

CPM-20 Multifunction Power Meter

ADTEK

Description

CPM-20 multifunction power meter provide high accuracy single phase and three-phase measuring and displaying, energy accumulating, power quality analysis, and data communication.

It provides maximum/minimum records for power usage and power demand parameters.

Hardware standard built in a RS485 Modbus communication port.

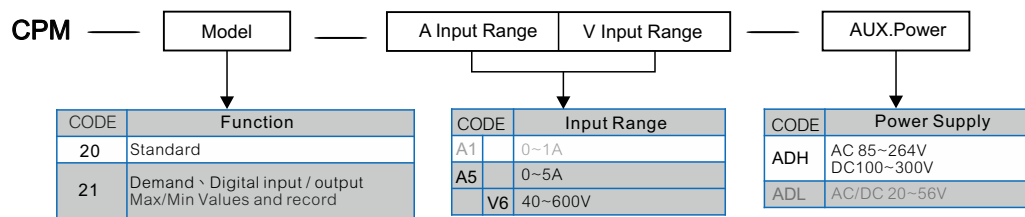
FCC and CE Approved

Applications

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



Ordering Information



Meter Selection Guide

Features		CPM-20	CPM-21
Voltage	$V_{12} V_{23} V_{31} V_{LL_Avg} / V_1 V_2 V_3 V_{UL_Avg}$	●	●
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 Total	●	●
Reactive Energy	Varh Total	●	●
THD/Voltage	$THD_{V1} THD_{V2} THD_{V3} THD_{V_Avg}$	●	●
THD/Current	$THD_{I1} THD_{I2} THD_{I3} THD_{I_Avg}$	●	●
RS485	Modbus RTU mode	●	●
Cost	Total cost of energy	●	●
CO2	Total CO ₂ weight of energy	●	●
Date	Year, Month, Day, Hour, Minute, Second	●	●
DI & DO	Digital input / output function		●
Demand	$\Sigma P \Sigma Q \Sigma S I_{Avg}$		●
Max/Min Values and record	$U_A U_B U_C U_{Sc} U_{AB} U_{CA} I_A I_B I_C$ $P_{SUM} Q_{SUM} S_{SUM} PF_{Avg} FREQ P_{md} Q_{md} S_{md}$		●

Accuracy & Resolutions

PARAMETER	ACCURACY	RESOLUTION	MEASUREMENT RANGE
Voltage	0.25%	0.1V	40.0~400.0V _{ac} (V _{LN})
Current	0.25%	0.001A	1%~120% CT rating current
Neutral Current	1.0%	0.001A	1%~120% CT rating current
Active Power	0.5%	1W	-999999999~999999999W
Reactive Power	0.5%	1Var	-999999999~999999999Var
Apparent Power	0.5%	1VA	0~999999999VA
Power Factor	0.5%	0.001	±1.000
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
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_{LN} ; 60~600V_{LL}
PT Primary side ratio: 100~500000V
PT Secondary side ratio:100~600V
Current:0~5A, (Optional: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

(CPM-21 only)

Digital input: 2 channels DI
Opto-coupler input: 5V_{dc}, 20mA
Response time: ≤300mS
Isolation: 2000Vac
Digital output: 2 channels DO
Open collect(O.C.); 40V_{ac}, 50mA
Response time: ≤300mS
Isolation: 2000Vac
Function: Can set to energy pulse output \
alarm output \ RS485 control output
DO1 is active energy pulse output
DO2 is reactive energy pulse output
Pulse divider: 1~6000 (x0.1 kWh or kVarh)
Pulse width: 1~20 (x10mS)
Alarm output mode: Hi / Lo
Up to 33 parameters of power and Demand
for assign
RS485 control output mode: Output setting from RS485

Power Supply

Range: ADH: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

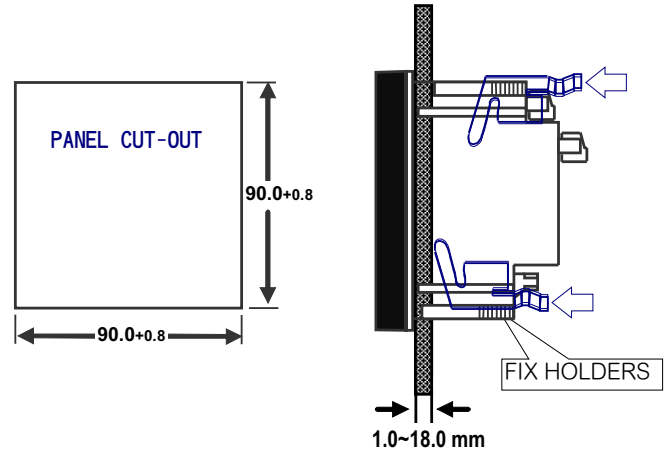
Mechanical Characteristics

Dimensions: 96mm(W)x96mm(H)x71mm(L)
 Panel cutout: 90mm(W)x90mm(H)
 Material: PC, Black (with fire-retardant)
 Mounting: Panel mounting
 Weight: ≤400g

Safety

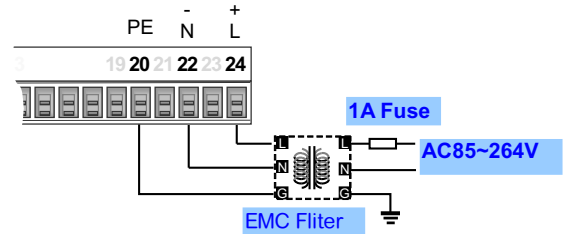
Isolation: AC 2KV, 50/60Hz, for 1 min, Between Power / Input / Output / Case
 Insulation resistance: ≥ 100MΩ @ 500V_{dc}
 EMC: EN61326:2006
 LVD: EN61010-1:2010
 Wire terminal: PA66 (UL 94V-0)
 Voltage / Current input:
 AWG: 26~10 / 0.5~4.0mm²
 Screw Torque Value: M3 / 8.0kgf.cm(Max)
 Others input:
 AWG: 28~16 / 0.5~1.5mm²
 Screw Torque Value: M2 / 2.04kgf.cm(Max)

Installation



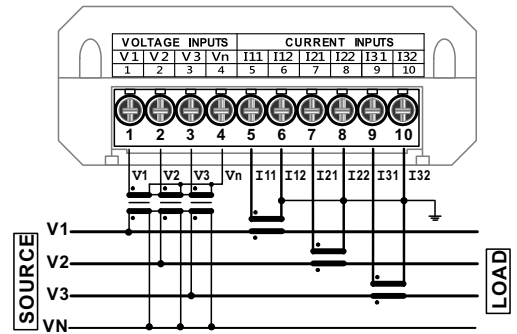
Connection diagram

Aux Power

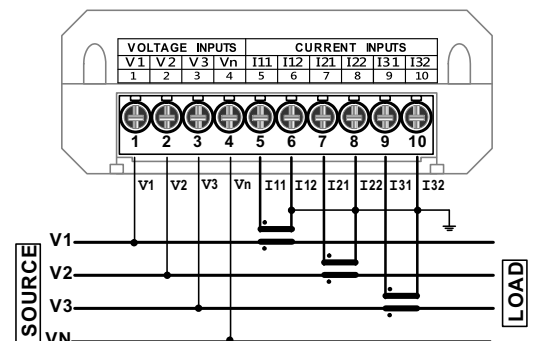


Voltage and Current input

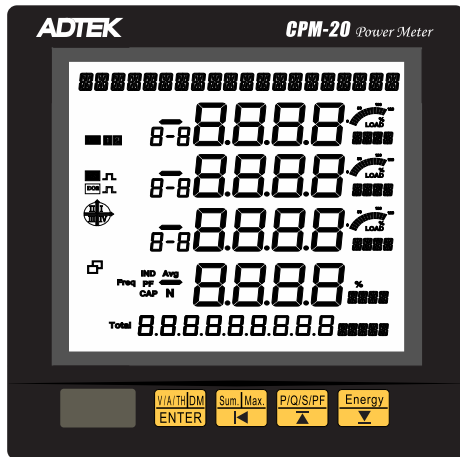
3P4W- 3PT/ 3CT



3P4W- w/o PT/ 3CT



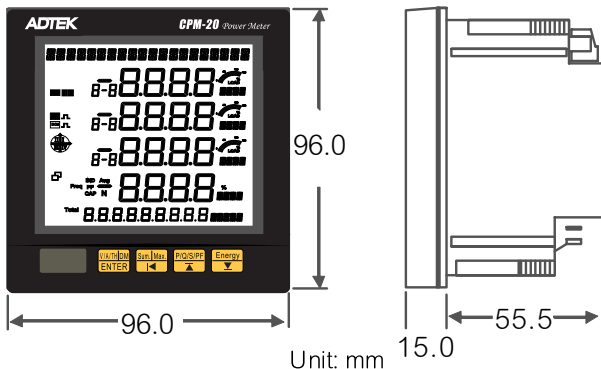
Front panel



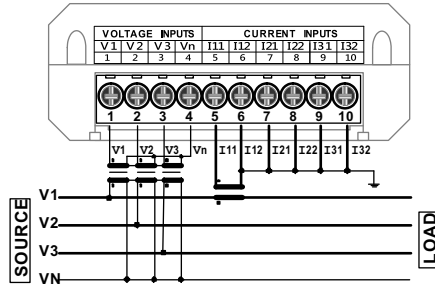
Display: LCD 65(W)x61(H)mm ; White backlight
 Backlight delay time : 0~15 min ("0" is always on)

Description: Twenty 8 digits in the top of display area: Display mode indication.
 Four line of 8 digits in the metering area : Display metering data such as voltage \ current \ power \ power factor \ frequency \ unbalance \ etc.
 Four line of 8 digits in the metering area : Display metering data unit.
 Three line 8-8 digits: 1, 2, 3 for 3 phase ; 1-2, 2-3, 3-1 for 3 phase line to line.
 Nine 8 and five 8 digits: Display energy data and unit.
 Also display real time o'clock.

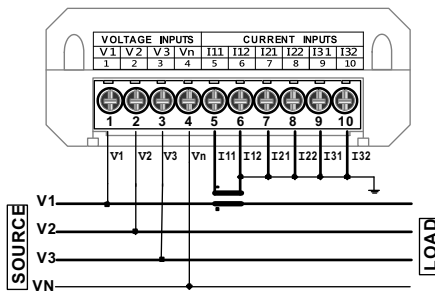
Dimensions



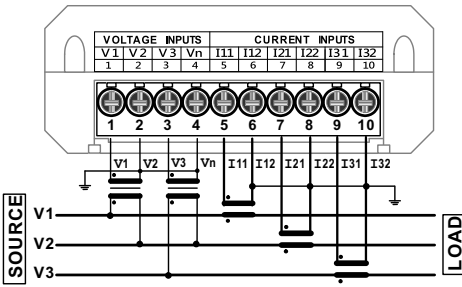
3P4W-3PT/ 1CT



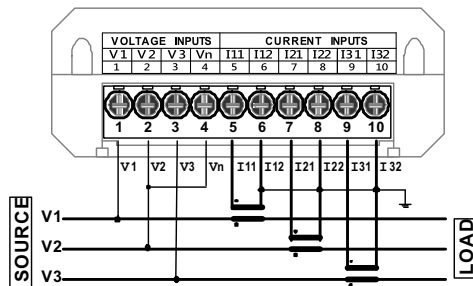
3P4W-w/o PT/ 1CT



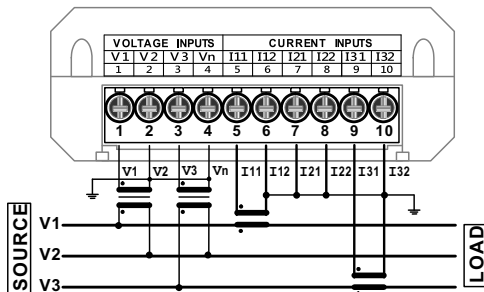
3P3W-2PT/ 3CT



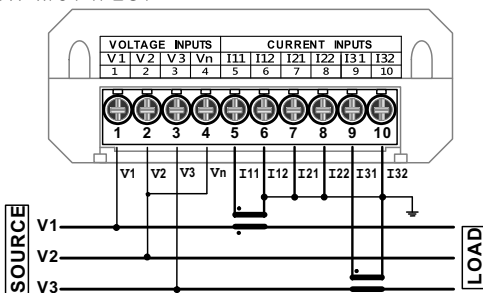
3P3W-w/o PT/ 3CT



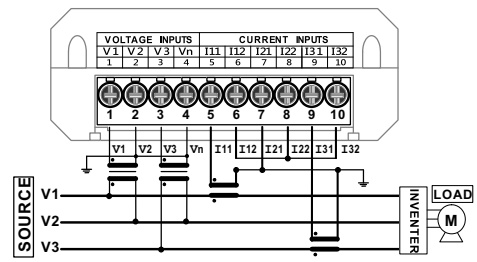
3P3W-2PT/ 2CT



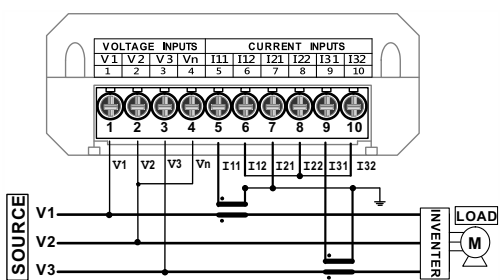
3P3W-w/o PT/ 2CT



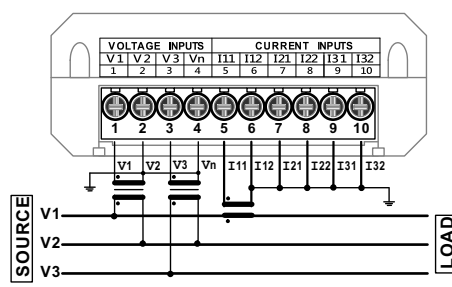
※This CT connection is available use for Inverter load or normal load situation
3P3W-2PT/ 2CT



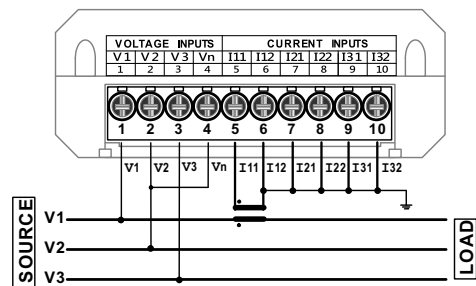
3P3W-w/o PT/ 2CT



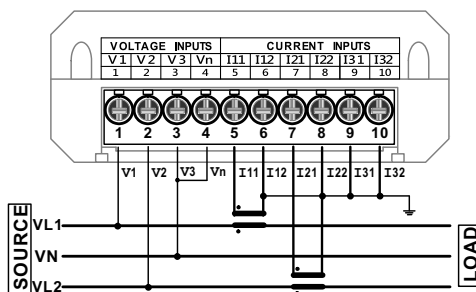
3P3W-2PT/ 1CT



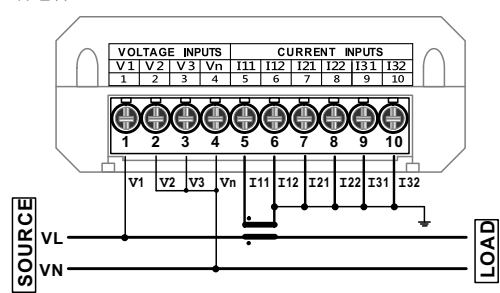
3P3W-w/o PT/ 1CT



1P3W

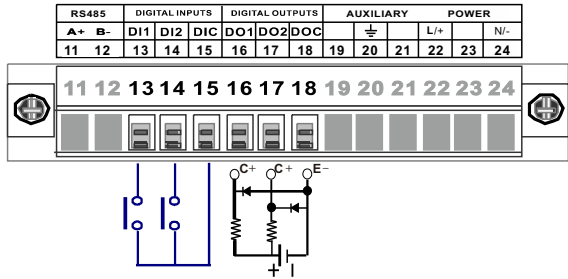


1P2W



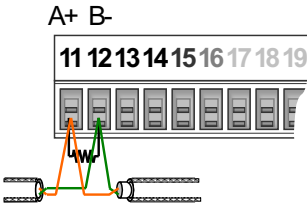
Digital input/output (CPM-21 only)

Wire: AWG 28~16 (0.5~1.5mm²)



RS485 Communication port

Wire: AWG 28~16(0.5~1.5mm²)



Distance Max. : 1200M
Terminator: 120~300Ω/0. 25W
(Standard: 150Ω)