

# CPM-12D Din rail mounting power meter



## Description

CPM-12D din rail mounting power meter with high accuracy measurement for single phase and three-phase system.  
Measuring all basic parameters ; V, I, P, Q, kWh, kVarh etc..  
Standard with RS485 Modbus RTU communication port, front LCD display with buttons for programming.  
Auto wiring change (**Note**) via software  
CE and FCC approved

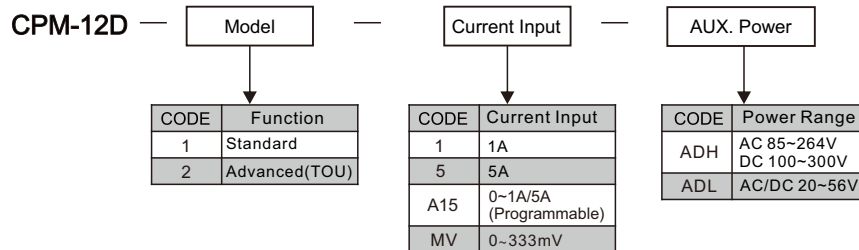
**Note:** Auto wiring change have certain condition limit, please refer to operation manual for further details.

## 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

Measurement	
Voltage	$V_1, V_2, V_3, V_{LN,AVG} / V_{12}, V_{23}, V_{31}, V_{LL,AVG}$
Current	$I_1, I_2, I_3, I_{AVG}, I_N$
Active Power	$P_1, P_2, P_3, \Sigma P$
Reactive Power	$Q_1, Q_2, Q_3, \Sigma Q$
Apparent Power	$S_1, S_2, S_3, \Sigma S$
Power Factor	$PF_1, PF_2, PF_3, PF_{AVG}$
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 Total
THD/Voltage (31st THD)	$THD_{V1}, THD_{V2}, THD_{V3}, THD_{V,AVG}$
THD/Current (31st THD)	$THD_{I1}, THD_{I2}, THD_{I3}, THD_{I,AVG}$
Phasor Diagram	Voltage phasor diagram, Current phasor diagram
Demand	Current Demand, Power Demand
Max. Demand recording	Max. Demand of Current & Power and times stamp
Max/Min Values	Maximum / Minimum values and times stamp
Event Record	Can be set event source from 35 parameters, 16 event records.
Data Logging	Record interval can be set, 50 out of 88 parameters can be record at the same time.
RS485	Modbus RTU mode
CO <sub>2</sub>	CO <sub>2</sub> (Kg)
PO	Pulse Output
Time of Use	4 seasons, 8 tariff settings per day, Per year or up to 5 years setting
Date and Time	Year, Month, Day, Hour, Minute, Second
Run hour	Operating hour, Run hour

## Accuracy & Resolutions

PARAMETER	ACCURACY	RESOLUTION	MEASUREMENT RANGE
Voltage	0.5%	0.1V	40.0~400.0V <sub>LN</sub> (V <sub>LN</sub> )
Current	0.5%	0.001A	1%~120% CT rating current
Neutral Current	1.5%	0.001A	1%~120% CT rating current
Active Power	1.0%	1W	-999999999~999999999W
Reactive Power	1.0%	1Var	-999999999~999999999Var
Apparent Power	1.0%	1VA	0~999999999VA
Power Factor	1.0%	0.001	-0.020~+1.000~0.020
Frequency	0.1%	0.01Hz	45.00~65.00Hz
Active Energy	1.0%	0.1kWh	0~9999999.9kWh
Reactive Energy	1.0%	0.1kVarh	0~9999999.9kVarh
THD	1.0%	0.1%	0~100.0%

## Technical Specification

### Electrical Characteristics

Measurement: True RMS  
Sampling: 128 point/Cycle  
Metering system type: 1P2W, 1P3W, 3P3W(1/2/3CT) 、3P4W (1/3CT) ; Balance / Unbalance  
Voltage: 40~400V<sub>LN</sub> ; 60~600V<sub>LL</sub>  
PT Primary side ratio: 100~1200000V  
PT Secondary side ratio: 50~500V  
CT Primary side ratio: 1~9999A  
CT Secondary side: 0~5A / 0~1A / 333mV  
Frequency: 45~65Hz  
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

### Data Record

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

### RS485 Communication

Protocol: RS485 Modbus RTU mode  
Address: 1~247  
Baud rate: 1200/2400/4800/9600/19200/38400/57600/115200 bps  
Parity: None / Even / Odd  
Data bits: 8 bits  
Stop bit: 1 or 2  
Distance: 1200M max  
Terminate resistor: 120~300Ω/0.25W(typical: 150Ω)  
Memory storage: 2MB Flash ROM



**Pulse Output**

Output type: Open collector (O.C.): 40V<sub>dc</sub> / 50mA  
 Parameter for output: Import active energy \ Export active energy  
 Import reactive energy \ Export reactive energy  
 Pulse divider: 1~9999 (x0.1 kWh or kVarh)  
 Pulse width: 0~5000(mS); 0 is 50% duty cycle  
 Test pulse output: 1600 Pulse / 1kWh, duty cycle 50%

**Demand**

Calculation method: Slide / Fix

**TOU (Time of Use)**

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: AE-Imp \ AE-Exp \ AE-Total \ RE-Imp \ RE-Exp \ RE-Total \ SE \ SE-Total  
 Yearly setting: Tariff setting for 1 year or set up to 5 years

**Power Supply**

Range: ADH: AC 85~264V / DC 100~300V  
 ADL: AC/DC 20~56V  
 Power consumption: AC: ≤5VA @ 230V / DC: ≤2W

**Environmental Characteristics**

Operating Temp.: 0~60°C  
 Humidity rating: 5~95%RH, Non-condensing  
 Temp. coefficient: ≤100 PPM/°C  
 Storage Temp.: -10~70°C  
 IP Enclosure: Housing: IP20

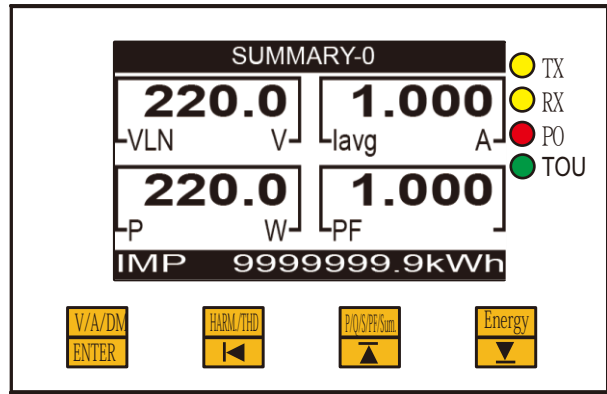
**Mechanical Characteristics**

Dimensions: 72mm(W)x58.7mm(H)x87.5mm(L)  
 Material: ABS, Black (with fire-retardant)  
 Mounting: DIN rail mounting  
 Weight: ≤400g

**Safety**

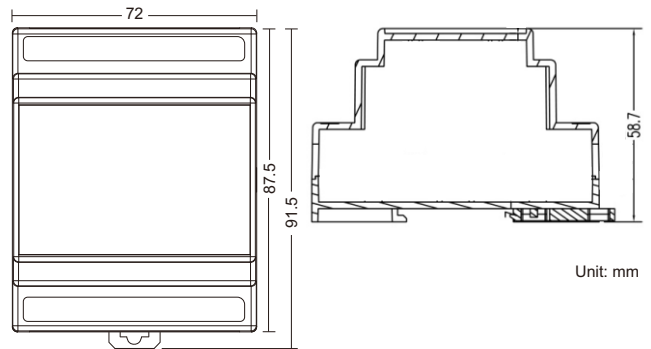
Isolation: AC 2KV, 50/60Hz, for 1 min, Between Power / Input / Output / Case  
 Insulation resistance: ≥100MΩ @ 500V<sub>dc</sub>  
 EMC: EN 61326-1:2013;  
 CISPR11 CISPR11 Clasaa A;  
 EN61000-3-2:2014;  
 EN61000-3-3:2013;  
 IEC61000-4-2:2008;  
 IEC61000-4-3:2006+A1:2007+A2:2010;  
 IEC61000-4-4:2012;  
 IEC61000-4-5:2005;  
 IEC61000-4-6:2013  
 IEC61000-4-8:2009;  
 IEC61000-4-11:2004  
 FCC: FCC part 15 subpart B Class A  
 LVD: EN61010-1:2010  
 Wire terminal: PA66 (UL 94V-0)  
 AWG: 28~12 / 0.2~2.5mm<sup>2</sup>  
 Screw Torque Value:  
 M2.5 / 5.202kgf.cm(Max)

**Front Panel**

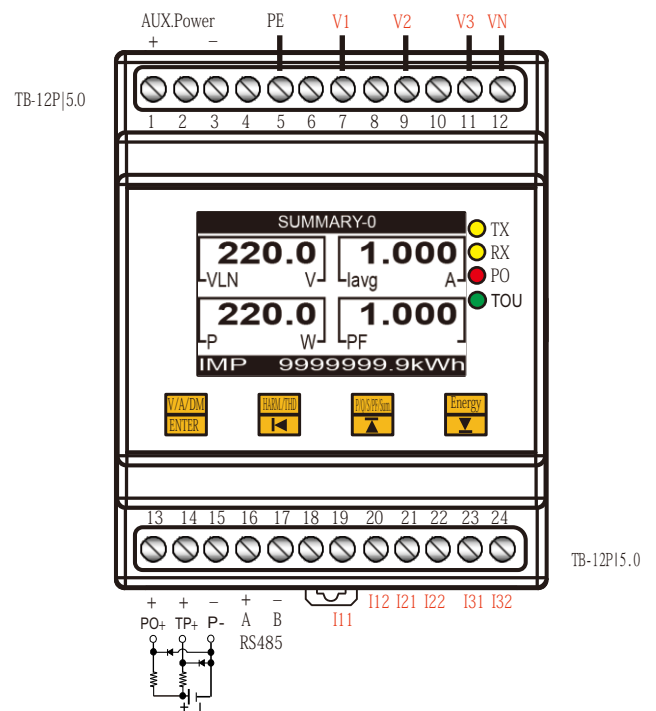


Display: 128\*64 dots matrix LCD with white backlight  
 Backlight delay time : 0~15 min ( "0" is always on)  
 Operating Keys : 4 buttons  
 LED indicators : TX,RX for communication  
 PO for Pulse Output

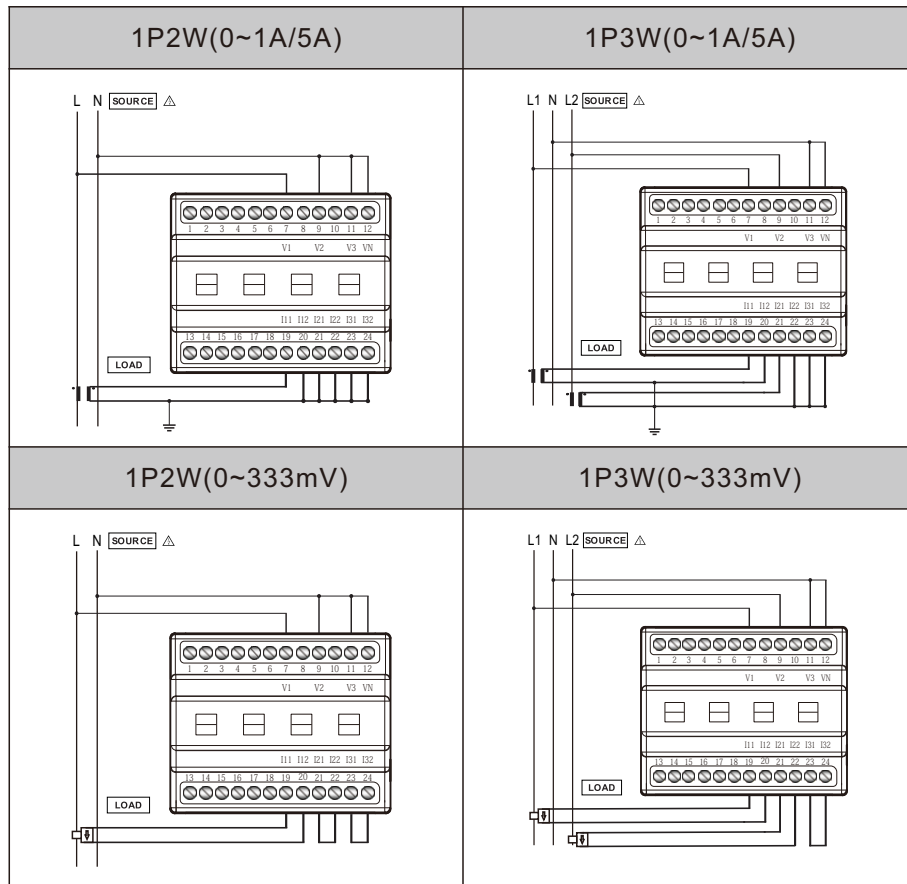
**Dimensions**



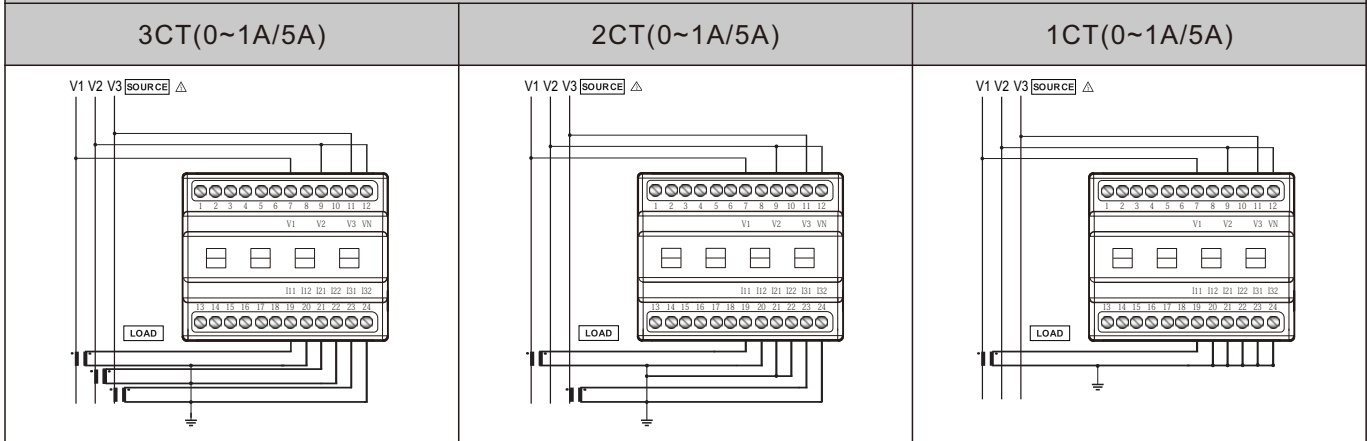
**Connection Diagram**



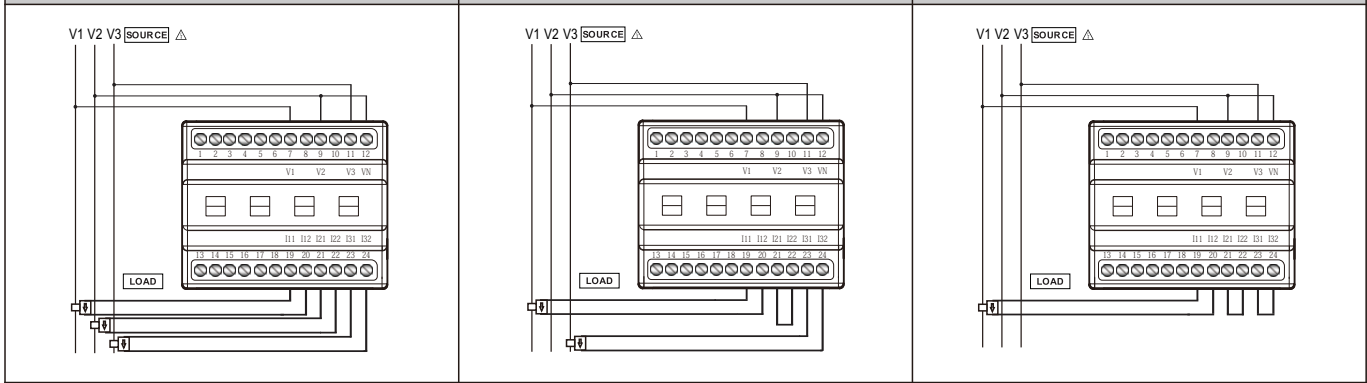
■ Voltage and Current connection (CT secondary side distinguishes 1A/5A and 333mV)



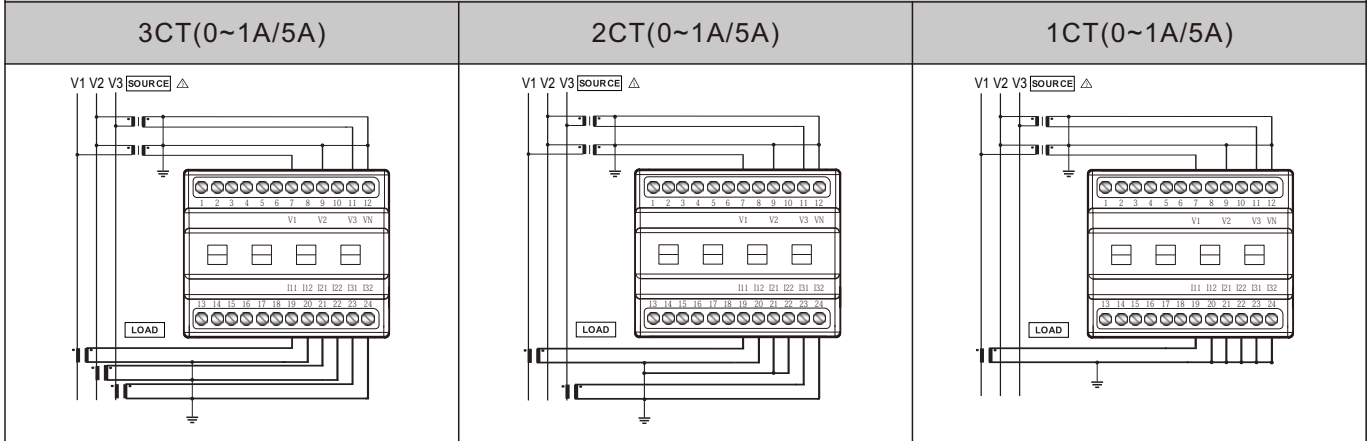
**3P3W w/o PT**



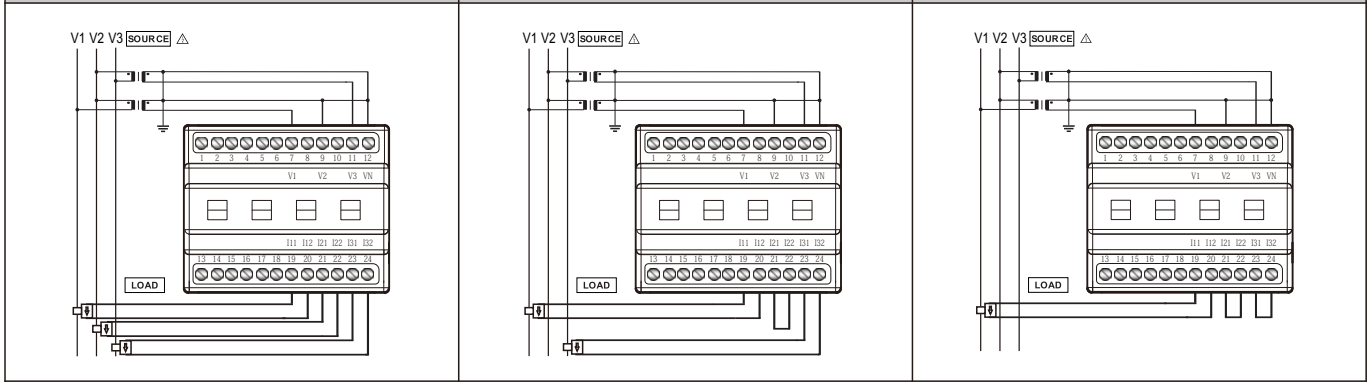
3CT(0~333mV)	2CT(0~333mV)	1CT(0~333mV)
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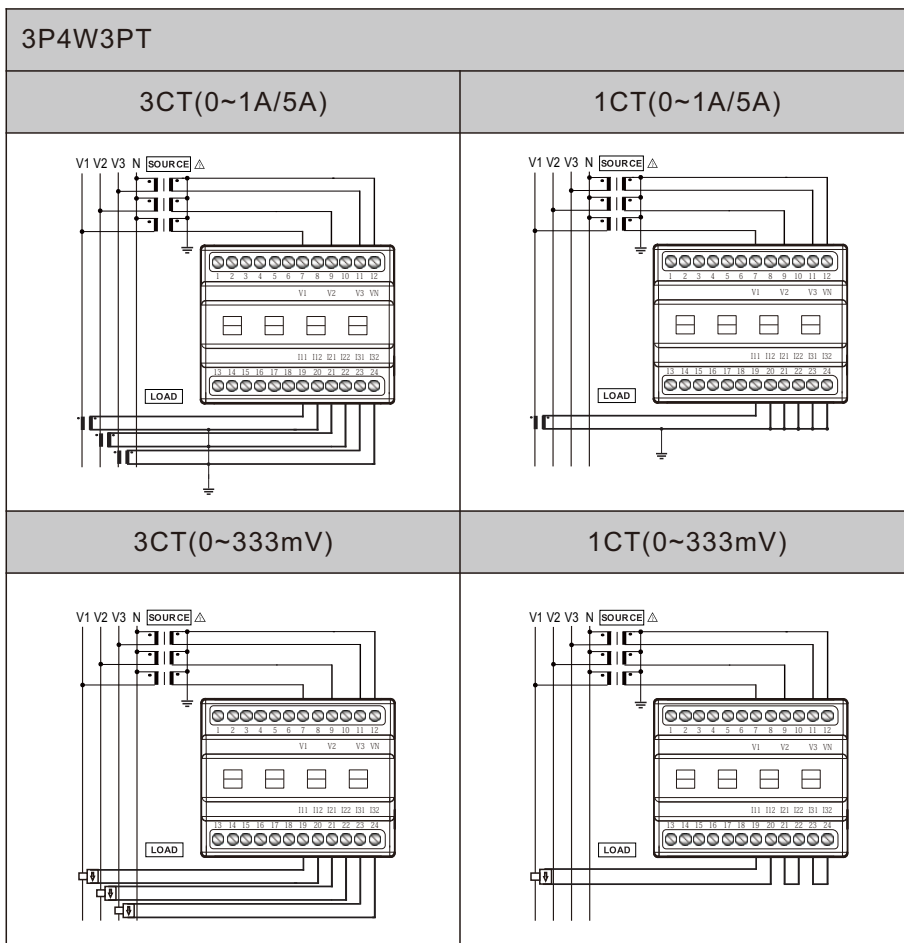
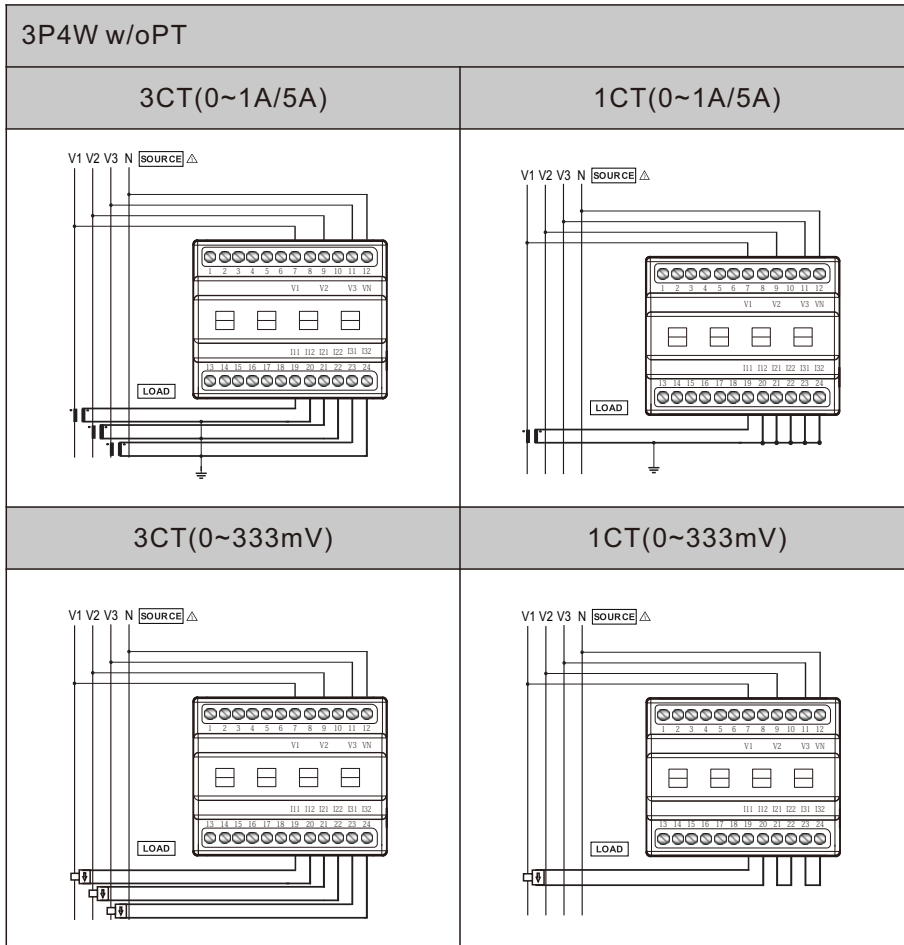


**3P3W 2PT**



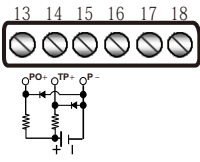
3CT(0~333mV)	2CT(0~333mV)	1CT(0~333mV)
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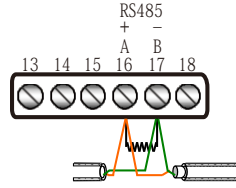
**■ Pulse output**

Wire: AWG 28~12 (0.2~2.5mm<sup>2</sup>)



**■ RS485 Communication port**

Wire: AWG 28~12(0.2~2.5mm<sup>2</sup>)



Distance Max. : 1200M  
 Terminator: 120~300Ω/0.25W  
 (Standard: 150Ω)

**■ Power connection**

