

VG01 使用手册

蓝牙Beacon

VG01 User Manual

Bluetooth Beacon

文档信息/Document Information

标题/Title

VG01 使用手册 蓝牙 Beacon

VG01 User Manual Bluetooth Beacon

文档类型/Document type

使用手册/User Manual

文档编号/Document number

SL-19100137

版本和日期/Revision and date

V1.05

11-Jan-2022

披露限制/Disclosure restriction

公开/Public

历史版本/Revision History

版本号/Versions	更新内容/Description	制作人/Marker	日期/Data
V1.01	初始文档/Initial Release	Hogan	20170103
V1.02	更新认证信息/Update certification information	George	20170831
V1.03	更改中心设备描述（主机设备）/ update main Device Description (Host device)	Abner	20171011
V1.04	更新电气参数信息/ Updated electrical parameter information	George	20181109
V1.05	增加英文版和更新芯片型号/ Add English version and update chip model	Wendy	20220111

设备清单/Device list

名称/Device Name	型号/Device No.	数量/Number	备注/Remark
蓝牙信标/Bluetooth Beacon	VG01	1PCS	
纽扣电池/Button Cell Battery	CR2477	1PCS	

SKYLAB 保留本文档及本文档所包含的信息的所有权利。SKYLAB 拥有本文档所述的产品、名称、标识和设计的全部知识产权。严禁没有征得 SKYLAB 的许可的情况下复制、使用、修改或向第三方披露本文档的全部或部分内容。

SKYLAB 对本文档所包含的信息的使用不承担任何责任。没有明示或暗示的保证，包括但不限于关于信息的准确性、正确性、可靠性和适用性。SKYLAB 可以随时修订这个文档。可以访问 www.skylab.com.cn 获得最新的文件。

Copyright © 2018, 深圳市天工测控技术有限公司。

SKYLAB® 是深圳市天工测控技术有限公司在中国的注册商标。

SKYLAB reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. Reproduction, use, modification or disclosure to third parties of this document or any part thereof without the express permission of SKYLAB is strictly prohibited.

The information contained herein is provided “as is” and SKYLAB assumes no liability for the use of the information. No warranty, either express or implied, is given, including but not limited, with respect to the accuracy, correctness, reliability and fitness for a particular purpose of the information. This document may be revised by SKYLAB at any time. For most recent documents, visit www.skylab.com.cn.

Copyright © 2018, Skylab M&C Technology Co., Ltd.

SKYLAB® is a registered trademark of Skylab M&C Technology Co., Ltd in China.

目录/Contents

目录/Contents.....	3
1. 产品介绍/Product Introduction.....	4
1.1 VG01 内部模块介绍/ VG01 Internal Module Introduction.....	5
1.2 VG01 特性/Features.....	5
1.3 VG01 应用/Application.....	5
2. 硬件参数/Hardware Parameter.....	5
产品参数/Product Parameter.....	5
3. 配置参数/Configuration Parameters.....	7
3.1 VG01 开机/ VG01 Power on.....	7
3.2 扫描蓝牙 Beacon/ Scan Bluetooth Beacon.....	7
3.3 连接蓝牙 Beacon/ Connect Bluetooth Beacon.....	8
3.4 配置页面介绍/Configuration Introduction.....	9
3.5 修改蓝牙 Beacon 名称/ Modify Bluetooth Beacon Name.....	10
3.6 修改 UUID 值/ Modify UUID.....	11
3.7 修改 Major 值/ Modify Major.....	12
3.8 修改 Minor 值/ Modify Minor.....	13
3.9 修改参考校正功率/Modify Measured Power.....	14
3.10 修改无线发射功率/Modify Transmission Power.....	15
3.11 修改广播间隔/Modify Advertise Interval.....	16
3.12 修改连接密码/Modify Password.....	17
3.13 其他设置/ Others settings.....	18
3.14 快速配置/ Fast configuration.....	19
3.15 APP 下载/Download APP.....	20
4. 联系方式/Contact Information.....	20

1. 产品介绍/Product Introduction

VG01 是一款蓝牙 Beacon 设备。蓝牙 Beacon 是一种基于蓝牙 BLE 协议的广播协议，也指代拥有这种广播协议的 BLE 外围设备。VG01 作为一个蓝牙 Beacon 设备，它通常被安装在一个合适的位置，同时它将连续周期性地向它的周围环境进行广播，并且它是不应该被 BLE 的主机设备进行连接的。VG01 的广播内容按照一定的规则进行排布。

VG01 is a Bluetooth Beacon device. Bluetooth Beacon is a broadcasting protocol which is based on BLE protocol, also referred to a kind of BLE peripheral device that has this protocol. VG01 as a Bluetooth Beacon device, it is usually placed in a certain place, and it broadcasts its beacon signals like UUID, Major, Minor, RSSI etc. to surroundings continuously, and it can not be entered to the connection state to any BLE central device, the advertising data are arranged according to certain rules.

SkyBeacon 是一款 SKYLAB 研发团队研发用于配置 VG01 参数的手机 APP。用这款 APP 去连接 VG01，修改它的 UUID, Major, Minor 和设备名称等等参数。当 VG01 处于广播状态时这些参数将被广播出来。

SkyBeacon is a Phone APP for configuring VG01 which is made by Skylab R&D Team. Use this APP to connect to VG01 and modify its parameters such as UUID, Major, Minor, Name and so on. These parameters will be advertised after the VG01 being advertising condition.



图 1 /Figure 1: VG01

1.1 VG01 内部模块介绍/ VG01 Internal Module Introduction

VG01 是基于 Nordic nRF51802 的蓝牙 Beacon。VG01 用一个 CR2477 纽扣电池供电，电池使用寿命与 VG01 内部参数设置有关。此外，VG01 内部的 PCB 板上留有烧录口和一对 UART 串口。

VG01 is based on Nordic nRF51802 Bluetooth chip. VG01 is powered by a CR2477 button battery, the battery life is related to the internal parameters of the VG01. In addition, the VG01 internal PCB Board has a burning port, a pair of UART serial port.

1.2 VG01 特性/Features

- ◆ 低功耗/Low Power Consumption
- ◆ 体积小，轻便，美观/Small, Lightweight, Beautiful
- ◆ 应用灵活/Flexible Application
- ◆ 安装便捷/Easy to Install
- ◆ 广播距离可达 70 米/Advertise Range up to 70 Meters
- ◆ 符合 RoHS,FCC,CE 标准/RoHS FCC,CE compliance (Lead-free)

1.3 VG01 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 Parameter

产品参数/Product Parameter

硬件特性/Hardware Features	
型号/Model	VG01
天线类型/Antenna Type	PCB Antenna
电池/Battery	CR2477
电压/Voltage	1.8V~3.6V
尺寸/Dimension(D×H)	47.5*16.1mm
无线特性/Wireless Features	
无线标准/Wireless Standards	Bluetooth ® 4.0
频率范围/Frequency Range	2400MHz---2483.5MHz

传输速率/Data Rates	250kbps/1Mbps/2Mbps			
调制技术/Modulation Technique	GFSK Modulation			
无线安全/Wireless Security	AES HW Encryption			
传输功率/Transmit Power	Tx Power -20 to +4dBm in 4dB Steps			
灵敏度/Sensitivity	-93dBm at 1Mbps BLE			
工作模式/Work Mode	Central/Peripheral			
其他/Others				
环境/Environment	操作温度/Operating Temperature: -20°C~70°C			
	存储温度/Storage Temperature: -40°C~85°C			
	操作湿度/Operating Humidity: 10%~90% Non-condensing			
	存储湿度/Storage Humidity: 5%~90% Non-condensing			
Battery life 电池使用寿命				
功率	覆盖范围	广播间隔	电池使用时间	平均电流
+4dBm	70m	100ms	5 个月	270uA
		200ms	9 个月	150uA
		500ms	20 个月	67uA
		1000ms	34 个月	40uA
+0dBm	50m	100ms	6 个月	225uA
		200ms	12 个月	135uA
		500ms	25 个月	54uA
		1000ms	45 个月	30uA

注：以上数据仅供参考。

Note: The above data are only for reference

3. 配置参数/Configuration Parameters

3.1 VG01 开机/ VG01 Power on

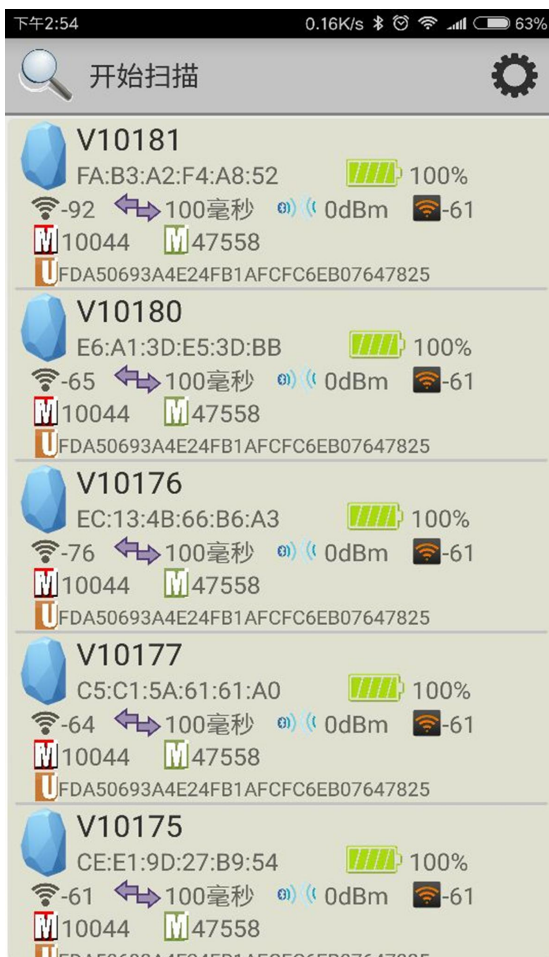
打开 VG01 的底壳，将绝缘片从 VG01 中抽出，VG01 开始广播，再安装 VG01 的底壳。

Open the bottom shell of the VG01, draw the insulation sheet out of VG01, VG01 began to broadcasting , and then install the bottom shell of the VG01.

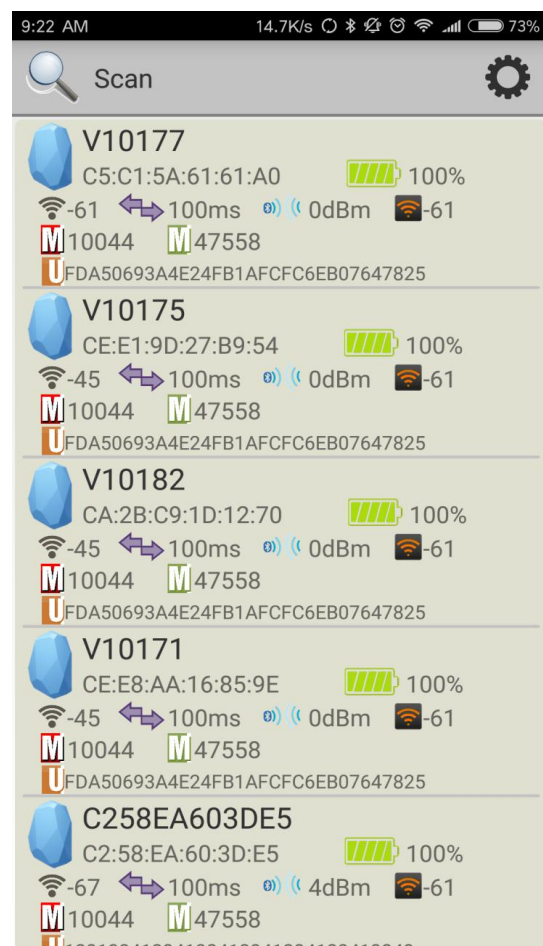
3.2 扫描蓝牙 Beacon/ Scan Bluetooth Beacon

打开 APP，点击扫描图标“开始扫描”，手机开始扫描周围的蓝牙 Beacons。

Open the APP and click the "Scan", cell phones begin to scan the surrounding Bluetooth Beacons.



中文界面

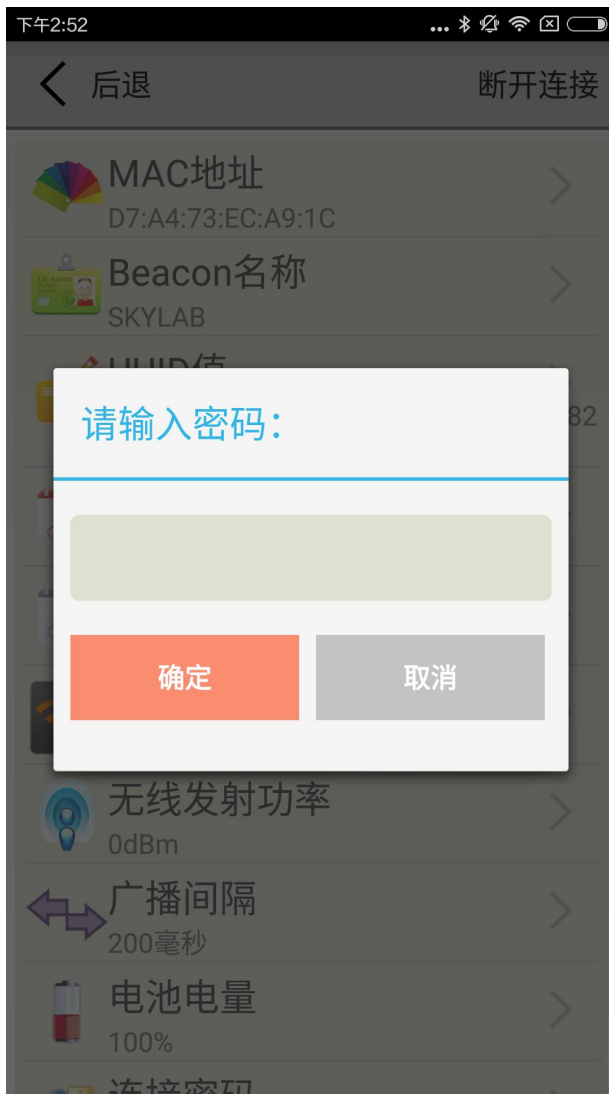


English interface

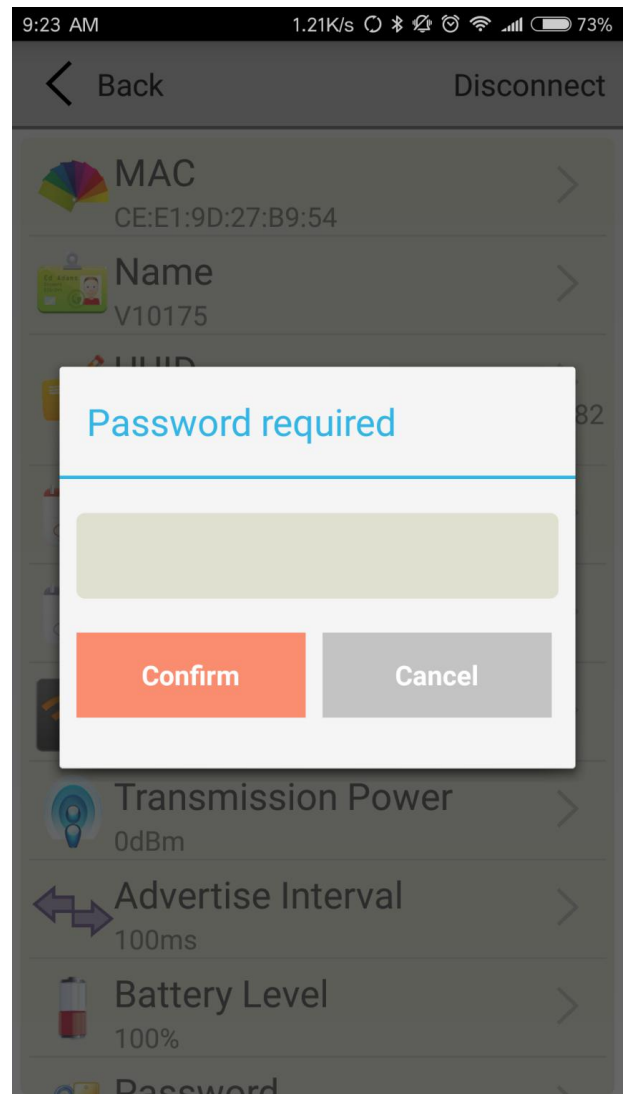
3.3 连接蓝牙 Beacon/ Connect Bluetooth Beacon

点击待连接的蓝牙 Beacon 后，出现下图，要求 30 秒内输入密码，以获得操作权限。（出厂密码为：1234）

Click the Bluetooth beacon to be connected, enter the password within 30 seconds, in order to obtain operating privileges .(Factory Password:1234)



中文界面

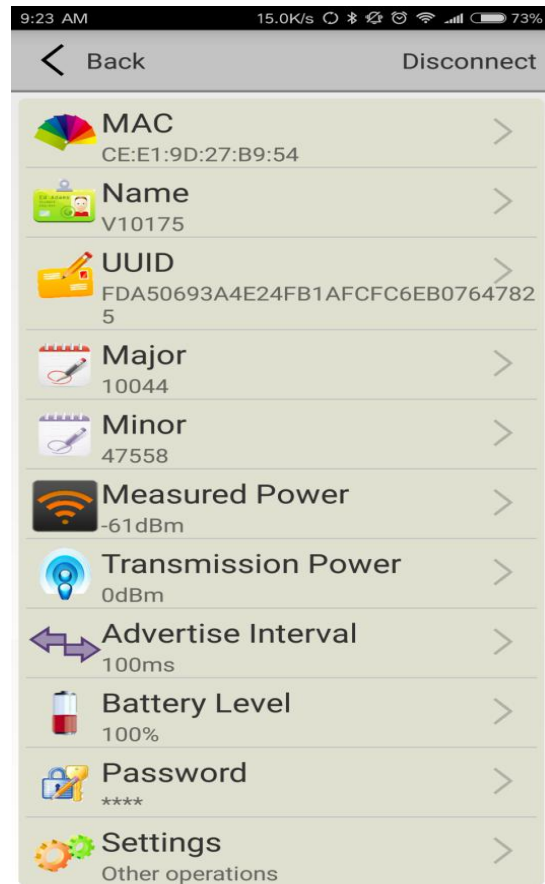


English interface

3.4 配置页面介绍/Configuration Introduction



中文界面



English interface

说明/Introductions:

MAC 地址: 芯片 MAC 地址/Chip MAC address

Beacon 名称/Name: VG01 被 APP 扫描时, APP 上显示的名称(长度少于 12 位的英文字符)/ The name of the Bluetooth Beacon which is selected.

UUID 值: 为 ISO/IEC11578:1996 标准的 128 位标识符 (32 个 16 进制的字符串) / 128-bit identifier according to ISO/IEC11578:1996 standard (32 hexadecimal digits)

Mijor 值: 自行设定的 16 位的标识符 (0-65535) / Set 16-bit identifier (0-65535)

Minor 值: 自行设定的 16 位的标识符 (0-65535) / Set 16-bit identifier (0-65535)

参考校正功率/Measured Power: 1 米处信号强度 (VG01 发射功率为 0dBm) / Signal strength at 1 meter (VG01 transmission power is 0dBm)

无线发射功率/Transmit Power: VG01 的发射功率/ VG01 transmit power

广播间隔/Advertise Interval: VG01 的广播间隔/ VG01 advertise interval

电池电量/Battery Capacity: VG01 的电池电量/ VG01 battery Capacity

连接密码/Password: 连接 VG01 时的连接密码/ VG01 connection password

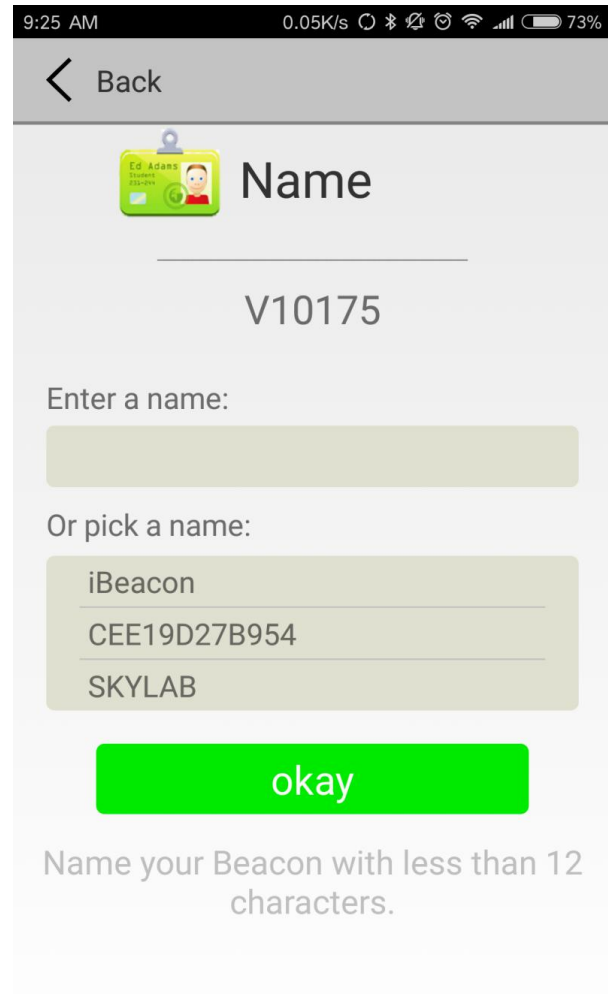
3.5 修改蓝牙 Beacon 名称/ Modify Bluetooth Beacon Name

点击“Beacon 名称”，出现下图界面，在“输入一个名称：”下面的方框内输入一个长度少于 12 位的英文字符做为 VG01 的设备名称。

Click the “Name”, appear the following UI, and then enter a length of less than 12-bit English characters as VG01 device name in the following “Enter a Name” box. Then click “okay”.



中文界面

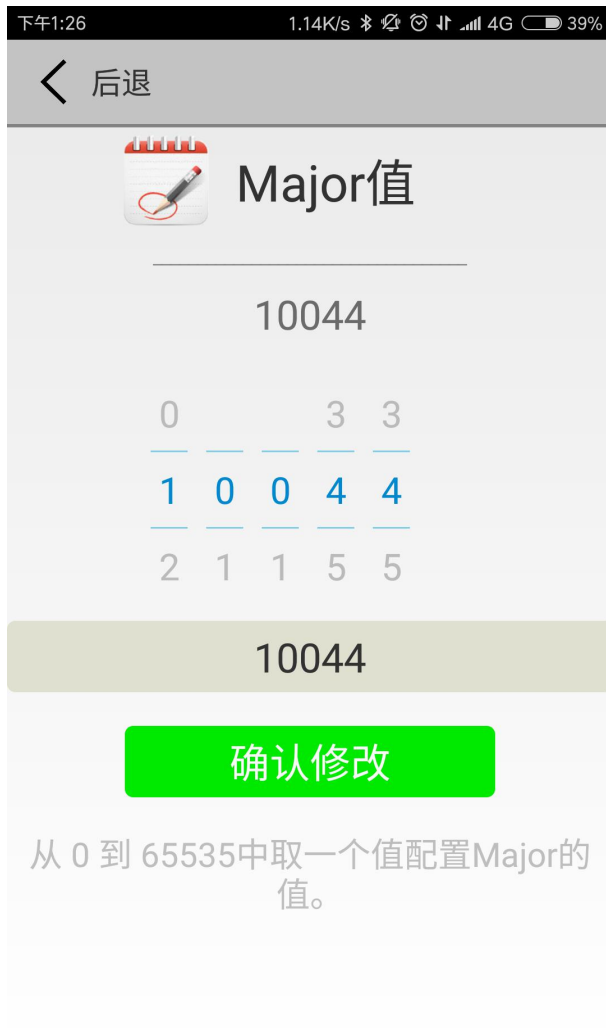


English interface

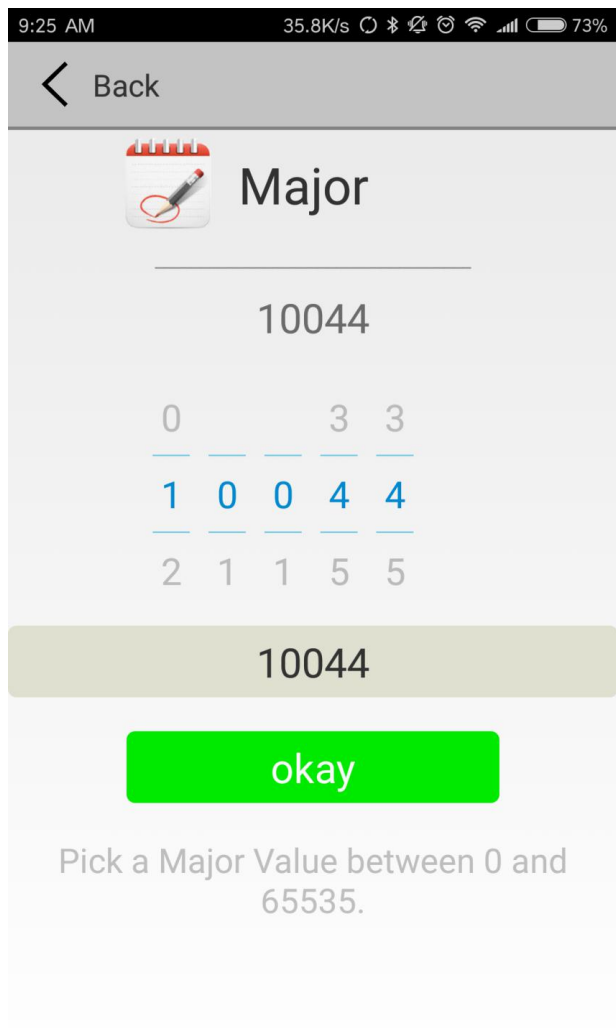
3.7 修改 Major 值/ Modify Major

点击“Major 值”，出现下图界面，设置一个 0~65535 之间的数值做为设备的 Major 值。

Click the "Major ", appear the following interface, set a value between 0~65535 as the Major values of the device. Then click “okay” .



中文界面



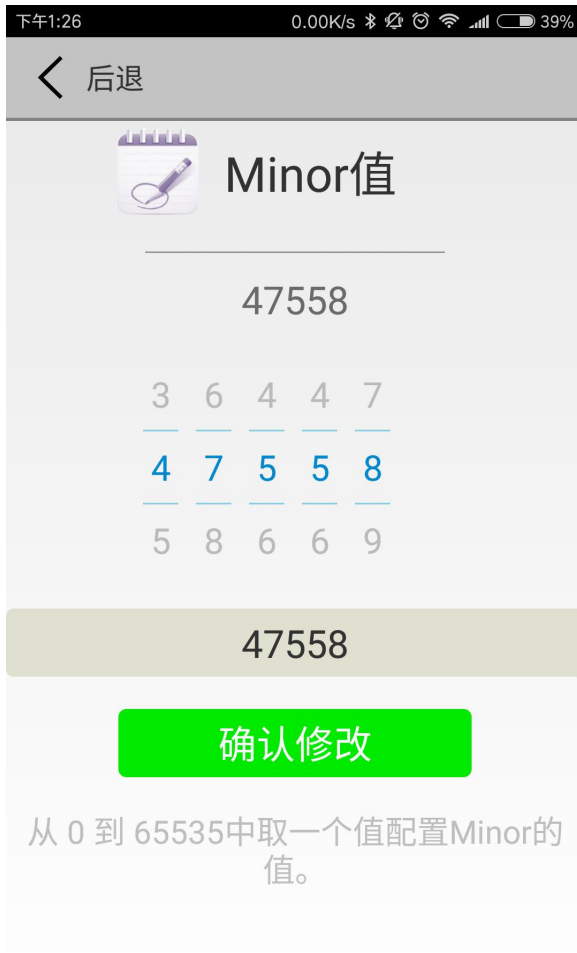
English interface

3.8 修改 Minor 值/ Modify Minor

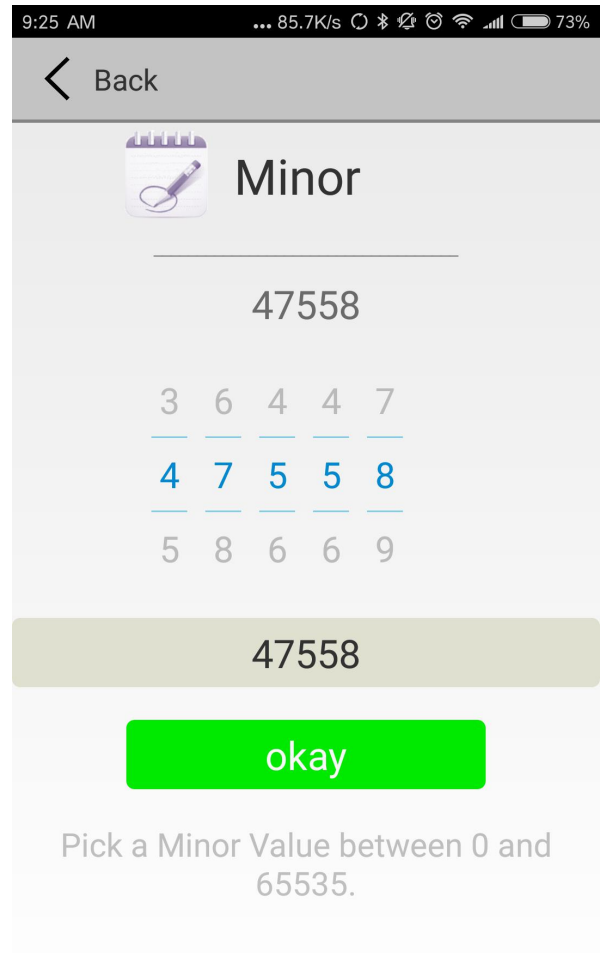
点击“Minor 值”，出现下图界面，设置一个 0~65535 之间的数值做为设备的 Minor 值。

Click the "Minor" appear the following UI, set a value between 0~65535 as the Minor value of the device.

Then click “okay” .



中文界面



English interface

3.9 修改参考校正功率/Modify Measured Power

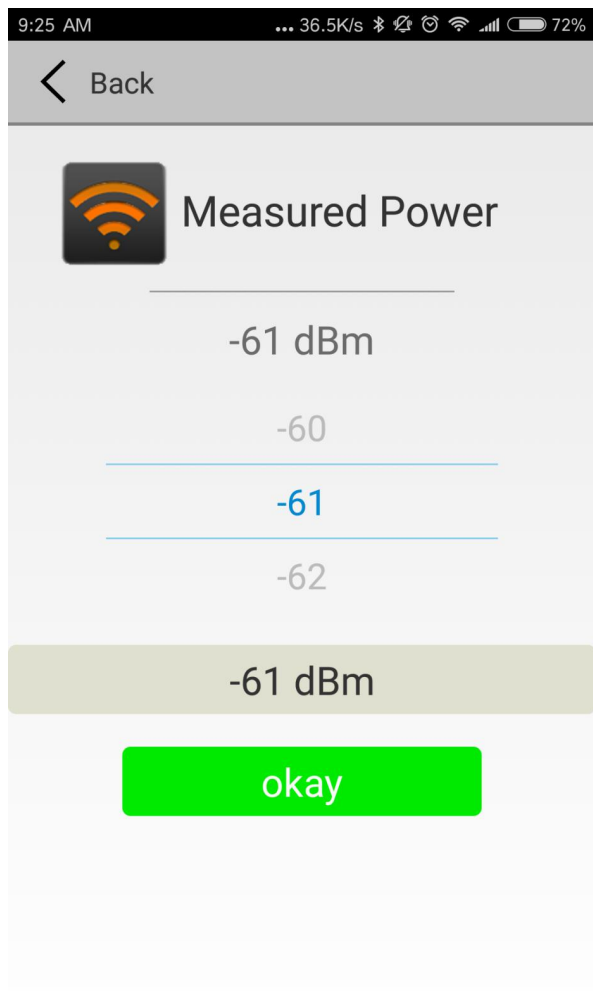
点击“参考校正功率”，出现下图界面，设置离 VG01 一米远处的参考功率，可调范围 -100dBm~-30dBm,默认为-61dBm。该值的含义为，当设备接收到 VG01 广播信号的信号强度为-61dBm 时，此时设备离 VG01 大约为 1 米。

Click the “Measured Power”, appear the following UI, set a measured power far away one meters from VG01, adjustable range -100dBm~-30dBm, the default is -61dBm.The meaning of the value, when the device received advertise signal strength is -61dBm of VG01, the device is about 1 meter from VG01.

Then click “okay”.



中文界面



English interface

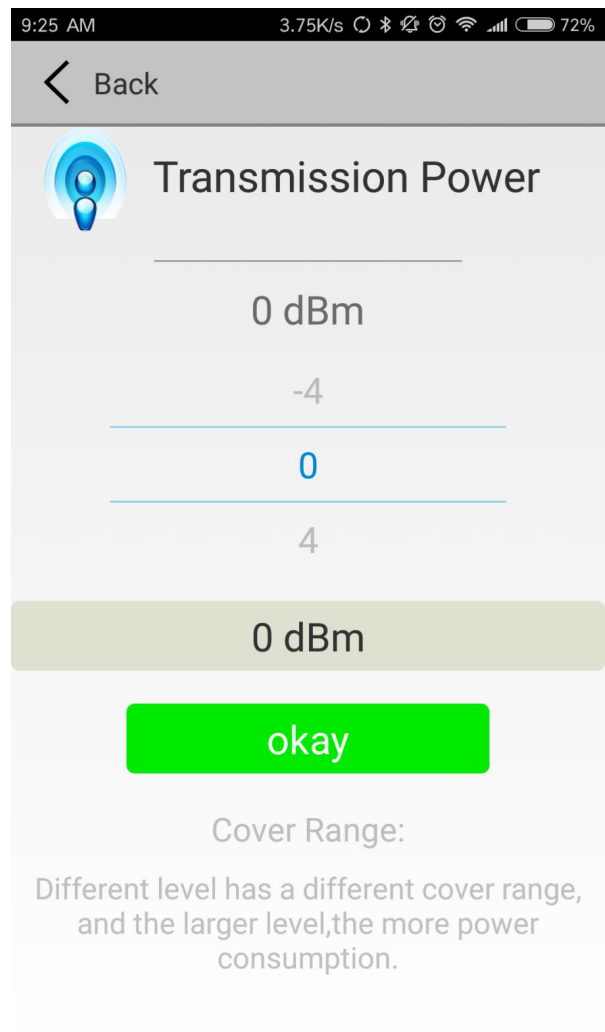
3.10 修改无线发射功率/Modify Transmission Power

点击“无线发射功率”，出现下图界面，设置 VG01 发射功率，功率可设置为：-30dBm、-20dBm、-16dBm、-12dBm、-8dBm、-4dBm、0dBm 和 4dBm。默认为 0dBm。

Click the "Transmit Power" appear the following UI, set a transmission power of VG01,, the power can be set to: -30dBm, -20dBm, -16dBm, -12dBm, -8dBm, -4dBm, 0dBm and 4dBm. Default is 0dBm. Then click "okay".



中文界面



English interface

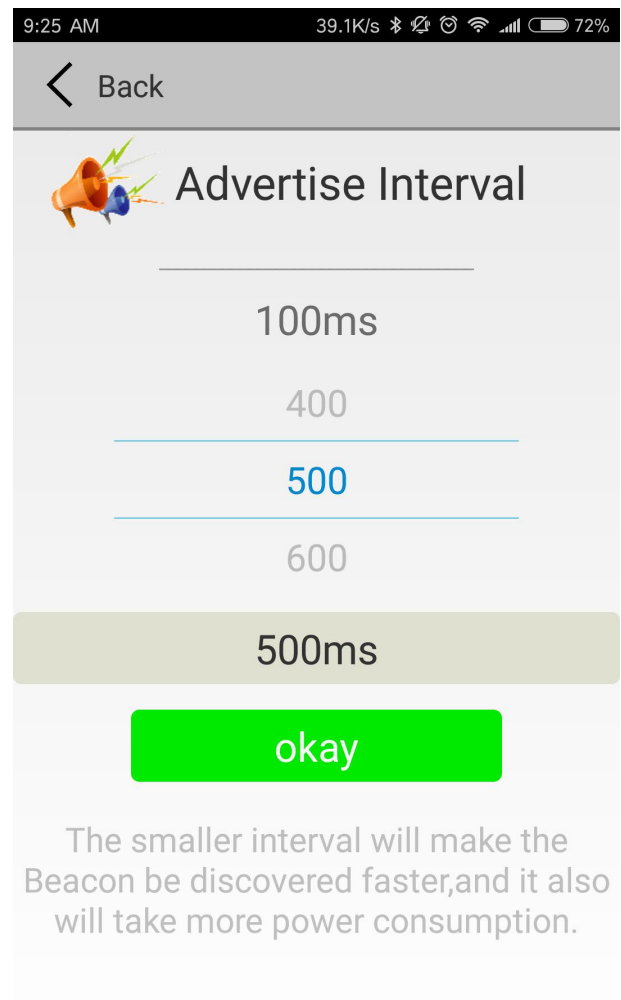
3.11 修改广播间隔/Modify Advertise Interval

点击“广播间隔”，出现下图界面，设置广播间隔，广播间隔可设置为：100ms、200ms、300ms、400ms、500ms、600ms、700ms、800ms、900ms 和 1000ms。默认为 500ms。

Click the "Advertise Interval" appear the following UI, set a advertise interval, broadcasting interval can be set to 100ms, 200ms, 300ms, 400ms, 500ms, 600ms of 700ms, 800ms, 900ms and 1000ms. The default is 500ms. Then click “okay” .



中文界面



English interface

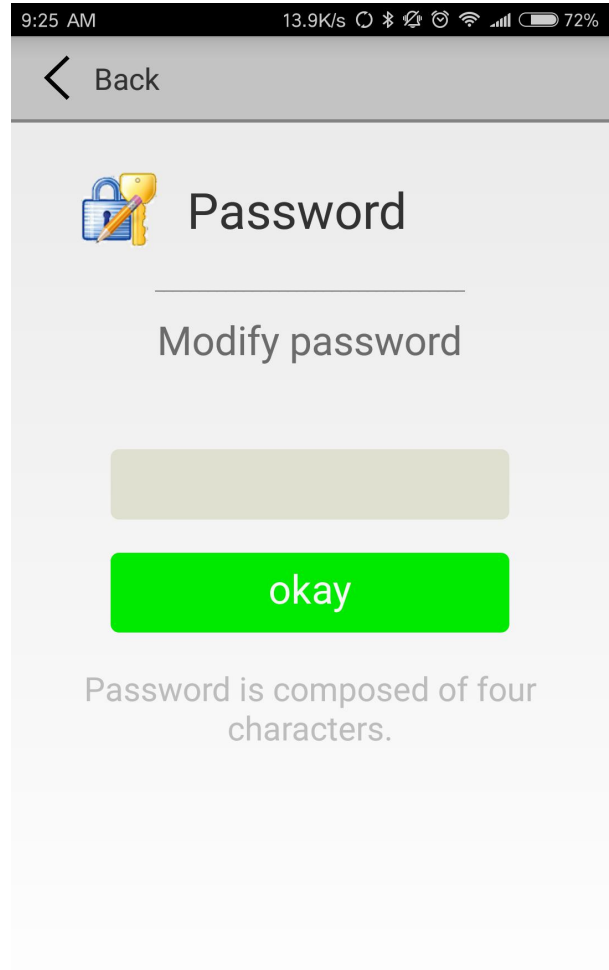
3.12 修改连接密码/Modify Password

点击“连接密码”，出现下图界面，在“修改连接密码操作”下方方框内输入4个英文字符做为连接密码。默认为1234。

Click the “Password”, appear the following UI, and then enter the 4 characters as a connection password in the “Password” box, the default is 1234. Then click “okay”.



中文界面



English interface

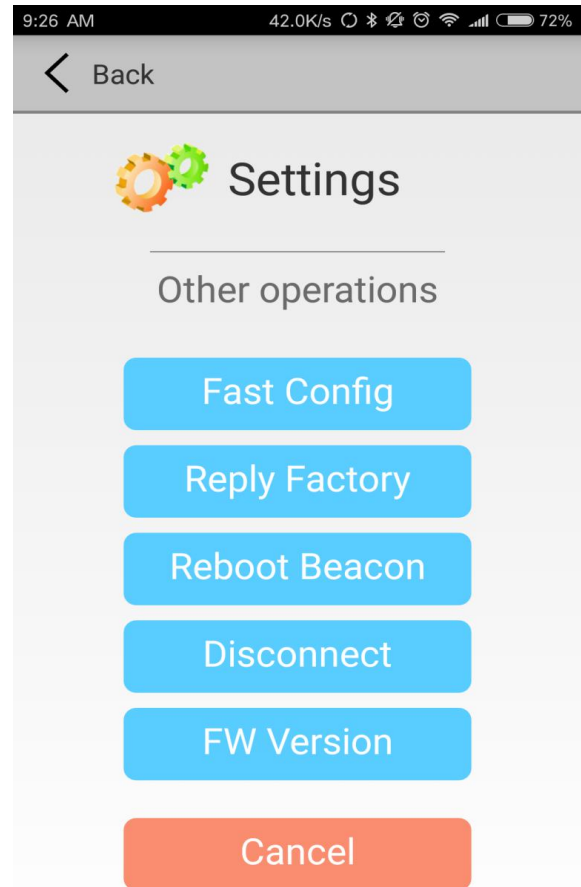
3.13 其他设置/ Others settings

设置界面里可以实现其他的操作。

Settings interface can achieve other operations.



中文界面



English interface

说明/Introductions:

快速配置功能/ Fast Configuration: 将当前连接的蓝牙 Beacon 快速配置成上一次连接修改完成的蓝牙 Beacon 一样的参数/Fast configuration can realize quickly configuration your beacons by using the last record

恢复出厂设置/Reply Factory: 恢复出厂时的设置/Restore factory settings

重启 Beacon/Reboot Beacon: 重新启动 VG01/ Restart the VG01

断开连接/Disconnect: 将当前连接的 VG01 断开/Disconnect the current VG01

固件版本/FW version: 查看当前 VG01 内的固件版本/View the current firmware version of VG01

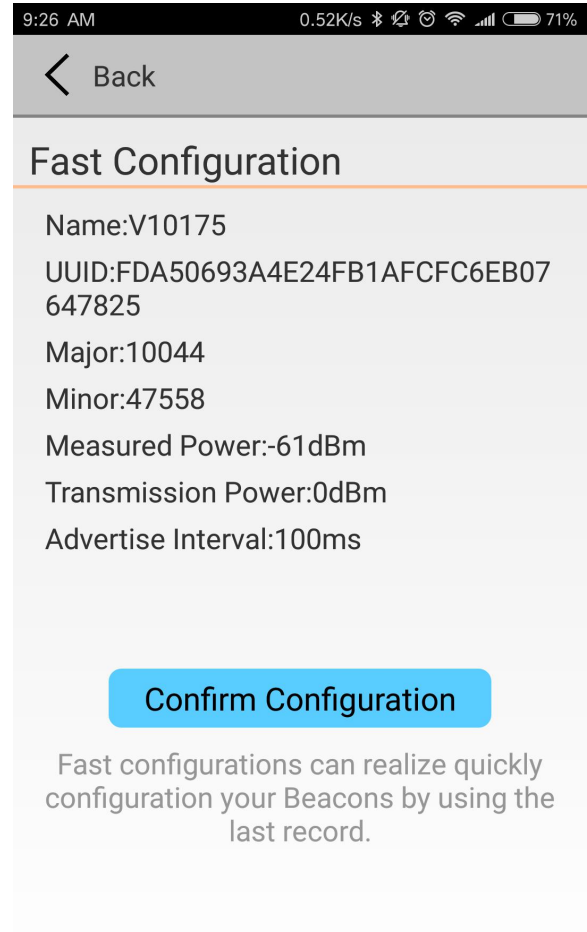
3.14 快速配置/ Fast configuration

快速配置功能是将当前连接的蓝牙 Beacon 快速配置成上一次连接修改完成的蓝牙 Beacon 一样的参数。

Fast Configuration can realize quickly configuration your beacons by using the last record.



中文界面



English interface

3.15 APP 下载/Download APP



Android 版二维码/ Android Version of QR Code

说明: 也可以在安卓市场里下载得到 APP。APP 的名称是 SkyBeacon。

Introductions: Also available in Android Market download in APP. SkyBeacon is the name of the APP.

4. 联系方式/Contact Information

Skylab M&C Technology Co., Ltd.

深圳市天工测控技术有限公司

地址: 深圳市龙华新区龙华办事处工业东路利金城科技工业园 9 栋 6 楼

Address: 6 Floor, No.9 Building, Lijincheng Scientific & Technical park, Gongye East Road, Longhua District, Shenzhen, Guangdong, China

电话/Phone: 86-755 8340 8210 (销售/Sales Support)

电话/Phone: 86-755 8340 8510 (技术/Technical Support)

传真/Fax: 86-755-8340 8560

邮箱/E-Mail: sales1@skylab.com.cn

网址/Website: www.skylab.com.cn www.skylabmodule.com