

I(P)ES-5408T-X-IGN

8 10/100TX + 4 10/100/1000T X-coded L2+ (8 PoE at/af) Managed Ethernet

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

- EN61373 verification: 24V Input voltage
- E-mark certificate for vehicle
- IEEE802.3at/af up to 30W per port; PoE management incl. detection and scheduling (For PoE Model)
- 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 and total PoE load and current
- Miss-wiring avoidance & node failure protection
- 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 of VLAN
- Protocol based VLAN; IPv4 Subnet based VLAN
- N-key configurator** for upgrading, auto/editable configuration back up and restoration without computer
- Optional bypass in case of power failure (IP67 only)
- IP54/IP67 housing; User friendly UI, including auto topology drawing; Complete CLI
- Compliant with ISO 7637-2
- ITxPT labeled w/ignition function



IP54 model



IP67 model



OVERVIEW

Lantech I(P)ES-5408T-X-IGN is a high performance L2+ Ethernet switch with 8 10/100TX + 4 10/100/1000T X-coded L2+ 8 PoE at/af Managed Ethernet Switch which by M12 connectors 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 by VLAN, advanced security including INGRESS/EGRESS ACL L2/L3, TACACS+**, SSH v2/SSL and Mac based DHCP server, DHCP Option 82, DHCP server, IGMPv1/v2/v3/router port, QinQ are also supported and 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 (For PoE Model)

Lantech IPES-5408T-X-IGN 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.

E-marking certificate, ITxPT; ISO 7637-2 compliant and extended working temperature

The I(P)ES-5408T-X-IGN is designed to meet with critical network environment with IP54/67 enclosure and M12 connectors for protection against dust and water. It has passed harsh environmental testing to comply with Industrial EMI and Safety standards as well as stability testing such as Free fall, Shock, and vibration. It is labeled with ITxPT public transport standards and also compliant with ISO 7637-2 which protects switch from being damaged by high voltage that could be found at vehicle cranky start.

For a greater flexibility in application the I(P)ES-5408T-X-IGN supports an extended operating temperature range from -40°C to 75°C.

The E-marking certificate makes it the most suitable switch for

bus, carriage, other vehicles application as well as for industrial areas where the power source is limited with 24V but has demand of IP surveillance or VoIP applications.

Dual power input design (24V input)

The Lantech I(P)ES-5408T-X-IGN is designed with dual power which can accept 9V~36VDC. Featured with relay contact alarm function, the I(P)ES-5408T-X-IGN being able to connect with alarm system in case of power failure or port disconnection events.

A voltage which can be minimal 0,5 Un nominal voltage (when $V_{in} \geq 36V$) and/or a voltage which can be maximal 1,5 Un nominal voltage for more than 1000 consecutive ms (one second).

Miss-wiring avoidance, Loop protection, Node failure protection

The I(P)ES-5408T-X-IGN 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 I(P)ES-5408T-X-IGN being 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. 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. Basic IPv6 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 I(P)ES-5408T-X-IGN 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 I(P)ES-5408T-X-IGN 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.

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 and GVRP supported

It supports the QinQ, 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.

802.1X security by MAC address

MAC-based port authentication is an alternative approach to 802.1x for authenticating hosts connected to a port. By authenticating based on the host's source MAC address, the host is not required to run a user for the 802.1x protocol. The RADIUS server that performs the authentication will inform the switch if this MAC can be registered in the MAC address table of switch.

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

The configuration file of Lantech I(P)ES-5408T-X-IGN 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 I(P)ES-5408T-X-IGN being able to send an email** 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** alert when abnormal.

Optional bypass relay prevent from power lost (IP67 only)

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. (-BT/-BBT model)

EN61373 verification; High ESD protection

Lantech I(P)ES-5408T-X-IGN 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 I(P)ES-5408T-X-IGN is designed to meet with critical network environment with IP54/67 aluminum enclosure and

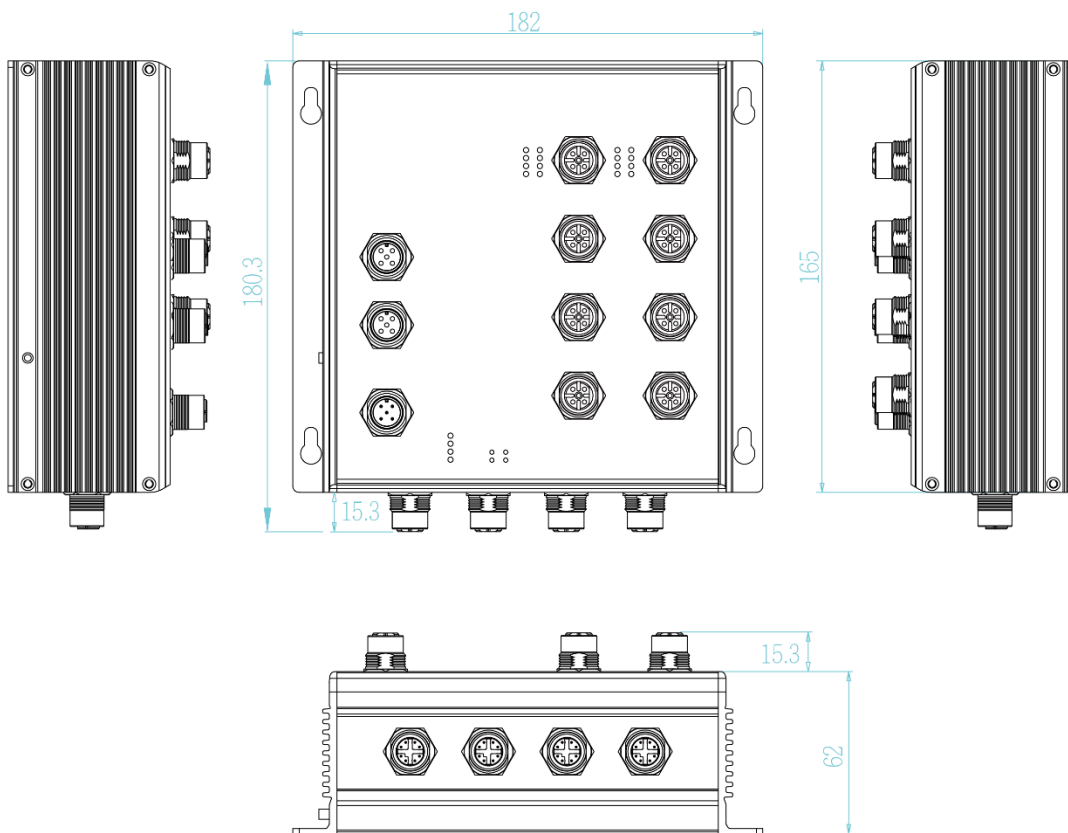
M12 connectors for water proof. For more usage flexibilities, I(P)ES-5408T-X-IGN supports wide operating temperature from -40°C to 75°C.

FEATURES & BENEFITS

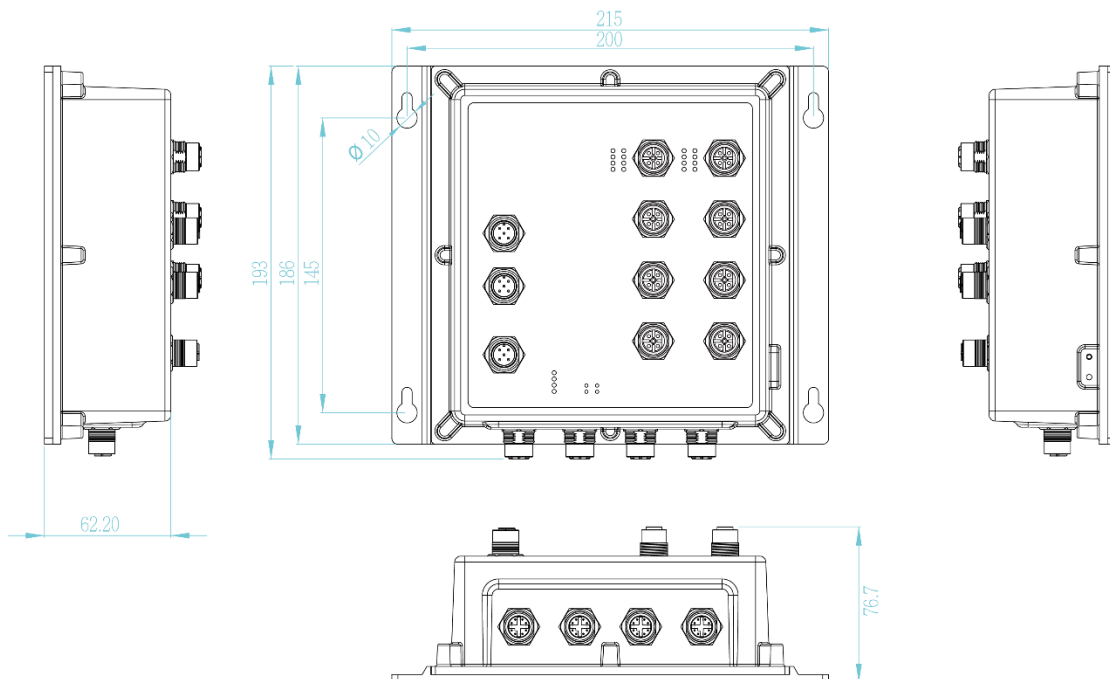
- **8 10/100TX + 4 10/100/1000T X-coded L2+ 8 PoE at/af ports Managed Ethernet Switch (Total 12 Ports Ethernet Switch)**
- EN61373 shock/vibration verification
- 24V model can accept dual 9~36VDC power input and boost to 54V for PoE 802.3at/af max 80W budget (For PoE Model)
- Galvanic isolation from power input/Ethernet ports to system 1.5KV
- N-key** configurator for firmware upgrade, auto/editable configuration back up and restoration
- Back-plane (Switching Fabric): 2.4Gbps
- 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 with 16 MSTI
- 4K 802.1Q VLAN, Port based VLAN, GVRP, QinQ of VLAN, QoS
- Supports IEEE 802.1ab LLDP, Cisco CDP; LLDP info can be viewed via Web/ Console
- MLD Snooping for IPv6 Multicast stream
- 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
- 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
- IGMP router port to assign query in ring for reversed multicast video flow
- IGMPv1, v2, v3 with Query mode for multimedia; GMRP
- Diagnostic including Ping / ARP table / DDM information
- 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)
- IP54/67 aluminum housing with DIN rail** and wall mount design
- E-mark certificate for vehicle
- ISO7637-2 Level III compliant
- Bypass protection** - Bypass failed switch caused by power failure of switch to protect network intactness (IP67 only)
- ITxPT labeled w/ ignition function
- 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)

IP54 model

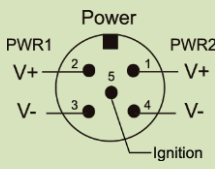


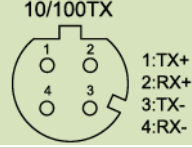
IP67 model



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 (For PoE Model)
Switch Architecture	Back-plane (Switching Fabric): 2.4Gbps
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 Relay/Console connector: 1 x M12 5-pole A-coded Power Input connector: 1 x M12 5-pole A-coded
	 <p>Diagram showing a 5-pin M12 connector with pins labeled PWR1, V+, V-, and Ignition. Pin 1 is PWR2, pin 2 is V+, pin 3 is V-, pin 4 is Ignition, and pin 5 is PWR1.</p>
	DIDO connector: 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) 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) 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	9~36VDC
PoE Budget	80W Higher PoE budget can be applied upon request. **
PoE pin	M12 port # 1~ # 8 support IEEE 802. 3at/af End-

assignment	point. Per port provides up to 30W
	 <p>Diagram showing a 4-pin M12 connector with pins labeled 1:TX+, 2:RX+, 3:TX-, and 4:RX-.</p>
Power Consumption	Max. 11W
Dimensions	IP54 model: Aluminum case 182mm(W)x180.3mm(H)x77.3mm(D) IP67 model: Aluminum case 215mm(W)x200mm(H)x76.7mm(D)
Weight	1.3kgs
Installation	IP67 model: DIN Rail** and Wall Mount Design IP54 model: Wall Mount Design
EMI & EMS	FCC Class A, CE EN55032 Class A, CE EN55024, CE EN61000-4-2, CE EN61000-4-3, CE EN61000-4-4, CE EN61000-4-5, CE EN61000-4-6, CE EN61000-4-8, CE EN61000-6-2, CE EN61000-6-4
Stability Testing	EN61373 (Shock and Vibration)
Vehicle Certificate	E13 marking (UN ECE R10) ITxPT labeled
Vehicle Compliance	UN ECE R118
MTBF	685,902hrs (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 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 (basic 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 Ring covers multicast on different ports Train mode for auto coupling ring configuration
PoE Management	<ul style="list-style-type: none"> PoE Detection to check if PD hangs then restart the PD PoE Scheduling to On/OFF PD upon routine time table On/ Off, voltage, current, watts, temperature
User friendly UI	<ul style="list-style-type: none"> 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
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 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 of VLAN, 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 16 MSTI
Quality of Service	The quality of service determined by 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 v2 for Management HTTPS for secure access to the web interface TACACS+** for Authentication
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
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**	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 Alarm Relay current carry ability: 1A @ DC24V
Protection	<ul style="list-style-type: none"> ■ Miss-wiring avoidance ■ Node failure protection ■ Loop protection
SNMP Trap	Up to 10 trap stations; trap types including: <ul style="list-style-type: none"> ● Device cold start ● Authorization failure ● Port link up/link down ● DI/DO open/close ● Typology change (ITU ring) ● Power failure ● Environmental abnormal**
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based DHCP; DHCP Option 66; basic IPv6 DHCP 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 firmware update, TFTP backup and restore; HTTP firmware upgrade
MLD Snooping	Support IPv6 Multicast stream
Diagnostic	Support Ping, ARP table and DDM information
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

*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 TACACS+ models are available with -TAS model names. Optional bypass models are available with -BT/BBT model name. (only on IP67 version)

- **IPES-5408T-X-54-24V-IGN.....P/N: 8360-7306**
8 10/100TX + 4 10/100/1000T X-coded L2+ 8 PoE at/af M12 IP54 L2+ Managed Ethernet Switch; -40°C to 75°C; dual 9~36VDC w/ignition
- **IPES-5408T-X-67-24V-IGN.....P/N: 8360-7307**
8 10/100TX + 4 10/100/1000T X-coded L2+ 8 PoE at/af M12 IP67 L2+ Managed Ethernet Switch; -40°C to 75°C; dual 9~36VDC w/ignition
- **IES-5408T-X-54-24V-IGN.....P/N: 8360-73061**
8 10/100TX + 4 10/100/1000T X-coded IP54 L2+ Managed Ethernet Switch; -40°C to 75°C; dual 9~36VDC w/ignition
- **IES-5408T-X-67-24V-IGN.....P/N: 8360-73071**
8 10/100TX + 4 10/100/1000T X-coded IP67 L2+ Managed Ethernet Switch; -40°C to 75°C; dual 9~36VDC w/ignition
- **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

- **ECONM12-08A(M)-180** 8 pin M12 (Male) A-coded 180 degree crimp type connector for reset/console/USB
- **ECONM12-05A(M)-C-180** 5 pin M12 (Male) A-coded 180 degree crimp type connector for DI/DO
- **ECONM12-04D(M)-C-180** 4 pin M12 (Male) D-coded 180 degree crimp type connector for data

Cable

- **ECAB124030MJS** 4 pin M12 (Male) D-coded 180 degree RJ45 STP cable for data, 300cm
- **ECONM12-5P(F)70CM CABLE** 5 pin M12 (Female) A-coded 90 degree cable for power supply, 70cm

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