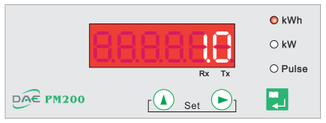
# PM200

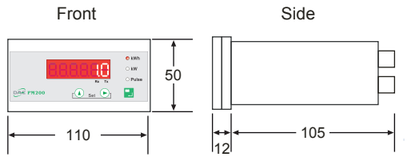
Installation Guide

## 1 Faceplate

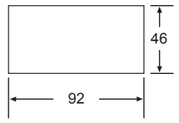



| | |
|---|---|
| kWh | Real Energy:<br>When over 99999.9, displays as two pages with upper and lower half of value alternating every 2 seconds. |
| kW | Real Power |
| Pulse | kWh pulse output indicator |
| Rx/Tx | RS485 Activity Indicators -<br>RX: receive, TX: transmit |
| ▲ | Increment Key |
| ▶ | Next Digit Key |
| ↵ | Display Mode / Next Parameter Key |

## 2 Dimensions



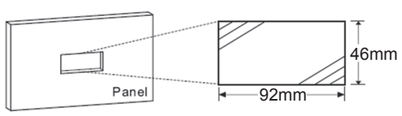

Panel Cutout :



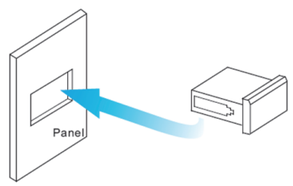

Unit：mm

## 3 Mounting

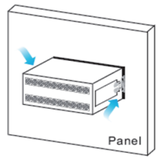
1. Make a cutout in the panel to fit in the device.




2. Remove the mounting brace, insert and push device into cutout, rear end first.




3. Put the mounting brace back onto the device and push forward until secure.




## 4 Terminals

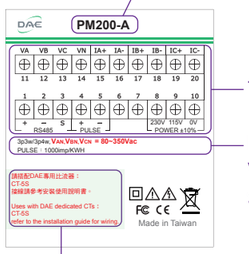
| Reference Voltages | | | | CT Input | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| VA | VB | VC | VN | IA+ | IA- | IB+ | IB- | IC+ | IC- |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| + | − | S | + | − | | | 230V | 115V | 0V |
| RS485 | | | PULSE | | | | POWER ±10% | | |
| RS485 | | | Special Functions | | | | Auxiliary Power | | |

## 5 Wiring Diagrams

Warning：
Follow the wiring diagram appropriate for the model of the device purchased. Do not modify or take wiring short cuts as it may damage the device.

PM200-□
└ Dedicated CT Type

Product Model：PM200-A
PM200-B
PM200-C
PM200-STD



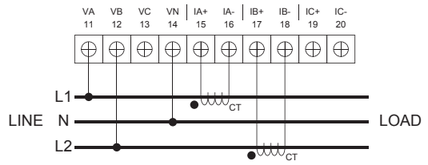

◎Model & Dedicated CT Pairings

PM200-A：CT-5S
PM200-B：CT-50S、CT-100S、CT-200S
CT-50D3、CT-200D3
PM200-C：CT-400C、CT-600C

**Refer to the respective CT datasheet for its detailed specifications.

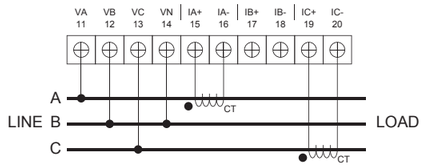
## ◎Wiring For Models Using Dedicated CT

1. Single Phase 3 Wire - 2 CTs
(use with AC110/220V)



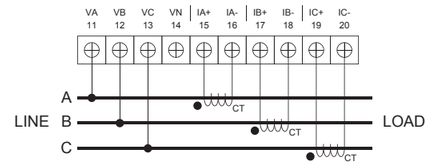

L1,L2 = AC 110/220V ， CT Primary > 5A
Exception: When using the CT5S, the primary should be less than 5A

2. 3 Phase 3 Wire - 2 CTs
(Use with AC110V or AC220V)



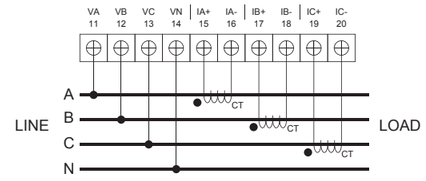

VAB,VAC,VCA ≤ AC 350V ， CT Primary > 5A
Exception: When using the CT5S, the primary should be less than 5A

3. 3 Phase 3 Wire - 3 CTs
(Use with AC380V or AC440V)




VAB,VAC,VCA ≤ AC 600V ，CT Primary > 5A
Exception: When using the CT5S, the primary should be less than 5A

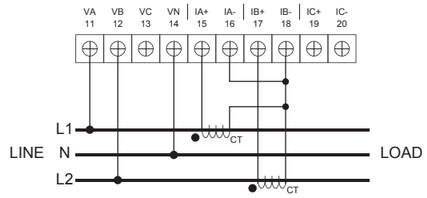
4. 3 Phase 4 Wire - 3 CTs
(Use with AC120/208V or AC220/380V)




VA,VB,VC ≤ AC 350V ， CT Primary > 5A
Exception: When using the CT5S, the primary should be less than 5A

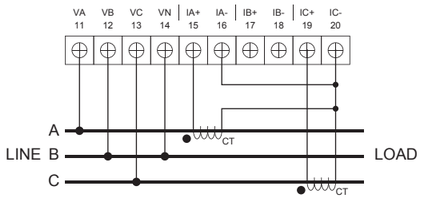
## ◎Wiring For PM200-STD Model Using Regular 5A Output CTs

1. Single Phase 3 Wire - 2 CTs
(use with AC110/220V)



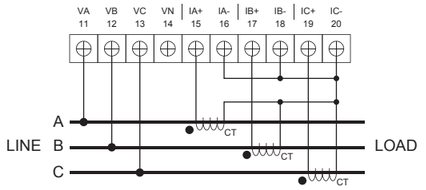

L1,L2 = AC 110/220V ，CT Primary > 5A

2. 3 Phase 3 Wire - 2 CTs
(Use with AC110V or AC220V)



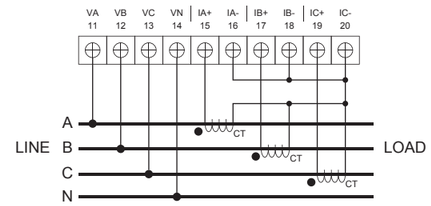

VAB,VAC,VCA ≤ AC 350V ，CT Primary > 5A

3. 3 Phase 3 Wire - 3 CTs
(Use with AC380V or AC440V)




VAB,VAC,VCA ≤ AC 600V ，CT Primary > 5A

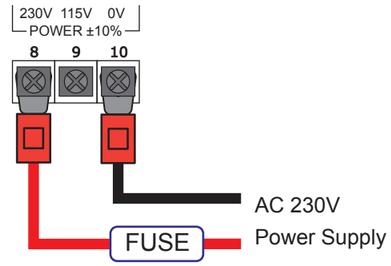
4. 3 Phase 4 Wire - 3 CTs
(Use with AC120/208V or AC220/380V)



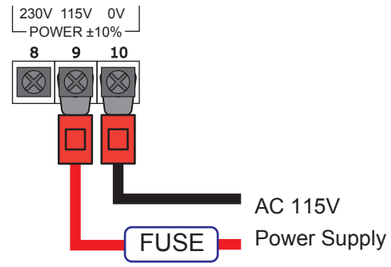

VA,VB,VC ≤ AC 350V ，CT Primary > 5A

## ◎Auxiliary Power Wiring Detail

Wiring for AC 230V：




Wiring for AC 115V：



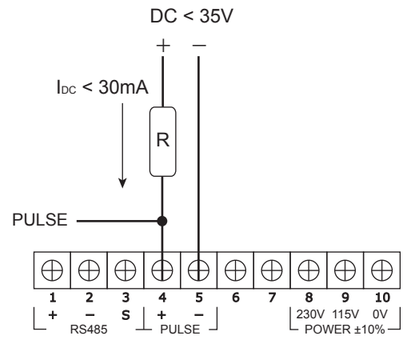

## 6 Pulse Out

◎PULSE OUT：

Pulse Out Assignment：
PULSE：NORMAL = DC V
PULSE OUT = 0V

Pulse Out (Meter Constant): 1000 imp/kWh

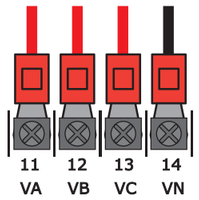
Pulse out wiring：



## 7 Cable Material

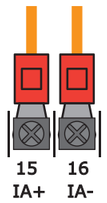
1.Reference voltage wire

Seven stranded 16AWG or 1.25mm$^2$ wire terminated with Y terminal lug Y1.25-3S.



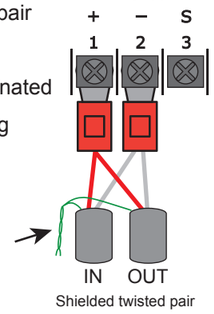

2. CT lead wire

Seven stranded 16AWG or 1.25mm$^2$ wire terminated with R terminal lug R1.25-3S.




3. Communication Cable

Shielded twisted pair cable (UL2464) 24~22AWG terminated with Y terminal lug Y1.25-3S




## 8 Operation

### A. Normal Mode

1. Before power up: Press the , then turn on the power to zero out both the kWh and kVArh(see section Resetting to Zero).

**Warning: The data cannot be restored once cleared

2. After power up: Press the to cycle through the displayable values

Total Real Energy (kWh)
↓
Total Real Power (kW)

### B. Setup Mode

1. Press both the ▲ and ► keys simultaneously to enter setup mode.
2. Press the key to save the changed parameter and move on to the next parameter
3. Press the ▲ key to increment the parameter
4. Press the ► key to move to the next digit

Setup Parameters :

(1) 888888 : LED Segment check (read only, not settable)

(2) r-0313 : Firmware version (read only, actual version may vary)

(3) Ad-188 : Device address, set from 0 to 254

(4) br2400 : Baud rate, selectable values 1200 / 2400 / 4800 / 9600

(5) Pt0000 : PT ratio, wait 3 seconds for the value to show up, set from 1.00 to 400.00

**Note: PT*CT ≤ 300,000

(6) Ct0000 : CT ratio, set from 1 to 1000

**Note: PT*CT ≤ 300,000

## 9 Power Up Checklist

### A. Before Power Up

☐ 1. Make sure that the auxiliary power is properly connected.

☐ 2. Make sure that the CTs are wired properly using the appropriate wiring diagram.

☐ 3. Make sure that the wires are tightly and securely screwed.

☐ 4. Make sure that the PM200 is mounted securely.

☐ 5. Make sure that the RS485 polarity are connected (+) to (+) and (–) to (–).

### B. After Power Up

☐ 1. Make sure that each LED segment lights up.

☐ 2. Check that each parameter setting is set accordingly.

## 10 Troubleshooting

Q：Why does the power have a nonsensical value?

A：(1) This could be because the orientation and pairings of the voltages or currents are mismatched.

(a)The CT lead wires has been reversed or the direction of the load wire is in the opposite direction.

(b) The voltage and current phases are mismatched.

Example: The A phase voltage is paired with the B phase current

(2) The voltage and current phases are already wrong for the existing wiring.

(3) Use a high accuracy multi-meter to check that the values are truly nonsensical.

Q：Why is the communication unstable or non-existent?

A：(1) Make sure that the bus is daisy chain and neither as star nor tree topology.

(2) Check that the communication converter is working and set up working properly and that the there are no shorts or open circuits.

(3) Check that the device address, baud rate matches that of the meter reading software. Each device on the same bus should have its own unique address and should not be duplicated. The baud rates for all devices should be the same.

(4) Check to make sure the there are no reversed polarities on the RS485 bus. All (+) are connected together and all (–) are connected together.

(5) The bus should not form a closed loop.

(6) Total bus length should not be more that 1000 meters long and total devices on the bus should not be more 32. Use repeaters if the bus is to exceed 1000 meters.

## 11 Wiring and Setup Checklist

1. Check that the wiring type setting matches the actual CT wiring.
2. Check that the auxiliary power is connected correctly (note that 110V and 220V have different terminals)
3. Check that the PT ratio is set in accordance with PT used.
4. Check that the CT ratio is set in accordance with CT used.
5. Check that the wires are screwed tightly to their terminals.
6. Check that the device address setting matches the meter reading software.
7. Check that the reference voltage is for the load being measured.
8. Check that the baud rate matches the meter reading software.

## 12 Safety Precautions

Please follow the precautions outlined below for the protection your safety and that of the device.

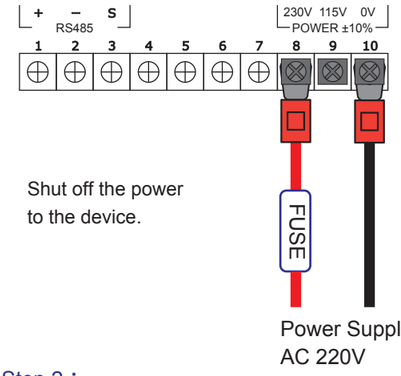
1. After opening the packaging, check to make sure that nothing has been damaged during transport.
2. Check that the model and specifications printed on the box and the device are the same.
3. This device is suited for regular power panels.
4. This device does not require special ventilation or heat dissipation.
5. Strictly follow the recommended wiring diagrams.
6. Do not install device in places where it will get wet, accumulate moisture, or accumulate dust.
7. When installing this product, also install the fuses, breakers or other power cutoff safety devices at the same time.
8. This mark ⊡ means double insulation.

⚠ Warning! When installing or making changes to the wiring, make sure to turn off power to the product and adjacent sources of high voltage to avoid electric shock.

## 13 Resetting to Zero

Resetting the accumulated meter reading to zero after completing the installation and testing.

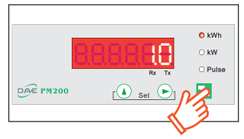
Step 1：




Shut off the power to the device.

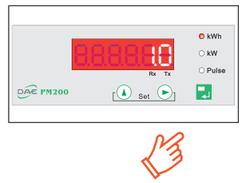
Power Supply AC 220V

Step 2：




Press and hold the page/enter button; do not let go until completing step 3.

Step 3：




Restore power to the device, the button can now be let go of; the kWh has been reset to zero.



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