

# IPGS-5424

## 24 10/100/1000T PoE + 4 DualSpeed SFP Industrial L2+ Switch w/ enhanced G.8032 Ring & PTP

- Support IEEE802.3af/at 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\*
- Supports PTP IEEE1588 v2 (under 1μ s)
- 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
- USB slot for edited restoration and auto backup



## OVERVIEW

Lantech IPGS-5424 is a high performance L2 + PoE managed industrial switch which provides L2 wire speed and advanced security function for network aggregation and backbone 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 Ciscosw to detect the switch info and show on L2 map topology.

Lantech IPGS-5424 features hardware-based PTP IEEE1588 v2 function which can allow 24 10/100/1000T and 4 100/1000M SFP uplinks to synchronize the network with precise accuracy (under 1μs). It has RTC (Real Time Clock) inside that can keep track of current time.

Compliant with 802.3af/at standard, the Lantech IPGS-5424 is able to feed each PoE port up to 30 Watts@54 VDC providing the connected PD devices. Lantech IPGS-5424 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-5424 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-5424 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-5424 much easier to get hands-on. The switch also equips the RTC (real time clock) which can keep track of time always. The IPGS-5424 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-5424 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-5424 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. The USB slot allows user to backup/ restore configuration.

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-5424 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-5424 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 built-in environmental monitoring can detect switch overall temperature, voltage and current where can send the SNMP traps, email and SMS alert when abnormal.

The Lantech IPGS-5424 is designed with dual power supply at 12/24/48VDC. Featured with relay contact alarm function, the IPGS-5424 is able to connect with alarm system in case of power failure. The IPGS-5424 also provides  $\pm 4000V$  EFT and  $\pm 6000V$  ESD protection, which can reduce unstable situation caused by power line and Ethernet.

Lantech IPGS-5424 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 IPGS-5424 can be used in extreme environments with an operating temperature range of  $-20^{\circ}C$  to  $60^{\circ}C$ .

## FEATURES & BENEFITS

- **24 10/100/1000T + 4 Dual Speed SFP w/24 PoE 802.3af/at Injectors (Total 28 Ports Switch)**
- **Embedded 24 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)**
- **IEEE 1588 PTP v2 (under 1 $\mu$ s) at all ports**
- **Back-plane (Switching Fabric): 56Gbps**
- **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  $\pm 4000$  VDC for power line.**
- **Supports  $\pm 6000$  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**
- **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

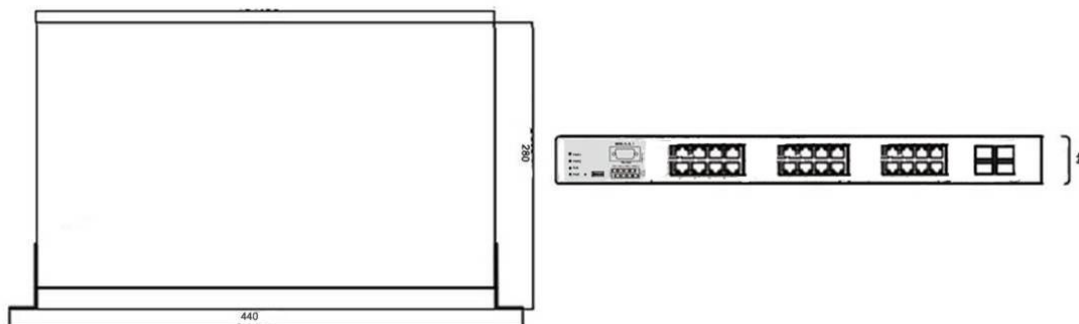
switch is back

- TFTP/HTTP firmware upgrade; Lantech™ InstaConfig\*\* for multiple upgrade; USB for edited restoration and auto backup
- 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 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, ambient temperature
- Supports DIDO (Digital Input/Digital Output)
- IP30 metal housing with DIN rail and Wall-mount\*\* design

## DIMENSIONS (unit=mm)



## SPECIFICATION

Hardware Specification	
IEEE Standards	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX Ethernet
	IEEE 802.3ab 1000Base-TX Ethernet
	IEEE 802.3z 1000Base-X Ethernet
	IEEE 802.3x Flow Control Capability
	ANSI/IEEE 802.3 Auto-negotiation
	IEEE 802.1Q VLAN
	IEEE 802.1p Class of Service
	IEEE 802.1X Access Control
	IEEE 802.1D Spanning Tree
	IEEE 802.1w Rapid Spanning Tree
	IEEE 802.1s Multiple Spanning Tree
	IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)	
IEEE 802.1x User Authentication (Radius)	
IEEE 1588 Precision Time Protocol v2	
IEEE 802.3t/af Power Over Ethernet	
Switch Architecture	Back-plane (Switching Fabric): 56Gbps
	Packet throughput ability (Full-Duplex): 71.43Mpps @64bytes
Transfer Rate	14,880pps for Ethernet port
	148,800pps for Fast Ethernet port
	1,488,000pps for Gigabit Ethernet port

CPU	Marvell 800Mhz		
RAM	256M Byte		
Flash	128M Byte		
MAC Address	16K MAC address table		
Jumbo frame	9KB on all ports		
PoE pin assignment	RJ-45 port # 1~# 24 support PoE at/af End-point, Alternative A mode. Per port provides up to 30W @54V capability. Positive (VCC+): RJ-45 pin 1,2. Negative (VCC-): RJ-45 pin 3,6.		
PoE input voltage & Power feed voltage	Input V	Active Mode A /Output V	
	45~56V(af)	48V @15W	
	54~56V(at)	54V @30W	
Connectors	24 10/100/1000T RJ-45 with auto MDI/MDI-X function 4 100M / 1000M Mini-GBIC : SFP sockets RS-232 console: Female DB-9 USB for automatic backup and restore		
DDM	Conform to SFF-8472 to show diagnostic SFP with temperature, current, voltage, input and output power		
Protocol	CSMA/CD		
LED	Per unit: Power 1 (Green), Power 2 (Green), Alarm (Red) ,R.M (Green) Link/Activity (Green), Full duplex/collision(Yellow)), MINI GBIC (Link/Activity )(Green)		

Datasheet Version 1.7

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Power Supply	9.5~60VDC input( DC relay contact) for system 48VDC for PoE	Environmental Monitoring	System status for input voltage, current and ambient temperature to be shown in GUI and sent alerting if any abnormal status
Power Consumption	Full load: 30W/ Unload: 13W	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
PoE Power Budget	720W	IPv6/4	Present
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V	Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree
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	Quality of Service	The quality of service determined by port, Tag and IPv4 Type of service, IPv4 Differentiated Services Code Points - DSCP
Case Dimension	19" Metal case,IP-30; 440mm(W)x280mm(D)x44mm(H)	Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues
Operating Humidity	5%~95% (Non-condensing)	QoS by VLAN	Tagged QoS by VLAN for all devices in the network
Operating Temperature	Standard: -20°C ~60°C	IP Security	Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.
Storage Temperature	-40°C ~85°C	Login Security	Supports IEEE802.1X Authentication/RADIUS
EMI	FCC Class A, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN-61000-4-4 (EFT), CE EN61000-4-5 (Surge), CE EN61000-4-6 (CS), CE EN61000-4-8, CE EN61000-4-11, CE EN61000-4-12, CE EN61000-6-2, CE EN61000-6-4	Port Mirror	Support 3 mirroring types: "RX, TX and Both packet"
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)	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*
Warranty	5 years	IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 256 multicast groups; IGMP router port ; IGMP query; GMRP**
<b>Software Specification</b>		MVR	Static multicast forwarding forward reversed IGMP flow (MVR) with multicast packets binding with ports for IP surveillance application
Management	SNMP v1 v2c, v3/ Web/Telnet/CLI	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.
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	RTC	Built-in Real Time Clock to keep track of time always
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	Flow Control	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex
PoE Management	1. PoE Detection to check if PD is hang up then restart the PD 2. PoE Scheduling to On/OFF PD upon routine time table	System Log	Supports System log record and remote system log server
PTP v2	Support hardware-based IEEE1588 PTPv2 in 1μs with 24 10/100/1000T and 4 100/1000M SFP	SMTP/Text SMS	Supports SMTP Server and 8 e-mail accounts for receiving event alert; can send SMS text alert via mobile
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>	Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups/Maximum 24 trunk members Aggregation ring for ring redundancy and bandwidth combination*	Protection	<ul style="list-style-type: none"> <li>Miss-wiring avoidance</li> <li>Repowered auto ring restore</li> <li>Loop protection</li> </ul>
LLDP	Supports LLDP to allow switch to advise its identification and capability on the LAN	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>PoE ping failure</li> <li>Power failure</li> <li>Environmental abnormal</li> </ul>
CDP	Cisco Discovery Protocol for topology mapping	DHCP	Provide DHCP Client/ DHCP Server/DHCP Option

	82/Port based&VLAN based DHCP distribution (DHCP relay agent)	upload and download	installation; Support factory reset button to restore all settings back to factory default; USB for edited restoration and auto backup
Mac based DHCP Server	Assign IP address by Mac that can include dumb switch in DHCP network	IfAlias	Each port allows an alphabetic string of 128-byte assigned as its own unique name via the SNMP or CLI interface
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	Supports text configuration file for system quick		

\*Future Release

\*\*Optional

\*\*\*Optional DDM SFP required

## ORDERING INFORMATION

### ■ IPGS-5424-DC.....P/N: 8380-601

24 10/100/1000T POE at/af + 4 Dual SFP L2 plus Industrial Switch w/48V DC INPUT; -20°C to 60°C

## OPTIONAL ACCESSORIES

### 55VDC DIN Rail Power for 802.3at Applications

- **AD1240-48S-5** 48~56VDC, 4.3A, 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 ~ 70°C)
- **AD1360-48S-5** 48~56VDC, 6.5A, 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 ~ 70°C)
- **AD1500-48S-5** 48~56VDC, 9A, 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 ~ 70°C)

### Mini GBIC (SFP)

- |  |  |
|--|--|
| ■ <b>8330-162</b> MINI GBIC 1000SX (LC/0.5km) Transceiver    | ■ <b>8330-061</b> 100Base LX 30KM, Single-mode, LC Transceiver |
| ■ <b>8330-163</b> MINI GBIC 1000SX2 (LC/2km) Transceiver     | ■ <b>8330-188</b> LTSFP-1000BX-10KM Transceiver (WDM 1310)     |
| ■ <b>8330-165</b> MINI GBIC 1000LX (LC/10km) Transceiver     | ■ <b>8330-189</b> LTSFP-1000BX-10KM Transceiver (WDM 1550)     |
| ■ <b>8340-0591</b> MINI GBIC 1000LHX (LC/40km) Transceiver   | ■ <b>8330-186</b> LTSFP-1000BX-20KM Transceiver (WDM 1310)     |
| ■ <b>8330-166</b> MINI GBIC 1000XD (LC/50km) Transceiver     | ■ <b>8330-187</b> LTSFP-1000BX-20KM Transceiver (WDM 1550)     |
| ■ <b>8330-169</b> MINI GBIC 1000XD (LC/60km) Transceiver     | ■ <b>8330-180</b> LTSFP-1000BX-40KM Transceiver (WDM 1310)     |
| ■ <b>8330-167</b> MINI GBIC 1000ZX (LC/80km) Transceiver     | ■ <b>8330-182</b> LTSFP-1000BX-40KM Transceiver (WDM 1550)     |
| ■ <b>8330-170</b> MINI GBIC 1000EZ (120km) Transceiver       | ■ <b>8330-181</b> LTSFP-1000BX-60KM Transceiver (WDM 1310)     |
| ■ <b>8330-168</b> MINI GBIC 10/100/1000T (100m) Transceiver  | ■ <b>8330-183</b> LTSFP-1000BX-60KM Transceiver (WDM 1550)     |
| ■ <b>8330-060</b> 100Base FX 2KM, Multi-mode, LC Transceiver | ■ <b>8330-184</b> LTSFP-1000BX-80KM Transceiver (WDM 1490)     |
| ■ <b>8330-065</b> 100Base FX 5KM, Multi-mode, LC Transceiver | ■ <b>8330-185</b> LTSFP-1000BX-80KM Transceiver (WDM 1550)     |

All SFP P/N# ended with D are with DDM function

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