

# VDB05蓝牙信标使用手册

# VDB05 Bluetooth Beacon User Manual

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## 设备清单/Product List

设备名称/Device Name	型号/Device No.	数量/Number	备注/Remark
蓝牙信标/Bluetooth 4.2 Beacon	VDB05	1 个/1 pcs	
电池/Battery	ER14250	1 个/1 pcs	默认安装在 VDB05 内部 /Inside VDB05

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## 1. 产品介绍/Product Introduction

VDB05 是一款蓝牙信标设备。蓝牙信标使用 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 “95POWER\_xbeacon” 读取，包括 UUID、Major、Minor、RSSI 等信息。

VDB05 is a Bluetooth Beacon device. It uses a broadcasting protocol which is based on BLE (Bluetooth Low Energy ). VDB05 broadcasts its general configure parameters like UUID, Major, Minor, RSSI etc. to surroundings over 37, 38 and 39 BLE channels continuously and non-directionally . The broadcasting information can be read by “95POWER\_xbeacon” APP, which is designed by 95POWER R&D Team.

VDB05 基于蓝牙 5.0 芯片，考虑到苹果手机不支持 BLE5.0，默认采用 BLE4.2 广播，内部预留了加速度传感器和温湿度传感器（默认不贴）。

VDB05 is based on Bluetooth 5.0 chip. It use BLE4.2 broadcasting by default, considering that i-phones do not support ble5.0. It reserves an accelerometer and a temperature & humidity sensor(not mounted by default).

其内部由 2 节 ER14250 电池供电，电池续航时间与 VDB05 广播参数有关，默认配置下待机时间可达 5 年（500ms 广播间隔，0dBm 广播功率）。

It is powered by 2 ER14250 batteries. Its battery life is related to the internal broadcasting parameters. By default setting the battery life can reach 5 years ( 500ms broadcasting interval, 0dBm TX Power).



Figure 1:VDB05 正视图/Top View

### 1.1 VDB05 特性/features

- ◆ 低功耗/ Low Power Consumption
- ◆ 体积小、重量轻、造型美观/ Small,Lightweight,Beautiful appearance
- ◆ APP 可灵活配置参数/ Flexible Application
- ◆ 安装方便(3M 胶安装) / Easy to Install(use 3M sticky tape)
- ◆ 广播范围最大可达 70 米 / Advertise Range up to 70 Meters
- ◆ 符合 RoHS (无铅)/ RoHS compliance (Lead-free)

- ◆ 符合 FCC, CE / FCC,CE compliance

## 1.2 VDB05 应用/application

- ◆ 室内定位/ Indoor Positioning
- ◆ 信息推送/ Information Push
- ◆ 身份识别/ Identification
- ◆ 微信摇一摇/ WeChat Shake

## 2. 硬件参数/Hardware parameters

### 2.1 产品参数/Product Parameter

硬件特性/Hardware Features	
型号/ Model	VDB05
天线类型/ Antenna Type	PCB 天线 PCB Antenna
电池/Battery	ER14250 2 * 1200mAh
电压/ Voltage	1.8~3.6 V
尺寸(D×H)/ Dimension(D×H)	52.0 * 23.2(±0.3)mm
无线功能/ Wireless Features	
无线标准/ Wireless Standards	蓝牙®5.0 Bluetooth ®5.0
频率范围/ Frequency Range	2400MHz——2483.5MHz
数据速率/ Data Rates	125kbps/250kbps/500kbps/1Mbps/2Mbps
调制技术/ Modulation Technique	GFSK
无线安全/ Wireless Security	AES
传输功率/ Transmit Power	-20~+4dBm 可调, 步长 4 dB Tx Power -20 to +4dBm in 4 dB Steps
灵敏度/ Sensitivity	-97dBm @1Mbps BLE
工作模式/ Work Mode	从机/ Peripheral
其他/ Others	
环境参数/ Environment	工作温度:-40℃~ 85℃ Operating Temperature: -40℃~85℃
	储存温度:-40℃~ 85℃ Storage Temperature: -40℃~85℃
	工作湿度:10%~90%不凝结 Operating Humidity: 10%~90% Non-condensing

储存湿度:5%~90%不凝结  
Storage Humidity: 5%~90% Non-condensing

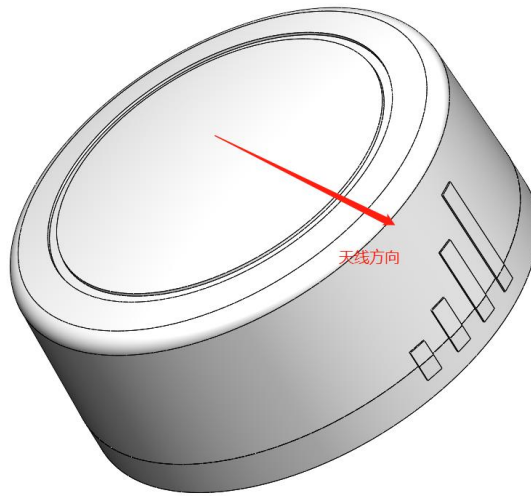
## 2.2 电池寿命 Battery life

发射功率/ TX Power	广播距离/ Adv. Distance	广播间隔 ms/ Adv. interval	每天功耗 mA*h/ Power consumption per day	待机天数/ Battery life (day)	待机年数/ Battery life (year)
4dBm	70m	100	7.25232	331	0.91
		200	3.66216	655	1.80
		400	1.86708	1285	3.52
		500	1.508064	1591	4.36
		800	0.96954	2475	6.78
		1000	0.790032	3038	8.32
0dBm	50m	100	5.208	182	0.50
		200	2.712	350	0.96
		400	1.440	660	1.81
		500	1.248	761	2.08
		800	0.840	1131	3.10
		1000	0.648	1466	4.02

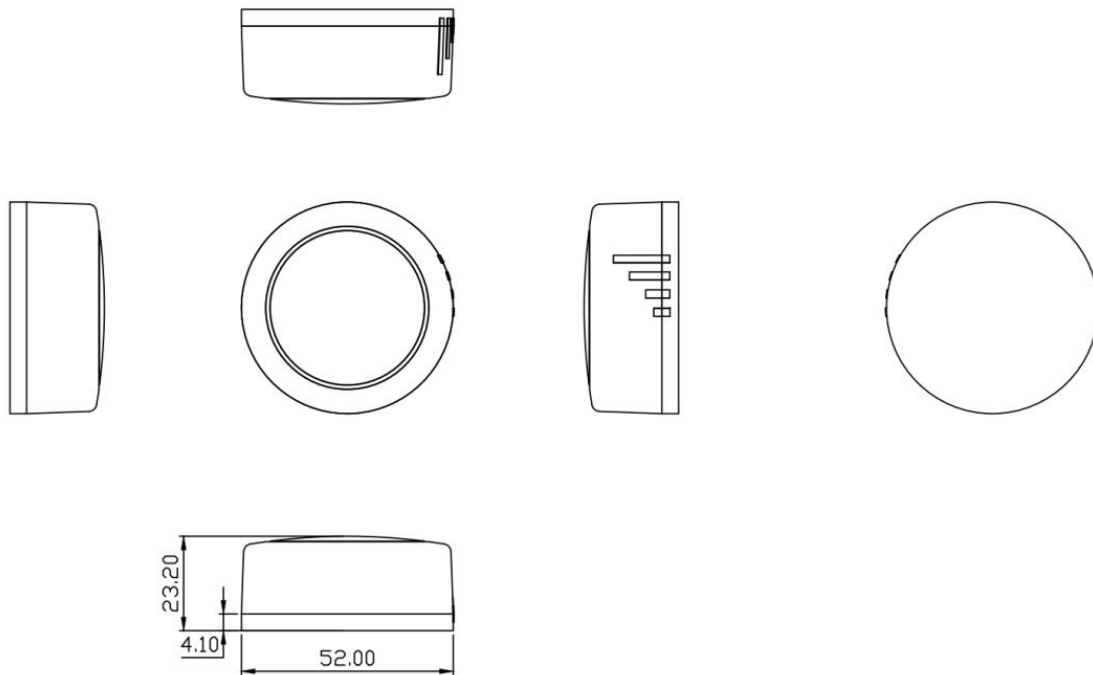
注：以上数据可能因环境不同而有所改变，且未计入电池损耗，仅供参考。

**Note:**The above data may differ from different environments. It is caculated by current-test (Battery Loss not included) and just for reference.

## 2.3 结构参数 structural parameters



天线方向指 PCB 板载天线信号强度最强的方向



### 3. 硬件使用说明/Hardware Instructions

#### 3.1 VDB05 安装电池/ install battery

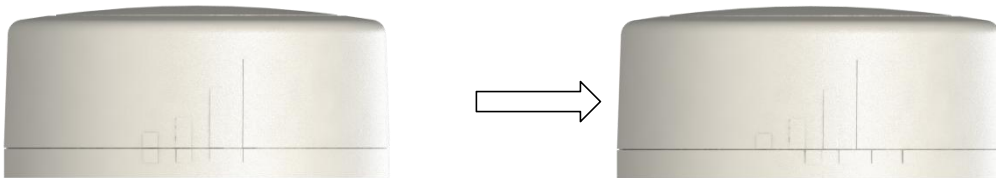
VDB05 安装电池后就会自动开机。默认情况下，出厂时已安装 2 节 ER14250 电池，并塞好了绝缘片。  
VDB05 will start automatically after the battery is installed. By default, two ER14250 batteries are installed and insulation sheet is inserted when it leave factory.

如果您需要更换电池，请遵循以下说明。

If you need to replace the battery, follow the instructions below.

a. 一只手固定面壳，另一只手顺时针旋转后盖，取下后盖。

Holding the shell in place with one hand, remove the back cover by rotating it clockwise with the other hand.



b. 取下旧电池，并更换更换 2 节 ER14250 锂电池，负极对弹簧，正极对铁片，两节电池并联，方向相同。

Remove the old batteries, and replace the two ER14250 lithium batteries, negative pole to spring, positive pole to iron, two batteries in parallel, the same direction



c. 重新安装后壳，请把后盖和面壳上有天线信号标志的方向对齐。

Reinstall the rear cover. Align the direction of the antenna signal mark on the rear cover and the face cover.

注意：请勿把电池方向装反！

**Note: Don't put the battery in the wrong direction!**



## 3.2 VDB05 安装固定方法/Mounting and fixing method

### 3M 胶式安装

a.使用无尘布把 VDB05 后盖擦拭干净，防止使用过程中有灰尘或油污；

Clean the back cover of VDB05 with a dust-free cloth to prevent dust or oil stains.

b.把 3M 胶片从油纸贴上揭掉，贴到 VDB05 后盖上。

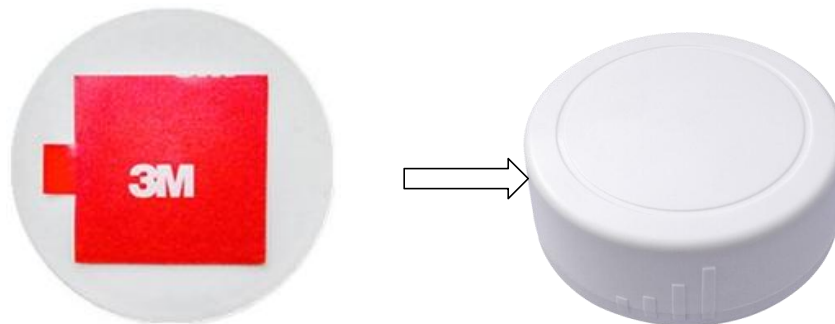
Remove the 3M thick double-sided tape from the oil paper and attach it to the back cover of VDB05.

c.把 VDB05 贴 3M 胶一面放到平面上（如桌子上）均匀按压。

Place the VDB05 on the 3M thick double-sided tape side on a surface (such as a table) and press evenly.

d.撕掉红色 3M 胶保护膜，并把 VDB05 有 3M 胶一面贴到目标安装位置（选择合适贴装位置，目标位置如果有灰尘或油渍需要提前清理干净，并保持干燥）。然后均匀施力按压 5~10 秒。

Tear off the red protective film of 3M thick double-sided tape and attach the 3M adhesive side of VDB05 to the target installation position (select the appropriate installation position, the target position should be cleaned in advance if there is dust or oil stains, and keep dry). Then apply force evenly and press for 5~10 seconds



## 4. 软件使用说明/Software Instructions

95POWER\_xbeacon 是 95POWER 研发团队开发的一款蓝牙 Beacon 软件，支持 iBeacon 可被连接的广播模式，可灵活配置常用参数。

95POWER\_xbeacon is a Bluetooth Beacon software developed by 95POWER research and development team. It supports connectable iBeacon modes and can flexibly configure common parameters.

### 4.1 下载应用程序/Download APP

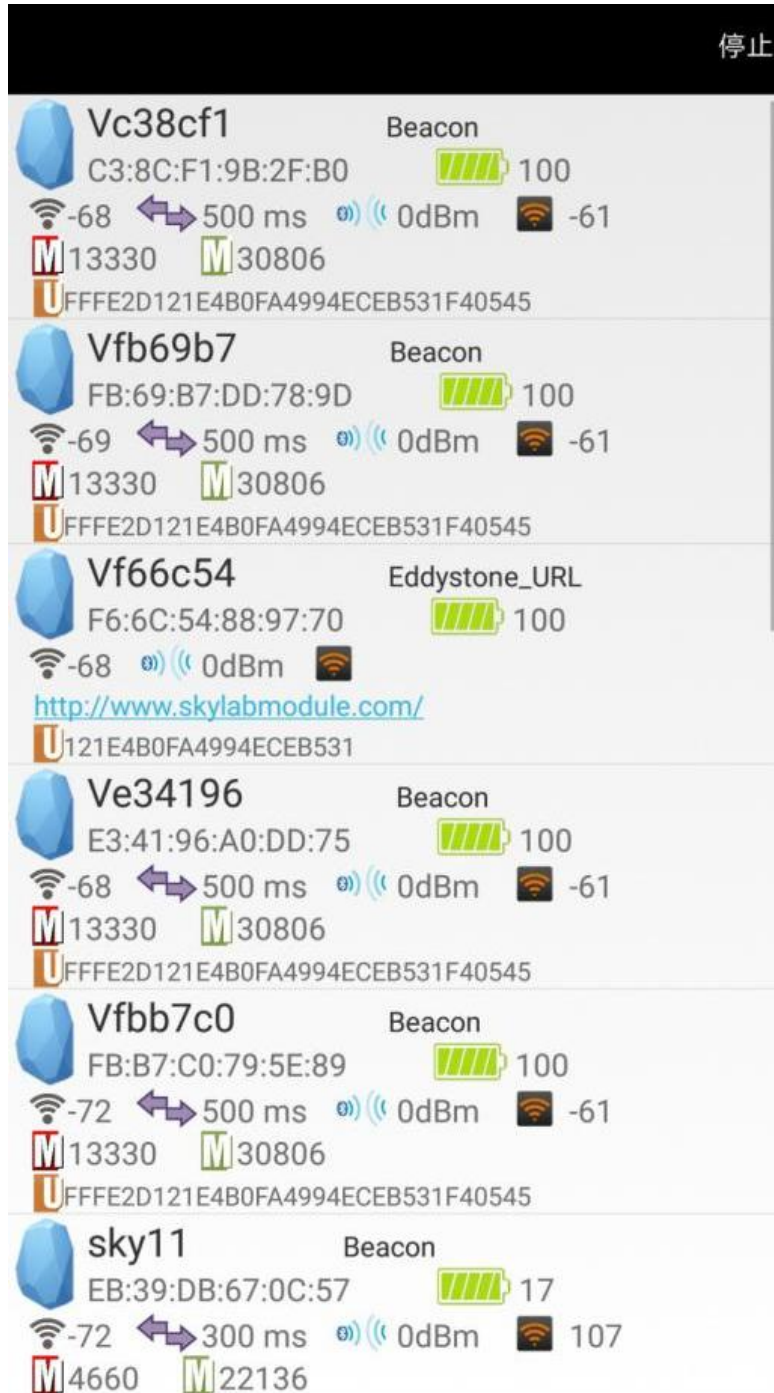
目前 APP 尚未上架，请联系销售人员提供，APP 名称 95POWER\_xbeacon。

95power\_xbeacon hasn't been put into the market yet. Please contact our sales team for this APP.

## 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，如下图。

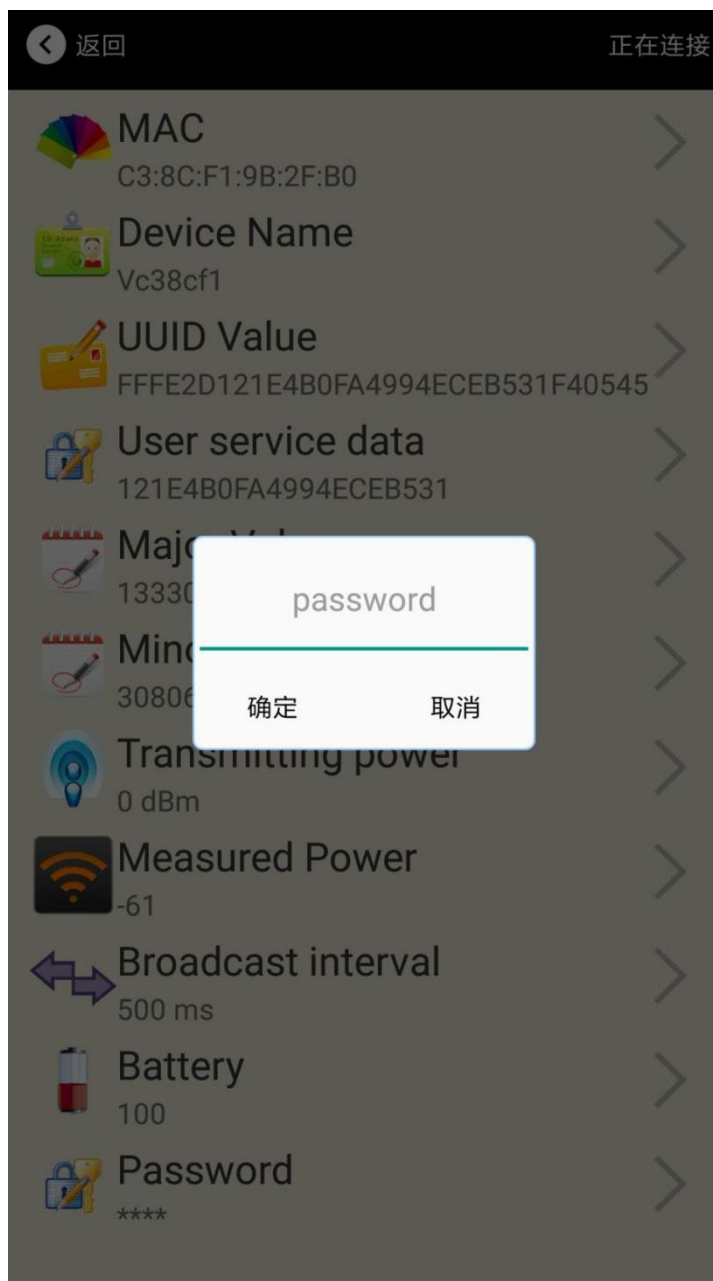
Open the APP, if cell phone ask for permission to open bluetooth please select yes. Then it will begin to scan the surrounding Bluetooth 4.2 Beacons, like below.



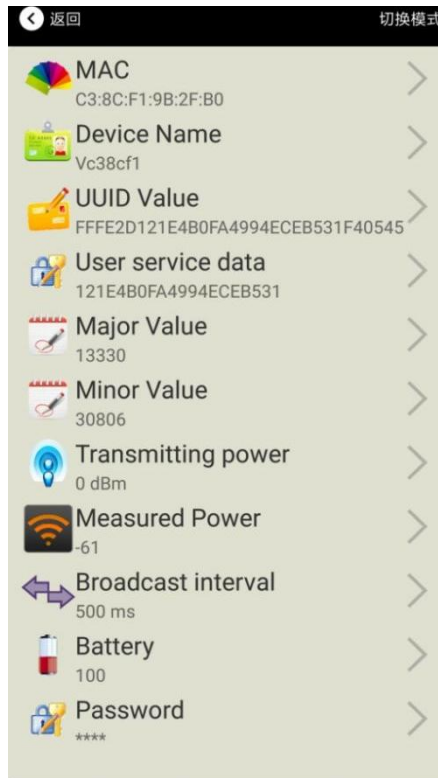
### 4.3 连接蓝牙信标/Connect Bluetooth 4.2 Beacon

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)



## 4.4 配置介绍/Configuration Introduction



### 介绍/Introductions:

**MAC:** MAC 地址/Chip MAC address

**Name:** 所选蓝牙信标的名称/The name of the Bluetooth 4.2 Beacon which is selected.

**UUID:** 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)

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

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

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

**Measured Power:** 距离 1 米时的参考信号强度/

Signal strength at 1 meter (VDB05 transmission power is 0dBm)

**Transmit Power:** VDB05 发射功率/VDB05 transmit power

**Advertise Interval:** VDB05 广播间隔/VDB05 advertise interval

**Battery Level:** VDB05 电池电量/VDB05 battery Capacity

**Password:** VDB05 密码 (默认 1234) /VDB05 connection password

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.

## 4.5 修改蓝牙信标名称/Modify Bluetooth 4.2 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 the “Device Name”, the following UI will be opened. Then enter a length of less than 12-bit English characters as VDB05 device name in the following “Enter a Name” box. Then click “confirm to modify”.



## 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 VDB05 的 UUID。然后点击“确认修改”。

Click the “UUID”, ,the following UI will be opened. Then and then enter a 32-byte string of sixteen as the UUID of VDB05 in the following “Enter an UUID” box. Then click “confirm to modify”.



## 4.7 修改 User service data/Modify User service data

点击“User service data”，出现如下界面，在“输入用户数据”中输入 24 个 16 进制字符。然后点击“确认修改”。

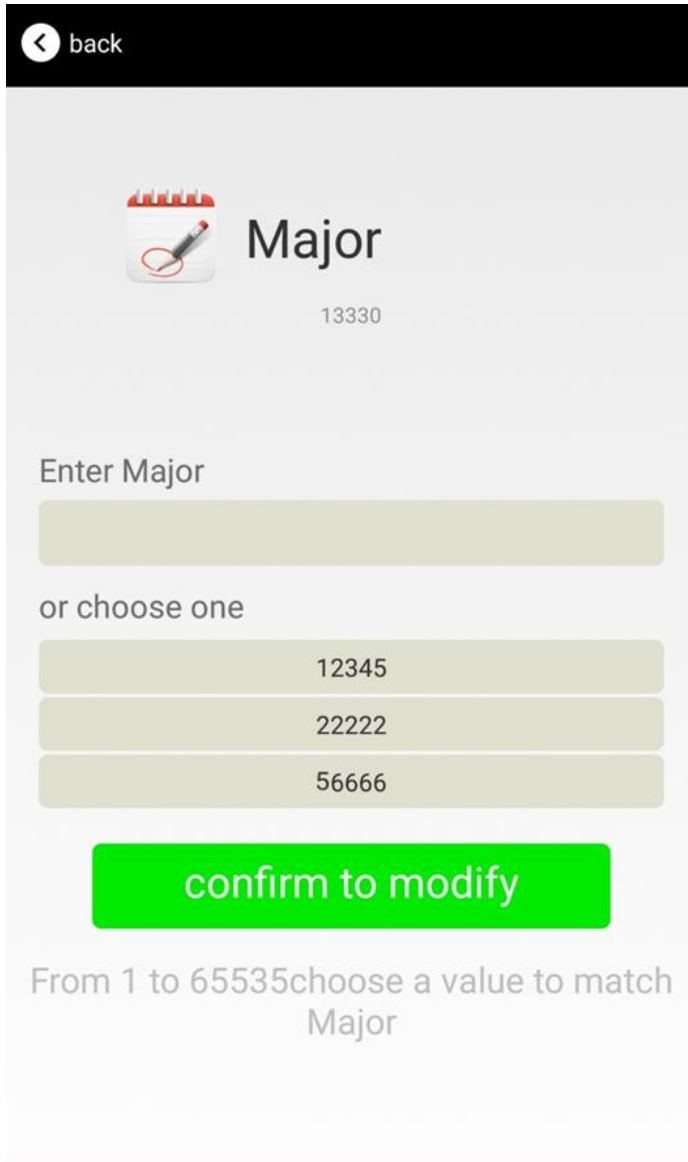
Click the " User service data ", the following interface will be opened. Then enter a Hexadecimal string of 24 word . Then click “confirm to modify”.



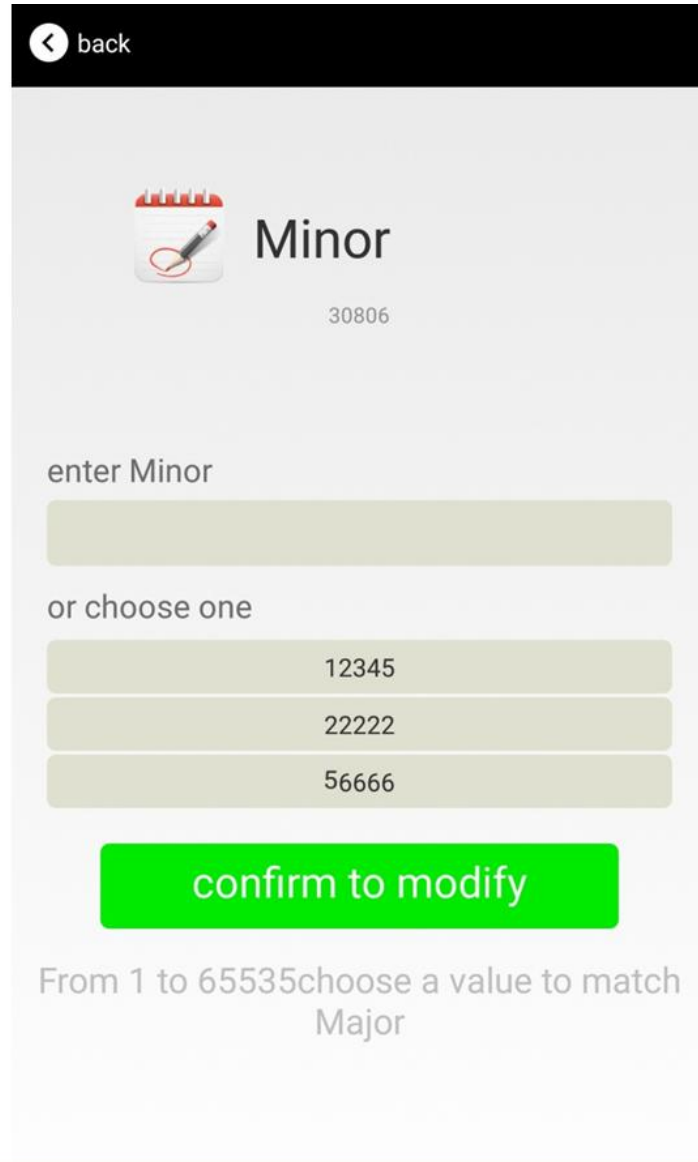
## 4.7 修改 Major、Minor/Modify Major、Minor

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”。Minor 类似，点击 Minor 进入修改即可。

Click the "Major"/"Minor", the following UI will be opened. Then set a value between 0~65535 as the Major/Minor value of the device. Then click "confirm to modify". Minor is similar, click Minor to enter modify.



The screenshot shows a mobile application interface for modifying the Major value. At the top left is a black bar with a white back arrow and the text "back". Below this is a light gray area with a red and white notepad icon and the word "Major" in bold. Underneath "Major" is the current value "13330". There is a text input field labeled "Enter Major" with a light green background. Below the input field is the text "or choose one" followed by three buttons with values "12345", "22222", and "56666". At the bottom is a large green button with the text "confirm to modify". Below the button is the text "From 1 to 65535 choose a value to match Major".



The screenshot shows a mobile application interface for modifying the Minor value. At the top left is a black bar with a white back arrow and the text "back". Below this is a light gray area with a red and white notepad icon and the word "Minor" in bold. Underneath "Minor" is the current value "30806". There is a text input field labeled "enter Minor" with a light green background. Below the input field is the text "or choose one" followed by three buttons with values "12345", "22222", and "56666". At the bottom is a large green button with the text "confirm to modify". Below the button is the text "From 1 to 65535 choose a value to match Major".



## 4.8 修改 Measured Power/Modify Measured Power

点击“Measured Power”，出现如下 UI，在距离 VDB05 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”。

Click the “Measured Power”, the following UI will be opened. Then select a measured power range from -100dBm to -30dBm. The default is -61dBm. Then click “confirm to modify”.

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 VDB05 约为 1 米。

Measured Power means, when a phone's RSSI is -61dBm, it is about 1 meter from VDB05.



## 4.9 修改发射功率/Modify Transmitting Power

点击“Transmission Power”出现如下 UI, 设置 VDB05 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 the "Transmitting Power", the following UI will be opened. Then set a transmitting power, which can be set to: -30dBm, -20dBm, -16dBm, -12dBm, -8dBm, -4dBm, 0dBm, 4dBm and 8dBm. Default Power is 0dBm. Then click "confirm to modify".



## 4.10 修改广播间隔/Modify Advertise 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 the "Advertise Interval", the following UI will be opened. Then set a advertise interval. Broadcasting interval can be set to 100ms, 200ms, 300ms, 400ms, 500ms, 600ms, 700ms, 800ms, 900ms and 1000ms. The default is 500ms. Then click "confirm to modify".



## 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 the “Password”, the following UI will be opened. Then and then enter the 4 characters as a connection password in the “Password” box, the default is 1234. Then click “confirm to modify”.



**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.

## 5.联系信息/Content

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