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

- *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 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, MLD snooping, DHCP server & DHCP Option82; Port based DHCP distribution, DHCP Snooping, Mac based DHCP server, QoS by VLAN, SSH v2/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3,TACACS+**, QinQ*
- *Protocol based VLAN ; IPv4 Subnet based VLAN*
- *Environmental Monitoring for temp, voltage and current*
- *Wide range dual DC input from ±45V~56V; HV mode with isolated 90~305VAC/120~430VDC*
- *USB port to backup, restore the configuration file and upgrade firmware (-U model)*
- *HV or DC input voltage model selection*
- *EN50121-4/50121-5 verification*

IEC 61850-3 | ITU G.8032 | Environmental Monitoring | USB Restore &Backup | PoE AT 30W | FC | 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. The comprehensive QoS, QoS by VLAN, advanced security including INGRESS/EGRESS ACL L2/L3, TACACS+**, SSH v2/SSL, Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ are supported and also required in large network.

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, networks configuration.

Miss-wiring avoidance, Loop protection, Node failure 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. 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; 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 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 16 MSTI.

MRP (Media Redundancy Protocol) can be supported for industrial automation networks.

DHCP option 82 & Port based, Mac based DHCP, Option66, DHCP Snooping, 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. DHCP Snooping is supported. 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. Basic IPv6 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 and GVRP supported
It supports the QinQ, QoS and GVRP for large VLAN segmentation.

IGMPv3, GMRP, router port, MLD Snooping, 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, MLD snooping and static multicast forwarding binding by ports for video surveillance application.

802.1X security by MAC address
MAC-based port authentication is an alternative approach to 802.1x for authenticating hosts connected to a port. By authenticating based on the host's source MAC address, the host is not required to run a user for the 802.1x protocol. The RADIUS server that performs the authentication will inform the switch if this MAC can be registered in the MAC address table of switch.

Auto-provisioning for firmware/configuration update
The switch supports auto-provisioning for switch to auto-check the latest software image and configuration through TFTP server.

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
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.

Event log & message; 2 DI / 2 DO
In case of event, the IPGS-5408DFT-PT is able to send an email 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 when abnormal.

Wide range dual DC powered input; Relay contact alarm
The Lantech IPGS-5408DFT-PT has dual power inputs from ±DC45~56V 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 4kV EFT, ±4kV Surge and ±15kV ESD air protection, which can reduce unstable situation caused by power line and Ethernet.

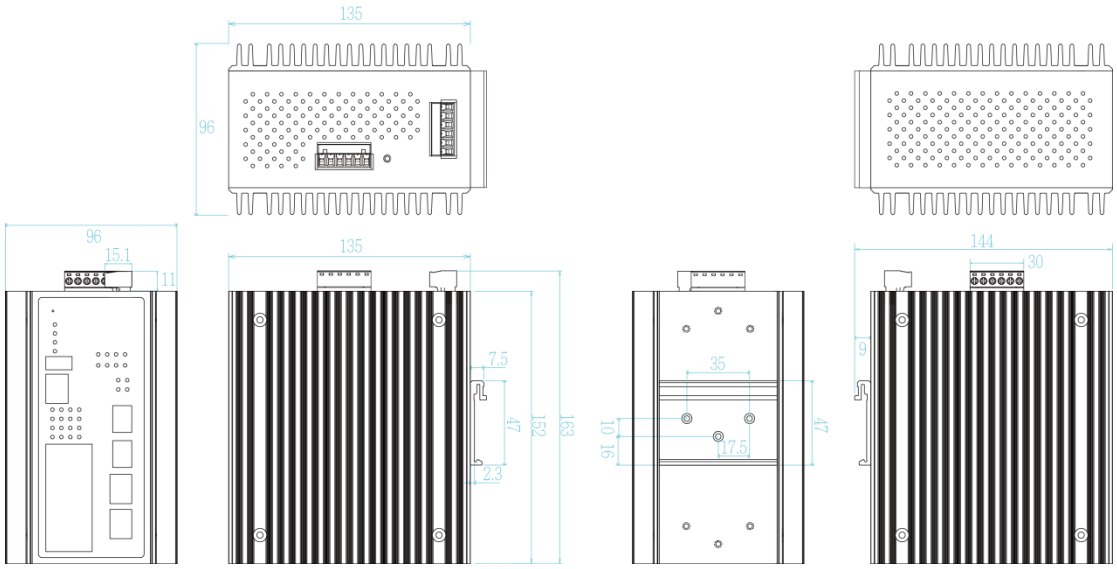
Industrial hardened design for extended temperature operation
Lantech IPGS-5408DFT-PT features high reliability and robustness coping with extensive EMI/RFI phenomenon, environmental vibration and shocks usually found in factory, substation, steel automation, aviation, mining and process control. It 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 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**
- **Compliant with IEC61850-3 & IEEE 1613**
- **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
- **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 4kV EFT protection**
- **Provides ±8kV (Contact) and ±15kV (Air) ESD protection**
- **Provides ±4kV Surge protection**
- **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 with 16 MSTI**
- **4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ, QoS**
- **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; Port based DHCP server; DHCP Option 66; DHCP Snooping, basic IPv6 DHCP server**
- **Mac based DHCP server to assign IP address**
- **MLD Snooping for IPv6 Multicast stream**
- **Bandwidth Control**
  - *Ingress packet filter and egress rate limit*
  - *Broadcast/multicast packet filter control*
- **Relay alarm output system events**
- **Miss-wiring avoidance**
  - *LED indicator*
- **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**
- **Configuration backup and restoration**
  - *Supports text configuration file for system quick installation*
  - *USB port for upload / download configuration by USB dongle*
- **System Event Log and SNMP Trap for alarm support; 32 RMON counters**
- **Security**
  - *SSL/SSH v2/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.*
  - *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**
- **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 DIDO (2 Digital Input / 2 Digital Output)**
- **Dual DC input from ±45V~56VDC**
- **One 90~305VAC/120~430VDC isolated power input (HV model)**
- **Diagnostic including Ping / DDM information**
- **Environmental monitoring for system input voltage, current and ambient temperature.**
- **IP30 metal housing with DIN rail and Wall-mount** design**
- **Auto Provision to verify switch firmware with the latest or certain version**

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 (±45~56VDC) or one isolated 90~305VAC/120~430VDC (HV model)
PoE Budget	Max. 120W (50-56VDC input is recommended for 802.3at 30W applications) Higher PoE budget can be applied upon request. **
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,

	IEC 61850-3	IEEE 1613

	IEC 61000-4-2 ESD	Contact: ± 6 kV; Air: ±8 kV	Contact: ± 8 kV; Air: ±15 kV
	IEC 61000-4-3 RS	80 to 3000 MHz: 10 V/m	80 to 1000 MHz: 20 V/m
	IEC 61000-4-4 EFT	220VAC: Power: 4 kV; Signal: 4 kV 48VDC: Power: 4 kV	
	IEC 61000-4-5 Surge	DC power: Line to line: ± 1 kV; Line to earth: ±2 kV AC power: Line to line: ± 2 kV; Line to earth: ±4 kV Signal: Line to line: ±2 kV; Line to earth: ±4 kV	
	IEC 61000-4-6 CS	220VAC: Power: 10V; Signal: 10V 48VDC: Power: 10V	
	IEC 61000-4-8 PFMF IEC 61000-4-11 DIPs CE EN61000-6-2		
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-64 (Vibration)		
Railway compliance	EN 50121-4 , EN 50121-5		
Substation Verification	IEC 61850-3 IEEE 1613		
MTBF	289,712 hrs (standards: IEC 62830)		
Warranty	5 years		

Software Specification

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP MIB	MIB MIBII SNMP MIB Bridge MIB IF MIB RMON 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	■ System info ■ Environmental monitoring ■ Power ■ Device event report ■ Port status ■ Port statistic ■ Port event report ■ Firmware upgrade ■ Network configuration
PoE Management	PoE Detection to check if PD hangs then restart the PD; PoE configuration; PoE monitoring; PoE Scheduling to On/OFF PD upon routine time table
Per Port PoE Status	Enable/Disable, voltage, current, watts, temperature
User friendly UI	■ Auto topology drawing ■ Topology demo ■ DDM threshold monitoring 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
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, Protocol based VLAN; IPv4 Subnet based 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 / CoS / ToS / VLAN / 61375-3-4
Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues
MLD Snooping	Support IPv6 Multicast stream
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 v2 for Management HTTPS for secure access to the web interface TACACS+** 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)
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
Protection	■ Miss-wiring avoidance ■ Node failure protection ■ 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; DHCP Snooping, basic IPv6 DHCP server
Mac based DHCP Server	Assign IP address by Mac
DNS	Provide DNS client feature
Diagnostic	Support Ping and DDM information
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 & restore	Supports text configuration file for system quick installation N-key** for mass firmware auto-backup, editable restoration and auto upgrade USB port to upload/download firmware by USB dongle
Management	SNMP v1 v2c, v3/ Web/Telnet/CLI

Auto Provision	To verify switch firmware with the latest or certain version

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

ORDERING INFORMATION

- **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, environmental monitoring, w/ dual ±45V~56VDC 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, 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)

- **8330-162-V1** MINI GBIC 1000SX (LC/MM/0.5KM) Transceiver
- **8330-163-V1** MINI GBIC 1000SX2 (LC/MM/2KM) Transceiver
- **8330-165-V1** MINI GBIC 1000LX (LC/SM/10KM) Transceiver
- **8340-0591-V1** MINI GBIC 1000LHX (LC/SM/40KM) Transceiver
- **8330-166-V1** MINI GBIC 1000XD (LC/SM/50KM) Transceiver
- **8330-169-V1** MINI GBIC 1000XD (LC/SM/60KM) Transceiver
- **8330-167-V1** MINI GBIC 1000ZX (LC/SM/80KM) Transceiver
- **8330-170-V1** MINI GBIC 1000EZX (LC/SM/120KM) Transceiver
- **8330-168-V1** MINI GBIC 10/100/1000T (100m) Transceiver
- **8330-060-V1** MINI GBIC 100Base (LC/MM/2KM) Transceiver
- **8330-065-V1** MINI GBIC 100Base (LC/MM/5KM) Transceiver
- **8330-061-V1** MINI GBIC 100Base (LC/SM/30KM) Transceiver
- **8330-197-V1** 1.25Gbps BiDi SFP 0.5KM Transceiver (WDM 1310)
- **8330-198-V1** 1.25Gbps BiDi SFP 0.5KM Transceiver (WDM 1550)
- **8330-195-V1** 1.25Gbps BiDi SFP 2KM Transceiver (WDM 1310)
- **8330-196-V1** 1.25Gbps BiDi SFP 2KM Transceiver (WDM 1550)
- **8330-188-V1** 1.25Gbps BiDi SFP 10KM Transceiver (WDM 1310)
- **8330-189-V1** 1.25Gbps BiDi SFP 10KM Transceiver (WDM 1550)
- **8330-186-V1** 1.25Gbps BiDi SFP 20KM Transceiver (WDM 1310)
- **8330-187-V1** 1.25Gbps BiDi SFP 20KM Transceiver (WDM 1550)
- **8330-180-V1** 1.25Gbps BiDi SFP 40KM Transceiver (WDM 1310)
- **8330-182-V1** 1.25Gbps BiDi SFP 40KM Transceiver (WDM 1550)
- **8330-181-V1** 1.25Gbps BiDi SFP 60KM Transceiver (WDM 1310)
- **8330-183-V1** 1.25Gbps BiDi SFP 60KM Transceiver (WDM 1550)
- **8330-184-V1** 1.25Gbps BiDi SFP 80KM Transceiver (WDM 1490)
- **8330-185-V1** 1.25Gbps BiDi SFP 80KM Transceiver (WDM 1550)
- **8330-071-V1** 125Mbps BiDi SFP 2KM (WDM 1310) Transceiver
- **8330-072-V1** 125Mbps BiDi SFP 2KM (WDM 1550) Transceiver
- **8330-069-V1** 125Mbps BiDi SFP 20KM (WDM 1310) Transceiver
- **8330-068-V1** 125Mbps BiDi SFP 20KM (WDM 1550) Transceiver
- **8330-080-V1** 125Mbps BiDi SFP 40KM (WDM 1310) Transceiver
- **8330-082-V1** 125Mbps BiDi SFP 40KM (WDM 1550) Transceiver
- **8330-081-V1** 125Mbps BiDi SFP 60KM (WDM 1310) Transceiver
- **8330-083-V1** 125Mbps BiDi SFP 60KM (WDM 1550) Transceiver
- **8330-084-V1** 125Mbps BiDi SFP 80KM (WDM 1310) Transceiver
- **8330-085-V1** 125Mbps BiDi SFP 80KM (WDM 1550) Transceiver
- **8330-191-V1** Dual Speed SFP 100M/1000M-LX 10KM Transceiver

All SFP# ended 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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