# T(P)ES-5416T

## 16 10/100TX + 4 GigaT X-coded L2+ (8/16 PoE at/af) EN50155 Managed Ethernet Switch w/Enhanced G.8032 Ring

- *EN50155/61373/45545-2 verification*
- *IEEE802.3at/af up to 30W per port; PoE management incl. detection and scheduling (For PoE Model)*
- *Optional 24V input can boost to 54V output PoE max. 120W; optional WV input supports PoE output max.120W (For PoE Model)*
- *Optional bypass in case of power failure, watchdog hang (BT models)*
- *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*
- *Miss-wiring avoidance & node failure protection*
- *User friendly UI, including auto topology drawing; Complete CLI*
- *Support LACP link aggregation, IGMP v3/router port, MLD snooping, DHCP server & DHCP Option82; DHCP Snooping, Port based DHCP distribution, Mac based DHCP server, QoS by VLAN, SSH v2/SSL, HTTPS, INGRESS/EGRESS ACL L2/L3, TACACS+**, QinQ*
- *User friendly UI, including auto topology drawing; Complete CLI*
- *Environmental Monitoring for temp., input voltage, current & PoE total load*
- *Protocol based VLAN; IPv4 Subnet based VLAN*
- *N-key configurator** for upgrading, auto/editable configuration back up and restoration without computer; good for multiple switches*

## OVERVIEW

Lantech T(P)ES-5416T (IP67/IP54) is a high performance L2+ (Gigabit uplink) EN50155 Ethernet switch with 16 10/100TX + 4 10/100/1000T (total 20 ports) (w/8/16 PoE 802.3af/at) ports 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 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 supports Cisco Discovery Protocol (CDP) for Ciscoworks to detect the switch info and show on L2 map topology.

***DHCP option 82 & Port based, Mac based DHCP, Option66, DHCP Snooping, 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. DHCP Snooping is supported. 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. Basic IPv6 DHCP service can be supported.

***Wide input range model (WV) w/maximum PoE budget***

The Lantech T(P)ES-5416T is designed with dual power input ranges from 16.8~137.5VDC. The WV model can accept dual 16.8~137.5VDC to feed 54V PoE to provide PoE budget max 120W. 24V model can accept dual 9~56VDC to feed 54V PoE to provide PoE budget max. 120W. (for PoE model) Featured with relay contact alarm function, the T(P)ES-5416T (IP67/IP54) is able to connect with alarm system in case of power failure or port disconnection events.

***User friendly GUI, Auto topology drawing***

The user-friendly UI, innovative auto topology drawing and topology demo makes T(P)ES-5416T (IP67/IP54) much easier to get hands-on. The complete CLI enables professional engineer to configure setting by command line.

***Enhanced G.8032 ring, 16 MSTI MSTP; MRP ring***

Lantech T(P)ES-5416T (IP67/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 each spanning tree for each VLAN for redundant links with 16 MSTI.

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

***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).

***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.

***PoE +, Advanced PoE management***

Lantech T(P)ES-5416T (IP67/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. (For PoE Model)

***Node failure protection, Miss-wiring alert, Loop protection***

The T(P)ES-5416T (IP67/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 T(P)ES-5416T (IP67/IP54) is able to alert with the LED indicator and send out an email** or traps. 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.

***Optional hardware bypass on Giga Copper ports***

The optional hardware bypass function provides redundant GigaT connection when power or switch fails in a ring or bus structure. The bypass replay is set to bypass the switch to the next one when power is off 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. The bypass is also activated when detecting the CPU watchdog is ON.

***Editable configuration file; Optional N key auto backup, exported text file***

The configuration file can also be exported in text file so that it can be edited and configured back to switch with ease for mass deployment. The built-in watchdog design can automatically reboot the switch when CPU is found dead. The optional N-key configurator offers firmware upgrade, auto/editable configuration back up and restoration without computer by adjusting the DIP switch.

***Event email** and trap; 1DI+1DO***

In case of event alarm, the T(P)ES-5416T (IP67/IP54) is able to send an email** to pre-define addresses as well as SNMP Traps out immediately. It provides 1DI and 1DO 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.

***Built-in environmental monitoring***

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

***EN50155, EN50121, EN61373 & EN45545 verification; High ESD protection***

Lantech T(P)ES-5416T (IP67/IP54) features high reliability and robustness coping with extensive EMI/RFI phenomenon, environmental vibration and shocks usually found in factory, substation, steel automation, aviation, mining and process control. It is the best solution for Automation, transportation, surveillance, Wireless backhaul, Semi-conductor factory and assembly lines.

The T(P)ES-5416T (IP67/IP54) is designed to meet with critical network environment with IP67/IP54 aluminum enclosure and M12 connectors for water proof. With EN45545-2 Fire & Smoke, and EN50155 & EN61373 verification, the T(P)ES-5416T (IP67/IP54) is best for railway in train/track side, vehicle and mining applications. For more usage flexibilities, T(P)ES-5416T (IP67/IP54) supports wide operating temperature from -40°C to 75°C.

T(P)ES-5416T (IP67/IP54) also provides ±2000V EFT and ±6000V ESD contact protection, which can reduce unstable situation caused by power line and Ethernet.

## FEATURES & BENEFITS

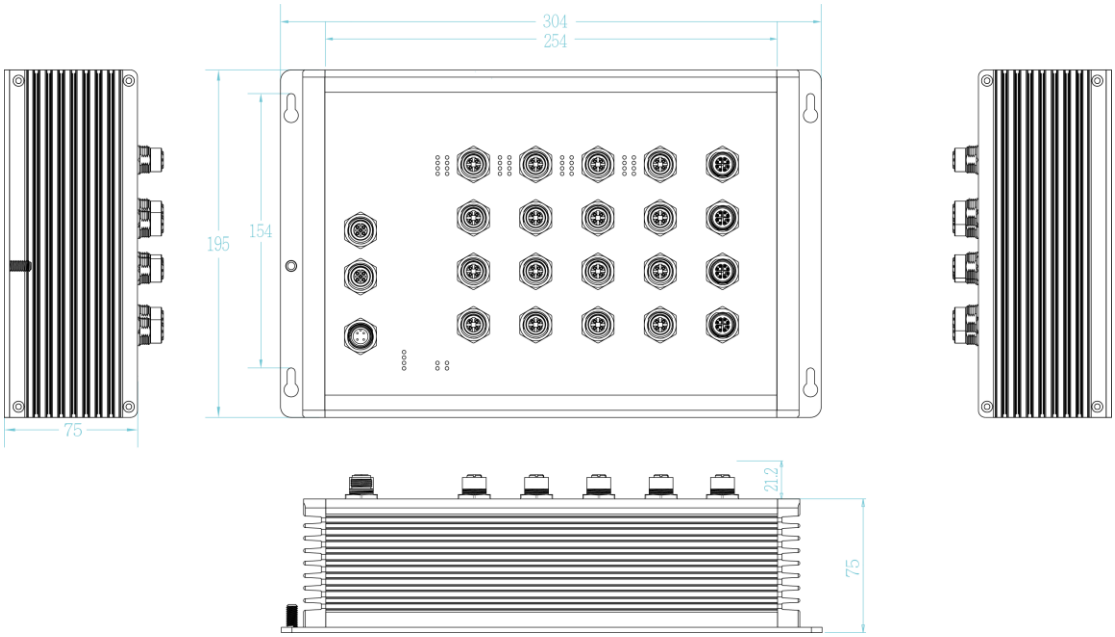
- **16 10/100TX + 4 10/100/1000T (w/8/16 PoE 802.3af/at) ports IP67/IP54 M12 EN50155 Managed Ethernet Switch (Total 20 Ports Switch)**
- **EN45545-2 Fire & Smoke, EN50155/EN50121 and EN61373 shock/vibration verification**
- **IEEE802.3at/af feeding power up to 30W per PoE port at 45~56VDC at port 1-8;1-16 (For PoE Model)**
- **PoE management including PoE detection and scheduling for PD (power devices) (For PoE Model)**
- **24V model accepts dual 9~56VDC power input and boost to 54V for PoE 802.3at/af at max 120W (24V input) budget (For PoE Model)**
- **WV model accepts dual 16.8~137.5VDC power input and feed 54V for PoE at/af at max 120W budget (For PoE Model)**
- **Back-plane (Switching Fabric): 11.2Gbps**
- **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 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*
  - *Cover multicast and data packets 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**
- **DHCP server / client / DHCP Option 82 relay / DHCP Option 82 server; Port based DHCP server; DHCP Snooping; DHCP Option 66; basic IPv6 DHCP server**
- **Mac based DHCP server to assign IP address**
- **Bandwidth Control**
  - *Ingress packet filter and egress rate limit*
  - *Broadcast/multicast packet filter control*
- **Relay alarm output system events**
- **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*
- **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/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**
- **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 total PoE load**
- **Supports 1DI + 1DO (Digital Input/Digital Output)**
- **IP54/IP67 aluminum housing with DIN rail** and wall mount design**
- **Diagnostic including Ping / DDM information**
- **Built-in IEC 61375-3-4 ECN (Ethernet Consist Network) to work with IEC61375-2-5 TBN**
- **MLD Snooping for IPv6 Multicast stream**
- **Bypass protection****
  - *Solid Giga Copper bypass*
  - *Bypass failed switch caused by power failure of switch to protect network intactness in a bus structure*

- *Wait until switch is completely booting to swift back to normal mode*

■ **Configuration backup and restoration**

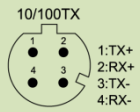
- *Supports editable configuration file for system quick installation*
- *N-key** for mass configuration auto-backup, editable restoration and auto firmware upgrade*

## DIMENSIONS (unit=mm)




## SPECIFICATION

| Hardware Specification | |
|---|---|
| Standards | IEEE 802.3 10Base-T Ethernet<br>IEEE 802.3u 100Base-TX<br>IEEE 802.3ab 1000BaseT<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>IEEE 802.3ad Link Aggregation Control Protocol (LACP)<br>IEEE 802.1AB Link Layer Discovery Protocol (LLDP)<br>IEEE 802.1X User Authentication (Radius)<br>IEEE802.1p Class of Service<br>IEEE802.1Q VLAN Tag<br>IEEE802.3at/af Power over Ethernet (For PoE Model) |
| Switch Architecture | Back-plane (Switching Fabric): 11.2Gbps |
| Transfer Rate | 14,880pps for Ethernet port<br>148,800pps for Fast Ethernet port<br>1,488,000pps for Gigabit Ethernet port |
| Mac Address | 16K MAC address table |
| Jumbo frame | 10KB |
| Connectors | 10/100TX: 16 ports M12 4-pole D-coded with Auto MDI/MDI-X function<br>10/100/1000T: 4x ports M12 8-pole X-coded with Auto MDI/MDI-X function<br>RS-232 connector: 1 x M12 5-pole A-coded |
| | Power Input connector : 1 x M12 4-pole A-coded<br>Relay contact : 1 x M12 5-pole A-coded |
| Network Cable | 10Base-T: 2-pair UTP/STP Cat. 3, 4, 5/ 5E/ 6 cable<br>EIA/TIA-568 100-ohm (100m)<br>100Base-TX: 2-pair UTP/STP Cat. 5/ 5E/ 6 cable<br>EIA/TIA-568 100-ohm (100m) |
| Giga Optical Cable | Multi-mode: 50/125um~62.5/125um<br>Single mode: 9/125um<br>Available distance: 550m (Multi-mode)/10km (Single-mode)<br>Wavelength: 850nm (Multi-mode)/1310nm (Single-mode) |
| 100M Optical Cable | Multi-mode: 50/125um~62.5/125um<br>Single mode: 9/125um<br>Available distance: 2km (Multi-mode)/10km (Single-mode)<br>Wavelength: 850nm (Multi-mode)/1310nm (Single-mode) |
| Bypass Protection** | Built-in bypass module on uplink Copper ports to pass to next switch in case of power failure |
| LED | Per unit: Power 1 (Green), Power 2 (Green), FAULT (Red)<br>Ethernet port: Link/Activity (Green), Speed (Green);<br>R.M. indicator (Green)<br>PoE (Green) (for PoE model) |
| DI/DO | 1 Digital Input (DI) :<br>Level 0: -30~2V / Level 1: 10~30V<br>Max. input current:8mA<br>1 Digital Output(DO): Open collector to 80 VDC, |

| | |
|---|---|
| | 50mA |
| 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 | 9~56VDC on 24V model<br>16.8~137.5VDC on WV model |
| PoE Budget (For PoE Model) | 120W |
| PoE pin assignment (For PoE Model) | M12 port # 1~ # 8;1~#16 support IEEE 802.3at/af End-point. Per port provides up to 30W<br>  |
| Power Consumption | Max. 13W 24V input<br>Max. 16W WV input |
| Dimensions | IP54/IP67 model: Aluminum case<br>304mm(W)x195mm(H)x96.2mm(D) |
| Weight | 1.6kgs |
| Installation | DIN Rail** and Wall Mount Design |
| EMI & EMS | FCC Class A,<br>EN55032 Class A,<br>EN55024, CE EN55011<br>CE EN61000-4-2 (ESD) Level 3<br>CE EN61000-4-3 (RS) Level 3<br>CE EN-61000-4-4 (EFT) Level 3<br>CE EN61000-4-5 (Surge) Level 3<br>CE EN61000-4-6 (CS) Level 3<br>CE EN61000-4-8 (Magnetic Field) Level 3 |
| Stability Testing | EN61373 (Shock and Vibration) |
| Verifications & report | EN50155/EN50121-3-2/EN50121-4 verification<br>EN45545-2 R13/R22/R23/R24/R25 (EN ISO 4589-2, EN ISO 5659-2, NF X70-100-1 & 2) Fire & Smoke verification |
| MTBF | 397,100 hrs (standards: IEC 62380) |
| Warranty | 5 years |

## Software Specification

| | |
|---|---|
| Management | SNMP v1 v2c, v3/ Web/Telnet/CLI |
| SNMP MIB | RFC 1213 MIBII<br>RFC 1158 MIBII<br>RFC 1157 SNMP MIB,<br>RFC 1493 Bridge MIB*<br>RFC 1573 IF MIB<br>Partial RFC 1757 RMON,<br>Private MIB |
| ITU G.8032 | Support ITU G.8032 v2/2012 for Ring protection in less than 20ms for self-heal recovery (basic mode)<br>Support various ring/chain topologies<br>Includes train ring, auto ring, basic single ring, enhanced ring, multiple-VLAN ring<br>Enhanced G.8032 ring configuration with ease<br>Cover multicast & data packets protection |
| PoE Management (For PoE Model) | 1. PoE Detection to check if PD hangs then restart the PD<br>2. PoE Scheduling to On/OFF PD upon routine time table<br>3. On/ Off, voltage, current, watts, temperature |
| User friendly UI | ■ Auto topology drawing<br>■ Topology demo<br>■ Auto configuration for G.8032(auto mode) for single ring<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 |
| 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<br>IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096)<br>GVRP, QinQ<br>Protocol based VLAN; IPv4 Subnet based VLAN |
| RSTP/MSTP | 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 / CoS / ToS / VLAN / 61375-3-4 |
| Class of Service | Support IEEE802.1p class of service, per port provides 8 priority queues |
| 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 for port based and MAC based authentication/MAC-Port binding<br>Ingress/Egress ACL L2/L3<br>SSL/ SSH v2 for Management<br>HTTPS for secure access to the web interface<br>TACACS+** for Authentication |
| MLD Snooping | Support IPv6 Multicast stream |
| IGMP | Support IGMP snooping v1,v2,v3; Supports IGMP static route; 1024 multicast groups; IGMP router port ; IGMP query; GMRP |
| Static multicast forwarding | 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.<br>The egress rate control supports all of packet type.<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 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 | Supports SMTP Server and 8 e-mail accounts for receiving event alert |
| Relay Alarm | Provides one relay output for port breakdown, power fail and alarm.<br>Alarm Relay current carry ability: 1A @ DC24V |
| 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 |

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|---|---|
| | ● Authorization failure<br>● Port link up/link down<br>● DI/DO open/close<br>● Typology change(ITU ring)<br>● Power failure<br>● Environmental abnormal** |
| DHCP | Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based DHCP; DHCP Snooping; DHCP Option 66; Basic IPv6 DHCP server |
| Mac based DHCP Server | Assign IP address by Mac |
| DNS | Provide DNS client feature |
| SNTP | Supports SNTP to synchronize system clock in Internet |
| Firmware | Supports TFTP firmware update, TFTP backup |
| Update | and restore; HTTP firmware upgrade |
| Diagnostic | Support Ping and DDM information |
| 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). |
| N-Key Configurator** | RJ45 dongle for firmware upgrade, auto / editable configuration backup/restoration |
| Configuration backup & restore | Supports text configuration file for system quick installation |

*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 models are available with –BT (Copper bypass) model names.

- **TPES-5416T-8-67-24V……P/N: 8361-200**
  16 10/100TX w/8 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ PoE Managed Ethernet Switch;9~56V input; -40°C to 75°C
- **TPES-5416T-8-54-24V……P/N:8361-2001**
  16 10/100TX w/8 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ PoE Managed Ethernet Switch; 9~56V input; -40°C to 75°C
- **TPES-5416T-16-67-24V……P/N:8361-2002**
  16 10/100TX w/16 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ PoE Managed Ethernet Switch;9~56V input; -40°C to 75°C
- **TPES-5416T-16-54-24V……P/N:8361-2003**
  16 10/100TX w/16 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ PoE Managed Ethernet Switch; 9~56V input; -40°C to 75°C
- **TPES-5416T-8-67-WV……P/N:8361-2004**
  16 10/100TX w/8 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ PoE Managed Ethernet Switch;16.8~137.5V input; -40°C to 75°C
- **TPES-5416T-8-54-WV……P/N:8361-2005**
  16 10/100TX w/8 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ PoE Managed Ethernet Switch; 16.8~137.5V input; -40°C to 75°C
- **TPES-5416T-16-67-WV……P/N:8361-2006**
  16 10/100TX w/16 PoE at/af + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ PoE Managed Ethernet Switch; 16.8~137.5V input; -40°C to 75°C
- **TPES-5416T-16-54-WV……P/N:8361-0034**
  16 10/100TX w/16 PoE at/af + 2 100M 2KM / Giga SX 550M Q-ODC + 2 10/100/1000T X-coded EN50155 M12 IP54 L2+ PoE Managed Ethernet Switch; 16.8~137.5V input; -40°C to 75°C
- **TES-5416T-67-24V……P/N:8361-2007**
  16 10/100TX + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ Managed Ethernet Switch;9~56V input; -40°C to 75°C
- **TES-5416T-54-24V……P/N:8361-2008**
  16 10/100TX + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ Managed Ethernet Switch; 9~56V input; -40°C to 75°C
- **TES-5416T-67-WV……P/N:8361-2009**
  16 10/100TX + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ Managed Ethernet Switch;16.8~137.5V input; -40°C to 75°C
- **TES-5416T-54-WV……P/N:8361-20091**
  16 10/100TX + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8~137.5V input; -40°C to 75°C
- **N-key Configurator……P/N: 8850-100**
  RJ45 connector dongle for firmware upgrade, auto/editable configuration backup and restoration for multiple switches; -20°C to 60°

## OPTIONAL ACCESSORIES

### M12 Connector & Cable

| | |
|---|---|
| **ECONM12-4P(F)1.5M CABLE** | 4 pin M12 (Female) A-coded 90 degree cable for power supply, 150cm |
| **ECAB124030MJS** | 4 Pin M12 RJ45 Male 3 Meters; STP Cable |
| **ECABM12X83MSTP** | 8 Pin M12 X-coded RJ45 Male 3 METER, STP CABLE w/ Shielding |

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