PM-5133-RCT Quick Start

v1.0, Nov. 2025

Packing List

The packaging of PM-5133-RCT series includes three Rogowski coils. In addition to this guide, the package includes the following items:



PM-5133-RCTxxxP *1



Mounting kit* 1



Screw Driver*1



Cable ties*3

Note: The specifications of Rogowski coil depend on the model number. For more detailed information, please refer to the product website.

Technical Support

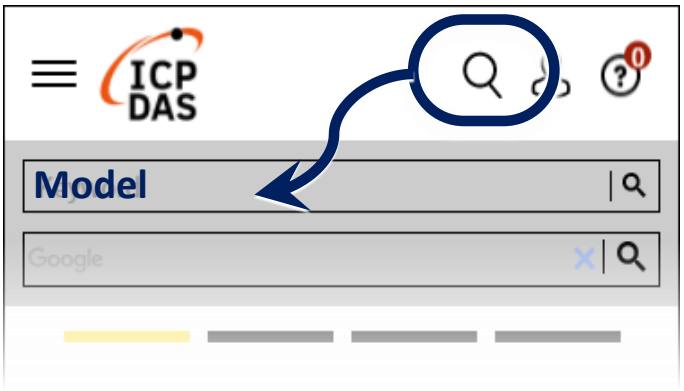
service@icpdas.com

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 Safety Information

1.1 Safety Guidelines

The meter contains hazardous voltages and must be handled carefully during installation and operation.

- The meter must never be disassembled. Failure to follow this may result in serious injury or death.
- Any work on or near energized meters, meter sockets, or other metering equipment poses a risk of electrical shock.
- Installation and maintenance should only be performed by qualified industrial electricians or metering specialists.
- ICP DAS assumes no responsibility for improper installation or failure to comply with national and local electrical codes.

1.2 Disclaimer

ICP DAS assumes no liability for any damage resulting from the use of this product. The company reserves the right to revise or modify this document at any time without prior notice.

2 Installation

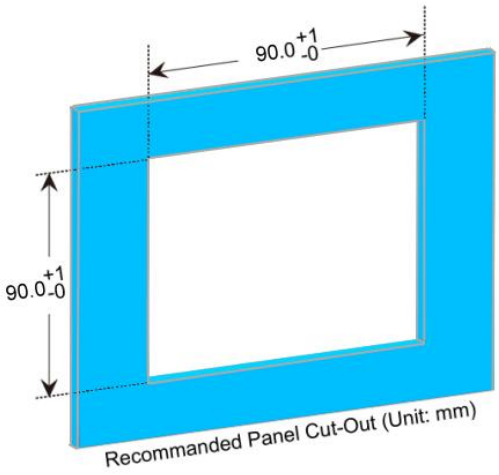
2.1 Preparation & Safety

- Carefully read this operation manual before use.
- Re-confirm the measurement position before installation.
- The meter's auxiliary power supply range is DC +12V to +48V.

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2.2 Mounting

- Prepare a panel and cut a hole to the specified size (90 × 90 mm, +1/–0).

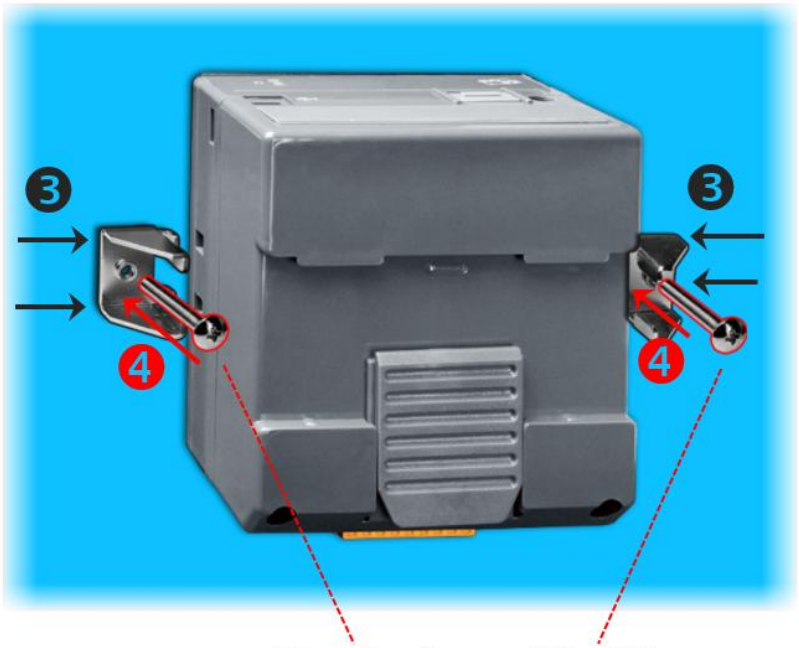




- Attach the PM-5133 to the cut-out hole.



- Insert the panel mounting clips into the upper and lower ventilation holes, and screw them to fix the unit.





Mounting Screw: M4 x 30L

Note: Recommended Screw Torque: 3.4 ~ 4.5 kgf-cm.

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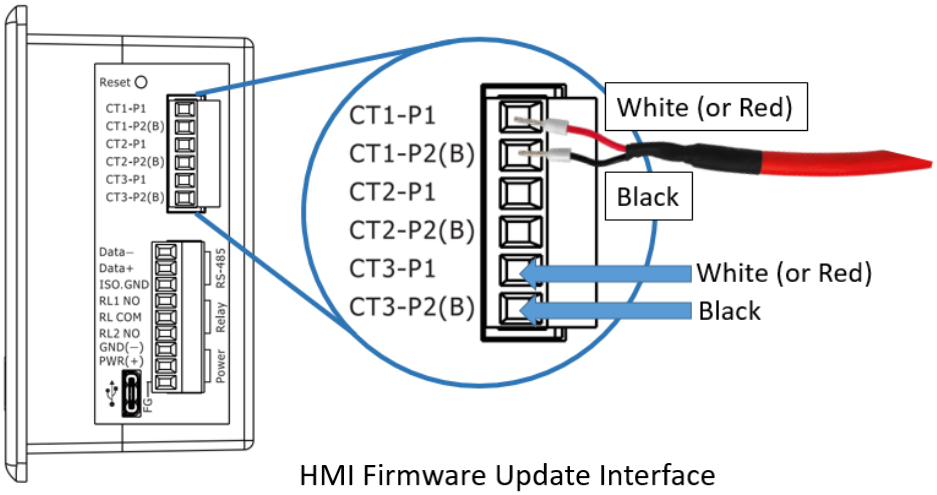
3 Wiring

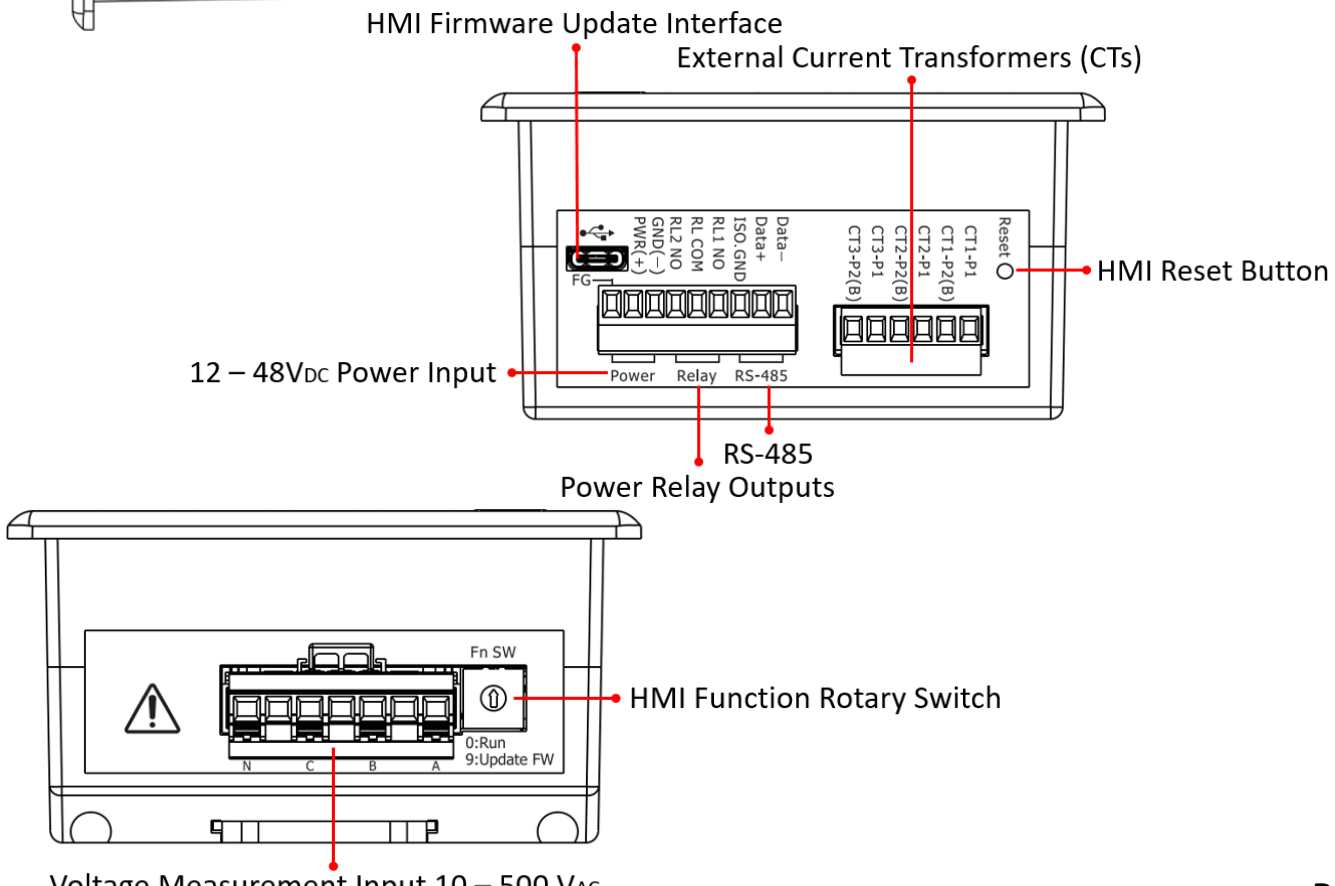
3.1 Voltage Input

- The PM-5133-RCTxxxP series supports input voltage up to 500 VAC.
- For voltages above 500 VAC, use a potential transformer (PT) and set the correct PT ratio.
- Verify the R-S-T (A-B-C) phase sequence before wiring.

3.2 CT Wiring & Direction

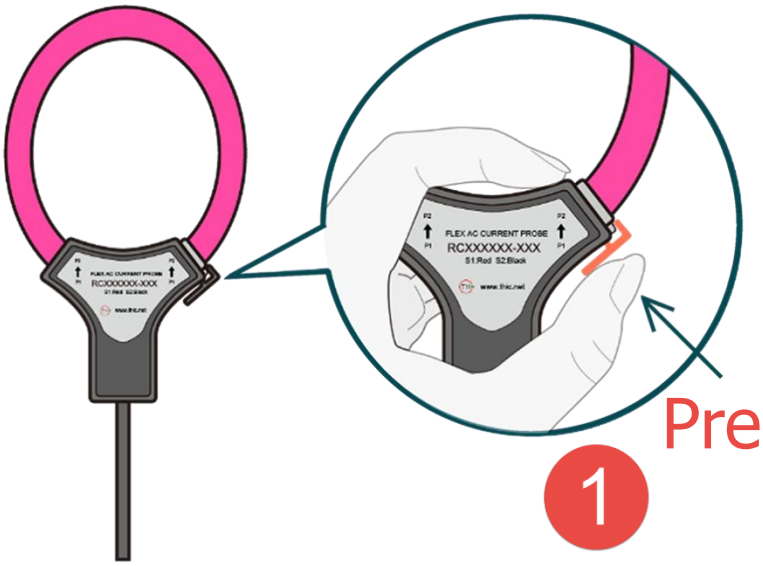
- Check the current input terminals. Connect in the sequence: **CT1-P1, CT1-P2, CT2-P1, CT2-P2, CT3-P1, CT3-P2 (white (or red)/black, white (or red) /black, white (or red) /black).**
- After wiring, close the CT clips securely. Make sure the arrow direction sign on CT's follows current flow direction.





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3.3 **CT's installation steps**



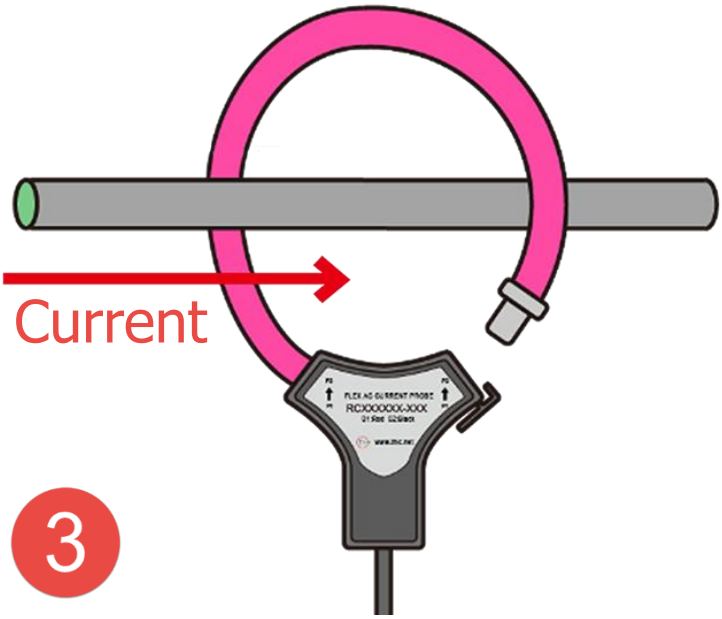
Press

1

2

Gently Pull
The "Free End"



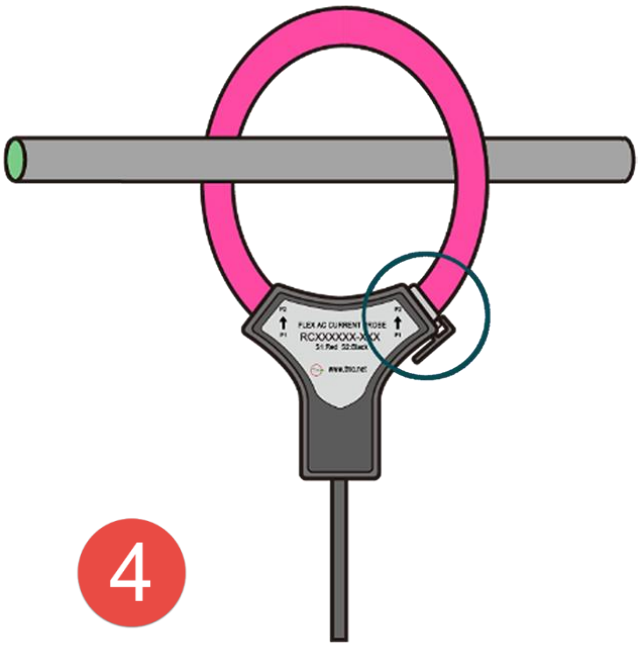


Current

3

Confirm Direction





4

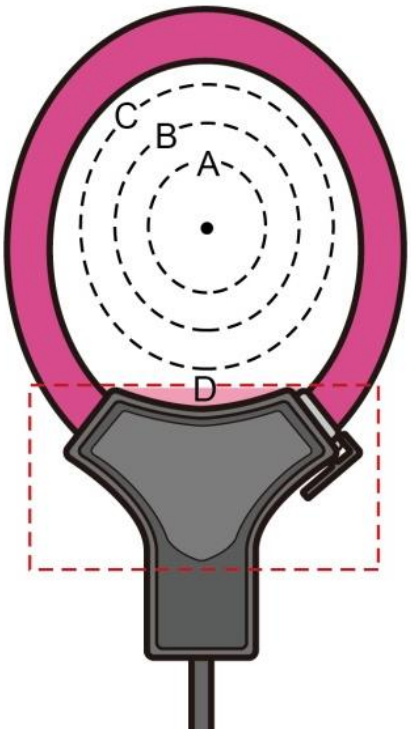
Snap the "free end"
into place

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3.4 **Rogowski Coil Installation Steps Precautions**

1. The ICP DAS Rogowski power meter is calibrated with the conductor positioned at the center (Position A in figure), which is the ideal location to ensure measurement accuracy.

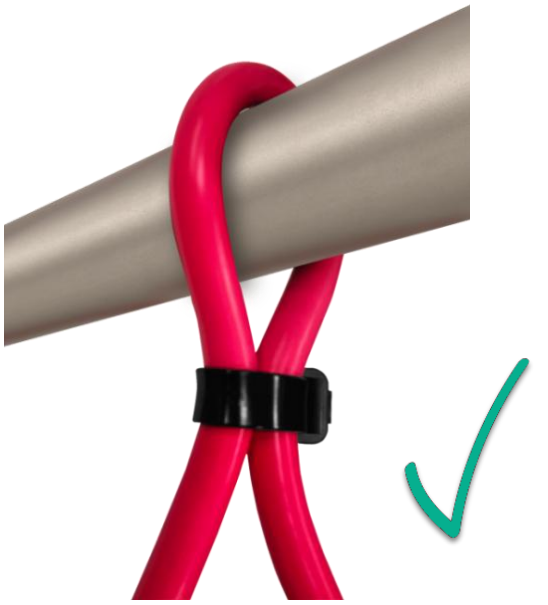
2. The Rogowski coil is not a completely closed circular structure, as it has a connection joint. The dashed area at Position D in the figure indicates the location of this connection. It is known that when the measured conductor is placed closer to this area, the measurement error increases because magnetic flux variations in that section cannot be properly detected. Please avoid measuring current within the dashed area, as doing so may result in measurement errors exceeding −5%. Moreover, external magnetic flux can also affect the connection section, further increasing measurement errors.



3. Before performing current measurements, ensure that all other current-carrying conductors, except the one being measured, are kept away from the Rogowski coil's connection section as much as possible.

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4. In practical applications, if the measured conductor is offset from the center of the Rogowski coil, tilted, or if the conductor size is disproportionate to the coil diameter, the measurement accuracy may be affected. When the conductor is only slightly tilted or off-center, the meter can still maintain acceptable measurement accuracy, but the error will increase accordingly. To achieve higher measurement precision, it is recommended to keep the measured conductor as perpendicular to the coil as possible and ensure it passes through the center of the coil. The left figure illustrates the recommended cable tie fixation method to minimize tilt. If the angle of inclination between the measured conductor and the plane of the Rogowski coil is large, and its position is close to the coil's connection end, as the right figure, the measurement error will reach the greatest.





Good
Installation Method

1. The cable tie is fastened close to the wire to prevent the CT from slipping.
2. The tilt angle is small.
3. Avoid positioning the CT near location D.

Poor
Installation Method

1. Large tilt angle.
2. Too close to connection point

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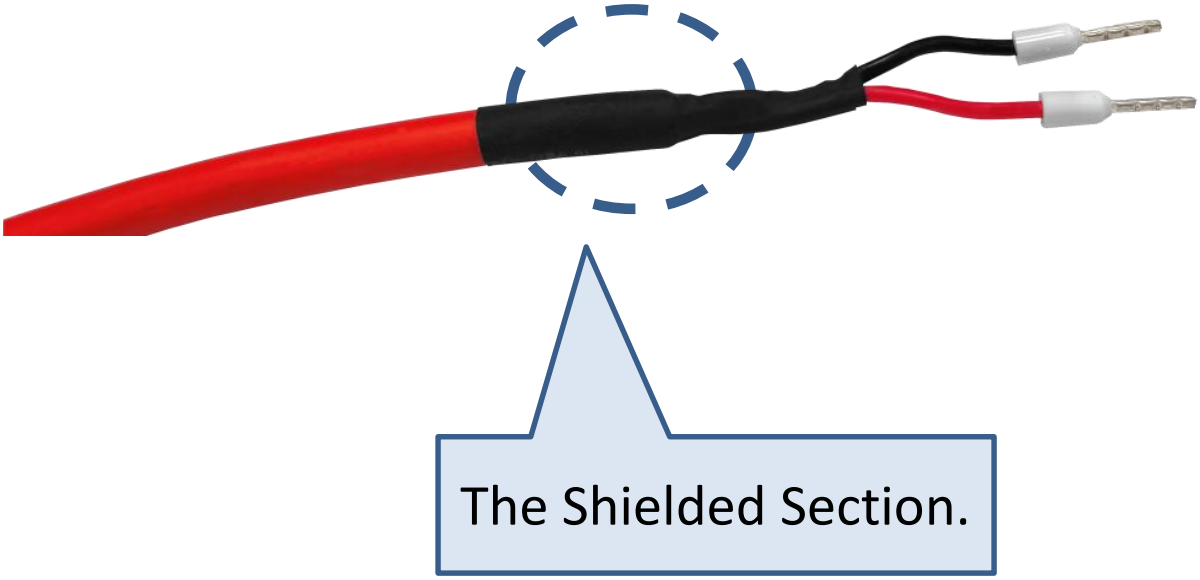
5. At lower input currents (approximately 5%–15% of the rated current), the Rogowski coil exhibits relatively higher measurement error.

The recommended operating current range vs. measurement accuracy is shown in the table below:

Rated Current	Recommended Operating Range	Error To 5% – 15% Rated Current	Error To 15% – 100% Rated Current
500A	50A – 500A	±2% – ±4% or more	Within ±2%; if the conductor is positioned at the center of Rogowski coil, the accuracy can be further improved to within ±1%.
1000A	50A ~ 1000A		
2000A	200A ~ 2000A		
4000A	200A ~ 4000A		

6. Do not extend the Rogowski coil's lead wires by yourself.
   Modifying the lead length will disrupt the original shielding structure, allowing external electromagnetic interference to couple into the sensing signal, which may cause waveform distortion and reduced measurement accuracy.

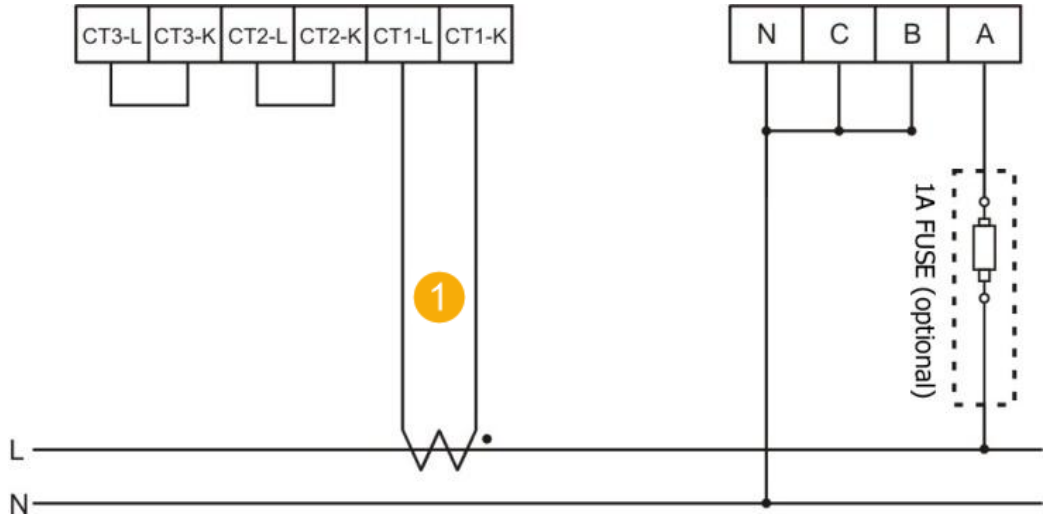
   If a special or extended lead length is required, please contact ICP DAS to obtain a factory-designed version with proper shielding treatment.



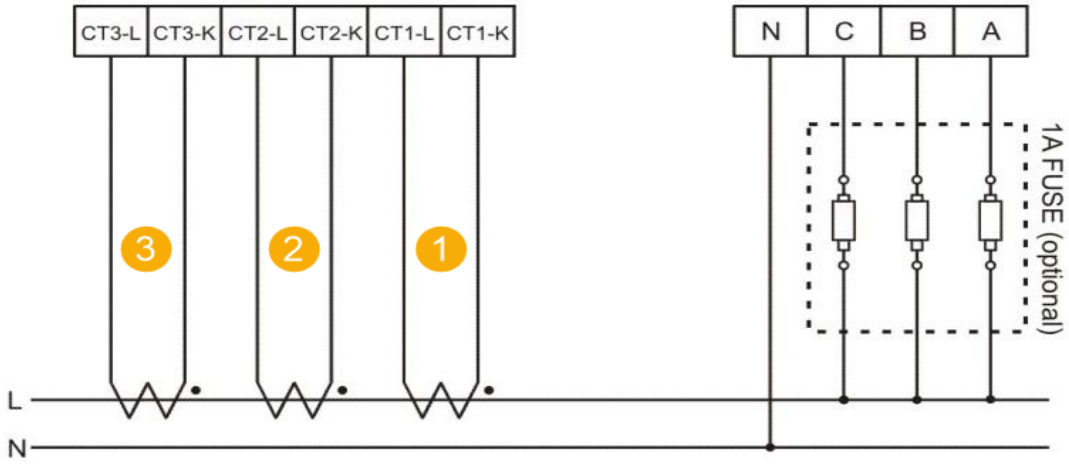
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3.5 Wiring

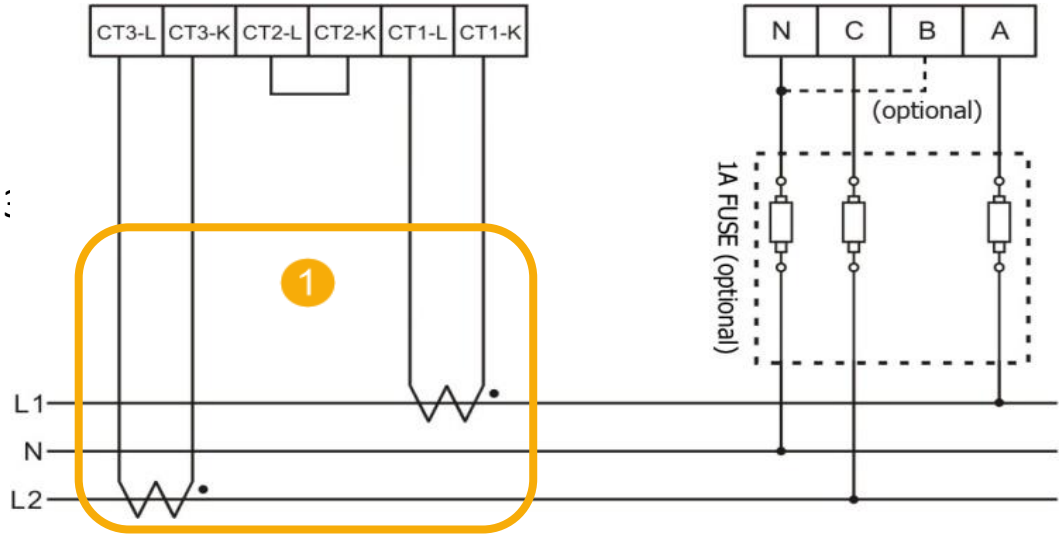
- 1P2W-1CT (Single-phase, Single-circuit) (Configure to 1P2W)



- 1P2W-3CT (Single-phase, 3-circuit) (Configure to 1P2W)

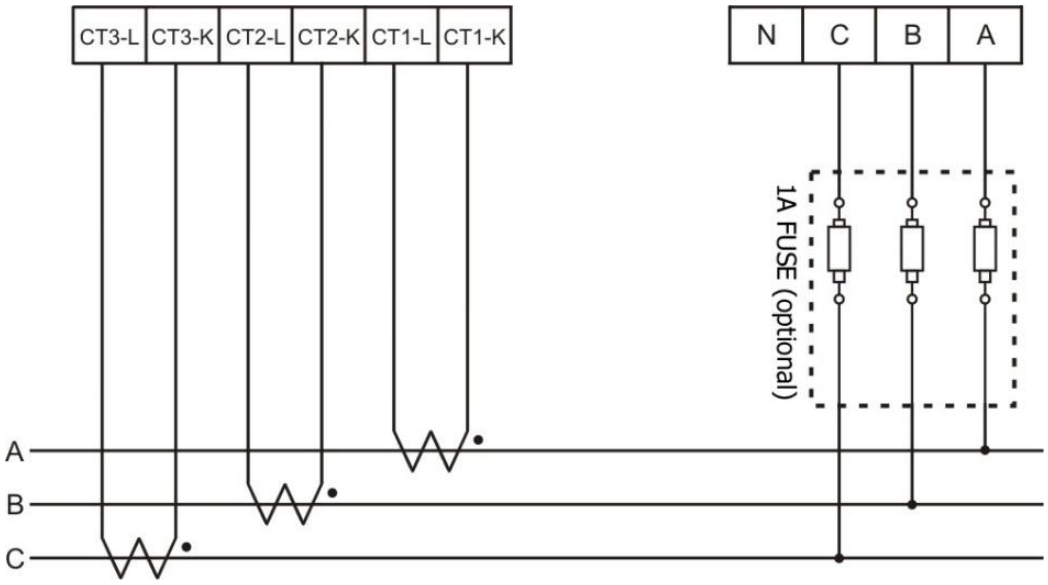


- 1P3W-2CT (Single-phase, Single-circuit) (Configure to 1P3W)

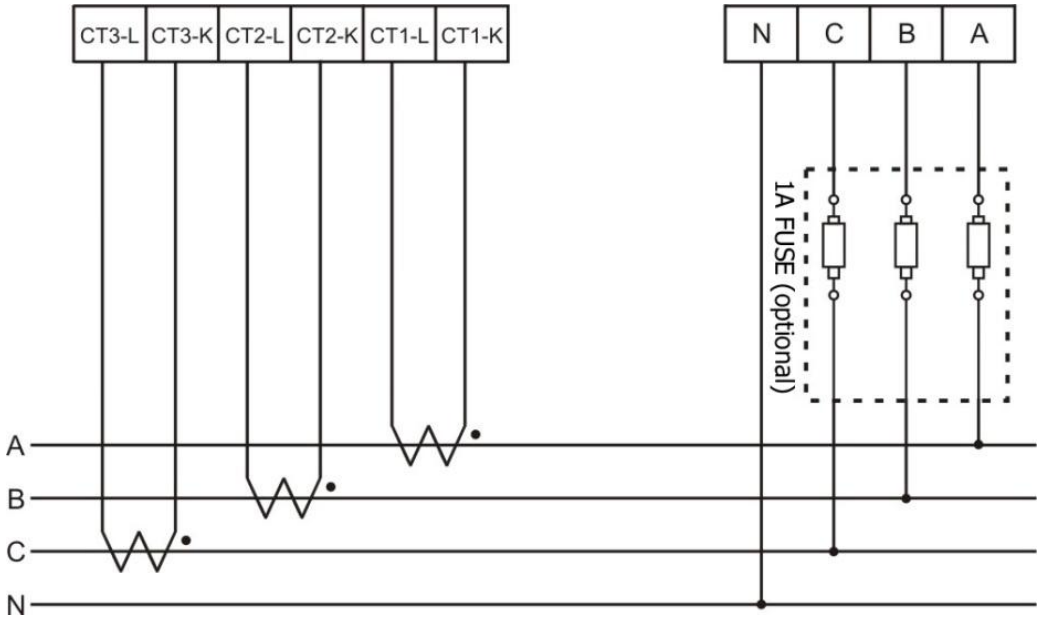


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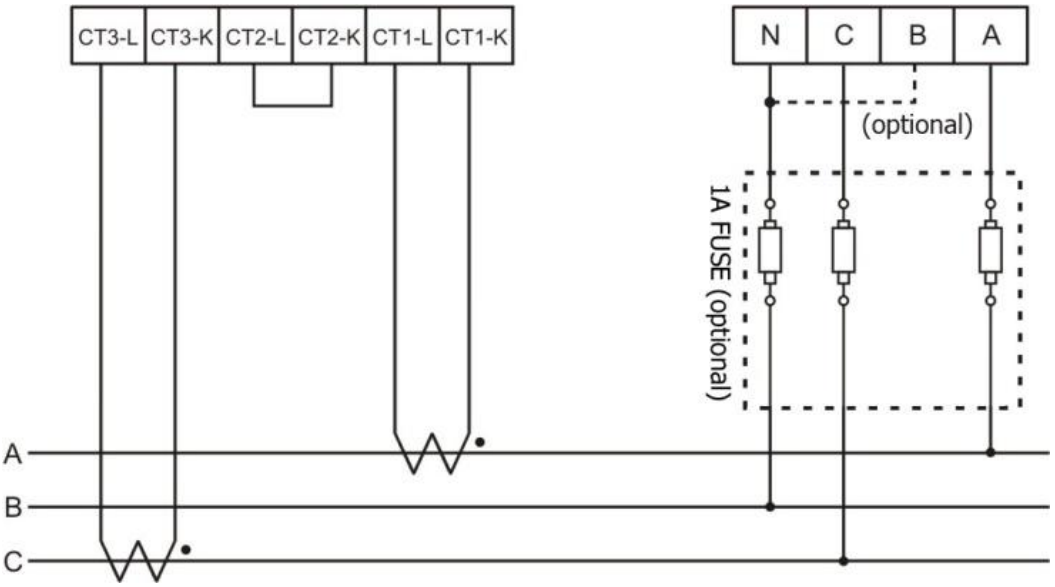
- 3P3W-3CT (Configure to 3P3W 3CT)



- 3P4W-3CT (Configure to 3P4W 3CT)



- 3P3W-2CT (Configure to 3P3W 2CT)



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Notes:

1. 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.
2. The 3P3W 2CT method is only suitable for **balanced three-phase systems with low harmonic distortion**. For unbalanced loads or systems with significant harmonics, the **3P3W 3CT method** is recommended for accurate measurement.

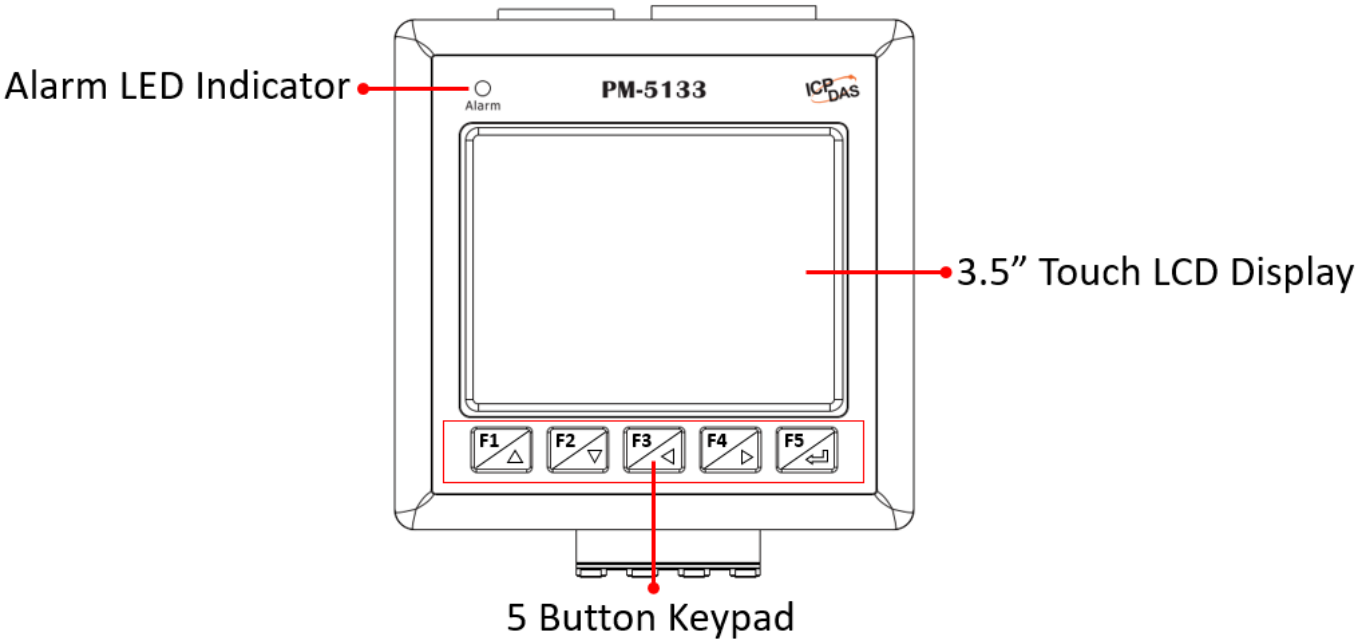
For detailed information, please refer to the Appendix “Questions and Answers” section of the manual.

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4 Operation

4.1 Keypad, Touch LCD Display & LED Indicator

- The PM-5133 provides a 3.5” touch LCD panel for operation, configuration, and displaying measurement data.
- A 5-button keypad is available for navigation when the touch panel is not convenient.
- The Alarm LED indicator turns on when predefined alarm conditions are active.



Keypad Functions:

Keypad	Functions
F1	Go to previous page
F2	Go to next page
F3	Switch phase / return to main page from advanced parameter settings
F4	Switch phase / go to advanced parameter settings
F5	Go to previously viewed page / exit the Setup mode

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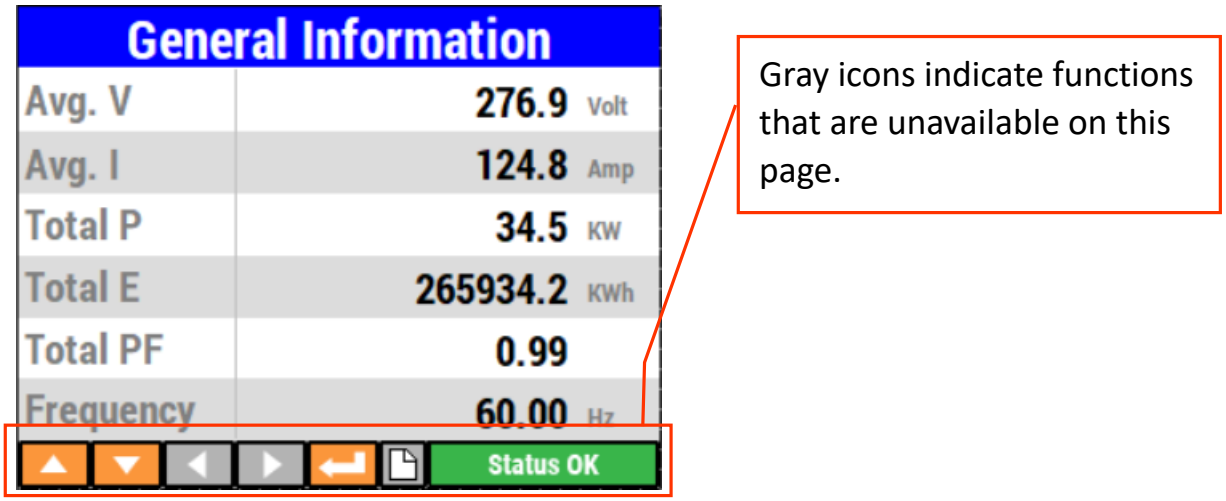
4.2 Normal Mode

Mode and Navigation

- The PM-5133 has two modes: **Normal Mode** and **Setup Mode**.
- Both modes use the F1 and F2 keys to switch pages.
- The F3 and F4 keys are used to switch phases or enter parameter settings on specific pages.
- Virtual buttons at the bottom of the screen can also be used for navigation.
- Grey icons indicate functions that are not available on the current page.

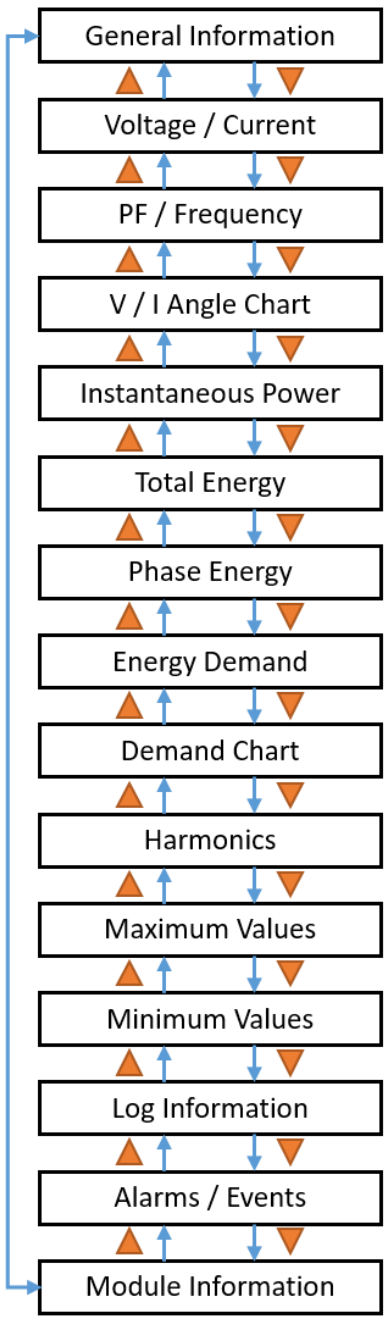
System Status Icons

- **Log icon**: shows the status of the data logging function.
  - Idle → log icon (gray)
  - Active → log icon (green)
- **Alarm icon**: shows alarm status.
  - No unconfirmed alarms → normal icon Status OK (green / OK)
  - At least one alarm → alarm icon Alarm (red); click Alarm to open the Alarms & Events page, afterwards click the F5 to go back the previously page from the Alarms & Events page.



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- The PM-5133 automatically starts measuring power data after power-up.
- A total of 15 pages are available for displaying measurement information. (For detailed descriptions, refer to the User's Manual.)



Average voltage, average current, total kW, total kWh, total PF, and power frequency

Voltage and current of each phase

Power factor and power frequency of each phase

The angle chart of voltage and current of each phase

The values of kW, kVar, and kVA of each phase

Total electrical power includes positive/negative/net/absolute kWh, absolute kVarh and absolute kVAh

The values of kWh, kVarh, and kVAh of each phase

The total energy demand and relative information

The trend chart of the total energy demand

Vthd, Ithd and 31-order harmonic information of each phase

The recorded maximum values of voltage, current, kW and Kvar of each phase

The recorded minimum values of voltage, current, kW and Kvar of each phase

The configuration and status of the data log functions

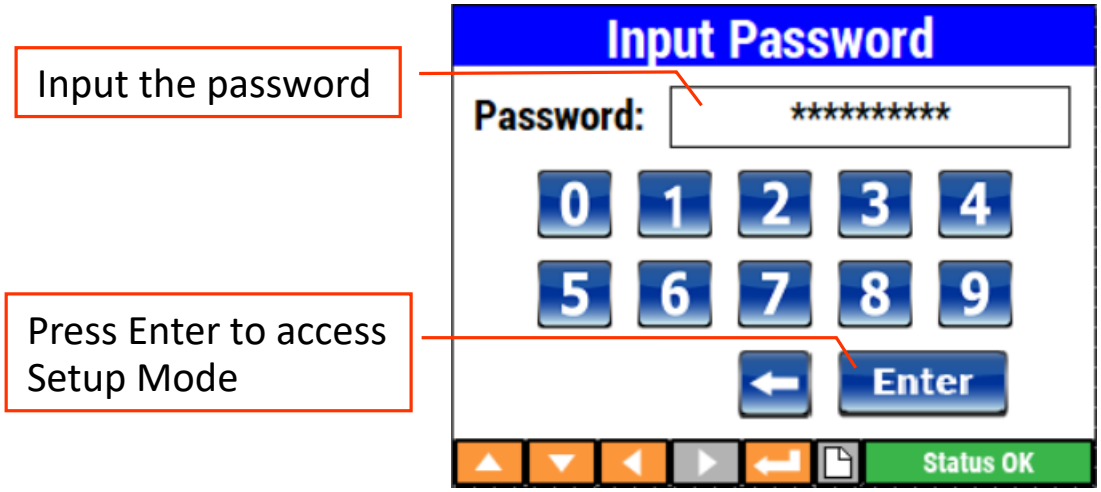
The log of the alarms and events

Beside the configured wiring mode and PT/CT ratio, it also provides the firmware version, system time and the way to the configuration mode.

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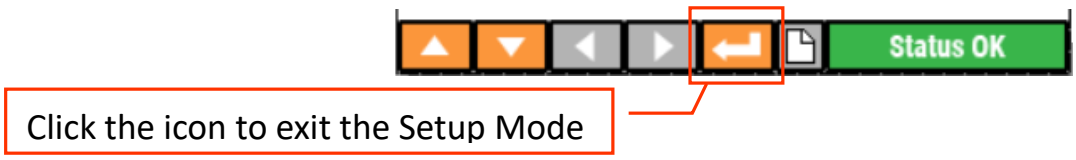
4.3 Setup Mode

- Enter Setup Mode from the **Module Information Page** by pressing **Configuration >>**.
- A password (up to 16 characters) is required to access Setup Mode.
- The default password is **0000**. If the password is forgotten:
  - Set the **Fn SW** (see Section 4.1 in User's Manual) to position 3 on the Input Password page.
  - The Alarm LED will turn on for ~10 seconds.
  - During this time, users can enter Setup Mode without a password.
  - After setting a new password, return **Fn SW** to **0** for security.
- Restoring **factory defaults** (via System Settings page) resets the password to **0000**.



Navigation in Setup Mode

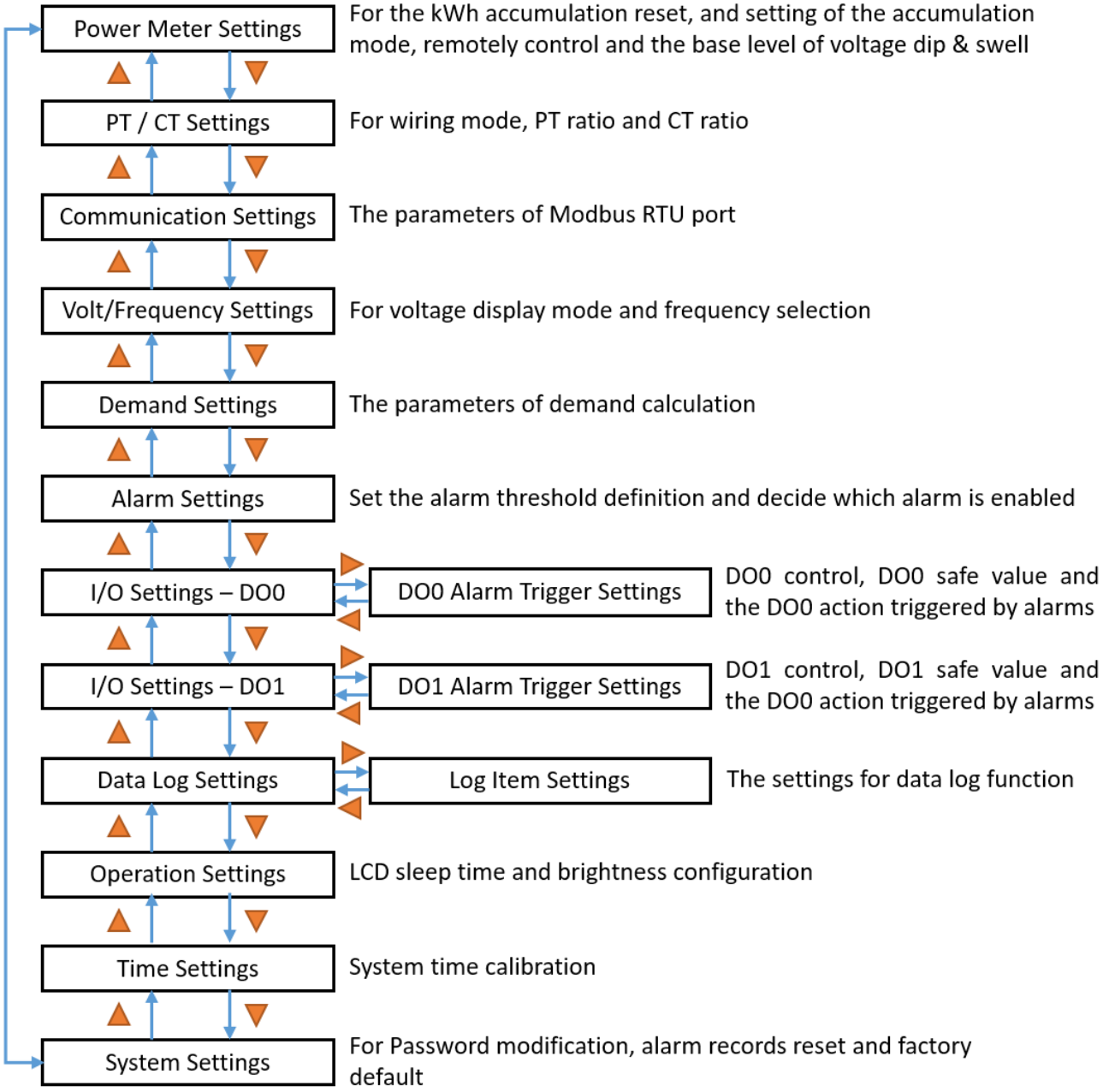
- The bottom bar layout is the same as in Normal Mode.
- **Grey icons** = unavailable functions on the current page.
- Users can:
  - Switch pages with the / **icons** or F1 / F2 **buttons**.
  - Exit Setup Mode with the or F5.



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There are 12 configuration pages in Setup Mode. These pages allow users to configure power measurement, communication parameters, alarm definitions, digital output (DO) actions, data logging, and other system functions. When switching pages in Setup Mode, the sequence and corresponding functions are shown below (For detailed descriptions, refer to the User's Manual.):

.

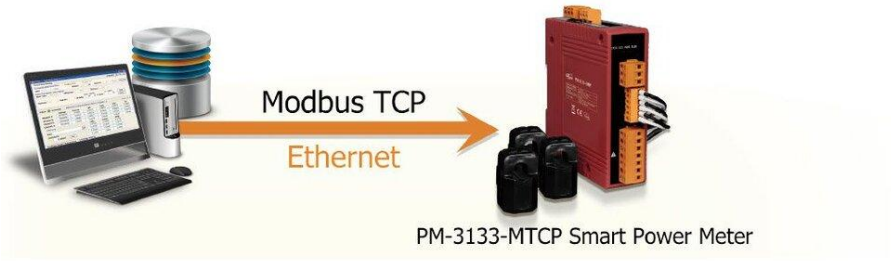


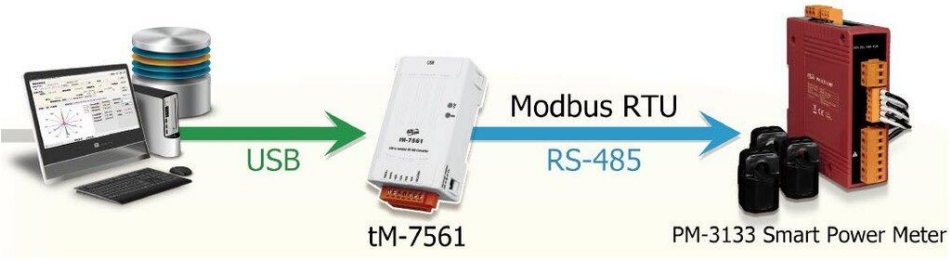
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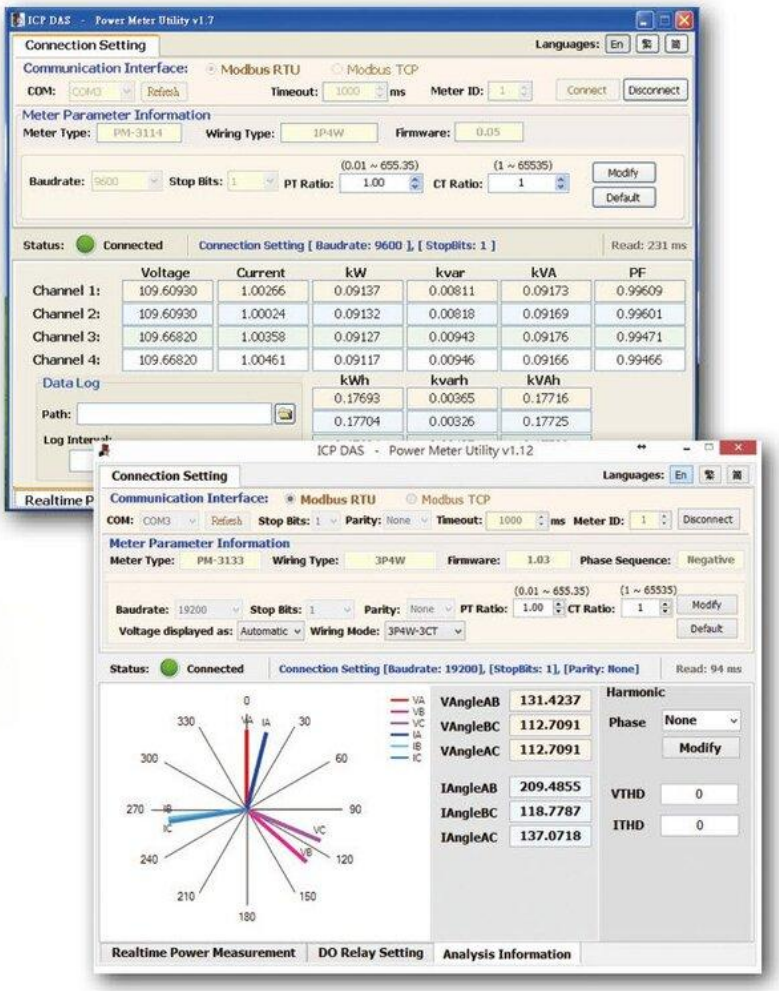
5 Power Meter Utility

Power Meter Utility has to be installed on PC and it enables to retrieve and display the power measurement values that measured by power meter via COM Port or Ethernet. The users will be able to read the power measurement values and to perform parameter settings of the meter.

Visit www.icpdas.com/, search [Power Meter Utility], and download the tool.





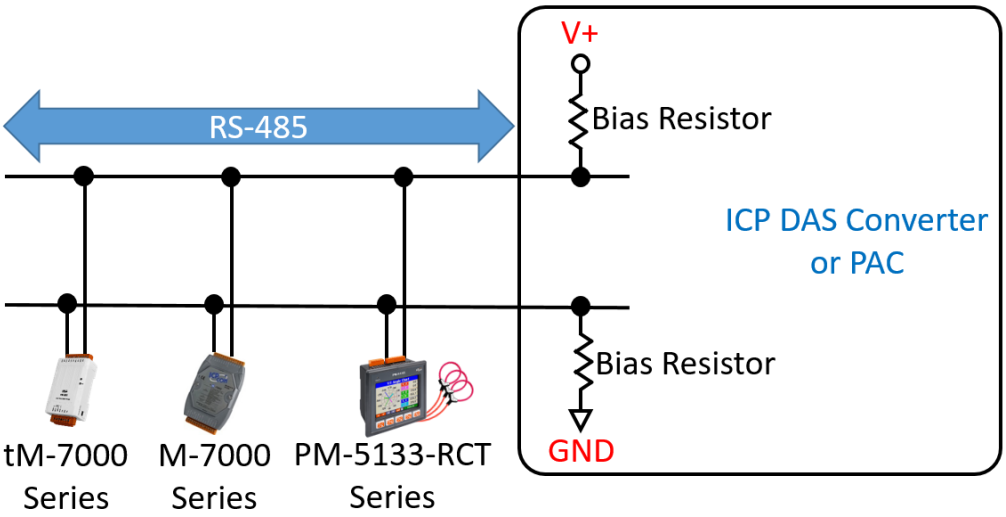


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6 Troubleshooting

6.1 RS-485 Connection Issues

- If the PC cannot communicate with the meter via RS-485:
  - Add a **bias resistor** on the RS-485 network to stabilize the signal.
  - The RS-485 master must provide bias for the PM-5133 series.
  - If the master does not provide bias, install a **tM-SG4** or **SG-785** to supply it.
  - All ICP DAS controllers and converters include built-in bias.



6.2 Negative Power Readings

- If measured power consumption (kW) values are negative:
  1. Verify the connections on the current input terminals to ensure they follow the sequence **CT1-P1, CT1-P2, CT2-P1, CT2-P2, CT3-P1 and CT3-P2** in the correct white (or red) - black pattern.
  2. Check the current flow direction and ensure it matches the arrow direction indicated on the clamp-type CT.



  3. An incorrect wiring sequence for voltage or current inputs may result in phase angle calculation errors. This can cause the power meter to misinterpret the direction of power flow, leading to negative KW readings or abnormally low Power Factor (PF) values.

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