# VDB1608 Datasheet

<table>
<thead>
<tr>
<th>Document Information</th>
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<tbody>
<tr>
<td><strong>Title</strong></td>
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<td><strong>Document Number</strong></td>
</tr>
<tr>
<td><strong>Version &amp; Date</strong></td>
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<td><strong>Classify</strong></td>
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</table>
# History Version:

<table>
<thead>
<tr>
<th>Version</th>
<th>Content</th>
<th>Confirm</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.01</td>
<td>Initial Release</td>
<td>Sherman</td>
<td>2019.09.25</td>
</tr>
<tr>
<td>V1.02</td>
<td>Update the format</td>
<td>Wendy</td>
<td>20210608</td>
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</table>

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1. Product introduction

VDB1608 is a BLE (Bluetooth Low Energy) 5.0 card. It can broadcast its owner’s personal identification information like name and number. And it can be used as indoor positioning card, which can be located by BLE gateway or other BLE locating base-station.

VDB1608 can also scan and forward at most 3 other BLE cards/beacons whose broadcasting frame pattern are the same as VDB1608’s. In that way, the covering range of BLE gateway can be extended by card relay.

VDB1608 has a rechargeable 600mAh Li-Battery. It can be charged by a magnetic USB connector line. Please follow the magnetic draw direction which will combine the card and connector tightly. Do not let the battery run out for too long, which may damage the battery, and make it difficult to recharge.

VDB1608 has a power key which can also be used as SOS key. Short press can activate the SOS signal, and long press (>3S) can power on or power off the card.

VDB1608 has two LED. The red one will be on when the battery is charging. The blue one will be on when pressing the button.

Figure 1-1 VDB1608 top and bottom
2. Basic parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLE5.0 TX power</td>
<td>+8dBm Max</td>
</tr>
<tr>
<td>BLE5.0 RX sensitivity</td>
<td>-95dBm (1Mbps BLE): -103dBm (125Kbps BLE)</td>
</tr>
<tr>
<td>Frequency</td>
<td>2400~2483.5MHz</td>
</tr>
<tr>
<td>Battery Life</td>
<td>TBD</td>
</tr>
<tr>
<td>Power consumption</td>
<td>TBD</td>
</tr>
<tr>
<td>LED</td>
<td>Charging LED, state LED</td>
</tr>
<tr>
<td>Key</td>
<td>Short press: SOS</td>
</tr>
<tr>
<td></td>
<td>Long press: Turn on/off</td>
</tr>
<tr>
<td>Broadcasting distance</td>
<td>100 meters</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>550mAh</td>
</tr>
<tr>
<td>Charging cable</td>
<td>Magnetic connect cable</td>
</tr>
<tr>
<td>Charging time</td>
<td>4 hours</td>
</tr>
<tr>
<td>Program updating</td>
<td>Support USB JLINK</td>
</tr>
<tr>
<td></td>
<td>Support OTA (Over The Air, by Bluetooth updating)</td>
</tr>
<tr>
<td>Operating Temp.</td>
<td>-20~60°C</td>
</tr>
<tr>
<td>IP grade</td>
<td>IP67 (water resistance)</td>
</tr>
<tr>
<td>Dimention</td>
<td>85.33<em>53.92</em>7.26mm</td>
</tr>
<tr>
<td>Accessory</td>
<td>Magnetic connect cable, Hanging belt</td>
</tr>
</tbody>
</table>

Table 2-1 Product parameters
3. Software Application Guide

3.1 Download APP
Skylab_xbeacon hasn’t been put into the market yet. Please contact our sales for the latest APP.

3.2 Scan Bluetooth Beacon
Open the APP, if cell phone ask for permission to open bluetooth, please select yes. Then it will begin to scan the surrounding Bluetooth Beacons.
3.3 Connect Bluetooth Beacon

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

Introductions:

MAC: Chip MAC address

Name: The name of the Bluetooth Beacon which is selected.

UUID: 128-bit identifier according to ISO/IEC11578:1996 standard (32 hexadecimal digits)

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

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

Measured Power: Signal strength at 1 meter (VDB1608 transmission power is 0dBm)

Transmit Power: VDB1608 transmit power

Advertise Interval: VDB1608 advertise interval

Battery Capacity: VDB1608 battery Capacity

Password: VDB1608 connection password
After the information is configured, the configuration will take effect after the Bluetooth connection is disconnected.

### 3.5 Modify Bluetooth Beacon Name

Click the “Device Name”, the following UI will be opened. Then enter a length of less than 12-bit English characters as VDB1608 device name in the following “Enter a Name” box. Then click “confirm to modify”.

![Beacon name](image)

**Beacon name**

VG05PWR

**enter name**

**or choose one**

- iBeacon
- skylabBeacon
- mBeacon

**confirm to modify**

Use less than 8 English Charaters, Chinese is not suggested
3.6 Modify UUID

Click the “UUID”, the following UI will be opened. Then and then enter a 32-byte string of sixteen as the UUID of VDB1608 in the following “Enter an UUID” box. Then click “confirm to modify”.

![UUID value](image)

enter UUID

or choose one

- AABBCDDEEFF00112233445566778899
- 00112233445566778899AABBCDDEEFF
- 12345678123456781234567812345678

confirm to modify

UUID is 16 bytes long. Use the 16 decimal data format.
3.7 Modify User service data

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 data interface]

Enter user data

Or choose one

- AABCCDDEEFF001122334455
- 00112233445566778899AABB
- 123456781234567812345678

Confirm to modify

The length of user data can not over 13 bytes, please use Hexadecimal format.
3.8 Modify Major/Minor

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".
3.9 Modify Measured Power

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 means, when a phone's RSSI is -61dBm, it is about 1 meter from VDB1608.
3.10 Modify Transmitting Power

Click the "Transmitting Power" UI will be opened. Then set a transmitting power, which can be set to: -16dBm, -12dBm, -8dBm, -4dBm, 0dBm, 4dBm (8dBm will be added in the future). Default Power is 0dBm. Then click "confirm to modify".

Choose value

4 dBm

confirm to modify

Choose a value to match EIRP from -30dBm to +4dBm
3.11 Modify Advertise Interval

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”.

Broadcast interval is shorter, Beacon will be found faster, the battery drain faster.
3.12 Modify Password

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".

Password consist of 4 English characters or Arabic numerals, don’t enter Chinese or the other symbol
3.13 Switch mode

Click "switch mode" on the upper right corner, the mode selection window will be opened. Then you can choose iBeacon or Eddystone mode. Default mode is iBeacon.
### 3.14 Eddystone configuration page Introduction

<table>
<thead>
<tr>
<th><strong>Introduction:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAC:</strong> Chip MAC address</td>
</tr>
<tr>
<td><strong>Name:</strong> The name of the Bluetooth Beacon which is selected.</td>
</tr>
<tr>
<td><strong>User service data:</strong> User-defined data in broadcasting</td>
</tr>
<tr>
<td><strong>Transmit Power:</strong> VDB1608 transmit power</td>
</tr>
<tr>
<td><strong>Advertise Interval:</strong> VDB1608 advertise interval</td>
</tr>
<tr>
<td><strong>Battery Capacity:</strong> VDB1608 battery Capacity</td>
</tr>
<tr>
<td><strong>Password:</strong> VDB1608 connection password</td>
</tr>
<tr>
<td><strong>URL:</strong> modify the Frame field information in Eddystone. The default format is URL. Other Formats can be selected by other setting</td>
</tr>
<tr>
<td><strong>Other setting:</strong> Format selection of Frame field information in Eddystone.</td>
</tr>
</tbody>
</table>

After the information is configured, the configuration will take effect after the bluetooth connection is disconnected.
3.15 Modify URL

Click “URL” , the following UI will be opened. Then input at most 16 characters as broadcasting URL. Then click “confirm to modify”.

![UI screenshot showing EddyStone URL Value input field and CONFIRM TO MODIFY button]

URL does not exceed 16 bytes
3.16 Other Setting

Click “Other setting”, the following UI will be opened. The following three options are UID, EID and TLM.
Select and set UID information:

NameSpace(10 bytes) and Instance(6 bytes) are set, respectively.
Select and set EID information:

Set EID information, maximum 8 bytes.

Select and set TLM information:
Select "Encrypted TLM specification" (suggested), and input encrypted TLM data (at most 12 byte), 16-bit Salt (2 byte) and 16-bit Message Integrity check (2 byte).
4. Contact information

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