T(P)GS-L5016T

16 10/10/100/1000T (w/8/16 PoE), EN50155 OS3 Managed Ethernet Switch; WVI / 24VI / 24TVI input

OVERVIEW

Lantech T(P)GS-L5016T is a high performance OS3 (All Gigabit) Ethernet switch with 16 10/100/1000T. PoE model has 8(16) PoE 802.3af/at ports which provides advanced security function for network aggregation deployment.

Up to 8/16 PoE at/af ports w/advanced PoE management and PoE galvanic isolation; Ethernet power input galvanic isolation

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. 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.

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%.

Lantech OS3 Platform with complete L2 management and upgradable optional L3 & communication protocols

The switch runs Lantech OS3 platform which is powerful with complete Layer 2 management features and optional upgradable for future expansion, such as Layer 3 Lite, Layer 3, IEC61375-2-5 (ETBN), etc. To learn more about the Lantech OS3 Platform, please refer to **Lantech OS3/OS4 Software Datasheet** (https://www.lantechcom.tw/global/eng/download/datasheet/D-OS3_OS4.pdf)

Enhanced cybersecurity features with IEC 62443-4-1 certification

Lantech OS3 platform is designed with high standard of cybersecurity to prevent the threats from network attack such

as DDoS attacks. To ensure the safety and reliability of communication networks, Lantech develops our products under strict international security standard and is certified with IEC 62443-4-1 network security standard. To learn more about Lantech cybersecurity software solution, please refer to **Lantech OS3/OS4 Software Datasheet** (https://www.lantechcom.tw/global/eng/download/datasheet/D-OS3_OS4.pdf)

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.

Built-in IEC 61375-3-4 ECN (Ethernet Consist Network) to work with IEC61375-2-5 TBN

Lantech OS3 Ethernet switches comply with IEC 61375-3-4 (ECN) standard. The support of Ethernet Consist Network allows interconnection between end devices located in single consist of train and interoperability with IEC61375-2-5 (TBN).

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.

Event log & message; 2DI + 2DO; Factory default pin

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 with traps and traps. The factory reset pin can restore the setting back to factory default.

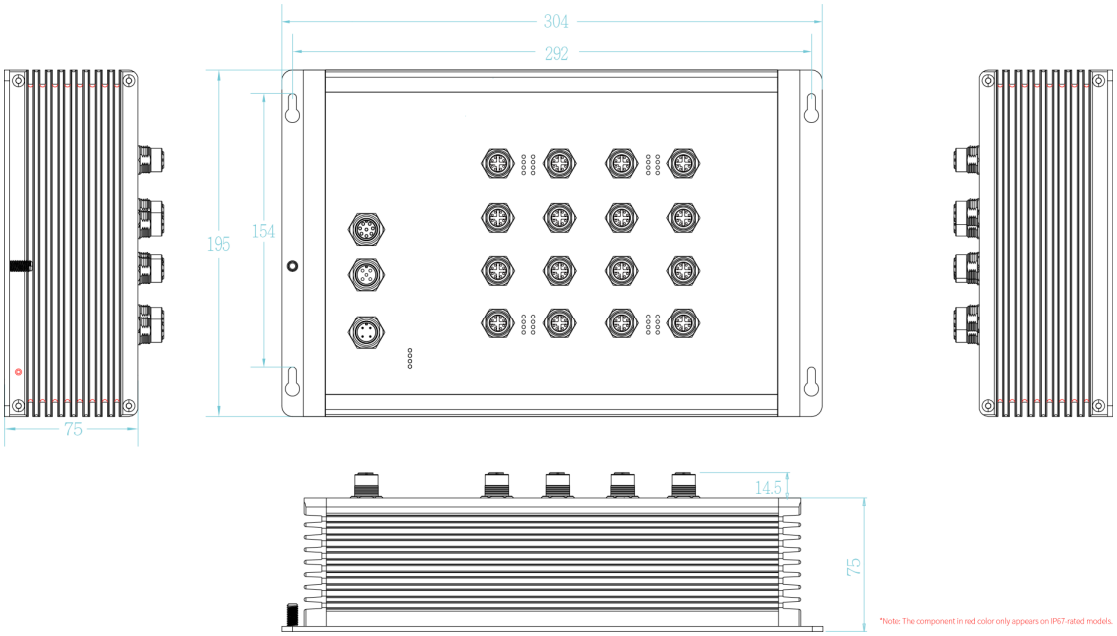
Dual WVI / 24VI / 24TVI input with max PoE budget and Inrush current protection

The switch accept 16.8~137.5VDC (WVI model) ; 9~36VDC (24VI model) ; 16.8~56VDC (24TVI model) dual input with Ethernet and PoE galvanic isolation and PoE model can feed 54V output for PoE feeding with 80W budget. The inrush current on initial power up can be limited lower than 10 x nominal current.

EN50155, EN45545-2; EN61373 compliance; Rugged design with high ESD protection

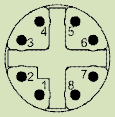
The switch is designed to meet with critical network environment with IP54/IP67 aluminum enclosure and M12 connectors for water proof. The switch passed serious tests under extensive Industrial EMI and Safety standards. With EN45545-2 Fire & Smoke and EN50155 verification, it is best switch for railway on-board/track side, vehicle, and mining applications. For more usage flexibilities, the switch supports wide operating temperature from -40°C to 70°C (85°C operation for 10min), which is compliant with the EN50155 Operating Temperature Range Requirement Class OT4.

DIMENSIONS (unit=mm)



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): 32Gbps
Mac Address	16K MAC address table
Jumbo frame	10KB
Connectors	10/100/1000T: 16 x M12 8-pole X-coded with Auto MDI/MDI function Power Input connector: 1 x M12 4-pole A-coded Reset/Console/USB : 1 x M12 8-pole A-coded DIDO: 1 x M12 5-pole A-coded
Network Cable	10Base-T: 2-pair STP Cat. 3, 4, 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair STP Cat. 5/ 5E/ 6 cable; EIA/TIA-568 100-ohm (100m) 1000Base-T: 4-pair STP Cat5E/6 cable
LED	Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red); RM(Green) 10/100/1000T Ethernet port: Link/Activity (Green) PoE : Link/Act (Green) (PoE model)
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 80 VDC, 50mA
Operating	5% ~ 95% (Non-condensing)
Humidity	
Operating Temperature	-40°C~70°C / -40°F~158°F (85°C operation for 10min.)
Storage Temperature	-40°C~85°C / -40°F~185°F
Power Supply	Dual DC input, 16.8~137.5VDC (WVI model) 9~36VDC (24VI model) 16.8~56VDC (24TVI model) (PoE galvanic isolation for PoE models; Ethernet galvanic isolation for all models)
PoE Budget (PoE model)	80W@24VDC Higher PoE budget can be applied upon request. **
PoE pin assignment (PoE model)	M12 port #1~#8/16 (-8/-16 model) ; support IEEE 802.3at/af End-point. Per port provides up to 30W 10/100/1000T  1:TXD1+ 5:BID4+ 2:TXD1- 6:BID4- 3:RXD2+ 7:BID3- 4:RXD2- 8:BID3+
Power Consumption	Max. 33.8W (exclude PoE load)
Case Dimension	IP54/IP67 model: Aluminum case 304mm(W)x195mm(H)x89.5mm(D)
Weight	3.45kgs
Installation	Wall Mount Design
EMI & EMS	FCC Part 15 Class A EN61000-6-2 EN61000-6-4 CE EN55032 Class A CE EN55024 CE EN61000-4-2 (ESD) Level 3 CE EN61000-4-3 (RS) Level 3 CE EN61000-4-4 (EFT) Level 3 CE EN61000-4-5 ED3 (Surge) Level 3 CE EN61000-4-6 (CS) Level 3 CE EN61000-4-8 (Magnetic field) Level 3

	BS EN61000-4-2, BS EN61000-4-3, BS EN61000-4-4, BS EN61000-4-5, BS EN61000-4-6, BS EN61000-4-8, BS EN55032, BS EN55024
Verifications	EN50155/EN50121-3-2/EN50121-4; EN45545-1, EN 45545-2 Fire & Smoke verification
Vehicle Certificate	E24 marking (UN ECE R10) (24VI model)*
Stability Testing	EN61373 (Shock and Vibration)

MTBF	551,745 hrs. (IEC 62380 standards)

Software Specification

Lantech OS3/OS4 Platform
Download Software Datasheet
(https://www.lantechcom.tw/global/eng/download/datasheet/D-OS3_OS4.pdf)

*Future release
**Optional

ORDERING INFORMATION

All model packages include M12 caps and wall mount bracket. All standard models are non-coating, optional coating models are available with –C model name.

- **TPGS-L5016T-8-54-WVI……P/N:8361-4312**
  16 10/100/1000T M12 X-coded; w/8 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~137.5VDC dual input ; -40~70C/-40~158F ; IP54 housing w/ PoE galvanic isolation
- **TPGS-L5016T-16-54-WVI……P/N:8361-431**
  16 10/100/1000T M12 X-coded; w/16 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~137.5VDC dual input ; -40~70C/-40~158F ; IP54 housing w/ PoE galvanic isolation
- **TPGS-L5016T-8-54-24VI……P/N:8361-4317**
  16 10/100/1000T M12 X-coded; w/8 PoE at/af OS3 PoE Managed Ethernet Switch; 9~36VDC dual input; -40~70C/-40~158F ; IP54 housing w/ PoE galvanic isolation ; E-marking certified*
- **TPGS-L5016T-16-54-24VI……P/N:8361-4318**
  16 10/100/1000T M12 X-coded; w/16 PoE at/af OS3 PoE Managed Ethernet Switch; 9~36VDC dual input ; -40~70C/-40~158F ; IP54 housing w/ PoE galvanic isolation ; E-marking certified*
- **TPGS-L5016T-8-54-24TVI……P/N:8361-43171**
  16 10/100/1000T M12 X-coded; w/8 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~56VDC dual input; -40~70C/-40~158F ; IP54 housing w/ PoE galvanic isolation
- **TPGS-L5016T-16-54-24TVI……P/N:8361-43181**
  16 10/100/1000T M12 X-coded; w/16 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~56VDC dual input ; -40~70C/-40~158F ; IP54 housing w/ PoE galvanic isolation
- **TGS-L5016T-54-WVI……P/N:8361-4311**
  16 10/100/1000T M12 X-coded; EN50155 OS3 Managed Ethernet Switch; 16.8~137.5VDC dual input ; -40~70C/-40~158F ; IP54 housing w/ galvanic isolation
- **TGS-L5016T-54-24VI……P/N:8361-4319**
  16 10/100/1000T M12 X-coded OS3 Managed Ethernet Switch; 9~36VDC dual input; -40~70C/-40~158F ; IP54 housing w/ galvanic isolation ; E-marking certified*
- **TGS-L5016T-54-24TVI……P/N:8361-43191**
  16 10/100/1000T M12 X-coded EN50155 OS3 Managed Ethernet Switch; 16.8~56VDC dual input; -40~70C/-40~158F ; IP54 housing w/ galvanic isolation
- **TPGS-L5016T-8-67-WVI……P/N:8361-43122**
  16 10/100/1000T M12 X-coded; w/8 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~137.5VDC dual input ; -40~70C/-40~158F ; IP67 housing w/ PoE galvanic isolation
- **TPGS-L5016T-16-67-WVI……P/N:8361-43102**
  16 10/100/1000T M12 X-coded; w/16 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~137.5VDC dual input ; -40~70C/-40~158F ; IP67 housing w/ PoE galvanic isolation
- **TPGS-L5016T-8-67-24VI……P/N:8361-43172**
  16 10/100/1000T M12 X-coded; w/8 PoE at/af OS3 PoE Managed Ethernet Switch; 9~36VDC dual input; -40~70C/-40~158F ; IP67 housing w/ PoE galvanic isolation ; E-marking certified*
- **TPGS-L5016T-16-67-24VI……P/N:8361-43182**
  16 10/100/1000T M12 X-coded; w/16 PoE at/af OS3 PoE Managed Ethernet Switch; 9~36VDC dual input ; -40~70C/-40~158F ; IP67 housing w/ PoE galvanic isolation ; E-marking certified*
- **TPGS-L5016T-8-67-24TVI……P/N:8361-43173**
  16 10/100/1000T M12 X-coded; w/8 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~56VDC dual input; -40~70C/-40~158F ; IP67 housing w/ PoE galvanic isolation
- **TPGS-L5016T-16-67-24TVI……P/N:8361-43183**
  16 10/100/1000T M12 X-coded; w/16 PoE at/af EN50155 OS3 PoE Managed Ethernet Switch; 16.8~56VDC dual input ; -40~70C/-40~158F; IP67 housing w/ PoE galvanic isolation
- **TGS-L5016T-67-WVI……P/N:8361-43112**
  16 10/100/1000T M12 X-coded; EN50155 OS3 Managed Ethernet Switch; 16.8~137.5VDC dual input ; -40~70C/-40~158F ; IP67 housing w/ galvanic isolation
- **TGS-L5016T-67-24VI……P/N:8361-43192**

16 10/100/1000T M12 X-coded OS3 Managed Ethernet Switch; 9~36VDC dual input; -40~70C/-40~158F ; IP67 housing w/ galvanic isolation ; E-marking certified*

- **TGS-L5016T-67-24TVI……..…….…….....P/N:8361-43193**
  16 10/100/1000T M12 X-coded EN50155 OS3 Managed Ethernet Switch; 16.8~56VDC dual input; -40~70C/-40~158F ; IP67 housing w/ galvanic isolation

OPTIONAL ACCESSORIES

Software package

Please refer to the software datasheet (https://www.lantechcom.tw/global/eng/download/datasheet/D-OS3_OS4.pdf)

M12 Connector & Cable

Connector	
ECONM12-04A(F)-C-180	4 pin M12 (Female) A-coded 180 degree crimp type connector for power supply
ECONM12-08A(M)-180	8 pin M12 (Male) A-coded 180 degree crimp type connector for reset/console/USB
ECONM12-05A(M)-C-180	5 pin M12 (Male) A-coded 180 degree crimp type connector for DI/DO
ECONM12-08X(M)-SPEEDCON	8 pin M12 (Male) X-coded 180 degree crimp type connector for data, Ethernet CAT6A (10G), shielded, SPEEDCON
Cable	
ECONM12-4P(F)1.5M CABLE	4 pin M12 (Female) A-coded 90 degree cable for power supply, 150cm
ECONM12-08M2-CONSOLE	8 pin M12 (Male) A-coded 180 degree to RS232 cable for console, 150cm
ECABM12X83MSTP	8 pin M12 (Male) X-coded 180 degree RJ45 STP cable for data, shielded, 300cm
Others	
M12 to USB interface adapter	8 pin M12 (Male) A-coded 180 degree M12 to USB 2.0 interface adapter, 8cm
USB 2.0 Ethernet Adapter	USB 2.0 to RJ45 Ethernet Adapter
ECONM12-08(M) TO DB9+USB2.0-1.5M CABLE	8 pin M12 (Male) A-coded 180 degree M12 to USB2.0 to DB9 (Female) cable, 150cm

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