BAIWAY

使用说明书

TX20 COULOMETER

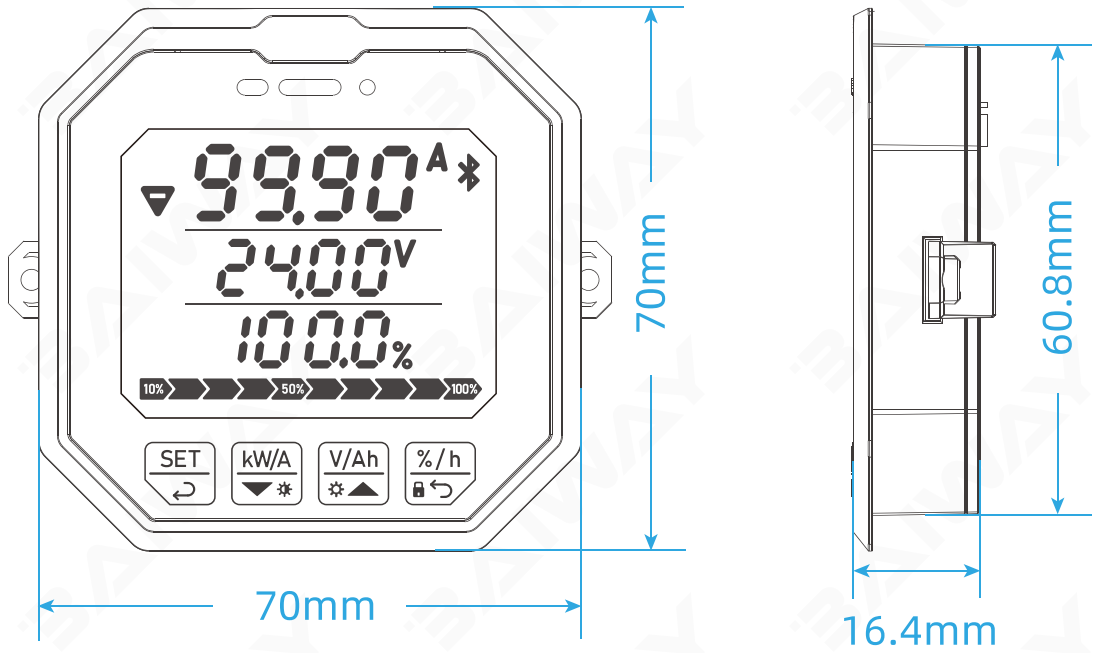
电流采集型电池电量表

防水　蓝牙　APP　触摸屏　自动光感

V1.0

目录

产品简介



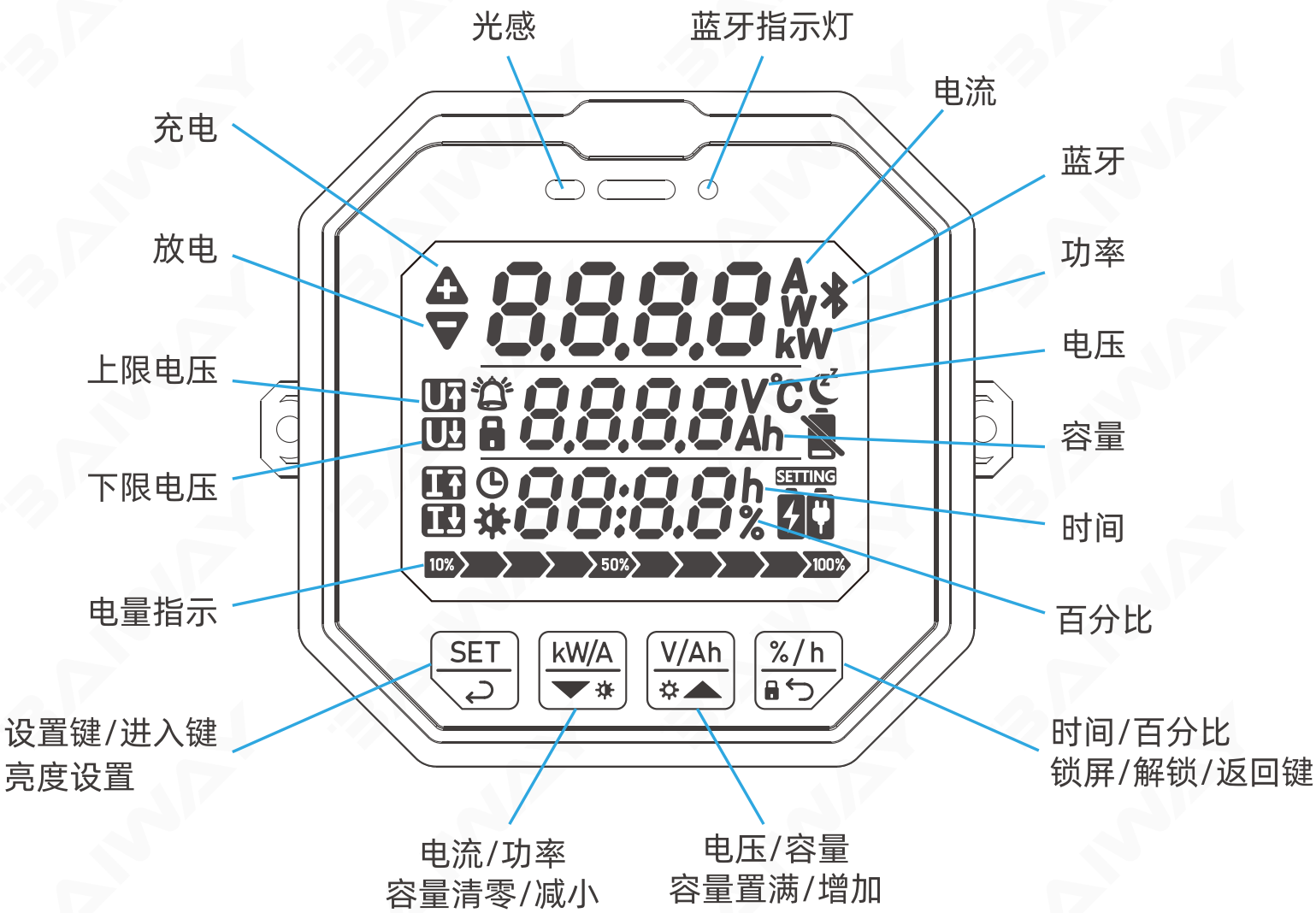
■本产品为高精度电流采集型电池电量表(也称库仑计)，采用触摸式按键，具有光线感应功能，可根据环境光线自动调节背光亮度。能准确检测电池组的实时电压、电流、功率、真实容量、剩余使用时间等参数，随时了解电池的工作状态。

■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～80V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。

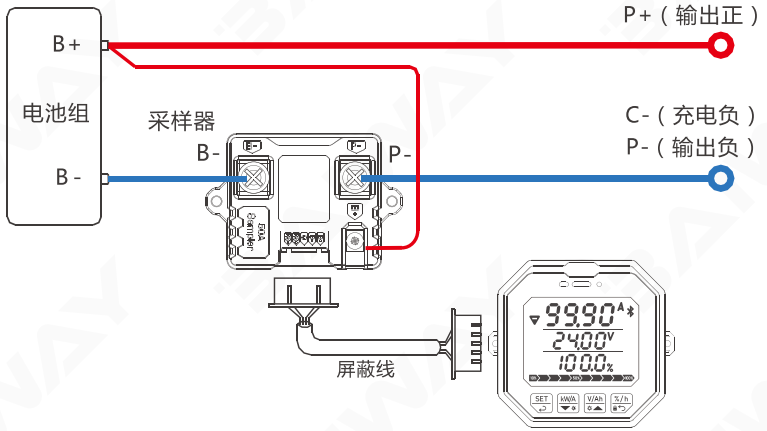
■采用基于蓝牙协议5.0版本的通讯模块，可使用APP与设备进行通讯，如参数配置或数据接收查看。

工作界面说明


光感
蓝牙指示灯
电流
充电
蓝牙
放电
功率
上限电压
电压
容量
下限电压
时间
电量指示
百分比
设置键/进入键
亮度设置
时间/百分比
锁屏/解锁/返回键
电流/功率
容量清零/减小
电压/容量
容量置满/增加
SET
kW/A
V/Ah
%/h
SETTING
10%
50%
100%

接线方法

50A采样器接线方法：



1.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-。

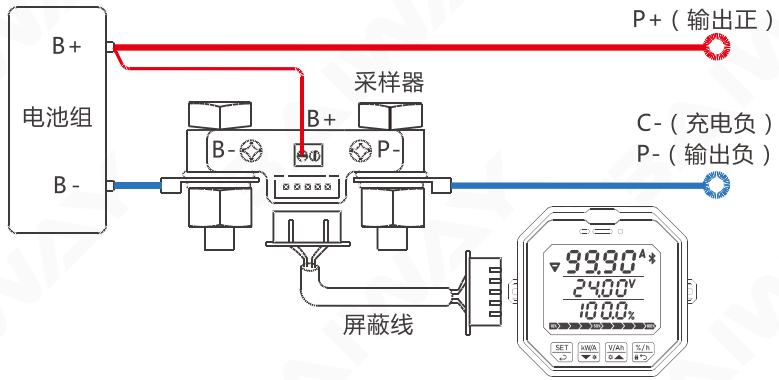
2.取一根0.3-0.5mm²红色导线将电池正极和采样器B+连接，用于电量表供电。

3.用屏蔽线将采样器和电量表相连，确认无误后，通电即可。

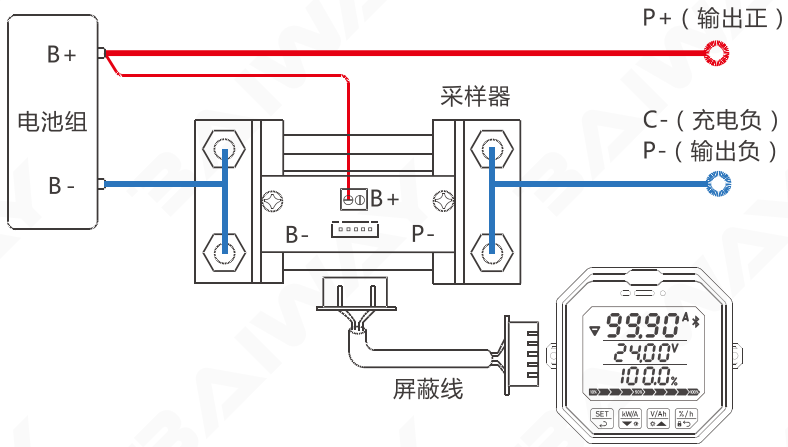
4.接线原则：确保流过电池的所有电流都经过采样器！

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。

100A/350A采样器接线方法：



500A采样器接线方法：



首次使用方法

接线并检查电流

按照 接线方法 (见03页) 图示完成连接后通电，电量表的屏幕应能显示。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(见09页) 完成有效容量值设置，然后把电量表容量归位(见本页)。

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：
A．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)；
B．将电池组放空同时把电量表百分比清零，再对电池组进行充电；
C．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）

1.置零容量：将电池放完(空)电后长按 kW/A 键，置零容量0%；
2.置满容量：或将电池充满电后长按 V/Ah 键，置满容量100%。

使用说明

■进行充电和放电时电量表必须处于工作状态，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(见04页) → 容量归位 ）。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 → 电池实际有效容量的检测 ）。

■本产品具有断电容量记忆功能。

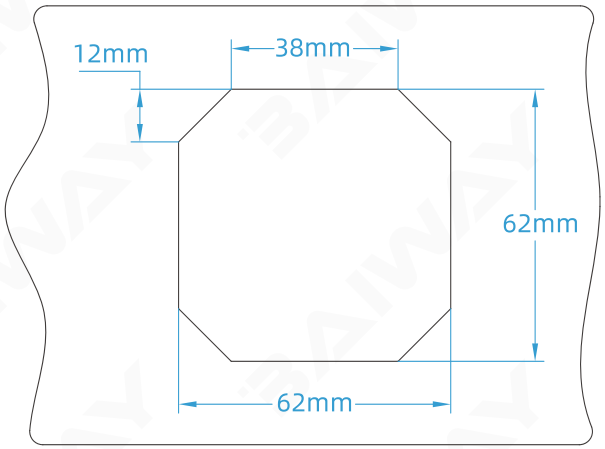
■在电流变化剧烈的场合可能产生一定的误差，影响容量值。

■本产品需配合采样器使用(表内部参数不同)，不同规格的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，严禁包裹覆盖！按照最大电流长期使用时，务必保持通风和散热。

安装方式

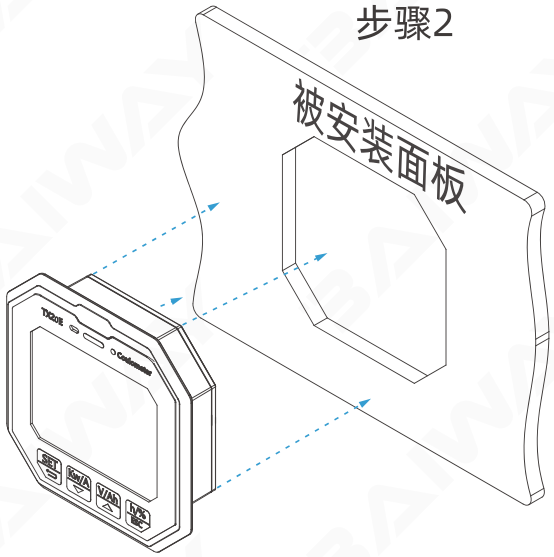
- 步骤1：在要安装的设备面板上根据开孔尺寸图进行开孔。
- 步骤2：从正面将电量表嵌入面板。
- 步骤3：将C形卡扣卡入产品侧面凹槽中，使用螺丝拧入卡扣螺丝孔，并且调整螺丝松紧度完成固定。

步骤1

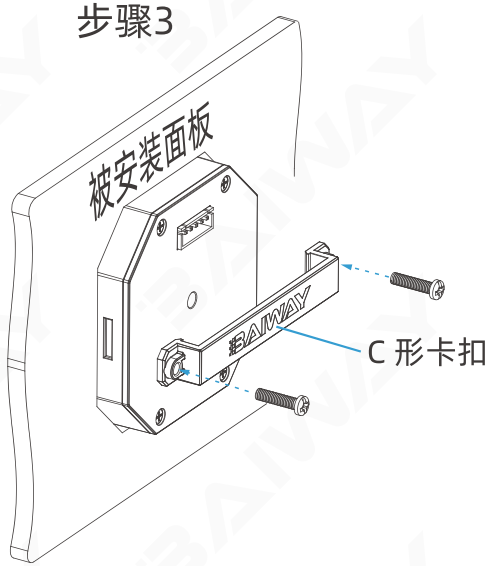


开孔尺寸图

步骤2

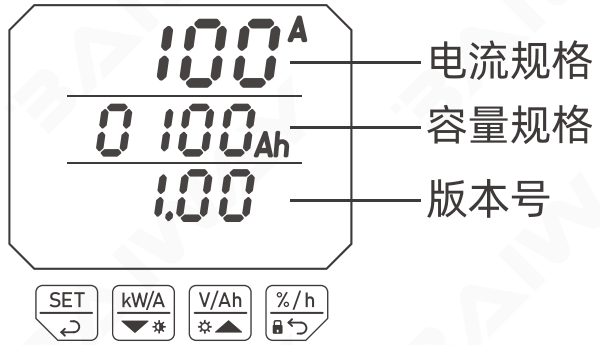


步骤3



规格/版本信息

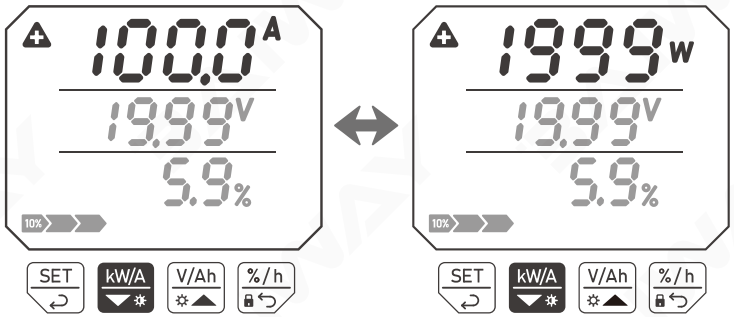
- 上电后界面显示本产品的电流规格、容量规格和版本号信息。
- 2秒后自动进入主界面。



功能设置

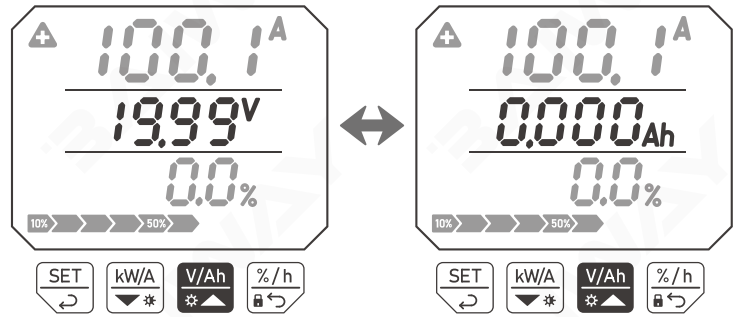
上电开机2秒之后进入主界面，在主界面下各功能之间的切换。如下图所示：

电流显示 ↔ 功率显示



点按 kW/A 键在第一行切换电流和功率

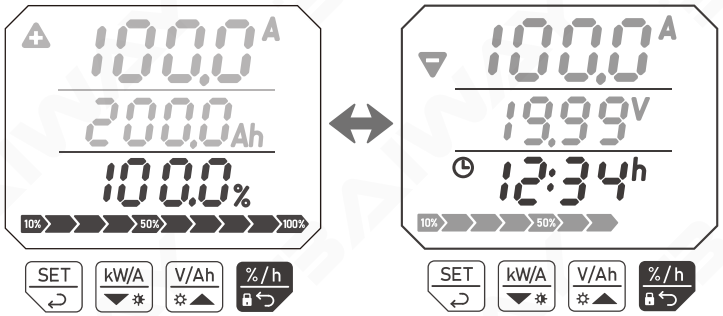
电压显示 ↔ 容量显示



点按 V/Ah 键在第二行切换电压和容量

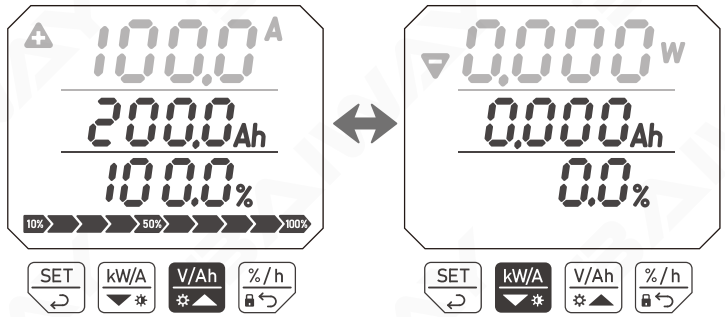
功能设置

容量百分比显示　　剩余时间显示



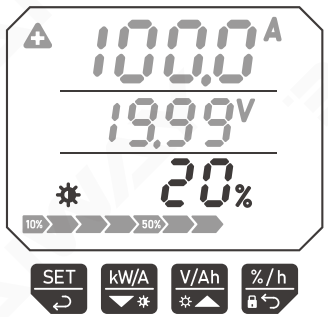
点按 %/h 键在第三行切换容量百分比和剩余时间

置满容量　　置零容量



长按 V/Ah 键容量置满,长按 kW/A 键容量清零

亮度调节



点按 SET 键,进入屏幕亮度调节功能,符号✱闪烁,点按 kW/A 或 V/Ah 键,屏幕亮度百分比降低或增加。设置完成后点按 %/h 键(或不做任何操做10秒后)返回主界面。

锁屏

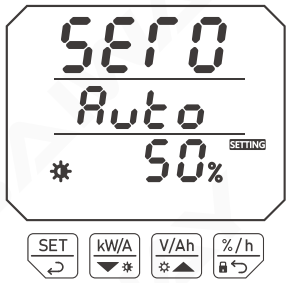
为防止触摸按键误操作,可进行锁屏操作。在主界面下长按 %/h 键,屏幕显示🔒符号,其它按键无效;可长按 %/h 键,退出锁屏状态,屏幕上🔒符号消失。

项目设置

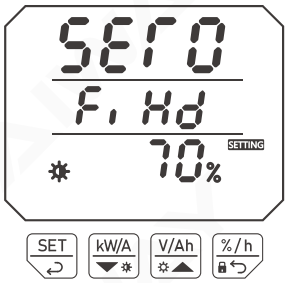
在主界面下，长按SET键进入项目设置界面（此时SET1闪烁）

① 设置**背光亮度**(SET0)

Auto(自动亮度)



Fixd(固定亮度)



Auto自动亮度模式:背光亮度根据环境光线自动调节。
Fixd固定亮度模式:背光亮度不受环境光线影响，通过手动调节。

① 按kW/A选择 SET0
② 按SET进入 SET0
③ 按SET切换 Auto/Fixd
④ 按kW/A或V/Ah改变亮度百分比数值
⑤ 按%/h退出项目
⑥ 按%/h退出设置

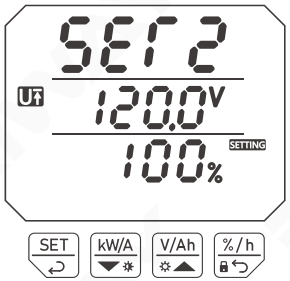
② 设置**电池容量**(SET1)

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SET进入 SET1
② 按kW/A或V/Ah设置数值
③ 按SET选择其它数字位
④ 按%/h退出项目
⑤ 按%/h退出设置

项目设置

3 设置**满容量电压**(SET2)



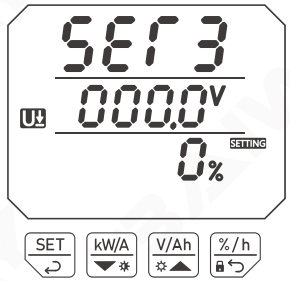
①按V/Ah选择 SET2

②按SET进入项目

③操作同SET1的②~⑤

功能：当电压高于满容量电压时,容量自动置为100%(置满)。

4 设置**零容量电压**(SET3)



①按V/Ah选择 SET3

②按SET进入项目

③操作同SET1的②~⑤

功能：当电压低于零容量电压时,容量自动置为0%(清零)。

5 设置**关机电压**(SET4)

①按V/Ah选择 SET4

②按SET进入项目

③操作同SET1的②~⑤

功能：当电压低于关机电压时,背光和液晶关闭,进入低功耗状态。

6 设置**低容量报警**(SET5)

①按V/Ah选择 SET5

②按SET进入项目

③操作同SET1的②~⑤

功能：低于此容量时，百分比和电池符号闪烁，蜂鸣器每10s报警一次。

技术参数

参数		最小值	常规值	最大值	单位	备注
工作电压		8.0	50.0	80	V	
工作功耗	背光亮度0%		<4.0		mA	
	背光亮度50%		<10.0		mA	
	背光亮度100%		<40.0		mA	
休眠功耗			<0.8		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	
配套采样器	50A电流	0.0	50.0	75.0	A	
	100A电流	0.0	100.0	150.0	A	
	350A电流	0.0	350.0	500.0	A	
	500A电流	0.0	500.0	750.0	A	
使用环境温度范围		-10.0	20.0	60	℃	
电表重量		60			g	以实际称重为准
重量（50A/100A/350A/500A）		252/334/483/806			g	以实际称重为准(整套产品的重量)
TX20尺寸		70×70×16.4			mm	

蓝牙参数

参数	最小值	常规值	最大值	单位	备注
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

BAIWAY

Instruction

TX20 COULOMETER

Current Collection Type Battery Meter

Waterproof

Bluetooth

APP

Touch Screen

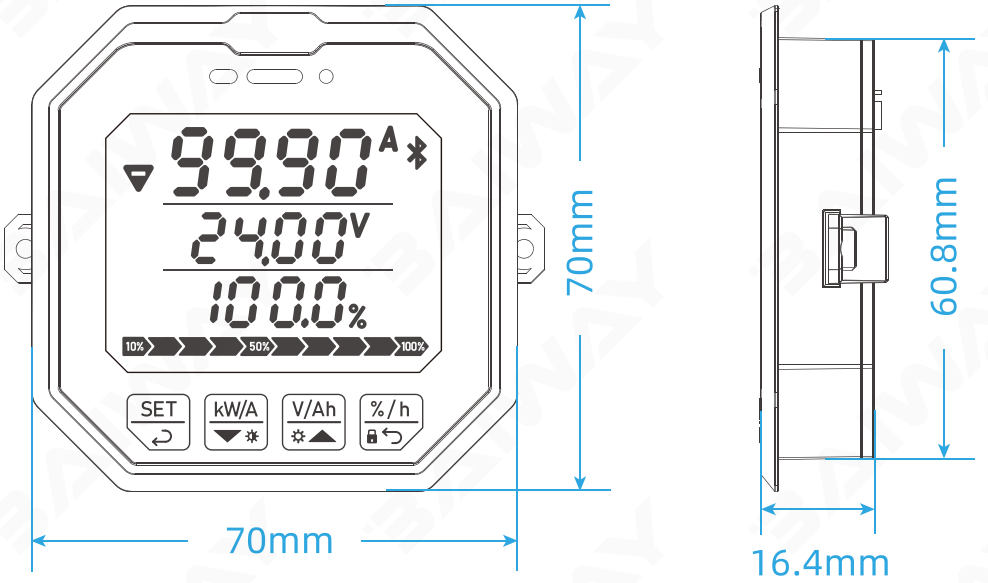
Light Sensing

V1.0

CONTENTS

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.

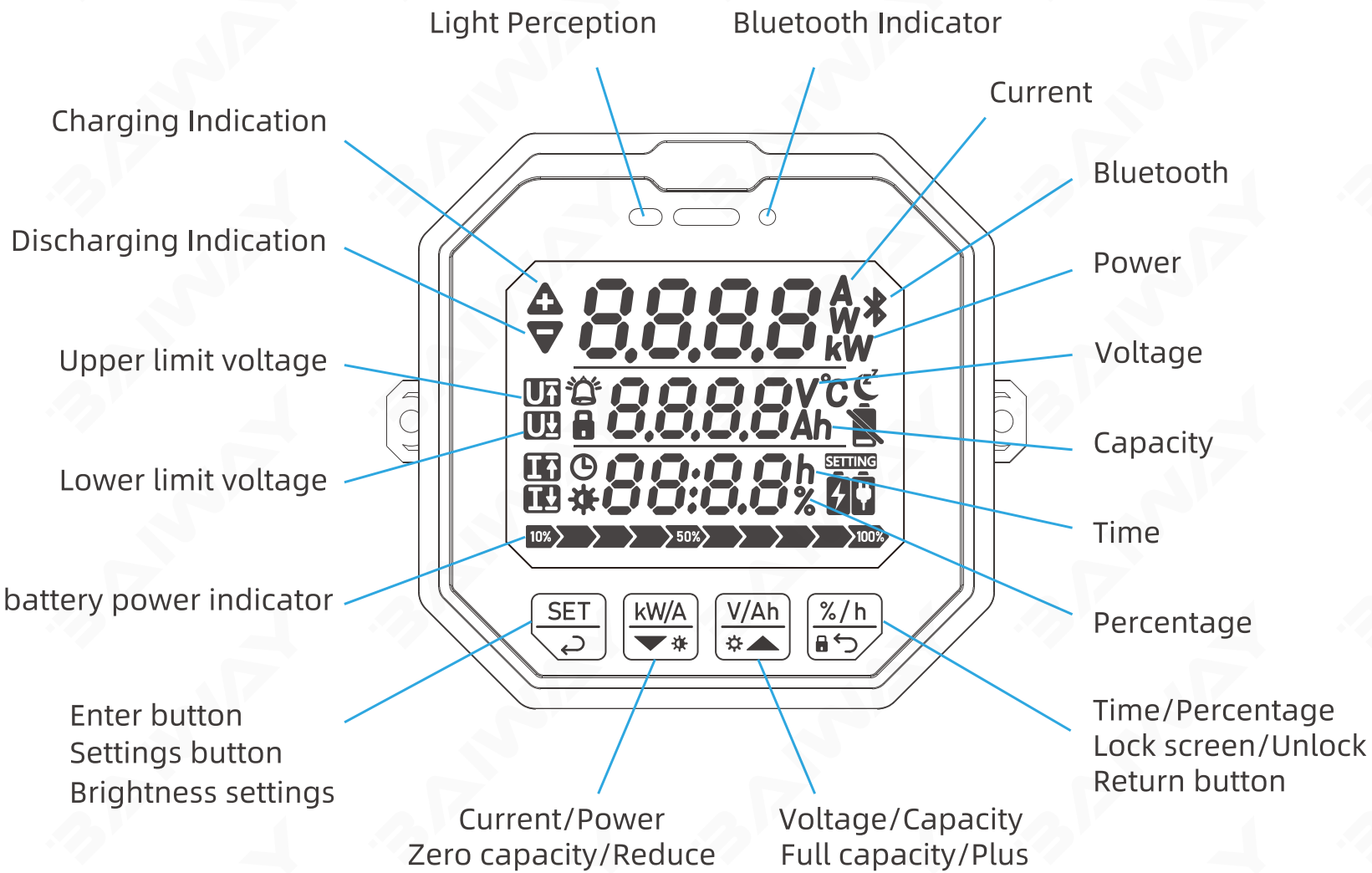


This product can be used for RV, bed vehicle, electric vehicle, emergency power supply, energy storage power supply, measuring equipment, medical equipment, various instruments and meters using battery equipment etc.

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~80V. Please be noted that this product must be combined with sampler.

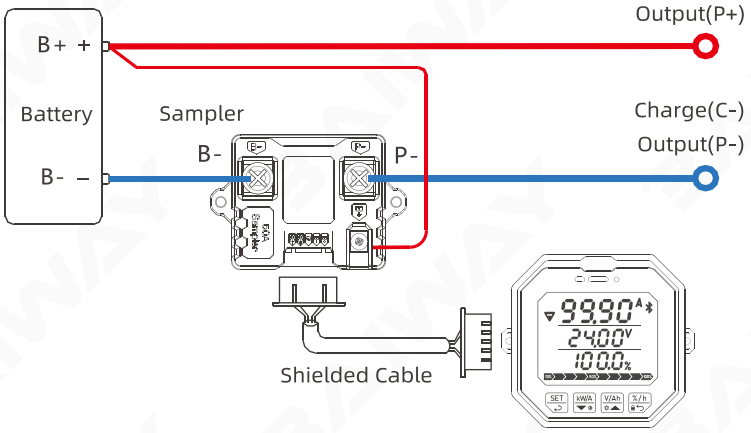
Using the communication module based on bluetooth protocol version 5.0, you can use APP to communicate with the device, such as parameter settings or data receiving.

Work Interface Instruction



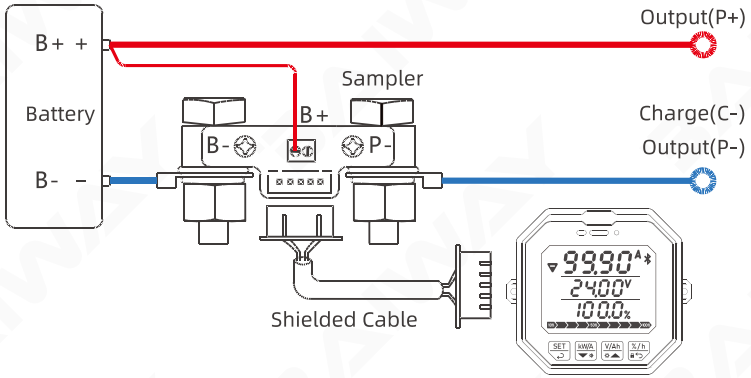
Wiring Method

Wiring method of 50A sampler :

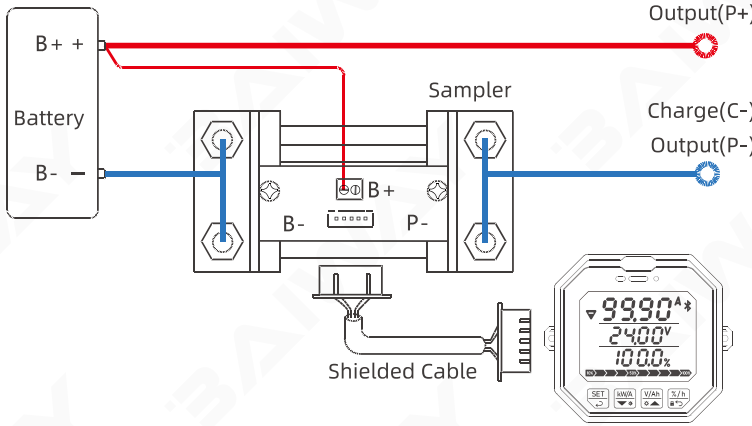


1. It is necessary to connect the matching sampler in series to the negative circuit of the battery pack when using. The B- of the sampler is connected to the negative B- of the battery pack, and the P- is connected to the negative P-/C- of the charge and discharge.
2. Take a red wire(20-22AWG) to connect 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 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(see page 03) , 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(see page 09) ,and then let the power meter' capacity homing(See this page).

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:

A. 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.);

B. Empty the battery pack and at the same time clear the capacity value to 0%, and then charge the battery pack;

C. 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.):

1.Zero capacity: After the battery is discharged (empty), Press and hold the button 

to set capacity percentage to 0%;

2.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(see page 04) → 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.

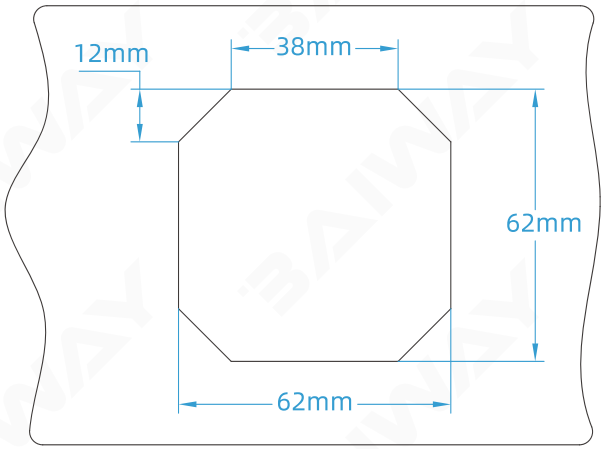
- A certain error may occur in the case when the current changes drastically, which affects the capacity value.

- 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.

Installation Method

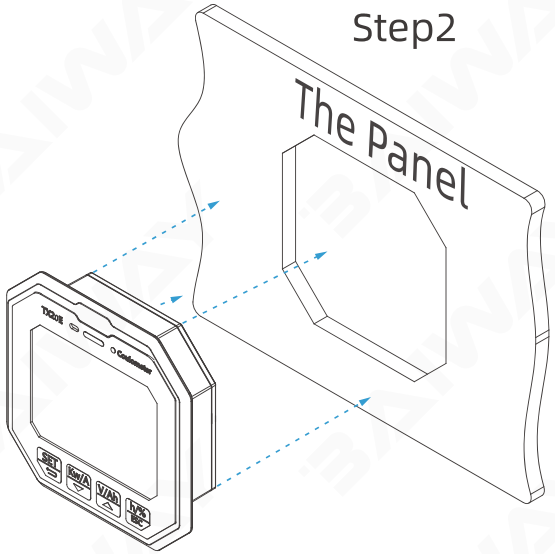
- Step1: Make a hole in the panel to be installed according to the hole size diagram.
- Step2: Insert the monitor into the panel from the front.
- Step3: Insert the C-shaped buckle into the groove on the side of the product, screw the screw into the buckle screw hole, and adjust the screw tightness to complete the fixation.

Step1

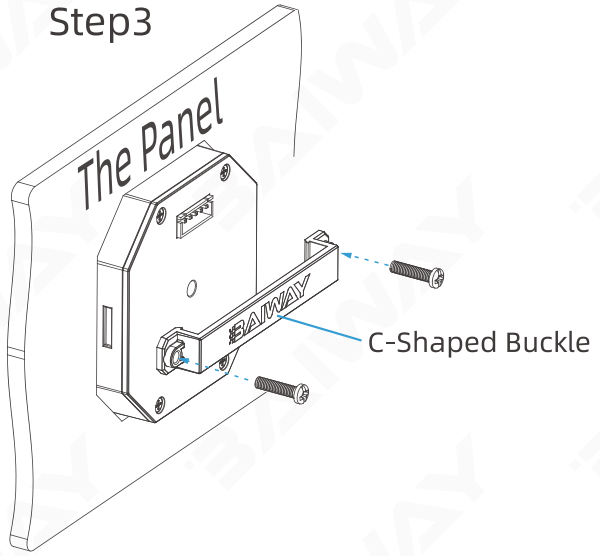


Opening Dimension Drawing

Step2

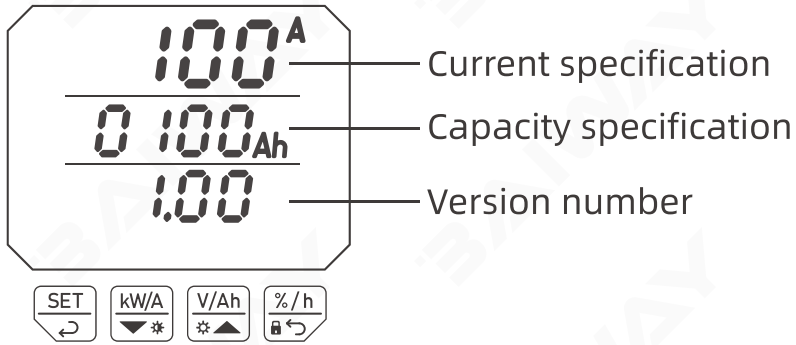


Step3



TP/VER Information

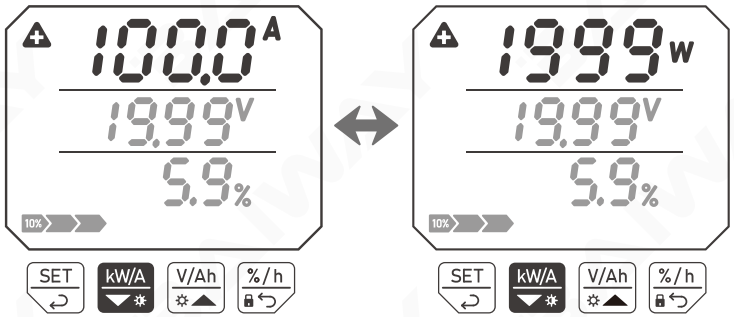
- After power on, the startup interface appears,shows the current specifications,capacity specifications and version number.
- Automatically enter the main interface after 2 seconds.



Function Settings

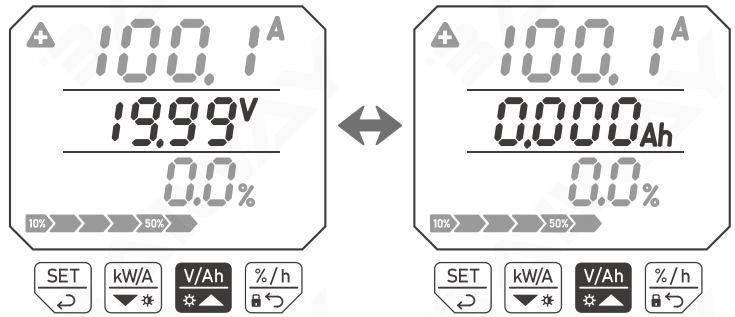
The main interface is automatically appeared After 2s of power on,You can switch between various functions in the main interface.as shown as follow:

Current ↔ Power



Click the kW/A to switch between current and power at first row

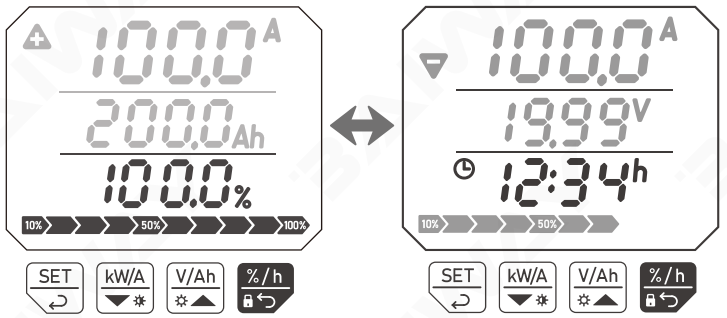
Voltage ↔ Capacity



Click the V/Ah to switch between voltage and capacity at second row

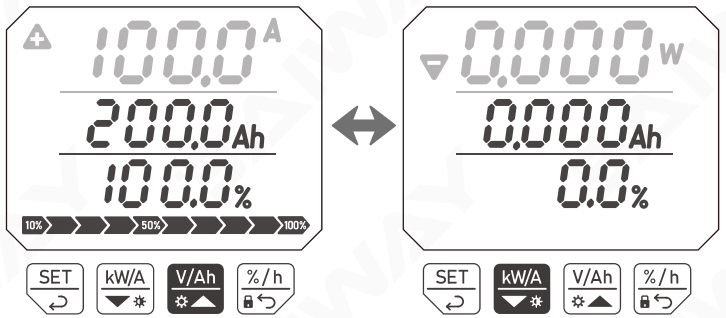
Function Settings

Capacity Percentage / Remaining Time



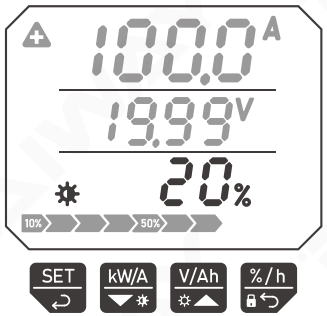
Click the %/h button to switch between percentage of capacity and remaining time at third row

Full Capacity / Zero Capacity



press and hold the V/Ah button to set full capacity, press and hold the kW/A button to set zero capacity

Brightness Adjustment



When tap the SET to enter the screen brightness adjustment function, symbol ☼ flashes, click the kW/A or V/Ah , the screen brightness percentage will decreases or increases.After doing that, press %/h (or don't do anything for 10S) to return to the main screen.

Lock Screen

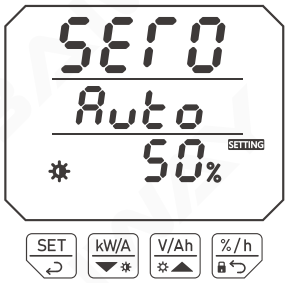
To prevent misoperation of pressing the touching button, the screen can be locked. Long press %/h in the main interface, the 🔒 symbol appears, and other keys are invalid; Long press the %/h to exit the lock screen state, and the 🔒 symbol disappears.

Project Settings

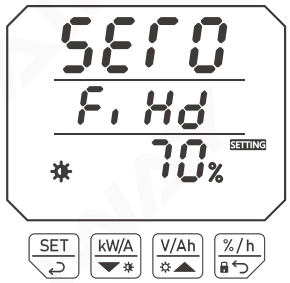
In the main interface, press and hold the button SET to enter the project settings interface (SET1 flashes).

1 Set **Backlight Brightness** (SET0)

Auto
(Automatic Brightness)



Fixd
(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. It needs to be manually adjusted.

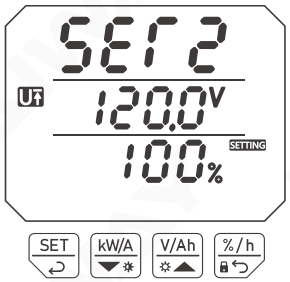
① Press kW/A to select SET0
② Press SET to enter SET0
③ Press SET to switch Auto/Fixd
④ Press kW/A or V/Ah to change the brightness percentage value
⑤ Press %/h to exit the item
⑥ Press %/h to exit settings

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 SET to enter SET1
② Press kW/A or V/Ah to set digits
③ Press SET to select other digits
④ Press %/h to exit the item
⑤ Press %/h to exit settings

3 Set **Full capacity Voltage**(SET2)



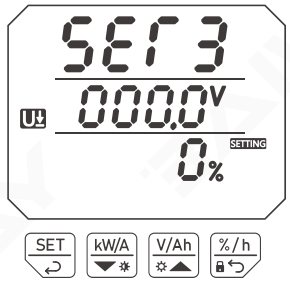
① Press V/Ah to select SET2

② Press SET to enter the item

③ The operation is the same as the ②~⑤of SET1

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

4 Set **Zero Capacity Voltage**(SET3)



① Press V/Ah to selec SET3

② Press SET to enter the item

③ The operation is the same as the ②~⑤of SET1

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

5 Set **Power Off Voltage**(SET4)

① Press V/Ah to selec SET4

② Press SET to enter the item

③ The operation is the same as the ②~⑤of SET1

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

6 Set **Low capacity alarm**(SET5)

① Press V/Ah to selec SET5

② Press SET to enter the item

③ The operation is the same as the ②~⑤of SET1

Function: The percentage and battery symbol will flash, and the buzzer will sound per 10s if below this capacity.

Technical Parameters

Parameter		Min.	Regular	Max.	Unit	Notes
Operating voltage		8.0	50.0	80	V	
Operating consumption	backlight 0%		<4.0		mA	
	backlight 50%		<10.0		mA	
	backlight 100%		<40.0		mA	
Sleep consumption			<0.8		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	
Matched Sampler	50A current	0.0	50.0	75.0	A	
	100A current	0.0	100.0	150.0	A	
	350A current	0.0	350.0	500.0	A	
	500A current	0.0	500.0	750.0	A	
The ambient temperature range of using		-10.0	20.0	60	℃	
Battery Meter Weight			60		g	Take the actual weight as the final
A Set Weight(50A/100A/350A/500A)			252/334/483/806		g	
TX20 Size			70×70×16.4		mm	

Bluetooth Parameters

Parameter	Min.	Regular	Max.	Unit	Notes
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