

使用说明书

TX20 COULOMETER

电流采集型电池电量表



防水



蓝牙



APP



触摸屏



锁屏

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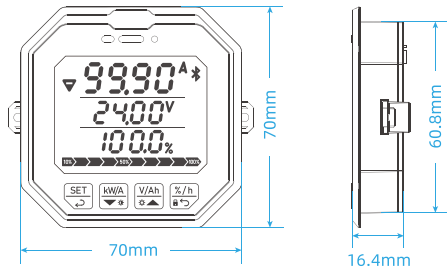
产品简介

■ 本产品为高精度电流采集型电池电量表（也称库仑计），采用触摸式按键，有自动背光调节功能，可自动根据环境光线调节背光亮度。能准确检测电池组的实时电压、电流、功率、真实容量、剩余使用时间等参数，随时了解电池的工作状态。

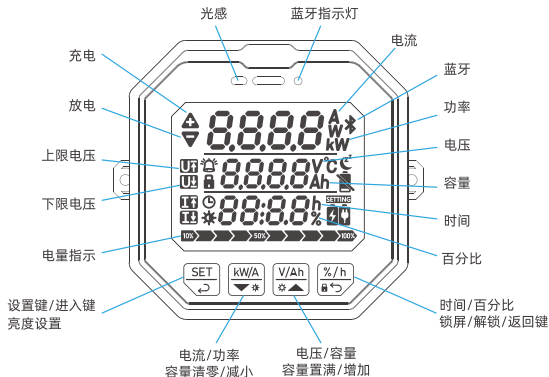
■ 可用于使用电池设备的房车、床车、电动车、应急电源、储能电源、测量设备、医疗设备、各种仪器仪表等产品。

■ 可使用工作电压在8V~120V的锂电池、磷酸铁锂、铅酸、镍氢等各种电池组，注意本产品必须配合采样器。

■ 采用基于蓝牙协议5.0版本的通讯模块，可使用APP与设备进行通讯，如参数配置或数据接收查看。

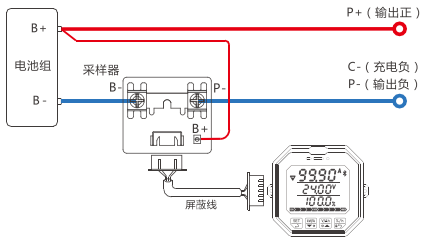


工作界面说明

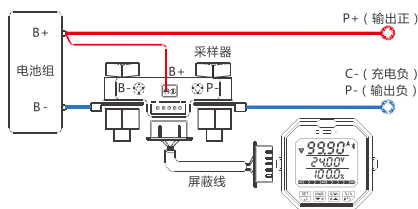


1. 使用时需要将配套的采样器必须串联到电池组的负极回路中。采样器上B-端连接电池组负极B-, P-端连接充放电的负极P-/C-。
2. 取一根0.3-0.5mm²红色导线将电池正极和采样器B+连接, 用于电量表供电。
3. 用屏蔽线将采样器和表相连, 确认无误后, 通电即可。
4. 接线原则: 确保流过电池的所有电流都经过采样器!

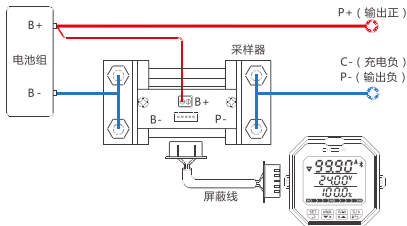
★ 50A采样器接线方法:



★ 100A/350A采样器接线方法:



★ 500A采样器接线方法:



注意: 请严格按照图示接线, 采样器必须串联在电池的负极回路中, 严禁连接正极回路! 屏蔽线不能自行延长。

首次使用方法

■ 接线并检查电流

按照 [接线方法](#) 图示完成连接后通电，屏幕应能显示。若无显示应断电检查连接是否正确。再对电池进行放电或充电并检查显示电流值或功率值和实际值是否一致，若误差较大请检查接线是否正确。（确保流过电池的所有电流都经过采样器！）

■ 电池实际有效容量设置

如电池的有效容量值已知，根据 [SET1设置](#) 完成有效容量值设置，充满电置满，见 [置满容量](#)。



■ 电池实际有效容量检测

首次使用或着是更换电池后需要正确设置电池的实际有效容量值，见 [SET1设置](#)。

如电池的有效容量未知，需检测，检测步骤如下：

- 进入容量设置界面，将容量值尽量设大(例如预估20Ah的设成30Ah)；
- 将电池组放空同时把表百分比清零，再对电池组进行充电；
- 充满后将显示的容量值设置为电量表的有效容量值。

■ 容量归位（电池容量清零或满容量设置）

- 置零容量：将电池放空(空)电后长按  键，置零容量0%；
- 置满容量：或将电池充满电后长按  键，置满容量100%。

使用说明

■ 进行充电和放电时库仑计必须处于工作状态，否则不能准确计算电池容量。本产品为低功耗设计，背光不亮（待机）时功耗很低，供电B+尽量不接在电源开关后，即始终保持通电状态。

■ 连接负载，当放电电流 > 背光开启电流时，背光亮起，▼符号显示，指示电池在放电，并显示放电电流、电压和容量百分比。

■ 断开负载，连接充电器，当充电电流 > 背光开启电流时，背光亮起，▲符号显示，指示电池在充电，并显示充电电流、电压和容量百分比。

■ 充电或放电电流值 < 背光关闭电流时，将进入低功耗状态，背光关闭。

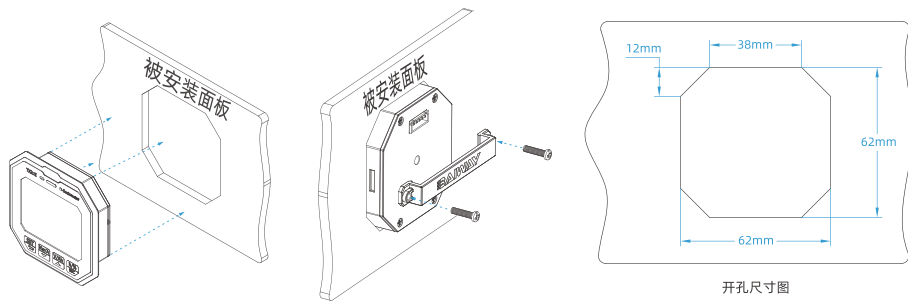
■ 如使用一段时间后百分比和容量值出现偏差，可进行归位（见 [首次使用方法](#) → [容量归为](#)）。如果仍出现偏差，电池容量可能衰减，需要重新进行电池容量校正（见 [首次使用方法](#) → [电池有效容量的检测](#)）。

■ 本产品具有断电容量记忆功能。

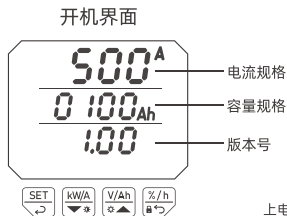
■ 在电流变化剧烈的场合可能产生一定的误差，影响容量值。

安装方式

在要安装的设备面板上开一个八边形孔，将显示器从正面安装并将电量表嵌于设备面板上，卡扣固定然后用螺丝锁紧。如图：



开机界面

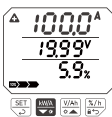


上电25显示为开机界面，显示内容分别为电流规格、容量规格和版本号。


主界面功能切换

上电开机2S之后自动进入主界面，在主界面下各功能之间的切换。如下图所示：

电流显示




功率显示





点按  键可进行电流和功率的切换(第一排)

电压显示



容量显示



点按  键可进行电压和容量的切换(第二排)

容量百分比显示



剩余时间显示



点按  键可进行容量百分比和剩余时间的切换(第三排)

容量置满



容量清零



在主界面下，长按  键容量置满，长按  键容量清零。

亮度调节



点按  键,进入屏幕亮度调节功能,符号*闪烁,点按  或  键,屏幕亮度百分比降低或增加.设置完成后点按  键(或不做任何操作10S后)返回主界面。

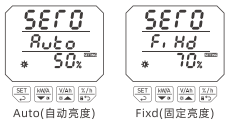
锁屏



为防止触摸按键误操作,可进行锁屏操作。在主界面下长按  键,屏幕显示  符号,其它按键无效;可长按  键,退出锁屏状态,屏幕上  符号消失。








在主界面下，长按  键进入项目设置界面（此时SET1闪烁）

1 设置背光亮度(SET0)



自动亮度模式：电量表会根据环境光线自动调节背光亮度。







固定亮度模式：电量表的背光亮度不受环境光线影响。

- ① 按  选择 SET0
- ② 按  进入 SET0
- ③ 按  切换 Auto/Fixd
- ④ 按  或  改变亮度百分比数值
- ⑤ 按  退出 SET0
- ⑥ 按  退出设置

2 设置电池容量(SET1)



使用前请根据电池组的实际真实有效容量设置，否则容量百分比的显示会不正确。

- ① 按  进入 SET1
- ② 按  或  设置数值
- ③ 按  选择其它数字位
- ④ 按  退出 SET1 项目
- ⑤ 按  退出设置

3 设置电池上限电压(SET2)




功能：当电压高于上限电压时，容量自动置为100%(置满)。

- ① 按  选择 SET2
- ② 按  进入 SET2
- ③ 操作同 SET1

4 设置电池下限电压(SET3)





功能：当电压低于下限电压时，容量自动置为0%(清零)。

- ① 按  选择 SET3
- ② 按  进入 SET3
- ③ 操作同 SET1

5 设置关机电压(SET4)



功能：当电压低于关机电压时，背光和液晶关闭

- ① 按  选择 SET4
- ② 按  进入 SET4
- ③ 操作同 SET1

技术参数

	参数	最小值	常规值	最大值	单位	备注
产品参数	工作电压	8.0	50.0	120	V	
	工作功耗(背光熄灭)		3.4		mA	
	工作功耗(背光最亮)		25.0		mA	
	休眠功耗	0.3		0.7	mA	
	电压采集精度		±1.0		%	
	电流采集精度		±1.0		%	
	容量采集精度		±1.0		%	
	背光开启电流(50A规格)		50		mA	
	背光开启电流(>50A规格)		100		mA	
	容量检测范围	0.1	100	9999	Ah	
	50A采样器电流	0.0	50.0	75.0	A	
	100A采样器电流	0.0	100.0	150.0	A	
	350A采样器电流	0.0	350.0	500.0	A	
	500A采样器电流	0.0	500.0	750.0	A	
	使用环境温度范围	-10.0	20.0	60	°C	
	重量 (50A/100A/350A/500A)	260/340/490/800			g	以实际称重为准
	TX20尺寸	70×70×16.4			mm	
蓝牙参数	工作频段	2402		2480	MHz	支持ISM频段
	发射功率	-19.5	0	2.5	dBm	
	接收灵敏度		-94		dBm	
	参考距离		90		m	晴朗空旷环境, 高度2米, @2.5dBm, 空速1Mbps
	蓝牙协议					BLE5.0

注意：本产品需配合采样器使用(表内部参数不同)，不同规格采样器与表禁止混用。

采样器为发热部件，尽量安装在空气流通处，严禁包裹遮盖！按照最大电流长期使用，务必保持通风和散热。

APP-登录



扫描二维码下载APP

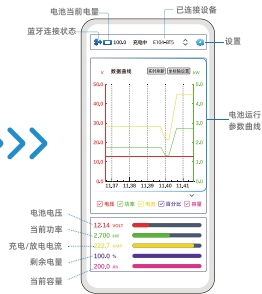
使用本APP前, 请确保您的库仑计显示表已经通电正常工作并确保采样器已经接线正确。详情可阅读“使用说明书”



暂无此功能

点击 跳过登陆 直接进入主界面

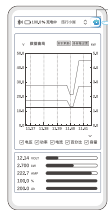
主界面



电池信息管理主页 (APP主界面)

APP-连接

- 蓝牙连接产品前, 请确认手机蓝牙已经处于打开状态, 并允许APP获取定位权限。



■ 点击设置按钮进入设置



■ 选择设备连接

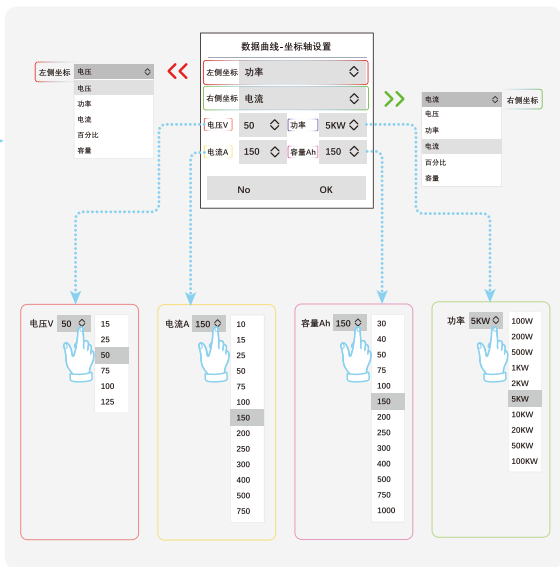
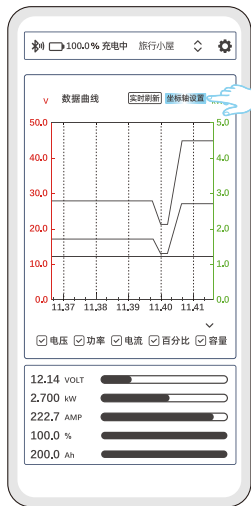


■ 开启连接开关



■ 连接设备后主界面显示数据

曲线的坐标轴最大值设置



坐标轴最大值选择都应大于实际显示值

APP-主界面设置

历史曲线

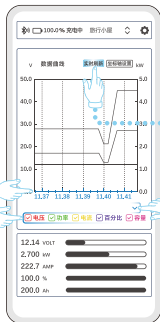


曲线界面可以左右滑动,查看历史曲线。

图表曲线显示

电压 功率 电流 百分比 容量

图表显示5种曲线,根据需要选择显示。



实时刷新

点击“实时刷新”,曲线跟随实时时间在右侧坐标更新。

选择时间轴

选择X轴时间

30分钟

No

Yes

30分钟

1分钟

5分钟

10分钟

30分钟

60分钟

APP-用户参数设置

- APP会读取设备中的用户参数,用户参数可在APP中设置,部分参数也可在设备上设置。

注:参数在本界面设置和在设备面板上设置的作用相同!



- 根据电池信息进行设置,在对应位置输入数值
- 点击“写入数据”完成设置

注:此两项是对设备的调整,而非APP!



显示当前设备的硬件信息



可以查看电池组累积的电量信息

Instruction



TX20 COULOMETER

Current Collection Type Battery Meter



Waterproof



Bluetooth



APP



Touch Screen



Lock Screen

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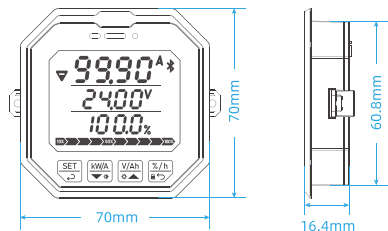
Product Introduction

■ This product is a high-precision current collection type battery power meter (also called coulometer), it has touch button and automatic backlight adjustment function, can automatically adjust the backlight according to the ambient light. It can accurately detect the real-time voltage, current, power, real capacity, remaining time of the battery pack etc, so that the working status of the battery is obtained accurately at any time.

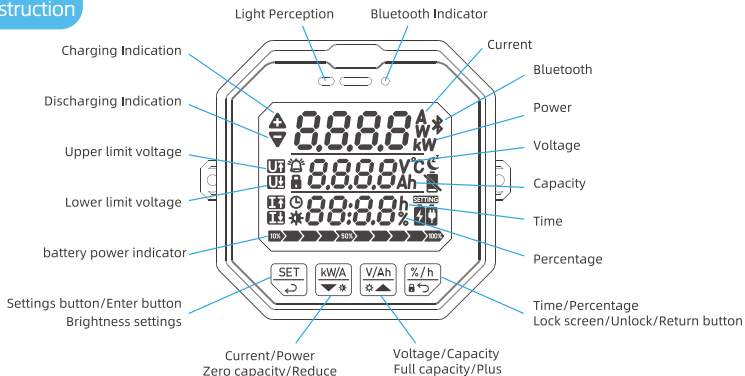
■ This product can be used for RV, bed vehicle, electric vehicle, emergency power supply, energy storage power supply, measuring equipment, medical equipment, various instruments and meters using battery equipment etc.

■ 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~120V. Please be noted that this product must be combined with sampler.

■ 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.

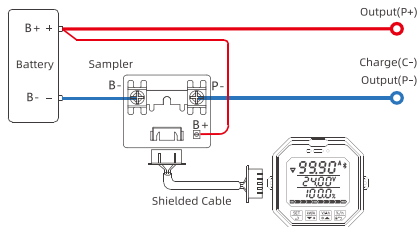


Work Interface Instruction

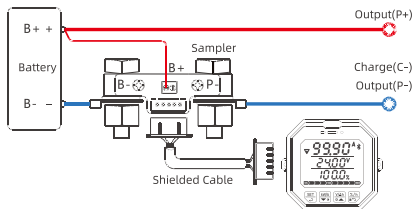


1. It is necessary to connect the matching sampler in series to the negative circuit of the battery pack when using. The B- of the sampler is connected to the negative B- of the battery pack, and the P- is connected to the negative P-/C- of the charge and discharge.
2. Take a red wire(20-22AWG) to connect the positive electrode of the battery to the sampler B+ for power supply of the meter.
3. Connect the sampler to the meter with a shielded wire. power on after confirmation.
4. Wiring principle: Ensure that all current flowing through the battery goes through the sampler!

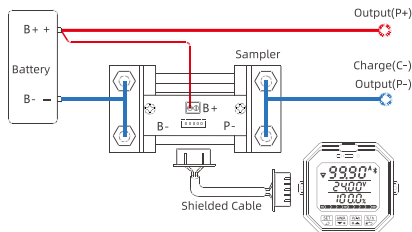
★ Wiring method of 50A sampler :



★ Wiring method of 100A/350A sampler :



★ Wiring method of 500A sampler :



Attention: Please wire strictly as shown. The sampler 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.

First Use Method

■ Wiring and checking the current

After completing the connection according to the [wiring method](#), 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 value or power value is consistent with the actual value. If the error is large, please check again whether the wiring is correct (**Make sure that all current flowing through the battery passes through the sampler.**)

■ Actual effective battery capacity setting

If the effective capacity value of the battery is known, complete the effective capacity setting according to the [SET1 settings](#), and set capacity percentage to 100% when the battery is fully charged, see [Full capacity](#).



■ Actual effective battery capacity detection

The actual effective capacity of the battery should be set correctly when the battery is used for the first time or replaced, see [SET1 settings](#).

If the effective capacity of the battery is unknown, you need to follow the steps below:

- Enter the capacity setting interface and set the capacity value as large as possible. (For example, it is set to 30Ah if the estimated value is 20Ah.);
- Empty the battery pack and at the same time clear the capacity value to 0%, and then charge the battery pack;
- After full charge, set the displayed capacity value to the effective capacity value of the electricity meter.

■ Capacity Homing(The battery capacity is cleared or full capacity setting.):

- Zero capacity: After the battery is discharged (empty), Press and hold the button  to set capacity percentage to 0%;
- Full capacity: After the battery is fully charged, Press and hold the button  to set the capacity percentage to 100%.

Instructions For Use

■ The coulombmeter 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 > the backlight turn-on current, the backlight turns on and displays ▼ symbol, 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 > the backlight turn-on current, the backlight turns on and displays ▲ symbol, which indicates that the battery is charging, and displays the charging current, voltage and capacity percentage.

■ When the charge or discharge current < the backlight turn-off current, it will enter a low-power consumption state and the backlight will be turned off.

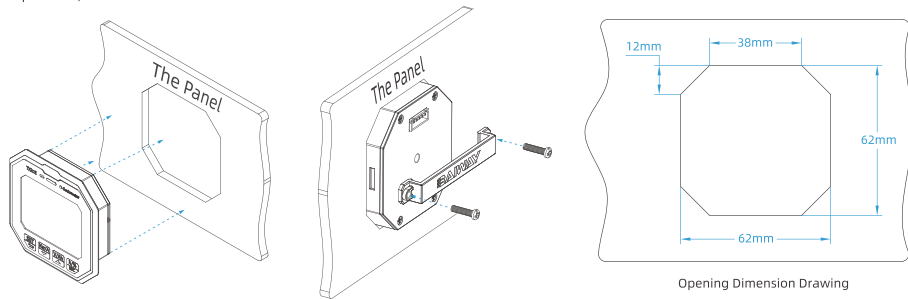
■ If the percentage and capacity values are deviated after a period of use, they can be reset (see [First Use Method](#) → [Capacity Homing](#)). If the deviation still occurs, the battery capacity may decay and it needs to be corrected again (see [First Use Method](#) → [Actual effective battery capacity detection](#)).

■ 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.

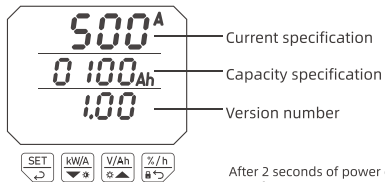
Installation Method

Make an octagonal hole in the panel to be installed, install the monitor from the front and clamp the meter to the panel, and then secure it with a clip at back, fasten it with screws. As shown below:



Startup Interface

Startup Interface



After 2 seconds of power on, the startup interface appears, showing the current specifications, capacity specifications and version number.

Main interface function switching

The main interface is automatically appeared After 2 seconds of power on, You can switch between various functions in the main interface.as shown as follow:

Current

Power

Click the **SW** button to switch between current and power (first row)

Voltage

Capacity

Click the **SW** button to switch between voltage and capacity (second row)

Capacity Percentage

Remaining Time

Click the **SW** button to switch between percentage of capacity and remaining time (third row)

Full Capacity

Zero Capacity

In the main interface, press and hold the button **SW** to set full capacity, press and hold the button **SW** to set zero capacity.

Brightness Adjustment

When tap the **SET** button to enter the screen brightness adjustment function, symbol ***** flashes, click the **SW** or **SW** button, the screen brightness percentage will decreases or increases. After the settings is completed, press **SW** (or do not do any operation for 10S) to return to the main screen.

Lock Screen

To prevent misoperation of pressing the touching button, the screen can be locked. Long press **SW** button in the main interface, the **L** symbol appears, and other keys are invalid; Long press the **SW** button to exit the lock screen state, and the **L** symbol disappears.

In the main interface, press and hold the button  to enter the project settings interface (SET1 flashes).

1 Set Backlight Brightness (SET0)










Auto
(Automatic Brightness)



Fixed
(Fixed Brightness)

Auto mode: The meter will automatically adjust the backlight brightness according to the ambient light.







Fixed mode: The backlight brightness of the meter is not affected by the ambient light.

- ① Press  to select SET0
- ② Press  to enter SET0
- ③ Press  to switch Auto/Fixed
- ④ Press  or  to change the brightness percentage value
- ⑤ Press  to exit SET0
- ⑥ Press  to exit settings

2 Set Battery Capacity (SET1)





Please set the capacity based on the actual effective capacity of the battery pack before use. otherwise, the capacity percentage is incorrect.

- ① Press  to enter SET1
- ② Press  or  to set digits
- ③ Press  to select other digits
- ④ Press  to exit SET1
- ⑤ Press  to exit settings

3 Set Battery Upper Limit Voltage (SET2)





- ① Press  to select SET2
- ② Press  to enter SET2
- ③ The operation is the same as SET1

Function: When the voltage exceeds the upper limit voltage, the capacity percentage is automatically set to 100% (Full capacity).

4 Set Battery Lower Limit Voltage (SET3)





- ① Press  to select SET3
- ② Press  to enter SET3
- ③ The operation is the same as SET1

Function: When the voltage is below the lower limit voltage, the capacity percentage is automatically set to 0% (Zero capacity).

5 Set Power Off Voltage (SET4)



- ① Press  to select SET4
- ② Press  to enter SET4
- ③ The operation is the same as SET1

Function: When the voltage is lower than the shutdown voltage, the backlight and LCD will be off and enter the low power consumption state.

Technical Parameter

	Parameter	Min.	Regular	Max.	Unit	Notes
Product parameter	Operating voltage	8.0	50.0	120	V	
	Operating consumption (backlight off)		3.4		mA	
	Operating consumption (backlight brightest)		25.0		mA	
	Sleep consumption	0.3		0.7	mA	
	Accuracy of voltage Collecting		±1.0		%	
	Accuracy of current Collecting		±1.0		%	
	Accuracy of Capacity Collecting		±1.0		%	
	Backlight on current(50A specifications)		50		mA	
	Backlight on current(>50A specifications)		100		mA	
	Capacity detection range	0.1	100	9999	Ah	
	50A sampler current	0.0	50.0	75.0	A	
	100A sampler current	0.0	100.0	150.0	A	
	350A sampler current	0.0	350.0	500.0	A	
	500A sampler current	0.0	500.0	750.0	A	
	The ambient temperature range of using	-10.0	20.0	60	°C	
	Weight(50A/100A/350A/500A)	260/340/490/800			g	Take the actual weight as the final
TX20 Size	70×70×16.4			mm		
Bluetooth parameter	Operating frequency band	2402		2480	MHz	Support ISM frequency band
	Transmitting power	-19.5	0	2.5	dBm	
	Receiving sensitivity		-94		dBm	
	Reference distance		90		m	in the cloudless and open space, height 2 meters, @2.5dBm, airspeed 1Mbps
	Bluetooth protocol					BLE5.0

Attention: This product needs to be used with the sampler (the internal parameters of the meter are different), it is forbidden to mix the sampler and the meter with different specifications.

The sampler 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.



Scan the QR code to download the APP

Before using this APP, please ensure that your coulometer is powered on and working properly and the sampler is wired correctly. For details, please refer to the "Instruction Manual"

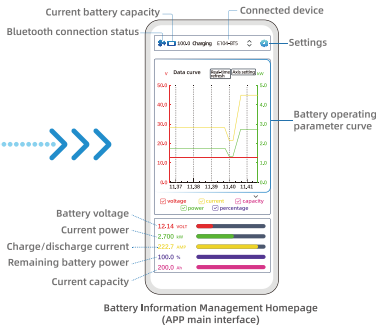
Login Interface



This function is currently unavailable

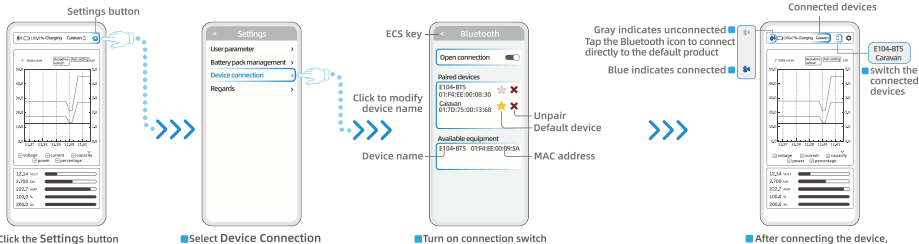
Press Skip Login to enter the main interface directly

Main Interface

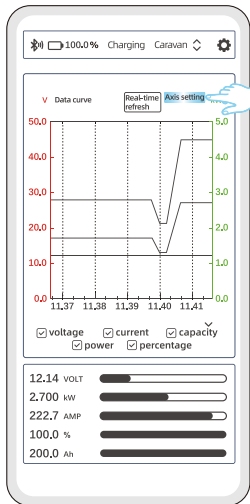


APP - Connection

- Before connecting to the product via Bluetooth, please confirm that your phone's Bluetooth is turned on and allow the app to obtain location permissions.



Setting the maximum value of the coordinate axis for the curve



The diagram illustrates the 'Data Curve - Axis Settings' dialog and its associated value selection menus. The dialog has two sections: 'Left Coordinate' and 'Right Coordinate'. The 'Left Coordinate' section has a dropdown menu with 'Voltage' selected. The 'Right Coordinate' section has a dropdown menu with 'Current' selected. Below these are input fields for 'Voltage' (50), 'Power' (5KW), 'Current' (150), and 'Capacity' (150). There are 'No' and 'OK' buttons at the bottom of the dialog. Below the dialog are four value selection menus, each with a hand icon pointing to a value: 'Voltage 50', 'Current 150', 'Capacity 150', and 'Power 5KW'. Each menu has a list of values from 15 to 1000. Dotted blue arrows connect the dialog's settings to the corresponding value selection menus.

The maximum value of the axis selected should be greater than the actual displayed value

APP - Main Interface Settings

Historical curve

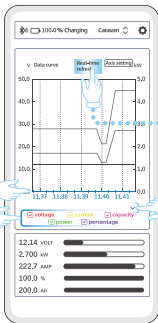


Swipe left and right in the curve interface to view historical curves.

Chart curve settings



The chart shows 5 types of curves, you select them according to your needs.



Real-time refresh

Click "Real time refresh", and the curve will follow the real-time time to update in the coordinates on the right.

Select timeline

Select X timeline

30M

No

Yes

30M

1M

5M

10M

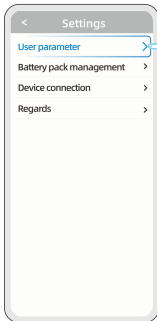
30M

60M

APP - User Parameter Settings

■ The APP will read the user parameters in the device, and the user parameters can be set in the APP, and some parameters can also be set by the device.

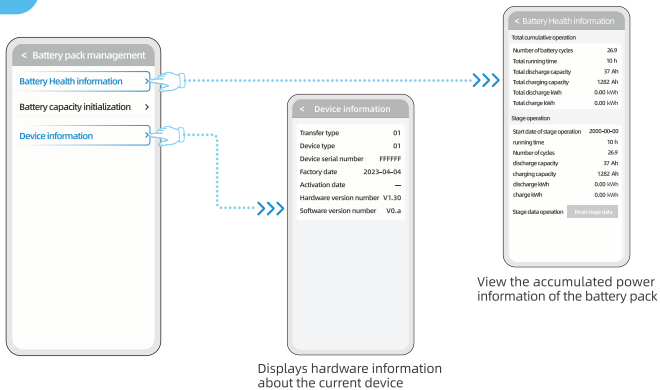
Attention: The parameters set in this interface have the same effect as those set by the coulometer!



■ Settings based on battery information and entering numerical values in the corresponding positions

■ Click **Read-in** Data button to complete the settings

Note: These two items are adjustments to the device, not the APP!



View the accumulated power information of the battery pack

Displays hardware information about the current device