HANCHU ESS

Version 01

User Manual

SM Series

Smart Energy,
Sustainable Solutions


HANCHU ESS

CONTENTS

1 About This Manual

This manual is an integral part of SM smart meter. It mainly introduces the assembly, installation, electrical connection, debugging of the products.
The products, services or features purchased are subject to the commercial contracts and terms of manufacturer All or part of the products, services or features described in this document may not be within the scope of purchase. This document serves only as a guide to use, and all statements, information and recommendations in this document do not constitute any express or implied guarantee.

1.1 How To Use This Manual

Before installing and using meters, please read this manual carefully, understand the safety information and be familiar with the functions and characteristics of inverters.
The manual content of subsequent versions of the inverter may be subject to change. The latest manual can be found at manufacturer.

1.2 Target Groups

This manual is applicable to the electrical installers with professional qualifications and end-users, who should have the following skills:

① Training for installation and commissioning of electrical system, as well as dealing with hazards.

② Knowledge of the manual and other related documents.

③ Knowledge of the local regulations and directives.

2 Safety Instructions

2.1 Safety Notes

① Before installation, please read this manual carefully and follow the instructions in this manual strictly.

② Installers need to undergo professional training or obtain electrical related professional qualification certificates.

③ Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to inverters and annulment of the warranty.

④ All electrical installations must conform to local electrical safety standards.

⑤ If the meter needs maintenance, please contact the local designated personnel for system installation and maintenance.

2.2 Statement

Under any of the following circumstances, it has the right not to bear the quality assurance:

① Damages caused by improper transportation.

② Damages caused by incorrect storage, installation or use.

③ Damages caused by installation and use of equipment by non-professionals or untrained personnel.

④ Damages caused by failure to comply with the instructions and safety warnings in this document.

⑤ Damages of running in an environment that does not meet the requirements stated in this document.

⑥ Damages caused by operation beyond the parameters specified in applicable technical specifications.

⑦ Damages caused by unauthorized disassembly, alteration of products or modification of software codes.

⑧ Damages caused by abnormal natural environment (force majeure, such as lightning, earthquake, fire, storm, etc.).

⑨ Any damages caused by the process of installation and operation which don't follow the local standards and regulations.

⑩ Products beyond the warranty period.

3 Product Description

3.1 System Introduction

SM series are smart meters and support different voltage levels and power grid. The SM can collect the data in real time, including grid voltage, current, power and energy yield. By cooperating with monitoring system.

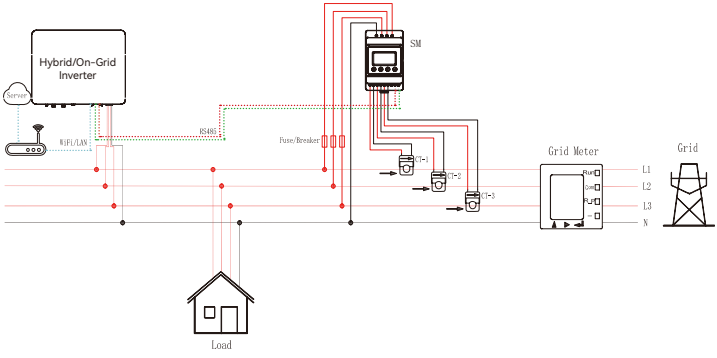


Figure 3-1 SM connected with inverter

The current and distribution method of SM series meters are shown in the following table:

Model	SM-MA	SM-5A
Current	120A/100mA	5A
	200A/100mA	
	300A/100mA	
Note	Standard Equipment6	Additional Purchase

NOTE

More application scenarios of SM are still under development, please contact us for details.

NOTICE

The SM-MA meter must be installed with the CT shipped with the inverter and must not be replaced.
If the CT is replaced, use the SM-5A meter and set the CT conversion ratio on the SM-5A meter.

3.2 Product Appearance

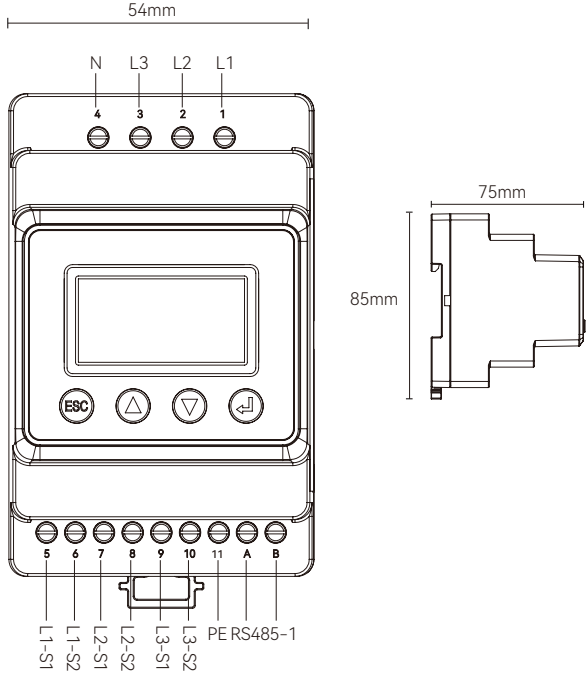
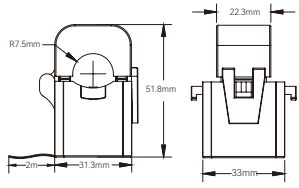


Figure 3-3 Smart Meter Appearance

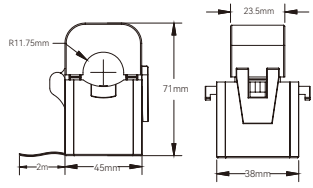
Wiring terminals as shown in the table below.

No.	Definition	Function
1	L1	L1/L2/L3/N connect to grid to detect power grid voltage.
2	L2	
3	L3	
4	N	
5	L1-S1	To detect the CT current and direction.
6	L1-S2	
7	L2-S1	
8	L2-S2	
9	L3-S1	
10	L3-S2	
11	PE	Ground Connection
RS485-1		SM, communicate with three-phase PV grid-connected inverter.
RS485-2		SM, communicate with hybrid inverter.
ANT		WIFI antenna port. SM doesn't have this port.
LAN		LAN communication port. SM doesn't have this port.
Type-C		Specified Debug Interface. Do not use it by non-professionals

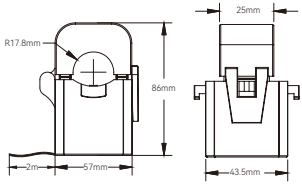
CT Appearance



ø16,120A/100mA



ø24,200A/100mA



ø35,300A/100mA

NOTICE

This meter can only be matched with the CT shipped with the meter, and Manufacturer will not be responsible for malfunctions if not use the CT shipped with the meter.

NOTE

The SM-MA will be delivered with matched CT(s) supplied are calibrated and tested to be used with the device in this package. These CT(s) cannot be interchanged within the same device and cannot be used for other devices from other packaging.

NOTE

The SM-5A is not delivered with CT. Customers are required to purchase qualified standard CT with secondary side output of 5A, CT accuracy of 0.5, and maximum CT conversion ratio of 5000:5.

3.3 Packing list

Item	Name	Quantity	Note
1	SM	1pcs	/
2	CT	1-3pcs	Only MA Version
3	Cord end terminal	12pcs	/

3.4 Storage

① Do not dispose of the original packing case. It is recommended to store the device in the original packing case when the device is decommissioned.

② The storage temperature and humidity should be in the range of -30℃~+ 60℃, and less than 90%, respectively.

4 Installation

SM series is IP20 and can be installed indoors only.

4.1 Smart Meter

① Pull to release the retaining clip.

② Mount the meter on the track and push the Retaining clip up (a click sound indicates it is installed well).

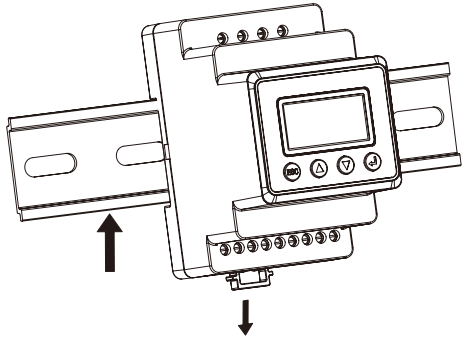
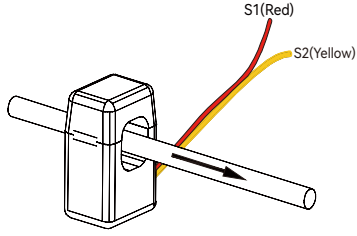


Figure 4-1 Smart Meter

4.2 Current Transformer



NOTE

The installation direction of the CT varies according to the application scenario. Please follow the directions of the CT as shown in 3.1 System Introduction

Incorrect connection or direction will cause incorrect data.

5 Wiring Connection

5.1 AC Connection

The installation of the meter should be strictly in accordance with the instructions of the User Manual, otherwise the meter may not work properly. According to different application scenarios, the meter wiring is different, and the meter used is also different. Please select the appropriate meter according to the use scenario.

Please follow the system wiring as shown in 3.1 System Introduction.

The SM supports three-phase grid(with 3 CTs) , single-phase grid(with 1 CT), and other grids.

Grid Type	Rated Voltage	CT Number	Note
Single-phase	110/120/127V(L-N) 220/230/240V(L-N)	1*CT	L/N/PE
Three-phase	380/400/415V(L-L) 208/220/240V(L-L)	3*CT	Wye (3L/N/PE) Delta (3L/PE)

The following is a list of common terminal connection diagrams. Select a proper system schematic diagram based on the actual situation. For different solutions, contact us for technical support.

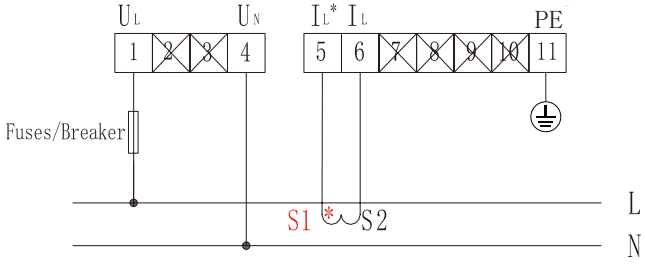


Figure 5-1 Single-phase

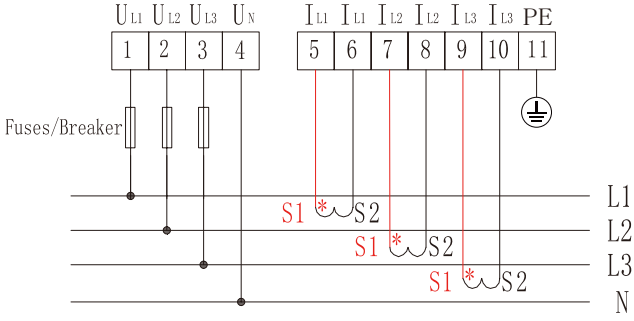


Figure 5-2 Three-phase(Wye)

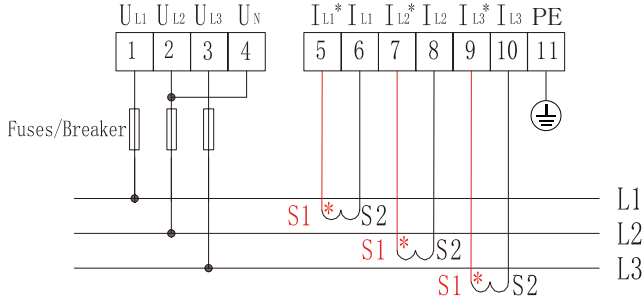


Figure 5-3 Three-phase (Delta)

5.2 SM connected with Hybrid Inverters

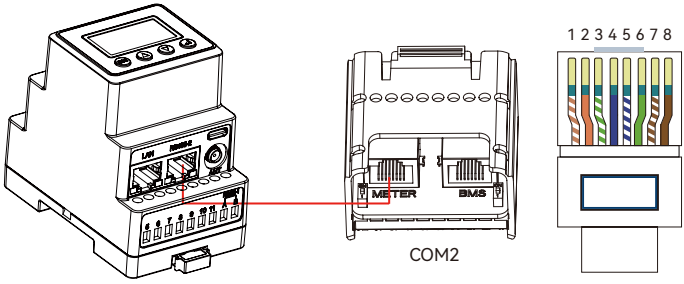


Figure 5-4 SM connected with Hybrid inverters

No.	Color	Definition	No.	Color	Definition
1	Orange & White	/	5	Blue & White	/
2	Orange	/	6	Green	/
3	Green & White	/	7	Brown & White	RS485_B2
4	Blue	/	8	Brown	RS485_A2

Figure 5-5 RJ45 terminal connection sequence and definition

NOTE

When the SM is connected to the Hybrid Inverters.
The Modbus address of the SM must be 1. If the communication between SM inverter fails, please check the Modbus address of the SM.

6 Commissioning

6.1 Meter Configuration Table

	LAN/WiFi	DHCP	CT Ratio	Grid Type
SM-MA	---	---	---	○
SM-5A	---	---	●	○

● : Need/Suggest to be configured

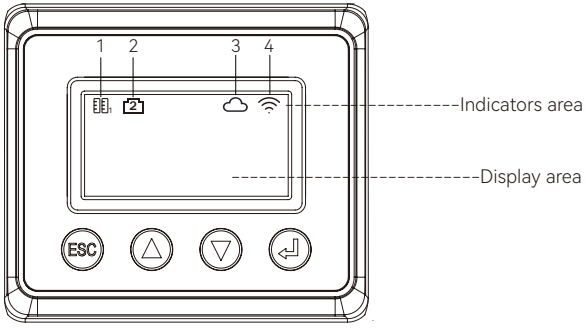
○ : Whether to configure it according to site actual requirement

---: No this option

Generally, Modbus and Time do not need to be set.

7 Operating Instruction

7.1 Screen Introduction



Item	Indicator		Status	Description
1		RS485-1	Always On	Communicate with inverter normally
			Off	Disconnection
2		RS485-2	Always On	Communicate with inverter normally
			Off	Disconnection
3		Network status	Slow flashing	The meter is not connected to the router.
			Quick flashing	The meter is connected to the router but not connected to the server.
			Always On	Communicate with the server normally
4		LAN	Always On	The communication method is selected as LAN in display
			Off	The communication method is not selected as LAN in display
		WiFi	Slow flashing	The communication method is selected as WiFi in display
			Off	The communication method is not selected as WiFi in display

7.2 Key Instructions

key

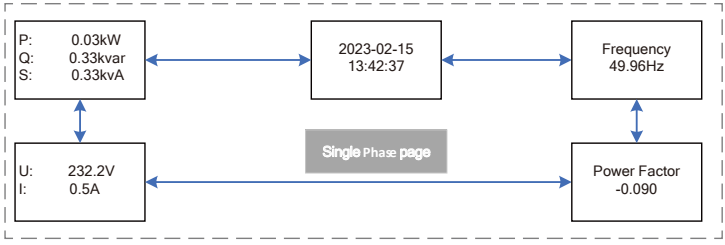

key

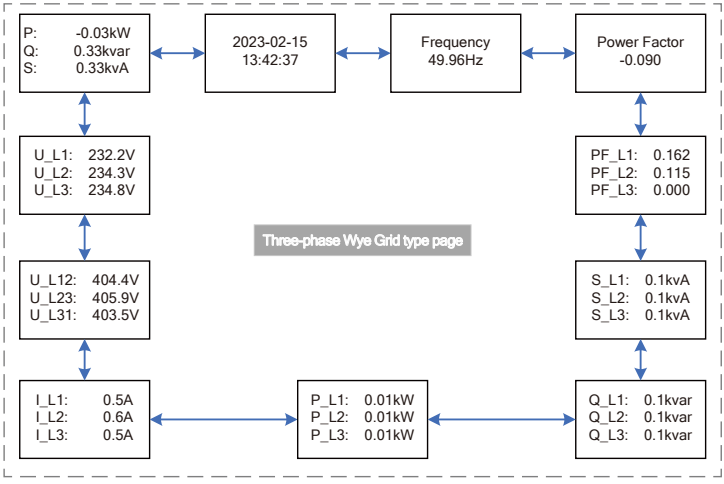

key

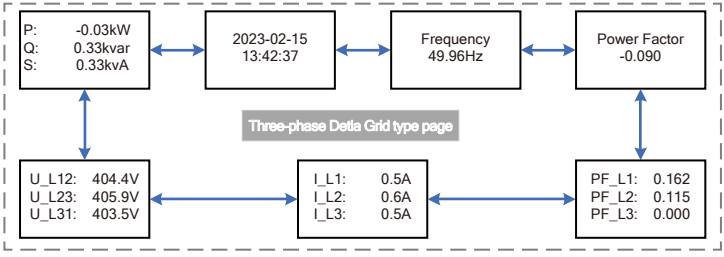

key

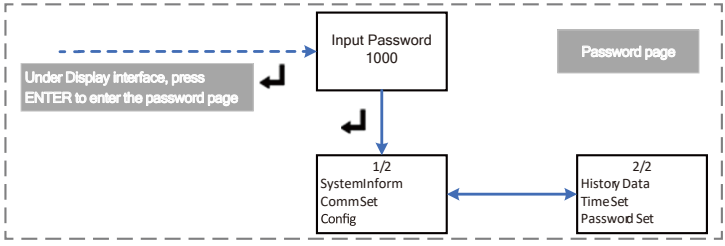
Key	Function
	Under the setting page, press this key to return to the upper menu
	Under Display interface, press this key to move the cursor to the upper part; Under Setting interface, press this key to toggle level menus or increase the value
	Under Display interface, press this key to move the cursor to the down part; Under Setting interface, press this key to toggle level menus or decrease the value
	Under Display interface, press this key to enter the password page for parameters setting; Under Setting interface, press this key to confirm the selection of the items and modification of parameters.

7.3 Display Interface

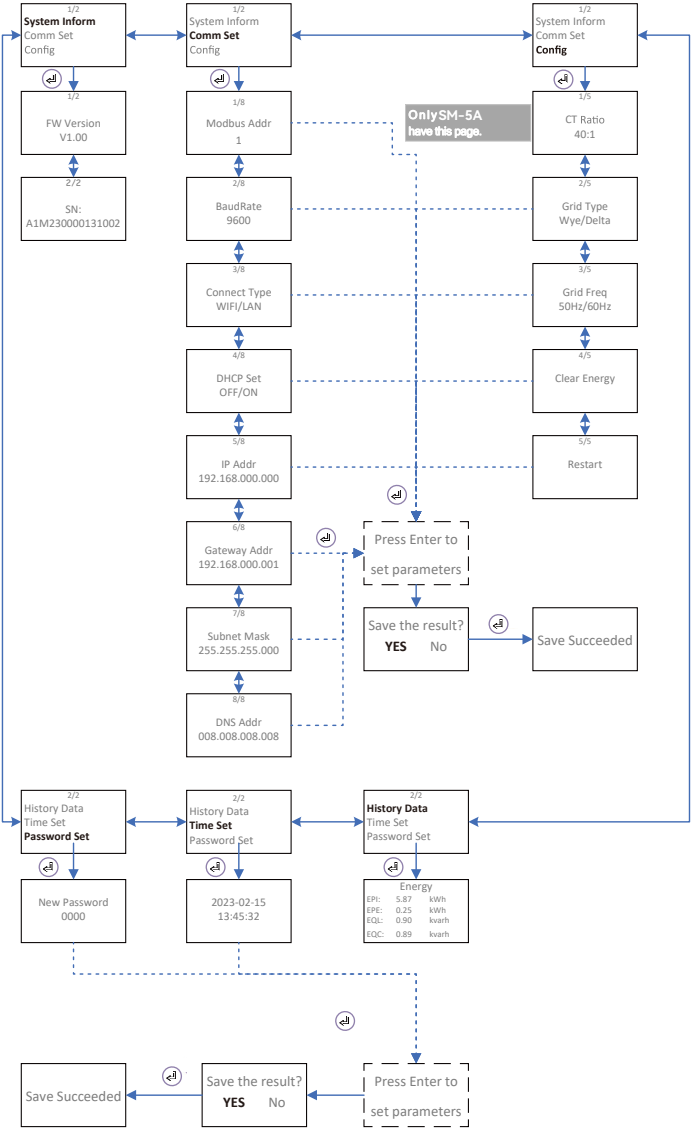



P: -0.03kW
Q: 0.33kvar
S: 0.33kvA
2023-02-15
13:42:37
Frequency
49.96Hz
Power Factor
-0.090
U_L1: 232.2V
U_L2: 234.3V
U_L3: 234.8V
PF_L1: 0.162
PF_L2: 0.115
PF_L3: 0.000
Three-phase Wye Grid type page
U_L12: 404.4V
U_L23: 405.9V
U_L31: 403.5V
S_L1: 0.1kvA
S_L2: 0.1kvA
S_L3: 0.1kvA
I_L1: 0.5A
I_L2: 0.6A
I_L3: 0.5A
P_L1: 0.01kW
P_L2: 0.01kW
P_L3: 0.01kW
Q_L1: 0.1kvar
Q_L2: 0.1kvar
Q_L3: 0.1kvar


P: -0.03kW
Q: 0.33kvar
S: 0.33kvA
2023-02-15
13:42:37
Frequency
49.96Hz
Power Factor
-0.090
Three-phase Delta Grid type page
U_L12: 404.4V
U_L23: 405.9V
U_L31: 403.5V
I_L1: 0.5A
I_L2: 0.6A
I_L3: 0.5A
PF_L1: 0.162
PF_L2: 0.115
PF_L3: 0.000


Input Password
1000
Password page
Under Display interface, press
ENTER to enter the password page
1/2
SystemInform
CommSet
Config
2/2
History Data
TimeSet
Password Set

7.4 Parameter Setting Interface



8 Appendix

8.1 Technical Parameters

Model	SM-MA	SM-5A
Signal and power input		
Voltage	230/400V,3~	
Frequency	50~60 Hz	
Current	120A/100mA 200A/100mA 300A/100mA	5A
Current overload	Continue: 1.2 times; instantaneous: 2times / 10	
Voltage input impedance	>1MΩ	
Accuracy		
Current/Voltage	0.5%	
Frequency	±0.01Hz	
Active Power	Class 0.5S	
Reactive Power	Class 0.5S	
Energy	Class 0.5S	
General data		
Over voltage category	III	
Dielectric strength	Resistance from signal, power supply and output terminal to shell >100MΩ	
Withstand voltage	Input and power supply >1.5kV	
Communication	Modbus RTU (RS485)	Modbus RTU (RS485)
Display	OLED	
Voltage power consumption	<5VA	<5VA
Noise Level (dB)	<25	<25
Terminal capacity	0.5~4 mm^2	
Size (L*W*H)	85*54*75mm	
Weight	150g	
Protection class	IP20 (For Indoor Use)	
Installation method	35mm DIN Rail	
Operating temperature	-30 ~ +60℃	
Operating humidity	<95%, No Condensation	
Operating altitude	<3000m	

8.2 Contact Information

Should you have any question about this product, please contact us.

We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Date of the device
- Fault code/name
- Brief description of the problem

HANCHU ESS

Android APP

iOS APP

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