

Product Specifications

Industrial 5-Port 10/100TX Ethernet Switch with 4-Port 802.3at PoE+

ISW-504PT

Version 3.0

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Change History:

Revision	Date	Author	Change List
Version 1.0	2010/08/25	Bryant Wu	Initial release
Version 2.0	2012/02/03	Bryant Wu	Change Power solution
Version 3.0	2018/11/04	Keithy Lin	Change PoE and switch chipset

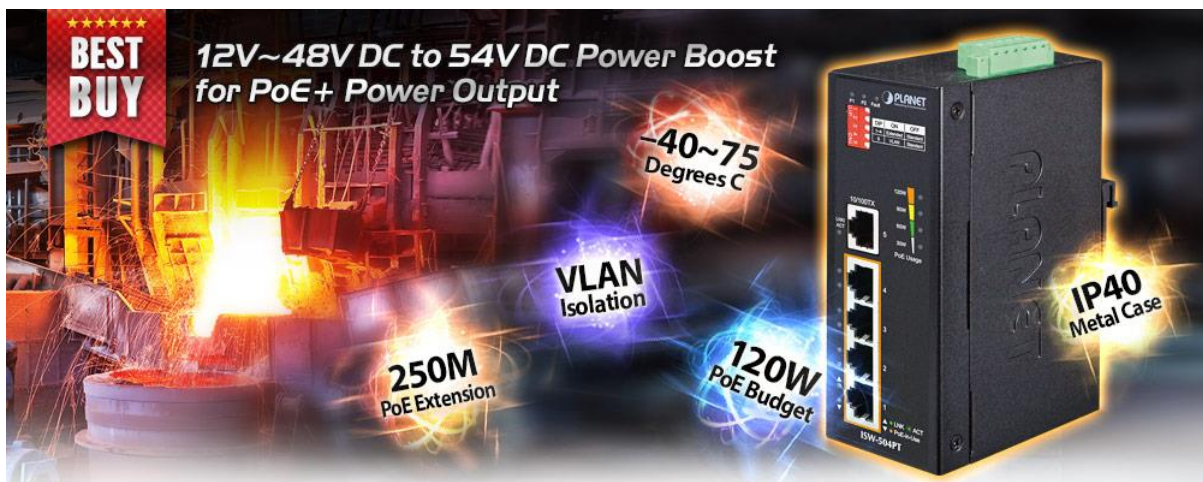
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1. PRODUCT DESCRIPTION



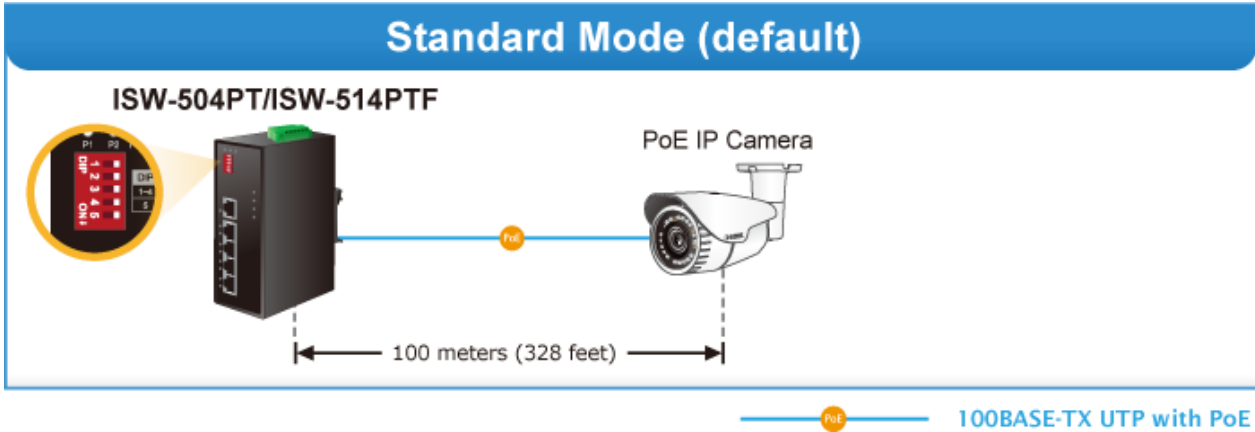
Cost-effective Full PoE+ Power Solution Ideal for Hardened Environment

Featuring Plug and Play designed to be installed in heavy industrial demanding environments, the ISW-504PT is a PLANET Industrial-grade, DIN-rail type Unmanaged Fast Ethernet PoE+ Switch with 4 10/100BASE-TX PoE+ ports, and 1 additional Fast Ethernet interface for video uplink. The ISW-504PT is designed with redundant power system and is able to operate reliably, stably and quietly in any hardened environment without affecting its performance. It comes with a total power budget of up to 120 watts for different kinds of PoE applications and operating temperature ranging from -40 to 75 degrees C in a rugged IP40 metal housing.

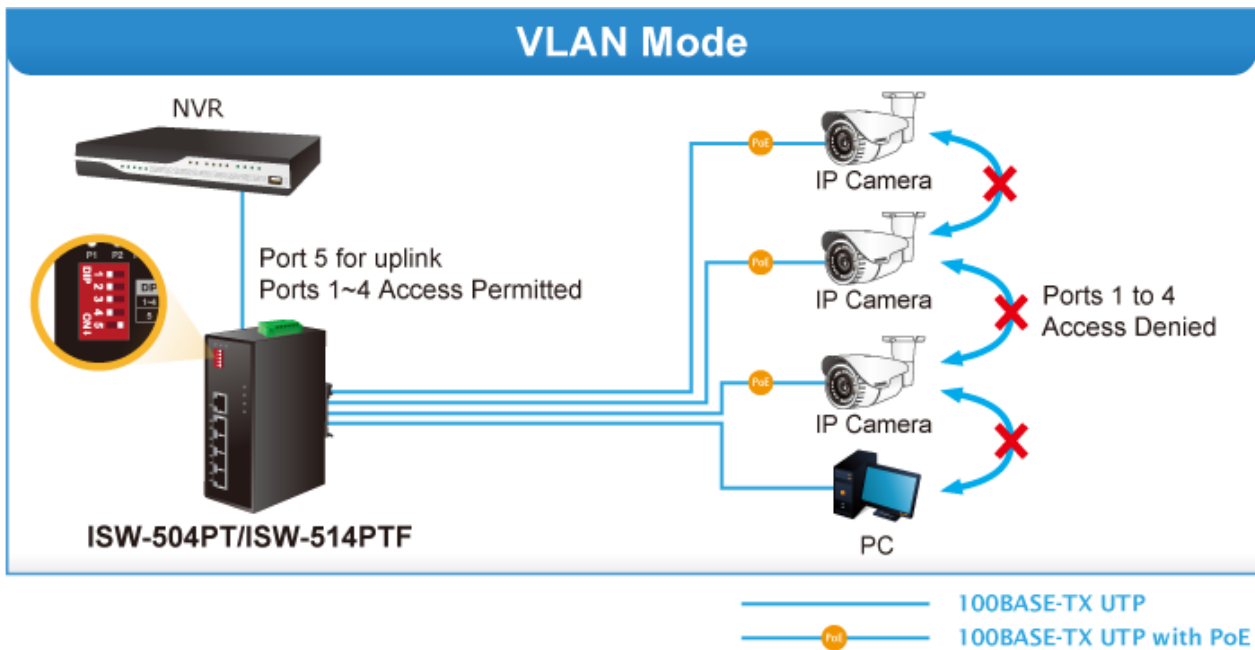


Extension of Ethernet Data Transmission Distance

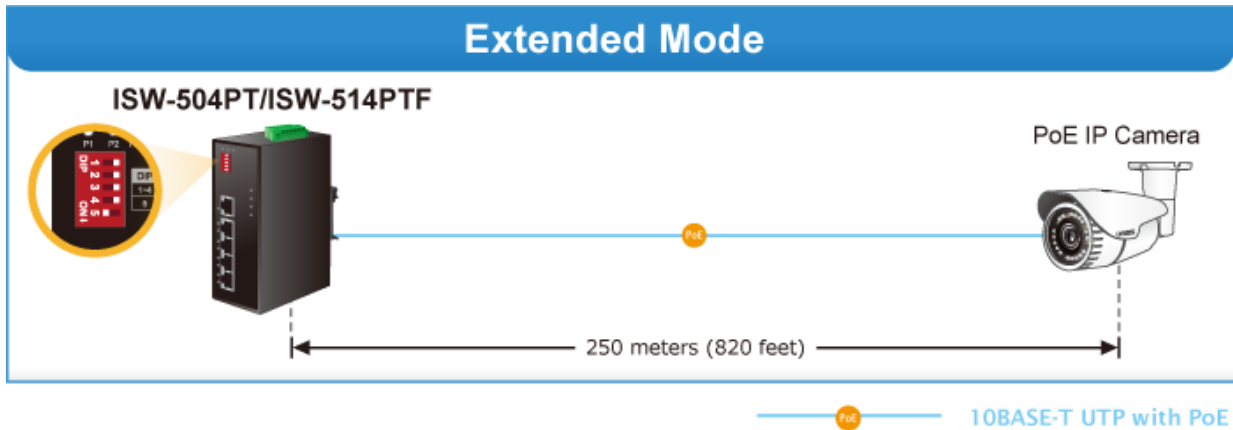
The ISW-504PT has a built-in solid DIP switch providing "Standard", "VLAN" and "Extend" operation modes. By default, the ISW-504PT operates as a normal IEEE 802.3af/at PoE+ Switch in the "Standard" operation mode.



The "VLAN" operation mode features with port-based VLAN function helps to prevent the IP camera's multicast or broadcast storm from influencing each other.

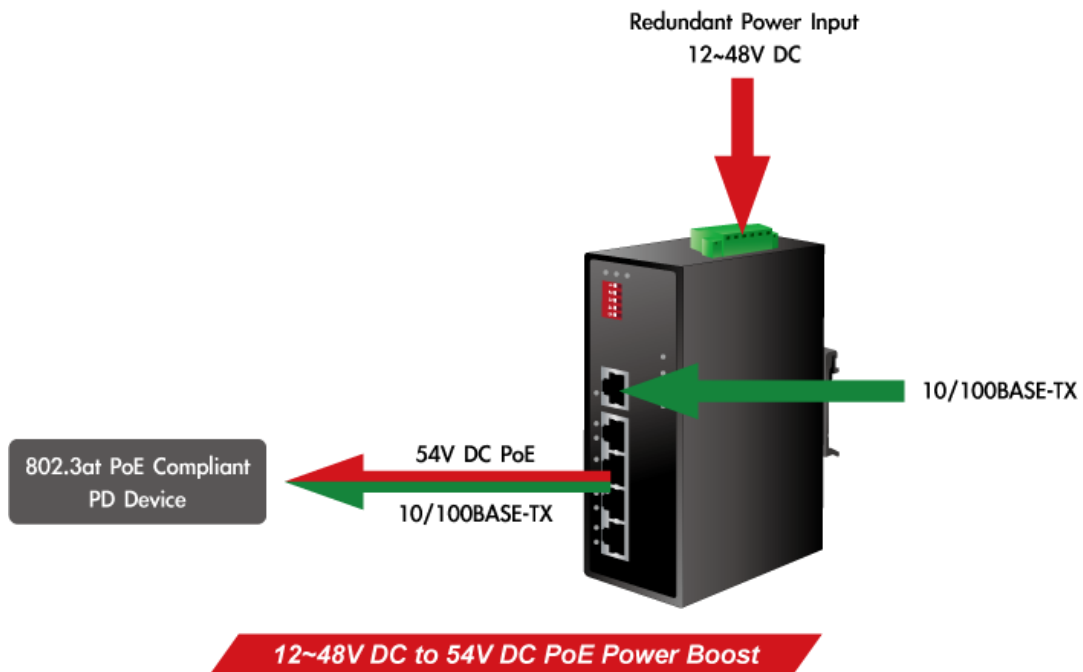


In the "Extend" operation mode, the ISW-504PT operates on a per-port basis at 10Mbps full duplex operation and can support 25-watt PoE power output over a distance of up to 250 meters, overcoming the 100-meter limit on Ethernet UTP cable.



Convenient and Reliable Power System

To facilitate the 802.3at PoE+ usage with commonly used 12~48V DC power input for transportation and industrial-level applications, the ISW-504PT adopts 12~48V DC to 54V power boost technology to solve power source issue but does not require special power supplies. The ISW-504PT provides an integrated power solution with a wide range of voltages (12~48V DC) for worldwide operability. It also provides dual-redundant, reversible polarity 12~48V DC power supply inputs for high availability applications.



Environmentally Hardened Design

With the IP40 metal industrial case, the ISW-504PT provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets without air conditioning. It features a ventilated construction in which a cooling fan is not necessary, thereby making its operation noiseless. Being able to operate under the temperature range from -40 to 75 degrees C, the ISW-504PT can be placed in almost any difficult environment.

Robust Protection

The ISW-504PT provides contact discharge of $\pm 5\text{KV DC}$ and air discharge of $\pm 5\text{KV DC}$ for Ethernet ESD protection. It also supports $\pm 5\text{KV}$ surge immunity to improve product stability and protects users' networks from devastating ESD attacks, making sure the flow of operation does not fluctuate.

2. PRODUCT FEATURES

➤ **Interface**

- 4 10/100BASE-TX Fast Ethernet IEEE 802.3at PoE+ RJ45 copper ports (Port-1 to Port-4)
- 1 10/100BASE-TX Fast Ethernet non-PoE RJ45 copper port
- One terminal block for master and slave power input (Power Range: 12 ~ 48V DC redundant power)
- Hardware DIP switch for Standard, VLAN and Extend mode selection; the Extend mode features 25-watt PoE transmission distance of 250m at speed of 10Mbps (Only for Port-1 to Port-4)

➤ **Power over Ethernet**

- Complies with IEEE 802.3at Power over Ethernet Plus, end-span PSE
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to 4 ports of IEEE 802.3af/at devices powered
- Up to 120-watt PoE budget
- Supports PoE power up to 36 watts for each PoE port
- Each port supports 54V DC power to PoE powered device
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100m in standard mode with 250m in extend mode

➤ **Switching**

- Hardware-based 10/100Mbps (half/full duplex), auto-negotiation and auto MDI/MDI-X
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- IEEE 802.3x flow control for full duplex operation and back pressure for half duplex operation
- 2K MAC address table size
- 10K Jumbo Frame
- IEEE 802.1Q VLAN transparency
- Automatic address learning and address aging
- Supports CSMA/CD protocol

➤ **Industrial Case and Installation**

- IP40 metal case
- DIN-rail , wall-mount design or side wall-mount design
- 12~48V DC redundant power with polarity reverse protect function
- Fault alarm for power input failed
- Supports 5KV DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature
- 4 real-time PoE power usage indicators

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch MAC	IC Plus IP178GI	x 1
PoE PSE	Microsemi PD69104B1F	x 1
MCU	NUVOTON W78E054DPG	x 1

3.2 FUNCTION SPECIFICATIONS

Product	ISW-504PT
Hardware Specifications	
Fast Ethernet Copper Ports	Five 10/100BASE-TX RJ45 auto-MDI/MDI-X ports (Port-1 to Port-5)
PoE Injector Port	Four ports with 802.3af/at PoE+ injector function (Port-1 to Port-4)
Switch Architecture	Store-and-Forward
Switch Fabric	1Gbps/non-blocking
Switch Throughput@64 bytes	0.74Mpps @64 bytes
MAC Address Table	2K entries
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10 Kbytes
DIP Switch (Port-1 to Port-4)	Standard mode: 30-watt PoE transmission distance of 100m at speed of 10/100Mbps VLAN mode: "Port-based VLAN Protection" where ports can be isolated from each other via one DIP switch. Only Port-5 can visit other ports. Extend mode: 25-watt PoE transmission distance of 250m at speed of 10Mbps
LED Indicators	3 x LED for System and Power: <ul style="list-style-type: none"> ■ Green: DC Power 1 ■ Green: DC Power 2 ■ Red: Power Fault Alarm 2 x LED for PoE Copper Port (Port-1~Port-4): <ul style="list-style-type: none"> ■ Green: LNK/ACT (10/100Mbps) ■ Amber: PoE-in-Use 1 x LED for 10/100TX Copper Port (Port-5): <ul style="list-style-type: none"> ■ Green: LNK/ACT 4 x LED for PoE Usage <ul style="list-style-type: none"> ■ Amber
Connector	Removable 6-pin terminal block <ul style="list-style-type: none"> ■ Pin 1/2 for Power 1 ■ Pin 3/4 for power fault alarm ■ Pin 5/6 for Power 2
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V AC
Power Requirements	12~48V DC, 7A (max.)
Power Consumption/	3.7 watts, 12.6 BTU (Standby without PoE function) at DC 12V power input

Dissipation	70 watts, 238.8 BTU (Full loading with PoE function) at DC 12V power input 4.6 watts, 15.7 BTU (Standby without PoE function) at DC 24V power input 105.1 watts, 358.6 BTU (Full loading with PoE function) at DC 24V power input 4.8 watts, 16.4 BTU (Standby without PoE function) at DC 48V power input 136.8 watts, 466.8 BTU (Full loading with PoE function) at DC 48V power input
Dimensions (W x D x H)	50 x 85.1 x 135 mm
Weight	596g
ESD Protection	5KV DC
Enclosure	IP40 metal case
Installation	DIN-rail kit and wall-mount kit
Power over Ethernet	
PoE Standard	IEEE 802.3at Power over Ethernet Plus/PSE
PoE Power Supply Type	End-span
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Output	Per port 54V DC , max. 36 watts
PoE Power Budget (max.)	60W @12V DC input 90W @24V DC input 120W @48V DC input
Max. Number of Class 2 PDs	4
Max. Number of Class 3 PDs	4
Max. Number of Class 4 PDs	4
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC 60068-2-32 (free fall) IEC 60068-2-27 (shock) IEC 60068-2-6 (vibration)
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3x Flow Control and Back Pressure IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus
Environment	
Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Humidity	5 ~ 95% (non-condensing)

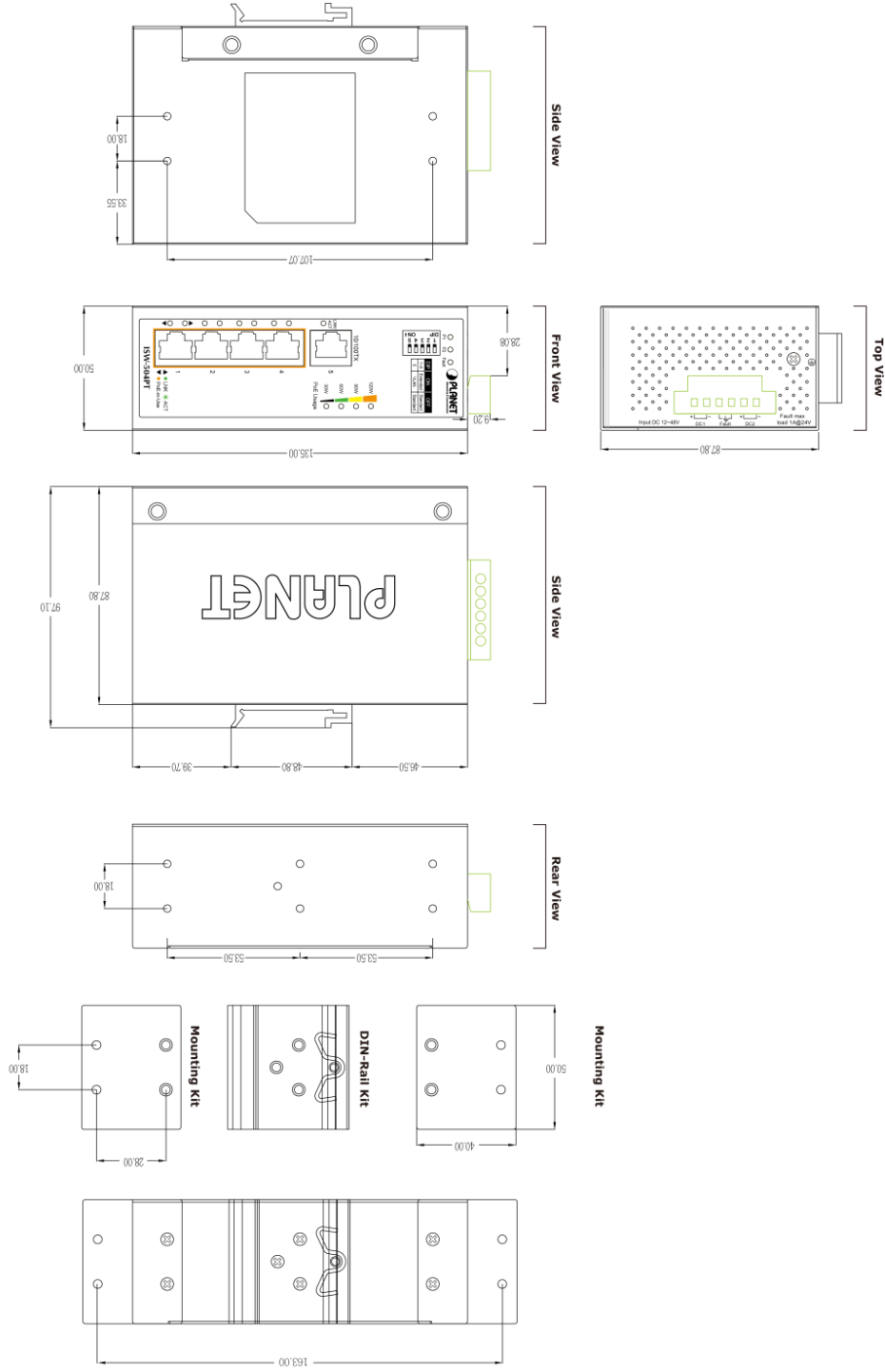
3.3 PHYSICAL SPECIFICATIONS:

- **Dimensions (W x D x H)**

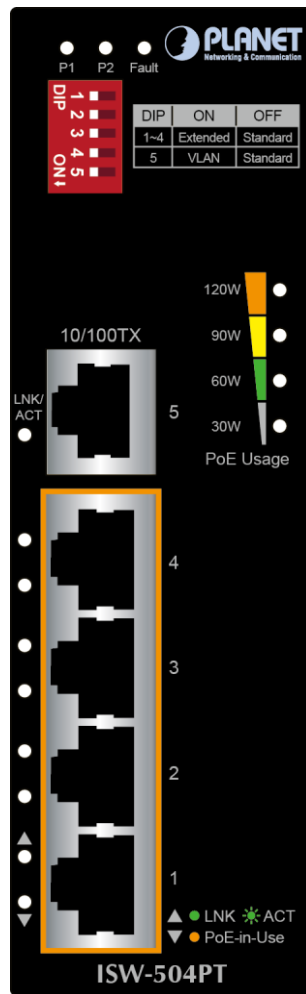
50 x 85.1 x 135 mm

■ **Weight**
596g

■ **Diagram**



■ Front Panel



■ System

LED	Color	Function
P1	Green	Lights: indicates power 1 has power.
P2	Green	Lights: indicates power 2 has power.
FAULT	Red	Lights: indicates either power 1 or power 2 has no power.
30W	Amber	Off: indicates the PoE usage is less than 14W. Blinks: indicates that the PoE usage is around 15W to 29W. Lights: indicates the PoE usage is around/over 30W.
60W	Amber	Blinks: indicates that the PoE usage is around 45W to 59W. Lights: indicates the PoE usage is around/over 60W.
90W	Amber	Blinks: indicates that the PoE usage is around 75W to 89W. Lights: indicates the PoE usage is around/over 90W.
120W	Amber	Blinks: indicates that the PoE usage is around 100W to 119W. Lights: indicates the PoE usage is at the maximum.

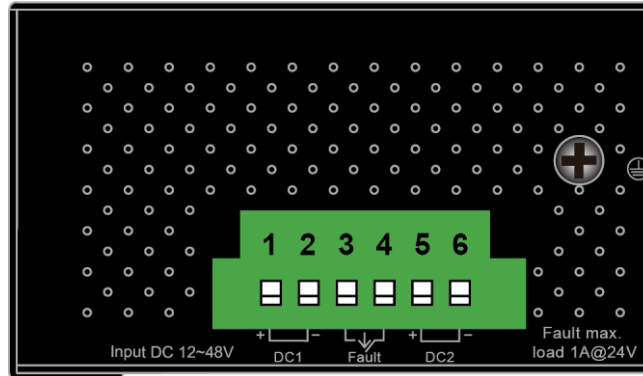
■ Per 802.3at PoE+ 10/100BASE-TX Interface (Port 1 to Port 4)

LED	Color	Function
LNK/ACT	Green	Lights: indicates the link through that port is successfully established at 10Mbps or 100Mbps. Blinks: indicates that the switch is actively sending or receiving data over that port.
PoE in-Use	Amber	Lights: indicates the port is providing DC in-line power. Off: indicates the connected device is not a PoE powered device (PD).

■ Per 10/100BASE-TX Interface (Port 5)

LED	Color	Function
LNK/ACT	Green	Lights: indicates the link through that port is successfully established at 10/100Mbps. Blinks: indicates that the switch is actively sending or receiving data over that port.

■ Top View



3.4 ENVIRONMENTAL SPECIFICATIONS

- **Operating:**
 - Temperature:** -40°C ~75 degrees C
 - Relative Humidity:** 5% ~ 90% (non-condensing)
- **Storage:**
 - Temperature:** -40°C ~85 degrees C
 - Relative Humidity:** 5% ~ 90% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

Power over Ethernet Capability

- **Power Requirement:** 12~48V DC*, 7A max.

*The industrial Ethernet switch adopts 12~54V DC to 54V power boost technology. When the DC input is 55~56V, the DC output power will be 54.5~55.5V (more or less).

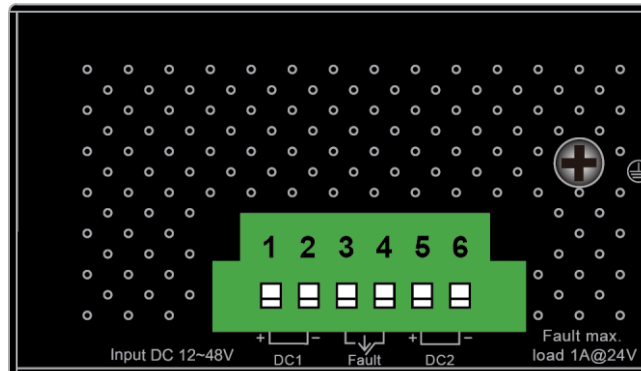
- **Power Budget:**

	12V DC Input	24V DC Input	48V DC Input
Power Budget	60 Watts / 204.7 BTU	90 Watts / 307.1 BTU	120 Watts / 409.5 BTU

- **Power Consumption:**

	12V DC Input	24V DC Input	48V DC Input
System On (without PoE output)	3.7 Watts / 12.6 BTU	4.6 Watts / 15.7 BTU	4.8 Watts / 16.4 BTU
Full loading with PoE function	70 Watts / 238.8 BTU	105.1 Watts / 358.6 BTU	136.8 Watts / 466.8 BTU

Power Input PIN Definition



1	2	3	4	5	6
Power 1		Fault		Power 2	
+	-			+	-

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

3.7 RELIABILITY

MTBF > 100,000Hrs @ 25 degrees C

3.8 BASIC PACKAGING

- ISW-504PT x 1
- User's manual x 1

- Wall-mount kit x 1
- Dust cap

3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	202 x 140 x 94 mm
Weight:	790g
Carton Dimensions (W x D x H):	585 x 224 x 312 mm
Carton Weight:	10kg
Quantity:	12pcs in one carton