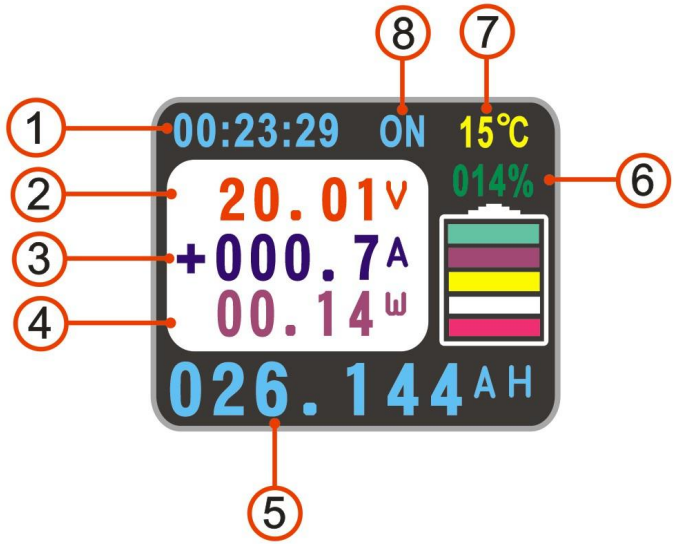
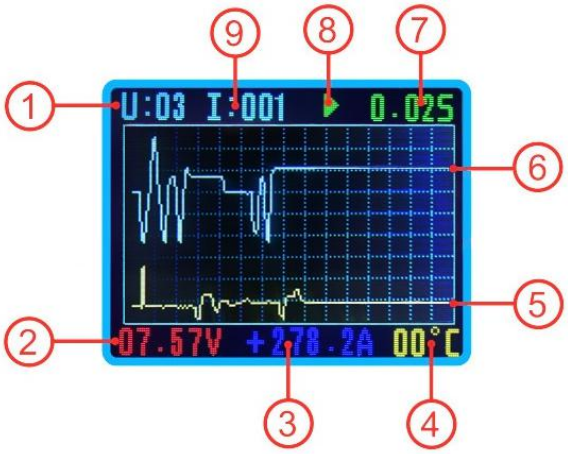
I. Technical indicators

Model			VAC9605S	VAC9610S	VAC9620S	VAC9630S	VAC9650S
Input voltage	Measuring range for self-powered		10V~85 V				
	Measuring range for external power		0~120 V				
Scope of measurement		Voltage	0.01 V ~120 V				
		Current	0.1 A ~50 A	0.2 A ~100 A	0.3 A ~200 A	0.4 A ~300 A	0.5 A ~500 A
		Capacity	0.000 1AH ~ 999999AH				
		Energy	0.00 1WH~ 99999.9 WH				
		Time	0~100 hours				
		Power value	60KW				
		Temperature	1~100℃				
Accuracy		Voltage	±1%+2 digits				
		Current	±2%+5 digits				
		Temperature	±2℃				
External supply voltage			12-60 V				
Display mode			1.8 inch colour LCD display				
Power consumption			Bright screen status :0.5W		Screen out :0.2 W		
Communications baud rate			bps 9600				
Measurement rate			20 per second				
Type and scope of protection		OVP (overvoltage protection)	0.01 V~120 V				
		LVP (undervoltage protection)	0.01V~120 V				
		OCP (charging overcurrent protection)	0-500A				
		NCP (discharge overcurrent	0-500A				
		OPP(overpower protection)	0-60 KW				
		OTP(over-temperature protection)	1-100℃				
Display panel size			78*42*26(mm)				
Measuring board size			56*36*34(mm)				

II. Presentation



1	Cumulative operating time	5	Residual capacity of batteries
2	Measured voltage values	6	Percentage of remaining battery capacity
3	Measured current value	7	Temperature
4	Measured Power Value	8	Output status display



1	voltage curve magnification	6	Voltage curve
2	Actual voltage value	7	Curve refresh time
3	Actual current value	8	Curve pause/start
4	Actual temperature	9	Amplification of current curve
5	Current curve		

Chapter II Operation instructions

Operating instructions

1. AH,WH display switch, short press key ⬆ switch AH and WH display;

2. Capacity filling function, hold button ⬆ more than 5 seconds, capacity automatically full to 100%;

3. Normal display and waveform display switch, short press key ⬇ switch display mode;

4. Capacity and time reset function, hold button ⬇ more than 5 seconds, capacity automatically return to 0;

5. Parameter setting function, hold button "OK" more than 5 seconds into parameter setting function, short press button" OK" , switch setting parameters, short press button ⬇ switch parameters and adjust step value, short press ⬆ change parameter value size, hold" OK" key more than 5 seconds exit parameter setting, and save data;

6. Under the curve display interface, short press key ⬆ switch curve refresh time;

At the curve display interface, press the OK" key to start or pause the curve refresh; the button ⬇ returns to the initial display interface.

Function description

Parameter setting serial number and function introduction serial number correspond to the same

1. **"BAT"** the battery capacity value setting, this parameter is to set the total measured capacity of the battery; when BAT=0, the number of AH in the charging process ("+" before the current value) and the discharge process ("-" before the

current value) always increases;

2. **"BPC"** the percentage of battery residual capacity, the number of battery residual AH can be set according to that value;

3. **"CLR"** no-load current zero, no-load current is not zero, click on the key to zero the no-load current;

4. **"OPP"** has set the power protection value, if the OPP value is set, when the actual output power value is greater than the set value, it will prompt the power over and cut off the relay (self-match);

5. **"OVP"** sets the overvoltage protection value, if the OVP value is set, when the actual measured voltage value is greater than the set value, the overvoltage will be prompted and the relay will be cut off (self-made);

6. **"LVP"** set the undervoltage protection value, if the LVP value is set, when the actual measured voltage value is less than the set value, it will prompt the undervoltage and cut off the relay (self-assembly);

7. **"NCP"** set the value of the impulse overcurrent protection, if the NCP value is set, when the actual measured charging current value is greater than the set value, it will prompt the overcurrent and cut off the relay (self-matching);

8. **"OCP"** set the protection value of the discharge overcurrent value, if the OCP value is set, when the actual measured discharge current value is greater than the set value, it will prompt the overcurrent and cut off the relay (self-matching);

9. **"OTP"** has set the temperature protection value, if the OTP value is set, when the actual measured temperature value is greater than the set value, the temperature will be prompted and the relay will be cut off (self-made).

10. **"LTP**" set the low temperature open value, if set the L TP value, when the actual measured temperature value is lower than the set value, the relay automatically closes the open output to achieve temperature control;

11. **"ADS"** address code setting. Multi-machine communication is realized by setting different address codes;

12. **"STI"** screen off current value. When the value of DET is greater than 0, when the actual current value is less than the current value of the screen and the time

is longer than DET, the LCD screen will automatically turn off, and when the actual current value is greater than STI, the LCD screen will automatically light up, or Manually click the button to wake up the screen display;

13. **"STE"** screen time setting, if this time value is set, the instrument automatically extinguishes the screen, press the OK key to automatically light up;

14. **"IYD"** current curve magnification, curve display mode, Y axis corresponding to the current range of 0-500 A, when the actual current is too small on the curve is not obvious, by increasing the IYD discharge voltage curve Y axis coordinates, enhance the display effect;

15. **"UYD"** voltage curve magnification, curve display mode, Y axis corresponding to the voltage range of 0-120 V, when the actual voltage is too small on the curve is not obvious, by increasing the UYD discharge voltage curve Y axis coordinates, enhance the display effect;

16. **" REP "**relay mode selection:

0： when the battery is full, the closed relay opens and discharges, the relay disconnects when the battery voltage is undervoltage, and the relay automatically closes when overvoltage;

1： when the battery undervoltage, closed relay open charge, when the battery voltage overvoltage relay disconnected, undervoltage relay automatically closed;

2： when the battery starts discharging or charging, the closed relay disconnects when the battery voltage is higher than OVP or lower than LVP;

17. **" ATO "**the default relay output state of the instrument, often on or off;

18. " After DEL "the relay delay operation time, the external relay and turn on the protection function, when the actual voltage or current value exceeds the protection value, the relay will delay for a period of time to determine whether to start the protection;

19. **"PRT"** relay control port operation mode, when PRT=0 relay control port can be connected to relay, normal closed, when reach protection value output is cut off. If PRT=1, relay port works as buzzer alarm port, when buzzer is connected, buzzer alarm function can be realized.

20. **"BEP"** With PRT=1, the buzzer alarm mode is enabled,when BEP=0 buzzer will automatically turn off alarm after 5 seconds of continuous alarm; If the BEP=1 buzzer will continuously alarm and the alarm must be turned off manually.

Relay Mode

There are three modes of relay operation:

Mode 0: when the battery is full, the closed relay opens and discharges; when the battery voltage is undervoltage, the relay disconnects and the relay closes automatically when overvoltage (realize automatic discharge);

Mode 1: when the battery is undervoltage, the closed relay opens and charges; when the battery voltage is overvoltage, the relay is disconnected and the relay is automatically closed when the voltage is undervoltage (realize automatic charging)

Mode 2: when the battery starts discharging or charging, the closed relay disconnects when the battery voltage is higher than OVP or lower than the LVP

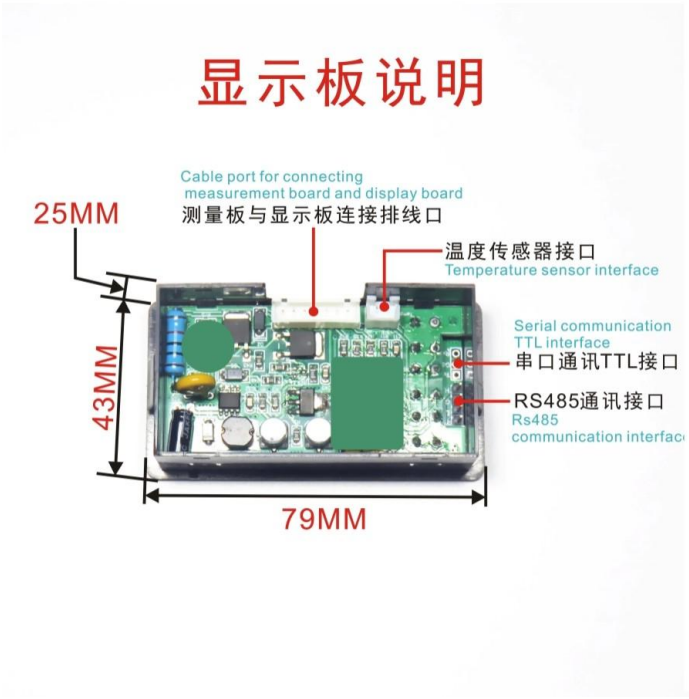
buzzer alarm mode description

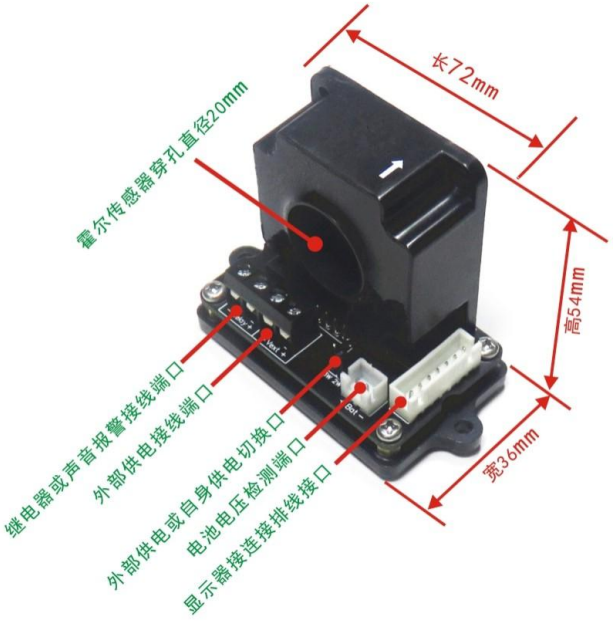
If you choose sound alarm work, when there is overvoltage, undervoltage, overcurrent, buzzer alarm will start, here are two alarm modes :

Mode 0: when the alarm starts, the alarm sound is interval "beep" , it will automatically stop after five seconds, no need to manually close

Mode 1: when the alarm starts, it will continue to “beep” alarm until the manual shutdown.

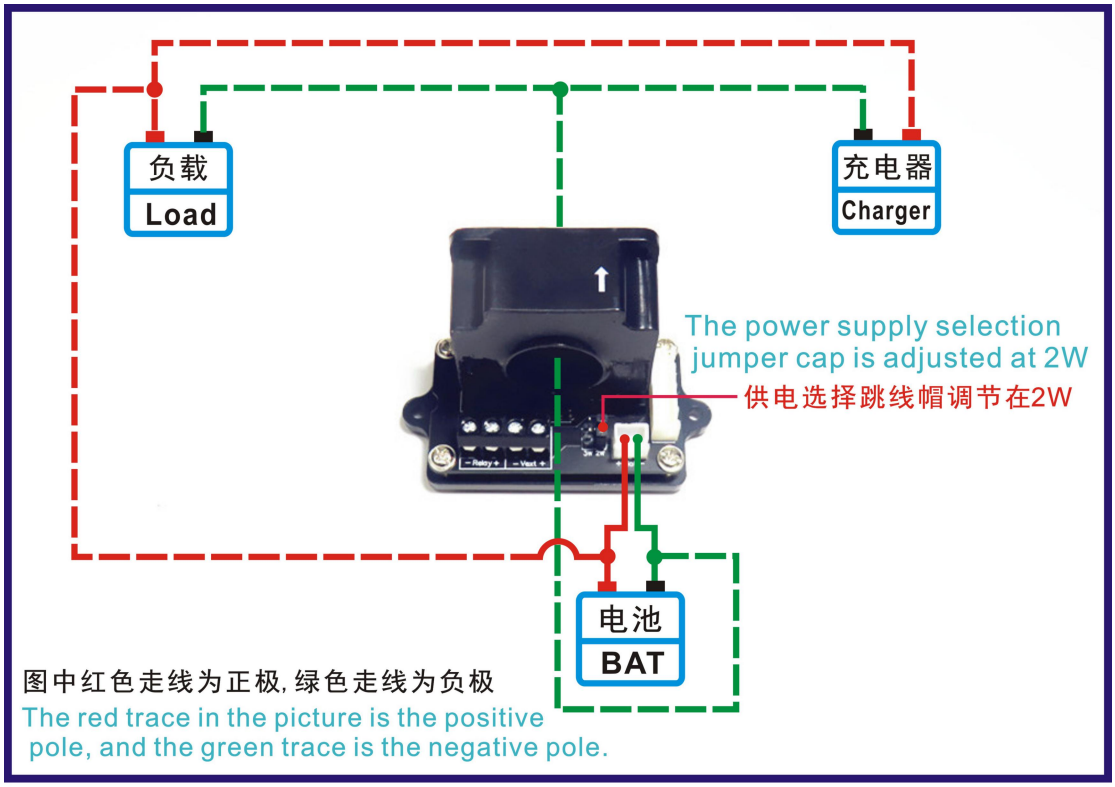
Interface description





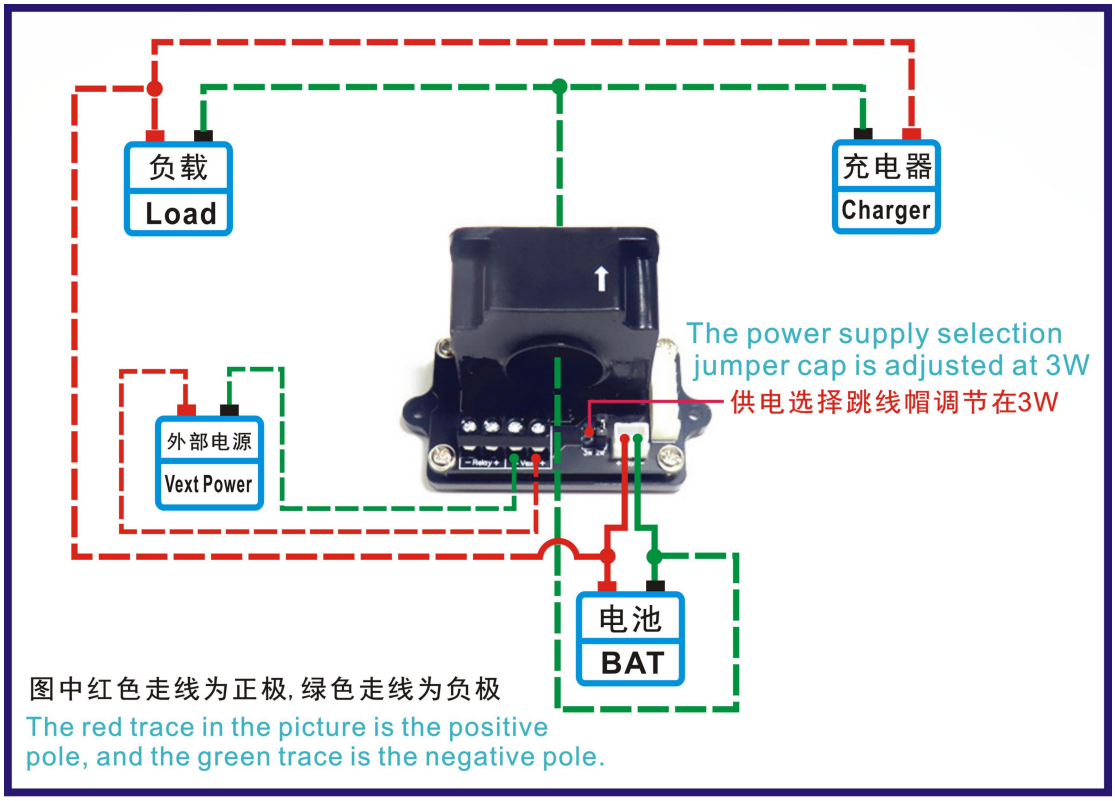
Wiring instructions

1. when the battery voltage range is between 10V-85V, the battery can be connected by its own power supply mode



Note: If the voltage range of the tested battery (power supply) is between (10-85V) during normal operation, the self-powered wiring method can be used. First, adjust the jumper cap of the power supply selection interface to "2W". The positive and negative poles of the (power supply) are connected to the voltage measurement port “+Bat-”; note that “+” connects to the positive pole of the battery (power supply), and “-” connects to the negative pole of the battery (power supply). Do not connect the positive and negative poles of the power supply wrongly. Or reverse, connect the positive pole of the battery (power supply) to the positive pole of the load, and connect the negative pole of the battery (power supply) to the negative pole of the load through the Hall sensor. When the direction of the current flowing through the Hall sensor and the direction of the arrow when the Hall sensor is powered on When consistent, the measured current will be displayed as a positive value, otherwise the measured current will be displayed as a negative value

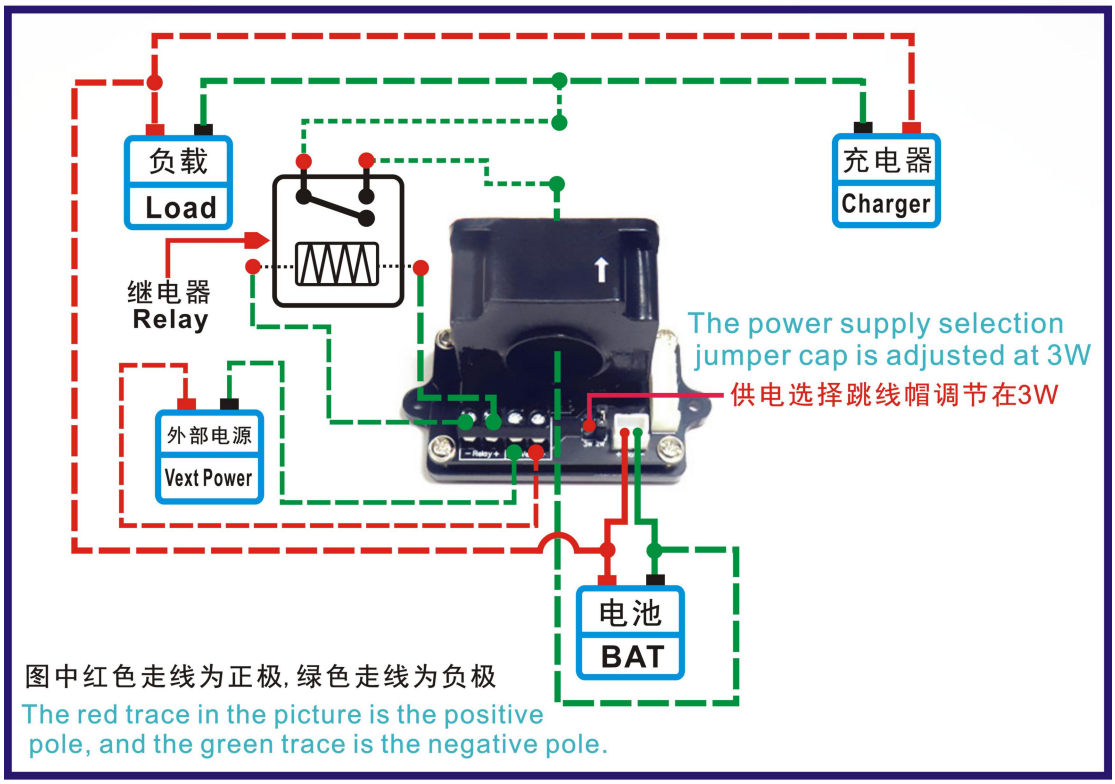
2. when the voltage range of the battery is less than 10 V or more than 85 V, the battery can be connected by its own power supply mode



Note: If the voltage range of the tested battery (power supply) is not between 10-85V during normal operation, you can use the external power supply wiring method. First, adjust the jumper cap of the power supply selection interface to "3W", and set the external power supply The positive and negative poles are connected to "+Vext-", note that the "+" is connected to the positive pole of the external power supply, and the "-" is connected to the negative pole of the external power supply; then when wiring, connect the positive and negative poles of the battery (power supply) to the voltage measurement port "+Bat" At -", note that "+" is connected to the positive pole of the battery (power supply) and "-" is connected to the negative pole of the battery (power supply). Do not connect the positive and negative poles of the battery (power supply) wrongly or reversely. Connect the positive pole of the battery (power supply) to the positive pole of the load. The negative pole of the battery (power supply) is connected to the negative pole of the load through the Hall sensor. When the direction of the current is the same as the direction of the power-on arrow of the Hall sensor, the measured current will be displayed as a positive value,

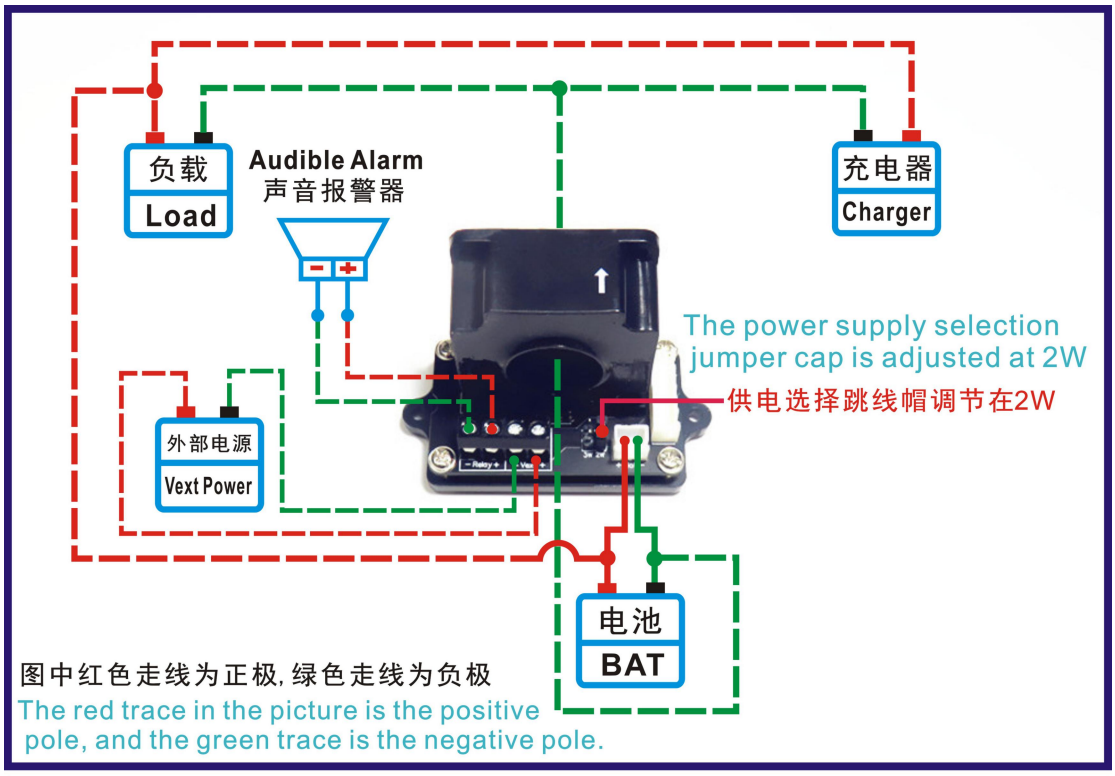
otherwise the measured current will be displayed as a negative value.

3.Connection mode of 3. external power supply control relay



Note: The working power of the relay is provided by an external power supply. If the relay is connected, an external power supply with the same working voltage as the relay must be provided. Connect the control port of the relay to the (+RELAY-) controller interface.

4. sound alarm mode working wiring



Note: The working power of the sound alarm is provided by an external power supply. If the sound alarm is used, an external power supply with the same working voltage as the sound alarm must be provided. Connect the positive and negative terminals of the sound alarm to the (+RELAY-) controller interface.

Data communication protocol:

Baud rate: 9600
Send data format 0xFA + (ADS value)
Starting value 0xFA (hexadecimal)
Address bit (ADS) If you use the serial port assistant to test, you need to convert the ADS value to the corresponding hexadecimal number
Such as sending: 0xFA 0x01
Return 27 data:
Data1=0xFA
Data2=0x01
Data3=Temperature value
DC current value: (Data5<<8|Data4)/10
DC voltage value: (Data7<<8|Data6)/100

Output status value: Data8
Current direction value: Data9 (0: negative current; 1: positive current)
Accumulated capacity value (AH):
(Data10<<24|Data11<<16|Data12<<8|Data13)/1000
Percentage value of remaining capacity: Data14;