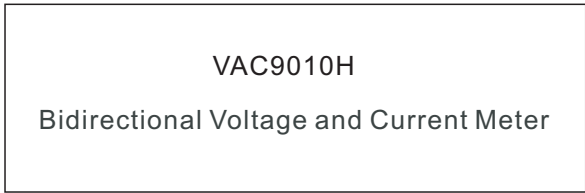


Operation Instructions



When you get a new VAC9010H voltage current meter, we recommend that you follow below steps to check the instrument.

- Check for damage caused by transport. If carton or plastic protector seriously damaged, please retain firstly, until the machine and attachments pass the testing.
- Check the package contents are complete. Contents of packing box as below. If content or instrument is damaged, please contact your dealer or the company. 1*Host: VAC9010H (include the display meter and power expansion board) 1*Accessories: User's manual (PDF version)
- Check the machine. If you find the appearance of instruments is damaged or the equipment is not working properly, or no pass the performance tests, please contact your dealer or our company.

Chapter One Overview

Instruments introduction

VAC9010H voltage ampere meter can measure voltage, current, charge and discharge capacity, time, power and other physical information. Meanwhile, it can set parameters for overvoltage protection, undervoltage protection, over current protection, over charging capacity protection and time protection and so on. The meter adopts non-contact Hall sensors to test current, which is safety and convenient. Moreover, the instrument show date in colorful LCD display and its information is comprehensive and humane. This meter is quite suitable for monitoring the output voltage and current, as well as applications such as battery charge and discharge.

The Main Characteristics

- Bidirectional detecting current. As for the users who want to measure charging and discharging electricity, it can automatically identify and detect the two-way current without changing the wiring direction.
- Power off memory function. It can save the AH value before powering down so that it is convenient to observe and measure.
- AH and current value cleaning function, no effect the next measurement.
- Voltage, current, charge capacity AH, WH, and power at the same time to display on one screen, shows information comprehensive and clear.
- Output shutdown key, flexible open or shut off output (needs relays).
- Protective functions: Over-voltage protections, over-current protection, over-power protection, limited time protection, overcharge protection, etc.
- Calibration online is facilitate for customers to correct errors.
- LCD screen can be manually switched off, or it less than 300mA, screen out automatically after one minute.
- Using Hall sensors to test current. The current wire through sensor hole, positive and negative direction of current can be detected, safe and convenient.

Technique Target

| Model | VAC9005H | VAC9010H | VAC9020H | VAC9030H |
|---------------------------------|--------------------------------|-------------|--------------------------------|----------|
| Current Measurement Range | 0-50A | 0-100A | 0-200A | 0-300A |
| Display Resolution | 0.01A | 0.1A | 0.1A | 0.1A |
| Voltage Measurement Range | Internal power supply (10-90)V | | External power supply (0-500)V | |
| Current Precision | ±3%±5digits | | | |
| Voltage Precision | ±2%±5digits | | | |
| Display Resolution | Voltage | 0.01V | | |
| | Capacity | 0.01AH | | |
| | Time | 0.01H(1min) | | |
| Measurement rate | 5time/second | | | |
| OVP(Over-voltage protections) | 0.01V~90V | | | |
| OPP(Over-power protections) | 0.01W~9.99KW | | | |
| LOP(undervoltage protection) | 0.01V~90V | | | |
| OCP(Over-current protections) | 0.1~100A | | | |
| OAH(Over-charge protection) | 0.01AH~9999AH | | | |
| OFT(Over-time protection) | 1min~99hour59min | | | |
| Size | 79×43×52(mm) | | | |
| Open holes(mm) | 76.5*39.2(mm) | | | |

Seet1-1 VAC9010H technique target

Chapter Two Instrument Instructions

Panel Description

- The instrument is split structure, composes of meter and power expansion board. Image 1-1 is instrument front panel; Sheet 2-1 is instrument front panel descriptions.

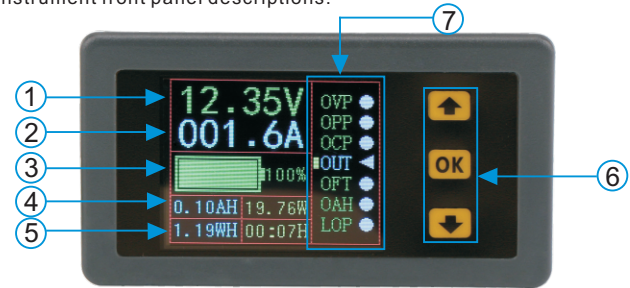


Image 1-1 VAC9010H front panel

| Number | Instructions |
|--------|---------------------------------|
| 1 | Voltage Value |
| 2 | Current Value |
| 3 | Volume Percent and Progress Bar |
| 4 | AH (blue),Power value (yellow) |
| 5 | WH (blue),Time (yellow) |
| 6 | Menus |
| 7 | Button |

Sheet 2-1 VAC9010H front panel

Connections

This diagram is the circuit of discharge mode, it just need to change load into the charger when charging, without changing the circuit. Current inputs from the front of transformer, output to back means remaining electricity decreases; conversely, remaining electricity increases.

● Image 1-2 is no relay power supply wires connection.

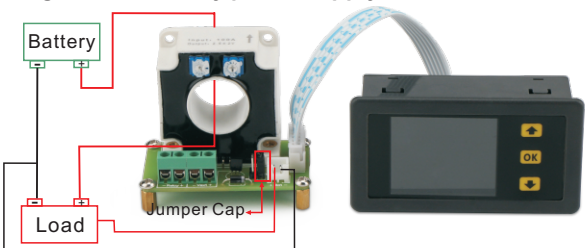


Image 1-2 VAC9010H Power expansion board connection

- "BAT" port connects power supply.
 - The positive of battery to load or one near cable cross to the hole of the Hall transformer.
 - Whether the jumper cap is on the "J4".
 - Please connect the port of connected battery positive and negative to the "BAT", power on.
- Note: please follow the picture 1 to connect, avoid converse connection and wrong connect.

● Image 1-3 is no relay independent power supply wires connection

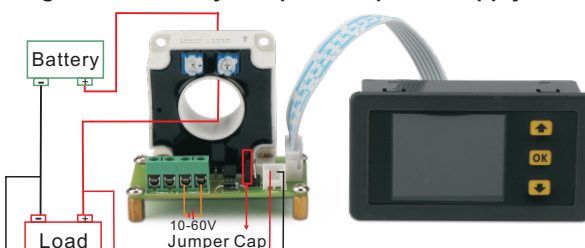


Image 1-3 VAC9010H Power expansion board connection

- "BAT" port connects power supply.
 - The positive of battery to load or one near cable cross to the hole of the Hall transformer.
 - Whether the jumper cap is on the "J3".
 - Please connect the port of connected battery positive and negative to the "BAT", connect the independent power (12v-60v), power on.
- Note: please follow the picture 2 to connect, avoid converse connection and wrong connect.

● Image 1-4 is the relay independent power supply wires connection

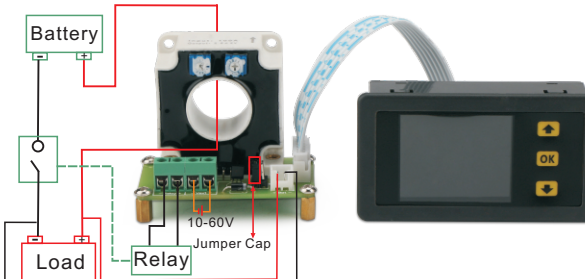


Image 1-4 VAC9010H Power expansion board connection

- "BAT" port connects power supply.
 - The positive of battery to load or one near cable cross to the hole of the Hall transformer.
 - Whether the jumper cap is on the "J3".
 - Please connect the relay.
 - Please connect the port of connected battery positive and negative to the "BAT", connect the independent power (independent power need match the relay voltage), power on.
- Note:
- Please follow the picture 3 to connect, avoid converse connection and wrong connect.
 - The repay is not included into the package.

Chapter Three Using Instructions

Connection

- According to the voltage range, choose the appropriate connection method. To make sure the input voltage is within the load.
- Note: Internal power supply range: 10V~90V; External power supply range: 0V~90V

Output

- If the relay is energized by pressing ↑↓, the Yellow cursor to OUT, press the OK button to control the output. If the OUT light is green, output opens; if the OUT light is gray, output shutdown. Power on state defaults the state which is before shutdown. If you do not relay, the output has been switched on, OUT light has ineffective.

Operating Notes:

- Screen can be manually switched off and manually switched on. It also can be set automatically extinguishing screen when the current lower than 300mA and it lasts one minute; And it can be set automatically bright screen when the current higher 300mA. Operation: the yellow pointer moves to OVP, press ↑, screen out, press OK to recover.
- OAH Electricity setting (suggestion: it can display the electricity value after full -charge).When the yellow pointer is near the OAH, long press OK key to enter the parameter setting, press OK key to save the setting after finishing. (suggestion: Add the full value in the first full-charge) Operation: the yellow pointer moves to LOP, press again ↓, yellow pointer fades out; and then press OK key, power fill / clear cycle.
- Automatically full of Power setting (set in OVP).It measures the voltage of the full power. Take full electricity voltage 48V for example. OVP can set for 47.8V. 47.9V which is a little lower than full electricity voltage, automatically full of the power when the charge voltage reach this value. When the OVP voltages lower 10V, the rangeability is 0.01V; When the OVP voltage higher 10V, the rangeability is 0.1V.
- No-load current correction. The yellow pointer moves to OUT, long press OK key 3 seconds and release. It can be operated repeatedly until clear out.
- This tester works normally until the input voltage reaches 12V. If the input voltage is too low, it may lead to error.

Expanding function settings

- If you want to open an extension function, moving yellow cursor to the corresponding item. Press OK and the indicator light will be turned into green, it means open the protection; if the indicator light turns into gray, it means close the protection. Please set parameters before opening protection .Method: long press OK about three seconds to enter the protection function parameter settings page.
- Then press ↑↓ to increase or decrease parameters. After finishing setting, press OK to return. The default parameters of each function are 000.
- Note: if you do not adjust the parameters after entering the page, you need to press ↑, one more ↓, press OK to return.

Expanding function instruction

- "OVP" over-voltage protection. If the OVP value has been set and opened the OVP protection options, when the input voltage exceeds the setting voltage, the tester will automatically cut off the output, then the OUT light turn green into gray. The protection turned off to restore output, yellow cursor to "OUT", press OK to open the output to start again.
- "OPP" is over power protection. If the OPP value has been set and opened the OPP protection options, when the output power exceeds the setting power, the tester will automatically cut off the output, then OUT lights from green to gray. The protection turned off to restore output, yellow cursor to "OUT", press OK to open the output to start again.
- "OCP" is over-current protection. If the OCP value has been set opened the OCP protection option, when the input current exceeds the set current, the tester will automatically cut off the output, then OUT lights from green to gray. The protection turned off to restore output, close protection options, return to normal output.
- "OFT" is timeout protection. If the OFT value has been set opened the OFT protection option. When the working time exceeds the set time, the machine will automatically cut off the output and OUT light turns green to gray. The protection turned off to restore output, yellow cursor to "OUT", press OK to open the output to start again.
- "OAH" is over-capacity protection. If the OAH value has been set and opened the OAH protection option, when the cumulative value of AH exceeds the set value of AH, the machine will automatically cut off the output and OUT light turns green to gray. The protection turned off to restore output, close protection options, return to normal output. The percentage of capacity display is the actual measured value compared with the setting AH: Capacity percentage= (actual AH value/ setting AH value)* 100%.
- "IOP" is under voltage protection. If the IOP value has been set and opened the IOP protection option, when the actual voltage value is lower than the setting protection voltage, the machine will automatically cut off and OUT light turns green to gray. The protection turned off to restore output, yellow cursor to "OUT", press OK to open the output to start again.
- You can manually turn off the screen (yellow cursor moves to OVP, long press ↑).And current is less than a certain value can automatically turn off screen, press the OK button to open the screen.
- AH value and time clearing function. The Yellow cursor down to "LOP", then press ↓, when the Yellow cursor disappears, then press OK, the time can be cleared, the AH value zeroed or filled. The full value corresponding to the setting value of "OAH".
- Current A value clear function. When the no-load current value is not 0, you can move the Yellow cursor to "OUT", long press the OK for 3 seconds, cleared.
- "OUT" arrow function. When the arrow behind "OUT" is green and pointing to the left, the current is entering and AH value will increase with time cumulative. When the arrow behind "OUT" is red and pointing to the right, the current is out and AH value will reduce with time cumulative.
- Please pay attention to the connection method.