email/trap**

The IPES-5408DFT 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 IPES-5408DFT will immediately send an email 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.

**Optional environmental monitoring\*\* for switch inside information (-M model)**

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

**DC powered input; Relay contact alarm**

The Lantech IPES-5408DFT is designed with  $\pm 48\text{VDC}$  power input ranges from  $\pm 44\text{V}\sim\pm 57\text{VDC}$ . Featured with relay contact alarm function, the IPES-5408DFT is able to connect with alarm system in case of power failure or port disconnection. The IPES-5408DFT also provides  $\pm 2000\text{V}$  EFT and  $\pm 6000\text{V}$  ESD protection, which can reduce unstable situation caused by power line and Ethernet.

**High reliability and extended working temperature**

Lantech IPES-5408DFT 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.

Can be used in extreme environments with an operating temperature range of  $-40^{\circ}\text{C}$  to  $75^{\circ}\text{C}$ .

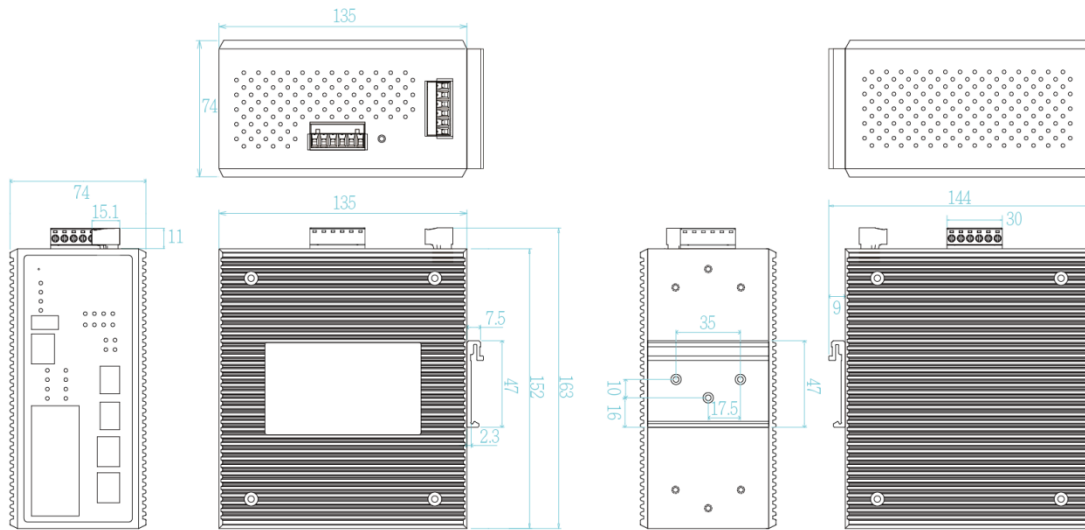
## FEATURES & BENEFITS

- 8 10/100TX + 2 10/100/1000T + 2 Dual Speed 100/1000M SFP w/8 PoE 802.3af/at ports (Total 12 Ports Switch)
- Embedded 8 PoE ports IEEE802.3af/at function to

- feed power up to 30W for active mode operation. Max. PoE budget: 120W
- PoE management including PoE detection and scheduling for PD (power devices)

- **Back-plane (Switching Fabric): 9.6Gbps**
- **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
- **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**
- **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 G.8032 ring configuration with ease
  - Auto ring configuration(auto mode) for single ring
  - Ring covers multicast on different ports
  - Covers multi-cast and data packets
- **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,802.1s MSTP VLAN redundancy with 16 MSTI**
- **4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ VLAN**
- **Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console**
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server for 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 or traps
- **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.
- **TFTP/HTTP firmware upgrade for multiple upgrade; Exported configuration file**
- **Configuration backup and restoration**
  - Supports text configuration file for system quick installation
  - N-key\*\* for mass firmware auto-backup, editable restoration and auto upgrade
  - USB port to download/upload firmware by USB dongle
- **System Event Log, SMTP Email alert, and SNMP Trap for alarm support; 32 RMON counters**
- **Security**
  - SSL/SSH/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
- **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, total PoE load and ambient temperature (-M model)**
- **Supports DIDO (2Digital Input/2Digital Output)**
- **±48V input power from ±44V to ±57V**
- **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): 9.6Gbps
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	10/100TX: 8 x ports RJ-45 with Auto MDI/MDI-X function 10/100/1000T: 2 x ports RJ-45 with Auto MDI/MDI-X function Mini-GBIC: 2 x Dual Speed 100/1000M 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	<b>1.25Gbps:</b>

	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) <b>125Mbps:</b> 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) <b>WDM 1.25Gbps:</b> 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) <b>WDM 125Mbps:</b> 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), RM(Green) Ethernet port: Link/Activity (Green); Mini-GBIC: Link/Activity (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	-20°C~60°C / -4°F~140°F (Standard model) -40°C~75°C / -40°F~167°F(-E model)
Storage Temperature	-40°C~85°C / -40°F~185°F
Power Input	48V model: ±44 ~ ±57VDC
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.
Case Dimension	Metal case. IP-30, 74 (W) x 135 (D) x 152 (H) mm

Weight	900 g
Installation	DIN Rail and Wall Mount** Design
EMI & EMS	FCC Part 15 Class A EN 55011:2009 +A1:2010 (Group 1 Class A) EN 61000-6-2: 2005 IEC 61000-4-2 (ESD) 2008, IEC 61000-4-3 (RS): 2006 +A1: 2007 +A2: 2010 IEC 61000-4-4 (EFT): 2012 IEC 61000-4-5 (Surge): 2005 IEC 61000-4-6 (CS): 2008 IEC 61000-4-8 (Magnetic field): 2009
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-64 (Vibration)
MTBF	797866.5 Hrs. (standards: IEC 62830)
Warranty	5 years
<b>Software Specification</b>	
Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP MIB	RFC 1213 MIBII RFC 1158 MIBII RFC 1157 SNMP MIB* RFC 1493 Bridge MIB, RFC 1573 IF MIB Partial RFC 1757 RMON RFC 2674 Q-Bridge MIB* LLDP MIB* Private MIB
ITU G.8032	Support ITU G.8032 v2/2012 for Ring protection in less than 20ms for self-heal recovery (single ring) Support various ring/chain topologies covering multi-cast and data packets Includes train ring & double ring 12 topologies etc Enhanced G.8032 ring configuration with ease Co-exist with RSTP on different ports
MMS Data Modeling	<ul style="list-style-type: none"> <li>■ System info</li> <li>■ Environmental monitoring</li> <li>■ Power</li> <li>■ Device event report</li> <li>■ Port status</li> <li>■ Port statistic</li> <li>■ Port event report</li> <li>■ Firmware upgrade</li> <li>■ Network configuration</li> </ul>
PoE Management	PoE Detection to check if PD hangs then restart the PD; PoE configuration; PoE monitoring
Per Port PoE Status	Enable/Disable, voltage, current, watts, temperature
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 monitoring 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
Environmental Monitoring**	System status for input voltage, current and ambient temperature to be shown in GUI and sent alerting if any abnormal status(-M model)
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, QoS by VLAN
RSTP/MSTP	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree with 16 MSTI
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(C-tag and S-tag) 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 Management access control with priority Ingress/Egress ACL L2/L3 SSL/ SSH for Management HTTPS for secure access to the web interface for Authentication MAC filter
IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 256 multicast groups; IGMP router port ; IGMP query; GMRP, QinQ, QOS by VLAN
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.
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(RFC3164)
SMTP	Supports SMTP Server and 8 e-mail accounts for receiving event alert
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
Protection	<ul style="list-style-type: none"> <li>■ Miss-wiring avoidance</li> <li>■ Node failure protection</li> <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 relay/ server
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 Dual NTP server to synchronize system clock in Internet
Firmware Update	Supports TFTP firmware update, TFTP backup and restore; HTTP firmware upgrade
Configuration backup &	Supports text configuration file for system quick installation



restore N-key\*\* for mass firmware auto-backup, editable restoration and auto upgrade  
USB port to upload/download firmware by USB dongle

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

## ORDERING INFORMATION

- **IPES-5408DFT-PT.....P/N: 8350-600**  
2 10/100/1000T+ 2 Dual Speed 100/1000M SFP + 8 10/100TX w/8 PoE af/at IEC61830-3 L2+ Industrial Managed Ethernet Switch w/USB slot, Enhanced Ring & MMS, ±44 ~ ±57VDC input; -20°C to 60°C
- **IPES-5408DFT-PT-E.....P/N: 8350-6001**  
2 10/100/1000T+ 2 Dual Speed 100/1000M SFP + 8 10/100TX w/8 PoE af/at IEC61850-3 L2+ Industrial Managed Ethernet Switch w/USB slot, Enhanced Ring & MMS, ±44 ~ ±57VDC input; -40°C to 75°C
- **IPES-5408DFT-PT-M.....P/N: 8350-601**  
2 10/100/1000T+ 2 Dual Speed 100/1000M SFP + 8 10/100TX w/8 PoE af/at IEC61850-3 L2+ Industrial Managed Ethernet Switch w/USB slot, Enhanced Ring & MMS, ±44 ~ ±57VDC input w/ environmental monitoring; -20°C to 60°C
- **IPES-5408DFT-PT-M-E.....P/N: 8350-6011**  
2 10/100/1000T+ 2 Dual Speed 100/1000M SFP + 8 10/100TX w/8 PoE af/at IEC61850-3 L2+ Industrial Managed Ethernet Switch w/USB slot, Enhanced Ring & MMS,±44 ~ ±57VDC input w/ environmental monitoring; -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)

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

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

### Lantech Communications Global Inc.

www.lantechcom.tw  
info@lantechcom.tw

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