Instrument Introduction:

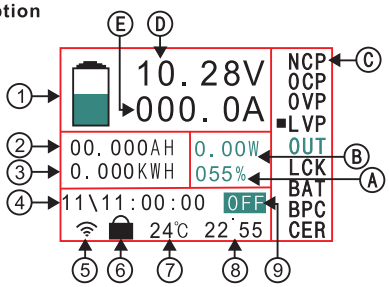
The VAC8010F is a versatile instrument based on 2.4 wireless data transmission technology, it can real-time display voltage, current, power, capacity, energy, temperature, operating hours and other physical parameters. The two relay interfaces are reserved for the battery charge and discharge management and overvoltage, undervoltage, overcurrent protection. The instrument uses 2.4inch color LCD as a display, display data more comprehensive, clear, easy to observe. With power-off memory function, can record value of AH and WH before power-off.

Technical Specifications:

Specification	Parameters
Voltage measurement range (self powered)	6V-80V
Voltage measurement range (external power supply)	0-120V
Input current measurement range	0-300A
External power supply voltage range	6-60V
Voltage measurement range	0.01V-120V
Current measurement range	0.1A-300A
Power Value	999 KW
Capacity measurement range	0.001AH~65000.00AH
Wattage measurement range	0.000KWH~9999KWH
Time measurement range	0~100hours
Voltage accuracy	±1%+2digits
Current accuracy	±2%+5digits
Measuring rate	5times/second
Relay delay time	(0-60)s
Communication distance	Single group 10meters in open space
Over voltage protection OVP	0.01V-500V
Low voltage protection LVP	0.01V-500V
Discharge over current protection OCP	0-500A
Charge over current protection NCP	0-500A
Display penal dimension	87*49*14mm
Measurement board dimension	114*54*28mm

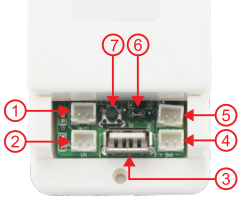
Instrument Description:

1. Display Description



1	Battery remaining capacity column	8	The cumulative value of a single run time
2	Accumulated remaining AH	9	Output status
3	Accumulated energy	A	Battery remaining capacity percentage
4	The time it takes for the battery to be fully charged or discharged (calculated based on charge or discharge current and capacity)	B	Power value
5	Wireless communication signal indication	C	Function Options Directory
6	Key lock indication	D	Real-time measurement of voltage
7	Real-time measurement of temperature	E	Real-time measurement of current

2. Interface Description of Measurement Board



1	Discharge relay control interface
2	Charge relay control interface
3	USB2.0 interface (offer power supply for display panel)
4	Voltage measurement interface
5	External power supply interface
6	External power supply and self powered selection interface
7	Relay switch button

3. Wiring Method

1). Self powered wiring diagram (Figure 3-1)

If the tested battery (power supply) working voltage is in range of 6V-80V, it can adopt the self powered wiring method. First, adjust the jumper cap of the power supply selection interface to "2W", and then connect the positive and negative terminals of the battery (power) to the "+ Bat-" of the voltage measurement port. Note that "+" is connected to the positive terminal of the battery (power supply), "-" is connected to the negative terminal of the battery; the positive pole of the battery (power) is connected to the positive pole of the load, the negative pole of the battery (power) is connected to the negative pole of the load through the Hall sensor. When the current flowing through the Hall sensor and the Hall sensor power-on arrow direction is the same, the measured current will show positive value, whereas the measured current will show negative value.

2). External power supply wiring diagram (Figure 3-2)

If the tested battery (power supply) working voltage range is out of the range (6-80V), the external power supply connection mode can be adopted. First, adjust the jumper cap of the power supply selection interface to "3W", connect the positive and negative side separately of the external power supply to the "+ Vext-". Note that "+" is connected to the positive terminal of the external power supply and "-" is connected to the negative terminal of the external power supply. Connect the positive and negative terminals of the battery to "+Bat-", note that "+" connected to the battery positive, "-" to the battery negative. Battery of the positive and negative cannot be connected reverse. The positive pole of the battery (power) is connected to the positive pole of the load, the negative pole of the battery (power) is connected to the negative pole of the load through the Hall sensor. When the current flowing through the Hall sensor and the Hall sensor power-on arrow direction is the same, the measured current will show positive value, whereas the measured current will show negative value.

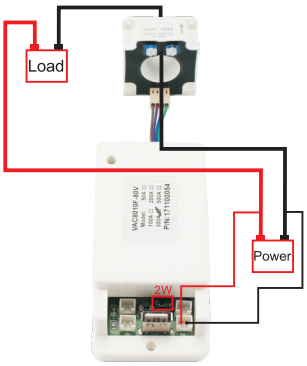


Figure 3-1

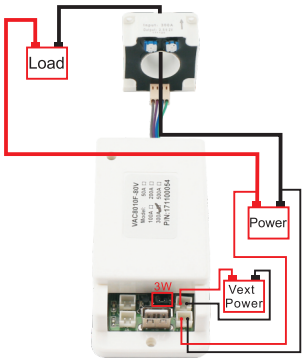


Figure 3-2

3).Charge Relay Wiring Instruction (Figure 3-3)

The relay working power is provided by external power supply, and if the relay is connected, it must provide an external power supply with the same operating voltage as the relay. Connect the control port of the relay to the interface of the charging controller. If you want to control the positive side of charging, connect the positive line through the relay. If you want to control the negative side of charging, connect the negative line to the relay. When the relay is on, "IN" light will be on, the light will be off when the relay is off.

4). Discharge Relay Wiring Instruction (Figure 3-4)

The relay working power is provided by external power supply, and if the relay is connected, it must provide an external power supply with the same operating voltage as the relay. Connect the control port of the relay to the interface of the discharge controller. If you want to control the positive side of the discharge, connect the positive line through the relay. If you want to control the negative side of the discharge, connect the negative line to the relay. When the relay is on, the "OUT" light will be on, it will be off when the relay is off.

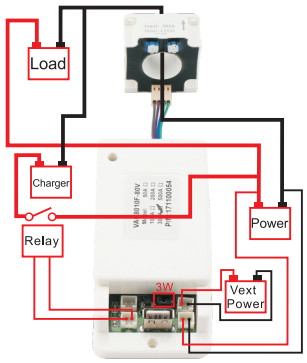


Figure 3-3

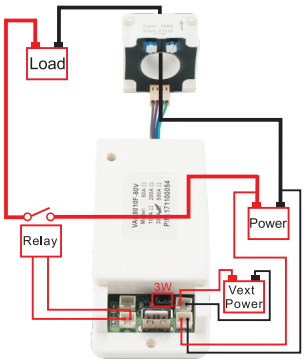


Figure 3-4

Using Instruction:

1. Wiring

According to the measured voltage range to select the appropriate wiring method, to ensure that the input voltage within the instrument withstand range.

Note: Self powered input voltage range: 6V ~ 80V;
External power supply input voltage range: 0V ~ 120V.

2. Function Introduction and Setting

1). **"NCP"** Charge over current protection value, if the value is greater than 0, the

protection will be started. If it is equal to 0, the protection function will not be activated. Press the ⬆ ⬇ key to move the cursor to **NCP** when setting the parameter, and then click **OK** to enter the Figure 4-1, the parameter setting interface, after entering this page, it will prompt the feature and range of the set parameters, and then click the ⬆ ⬇ key to change the value of the setting parameter. Note: the current display line will change to red when the parameter is set, and displays the wireless return value of the set parameters. When the setting parameter value and the current display line data coincide, the data setting is completed (ignoring the decimal point), and then click **OK** to return to the initial interface to complete the parameter setting and save.

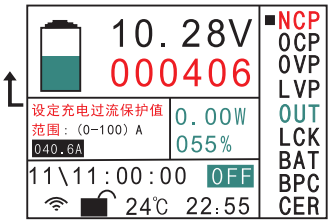


Figure 4-1

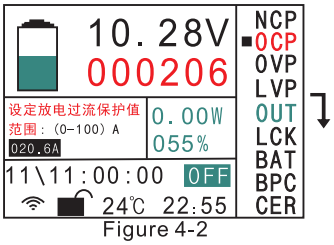


Figure 4-2

2). **"OCP"** Discharge over current protection value, if the value is greater than 0 will start the protection, if equal to 0 will not start the protection function. When setting the parameters, press the ⬆ ⬇ key to move the cursor to **OCP** and then click the **OK** key to enter into the parameter setting interface of Figure 4-2, setting the parameters in the same way as NCP.

3). **"OVP"** Charge overvoltage protection value, if the value is greater than 0 will start the protection, if equal to 0 will not start the protection function. When setting the parameters, press the ⬆ ⬇ key to move the cursor to **OVP**, and then click the **OK** key to enter into the parameter setting interface of Figure 4-3, setting the parameters in the same way as NCP.

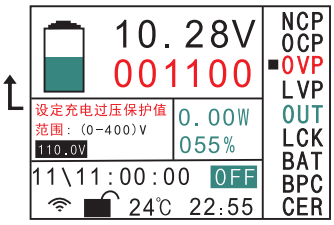


Figure 4-3

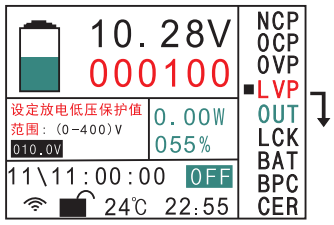


Figure 4-4

4). **"LVP"** Discharge undervoltage protection value, if the value is greater than 0 will start the protection, if equal to 0 will not start the protection function. When setting the parameters, press the ⬆ ⬇ key to move the cursor to **LVP** and then click the **OK** key to enter into the parameter setting interface Figure 4-4. The setting of parameters is the same as NCP.

5). **"OUT"** Output control, yellow cursor move to this position, click **OK** key, you can open the relay, or switch the working status of the two relays.

6). **"LCK"** Key lock control, move the cursor to this option, click the **OK** key to select this option, click the ⬇ key to lock the key as shown in Figure 4-6, if locked, all the keys cannot work, only long press the **OK** key for more than 10S can be unlocked, shown in Figure 4-6.

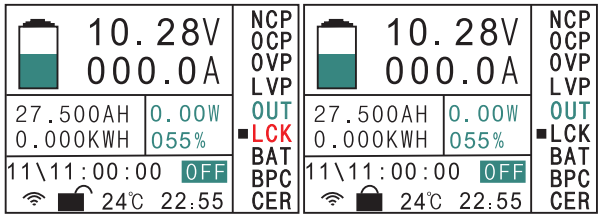


Figure 4-6

7). **"BAT"** Total battery capacity setting, move the cursor to this option, and click **OK** to enter the parameter setting page as shown in Figure 4-7, and set the parameters in the same way as NCP.

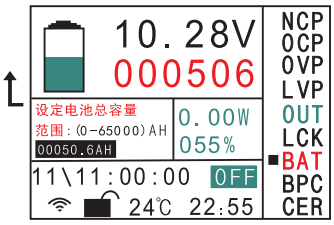


Figure 4-7

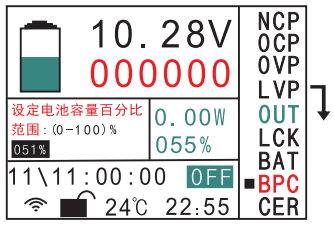


Figure 4-8

8). **"BPC"** Battery remaining capacity setting, can be estimated according to the actual use of the remaining battery capacity, this option can be set to the remaining battery capacity, convenient to test. When setting the battery remaining capacity, the parameter setting is completed when the real-time percentage and the set percentage are the same, as shown in Figure 4-8.

9). **"CER"** Current zeroing function, if the actual current value is zero, and the instrument display value is not zero, move the cursor to this option, short press **OK** key to zero the current.

10). **"RET"** Data reset function, if you want to return to zero watt hour and the cumulative running time value, move the cursor to this option, short press the OK key to zero these two parameters

11). **"LNG"** Language switching function, the instrument parameters preset with Chinese and English two interfaces to choose from, enter the parameter settings page as shown in Figure 4-11, click the ⬆ ⬇ key to switch the language type.

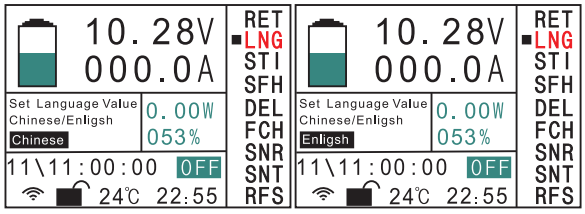


Figure 4-11

12). **"STI"** Default relay output state when power on setting option. If you select *ON*, the discharging relay will be automatically closed. If you select *OFF*, the charging and discharging relays will not be closed. You need to press the button to switch on or off the charging and discharging, as shown in Figure 4-12.

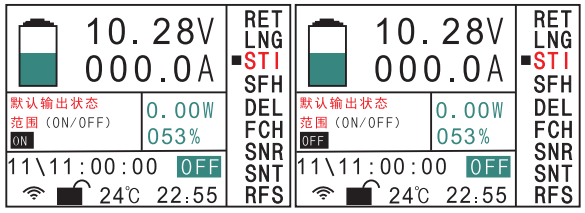


Figure 4-12

13). **"SFH"** Search device function, this function can realize one-to-many communication. By modifying the parameters corresponding to this option, you can switch the display to communicate with the measurement modules of different address bits, and you can check the detection data of different devices at any time. The way to set parameters is the same as NCP.

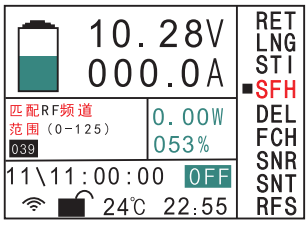


Figure 4-13

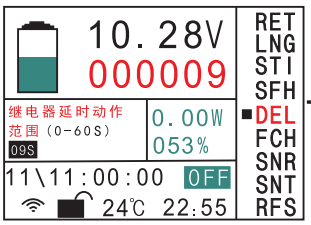


Figure 4-14

14). **"DEL"** Relay delay action time setting option, if the protection parameter has been set, when the instrument detects the real-time data exceeding the set parameter is less than the relay action delay time, the relay does not open; if the instrument detects the data exceeding the set parameter time is greater than the relay delay action time, the relay is disconnected. The way to set parameters is the same as NCP.

15). **"FCH"** Communication address setting function, this function can change the default communication address of the monitor and detection module, and set the parameters in the same way as NCP.

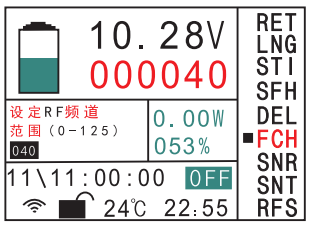


Figure 4-15

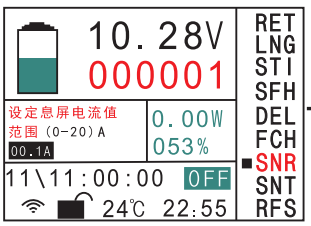


Figure 4-16

16). **"SNR"** Screen-off current value setting option, if the setting value of SNR is not set to 0, and the time value of the screen-off is not 0, the actual current value is less than the set value of SNR, the display will be off when reaching the set SNR value. When it is detected that the actual current value is greater than the set SNR value, LCD screen will automatically light up. The way to set parameter is the same as NCP.

17). **"SNT"** Screen-off time setting option. If the SNT set value is 0, the monitor will never turn off. If the SNT value is greater than 0, with the value of SNR to achieve the function of turning off the screen. The way to set parameter is the same as NCP.

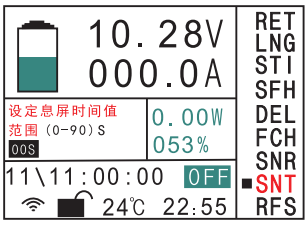


Figure 4-17

18). **"RFS"** Color reversal function. If turn on this function, we will change the display color matching on the next display of electricity, move the cursor to **RFS**, click the **OK** key to enter the parameter settings page, and click the ⬆ key to choose the flip display color.

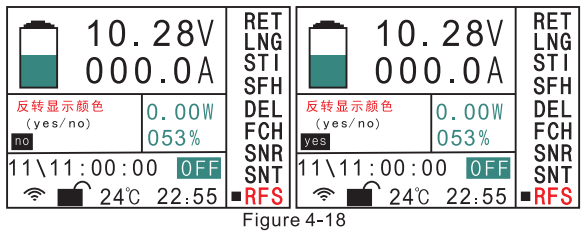


Figure 4-18