

Product Introduction

DROK Bidirectional Voltage Current Meter (VAC9010H) is a new type of voltage amp meter that can measure voltage, current, charge-discharge capacity, time, power and other electric parameters. It can also set parameters for over-voltage protection, under-voltage protection, over-current protection, over-charging capacity protection and over-time protection. The non-contact Hall sensor is used to detect the current, which is safe and convenient. Moreover, this meter adopts color LCD to display data, which is a more comprehensive and humanized design.

Parameters

Model		VAC9010H
Current Measurement Range		0-100A
Display Resolution		0.1A
Voltage Measurement Range		Internal power supply (10-90)V External power supply (0-90)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)

Sheet1 VAC9010H Parameters

Meter Panel



Image 1 Meter 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 Meter Panel

Power Expansion Board Wiring

Pictures below show the circuits in the discharging mode. For charging, you just need to change the load to the charger and there is no need for changing the circuit. If the current enters and flows out from the front and back of the transformer, the remaining battery capacity decreases, and conversely, the remaining battery capacity increases.

● Wiring of Internal Power Supply Wiring without Relay

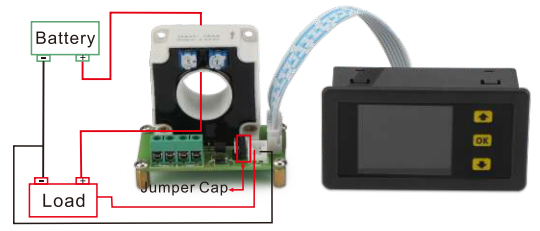


Image 2 VAC9010H Power expansion board connection

- Connect the "BAT" terminal with the power supply;
- Cross the wire which connecting the positive terminals of the load and battery through the hole of the Hall sensor, then check whether the jumper cap is at J4;
- Plug the terminals of the wires connecting the positive and negative of the battery into the "BAT" , and then power on.

Note: To avoid reverse connection or wrong connection, wiring should be done according to Image 2.

● Wiring of External Power Supply without Relay

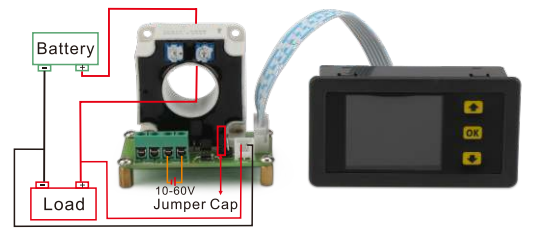


Image 3 VAC9010H Power expansion board connection

- Connect the "BAT" terminal with the power supply;
- Cross the wire which connecting the positive terminals of the load and battery through the hole of the Hall sensor, then check whether the jumper cap is at J3;
- Plug the terminals of the wires connecting the positive and negative of the battery into the "BAT" , connect the external power supply (12V-60V), and then power on.

Note: To avoid reverse connection or wrong connection, wiring should be done according to Image 3.



● Wiring of External Power Supply with Relay

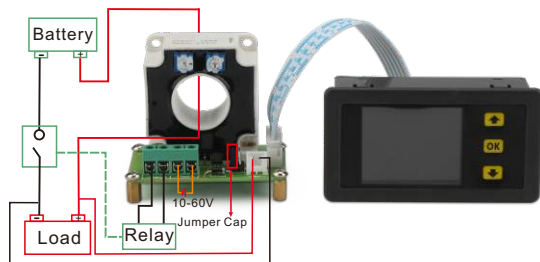


Image 4 VAC9010H Power expansion board connection

- Connect the "BAT" terminal with the power supply;
- Cross the wire which connecting the positive terminals of the load and battery through the hole of the Hall sensor, then check whether the jumper cap is at J3;
- Connect the relay;
- Plug the terminals of the wires connecting the positive and negative of the battery into the "BAT", connect the external power supply (which needed to match the relay voltage), and then power on.

Note: To avoid reverse connection or wrong connection, wiring should be done according to Image 4.

Wiring

Select the appropriate connection mode according to the measured voltage range, and ensure that the input voltage is within the voltage range of the meter.

Note: Input voltage Range of internal power supply: 10V~90V;
Input voltage Range of external power supply: 0V~90V.

Output

If the relay is connected, press the $\uparrow\downarrow$ button to move the yellow cursor to OUT after powering on, and press **OK** to control the output. If the OUT light is green, the output turns on; if the OUT light is gray, the output turns off. By default, the power on state of the meter is same as the state before the last shutdown.

If the relay is not connected, the output is always on and the OUT light is invalid.

Instruction

- The screen can be turned off manually, but it needs to be manually turned on after manually turned off; it can also be automatically turned off when the current value is lower than 300mA for one minute, and automatically turned on when the current is higher than 300mA.
Operation: Move the yellow cursor to OVP, press the \uparrow key, the screen is off; press **OK** to resume.

- OAH electricity setting(it is recommended to display electricity value when full charged): move the yellow cursor to OAH, hold press OK to enter parameter setting, and press OK to save the setting.(Recommend: after your battery is full charged, connect it to the tester, and set capacity percentage to 100%.)
Operation: Move the yellow cursor to OVP, press the \uparrow key, the screen is off; press **OK** to resume.

- Automatic charging setting: measure the full voltage and set it in OVP. For example, the full voltage is 48V, OVP voltage can be set at 47.8V or 47.9V(a bit lower than the full voltage) at which the tester will be automatically full-charged.
In the OVP, when the voltage is below 10V, the difference should be 0.01V; when the voltage is higher than 10V, the difference is 0.1V.

- No-load current calibration: move the yellow cursor to OUT, hold press OK for 3 seconds and let go. Repeat same operation until it is cleared out.

- Only when the power supply voltage reaches 12V can the meter work stably and normally. A too low voltage may lead to error.

Additional Functions

- Turn on protection function: move the yellow cursor to corresponding protection function, and press **OK**, the indicator light turn into green means the corresponding protection is turned on; and gray means turned off.
- Please set protection parameters before turning on the protection function:
Press **OK** for about three seconds to enter the parameter setting page of corresponding protection function, and then press $\uparrow\downarrow$ to adjust parameters.
After setting the parameters, press **OK** to return to the initial interface. The default parameters of each function are 000.
- Note: If you do not need to set parameters after entering setting page, please press \uparrow, \downarrow and **OK** in sequence to return.

Additional Functions Instruction

- "OVP" is over voltage protection. If the OVP value is set and the OVP protection is turned on, when the input voltage exceeds the set voltage, the tester will automatically cut off output and the OUT light will turn from green to gray.
If you need to restore output, move the yellow cursor to "OUT" and press **OK**.
- "OPP" is over power protection. If the OPP value is set and the OPP protection is turned on, when the output power exceeds the set power, the tester will automatically cut off output and the OUT light will turn from green to gray.
If you need to restore output, move the yellow cursor to "OUT" and press **OK**.

- "OCP" is over current protection. If the OCP value is set and the OCP protection is turned on, when the input current exceeds the set current, the tester will automatically cut off output and the OUT light will turn from green to gray.
If you need to restore output, turn off the protection, then output will be restored.

- "OFT" is over time protection. If the OFT value is set and the OFT protection is turned on, when the working time exceeds the set time, the tester will automatically cut off output and the OUT light will turn from green to gray.
If you need to restore output, move the yellow cursor to "OUT" and press **OK**.

- "OAH" is over capacity protection. If the OAH value is set and the OAH protection is turned on, when the accumulated AH value exceeds the set AH value, the tester will automatically cut off output and the OUT light will turn from green to gray.
If you need to restore the output, turn off the protection, then output will be restored.
The capacity percentage is the ratio between the actual measured AH and the set AH:
Capacity percentage = (the actual AH/the set AH)*100%.

- "LOP" is under voltage protection. If LOP value is set and the LOP protection is turned on, when the actual voltage value is lower than the set protection voltage, the tester will automatically cut off output and the OUT light will turn from green to gray.
If you need to restore output, move the yellow cursor to "OUT" and press **OK**.

- AH and time record clearing: move the yellow cursor down to "LOP", and then press the \downarrow key. When the yellow cursor disappears, press **OK** and the time record is cleared, AH will be filled up or cleared. The corresponding value of the AH is the set value of "OAH".

- Current value (A) resetting: when the no-load current value is not 0, move the yellow cursor to "OUT" and hold press **OK** for 3 seconds until reset.

- "OUT" arrow: when the arrow behind "OUT" is green and points to the left, current is flowing in, the number of AH will increase with time; when the arrow behind "OUT" is red and points to the right, current is flowing out, the number of AH will decrease with time.

- Please pay attention to the wiring mode.

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5V to 12V USB Boost Converter

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