CPM-10 Dual Display Multifunction Meter

■ DESCRIPTION

CPM-10 Multifunction meter product single phase, three phases high accuracy measurement of parameters such as voltage, current, active power, reactive power, apparent power, power factor, frequency, effective energy, with display and remote communication function. Option 1 set relay output, 1 analogue and 1 RS485 (Modbus RTU Mode) or 1 pulse output. Most suitable for power management, remote input/output, alarm and remote signal control uses needs. Having case depth 120mm only, easy panel mounting installation.

■ FEATURE

- **Input 1P2W,1P3W,3P3W,3P4W Unbalanced/Balanced load system's active power, reactive power, apparent power and electric energy (Watts-Hr) etc parameters.**
- **Dual display, upper row 4 digits for voltage/ 4 digits for current (or 10 digits Watts-Hr),lower row 4 1/2 digits Watts.**
- **1 set relay(SPDT) output, with 3 variable setting (R1.1/R1.2/R1.3), each react to setting parameters V.AVG/I.AVG/FREQ/P.TL/Q.TL/ S.TL / PF.AVG / AE.TL / RE.TL / VA / VB / VC / IA / IB / IC / PF-A / PF-B / PF-C / P-A / P-B / P-C / Q-A / Q-B / Q-C / S-A / S-B / S-C, having relay function : Hi / Lo / Hi Hold / Lo Hold / do / OFF; further advance function , start delay, hysteresis, time delay, reset delay etc**
- **1 analogues output same as relay setting parameters.**
  - **Output range: Current 0~10mA / 0~20 mA / 4~20 mA / 4~±20 mA / ±10 mA / ±20 mA (Default 4-20mA)**
  - **Output range: Voltage 0~5V / 1~5 V / 0~10 V / 0~±5 V / 1~±5 V / 0~±10 V / ±5 V / ±10 V (Default 0-10V)**
- **Option pulse and RS 485 communication output.**
- **Outer case standard DIN 96 x 48 mm**
- **Product design according to CE.**

■ Application

Motor control/ panel power monitoring/power consumption monitor and control/power distribution system /intelligent building & automation power management system/ power testing equipment

■ ORDERING INFOMATION

CPM–10 – [A Input range][V Input range] – [Optional Output 1][Optional Output 2][Optional Output 3] – [Aux. Power]

CODE	INPUT RANGE	CODE	INPUT RANGE	CODE	INPUT RANGE
A1	0~1A	C300	*300A/100mA	V1	50~500v
A5	0~5A	C400	*400A/133.3mA		
C005	*5A/2.5mA	C600	*600A/200mA		
C060	*60A/20mA	*: Said Clamp CT			
C100	*100A/33.3mA				
C150	*150A/50mA				
C200	*200A/66.6mA				

CODE	OUTPUT 1
ON	None
OR1	Relay(1st)
OPC1	Pulse(O.C)
OPR1	Pulse(Relay)

Only Pulse OR Relay output

CODE	OUTPUT 2
AN	None
AI1	4~20 mA
AV1	0~10 V

Voltage/Current

CODE	OUTPUT 3
UN	None
U81	RS485

CODE	AUX. POWER
ADH	AC 85~264V DC 100~300 V
ADL	AC/DC 20~56V

■ TECHNICAL SPECIFICATION

Measurement and connection

Connection	Input range			Input consumption
	Voltage	Amp.	Freq.	
1P2W	50~500Vac(VL-N)	1A 5A	45~65 Hz	Voltage:≤0.5VA/Phase or Current:≤0.1VA/Phase
1P3W				
3P3W				
3P4W				

*** Max input 500V, 5A, if exceed please use PT or CT**

Accuracy and resolution (Accuracy add 1.0 % when selected the Clamp Type)

Parameters	Accuracy	Max. Resolution	Display Range
Voltage	0.2%	0.1 V	0~2999.9
Current	0.2%	0.02 A	0~2999.9
Active	0.5%	0.001 kW	-19999~29999
Reactive	0.5%	0.001 kVar	-19999~29999
Apparent	0.5%	0.001 kVA	-19999~29999
Power factor	0.5%	0.001	-0.020~1.000~+0.020
Frequency	0.2%	0.01 Hz	45.00~65.00
Effective	0.5%	0.001 kWh	0~9999999999
Ineffective	0.5%	0.001 kVarh	0~9999999999

Input

Measurement: True RMS Value
Ripple effect: ≤ 0.2% of F.S. at 30% distortion
A/D converter: 16 bits A/D converter

Sampling rate: 128point/Cycle
Response time: ≤100 ms (Average value set as = "1")
System: 1P2W, 1P3W, 3P3W, 3P4W;
Unbalanced / Balanced load

Input range:
Voltage: 50~500V L-N
Primary shunt unit setting: V and KV
PT Primary setting: 50.0V~100KV
PT Secondary setting:50.0~500.0V
Direct Input: Primary = Secondary < 500V
Current: 0 ~ 1/ ~ 5A (max.)
CT Primary setting: 1~2999.9A
CT Secondary setting: 1.000~5.000A (Option)
Frequency: 50/60Hz ± 3Hz,

Max. input capability:
Voltage: 2 X rated voltage continuous
4 X rated voltage continuous 2 minutes
Current: 3 X rated current continuous
10 X rated current continuous 10 seconds
50 X rated current 1 second (5A input type)

Control function

Setting point: 3 sets (1 contact output for 3 set values)
Relay output: 1set SPDT, 1A/230Vac, 3A/115V
Relay settings: Up to 27 parameters relay setting
Relay mode: Hi / Lo / Hi.HLd / Lo.HLd / do / oFF
Function: Start delay/Start band/ Hysteresis /Relay hold

Start band: 0~9999 counts
Start delay: 0:00.0~9(Minutes):59.9(Second)
Run delay: 0:00.0~9(Minutes):59.9(Second)
Off delay: 0:00.0~9(Minutes):59.9(Second)
Hysteresis: 0~5000 counts

Analogue(Optional)

Accuracy: ≤± 0.1% of F.S.; 16 bits DA converter
Ripples: ≤± 0.1% of F.S.
Response time: ≤100 m-sec. (Input range 10~90%)
Isolation: Insulation 1500V between input and output
Output range: [Ao.SL] **Voltage:** 0~5V / 0~10V(Default) / 1~5V
0~2.5~5V / 1~3~5V / 0~5~10V /
-5~+5V / -10~+10V
Current: 0~10mA / 0~20mA / 4~20mA(Default)
4~12~20 mA / -10~10 mA / -20~+20 mA
Output load capability: **Voltage output:** 0~10V ，≧1000Ω
Current output: (0)4~20mA ，≦530Ω
Function: [Ao.HS] Maximum output value display setting
Setting range: -19999~29999
[Ao.LS] Minimum output value display setting
Setting range: -19999~29999
[Ao.Lnt] (Output Hi):Output from 0.00~110.00%
Digital adjustment: [Ao.Pro] Setting range:-32768~+32767
[Ao.SPn]: Setting range: -32768~+32767

RS 485 (Optional)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 bps selectable
Bits: 8 bits
Parity check: Odd、even or none (with 1 or 2 stop bit) selectable
Address: 1 ~ 255 selectable
Wire distance: 1200M max
Terminal resistance: 150Ω.

Pulse output(Optional)

Output mode: 1 contacts open collector，DC 30V, 100mA
Output parameters: Effective energy：(AE.TL / -AE.TL)
Ineffective energy：(RE.TL /-RE.TL)
Output range: Max frequency: 1000Hz；duty cycle 50%
Pulse/Count: 1 Pulse/1~9999 Count selectable.

Power supply

Working voltage: ADH:AC 85~264V，DC 100~300V
ADL:AC/DC 20~56V
Power consumption: AC Power ≤12VA , DC Power ≤ 6W
Data storing: By EEPROM

Safety

Insulation: AC 2.0 KV for 1 min, Power/Input/Output/Casing
Isolatuion resistance: ≥100M ohm at 500Vdc, Power/Input/Output/Casing
Signal isolation: Power/Input/Relay/RS485/Analogue output/Pulse
EMC: EN 55011:2002; EN 61326:2003
LVD: EN 61010-1:2001

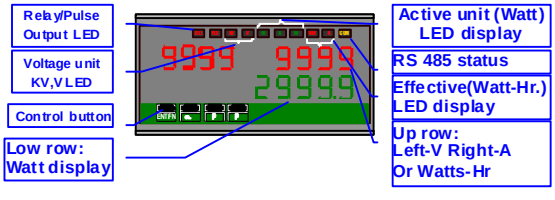
Working environment

Temperature.: 0~60 ˚C
Humidity.(%RH): 20~95 %RH, Non condensing
Temp. coefficient: ≤ 100 PPM/˚C
Storage: -10~70 ˚C
Protection: Front panel: IEC 529 (IP52); Case: IP30

Mechanical

Dimension: 96mm(W) x 48mm(H) x 120mm(D)
Mounting size: 92mm(W) x 44mm(H)
Case material: ABS Non-flammable (UL 94V-0)
Installation: Panel mounting
Terminal: Plastic NYLON 66 (UL 94V-0)
10A 300Vac, M2.6, 16~22AWG
Weight: 350g(Aux. Power : ADH, ADL)

■ Front panel



Display:

Low row: 5 Digits; 0.28”(0.71cm) Green LED (Watt)
Up row: 10 Digits; 0.28”(0.71cm) Red LED
Selection [d.SEL]: **When[u-A]:Left**、right each 4 Digits(V/A)
When[PWH]: 10 Digits totalizer (Watts-Hr)
Display unit: **Active power**: 3 green rectangular LED for W / KW
Effective : 3 rectangular red LED for Wh / KWh / MWh

I/O Status:

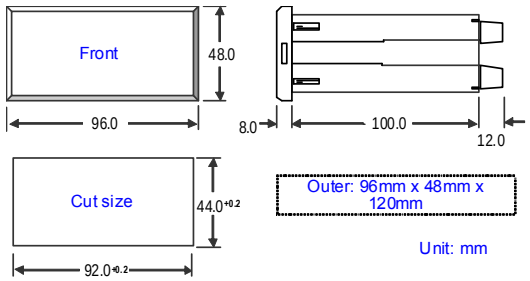
PLS **Pulse output display:** 1 rectangular red LED
During pulse transmission, LED will blink；when
It blink faster mean Watt-Hr. accumulate more
COM **RS 485 communication:** 1 rectangular orange LED
RS485 signal send/receive data，LED will blink
When COM blink faster, data transfer speed is higher
RL1 **Relay output LED:**1 rectangular red LED
LED on when relay output;;

Control button: 4 control buttons: Enter, function./ Shift / Up / Down
Up key: Value increase / return to previous level
Down key: Value decrease / enter next level
Shift key: Move decimal point / return to up level / escape setting
Enter/Fun key: Enter setting status / save and enter next function parameters

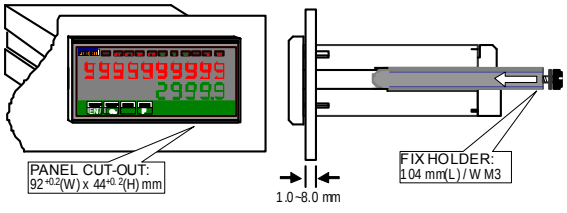
Password function: 4 digits password setting；range 0000~9999
Password for parameters setting level needed.
Password can be change at parameters level
Please contact us if password lost.

Lock function: 4 lock modes, No lock/User level lock/Parameters Setting lock/Lock all
None: No lock，all function and parameters selectable
User Level: Open for viewing level, not able to change any setting if locked
Engineer Level: Open for viewing level, not able to change any setting If locked
All: Locked all level.

■ Casing dimension



■ Installation



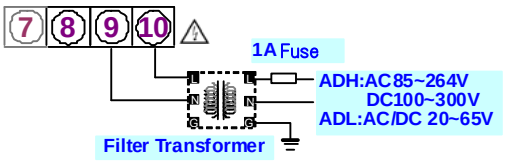
Please install meter within working temperature & humidity environment

■ Wiring diagram

Please check input operating voltage before sending power, terminal connection to right number ◦ Advise adding fuse/switch in front of power.

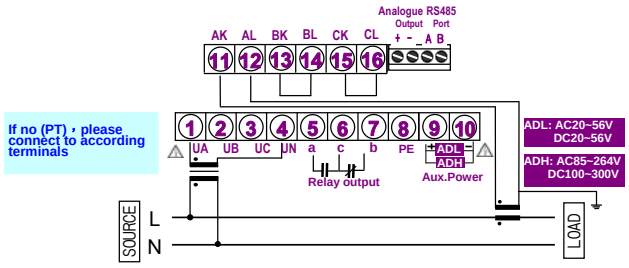
RS485 / Pulse / Relay wiring: AWG22~16(0.5~1.3mm^2)
Other: Wiring: AWG15~10(1.5~2.5mm^2)

Operating power connection

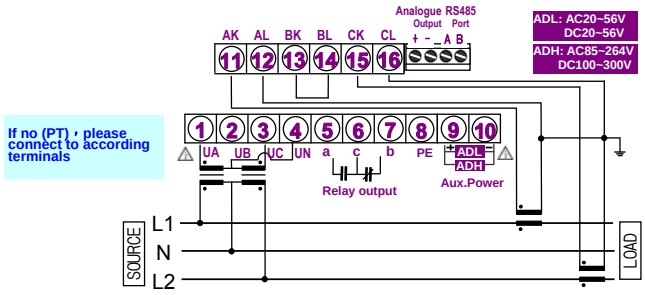


Input connection

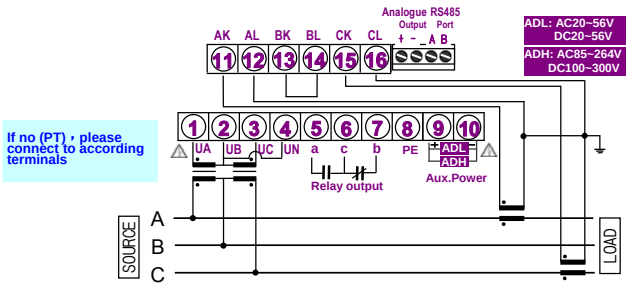
1 Phase 2 wire (Unbalanced load)



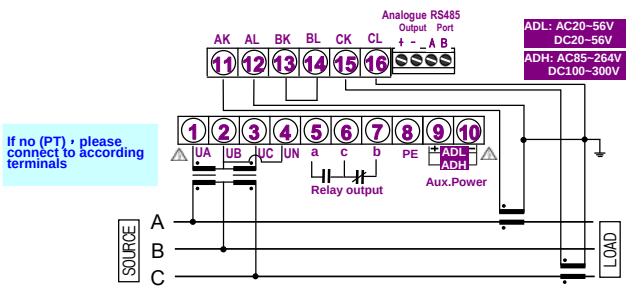
1 Phase 3 wire(Unbalanced load)



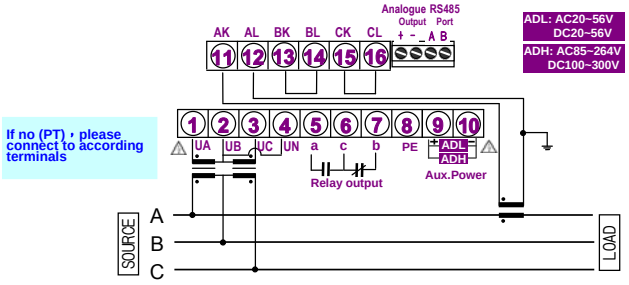
3 Phase 3 wire(Unbalanced load 2CT)



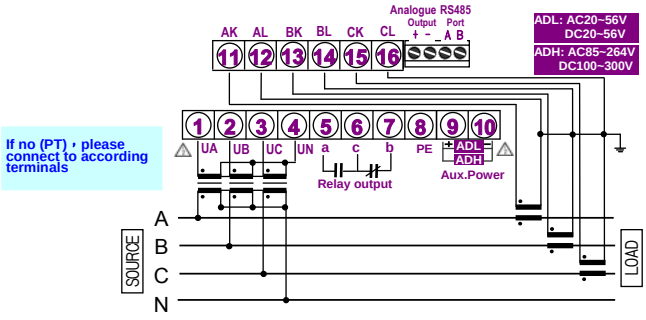
3 Phase 3 wire(Unbalanced load 3CT)



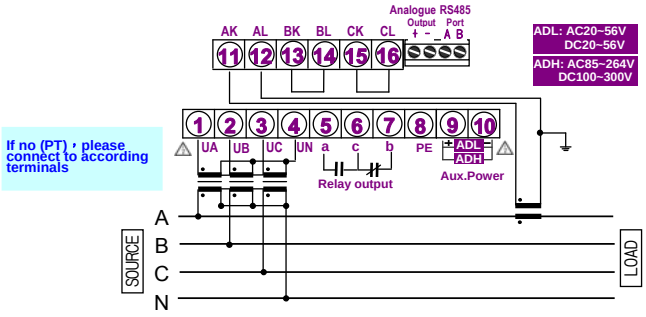
3 Phase 3 wire(Balanced load 1CT)



3 Phase 4 wire(Unbalanced load 3CT)



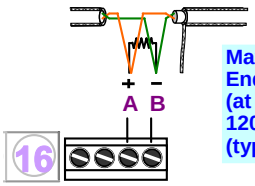
3 Phase 4 wire(Balanced load 1CT)



Output signal connection

Due to limited terminals, pulse and relay output is using same terminal, only 1 output is available, will not have both. Please follow product code, specification on label and connection according to given on product

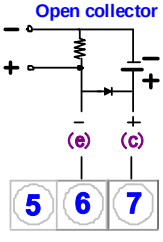
RS485 output



Max distance: 1200M
End terminal resistance (at latest unit): 120~300ohm/0.25W (typical: 150ohm)

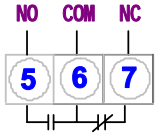
Pulse output

Open collector output:



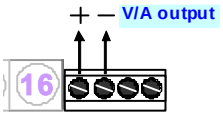
Max load 30V/60mA

Relay output:



Contact load 1A/230V , 3A/115V

Analogue output



1 Analogue + RS485 Output