

# 电池管理系统

Battery Management System

## 电池保护板 APP 使用说明书

User Manual for Battery Protection Board APP

版本号 (Version)	V2.1.15+
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发布时间 (Writer Time)	2025-3-25

# 一、软件概述 Software Overview

电池保护板 APP 软件，简称：ZXH-BMS；它是一款专门为管理和维护电池状态而设计的移动应用程序。它与电池保护板硬件协同工作，通过蓝牙、Wi-Fi 或其它通信方式连接，为用户提供对电池各项参数的实时监测、控制以及保护功能，旨在确保电池安全、稳定、高效地运行，延长电池使用寿命，广泛应用于各类使用可充电电池的设备，如电动车、储能设备、便携式电子产品等。

The Battery Protection Board APP software, abbreviated as ZXH-BMS, is a mobile application specifically designed for managing and maintaining the battery status. It works in concert with the battery protection board hardware and connects through Bluetooth, Wi-Fi, or other communication methods. It provides users with real - time monitoring, control, and protection functions for various battery parameters, aiming to ensure the safe, stable, and efficient operation of the battery, extend the battery service life, and is widely applied to various devices using rechargeable batteries, such as electric vehicles, energy storage devices, and portable electronic products.

# 二、功能介绍 Function Introduction

实时参数监测：能够实时获取并展示电池的关键参数。例如它可实时显示电池的电压，让用户了解电池当前的剩余电量状态，判断是否需要充电；显示电流，帮助用户知晓电池充放电时的电流大小，评估电池工作负载情况；还能监测电池温度，因为过高或过低的温度都

可能影响电池性能与寿命，及时掌握温度信息可避免电池在不良环境下工作。这些实时参数通常以数字、图表等直观形式呈现在手机 APP 界面，方便用户一目了然地获取电池状态。

### **Real-time Parameter Monitoring**

The APP can obtain and display the key parameters of the battery in real - time. For example, it can show the battery voltage in real - time, allowing users to understand the current remaining power status of the battery and judge whether it needs to be charged. It can also display the current, helping users know the magnitude of the current during battery charging and discharging, and evaluate the battery's working load. Additionally, it can monitor the battery temperature. Since both too high and too low temperatures can affect the battery performance and lifespan, timely access to temperature information can prevent the battery from operating in adverse environments. These real - time parameters are usually presented in an intuitive way such as numbers and charts on the mobile APP interface, allowing users to clearly obtain the battery status at a glance.

**充放电管理：**在充电方面，APP 可设置充电截止电压、电流限制等参数。

### **Charge - Discharge Management**

In terms of charging, the APP can set parameters such as the charging cut - off voltage and current limit.

**故障诊断与报警：**APP 具备强大的故障诊断功能，持续监测电池保护板及电池的运行状况。一旦检测到异常，如电池过压、欠压、过流、短路或电池保护板硬件故障等情况，APP 还会详细显示故障类型及可能的原因，例如显示“电压检测线开路、高温保护、限流充电、短路保护”，帮助用户快速定位并解决问题，保障电池系统安全运行。

#### **Fault Diagnosis and Alarm**

The APP has a powerful fault diagnosis function and continuously monitors the operating status of the battery protection board and the battery. Once abnormalities are detected, such as battery over - voltage, under - voltage, over - current, short - circuit, or hardware failures of the battery protection board, etc., the APP will also display in detail the type of fault and possible causes. For example, it will show "open circuit of voltage detection line, high - temperature protection, current - limited charging, short - circuit protection", helping users quickly locate and solve problems to ensure the safe operation of the battery system.

**电池健康评估：**通过对电池充放电数据，APP 显示电池健康状态，用户根据电池当前健康状态进行评估，预测电池剩余使用寿命，让用户提前做好电池更换等相关准备。

## Battery Health Assessment

Through the analysis of battery charge – discharge data, the APP displays the battery health status. Users can evaluate the battery based on its current health condition and predict the remaining service life of the battery, enabling users to make preparations in advance for battery replacement and other related matters.

**保护板固件升级：**随着技术的不断进步与优化，电池保护板的固件也需要适时更新。APP 为用户提供便捷的保护板固件升级功能。当有新的固件版本可用时，用户可以选择下载进入升级。

## Protection Board Firmware Upgrade

With the continuous progress and optimization of technology, the firmware of the battery protection board also needs to be updated in a timely manner. The APP provides users with a convenient protection board firmware upgrade function. When a new firmware version is available, users can choose to download and proceed with the upgrade.

**保护板电流校准：**在电池保护板长期使用过程中，由于电子元件老化、环境因素影响等，可能导致电流监测出现偏差。准确的电流监测对于电池的充放电管理和安全保护至关重要，因此 APP 提供了保护板电流校准功能。

## Protection Board Current Calibration

During the long - term use of the battery protection board, due to factors such as the aging of electronic components and the influence of the environment, deviations may occur in current monitoring. Accurate current monitoring is crucial for the charge - discharge management and safety protection of the battery. Therefore, the APP provides a protection board current calibration function.

**保护板参数配置:** 合理的保护板参数配置对于电池的高效运行和长久使用起着关键作用。APP 允许用户根据电池的实际情况和使用需求对保护板的多项参数进行灵活配置。

### Protection Board Parameter Configuration

Reasonable parameter configuration of the protection board plays a crucial role in the efficient operation and long - term use of the battery. The APP allows users to flexibly configure multiple parameters of the protection board according to the actual situation and usage requirements of the battery.

## 三、下载与安装 **Download and installation**

### 3.1 客户端二维码

**Client-side QR code**



### 3.1.1 ZXH-BMS Android 客户端 Client

方式一：根据上方提供的二维码进行扫码，选择安装合适版本。

Method 1: Scan the QR code provided above and then choose to install.

方式二：在浏览器输入网址，选择安装合适版本。

<https://mestts.zhixinhang.com/pages/app/zxhbms>

Method 2: Enter the website URL in the browser, then select and install the appropriate version.

方式三：（国外）通过 Google Play 搜索“ZXH-BMS”，搜索成功之后，选择安装。【对不起，此下载渠道暂未开通】

Method 3 (For overseas users): Search for "ZXH-BMS" on Google Play. After a successful search, select the option to install.  
[Sorry, this download channel is not yet available.]

### 3.1.2 ZXH-BMS iOS 客户端 Client

方式一：根据上方提供的二维码进行扫码，选择安装。

Method 1: Scan the QR code provided above and then choose to

install.

方式二：通过 App Store 搜索“ZXH-BMS”，搜索成功之后，选择安装。

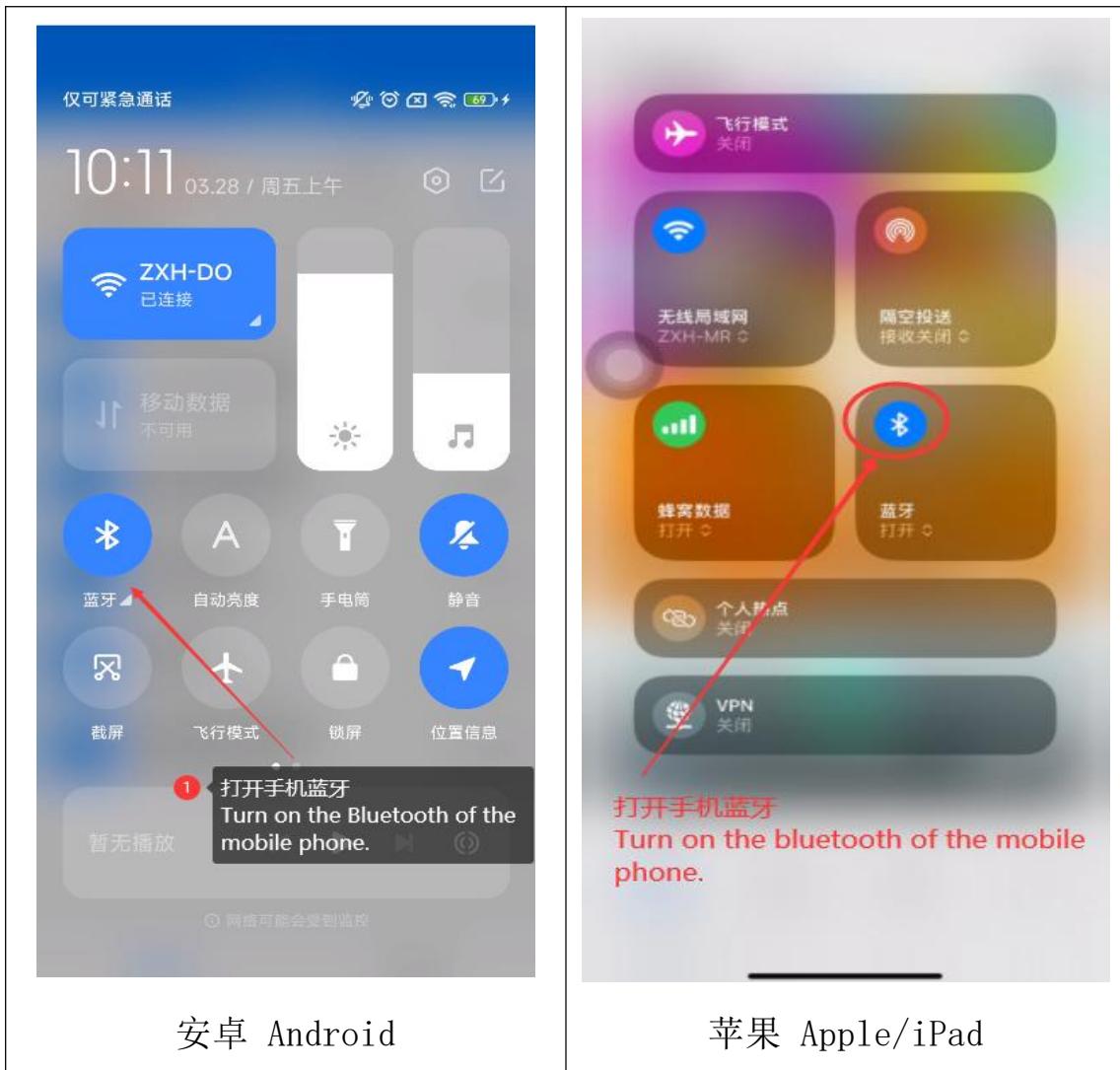
Method 2: Search for "ZXH - BMS" in the App Store. After a successful search, select "Install".

## 四、操作教程 Operation Tutorial

### 功能一：打开手机蓝牙功能

打开手机“设置”，找到“蓝牙”，点击开启。

Function 1: Turn on the Bluetooth Function of the Mobile Phone  
Open the "Settings" on the mobile phone, find "Bluetooth", and click to turn it on.



## 功能二：启动 APP



上图所示：APP 图标

- (1) 在手机屏幕上，找到 ZXH-BMS (上图所示)，点击启动。
- (2) ZXH-BMS 首次运行时，弹出提示权限授权窗口。
- (3) 请您选择允许，否则可能无法搜索到蓝牙。

如果因拒绝权限授权，造成设备列表无法自动发现蓝牙信息，则

需要卸载 APP，然后重新安装 APP。

重新安装完成后，第一次启动 APP 时，系统弹出授权提示窗口，请选择“允许”。

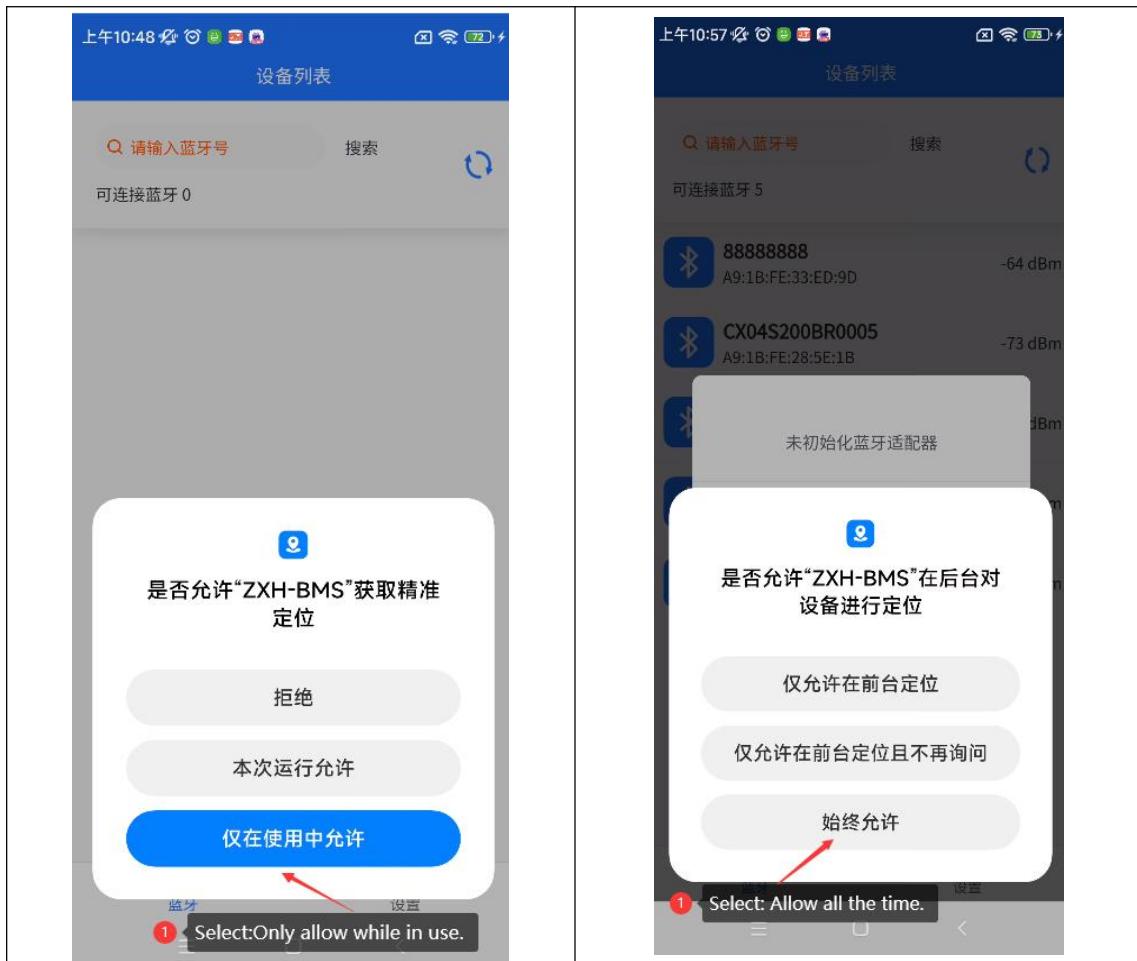
#### Function 2: Launch the APP

As shown in the picture above: APP Icon

- (1) On the mobile phone screen, find ZXH - BMS (as shown in the picture above) and click to launch it.
- (2) When ZXH - BMS runs for the first time, a permission authorization prompt window will pop up.
- (3) Please select "Allow", otherwise you may not be able to search for Bluetooth devices.

If you refuse the permission authorization and as a result, the device list cannot automatically detect the Bluetooth information, you need to uninstall the APP and then reinstall it.

After the reinstallation is completed, when you launch the APP for the first time, the system will pop up a permission authorization prompt window. Please select "Allow".



### 功能三：连接设备

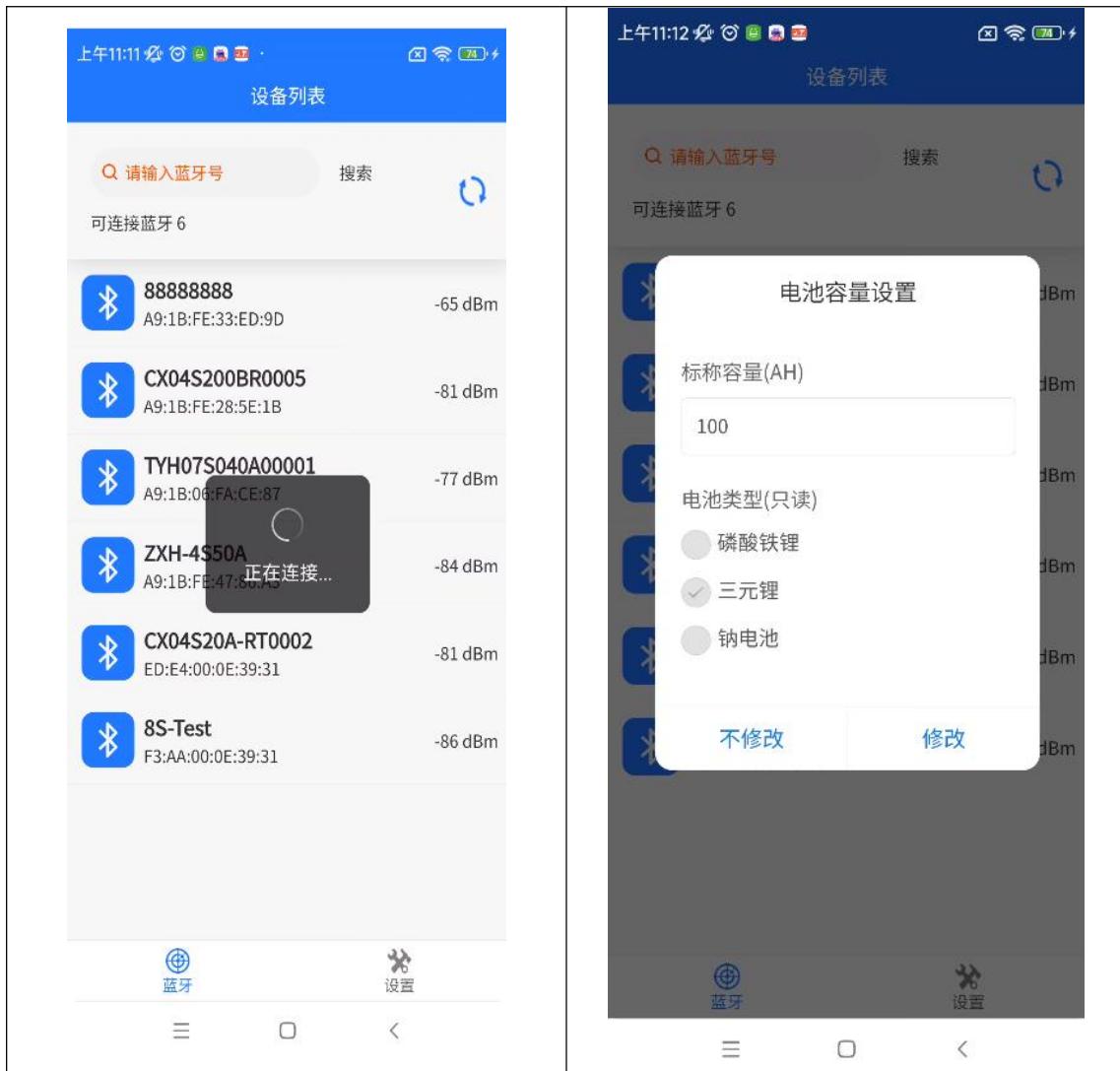
- (1) 设备列表中，点击你需要连接的蓝牙名称，开始连接。
- (2) 连接时，ZXH-BMS 提示“正在连接”。
- (3) 连接成功时，系统会提示一个容量的配置，默认不需要修改，选择“不修改”。
- (4) 连接失败时，系统提示“连接失败连接超时”，你可以选择连接，或者参照常见问题解答的建议进行操作。

#### Function 3: Connecting Devices

- (1) In the device list, click the name of the Bluetooth device

you want to connect to start the connection.

- (2) During the connection process, ZXH - BMS will prompt "Connecting".
- (3) When the connection is successful, the system will prompt for a capacity configuration. By default, there is no need to modify it. Select "Do not modify".
- (4) When the connection fails, the system will prompt "Connection failed. Connection timed out". You can choose to try to connect again or refer to the suggestions in the FAQ for further operations.



## 功能四：仪表盘展示关键参数数据

- (1) 进入仪表盘界面
- (2) 在顶部的左侧“返回”键，代表返回蓝牙设备并主动断开当前蓝牙连接。
- (3) 在顶部中间部分，显示的是当前连接的蓝牙名称
- (4) 在顶部的右侧是一个配置菜单。
- (5) 仪表盘展示了电池实时的关键参数，包括了标称信息、实时电流、实时MOS温度、电池剩余电量、总的电压、电池状态、单体电压

等信息。

#### Function 4: Dashboard Displays Key Parameter Data

- (1) Enter the dashboard interface.
- (2) The "Back" button on the upper - left side of the dashboard returns to the Bluetooth device and actively disconnects the current Bluetooth connection.
- (3) The upper - middle part of the dashboard shows the name of the currently connected Bluetooth device.
- (4) There is a configuration menu on the upper - right side of the dashboard.
- (5) The dashboard displays the real - time key parameters of the battery, including nominal information, real - time current, real - time MOS temperature, remaining battery power, total voltage, battery status, and single - cell voltage.



## 功能五：展示电池常见参数数据

- (1) 从“仪表盘”界面，点击灰色的栏目上的“数据”选项卡。
- (2) 进入常见参数数据界面，展示电池的基本参数数据。

Function 5: Display Common Parameter Data of Battery

- (1) From the "Dashboard" interface, click the "Data" tab on the gray - colored column.
- (2) Enter the common parameter data interface to display the basic parameter data of the battery.

MOS	29.7°C
Probe-1	27.1°C
Probe-2	29.7°C
Probe-3	—°C
Probe-4	—°C
Total Voltage	12.019V
Charge/Discharge Current	0.000A
Remaining Capacity (SOC)	1%
Charge Count	0
Discharge Count	0
Health Status	100%
标签详情	

## 功能六：展示电池的故障诊断保护参数

- (1) 从“仪表盘”界面，点击灰色的栏目上的“保护”选项卡。
- (2) 进入保护界面，展示了保护板充电保护、放电保护、单体保护、电池保护等保护计数。

Function 6: Display the Fault Diagnosis and Protection Parameters of the Battery

- (1) From the "Dashboard" interface, click the "Protection" tab on the gray - colored column.
- (2) Enter the protection interface, which displays the

protection counts of the protection board, such as charging protection, discharging protection, single - cell protection, and battery protection.



## 功能七：记录蓝牙连接后的告警记录

- (1) 从“仪表盘”界面，点击灰色的栏目上的“告警”选项卡。
- (2) 在界面中展示了蓝牙当前连接时发生重要告警记录，详细记录了电压、温度、电流、以及保护类型信息。

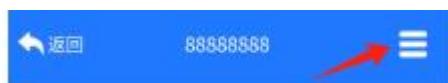
Function 7: Record Alarm Records after Bluetooth Connection

- (1) From the "Dashboard" interface, click the "Alarm" tab on the gray - colored column.

(2) The interface displays the important alarm records that occur during the current Bluetooth connection, which detail information such as voltage, temperature, current, and protection type.



## 功能八：参数配置



- (1) 在仪表盘界面，顶部的右侧点击配置菜单，选择“参数配置”。
- (2) 读取，点击获取参数。
- (3) 修改，点击调整参数。

修改保护板参数的方法：

3.1 参数界面，快速连接的点击 6 次的“基础参数”文字，直到下方显示“修改”文字的出现。

3.2 点击“修改”。

3.3 输入密码，密码内容向售后人员索要。

3.4 点击“验证密码”，验证通过，自动进入参数配置窗口。

3.5 设置参数完成后，点击保存。

#### Function 8: Parameter Configuration

(1) On the dashboard interface, click the configuration menu on the upper right side and select "Parameter Configuration".

(2) For reading, click "Get Parameters".

(3) For modification, click "Adjust Parameters".

Method for modifying the parameters of the protection board:

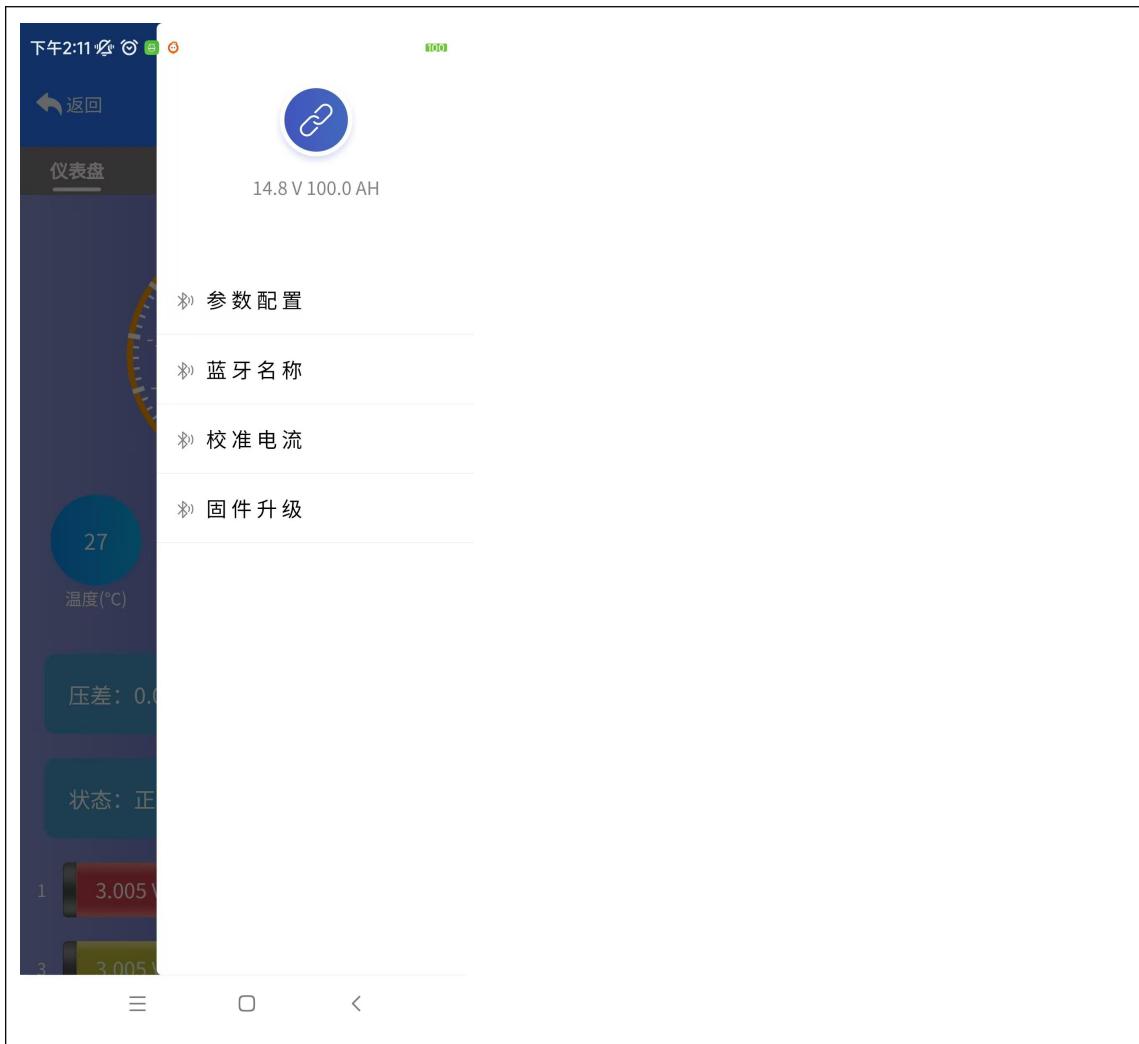
3.1 In the parameter interface, quickly click the text "Basic Parameters" six times until the text "Modify" appears below.

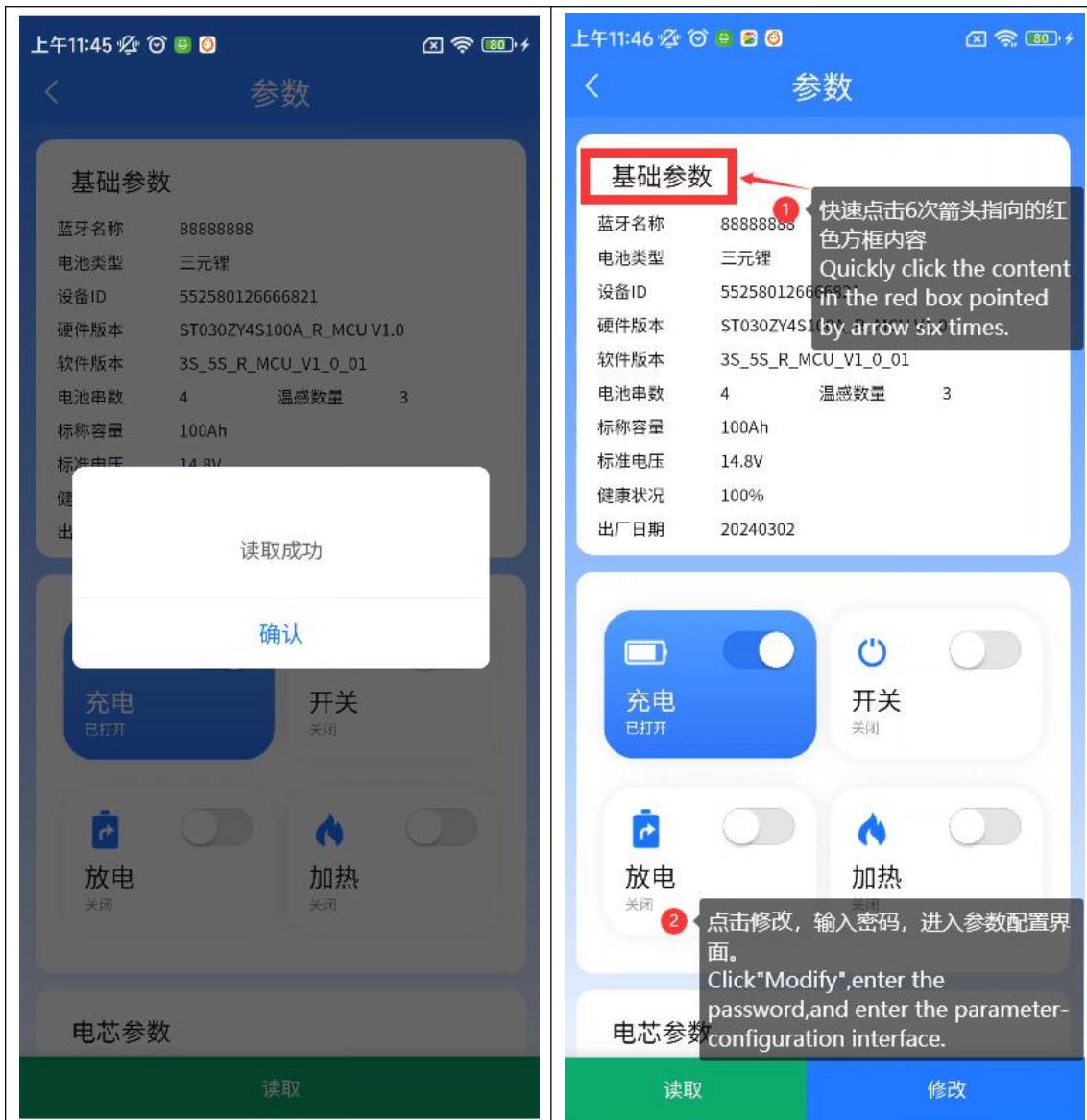
3.2 Click "Modify".

3.3 Enter the password. You need to ask the after-sales staff for the password.

3.4 Click "Verify Password". If the verification is successful, you will automatically enter the parameter configuration window.

3.5 After setting the parameters, click "Save".





## 功能九：蓝牙名称修改

- (1) 在仪表盘界面，顶部的右侧点击配置菜单，选择“蓝牙名称”。
- (2) 输入新的蓝牙名称。
- (3) 点击“确定”，完成修改。
- (4) 修改之后，请在 10 秒之后再重新连接蓝牙。

Function 9: Modify Bluetooth Name

- (1) On the dashboard interface, click the configuration menu

on the upper - right side and select "Bluetooth Name".

(2) Enter the new Bluetooth name.

(3) Click "OK" to complete the modification.

(4) After the modification, please reconnect to the Bluetooth device after 10 seconds.



## 功能十：校准电流

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## 功能十一：保护板升级

- (1) 手机开启连接 WIFI (或者打开手机卡流量上网网络)。
- (2) 在仪表盘界面，顶部的右侧点击配置菜单，选择“固件升级”。
- (3) 输入密码，密码内容向售后人员索要（此密码特殊）。
- (4) 点击“验证密码”，验证通过，自动进入电流校准窗口。
- (5) 输入固件的名称和下载码，点击“下载固件”。
- (6) 下载固件完成，最后点击“开始升级”，等待保护板升级完成。

### Function 11: Protection Board Upgrade

- (1) Turn on the WIFI connection on your mobile phone (or enable the mobile data network for internet access).
- (2) On the dashboard interface, click the configuration menu on the upper - right side and select "Firmware Upgrade".
- (3) Enter the password. You need to ask the after - sales staff for the password as it is special.
- (4) Click "Verify Password". If the verification is successful, you will automatically enter the current calibration window.
- (5) Enter the name and download code of the firmware and click "Download Firmware".
- (6) After the firmware is downloaded, click "Start Upgrade" and wait for the protection board to complete the upgrade.



## 功能十二：多语言设置

- (1) 在蓝牙设备列表界面，选择底部“设置”。
- (2) 在设置界面，选择“多语言”，选择和设置当前语言为简体中文或 English。

### Function 12: Multi - language Setting

- (1) On the Bluetooth device list interface, select "Settings" at the bottom.
- (2) On the settings interface, select "Multi - language", and select and set the current language to Simplified Chinese or

English.



## 功能十三：APP 检查升级

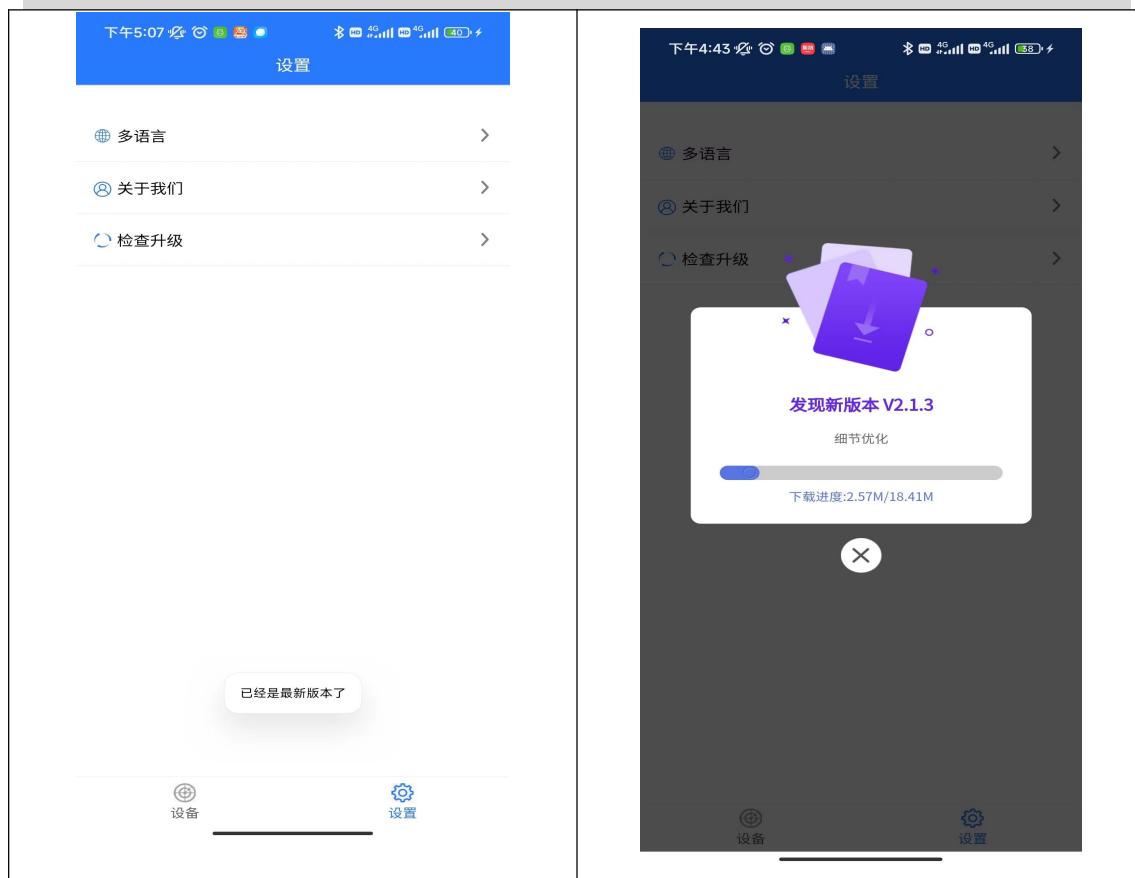
- (1) 手机开启连接 WIFI (或者打开手机卡流量上网网络)。
- (2) 在蓝牙设备列表界面，选择底部“设置”。
- (3) 在设置界面，选择“检查升级”，如果有新版本提示“发现新版本”；如果没有新版本提示“已经是最新版本了”。

### Function 13: Check for APP Upgrade

- (1) Turn on the WIFI connection on the mobile phone (or enable the mobile data network for internet access).
- (2) On the Bluetooth device list interface, select "Settings"

at the bottom.

(3) On the settings interface, select "Check for Upgrade". If there is a new version available, it will prompt "New version found"; if there is no new version, it will prompt "It is already the latest version."



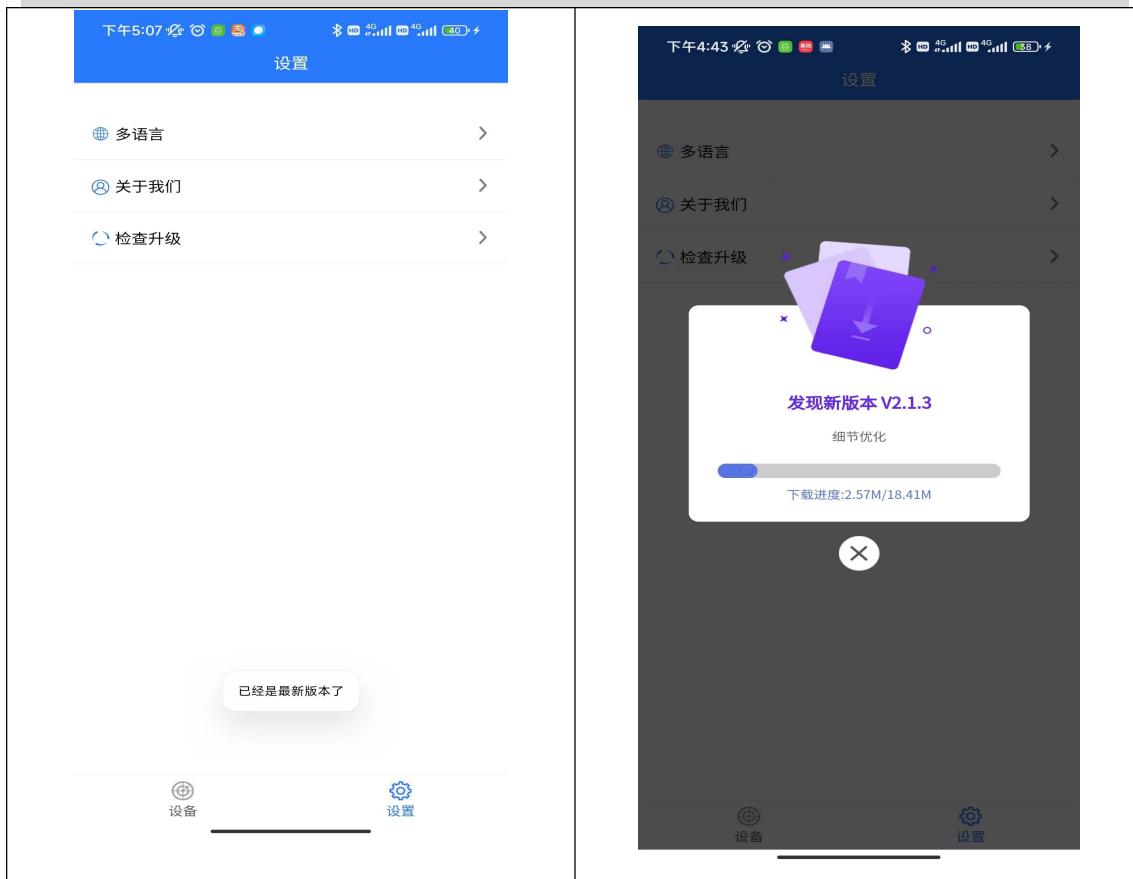
## 功能十四：查看 APP 版本

- (1) 在蓝牙设备列表界面，选择底部“设置”。
- (2) 在设置界面，选择“关于我们”，在 LOGO 图标下面显示当前版本号。

Function 14: Check the APP Version

(1) On the Bluetooth device list interface, select "Settings" at the bottom.

(2) On the settings interface, select "About Us", and the current version number is displayed below the LOGO icon.



## 五、常见问题解答 (FAQs)

问题 1：连接蓝牙保护板时，APP 提示“连接失败，连接超时”。

解答建议：

- (1) 检查设备是否通电。
- (2) 检查手机蓝牙功能是否开启。
- (3) 检查其它手机是否已连接该蓝牙。

(4) 关闭手机蓝牙功能，重启开启。

(5) 退出 ZXH-BMS，重新启动 APP。

**Question 1:** When connecting to the Bluetooth protection board, the APP prompts "Connection failed, connection timed out".

**Suggested Solutions:**

(1) Check whether the device is powered on.

(2) Check whether the Bluetooth function of the mobile phone is turned on.

(3) Check whether other mobile phones have already connected to this Bluetooth device.

(4) Turn off the Bluetooth function of your mobile phone, and then turn it on again after restarting.

(5) Exit the ZXH-BMS application, and then relaunch the APP.

FCC compliance statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.