PM-311x Quick Start

1. Shipping Package

This shipping package contains the following items

1 x PM-311x module | 1 x Quick Start | Screw Driver x 1 | Cable ties x 4 for PM-3114
Cable ties x 2 for PM-3112






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. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, not for any infringements of patents or other rights of third parties resulting from its use.

1.2. Product Warranty & Customer Support

ICP DAS warrants all products free from defects in material and workmanship for a period of one year from the date of shipping. During the warranty period, we will, at our position, either repair or replace any product that proves to be defective. To report any defect, please contact ：**+886-3- 597-3366** or **service@icpdas.com**.

Documentation & Utility:
http://ftp.icpdas.com/pub/cd/powermeter/pm-311x/

1.2.1.Limitation of Warranty

This warranty does not apply to defects resulting from unauthorized modification, misuse, or use for reason other than electrical power monitoring. The supplied meter is not a user-serviceable product.

2. Installation

Please use the soft dry clothes to clean the instrument.

Please do not use any chemical or detergent or volatile solvents to clean the instrument, in order to avoid any possibility of the cover damage.

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2.1. Dimension and Latch

- 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.
- PM-311x series can be installed as rail mounting mode or embedded, no need to drill a hole or screw to fix it (rail mounting width can up to the length of 35 mm).
- Meter auxiliary power for PM-311x series is DC +12V ~+48V or DC +10V ~+30V (For PM-311x-xxxC).

2.2. Voltage Input

PM-311x series: Input Voltage up to 300V, When input voltage larger than 300V, please add the PT (power transformer), and Change PT Ratio setup.

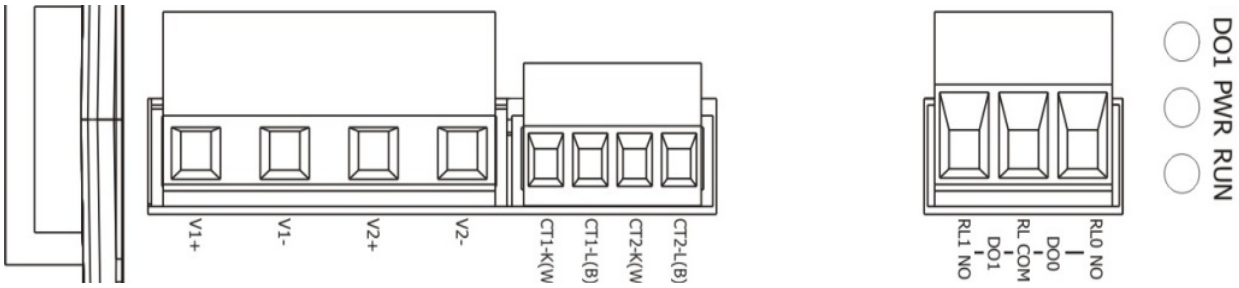
2.3. Current Input

1. The external CT's are fragile, please handle with care.
2. The current input of PM-311x series is in mA range. Only the ex-factory attached CT's can be used. The other CT's, for example, from panel will damage the instrument due to its large current (around 5A)
3. When more than one smart meters (PM-311x series) are installed, please do not disconnect the CT with its original meter and mix use with each other. Since each set of smart meter (PM-311x series) and its attached split type clip-on CT are calibrated set by set. The mix use may cause wrong measurements.
4. To install CT's correctly, please ensure the CT lines sequences is right before clip the CT's onto the power cable of the monitoring equipment. (Detail will be found in next section)
5. When measuring the current, the secondary circuit of a CT should never be opened when a load is passing through its primary. Make sure you always open the CT clip to detach the CT before removing the terminal lines. Otherwise, it will cause severe injury.
6. Please handle with extra care, especially when the operation space of CT's is limited.
7. The current direction must follow K-L marked on CT's.
8. Please select the right size CT's for different size of monitoring equipment cables:
   power cable diameter ＜Φ10 use 60A CT，Φ10～Φ16 use 100A CT，Φ16～Φ24 use 200A CT。
9. The maximum current value cannot exceed the CT rating.

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2.4. Connection

- **PM-3112 Series**

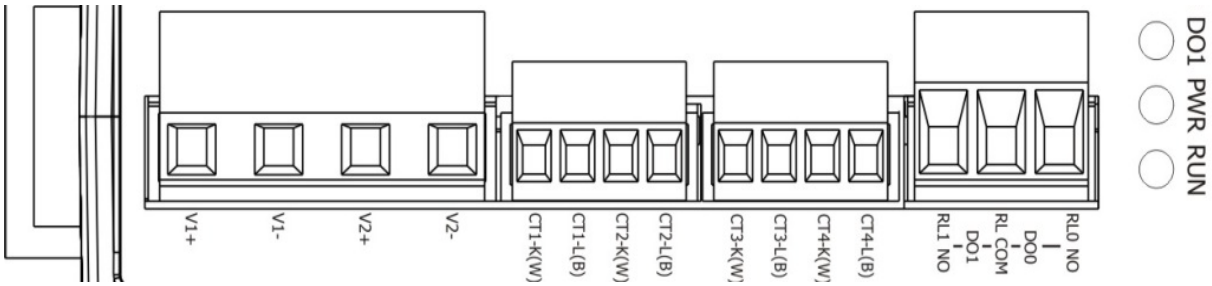


Please firstly check the current input terminal, and then in the white black, white black wired sequences （CT1-K,CT1-L,CT2-K,CT2-L）. After connect the CT's, clip on CT's. Make sure the arrow direction sign on CT's follows current flow direction（K→L）.

Note: it must be in the same direction.

Connect the AC voltage input terminal. For PM-3112, connect V1- V1+ and V2- V2+.

- **PM-3114 Series**



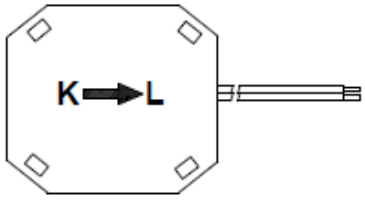
Please firstly check the current input terminal, and then in the white black, white black wired sequences （CT1-K,CT1-L,CT2-K,CT2-L,CT3-K,CT3-L,CT4-K,CT4-L）. After connect the CT's, clip on CT's. Make sure the arrow direction sign on CT's follows current flow direction（K→L）.

Note: it must be in the same direction.

Connect the AC voltage input terminal. For PM-3114, connect V1- V1+ and V2- V2+.

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2.5. CT's 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→L" mark on the CT and then close the CT clip.

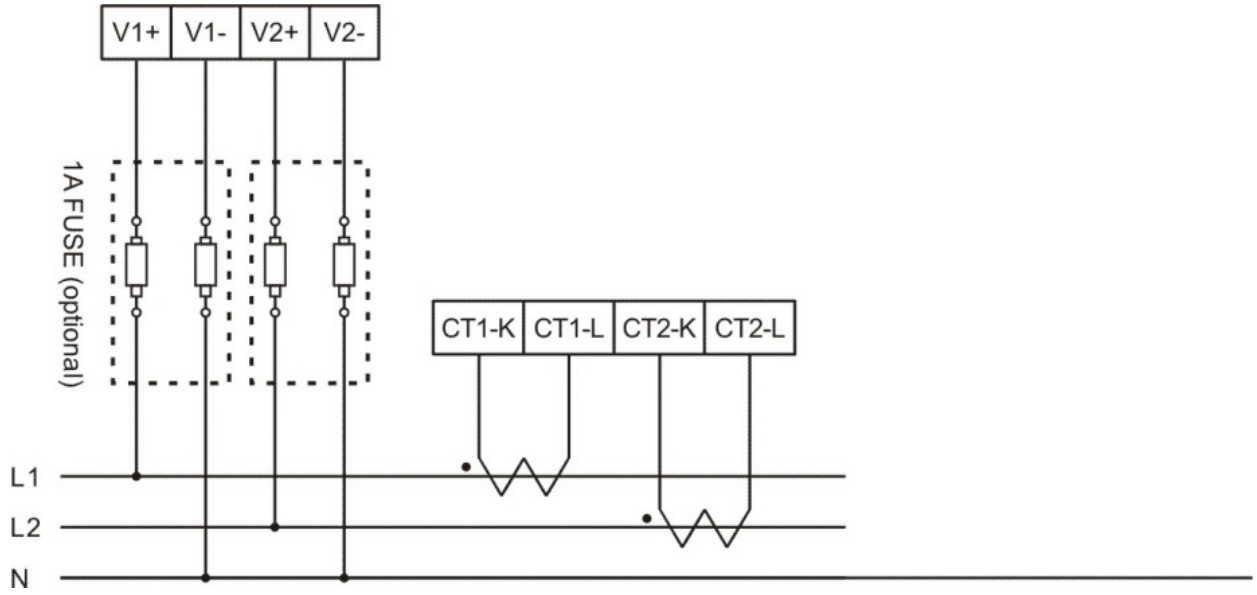


- Installation steps finished.

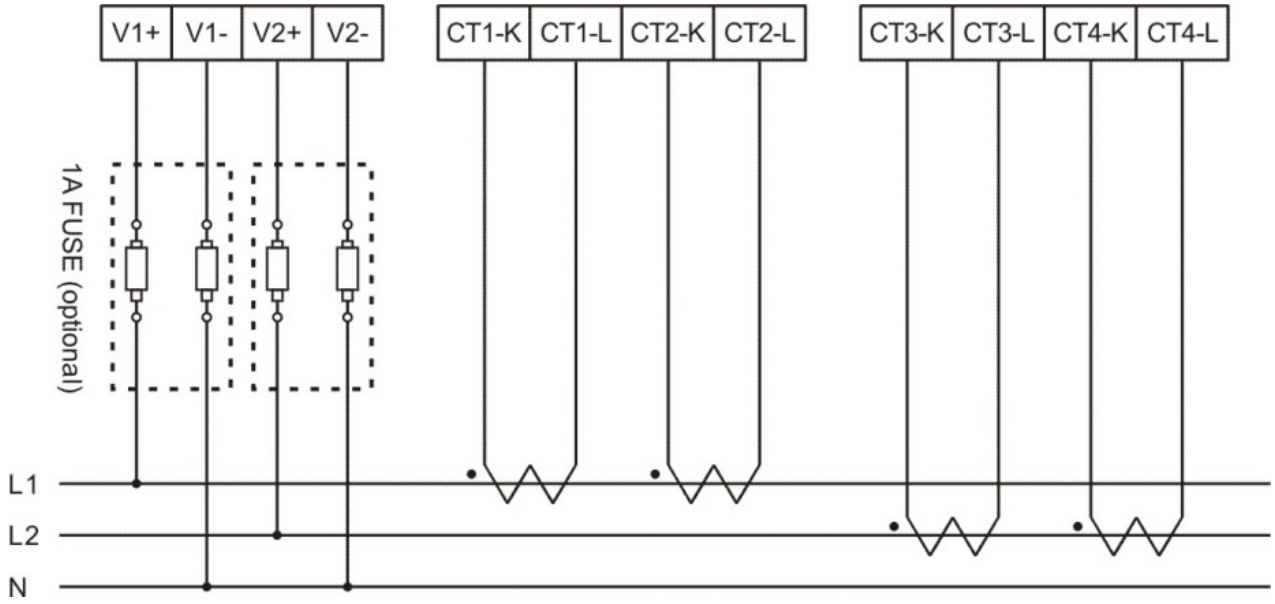
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Wiring

- 1P2W-2CT (PM-3112 Series)



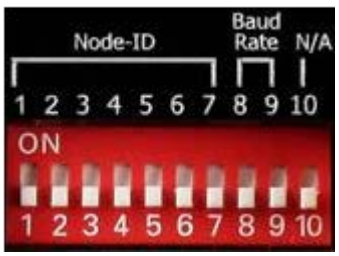
- 1P4W-4CT(PM-3114 Series)



3. Communication

3.1. RS-485 setting

- Default setting for RS-485: **19200, n, 8, 1**
- DIP switch is used for Modbus address setting, default is 1, i.e. all OFF
  For example: Modbus address is 10，find the table of DIP switch 1-7 is
  ON, OFF, OFF, ON, OFF, OFF, OFF



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- SW1－SW7 setting

  Setting Modbus-RTU address for communication (1-128)

Modbus Address	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW7
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	**ON**	OFF	OFF	OFF	OFF	OFF	OFF
3	OFF	**ON**	OFF	OFF	OFF	OFF	OFF
4	**ON**	**ON**	OFF	OFF	OFF	OFF	OFF
……							
125	OFF	OFF	**ON**	**ON**	**ON**	**ON**	**ON**
126	**ON**	OFF	**ON**	**ON**	**ON**	**ON**	**ON**
127	OFF	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**
128	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**

- SW8－SW9 setting

  PM-311x：For Baud Rate Setting

Baud Rate	SW 8	SW9
9600	OFF	OFF
19200 (Default)	ON	OFF
38400	OFF	ON
115200	ON	ON

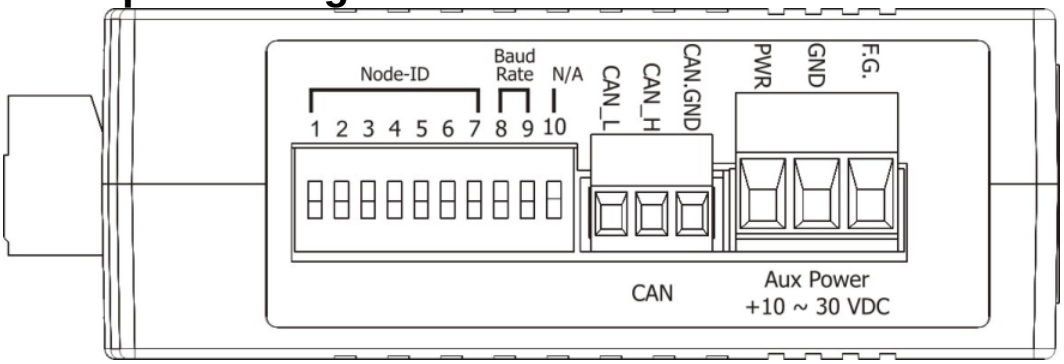
3.2. Ethernet setting

- Ethernet default settings:

IP Address	**192.168.255.1**
Subnet mask	**255.255.0.0**
Gateway	**192.168.0.1**
Port	**502**

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3.3. CANopen setting

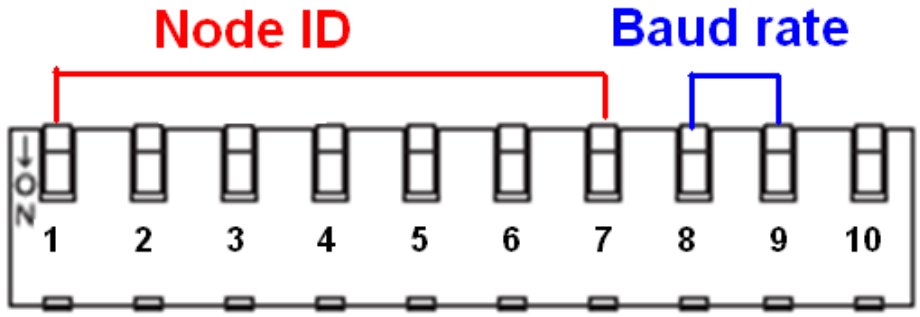


PM-311x-CPS provides hardware Node-ID setting by DIP-Switch. The relationship between the Node-ID and the DIP-Switch status is shown below.

- **Node-ID and DIP-Switch 1 ~ 7**

Node ID	Pin 1	Pin2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	OFF	ON	OFF	OFF	OFF	OFF	OFF
4	ON	ON	OFF	OFF	OFF	OFF	OFF
…							
126	ON	OFF	ON	ON	ON	ON	ON
127	OFF	ON	ON	ON	ON	ON	ON
128	ON	ON	ON	ON	ON	ON	ON

- **The baud rate of CAN bus**



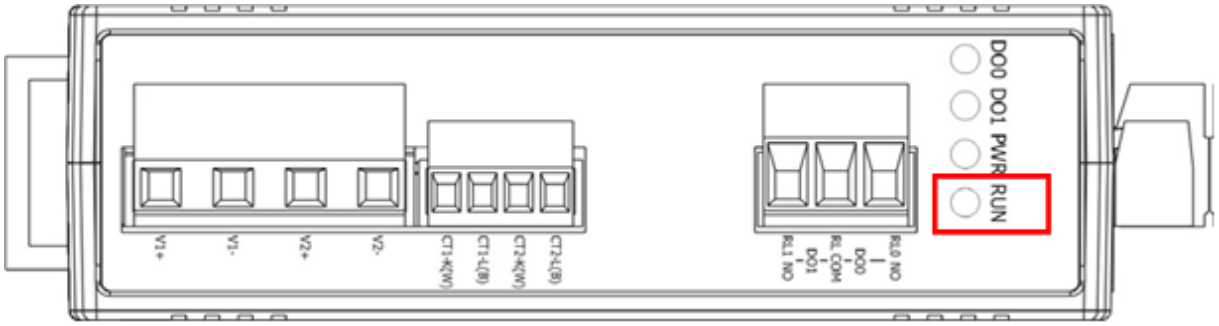
The DIP-Switch from pin 8 to pin 9 represents the CAN bus baud rate of the PM-311x-CPS. The mapping table is shown as below. The default baud rate value is 125K, and the corresponding DIP-Switch value from pin 8 to pin 9 is (OFF) (OFF).

CAN baud rate and DIP-Switch 8~ 9

CAN baud-rate	Pin 8	Pin 9
125 k **(Default)**	OFF	OFF
250 k	ON	OFF
500 k	OFF	ON
1000 k	ON	ON

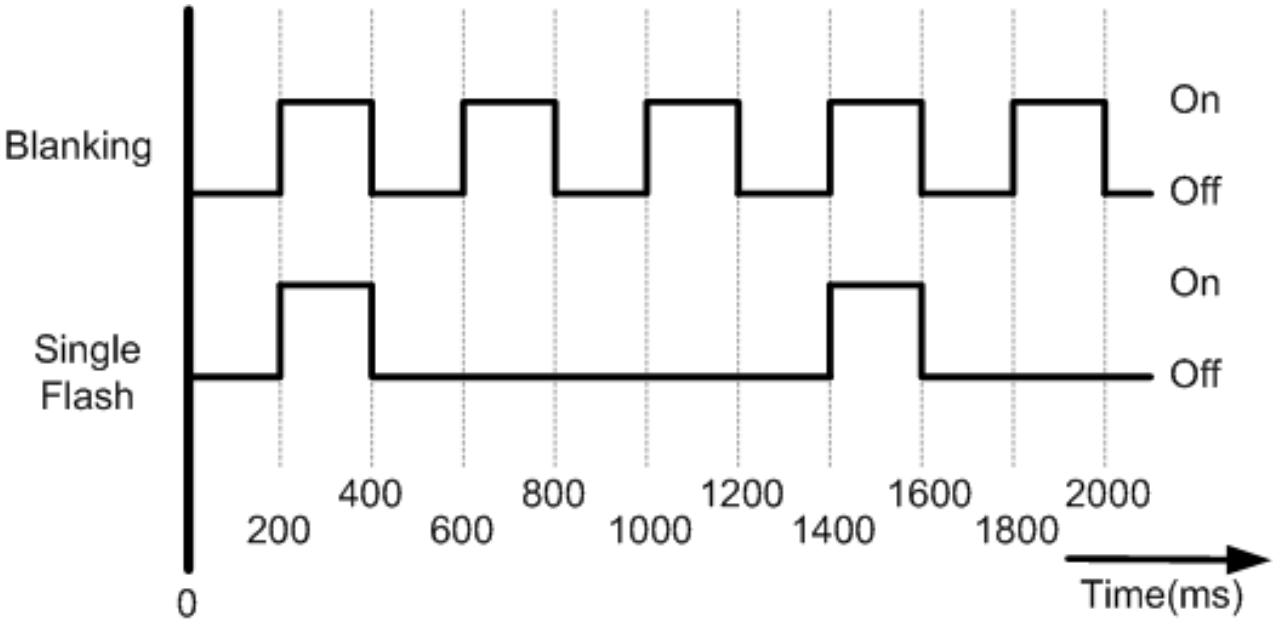
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- **The LED state**



LED “RUN” is an indicator LED of CANopen state in the PM-311x-CPS. It shows whether the CANopen operation state is. The following figure shows the LED.

No.	Signal	State	Description
1	No Light	Non-operation	Malfunction or Power Supply/Connection not ready
2	Single Flash	Stopped	The device is in Stopped state
3	Blinking	Pre-operation	The device is in the pre-operation state
4	Continuing Light	Operation	The device is in the operational state



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