TPGS-3214MGT

14 GE + 2 2.5GE M12 X-coded Push-Pull EN50155 Managed Ethernet Switch w/optional Cybersecurity, WVI input



OVERVIEW

The Lantech TPGS-3214MGT (OS2 Pro platform) is a compact managed Ethernet switch with a PoE budget of 80W, designed for rail, metro, and vehicle 24V input systems. It features 14 10/100/1000T ports + 2 1G/2.5G ports w/ M12 X-coded Push-Pull lock connectors (IEC 61076-2-010), along with 12 PoE 802.3af/at Ethernet ports. 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. Compliance with EN50155 certifications rest assured the product meets world-class standards for vehicle, rail onboard performance and reliability.

Redundant dual power input design; EN50155 verification with high ESD and inrush current prevention and polarity reverse protection

TPGS-3214MGT is designed with dual power inputs that accept 16.8V~137.5VDC for train use and is capable of withstanding EMI/RFI interference in the onboard network as well as environmental shocks and vibrations. The redundant power input design integrates inrush current protection also protect against polarity reversal. Additionally, the galvanic isolation feature shields the system from power transients often present in onboard networks.

Embedded Outer-lock push-pull connectors ensure fast installation and connection reliability (-PP model)

The built-in outer-lock push-pull connectors give the switch small-footprint design and for space-saving cabling installation. They ensure quick, tool-free installation with a simple push. Most importantly, their secure locking mechanism provides unwavering reliability, preventing accidental disconnections crucial for network uptime.

Support Perpetual/Fast PoE*; PoE budget up to 80W for 12 Ports PoE at/af with PD detection, auto PD reboot, scheduling and PoE & Ethernet galvanic isolation*

Fast PoE* and Perpetual PoE* combined provide uninterrupted power delivery for critical devices. Fast PoE instantly supplies power after startup, while Perpetual PoE maintains power during switch reboots or upgrades. Together, they ensure continuous, reliable operation of Powered devices (PD) in mission-critical environments.

TPGS-3214MGT supports a maximum PoE budget of 80W 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.

Comprehensive Network Protection Against DDoS and Layer 2 Threats

Lantech OS2Pro generation integrates advanced security mechanisms to safeguard both switches and networks. Key features include DDoS attack mitigation, 802.1X port-based authentication, Dynamic ARP Inspection (DAI), IP Source Guard, and Port Security, providing multi-layer protection against spoofing, unauthorized access, and traffic floods. These security capabilities ensure stable, resilient network operation.

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

Open RESTful API for Seamless Integration and High-Performance Network Management

The switch features a lightweight and efficient Open RESTful API designed for seamless integration with centralized network management software. Using standard HTTP methods (GET, PUT, POST, DELETE) and JSON data structures, the API enables real-time access to configuration and operational data.
By leveraging modern web technologies, the switch minimizes CPU overhead typically associated with traditional SNMP polling, delivering faster response times, reduced system load, and improved scalability for high-performance network environments.

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.

Reliable eMMC for better power efficiency and reliability

The switch utilizes eMMC for firmware storage. The eMMC's standard interface streamlines the design process while delivering improved power efficiency and enhanced reliability, thereby extending the storage's lifespan.

Auto feed configuration for swapped new switches for seamless network maintenance, USB port for backup, restoring configuration and upgrading firmware

The switch supports auto-feed configuration features that revolutionize network switch setup and management. It ensures that new and replacement switches automatically receive the correct configurations without manual intervention. Additionally, it supports the traditional way of uploading or downloading the firmware/configuration through a USB dongle.

Event log & message; 1DI + 1DO; Factory default pin

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

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 and PoE port temperature, and total power load (including PoE if any) 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.

OPTIONAL FEATURES

Optional bypass relay prevents power loss

T(P)GS-3214MGT offers an optional bypass relay (-BT/-BBT model) that ensures network continuity during power loss by bypassing traffic to the next device. The Lantech smart bypass remains active until the switch has fully rebooted after power restoration, preventing additional network interruptions.

Optional LantechView for Lantech devices maintenance

LantechView software automatically detects Lantech devices across the network, enabling seamless configuration management over multiple IP subnets and VLANs—both for individual devices and batch operations. It also offers comprehensive firmware management, supporting single or group verification and simultaneous upgrades to the latest versions.
For more details on LantechView software solutions, please visit:
https://www.lantechcom.tw/global/eng/download/datasheet/D-LantechView.pdf

Optional IEC 62443-4-2 Model with Physical Tamper Resistance and a Variety of Security

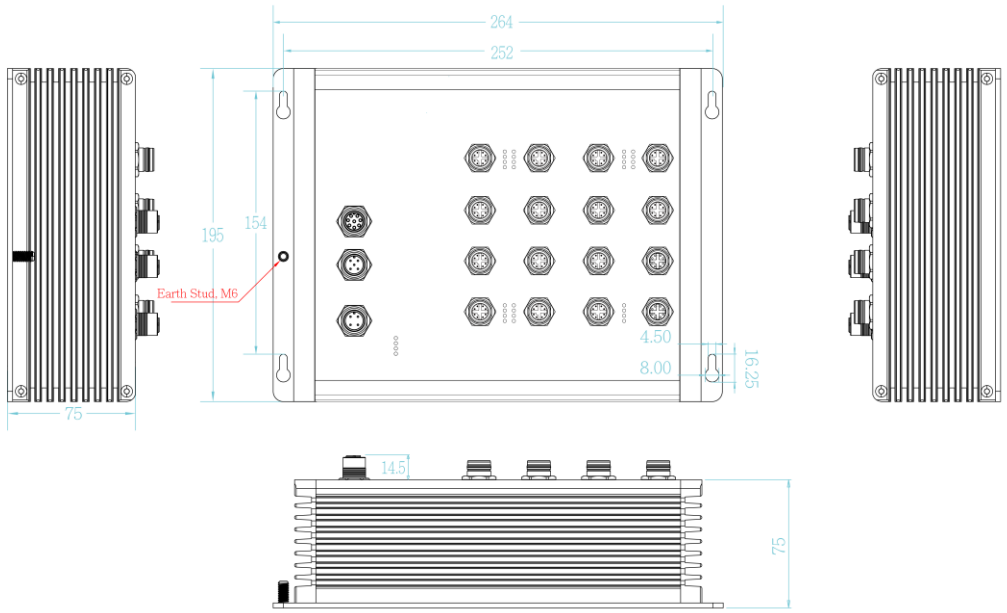
Measures

For enhanced cybersecurity, the optional IEC 62443-4-2 is available on -SEC model. This includes over 90 security measures such as vulnerability checking, encrypted files, public key management, strong password enforcement, account management, and both penetration and stress testing. It emphasizes protection against unauthorized access, tampering, and malware through detailed log events and roots of trust security IC. To learn more about Lantech cybersecurity software solutions, please refer to
https://www.lantechcom.tw/global/eng/download/datasheet/D-OS2PRO.pdf

OS2 Pro vs. OS2 Pro - SEC models comparison

	OS2 Pro	OS2 Pro - SEC
Management	Web UI/Telnet complete CLI command line	Web UI/Telnet complete CLI command line
IEC 62443-4-2 Cyber Security	NA	Y, need optional license
Hardware Environmental Monitoring	Y	Y
Bypass	Optional	Optional
Boot up time	Within 60sec.	Around 90sec.

DIMENSIONS (unit=mm)



SPECIFICATIONS

Hardware Specification

Standards	IEEE802.3 10Base-T Ethernet IEEE802.3u 100Base-TX IEEE802.3ab 1000Base-T Ethernet 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) IEEE802.1AX Link Aggregation multiple

	network connection bundling IEEE802.1X User Authentication (Radius) IEEE802.1p Class of Service IEEE802.1Q VLAN Tag IEEE802.3at/af Power over Ethernet (PoE model)
Switch Architecture	Back-plane (Switching Fabric): 38Gbps
Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Ethernet port
Mac Address	16K MAC address table
Jumbo frame	10KB
Connectors	10/100/1000T: 14 x M12 8-pole X-coded with outer-lock push-pull connectors 1G/2.5G: 2 x M12 8-pole X-coded with outer-lock push-pull connectors Power Input connector: 1 x M12 4-pole Male A-coded Reset/Console/USB: 1 x M12 8-pole A-code DI/DO: 1 x M12 5-pole A-coded 10/100/1000T
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) 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) Ethernet port: Link/Activity (Green), Speed (Amber) PoE: Link/Act (Green)
DI/DO	1 Digital Input (DI): Level 0: -30~2V / Level 1: 10~30V Max. input current:8mA 1 digital Output (DO): Open collector to 80 VDC, 50mA
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-40C~70C / -40F~158F (85°C operation for 10min.) (Class OT4)

Storage Temperature	-40°C~85°C / -40°F~185°F
Power Supply	16.8-137.5VDC
PoE Budget	80W
PoE pin assignment	M12 port #1-#12 (-12) supports IEEE 802.3at/af PoE PSE. Per port provides up to 30W. Can activate and deactivate the PoE power supply for each switch port via the administration interface.
Power Consumption	12W (w/o PoE load)
Case Dimension	IP54: Aluminum case (in accordance with DIN EN60529) 264(W)x195mm(H)x89.5mm(D)
Weight	2.8kgs
Installation	Wall Mount
EMI & EMS	FCC Class A, CE EN55032 Class A, CE EN55024, 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 EN61000-4-11, CE EN61000-6-2, IPVCE EN61000-6-4
Verifications	EN50155:2022/EN50121-3-2/EN50121-4 EN45545-1, EN 45545-2 Fire & Smoke
Reach & RoHS	(EC) No. 1907/2006 (REACH) (EU) 2015/863 (RoHS 3)
Stability Testing	EN61373 (Shock and Vibration)
MTBF	248,061 hrs (standards: IEC 62380)
Bypass**	Two pairs bypass module on uplink ports to pass to next switch in case of power failure and CPU hang (-BT/-BBT model)

Software Specification

Lantech OS2PRO Platform
Download Software Datasheet
(https://www.lantechcom.tw/global/eng/download/datasheet/D-OS2PRO.pdf

*Future release
**Optional

ORDERING INFORMATION

All model packages include M12 caps. For coating add –C to part no. and model name; for optional bypass add –BT/-BBT (one/two pair) to end of model names. For IEC 62443-4-2 add -SEC to part no. and model names.
＊To support environmental sustainability, a console cable will not be included with each device by default. If your project requires one, please contact your sales representative.

- **TPGS-3214MGT-12-54-WVI-PP …….. P/N: 8351-180**
  14 10/100/1000T w/12 PoE at/af + 2 1G/2.5G Copper M12 X-code push-pull connectors L2+ Managed Ethernet Switch w/PoE & Ethernet galvanic isolation; 16.8~137.5VDC dual input; -40°C to 70°C; IP54 rated
- **TGS-3214MGT-12-54-WVI-PP …….. P/N: 8351-18001**
  14 10/100/1000T 2 1G/2.5G Copper M12 X-code push-pull connectors L2+ Managed Ethernet Switch w/Ethernet galvanic isolation; 16.8~137.5VDC dual input; -40°C to 70°C; IP54 rated

*For all detailed part nos. and model names, please refer to
https://www.lantechcom.tw/global/eng/download/datasheet/P-T(P)GS-3214MGT.pdf

OPTIONAL ACCESSORIES

Software package

Please refer to the software datasheet (https://www.lantechcom.tw/global/eng/download/datasheet/D-OS2PRO.pdf)

M12 Connector & Cable

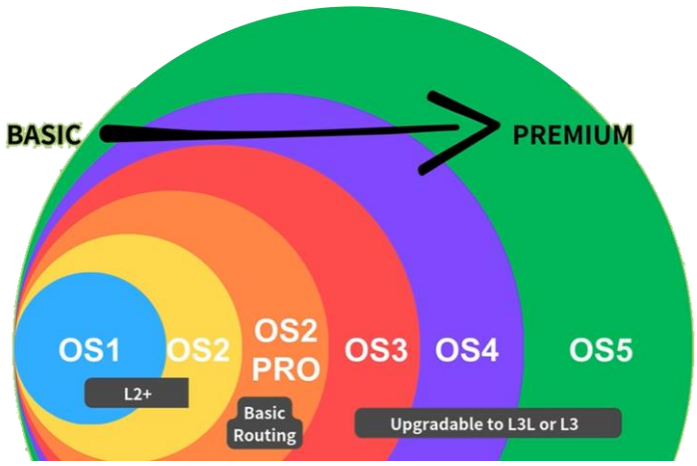
Connector

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

ECONM12-04D(M)-C-180	4 pin M12 (Male) D-coded 180 degree crimp type connector for data
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
ECAB124030MJS	4 pin M12 (Male) D-coded 180 degree RJ45 STP cable for data, 300cm
ECABM12X83MSTP	8 pin M12 (Male) X-coded 180 degree RJ45 STP cable for data, shielded, 300cm
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

Managed Switch OS Generations

We offer a comprehensive range of managed switches, from OS1 and OS2 with rich L2+ management features, to OS2 PRO with basic routing functionality, and OS3, OS4, and OS5, which can be upgraded with optional Layer 3 Lite or Layer 3 capabilities to meet diverse customer needs. Note: Model differences include both software features and hardware specifications.



[LEARN MORE]

→ OS2PRO Generation

→ OS3/OS4 Generation

→ OS5 Generation

[CHECK THE DIFFERENCES]

→ Generation Comparison Table

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In a continuing effort to improve and advance technology, product specifications are subject to change without notice.