KPW-T4SP

Industrial

IEEE 802.3af IEEE 802.3at & PoE++

PoE Splitter

User's Guide

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TRADEMARKS

Ethernet is a registered trademark of Xerox Corp.

FCC NOTICE

This device complies with Class A Part 15 the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including the interference that may cause.

CE NOTICE

Marking by the symbol indicates compliance of this equipment to the EMC directive 2014/30/EU of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

EN 61000-6-4
- EN 61000-3-2
- EN 61000-3-3

EN 61000-6-2
- IEC 61000-4-2
- IEC 61000-4-3
- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-6
- IEC 61000-4-8
- IEC 61000-4-11

VCCI

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

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Introduction

KTI Network's KPW-T4SP is a high power PoE++ splitter which integrates Power over Ethernet (PoE) technology to PoE incapable network device by just using a single Cat.5/5e/6 cable for both power and data transaction. It is a high power splitter that is able to receive a power up to 128W in a voltage range of 36 ~ 57V over Ethernet twisted cable from IEEE 802.3af compliant PoE, 802.3at compliant PoE+ and KTI's proprietary PoE++ PSE end.

The splitter is equipped with DIP SW that allows user to select one from nine different classes for demanding power from a remote PoE switched port or mid-span injector. This feature supports efficient power management at the advanced PSE side.

The splitter comes with several optional DC-DC power converters that convert PoE voltage to a matched voltage and supply power to the local end device. The converters have options with two voltages, 12V and 24V and two power levels, 60W and 90W for selection.

With higher power support with PoE++, it enables new markets and widens PoE's scope to existing markets that require higher power in applications such as: Building management (connected LED lighting), Pan-tilt -zoom (PTZ) security cameras, Kiosks, Point of Sale (POS) terminals, Thin clients and Small cells.

For industrial applications, the splitter is also equipped with optional brackets for Din-Rail mounting and panel mounting. To enhance application safety, the splitter is featured short-circuit protection, low voltage lock out, inrush current limit and thermal protection.

Features

- Enables PoE incapable network device with PoE capability
- IEEE 802.3at PoE+ and 802.3af PoE compliance
- Supports proprietary high power PoE++ up to 128W
- Supports 10BASE-T, 100BASE-TX, and 1000BASE-T
- Supports Alternative A or Alternative B PoE input over Cat.5/6
- Provides power class selection DIP for demanding power from PSE
- Supports Type 1 PSE classification and Type 2 PSE 2-event classification
- Provides solution with isolated and high-efficient DC-DC power converters

Panels

Specifications

Standard	IEEE 802.3 10BASE-T, 100BASE-TX, 1000BASE-T
PoE In Jack	Shielded RJ-45
	10BASE-T, 100BASE-TX, 1000BASE-T support
	Power pins – Pin1/2/3/6 and Pin4/5/7/8 (support both)
	LAN cable - Cat.5 or better

Pin	10/100Base-TX	1000Base-T	PoE
1	RX+	BI_DA+	V_{poe}+
2	RX-	BI_DA-	V_{poe}+
3	TX+	BI_DB+	V_{poe}-
4		BI_DC+	V_{poe}+
5		BI_DC-	V_{poe}+
6	TX-	BI_DB-	V_{poe}-
7		BI_DD+	V_{poe}-
8		BI_DD-	V_{poe}-

PoE Standard	IEEE 802.3af Type 1, IEEE 802.3at Type 2, Proprietary Type 3 & Type 4
PoE Power Class	Type 1 Class 0 ~ Class 3, Type 2 Class 4
	Proprietary PoE++ Class 5 ~ Class 8 (DIP SW selectable)
PoE Input Voltage	36 ~ 57VDC
DIP SW Selector	SW1, SW2: PD class selection for PSE PD classification
LAN Out Jack	Shielded RJ-45
	10BASE-T, 100BASE-TX, 1000BASE-T support
	LAN cable - Cat.5 or better

Pin	10/100Base-TX	1000Base-T
1	RX+	BI_DA+
2	RX-	BI_DA-
3	TX+	BI_DB+
4		BI_DC+
5		BI_DC-
6	TX-	BI_DB-
7		BI_DD+
8		BI_DD-

DC Power Output	2P flange European Terminal block – DC+/DC-

	Power wires: 12 ~ 22 AWG (1 meter max.)
Output Voltage	V_{poe} received at PoE IN jack
LED Display	PoE input status
Housing	Enclosed metal with no fan
Dimension	89.2 x 24 x 85 mm (LxWxH)
Mounting Support	DIN-Rail, Panel mounting
Temperature	Operating Temperature: -40°C ~ +70°C
	Storage Temperature: -40°C ~ +85°C
	Relative Humidity: 5% ~ 95% non-condensing
Approval	FCC Part 15 Class A, CE Mark Class A, VCCI, IEC60950-1 safety

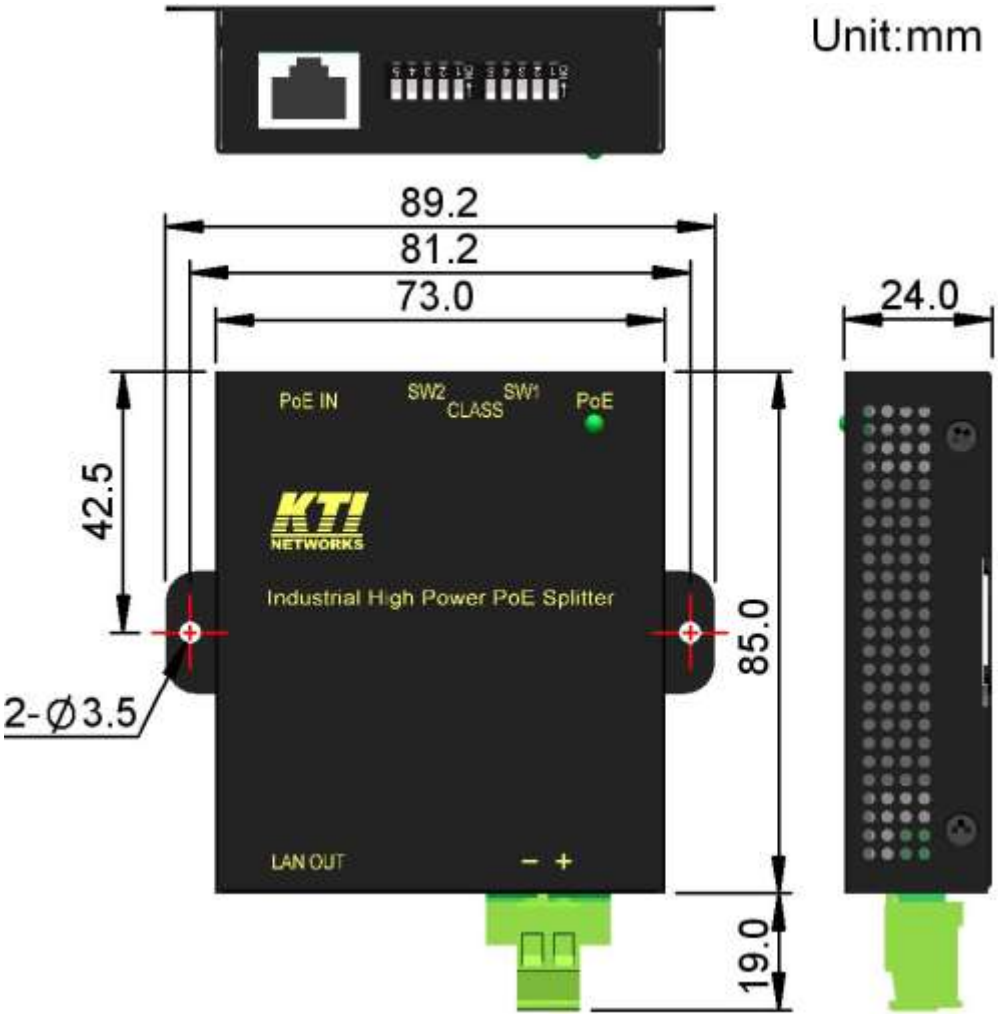
Safety Cautions

To reduce the risk of bodily injury, electrical shock, fire and damage to the product, observe the following precautions.

- ✓ Do not service any product except as explained in your system documentation.
- ✓ Opening or removing covers may expose you to electrical shock.
- ✓ Only a trained service technician should service components inside these compartments.
- ✓ If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
  - The power cable, extension cable, or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- ✓ Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.

Mounting Support

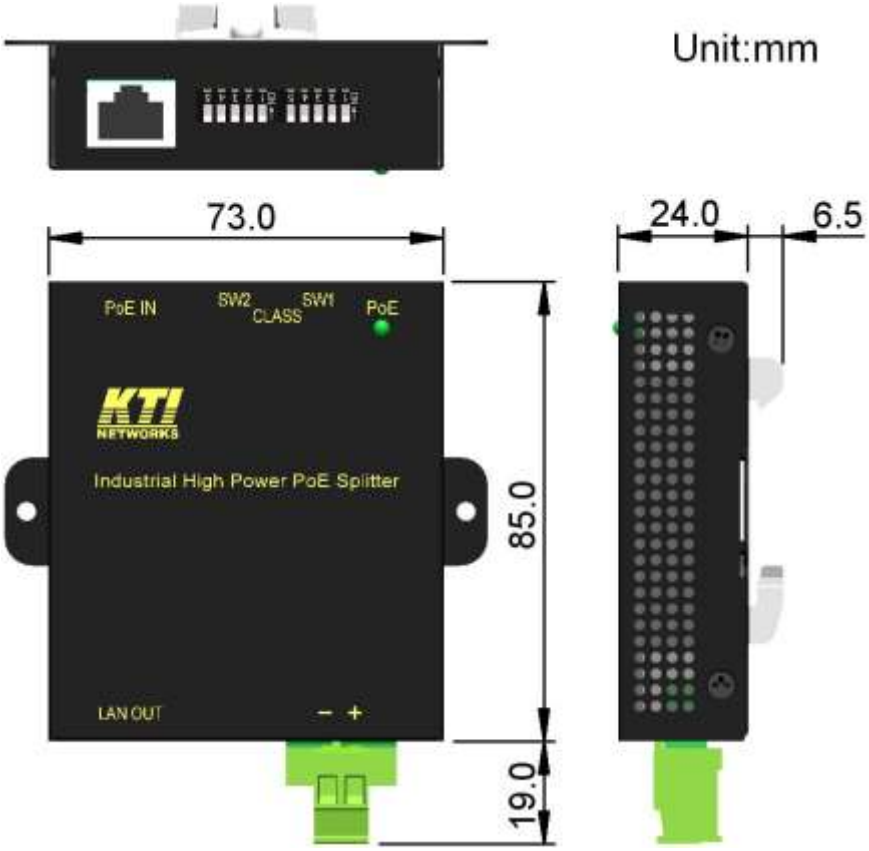
Panel mount & Dimension



Din-Rail mounting bracket installation

The bracket is supplied in the product package.

Dimension



Application Notes

This power class selection makes PD power notification to the remote PSE for PD discovery, power classification operation. It does not cause any power consumption limitation on the splitter itself. Note that some PSE devices may use the class notification for PoE power management and may limit the power delivery according to the received class notification.

PD Class Selection (DIP SW)

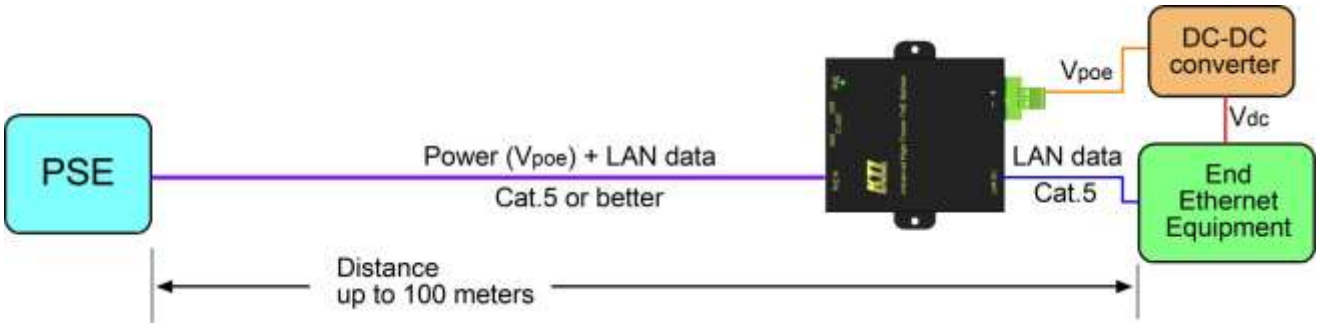
Type	Class	Std.	Power Request (min.)	SW1*2	SW2*3
1	0	802.3af	12.95W	1 ON	5 ON
1	1	802.3af	3.84W	2 ON	5 ON
1	2	802.3af	6.49W	3 ON	5 ON
1	3	802.3af	12.95W	4 ON	5 ON
2	4	802.3at	25.5W	5 ON	5 ON
3*1	5	proprietary	38.7W	1 ON	1 ON
3*1	6	proprietary	52.7W	2 ON	2 ON
4*1	7	proprietary	70W	3 ON	3 ON
4*1	8	proprietary	90W	4 ON	4 ON

Notes:

1. The classes of Type 3 and Type 4 are proprietary standard.
2. One switch is set ON and others are set OFF in SW1 group.
3. One switch is set ON and others are set OFF in SW2 group.

Application Example

Typical connection of a PoE application:



Compatible PSE devices:

- IEEE 802.3af Mid-span injector
- IEEE 802.3af compliant Ethernet switch port
- IEEE 802.3at Mid-span injector
- IEEE 802.3at compliant Ethernet switch port
- KPOE-200 PoE++ Mid-span injector

Notes:

1. The V_{poe} measured at the splitter end could be different from that measured at the PSE end. The voltage drop is caused by Cat.5 line resistance. The V_{poe} measured at the splitter end may be in the range of 36 ~ 57VDC.
2. Reference data for voltage drop over standard Cat.5 (Wire: 24AWG, Length: 100m):

Current	Cable pairs	Voltage drop
2A	4	2V
2A	2	8.3V
1A	4	1V
1A	2	4.1V

3. The splitter supports receiving PoE with all 4 pairs. (Some PSE devices use 2 pairs only for power delivery.)

Optional DC-DC Power Converters for purchase:

Model	Input	Output	Power
KPW-D48T12-60	18 ~ 70V	12V	60W
KPW-D48T24-60	18 ~ 70V	24V	56.4W
KPW-D48T12-90	36 ~ 70V	12V	90W
KPW-D48T24-90	36 ~ 70V	24V	90W