

PMAC901 Single Phase Energy Meter

Installation & Operation Manual



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1. Product Description

PMAC901 DIN rail energy meter is a kind of new style single phase whole electronic type meter. The meter is completely conformed to the relative requirements of the Nation Standard GB/T17215-2008 and International Standard IEC 62053:2003 (Class 1 or Class 0.5S). It is an integration of up-to-date micro-electronics technique, special imported large scale integrate circuit, advanced technique of digital sampling technique and SMT techniques etc.

PMAC901 single phase energy meter is designed for measuring active energy power consumption in a rated frequency of 50Hz or 60Hz three phase alternating current circuit. It displays total energy consumption via LCD and is characterized with good reliability, compact size, light weight, specious nice appearance and easy installation.

2. Features

- ◆ 35mm DIN installing, in accordance with Standard DIN ED5002
- ◆ High accuracy, active energy accuracy up to class 1 or class 0.5S
- ◆ 6+1 digits LCD display (999999.9 kWh)
- ◆ Passive pulse output, output signal is in accordance with Standard DIN43864
- ◆ LED indicates pulse output
- ◆ Key-press for local parameter setting
- ◆ RS485 or C-MBUS communication port, Modbus protocol

3. Order Information

PMAC901 - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/>	
	① ② ③
① Communication Port	
C	One RS485 COM
M	One C-MBUS
② Optional Accuracy	
1	Active energy class 1
0.5S	Active energy class 0.5S
③ Rated Current	
40	10(40)A
60	10(60)A
100	20(100)A

Order Example

PMAC901 –C –0.5S -40

It means the single phase energy meter provides one pulse output, one RS485 COM, class 0.5S accuracy measurement, maximum rated current is 40A.

4. Main Technical Parameter

Rated voltage	220VAC	Accuracy	Class 1 or Class 0.5S
Rated current	10(40)A,10(60)A,20(100)A	Dimension	75×88×73mm
Input frequency	50Hz	Installation mode	Standard 35mm DIN rail
Starting current	0.1%I _n	Operating condition	Operating temperature: -20°C~+55°C
Power supply	220VAC±15%		Storage temperature: -20°C~+55°C
Power consumption	<2W		Relative humidity: 5%~95%,non-condensing
Insulating property	Power frequency withstand voltage: AC 2 KV Impulse withstand voltage: 6KV		
Electrostatic discharge immunity test	IEC61000-4-2, Level 4		
Radiated immunity test	IEC61000-4-3, Level 3		
Electrical fast transient/ burst immunity test	IEC61000-4-4, Level 3		
Surge immunity test (1, 2/50μs~8/20μs)	IEC61000-4-5, Level 3		
Conducted emission	EN55022, Class B		
Radiated emission	EN55022, Class B		

5. Display and Key-press Operation

5.1 Display Instruction

In energy data displaying interface, the LCD displays KWH value in 6 +1 digits (999999.9 KWh).

In parameter setting interface, the menu setting options are in order of : CT ratio programming, communication address programming, baud rate programming, clear energy.

5.2 LED Lights Instruction

On the panel of the meter, there are 3 LED lights in order of **(COM)**, **(PULSE)**, **(REV)**.

(COM) is communication indicating light. When the communication is normal, the light flashes once every two seconds. When communication error, the light flashes twice a second. In case communication blackout, the light is off.

(PULSE) is active pulse output indicating light. It flashes once as soon as there is a pulse output.

(REV) is opposite energy indicating light. This light is on when the active power is reversed.

5.3 Key-press Instruction

- ◀ Move left or quit setting.
- △ Increase value or select menu.
- ↵ Enter setting or enter menu.

5.4 Parameter Setting

◆CT Ratio Programming

Note: When rated current >5A, default CT ratio is 1.

- (1) In data displaying interface, press ↵ for 3 seconds and release to enter setting interface. The default first setting menu is CT ratio programming. Default display is: **1- 1**
The number **1-** means CT ratio setting option. The back number **1** means the CT ratio is 1.
The programming range of CT ratio is 1~999.
- (2) If the external CT parameter is 800/5, users should program the CT ratio to 160.
Press ↵ quickly and release to enter programming. The screen shows: **1- 1 .1**
The last two digits **.1** means the current cursor position is on units digit.
- (3) Press △ several times, change the units digit to 0. The screen shows: **1- 0 .1**
- (4) Then press ◀ once again, the screen shows: **1- 0 .2**
The last digit **.2** means current cursor position is on tens digit.
- (5) Press △ several times, change the tens digit to 6. The screen shows: **1- 60 .2**
- (6) Then press ◀ once again, the screen shows: **1- 60 .3**
The last digit **.3** means current cursor position is on hundreds digit.
- (7) Press △, change the hundreds digit to 1. The screen shows: **1- 1 60 .3**
- (8) Then press ↵ to confirm the setting. The last two digits **.3** disappear. Quit CT ratio programming. At this moment, CT ratio menu shows: **1- 1 60**
- (9) Press ◀ to quit setting interface.

◆Communication Address Programming

- (1) In data displaying interface, press ↵ for 3 seconds and release to enter setting interface. The initial menu is CT ratio programming. Press △ once and release, enter communication address programming. The default display: **2- 1**

The number **2-** means communication address setting option. The back number **1** means the communication address is 1.

The programming range of communication address is 1~247.

- (2) If users want to change the communication address to 12, press \leftarrow to enter programming. The screen shows:

2- 1 .1

The last two digits **.1** means current cursor position is on units digit.

- (3) Press \triangle to change the units digit to 2. The screen shows: **2- 2 .1**

- (4) Press \leftarrow , the screen shows: **2- 2 .2**

The last two digits **.2** means current cursor position is on tens digit.

- (5) Press \triangle to change the tens digit to 1. The screen shows: **1- 12 .2**

- (6) Then press \leftarrow to confirm the setting. The last two digits **.2** disappear, and the communication address menu shows: **2- 12**

- (7) Press \leftarrow to quit programming.

◆Baud Rate Programming

- (1) In data displaying interface, press \leftarrow for 3 seconds and release to enter setting interface. Press \triangle twice to enter baud rate menu. The screen shows: **3- 9 6**

The number **3-** means baud rate setting option. The back number **96** means the baud rate is 9600bps.

The baud rate can be set to 4800bps or 9600bps.

- (2) If users want to change the baud rate to 4800bps, press \leftarrow to enter programming. The screen shows: **3- 96 .**

The last lighted decimal point **.** means it is in programming interface.

- (3) Press \triangle once, change the baud rate to 4800bps. The screen shows: **3- 48 .**

- (4) Press \leftarrow to confirm setting, the decimal point disappear. The screen shows: **3- 48**

- (5) Press \leftarrow to quit programming.

◆Clear Energy

- (1) In data displaying interface, press \leftarrow for 3 seconds and release to enter setting interface. Press \triangle three times to enter clear energy menu. The screen shows: **4-C n**

The number **4-** means clear energy setting option, the letter **C** means CLEAR, and the last letter **n** is used for setting.

- (2) Press \leftarrow quickly and release, enter programming. The last decimal point lights on. The screen shows: **4-C n .**

- (3) Press \triangle and release, the last letter **n** change to **y**. It **warns** users to clear energy. The screen shows: **4-C y .**

- (4) Press \leftarrow and release, confirm to clear energy. The screen again shows: **4-C n**
- (5) Press \triangleleft to quit programming, and turn back to data displaying interface. The kWh value has been cleared to zero.

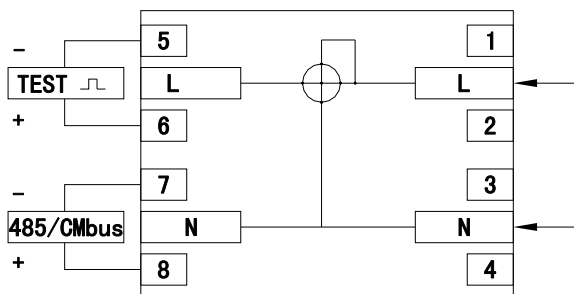
6. Connection Modes and Drawing

There are two connection modes: direct connection and indirect connection through CT.

When rated current $>100\text{A}$, the meter should be connected via external CT.

When rated current $\leq 100\text{A}$, the meter should be connected directly.

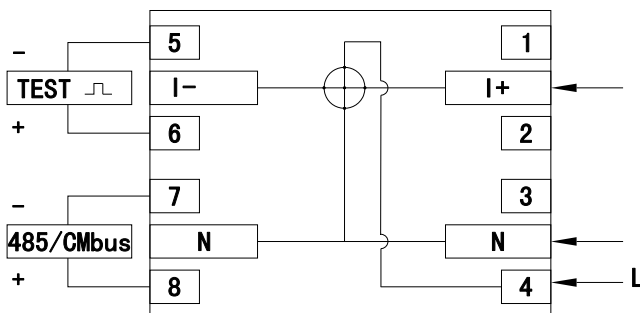
(1) PMAC901 direct connection drawing (rated current $\leq 100\text{A}$)



Note: The dimension of L/+ connecting hole is $7\times 7\text{mm}$.

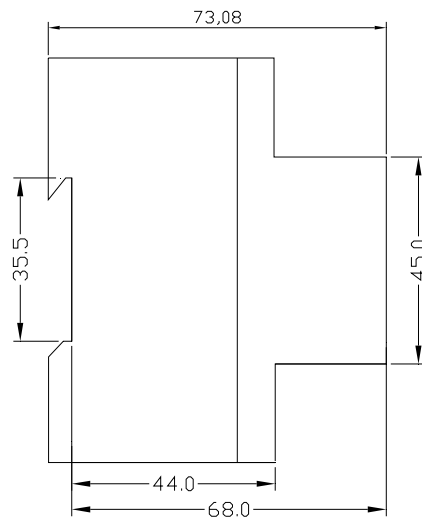
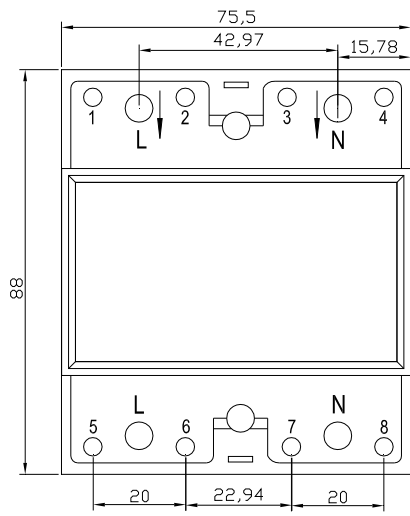
The dimension of N/- connecting hole is $3.5\times 2.5\text{mm}$.

(2) PMAC901 indirect connection drawing, via external CT (rated current $>100\text{A}$)



7. Figure and Installation Dimension

PMAC901 Figure and Installation Dimension (unit: mm)



8. PMAC901 Modbus RTU

Metering Data Registers (F03)

Register Address	Type of Register	Description	Remarks		Type of Data
40001	RO	EL	Energy low 16 bit	Total energy, one decimal place. Unit: kWh	unsigned long
40002	RO	EH	Energy high 16 bit		
40003	RO	V	Voltage, two decimal places, Unit: V		unsigned int
40004	RO	IL	Current low 16 bit	Current, three decimal places. Unit: A	unsigned long
40005	RO	IH	Current high 16 bit		
40006	RO	PL	Active power low 16 bit	Active power, one decimal place. Unit: W	long
40007	RO	PH	Active power high 16 bit		
40008	RO	KVAL	Apparent power low 16 bit	Apparent power, one decimal place. Unit: KVA	unsigned long
40009	RO	KVAH	Apparent power high 16 bit		

Parameter Settings

Register Address	Type of Register	Description	Remarks
40201	RW	CT ratio	1~999
40202	RW	Communication address	1~247
40203	RW	Baud rate of COM 1	0 – 4800bps 1 – 9600bps

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