

蓝牙Beacon VDB1611使用说明书

Bluetooth Beacon VDB1611 Instruction Manual

产品名称: 蓝牙Beacon

Product Name: Bluetooth Beacon

产品型号: VDB1611

Product Model: VDB1611

版本号: V1.01

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设备清单 Device List

名称 Name	型号 type specification	数量 quantity	备注 comment
蓝牙 Beacon Bluetooth Beacon	VDB1611 VDB1611	1 个 1PCS	面壳有开孔透气, 方便温湿度测试 The surface shell has holes for air, Convenient for temperature and humidity testing
电池 battery	SIZE AA(5 号) SIZE AA(No. 5 battery)	2 个 2PCS	南孚 Excell 工业装, 2600mAh Nanfu Excell Industrial Installation, 2600mAh

1. 产品介绍 Product Presentation

VDB1611 是一款带加速度计和温湿度传感器的蓝牙信标。其广播协议符合蓝牙 BLE 广播协议，包括 iBeacon (Apple) 和 Eddystone (Google) 两种协议。它通常被安装在一个合适的位置，采样温湿度及加速度信息，并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并采集到其传感器信息。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。

The VDB1611 is a Bluetooth beacon with an accelerometer and a temperature and humidity sensor. Its broadcasting protocol conforms to the Bluetooth BLE broadcasting protocol, including iBeacon (Apple) and Eddystone (Google). It is usually installed in a suitable location, sampling temperature, humidity and acceleration information, and periodically broadcasting to its surrounding environment, so as to be scanned by other Bluetooth devices such as Bluetooth gateway and collect its sensor information. It is usually not connected to other BLE host devices, but can be connected via a mobile APP, modifying its broadcast parameters, etc.

Skylab_xBeacon 是一款 SKYLAB 研发团队研发用于配置 VDB1611 参数的手机 APP。用这款 APP 去连接 VDB1611，可以修改它的广播频率、功率，UUID, Major, Minor 和设备名称等等参数。当 VDB1611 处于广播状态时这些参数将被广播出来。

Skylab_xBeacon is a mobile APP developed by SKYLAB research and development team to configure VDB1611 parameters. Using this APP to connect to VDB1611, you can modify its broadcast frequency, power, UUID, Major, Minor, device name and other parameters. These parameters will be broadcast when VDB1611 is in the broadcast state.



VDB1611

1.1 VDB1611 内部模块介绍 **VDB1611 internal module introduction**

VDB1611 基于 Nrodic nRF52832 芯片平台, 使用 LIS2DH12 三轴加速度传感器和 SH31 温湿度传感器, 实现运动状态, 温湿度信息的广播。

VDB1611 is based on Nrodic nRF52832 chip platform and uses LIS2DH12 triaxial acceleration sensor and SH31 temperature and humidity sensor to realize the broadcast of motion state, temperature and humidity information.

VDB1611 用两节 5 号电池 (南孚 Excell 工业装) 串联供电, 方便更换电池。

VDB1611 is powered by two No. 5 batteries (Nanfu Excel industrial Installation) in tandem for easy battery replacement.

此外, VDB1611 内部的 PCB 板上留有用于节省电量的开关、用于调试的烧录口和一对 UART 串口。

In addition, the VDB1611 has an internal PCB with a power saving switch, a burning port for debugging, and a pair of UART serial ports.

1.2 VDB1611 特性 **VDB1611 features**

低功耗 **low power consumption**

加速度和温湿度数据采集 **Acceleration, temperature and humidity data acquisition**

应用灵活 **Application of flexible**

安装便捷 **Convenient installation**

广播距离可达 70 米 **The broadcast range is up to 70 meters**

符合 RoHS, FCC, CE 标准 **Comply with RoHS, FCC and CE standards**

1.3 VDB1611 应用 **VDB1611 application**

分布式传感器 **Distributed sensor**

室内定位 **indoor localization**

信息推送 **information push**

身份识别 **Identity technologies**

微信摇一摇 **WeChat, shake**

2. 硬件参数 Hardware parameters

产品参数 Product Parameter	
尺寸 size	72*45*26mm (长度*宽度*高度) 72*45*26mm (length * width * height)
电池型号 BATTERY SIZE	Size AA (5 号电池) Size AA (No. 5 battery)

传感器参数 Sensor Parameter	
加速度传感器 acceleration sensor	3 轴, $\pm 2g/4g/8g/16g$ 四档可调 3 axis, $\pm 2G / 4G / 8g/16g$ four gears adjustable
湿度传感器 humidity sensor	0%RH~100%RH ($\pm 2\%RH$)
温度传感器 temperature sensor	$-20^{\circ}C \sim 70^{\circ}C$ ($\pm 0.2^{\circ}C$)
工作温度 operating temperature	$-20^{\circ}C \sim 70^{\circ}C$

蓝牙参数 Bluetooth parameters	
无线标准 Wireless standards	蓝牙®4.2/5.0(不支持 long-range) Bluetooth ®4.2/5.0(no long-Range support)
频率范围 frequency range	2400MHz——2483.5MHz

数据速率 data rate	250 kbps / 1 Mbps / 2 Mbps		
调制技术 modulation technique	GFSK 调制 GFSK modulation		
无线安全 Wireless security	AES		
传输功率 Transmission Power	-20~+4dBm (4 dB 递增) -20~+4dBm (4dB increasing)		
灵敏度 sensitivity	-93dBm at 1Mbps BLE		
工作模式 Working mode	从机 Peripheral From the machine Peripheral		
电池使用寿命 Battery life			
广播功率 broadcasting power	覆盖范围 coverage area	广播间隔 Broadcast interval	电池使用时间 (月) Battery Life (month)
+4dBm	70m	100ms	10.2
		200ms	19.7
		500ms	45.1
		1000ms	78.9
+0dBm	50m	100ms	13.8
		200ms	26.5
		500ms	58.9
		1000ms	99.2

注:

功耗数据仅供参考,当计算寿命大于电池寿命(5年)时,以电池寿命为准;

加速度传感器默认工作中断模式(运动后就会给出中断),最后一次运动10s后认为进入静止状态;

温湿度采样频率默认每分钟采样一次。

Note:

The power consumption data is for reference only. When the calculated life is longer than the battery life (5 years), the battery life shall prevail.

The acceleration sensor works in the interrupt mode by default (the interrupt will be given after the motion), and it is considered to enter the static state after the last motion of 10s.

The sampling frequency of temperature and humidity is once per minute by default.

3. 软件使用说明 **Software Instructions**

3.1 VDB1611 开机 **VDB1611starting up**

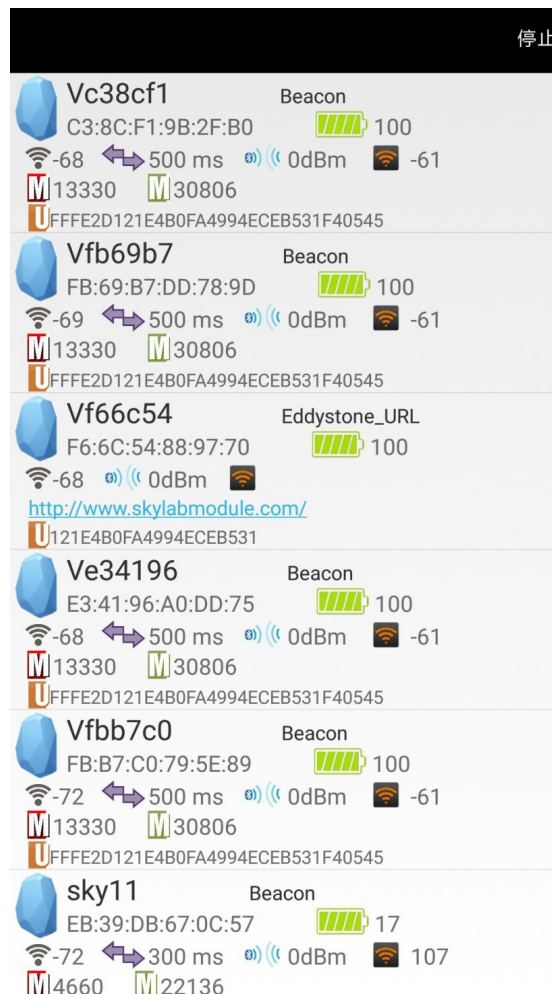
打开 VDB1611 的底壳，安装两个 Size AA 电池，再将开关拨到“ON”。此时，VDB1611 开始广播，再安装 VDB1611 的底壳。如未特殊要求，默认出货样机已提前拨到“ON”上，并装好电池打好螺丝。

Open the bottom shell of VDB1611, install two Size AA batteries, and then turn the switch to "ON".At this point, VDB1611 starts broadcasting, and then install the bottom shell of VDB1611.If there is no special requirement, the default shipping prototype has been set to "ON" in advance, and the battery has been installed and screws have been made.

3.2 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。

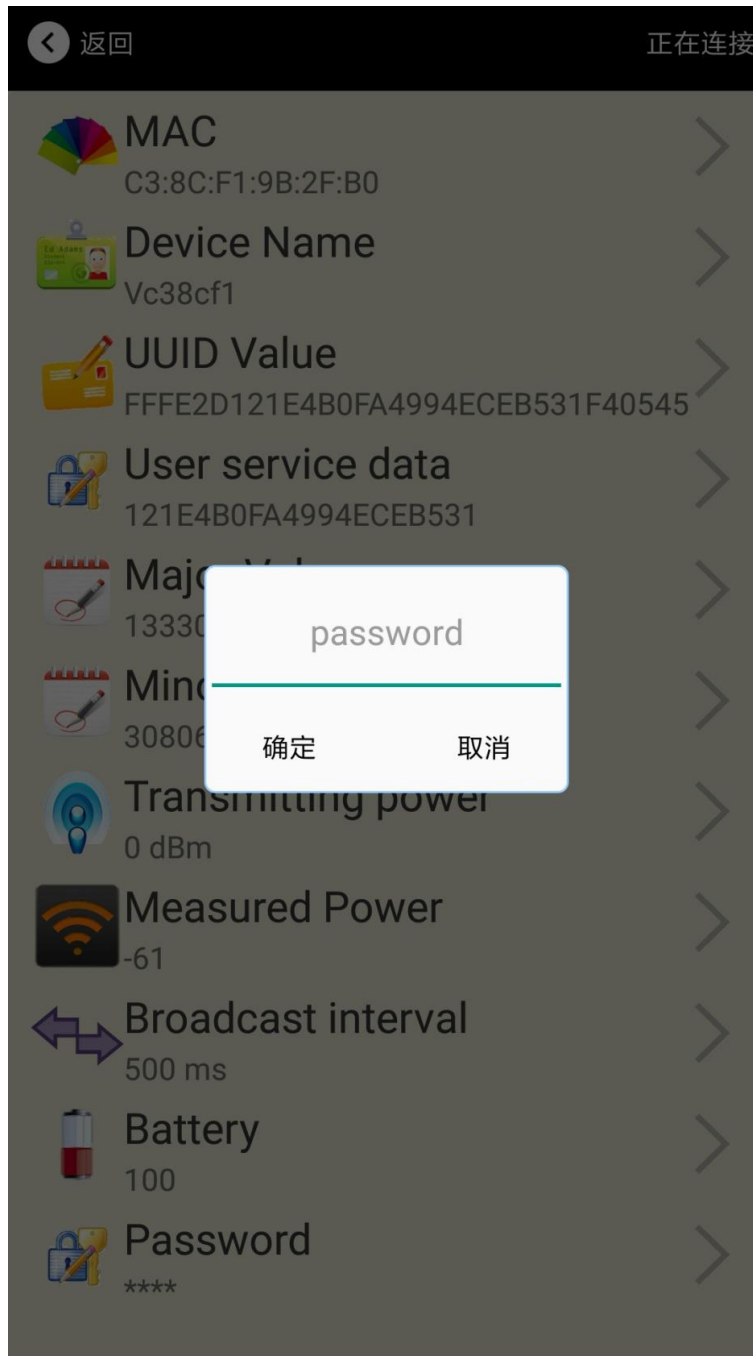
Open the APP. If the phone prompts to turn on Bluetooth, please allow the phone to automatically scan the surrounding Bluetooth beacons.



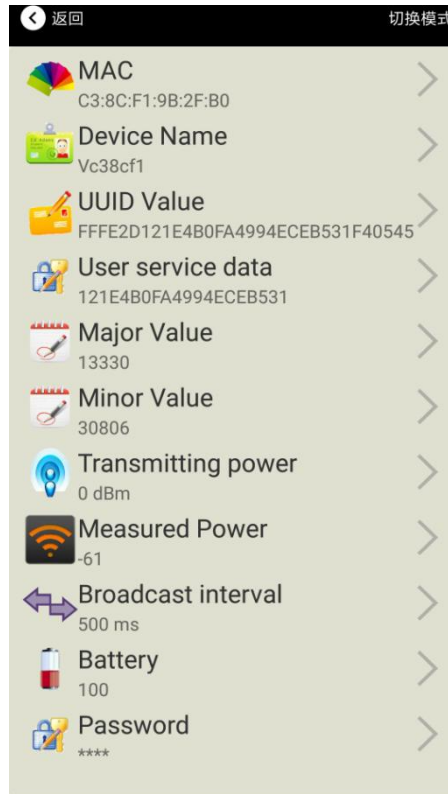
3.3 连接蓝牙信标 **Connect to bluetooth beacons**

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)



3.4 配置介绍 Configuration Instruction



介绍:

MAC: MAC 地址

MAC: MAC address

Name:所选蓝牙信标的名称。

Name: The Name of the selected Bluetooth beacon.

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

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

User service data:用户数据，24 个 16 进制数字

User Service data: User data, 24 hexadecimal digits

Major: 16 位标识符(0-65535)

Major: 16-bit identifier (0-65535)

Minor: 16 位标识符(0-65535)

Minor: 16-bit identifier (0-65535)

Measured Power:距离 1 米时的参考信号强度

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

Transmit Power:VG05 发射功率

Transmit Power:VG05 Transmit Power

Advertise Interval:VG05 广播间隔

Advertise Interval:VG05 broadcast interval

Battery Level:VG05 电池电量

Battery Level:VG05 Battery Level

Password:VG05 密码 (默认 1234)

Password:VG05 (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 Bluetooth connection is disconnected and the configuration will take effect.

3.5 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".



3.6 修改 UUID **Modify the 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 VG05 的 UUID。然后点击“确认修改”。

Click "UUID" to bring up the following UI, then type 16 bytes (32 hexadecimal characters) in the "Enter a UUID Value" box as the UUID for VG05. Then click "Confirm changes".



3.7 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 "User Service Data" and the following interface will appear. Enter 24 hexadecimal characters in "Enter User Data". Then click "Confirm changes".



晚上7:28 0.7K/s 蓝牙 闹钟 信号 76

返回

 用户数据

121E4B0FA4994ECEB531

输入用户数据

或者选一个

AABBCCDDEEFF001122334455

00112233445566778899AABB

123456781234567812345678

确认修改

用户数据长度不超过13字节，请使用16进制数据格式。

3.8 修改 Major、Minor **Modify Major and 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 will appear. Set 0~65535 as the Major value of the device. Then click "Confirm changes".



修改 Minor **Modify the Minor**

同上面 Major 类似，点击 Minor 进入修改即可。

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

3.9 修改 Measured Power **Modify the Measured Power**

点击“Measured Power”，出现如下 UI，在距离 VG05 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 VG05 约为 1 米。

Click "Measured Power", and the following UI appears. Set Measured Power at a distance of 1 m from VG05. The adjustable range is -100dbm ~ -30dbm, and the default is -61dbm. Then click "Confirm changes".

Measured Power means that when the signal strength to be received by the receiving equipment is -61dbm, the Measured Power shall be deemed to be about 1 m away from VG05.



3.10 修改发射功率 **Modified transmitting power**

点击“Transmission Power”出现如下 UI，设置 VG05 的发射功率。功率可设置为:-30dBm， -20dBm， -16dBm， -12dBm， -8dBm， -4dBm, 0dBm, 4dBm。默认是 0 dBm。然后点击“确认修改”。

Click "Transmission Power" to display the following UI and set the Transmission Power of VG05. The power can be set to: -30dbm, -20dbm, -16dbm, -12dbm, -8dbm, -4dbm, 0dbm, 4dbm. The default is 0 dBm. Then click "Confirm changes".



3.11 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".



3.12 修改密码 [Change 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" and the following UI will appear. Then, enter 4 characters in the "Password" box as the connection Password. The default is 1234. Then click "Confirm changes".



!!! 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。

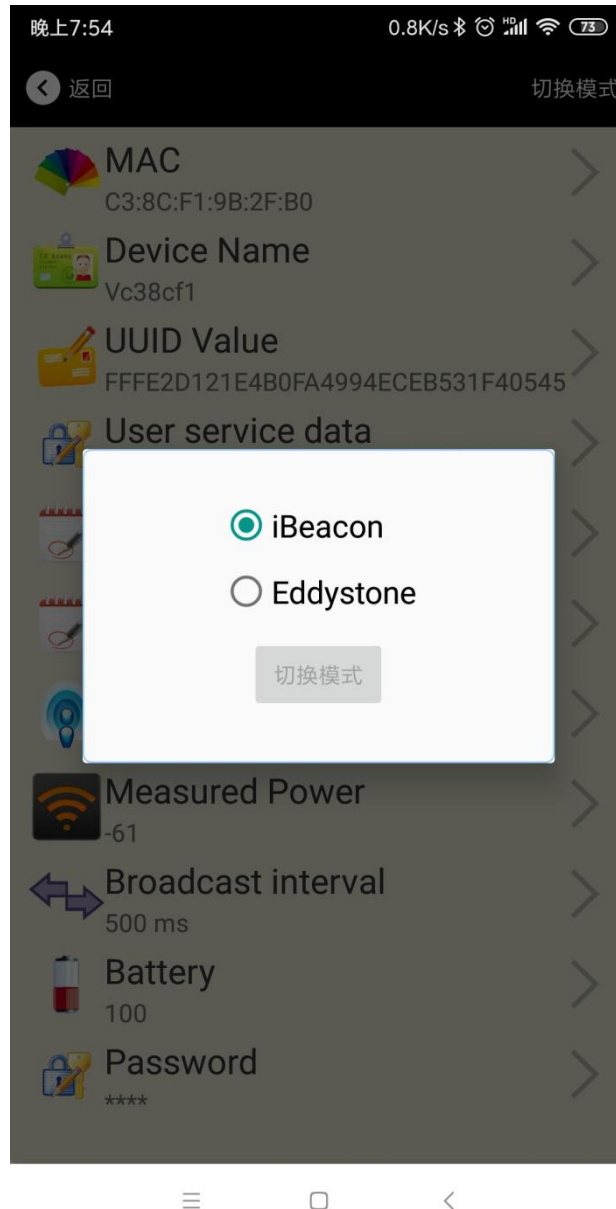
!!!!!!!Note:

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.

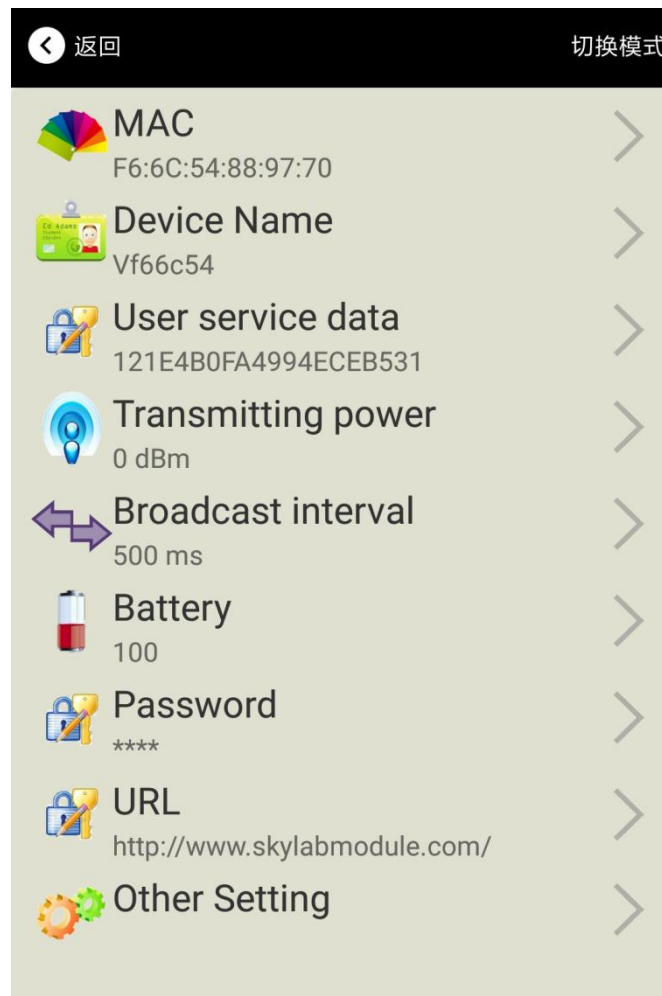
3.13 切换模式 Switching Mode

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.



3.14 Eddystone 配置页面简介 [Introduction to the Eddystone configuration page](#)



简介:[introductory](#)

MAC:MAC 地址

[MAC:MAC address](#)

Name:蓝牙信标的名称，配置方式同 iBeacon 模式。

[Name: The Name of the Bluetooth beacon, configured in the same manner as iBeacon mode.](#)

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

[User Service data: User-defined data, configured in the same way as iBeacon mode.](#)

Transmit Power:VG05 发射功率，配置方式同 iBeacon 模式。

[Transmit Power:VG05 Transmit Power, configured in the same mode as iBeacon.](#)

Advertise Interval:VG05 广播间隔，配置方式同 iBeacon 模式。

[Advertise Interval:VG05 broadcast Interval, configured in iBeacon mode.](#)

Battery Level:VG05 电池电量

Battery Level:VG05 Battery Level

Password:VG05 连接密码，配置方式同 iBeacon 模式。

Password:VG05 connection Password, configured in the same way as iBeacon mode.

URL:修改 Eddystone 字段信息。默认格式是 URL。

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

Other Setting:用于选择 Eddystone 其他字段信息。

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

配置好信息后，蓝牙连接断开，配置将生效。

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

3.15 修改 URL **Modify the 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.



3.16 修改 Other Setting **Modify Other Setting**

选择并设置 UID 信息:**Select and set UID information:**



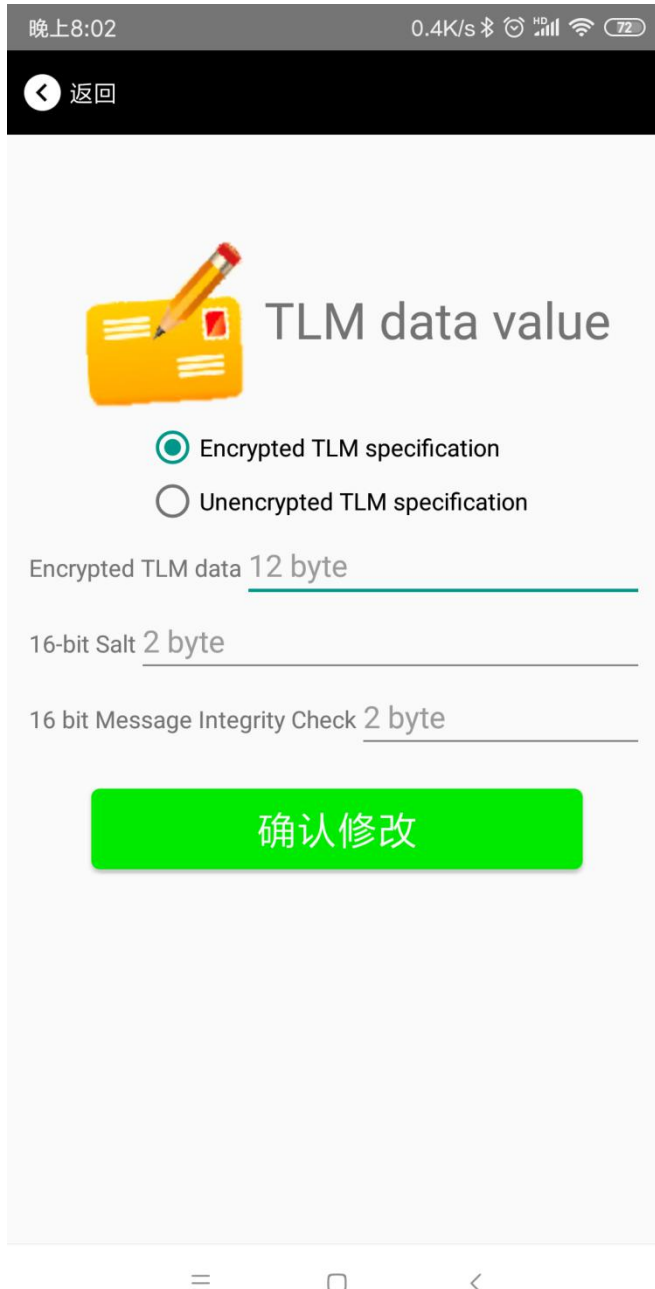
分别设置 NameSpace(10 字节)和 Instance(6 字节)。 **Set NameSpace(10 bytes) and Instance(6 bytes), respectively.**

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.](#)

选择并设置 TLM 信息:[Select and set TLM information:](#)



推荐选择 Encrypted TLM specification (加密的 TLM 规范), 然后输入分别输入最多 12 字节的 Encrypted TLM data (加密 TLM 数据), 2 字节的 16-bit Salt, 以及 2 字节的 16 bit Message Integrity Check.

[It is recommended to select the Encrypted TLM Specification, Encrypted TLM Data, Encrypted TLM Data, 2-byte 16-bit Salt, and 2-byte 16-Bit Message Integrity Check for Encrypted TLM Data, respectively.](#)

3.17 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_xbeacon。

At present, the latest APP has not been put on the shelf. Please contact the sales staff to provide the APP name Skylab_xbeacon.

4. 联系方式 **Contact us**

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