IGS-6416XSFP

16 10/100/1000T at/af + 4 1G/2.5G/10G SFP+ L2+ Industrial Managed Ethernet Switch w/ Enhanced G.8032 Ring, PXE, 24V/HV input

- *Auto-sensing triple speed1G/2.5G/10G SFP+ Uplink Cage*
- *Support PXE to verify switch firmware with the latest or certain version on server*
- *Enhanced G.8032 ring protection < 20ms for single ring. Supports enhanced mode and basic mode; Enhanced G.8032 ring covers multicast packets; MSTP 8 MSTI /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, Mac based DHCP server, SSH v2/SSL, HTTPS, INGRESS ACL L2/L3,TACACS+, subnet VLAN and protocol VLAN*
- *Dual Input voltage 12~57VDC (24V model); Single input power 90~305VAC/120~430VDC (HV model)*
- *Enhanced Environmental Monitoring for temp., actual input voltage, current & total power load*
- *Optional L3Lite/L3* to be upgradable*
- *Wide range operation temperature (-E model):-40~75C/-40~167F; Fan-less design*

OVERVIEW

Lantech IGS-6416XSFP is a high performance L2+ (All Gigabit) Ethernet switch with 16 100/1000T + 4 1G/2.5G/10G auto sensing SFP+ ports which provides advanced security function for network aggregation deployment. It delivers ITU G.8032 enhanced ring recovery less than 20ms in single ring while also supports enhanced mode with easy configuration, comprehensive QoS, advanced security including INGRESS ACL L2/L3, TACACS+, SSH v2/SSL, Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port which are important features required in large network. The Cisco Discovery Protocol (CDP) and LLDP are supported for Ciscoworks to detect the switch info and show on L2 map topology.

Miss-wiring avoidance, Loop protection, node failure protection

The IGS-6416XSFP 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-6416XSFP 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. Loop protection is also available to prevent the generation of broadcast storm when a dumb switch is inserted in a closed loop connection.

Support PXE to verify switch firmware with the latest or certain version

The switch can check its firmware version during booting time via PXE protocol. If switch finds any newer version, it will upload automatically.

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. Basic IPv6 DHCP service can be supported.

User friendly GUI, Auto topology drawing
The user friendly UI, innovative auto topology drawing and topology demo makes IGS-6416XSFP much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line.

Enhanced G.8032 ring, 8 MSTI MSTP; MRP ring
Lantech IGS-6416XSFP 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 enhanced ring and basic ring by easy setup than others. It supports MSTP that allows RSTP over VLAN for redundant links with 8 MSTI.

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

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.

QoS by VLAN for legacy device
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.

Enhanced Storm control*
Storm control prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on one of the physical interfaces and the detection is more precise and reaction is more efficient.

Optional L3Lite/L3* to be upgradable
Lantech OS3 is optional upgradable to L3 Lite for future expansion. The optional L3Lite includes editable routing table, VRRP, Router-on-a-stick, Inter- VLAN routing.

Editable configuration file; USB port for upload/download configuration
The configuration file of Lantech IGS-6416XSFP can be exported and edited with word processor for the following switches to configure with ease.

The USB port can upload/download the configuration from/to USB dongle.

2DI/2DO for relay contact and event alerting by email & traps
In case of event, the IGS-6416XSFP is able to send an email to pre-defined addresses as well as SNMP Traps out immediately. It provides 2DI and 2DO. 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.

Enhanced environmental monitoring for switch inside information
The enhanced environmental monitoring can detect switch overall temperature, total power load, voltage and current where can send the SNMP traps, email when abnormal.

24V/HV input voltage selection: dual 12V-57VDC (24V model) or single 90~305VAC/120~430VDC (HV model)
The IGS-6416XSFP being able to work from 12VDC to 57VDC (24V model). Or with single high power supply at 90~305VAC / 120~430VDC (HV model).

Industrial hardened design with high EFT and ESD protection
Lantech IGS-6416XSFP 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. Featured with relay contact alarm function, the IGS-6416XSFP is able to connect with alarm system in case of power failure or port disconnection.
It is the best solution for Automation, transportation, surveillance, Wireless backhaul, Semi-conductor factory applications. The -E model can be used in extreme environments with an operating temperature range of -40°C to 75°C.

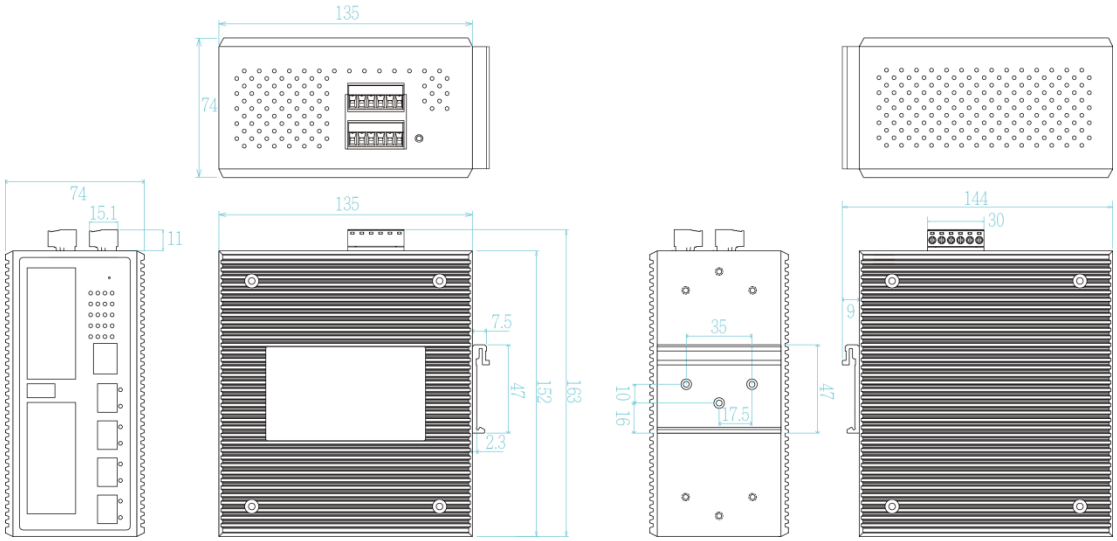
FEATURES & BENEFITS

- **16 100/1000T + 4 1G/2.5G/10G auto sensing SFP+ ports (Total 20 Ports Switch)**
- **Back-plane (Switching Fabric): 112Gbps**
- **16K MAC address table**
- **Dual input from 12V~57VDC (24V model); HV single input from 90~305VAC/120~430VDC (HV model)**
- **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 protection in 20ms for single ring**
  - *Support various ring/chain topologies, including enhanced ring & basic ring*
  - *Enhanced G.8032 ring configuration with ease*
  - *Cover multicast and data packets 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 8 MSTI**
- **4K 802.1Q VLAN, Port based VLAN, GVRP**
- **Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console**

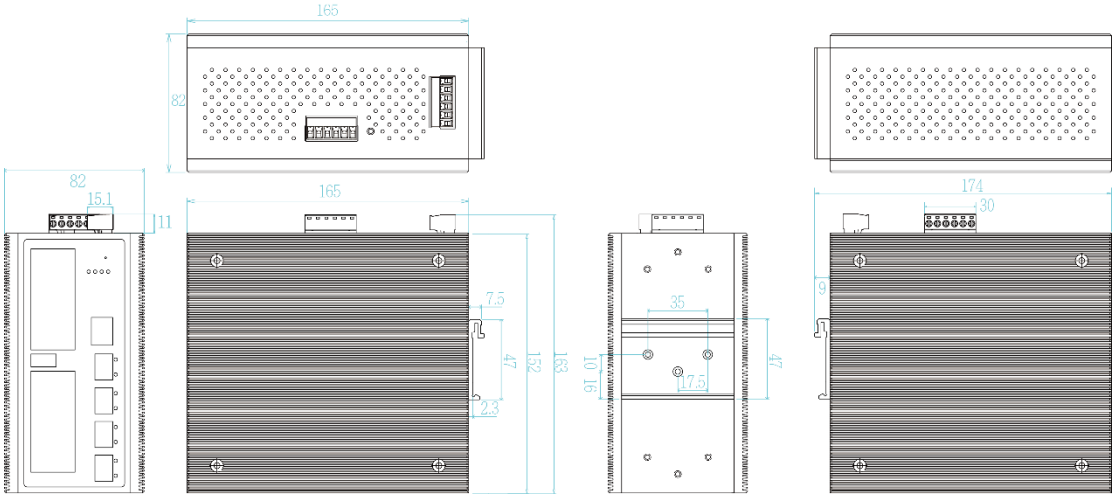
- **Support PXE to verify switch firmware with the latest or certain version**
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server; Port based DHCP server; Basic DHCP Option 66**
- **Mac based DHCP server to assign IP address that includes dumb switches in DHCP network**
- **Bandwidth Control**
  - *Ingress packet filter and egress rate limit*
  - *Broadcast/multicast packet filter control*
- **Relay alarm output system events**
- **Miss-wiring avoidance**
  - *LED indicator*
- **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**
- **System Event Log, SMTP Email alert and SNMP Trap for alarm support; 32 RMON counters**
- **Security**
  - *SSL/SSH v2/INGRESS ACL L2/L3*
  - *MAC address table: MAC address entries/Filter/static MAC-Port binding*
  - *Remote Admin: 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 for Multicast protection**
- **IGMPv1,v2,v3 with Query mode for multimedia; GMRP**
- **Dual image firmware support**
- **MLD Snooping for IPv6 Multicast stream**
- **Factory reset button to restore setting to factory default**
- **Watchdog design to auto reboot switch when CPU is found dead**
- **Enhanced environmental monitoring for system actual input voltage, current, ambient temperature and total power load**
- **Diagnostic including Ping / ARP table / DDM information**
- **Optional L3Lite/L3* to be upgradable**
- **Supports DIDO (Digital Input/Digital Output)**
- **Configuration backup and restoration**
  - *Supports editable configuration file for system quick installation*
  - *USB port to upload/download firmware by USB dongle*
- **Wide operation temperature (-E model): -40C~75C/-40F~167F; Fan-less design**
- **IP30 metal housing with DIN rail and Wall-mount** design**

DIMENSIONS (unit=mm)

24V model



HV model



SPECIFICATION

Hardware Specification

Standards	IEEE802.3 10Base-T Ethernet IEEE802.3u 100Base-TX IEEE802.3ab 1000Base-T 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): 112Gbps
Mac Address	16K MAC address table
Jumbo frame	10KB
Connectors	10/100/1000T: 16 x ports RJ-45 with Auto MDI/MDI-X function Mini-GBIC: 4 x 1G/2.5G/10G SFP+ auto-sensing socket with DDMI RS-232 connector: RJ-45 type USB x 1 Power & Relay connector: 1 x 6-pole terminal block DIDO : 1 x 6-pole terminal block
Network Cable	100Base-TX: 2-pair STP Cat. 5/ 5E/ 6 cable; EIA/TIA-568 100-ohm (100m) 1000Base-T: 4-pair STP Cat5E/6 cable; 10GBaseT:4-pair STP Cat6/6A/7 cable
Optical Cable	**1Gbps:** 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) **2.5Gbps** Multi-mode: 0 to 300 m, 850 nm (50/125 µm); Single mode: 0 to 2 km/ 15 km/ 40 km, 1310 nm (9/125 µm); 0 to 40 km/ 80 km/ 100km, 1550 nm (9/125 µm) **WDM 1Gbps:** 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 2.5Gbps** Single-mode: 0 to 5 km/ 20 km/ 40 km/ 60 km, 1310 /1550nm (9/125 µm); 0 to 80 km, 1490/1550 nm (9/125 µm) **10Gbps** Multi-mode: 0 to 300 m, 850 nm (OM3 50/125 µm); Single mode: 0 to 10 km/ 20 km, 1310 nm (9/125 µm); 0 to 40 km/ 80km/ 100 km, 1550 nm (9/125 µm) **WDM 10Gbps** Single-mode: 0 to 10 km/ 20 km/ 40 km/ 60 km, 1270/1330 nm (9/125 µm); 0 to 80km, 1490/1550 nm (9/125 µm)
LED	Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red); RM(Green) Ethernet port: Link/Activity (Green), Speed (Green); 10G (Amber)
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	Dual DC input, 12~57VDC (24V model) Single HV input, 90~305VAC/120~430VDC (HV model)
Power Consumption	Max. 25W (full load w/o PoE)
Case Dimension	Metal case. IP-30, 74 (W) x 135 (D) x 152 (H) mm (24V model) 74 (W) x 165 (D) x 152 (H) mm (HV model)
Weight	900 g
Installation	DIN Rail and Wall Mount** Design
EMI & EMS	FCC Class A, CE EN55032 Class A, CE EN55024, CE EN61000-4-2, CE EN61000-4-3, CE EN61000-4-4, CE EN61000-4-5, CE EN61000-4-6, CE EN61000-4-8, CE EN61000-6-2
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)
Railway compliance	EN50155:2017, EN50121-3-2:2015, EN50121-4:2015, EN61373:2010

MTBF	659,028.7 Hrs (IEC 62380 standards)
Warranty	5 years

Software Specification

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP MIB	RFC 1213 MIBII RFC 1158 MIB RFC 1157 SNMP MIB RFC 1493 Bridge MIB* RFC 1573 IF MIB RFC 2674 Q-Bridge MIB* RFC 2819 RMON MIB Private MIB
ITU G.8032	Support ITU G.8032 for Ring protection in less than 20ms for self-heal recovery (single ring enhanced mode) Support basic single ring & enhanced ring Enhanced G.8032 ring configuration with ease Cover multicast & data packets protection
User friendly UI	■ Auto topology drawing ■ Topology demo ■ 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
Enhanced Environmental Monitoring	System status for actual input voltage, current, total power load 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 Protocol based VLAN, Subnet based VLAN
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree 8 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
Remote Admin	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/static MAC-Port binding Ingress ACL L2/L3 SSL/ SSH v2 for Management HTTPS for secure access to the web interface TACACS+ for Authentication
IGMP	Support IGMP snooping v1,v2,v3; 256 multicast groups; IGMP router port ; IGMP query; GMRP
MLD Snooping	Support IPv6 Multicast stream
Static multicast forwarding	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 Trap	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	■ Miss-wiring avoidance ■ Node failure protection ■ Loop protection
SNMP Trap	Up to 5 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
PXE	PXE to verify switch firmware with the latest or certain version
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82 (Client & Server)/Port based DHCP; DHCP Option 66; Basic IPv6 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 firmware update, TFTP backup and restore; HTTP firmware upgrade
Optional L3Lite/L3**	Lantech OS3 is optional upgradable to L3 Lite/L3* for future expansion. The optional L3Lite includes editable routing table, VRRP, Router-on-a-stick, Inter- VLAN routing.
Configuration upload and download	Supports text configuration file for system quick installation; Support factory reset button to restore all settings back to factory default; USB for auto restore/backup
Diagnostic	Support Ping, ARP table and DDM information
Dual Image Firmware	Support dual image firmware function

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

ORDERING INFORMATION

- **IGS-6416XSFP-24V……..P/N: 8350-868**
  16 10/100/1000T + 4 1G/2.5G/10G SFP+ L2+ Industrial Managed Ethernet Switch; -20°C to 60°C; Enhanced Environmental Monitoring; dual input 12V~57V input
- **IGS-6416XSFP-24V-E……..P/N: 8350-869**
  16 10/100/1000T + 4 1G/2.5G/10G SFP+ L2+ Industrial Managed Ethernet Switch; -40°C to 75°C; Enhanced Environmental Monitoring; dual input 12V~57V input
- **IGS-6416XSFP-HV……..P/N: 8350-870**
  16 10/100/1000T + 4 1G/2.5G/10G SFP+ L2+ Industrial Managed Ethernet Switch; -20°C to 60°C; Enhanced Environmental Monitoring; Single high power 90~305VAC/120~430VDC
- **IGS-6416XSFP-HV-E……..P/N: 8350-871**
  16 10/100/1000T + 4 1G/2.5G/10G SFP+ L2+ Industrial Managed Ethernet Switch; -40°C to 75°C; Enhanced Environmental Monitoring; Single high power 90~305VAC/120~430VDC

OPTIONAL ACCESSORIES

Software package

- **OS3 – L3L…….. P/N: 9000-114**
  OS3 software platform with Layer 3 Lite functions (please check Lantech software data sheet for details)
- **OS3 – L3*…….. P/N: 9000-116**
  OS3 software platform with Layer 3 functions (please check Lantech software data sheet for details)

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)

Mini GBIC (SFP)

- **8330-162X** MINI GBIC 1000SX (LC/0.5km) Transceiver
- **8330-163X** MINI GBIC 1000SX2 (LC/2km) Transceiver
- **8330-165X** MINI GBIC 1000LX (LC/10km) Transceiver
- **8340-0591** MINI GBIC 1000LHX (LC/40km) Transceiver
- **8330-166** MINI GBIC 1000XD (LC/50km) Transceiver
- **8330-169** MINI GBIC 1000XD (LC/60km) Transceiver
- **8330-167** MINI GBIC 1000ZX (LC/80km) Transceiver
- **8330-170** MINI GBIC 1000EZX (120km) Transceiver
- **8330-168** MINI GBIC 1000T (100m) Transceiver
- **8330-188** LTSFP-1000BX-10KM Transceiver (WDM 1310)
- **8330-189** LTSFP-1000BX-10KM Transceiver (WDM 1550)
- **8330-186** LTSFP-1000BX-20KM Transceiver (WDM 1310)
- **8330-187** LTSFP-1000BX-20KM Transceiver (WDM 1550)
- **8330-180** LTSFP-1000BX-40KM Transceiver (WDM 1310)
- **8330-182** LTSFP-1000BX-40KM Transceiver (WDM 1550)
- **8330-181** LTSFP-1000BX-60KM Transceiver (WDM 1310)
- **8330-183** LTSFP-1000BX-60KM Transceiver (WDM 1550)
- **8330-184** LTSFP-1000BX-80KM Transceiver (WDM 1490)
- **8330-185** LTSFP-1000BX-80KM Transceiver (WDM 1550)
- **8330-262D** MINI GBIC 2.5G 850nm VCSEL (LC/0.3km) Transceiver
- **8330-263D** MINI GBIC 2.5G 1310nm FP (LC/2km) Transceiver
- **8330-265D** MINI GBIC 2.5G 1310nm DFB (LC/15km) Transceiver
- **8330-193D** 10G Base SFP+ SR, Multi-mode (LC/300m) Transceiver
- **8330-194D** 10G Base SFP+ LR, Single-mode (LC/10km) Transceiver
- **8330-209D** 10G Base SFP+ , Single-mode(10km) Transceiver (WDM 1270)
- **8330-210D** 10G Base SFP+ , Single-mode(10km) Transceiver (WDM 1330)
- **8330-200D** 10G Base SFP+ , Single-mode(20km) Transceiver (WDM 1270)
- **8330-201D** 10G Base SFP+ , Single-mode(20km) Transceiver (WDM 1330)
- **8330-202D** 10G Base SFP+ , Single-mode(40km) Transceiver (WDM 1270)
- **8330-203D** 10G Base SFP+ , Single-mode(40km) Transceiver (WDM 1330)
- **8330-206** 10G/5G/2.5G/1000Base-T SFP, 3.3V,30m (10G) 50m (2.5G/5G) 100m (1G); -10~70°C (only used from 18V~57VDC power input, maximum two ports)

All SFP ended with D are with Diagnostic function

Lantech Communications Global Inc.

www.lantechcom.tw
info@lantechcom.tw