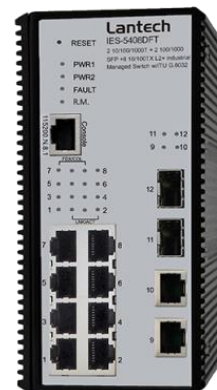# IES-5408DFT-PT

2 10/100/1000T + 2 100/1000 SFP + 8 10/100TX IEC 61850-3

Managed Ethernet Switch w/ Enhanced 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*
- *IEC packet counter for GOOSE monitoring*
- *QoS for GOOSE packet***
- *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; 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 18V~72V with galvanic isolation*

OVERVIEW

Lantech IES-5408DFT-PT is a high performance L2+ (Gigabit uplink) switch with 8 10/100TX + 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.

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, network configuration.

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

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

The IES-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 IES-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 IES-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 server can assign dedicated IP address by MAC or by port (Port based for single switch), it also can assign IP address by port for multiple switches with single DHCP option82 server. For the ending device which need to download file from TFTP server, DHCP Option66 server can offer IP address of TFTP server to DHCP client. Optional IPv6 address resolution for DHCP service 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 IES-5408DFT-PT much easier to get hands-on. The IES-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

The configuration file of Lantech IES-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.

Event log & message; 2 DI / 2 DO

In case of event, the IES-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 with galvanic isolation; Relay contact alarm

The Lantech IES-5408DFT-PT is designed with wide range dual power input from 18V~72VDC with galvanic isolation. Featured with relay contact alarm function, the IES-5408DFT-PT is able to connect with alarm system in case of power failure or port disconnection. The IES-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 IES-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.
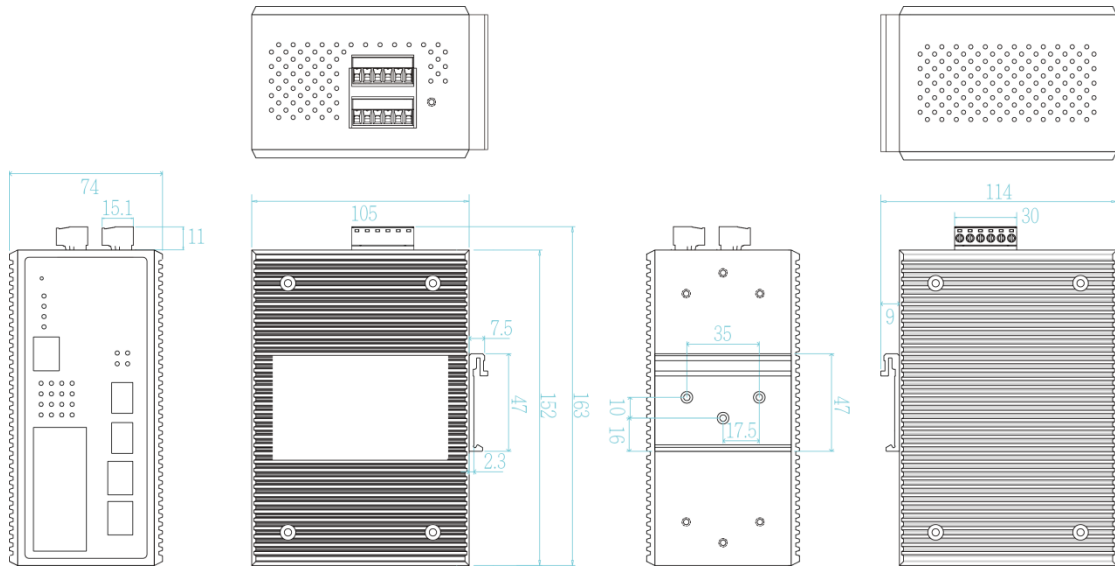
The -E model can be used in extreme environments with an operating temperature range of -40°C to 75°C.

FEATURES & BENEFITS

- **8 10/100TX + 2 10/100/1000T + 2 Dual Speed SFP (Total 12 Ports Switch)**
- **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
- **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**
- **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 ±4000 VDC (Contact) and ±8000 VDC (Air) Ethernet ESD protection**
- **±4000V Surge for signal port**
- **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**, QoS QinQ****
- **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; 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**
- **TFTP/SFTP**/HTTP firmware upgrade**
- **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_
- **Configuration backup and restoration**
  - _Supports text configuration file for system quick installation_
- **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_
  - _TACACS+*_
  - _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**
- **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**
- **Supports 2DI / 2DO (2Digital Input/2Digital Output)**
- **Wide range dual input power from 18V to 56V with galvanic isolation**
- **Environmental monitoring for system input voltage, current and ambient temperature**
- **IP30 metal housing with DIN rail and Wall-mount** design**

DIMENSIONS (unit=mm)

IES-5408DFT-PT

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
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 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), RM(Green) Ethernet port: Link/Activity (Green), Speed (Green); Mini-GBIC: Link/Activity (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 Supply	18 to 72 VDC with galvanic isolation
Power Consumption	10W
Case Dimension	Metal case. IP-30, 74 (W) x 105 (D) x 152 (H) mm
Weight	900 g
Installation	DIN Rail and Wall Mount** Design
EMI & EMS	FCC Class A, CE EN55032, CE EN55011, CE EN61000-4-2, CE EN61000-4-3,

	CE EN61000-4-4, CE EN61000-4-5, CE EN61000-4-6, CE EN61000-4-8, CE EN61000-4-11, CE EN61000-6-2, CE EN61000-6-4
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-64 (Vibration)
Railway verification	EN50121-4 , EN 50121-5
Substation Verification	IEC 61850-3
	IEEE 1613
MTBF	830,589 hrs
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
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 Includes train ring, auto ring, basic single ring, enhanced ring, multiple-VLAN ring Enhanced G.8032 ring configuration with ease. Protect multicast & unicast data
MMS Data Modeling	• System info • Environmental monitoring • Power • Device event report • Port status • Port statistic • Port event report • Firmware upgrade • Network configuration
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 monitoring with dB values*** ■ Complete CLI for professional setting
Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups
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
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 QinQ**, Protocol based VLAN** ; IPv4/IPv6 Subnet based VLAN**
IPv6/4	Present
RSTP/MSTP	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree with 8/16* 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 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 TACACS+* for Authentication
IGMP	Support IGMP snooping v1,v2,v3; 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 DHCP; DHCP Option 66; IPv6 address resolution for DHCP 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 SNTP to synchronize system clock in Internet
Firmware Update	Supports TFTP/SFTP** firmware update, TFTP backup and restore; HTTP firmware

	upgrade
Configuration backup & restore	Supports text configuration file for system quick installation

*Future release

**Optional
***Optional DDM SFP required

ORDERING INFORMATION

■ **IES-5408DFT-PT…………….…........P/N: 8350-509**
2 10/100/1000T+2x100/1000 SFP + 8 10/100TX IEC61850-3 Managed Ethernet Switch
w/enhanced Ring & MMS, environmental monitoring, w/ dual isolated18~72VDC input; -40°C to 75°C

■ **IES-5408DFT-PT-HV…….…..…….…..P/N: 8350-507**
2 10/100/1000T+2x100/1000 SFP + 8 10/100TX IEC61850-3 Managed Ethernet Switch w/Enhanced Ring & MMS,
environmental monitoring, w/ One isolated 90~305VAC/120~430VDC power supply; -40°C to 75°C

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)

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