

# TPES-5424T

24 10/100TX+ 4 10/100/1000T L2+ 16/24 PoE at/af EN50155 Managed

## Ethernet Switch w/ enhanced G.8032 Ring ; 24V/WV model

- EN50155/61373/45545-2 verification
- IEEE802.3at/af up to 30W per port; PoE management incl. detection and scheduling
- Selection of dual WV input (16.8V~137.5VDC) and 24V input (9V~56VDC) for PoE budget max. 120W
- 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\*\*
- Built-in sensors for environmental monitoring on input voltage, current, switch temperature and PoE load
- Optional bypass in case of power failure, watchdog loss
- Galvanic isolation between input Power, PoE circuit and system (WVI model)
- Miss-wiring avoidance & node failure protection
- IP54 housing with small dimension to prevent from moisture / water ingress
- User friendly UI, including auto topology drawing; Complete CLI
- Support LACP link aggregation, IGMP v3/router port, DHCP server & DHCP Option82; Port based DHCP distribution, Mac based DHCP server, QoS by VLAN, SSH/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, TACACS+, QinQ, SMS\*\*
- Protocol based VLAN\*\* ; IPv4/IPv6 Subnet based VLAN\*\*
- Optional InstaView\*\* for centralized backup, editing the configuration file and upgrade firmware
- N-key configurator\*\* for firmware auto upgrading, auto configuration back up and editable configuration restore



## OVERVIEW

Lantech TPES-5424T-16/24 (IP54) is a high performance L2+ (Gigabit uplink) Ethernet switch with 24 10/100TX+ 4 10/100/1000T w/16/24 PoE 802.3at/af Injectors by M12 provides L2 wire speed and advanced security function for network aggregation deployment. 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/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 supports 10K Jumbo frame.

### Up to 16/24 PoE ports with advanced PoE management

Lantech TPES-5424T-16/24 (IP54) supports IEEE802.3at/af standard which can feed HI-power up to 30W at each PoE port for big power consumption devices like PTZ IP camera, High

power 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 hangs 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; Optional MRP ring

Lantech TPES-5424T-16/24 (P54) 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, 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 each spanning tree for each VLAN for redundant links with 16 MSTI.

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

#### **QoS by VLAN for legacy devices to tag with priority**

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, GVRP for large VLAN segmentation.

#### **IGMPv3, GMRP, router port, 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 and static multicast forwarding binding by ports for video surveillance application.

#### **Miss-wiring avoidance, Loop protection, Auto re-powered ring restore**

The TPES-5424T-16/24 (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 TPES-5424T-16/24 (IP54) is able to alert with the LED indicator and disable ring automatically. Repowered auto ring restore function (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.

#### **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 need to download file from TFTP server, DHCP Option66 server can offer IP address of TFTP server to DHCP client. Optional IPv6 address resolution for DHCP service can be supported.

#### **Editable configuration file; InstaView\*\* for mass deployment**

The configuration file of Lantech TPES-5424T-16/24(IP54) can be exported and edited with word processor for the other switches configuration with ease. The factory reset button can restore the setting back to factory default and built-in watchdog design can automatically reboot the switch when CPU is found dead.

With optional InstaView, the configuration files can be mass backup, mass-editable deployed and auto upgrading firmware in batch make maintenance easy.

The optional N-key configurator offers firmware upgrade, auto/editable configuration back up and restoration without computer by adjusting the DIP switch.

#### **User friendly UI, Auto topology drawing, complete CLI**

The user friendly UI, innovative auto topology drawing and topology demo makes TPES-5424T-16/24 (IP54) much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line.

#### **DIDO w/email\*\* trap and SMS\*\* alerting**

In case of event alarm, the TPES-5424T-16/24 (IP54) will immediately send an email\*\* & SMS\*\* text message to pre-defined addresses as well as SNMP Traps out. It provides 1DI and 1DO while 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.

#### **Selection of dual WV (16.8V~137.5VDC) input and 24V (9V~56VDC), High PoE budget**

WV model w/system isolation accepts 16.8~137.5VDC dual input and can feed 54V output with max 120W PoE budget. WVI w/PoE isolation and can feed max 120W PoE budget. 24V model w/system isolation accept 9~56VDC dual input for PoE feeding with max 120W budget.

The TPES-5424T-16/24 (IP54) also provides  $\pm 2000V$  EFT and  $\pm 6000V$  ESD protection, which can reduce unstable situation caused by power line and Ethernet.

#### **Built-in environmental monitoring to show switch inside info**

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

#### **EN50155 for rolling stock, EN45545 fire and smoke verification**

The TPES-5424T-16/24 (IP54) is designed to meet with critical network environment with IP54 aluminum enclosure and M12 connectors for water proof. It passed tests under extensive Industrial EMI and Safety standards. With EN45545-2 Fire & Smoke, and EN50155 verification, the TPES-5424T-16/24 (IP54) is best for railway in train/track side, vehicle and mining applications. For more usage flexibilities, TPES-5424T-16/24 (IP54) supports wide operating temperature from  $-40^{\circ}C$  to  $75^{\circ}C$ .

#### **Optional bypass relay prevent from power lost**

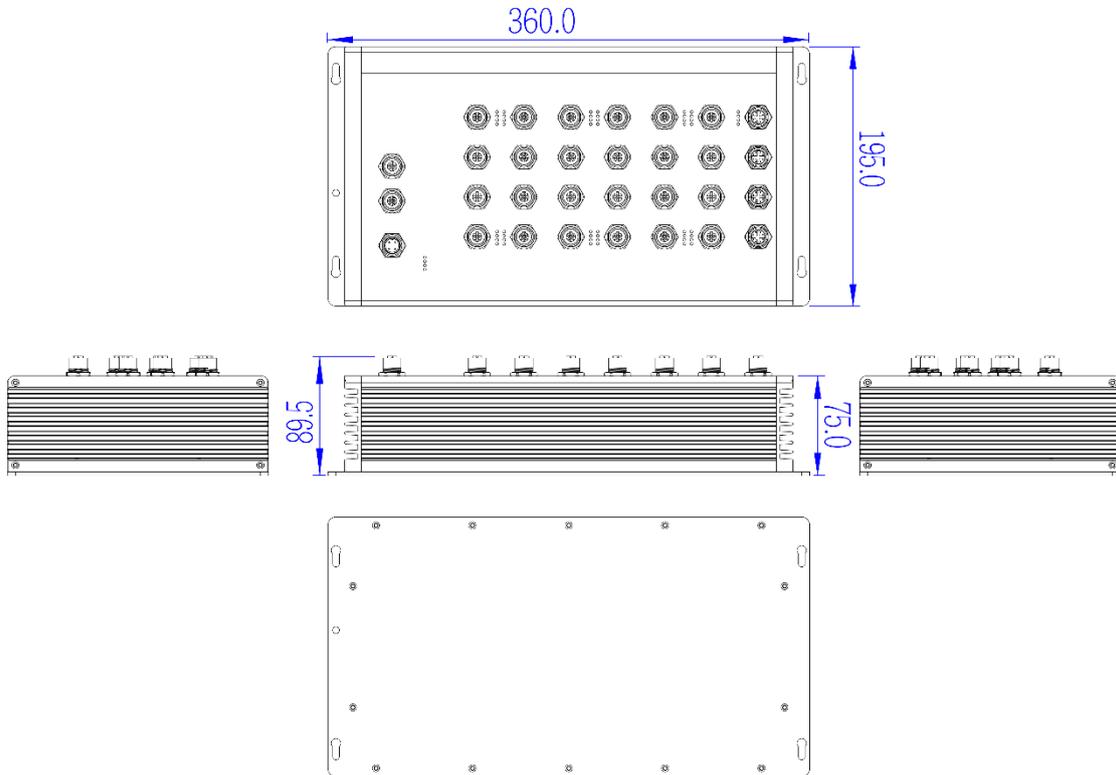
The optional bypass relay is set to bypass the switch to the next one in order to protect the network from crashing. Lantech bypass caters to remain in bypass mode until the switch is completely booting up when power is back to avoid another network lost. (-B/-BB model)

## FEATURES & BENEFITS

- 24 10/100TX+ 4 10/100/1000T w/16/24 PoE802.3af/at Injectors EN50155 IP54 M12 Managed Ethernet Switch (Total 28 Ports Ethernet Switch)
- EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification
- PoE management including PoE detection and scheduling for PD (power devices)
- 24V model w/system isolation accepts dual 9~56VDC power input and boost to 54V for PoE 802.3at/af at max 120W budget (power connector: M12 T-coded)
- WV model w/system isolation accepts dual 16.8~137.5VDC power input and feed 54V for PoE at/af at max 120W budget (power connector: M12 A-coded)
- WVI model w/ PoE galvanic isolation accepts dual 16.8~137.5VDC power input and feed 54V for PoE at/af at max 120W budget (power connector: M12 A-coded)
- N-key\*\* configurator for firmware auto upgrade, auto configuration back up and editable restoration
- Back-plane (Switching Fabric): 12.8Gbps
- 16K MAC address table
- 10KB Jumbo frame supported
- User friendly UI, auto topology drawing, topology demo, complete CLI for professional setting
- Enhanced G.8032 Ring protection in 20ms for single ring
  - Support various ring/chain topologies, including train ring, enhanced ring, basic ring, auto ring & multiple VLAN ring
  - Enhanced G.8032 ring configuration with ease
  - Auto ring configuration(auto mode) for single ring
  - Ring covers multicast on different ports
  - Train ring for auto coupling topology
- Provides EFT protection  $\pm 2000$  VDC for power line.
- Supports  $\pm 4000$  VDC (Contact) and  $\pm 8000$  VDC (Air) Ethernet ESD protection
- Supports IEEE 802.1p Class of Service, per port provides 8 priority queues Port base, Tag Base and Type of Service Priority
- IEEE 802.1d STP, IEEE 802.1w RSTP, 802.1s MSTP VLAN redundancy 16 MSTI
- 4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ, QoS
- Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console/ Lantech™ InstaView\*\*
- DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server; Port based DHCP server; DHCP Option 66; IPv6 address resolution for 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
- Relay alarm output system events
- Miss-wiring avoidance
  - LED indicator
- Repowered auto ring restore
  - 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
- Configuration backup and restoration
  - Supports editable configuration file for system quick installation
  - InstaView\*\* for centralized configuration deployment, backup & upgrade
- TFTP/SFTP\*\*/HTTP firmware upgrade; Lantech™ InstaView\*\* for multiple upgrade
- System Event Log, SMTP Email\*\* alert, SMS\*\* mobile (text) and SNMP Trap for alarm support; 32 RMON counters
- Security
  - SSL/SSH/INGRESS/EGRESS ACL L2/L3
  - Port Security: MAC address entries/Filter/MAC-Port binding
  - IP Security: IP address security management to prevent unauthorized intruder.
  - 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
- Multicast static route for non- IGMP camera to prevent flooding; IGMP router port to assign query in ring for reversed multicast video flow IGMPv1,v2,v3 with Query mode for multimedia; GMRP
- Watchdog design to auto reboot switch CPU is found dead
- Built-in environmental monitoring for system input voltage, current, ambient temperature and PoE load
- Supports DIDO (Digital Input/Digital Output)
- IP54 aluminum housing with wall mount design

- **Bypass protection\*\* - Bypass failed switch caused by power failure, hanged or link down of switch to protect network from disconnection (-B/-BB model)**

**DIMENSIONS (unit=mm)**

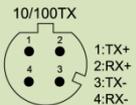


**SPECIFICATION**

**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): 12.8Gbps
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	10/100TX: 24 x ports M12 4-pole D-coded with Auto MDI/MDI-X function 10/100/1000T: 4 x ports M12 8-pole X-coded with Auto MDI/MDI-X function RS-232 connector: 1 x M12 5-pole A-coded Power Input connector : 1 x M12 4-pole T-coded Male (24V model)

	<p>1x M12 4-pole A-coded Male (WVWVI model)</p>
	<p>Relay contact : 1 x M12 5-pole A-coded</p>
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)
Bypass Protection**	Built-in bypass module on uplink ports to pass to next switch in case of power failure
LED	Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red)

	Ethernet port: Link/Activity (Green), Speed (Green); R.M. indicator (Green) PoE: (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 40 VDC, 200mA
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	WV/WVI model: 16.8~137.5VDC 24V model: 9~56VDC
PoE Budget	120W
PoE pin assignment	M12 port # 1~ # 16/24 support IEEE 802.3at/af End-point. Per port provides up to 30W  
Power Consumption	Max. 36W (w/ PoE 120W) Max. 20W (w/o PoE)
Dimensions	IP54 model: Aluminum case 360mm(W)x195mm(H)x98.7mm(D)
Weight	2.8kgs
Installation	Wall Mount Design
EMI & EMS	FCC Class A, CE EN55022 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
Stability Testing	EN61373 (Shock and Vibration)
MTBF	542,368 hrs (standards: IEC 62380)
Verifications & report	EN50155/EN50121-3-2/EN50121-4 verification EN45545-2 R24/R25 (EN ISO 4589-2, EN ISO 5659-2, NF X70-100-1 & 2) Fire & Smoke verification
Warranty	5 years
<b>Software Specification</b>	
Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP MIB	RFC 1215 Traps 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*; Bridge MIB, LLDP MIB RSTP 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 enhanced mode) 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 Cover multicast & data packets protection
PoE Management	1. PoE Detection to check if PD hangs then restart the PD 2. PoE Scheduling to On/OFF PD upon routine time table 3. On/ Off, voltage, current, watts, temperature
User friendly UI	<ul style="list-style-type: none"> <li>■ Auto topology drawing</li> <li>■ Topology demo</li> <li>■ Auto configuration for G.8032(auto mode) for single ring</li> </ul>

	Complete CLI for professional setting
Port Trunk with LACP	<ul style="list-style-type: none"> <li>■ LACP Port Trunk: 8 Trunk groups</li> </ul>
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, PoE load and ambient temperature 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/IPv6 Subnet based VLAN**
IPv6/4	Present
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree (16 MSTI)
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	Tagged QoS by VLAN 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 for Management HTTPS for secure access to the web interface TACACS+ for Authentication
IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 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
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.
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
SMTP**/Text SMS**	Supports SMTP Server and 8 e-mail accounts for receiving event alert; can send SMS** text alert via mobile
Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
Protection	<ul style="list-style-type: none"> <li>■ Miss-wiring avoidance</li> <li>■ Repowered auto ring restore</li> <li>Loop protection</li> </ul>
SNMP Trap	Up to 10 trap stations; trap types including: <ul style="list-style-type: none"> <li>● Device cold start</li> <li>● Authorization failure</li> <li>● Port link up/link down</li> <li>● DI/DO open/close</li> <li>● Typology change (ITU ring)</li> <li>● Power failure</li> </ul> <ul style="list-style-type: none"> <li>■ Environmental abnormal</li> </ul>
DHCP	<ul style="list-style-type: none"> <li>● Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based DHCP; DHCP Option 66; IPv6 address resolution for DHCP</li> </ul>

	server**
Mac based DHCP Server	Assign IP address by Mac that can include dumb switch in DHCP network
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/SFTP** firmware update, TFTP backup and restore; HTTP firmware upgrade; Lantech™ InstaView** for multiple upgrade

N-Key Configurator**	RJ45 dongle for firmware upgrade, auto / editable configuration backup/restoration
Configuration upload and download	Supports editable configuration file for system quick installation; Support factory reset button to restore all settings back to factory default; Optional InstaView for mass backup, editing configuration and upgrade

\*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. Optional Bypass relay models are available with -BT/-BB model name.

- **TPES-5424T-16-54-24V.....P/N: 8361-8412**  
24 10/100TX w/16 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 9V~56V dual input; 120W budget, -40°C to 75°C
- **TPES-5424T-24-54-24V.....P/N: 8361-8416**  
24 10/100TX w/24 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 9V~56V dual input; 120W budget, -40°C to 75°C
- **TPES-5424T-16-54-WV.....P/N: 8361-841**  
24 10/100TX w/16 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual input; 120W budget, -40°C to 75°C
- **TPES-5424T-24-54-WV.....P/N: 8361-842**  
24 10/100TX w/24 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual input; 120W budget, -40°C to 75°C
- **TPES-5424T-16-54-WV-BT.....P/N: 8361-8411**  
24 10/100TX w/16 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual input; 120W budget, -40°C to 75°C, w/ one pair Copper Bypass
- **TPES-5424T-24-54-WV-BT.....P/N: 8361-8423**  
24 10/100TX w/24 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual input; 120W budget, -40°C to 75°C, w/ one pair Copper Bypass
- **TPES-5424T-16-54-WVI.....P/N: 8361-8413**  
24 10/100TX w/16 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual input with galvanic isolation; 120W budget, -40°C to 75°C
- **TPES-5424T-24-54-WVI.....P/N: 8361-8421**  
24 10/100TX w/24 PoE at/af up to 30W @ + 4 GigaT EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual input with galvanic isolation; 120W budget, -40°C to 75°C
- **N-key Configurator.....P/N: 8850-100**  
RJ45 connector dongle for firmware auto upgrade, auto configuration backup and editable restoration

## OPTIONAL ACCESSORIES

### M12 Connector & Cable

- **ECONM12-05A(F)-C-180** M12 5Pin (Female) A-coded 180 Degree Crimp Type Connector
- **ECONM12-5P(F)70CM CABLE** 5 pin M12 power cable 90 degree angle, 70cm
- **ECONM12-5P(M)-W-180** M12 5P(Male) 180 Degree Wire Type Connector (DI/DO)
- **ECONM12-04T(F)-3PECON** M12 4P (Female) T-coded 180 Degree Screw Type Connector
- **ECONM12-04D(M)-C-180** Connector,4-pin (Male),M12 D-coded Crimp Type 180 degree
- **ECONM12-05A(F)-C-180** M12 5Pin (Female) A-coded 180 Degree Crimp Type Connector
- **ECAB124030MJS** 4 Pin M12 RJ45 Male 3 Meters; STP Cable
- **CON09000030** Fiber optical connector ASSY type

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