VDB03S蓝牙信标使用手册

VDB03S Bluetooth Beacon User Manual

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修订/ Revision	描述/Description	修改人/Modifier	日期/Date
V1.01	初始版本/Initial release	Seven	20230822

设备清单/Product List

设备名称/Device Name	型号/Device No.	数量/Number	备注/Remark
蓝牙 Beacon	VDB03S	1PCS	带防拆按键/With an anti-removal button
纽扣锂金属电池/Button lithium metal battery	CR2032	1PCS	可拆卸、不可充电电池/Removable, non-rechargeable battery

目录

1. 产品介绍/Product Introduction

VDB03S 是一款防拆型资产标签蓝牙信标。其广播协议符合蓝牙 BLE 广播 iBeacon（Apple）协议。它通常被安装在一个合适的位置，周期性地向它的周围环境进行广播，从而被其他蓝牙设备如蓝牙网关扫描到其广播内容，并计算出位置信息。通常它是不会被其他 BLE 的主机设备连接上的，但是可以通过手机 APP 进行连接，并修改其广播参数等内容。

VDB03S is a asset label Bluetooth beacon with a function to prevent disassembly. Its broadcast protocol conforms to bluetooth BLE broadcast iBeacon (Apple) protocol. It is usually installed in a suitable location, periodically broadcast to its surroundings, so that other Bluetooth devices such as Bluetooth gateways can scan its broadcast content and calculate the location information. It is usually not connected by other BLE host devices, but can be connected through mobile APP, and modify its broadcast parameters and other contents.

Skylab_Beacon 是一款 SKYLAB 研发团队研发用于配置 VDB03S 参数的手机 APP。用这款 APP 去连接 VDB03S，可以修改它的广播频率、功率、UUID、Major、Minor 和设备名称等等参数，但广播频率在按键按下时恢复为 10s 一次。当 VDB03S 处于广播状态时这些参数将被广播出来。

Skylab_Beacon is a mobile phone APP developed by SKYLAB R&D team for configuring VDB03S parameters. When you connect VDB03S with this APP, you can modify its broadcast frequency, power, UUID, Major, Minor, device name and other parameters, but the broadcast frequency returns to 10s once when the key is pressed. These parameters will be broadcast when VDB03S is in broadcast state.

图 1 带防拆按键/With anti-removal button   图 2 带表带/With a Wristband

1.1 VDB03S 内部模块介绍/Internal Modules

VDB03S 内部支持防拆按键，可以在被拆下时上传报警信息（需要确保安装面平整，可以在正常安装时把防拆按键按下）。

The VDB03S supports an anti-removal button, which can upload an alarm message when the VDB03S is removed. (Ensure that the installation surface is flat and press the anti-removal button during normal installation.)

VDB03S 用一个纽扣锂金属电池供电，电池可以拆卸更换但不能充电。

The VDB03S is powered by a button lithium metal battery that can be removed and replaced but cannot be recharged.

1.2 VDB03S 特性/Features

◆ 低功耗/ Low Power Consumption

◆ 防拆卸/prevent the disassembly

◆ 应用灵活/ Flexible application

◆ 安装便捷/ Easy to deploy

◆ 广播距离可达 50 米（0dBm）/ Broadcast distance of up to 50 m (0dBm)

◆ 符合 RoHS, FCC, CE 标准/ RoHS, FCC,CE compliance

1.3 VDB03S 应用/Application

◆ 资产标签/ Asset Label

◆ 室内定位/ Indoor positioning

◆ 信息推送/ Information push

◆ 身份识别/ Identification

◆ 微信摇一摇/ Wechat shake

◆ 计步/ Counting step

2. 硬件参数/Hardware Parameters

产品参数//Product Parameter	
尺寸（长度*宽度*高度）/Dimension(L×W×H)	37.3*23.4*5.1mm
电池型号/ Battery	CR2032
工作温度/Operating Temperature	-30℃~60℃

蓝牙参数/Bluetooth parameters	
无线标准/ Wireless Standards	蓝牙®4.2
频率范围/ Frequency Range	2400MHz---2483.5MHz
数据速率/ Data Rates	1Mbps(Bluetooth ® 4.2)
调制技术/ Modulation Technique	PWM 调制
无线安全/ Wireless Security	AES HW Encryption
传输功率/ Transmit Power	-20，-16，-12，-8，-4，0dBm
灵敏度/ Sensitivity	-94dBm at 1Mbps BLE
工作模式/ Work Mode	iBeacon

电池使用寿命/Battery life				
广播功率/ TX Power	覆盖范围/ Adv. Distance	广播间隔/ Adv. interval	状态/status	电池使用时间（月）/ Battery life(Month)
+0dBm	50m	10000ms	按键按下/ Button Down	23.5
		2000ms	按键弹起/Button up	19.1

注：功耗数据仅供参考，未考虑电池自放电因素，当计算寿命大于电池寿命（5 年）时，以电池寿命为准；上述计算默认采用 220mAh 作为电量参考。

Note: The power consumption data is for reference only, and the battery self-discharge factor is not considered. When the calculated life is greater than the battery life (5 years), the battery life shall be the criterion. The above calculation uses 220mAh as the power reference by default.

3. 电池安装指导/Install Battery

VDB03S 在默认情况下，出厂时已安装一块纽扣锂金属电池。如果您需要更换电池，请遵循以下说明。

By default, the VDB03S comes with a button lithium metal battery. If you need to replace the battery, follow these instructions.

（1）用一字螺丝刀或者镊子插入下图圈内的位置中，然后将后壳撬开；

(1) Use a flat-head screwdriver or tweezers to insert into the circle below, and then pry open the back shell;
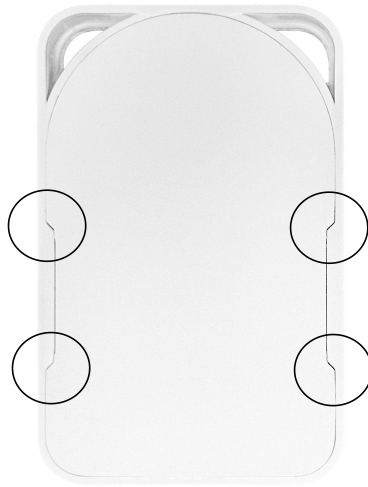
（2）随后将产品拿出，取下旧电池，按照旧电池的放置位置将新电池放好后，产品就可以进行正常工作了；

(2) Then take out the product, remove the old battery, and place the new battery according to the position of the old battery, and the product can work normally;
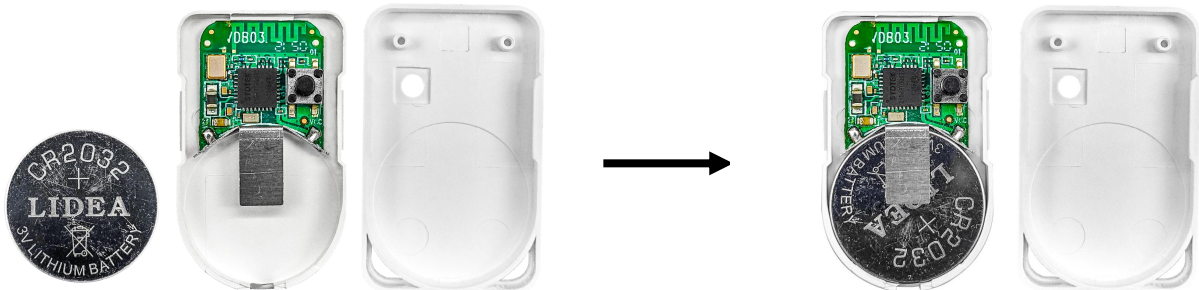
注：请注意区分电池正负极。

Note: Please be careful to distinguish between positive and negative poles.

4. 软件使用说明/Software Instructions

4.1 扫描蓝牙信标/Scan Bluetooth beacons

　　打开 APP，如果手机提示打开蓝牙，请允许，进入 APP 界面后拖动 RSSI（接收的信号强度指示）到合适的位置，然后点击开始扫描，手机就会开始扫描周围的蓝牙信标。

Open the APP. If the mobile phone prompts to turn on Bluetooth, please allow. After entering the APP interface, drag RSSI (received signal strength indicator) to the appropriate position, and then click "Start scan", the mobile phone will start to scan the surrounding Bluetooth beacons.
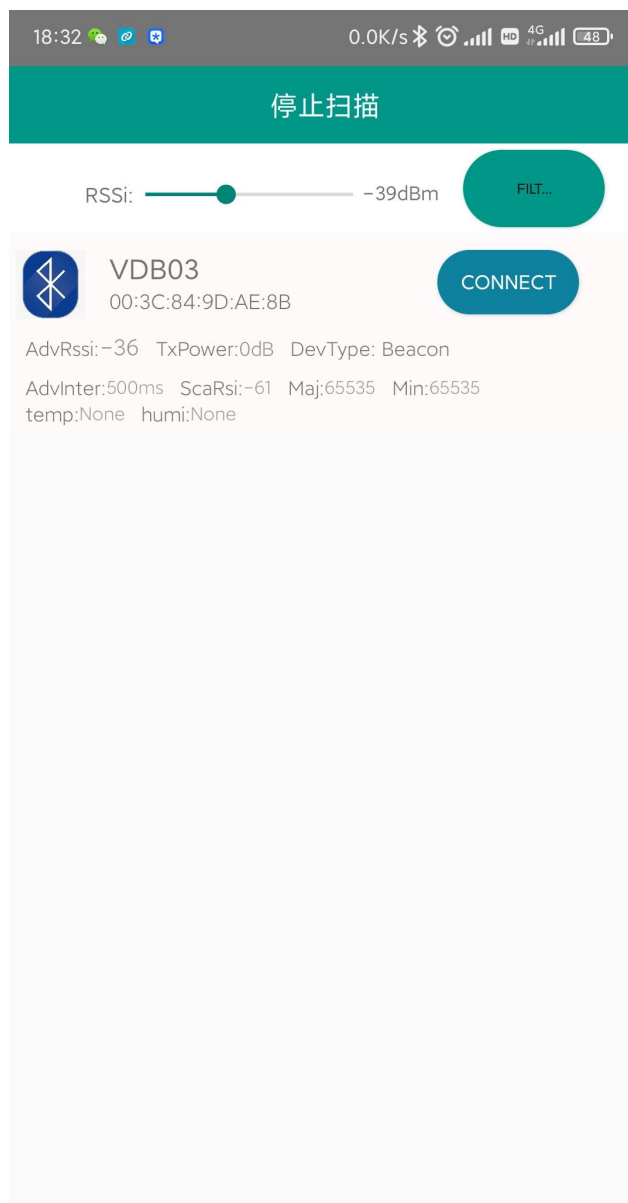
4.2 连接蓝牙信标/Connect Bluetooth 4.2 Beacon

点击要连接的蓝牙信标，30 秒内输入密码，即可获得操作权限。(出厂密码:1234)

Click the Beacon you want to connect, and enter the password within 30 seconds, in order to obtain

operating privileges .(Factory Password:1234).

4.3 配置介绍/Configuration introduction

介绍 Introductions:

MAC: MAC 地址（不可修改）/ Chip MAC address(non-modifiable)

Device Name: 所选蓝牙信标的名称/ The name of the Bluetooth 4.2 Beacon which is selected.
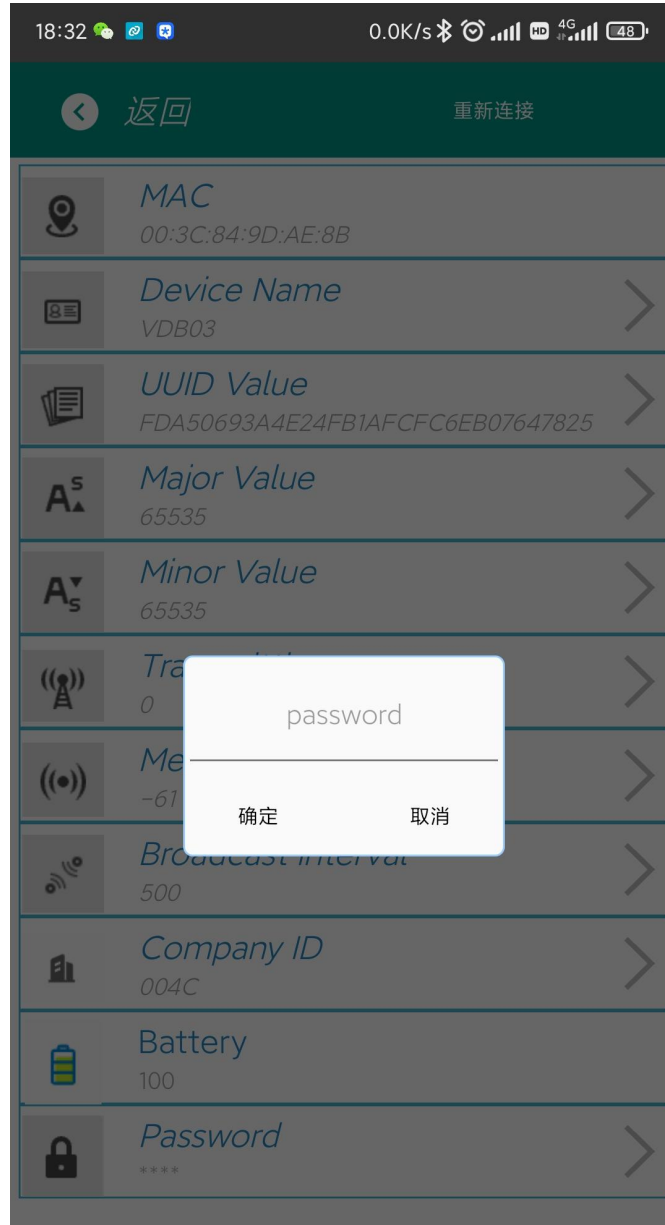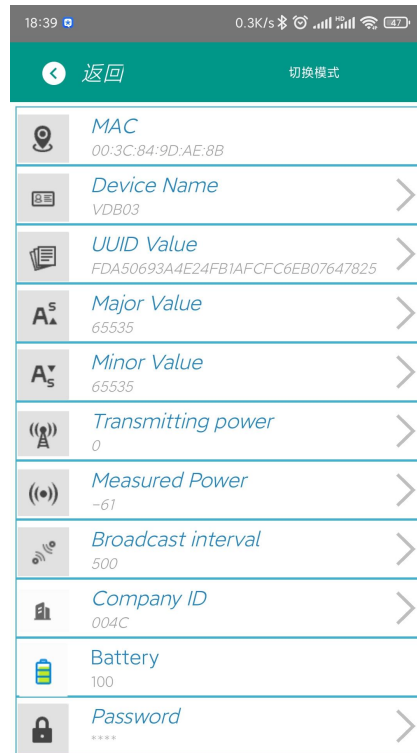
UUID Value: 按照 ISO/IEC11578:1996 标准的 128 位标识符(16 字节)/128-bit identifier according to ISO/IEC11578:1996 standard (32 hexadecimal digits)

Major Value: 16 位标识符(0-65535)/ set 16-bit identifier (0-65535)

Minor Value: 16 位标识符(0-65535)/ set 16-bit identifier (0-65535)

Transmitting Power: 发射功率/ Transmit power

Measured Power: 距离 1 米时的参考信号强度/Signal strength at 1 meter（Beacon transmission power is 0dBm）

Broadcast interval: Beacon 广播间隔/Beacon advertise interval

Company id: 作为区分的 id 号/The id number is used as a distinction

Battery: Beacon 电池电量（无法修改）/ Beacon battery Capacity(non-modifiable)

Password: Beacon 密码（默认 1234）/Beacon connection password（Default 1234）

配置好信息后，蓝牙连接断开，配置将生效。

After the information is configured ,the configuration will take effect after the bluetooth connection is disconnected.

4.4 修改蓝牙信标名称/Modify Bluetooth 4.2 Beacon Name

　　点击"Device Name", 出现以下界面, 然后在"输入一个名称"框中输入长度小于 10 位的英文字符名称, 也可以在"或者选一个"里选一个名称。然后点击"确认", 修改成功后会在界面下方显示 "修改成功"。

Click the "Device Name", the following UI will be opened. Then enter a length of less than 10-bit English characters as Beacon device name in the following "Enter a Name" box. Then click "confirm to modify". After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

4.5 修改 UUID/Modify UUID

　　点击"UUID"，出现以下界面，然后在"请输入一个值"框中输满 16 个字节（32 个十六进制字符）作为 Beacon 的 UUID。然后点击"确认"，修改成功后会在界面下方显示 "修改成功"。

Click the "UUID", the following UI will be opened. Then enter a 32-byte string of sixteen as the UUID of Beacon in the following "Enter an value" box. Then click "confirm to modify". After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

4.6 修改 Major、Minor/Modify Major、Minor

点击"Major"，出现如下界面，然后在"请输入一个值"框中设置 0~65535 为设备的 Major 值。然后点击 "确认"，修改成功后会在界面下方显示 "修改成功"。

Click the "Major",the following UI will be opened. Then set a value between 0~65535 as the Major value of the device in the following "Enter an value" box. Then click "confirm to modify". Minor is similar, click Minor to enter modify. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

修改 Minor/Modify Minor

同上面 Major 类似，点击 Minor 进入修改即可。

Just like you did above to modify Major, click Minor to enter the change.

4.7 修改发射功率/Modify Transmitting Power

点击"发射功率"出现以下界面，点击设置框，选择需要的发射功率，点击确认。

Click "发射功率" to appear in the following interface, click the Settings box, select the required transmit

power, and click confirm.

注：VDB03S 最大功率只有 0dBm，如果配置 4dBm，不识别，会返回设置失败。

Note: The maximum power of VDB03S is 0dBm. If 4dBm is configured it is not recognized, the setting

will fail.

4.8 修改参考信号强度/Modify the reference signal strength

点击 "Measured Power"，出现如下界面，在距离 Beacon 1 米远处，然后在"请输入一个值"框中设置测量功率，可调范围-100dBm~ -30dBm，默认为-61dBm。然后点击 "确认"，修改成功后会在界面下方显示 "修改成功"。

Click "Measured Power", the following interface will appear, 1 meter away from the Beacon, and then set the Measured Power in the box of "Please input a value", adjustable range of -100dbm ~ -30dbm, default is -61dbm. Click OK. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

Measured Power 含义为：当接收设备接收到的信号强度为-61dBm 时，可认为该设备距离 Beacon 约为 1 米。

Measured Power means: when the signal intensity received by the receiving equipment is -61dbm, it can be considered that the distance between the equipment and the Beacon is about 1m.

4.9 修改广播间隔/Modify Advertise Interval

点击"Broadcast interval"出现如下界面，在"请输入一个值"框中设置广播间隔。默认为 2000ms。

然后点击"确认"，修改成功后会在界面下方显示 "修改成功"。

Click "Broadcast Interval", the following interface is displayed. In the "Please Enter a value" box, set the

broadcast interval. The default value is 2000ms. Click OK. After the modification is successful,

"Modification succeeded" will be displayed at the bottom of the interface

4.10 修改 Company id//Modify Company id

　　点击"Company id"出现如下界面，在"请输入一个值"框中填写一个 4 位的 16 进制数作为 Company id。然后点击"确认"，修改成功后会在界面下方显示 "修改成功"。

Click "Company ID" and the following interface appears. Fill in a 4-digit hexadecimal number in the

"Please enter a value" box as the Company ID. Click OK. After the modification is successful,

"Modification succeeded" will be displayed at the bottom of the interface.

4.11 修改密码/Modify Password

　　点击"Password"，出现如下界面，然后在"输入一个密码"框中输入 4 个字符作为连接密码，默认为 1234。然后点击"确认"，修改成功后会在界面下方显示 "修改成功"。

Click "Password", the following interface appears, and then enter 4 characters in the "Enter a Password" box as the connection Password, the default is 1234. Click OK. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

注意：请提前保存好您的密码，一旦修改新密码，原密码将失效，必须用新密码才能登陆。

Note:Please save your password in advance, once you change the new password, the original password will be invalid, you must use the new password to log in.

4.12 APP 下载/Download the APP

目前最新 APP 尚未上架，请联系销售人员提供，APP 名称 Skylab_beacon 和 nRF Connect。

At present, the latest APP has not been put on the shelves, please contact the sales staff. The APP names are Skylab_beacon and nRF Connect.

5. 订购信息 Ordering Information

产品型号 Module No.	产品编码 Part number	产品状态 Product State	标注/Note
VDB03S	39060	MP	带加速度，磁力，NTC 测温，防拆按键/With acceleration, magnetic force, NTC temperature measurement and anti-removal button
	3906001	MP	不带防拆按键以及不外挂传感器/Without anti-removal button and without external sensors
腕带附件 Wristband	18132	橙色 orange	默认不配 Default not included
	1813201	白色 white	默认不配 Default not included

6. 联系方式/ Contact information

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