# Avvel X Beacon - Services Guide

## Contents:



### Features

- 3 Different sensors included.
- Broadcasts 3 different types of data simultaneously.
- Compact durable waterproof housing.
- Large capacity replaceable battery - can work continuously for up to 5 years* (CR2477, also compatible with rechargeable batteries).

*If set to default values.

### Sensors Included:

- Accelerometer.
- 90 dB Buzzer.
- Vibrator Unit.

### Accelerometer Features

- Find acceleration values even when in non-connectable mode.
- Updating rate can be adjusted dynamically (100ms to 10ms).
- Value is broadcast in the form of a radio.
- To see the source of data, users can add; MAC ID, direction, battery level and temperature value*, allowing fast and safe transfer of data.
- Broadcast method can be reconfigured.

*Varies depending on sensors included in model.

## Different Working Modes

Our beacons have 3 different working modes; Sleep, Configuration and Normal.
Once the user has tapped the beacon it will enter into to Configuration Mode, once in this mode the beacons configuration can be altered. It can state in this mode for unto 45 seconds, after which the connection will be disabled. Once the connection is disabled the beacon will enter into Normal Working Mode or Sleep Mode.

Sleep Mode: The beacon is not broadcasting any data, the beacon needs to be tapped and the state changed to begin broadcasting.

Configuration Mode: The user has 45 seconds to connect to the beacon, once the user is connected they are able to change the configuration of the beacon. The beacon will go into either Sleep Mode or Normal Working Mode, depending on the configuration.

Normal Working Mode: Once the beacon has come out of configuration mode, and the state has been changed to Broadcast Mode or Trigger Mode, the beacon will begin to broadcast the relevant data. At this point the device is in Non-Connectable mode, to change the configuration and enter back into Configuration Mode, the beacon needs to be put into Connectable Mode. This is simply done by tapping the device until it beeps.

## Services Information

Register Beacon State

| | |
|---|---|
| **Connectable_En** | set the broadcast type<br>Default value: 0<br>(0: Connectable_En disabled; 1: Connectable_En enabled) |
| **Acc_Trigger _en** | set Motion-Triggered Mode for the value of the acceleration<br>Default value:0<br>(0: Acc_Trigger_en disabled; 1: Acc_Trigger_en enabled) |
| **Acc_Always _en** | set Broadcast Mode for ACC data.<br>Default value:0<br>(0: Acc_Always_en disabled; 1: Acc_Always_en enabled) |
| **Eddystone _Trigger_en** | set Motion-Triggered Mode for the values of Eddystone<br>Default value:0<br>(0: Eddystone_Trigger_en disabled; 1: Eddystone_Trigger_en enabled) |
| **Eddystone_Always_ en** | set Broadcast Mode for the values of Eddystone<br>Default value:0<br>(0:Eddystone_Always_en disabled; 1: Eddystone_Always_en enabled) |
| **iBeacon _Trigger_en** | set Motion-Triggered Mode for the values of iBeacon protocol.<br>Default value:0<br>(0: iBeacon _Trigger_en disabled; 1: iBeacon _Trigger_en enabled) |
| **iBeacon _Always_en** | set Broadcast Mode for the values of iBeacon protocol.<br>Default value:0<br>(0: iBeacon _Always_en disabled; 1: iBeacon _Always_en enabled) |
| **Beacon_Disable** | set Beacon State<br>Default value:1<br>(0:activated ; 1: inactivated) |

# iBeacon Configuration Details

## iBeacon Broadcasting Only

| Beacon State | Description |
|---|---|
| 0x02 | Broadcast mode for iBeacon data |
| 0x04 | Trigger mode for iBeacon data |
| 0x06 | Both |

## Getting Battery Information

1. Use the highest one of Minor value among the Beacon parameters, and regard the highest Minor value as the battery information. The battery information is divided into 15 levels that is 1-15 (1-F).

2. Use the highest two of Minor value among the Beacon parameters, and regarding the highest two Minor value as the battery information. The battery information is divided into 100 levels that is

3. Use the UUID, Major, Minor values of the Beacon parameters as the Key, and broadcast the key and the battery information to outside, which can be received by scanning. The data can be broadcast twice every 50 seconds.

4. Use our Beacon's own ID as the Key, and broadcast the key and the battery information to outside, which can be received by scanning. The data can be broadcast twice every 50 seconds.

## Default iBeacon Data

- UUID: EBEFD083-70A2-47C8-9837-E7B5634DF524
- Major: 0x0001
- Minor: 0x0001
- Measured Power Value: 0xCB
- Broadcast Interval: 1Hz

## Adjustable Parameters

- UUID
- Major Identifier
- Minor Identifier
- Measured Power Value
- Transmission Power (Tx Power)
- Broadcast Interval

# Eddystone Configuration Details

## Eddystone Broadcasting Only

| Beacon State | Description | Notes |
|---|---|---|
| 0x08 | Broadcast mode for Eddystone data | The beacon will be in broadcast mode, and broadcast the data complying with the Eddystone protocol. |
| 0x10 | Trigger mode for Eddystone data | The beacon will be in trigger mode. When the beacon moves, the beacon will automatically broadcast the data complying with the Eddystone protocol externally. |
| 0x18 | Both | The beacon will enable both broadcast mode and trigger mode simultaneously. |

## Default Eddystone Data

- Data:0x0303d8fe0d16d8fe0021006a61616c656500
- Length: 0x12
- Broadcast Interval: 1Hz

## Adjustable Parameters

All parameters, including; Eddystone data and broadcast internal.

# AccBeacon Configuration Details

## AccBeacon Broadcasting Only

| Beacon State | Description | Notes |
|---|---|---|
| 0x20 | Broadcast mode for acceleration data | The beacon will be in broadcast mode for acceleration data. |
| 0x40 | Trigger mode for acceleration data | The beacon will be in trigger mode. When the beacon moves, the beacon will automatically broadcast acceleration data. |
| 0x60 | Both | The beacon will enable both broadcast mode and trigger mode for the acceleration data simultaneously. |

## Register for Beacon Acceleration Data

| | |
|---|---|
| **Mac_Adress** | Add Mac Adress in broadcast data<br>Default value: 1<br>( 0:add_En disabled; 1: add_En enabled) |
| **Acc_Data** | Add the acceleration values in broadcast data<br>Default value:1<br>( 0:add_En disabled; 1: add_En enabled) |
| **Temp_Data** | Add the temperature values in broadcast data<br>Default value:1<br>(0: add_En disabled; 1: add_En enabled) |
| **Batt_Data** | Add the battery values in broadcast data<br>Default value:1<br>(0: add_En disabled; 1: add_En enabled) |
| **Position_Data** | Add the position values in broadcast data<br>Default value:1<br>(0: add_En disabled; 1: add_En enabled) |
| **broadcast_Type** | Set broadcast types<br>Default value:1<br>(0: broadcast as manufacturer data; 1: broadcast as service data) |

## AccBeacon Data Composition

| State Value | Mac Address | Acceleration Value | Temperate Value | Power Value | Position Data |
|---|---|---|---|---|---|

## Default AccBeacon Data

- The composition of values:0xFC
- ADV SERVICE: 0xAA10
- The read rate of acceleration: 1Hz -broadcast
- Interval: 1Hz

## Adjustable Parameters

All parameters, including; the composition sate of the values, ADV SERVICE and read rate of acceleration.



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