# T(P)GS-3208GF

## 8 GE + 2 GF L2+ (w/8 PoE at/af) NAT Router switch w/ Enhanced G.8032 Ring



## OVERVIEW

The Lantech T(P)GS-3208GF (OS2 Pro platform) is a compact router switch with a PoE budget of 120W, designed for industrial network 24V/48V input Ethernet switch systems. It features 8 10/100/1000T + 2 1000M Fiber with single-mode/multi-mode ports, along with 8 PoE 802.3af/at Ethernet ports (PoE model). The switch offers Layer 2 management, NAT, unique AUTO-FEED configuration, MQTT, advanced security functions and Health diagnostic snapshot maintenance to ensure reliable and easy onboard network deployment. It's WebGUI and complete CLI interface make configuration straightforward for all skill levels. Additionally, the OPEN API document format enhances central management efficiency, making it ideal for fleet management and AIoT applications.

***Redundant dual power input design (24VI;48VI model)***

T(P)GS-3208GF is designed with dual power inputs that accept 12V~56V DC for 24VI vehicle use, and 44V-56VDC for 48VI train model and is capable of withstanding EMI/RFI interference in the onboard network as well as environmental shocks and vibrations. The redundant power input design with galvanic isolation feature shields the system from power transients often present in onboard networks.

***PoE budget up to 120W for 8 Ports with PD detection, auto PD reboot, scheduling and Ethernet power input galvanic isolation with partial ports for PoE galvanic isolation***

T(P)GS-3208GF supports maximum PoE budget of 120W with advanced PoE management features, including PoE auto-detection and scheduling. The PoE detection function can identify if a connected Powered Device (PD) becomes unresponsive and then auto-restart the PD. Moreover, PoE scheduling allows for a pre-set power feeding schedule based on a routine timetable. Each PoE port can be enabled or disabled, and it provides information on voltage, current, power (W), and temperature.

There is galvanic isolation between the power input and the Ethernet power system. The PoE galvanic isolation on PoE at/af ports provides insulation between the power input and the PoE Ethernet ports, preventing cabling and grounding incidents from damaging the Ethernet switch.

***DDoS security to protect switch and server; Optional IEC 62443 compliance with physical tamper resistance and detection for integrity and authenticity of the boot process***

The switch is designed with a high standard of security methods to prevent network threads, such as prevention of DDoS attacks, 802.1X security authentication, Dynamic ARP Inspection, IP Source Guard and Port Security. The optional cybersecurity features compliant with IEC 62443-4-2 include vulnerability checking, encrypted files, public

key management, strong password enforcement, account management, and penetration and stress testing, among many others, totaling up to 90 security measures. The compliance of IEC 62443-4-2 employs roots of trust to verify the integrity and authenticity of the firmware, software, and configuration data needed for the switch's boot process.

### *Lantech OS2 PRO Platform with advanced L2 management and L3 routing protocols incl. OSPF and RIP V1&V2*

The switch developed on Lantech OS2 Pro platform is equipped with Layer 2 management and some Layer 3 routing protocols, including OSPF and RIP V1,V2. Engineered for diverse vehicle applications, this platform also supports a range of features such as NAT, Port forwarding, multiple Static IP address, DHCP server/option/client/port based, VLAN, IGMP, RSTP/ G.8032 enhanced ring recovery, LACP etc.

### *Support Open API document for Restful API for better switch performance*

The switch supports an OPEN API that uses JSON format to access and manipulate data using GET, PUT, POST, and DELETE methods, thereby avoiding the CPU utilization associated with traditional SNMP management.

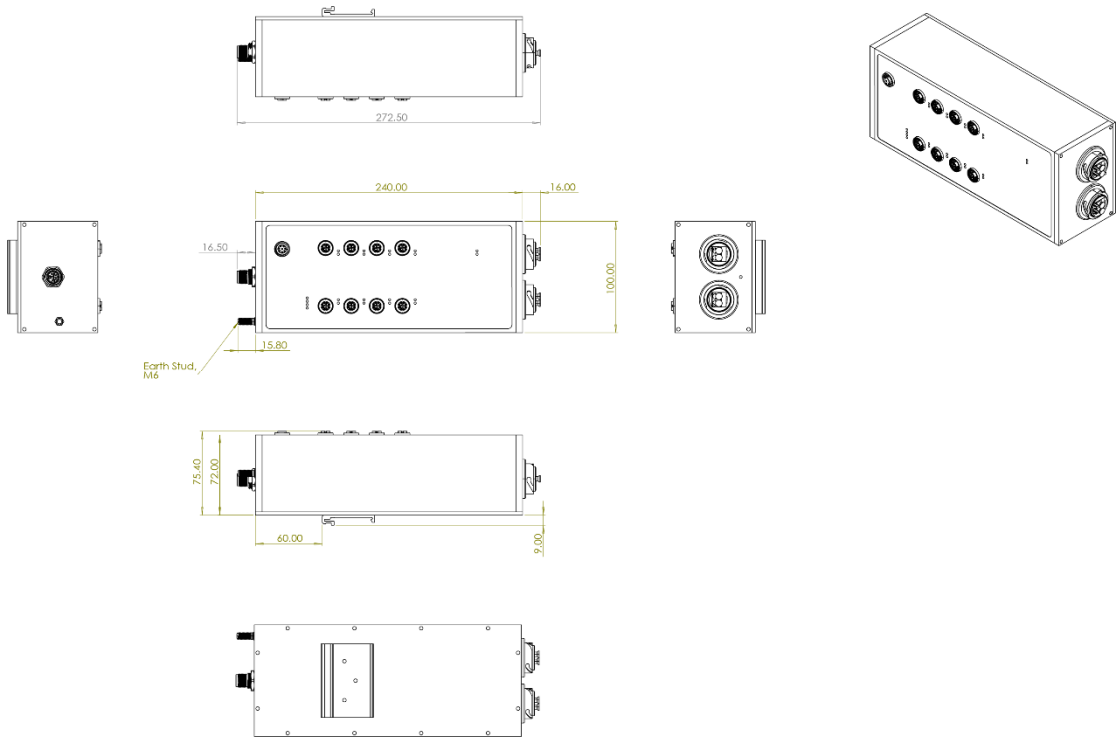
### *mDNS (Multicast DNS) and DNS server/client feature and MQTT-role of Publisher or Broker*

It supports mDNS (Multicast DNS) which enables hosts in the LAN to discover and communicate with devices each other in compliance with the DNS protocol, without requiring a traditional DNS server. The switch can act as MQTT Publisher or Broker that can send data to the broker then broker distributors the "payload" to the subscribers all in a very lightweight protocol.

### *User-friendly GUI, Auto topology drawing, Editable configuration text file, Enhanced Environmental Monitoring, CPU watchdog, Snapshot switch information for trouble-shooting analysis*

The user-friendly UI, innovative auto topology drawing, and topology demo make the Lantech switch much easier to use. The complete CLI enables professional engineers to configure settings via the command line. The configuration file can be exported as a text file, allowing it to be easily edited and reconfigured for mass deployment. It supports enhanced environmental monitoring of actual input voltage, current, ambient temperature, and total power load where user can set threshold to trigger an alert or event log. The built-in watchdog design can automatically reboot the switch if the CPU becomes unresponsive. With the distinctive Snapshot feature, the switch can gather data, including port statistics, system core information, configuration, and event logs, either at a specific point in time or by scheduling, to address switch issues and analyze the root cause promptly.

## DIMENSIONS (unit=mm)




## SPECIFICATION

### Hardware Specification

| | |
|---|---|
| Standards | IEEE802.3 10Base-T Ethernet<br>IEEE802.3u 100Base-TX<br>IEEE802.3ab 1000Base-T Ethernet<br>IEEE802.3x Flow Control and Back Pressure<br>IEEE802.3ad Port trunk with LACP<br>IEEE802.1d Spanning Tree<br>IEEE802.1w Rapid Spanning Tree<br>IEEE802.1s Multiple Spanning Tree<br>IEEE802.3ad Link Aggregation Control Protocol (LACP)<br>IEEE802.1AB Link Layer Discovery Protocol (LLDP)<br>IEEE802.1X User Authentication (Radius)<br>IEEE802.1p Class of Service<br>IEEE802.1Q VLAN Tag<br>IEEE802.3at/af Power over Ethernet (PoE model) |
| Switch Architecture | Back-plane (Switching Fabric): 20Gbps |
| Transfer Rate | 14,880pps for Ethernet port<br>148,800pps for Fast Ethernet port<br>1,488,000pps for Gigabit Ethernet / Gigabit Fiber port |
| Mac Address | 16K MAC address table |
| Jumbo frame | 10KB |
| Connectors | 10/100/1000T: 8 x M12 8-pole X-coded<br>1000LX: 2 x LC connectors with single-mode fiber (WAN/LAN configurable)<br>Power Input connector: 1 x M12 5-pole Male K-coded<br>Reset/Console/USB: 1 x M12 8-pole A-code |
| Network Cable | 10Base-T: 2-pair UTP/STP Cat. 3, 4, 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m)<br>100Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m)<br>1000Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable EIA/TIA-568 100-ohm (100m) |
| LED | Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red); RM(Green)<br>Ethernet port: Link/Activity (Green), Speed (Amber); PoE: Link/Act (Green); |
| Operating Humidity | 5% ~ 95% (Non-condensing) |
| Operating Temperature | -20°C~60°C / -4°F~140°F<br>-40°C~75°C / -40°F~167°F (-E model) |
| Storage Temperature | -40°C~85°C / -40°F~185°F |
| Power Supply | 44-56VDC (48VI); 12-56VDC (24VI) |
| PoE Budget | 120W (PoE model) |
| PoE pin assignment | M12 port #1-#8 supports IEEE 802. 3at/af End-point<br>Per port provides up to 30W |
| Power Consumption | 8W (without PoE load) |
| Case Dimension | 272.5mm(W)x100mm(H)x84.4mm(D) |
| Weight | 1.85 kgs |
| Installation | DIN-Rail |
| EMI & EMS | FCC Class A,<br>CE EN55032 Class A, CE EN55024,<br>CE EN61000-4-2, CE EN61000-4-3,<br>CE EN61000-4-4, CE EN61000-4-5,<br>CE EN61000-4-6, CE EN61000-4-8,<br>CE EN61000-6-2, CE EN61000-6-4 |
| Safety | UL62368* |
| MTBF | TBC |
| Warranty | 5 years (may differ by project) |

### Software Specification

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|---|---|
| Management | SNMP v1 v2c, v3/ Web/Telnet/CLI |
| SNMP MIB | MIBII<br>MIB<br>SNMP MIB,<br>IF MIB<br>RMON MIB,<br>Bridge MIB,<br>LLDP MIB<br>Private MIB |
| Enhanced G.8032 ring | Support ITU G.8032 v2/2012 for Ring protection in |

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| | less than 20ms for self-heal recovery (single ring enhanced mode)<br>Support various ring/chain topologies<br>Includes basic single ring and enhanced ring<br>Enhanced G.8032 ring configuration with ease<br>Cover multicast & data packets protection |
| PoE Management (PoE model) | PoE Detection to check if PD is hang up then restart the PD.<br>PoE Scheduling to On/OFF PD upon routine timetable. |
| Per Port PoE Status (PoE model) | On/ Off, voltage, current, watts, temperature |
| User-friendly UI | ■ Auto topology drawing<br>■ Topology demo<br>■ 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 |
| VLAN | Port Based VLAN<br>IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.)<br>GVRP |
| RSTP/MSTP | 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 is 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.<br>802.1X access control/MAC-Port binding<br>INGRESS ACL L2/L3<br>SSL/ SSH v2 for Management<br>HTTPS for secure access to the web interface |
| IGMP | Support IGMP snooping v1,v2,v3; 1024 multicast groups; IGMP router port ; IGMP query; GMRP |
| Static MAC-Port bridge | Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application |

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| WAN Port | ■ PPPoE<br>■ DHCP client |
| L3 routing functions | Static route<br>RIP/OSPF |
| Firewall | Port forwarding<br>DMZ<br>Filtering<br>Remote admin<br>DDoS protection<br>NAT |
| Bandwidth Control | Support ingress packet filter.<br>Ingress filter packet type combination rules are Broadcast/Multicast/Flooded Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all types of packet.<br>The packet filter rate can be set an accurate value through the pull-down menu for the ingress packet filter. |
| 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 |
| Protection | ■ Miss-wiring avoidance<br>■ Node failure protection<br>■ Loop protection |
| SNMP Trap | Up to 10 trap stations; trap types including:<br>● Device cold start<br>● Authorization failure<br>● Port link up/link down<br>● DI/DO open/close<br>● Topology change (ITU ring)<br>● Power failure<br>● Environmental abnormal |
| DHCP | Provide DHCP Client/ DHCP Server/DHCP Option 82 (Server and relay)/Port based DHCP; DHCP Snooping; DHCP option 66 |
| 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 |
| Configuration upload and download | Supports editable configuration file for system quick installation<br>Support factory reset pin to restore all settings back to factory default<br>USB port for upload/download configuration by USB dongle |

*Future Release
**Optional

## ORDERING INFORMATION

All model packages include M12 caps. For optional Giga LX multi-mode 2 KM fiber, replace -SM with -MM

- **TPGS-3208GF-8-SM-54-24VI ……. P/N: 8351-1413**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP54 router Switch; -20 to 60C; 12-56VDC input w/PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-54-24VI ……. P/N: 8351-1414**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP54 router Switch; -20 to 60C; 12-56VDC input w/Ethernet galvanic isolation
- **TPGS-3208GF-8-SM-54-24VI-E ……. P/N: 8351-1415**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP54 router Switch; -40 to 75C; 12-56VDC input w/PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-54-24VI-E ……. P/N: 8351-1416**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP54 router Switch; -40 to 75C; 12-56VDC input w/Ethernet galvanic isolation
- **TPGS-3208GF-8-SM-54-48VI ……. P/N: 8351-1417**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP54 router Switch; -20 to 60C; 44-56VDC input w/ PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-54-48VI ……. P/N: 8351-1418**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP54 router Switch; -20 to 60C; 44-56VDC input

w/Ethernet galvanic isolation

- **TPGS-3208GF-8-SM-54-48VI-E …….. P/N: 8351-1419**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP54 router Switch; -40 to 75C; 44-56VDC input w/ PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-54-48VI-E …….. P/N: 8351-14191**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP54 router Switch; -40 to 75C; 44-56VDC input w/Ethernet galvanic isolation
- **TPGS-3208GF-8-SM-67-24VI …….. P/N: 8351-14131**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP67 router Switch; -20 to 60C; 12-56VDC input w/PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-67-24VI …….. P/N: 8351-14141**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP67 router Switch; -20 to 60C; 12-56VDC input w/Ethernet galvanic isolation
- **TPGS-3208GF-8-SM-67-24VI-E …….. P/N: 8351-14151**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP67 router Switch; -40 to 75C; 12-56VDC input w/PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-67-24VI-E …….. P/N: 8351-14161**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP67 router Switch; -40 to 75C; 12-56VDC input w/Ethernet galvanic isolation
- **TPGS-3208GF-8-SM-67-48VI …….. P/N: 8351-14171**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP67 router Switch; -20 to 60C; 44-56VDC input w/ PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-67-48VI …….. P/N: 8351-14181**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP67 router Switch; -20 to 60C; 44-56VDC input w/Ethernet galvanic isolation
- **TPGS-3208GF-8-SM-67-48VI-E …….. P/N: 8351-14192**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ (w/8 PoE at/af) NAT IP67 router Switch; -40 to 75C; 44-56VDC input w/ PoE & Ethernet galvanic isolation
- **TGS-3208GF-SM-67-48VI-E …….. P/N: 8351-14193**
  8 10/100/1000T + 2 Giga LX single-mode 10KM LC L2+ NAT IP67 router Switch; -40 to 75C; 44-56VDC input w/Ethernet galvanic isolation

## OPTIONAL ACCESSORIES

### M12 Connector & Cable

**Connector**

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|---|---|
| **4106-00000097-001 ECONM12-05K(F)-S-180** | 5 pin M12 (Female) K-coded 180 degrees screw type connector for power supply |
| **ECONM12-08X(M)-SPEEDCON** | 8 pin M12 (Male) X-coded 180 degree crimp type connector for data, Ethernet CAT6A (10G), shielded, SPEEDCON |

**Cable**

| | |
|---|---|
| **ECABM12X83MSTP** | 8 pin M12 (Male) X-coded 180 degree RJ45 STP cable for data, shielded, 300cm |
| **4106-00000096-001 ECABM12-05K(F)-90-1.5M** | 5 pin M12 (Female) K-coded 90 degrees 1.5M cable for power supply |
| **ECONM12-08A(M)-180** | 8 pin M12 (Male) A-coded 180 degree crimp type connector for reset/console/USB |
| **ECABMO02-QOP2-3.0-SM-OS2** | Q-ODC 2 plug/LC single-mode fiber, SM-OS2, 300cm |

**Lantech Communications Global Inc.**

**www.lantechcom.tw**
**info@lantechcom.tw**