

## DESCRIPTION

MWH-10A Energy Meter offers high accuracy measurements of Energy (Watt-Hr) and Active Power, display and communication functions. It is also with 1 relay output, 1 analogue output, 1 RS485 communication port, and 1 pulse output in option as well

112mm (D) is ideal for assembling in panels with limited penetration depth



## FEATURE

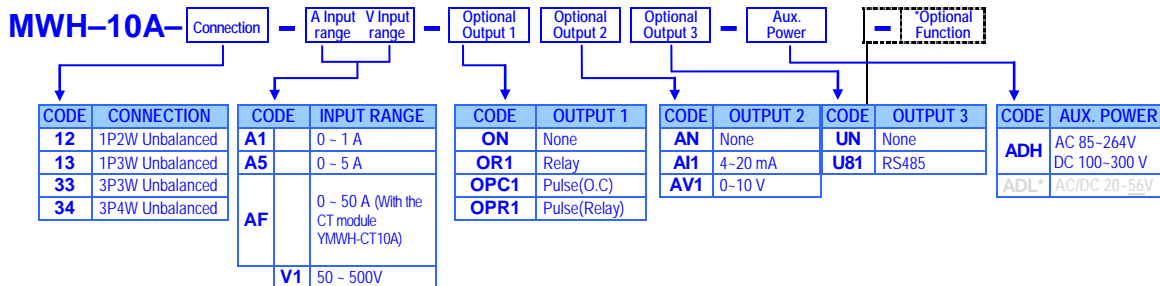
- Measuring Watt & Watt-Hr in 1P2W, 1P3W, 3P3W, 3P4W Unbalanced systems
- Dual displays for 10 digits Watts-Hr and 4 2/3 digits Active Watts
- 1 relay output for Hi / Lo / Hi Hold / Lo Hold / OFF modes, and with start delay, hysteresis, energized time delay, de-energized time delay functions
- Analogue output, pulse output and RS 485 communication are available in options
- Standard panel cutouts: 1/8 DIN 96 x 48 mm
- Meet CE requirements

## APPLICATIONS

Control panels and Consumption monitoring  
Energy and tariff managements for building automation

Switchgear distribution systems  
Energy Testing Equipment

## ORDERING INFORMATION



## 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

Parameters	Accurac	Resolution(Programmable)	Display Range
Active Power	0.5%	0.001 (kW/ kWh)	-19999~29999
Active Energy	0.5%		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  
**Accuracy:** ≤ 0.5% of FS ± 1C;  
**Sampling rate:** 128point/Cycle  
**Response time:** ≤500 ms (Average value set as = "2")

### System:

### Input range:

1P2W, 1P3W, 3P3W, 3P4W / Unbalanced load  
**Voltage: 50~500V L-N**

Primary shunt unit setting: V and KV  
 PT Primary setting:50.0V~299.99KV  
 PT Secondary setting:50.0~500.0V  
 Direct Input: Primary = Secondary < 500V  
**Current: 0 ~ 1 A or 0~ 5A (max.)**  
 CT Primary setting: 1~2999.9A  
 CT Secondary setting fixed: 1.000 or 5.000A (by order)

### 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:** 1 sets contact output  
**Relay output:** 1set SPDT, 1A/230Vac, 3A/115V  
**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

#### 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  
 Relay:DC24V/1A (frequency has to under 50Hz)  
**Output range:** Maximum frequency: 1000Hz; duty cycle 50%  
**Pulse divider:** 1 Pulse/1~9999 Count programmable.  
**Pulse high-level output time:** 0(Auto)~1/~5000x4ms setting

#### Safety

**Insulation:** AC 2.0 KV for 1 min, Power/Input/Output/Casing  
**Isolation 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  
**Safety(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: IP20

#### 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)

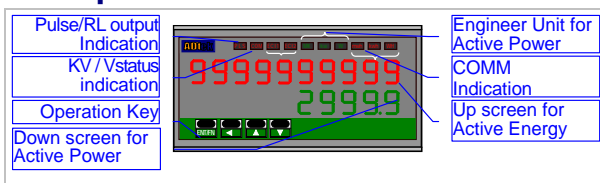
#### Power supply

**Working voltage:** ADH:AC 85~264V · DC 100~300V  
 ADL:AC/DC 20~56V

**Power consumption:** AC 電源 ≤ 12VA · DC 電源 ≤ 6.0W

**Data storing:** By EEPROM

## ■ Front panel



**Display:** **Dual screen display for active power and active**  
**Low row:** 5 Digits; 0.28"(0.71cm) Green LED  
**Up row:** 10 Digits; 0.28"(0.71cm) Red LED  
**Display unit:** **Active power:** 3 green rectangular LED for W / KW  
 Effective : 3 rectangular red LED for Wh / KWh / MWh

#### I/O Status:

**Pulse output display:** 1 rectangular red LED  
**PLS** 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.

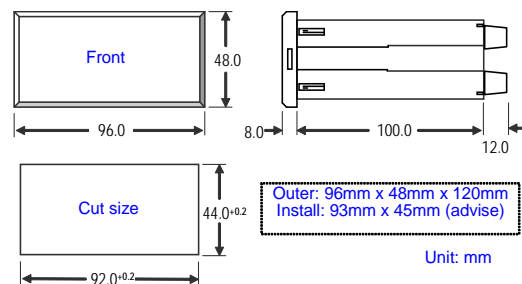
#### Lock function:

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.

#### Analogue(Optional)

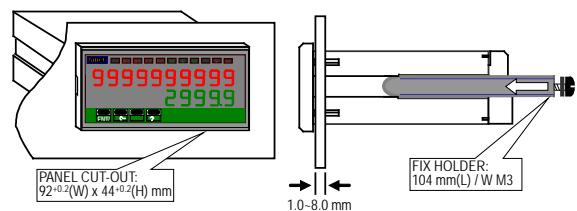
**Accuracy:**  $\pm 0.1\%$  of F.S.; 16 bits DA converter  
**Ripples:**  $\pm 0.1\%$  of F.S.  
**Output range:** **Voltage:** 0~5V / 0~10V(Default) / 1~5V  
**Current:** 0~10mA / 0~20mA / 4~20mA(Default)  
**Function:** [Output Hi] (Output Hi ):Output from 0.00~110.00%

## ■ Casing dimension



## ■ Installation

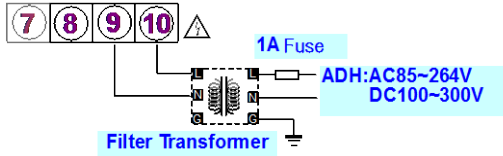
Please install meter within working temperature & humidity environment.



## Wiring diagram

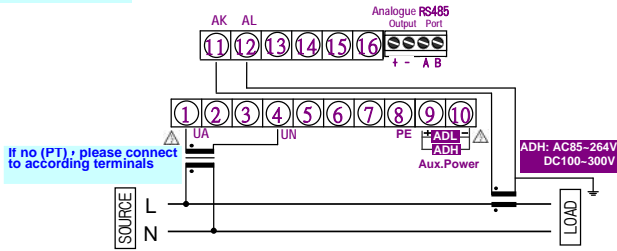
Please check input operating voltage before sending power, terminal connection to right number. Advise adding fuse/switch in front of power.  
 RS485 / Analog Output wiring: AWG22~16(0.5~1.3mm<sup>2</sup>)  
 Other: Wiring: AWG15~10(1.5~2.5mm<sup>2</sup>)

### Operating power connection

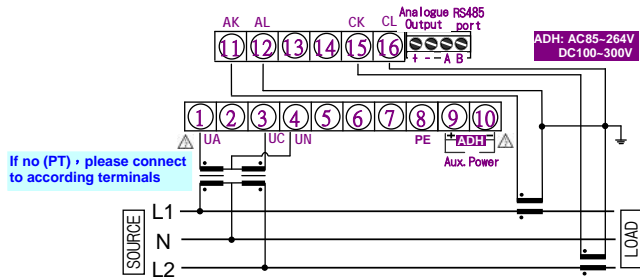


### Input connection

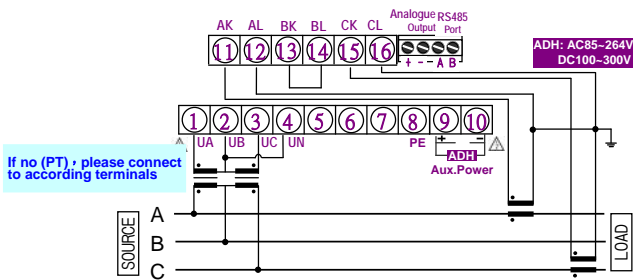
#### 1 Phase 2 Wire



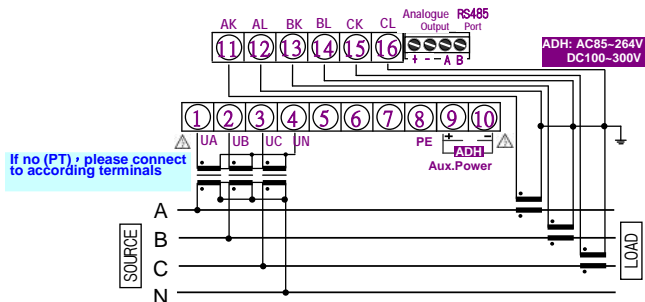
#### 1 Phase 3 Wire



#### 3Phase 3wire 2CT(Unbalanced Load)

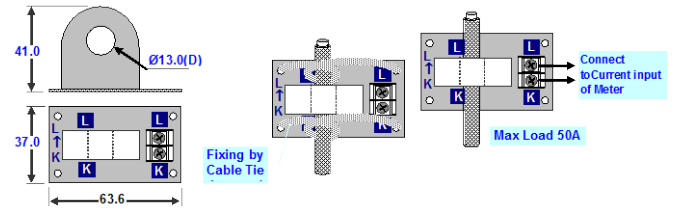


#### 3Phase 4wire 3CT(Unbalanced Load)



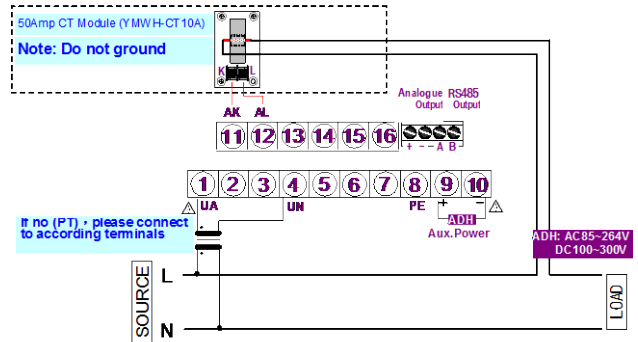
### Input connection

Optional modules: high-precision CT module – YMWH-CT10A – 0.1class

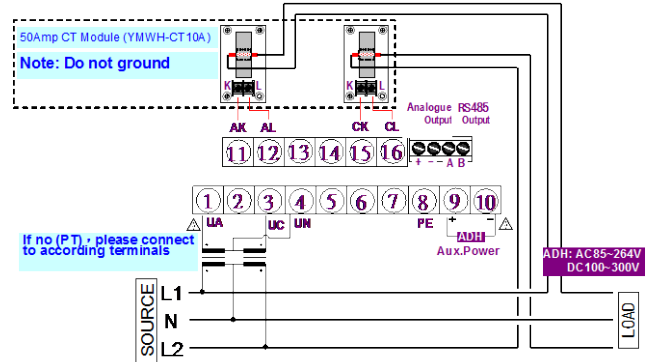


Do not ground the use of CT module - YMWH-CT10A

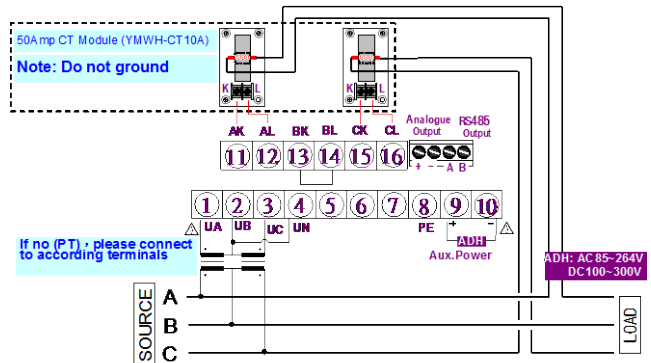
#### With YMWH-CT10A(CT Module) 1P2W

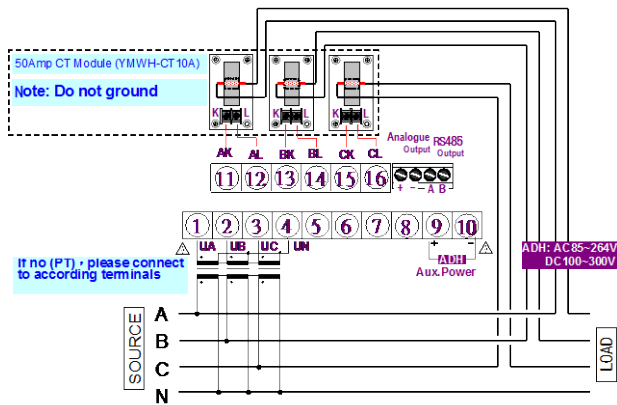


#### With YMWH-CT10A(CT Module) 1P3W

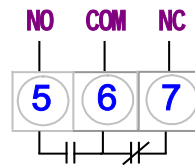


#### With YMWH-CT10A(CT Module) 3P3W





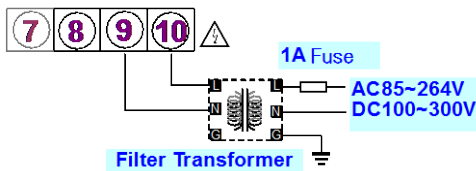
Contact load  
1A/230V · 3A/115V



## Wiring diagram

Please check input operating voltage before sending power, terminal connection to right number · Advise adding fuse/switch in front of power.  
RS485 / Analog Output wiring: AWG22~16(0.5~1.3mm<sup>2</sup>)  
Other: Wiring: AWG15~10(1.5~2.5mm<sup>2</sup>)

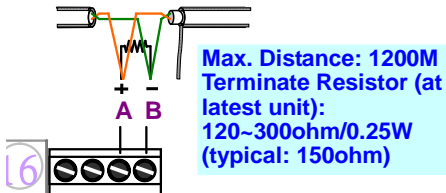
### Operating power connection



### Output signal connection

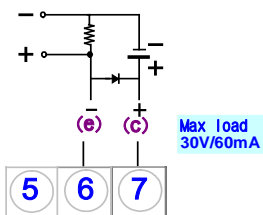
Due to limited terminals · left side terminal used for analog output; right terminal used for RS485 output Please follow product code, specification on label and connection according to given on product

### RS485 output



### Pulse output

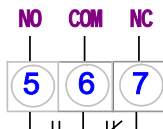
#### Open collector output:(OPC1)



#### Relay Pulse output:(OPR1)

Action frequency  
less than 30Hz

Contact load  
1A/230V · 3A/115V



### 1 Analogue + RS485 Output

