TPGS-5008T

8 10/100/1000T X-coded EN50155 L2+ 8 PoE at/af Managed Ethernet Switch w/ Enhanced G.8032 Ring; WVI input

- *EN50155/61373/45545-2 verification; 16.8~137.5V input*
- *Built-in IEC 61375-3-4 ECN (Ethernet Consist Network) to work with IEC61375-2-5 ETBN*
- *IEEE802.3at/af up to 30W per port; PoE budget up to 80W*
- *PoE management incl. detection and scheduling*
- *Galvanic isolation between input, PoE and output as well as case*
- *Enhanced G.8032 ring protection < 20ms for single ring. Supports auto mode, enhanced mode, train mode, multi-VLAN and basic mode; Enhanced G.8032 ring covers multicast packets; MSTP 16MSTI /RSTP; support MRP ring*
- *IP54 Aluminum housing for best heat dissipation and preventing moist ingress*
- *Environmental Monitoring for temp., input voltage, current and total PoE load*
- *Miss-wiring avoidance & node failure protection*
- *Inrush current protection*
- *User friendly UI, including auto topology drawing; Complete CLI*
- *Support LACP link aggregation, IGMP v3/router port, MLD snooping, DHCP server & DHCP Option82; Port based DHCP distribution, Mac based DHCP server, QoS by VLAN, SSH v2/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, TACACS+**, QinQ*
- *Protocol based VLAN; IPv4 Subnet based VLAN*
- *N-key configurator** for upgrading, auto back up /editable restoration without computer*

OVERVIEW

Lantech TPGS-5008T (IP54) is a high performance L2+ All Gigabit Ethernet switch with 8 10/100/1000T w/8 PoE at/af ports up to 30W@ at M12 X-coded providing L2 wire speed and advanced security function for network aggregation deployment. It houses in an IP54 aluminum compact enclosure that is waterproof and will prevent moisture ingress due to temperature fluctuations.

It delivers ITU G.8032 enhanced ring recovery less than 20ms in single ring while also supports train ring, enhanced mode, multiple VLAN mode with easy configuration. The comprehensive QoS, QoS by VLAN, advanced security including INGRESS/EGRESS ACL L2/L3, TACACS+**, SSH v2/SSL, Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ are supported and also required in large network. It also supports10K Jumbo frame.

Dual WVI (16.8V~137.5VDC) input, high PoE budget
WVI model w/PoE isolation accepts 16.8~137.5VDC dual input and can feed 54V output with max 80W PoE budget.
A voltage which can be minimal 0,5 Un nominal voltage (when Vin≥36V) and/or a voltage which can be maximal 1,5 Un nominal voltage for more than 1000 consecutive ms (one

second).

PoE +, Advanced PoE management
Lantech TPGS-5008T (IP54) supports IEEE802.3at/af standard which can feed power up to 30W at each PoE port for big power consumption devices like PTZ IP camera, wireless AP etc. The advanced PoE management includes PoE detection and scheduling besides the regular PoE per port status. 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. Per port PoE status can remotely On/Off the power and display information of voltage, current, watt and PoE temperature.

Enhanced G.8032 ring, 16 MSTI MSTP; MRP ring
Lantech TPGS-5008T (IP54) features enhanced G.8032 ring which can be self-healed in less than 20ms for single ring topology protection covering Multicast packets. It also supports various ring topologies that covers double ring, multi-chain (under enhanced ring), train ring, basic ring, multiple-VLAN ring and auto-ring by easy setup than others. The innovative auto-Ring configurator (auto mode) can calculate owner and

neighbor in one step. It supports MSTP that allows RSTP over VLAN for redundant links with 16 MSTI.

MRP (Media Redundancy Protocol) can be supported for industrial automation networks.

Node failure protection, Miss-wiring alert, Loop protection

The TPGS-5008T (IP54) 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 TPGS-5008T (IP54) is 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. 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.

QoS by VLAN for legacy device

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.

QinQ, QoS and GVRP supported

It supports the QinQ, QoS and GVRP for large VLAN segmentation.

IGMPv3, GMRP, router port, MLD Snooping, static multicast forwarding and multicast Ring protection

The unique multicast protection under enhanced G.8032 ring can offer immediate self-recovery instead of waiting for IGMP table timeout. It also supports IGMPv3, GMRP, router port, MLD snooping and static multicast forwarding binding by ports for video surveillance application.

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

Lantech OS1 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).

DHCP option 82 & Port based, Mac based DHCP, Option66, IPv6 DHCP server

DHCP server can assign dedicated IP address by MAC or by port (Port based for single switch), it also can assign IP address by port for multiple switches with single DHCP option82 server. For the ending device which needs to

download file from TFTP server, DHCP Option66 server can offer IP address of TFTP server to DHCP client. Basic IPv6 DHCP service can be supported.

User friendly GUI, Auto topology drawing

The user friendly UI, innovative auto topology drawing and topology demo makes TPGS-5008T (IP54) much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line.

Optional N-key auto backup, exported text file

The configuration file of Lantech TPGS-5008T (IP54) can be exported in text file so that it can be edited and configured back to switch with ease for mass deployment. The optional N-key configurator offers firmware upgrade, auto backup/ editable configuration restore without computer by adjusting the DIP switch. The built-in watchdog design can automatically reboot the switch when CPU is found dead.

Event log & message; 2DI + 2DO

In case of event, the TPGS-5008T (IP54) is able to send an email** to pre-defined addresses as well as SNMP Traps out immediately. It provides 4DI and 3DO 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 alarm while sending alert information to IP network with email and traps.

Environmental monitoring for inside switch info

The built-in environmental monitoring can detect switch overall temperature, real input voltage, current and total PoE load where can send the SNMP traps and email** when abnormal.

High ESD protection, Inrush current protection

IPGS-5008T (IP54) provides ±2000V EFT and ±6000V ESD protection, which can reduce unstable situation caused by power line and Ethernet.

The inrush current on initial power up can be limited lower than 10 x nominal current and for less than 1ms.

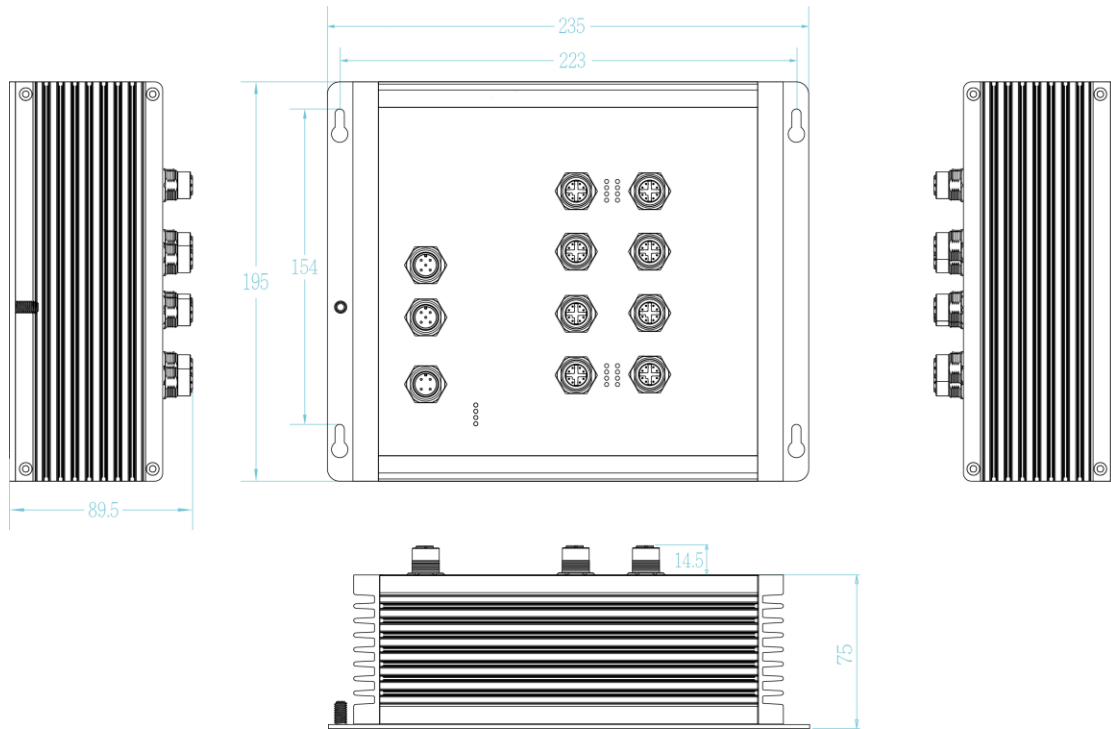### EN50155, EN45545-2, EN50121-3-2, EN61373 verification

The TPGS-5008T (IP54) passed serious tests under extensive Industrial EMI and Safety standards. With EN45545-2 Fire & Smoke, and EN50155 verification, the TPGS-5008T (IP54) is best for railway in train/track side, vehicle and mining applications. For more usage flexibilities, TPGS-5008T (IP54) supports wide operating temperature from -40°C to 75°C.

FEATURES & BENEFITS

- **8 10/100/1000T X-coded EN50155 IP54 M12 Managed Ethernet Switch w/8x 802.3at/af PoE ports (Total 8 Ports Gigabit Switch)/ 30W@each port**
- **EN45545-2 Fire & Smoke,EN50155 and EN61373 shock/vibration verification**
- **PoE management including PoE detection and scheduling for PD (power devices)**
- **Galvanic isolation from power input/Ethernet ports to system 1.5KV**

- **WVI model w/ PoE galvanic isolation accepts dual 16.8~137.5VDC power input and feed 54V for PoE at/af at max 80W budget**
- **Back-plane (Switching Fabric): 16Gbps**
- **16K MAC address table**
- **10KB Jumbo frame**
- **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 train ring, enhanced ring, basic ring, auto ring & multiple VLAN ring (with 3rd party G.8032 switch)
- Auto ring configuration (auto mode) for single ring
- Multi-VLAN mode

- **IEEE 802.1d STP, IEEE 802.1w RSTP,802.1s MSTP VLAN redundancy with 16 MSTI**
- **Supports IEEE 802.1p Class of Service, per port provides 8 priority queues Port base, Tag Base and Type of Service Priority**
- **4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ, QoS**
- **QoS by VLAN tag to prioritize all devices in network**
- **Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console**
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server; Port based DHCP server; DHCP Option 66; basic IPv6 DHCP server**
- **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
- **Miss-wiring avoidance**
  - LED indicator
- **Node failure protection**
  - 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
- **Inrush current protection**
- **TFTP/HTTP firmware upgrade**
- **System Event Log, SMTP Email** alert and SNMP Trap for alarm support; 32 RMON counters**

- **Security**
  - SSL/SSH v2/INGRESS/EGRESS ACL L2/L3
  - MAC address table: MAC address entries/Filter/static MAC-Port binding
  - IP Security: IP address security management to prevent unauthorized intruder.
  - TACACS+**
  - Login Security: IEEE802.1X/RADIUS
  - HTTPS for secure access to the web interface
- **Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application**
- **IGMP router port to assign query in ring for reversed multicast video flow**
- **MLD Snooping for IPv6 Multicast stream**
- **IGMPv1,v2,v3 with Query mode for multimedia**
- **Watchdog design to auto reboot switch CPU is found dead**
- **Built-in environmental monitoring for system input voltage, current, ambient temperature & total PoE load**
- **Supports 2 DI + 2 DO (Digital Input/Digital Output)**
- **IP54 aluminum housing with wall mount design**
- **Environmental monitoring for system input voltage, current, ambient temperature and total PoE load**
- **Configuration backup and restoration**
  - Supports editable configuration file for system quick installation
- **Wide operation temperature: -40C~75C/-40F~167F**
- **Built-in IEC 61375-3-4 ECN (Ethernet Consist Network) to work with IEC61375-2-5 TBN**
- **Diagnostic including Ping / ARP table / DDM information**
- **EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification**
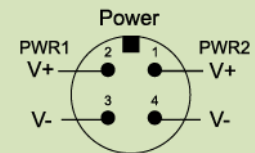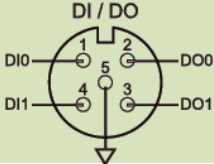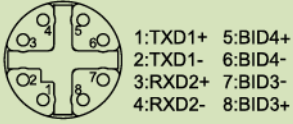
DIMENSIONS (unit=mm)

SPECIFICATION

Hardware Specification

Standards	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX IEEE802.3ab 1000Base-T 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 IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.1X User Authentication (Radius) IEEE802.1p Class of Service IEEE802.1Q VLAN Tag IEEE802.3at/af Power over Ethernet
Switch Architecture	Back-plane (Switching Fabric): 16Gbps
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: 8 x ports M12 8-pole X-coded with Auto MDI/MDI-X function RS-232/Reset connector: 1 x M12 5-pole A-coded DI/DO: 1 x M12 5-pole A-coded Power Input connector :

	1x M12 4-pole A-coded Male
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/Active(Green) PoE : Link/Active(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

	DI / DO diagram
	DI0 — 1, DO0 — 2, 5, DI1 — 4, DO1 — 3
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-40°C~75°C / -40°F~167°F
Storage Temperature	-40°C~85°C / -40°F~185°F
Power Supply	16.8~137.5VDC
Power Consumption	Without PoE: Max. 12W With PoE: Max. 13.7W
PoE Budget	(see table below)

Input Range	Power Input	Maximal PoE Budget
16.8~27VDC	Dual Power Input	80W
28~137.5VDC	Single Power Input	80W

PoE pin assignment	M12: port # 1~ # 8 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+ |
Dimensions	235mm(W)x195mm(H)x89.5mm(D)
Weight	980gs (IP54)
Installation	Wall Mount Design
EMI & EMS	FCC Part 15 Class A ,CE EN55022, CE EN55024 , CE EN61000-4-11 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
Stability Testing	EN61373 (Shock and Vibration)
Verifications & report	EN50155//EN50121-3-2/EN50121-4 verification EN45545-2 R13/R22/R23/R24/R25 (EN ISO 4589-2, EN ISO 5659-2, NF X70-100-1 & 2) Fire & Smoke verification
MTBF	622,324 hrs (standards: IEC 62380)
Warranty	5 years
Software Specification	
Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP 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 1757 RMON RFC 2674 Q-Bridge MIB* LLDP MIB Private MIB

ITU G.8032	Support ITU G.8032 v2/2012 for Ring protection in less than 20ms for self-heal recovery (single ring) Support various ring/chain topologies Includes train ring, auto ring, basic single ring, enhanced ring, multiple-VLAN ring Enhanced G.8032 ring configuration with ease Multi-VLAN mode
PoE Management	■ PoE Detection to check if PD is hang up then restart the PD ■ PoE Scheduling to On/OFF PD upon routine time table ■ On/ Off, voltage, current, watts, temperature
User friendly UI	■ Auto topology drawing ■ Topology demo ■ Auto configuration for G.8032 (auto mode) for single ring ■ 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
Environmental Monitoring	System status for input voltage, current, ambient temperature and total PoE load to be shown in GUI and sent alerting if any abnormal status
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, QinQ, QoS, Protocol based VLAN; IPv4 Subnet based VLAN
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree 16MSTI
Quality of Service	The quality of service 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
QoS by VLAN	QoS by VLAN tag for all devices in the network
IP Security	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.

	802.1X access control for port based and MAC based authentication/MAC-Port binding Ingress/Egress ACL L2/L3 SSL/ SSH v2 for Management HTTPS for secure access to the web interface TACACS+** for Authentication		including: ● Device cold start ● Authorization failure ● Port link up/link down ● DI/DO open/close ● Typology change(ITU ring) ● Power failure ● Environmental abnormal
IGMP	Support IGMP snooping v1,v2,v3 ; 1024 multicast groups; IGMP router port ; IGMP query; GMRP	DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82 (Client & Server)/Port based DHCP; DHCP Option 66; basic IPv6 DHCP server
Static multicast forwarding (MVR)	Static multicast forwarding forward reversed IGMP flow (MVR) with multicast packets binding with ports for IP surveillance application	Mac based DHCP Server	Assign IP address by Mac that can include dumb switch in DHCP network
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.	DNS	Provide DNS client feature and support Primary and Secondary DNS server
		ECN	Complies 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).
		SNTP	Supports SNTP to synchronize system clock in Internet
Flow Control	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex	Diagnostic	Support Ping , ARP table and DDM information
System Log	Supports System log record and remote system log server	Firmware Update	Supports TFTP firmware update, TFTP backup and restore; HTTP firmware upgrade
MLD Snooping	Support IPv6 Multicast stream	N-Key Configurator**	RJ45 dongle for firmware upgrade, auto backup / editable restoration
SMTP**	Supports SMTP Server and 8 e-mail accounts for receiving event alert	Configuration upload and download	Supports text configuration file for system quick installation Support factory reset button to restore all settings back to factory default
Protection	■ Miss-wiring avoidance ■ Node failure protection ■ Loop protection		
SNMP Trap	Up to 10 trap stations; trap types		

*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-5008T-54-WVI...……..…….........P/N: 8361-4249**
8 10/100/1000T X-coded EN50155 M12 IP54 L2+ PoE Managed Gigabit Ethernet Switch; 16.8V~137.5VDC dual input w/ PoE galvanic isolation; PoE max 80W budget ; -40°C to 75°C

■ **TPGS-5008T-54-WVI-C...……….........P/N: 8361-42491**
8 10/100/1000T X-coded EN50155 M12 IP54 L2+ PoE Managed Gigabit Ethernet Switch; 16.8V~137.5VDC dual input w/ PoE galvanic isolation; PoE max 80W budget ; -40°C to 75°C; w/conformal coating

■ **N-key Configurator…………….…......P/N: 8850-100**
RJ45 connector dongle for firmware upgrade, auto/editable configuration backup and restoration; -20°C to 60°

OPTIONAL ACCESSORIES

M12 Connector & Cable

Connector

■ **ECONM12-04A(F)-C-180** 4 pin M12 (Female) A-coded 180 degree crimp type connector for power supply

■ **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

ECABM12X83MSTP   8 pin M12 (Male) X-coded 180 degree RJ45 STP cable for data, shielded, 300cm