

# JX-80

# Multifunction Power Analyser

## Description

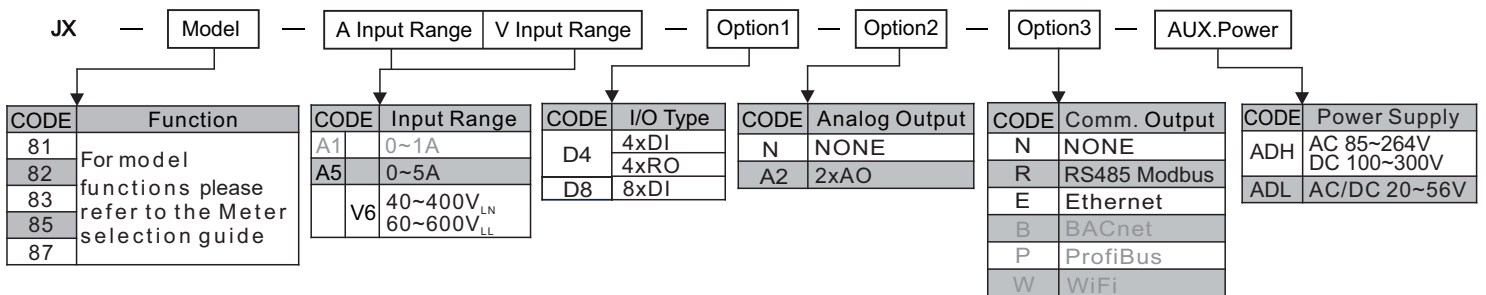
Our JX-80 multifunction power analyser provides high accuracy single phase and three phase energy measuring and display, energy accumulation, power quality analysis, data logging and data communication. Our JX-80 series meters are able to measure bi-directional, four quadrants kWh and kVarh. It provides maximum/minimum records for power usage and power demand parameters. The hardware features a built in a RS485 Modbus communication port , 4 digital inputs, 2 relay outputs, LCM and 4MB flash for data-logging. In addition , also provide TOU , voltage and current THD, harmonics up to the 63rd and auto wiring change via software .



## Applications

- Energy management system
- Factory automation
- Intelligent power panel
- Industrial automation
- Power Grid automation
- Community power monitoring
- Intelligent green building

## Ordering Information



## Meter Selection Guide

Features		81	82	83	85	87
Voltage	V <sub>12</sub> V <sub>23</sub> V <sub>31</sub> V <sub>LL,Avg</sub> / V <sub>1</sub> V <sub>2</sub> V <sub>3</sub> V <sub>LN,Avg</sub>	●	●	●	●	●
Current	I <sub>1</sub> I <sub>2</sub> I <sub>3</sub> I <sub>Avg</sub> I <sub>N</sub>	●	●	●	●	●
Active Power	Four quadrants P <sub>1</sub> P <sub>2</sub> P <sub>3</sub> ΣP	●	●	●	●	●
Reactive Power	Four quadrants Q <sub>1</sub> Q <sub>2</sub> Q <sub>3</sub> ΣQ	●	●	●	●	●
Apparent Power	S <sub>1</sub> S <sub>2</sub> S <sub>3</sub> ΣS	●	●	●	●	●
Power Factor	PF <sub>1</sub> PF <sub>2</sub> PF <sub>3</sub> PF <sub>Avg</sub>	●	●	●	●	●
Frequency	Hz	●	●	●	●	●
Active Energy	Wh_Imp Wh_Exp Wh_Total Wh_Net	●	●	●	●	●
Reactive Energy	Varh_Imp Varh_Exp Varh_Total Varh_Net	●	●	●	●	●
Apparent Energy	VAh	●	●	●	●	●
THD/Voltage	THD <sub>V12</sub> THD <sub>V23</sub> THD <sub>V31</sub> THD <sub>V,Avg</sub>	●	●	●	●	●
THD/Current	THD <sub>I1</sub> THD <sub>I2</sub> THD <sub>I3</sub> THD <sub>I,Avg</sub>	●	●	●	●	●
Individual harmonic	2nd~63rd Individual harmonics		●	●	●	●
Phasor diagram	Voltage phasor diagram , Current phasor diagram		●	●	●	●
Waveform capture	Voltage waveform , Current waveform				●	●
Demand	Current Demand, Power Demand		●	●	●	●
Max. Demand Value	Max. Demand of Current & Power and time stamp		●	●	●	●
Max/Min Values	Maximum / Minimum values and time stamp	●	●	●	●	●
Power record	Swells voltage \ Falling voltage include time and setting					●
Event record	FREQ, V1, V2, V3, V_AVG, U12, U23, U31, U_AVG, I1, I2, I3, I_AVG, IN, P1, P2, P3, P_SUM, Q1, Q2, Q3, Q_SUM, S1, S2, S3, S_SUM, PF1, PF2, PF3, PF_AVG, Unbl_V, Unbl_I, LCR, THD_V1, THD_V2, THD_V3, THD_V, THD_I1, THD_I2, THD_I3, THD_I, DM_P, DM_Q, DM_S, DM_I1, DM_I2, DM_I3		●	●	●	●
Data record	FREQ, V1, V2, V3, V_AVG, U12, U23, U31, U_AVG, I1, I2, I3, I_AVG, IN, P1, P2, P3, P_SUM, Q1, Q2, Q3, Q_SUM, S1, S2, S3, S_SUM, PF1, PF2, PF3, PF_AVG, Unbl_V, Unbl_I, Phasor Diagram_V, Phasor Diagram_I, THD_V.MAX, THD_V.MIN, V_AVG.TH.D.MAX, V_AVG.TH.D.MIN, THD_I.MAX, THD_I.MIN, I_AVG.TH.D.MAX, I_AVG.TH.D.MIN, DM_P, DM_Q, DM_S, DM_I.MAX, DM_I.MIN		●	●	●	●
External Control Input	ECI1 ECI2 ECI3 ECI4 ECI5 ECI6 ECI7 ECI8	●	●	●	●	●
Digital Output	PO1 PO2	◎	◎	◎	◎	◎
Relay Output	RO1 RO2 RO3 RO4	◎	◎	◎	◎	◎
Analog Output	AO1 AO2	◎	◎	◎	◎	◎
Time of Use	4 seasons, 8 tariff settings per day, Per year or up to 5 years setting			●	●	●
Date	Year, Month, Day, Hour, Minute, Second	●	●	●	●	●

## Accuracy & Resolutions

PARAMETER	ACCURACY	RESOLUTION	MEASUREMENT RANGE
Voltage	0.1%	0.1V	40.0~400.0Vac(VLN)
Current	0.1%	0.001A	1%~120% CT rating current
Neutral Current	0.5%	0.001A	1%~120% CT rating current
Active Power	0.25%	1W	-999999999~999999999W
Reactive Power	0.25%	1Var	-999999999~999999999Var
Apparent Power	0.25%	1VA	0~999999999VA
Power Factor	0.25%	0.001	-0.020~+1.000~0.020
Frequency	0.2%	0.01Hz	45.00~65.00Hz
Active Energy	0.5%	0.1kWh	0~99999999.9kWh
Reactive Energy	0.5%	0.1kVarh	0~99999999.9kVarh
Apparent Energy	0.5%	0.1kVAh	0~99999999.9kVAh
THD	1.0%	0.1%	0~100.0%
Individual harmonic	1.0%	0.1%	0~100.0%
Unbalance	0.5%	0.1%	0~300.0%

## Technical Specifications

### Electrical Characteristics

Measurement: True RMS  
 Sampling: 256 point/Cycle  
 Metering system type: 1P2W, 1P3W, 3P3W, (1、2、3CT)、3P4W (1、3CT); Balance/Unbalance

Input range: Voltage:40~400V<sub>LN</sub>; 60~600V<sub>LL</sub>  
 PT Primary side ratio:100~1200000V  
 PT Secondary side ratio:50~600V  
 Current:0~5A, (Optional:0~1A)  
 CT Primary side ratio: 5~9999A

Metering over range: Voltage:2x rated voltage continuous ;  
 2500V,1sec  
 Current:2x rated current continuous ;  
 20x rated current 1sec

Input load: Voltage:<0.2VA ; Current:<0.1VA

### Power Quality

THD: Total harmonic distortion for voltage and current

Individual harmonic: 2nd~63rd individual harmonics for voltage and current

### Relay Output(RO)

Relay contact form: 4 sets SPST(1a) ; 5A/250Vac□5A/30Vdc ;  
 Relay action mode: Hi / Lo/Hi.Hold / Lo.Hold /DO  
 Set points: Up to 48 parameters of power and Demand for assign

### Analog Output(AO)

Output channel: 2 channels  
 Signal output: Voltage:0~5V /0~10V  
 Current: 0~20mA / 4~20mA / 0~10mA

Output capacity: Voltage: ≥ 1000Ω ; Current: ≤ 530Ω

Accuracy: ± 0.1% of F.S.; 16 bits DA converter

Ripple rate: ≤ ± 0.1% of F.S.

Response time: ≤ 100mS.(input: 10~90%)

### External Control Input (ECI)

Input mode: 4 channels or 8 channels ECI input ;  
 mechanical contact open collector input are available

Input function: Can set up for DI /Demand reset /  
 Max. Demand reset / Energy values reset /  
 Max. and Min. values reset / Relay reset  
 0~99 (x8mS) programable

Debouncing time:

### Pulse Output (PO)

Output mode: 2 channels open collect(O.C.);  
 Output: 30Vdc, 30mA(max)

Output frequency: 40Hz (max)

Pulse divider: 1~9999 (1 Pulse= 0.1kWh; if set 100,  
 1Pulse= 10.0kWh)

Pulse width: 0~5000(x 4mS), 0 is duty cycle 50%

### TOU (JX-83\85\87 only)

4 Seasons: 1~4 seasons per year  
 8 Tariff setting: 1~8 each day(For peak, mid peak, off peak  
 per day for billing)

Parameters of TOU : RE-Exp \ RE-Tota \ SE-Total

Yearly setting: Tariff setting for 1 year or set up to 5 years

### Data Record

Waveform capture: Each phase of voltage and current sampling  
 are 64 points per cycle and continues record  
 16 cycles

Data logging: Load setting from previous saved file or set  
 according to needs. Time interval from  
 1~32767 for second, minute, hour or day,  
 depend on value record needs.

Event record: Recording abnormal event and timestamp

Memory storage: 4MB Flash ROM

### RS485 communication (Second RS485 is optional)

Output set: 2 ports  
 Protocol: Modbus RTU mode  
 Baud rate: 1200/2400/4800/9600/19200/38400 bps  
 Data bits: 8 bits  
 Parity: None / Even / Odd  
 Stop bit: 1 or 2  
 Address: 1~247  
 Distance: 1200M max  
 Terminate resistor: 120~300Ω/0.25W(typical: 150Ω)

### Ethernet (Optional)

Network interface: 10M / 100M BASE-T  
 Protocol: TCP / IP , UDP

### WiFi (Optional)

Protocol: IEEE 802.11 b/g/n Standard

### BACnet (Optional)

Protocol: BACnet Protocol

### Environmental Characteristics

Operating Temp.: 0~60℃  
 Humidity rating: 5~95%RH, Non-condensing  
 Temp. coefficient: ≤ 100 PPM/℃  
 Storage Temp.: -10~70℃  
 IP Enclosure: Front panel: IEC 529 (IP50) ; Housing: IP20

### Power Supply

Range: ADH:AC 85~264V / DC 100~300V  
 ADL : AC/DC 20~56V

Power consumption: AC: ≤ 15VA @ 230V / DC: ≤ 5W

### Mechanical Characteristics

Dimensions: 96mm(W)x96mm(H)x101mm(L)  
 Panel cutout: 90mm(W)x90mm(H)  
 Material: ABS, Black (with fire-retardant)  
 Mounting: Panel mounting  
 Wire terminal: PA 66 (UL 94V-0)  
 Voltage input:  
 AWG:28~12 / 0.2~2.5mm<sup>2</sup>  
 Screw Torque Value:M2.5 / 5.202kgf.cm(Max)  
 Current input:  
 AWG:22~12 / 0.5~3.0mm<sup>2</sup>  
 Screw Torque Value:M4 / 12.24kgf.cm(Max)  
 Other input:  
 AWG:28~16 / 0.5~1.5mm<sup>2</sup>  
 Screw Torque Value:M2 / 2.04kgf.cm(Max)  
 Weight: ≤ 600g

### Safety

Isolation: AC 2KV,50/60Hz, for 1 min, Between Power /  
 Input / Output / Case

Insulation resistance: ≥ 100MΩ @ 500V<sub>dc</sub>  
 EMC: EN61326:2013;EN61000-3-2-2014;  
 EN6100-3-3:2013

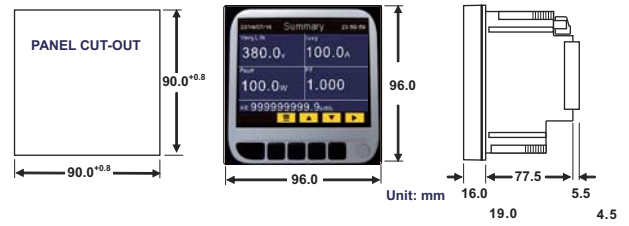
LVD: EN61010-1:2010

## Front panel

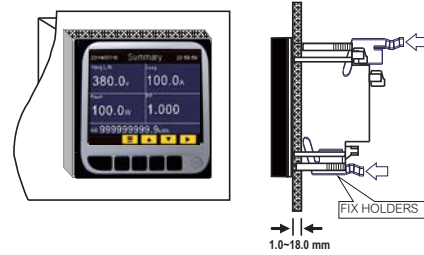


Display 3.5" TFT LCD  
Update rate 0.5 Sec  
Operation key: The keys function as icons shown on display

## Dimensions



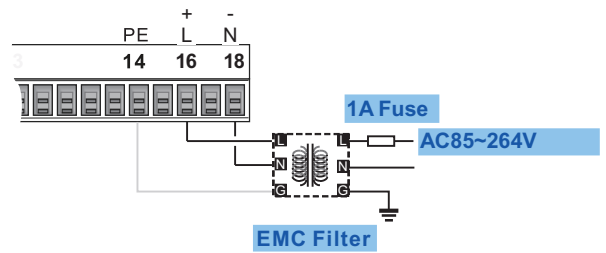
## Installation



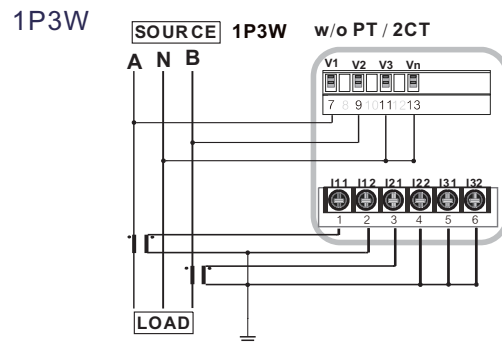
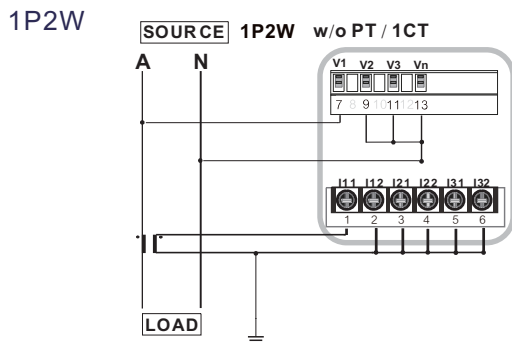
## Connection diagram

4DI+4RO						8DI																																																																																																									
7	9	11	13	14	16	18	7	9	11	13	14	16	18																																																																																																		
V1	V2	V3	Vn	PE	L+	N/-	V1	V2	V3	Vn	PE	L+	N/-																																																																																																		
VOLTAGE INPUTS						AUX. POWER						VOLTAGE INPUTS						AUX. POWER																																																																																													
19	+V	20	-A	21	com	22	+V	23	+A	24	com	25	+C	26	-E	27	+C	28	-E	29	+C	30	-E	31	+A	32	-B	19	+V	20	-A	21	com	22	+V	23	+A	24	com	25	+C	26	-E	27	+C	28	-E	29	+C	30	-E	31	+A	32	-B	D13	33	D16	34	D17	35	D18	36	D19	37	D20	38	D21	39	D22	40	D23	41	D24	42	D25	43	D26	44	D27	45	D28	46	D13	33	D16	34	D17	35	D18	36	D19	37	D20	38	D21	39	D22	40	D23	41	D24	42	D25	43	D26	44	D27	45	D28	46
Relay Output						Digital Input (ECI)						Relay Output						Digital Input (ECI)																																																																																													
LAN						LAN						LAN						LAN																																																																																													
Comm. Port 1						Comm. Port 2						Comm. Port 1						Comm. Port 2																																																																																													
CURRENT INPUTS						CURRENT INPUTS						CURRENT INPUTS						CURRENT INPUTS																																																																																													
I11	I12	I21	I22	I31	I32	I11	I12	I21	I22	I31	I32	I11	I12	I21	I22	I31	I32	I11	I12	I21	I22	I31	I32																																																																																								
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6																																																																																								

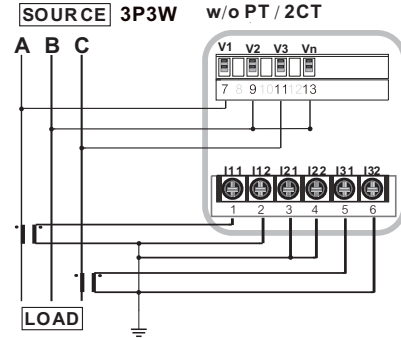
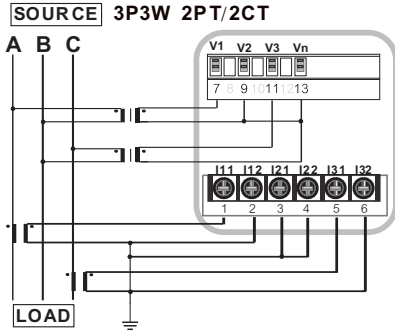
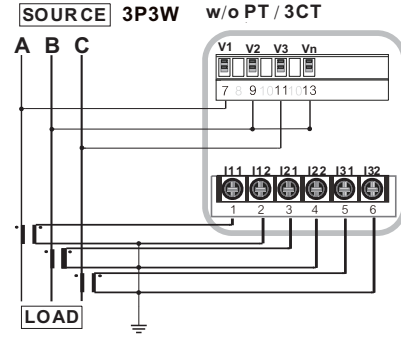
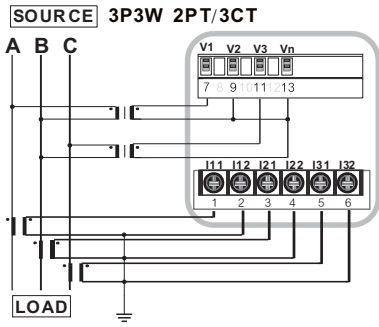
## Power connection



## Voltage and Current connection

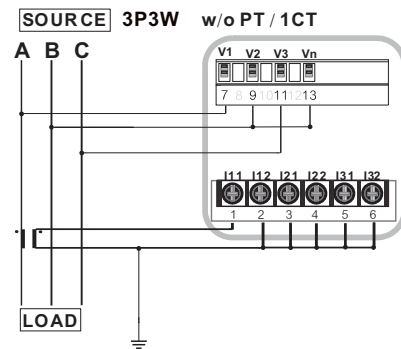
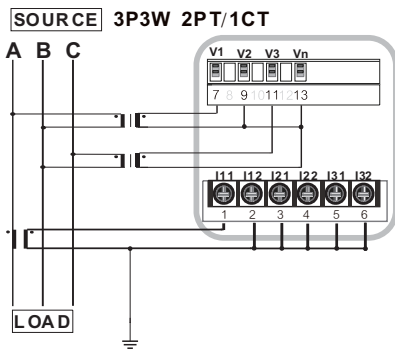
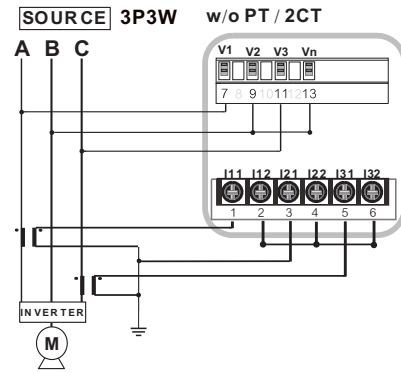
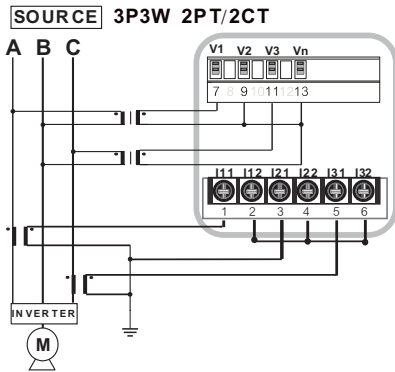


3P3W

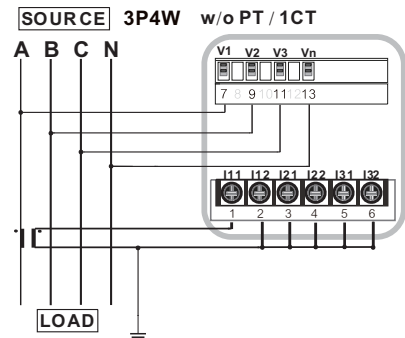
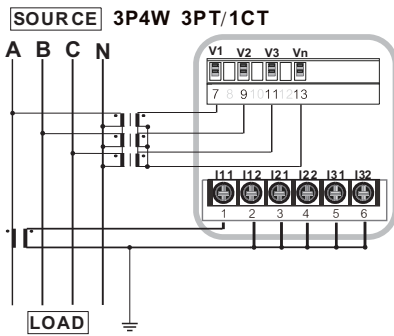
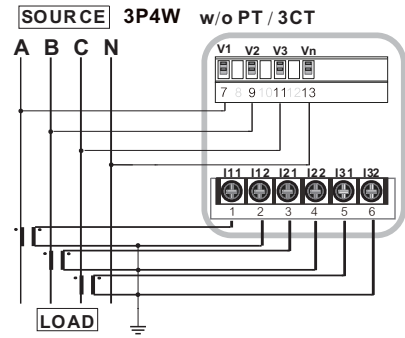
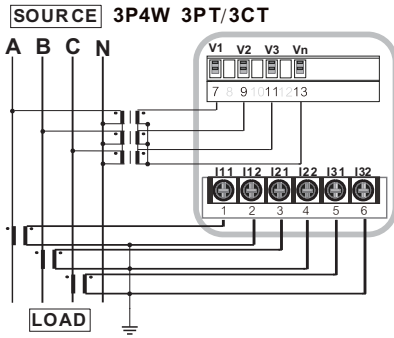


※This CT connection is available to use for inverter load or normal load situation

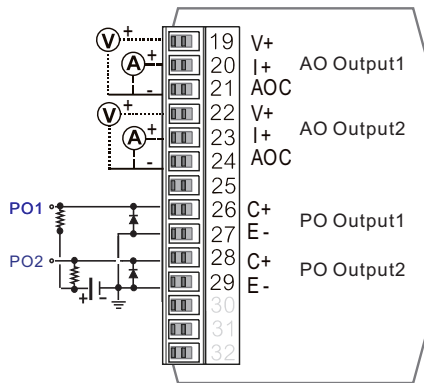
※This CT connection is available to use for inverter load or normal load situation



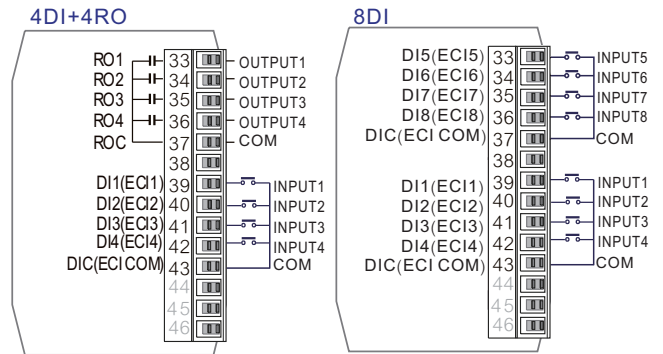
3P4W



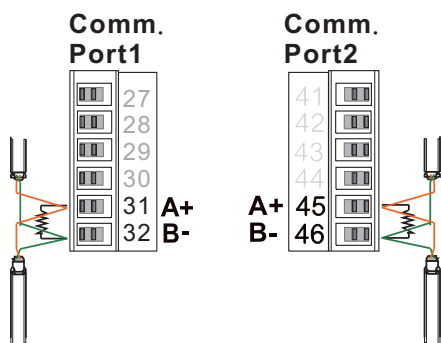
Analog output(AO)/ Pulse output (PO)



Relay output (RO)/ External Control input (ECI)



RS485 communication port



Max. Distance:1200M  
 Terminate Resistor  
 (at latest unit):120~300Ω/  
 0.25W(typical:150Ω)

