

**Industrial 10BASE-T1L SPE to 10/100BASE-TX
Media Converter**

SPE-1SP1T/SPE-1SP1T-TB
User's Manual

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1. Introduction

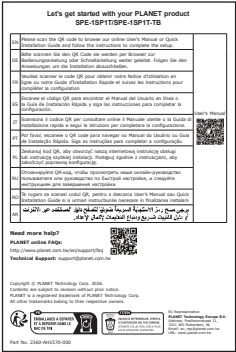
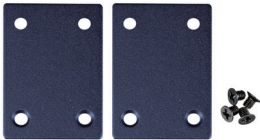
Thank you for purchasing PLANET Industrial 10BASE-T1L SPE to 10/100BASE-TX Media Converter Series, the SPE-1SP1T and SPE-1SP1T-TB. The descriptions of the two models are as follows:

SPE-1SP1T	Industrial 1-Port 10BASE-T1L + 1-Port 10/100BASE-TX Unmanaged Single-Pair Ethernet Media Converter
SPE-1SP1T-TB	Industrial 10BASE-T1L Terminal Block SPE to 10/100BASE-TX Media Converter

“SPE-1SP1T Series” mentioned in this Manual represents the above two models.

2. Package Contents

Open the box of the SPE-1SP1T Series and carefully unpack it. The box should contain the following items:

SPE Media Converter x 1		QR Code Sheet x 1
		
DIN-rail Kit x 1	Wall-mount Kit x 1	RJ45 Dust Cap x 1
		

If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

3. Product Features

Single Pair Ethernet (SPE) Interface

- Comply with IEEE 802.3cg 10BASE-T1L standard
- Supports transmission distance up to 1,000 meters over a single twisted pair
- **SPE-1SP1T: IP20 IEC 63171-2** industrial SPE connector
- **SPE-1SP1T-TB: 3-Pin Terminal block** connector for direct wiring

Physical Port

- 1 10/100BASE-TX RJ45 copper port
- Auto-negotiation and Auto MDI/MDI-X support

Layer 2 Features

- Complies with IEEE 802.3, 10BASE-T and IEEE 802.3u, 100BASE-TX Ethernet standards
- High-performance Store and Forward architecture, broadcast storm control and runt/CRC filtering eliminate erroneous packets to optimize the network bandwidth
- Integrated address look-up engine, supporting 4K absolute MAC addresses
- 4K bytes packet size
- Automatic address learning and address aging
- IEEE 802.1Q VLAN transparency

Industrial Case and Installation

- IP30 metal case
- DIN-rail, wall-mount or side wall-mount design for DC input power design - 9 to 48V DC input range with polarity reverse protection
- Supports 6000 VDC Ethernet ESD protection
- -40 to 75 degrees C operating temperature
- Advantage of minimum installation time (Simply by Plug-and-Play)
- Supports extensive LED indicators for network diagnosis
- Free fall, shock-proof and vibration-proof for industries

4. Hardware Introduction

4.1 Physical Dimensions

SPE-1SP1T

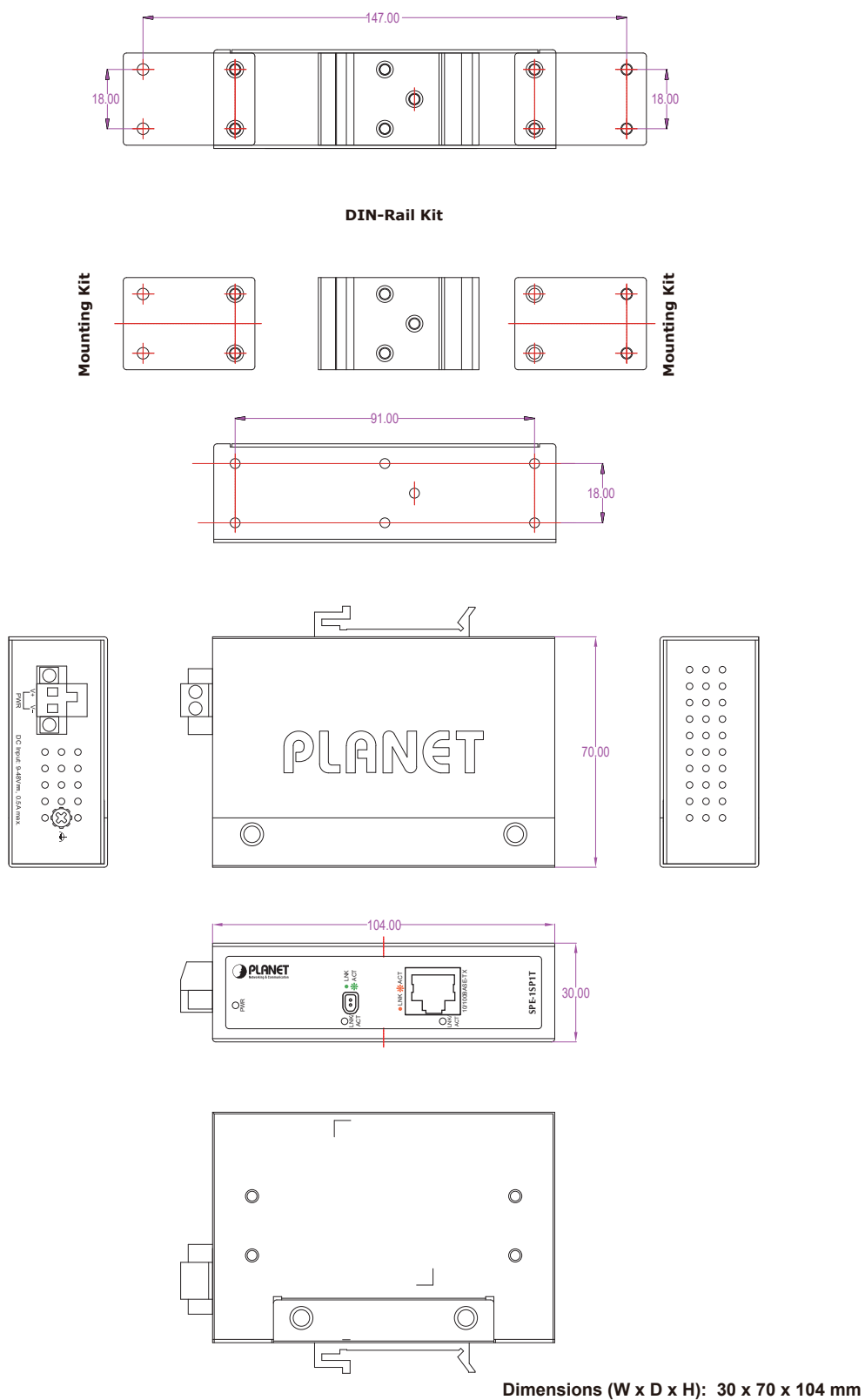


Figure 4-1-1: SPE-1SP1T Diagram

SPE-1SP1T-TB

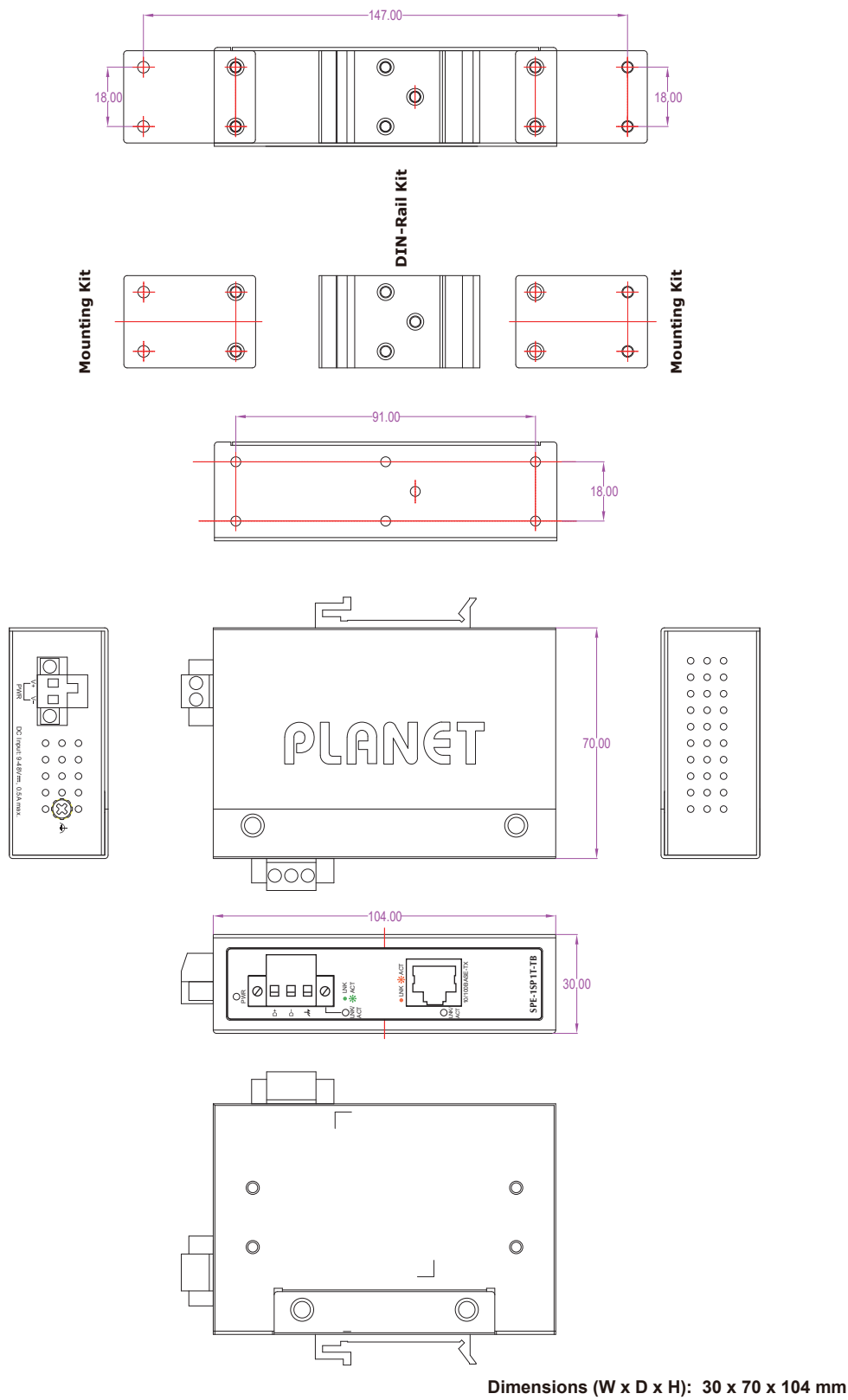


Figure 4-1-2: SPE-1SP1T-TB Diagram

4.2 Front Panel and LED Indicators

■ SPE-1SP1T/SPE-1SP1T-TB Front Panel



Figure 4-2-1: SPE-1SP1T Front Panel



Figure 4-2-2: SPE-1SP1T-TB Front Panel

- LED for power
- SPE-1SP1T: IP20 IEC 63171-2 industrial SPE connector
- SPE-1SP1T-TB: 3-Pin Terminal block connector for direct wiring
- RJ45 connector for 10/100BASE-TX Fast Ethernet connection

■ LED Indicators

➤ System

LED	Color	Function	
PWR	Green	Lit	To indicate that the SPE-1SP1T/SPE-1SP1T-TB has power.
		Off	To indicate that the SPE-1SP1T/SPE-1SP1T-TB has no power.

➤ 10BASE-T1L SPE Port (Port-1)

LED	Color	Function	
LNK/ACT	Green	Lit	To indicate that the SPE Port link is established.
		Blink	To indicate that the SPE Port is actively sending or receiving data over that port at 10Mbps.
		Off	To indicate that the SPE Port link is down.

➤ 10/100BASE-TX Port (Port-2)

LED	Color	Function	
LNK/ACT	Amber	Lit	To indicate that the port is operating at 10/100Mbps.
		Blink	To indicate that the SPE-1SP1T/SPE-1SP1T-TB is actively sending or receiving data over that port at 10/100Mbps.
		Off	To indicate that the port link is down.

4.3 Upper Panel

The upper panel of the SPE-1SP1T Series consists of one terminal block connector within one power input.

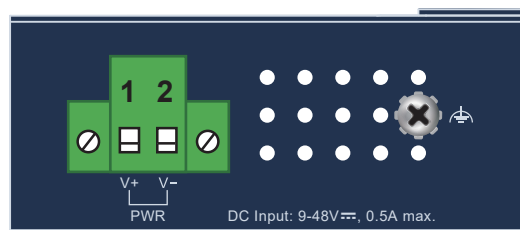


Figure 4-3-1: SPE-1SP1T Series Upper Panel

4.4 Wiring the Power Inputs

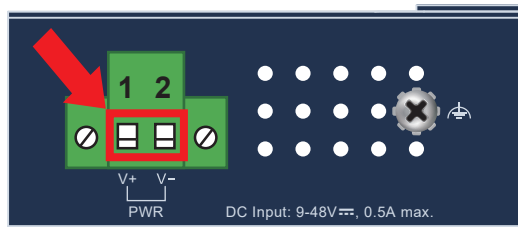
- The upper panel of the SPE-1SP1T Series consists of one terminal block connector within one power input.
- The 2-contact terminal block connector on the upper panel of SPE-1SP1T Series is used for 9~48V DC power inputs. Please follow the steps below to insert the power wire.



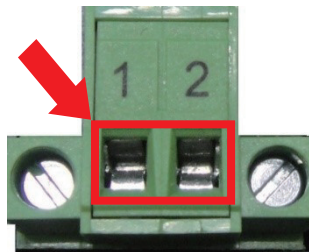
Caution

When performing any of the procedures like inserting the wires or tightening the wire-clamp screws, make sure the power is OFF to prevent from getting an electric shock.

1. Insert positive and negative DC power wires into contacts 1 and 2 for POWER.



2. Tighten the wire-clamp screws for preventing the wires from loosening.



1 2
Power
+ -

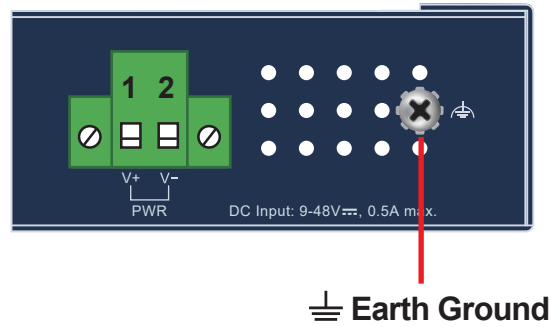


Note

1. The wire gauge for the terminal block should be in the range between 12 and 24 AWG.
2. The DC power input range is 9V ~ 48V DC.

4.5 Grounding the Device

User MUST complete grounding wired with the device; otherwise, a sudden lightning could cause fatal damage to the device. EMD (Lightning) DAMAGE IS NOT COVERED UNDER WARRANTY.



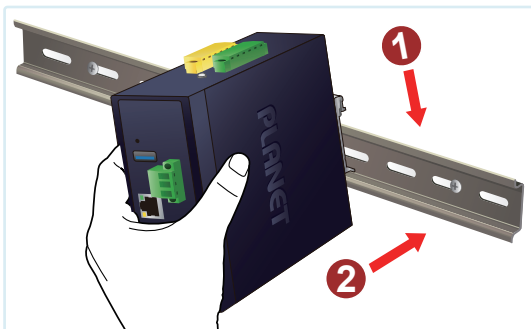
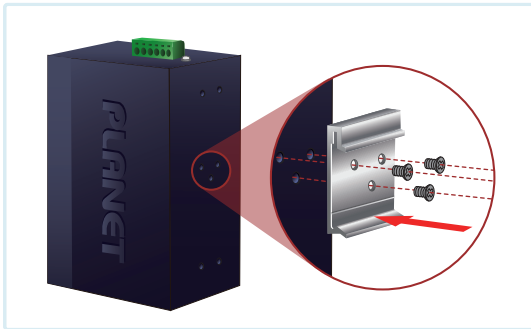
5. Hardware Installation

This section describes the functionalities of the SPE-1SP1T Series components and guides you to install it on the DIN rail and wall. Please read this chapter completely before continuing.

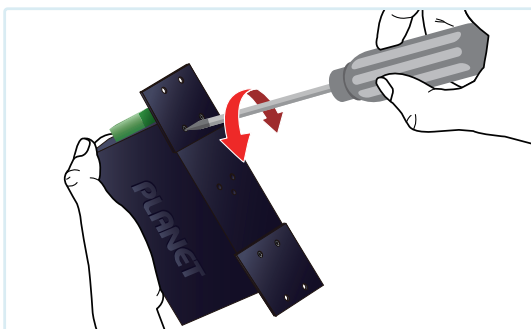


These following pictures guide you to installing the device, and the device is not SPE-1SP1T Series.

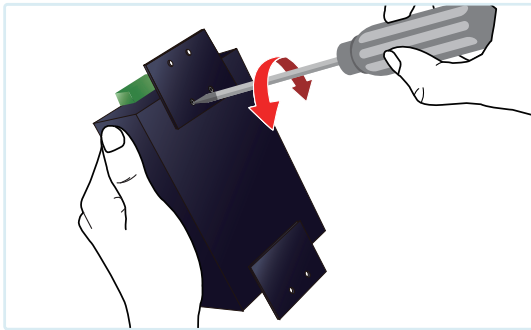
5.1 DIN-rail Mounting Installation



5.2 Wall-mount Plate Mounting



5.3 Side Wall-mount Plate Mounting



Caution

You must use the screws supplied with the wall-mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

6. SPE-1SP1T Series Comparison

The SPE-1SP1T Series sharing the same compact form factor, the SPE-1SP1T and SPE-1SP1T-TB differ only in their 10BASE-T1L connector type: the SPE-1SP1T features an IP20 IEC 63171-2 industrial SPE connector, while the SPE-1SP1T-TB is equipped with a 3-Pin terminal block interface for direct wiring, making it ideal for industrial control panels and cabinets. The SPE-1SP1T and SPE-1SP1T-TB allow existing switches, PLCs, and industrial computers to connect to SPE-based field devices without any network architecture changes, significantly reducing cabling costs and complexity while accelerating IIoT deployment.

6.1 SPE-1SP1T Series: Key Features Comparison

Model	SPE-1SP1T	SPE-1SP1T-TB
10BASE-T1L Connector	IP20 IEC 63171-2	3-Pin Terminal Block
Maximum Distance	1km	1km
10/100BASE-TX RJ45 Port	1	1
Power Requirement	DC 9-48V, 0.5A	
Enclosure	Compact IP30 Metal Case	
Operating Temperature	-40~75 degrees C	

6.2 SPE-1SP1T Series: SPE Connector Options Comparison

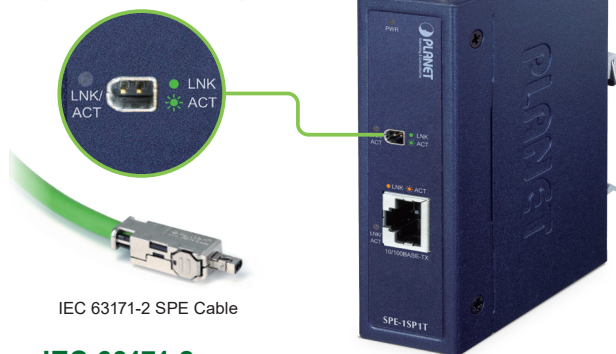
SPE Connector Options

IEC 63171-2 vs Terminal Block

OPTION A

SPE-1SP1T

(IEC 63171-2 Connector)



IEC 63171-2 SPE Cable

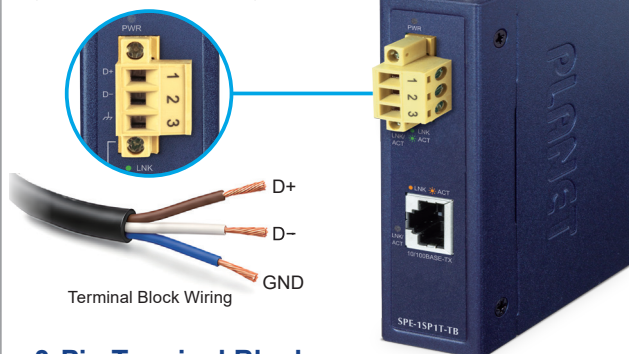
IEC 63171-2

- ✓ Pre-terminated SPE connector
- ✓ Quick installation
- ✓ Tool-free termination
- ✓ Best for standardized industrial SPE cabling

OPTION B

SPE-1SP1T-TB

(Terminal Block Connector)



Terminal Block Wiring

3-Pin Terminal Block

- ✓ Direct wire connection
- ✓ Flexible field wiring
- ✓ Ideal for control panels and cabinets
- ✓ Convenient when bare wire installation is preferred

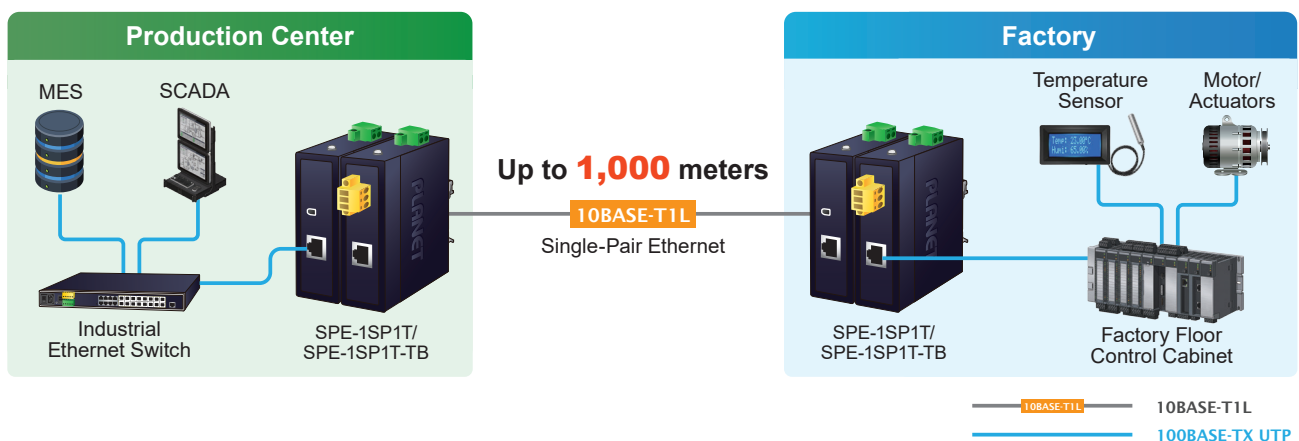
7. SPE-1SP1T Series Applications

The SPE-1SP1T Series allows existing switches, PLCs, and industrial computers to connect to SPE-based field devices without network architecture changes, significantly reducing cable costs and complexity while accelerating IIoT deployment.

7.1 Industrial Automation & Process Control

In smart factories, the SPE-1SP1T Series bridges legacy Ethernet infrastructure and next-generation 10BASE-T1L field devices. By converting 10BASE-T1L to standard 10/100BASE-TX, it enables existing switches and industrial computers to connect directly with edge devices over a single twisted pair up to 1,000 meters without repeaters.

Featuring an IP30 metal housing, a wide operating temperature range (-40°C to 75°C), and flexible DIN-rail or wall-mount options, it is built for harsh factory floor environments. This allows manufacturers to modernize their network architecture incrementally, avoiding the cost and disruption of a full overhaul.



7.2 Building Automation & Facility Management

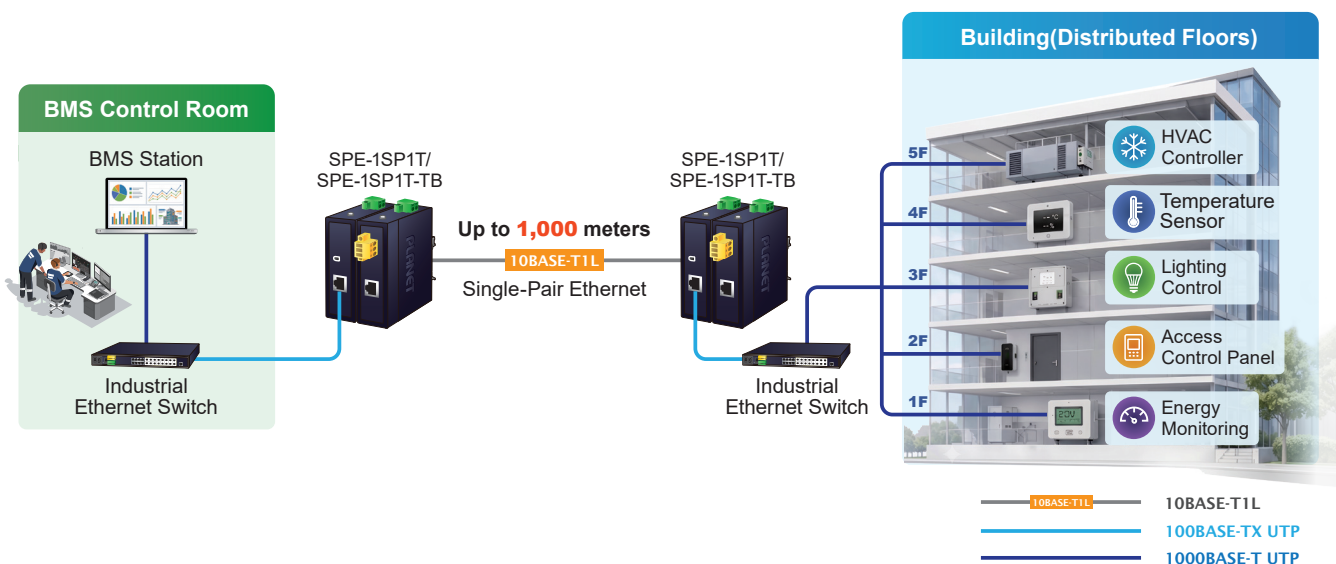
The SPE-1SP1T Series addresses smart building infrastructure demands (HVAC, lighting, access control, and energy monitoring) by overcoming traditional RS-485 bandwidth and IT integration limits:

Reuse Existing Cabling: Single twisted-pair transmission up to 1,000 meters directly reuses existing RS-485 or LON 2-conductor cables, avoiding rewiring costs and downtime in retrofit projects.

Flexible Deployment: Features a 9-48V wide DC input range and a compact form factor, allowing easy installation in ceiling spaces, utility closets, or equipment racks.

Real-Time Monitoring: Helps facility managers lower installation costs while enabling the granular, real-time data monitoring required by modern building automation systems.

Extend Building Management System to Distributed Floors



8. Product Specifications

Product	SPE-1SP1T	SPE-1SP1T-TB
Hardware Specifications		
Single Pair Ethernet (SPE) Interface	IP20 IEC 63171-2 industrial SPE connector, 10Mbps full duplex mode	3-Pin Terminal block connector for direct wiring, 10Mbps full duplex mode
Ethernet Interface	1 x 10/100BASE-TX Coport port	
SRAM (Chipset built-in)	64KB	
Flash Memory	32Mbit	
ESD Protection	±6KV air gap discharge ±6KV contact discharge	
Surge Immunity	6KV DC	
Enclosure	IP30 metal case	
Dimensions (W x D x H)	30 x 70 x 104mm	
Weight	205g	
Power Requirements - DC	DC 9~48V, 0.5A max.	
Power Consumption	DC 9V: Max. 0.36 watts/1.22BTU (Power on without any connection) Max. 0.45 watts/1.53BTU (Full loading) DC 48V: Max. 0.4 watts/1.36BTU (Power on without any connection) Max. 0.5 watts/1.70BTU (Full loading)	
LED Indicator	1 x LED for System: ■ Green: DC Power 1x LED for 10BASE-T1L SPE Port (Port-1): ■ Green: LNK/ACT 1 x LED for 10/100BASE-TX RJ45 Port (Port-2): ■ Amber: 10/100 LNK/ACT	

Switching	
Switch Architecture	Store-and-forward
Address Table	4K
Jumbo Frame	4K bytes
Flow Control	Back pressure for half duplex IEEE 802.3x pause frame for full duplex
Standards Conformance	
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3cg 10BASE-T1L IEEE 802.3x Flow Control and Back Pressure
Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Environment	
Operating	Temperature: -40 ~75 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -40 ~ 85 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

9. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource on PLANET Website first to check if it could solve your issue. If you need more support information, please contact PLANET switch support team.

PLANET online FAQs:

<https://www.planet.com.tw/en/support/faq>

Switch support team mail address:

support@planet.com.tw

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EU Representative

PLANET Technology Europe B.V.

Address: Posthoornstraat 11, 3011 WD Rotterdam, NL

Email: eu_rep@planet.com.tw

URL: www.planet.com.tw

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If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning

1) This device must be earthed. 2) For indoor use only!

CE Mark Warning

This device is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Energy Saving Note of the Device

This power required device does not support Standby mode operation. For energy saving, please remove the power cable to disconnect the device from the power circuit. Without removing power cable, the device will still consume power from the power source. In view of Saving the Energy and reducing the unnecessary power consumption, it is strongly suggested to remove the power connection for the device if this device is not intended to be active.

WEEE Warning



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

PLANET Industrial 10BASE-T1L SPE to 10/100BASE-TX Media Converter User's Manual

For Models: SPE-1SP1T/SPE-1SP1T-TB

Revision: 1.0 (August 2026)