IPGS-3416DSFPM

16 10/100/1000T PoE at/af + 4 100/1000 SFP L2+ Industrial Managed Switch w/ Enhanced G.8032 Ring & Environmental Monitoring

- *Support IEEE802.3at/af up to 30W per port*
- *PoE management incl. Detection and Scheduling*
- *Enhanced G.8032 ring protection < 20ms with easy configuration; Dynamic coupling ring; Aggregation ring**
- *Miss-wiring avoidance & Repowered auto ring restore (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, SSH/SSL, TACAS+*, HTTPS, ACL, IPv6, SMS*
- *Environmental Monitoring for temp., voltage & current*

OVERVIEW

Lantech IPGS-3416DSFPM is a high performance L2+ (Gigabit uplink) switch with 16 100/1000T + 4 100/1000M SFP w/16 PoE 802.3af/at Injectors which provides L2 wire speed and advanced security function for network aggregation deployment. It delivers ITU G.8032 enhanced ring recovery less than 20ms including dynamic coupling ring, enhanced mode for easy configuration and aggregation ring*, comprehensive QoS, QoS by VLAN, advanced security including ACL L2/L3, SSH/SSL, Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ* (double tag VLAN) which are important features required in train and large network. It also supports Cisco Discovery Protocol (CDP) and LLDP for Ciscoworks to detect the switch info and show on L2 map topology.

Compliant with 802.3af/at standard, the Lantech IPGS-3416DSFPM is able to feed each PoE port up to 30 Watts@54 VDC providing the connected PD devices. Lantech IPGS-3416DSFPM supports advanced PoE management including PoE detection and scheduling. PoE detection can detect if the connected PD is hang up then restart the PD; PoE scheduling is to allow pre-set power feeding schedule upon routine time table. Each PoE ports can be Enabled/disabled, get the voltage, current, Watt, and temperature info displayed on WebUI.

The IPGS-3416DSFPM 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-3416DSFPM is able to alert with the LED indicator and send out an email, traps or a SMS text. Repowered auto ring restore function (node failure protection) ensures the switches in a ring to survive after power breakout is back. The status can be shown in NMS when each switch is back. This feature prevents the broken ring and keep ring alive without any re-configuration needed. Loop protection is also available to prevent the generation of broadcast storm when a dumb switch is inserted in a closed loop connection.

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 police setting on the switch. Mac based DHCP server function assigns an IP address according to its MAC address to include dumb switches in DHCP network.

The user friendly UI, innovative auto topology drawing and topology demo makes IPGS-3416DSFPM much easier to get hands-on. The switch also equips the RTC (real time clock) which can keep track of time always. The IPGS-3416DSFPM 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.

Lantech IPGS-3416DSFPM features enhanced G.8032 ring which can be self-healed in less than 20ms for ring/chain topologies which covers dynamic coupling ring & aggregation ring* protection. The innovative auto-Ring configurator (auto mode) can calculate owner and neighbor in one step. The enhanced mode and dynamic coupling ring configuration have never been easier. It supports MSTP that allows RSTP over Vlan for redundant links. The ITU G.8032 Ring and RSTP can be co-existed in the same switch with different ports for the most flexible protection.

The configuration file of Lantech IPGS-3416DSFPM can be exported in text file so that it can be edited and configured back to switch with ease for mass deployment. The factory reset button can restore the setting back to factory default and built-in watchdog design can automatically reboot the switch when CPU is found dead.

QoS by VLAN 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.

The IPGS-3416DSFPM 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 IPGS-3416DSFPM will immediately send an email & SMS text message to pre-defined addresses as well as SNMP Traps out. It provides 2DI and 2DO while disconnection of the specific port was detected; DO will activate the signal LED to alarm. DI can integrate the sensors for events and DO will trigger the alarm while sending alert information to IP network with email and traps.

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

The Lantech IPGS-3416DSFPM is designed with dual power supply at 48VDC. Featured with relay contact alarm function, the IPGS-3416DSFPM is able to connect with alarm system in case of power failure. The IPGS-3416DSFPM also provides 2000V EFT and 6000V ESD protection, which can reduce unstable situation caused by power line and Ethernet.

Lantech IPGS-3416DSFPM 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.

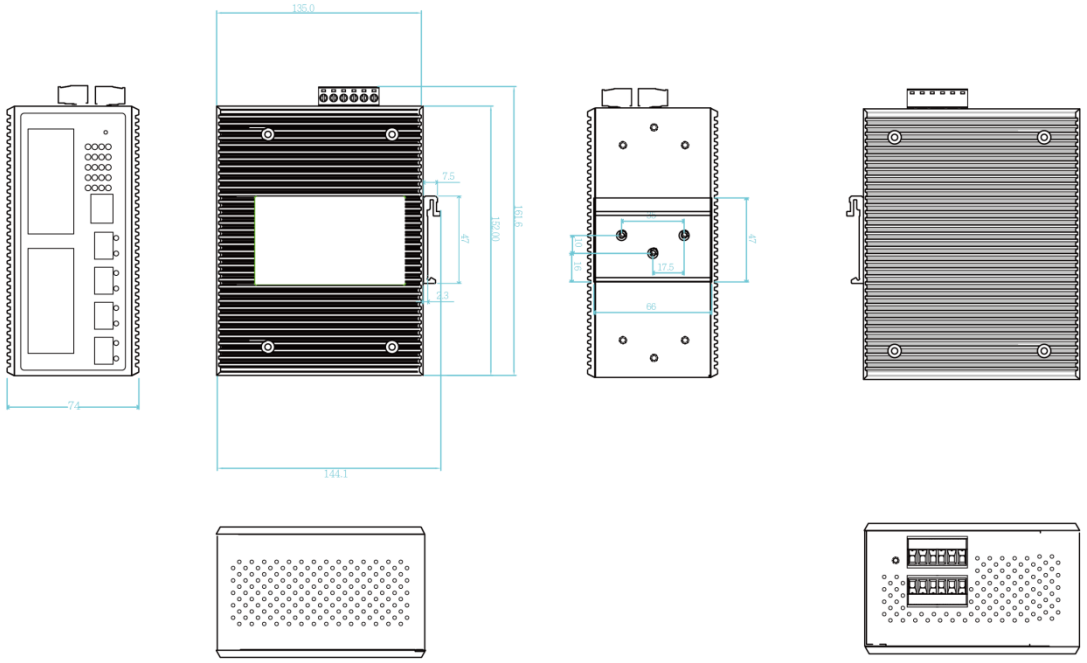
The -E model can be used in extreme environments with an operating temperature range of -40°C to 75°C.

FEATURES & BENEFITS

- **16 100/1000T + 4 100/1000M FX w/16 PoE 802.3af/at Injectors (Total 20 Ports Switch)**
- **Embedded 16 PoE Injectors IEEE802.3af/at function to feed power up to 30W@54V; 15W @ 48V per port for active operation**
- **PoE management including PoE detection and scheduling for PD (power devices)**
- **Back-plane (Switching Fabric): 40Gbps**
- **16K MAC address table**
- **DDM to support SFP diagnostic function*****
  - *Automatically convert the raw data into dB values for TX power/RX power, making it easier to measure the fiber distance*
- **9KB Jumbo frame supported on all ports**
- **User friendly UI, auto topology drawing, topology demo, complete CLI for professional setting**
- **Enhanced G.8032 Ring protection in 20ms < 256 switches**
  - *Support various ring/chain topologies, including dynamic coupling ring& aggregation ring**
  - *Enhanced G.8032 ring configuration with ease*
  - *Auto ring configuration(auto mode) for single ring*
  - *Co-exist with RSTP on different ports*
- **Aggregation ring for ring redundancy and bandwidth combination***
- **Provides EFT protection 2000 VDC for power line.**
- **Supports 6000 VDC Ethernet ESD protection**
- **LACP load balancing to distribute the load***
- **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**
- **QoS by VLAN to prioritize all devices in the network**
- **IEEE 802.1d STP, IEEE 802.1w RSTP,802.1s MSTP VLAN redundancy**
- **4K 802.1Q VLAN, Port based VLAN, GVRP**, QinQ***
- **Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console/ Lantech™ InstaConfig**/ Lantech™ InstaView****
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server for Port&Vlan based DHCP distribution**
- **Mac based DHCP server to assign IP address that includes dumb switches in DHCP network**
- **Bandwidth Control**
  - *Ingress packet filter and egress rate limit*
  - *Broadcast/multicast packet filter control*
- **Relay alarm output system events**
- **Miss-wiring avoidance**
  - *LED indicator*
  - *Email, traps, or SMS notification*
- **Repowered auto ring restore**
  - *Ensure the switches in a ring to survive after power breakout is back*
  - *The status can be shown in NMS when each switch is back*

- **TFTP/HTTP firmware upgrade; Lantech™ InstaConfig** for multiple upgrade**
- **System Event Log, SMTP Email alert, SMS mobile (text) and SNMP Trap for alarm support; 32 RMON counters**
- **Security**
  - *SSL/SSH/ACL L2&L3*
  - *Port Security: 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 (MVR) 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**
- **Multicast VLAN registration* for metro video**
- **IGMPv1,v2,v3 with Query mode for multi media**
- **Factory reset button to restore setting to factory default**
- **Watchdog design to auto reboot switch CPU is found dead**
- **Environmental monitoring for system input voltage, current, ambient temperature and total PoE load**
- **Supports DIDO (Digital Input/Digital Output)**
- **IP30 metal housing with DIN rail and Wall-mount** design**

DIMENSIONS (unit=mm)



SPECIFICATION

Hardware Specification

Standards	IEEE802.3 10Base-T Ethernet IEEE802.3u 100Base-TX 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): 40Gbps Packet throughput ability (Full-Duplex): 23.8Mpps @64bytes
Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Fiber Ethernet port
CPU	Marvell 800Mhz
RAM	256M Byte
Flash	128M Byte
Mac Address	16K MAC address table
Jumbo frame	9KB on all ports
Connectors	10/100/1000T: 16 x ports RJ-45 with Auto

	MDI/MDI-X function Mini-GBIC: 4 x 100/1000 SFP socket with DDM RS-232 connector: RJ-45 type Power & P-Fail 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)
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) **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)
Protocol	CSMA/CD
LED	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) 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	48VDC
PoE Budget	240W for 802.3at 54V input 120W for 802.3af 48V input
PoE pin assignment	RJ-45 port # 1~#16 support IEEE 802.3at/af End-point, Alternative A mode. Per port provides 30W at 54~56VDC/15W at 48V~56VDC. Positive (VCC+): RJ-45 pin 1,2. Negative (VCC-): RJ-45 pin 3,6.
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 EN61000-6-2, CE EN61000-6-4, CE EN61000-4-2, CE EN61000-4-3, CE EN61000-4-4, CE EN61000-4-5, CE EN61000-4-6, CE N61000-4-8, EN61000-4-11
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)
MTBF	NA
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 1643 EtherLike, Partial RFC 1757 RMON, RFC 2674 Q-Bridge MIB; Bridge MIB, RFC 2790 Host Resource 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 (basic mode) Support various ring/chain topologies Includes dynamic coupling ring & aggregation ring*
	Enhanced G.8032 ring configuration with ease Co-exist with RSTP on different ports
PoE Management	PoE Detection to check if PD is hang up then restart the PD
Per Port PoE Status	On/ Off, voltage, current, watts, temperature
PTP v2	Support hardware-based IEEE1588 PTPv2 in 1µs, End to End (1-step) and Peer to Peer (1-step) modes in Transparent Clock, on all ports
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/Maximum 16 trunk members Aggregation ring for ring redundancy and bandwidth combination*
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 , total PoE 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** (256 Groups)**, QinQ*
IPv6/4	Present
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree
Quality of Service	The quality of service determined by port, Tag and IPv4 Type of service, IPv4 Differentiated Services Code Points - DSCP
Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues
QoS by VLAN	Tagged QoS by VLAN for all devices in the network
IP Security	Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.
Login Security	Supports IEEE802.1X Authentication/RADIUS
Port Mirror	Support 3 mirroring types: “RX, TX and Both packet”
Network Security	Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder. 802.1X access control for port based and MAC based authentication/MAC-Port binding Management access control with priority 256 Policy based Access Control List SSL/ SSH for Management HTTPS for secure access to the web interface TACACS+ for Management Authentication*
IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 256 multicast groups; IGMP router port ; IGMP query; GMRP**
MVR	Static multicast forwarding forward reversed IGMP flow (MVR) 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
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) ● PoE ping failure ● Power failure ● Environmental abnormal
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based&VLAN based DHCP distribution (DHCP relay agent)

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; Lantech™ InstaConfig** for multiple upgrade
Configuration upload and download	Supports text configuration file for system quick installation; Support factory reset button to restore all settings back to factory default; USB for auto restore/backup
IfAlias	Each port allows an alphabetic string of 128-byte assigned as its own unique name via the SNMP or CLI interface

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

ORDERING INFOMATION

- **IPGS-3416DSFPM…….…….…….....P/N: 8350-841**
  16 10/100/1000T PoE at/af up to 30W + 4 Dual Speed SFP L2+ Managed Industrial PoE Switch; -20°C to 60°C; Environmental Monitoring

- **IPGS-3416DSFPM-E…….…….....P/N: 8350-842**
  16 10/100/1000T PoE at/af up to 30W + 4 Dual Speed SFP L2+ Managed Industrial PoE Switch; -40°C to 75°C; Environmental Monitoring

OPTIONAL ACCESSORIES

DIN Rail Power

AD1240-48S	48VDC, 5A, Wide AC Input, Build-in fan Cooled, DIN Rail or Wall Mounted, RoHS, Operating Temp. -20°C~50°C (ambient, derating each output at 2.5% per degree from 50°C ~ 75°C)
AD1360-48F	48VDC, 7.5A, Wide AC Input, Build-in fan Cooled, DIN Rail or Wall Mounted, RoHS, Operating Temp. -20°C~50°C (ambient, derating each output at 2.5% per degree from 50°C ~ 75°C)
-E model	-40°C~75°C(ambient, derating each output at 2.5% per degree from 50°C ~ 75°C)

Mini GBIC (SFP)

8330-162	MINI GBIC 1000SX (LC/0.5km) Transceiver
8330-163	MINI GBIC 1000SX2 (LC/2km) Transceiver
8330-165	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 10/100/1000T (100m) Transceiver

All SFP part no. with D are with DDM function

Wall Mount Bracket

MBEAR001	Wall mount bracket for 74.15(W) x 114.3 (D) x 152 (H) mm Industrial switches

Lantech Communications Global Inc.

www.lantechcom.tw
info@lantechcom.tw