

## Description

CPM-12 multifunction power meter provide high accuracy single phase and three-phase measuring and displaying, energy accumulating, power quality analysis, and data communication.

Hardware can be option a a RS485 Modbus communication port.

Auto wiring change (**Note**) via software

CE and FCC approved

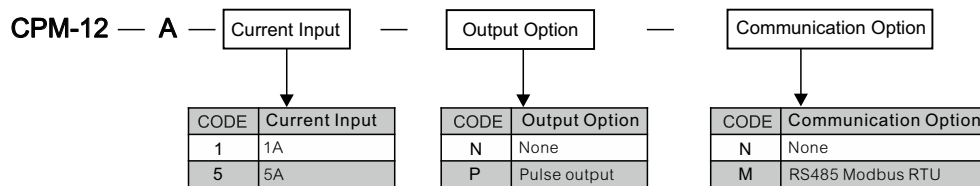
**Note:** Auto wiring change will be had condition limit, please refer to operation manual.

## 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)	$THD_{I1}, THD_{I2}, THD_{I3}, THD_{I, Avg}$
RS485	Modbus RTU mode
CO <sub>2</sub>	CO <sub>2</sub> (Kg)
PO	Pulse Output

## 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	0.2%	0.01Hz	45.00~65.00Hz
Active Energy	1.0%	0.1kWh	0~9999999.9kWh
Reactive Energy	1.0%	0.1kVarh	0~9999999.9kVarh
Apparent Energy	1.0%	0.1VAh	0~9999999.9VAh
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(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: 50~500V  
 Current: 0~5A / 0~1A  
 CT Primary side ratio: 5~9999A  
 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

### RS485 Communication

Protocol: RS485 Modbus RTU mode  
 Address: 1~247  
 Baud rate: 1200/2400/4800/9600/19200/38400 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: FRAM

### 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%

### Power Supply

Range: AC 85~264V / DC 100~300V  
 Power consumption: AC: ≤10VA @ 230V / DC: ≤3W

### 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: Front panel: IEC 529 (IP50) ; Housing: Ip20

### Mechanical Characteristics

Dimensions: 96mm(W)x96mm(H)x70.5mm(L)  
 Panel cutout: 90mm(W)x90mm(H)  
 Material: PC, Black (with fire-retardant)  
 Mounting: Panel mounting  
 Weight: ≤400g

**Safety**

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

Insulation resistance:  $\geq 100M\Omega @ 500V_{dc}$

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)

Voltage / Current input: AWG:26~10 / 0.5~4.0mm<sup>2</sup>

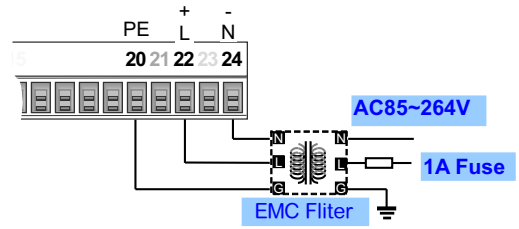
Screw Torque Value: M3 / 8.0kgf.cm(Max)

Others input: AWG:28~16 / 0.5~1.5mm<sup>2</sup>

Screw Toque Value: M2 / 2.04kgf.cm(Max)

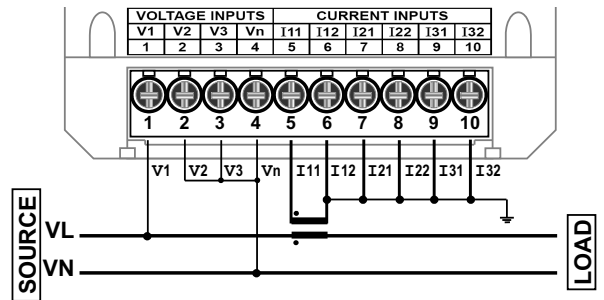
**Connection Diagram**

**Aux Power**

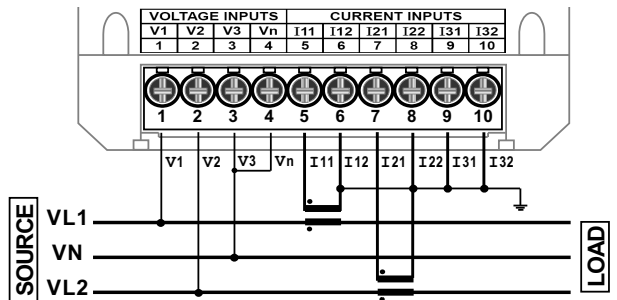


**Voltage and Current input**

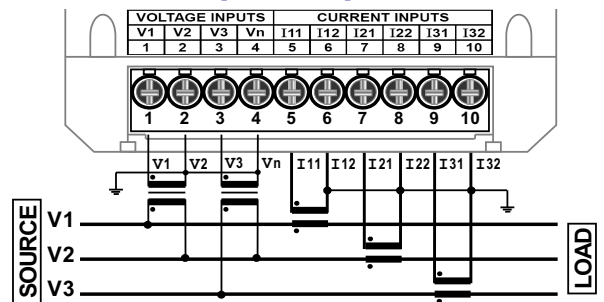
● **1P2W - [ 1P2W ]**



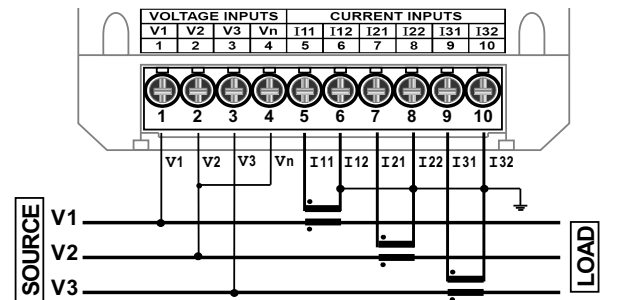
● **1P3W - [ 1P3W ]**



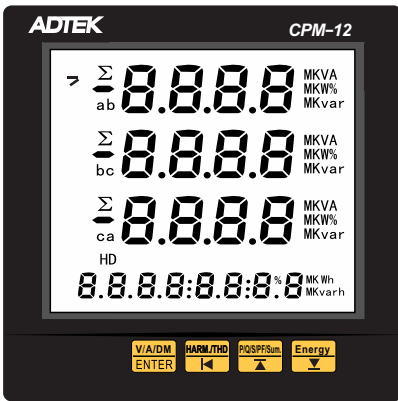
● **3P3W - 2PT / 3CT [ 3P3W3CT ]**



● **3P3W - W/O PT / 3CT [ 3P3W3CT ]**

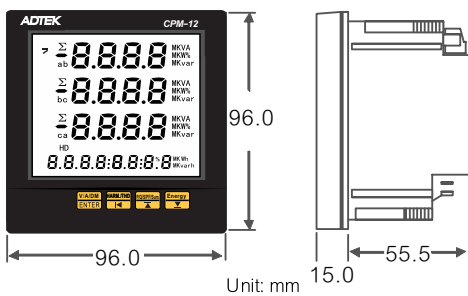


**Front Panel**

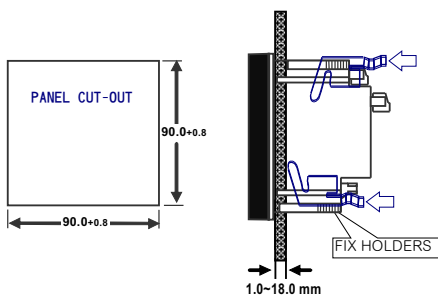


Display: LCD 65(W)x61(H)mm ; White backlight  
Backlight delay time : 0~15 min ( "0" is always on)

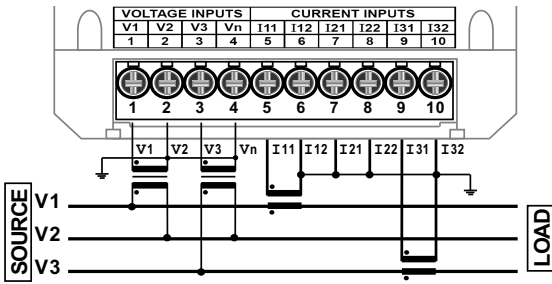
**Dimensions**



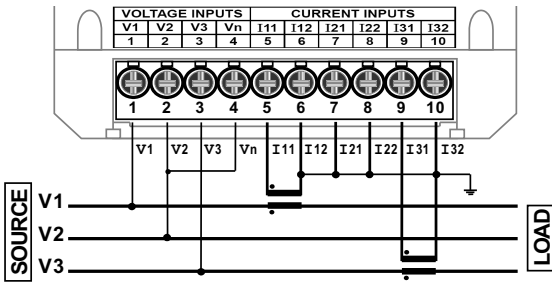
**Installation**



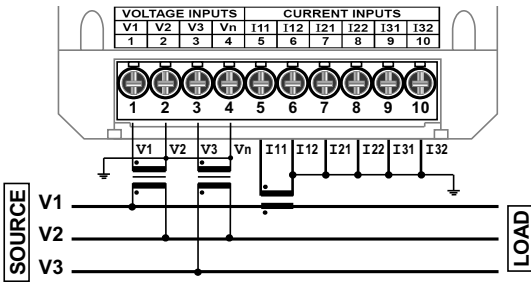
● 3P3W-2PT / 2CT [ 3P3W2CT ]



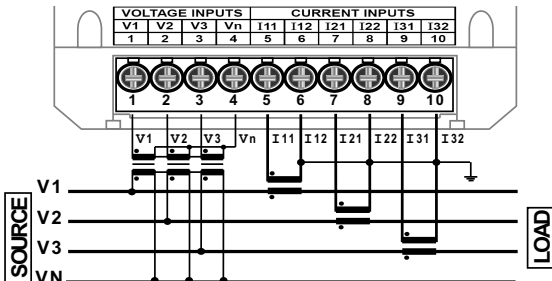
● 3P3W -W/O PT / 2CT [ 3P3W2CT ]



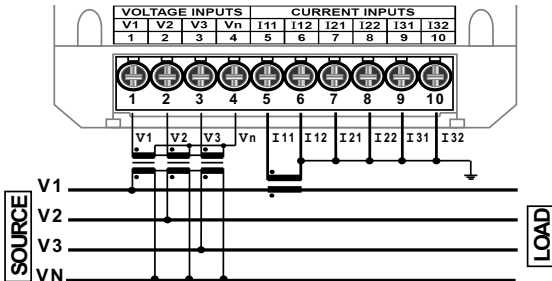
● 3P3W -2PT / 1CT [ 3P3W1CT ]



● 3P4W -3PT / 3CT [ 3P4W3CT ]

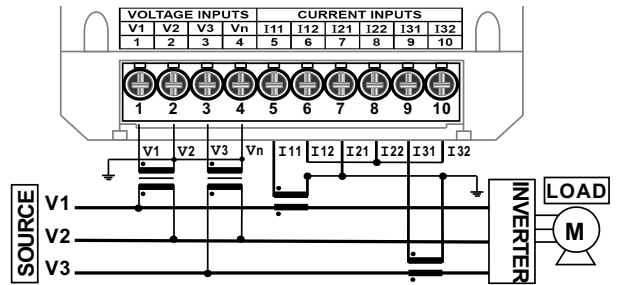


● 3P4W-3PT / 1CT [ 3P4W1CT ]

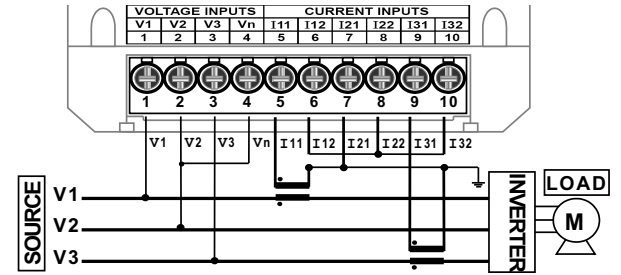


※This CT connection is available use for Inverter load or normal load situation

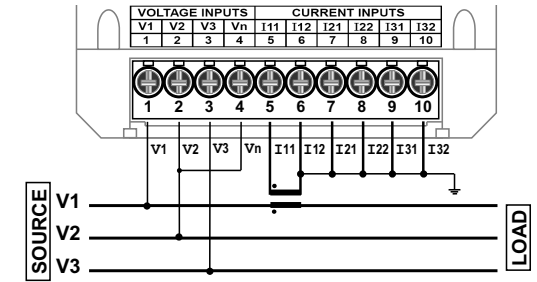
● 3P3W -2PT / 2CT [ 3P3W2CT ]



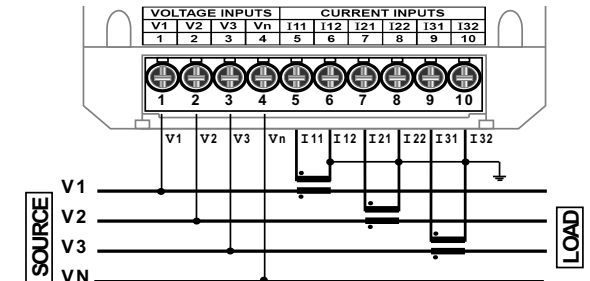
● 3P3W -W/O PT / 2CT [ 3P3W2CT ]



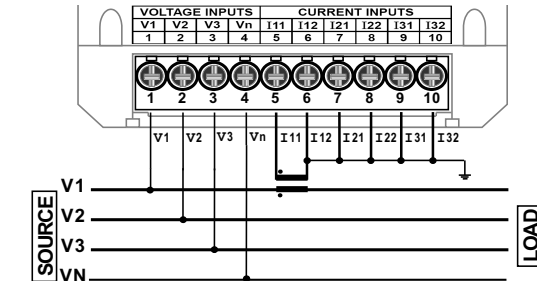
● 3P3W -W/O PT / 1CT [ 3P3W1CT ]



● 3P4W- W/O PT / 3CT [ 3P4W3CT ]

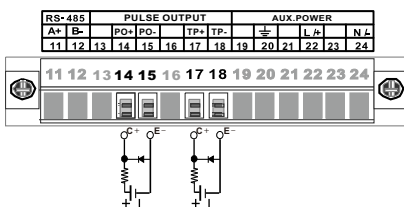


● 3P4W -W/O PT / 1CT [ 3P4W1CT ]



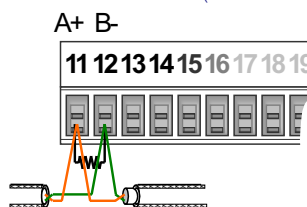
Pulse output

Wire: AWG 28~16 (0.5~1.5mm<sup>2</sup>)



RS485 Communication port

Wire: AWG 28~16(0.5~1.5mm<sup>2</sup>)



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