蓝牙信标

VDB1615规格书/datasheet

文档信息

<table>
<thead>
<tr>
<th>标题/Title</th>
<th>VDB1615 蓝牙信标模块规格书/datasheet</th>
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</thead>
<tbody>
<tr>
<td>文档类型/Document type</td>
<td>规格书/datasheet</td>
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<td>文档编号/Document number</td>
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修订历史/Revision History

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<tr>
<th>修订/ revision</th>
<th>描述(description)</th>
<th>修改人/modifier</th>
<th>日期/date</th>
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<tr>
<td>V1.01</td>
<td>最初版本/initial release</td>
<td>谢晓博/sherman</td>
<td>20201111</td>
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此文档适用于以下产品：

<table>
<thead>
<tr>
<th>产品名称</th>
<th>产品型号</th>
<th>产品状态</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beacon</td>
<td>VDB1615</td>
<td>量产</td>
</tr>
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目录

1. 产品介绍/Product Introduction..............................................................................................................5
   1.1 VDB1615 内部介绍/Internal introduction....................................................................................5
   1.2 VDB1615 特性/features................................................................................................................5
   1.3 VDB1615 应用/application...........................................................................................................6
2. 硬件参数/Hardware parameters..........................................................................................................6
   2.1 产品参数/Product Parameter..................................................................................................6
   2.2 电池寿命/Battery life................................................................................................................7
   2.3 结构参数/structural parameters..............................................................................................8
3. 硬件使用说明/Hardware Instructions..................................................................................................9
   3.1 VDB1615 安装电池/install battery...........................................................................................9
   3.2 VDB1615 安装固定方法/Mounting and fixing method...............................................................10
4. 软件使用说明/Software Instructions................................................................................................10
   4.1 下载应用程序/Download APP................................................................................................11
   4.2 扫描蓝牙信标/Scan Bluetooth beacons.....................................................................................11
   4.3 连接蓝牙信标/Connect Bluetooth 4.2 Beacon.........................................................................12
   4.4 配置介绍/Configuration Introduction.........................................................................................13
   4.5 修改蓝牙信标名称/Modify Bluetooth 4.2 Beacon Name.........................................................14
   4.6 修改 UUID/Modify UUID..........................................................................................................15
   4.8 修改 Major、Minor/Modify Major、Minor................................................................................17
   4.9 修改 Measured Power/Modify Measured Power........................................................................18
   4.10 修改发射功率/Modify Transmitting Power.............................................................................19
   4.12 修改密码/Modify Password.....................................................................................................21
   4.13 切换模式/ Switch mode.............................................................................................................22
   4.14 Eddystone 配置页面简介/Eddystone configuration page Introduction..................................23
   4.15 修改 URL/Modify URL.............................................................................................................24
   4.16 修改 Other Setting/Modify Other Setting................................................................................25
5. 联系信息/Contact...
### 列表

<table>
<thead>
<tr>
<th>设备名称</th>
<th>型号</th>
<th>数量</th>
<th>备注</th>
</tr>
</thead>
<tbody>
<tr>
<td>蓝牙信标</td>
<td>VDB1615</td>
<td>1个</td>
<td></td>
</tr>
<tr>
<td>电池</td>
<td>ER14250</td>
<td>2个</td>
<td>默认安装在VDB1615内部</td>
</tr>
</tbody>
</table>

### List

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Device No.</th>
<th>Number</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluetooth 4.2 Beacon</td>
<td>VDB1615</td>
<td>1 PCS</td>
<td></td>
</tr>
<tr>
<td>Battery</td>
<td>ER14250</td>
<td>2 PCS</td>
<td>Inside VDB1615</td>
</tr>
</tbody>
</table>
1. Product Introduction

VDB1615 is a Bluetooth Beacon device. It uses a broadcasting protocol which is based on BLE (Bluetooth Low Energy). VDB1615 broadcasts its general configuration 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.

1.1 VDB1615 Internal Introduction

VDB1615 is based on Nordic Bluetooth 4.2 chip. It is powered by 2 ER14250 batteries. Its battery life is related to the internal broadcasting parameters.

1.2 VDB1615 Features

Low Power Consumption
Small, Lightweight, Beautiful appearance
Flexible Application
Easy to Install (use 3M sticky tape)
Advertise Range up to 100 Meters
RoHS compliance (Lead-free)
FCC, CE compliance
1.3 VDB1615 Application

- **Indoor Positioning**
- **Information Push**
- **Identification**
- **WeChat Shake**

2. Hardware Parameters

### 2.1 Product Parameters

<table>
<thead>
<tr>
<th>Hardware Features</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>VDB1615</td>
</tr>
<tr>
<td><strong>Antenna Type</strong></td>
<td>PCB Antenna</td>
</tr>
<tr>
<td><strong>Battery</strong></td>
<td>ER14250 2 * 1200 mAh</td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>3.6 v</td>
</tr>
<tr>
<td><strong>Dimension (D×H)</strong></td>
<td>52.0 * 23.2(±0.3)mm</td>
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</table>

<table>
<thead>
<tr>
<th>Wireless Features</th>
<th></th>
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<tr>
<td><strong>Wireless Standards</strong></td>
<td>Bluetooth® 4.2</td>
</tr>
<tr>
<td><strong>Frequency Range</strong></td>
<td>2400MHz——2483.5MHz</td>
</tr>
<tr>
<td><strong>Data Rates</strong></td>
<td>250 kbps / 1 Mbps / 2 Mbps</td>
</tr>
<tr>
<td><strong>Modulation Technique</strong></td>
<td>GFSK</td>
</tr>
<tr>
<td><strong>Wireless Security</strong></td>
<td>AES</td>
</tr>
<tr>
<td><strong>Transmit Power</strong></td>
<td>-20~+4 dBm 可调，步长 4 dB</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>-93dBm at 1Mbps BLE</td>
</tr>
<tr>
<td><strong>Work Mode</strong></td>
<td>Peripheral</td>
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</table>

### Others
### 工作环境 Environment

<table>
<thead>
<tr>
<th>工作温度</th>
<th>Operating Temperature: -40℃~85℃</th>
</tr>
</thead>
<tbody>
<tr>
<td>儲存温度</td>
<td>Storage Temperature: -40℃~85℃</td>
</tr>
<tr>
<td>工作湿度</td>
<td>Operating Humidity: 10%~90% Non-condensing</td>
</tr>
<tr>
<td>儲存湿度</td>
<td>Storage Humidity: 5%~90% Non-condensing</td>
</tr>
</tbody>
</table>

### 2.2 电池寿命/Battery life

<table>
<thead>
<tr>
<th>发射功率 (dBm)</th>
<th>广播距离 (m)</th>
<th>广播间隔 (ms)</th>
<th>一天的功耗 (mAh)</th>
<th>待机时长 (天)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transmission Power (dBm)</strong></td>
<td><strong>Broadcast Distance (m)</strong></td>
<td><strong>Broadcast time interval (ms)</strong></td>
<td><strong>Power consumption per day (mAh)</strong></td>
<td><strong>Battery life (days)</strong></td>
</tr>
<tr>
<td>4</td>
<td>70</td>
<td>100</td>
<td>8.70984</td>
<td>276</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400</td>
<td>2.23146</td>
<td>1076</td>
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<td></td>
<td></td>
<td>500</td>
<td>1.799568</td>
<td>1334</td>
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<td>1000</td>
<td>0.935784</td>
<td>2565</td>
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<tr>
<td>0</td>
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<td>100</td>
<td>5.82984</td>
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<td>400</td>
<td>1.51146</td>
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<td>0.647784</td>
<td>3705</td>
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<td>-4</td>
<td>35</td>
<td>100</td>
<td>4.38984</td>
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<td>400</td>
<td>1.15146</td>
<td>2084</td>
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<td>500</td>
<td>0.935568</td>
<td>2565</td>
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<tr>
<td></td>
<td></td>
<td>1000</td>
<td>0.503784</td>
<td>4764</td>
</tr>
</tbody>
</table>

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。

Attention:

The above data may differ from different environments. It is calculated 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 VDB1615 安装电池 / install battery

VDB1615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。

VDB1615 will start automatically after the battery is installed. By default, two ER14250 batteries are installed and plugged in from the 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.

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.

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.

注意！千万不能把电池方向装反！

Attention！Don’t put the battery in the wrong direction!

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.
3.2 VDB1615 安装固定方法/Mounting and fixing method

3M 胶式安装

a. 使用无尘布把 VDB1615 后盖擦拭干净，防止使用过程中有灰尘或油污。

Clean the back cover of VDB1615 with a dust-free cloth to prevent dust or oil stains during use.

b. 把 3M 胶片从油纸贴上揭掉，贴到 VDB1615 后盖上，并把红纸撕掉。

Remove the 3M film from the oil paper and attach it to the back cover of VDB1615. And tear off the red paper.

c. 把 VDB1615 贴 3M 胶一面放到平面上（如桌子上）均匀按压。

Place the VDB1615 on the 3M adhesive side on a surface (such as a table) and press evenly.

d. 撕掉 3M 胶保护膜，并把 VDB1615 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 protective film of 3M adhesive and attach the 3M adhesive side of VDB1615 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 和 Eddystone 两种模式，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 iBeacon and Eddystone modes and can flexibly configure common parameters.
4.1 Download App

Download application/APP

At present, the APP has not been released. Please contact our sales representative for information. The APP name is 95POWER_xbeacon.

95power_xbeacon hasn’t been put into the market yet. Please contact our salesman for this APP.

4.2 Scan Bluetooth Beacons

Scan Bluetooth Beacons/Scan Bluetooth beacons

Open the APP, if the phone prompts to open Bluetooth, please allow. The phone will automatically start scanning surrounding Bluetooth beacons.

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.
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 Bluetooth 4.2 Beacon to be connected, 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.


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（VDB1615 transmission power is 0dBm）

Trasmit Power: VDB1615 发射功率  VDB1615 transmit power

Advertise Interval: VDB1615 广播间隔  VDB1615 advertise interval

Battery Level: VDB1615 电池电量  VDB1615 battery Capacity
Password: VDB1615 密码（默认 1234）VDB1615 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 VDB1615 device name in the following “Enter a Name” box. Then click “confirm to modify”.

![Beacon Name](image)

输入一个名称

或者选一个

iBeacon
skylabBeacon
mBeacon

确认修改

使用长度不多于8的英文字符命名，不推荐使用中文。
4.6 Modify UUID/Modify UUID

Click “UUID”, the following UI will be opened. Then and then enter a 32-byte string of sixteen as the UUID of VDB1615 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”.

![User service data interface image]
4.8 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.
4.9 修改 Measured Power/Modify Measured Power
点击“Measured Power”，出现如下 UI，在距离 VDB1615 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 VDB1615 约为 1 米。

Measured Power means, when a phone’s RSSI is -61dBm, it is about 1 meter from VDB1615.
4.10 修改发射功率/Modify Transmitting Power

点击“Transmission Power”出现如下UI，设置VDB1615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".
4.11 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”.

![UI图](image)
4.12 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.
### 4.13 切换模式/Switch mode

点击右上角切换模式文字，出现模式选择窗口，点选 Eddystone。

Click “switch mode” on the upper right corner, the mode selection window will be openend. Then you can choose iBeacon or Eddystone mode. Default mode is iBeacon.
4.14 Eddystone 配置页面简介/Eddystone configuration page Introduction

简介：

MAC: MAC 地址 / Eddystone configuration page Introduction

Name: 蓝牙信标的名称，配置方式同 iBeacon 模式。

The name of the Bluetooth 4.2 Beacon which is selected.

User service data: 用户自定义的数据，配置方式同 iBeacon 模式。/User-defined data in broadcasting

Transmit Power: VDB1615 发射功率，配置方式同 iBeacon 模式。/VDB1615 transmit power

Advertise Interval: VDB1615 广播间隔，配置方式同 iBeacon 模式。/VDB1615 advertise interval

Battery Level: VDB1615 电池电量。/VDB1615 battery Capacity

Password: VDB1615 连接密码，配置方式同 iBeacon 模式。/VDB1615 connection password

URL: 修改 Eddystone 字段信息。默认格式是 URL。
modify the Frame field information in Eddystone. The default format is URL. Other Formats can be selected by other setting

Other Setting: 用于选择 Eddystone 其他字段信息。

Format selection of Frame field information in Eddystone.

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.

4.15 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", the following UI appears, and then enter a string of up to 16 bytes on the "URL" underscore, you can broadcast the URL.
4.16 修改 Other Setting/Modify Other Setting
选择并设置 UID 信息/Select and set the UID information:

![EddyStone Uid Value]

- 输入一个 NameSpace 值
  - 输入16进制格式的10个字节

- 输入一个 Instance 值
  - 输入16进制格式的6个字节

确认修改
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 the EID information:

![Encrypted Value](image)

输入一个 Encrypted 值

或选择一个

- AABCCDDEEFF0011
- 0011223344556677
- 1234567812345678

确认修改

使用长度不多于8的英文字符命名，不推荐使用中文。
设置 EID 信息，最多 8 个字节。

Set the EID information to a maximum of 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, then enter up to 12 bytes of Encrypted TLM Data, 2 bytes of 16-bit Salt, and 2 bytes of 16-bit Message Integrity Check.
5.联系信息/Content

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