IPES-5408T (IP67/IP54)

8 10/100TX + 4 10/100/1000T X-coded L2+ 8 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*
- *WV dual input steps down to 54V output PoE max.80W; optional 24V input can boost to 54V output PoE max 120W (T code power);80W (A code power)*
- *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***
- *Environmental Monitoring for temp., voltage , current and total PoE load*
- *Miss-wiring avoidance & node failure protection*
- *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 bypass in case of power failure, watchdog loss*
- *N-key configurator** for upgrading, auto/editable configuration back up and restoration without computer*
- *IP67/IP54 housing; User friendly UI, including auto topology drawing; Complete CLI*

IP67 model

IP54 model

CE FC RoHS2

EN50155 | ITU G.8032 | EN 45545-2 | Environmental Monitoring | Train Ring | 12V booster 48V | PoE AT 30W

OVERVIEW

Lantech IPES-5408T (IP67/IP54) is a high performance L2+ (Gigabit uplink) Ethernet switch with 8 10/100TX(D-coded) + 4 10/100/1000T(X-coded) w/8 PoE 802.3af/at 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 Cisco Discovery Protocol (CDP) for Ciscoworks to detect the switch info and show on L2 map topology.

Up to 8 PoE ports with advanced PoE management
Lantech IPES-5408T (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.

Wide selection of input range models (24V/WV) w/maximum PoE budget
The Lantech IPES-5408 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 80W. 24V model can accept dual 16.8~56VDC to feed 54V PoE to provide PoE budget max.120W (T code power connector);

80W (A code power connector). Featured with relay contact alarm function, the IPES-5408T is able to connect with alarm system in case of power failure or port disconnection events.

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

The IPES-5408T (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 IPES-5408T (IP67/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. 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 needs 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.

User friendly UI, Auto topology drawing, complete CLI

The user friendly UI, innovative auto topology drawing and topology demo makes IPES-5408T (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; Optional MRP ring

Lantech IPES-5408T (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. 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.

Editable configuration file; Optional N-key auto backup, Exported text file

The configuration file of Lantech IPES-5408T (IP67/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/editable configuration back up and restoration without computer by adjusting the DIP switch.

Event log & message; 1 DI + 1 DO

In case of event, the IPES-5408T (IP67/IP54) is able to send an email** & SMS** text message to pre-defined 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 to show switch inside info

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

EN50155, EN45545-2, EN61373 verification; High ESD protection

Lantech IPES-5408T (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 IPES-5408T (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 & 61373 verification, the IPES-5408T (IP67/IP54) is best for railway in train/track side, vehicle and mining applications. For more usage flexibilities, IPES-5408T (IP67/IP54) supports wide operating temperature from -40°C to 75°C.
IPES-5408T (IP67/IP54) also provides ±2000V EFT and±4000 VDC (Contact) / ±8000 VDC (Air) Ethernet ESD protection, which can reduce unstable situation caused by power line and Ethernet.

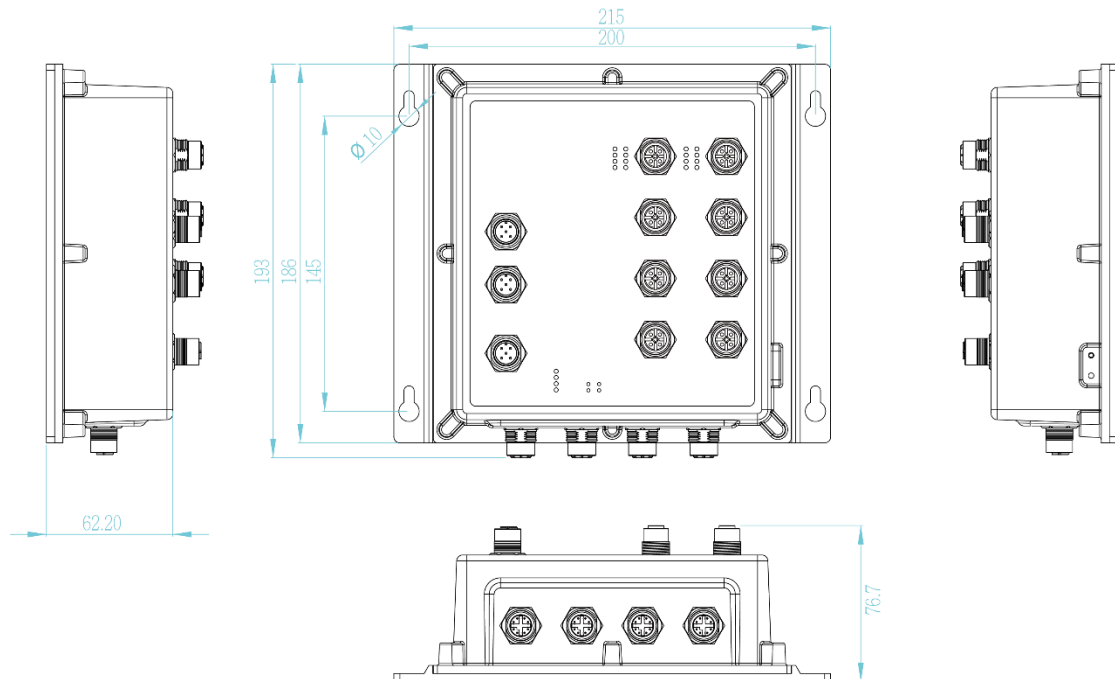### Optional bypass relay prevent from power lost

The optional bypass relay 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. Smart bypass can be activated when switch encounters power failure or watch dog hang.
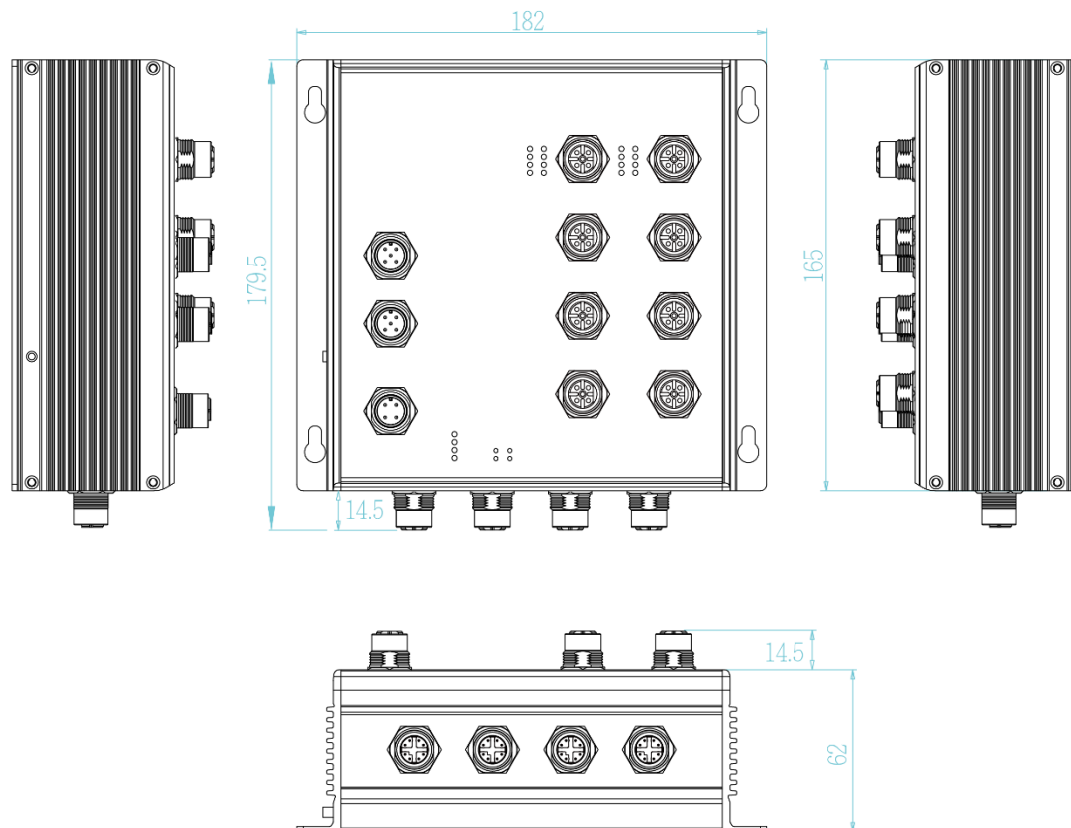
FEATURES & BENEFITS

- 8 10/100TX(D-coded) + 4 10/100/1000T(X-coded) w/8 PoE 802.3af/at Injectors EN50155 IP67/IP54 M12 Managed Ethernet Switch (Total 12 Ports Switch)
- EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification
- IEEE802.3at/af feeding power up to 30W per PoE port at 45~56VDC at port 1-8
- PoE management including PoE detection and scheduling for PD (power devices)
- 24V model can accept dual power input ranges from 16.8~56V and can boost up to 54V for PoE 802.3at/af max. 120W budget (T code power); 80W budget (A code power)
- WV model can accept dual 16.8~137.5V input and feed 54V for PoE at/af at max 80W budget
- N-key** configurator for firmware upgrade, auto/editable configuration back up and restoration
- Back-plane (Switching Fabric): 9.6Gbps
- 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
- Provides EFT protection ±2000 VDC for power line.
- Supports ±4000 VDC (Contact) and ±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 with 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 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
- TFTP/SFTP**/HTTP firmware 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.
  - 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
- 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
- Supports 1DI + 1DO (Digital Input/Digital Output)
- IP67/IP54 aluminum housing with DIN rail** and wall mount design
- Bypass protection** - Bypass failed switch caused by power failure of switch to protect network intactness
- 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)

IP67 model

215
200
Ø10
193
186
145
62.20
76.7

IP54 model

182
179.5
165
14.5
14.5
62

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): 9.6Gbps
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: 8 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 5-pole A-coded Male (WV)

Power
PWR1   PWR2
V+   V+
V-   V-

1x M12 4-pole T-coded Male (24V)

Power
PWR1   PWR2
V+   V+
V-   V-

1 x M12 5-pole A-coded Male (24V)

Power
PWR1   PWR2
V+   V+
V-   V-

	Relay contact : 1 x M12 5-pole A-coded
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	16.8~56VDC (24V)
	16.8~137.5VDC (WV)
PoE Budget	WV model: 80W
	24V model: 120W (T code)
	80W (A code)
PoE pin assignment	M12 port # 1~ # 8 support IEEE 802.3at/af End-point. Per port provides up to 30W

10/100TX

1:TX+   V+   :   pin 2, 4
2:RX+   V-   :   pin 1, 3
3:TX-
4:RX-

Power Consumption	Max. 11W 12V~48VDC input
	Max. 16W 72/110/WV input
Dimensions	IP67 model: Aluminum case 215mm(W)x200mm(H)x76.7mm(D)
	IP54 model: Aluminum case 182mm(W)x179mm(H)x76.5mm(D)
Weight	1.4kgs (IP67); 1.8kgs(IP54)
Installation	IP67 model: DIN Rail** and Wall Mount Design
	IP54 model: 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	685,902 hrs (IEC 62830 standards)
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

Software Specification

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 (basic mode)
	Support various ring/chain topologies
	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
	Ring covers multicast on different ports
	Train mode for auto coupling ring configuration
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	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.
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/Maximum 8 trunk members	Flow Control	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex
LLDP	Supports LLDP to allow switch to advise its identification and capability on the LAN	System Log	Supports System log record and remote system log server
CDP	Cisco Discovery Protocol for topology mapping	SMTP/Text SMS**	Supports SMTP Server and 8 e-mail** accounts for receiving event alert; can send SMS** text alert via mobile
Environmental Monitoring	System status for input voltage, current ,total PoE load and ambient temperature to be shown in GUI and sent alerting if any abnormal status	Relay Alarm	Provides one relay output for port breakdown, power fail and alarm. Alarm Relay current carry ability: 1A @ DC24V
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**	Protection	■ Miss-wiring avoidance ■ Repowered auto ring restore Loop protection
IPv6/4	Present	SNMP Trap	Up to 10 trap stations; trap types including: ● Device cold start ● Authorization failure ● Port link up/link down ● DI/DO open/close ● Typology change(ITU ring) ● Power failure ● Environmental abnormal
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	DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based DHCP; DHCP Option 66; IPv6 address resolution for DHCP server**
QoS by VLAN	Tagged QoS by VLAN for all devices in the network	Mac based DHCP Server	Assign IP address by Mac that can include dumb switch in DHCP network
IP Security	Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.	DNS	Provide DNS client feature and support Primary and Secondary DNS server
Login Security	Supports IEEE802.1X Authentication/RADIUS	SNTP	Supports SNTP to synchronize system clock in Internet
Port Mirror	Support 3 mirroring types: "RX, TX and Both packet"	Firmware Update	Supports TFTP/SFTP** firmware update, TFTP backup and restore; HTTP firmware upgrade
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	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
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		

*Future release
**Optional

ORDERING INFOMATION

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 –B/BB model name

■ **IPES-5408T-67-24V...……….….....P/N: 8360-6049**
8 10/100TX PoE at/af up to 30W + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ Managed Ethernet Switch; 16.8V~56V dual input; -40°C to 75°C

■ **IPES-5408T-54-24V…....………......P/N: 8360-6024**
8 10/100TX PoE at/af up to 30W + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ Managed Ethernet Switch;16.8V~56V dual input; -40°C to 75°C

■ **IPES-5408T-67-24V-T...………......P/N: 8360-60492**
8 10/100TX PoE at/af up to 30W + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ Managed Ethernet Switch w/ M12 T code power connector; 120W budget, 16.8V~56V dual input; -40°C to 75°C

■ **IPES-5408T-54-24V-T…...……......P/N: 8360-60493**
8 10/100TX PoE at/af up to 30W + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ Managed Ethernet Switch w/ M12 T code power connector; 120W budget, 16.8V~56V dual input; -40°C to 75°C

■ **IPES-5408T-67-WV...…………........P/N: 8360-6039**
8 10/100TX PoE at/af up to 30W + 4 10/100/1000T X-coded EN50155 M12 IP67 L2+ Managed Ethernet Switch;16.8V~137.5V dual input; -40°C to 75°C

■ **IPES-5408T-54-WV…….....…….....……..P/N: 8360-6020**
  8 10/100TX PoE at/af up to 30W + 4 10/100/1000T X-coded EN50155 M12 IP54 L2+ Managed Ethernet Switch; 16.8V~137.5V dual 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; -20°C to 60°

OPTIONAL ACCESSORIES

M12 Connector & Cable

■ **ECONM12-5P(F)70CM CABLE**	5 pin M12 power cable 90 degree angle, 70cm
■ **ECONM12-4P(F)1.5M CABLE**	4 pin M12 power cable 90 degree angle, 150cm
■ **ECONM12-04A(F)-C-180**	M12 4P(Female) A-coded 180 Degree Crimp Type Connector
■ **ECONM12-04T(F)-3PECON**	M12 4P (Female) T-coded 180 Degree Screw Type Connector
■ **ECONM12-5P(M)-W-180**	M12 5P(Male) 180 Degree Wire Type Connector (DI/DO)
■ **ECONM12-04D(M)-C-180**	Connector,4-pin (Male),M12 D-coded Crimp Type 180 degree
■ **ECAB124030MJS**	4 Pin M12 RJ45 Male 3 Meters; STP Cable
■ **Lantech USB Dongle**	M12 to USB 2.0 dongle