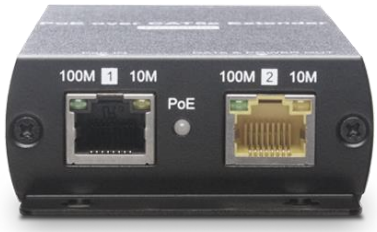
IP/ PoE Extender

User Manual

Model : IP09P

PoE over CAT5e Extender



Introduction

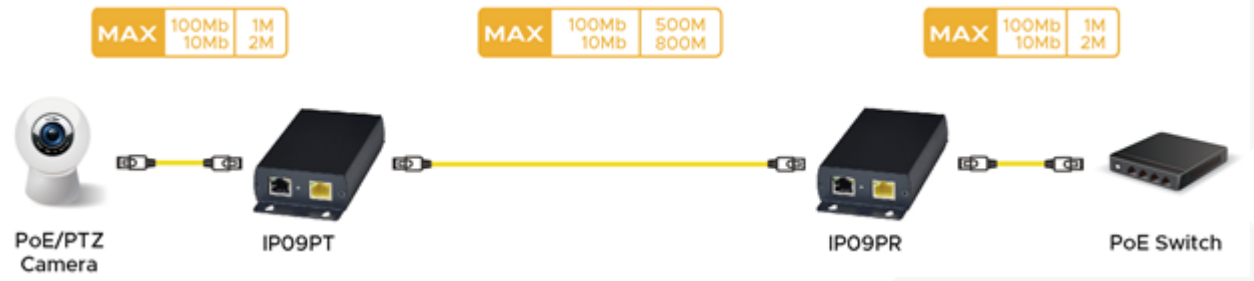
IP09P is a point-to-point PoE (Power over Ethernet) extender that can use single CAT5e (or greater) cable to extend TCP/IP signal and huge amount of power for a remote PoE device, such as speed dome camera, Dante PoE speaker, smart LED...etc., with no external power required. It's a perfect solution for CCTV system, large-scale audio environment, smart building and factory.

Features

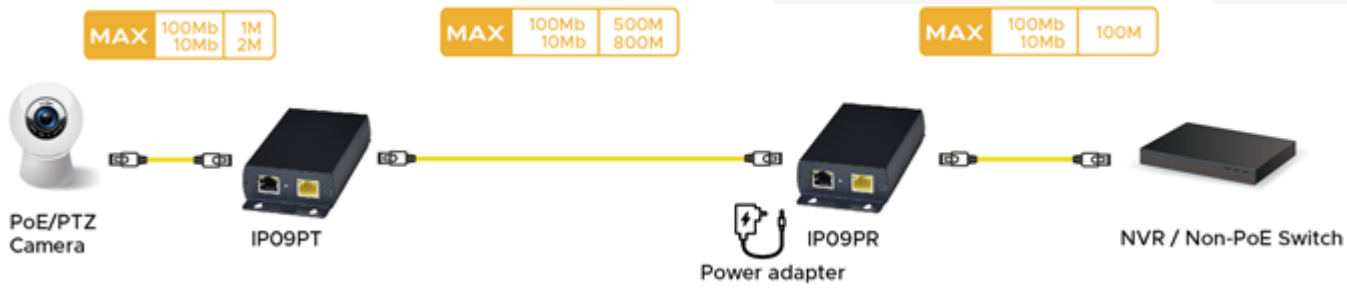
- Signal extension up to 800M over CAT5e cable.
- Provides up to 90W power for remote PoE device.
- Power source from either a PoE switch or an external power adapter.
- Bandwidth up to 100Mbps.
- Supports Full duplex and half duplex mode and Auto MDI/MDI-X switching.
- Built-in 30kV ESD, 40A EFT, and 30A surge at RJ45 side.

Installation view

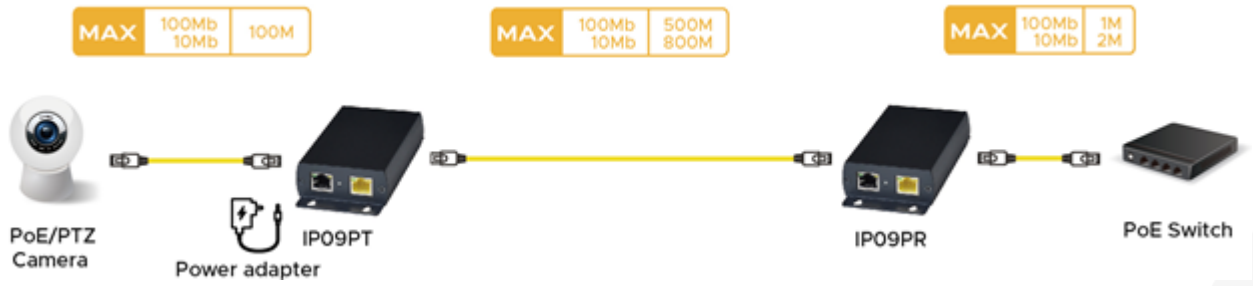
1 Power from a PoE switch



2 Power from a power adapter

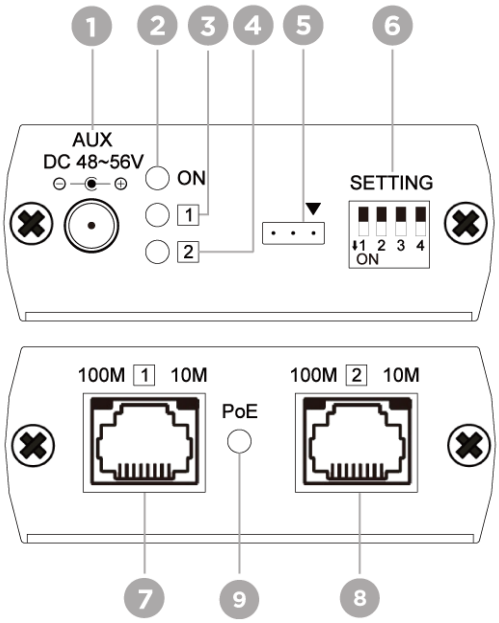


3 Extra Power supply at the transmitter side for additional 100M extension



4 Extra-long distance PoE Extension

Panel Review



No.	Interface	Function
1	Power Jack	To connect with DC48 or 56V power adapter when connecting to non-PoE device. Power input maximum up to 110W.
2	Power LED Indication	To indicate the power status (Refer to Description 1)
3	Port 1 Status Indication	Port 1 mode indication (Refer to Description 3)
4	Port 2 Status Indication	Port 2 mode indication (Refer to Description 3)
5	Console Port	To update firmware.
6	DIP Switch	To select the desired mode (Refer to Description 5)
7	RJ45 Connector	Port 1；To connect with an networking device or IP09P (Refer to Description 4)
8	RJ45 Connector	Port 2；To connect with IP09PT/ IP09PR
9	PoE LED Indication	To indicate the PoE connection status (Refer to Description 2)

Description

1 Power LED Indication

Green ON	Green OFF	Breathe
Power On	Power Off	Power Saving

2 PoE LED Indicator

Blue ON	Blue OFF
Connect to PoE device	Connect to Non-PoE device

3 Status Indication

Port 1 Status

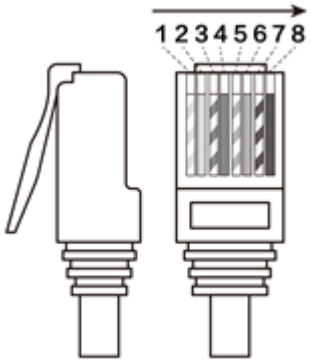
Blue ON	Blue OFF	Light Blinking	Blink twice
Long Distance	Unlinked or Ethernet	100Base-T1	Hardware Failure

Port 2 Status

Blue ON	Blue OFF	Light Blinking	Blink twice
Long Distance	Unlinked	100Base-T1	Hardware Failure

3.1 Once the port 1 and 2 remain unlinked, the IP09C will automatically turn to Power Saving mode.

4 RJ45 Pinout



568B Pinout Order	RJ45 Port 1 (Black)		RJ45 Port 2 (Yellow)	
	Data	PoE	Data	PoE
1. Orange-white	TX+ (DATA1+)	PoE+ (Data Pair)	DATA1+	Power +
2. Orange	TX- (DATA1-)	PoE+ (Data Pair)	DATA1-	Power +
3. Green-white	RX+ (DATA2+)	PoE- (Data Pair)	DATA2+	Power -
4. Blue		PoE+ (Spare Pair)		Power +
5. Blue-white		PoE+ (Spare Pair)		Power +
6. Green	RX- (DATA2-)	PoE- (Data Pair)	DATA2-	Power -
7. Brown-white		PoE- (Spare Pair)		Power -
8. Brown		PoE- (Spare Pair)		Power -

4.1 10BASE-T, 100BASE-TX and long distance 100Mbps mode use two pairs of wires to transfer data.

4.2 100BASE-T1, long-distance 10Mbps mode use one pair of wires to transfer data.

4.3 Power is transferred through four pairs of wire.

5 Power and Transmission Distance

The reports below show the extension distance and the amount of power transferred by distance. All statistics get from the result of using the COMMSCOPE 57535-2 (CAT5e 24AWG) cables to test.

5.1 Mode & Data Rate by transmission distance

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

5.2 Power from 56V Power Adapter

Input Power	Distance	Output Power
95W (56V/1.7A)	200M	50W
72W (56V/1.3A)	300M	38W
56W (56V/1.0A)	400M	29W
45W (56V/0.8A)	500M	23W
40W (56V/0.7A)	600M	20W
32W (56V/0.57A)	700M	16W
28W (56V/0.5A)	800M	14W

5.3 Power from 48V Power Adapter

Input Power	Distance	Output Power
64W (48V/1.4A)	200M	36W
44W (48V/0.9A)	300M	24W
34W (48V/0.7A)	400M	19W
29W (48V/0.6A)	500M	15W
22W (48V/0.45A)	600M	12W
21W (48V/0.44A)	700M	10W
17W (48V/0.35)	800M	8W

5.4 Power from IEEE 802.3at PoE Switch

Input Power	Distance	Output Power
IEEE 802.3at PoE Switch	200M	21W
	300M	19W
	400M	17.5W
	500M	16.5W
	600M	15W
	700M	13W
	800M	10W

6 DIP Switch Setting

6.1 Port 1 can be set manually and automatically but Port2 can only set automatically.

SWITCH	SETTINGS/ FUNCTION							
SW 1	Auto Mode (Default)	OFF ↑	Auto Mode with EEE	ON ↓	100Mbps	ON ↓	10Mbps	OFF ↑
SW 2		OFF ↑		OFF ↑		ON ↓		ON ↓
SW 3		OFF ↑		OFF ↑		ON ↓		ON ↓
SW 4		OFF ↑		OFF ↑		ON ↓		ON ↓

6.2 Auto Mode/ Default: Automatically set up the link speed and transmssion protocol.

6.3 Auto+EEE Mode: Energy-Efficient Ethernet based on Auto Mode.

6.4 When all DIP switches are ON, the data rate will support 100Mbps at all modes.

6.5 When Switch 1 is OFF and Switch 2, 3, 4 are ON, the data rate will support 10Mbps at all modes.

6.6 When data rate is 10Mbps at 100BASE-T1 mode, the mode will automatically switch to Long-Distance mode and data rate remains 10Mbps.

6.7 Port 2 will auto-negotiate to perfect the connection.

6.8 When Port 1 is connected with a networking device over 500M away or the auto-mode cannot work properly, please follow the chart below to manually set up data rates and modes.

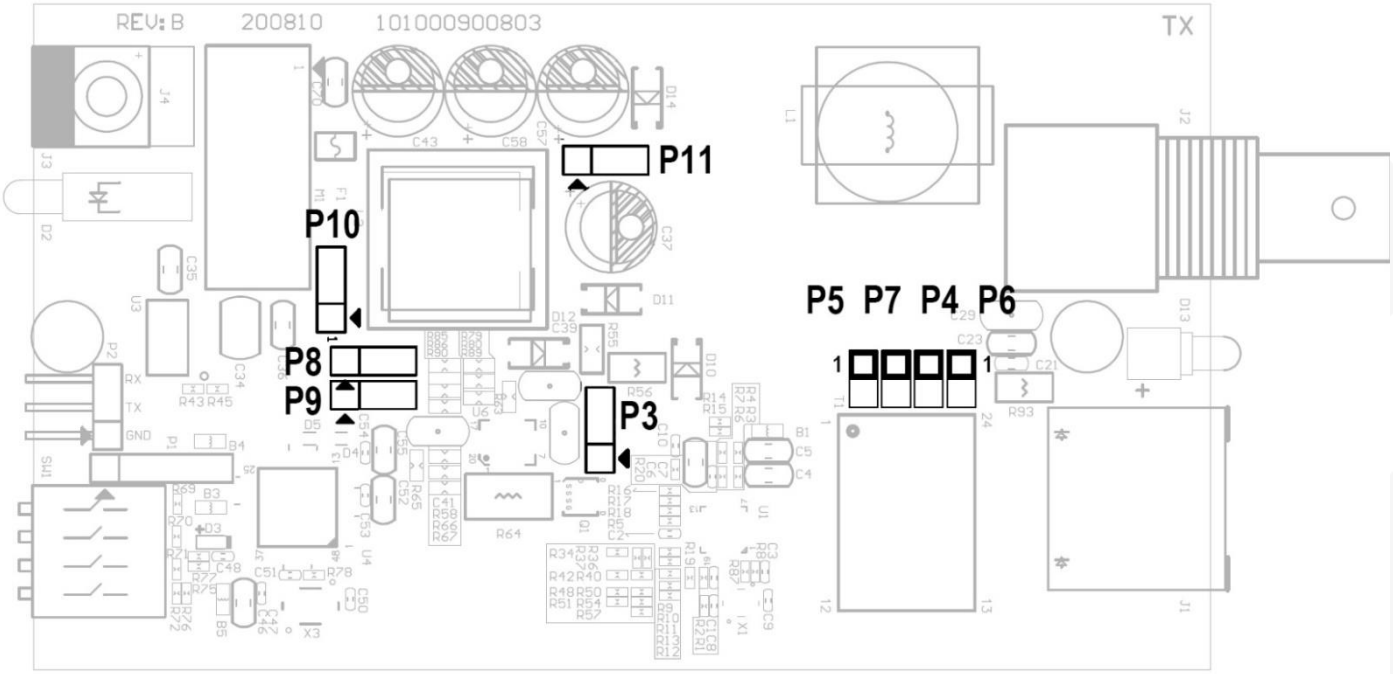
SWITCH	Function	↑ OFF	↓ ON
SW 1	Link Speed	10Mbps	100Mbps
SW 2	Standard Ethernet	Disable	Enable
SW 3	100BASE-T1	Disable	Enable
SW 4	Long Distance	Disable	Enable

6.9 Port 1 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

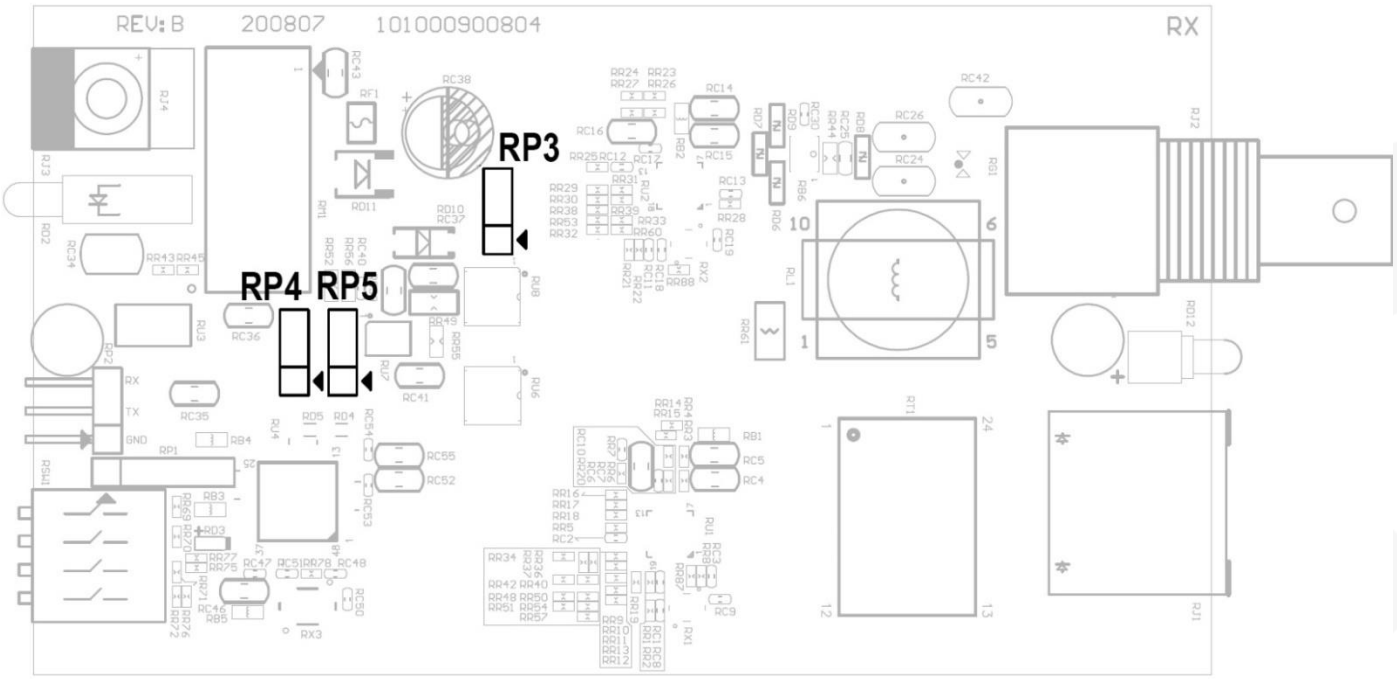
Jumper Settings

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.
4. IP09PT Jumper Settings:



Position	Function	Setting		Description
P3	Operation Mode	Jumper cap on pin 1 & 2		PoE handshake ON (Default)
		Jumper cap on pin 2 & 3		PoE handshake OFF
P4	Data Pair A Power Settings	Jumper cap ON	Mode A (End-spin)	Power over PIN 1,2 (Default)
		Jumper cap OFF		Power OFF
P5	Data Pair B Power Settings	Jumper cap ON		Power over PIN 3,6 (Default)
		Jumper cap OFF		Power OFF
P6	Spare Pair C Power Settings	Jumper cap ON	Mode B (Mid-spin)	Power over PIN 4,5 (Default)
		Jumper cap OFF		Power OFF
P7	Spare Pair D Power Settings	Jumper cap ON		Power over PIN 7,8 (Default)
		Jumper cap OFF		Power OFF
P8	PoE Mode	Jumper cap on pin 1 & 2		On Standard PoE Mode (Default)
		Jumper cap on pin 2 & 3		On Legacy PoE Mode
P9	Dual PD Mode	Jumper cap on pin 1 & 2		Power over 8 PINs (Default)
		Jumper cap on pin 2 & 3		Dual PD mode OFF
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

IP09PR 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

Package Included

1 x IP09PT
1 x IP09PR
4 x Screw
4 x Screw Plug

Specification:

ITEM	IP09PR	IP09PT
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		
Input	1 x RJ45	1 x RJ45
Output	1 x RJ45	1 x RJ45
Power Interface	1 x (5.5 x 2.1mm) DC Jack	
Power		
Power Supply	DC 48 ~ 56V Regulated	DC 12 ~ 56V Regulated
Power Consumption	1W	1W
Ambient Temperature		
Operation	0 ~ 85°C	
Storage	-20 to 85°C	
Humidity	95%	
Physical Characteristics		
Dimensions	67 x 135 x 27mm	67 x 135 x 27mm
Weight	205g	215g