

# VDB08规格书

# VDB08 Datasheet

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V1.04	更新道钉和螺丝的实物图	Lena	2024.8.7

## 设备清单/Product List

名称/Item	型号/Model Number	数量/Number	备注/Remark
蓝牙道钉信标/Road spike BLE Beacon	VDB08	1	
锂亚电池/Li-SOCl <sub>2</sub> Battery	ER14505	1/2	标配 1 节/Standard 1 section
膨胀螺栓	M5*50	2 个	使用 8mm 钻头打孔 /Use 8mm drill for holes

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## 1. 产品介绍/Product Induction

VDB08 是一款蓝牙道钉信标。该信标使用 BLE 低功耗蓝牙广播的方法，利用其支持的通用属性配置文件在第 37、38、39 三个信道上连续发送无定向性的广播包。其广播内容可由我司研发团队开发的 APP “Skylab\_xbeacon” 读取，包括 UUID、Major、Minor、RSSI 等信息。

VDB08 is a Bluetooth spike beacon. The beacon USES the BLE low power Bluetooth broadcasting method and USES its supported common properties profile to continuously send astatic broadcast packets over channels 37, 38, and 39. The broadcast content can be read by the APP "Skylab\_xbeacon" developed by our r&d team, including UUID, Major, Minor, RSSI and other information.

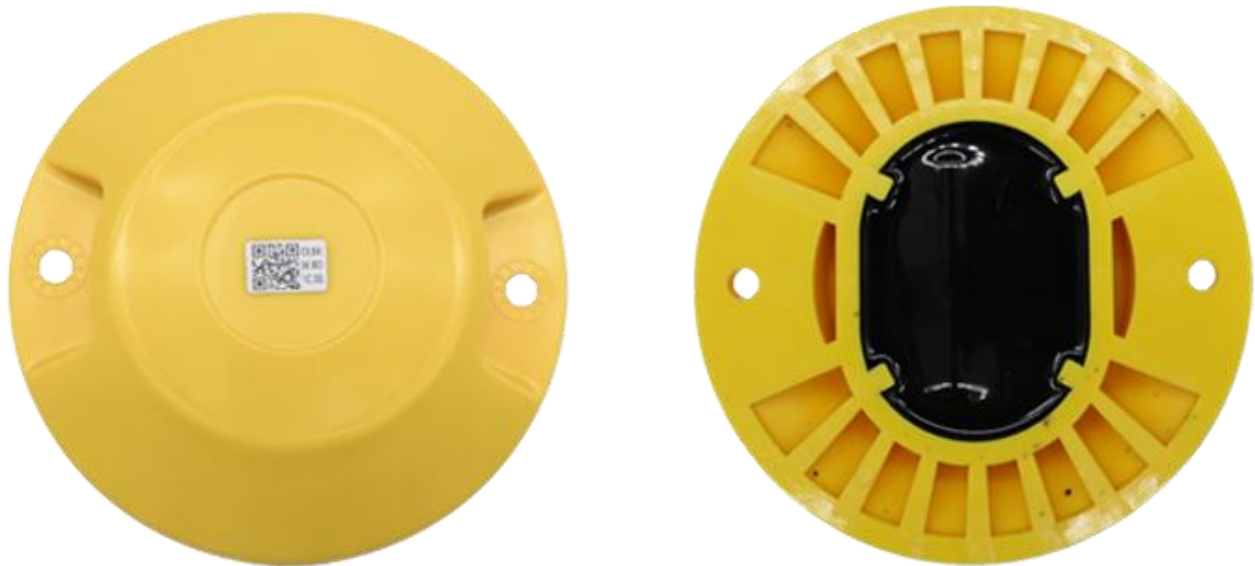


图 1:VDB08 产品图/ Figure 1: VDB08 product diagram

### 1.1 VDB08 内部介绍

VDB08 基于低功耗 BLE 4.2/5.0 芯片。其内部由最多 2 节 ER14505 电池供电（默认 1 节），电池满配情况下电池续航时间可达 10 年以上。

VDB08 is based on the Low Power BLE 4.2/5.0 chip. It is powered internally by one or two ER14505 batteries. It can work continually for more than 10 years with full battery .

## 1.2 VDB08 特性

低功耗/ Low power consumption

高防护等级、结实耐用、方便地面安装/ High protection grade, strong and durable, easy to install on the ground

APP 可灵活配置参数/ APP can flexibly configure parameters

OTA 无线升级/ OTA Wireless upgrade

广播范围最大可达 100 米/ The maximum broadcast range is 100 meters

防护等级为 IP68/ IP grade is IP68

防爆等级符合 Ex ib IIC T6 Gb; Ex ib 21 T85°C/ Explosion-proof grade: Ex ib IIC T6 Gb; Ex ib 21 T85°C

符合 RoHS (无铅)/ RoHS compliant (lead-free)

符合 FCC, CE/ In line with the FCC, CE

## 1.3 VDB08 应用

室内定位/ Indoor positioning

智慧停车/ Wisdom parking

智慧导航/Smart navigation

信息推送/ Information push

身份识别/ Identification

微信摇一摇/ WeChat shake

## 2. 硬件参数/Hardware Specification

硬件特性/Hardware features	
型号/Model	VDB08
天线类型/ Type of antenna	PCB antenna
电池/battery	ER14505 2700mAh ER14505 2700mAh
标称电压 /nominal voltage	3.6 V
尺寸/Dimension	D:110 (±2) mm * H:23.8(±0.5)mm
重量/Weight	190±10g
无线功能/Wireless capabilities	
无线标准/ Wireless standards	BLE ® 4.2/5.0
频率范围 frequency domain	2400MHz—2483.5MHz
数据速率/data rate	1Mbps / 2Mbps
调制技术/ modulation system	GFSK 调制
无线安全/ Wireless security	AES
传输功率/ transmission power	Tx 功率在-20 到+4dBm 范围内以 4dB 递增
灵敏度/Sensitivity	-96dBm @ 1Mbps BLE
工作模式/Workig mode	iBeacon / Eddystone
其他/rest	
工作环境/ work environment	工作温度/Operating Temp. -40°C~ 85°C
	储存温度/Storage Temp. -40°C~ 85°C
	工作湿度/Operating Humidity 10%~90%不凝结

储存湿度:5%~90%不凝结

## 2.1 电池寿命/Battery life

发射功率 (dbm) Tx Power	广播距离 The radio range	广播间隔 (ms) Broadcast interval	平均功耗 (μA) Average Current Consumption in μ A	两节 ER14250 2400mAh 待机时长(year) The standby time	单节 ER14505 2700mAh 待机时长(year) The standby time	两节 ER14505 5400mAh 待机时长(year) The standby time
4	80	300	<b>107.8</b>	<b>2.5</b>	<b>2.9</b>	<b>5.7</b>
		400	<b>85.8</b>	<b>3.2</b>	<b>3.6</b>	<b>7.2</b>
		500	<b>69.8</b>	<b>3.9</b>	<b>4.4</b>	<b>8.8</b>
		800	<b>48.0</b>	<b>5.7</b>	<b>6.4</b>	<b>12.8</b>
		1000	<b>41.3</b>	<b>6.6</b>	<b>7.5</b>	<b>14.9</b>
0	50	300	<b>106.7</b>	<b>2.6</b>	<b>2.9</b>	<b>5.8</b>
		400	<b>84.5</b>	<b>3.2</b>	<b>3.6</b>	<b>7.3</b>
		500	<b>70.3</b>	<b>3.9</b>	<b>4.4</b>	<b>8.8</b>
		800	<b>49.1</b>	<b>5.6</b>	<b>6.3</b>	<b>12.6</b>
		1000	<b>40.5</b>	<b>6.8</b>	<b>7.6</b>	<b>15.2</b>
-4	30	300	<b>94.4</b>	<b>2.9</b>	<b>3.3</b>	<b>6.5</b>
		400	<b>75.0</b>	<b>3.7</b>	<b>4.1</b>	<b>8.2</b>
		500	<b>62.8</b>	<b>4.4</b>	<b>4.9</b>	<b>9.8</b>
		800	<b>42.7</b>	<b>6.4</b>	<b>7.2</b>	<b>14.4</b>
		1000	<b>35.2</b>	<b>7.8</b>	<b>8.8</b>	<b>17.5</b>

以上数据可能因环境不同而有所改变，且未计入电池损耗，仅供参考。

The above data is only for reference. It may vary from different environment. Battery loss is not included .

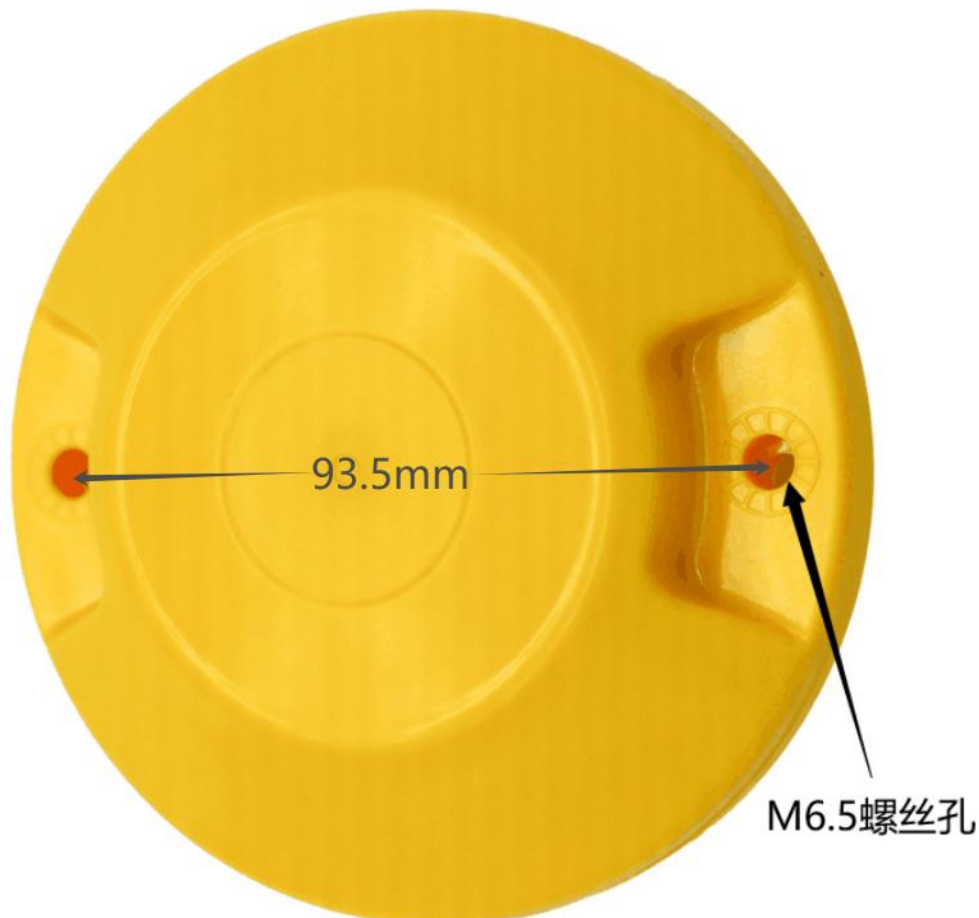
**注意：**广播距离为室外空旷距离测试结果，室内场景因电磁环境较为复杂，会快速衰减。请根据实际部署情况测试广播距离，并可以通过调整发射功率来减少广播距离，从而达到延长使用寿命的目的。

**Note:** The broadcast distance is the test result of outdoor open distance. The indoor scene will decay rapidly due to the complex electromagnetic environment. Please test the broadcast distance according to the actual deployment situation, and the broadcast distance can be reduced by adjusting the transmission power, so as to achieve the purpose of extending the service life

### 3. 安装方法/Installation method

(1) 在安装面使用 8mm 钻头，间隔 93.5mm 打孔（也可以提前拿道钉在地面用记号笔在螺丝孔对应安装面画点打孔）。

(1) Use an 8mm drill on the mounting surface and drill holes 93.5mm apart (It's also possible to take the spikes in advance, use a marker pen to mark dots on the installation surface corresponding to the screw holes on the ground and drill holes.

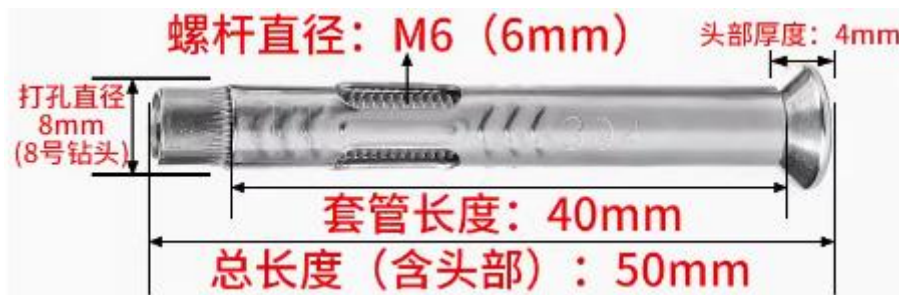




(2) 将 2 颗膨胀螺栓适当拧紧，敲到安装孔里，拧下螺杆。膨胀螺栓规格如下：

(2) Tighten the two expansion bolts appropriately, knock them into the installation

holes, and unscrew the screw rods. The specifications of the expansion bolts are as follows:



(3) 把道钉的安装孔对齐两颗膨胀螺栓放到安装面上，并使用螺丝刀拧紧螺杆。

(3) Align the installation holes of the spikes with the two expansion bolts and place

them on the installation surface, and then use a screwdriver to tighten the screw rods.



## 4. 软件使用说明/Software Instructions

Skylab\_xbeacon 是 Skylab 研发团队开发的一款蓝牙 Beacon 软件,支持 iBeacon 和 Eddystone 两种模式,可灵活配置常用参数。

Skylab\_xbeacon is a Bluetooth Beacon software developed by Skylab research and development team. It supports iBeacon and Eddystone modes and can flexibly configure common parameters.

### 4.1 下载应用程序/Download the application

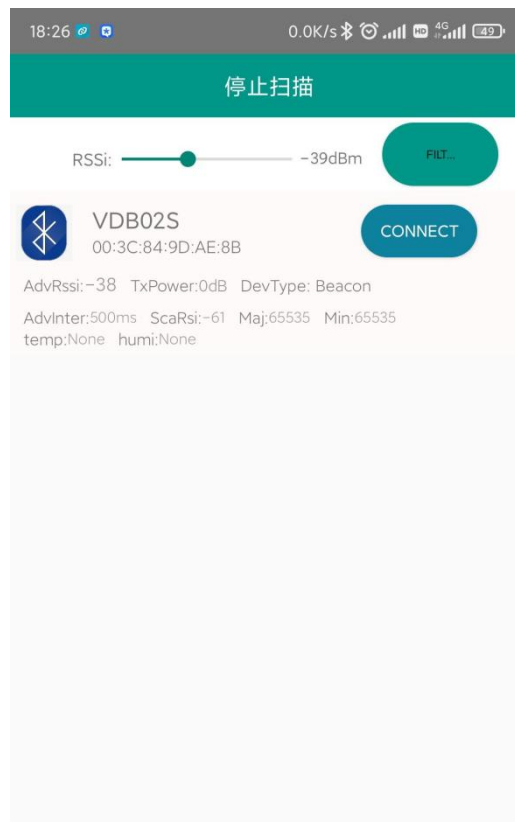
目前 APP 尚未上架,请联系销售人员提供,APP 名称 Skylab\_xbeacon。

At present, the APP has not been put on the shelf. Please contact the sales staff to provide the APP name Skylab\_xbeacon.

### 4.2 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,手机自动开始扫描周围的蓝牙信标。

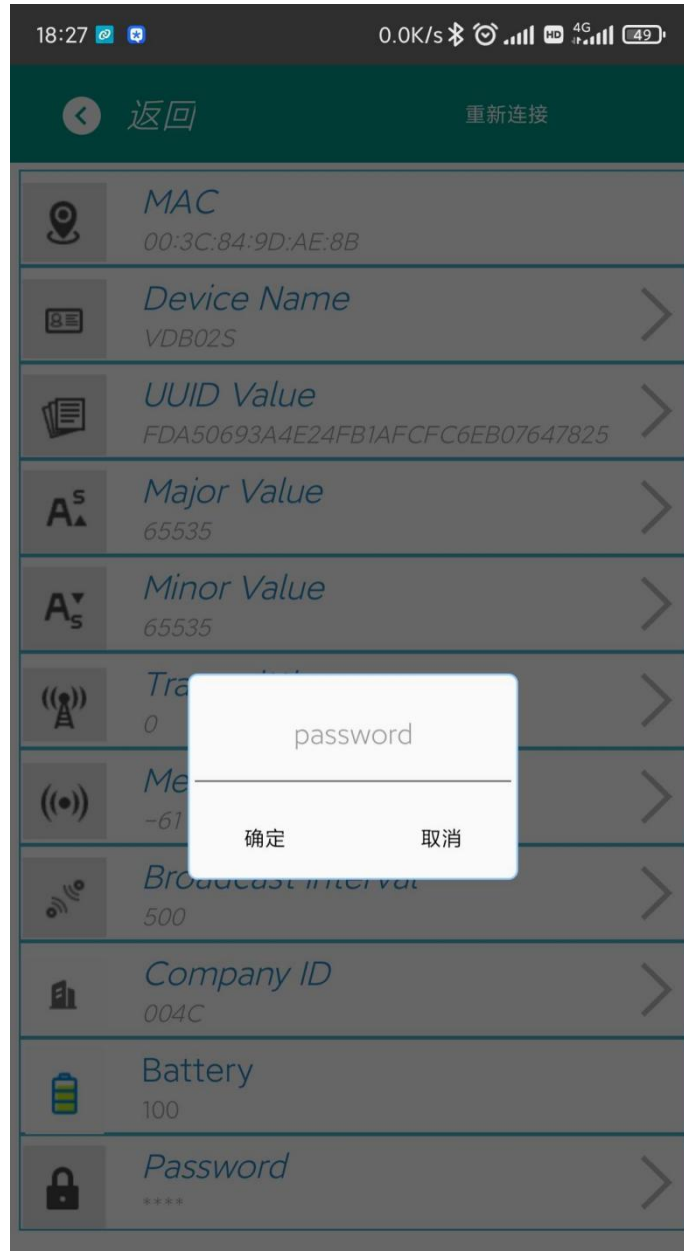
Open the APP. If the phone prompts to turn on Bluetooth, please allow the phone to automatically scan the surrounding Bluetooth beacons.



### 4.3 连接蓝牙信标/Connect to bluetooth beacons

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)

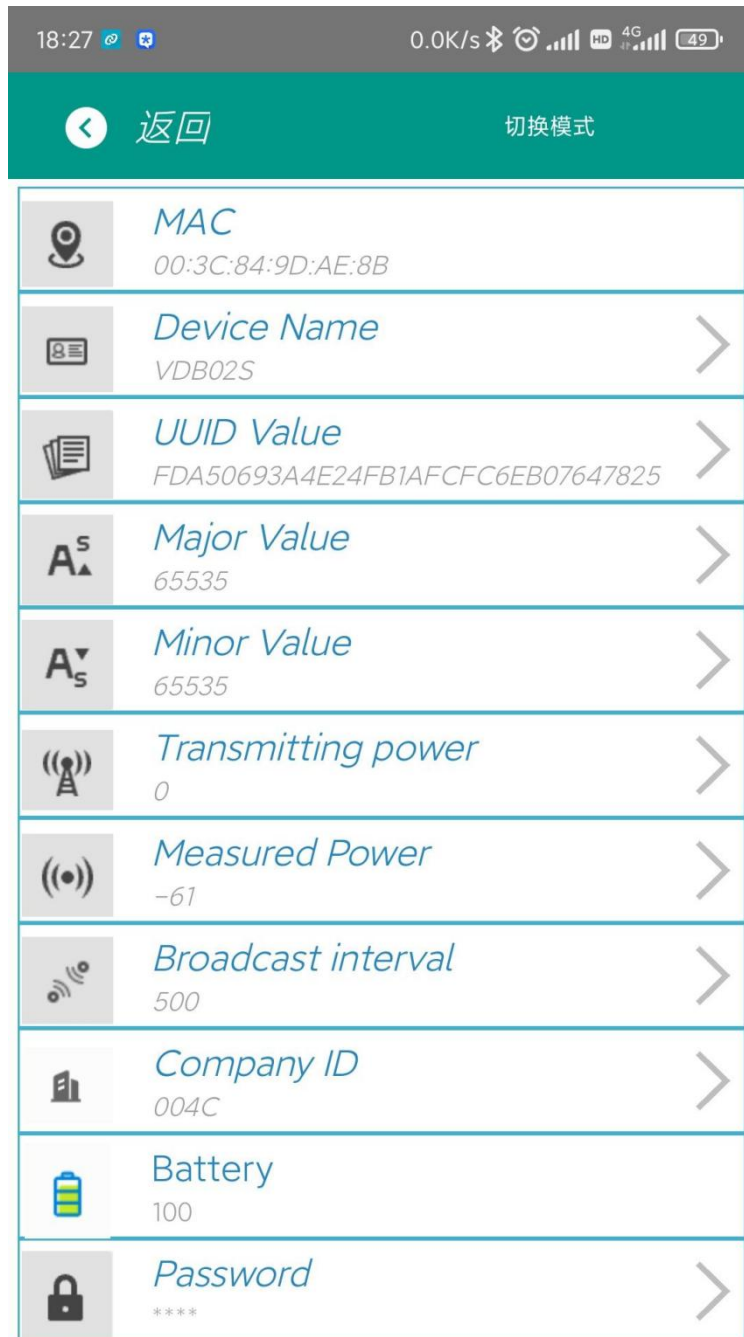
Click the Bluetooth beacon to connect and enter the password within 30 seconds to obtain the operation permission.(Factory Password :1234)



注意：密码忘记后无法恢复，请务必做好记录！

**Note:** The password cannot be recovered after forgetting, please make a good record!

## 4.4 配置介绍/Configuration is introduced



介绍:

**MAC:** MAC 地址

**Name:** 所选蓝牙信标的名称。

**UUID:** 按照 ISO/IEC11578:1996 标准的 128 位标识符(16 字节)

**User service data:** 用户数据, 24 个 16 进制数字

**Major:** 16 位标识符(0-65535)

**Minor:** 16 位标识符(0-65535)

**Measured Power:** 距离 1 米时的参考信号强度

**Transmit Power:** VDB08 发射功率

**Advertise Interval:** VDB08 广播间隔

**Battery Level:** VDB08 电池电量

**Password:** VDB08 密码（默认 1234）

配置好信息后，蓝牙连接断开，配置将生效。

Introduction:

**MAC:** MAC address

**Name:** The Name of the selected Bluetooth beacon.

**UUID:** 128-bit (16-byte) identifier according to ISO/IEC11578:1996

**User Service data:** User data, 24 hexadecimal digits

**Major:** 16-bit identifier (0-65535)

**Minor:** 16-bit identifier (0-65535)

**Measured Power:** Reference signal strength Measured at a distance of 1 m

**Transmit Power:** VDB08 Transmit Power

**Advertise Interval:** The VDB08 broadcast Interval

**Battery Level:** VDB08 Battery Level

**Password:** VDB08 (default: 1234)

After the information is configured, the Bluetooth connection is disconnected and the configuration will take effect.

## 4.5 修改蓝牙信标名称/Modify the Bluetooth beacon name

点击“Device Name”，出现以下 UI，然后在“输入一个名称”框中输入长度小于 12 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”。

Click "Device Name" to bring up the following UI. Then enter the English character Name of less than 12 characters in the "Enter a Name" box, or select a Name in the "Choose one" box. Then click "Confirm changes".



## 4.6 修改 UUID/Modify UUID

点击“UUID”，出现以下 UI，然后在“输入一个 UUID 值”框中输满 16 个字节（32 个十六进制字符）作为 VDB08 的 UUID。然后点击“确认修改”。

Click "UUID" to bring up the following UI, then type a full 16 bytes (32 hexadecimal characters) in the "Enter a UUID Value" box as the UUID for VDB08. Then click "Confirm changes".



## 4.7 修改 Major、Minor/Modify Major、Minor

点击“Major”，出现如下界面，设置 0~65535 为设备的 Major 值。然后点击“确认修改”。

Click "Major", and the following interface appears, and set 0~65535 as the Major value of the device.

Then click "Confirm modification".



18:29 0.0K/s 4G 48

←

**A<sup>s</sup> Major**  
major:65535

请输入一个值:

或者选择一个:

1000

12345

65535

确定

从0到65535中选取一个值作为Major

同上面 Major 类似，修改 Minor 点击 Minor 进入修改即可。

Modify the Minor

Similar to the Major above, click Minor to enter the modification.



## 4.8 修改 Measured Power/Modify Measured Power

点击“Measured Power”，出现如下 UI，在距离 VDB08 1 米远处，设置测量功率，可调范围 -100dBm~-30dBm，默认为-61dBm。然后点击“确认修改”。

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 VDB08 约为 1 米。

Click "Measured Power", and the following UI appears. Set Measured Power at a distance of 1 meter from VDB08. The adjustable range is -100dbm ~ -30dbm, and the default is -61dbm. Then click "Confirm changes".

Measured Power means that when the signal strength received by the receiving equipment is -61dbm, the Measured Power can be considered to be about 1 m away from VDB08.



## 4.9 修改发射功率/Modified transmitting power

点击“Transmission Power”出现如下 UI，设置 VDB08 的发射功率。功率可设置为:-30dBm, -20dBm, -16dBm, -12dBm, -8dBm, -4dBm, 0dBm, 4dBm。默认是 0dBm。然后点击“确认修改”。

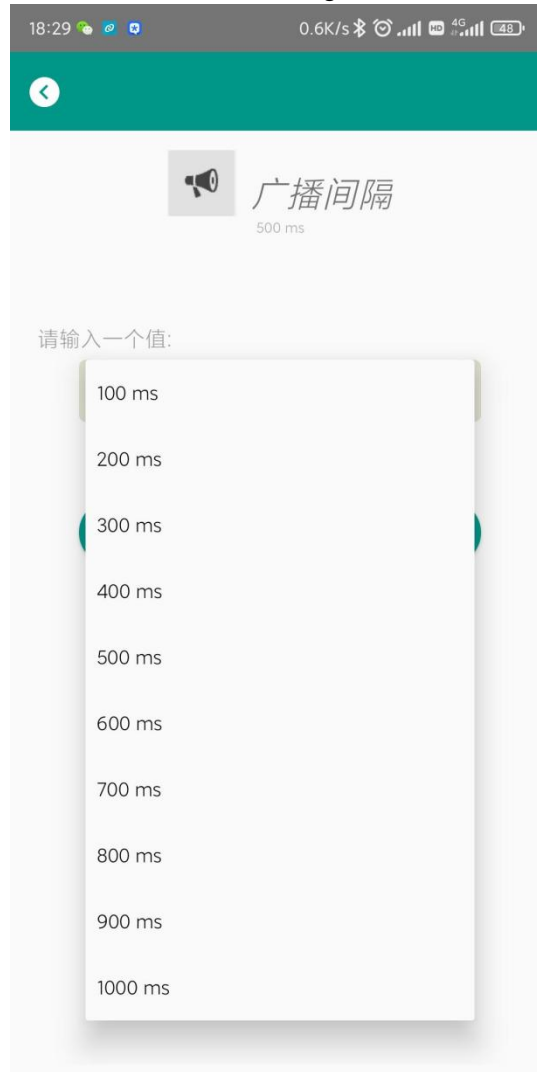
Click "Transmission Power" to display the following UI and set the Transmission Power of VDB08. The power can be set to: -30dbm, -20dbm, -16dbm, -12dbm, -8dbm, -4dbm, 0dBm, 4dBm. The default is 0dBm. Then click "Confirm changes".



#### 4.10 修改广播间隔/Modify broadcast interval

点击“广播间隔”出现如下 UI，设置广播间隔，广播间隔可以设置为 100ms、200ms、300ms、400ms、500ms、600ms、700ms、800ms、900ms 和 1000ms。默认为 500ms。然后点击“确认修改”。

Click "Broadcast Interval" to display the following UI and set the broadcast interval. The broadcast interval can be set to 100ms, 200ms, 300ms, 400ms, 500ms, 600ms, 700ms, 800ms, 900ms and 1000ms. The default is 500ms. Then click "Confirm changes".



#### 4.11 修改密码/Modify Password

点击“Password”，出现如下 UI，然后在“Password”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”。

Click "Password", the following UI appears, and then enter 4 characters in the "Password" box as the connection password, and the default is 1234. Then click "Confirm Modification."



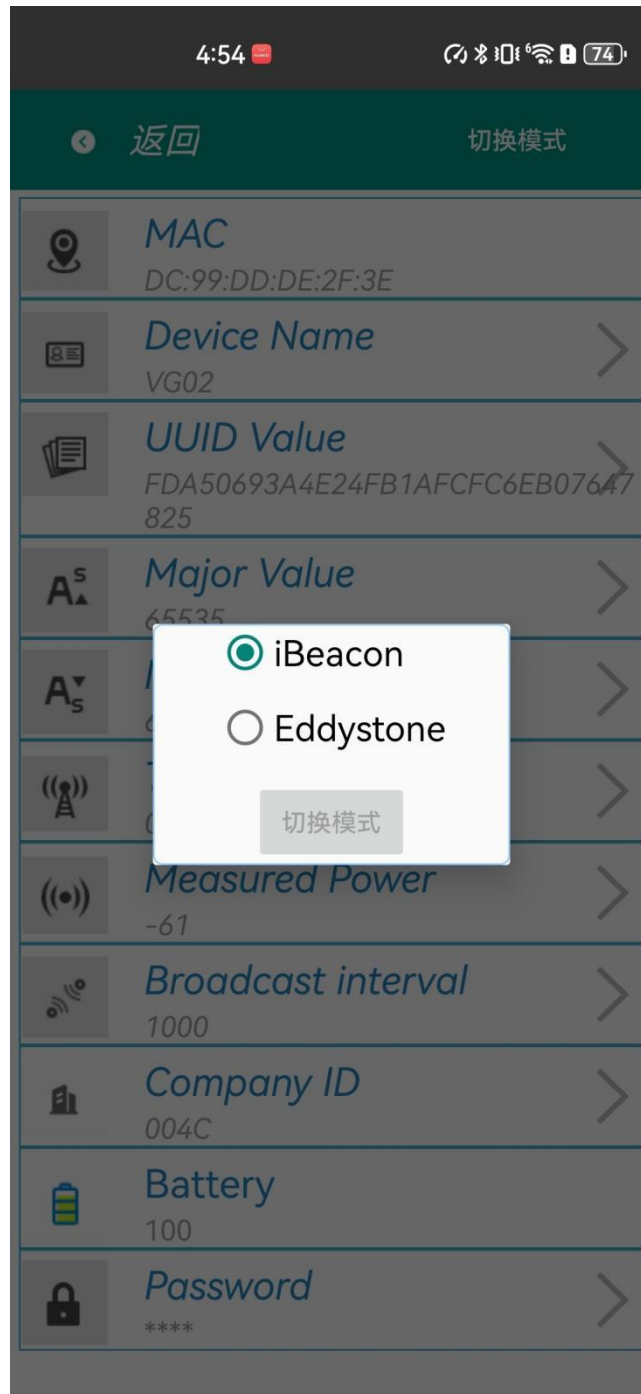
!!! **注意:** 请提前保存好您的密码，一旦修改新密码，原密码将失效，必须用新密码才能登陆。

!!! **Note:** Please save your password well in advance. Once you change the new password, the original password will become invalid and you must use the new password to log in.

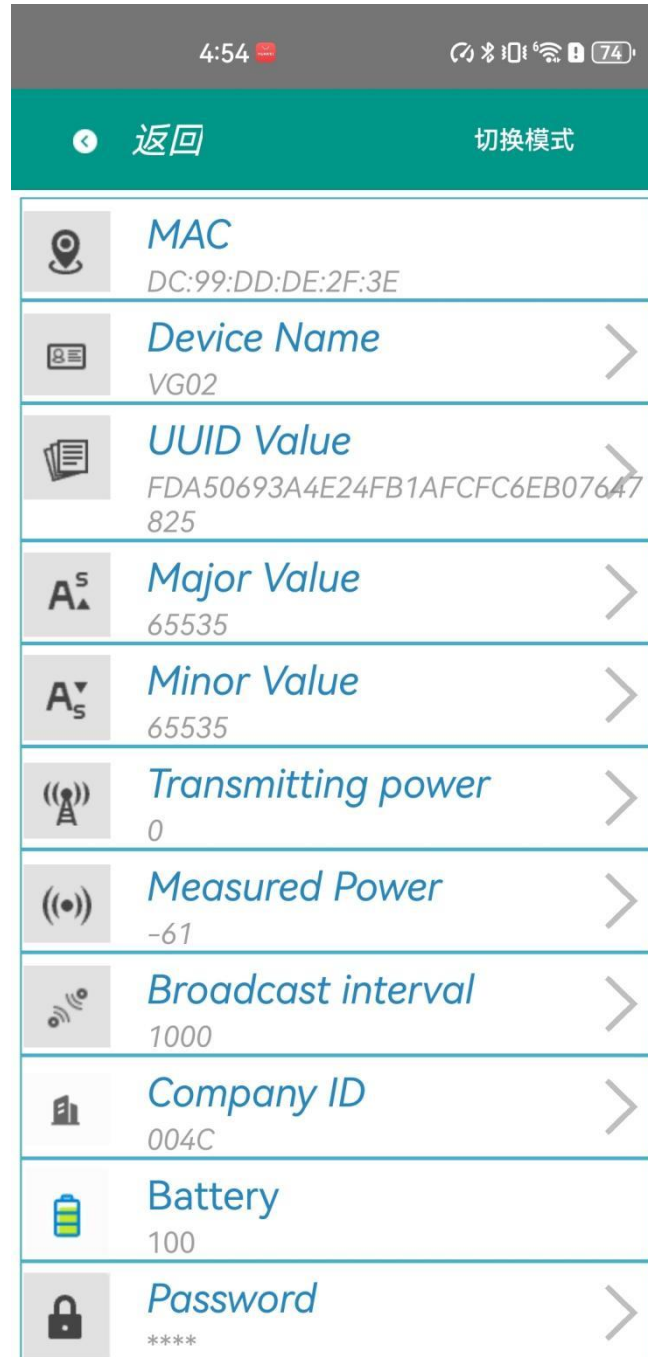
## 4.12 切换模式/switching mode

点击右上角切换模式文字，出现模式选择窗口，点选 Eddystone。

Click the upper-right corner to switch mode text, the mode selection window appears, and click Eddystone.



## 4.13 Eddystone 配置页面简介/Eddystone Introduction to configuration page



简介:

**MAC:** MAC 地址

**Name:** 蓝牙信标的名称，配置方式同 iBeacon 模式。

**User service data:** 用户自定义的数据，配置方式同 iBeacon 模式。

**Transmit Power:** VDB08 发射功率，配置方式同 iBeacon 模式。

**Advertise Interval:** VDB08 广播间隔，配置方式同 iBeacon 模式。

**Battery Level:** VDB08 电池电量

**Password:** VDB08 连接密码，配置方式同 iBeacon 模式。

**URL:** 修改 Eddystone 字段信息。默认格式是 URL。

**Other Setting:** 用于选择 Eddystone 其他字段信息。

配置好信息后，蓝牙连接断开，配置将生效。

#### **Introduction:**

**MAC:** MAC address

**Name:** The Name of the Bluetooth beacon, configured in the same manner as iBeacon mode.

**User Service data:** User-defined data, configured in the same way as iBeacon mode.

**Transmit Power:** VDB08 Transmit Power, configured in the same mode as iBeacon.

**Recording Interval:** VDB08 broadcast Interval, configured in iBeacon mode.

**Battery Level:** VDB08 Battery Level

**Password:** VDB08 connection Password, configured in the same way as iBeacon mode.

**URL:** Modify the Eddystone field information. The default format is URL.

**Other Setting:** Used to select Eddystone's Other field information.

After the information is configured, the Bluetooth connection is disconnected and the configuration will take effect.

## 4.14 修改 URL/Modify URL

点击“URL”，出现如下 UI，然后在“url”下划线上输入最多 16 字节的字符串，即可广播 URL。

Click "URL" and the following UI appears. Then type a string of up to 16 bytes on the "URL" underscore to broadcast the URL.





## 4.15 修改 Other Setting//Modify Other Setting

选择并设置 UID 信息:

Select and set UID information:



分别设置 NameSpace(10 字节)和 Instance(6 字节)。

Set NameSpace(10 bytes) and Instance(6 bytes), respectively.

选择并设置 EID 信息:

Select and set EID information:



设置 EID 信息，最多 8 个字节。

Set EID information, up to 8 bytes.

## 5. 联系方式/Contact

### **95Power Information Technology Co., Ltd**

深圳市微能信息科技有限公司

地址：深圳市龙华区福城街道茜坑路 88 号鸿荣源.鸿创科技中心 A 区 6 栋 11 楼。

Address: Hong Rongyuan, No. 88 Xikeng Road, Fucheng Street, Longhua District, Shenzhen City.

Hongchuang Technology Center, Block A, building 6, 11th floor.

Phone: 86-0755-2877 1280 (Sales Support)

Phone: 86-0755-8340 8210 (Technical Support)

Fax: 86-0755-8340 8560

邮箱/E-mail: sales@95power.com.cn

网址/Website: www.95power.com.cn