POC2052-4P-1CX PoE Over Coaxial Extender User Manual

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Version

This document applies to POC2052-4P-1CX.

FCC compliance

This device complies with part 15 of 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 interference that may cause undesired operation.

FCC compliance

Class A: 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.

Canada

This Class A digital apparatus complies with CAN ICES-003 (A)/NMB-3 (A).

Cet appareil numérique de la classe A est conforme à la norme CAN ICES-003 (A)/NMB-3 (A).

ACMA compliance

Notice! This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Certification

EU directives

This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU.

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

Product warnings and disclaimers

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Contact information and manuals

For contact information go to: www.interlogix.com or www.firesecurityproducts.com.

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Content

Important information

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To the maximum extent permitted by applicable law, in no event will UTCFS be liable for any lost profits or business opportunities, loss of use, business interruption, loss of data, or any other indirect, special, incidental, or consequential damages under any theory of liability, whether based in contract, tort, negligence, product liability, or otherwise. Because some jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages the preceding limitation may not apply to you. In any event the total liability of UTCFS shall not exceed the purchase price of the product. The foregoing limitation will apply to the maximum extent permitted by applicable law, regardless of whether UTCFS has been advised of the possibility of such damages and regardless of whether any remedy fails of its essential purpose.

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Advisory messages

Advisory messages alert you to conditions or practices that can cause unwanted results. The advisory messages used in this document are shown and described below.

WARNING: Warning messages advise you of hazards that could result in injury or loss of life. They tell you which actions to take or to avoid in order to prevent the injury or loss of life.

Caution: Caution messages advise you of possible equipment damage. They tell you which actions to take or to avoid in order to prevent damage.

Note: Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

Chapter 1
Introduction

The description of the IFS POC2052-4P-1CX model is as follows:

- 4-port 10/100TX PoE Extender

Unless specified, the term “POC extender” mentioned in this user manual refers to the POC2052-4P-1CX.

Package contents

Open the box of the industrial PoE+ switch and carefully unpack it. The box should contain the following items:

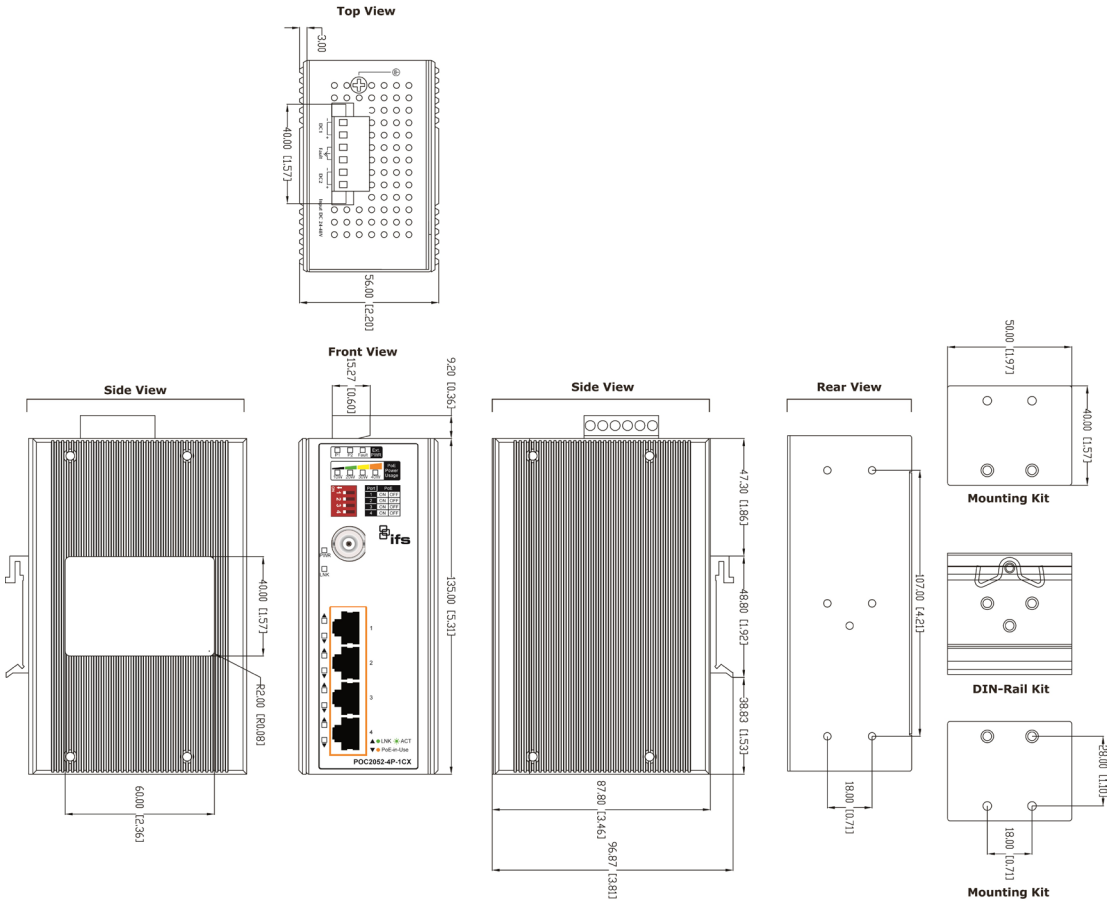
- The POC extender × 1
- DIN rail kit x 1
- Wall mounting kit x 1

If any of these are missing or damaged, contact your dealer immediately. If possible, retain the carton including the original packing materials for repacking the product in case there is a need to return it to us for repair.

Chapter 2
Hardware description

Physical dimensions

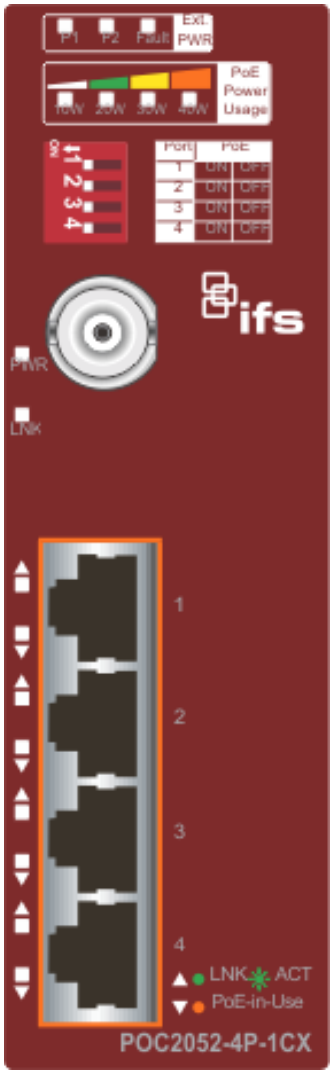
Dimensions (W x D x H): 135 x 87.8 x 56 mm



Dimensions (unit = mm)

Front panel

The front panel of the POC extender consists of 1BNC female/RJ45 connector and four 10/100BASE-TX RJ45 ports. The LED indicators are also located on the RJ45 ports of POC extender.



LED indicators

External power supply

LED	Color	Function
P1	Green	**Lit**: indicates that the power input 1 has power.
P2	Green	**Lit:** indicates that the power input 2 has power.
Fault	Red	**Lit**: indicates that either power 1 or power 2 has no power.

PoE usage

LED	Color	Function
10 W	Green	**Lit**: indicates the power usage is ≧ 10 W.
20 W	Green	**Lit**: indicates the power usage is ≧ 20 W.
30 W	Green	**Lit**: indicates the power usage is ≧ 30 W.

40 W	Green	**Lit**: indicates the power usage is ≧ 40 W.

POC interface

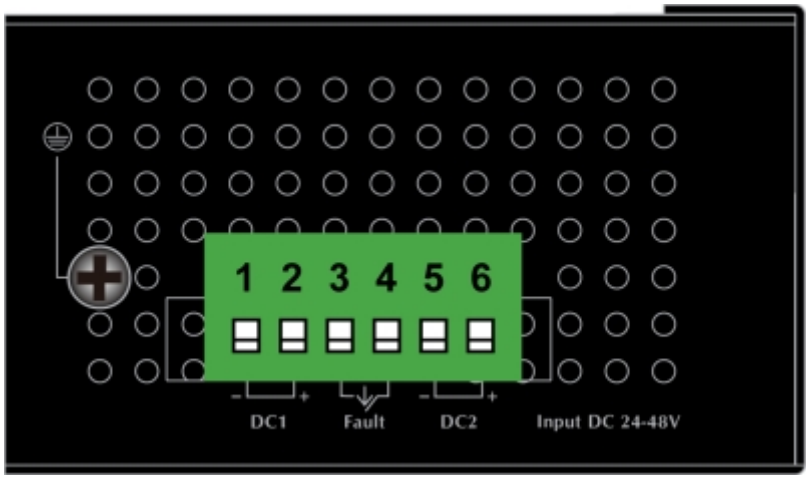
LED	Color	Function
LNK/ACT	Green	**Lit**: indicates the port has successfully connected to the network at 10/100/1000 Mbps. **Blinking**: indicates that the switch is actively sending or receiving data over that port.
1000	Orange	**Lit**: indicates the port has successfully connected to the network at 1000 Mbps. **Off**: indicates that the link through that port has successfully connected to the network at 10/100 Mbps.

Per 1000X SFP slot (shared with port 9 to port 10)

LED	Color	Function
LNK/ACT	Green	**Lit**: indicates the port has successfully connected to the network at 1000 Mbps. **Blinking**: indicates that the switch is actively sending or receiving data over that port.
1000	Orange	**Lit**: indicates the port has successfully connected to the network at 1000 Mbps. **Off**: indicates that the link through that port is not established.

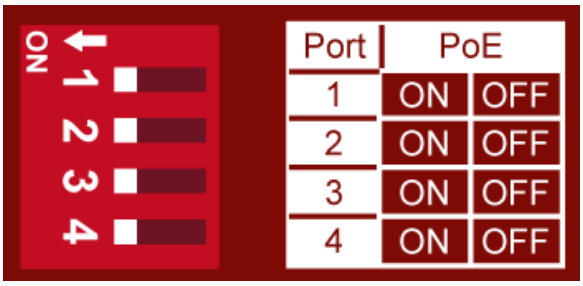
Upper panel

The upper panel of the POC extender consists of one terminal block connector within two DC power inputs.



PoE DIP switch indication

The POC extender provides an adjustable switch that can be used to control the operation of the PoE output.



Port 1	ON (default)	Port-1 PoE Enable
	OFF	Port-1 PoE Disable
Port 2	ON (default)	Port-2 PoE Enable
	OFF	Port-2 PoE Disable
Port 3	ON (default)	Port-3 PoE Enable
	OFF	Port-3 PoE Disable
Port 4	ON (default)	Port-4 PoE Enable
	OFF	Port-4 PoE Disable

Note: For example, to stop the remote powered device of port 1, turn the switch OFF to stop the output power.

Caution: When the PoE function of any ports are turned off, per port output will not enhance the output capacity.

Product specifications

Hardware Specifications		
Ethernet Interface	**Copper Ports**	Four 10/100BASE-TX RJ45 auto-MDI/MDI-X
	PoE Injector Ports	Four ports with 802.3at/af PoE injector function with Port-1 to Port-4
	Functionality	Four DIP switches to control PoE output on or off with Port-1 to Port-4
	PoE Standards Compliance	IEEE 802.3at Power over Ethernet Plus/ PSE
	PoE Type	End-span
	PoE Power output	52 VDC, PoE output depends on POC Injector or POC Switch
		52 VDC, 30 W per port (External DC input)
	Cabling	Ethernet : 10BASE-T: 2-pair UTP Cat.3, 4, and 5 Ethernet : 100BASE-TX: 2-pair UTP Cat.5, 5e, and 6

	Maximum Distance	100 m
	Maximum Frame size	1522 bytes
Long Reach PoE Interface	**Connectivity**	One BNC female Long Reach PoE over Coaxial PD (Powered Device)
	Power Input	44~ 56 VDC
	Power Pin Assignment	BNC center pole: DC+ BNC shield: DC-
	Cabling	Coaxial cable: 75 ohm RG-6/U cable, less than12Ω/1000 ft RG-59/U cable, less than 30Ω/1000 ft.
	Maximum Distance	Max. 200 m with PoE+ output (656 ft.) Max. 400 m with PoE output (1,312 ft.) Max. 1000 m without PoE output (3,280 ft.)
	Long Reach Ethernet Standard	IEEE 1901
	Modulation Type	Wavelet-OFDM
	Security	128-bit AES encryption
	Frequency Band	2 ~ 28 MHz
	Encryption	AES 128-bit
	POC Compatibility	With power over coaxial input: POC252-1CXP-1T – 1-Port POC Injector POC2502-8CXP-2T-2S – 8-Port POC Switch POC2502-16XP-2T-2S – 16-Port POC Switch
LED Indicator	3 x LED for External power supply:	Green: DC Power 1
		Green: DC Power 2
		Red: Power Fault
	4 x LED for PoE Usage:	Green: 10 W/20 W/30 W/40 W
	2 x LED for Long Reach PoE In:	Green: PWR
		Green: LNK
	2 x LED for each RJ45 interface (Port-1 and Port-4)	Green: 10/100 Mbps LNK/ACT
		Orange: PoE-in-use
Installation	DIN rail kit and wall mount kit	
Dimensions (W x D x H)	135 x 87.8 x 56 mm	
Weight	644 g	

<table>
<tr><td rowspan="2">Power Requirements</td><td colspan="5">44~56 VDC power over coaxial input</td></tr>
<tr><td colspan="5">DC 24~48 V, redundant power with polarity reverses protection function</td></tr>
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<tr><td colspan="6">Standards Conformance</td></tr>
<tr><td>Standards Compliance</td><td colspan="5">IEEE 802.3 Ethernet/10BASE-T
IEEE 802.3u Fast Ethernet/100BASE-TX
IEEE 802.3x Full-Duplex Flow Control
IEEE 802.3at Power over Ethernet Plus</td></tr>
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<tr><td>Stability Testing</td><td colspan="5">IEC60068-2-32 (free fall)
IEC60068-2-27 (anti-shock)
IEC60068-2-6 (anti-vibration)</td></tr>
<tr><td colspan="6">Environment</td></tr>
<tr><td>Temperature</td><td colspan="5">Operating: -20~70°C
Storage: -20~70°C</td></tr>
<tr><td>Humidity</td><td colspan="5">Operating: 5~95% (non-condensing)
Storage: 5~95% (non-condensing)</td></tr>
<tr><td colspan="6">Performance</td></tr>
<tr><td rowspan="6">Coaxial Performance</td><td rowspan="2">Distance</td><td rowspan="2">Data rate(Upload/ Download)</td><td colspan="3">802.3af/at PoE Total Output Capability</td></tr>
<tr><td>Remote POC power through BNC W/56 VDC IN</td><td>Remote POC power by POC2502-8CXP-2T</td><td>Local DC power through terminal block</td></tr>
<tr><td>200 m</td><td>91/88 Mbps</td><td>21 W</td><td>21 W</td><td>120 W</td></tr>
<tr><td>400 m</td><td>89/87 Mbps</td><td>18.4 W</td><td>18 W</td><td>120 W</td></tr>
<tr><td>600 m</td><td>83/81 Mbps</td><td>16 W</td><td>14 W</td><td>120 W</td></tr>
<tr><td>800 m</td><td>68/69 Mbps</td><td>12 W</td><td>11 W</td><td>120 W</td></tr>
<tr><td>1000m</td><td>57/60 Mbps</td><td>8.5 W</td><td>8 W</td><td>120 W</td></tr>
</table>

RG-59 bare copper coaxial cable specs

Item No.	Cable Length (FT.)	Maximum PoE Output (W) From	
		POC252-1CXP-1T	POC2502-16CXP-1T-2S
1	200	22.0	22.0
2	400	22.0	22.0
3	600	22.1	22.0
4	800	21.1	21.1
5	1000	20.2	20.1
6	1200	19.3	19.1
7	1400	18.9	18.1
8	1600	17.4	16.9
9	1800	16.8	15.7
10	2000	15.6	14.4
11	2200	14.4	13.8
12	2400	12.9	12.7
13	2600	12.3	11.4
14	2800	11.7	10.6
15	3000	9.6	9.6
16	3300	8.6	8.4

RG-59 copper-clad steel coaxial cable specs

Item No.	Cable Length (FT.)	Maximum PoE Output (W) From	
		POC252-1CXP-1T	POC2502-16CXP-1T-2S
1	200	22.0	22.0
2	400	22.0	22.0
3	600	22.1	22.0
4	800	21.1	21.1
5	1000	20.2	20.1
6	1200	19.3	19.1
7	1400	18.9	18.1
8	1600	17.4	16.9
9	1800	16.8	15.7

Chapter 3
Installation

This section describes the installation and functionalities of the POC extender's components. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

Note: Before installation, consider the distance and Watt value demand for PD devices. The POC extender output capacity and upload/download performance depends on the length of the coaxial and UTP cables.

Note: When the remote PD's total power consumption is higher than the POC extender's PoE power budget, the device will reboot and the LED Indicators will flash continuously. Remove UTP cables from the RJ45 ports to avoid malfunctioning of the POC extender.

Installation precautions

The POC extender supports two ways as power source to inject 802.3af/at PoE to remote standard PDs.

- Remote POC power from POC injector/switch over coaxial/UTP cable.
- Local DC power from power supply through the POC extender's terminal block.

Remote power by coaxial cable

When installing POC PoE over coaxial injector, it only can work with the POC2052-4P-1CX POC extender. Confirm that other non-PoE equipment is not connected with the coaxial cable. When you connect the coaxial cable to a coax-LAN converter, CCTV camera, and so on, it might damage the other equipment.

Caution: After the power over coaxial injector is enabled, the center pin of the coaxial cable is with electricity. Please do not touch the center pin.

Note: Interlogix IFS power over coaxial injectors or switches have a warning sticker, including the POC252-1CXP-1T and POC2502-8CXP-2T products.

Remote power by UTP cable

When installing the POC PoE over UTP injector, it only can work withthe POC extender. Please confirm that other non-PoE equipment is not connected with the UTP cable. If it is connected with the standard Ethernet equipment, it might cause damage.

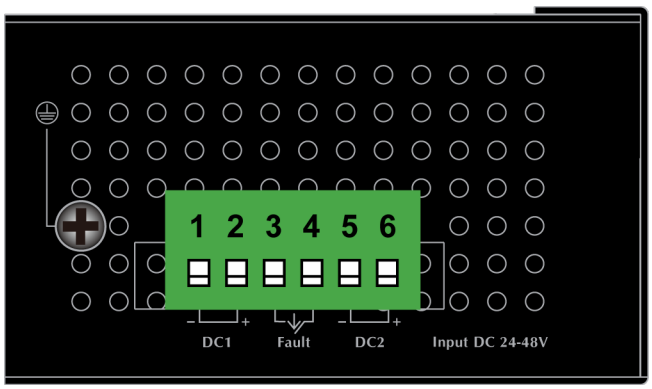
Local power

To increase the PoE power budget of the POC extender, use an external DC power supply. The 6-contact terminal block connector on the upper panel of POC extender is used for two DC redundant power inputs. Follow the steps below to insert the power wires.

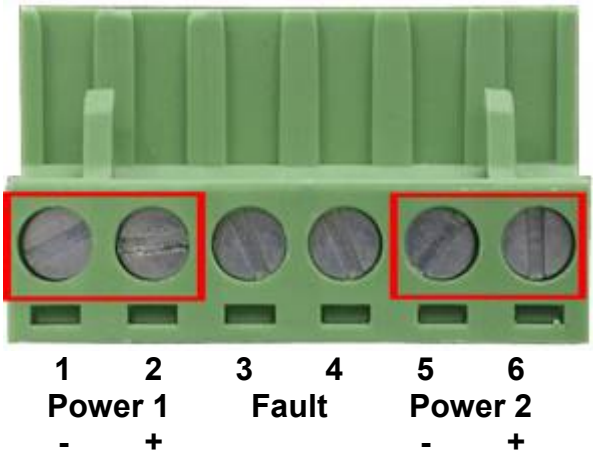
Note: When the user is connected with an external power supply, the POC extender will give priority to the external power supply of the POC injector or switch when the data is transmitted to the POC extender.

Caution: When performing any of the procedures, such as inserting the wires or tightening the wire-clamp screws, ensure that the power is OFF to avoid electric shock.

1. Insert positive/negative DC power wires into contacts 1 and 2 for DC Power 1, or 5 and 6 for DC Power 2.



2. Tighten the wire-clamp screws to prevent the wires from loosening.

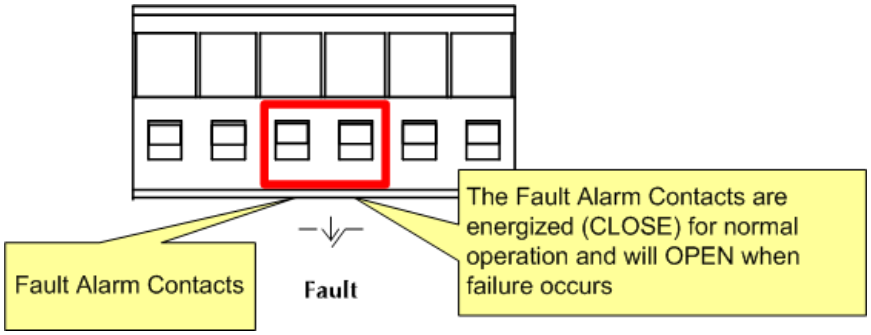


Note:

1. The wire gauge for the terminal block should be in the range of 12 to 24 AWG.
2. The DC power input range is 24 to 48 VDC.

Wiring the fault alarm contact

The fault alarm contacts are in the middle of the terminal block connector as the picture shows below. Inserting the wires, the POC extender detects the fault status of the power failure and then forms an open circuit. The following illustration shows an application example for wiring the fault alarm contacts. Wires are inserted into the fault alarm contacts.



Note:

1. The wire gauge for the terminal block should be in the range of 12 to 24 AWG.
2. Alarm relay circuits accept uo to 24 V, max. 1 A currents.

Chapter 4
Application diagram

The POC extender is designed to extend IP Ethernet transmission and inject power simultaneously into a remote 802.3af/at PoE compliant powered device (PD) beyond the 100 meters distance limit of Ethernet. The solution works in pairs for point to point and point to multipoint connectivity.

The POC extender supports two ways for a power source to inject 802.3af/at PoE to remote standard PDs.

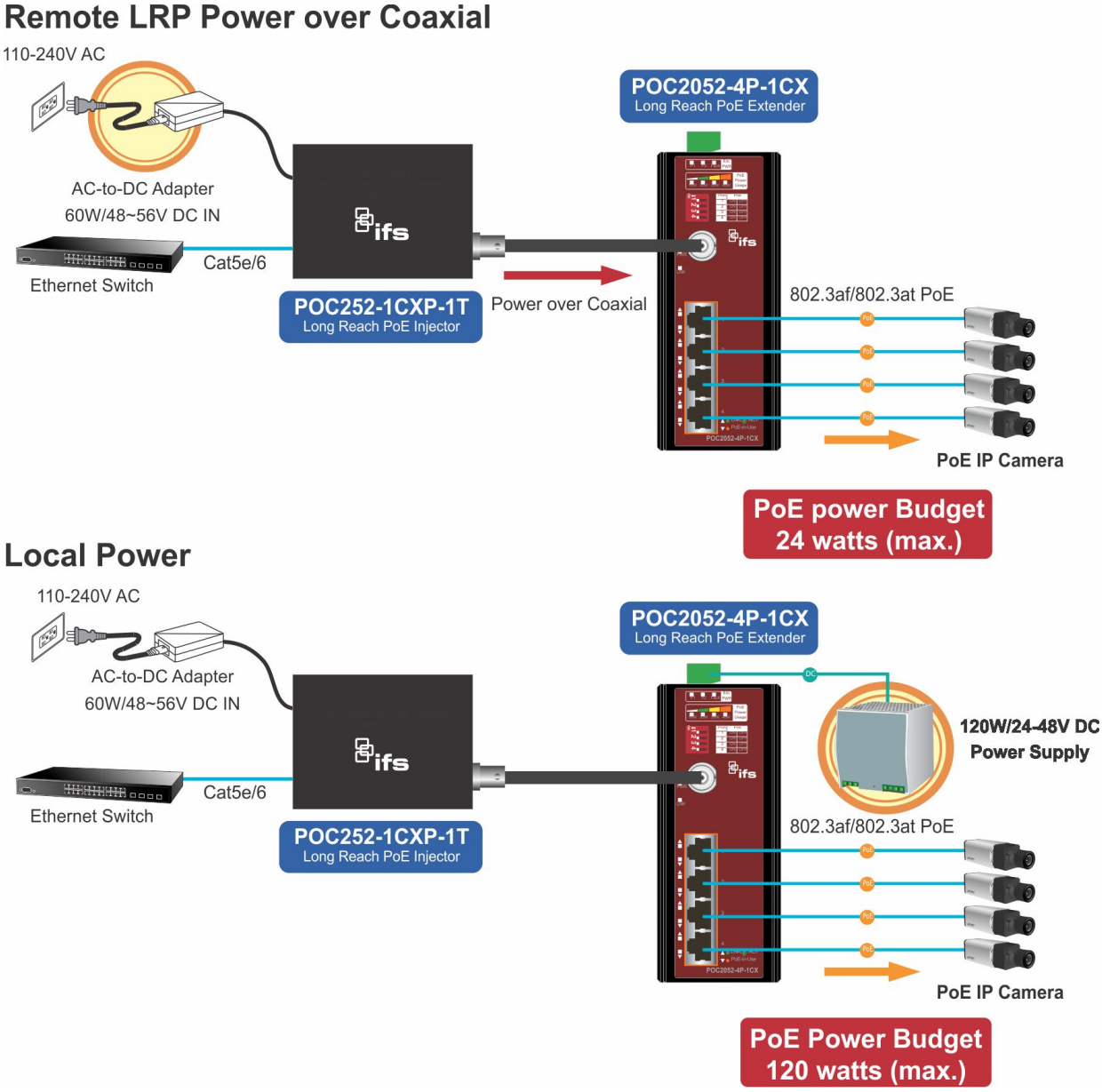
- Remote POC power from the POC injector/switch over coaxial cable.
- Local DC power from the power supply through the POC extender terminal block.

In the following application topologies, users can find the suitable way to extend the distance and power on the remote PDs.

Point to multi-point

Remote POC power through BNC/RJ45 with DC 56 V input or local power with an external DC input (DC 24~48 V).

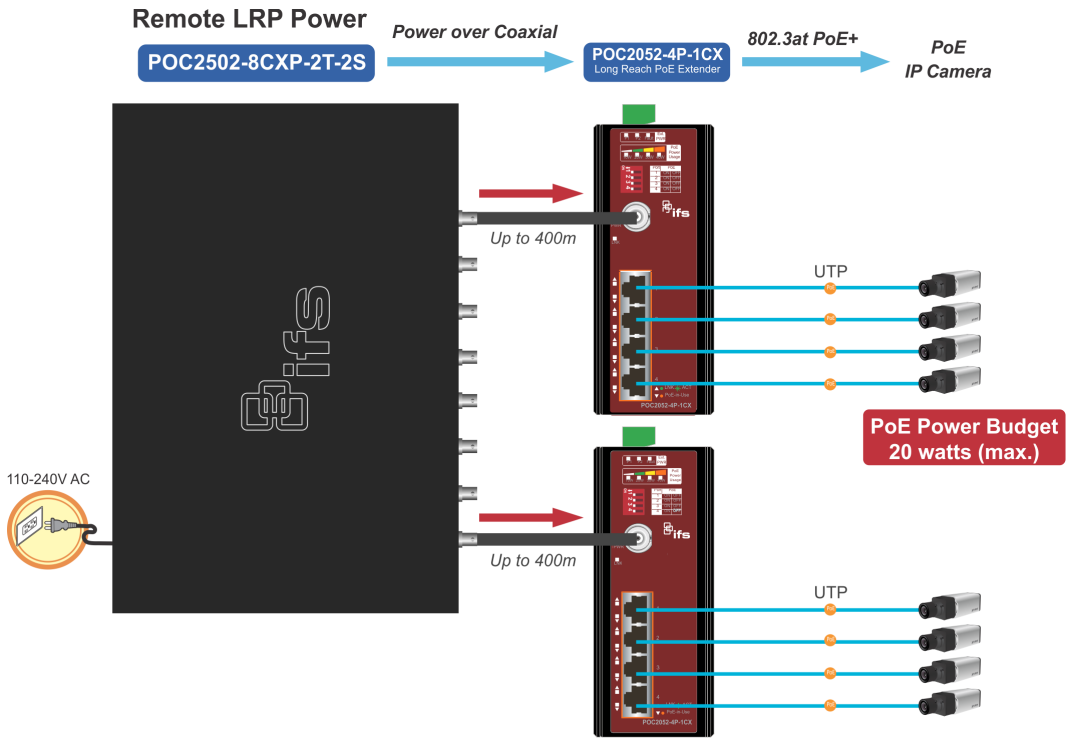
POC252-1CXP-1T to POC2052-4P-1CX

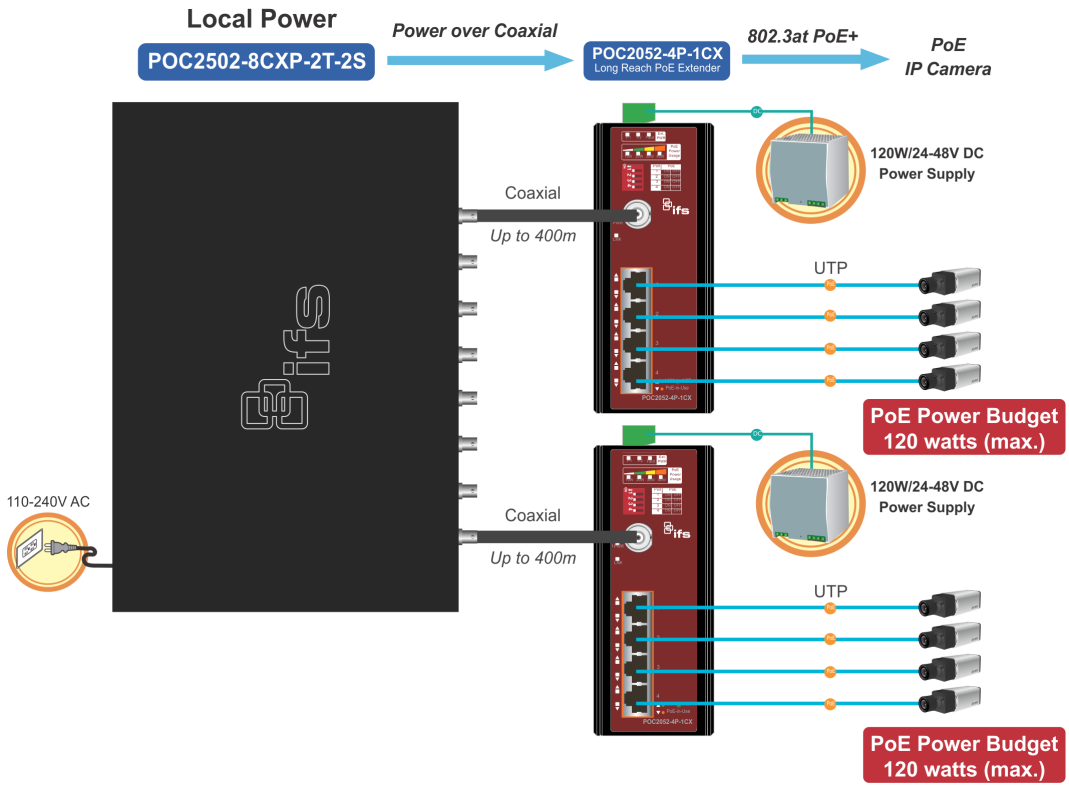


Multi-point to multi-point

Remote power POC power through BNC with DC 56 V input or local power with wxternal DC input (DC 24~48 V).

POC2502-8CXP-2T-2S to POC2052-4P-1CX

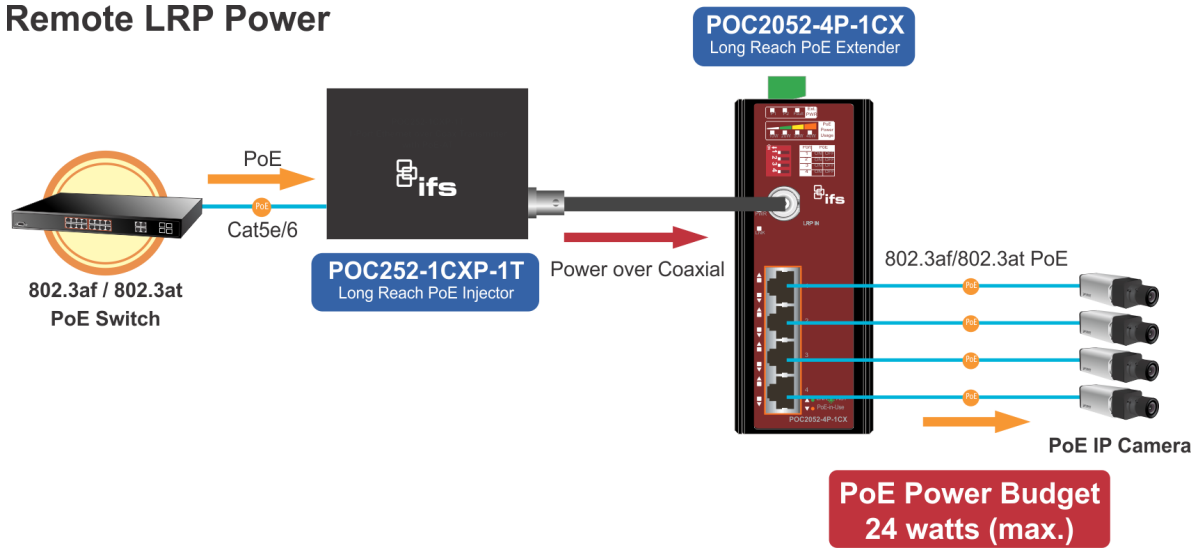




Applications of POC252-1CXP-1T or POC switch with coaxial cable

One POC252-1CXP-1T with PoE power input and one POC2052-4P-1CX with PoE power output

The POC injector is powered via IEEE 802.3at/af PoE. An IEEE 802.3at/af compliant PoE PD will automatically be powered by the POC extender via UTP.



Functions	POC252-1CXP-1T POC injector	POC2052-4P-1CX POC extender
Power Input	RJ45 with 802.3at/af PoE input	BNC with DC power over coaxial input
Power Output	BNC with DC power over coaxial output	RJ45 with 802.3at/af PoE output

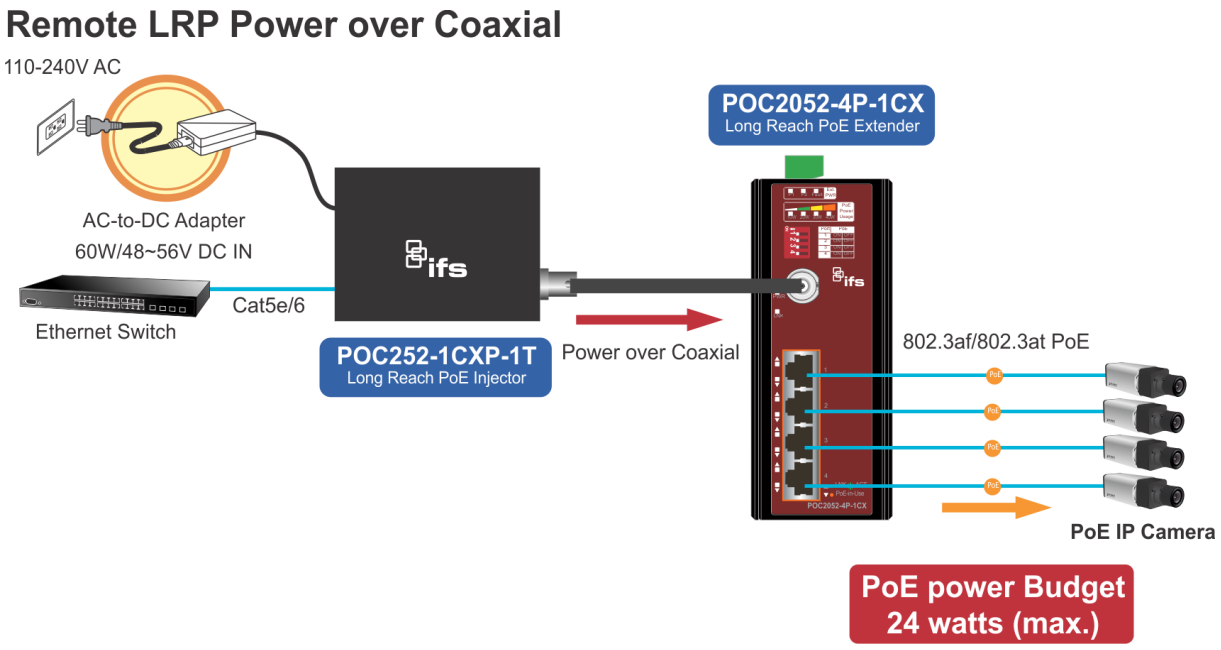
Installation instructions

1. Connect the POC injector (POC252-1CXP-1T) and POC extender to the ends of the BNC terminated coaxial cable.
2. Stick the “Warning Sticker” on the coaxial cable.
3. Connect a Cat5/6 UTP cable to the POC252-1CXP-1T and an IEEE 802.3at compliant PoE switch or PoE injector. If the PoE switch or PoE injector is powered on already, then the PWR LED of POC252-1CXP-1T and the POC extender should illuminate immediately.
4. Connect a Cat5/6 UTP cable to the POC extender and an IEEE 802.3at/af compliant PoE IP camera or PoE wireless AP.

WARNING: The POC252-1CXP-1T accepts IEEE 802.3at equipment for optimal power injection. Other non-standard PoE power devices may cause the POC252-1CXP-1T to malfunction.

One POC252-1CXP-1T with 48 to 56 V power adapter and one POC2052-4P-1CX with PoE power output

The POC injector is powered via the external adapter. The IEEE 802.3at/af compliant PoE PD will automatically be powered by the POC extender via UTP.



Functions	POC252-1CXP-1T POC injector	POC2052-4P-1CX POC extender
Power Input	Power adapter with 48~56V DC in. POC252-1CXP-1T accepts up to 120 W external power input	BNC with DC power over coaxial input
Power Output	BNC with DC power over coaxial output	RJ45 with 802.3at/af PoE output

Installation instructions

1. Connect the POC injector (POC252-1CXP-1T) and POC extender to the ends of the BNC terminated coaxial cable.
2. Stick the “Warning Sticker” on the coaxial cable.
3. Connect a Cat5/6 UTP cable to the POC252-1CXP-1T and a non-PoE switch or workstation.
4. Connect a 48~56 VDC power adapter to the POC252-1CXP-1T power socket. The PWR LED of the POC252-1CXP-1T and POC extender should illuminate immediately
5. Connect a Cat5/6 UTP cable to the POC extender and an IEEE 802.3at/af compliant PoE IP camera or PoE wireless AP.

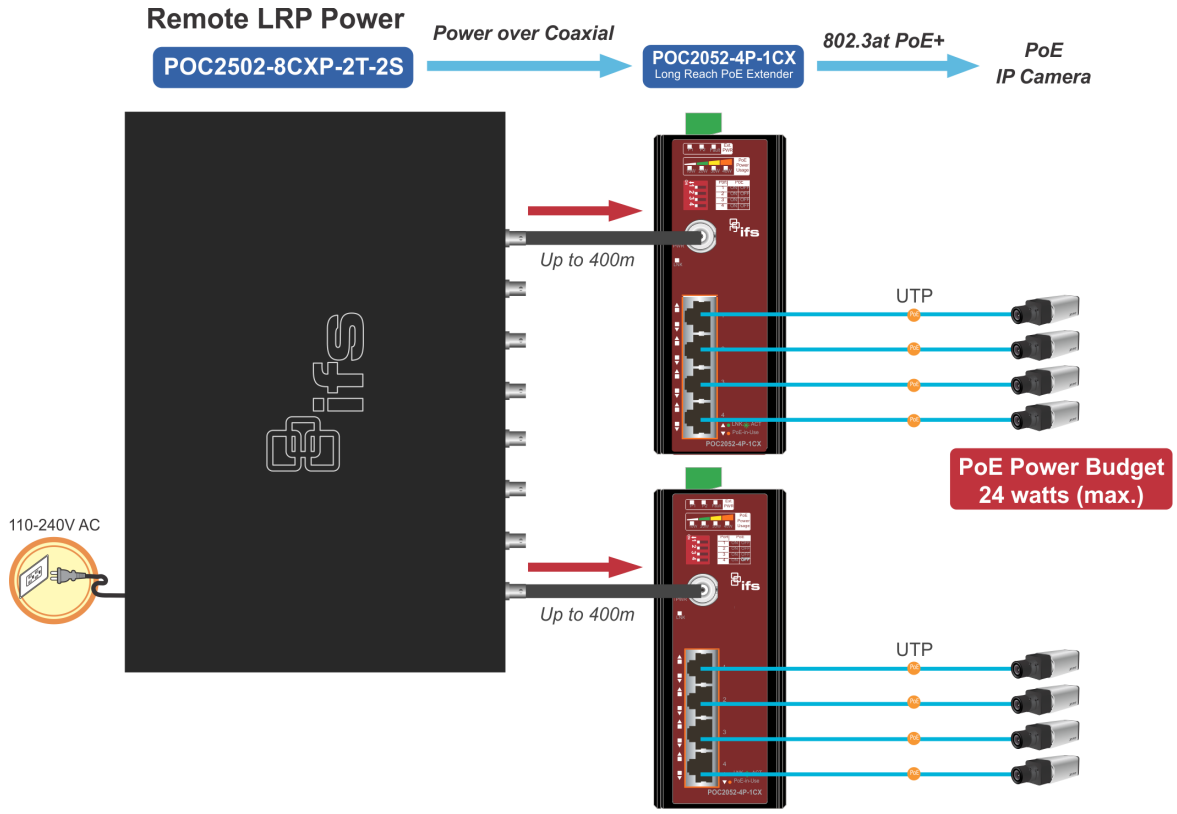
Note:

1. PoE output capacity is based on different DC power input / PoE input.

2. The POC252-1CXP-1T has two power input options; only one mode is available at one time. PoE power input cannot be used if power input of DC 52 V or 56 V is selected.

One POC2502-8CXP-2T-2S with AC power input and one POC extender with PoE power output

The POC switch is powered via the AC power. The IEEE 802.3at/af compliant PoE PD will automatically be powered by the POC extender via UTP.



Functions	POC2502-8CXP-2T-2S POC switch	POC2052-4P-1CX POC extender
Power Input	Power cord with AC 100~240V, 50/60Hz, auto-sensing	BNC with DC power over coaxial input
Power Output	BNC with DC power over coaxial output	RJ45 with 802.3at/af PoE output

Installation instructions

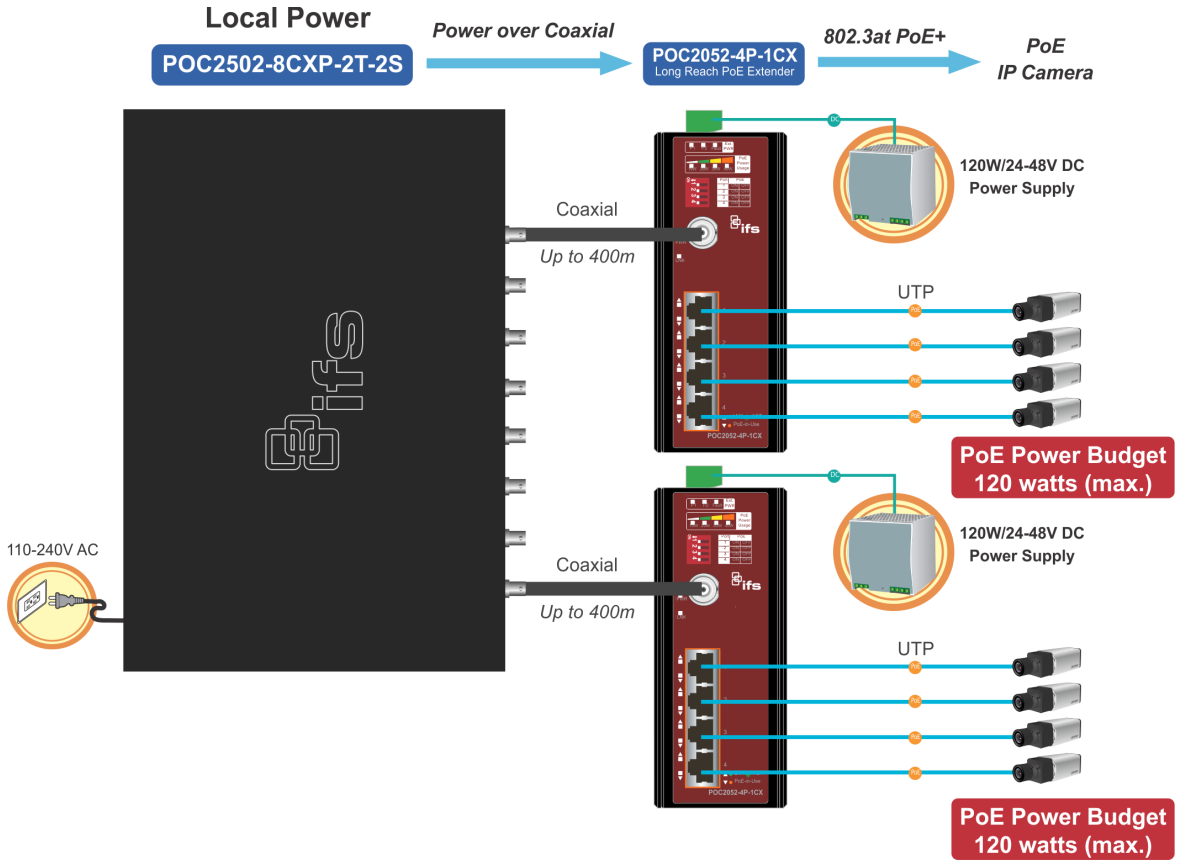
1. Connect the POC switch and POC extender to the ends of the BNC terminated coaxial cable.
2. Connect a 100~240 VAC power cord to POC switch power socket. The PWR LED of the POC switch should illuminate immediately.
3. The POC managed switch is configured DISABLED for the Long Reach PoE function as default. You must enable the Long Reach PoE function for all POC ports from the WebUI.

4. After enabling the POC function of the POC switch from the WebUI, the PWR LED of POC2052-4P-1CX should illuminate immediately.
5. Connect a Cat5/6 UTP cable to the POC extender and an IEEE 802.3at/af compliant PoE IP camera or PoE wireless AP.

Note:

1. PoE output capacity is based on different DC power input / PoE input.
2. The POC252-1CXP-1T has two power input options; only one mode is available at one time. PoE power input cannot be used if power input of DC 52 V or 56 V is selected.

One POC2502-8CXP-2T-2S and one POC extender with PoE power output



Functions	POC2502-8CXP-2T-2S POC switch	POC2052-4P-1CX POC extender
Power Input	Power cord with AC 100~240V, 50/60Hz, auto-sensing	External DC 24~48V power input
Power Output	BNC with DC power over coaxial output	RJ45 with 802.3at/af PoE output

WARNING: After the power over coaxial injector is enabled, the center pin of the coaxial cable has electricity. Please do not touch the center pin.

Appendix A
Networking connection

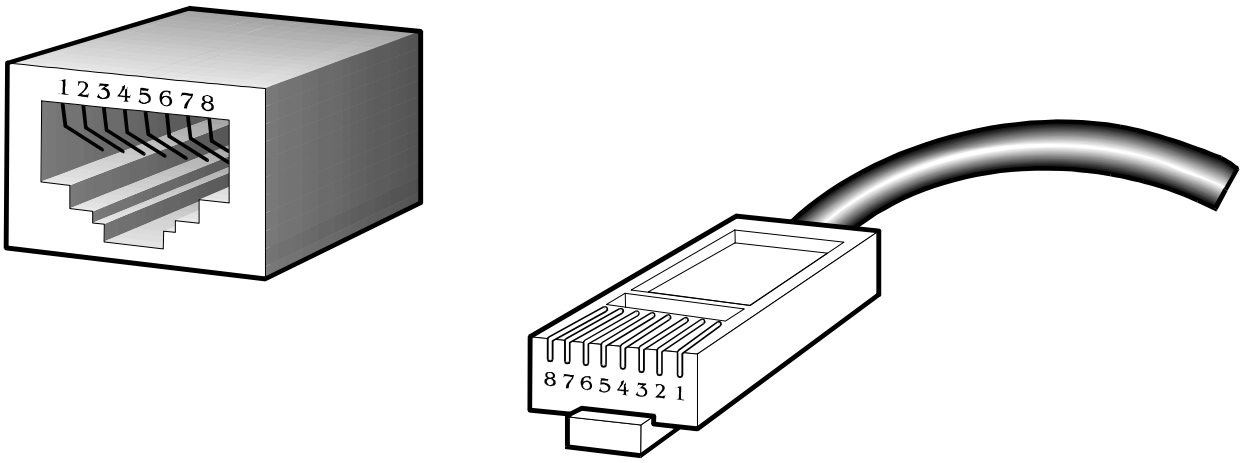
RJ45 pin assignments

10/100Mbps, 10/100BASE-TX

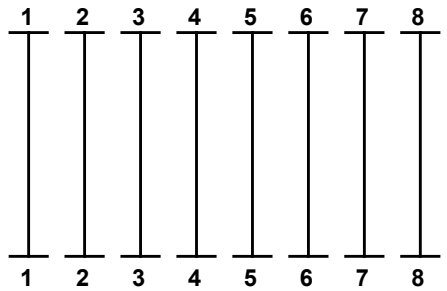
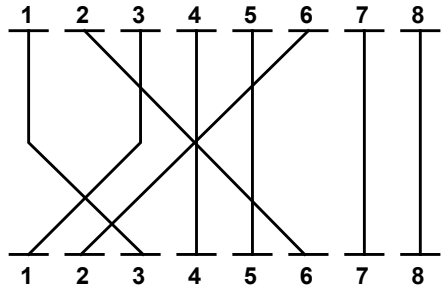
Pin number	MDI	MDI-X	PoE
1	Tx + (transmit)	Rx + (receive)	Positive (VCC+)
2	Tx - (transmit)	Rx - (receive)	Positive (VCC+)
3	Rx + (receive)	Tx + (transmit)	Negative (VCC-)
4, 5		Not used	Not used
6	Rx + (receive)	Tx + (transmit)	Negative (VCC-)
7, 8		Not used	Not used

RJ45 cable pin assignments

The standard RJ45 receptacle/connector:



There are eight wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and the color of the straight cable and crossover cable connection:

Straight Cable		SIDE 1	SIDE 2
	SIDE 1 SIDE 2	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown
Crossover Cable		**SIDE 1**	**SIDE 2**
	SIDE 1 SIDE 2	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown	1 = White / Green 2 = Green 3 = White / Orange 4 = Blue 5 = White / Blue 6 = Orange 7 = White / Brown 8 = Brown

Ensure that connected cables are with the same pin assignment and color as the above diagram before deploying the cables into the network.