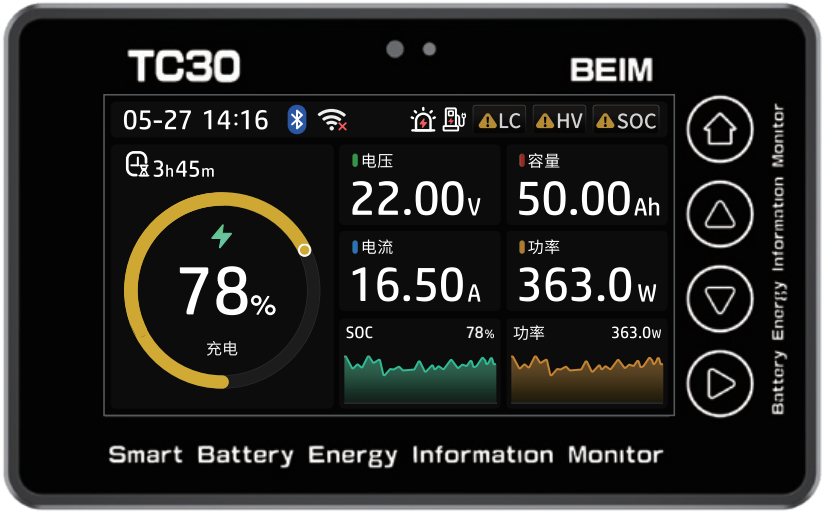
TC30 COULOMETER

Current Collection Type Battery Monitor



Instruction

WIFI

BLE

APP

Touchscreen

Light Sensing

V1.0

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Product Introduction

This product is a high-end intelligent current collection type battery monitor (also called coulometer), featuring an ultra-high-resolution IPS color screen with full capacitive touch control, it displays multiple parameters via an intuitive interface. It has automatic backlight adjustment function, can automatically adjust the backlight according to the ambient light. Supports Bluetooth/WiFi wireless and RS485/TTL wired connectivity for remote monitoring and data transmission. Equipped with multi-alert functions for real-time anomaly detection. Provides cumulative parameter statistics, peak value display, and real-time curve plotting for comprehensive battery performance analysis.

This product can be used for RV, motorhome,campervans, electric vehicle, emergency power supply, energy storage power supply, measuring equipment, medical equipment, various instruments and meters using battery equipment etc.

It is suitable for lithium batteries, lithium iron phosphate battery, lead-acid battery, NI-MH battery and other battery packs with operating voltage of 8V~100V. Please be noted that this product must be combined with shunt.

Using the communication module based on bluetooth protocol version 5.0, you can use APP to communicate with the device, such as parameter settings or data receiving.

Work Interface Instruction

Alarm

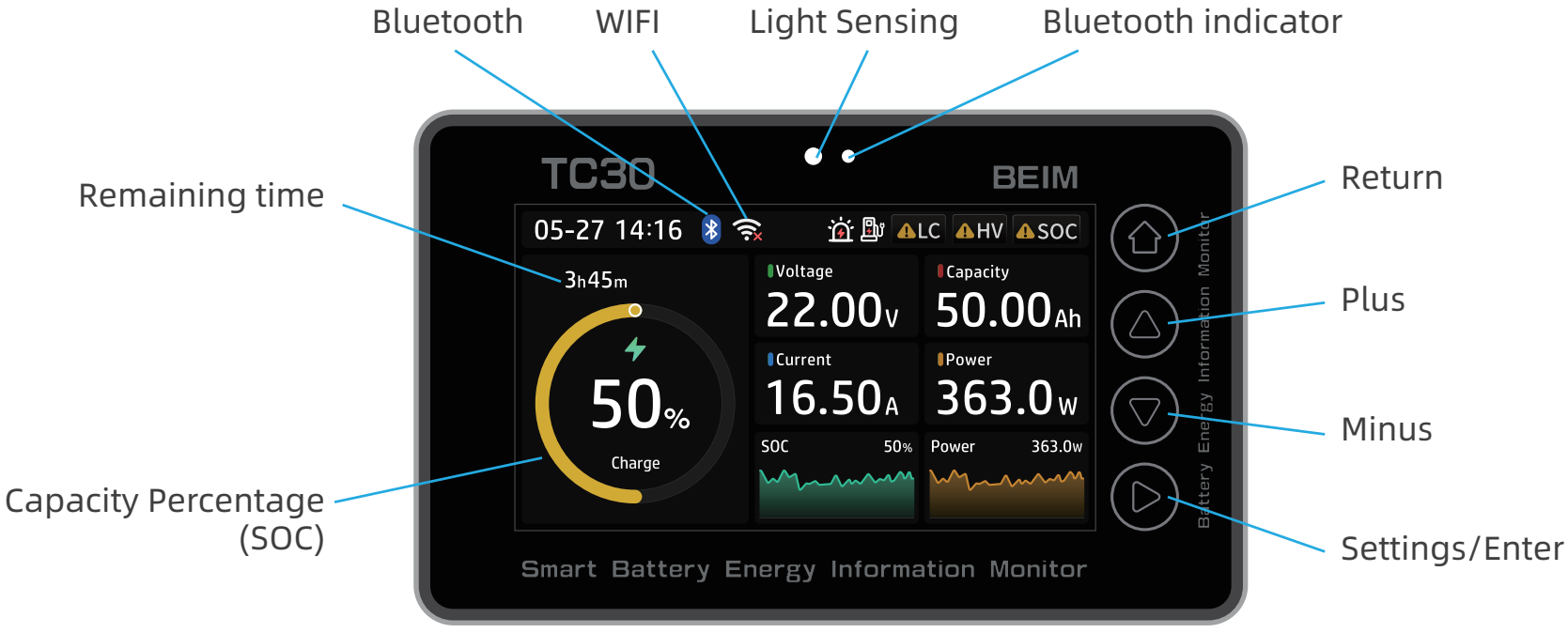
Low battery

HV High voltage alarm

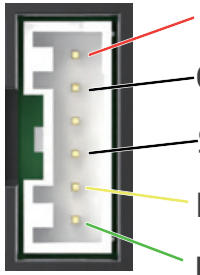
LV Low voltage alarm

LC Low capacity alarm

SOC Low SOC



Interface Description



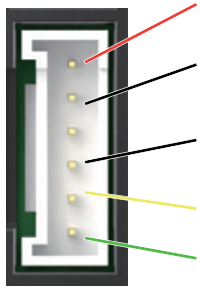
B+Battery positive pole

GND Grounding

Shielding layer

Rs+Positive pole of shunt signal

Rs- negative pole of shunt signal



V+5~24V power supply

GND Grounding

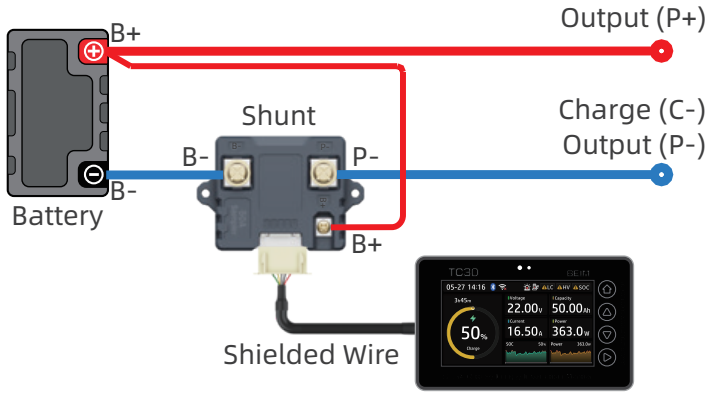
Shielding layer

485-B

485-A

Wiring Method

Wiring method of 50A shunt :



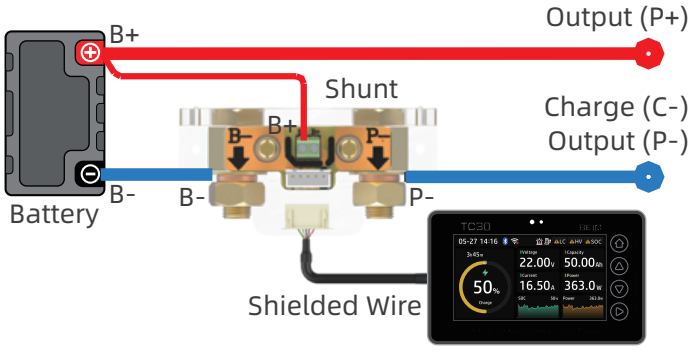
It is necessary to connect the matching shunt in series to the negative circuit of the battery pack when using. The B- of the shunt is connected to the negative B- of the battery pack, and the P- is connected to the negative P-/C- of the charge and discharge.

Take a red wire(20-22AWG) to connect the positive electrode of the battery to the shunt B+ for power supply of the battery monitor.

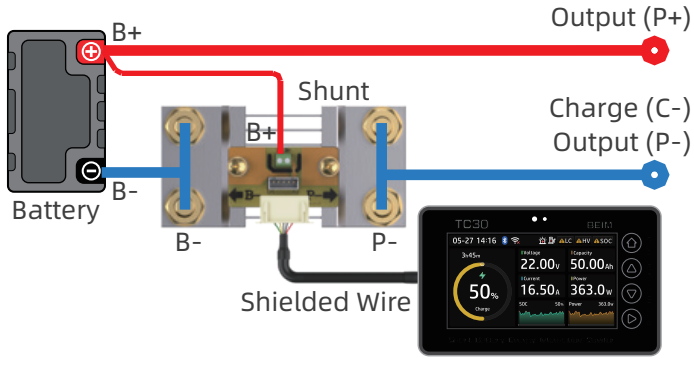
Connect the shunt to the battery monitor with a shielded wire. Power on after confirmation.

Wiring principle: Ensure that all current flowing through the battery goes through the shunt!

Wiring method of 100A/350A shunt :



Wiring method of 500A shunt :



Attention:Please wire strictly as shown. The shunt must be connected in series with the negative circuit of the battery. It is strictly forbidden to connect the positive circuit. Shielded wires cannot be extended by yourselves.

1 Connect Wiring and check current

After completing the connection according to the Wiring Method (see page 04), power on and the screen should be able to display. If there is no display, power off and check if the connection is correct. Then discharge or charge the battery and check whether the displayed current/power value is consistent with the actual value. If the error is large, please check again whether the wiring is correct.
Please make sure that all current flowing through the battery passes through the shunt.

2 Set effective battery capacity

If the effective capacity is known:

Go to the User PAR (see page 08) to complete the "Effective CAP" setting. Then enter the Battery Management (see page 09), click "Full CAP" and fully charge the battery. After completing the above steps, it can be used normally.

If the effective capacity is unknown (after the first use or replacement of the battery):

The actual effective capacity of the battery needs to be tested, and the testing steps are as follows:

A. Go to the User PAR (see page 08) and select the "Effective Capacity" setting. Set the capacity as high as possible (for example, if the estimated battery is 200Ah, set it to 300Ah first);
B. Empty the battery, click "Zero CAP" (see page 09 Battery Management), and then charge the battery;
C. After the battery is fully charged, the capacity value (Ah) displayed on the battery monitor is the effective capacity of the battery.

After testing the effective capacity, enter the User PAR (see page 08) to complete the "Effective CAP" setting. After completing the above steps, it can be used normally.

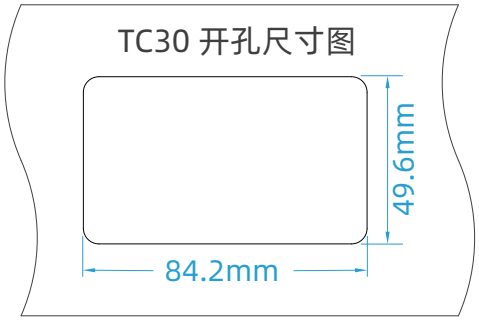
Instructions For Use

- The battery monitor must be in working condition when charging and discharging, otherwise the battery capacity cannot be accurately calculated. This product is a low-power consumption design, the power consumption is very low when backlight is off (standby). Don't connect the power supply B+ behind the power switch (always keep the power on).
- Connecting the load, when the discharge current > sleep current, the backlight always on, with "discharging" displayed below the capacity percentage, which indicates that the battery is discharging, and displays the discharge current, voltage, and capacity percentage.
- Disconnecting the load and connect the charger,when the charge current > sleep current, the backlight always on, with "charging" , which indicates that the battery is charging, and displays the charging current, voltage and capacity percentage.
- When the charge or discharge current < sleep current, it will enter a low-power consumption state. When the sleep backlight is set to 0%, the battery monitor completely turns off; When the sleep backlight is set to 1%, the battery monitor remains slightly bright; When the device current > sleep current, the battery monitor returns to normal brightness.
- If the percentage and capacity values are deviated after a period of use, they can be reset (Battery Management (see page 09) → Full CAP & Zero CAP) . If the deviation still occurs, the battery capacity may decay and it needs to be corrected again (see Setup & First Use (see page 05) → Set effective battery capacity).
- This product has a power-off capacity memory function.
- A certain error may occur in the case when the current changes drastically, which affects the capacity value.
- This product needs to be used with the shunt (the internal parameters of the battery monitor are different), it is forbidden to mix the shunt and the battery monitor with different specifications. The shunt is a heat-generating component, and it should be installed in the air circulation as much as possible. Always keep ventilation and heat dissipation when using the maximum current for long periods of time.

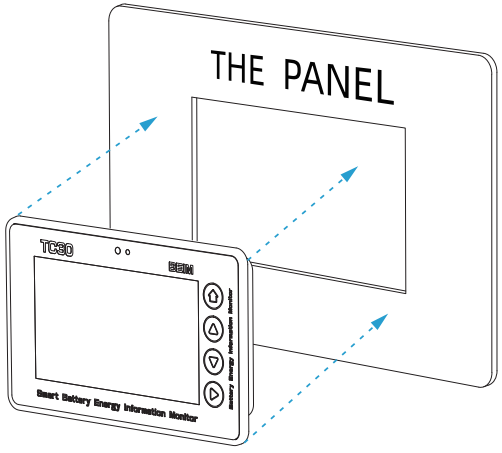
Installation Method

- Step1: Make a hole in the panel to be installed according to the hole size diagram.
- Step2: Insert the battery monitor into the panel from the front.
- Step3: Insert the clip from the rear side of the product in the direction shown in the figure, then press to lock, as shown in Figure 1.

Step 1



Step 2



Step 3

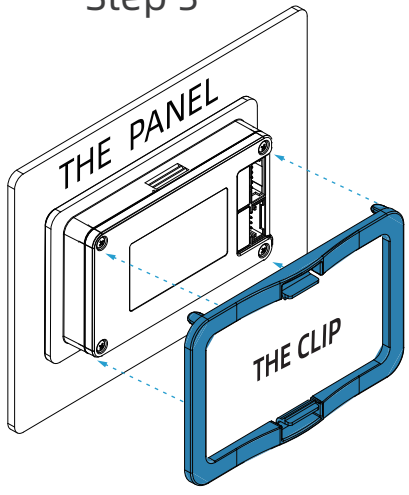
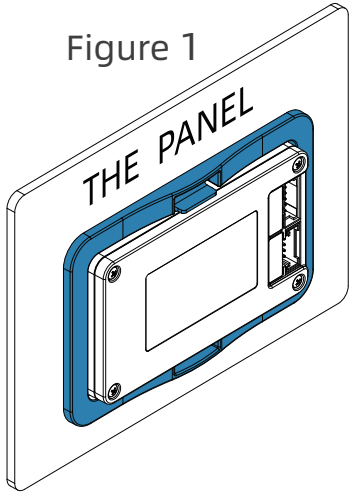
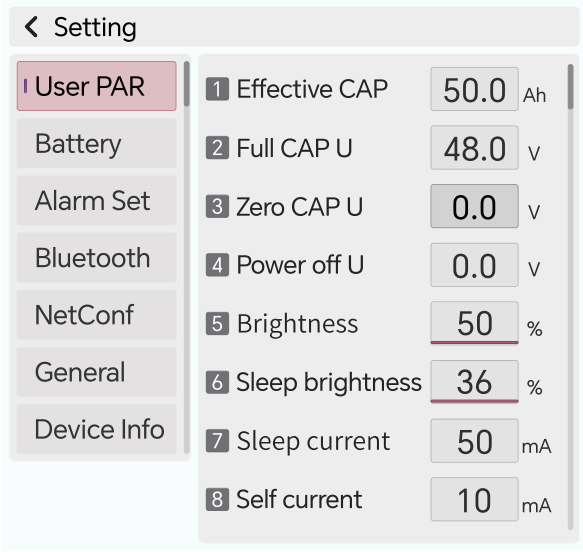


Figure 1



User PAR



Numerical Settings:

1. Press ▷ to enter the settings interface
2. Press ▷ to enter the user parameter interface
3. Press △ or ▽, or tap the display to select settings.
4. Press ▷ to enter the number input field, tap to input digits, then tap ✔ to confirm.

1 **Effective CAP**: Please set the capacity based on the actual effective capacity of the battery pack before use. Otherwise, the capacity percentage is incorrect (**essential setup**).

2 **Full CAP U**: The capacity value is automatically set to 100% (Full capacity) after this voltage is exceeded. This setting should be configured according to actual requirements. Incorrect settings may affect the battery monitor's performance.

3 **Zero CAP U**: The capacity value is automatically set to 0% if below this voltage (Zero clearing). This setting should be configured according to actual requirements. Incorrect settings may affect the battery monitor's performance (**leave unconfigured unless necessary**).

4 **Power off U**: Screen turns off and no display if below this voltage, entering a low-power shutdown state, press any button to temporarily restore the display. Normal operation automatically resumes when voltage > set value.

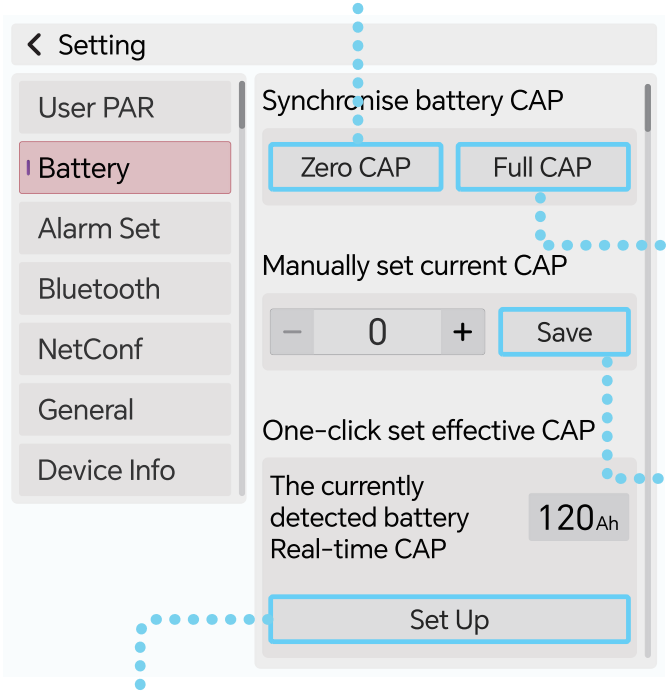
5 **Brightness:** The backlight brightness during work.

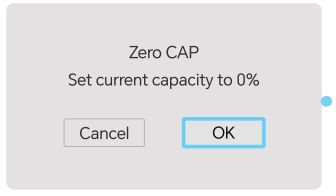
6 **Sleep brightness**: The minimum brightness value is adjustable, low power consumption. The range for setting the sleep backlight value is 0% to 30%. When the sleep backlight is set to 0%, the battery monitor completely turns off; When the sleep backlight is set to 1%, the battery monitor remains slightly bright; the sleep backlight value < the set working backlight brightness value.

7 **Sleep current**: After the battery current drops below this value for 10 seconds, it will automatically sleep and enter a low-power state. The sleep current value can be set within the range of 0~1000mA. When the battery current is higher than this current, the battery monitor returns from sleep backlight to working backlight brightness.

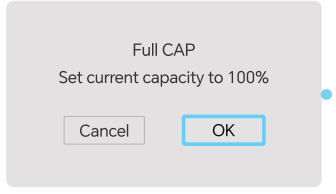
8 **Self current**: The current consumed by one's own work can lead to statistical errors in the total power consumption of the tested system.

Battery Management

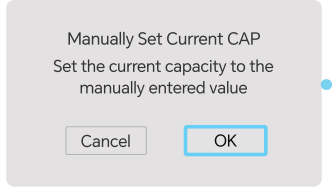




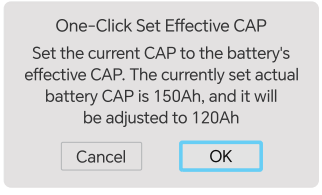
After discharging the battery (empty), select "Zero CAP" to reset the current capacity to 0%.



After fully charging the battery, select "Full CAP" to fill the current capacity to 100%.



If the current capacity value of the battery pack is known, the capacity value can be manually entered to complete the setting.

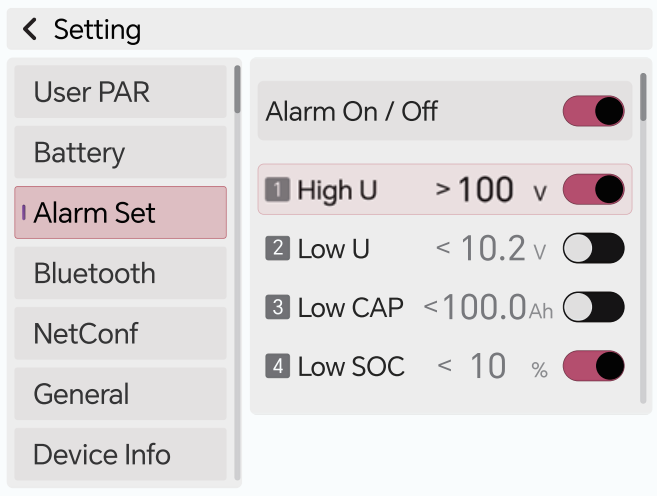


Set the real-time capacity value directly to the actual effective capacity value of the battery pack.

Function settings:

1. Press ▷ to enter settings interface
2. Press ▽ or tap Battery
3. Press ▷ to enter the battery interface, press △ or ▽ select the settings option. Or simply tap on the settings item.
4. Press ▷, tap OK

Alarm Set



Master Alarm Switch: Must be ON for other alarms to activate.

1 **High V**: Open this option, when the voltage exceeds the set value, the buzzer will sound per 10s, and the main interface will display HV.

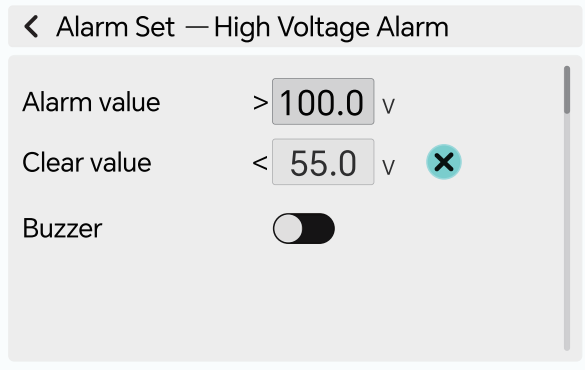
2 **Low V**: Open this option, when the voltage is lower than the set value, the buzzer will sound per 10s, and the main interface will display LV.

3 **Low CAP**: Open this option, when the capacity is lower than the set value in the discharge state, the buzzer will sound per 10s, and the main interface will display LC.

4 **Low SOC**: Open this option, when the remaining capacity percentage is lower than the set value, the buzzer will sound per 10s, and the main interface will display SOC.

Alarm Value Setting

The **Alarm Set** menu contains six items, each with identical submenus. Example: **High Voltage Alarm**:



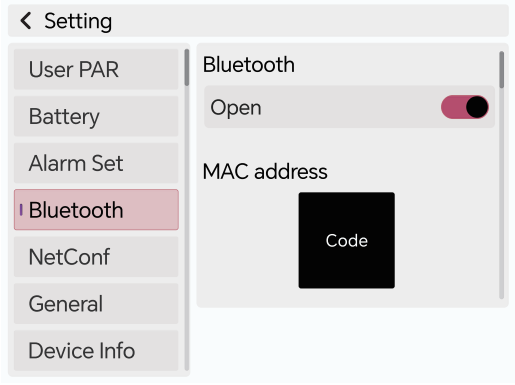
Alarm value: When voltage exceeds the set alarm value, if the buzzer is enabled, this triggers an alarm and there is a corresponding alarm icon on the main interface; if the buzzer is disabled, no alarm activates.
Clear value: When the voltage is less than the set release value, the buzzer stops alarming, the alarm is released, and the corresponding alarm icon on the main interface disappears.
Buzzer: It will only sound an alarm when it is turned on.

Note: the ✕ sign appears indicating that the input value is unreasonabe and needs to be re-entered.

Alarm Set:

1. Press ▷ to enter settings interface.
2. Press ▽ or tap [Alarm Set].
3. Press ▷ to enter the alarm set interface, press △ or ▽ select the settings option. Or simply tap on the settings item.
4. Press ▷ or tap to enter the settings submenu, press △ or ▽ select the settings option, or simply tap on the settings item.
5. Tap to input numbers, tap ✔ to complete the setting.

Bluetooth & WIFI

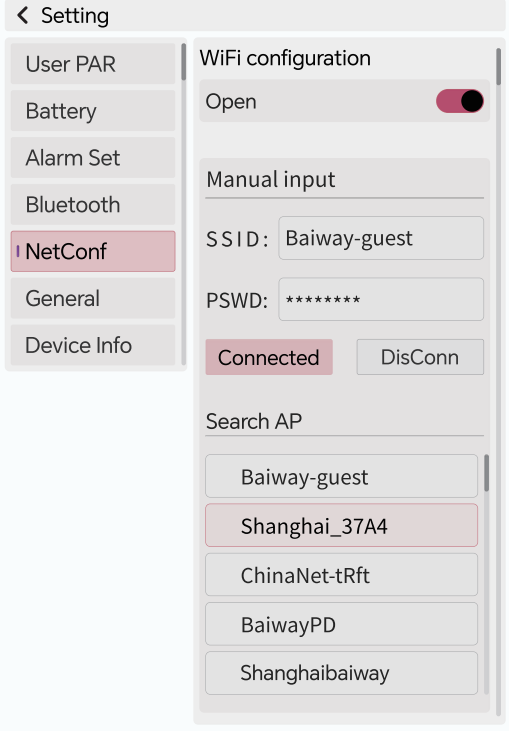


Bluetooth settings:

①Press ▷ to enter settings interface.

②Press ▽ or tap Bluetooth.

③Press ▷ to enter the Bluetooth configuration interface, and press ▷ to turn on or off Bluetooth; or simply tap to turn on or off Bluetooth.



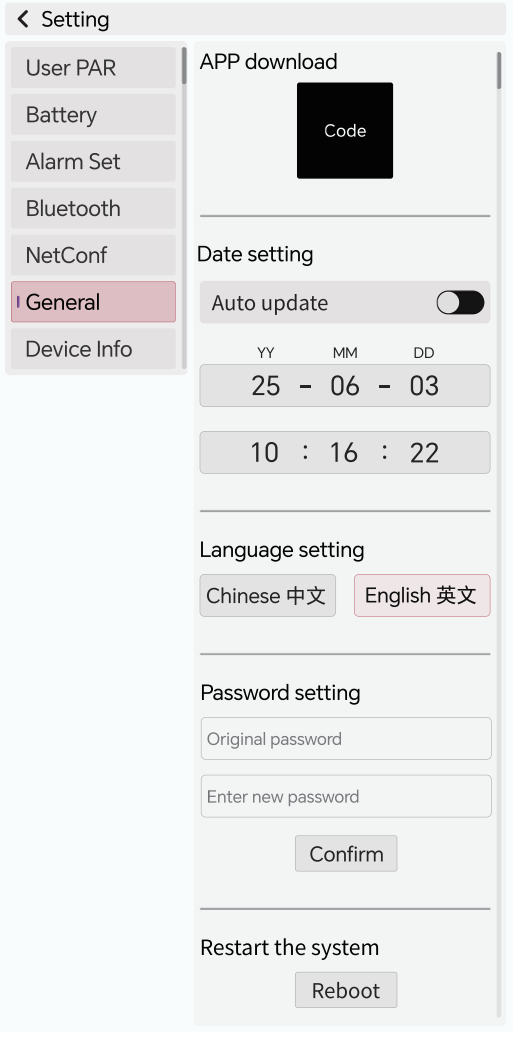
WIFI settings:

①Press ▷ to enter settings interface.

②Press ▽ or tap NetConf.

③Press ▷ to enter the WIFI configuration interface, and press ▷ to turn on or off WIFI; or simply tap to turn on or off WIFI.

General settings



General settings:

① Press ▷ to enter settings interface.

② Press ▽ or tap General.

③ Press ▷ to enter the General settings interface, press △ or ▽ select the settings option, or simply tap on the settings item.

④ Tap to input numbers, tap ✔ to complete the setting.

Note: Please remember your password before setting it. Once lost, it cannot be recovered.
After setup, this password will be required whenever accessing the settings menu again from the main interface.

Technical Parameters

Parameter		Min.	Nominal	Max.	Unit	Remarks
Working voltage		10	50	100	V	
Working consumption	Backlight 0%			0.9	W	
	Backlight 50%			1.2	W	
	Backlight 100%			1.5	W	
	Bluetooth on: +300mW power draw					
Accuracy of collecting voltage			±1.0		%	
Accuracy of collecting current			±1.0		%	
Accuracy of collecting capacity			±1.0		%	
Capacity detection range		0	100	6500	Ah	
Matched shunt Current detection range	50A Specification	0.0	50.0	75.0	A	The battery monitor should use with the shunt, it is forbidden to mix the shunt and the battery monitor with different specifications
	100A Specification	0.0	100.0	150.0	A	
	350A Specification	0.0	350.0	500.0	A	
	500A Specification	0.0	500.0	750.0	A	
Ambient temperature range		-10.0	20.0	60	℃	
TC30 Weight			70		g	Take the actual weight as the final

Bluetooth Parameters

Parameter	Min.	Nominal	Max.	Unit	Remarks
Operating frequency band	2.402	2.442	2.480	MHz	
Transmitting power	-24	0	21	dBm	
Receiving sensitivity		-97.5		dBm	
Reference distance		60		m	in the cloudless and open space，height 2 meters, @2.5dBm, airspeed 1Mbps
Bluetooth protocol					BLE5.0