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## **Check the box**

When you get a new SIN9020S voltage meter, it is recommended that you follow the following steps to inspect the instrument.

### **1. Check for damage caused by transportation.**

If found packaging cartons or bubble bag cushions serious damage, keep them until the completeness and pass the test.

### **2. Check the box in the article are complete.**

The contents of the box below. If the content does not match or if the instrument is damaged, contact your dealer or manufacturer.

Host:

SIN90100S (including headers and display power expansion board) 1

Accessories:

User Manual (pdf version) 1

### **3, check the machine.**

Inspect the instrument is damaged, not working properly, or fails performance tests, please contact your dealer or manufacturer

## **Chapter 1 Overview**

### **I、 Introduction instrument**

SIN9020S a voltage meter is able to measure voltage, current, charge and discharge capacity, time, power and other physical quantities of the new voltage meter, but also can set parameters to achieve over voltage protection, under voltage protection, over current protection, over-charging capacity protection features protection and limit protection. The instrument uses a color liquid crystal display measured data, display information comprehensive and humane. This instrument is ideal for monitoring the output voltage and current, as well as the battery charge and discharge applications.

### **2、 The main characteristics**

1, Two-way detection current for detecting the charging and discharging of the user can easily detect bidirectional current,

Without changing the wiring.

2, Power and memory function, power failure after the number of memory before power can be AH, facilitate the observation and measurement.

3, Time and number of AH clear function, without affecting the measurement.

4, AH number can fill, does not affect the direct discharge measurement.

5, Voltage, current, charge capacity AH number, WH number, time, power is simultaneously displayed, the display information

comprehensive and clear.

6, With an output shutdown function keys, flexible output turned on or off.

7, Over-voltage, over-current, over-power, limit, overcharge protection.

8, Online calibration, enabling customers to promptly correct the error.

9, In the liquid crystal display can be turned off if necessary, reduce power consumption. .

### Third, technical indicators

Project		Parameters
Voltage measuring range	Self-powered voltage measurement range	10V~90V
	External power measurement range	0~90V
Current input \ output current measurement range		0~20A
Display method		Color liquid crystal display
Display Resolution	Voltage	0.01V
	Current	0.01A
	Capacity	0.01AH
	Time	1min
Accuracy	Voltage	1% + 2 words
	Current	2% + 5 words
Measurement rate		5 times / sec
	OFT (out protection)	0.01H~99.9H
Dimensions (length × width × height)		79×43×52 ( mm )
Mounting hole opening (mm)		76.5*39.2 ( mm )

## Chapter II Instrument Description

### First, the Panel

This meter is a split structure, the instrument consists of two parts and power expansion board. Figure 2-1 for the front instrument panel, Figure 2-2 is a power expansion board.

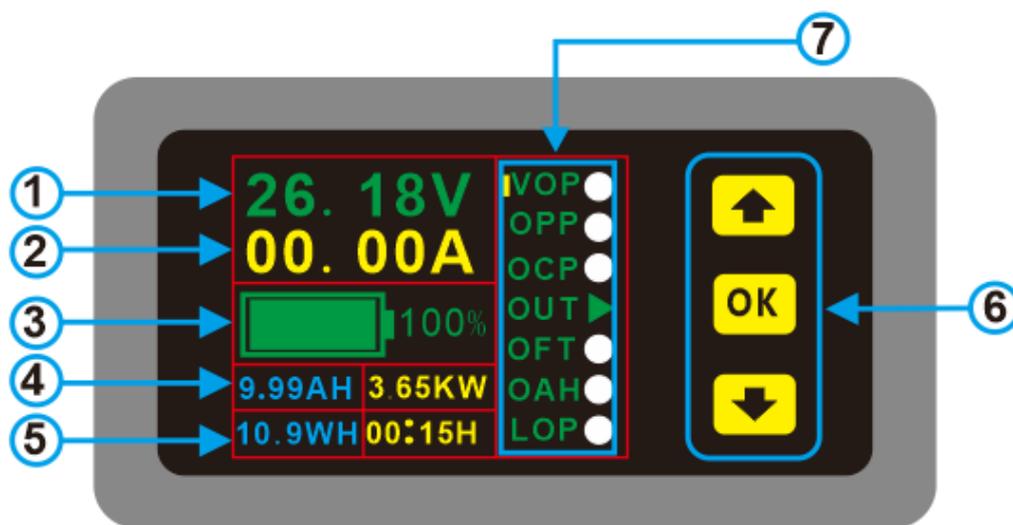


Figure 1-1 SIN9020S Front View

Grade	Explanation
1	Voltage values
2	Current values
3	Percent by volume and A progress bar
4	AH number (blue), Power values (yellow)
5	WH number (blue),The time value (yellow)
6	Select the menu protection
7	Buttons

Figure 2-1 SIN9020S Front View

Without protection function



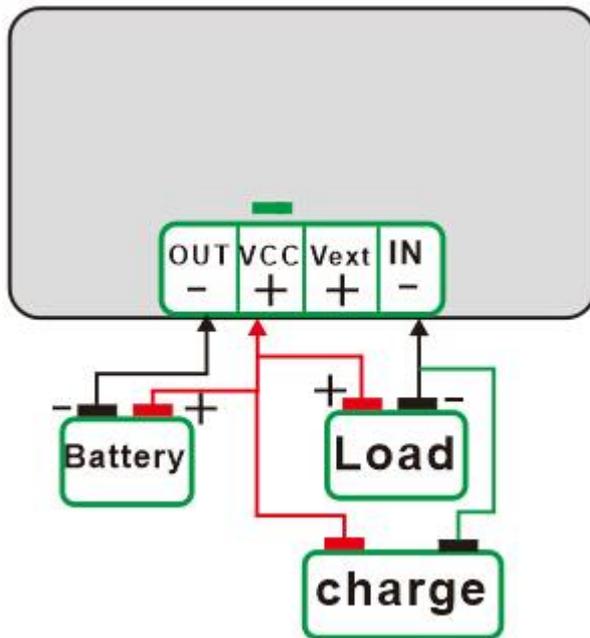
**Figure 2-2 SIN9020S power expansion board schematic**

## **Second, Wiring**

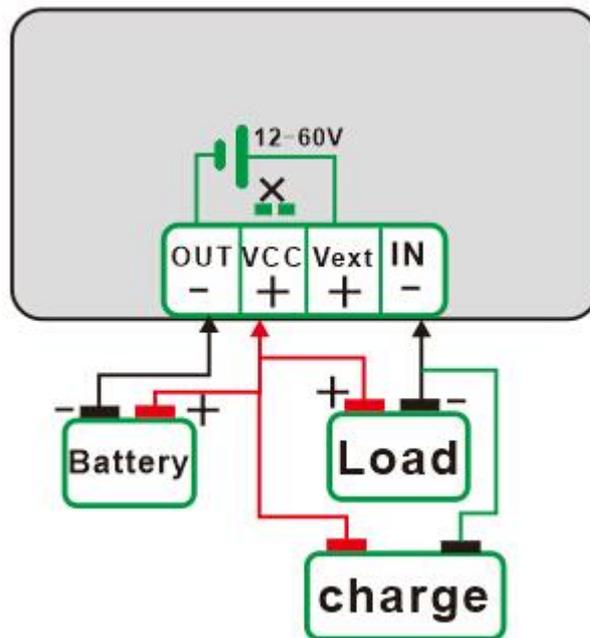
Behind SIN9020 voltage meter has four terminals, "OUT -", "VCC +", "V\_ext +", "IN -", where "V\_ext +" positive external power supply terminals when three-wire system. "VCC +" to the positive input positive power supply, but also the load.

This paragraph header in two-wire and three-wire connection connection, two-wire instrument can be directly plugged in, the three-wire system requires an external power supply to power the instrument separately.

**1, the power supply wiring diagram and method itself .**



**2, three-wire meter wiring diagram and description**

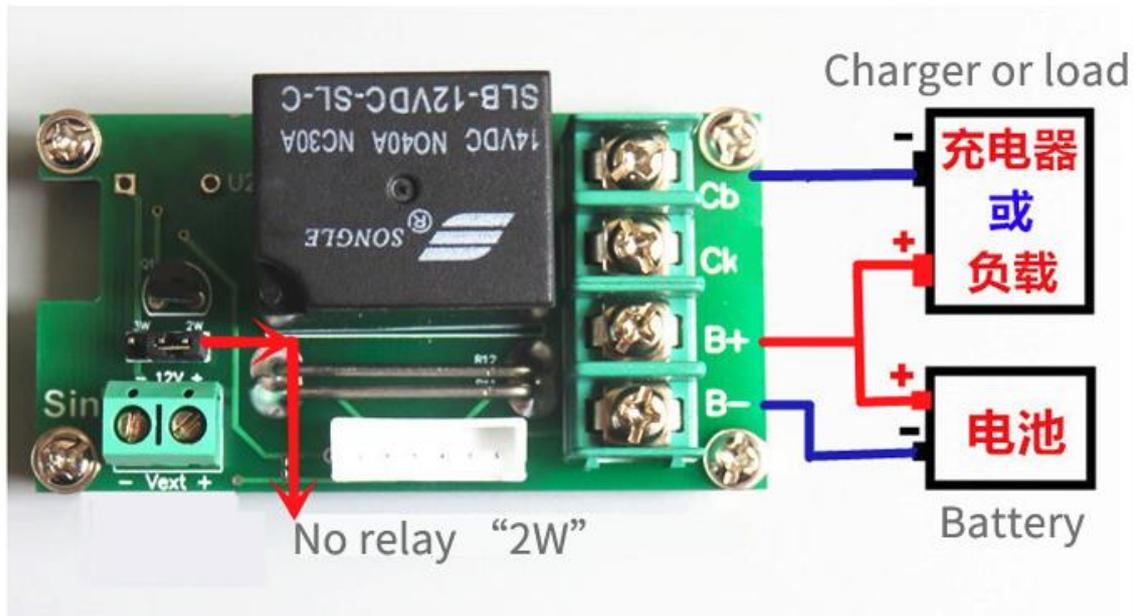


Three-wire connection:

Open the back cover of the instrument, the short-circuit point with a soldering iron to pick apart the positive external power supply connected to the "Vext +", the negative external power supply connected to the "IN-", and then the load is connected to the positive electrode "VCC +", load the negative electrode connected to the "OUT-" on the positive power of the knot "VCC +", the negative electrode connected

to the "IN-", the attention to positive and negative direction wiring, be careful not reversed.

**With relay on-off  
version**



The relay function is not turned on: the positive and negative poles of the power supply and the load (charger) are connected to the common terminal "B+", the negative pole of the battery is connected to the "B-", and the negative pole of the load (charger) is connected to the "Cb". The short-circuit terminal cap can be connected at 2W. Cb is normally closed. If the detection voltage is less than 10V, a 12VDC independent power supply is required to supply power to the meter. Jump the cap to 3W.



## Chapter III Instructions

### 1、 Wiring

Select the appropriate wiring based on the measured voltage, ensure that the input voltage is within the tolerance range of the instrument.

Note: When the power supply input voltage range itself: 10V ~ 90V;

External power supply input voltage range: 0V ~ 90V.

### 2、 The output

If you pick up the relay, power and by clicking on the yellow button to move the cursor to the OUT point, click on the OK button to control output light OUT shown in green if the output is open, if the output OUT light gray off, power on the machine status by default the last pre-shut down state. If you do not relay, the output has been turned on, OUT lamp failure.

### 3、 To expand the feature set

If you want to open an expansion of functions, move the yellow cursor to the item, click the OK button item corresponding indicator turns green then open the protected grayed turn off the protection. Before turning on the protection of the protection must first set parameters by press OK button for three seconds or so to enter the protection parameters settings page, and then by adjusting the keys to increase or decrease the parameter settings. Setting parameters When finished, click OK to return to the initial interface, default parameters for each function factory are 000.

**NOTE: If you do not adjust the parameters into the adjustment page, you need to click on in the press, click on the OK button to return to the original page.**

### 4, Expand Features

1, "OVP" over voltage protection, if set OVP value and the OVP protection options open, when the input voltage exceeds the set voltage, the unit will automatically cut off the output, and the light from green to gray-OUT . To restore protection shutdown output, the yellow cursor to "OUT", click the OK button to open the new output.

2, "OPP" is over power protection, if set OPP value, and opened the OPP protection options, when the output power exceeds the power, the machine will automatically cut off the output, and the light from green to gray-OUT . To restore protection shutdown output, the yellow cursor to "OUT", click the OK button to open the new output.

3, "OCP" is over-current protection, if set OCP value, and opened the OCP protection options, when the input current exceeds the set current, the machine will automatically cut off the output, and the light from green to gray-OUT . To restore protection shutdown output, turn off the option to protect and restore normal output.

4, "OFT" overtime protection, if the value is set OFT, the OFT protection options open and, when working time exceeds the set time, the unit will automatically cut off the output, and the OUT lights from green to gray. To restore protection shutdown output, the yellow cursor to "OUT", click the OK button to open the new output.

5, "OAH" super-capacity protection, if OAH set value, and opened the OAH protection options, when the cumulative AH AH value exceeds the set value, the machine will automatically cut off the output, and the light from green OUT gray. To restore protection shutdown output, turn off the option to protect and restore normal output. Percentage of the capacity of the display is the actual measured value and the set number of AH compared: the percentage of capacity = (actual number AH / AH set number) \* 100%.

6, "LOP" is under voltage protection, if set LOP value and protection options turned LOP, when the output power exceeds the power, the machine will automatically cut off the output, and the light from green to gray-OUT . To restore protection shutdown output, the yellow cursor to "OUT", click the OK button to open the new output.

7, Move the cursor to "OUT", press OK button at the moment the meter will enter a sleep state, in this state, although not liquid crystal display, but any CPU then work

properly. Click the button or button to wake the liquid crystal display.

8, AH number and time clear function. The yellow cursor to the next "LOP", then click on the button when the yellow cursor disappears, and then click the OK button, the time is cleared, the number of AH can be cleared or fill, AH fill the number corresponding to the value of " OAH "set point.

9, "OUT" arrow function. When "OUT" behind the green arrow pointing to the left and flows into the current state of AH number will increase as the accumulated time when "OUT" behind the red arrow pointing to the right, and current flows vary with the number of state AH the cumulative reduction in the time, pay attention to wiring in the wiring.

### **Care and maintenance**

- 1, the instrument must not exceed the voltage and current ranges, otherwise it will damage the instrument.
- 2, positive and negative can not be reversed, reverse can not be measured correctly.
- 3, the working temperature of -10 ~ 50 °C, Storage temperature -20 ~ 70 °C, and the instrument in a dry environment.
4. Do not attempt to disassemble the instrument, destroy the package will void the warranty. This instrument there are no user-serviceable parts, repairs may only be designated repair outlets or by returning the factory.
- 5, please do not move the instrument to avoid severe irreparable damage to the internal circuit when the instrument is working properly.

### **Warranty and service**

Thank you for purchasing ours electronic products. To maximize the use of your new product features, we recommend you take the following a few simple steps:

1. Read the safety and efficient use.
- 2, read the warranty terms and conditions.

**Warranty conditions:**

From the date of shipment from the instrument warranty for one year. During the warranty period, the Company fault repair or replace the instrument selected according to the situation. For service, please send the product to our company.

**Following conditions are not covered under warranty:**

User operation or improper maintenance; or use the software to provide their own user interfaces; unauthorized modification of the instrument.