I(P)GS-H7416XF

16 GE (PoE) + 4 10G SFP+ Industrial Managed Ethernet Switch; 24TVI input models w/optional dynamic routing, multicast routing, Cybersecurity, and hardware NAT

OVERVIEW

Lantech I(P)GS-H7416XF is a high-performance OS5 (All Gigabit) Ethernet switch with 16 100/1000T + 4 1G/2.5G/10G auto-sensing SFP+ (w/16 PoE 802.3af/at Ports) which provides advanced security function for network aggregation deployment. The OS5 platform supports L3/L2, IPv6/v4, NAT**, standardized ITU G.803 ring, IEC62443-4-2 certified cybersecurity, Macsec**, PTP v2** as well as ETBN TTDP** protocol suitable for the future-proof modern network.

Lantech OS5 platform is equipped with complete L2 management and L3 communication protocols incl. dynamic routing, multicast routing, hardware NAT and ETBN TTDP; optional PTP, MacSec to be upgradable

The switch runs on the Lantech OS5 platform which is powerful with complete Layer 2 management features and major L3 protocols inclusive of RIP, OSPF, PIM, DVMRP, IEC61375-2-5 (ETBN), and hardware-based NAT. Optional hardware-base encryption compliance with IEEE 802.3AE MACsec for the point-to-point security links.
The optional PTP V2 and gPTP support transparent clock, boundary clock and ordinary clocks with 2-step processing that synchronizes network time accuracy to sub-microseconds. To learn more about the Lantech OS5 Platform, please refer to **Lantech OS5 Software Datasheet**

Certified cybersecurity development process with IEC 62443-4-1, and IEC 62443-4-2* certificate with physical tamper resistance and detection for integrity and authenticity of the boot process

Lantech OS5 platform is designed with a high standard of cybersecurity to prevent threats from network attacks. To ensure the safety and reliability of communication networks, Lantech software development is certified with IEC 62443-4-1 security process standards and the switch is also certified with IEC 62443-4-2*. The switch uses roots of trust to verify the integrity and authenticity of the firmware, software, and configuration data needed for the switch's boot process.
To learn more about Lantech cybersecurity software solutions, please refer to **Lantech OS5 Software Datasheet**

Support Restful API for better switch performance; Auto-provisioning* for firmware/configuration update

The switch supports Restful API that uses JSON format to access and use data for GET, PUT, POST and DELETE types to avoid traditional SNMP management occupying CPU utilization. The OPEN API document format for Restful API can greatly improve central management efficiency for various applications including fleet management and AIOT.

It also supports auto-provisioning for switch to auto-check the latest software image and configuration through TFTP server.

Up to 16 PoE at/af ports w/advanced PoE management and PoE galvanic isolation with max PoE budget; Ethernet power input galvanic isolation, support Perpetual/Fast PoE

Compliant with 802.3af/at standard, the PoE model is able to feed each PoE port up to 30 Watt at each PoE port for various IP PD devices to feed PoE budget to 80 Watt. It supports advanced PoE management including PoE detection and scheduling. PoE detection can detect if the connected PD hangs 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.

Perpetual and Fast PoE provides immediate and continuous power to devices during PSE switch reboots.

Galvanic isolation between power input and Ethernet power system, also the PoE galvanic isolation provides insulation between the power input to PoE Ethernet ports, preventing cabling and grounding incidents from damaging the Ethernet switch. The efficiency of the galvanically decoupled voltage converters can reach above 90%.

Miss-wiring avoidance, node failure protection, Loop protection

The switch also embedded several features for strong and reliable network protection in an easy and intuitive way. When the pre-set ring configuration failed or looped by miss-wiring, the switch being 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.

User-friendly GUI, Auto topology drawing, Enhanced Environmental Monitoring

The user-friendly UI, innovative auto topology drawing and topology demo makes the switch much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line. It supports enhanced environmental monitoring for actual input voltage, current, ambient temperature and total power load.

Editable configuration file; USB port for import/export configuration

The configuration file of the switch can be imported and edited with word processor for the following switches to configure with ease. The USB port can import/export the configuration from/to USB dongle and also to upgrade firmware from USB dongle. TFTP/HTTP firmware upgrade is supported.

Out-Of-Band management

OOB management allows a separate and secure method to access and manage the switch even when the primary network is inaccessible.

Real-Time Clock for precise time

The switch built-in a real-time clock (RTC) for measurement the passage of time with a NTP server.

Event log & message; 2DI + 2DO; Factory reset button

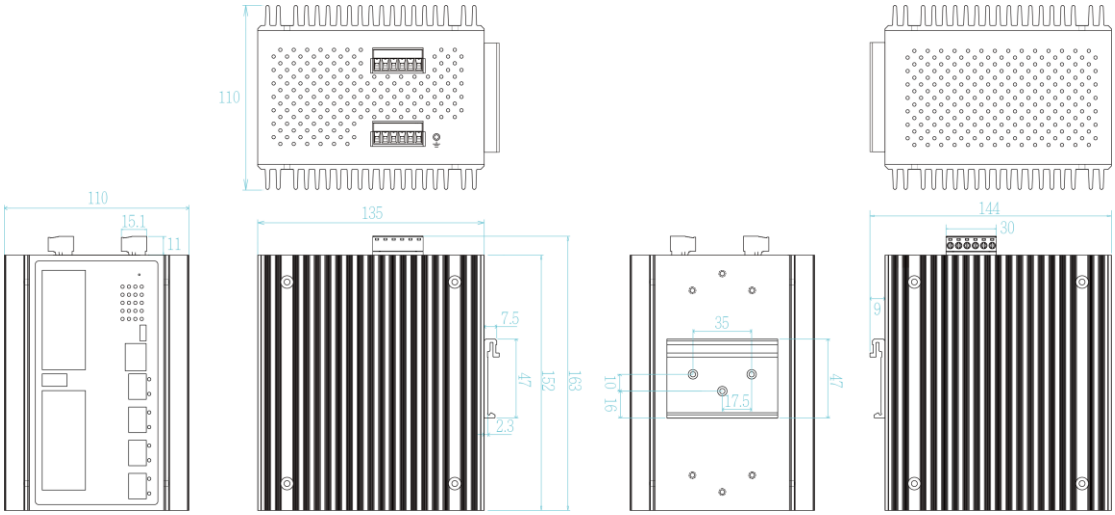
The switch provides 2DI and 2DO. When disconnection of the specific port was detected; DO will activate the signal LED to alarm. DI can integrate the sensors for events and DO will trigger the outside alarm and switch will send alert information to IP network with traps. The factory reset button can restore the setting back to factory default.

Industrial-hardened design with high EFT and ESD protection

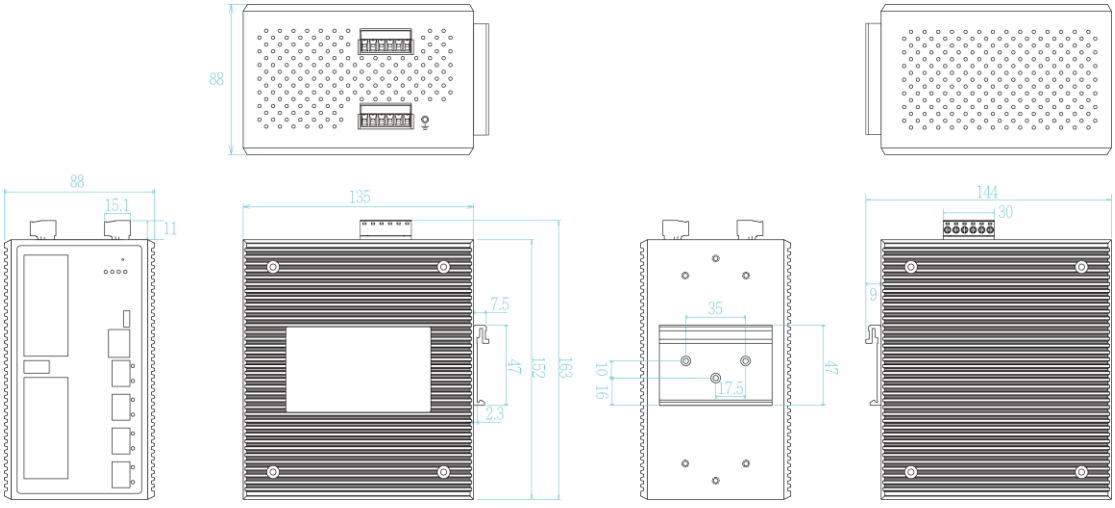
The switch features high reliability and robustness coping with extensive EMI/RFI phenomenon, environmental vibration and shocks. It is the best solution for Automation, transportation, autonomous vehicles, surveillance, Wireless backhaul, Semi-conductor factory applications. The -E model can be used in extreme environments with an operating temperature range of -40°C to 75°C.

DIMENSIONS (unit=mm)

PoE model



Non-PoE model



SPECIFICATIONS

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 IEEE802.3at/af Power over Ethernet
Switch Architecture	Back-plane (Switching Fabric): 112 Gbps
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: USB type-C USB type-A x 1 Power connector: 1 x 6-pole terminal block DIDO: 1 x 6-pole terminal block Out-Of-Band connector: RJ-45 type
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) PoE: Link/Act (Green, PoE model); 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	Dual DC input, 16.8~56VDC (24TVI model);
PoE Budget (PoE model)	80W
PoE pin assignment (PoE model)	RJ-45 port # 1~#16 supports IEEE 802.3at/af End-point, Alternative A mode. Positive (VCC+): RJ-45 pin 1,2 Negative (VCC-): RJ-45 pin 3,6
Power Consumption	Max. 37W (full load w/o PoE)
Case Dimension	Metal case IP-30, 110 (W) x 135 (D) x 152 (H) mm (PoE model) 88 (W) x 135 (D) x 152 (H) mm (Non-PoE model)
Weight	2.1kgs
Installation	DIN Rail and Wall Mount** Design
EMI & EMS	EN 55011:2016 FCC Class A, CE EN55032 Class A, CE EN55035, 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
Verifications	EN50155/EN50121-3-2/EN50121-4
Safety	EN IEC 62368-1
Stability Testing	IEC60068-2-31 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)
MTBF	339,024hrs (standards: IEC 62380)
Warranty	5 years

Software Specification

Lantech OS4 Platform	Download Software Datasheet

*Future release
**Optional

ORDERING INFORMATION

For optional PTP add -PTP; For optional MacSec add -MacSec

- **IPGS-H7416XF-16-24TVI……..…….....P/N: 8361-034**
  16 10/100/1000T PoE at/af up to 30W + 4 1G/2.5G/10G SFP+ OS5 EN50155 Managed Ethernet Switch; -20°C to 60°C; dual 16.8~56V input
- **IGS-H7416XF-24TVI……..…….....P/N: 8361-0341**
  16 10/100/1000T + 4 1G/2.5G/10G SFP+ OS5 EN50155 Managed Ethernet Switch; -20°C to 60°C; dual 16.8~56V input
- **IPGS-H7416XF-16-24TVI-E ……..…….....P/N: 8361-0342**
  16 10/100/1000T PoE at/af up to 30W + 4 1G/2.5G/10G SFP+ OS5 EN50155 PoE Managed Ethernet Switch; -40°C to 75°C; dual 16.8~56V input
- **IGS-H7416XF-24TVI-E ……..…….....P/N: 8361-0343**
  16 10/100/1000T + 4 1G/2.5G/10G SFP+ OS5 EN50155 Managed Ethernet Switch; -40°C to 75°C; dual 16.8~56V input

OPTIONAL ACCESSORIES

Software package

Please refer to the software datasheet

DIN Rail Power for 802.3at Applications

- **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)

Mini GBIC (SFP)

- **8330-162-V1** MINI GBIC 1000SX (LC/0.5km) Transceiver
- **8330-163-V1** MINI GBIC 1000SX2 (LC/2km) Transceiver
- **8330-165-V1** MINI GBIC 1000LX (LC/10km) Transceiver
- **8340-0591-V1** MINI GBIC 1000LHX (LC/40km) Transceiver
- **8330-166-V1** MINI GBIC 1000XD (LC/50km) Transceiver
- **8330-169-V1** MINI GBIC 1000XD (LC/60km) Transceiver
- **8330-167-V1** MINI GBIC 1000ZX (LC/80km) Transceiver
- **8330-170-V1** MINI GBIC 1000EZX (120km) Transceiver
- **8330-168-V1** MINI GBIC 1000T (100m) Transceiver
- **8330-188-V1** LTSFP-1000BX-10KM Transceiver (WDM 1310)
- **8330-189-V1** LTSFP-1000BX-10KM Transceiver (WDM 1550)
- **8330-186-V1** LTSFP-1000BX-20KM Transceiver (WDM 1310)
- **8330-187-V1** LTSFP-1000BX-20KM Transceiver (WDM 1550)
- **8330-180-V1** LTSFP-1000BX-40KM Transceiver (WDM 1310)
- **8330-182-V1** LTSFP-1000BX-40KM Transceiver (WDM 1550)
- **8330-181-V1** LTSFP-1000BX-60KM Transceiver (WDM 1310)
- **8330-183-V1** LTSFP-1000BX-60KM Transceiver (WDM 1550)
- **8330-184-V1** LTSFP-1000BX-80KM Transceiver (WDM 1490)
- **8330-185-V1** LTSFP-1000BX-80KM Transceiver (WDM 1550)
- **8330-262D-V1** MINI GBIC 2.5G 850nm VCSEL (LC/0.3km) Transceiver
- **8330-263D-V1** MINI GBIC 2.5G 1310nm FP (LC/2km) Transceiver
- **8330-265D-V1** MINI GBIC 2.5G 1310nm DFB (LC/15km) Transceiver
- **8330-193D-V1** 10G Base SFP+ SR, Multi-mode (LC/300m) Transceiver
- **8330-194D-V1** 10G Base SFP+ LR, Single-mode (LC/10km) Transceiver
- **8330-209D-V1** 10G Base SFP+ , Single-mode(10km) Transceiver (WDM 1270)
- **8330-210D-V1** 10G Base SFP+ , Single-mode(10km) Transceiver (WDM 1330)
- **8330-200D-V1** 10G Base SFP+ , Single-mode(20km) Transceiver (WDM 1270)
- **8330-201D-V1** 10G Base SFP+ , Single-mode(20km) Transceiver (WDM 1330)
- **8330-202D-V1** 10G Base SFP+ , Single-mode(40km) Transceiver (WDM 1270)
- **8330-203D-V1** 10G Base SFP+ , Single-mode(40km) Transceiver (WDM 1330)
- **8330-206-V1** 10G/5G/2.5G/1000Base-T SFP, 3.3V,30m (10G) 50m (2.5G/5G) 100m (1G); -10~70°C

All SFPs ended with D are with Diagnostic function

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