CPM-10 Economical Multifunction Power Meter

■ DESCRIPTION

CPM-10 Multifunction Power meter measure single phase 2 wire ,single phase 3 wire ,three phase 3 Wire and 3 Phase 4 wire systems with high accuracy measurement for parameters such as voltage, current ,active power, reactive power, apparent power, power factor ,frequency, effective energy (V,A,W,Watt-Hr,Var,Var-Hr,VA,PF ,Hz), having LED display and standard communication RTU Modbus RS485..

Optional functions 1 set relay output,1 analogue,1 RS485 (ModbusRTU Mode) or 1 pulse output. Most suitable for power management,remote input /output, alarm and remote signal control uses needs.

Case depth 120mm only, easy panel mounting installation



인증서(CERTIFICATE)
LVD(CE),EMC(CE)

■ FEATURE

- Measure 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 and voltage/ 4 digits for current (or 10 digits Watts-Hr),lower row 4 1/2 digits Watts. (0~29999)
- 1 set relay(SPDT) output, with 3 variable setting (R1.1/R1.2/R1.3), can be set to below 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 / OFF; further advance function , start delay, hysteresis, time delay, reset delay etc
- 1 analogue output same as relay setting parameters. Selectable output range for voltage or currents
  - ➢Output ranges for Current 0~10mA / 0~20 mA / 4~20 mA / 4~±20 mA / ±10 mA / ±20 mA (Default 4-20mA)
  - ➢Output ranges for 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 or RS 485 communication output.
- Outer case standard DIN 96 x 48 mm
- CE approved

■ 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
A1	0~1A	C300	*300A/100mA
A5	0~5A	C400	*400A/133.3mA
C005	*5A/2.5mA	C600	*600A/200mA
C060	*60A/60mA	MV	*333mVac
C100	*100A/33.3mA	*: Said Clamp CT	
C150	*150A/50mA		
C200	*200A/66.6mA		

CODE	INPUT RANGE
V1	50~500v

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,

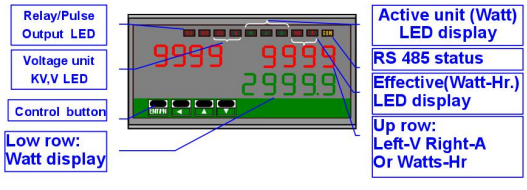
Max. input capability:
Voltage: 2 X rated voltage continuous
4 X rated voltage continuous 2 minutes
Current: 3 X rated current continuous
10 X rated current continuous 10 seconds
50 X rated current 1 second (5A input type)

Control function

Setting point: 3 sets (1 contact output for 3 set values)
Relay output: 1set SPDT, 5A/230Vac, 5A/115V
Relay settings: Up to 27 parameters relay setting
Relay mode: Hi / Lo / Hi.HLd / Lo.HLd / 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: [RaSL]	**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:	[RaHS] Maximum output value display setting Setting range: -19999~29999 [RaLS] Minimum output value display setting Setting range: -19999~29999 [RaLnt] (Output Hi):Output from 0.00~110.00%
Digital adjustment:	[Ra2ro] Setting range:-32768~+32767 [RaSPn]: 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 channel 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 61326-1:2006 EN61000-3-2:2006+A1:2009+A2:2009 EN61000-3-3:2008
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



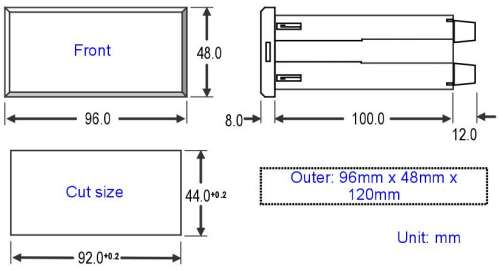
Display:

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[tUtH]:** 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

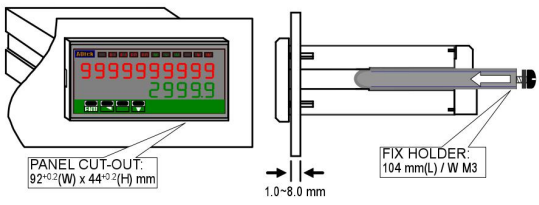
I/O Status:

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



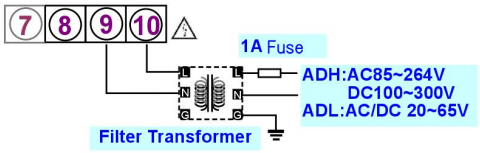
Please install meter within working temperature & humidity environment

■ Wiring diagram

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

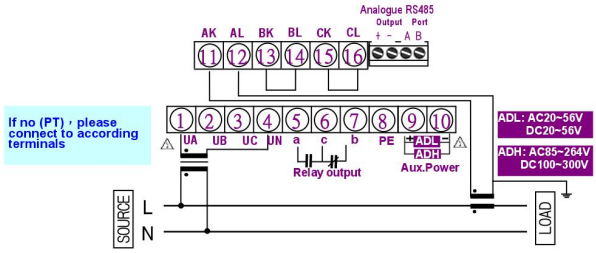
RS485 / Pulse / Relay wiring: AWG22~16(0.5~1.3mm²)
Other: Wiring: AWG15~10(1.5~2.5mm²)

Operating power connection

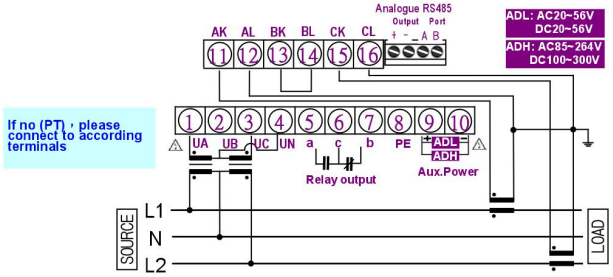


Input connection

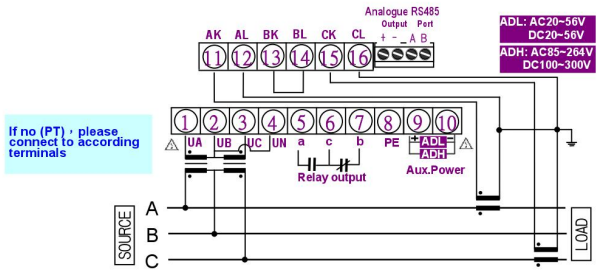
1 Phase 2 wire (Unbalanced load) ■With CLAMP CT, do not ground or parallel connection the secondary side, otherwise the header burned



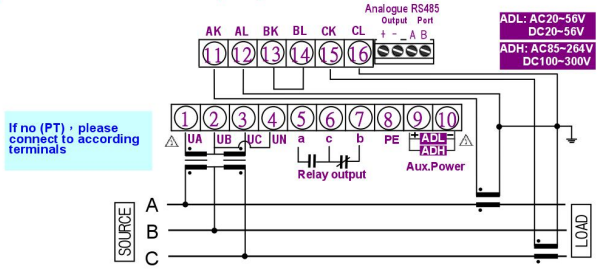
1 Phase 3 wire(Unbalanced load) ■With CLAMP CT, do not ground or parallel connection the secondary side, otherwise the header burned



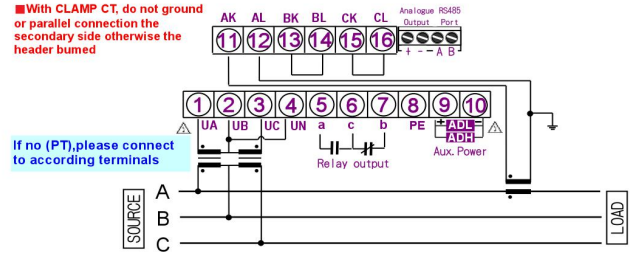
3 Phase 3 wire(Unbalanced load 2CT) ■With CLAMP CT, do not ground or parallel connection the secondary side, otherwise the header burned



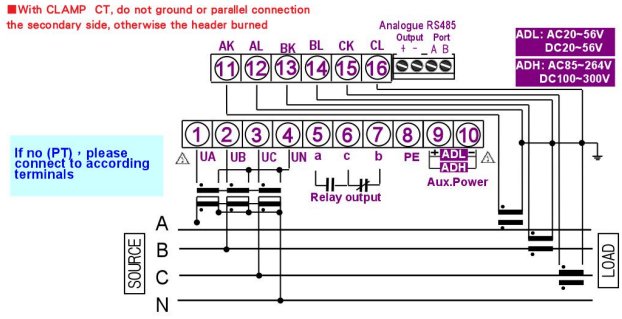
3 Phase 3 wire(Unbalanced load 3CT) ■With CLAMP CT, do not ground or parallel connection the secondary side, otherwise the header burned



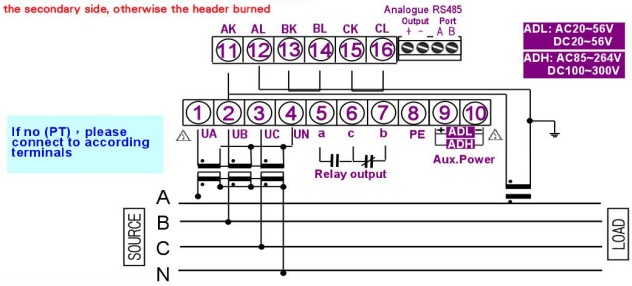
3 Phase 3 wire(Balanced load 1CT)



3 Phase 4 wire(Unbalanced load 3CT)



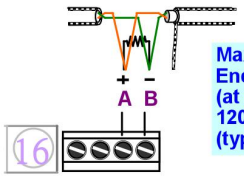
3 Phase 4 wire(Balanced load 1CT)



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

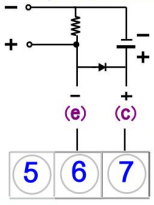
RS485 output



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

Pulse output

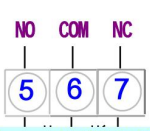
Open collector output:



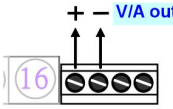
Max load 30V/60mA

Relay output:

Contact load 5A/230V , 5A/115V



Analogue output



1 Analogue + RS485 Output

