PM-2133DP & PM-2133D-xxxP
Quick Start v1.1, May 2025

Packing List

In addition to this guide, the package includes the following items:



PM-2133D-xxxP



Cable ties * 3



CT * 3



PM-2133DP

Technical Support

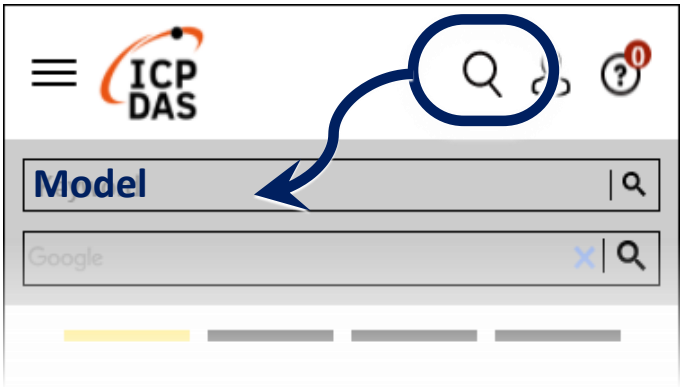
service@icpdas.com

www.icpdas.com

Resources

How to search for drivers, manuals and spec information on ICP DAS website.

- For Mobile Web



- For Desktop Web



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1.1.Caution & Warning



The meter contains hazardous voltages, and should never be disassembled. Failing to follow this practice will result in serious injury or death. Any work on or near energized meters, meter sockets, or other metering equipment could induce a danger of electrical shock. It is strongly recommended that all work should be performed only by qualified industrial electricians and metering specialist. ICP DAS assumes no responsibility if your electrical installer does not follow the appropriate national and local electrical codes.

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice.

2. Installation

2.1.

- Products come with external split type clip-on CT's. Disconnect the CT's or use other CT's is highly prohibited.
- Please read this operation manual carefully before using.
- Please re-confirm the measure position.
- Reconfirm the RST (ABC) phase sequence of the power system.
- Meter auxiliary power for PM-2133D series is AC +85 ~ +264 VAC (277 VAC available).

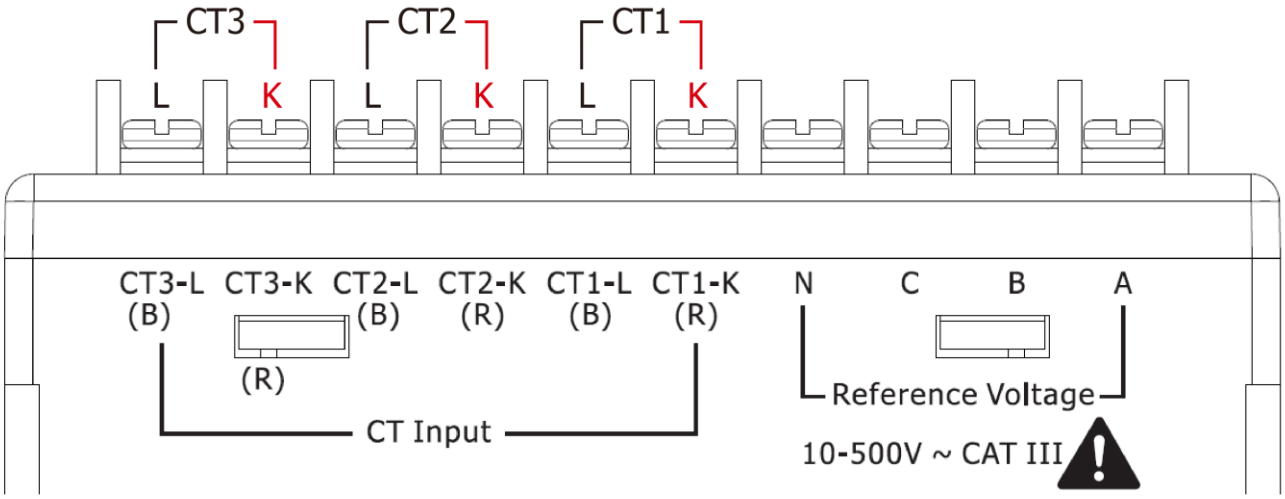
2.2.Voltage Input

1. PM-2133D series: Input Voltage up to 500V.
   For any higher Input Voltage large than 500V, please add the PT (power transformer), and Change PT RATIO setup.
2. Confirm the RST (ABC) phase sequence.

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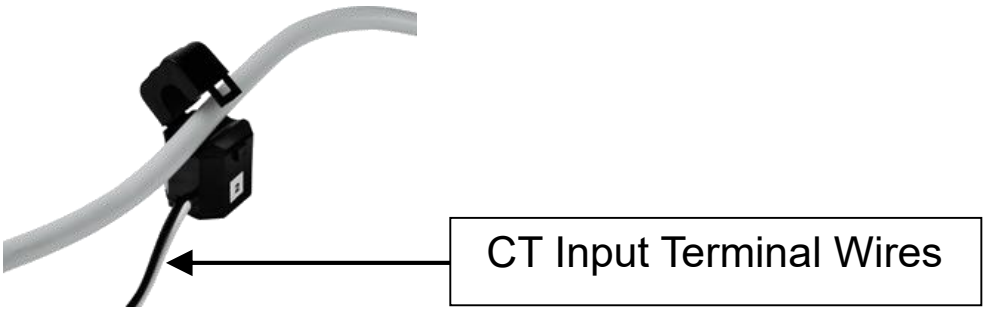
2.3. Connection

Please firstly check the current input terminal, and then in red black, red black, red black wire sequences (CT1-K, CT1-L, CT2-K, CT2-L, CT3-K, CT3-L). Then connect the CT's, and close the CT clip. Make sure the arrow direction sign on CT's follows current flow direction K (Red/White wire) → L (Black wire). **Please use 3.2 mm Y-type terminals.**



2.4.Wire Disconnection

1. Unlock the CT clip and remove the CT from the power cable, avoiding disconnecting the CT terminal wires if possible (do not disconnect the terminal wirers first).
   Warning! If you need to remove the CT terminal wires, make sure to first detach the CT before removing the CT terminal wires. This is to prevent high open-circuit secondary voltage being generated on the secondary side of the CT, which could cause electric shock or damage to the CT and connected equipment in the secondary circuit.
2. Disconnect the voltage input wires from the terminals and wrap the wire ends with insulating tape.
3. Disconnect the communication wires from the terminal.
4. Disconnect the auxiliary power from the terminal, then wrap the wire ends with insulating tape.



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2.5.PM-2133DP Current Input

1. The external CT's are fragile, please handle with care.
2. The current input of PM-2133DP is in mV range. The other CT's, for example, from panel will damage the instrument due to its large current (around 5A)
3. CT Selection Considerations:

Adding current transformer (333mV Output CTs) has the effect of reducing the measured current by the CT ratio (let's say 40:1 for 200A CT as example). So a current of 200A becomes 5A. Since the meter sees 5A, many of the measurements it reports will be low by a factor of 40 unless they are scaled up by 40.

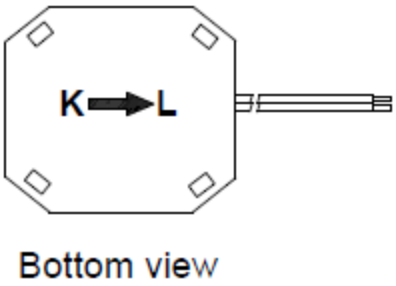
Current transformer	CT Ratio		Current transformer	CT Ratio
50A CT	10:1		400A CT	80:1
60A CT	12:1		800A CT	160:1
100A CT	20:1		1000A CT	200:1
200A CT	40:1		1200A CT	240:1

Note:

A. Please use low phase angle error CTs: essential for accurate power and energy
measurements. (Example: phase error <2°)
B. Primary CT accuracy will influence the measurement.
C. PM-2133DP only for external 333mV Output CTs **(Rogowski coils are not supported)**.
Safe: burden resistor built-in, 333 mVac voltage output at rated full scale current, no shorting blocks needed.
D. This meter requires external CT(s) to operate:
1P2W-1CT requires 1 CT per meter.
3P3W-2CT/1P3W-2CT requires 2 CTs per meter.
3P4W-3CT/3P3W-3CT requires 3 CTs per meter.

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2.6.PM-2133D-xxxP CT Installation Steps



Bottom view

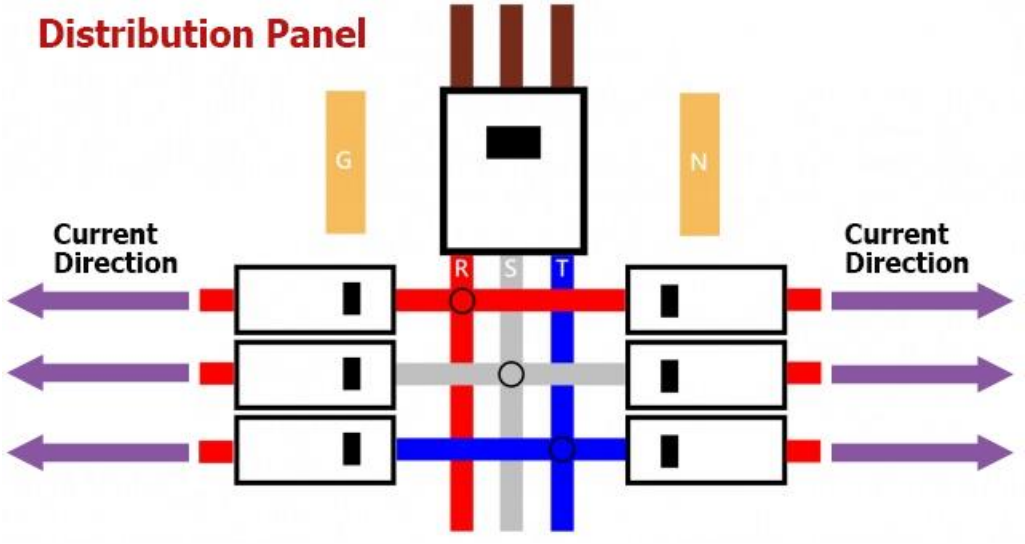


- At the bottom of the CT, there is a "K→L" mark.
- Open the CT clip.





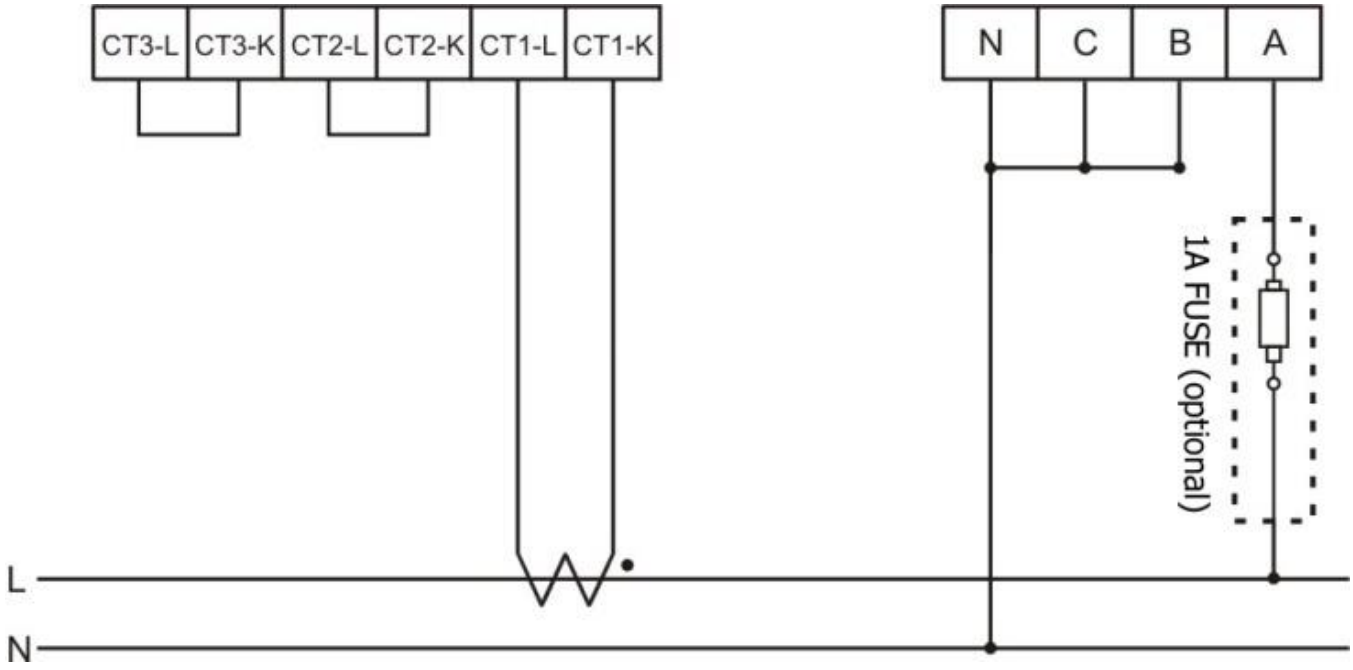
- Make sure the power current direction follow the "K (Red/White wire) → L (Black wire)" marking on the CT and then close the CT clip.
- Complete the Installation.



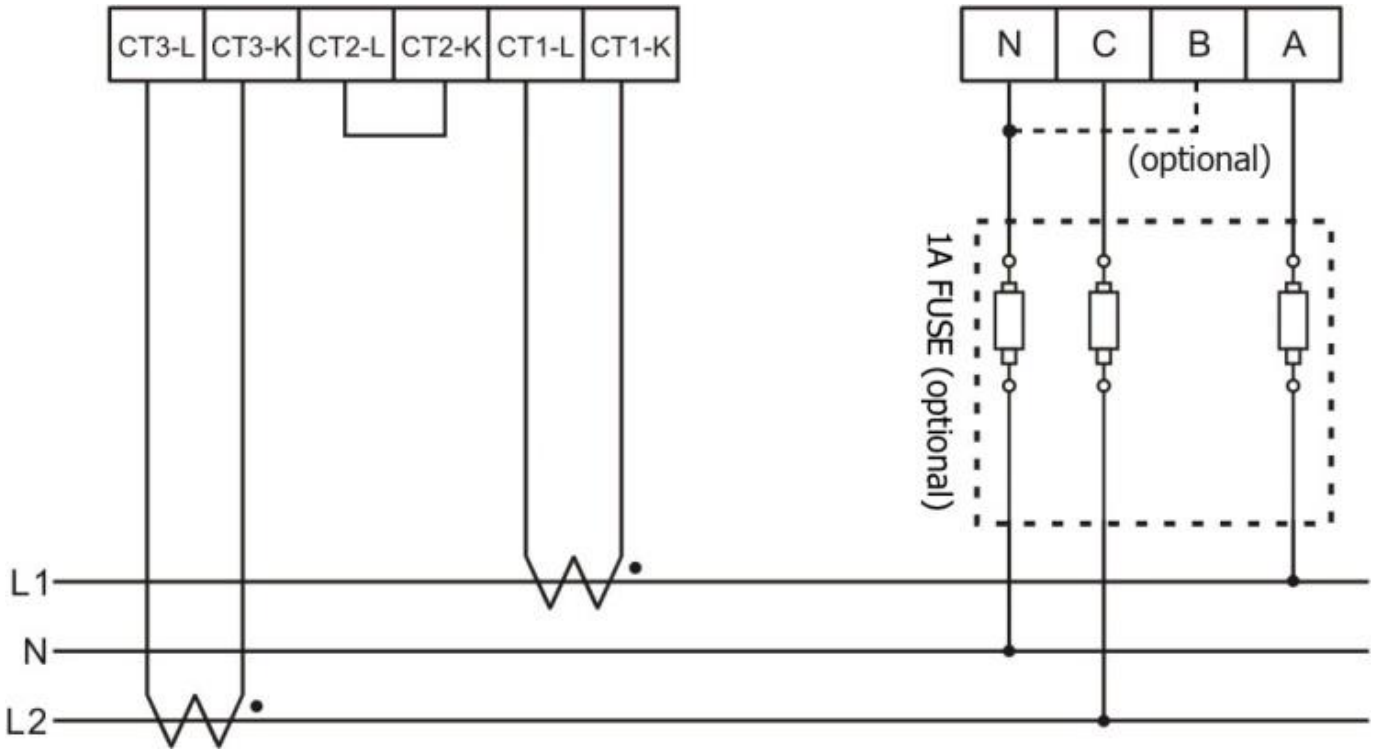
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2.7.Wiring

- 1P2W-1CT

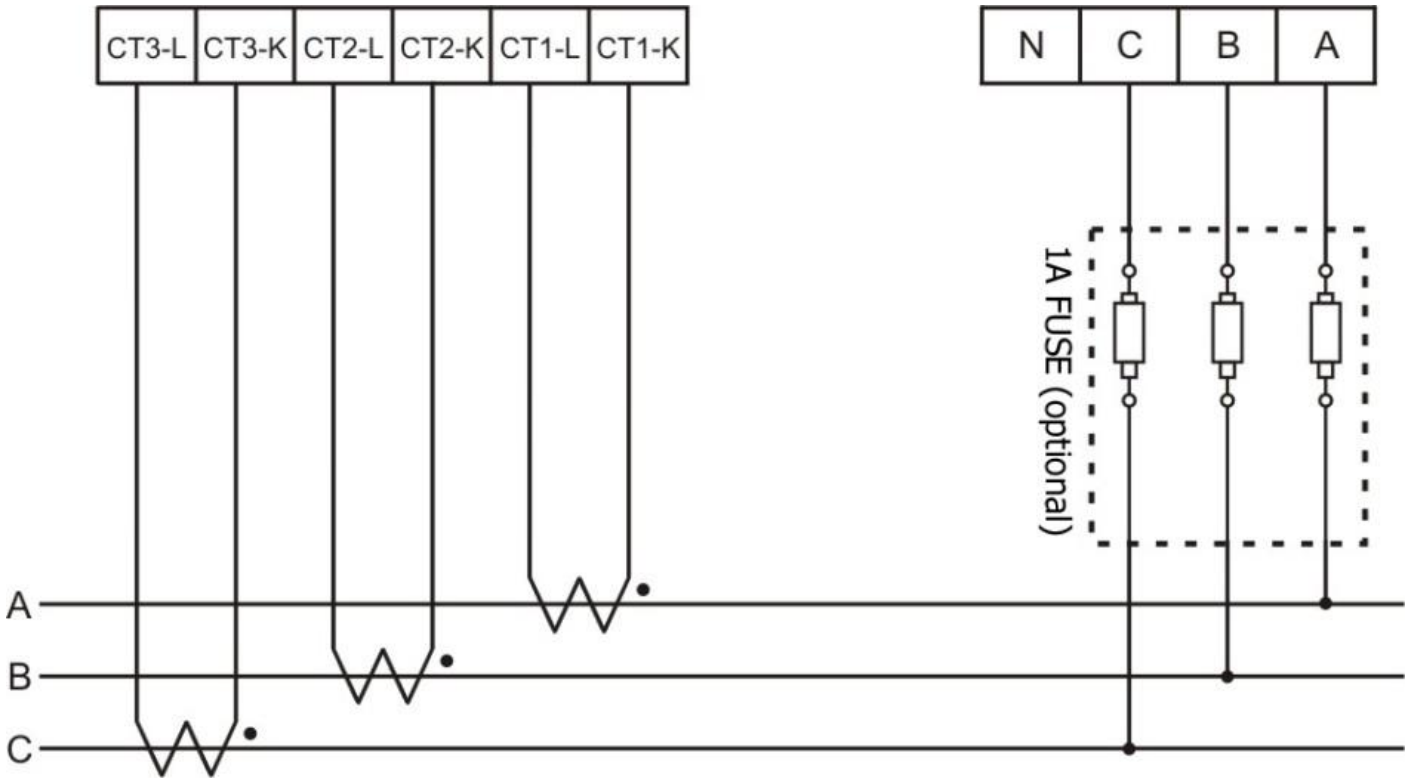


- 1P3W-2CT

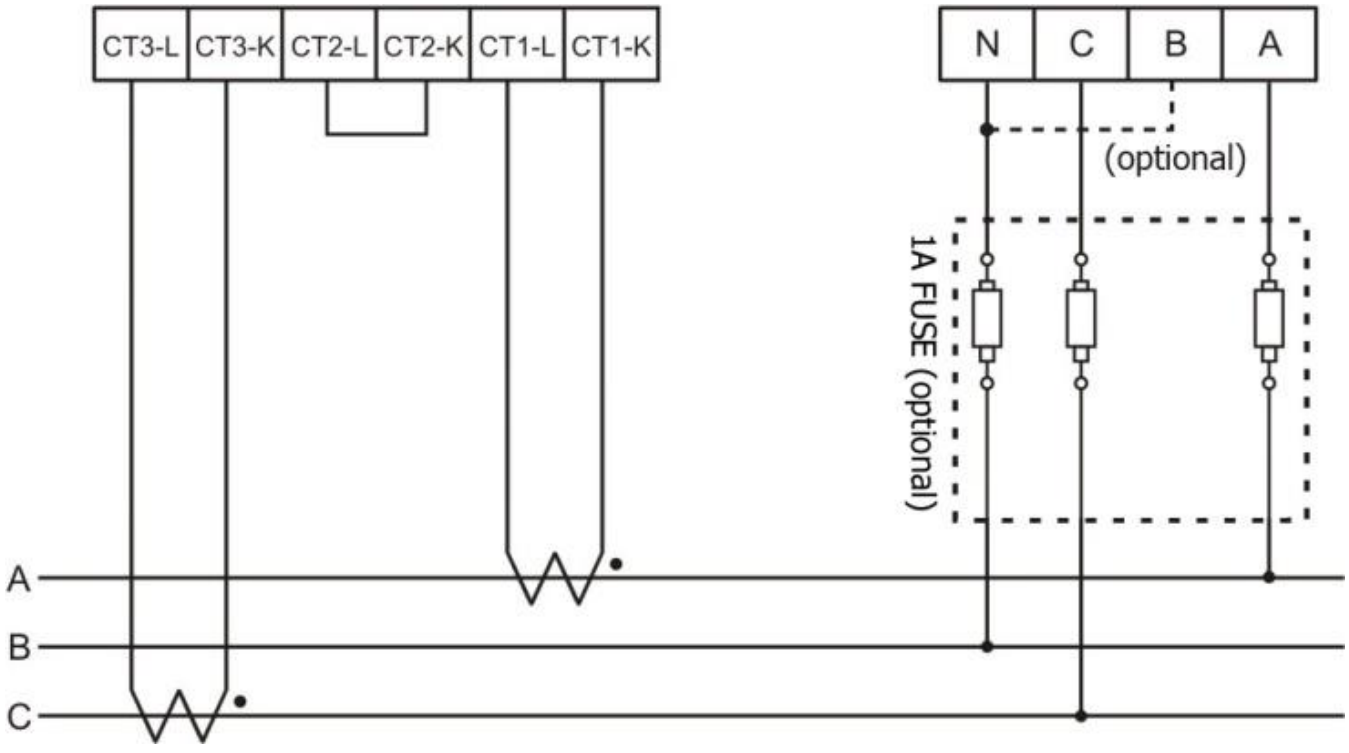


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- 3P3W-3CT

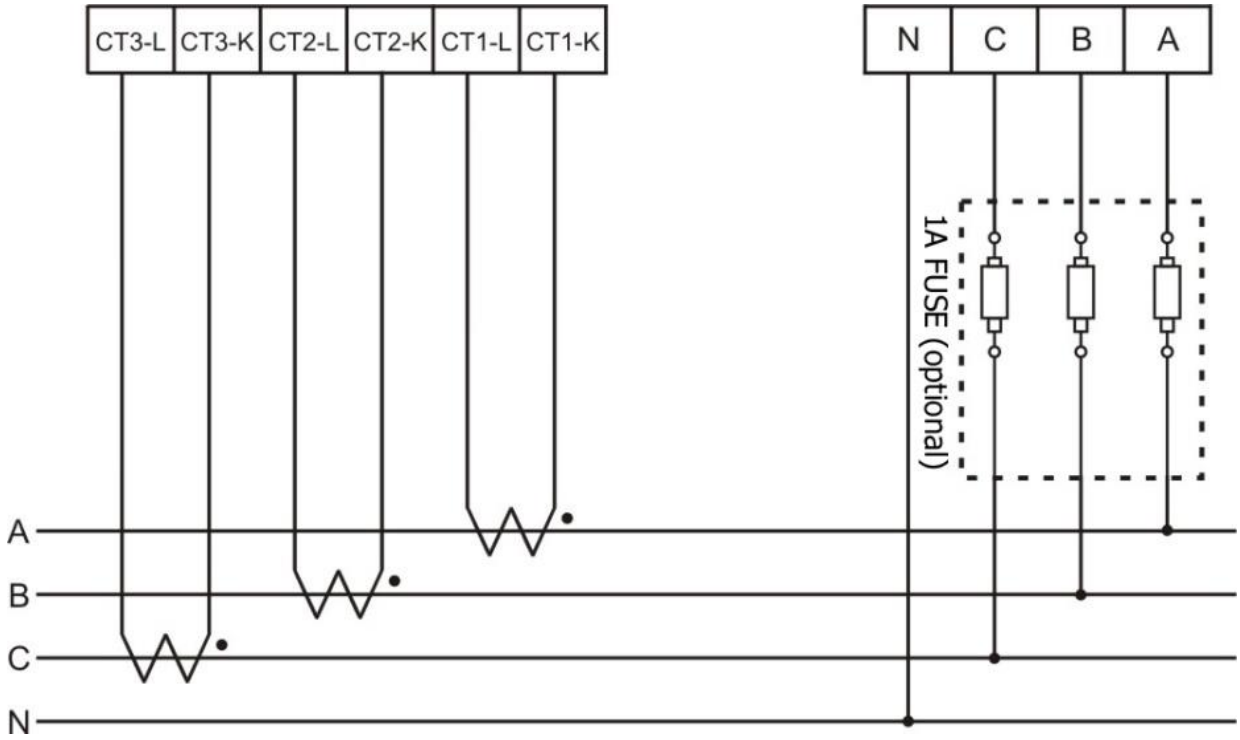


- 3P3W-2CT
  (If phase B is in a floating state, it may pick up induced voltage signals. To avoid this, phase B can be connected to the neutral (N) line.)



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- 3P4W-3CT



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3. Keypad, LED Indicator & Display

3.1.Function of LED Display, Indicator and Keypad

PM-2133D has a built-in 8-Digit LED Display to display the power data measured by the meters. The 7 LED Indicators are used to indicate the type of the power data which are currently shown on the 8-Digit LED Display, and the status of RS-485 communication (Tx/Rx).



PM-21333D also has a built-in four buttons of keypad which is used to adjust the power data which is currently shown on the LED Display or the parameters setting of PM-2133D.

Keypad	Function
▲	Move to next item be shown or decrease the settings of parameters
▼	Move to previous item be shown or increase the settings of parameters
Enter	Change LED Display to "Setup Mode" or enable the modification of parameters
Exit	Change LED Display to "Normal Mode" or disable the modification of parameters

3.2.Operation of LED Display, Indicator and Keypad

With the built-in LED Display, Indicator and Keypad, PM-2133D can display the real-time power data it measures. User can also change the setting of the power meter. The following sections describe the features provided.

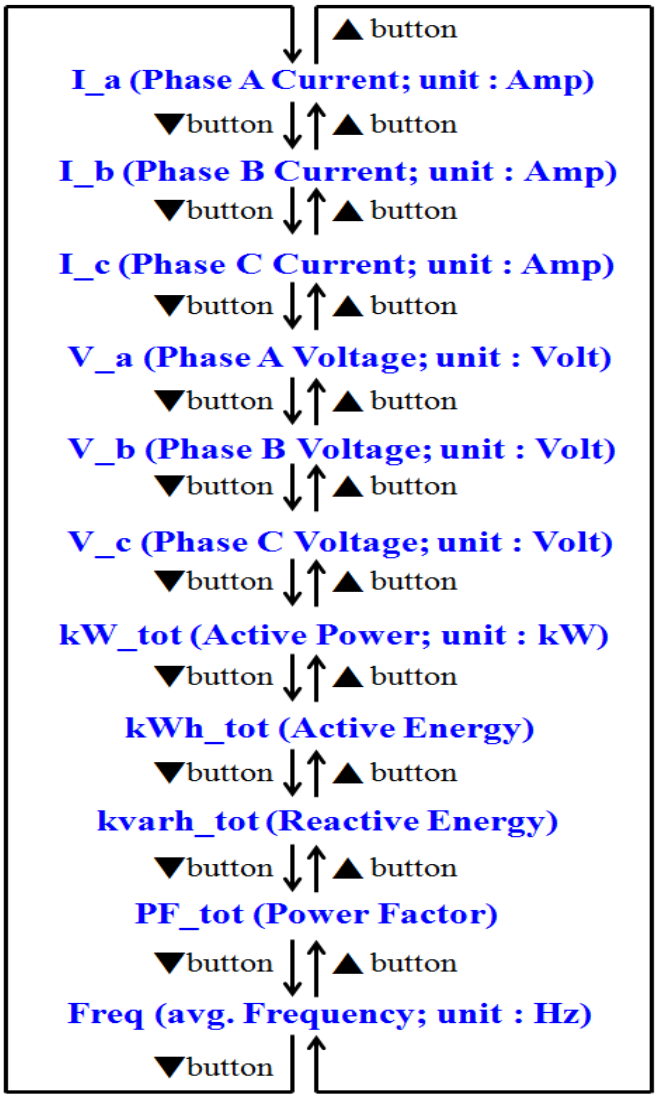
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3.2.1 Normal Mode

After power up PM-2133D, the default power data shown is power data of I_a (Phase A Current). User can press the "▲" button and "▼" button of the Keypad to select the desired power data to be displayed on PM-2133D. The corresponding LED Indicator of the power data selected will also be in "ON" status - lights up in red.



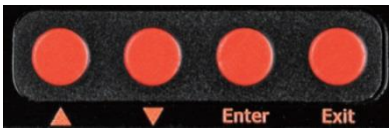
The power data provided by PM-2133D will be displayed circularly in the sequence as below:



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3.2.2 Setup Mode

User can press the buttons of Keypad to enter the Setup Mode to adjust the parameters setting of PM-2133D. The steps are as below:

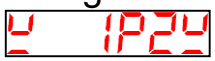


i. Press the "Enter" button to enter the Setup mode, all the LED Indicators of PMD-2133D will be in "ON" status, and the LED Display panel will display 8.8.8.8.8.8.8.8..

ii. Press the "▲" button and "▼" button of the Keypad to select the parameter of PM-2133D to be modified. The settings of parameters provided by PM-2133D will be shown in sequence as below:

- 8.8.8.8.8.8.8.8. : LED Segment check (read only, cannot be modified)
- uEr 0209 : Firmware version (read only, cannot be modified).
- Ad 01 : Modbus Address setting.
  - Press the "Enter" button, the current address setting will blink.
  - Press the "▲" button and "▼" button to adjust the setting of address. The range is from 1 to 64.
- br 9600 : Modbus Baudrate setting.
  - Press the "Enter" button, the current Baudrate setting will blink.
  - Press the "▲" button and "▼" button to adjust the Baudrate setting. There are 4 options: 9600(9600), 19200(19200), 38400(38400) and 115200(115200) for selection.
- dF 8o1: Modbus Data Format setting.
  - Press the "Enter" button, the current Data Format setting will blink.
  - Press the "▲" button and "▼" button to adjust the Data Format setting. There are 6 options: 8N1(8n1; 8 data bits, None Parity, 1 stop bits), 8O1 (8o1; 8 data bits, Odd Parity, 1 stop bits;), 8E1(8E1; 8 data bits, Even Parity, 1 stop bits), 8N2(8n2; 8 data bits, None Parity, 2 stop bits), 8O2 (8o2; 8 data bits, Odd Parity, 2 stop bits;) and 8E2(8E2; 8 data bits, Even Parity, 2 stop bits) for selection.

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-  : PT ratio setting. The range is from 0.01 to 655.35.
  - Press the "Enter" button, the hundreds digit of the PT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of hundreds digit.
  - Then press the "Enter" button, the tens digit of the PT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of tens digit.
  - Press the "Enter" button, the units digit of the PT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of units digit.
  - Press the "Enter" button, the tenths digit of the PT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of tenths digit.
  - Press the "Enter" button, the hundredths digit of the PT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of hundredths digit.
-  : CT ratio setting. The range is from 1 to 65535.
  - Press the "Enter" button, the ten thousands digit of the CT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of ten thousands digit.
  - Press the "Enter" button, the thousands digit of the CT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of thousands digit.
  - Press the "Enter" button, the hundreds digit of the CT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of hundreds digit.
  - Press the "Enter" button, the tens digit of the CT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of tens digit.
  - Press the "Enter" button, the units digit of the CT ratio will blink. Press the "▲" button and "▼" button to adjust the setting of units digit.
-  : Wiring mode setting.
  - Press the "Enter" button, the current Wiring mode setting will blink.
  - Press the "▲" button and "▼" button to adjust the Wiring mode setting. There are 5 options: 1P2W(), 1P3W( ), 3P3W2CT (), 3P3W3CT() and 3P4W3CT() for selection.

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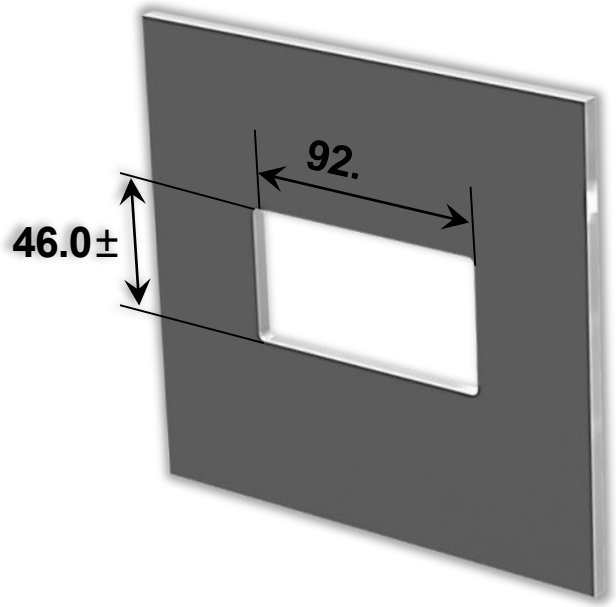
-  : Display Voltage setting.
  - Press the "Enter" button, the current Display Voltage setting will blink.
  - Press the "▲" button and "▼" button to adjust the Display Voltage setting. There are 3 options: Automatic(AUtō), "Show as Vln" (tō uLn) and "Show as Vll" (tō uLL) for selection. Please refer to PM-2133D User's Manual before change the setting of Display Voltage.

iii. After completing the setting, press the "Enter" button to save the new setting.
iv. Repeat Step ii~iii to complete all parameter settings.
v. After all parameter settings are completed, press the "Exit" button to return the Normal Mode.

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4. Mounting the PM-2133D

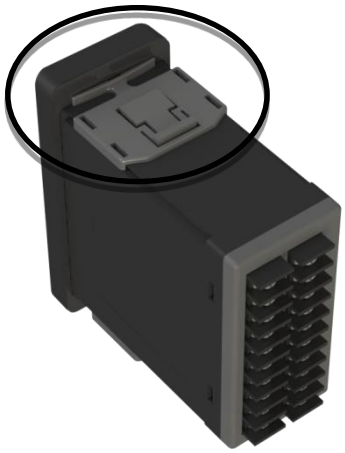
1. Prepare a panel and cut a hole
   to the specified size (unit: mm).

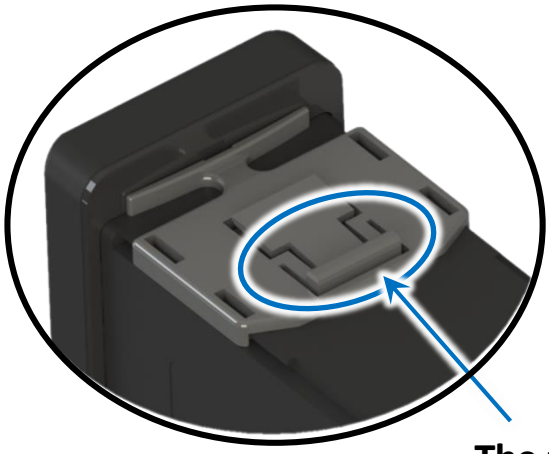


Panel thickness: 1 to 5 mm

2. Remove the latch assembly.

   i. Press the protruding pin of the latch assembly.

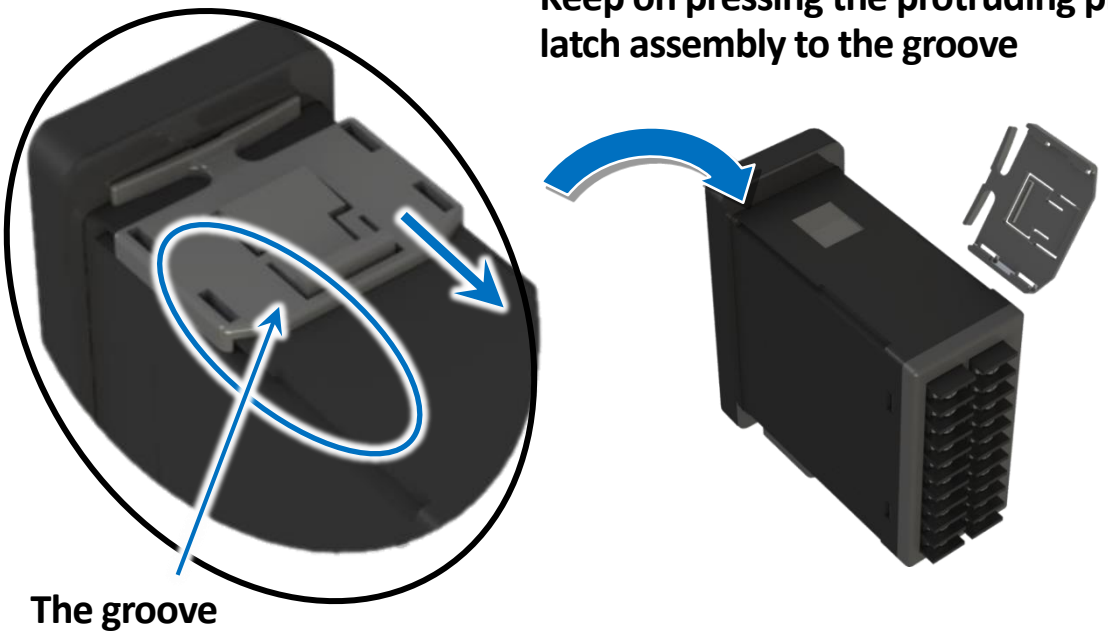




The protruding pin

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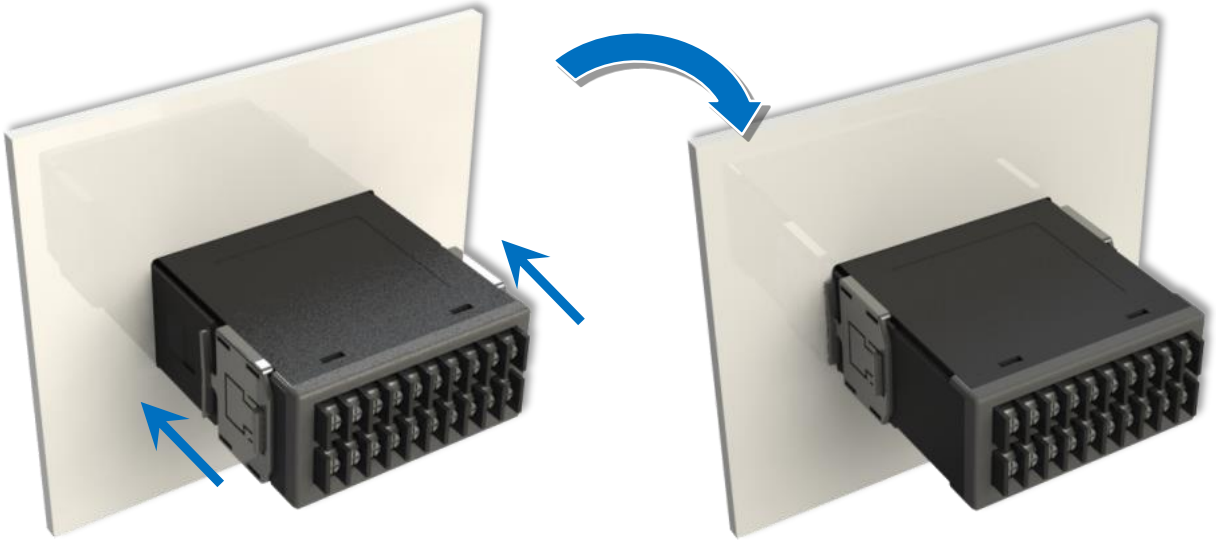
ii. Slide the latch assembly to the groove, and then remove the latch assembly.



3. Attach the PM-2133D to the cut-out hole.



4. Attach the latch assembly, and then slide the latch assembly toward the panel.



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5. Common Malfunction Analysis:

1. PC and meter cannot make the connection with RS-485 ?

Add the Bias Resistor on RS-485 Network for stable signal
The RS-485 master is required to provide the bias for PM-2133D series. Otherwise, the tM-SG4 or SG-785 should be added to provide the bias. All ICP DAS controllers and converters provide the bias.

2. What problem is while the measured readings of the power consumption（kw）is negative?

(1)First check the current input end – line terminal, （check the connection should be **CT1-K, CT1-L, CT2-K, CT2-L, CT3-K, CT3-L**）, base on red/white black, red/white black, red/white black follow the sequence order

(2)Check the field current direction K (Red/White wire) → L (Black wire) is same as the inner arrow direction of the split type clip-on CT.

(3)Incorrect voltage or current wiring sequence may lead to phase angle calculation errors, causing the power meter to misinterpret the direction of power flow. This may also result in an abnormally low Power Factor (PF) reading.

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