

INJ-IG01-PH
INJ-IG01-PHE
 Industrial Grade Gigabit Ethernet PoE Injector



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Introduction

INJ-IG01-PH(E) is an industrial grade, single port, gigabit Ethernet PoE (Power over Ethernet) injector. PoE technology describes a system to pass electrical power safely, along with data, on Ethernet cabling. The original IEEE 802.3af-2003 PoE standard provides up to 15.4W of DC power to each device. The updated IEEE 802.3at-2009 PoE standard also known as PoE+ or PoE plus, provides up to 30W of power. Additionally, INJ-IG01-PH(E) can provide up to 60W/72W through the non-standard use of all 4 pairs of category 5e cable.

Housed in a rugged DIN rail or wall mountable enclosure, this product is designed for harsh environments, such as industrial networking, intelligent transportation systems (ITS) and is also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. Standard operating temperature range models (-10°C to 60°C) and wide operating temperature range models (-40°C to 75°C) fulfill the special needs of industrial automation applications.

Features

- Provide one port IEEE 802.3af/at PoE
- Provide power up to 36W (2 pair mode) and 72W (4 pair mode)
- Function settings via DIP switch for easy installation
- 48VDC (44VDC~57VDC) input power
- Smart LED indication
- Support auto detection and classification for PoE application
- Support short-circuit and current-overloading protection for PoE application
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4
- Wide operating temperature range -40°C~75°C (INJ-IG01-PHE)
- IP30 rugged metal housing

Specifications

Ethernet Interface

- Data input: Cat. 5e (or above) RJ-45 (shielded) 10/100/1000M x 1
- Data + PoE output: Cat. 5e (or above) RJ-45 (shielded) 10/100/1000M x 1
- Standards: IEEE 802.3, 802.3u, 802.3ab
- PoE Standards: IEEE 802.3af, IEEE 802.3at

Specifications (cont.)

Power

- 48VDC (44VDC~57VDC) input power (Use DC 50V or above for IEEE 802.3at application)
- Reverse polarity protection: Yes
- Overload protection: Yes
- Connector: terminal block
- PoE Power Output: Ultra High Power 60W/72W PoE output
 IEEE 802.3at 30W PoE output
 IEEE 802.3af 15.4W PoE output
- Power Consumption:

PoE Mode	In 30W Mode (2 Pair)	In 60W Mode (4 Pair)
Power Consumption		
Input Power Consumption (Input 48VDC)	31.1W	62.8W
Output Power	30W	60W

Mechanical

- Water & Dust Proof: IP30 Protection
- Dimensions: 70 mm (D) x 30 mm (W) x 103 mm (H)
- Mounting: DIN-Rail, Wall Mount (kits included)
- Weight: 215 g

Environmental

- Operating Temperature: -10°C~60°C (INJ-IG01-PH)
 -40°C~75°C (INJ-IG01-PHE)
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (Non-condensing)

Certifications

- EMC: CE
- EMI (Electromagnetic Interference): FCC, FCC Part 15 Subpart B Class A, CE EN55022 Class A
- Railway Traffic: EN50121-4 (Pending)
- Immunity for Heavy Industrial Environment: EN61000-6-2
- Emission for Heavy Industrial Environment: EN61000-6-4
- EMS (Electromagnetic Susceptibility) Protection Level:
 - EN61000-4-2 (ESD) Level 3, Criteria B
 - EN61000-4-3 (RS) Level 3, Criteria A
 - EN61000-4-4 (Burst) Level 3, Criteria A
 - EN61000-4-5 (Surge) Level 3, Criteria B
 - EN61000-4-6 (CS) Level 3, Criteria A
 - EN61000-4-8 (PFMF, Magnetic Field) Field Length: 300A/m, Criteria A
- Shock: EN60068-2-27
- Freefall: EN60068-2-32
- Vibration: EN60068-2-6
- MTBF (MIL-HDBK-217): 409,994 hours

Connectors

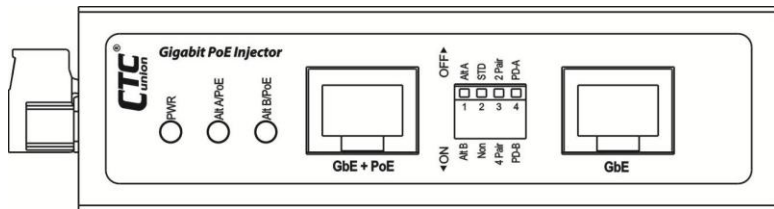


Figure 1. Front Panel

INJ-IG01-PH(E) has two standard shielded RJ-45 connectors for Ethernet cable connections. The connector labeled GbE (Data input) will connect to Ethernet switch, while the connector labeled GbE+PoE (Data + PoE output) will connect to PoE PD device such as IP Camera, Access Point, IP Phone, Digital Signage or any other PoE power device. The PoE mode is selected via a 4-pole DIP switch. Please see the next page for the settings of the PoE operation modes.

RJ-45 Ethernet Port Pinouts

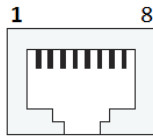


Figure 2. RJ-45 Ethernet Port Pinouts

RJ-45 Ethernet & PoE Pin Assignments

Pin No.	RJ-45 Ethernet		PoE Output		
	100Base-TX	1000Base-T	2 Pair/Alt A	2 Pair/Alt B	4 Pair
1	RX+	TRD 0+	V+		V+
2	RX-	TRD 0-	V+		V+
3	TX+	TRD 1+	V-		V-
4	-	TRD 2+		V+	V+
5	-	TRD 2-		V+	V+
6	TX-	TRD 1-	V-		V-
7	-	TRD 3+		V-	V-
8	-	TRD 3-		V-	V-

NOTE: For 2/4 Pair & standard/high power DIP switch settings, please refer to page 4.

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Power Connection

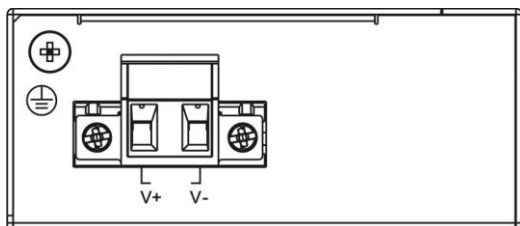


Figure 3. Terminal Block

INJ-IG01-PH(E) is powered up by an external power supply (44VDC~57VDC). To connect to the power supply, insert V+ and V- wire into power contacts. Then, tighten the wire-clamp screws to prevent power wires from loosening. If the power supply is connected correctly, then the PWR LED on the front panel will light in green.

LED Indicators

LED	Color	Description
PWR	Green	Lit if power is connected and active.
	Off	Power is not connected.
Alt A/PoE	Green	Lit when a PD device is connected to the GbE+PoE RJ-45 connector and the Injector is feeding power in Alt A.
	Blinking	One of the Injector faults (overload, short circuit or over-temperature) occurs.
Alt B/PoE	Green	Lit when a PD device is connected to the GbE+PoE RJ-45 connector and the Injector is feeding power in Alt B mode.
	Blinking	One of the Injector faults (overload, short circuit or over-temperature) occurs.

NOTE: If both Alt A and Alt B LED indicator are lit in Green, this indicates that the Injector operates in 4 Pair high power application.

DIP Switch Function Descriptions

DIP No.	Status	Setting	Function Description
1	OFF *	Alt A	<ul style="list-style-type: none"> In 2 Pair mode, the injector feeds power on the 1&2, 3&6 wire pairs. In 4 Pair mode, this setting enables the injector to use 1&2, 3&6 wire pairs to handle handshaking process.
	ON	Alt B	<ul style="list-style-type: none"> In 2 Pair mode, the injector feeds power on the 4&5, 7&8 wire pairs. In 4 Pair mode, this setting enables the injector to use 4&5, 7&8 wire pairs to handle handshaking process.
2	OFF *	STD	The injector provides PoE output 15.4W or 30W. Also see DIP Switch 1.
	ON	Non	The injector provides non-standard PoE output up to 36W. Also see DIP Switch 1.
3	OFF *	2 Pair	Feeding power via data pair (Alt A) or spare pair (Alt B). Also see DIP Switch 1 and 2.
	ON	4 Pair	Feeding power via both data pair (Alt A) and spare pair (Alt B). Also see DIP Switch 4.
4	OFF *	PD-A	This mode is compatible with the general PD devices at either 2 pair mode (DIP No. 3 OFF) or 4 pair mode (DIP No. 3 ON). Also see NOTE 2.
	ON	PD-B	This mode is compatible with particular PD devices at high-power 4 pair mode (DIP No. 3 ON) installation such as AXIS® Q60 series.

NOTE 1: By default, all DIP switches are set to OFF (marked with *).

NOTE 2: For 2 Pair mode, DIP Switch 4 must be set to OFF.

NOTE 3: After changing the DIP switch setting, you must restart the device to activate the setting.

PoE Power & DIP Switch Settings

DIP No.	Alt A 15.4W/30W	Alt B 15.4W/30W	Alt A 36W	Alt B 36W	4 Pair PD-A 60W	4 Pair PD-B 60W	4 Pair PD-A 72W	4 Pair PD-B 72W	4 Pair PD-A 60W	4 Pair PD-B 60W	4 Pair PD-A 72W	4 Pair PD-B 72W
1	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
2	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
3	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON
4	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON

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Installation

The injector comes with both wall mount and DIN rail hardware brackets. When installing the DIN rail bracket, be sure to correctly align the orientation pin.

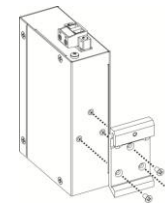


Figure 4. DIN Rail

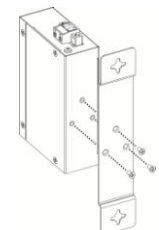


Figure 5. Wall Mounting

The injector with DIN Rail bracket has a steel spring in the upper rail of the bracket. This spring is compressed for mounting and un-mounting by applying downward force.

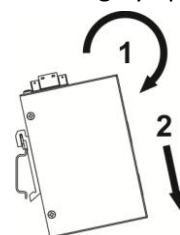


Figure 6. Mounting

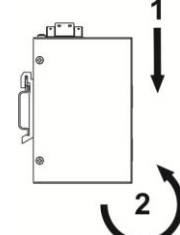


Figure 7. Un-mounting

Application

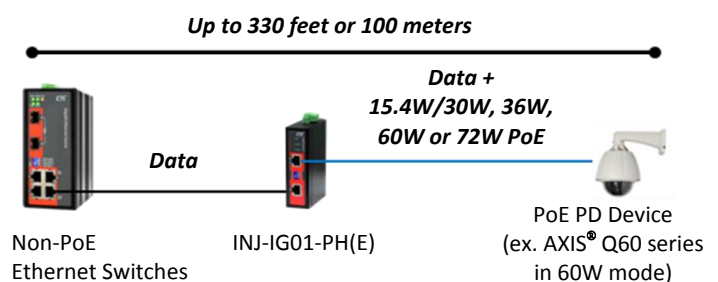


Figure 8. INJ-IG01-PH(E) Injector Application