CPM-70 MULTIFUNCTION POWER ANALYER ADTEK

■ DESCRIPTION

CPM-70 series provide single phase and three-phase high accuracy measurements, 2~31st individual harmonic readings of voltage and current, and display the total electricity bill ratio (cost) and CO2 emission. Equip with 4 digital inputs, 2 replay outputs, RS485 Modbus communication port and 2MB flash ROM for data-logging. In addition, it's especially including TOU function and wiring correction via software.

■ APPLICATION

Power Monitoring of Motor Control Switchboard
Energy Management and Electricity Cost Allocation System
Distribution Power Monitoring, Power Quality Analysis

■ ORDERING INFORMATION

CPM- [Model Number] – [A Input range][V Input range] – [Output] – [AUX. POWER]

(PS: Grey wording part number not available at the moment)

CODE	Function
71	Standard
72	2~31st Individual Harmonic & demand
73	2~31st Individual Harmonic & demand & TOU

CODE		INPUT RANGE
A1		0 ~ 1 A
A5		0 ~ 5 A
	V6	40~ 400 V_{LN} 60~ 600V_{LL}

CODE			DI/DO/RELAY
I4	N	R2	4xDI + 2xRelay
I4	O1	R1	4xDI + 1xDO + 1xRelay

CODE	AXU. POWER
ADH	AC 85~264V DC100~300V
ADL	AC/DC 20~56V

PARAMETERS		71	72	73
Voltage	V_{12} V_{23} V_{31} V_{LL_Avg} V_1 V_2 V_3 V_{LN_Avg}	●	●	●
Current	I_1 I_2 I_3 I_{Avg} I_N	●	●	●
Active Power	P_1 P_2 P_3 ΣP	●	●	●
Reactive Power	Q_1 Q_2 Q_3 ΣQ	●	●	●
Apparent Power	S_1 S_2 S_3 ΣS	●	●	●
Power factor	PF_1 PF_2 PF_3 PF_{Avg}	●	●	●
Frequency	Hz	●	●	●
Active Energy	WH Imp WH Exp WH Total WH Net	●	●	●
Reactive Energy	QH Imp QH Exp QH Total QH Net	●	●	●
Apparent Energy	VAH	●	●	●
THD for voltage	THD_{V12} THD_{V23} THD_{V31} THD_{V_Avg}	●	●	●
THD for current	THD_{I1} THD_{I2} THD_{I3} THD_{I_Avg}	●	●	●
Individual Harmonic	2nd~31st		●	●
Demand	Current Demand, Power Factor Demand		●	●
Max. demand recording	Max. Demand of Current & Power Factor		●	●
Max / Min record	Max / Min record	●	●	●
External Control Input	ECI1 ECI 2 ECI 3 ECI 4	●	●	●
Digital Output	DO1	●	●	●
Relay Output	RO1 RO2	●	●	●
TOU	4 Tariffs, 8 Schedules			●
Date	Year, Month, Day, Hour, Minute, second	●	●	●

Accuracy & Resolutions

PARAMETERS	ACCURACY	RESOLUTION	INPUT RANGE
Voltage	0.2%	0.1V	40.0~400.0Vac(V_{LN})
Current	0.2%	0.001A	1%~120% rating
Neutral Current	1.0%	0.001A	1%~120% rating
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	0.1%	0.01Hz	45.0~65.0Hz
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	1.0%	0.1%	0~100.0%
3-phase un-balance	0.5%	0.1%	0~300.0%

■ TECHNICAL SPECIFICATION

Input

Measurement: True RMS measurement
Sampling: 128 point / Cycle
Connection: 1P2W、1P3W、3P3W(1、2、3CT) 、3P4W(1、3CT)；Balanced/ Unbalance
Programmable by front buttons(Actual wiring must be same)
Input range: Voltage：40~400 V_{LN} ; 60~600V_{LL}
PT Primary range：100~1200000V
PT Secondary range：50~600V
Current：0~5A, (Optional:0~1A)
CT Primary range：5~9999A
Frequency：45~65Hz
Max. Input over: Voltage:2 X rated continuous；2500V, 1 sec
Current: 2 X rated continuous；20 X rated 1 sec
Input burden: Voltage：< 0.2VA；Current：< 0.1VA

Power Quality

THD: Total harmonic distortion for Voltage and Current
Individual Harmonic: 2nd~31st individual harmonics for voltage and current

Relay Output(RO)

Relay Contact: Dual FORM-A；5A/250Vac；5A/30Vdc；Common point
Relay Mode: Hi/Lo/Hi.hold/Lo.hold/DO
Set Points: Corresponding to 34 parameters of power and Demand

External Control Input(ECI)

Input Mode: 4 ECI points；Mech. Contact or Open collect
Function: Reset Wh or Varh/ Max. or Min Hold/ / relay energized latch/ DI
Debouncing time: 0~99 x 8mS (programmable)

Pulse Output (DO)

Output Mode: Open collect: 30Vdc, 30mA(max)
Output Frequency: 1000Hz(max)(must provide external voltage and add resistors
Pulse Divider: 1~9999 (1 Pulse= 0.1kWh; if set 100, 1 Pulse= 10.0kWh)
Pulse Range: 0~5000x4mS，0 means duty cycle 50%
Pulse Output Calibration: DO terminal(Pin33,34) is based on 3200 Pulse/1kWh,Duty cycle 50% to output，(Not limited by DO parameter setting)
Select 2RO but no DO, then the second RO(Pin30,31)will be the terminal of pulse output calibration .Must provide external voltage and resistors while output 50Hz (max)

Time-of-Use rate (TOU (CPM-73 only)

4 seasons: 1~4 seasons per year
8 Schedule: 1~8 schedules per seasons
Every schedule can assign 4 different tariffs (time periods)
4 Tariffs: Every tariff can assign different prices at different time period
TOU Power Parameters: AE-Imp、AE-Exp、AE-Total、RE- Imp、RE- Exp、RE-Total
SE-Total
Special day: Each can set special days and price rates in a decade or set one special day and price for a decade

Data-logging

Data-logging: According to recording interval to save initial data or assigned data. Recording interval time can set from 1 to 32767; time unit: Day, hour, minute, second
Memory: 2MB Flash ROM

CPM-70

RS485 communication

Protocol:	Modbus RTU mode
Address:	1~247
Baud rate:	1200/2400/4800/9600/19200/38400
Parity:	None / Even / Odd
Data bits:	8 bits
Stop bits:	1 or 2
Wiring:	1200M max,
Termination Res.:	120~300Ω/0.25W(typical: 150Ω)

Environmental

Operating Temp.:	0~60 ˚C
Operating Hum(%RH):	5~95 %RH, non-condensing
Temp. Coefficient:	≤100 PPM/˚C
Storage Temperature:	-10~70˚C
Enclosure:	Front panel: IEC 529 (IP50) ； Housing: IP20

Power

Power supply:	ADH:AC 85~264V / DC 100~300V; ADL:AC/DC 20~56V
Power consumption:	AC：≤ 10VA @ 230V / DC：≤ 3W

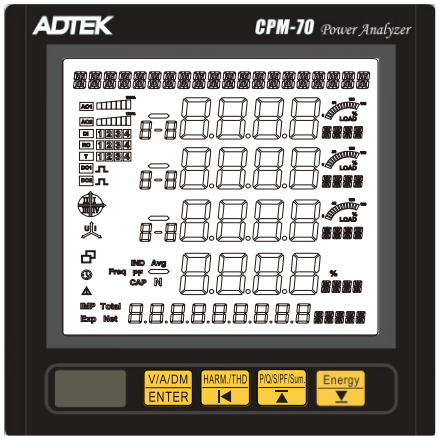
Mechanical

Dimension:	96mm(W) x 96mm(H) x 91mm(D)
Panel cutout:	90mm(W) x 90mm(H)
Case material:	Black ABS (non-flammable)
Installation:	Panel mounting

Electrical safety

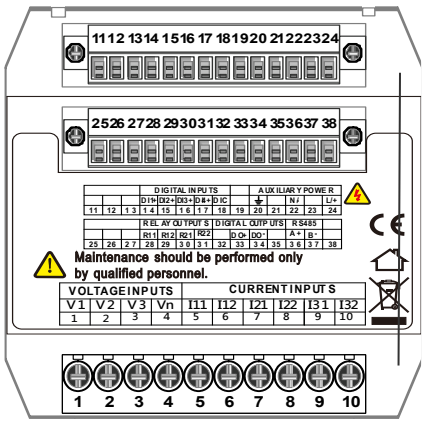
Dielectric Strength:	AC 2KV, 50/60Hz, 1 min. ; Between Input / Output / Power / Case
Insulation Res:	≥100M ohm, DC 500V
EMC:	EN 61326:2006
Safety(LVD):	EN 61010-1:2010
Wiring terminal:	Screw terminal, Plastic NYLON 66 (UL 94V-0) Current/Voltage input:1.2~2.5mm²(AWG15~10) Other: 0.5~1.3mm²(AWG22~16)
Weight:	≤ 450g

■Front Panel

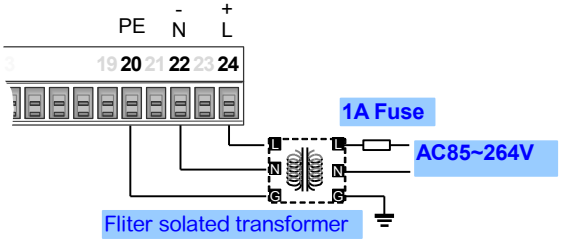


Display:	LCD 65(W)x58(H)mm ； White backlight ； Blue wording Visible under direct sunlight Backlight on time1~15Min (“0” is always light)
Reading:	Upper row 20 digits: Display date 、 time 8888 :4 Digits x 4 rows, Display Value 888888888:9 Digits x 1 row, Display Energy parameters :RS485 communication status ； 2 square status icons Display Master and Slave status ；

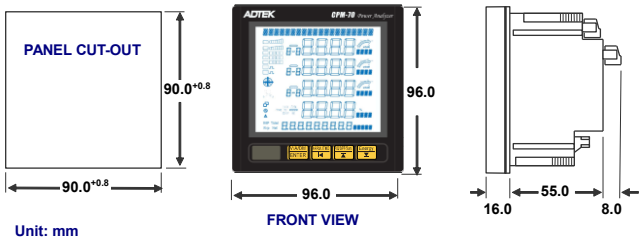
■Connection diagram



■ Connection diagram

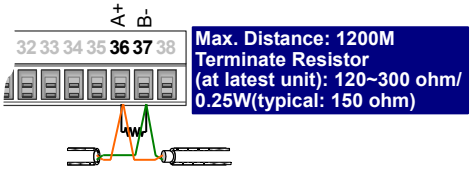


■Dimensions

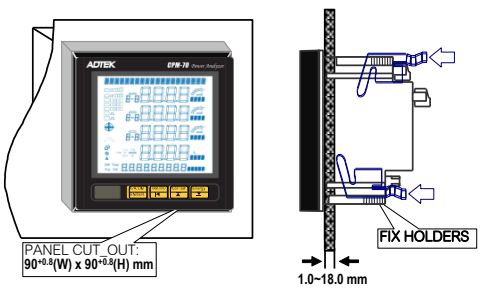


Unit: mm

■ RS485 Communication output



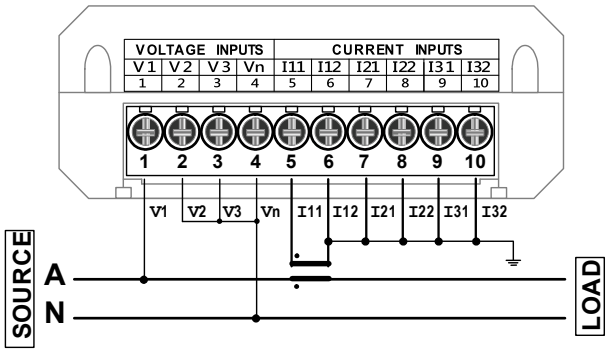
■Installation



■ Voltage and current wiring

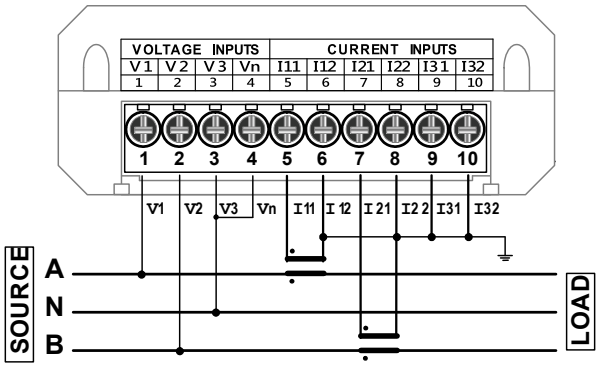
1 Phase 2 Wire

None PT/1CT



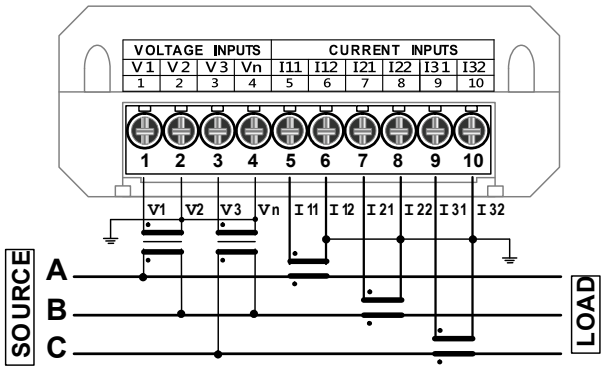
1 Phase 3 Wire

None PT/2CT

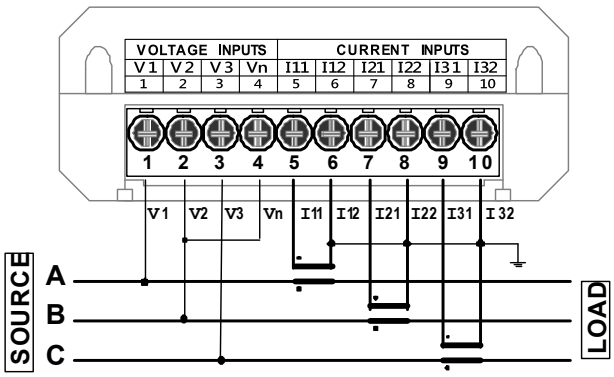


3 Phase 3 Wire

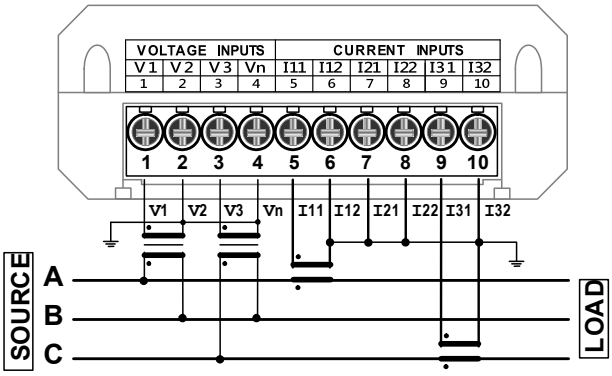
2PT/3CT



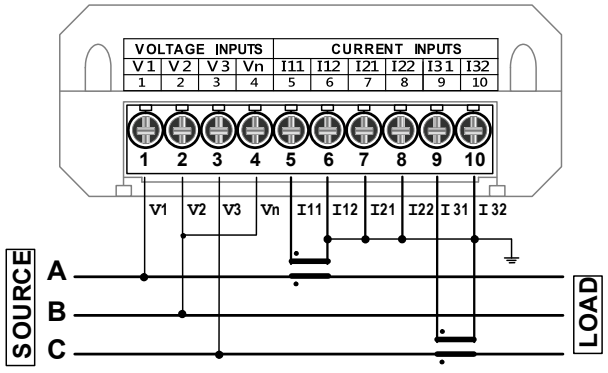
None PT/3CT



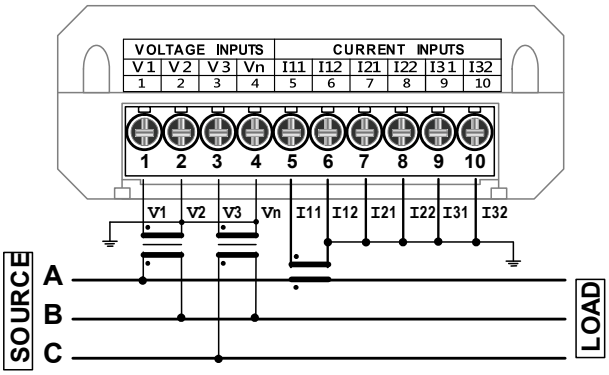
2PT/2CT



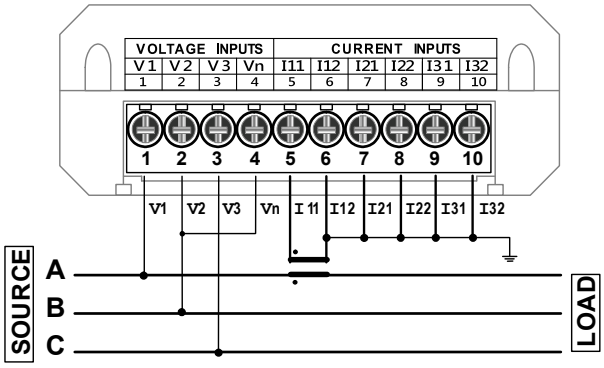
None PT/2CT



2PT/1CT

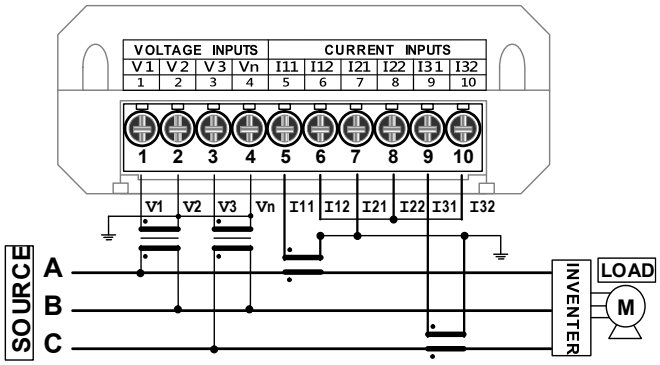


None PT/1CT



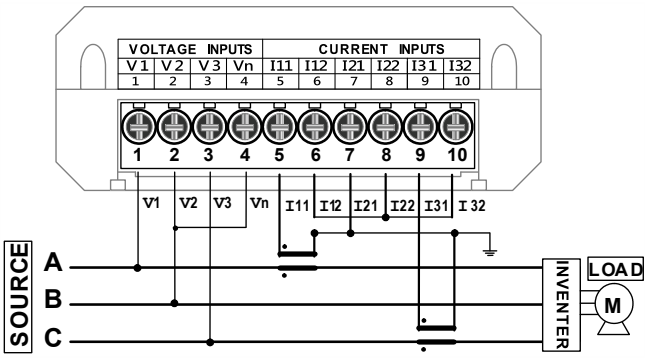
2PT/2CT

※This CT wiring can be use for inverter load or any usual circumstances



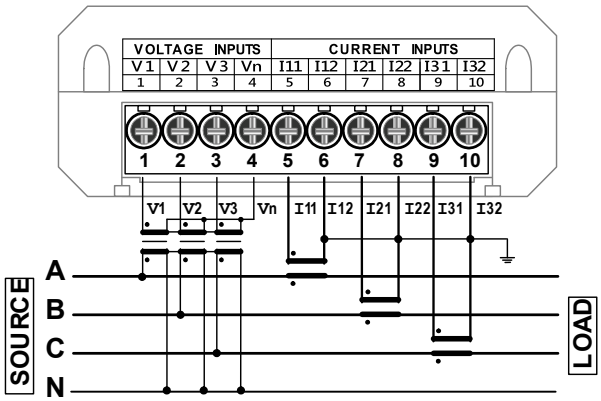
None PT/2CT

※This CT wiring can be use for inverter load or any usual circumstances

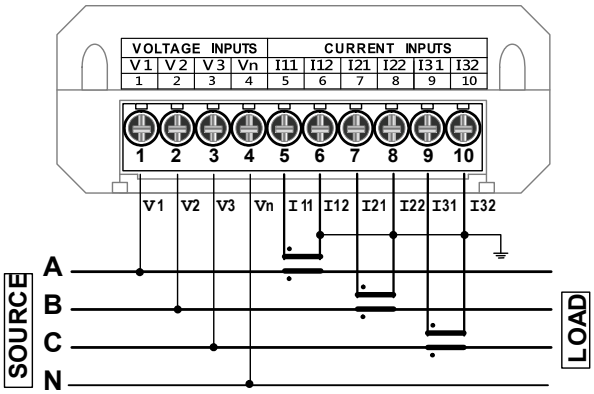


3 Phase 4 Wire

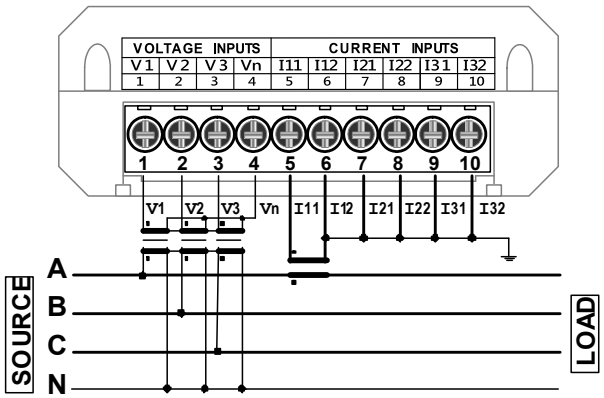
3PT/3CT



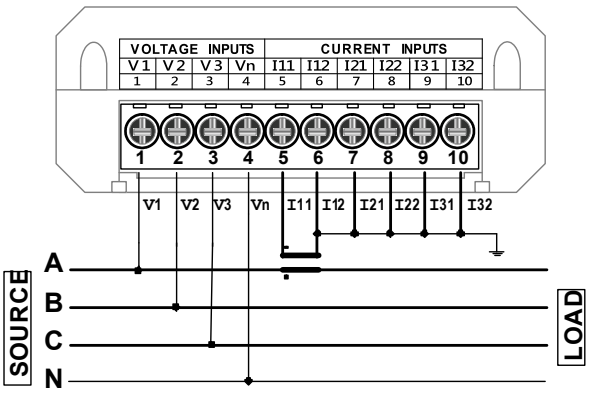
None PT/3CT



3PT/1CT



None PT/1CT

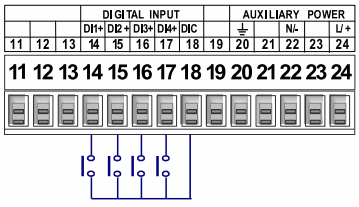


Digital Input(DI)

Output (Terminal Block **2**)

Wire diameter: AWG22~16(0.5~1.3mm²)

1xDI

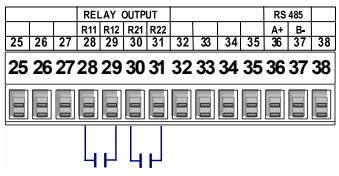


Relay Output(RO)/ Digital Output (DO)

Output (Terminal Block **3**)

Wire diameter: AWG22~16(0.5~1.3mm²)

2xRelay



1xRelay+1xDO