



Modular 8-Port Mid-span Power over Ethernet Injector

KPOE-800HP

Installation Guide



DOC.140121

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TRADEMARKS

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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 of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

EMC Class A

EN 61000-6-4:2007/A1:2011

EN 61000-3-2:2006/A1:2009/A2:2009

EN 61000-3-3:2008

EN 61000-6-2:2005

IEC 61000-4-2:2008

IEC 61000-4-3:2010

IEC 61000-4-4:2012

IEC 61000-4-5:2005

IEC 61000-4-6:2008

IEC 61000-4-8:2009

IEC 61000-4-11:2004

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1. Introduction



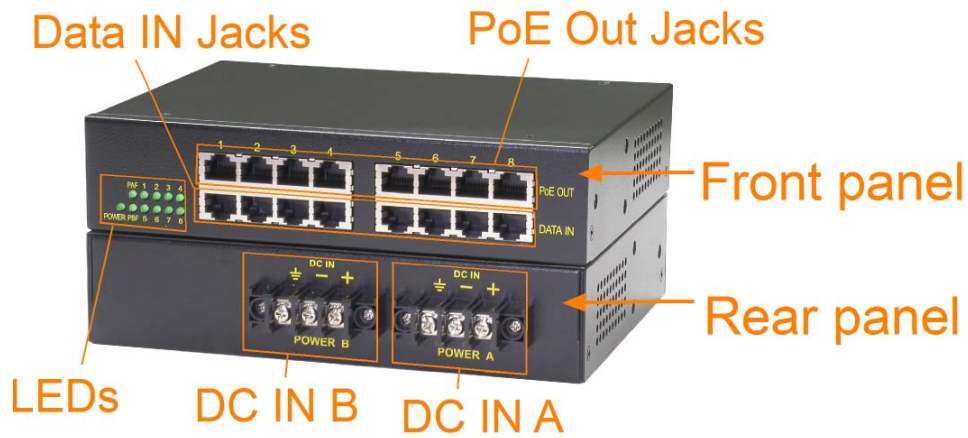
The Power over Ethernet (PoE) injector is a mid-span power injector designed and tested for use with all IEEE802.3af and IEEE802.3at compatible PoE Powered Devices (PDs). The PoE injector sits between a switch port and the PoE powered device, providing inline power capability to an un-powered switch port.

1.1 Features

- Supports 8 Ethernet ports
- Full IEEE802.3at compliance
- Gigabit Ethernet support
- Transparent to switch functionality
- Standard user safety protection
- Redundant DC power input
- 19" rack mounting support

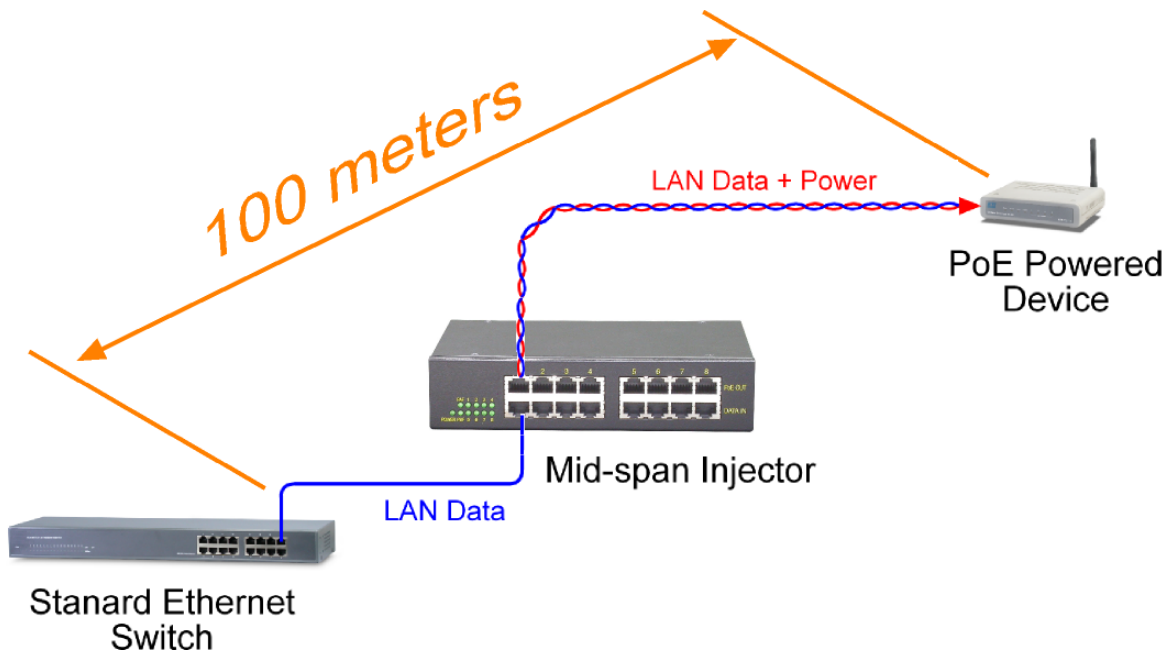
1.2 Product Panels

The following figure illustrates the faces of the injector:



1.3 Mid-span Injector Function

The PoE injector sits between a switch port and the PoE powered device, providing inline power capability to an un-powered switch port.



1.4 Specifications

<u>Network Ports</u>	8 connections for 8 non-PoE switched ports 8 connections for 8 PoE powered devices
<u>PoE Support</u>	IEEE 802.3at compliance for typical and high power AP
<u>Data IN Jack</u>	Shielded RJ-45 IEEE 802.3, 10Base-T, 100Base-TX, 1000Base-T compatible Hot-plug support
<u>PoE OUT Jack</u>	Shielded RJ-45 IEEE 802.3, 10Base-T, 100Base-TX, 1000Base-T compatible Hot-plug support
<u>PoE OUT Standard</u>	IEEE 802.3at PSE
<u>PoE OUT Voltage</u>	Power positive (V_{out+}) on jack pin 4/5 Power negative (V_{out-}) on jack pin 7/8
<u>PoE OUT Cable</u>	4-pair Cat.5, 5e, or 6 Distance mid-span up to 100 meters
<u>PoE PSE</u>	Class 0 ~ 4 PD support Power for Type 1 PD 350mA max.: +44 ~ +57Vout (depends on DC IN) Power for Type 2 PD 600mA max.: +50 ~ 57Vout (depends on DC IN)
<u>PoE PSE Protection</u>	Port power shut down protection for events: <ul style="list-style-type: none">- Incompliant PD detection,- Disconnection,- Overload,- Over-current- Short-circuit
<u>DC IN A & B</u>	Two screw-type industrial terminal blocks 3P contacts per block: Vdc+ / Vdc- / FG Voltage range: +44 ~ +57VDC Redundant input support
<u>LED Indicators</u>	System power status, DC IN A fault status, DC IN B fault status P1 ~ P8 PoE ON status
<u>Power Consumption</u>	276W max. @+57VDC including all ports maximal PoE output
<u>Power Dissipation</u>	2W typical
<u>Dimension</u>	190 x 140 x 43 mm (WxDxH)
<u>Housing</u>	Enclosed metal with no fan

Mounting Support

19" rack mountable

Temperature

Operating: -40°C ~ +70°C

Storage: -40°C ~ +85°C

Relative humidity: 5 ~ 95% non-condensing

Certificate

FCC Part 15 Class A

CE

EN 61000-6-4 emission Class A

EN 61000-6-2 immunity

IEC 61950-1 safety

2. Installation

2.1 Unpacking

Check that the following components have been included:

- Information CD
- The device unit

If any item is found missing or damaged, please contact your local reseller for replacement.

The following are available optional accessories:

- 19" rack mounting bracket kits
The brackets are used for mounting the devices in a 19" rack.
- PoE 300W Power Supply (Options: 48V, 52V, 54V)
The power is used for supporting the injector power up to 300W.

2.2 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.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

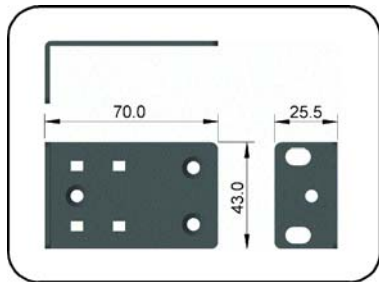
2.3 Mounting the Injector

Desktop Mounting

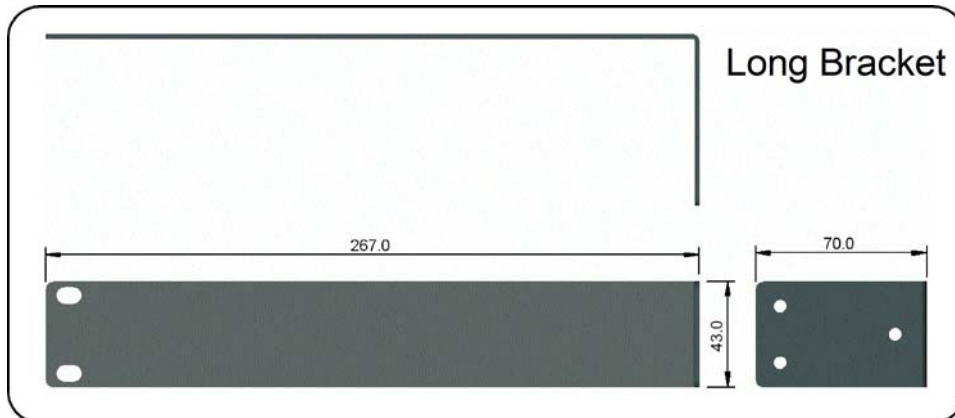
The injector can be mounted on a desktop or shelf. Make sure there is proper heat dissipation from and adequate ventilation around the device. Do not place heavy objects on the device.

Rack Mounting

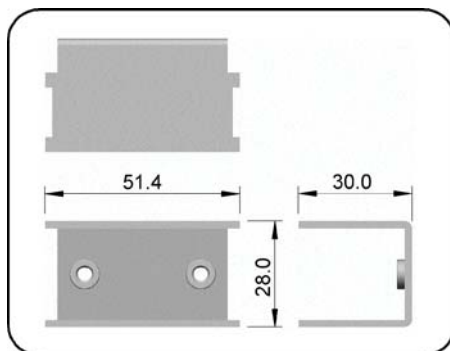
The following optional brackets are designed for use to mount the devices in a 19" rack.



Short Bracket



Long Bracket



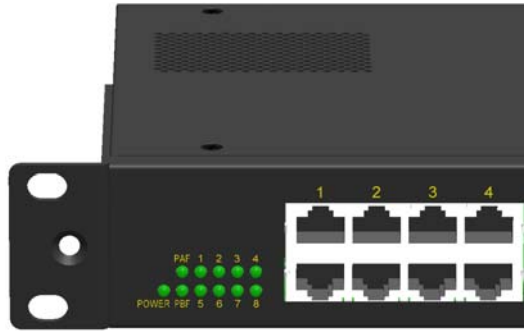
Joint Bracket

Mounting one unit in a rack

Use the bracket set 1 and follow the steps shown below:

- ✓ Short bracket x 1
- ✓ Long bracket x 1

1. Install the short bracket to one side of the device.



2. Install the long bracket to the other side of the device.



3. Mount the device in a 19" rack.

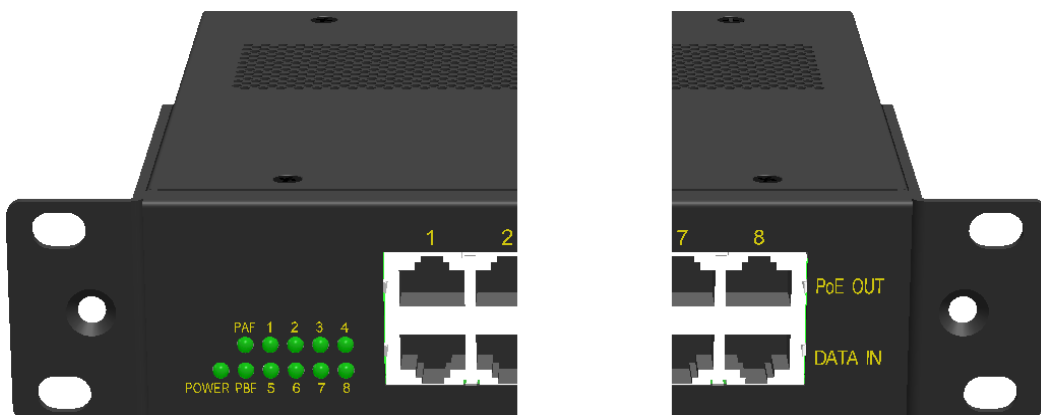


Mounting two units in a rack

Use the bracket set2 and follow the steps shown below:

- ✓ Short bracket x 4
- ✓ Joint bracket x 1

1. Install two short brackets to both sides of each device.



2. Joint two units together as shown below:

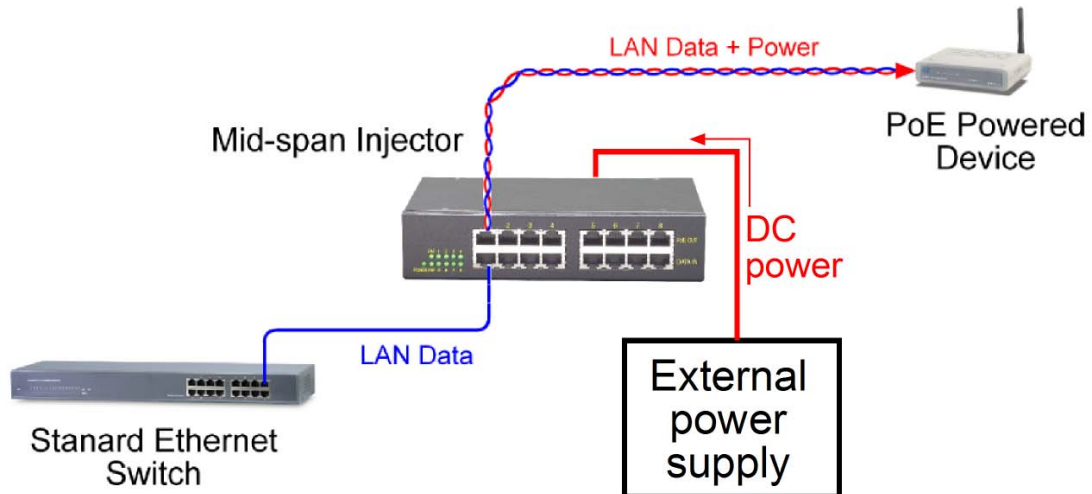


3. Mount two device units as one in a 19" rack.



2.4 Applying DC Power

The injector needs an external AC-DC power supply to supply DC power for main PoE power support as shown below:



Two DC IN interfaces, POWER A and POWER B are provided on rear panel. Either one can be used if only one power supply is available. Both are redundant support mutually if power redundancy is needed.

DC IN POWER A, DC IN POWER B



Receptacles: Screw-type terminal block A & B

Operating Voltages: +44 ~ +57VDC

Power Wire Gauge: 12AWG (1 meter max.)

Terminal Contacts

+ V_{dc}+

— V_{dc-}

⊥ FG (Frame ground, Protective Earth)

Note:

Both V_{dc+} and V_{dc-} contacts are isolated to FG contact and chassis.

The V_{dc} is delivered to PSE Out Jacks for output directly.

Power Consumption

Power consumed by internal PoE control circuitry of the injector is about **2W**..

Power consumption for supporting eight Type 1 PDs: 125W max.

Power consumption for supporting eight Type 2 PDs: 276W max.

Typical PoE PD Information

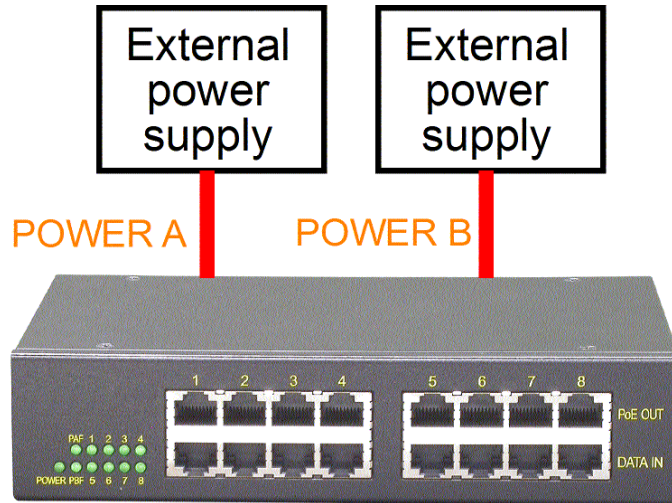
Technology	PoE	PoE+ (High Power)
Standard	IEEE 802.3af (Type 1)	IEEE 802.3at (Type 2)
Max. power received at PD end (Delivered at PSE end)	15.4W	34W
Working voltage range at PSE end	44 ~ 57VDC	50 ~ 57VDC
Max. current	350mA	600mA
Max. power for eight PDs	123W	274W

Note: Above information are typical data by IEEE standard. The exact ratings and limits among different PoE PD devices might differ according to the implementation of each device respectively. Consult the user's guide of the PoE PD device you are using.

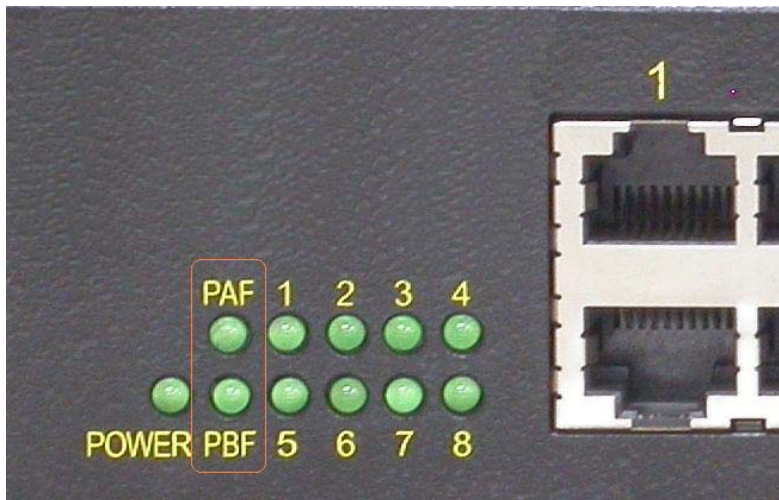
2.4.1 Power Input Redundancy

Two power supplies are required and connect POWER A and POWER B respectively to support power input redundancy. A connection block is shown below:

During normal operation, both power units supply power equally to the injector. When a power fault occurs on one unit, the other unit will support full load consumed by the injector immediately. The power fault may be caused by power device failure or disconnection. The power fault also is indicated by LED display PAF and PBF.



Power Fault LED Indicators – PAF PBF



3. Making LAN Connections

3.1 Making Switch Port Connections

The mid-span injector is designed to support the following PoE incapable switch port types and the PoE function is transparent and independent to the following port configuration:

IEEE 802.3 std.

10BASE-T

100BASE-TX

1000BASE-T

Port Configuration

Auto-negotiation: Enable or disable

Transmission speed: 10Mbps, 100Mbps, 1000Mbps

Duplex: Half duplex, full duplex

Jack Pins: MDI or MDI-X

Network Cables

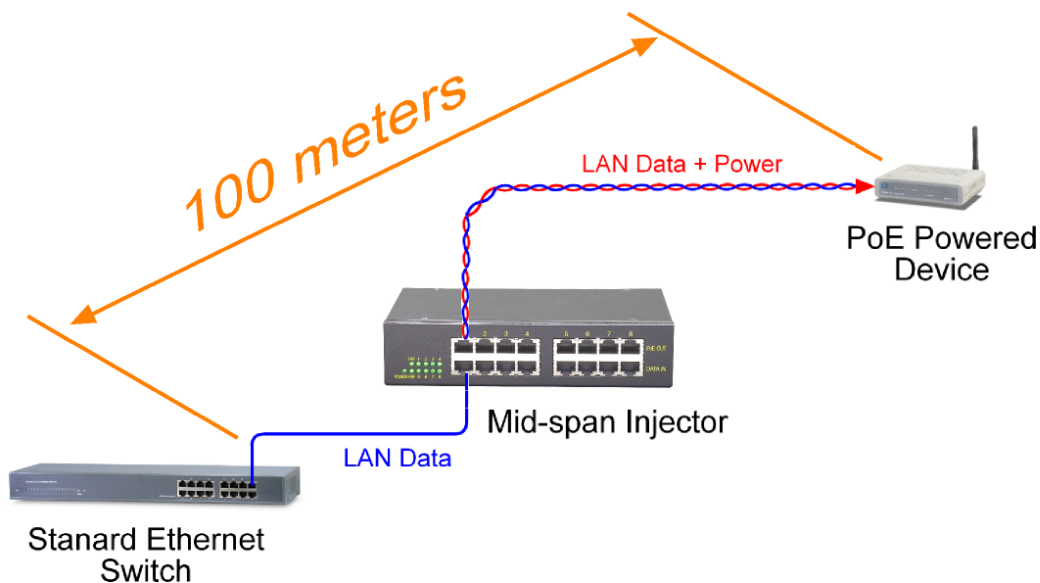
10BASE-T: 2-pair UTP Cat. 3, 4, 5, EIA/TIA-568B 100-ohm

100BASE-TX: 2-pair / 4-pair UTP Cat. 5, EIA/TIA-568B 100-ohm

1000BASE-T: 4-pair UTP Cat. 5, Cat.5e, Cat.6, EIA/TIA-568B 100-ohm

To make a switch port connection, the steps are:

1. Find an appropriate network cable for a port connection.
2. Connect one end of the cable to the PoE-incapable switch port.
3. Connect the other end to one available DATA IN jack of the PoE injector.



3.2 Making Powered Device Connections

The mid-span injector supports connection to IEEE 802.3at compliant PoE PD (Powered Device). The Ethernet port of the PD can be Ethernet, Fast Ethernet or Gigabit Ethernet. The injector's PoE OUT port delivers power together with network signal to a connected powered device via Cat.5 cable or better.

To make a connection, the following check points should be noted:

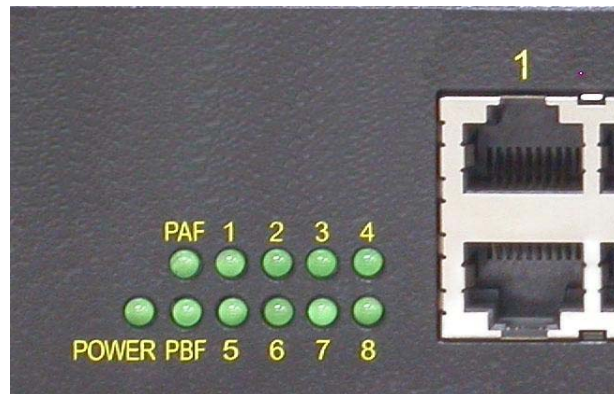
1. For safety reason, the connected PD must be a IEEE 802.3af-compliant device. Un-compliant devices are not supported.
2. The Cat.5 cables used for the connections must be 4-pair cables. The power is sent over the pairs (4,5) (7,8) of the cable.
3. The mid-span connection distance is up to 100meters.
4. Hot-plug connection is allowed anytime.

Safety Protection

The injector provides safety protection design for operation. The individual power output of each PoE OUT port is shut down when any of the following events occurs:

Incompliant PD	An incompliant PD is detected on the port.
Disconnection	A PD disconnection.
Overload	An overload situation is detected on the port.
Over-current	An over-current situation is detected on the port.
Short-circuit	A short-circuit situation is detected on the port.

3.3 LED Indication



LED	Function	State	Interpretation
POWER	System power status	ON	The injector is powered ON.
PAF	POWER A status	ON	POWER A is fault.
PBF	POWER B status	ON	POWER B is fault.
1 ~ 8	Port 1 ~ Port 8 PoE status	ON	Port PoE power is ON.
		OFF	Port PoE power is OFF.

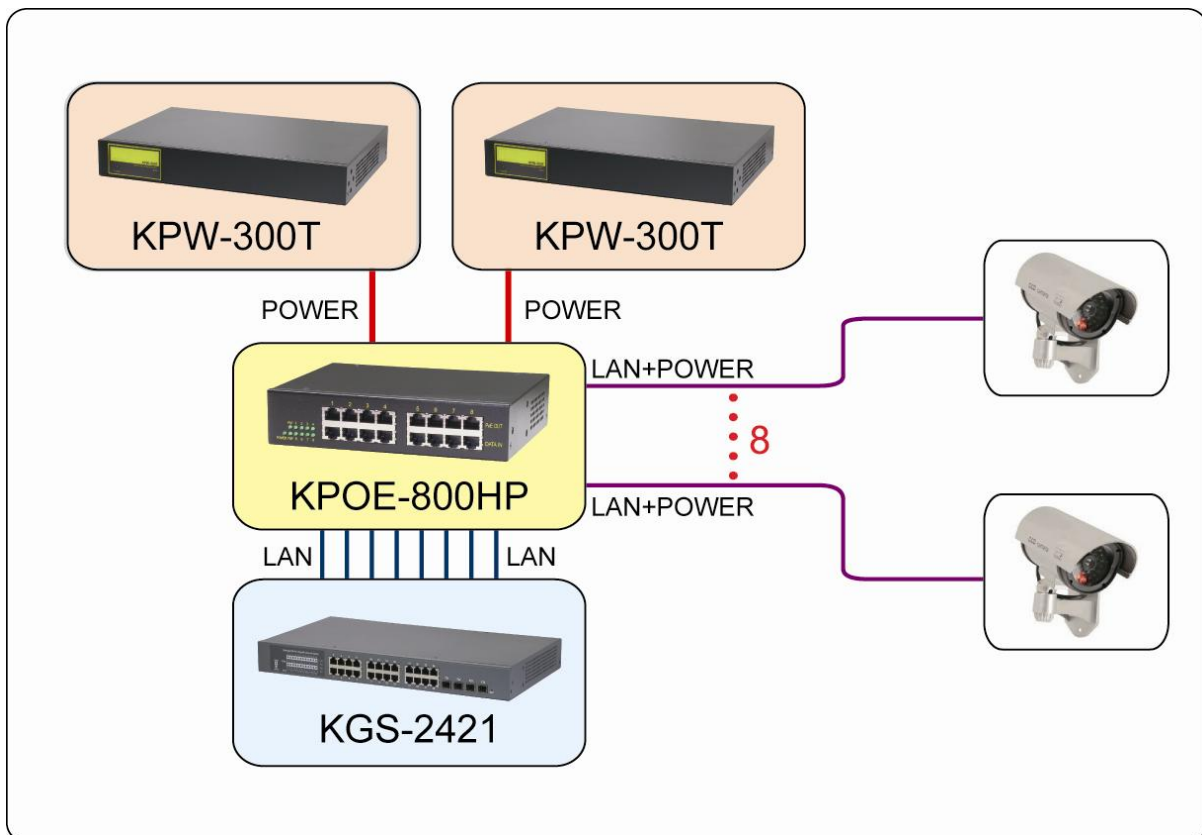
4. Application and Optional Products

Optional Items

Part Number	Description
KPOE-800HP-BRACKET1	19" rack mounting bracket kit for 1-unit mounting
KPOE-800HP-BRACKET2	19" rack mounting bracket kit for 2-unit mounting
KPW-300T	1U rack mountable 300W switching power supply for PoE/PoE+ applications

Consult your dealer for the details of optional items.

4.1 Application Example



KGS-2421: Gigabit Ethernet switch with no PoE function

KPW-300T: 19" rack mountable 300W switching power supply