

IP/ PoE Extender

User Manual

Model : RP-EC509CP

PoE over Coaxial Extender



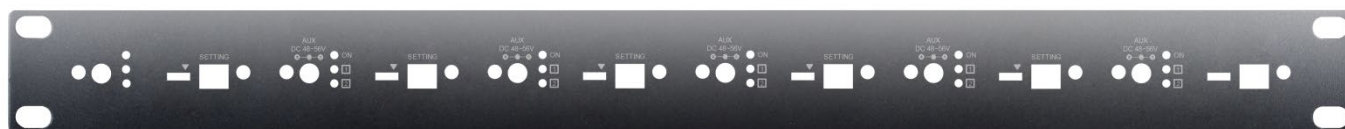
Introduction

RP-EC509CP is a point-to-point PoE (Power over Ethernet) extender that can use single coaxial cable to extend TCP/IP signal and huge amount of power for a remote PoE device, such as speed dome camera, Dante PoE speaker, smart LED...etc., with no external power required. It's a perfect solution for CCTV system, large-scale audio environment, smart building and factory..

Features

- Signal extension up to 800M over coaxial cable.
- Provides up to 90W power for remote PoE device.
- Power source from either a PoE switch or an external power adapter.
- Bandwidth up to 100Mbps.
- Supports Full duplex and half duplex mode and Auto MDI/MDI-X switching.
- Built-in 10KA surge capability tested with 8/20μs.

Optional Model



ECR006-EC509P 19"1U Rack

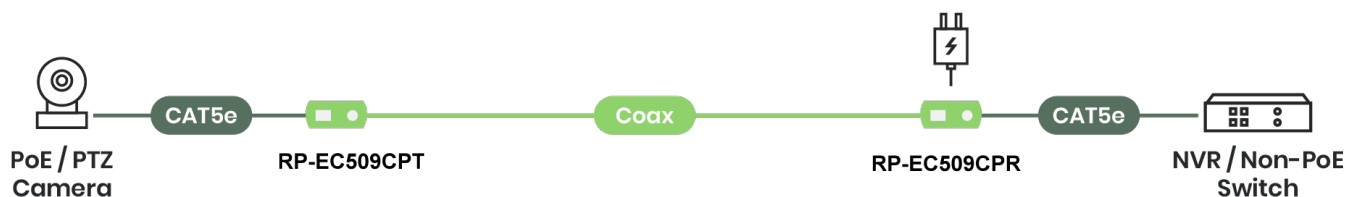
- Organize up to 6 pieces of RP-EC509CP Series and cables.
- Compliant with 1U standard (1.75" or 44mm).
- 19" length and 1.75" height (482.6mm x 44mm).

Installation view

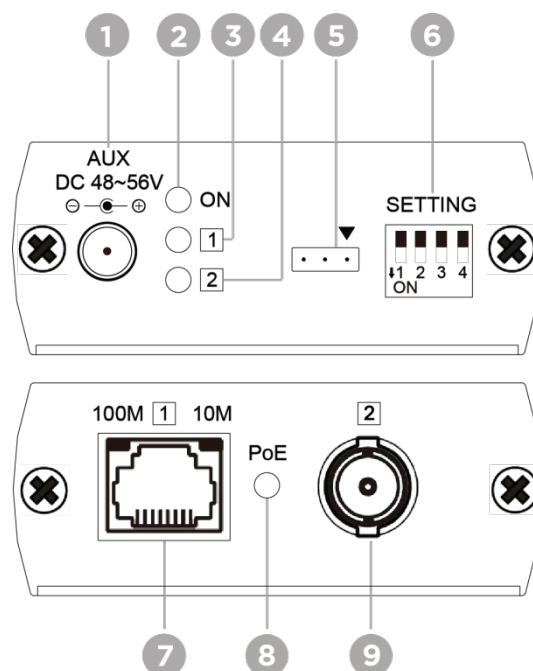
Power from a PoE Switch



Power from a Power Adapter



Panel Review



No.	Interface	Function
1	Power Jack	To connect with a DC48 ~ 56V adapter
2	Power LED Indication	To indicate the power status (Refer to Description 1)
3	Status Indication	☐ Status : Port 1 mode indication (Refer to Description 3)
4	Status Indication	☒ Status : Port 2 mode indication (Refer to Description 3)
5	Jumper	Reserved
6	DIP Switch	To select the desired mode (Refer to Description 5)
7	RJ45 Connector	Port 1 ; To connect with networking devices or RP-EC509 (Refer to Description 4)
8	PoE LED Indication	To indicate the PoE connection status (Refer to Description 2)
9	BNC Connector	Port 2 ; To connect with RP-EC509CPT/ RP-EC509CPR

LED Indication

LED	LED Color	Description
Power	Green ON/ OFF	Power On/ Off
	Breathing	Power Saving
PoE	BLUE ON/ OFF	PoE On/ Off

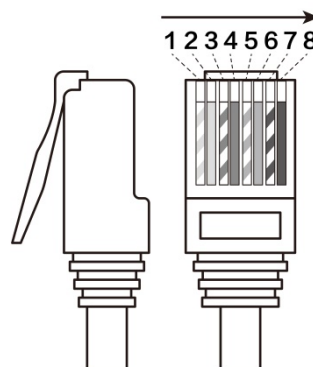
Status Indication

Port 1/2 Mode Status:

LED Color	Description
Blue On	Long Distance
Blue Off	Unlinked/ Ethernet
Blinking	100Base-T1

RJ45 Pinout

PIN	Data	PoE
1. Orange-white	TX+ (DATA1+)	PoE+ (Data Pair)
2. Orange	TX- (DATA1-)	PoE+ (Data Pair)
3. Green-white	RX+ (DATA2+)	PoE- (Data Pair)
4. Blue		PoE+ (Spare Pair)
5. Blue-white		PoE+ (Spare Pair)
6. Green	RX- (DATA2-)	PoE- (Data Pair)
7. Brown-white		PoE- (Spare Pair)
8. Brown		PoE- (Spare Pair)



※10BASE-T, 100BASE-TX and long distance 100Mbps mode use two pairs of wires to transfer data.

※100BASE-T1, long distance 10Mbps mode use one pair of wires to transfer data.

※Power is transferred through four pairs of wire.

DIP Switch Setting

SWITCH	SETTINGS/ FUNCTION							
SW1	Auto Mode (Default)	OFF ↑	Auto Mode with EEE	ON ↓	100Mbps	ON ↓	10Mbps	OFF ↑
SW2		OFF ↑		OFF ↑		ON ↓		ON ↓
SW3		OFF ↑		OFF ↑		ON ↓		ON ↓
SW4		OFF ↑		OFF ↑		ON ↓		ON ↓

- Auto Mode/ Default: Enable Auto-Negotiation which automatically sets up the link speed and transmission protocol.
- Auto+EEE Mode: Energy-Efficient Ethernet based on Auto Mode.

Advanced Mode

Please refer to the chart below to manually set up the Link Speed, and Modes

NO	Function	↑ OFF	↓ ON
1	Link Speed	10Mbps	100Mbps
2	Ethernet	Disable	Enable
3	100BASE-T1	Disable	Enable
4	Long Distance	Disable	Enable

Auto-Negotiation Priority

Priority	Mode
1 (Highest)	Long Distance 100Mbps
2	100BASE-T1
3	Long Distance 10Mbps
4	100BASE-TX Full Duplex
5	100BASE-TX Half Duplex
6	10BASE-T Full Duplex
7 (Lowest)	10BASE-T Half Duplex

Power and Transmission Distance

The reports below show the extension distance and the amount of power transferred by distance. All statistics are from the result of using 24AWG CAT5e, 75Ω RG59/RG6U coaxial cables to test.

- Transmission distance & data rate by different modes

Mode	Data Rate	Distance
100BASE-TX with EEE	100Mbps	100M
100BASE-TX	100Mbps	130M
100BASE-T1	100Mbps	300M
Long Distance	100Mbps	500M
10BASE-T with EEE	10Mbps	100M
10BASE-T	10Mbps	250M
Long Distance	10Mbps	800M

- Transmission distance by different BNC connectors & data rate

Cable	Data Rate	Distance
RG59 (75-3)	100Mbps	500M
RG6U (75-5)	100Mbps	500M
RG59 (75-3)	10Mbps	800M
RG6U (75-5)	10Mbps	800M

Applying RG6U coaxial cable and power from 56V Power Adapter

Input Power	Distance	Output Power
110W (56V/1.96A)	100M	60W
100W (56V/1.79A)	200M	57W
86W (56V/1.54A)	300M	41W
88W (56V/1.59A)	400M	40W
61W (56V/1.09A)	500M	28W
47W (56V/0.84A)	600M	22W
39W (56V/0.69A)	700M	17W
37W (56V/0.67A)	800M	15W
27W (56V/0.48A)	900M	11W
25W (56V/0.45A)	1000M	10W

Applying RG6U coaxial cable and power from 48V Power Adapter

Input Power	Distance	Output Power
96W (48V/2.00A)	100M	50W
95W (48V/1.98A)	200M	47W
77W (48V/1.60A)	300M	30W
72W (48V/1.50A)	400M	28W
43W (48V/0.91A)	500M	19W
37W (48V/0.78A)	600M	15W
31W (48V/0.66A)	700M	11W
25W (48V/0.53A)	800M	9W
22W (48V/0.46A)	800M	7W
24W (48V/0.49A)	1000M	6W

Applying RG59 coaxial cable and power from 56V Power Adapter

Input Power	Distance	Output Power
96W (56V/2.00A)	100M	57W
74W (56V/1.33A)	200M	34W
50W (56V/0.9A)	300M	24W
39W (56V/0.7A)	400M	17W
31.8W (56V/0.57A)	500M	14W
25W (56V/0.45A)	600M	10W
24.6W (56V/0.44A)	700M	9W
18W (56V/0.34A)	800M	7W

Applying RG59 coaxial cable and power from 48V Power Adapter

Input Power	Distance	Output Power
96W (48V/2.00A)	100M	49W
65W (48V/1.37A)	200M	23W
39W (48V/0.81A)	300M	16W
28W (48V/0.58A)	400M	10W
21W (48V/0.44A)	500M	8W
16W (48V/0.33A)	600M	6W
14W (48V/0.29A)	700M	4W
12W (48V/0.26A)	800M	3W

Applying RG6U coaxial cable and power from 802.3at PoE Switch (Zyxel GS1900-8HP)

Input Power	Distance	Output Power
802.3at PoE Switch	100M	20W
	200M	20W
	300M	19W
	400M	17W
	500M	16W
	600M	15W
	700M	14W
	800M	12W
	900M	9W
	1000M	8W

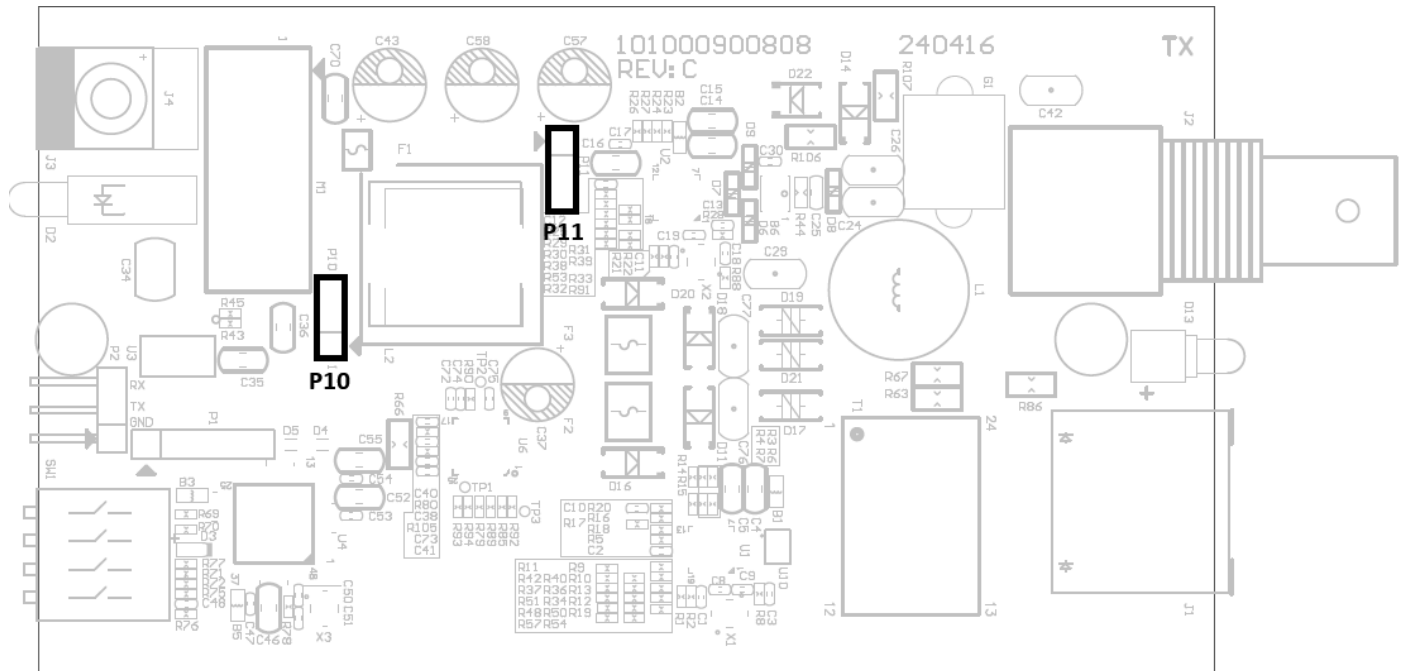
Applying RG59 coaxial cable and power from 802.3at PoE Switch (Zyxel GS1900-8HP)

Input Power	Distance	Output Power
802.3at PoE Switch	100M	19W
	200M	17W
	300M	15W
	400M	13W
	500M	10W
	600M	8W
	700M	7W
	800M	4W

Jumper Settings

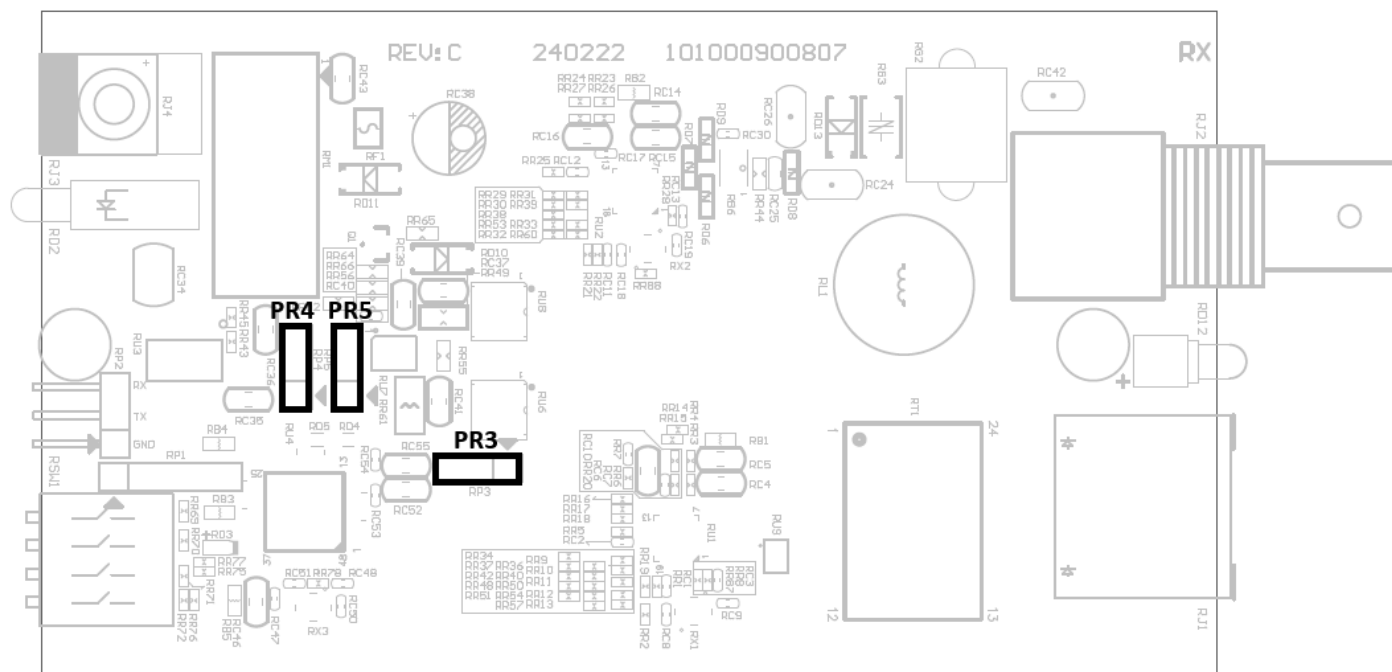
1. We strongly recommend those who have advanced engineering skills to adjust the jumpers.
2. Improper adjustment may make the devices damaged.
3. Any changes should start after turning off the power.

RP-EC509CPT Jumper Settings:



Position	Function	Setting	Description
P10	Boost Voltage	Jumper cap on pin 1 & 2	Enable boost voltage (Default)
		Jumper cap on pin 2 & 3	Disable boost voltage
P11	Voltage Select	Jumper cap on pin 1 & 2	Boosted voltage for PSE (Default)
		Jumper cap on pin 2 & 3	No boost voltage for PSE

RP-EC509CPR Jumper Settings



Position	Function	Setting	Description
RP3	Operation Mode	Jumper cap on pin 1 & 2	PoE power ON (Default)
		Jumper cap on pin 2 & 3	PoE power OFF
RP4	PoE Class Setting	Jumper cap on pin 1 & 2	Support 802.3bt 90W (Default)
RP5		Jumper cap on pin 2 & 3	Support 802.3bt 60W

Caution

- Using high-quality CAT.5e UTP / STP / FTP □ CAT.6 UTP cables and high-quality 75Ωis coaxial cables are recommended. The thicker gauge of wire, the smaller the data loss. Using pure copper Ethernet and Coaxial cable is recommended.
- Ensure to connect all cables before power on to prevent voltage spikes.
- DO NOT connect PoE and auxiliary power at the same time, check the Jumper Settings section.

Package Includes

No.	Item	Quantity
1	RP-EC509CPT	x 1
2	RP-EC509CPR	x 1
3	Screw	x 4
4	Screw Plug	x 4

Specification

Specification		
ITEM	RP-EC509CPR	RP-EC509CPT
Support		
Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3bw 100BASE-T1 Ethernet IEEE 802.3 N-Way Auto-Negotiation IEEE 802.3x Full Duplex Operation and Flow Control IEEE 802.3az Energy Efficient Ethernet IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3bt Power over Ethernet Plus Plus	
Network Bandwidth	10/ 100 Mbps	
Max. Transmission Distance	10Mbps at 800M, 100Mbps at 500M	
Ports & Interfaces		
Data Input	1 x 75Ω BNC	1 x RJ45
Data Output	1 x RJ45	1 x 75Ω BNC
Power Interface	1 x (5.5 x 2.1mm) DC Jack	1 x (5.5 x 2.1mm) DC Jack
Power		
Power Supply	48 ~ 56V Regulated	12 ~ 56V Regulated
Power Consumption	1W	1W
Ambient Temperature		
Operation	0 to 85℃	
Storage	-20 to 85℃	
Humidity	95%	
Physical Characteristics		
Dimensions	67 x 135 x 27mm	67 x 135 x 27mm
Weight	205g	215g