

CONFIGURATION GUIDE

Single-Phase Meter



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Preface

Scope of application

This product manual describes the installation, electrical connection, debugging, maintenance and troubleshooting of Single-Phase Meter.

Table of adapted inverters

NO.	Product Type	Model
1	Single-phase inverters (PV)	SOFAR 1100-3300TL-G3
2		SOFAR 4-6KTLM-G3
3		SOFAR 7-10KTLM-G3
4	Single-phase inverters (Energy storage)	HYD 3K-6K-EP

Versions of the guide

Versions	Modify records	Time
V1.0	First Edition Release	2023.04.20

1. Symbol interpretation

Read the safety precautions in this manual carefully. If ignored, serious injury or death may result.



DANGER

Non-observance will result in death or serious injury.

- Follow the warnings in order to prevent death or serious injury!



WARNING

Non-observance may result in death or serious injury.

- Follow the warnings in order to prevent serious injury!



CAUTION

Non-observance may result in minor injury.

- Follow the warnings in order to prevent injury!

ATTENTION

Non-observance may result in property damage!

- Follow the warnings in order to prevent damage to or destruction of the product.

- Provides tips essential to the optimal operation of the product.

2. Introduction

This scheme is a 1-to-1 communication mode, and one set of electricity meter cannot correspond to multiple Grid-tied Inverters.

Type	Model	Reference Voltage	Frequency	Nominal Current	Adapted CT
Single-Phase Meter	DDSU666	230V	50Hz/60Hz	* /100mA	HY94C2(D.01),200A/100mA, 0.5%,2KV, -40~85 C, Ø24
				5(80A)	No need for external CT

3. Meter installation

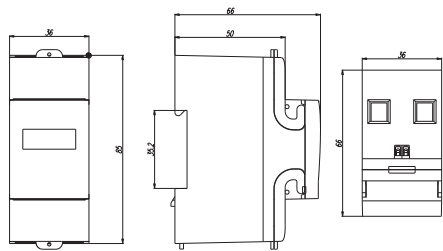
 **DANGER**

- Please ensure installation with power off
- Please select the correct power connection
- Please connect in strict accordance with the wiring diagram

ATTENTION

- Please install in a suitable meter size distribution cabinet

3.1 The meter is installed on the DIN35 standard guide rail.



3.2 Wiring diagram

For DDSU666 5(80)A:

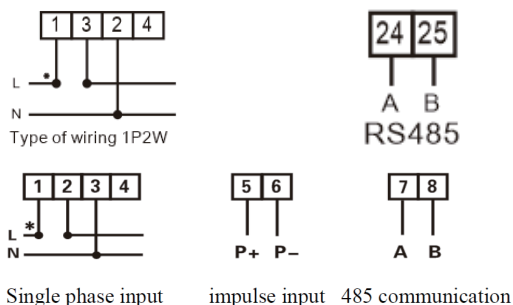


Figure: Direct access to the instrument

For DDSU666 */100mA:

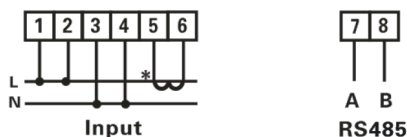


Figure: Mutual inductance access to the instrument

NOTE

The inverter communication port is checked in the inverter manual; or the interface description in item 8 at the end of this manual.

4. Setting Feed-in limitation of the inverters

SOFARSOLAR Grid-tied Inverters have two button operation menus respectively.

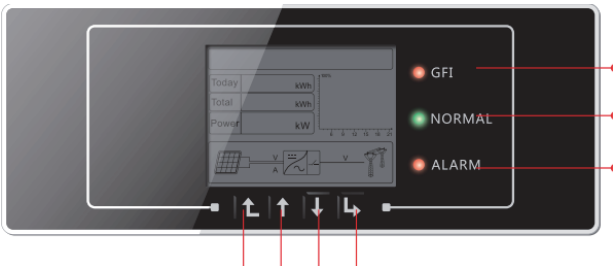
4.1 Introduction of the button function (two buttons on the screen)



Enter setting (long press ↓ to enter the menu)	---Long press ↓ to enter
Some settings require a password (the default password is 0001) (The menu number varies slightly according to different models.)	1. Set the system time
	2. Clear up the power generation capacity
	3. Clear the event record
	4. Import the safety gauge parameters
	5. Switch on machine control
	6. Set up the total power generation capacity
	7. Set up the correspondence address
	8. Set the input mode
	9. Set language
	10. Set Feed-in limitation
	11. Logical interface
	12. Curve scan
	13. PCC Select
	14. Reflux Power

- 1. If you only need to monitor the power, you don't need the Feed-in limitation function:
Set Feed-in limitation →disable
- 2. If you need to connect the meter to realize the Feed-in limitation function:
10. Set Feed-in limitation → Enable
13. PCC select → PCC Meter.
14. Reflux Power → ***KW

4.2 Introduction (four buttons on screen)



Parameter setting (back to the menu)	---Press the OK key to enter
Some settings require a password (the default password is 0715) (The menu number varies slightly according to different models.)	1. Set the system time
	2. Clear up the power generation capacity
	3. Clear the event record
	4. Set up safety regulations for countries
	5. Switch on machine control
	6. Country setting
	7. Settings, total power generation
	8. Settings, correspondence address
	9. Set up, input mode
	10. Set up the language
	11. Set the startup parameters
	12. Set the safety gauge voltage
	13. Set the safety regulation frequency
	14. Set up the insulation impedance
	15. Set the reactive power
	16. Set up the active power and load reduction
	17. Set Feed-in limitation
	18.MPPT scan
	19. Start-up time setting

	20. Set Meter
	21. Logical interface
	22. Set the power ratio

1. If you only need to monitor the power, you don't need the Feed-in limitation function:
The Feed-in limitation function is disable by default.
2. If you need to connect the meter to realize the Feed-in limitation function:
17. Set Feed-in limitation→Enable→Set Feed-in Power->***KW
20. Set Meter→Enable→***KW

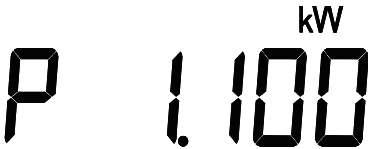
5. Display function

The positive pulse indicator flashes when the meter is in a normal operating state (on duty). If the indicator light is not flashing or not on for a long time, check that the meter is wired correctly.

Each set of data is displayed for 5 seconds, and the display interface is shown below.

No.	Content	Description
01	Imp. kW h 000 1.20	Means the current positive active energy EImp, the unit is "kWh", EImp=1.20kWh.
02	Exp. kW h 000 1.00	Means the current negative active energy EExp, the unit is "kWh", EExp=1.00kWh.

03	0002.20 kW h	Means the current combination active energy total ComEp, the unit is "kWh", ComEp=2.20kWh.
04	Modbus NO.	Means the current communication protocol is Modbus.
05	8n1 NO.	Represents 8 data bits, no effect bit and one stop bit of the current communication protocol.
06	11 NO.	Means the current communication address is 11.
07	9600 NO.	Means the current communication baud rate is 9600.
08	220.0 V	Means the current display voltage is U, the unit is "V", U=220.0V.

No.	Content	Description
09		Means the current display current is I, the unit is "A", I=5.000A.
10		Means the current display is the active power P, the unit is "kW", P=1.100kW.
11		Means the current display is the power factor Ft, Ft=1.000.
12		Means the current display is frequency F,F=50.00Hz.

6. Communication

The instrument can provide Modbus-RTU communication protocol (see **6.2 MODBUS-RTU Communication Protocol**), for the parameter information to be read or modified by the communication, please see the below table.

6.1 Communication parameter information

Parameter address	Parameter code	Instructions of parameters	Data type	Data length Word	R / W property
0000H	UCode	Programming password codE	16bit with symbols	1	R/W
0001H	REV.	Reserved, actual read is the version number	16bit with symbols	1	R
0002H	ClrE	Electric energy zero clearing Clr.E (1: zero clearing)	16bit with symbols	1	R/W
0003H	RESERVED	RESERVED	16bit with symbols	1	/
0004H	RESERVED	RESERVED	16bit with symbols	1	/
0005H	Change Protocol	Protocol changing-over	16bit with symbols	1	R/W
0006H	Addr	Communication address Addr	16bit with symbols	1	R/W
0007H	RESERVED	RESERVED	16bit with symbols	1	/
0008H	RESERVED	RESERVED	16bit with symbols	1	/
0009H	RESERVED	RESERVED	16bit with symbols	1	/
000AH	RESERVED	RESERVED	16bit with symbols	1	/
000BH	Meter type	Meter type	16bit with symbols	1	R
000CH	BAud	Communication baud rate bAud	16bit with symbols	1	R/W
000DH	RESERVED	RESERVED	16bit with symbols	1	/
000EH	RESERVED	RESERVED	16bit with symbols	1	/

000FH	RESERVED	RESERVED	16bit with symbols	1	/
0010H	RESERVED	RESERVED	16bit with symbols	1	/
Electric quantity of the secondary side					
2000H	U	Voltage	Single-precision floating point	2	R
2002H	I	Current	Single-precision floating point	2	R
2004H	P	Conjunction active power, the unit is KW	Single-precision floating point	2	R
2006H	Q	Conjunction active power, the unit is KW	Single-precision floating point	2	R
2008H	RESERVED	RESERVED	Single-precision floating point	2	/
200AH	PF	Conjunction power factor	Single-precision floating point	2	R
200CH	RESERVED	RESERVED	Single-precision floating point	2	/
200EH	Freq	Frequency	Single-precision floating point	2	R
2010H	RESERVED	RESERVED	Single-precision floating point	2	/
Electric data of the secondary side					
4000H	Ep	Active in electricity	Single-precision floating point	2	R
400AH	-Ep	Reverse in electricity	Single-precision floating point	2	R

NOTE

- ChangeProtocol : data for 2 for Modbus RTU protocol -, data to 1 for DL/T 645-2007.
- CLr. E: Power reset write 1 removal of total power.
- BAud rate: 0: 1200bps \1: 2400bps\2: 4800bps\3: 9600bps.

6.2 MODBUS-RTU Communication Protocol

Information transmission adopts asynchronous mode, taking byte as the unit. The communication date transmitted between the host and slave computer is the format of 10-digit characters, including one start bit(0), 8 data bits without check bit, two stop bits(1)(other format can be customized).

Start	Address code	Function code	Data field	CRC check code	End
Pause time for more than 3.5 characters	1 byte	1 byte	N bytes	2 bytes	Pause time for more than 3.5 characters

Address code: The first byte of each communication frame, the range is 1~247. Each slave must have an exclusive address code in the bus, only the slave device which matches the address code sent by the host computer can respond returned information.

Function code: The meter supports the following two function codes:

Function code	Definition	Operation
03H	Read register	Read the data of one or several registers
10H	Write multi-port register	Write n 16-digit binary data into n continuous registers

Data field: The data field is different with different function codes. These data can be numerical values, reference addresses and so on. For different slave devices, both the address and data information are different, and the communication information table should be provided.

For example:

1、Read register: The slave address which the host intends to read is 01H, the start register address is two register data of 0CH, sent by the host:

The host sends		Send message
Address code		01H
Function code		03H
Start register address	High byte	00H
	low byte	0CH
Register number	High byte	00H
	low byte	02H
CRC	low byte	04H
	High byte	08H

If the data of the slave register 0CH, 0DH is 0000H, 1388H, the slave will return:

The slave returns		Send message
Address code		01H
Function code		03H
Bytes		04H
Register 0CH data	High byte	00H
	low byte	00H
Register 0DH data	High byte	13H
	low byte	88H
CRC	low byte	F7H
	High byte	65H

2、Write multi-port register: The host intends to save data of 0002H, 1388H, 000AH into the slave address of 01H, the start register address is the three registers of 00H, sent by the host:

The host sends		Send message
Address code		01H
Function code		10H
Start register address	High byte	00H
	low byte	00H
Register number	High byte	00H
	low byte	03H
Write bytes		06H
The data to be written in 00H register	High byte	00H
	low byte	02H
The data to be written in 01H register	High byte	13H
	low byte	88H
The data to be written in 02H register	High byte	00H
	low byte	0AH
CRC	low byte	9BH
	High byte	E9H

Returned by the slave:

The slave returns		Send message
Address code		01H
Function code		10H
Start register address	High byte	00H
	low byte	00H
Register number	High byte	00H
	low byte	03H
CRC	low byte	80H
	High byte	08H

7. Troubleshooting

Problems	Reason	Troubleshooting
Display fault	1. The wiring may not connected according to the wiring diagram of the meter. 2. Check if the actual connection is the same as the requirement of the wiring diagram. Pay special attention to "N" position of the voltage, the high & low end of the current and terminal labeling are different from actual number.	1. If the wiring is incorrect, please follow the correct wiring instruction (see wiring diagram). 2. If the power supply voltage is abnormal, please supply power according to the voltage range specification on Manuel. 3. If it is not the above problem, please contact the local supplier.
Communication fault	1. The RS485 communication cable is open, shorted, or connected reversely. 2. The address, baud rate, and data bit check digit of the instrument does not match the host.	1. If there is a problem with the communication cable, please replace the communication cable. 2. Set the address, baud rate and data bit check digit of the meter is same as host.

8. Interface description

There are two interfaces respectively.

8.1 Type 1 (two screen buttons)

PIN	Definition	Function	Remarks
1	RS485A	RS485 Differential signal +	Wired monitoring or Inverter cascade monitoring
2	RS485A	RS485 Differential signal +	
3	RS485B	RS485 Differential signal-	
4	RS485B	RS485 Differential signal-	

5	Electricity Meter, RS485A	Meter RS485 Differential signal +	Cable connection meter
6	Electricity Meter, RS485B	Power Meter RS485 Differential signal-	Cable connection meter
7	GND.S	RS485 signal ground	
8	DRM0	Remote shutdown signal	DRMS joggle
9	DRM1/5	/	
10	DRM2/6	/	
11	DRM3/7	/	
12	DRM4/8	/	
13	GND.S	Communication to	/
14-16	Empty PIN	N/A	N/A

8.2 Type 2 (four screen buttons)

Network cable crystal head- -multi-function communication interface.

TOP FRONT 	NO	Colour	Function
	1	White orange	RS485B-
	2	Orange	RS485A+
	3	White green	RS485A+
	4	Blue	RS485A+
	5	White blue	RS485B-
	6	Green	RS485B-
	7	White brown	NC
	8	Brown	NC