

# **BTN100 USER MANUAL**

## **New features of the 3.3 version Beacon firmware**

### **Improved Security**

Add the brute force prevention measures of the password: Beacon would lock automatically when the input password error consecutive for ten times. The default lock time is half an hour, and the lock time can be dynamic configured up to ten hours.

### **Connection Time Limit**

Limiting the user's connection time, and the longest is within five minutes.

## **Introduction**

Jaalee offers complete indoor Bluetooth BLE solutions for indoor navigation with beacon tag hardware and open Interface to support any indoor navigation deployment. We offer stand-alone tags and services or complete professional services, engineering, and custom beacon tag designs. You can do everything you want without any limit of us. For the development documents matters, please contact us.

JAALEE Beacon is a small BLE device which can be stuck on the items you want to track such as keys, pets, children, toys and so on. You can locate them with your ios devices which support BLE 4.0. The Beacon will alert you with buzz. We offer stand-alone tags and services or complete professional services, engineering, and custom Beacon tag designs.

## **Product Details**

Jaalee Beacon is developed and produced based on BLE 4.0 and Beacon has the same housing as Beacon.

It can work as an independent system. For developers, we provide the Android and IOS SDK, and our hardware interface developed completely by us, so the developers can develop it without using SDK. For iBeacon agreement, all of the parameters can be reconfigured, including Proximity UUID, Major, Minor and Power. In order to meet different customers' needs, broadcast interval can also be set, which ranges from 100 ms to 10 s. Besides, hardware transmitted power can be configured, configurable range is 4 dBm to -40 dBm. Low cost customizing housing would be provided to potential customers.

JAALEE Beacon is developed and produced based on BLE 4.0. The JAALEE Beacon module is a circuit board. It can work as an independent system. For developers, we provide the Android and IOS SDK, and our firmware interface is completely open, so the developers can develop their Apps without SDK. In order to meet different needs of customers, broadcast interval can also be set, which ranges from 100 ms to 10 s. Besides, hardware transmitted power can be configured, configurable range is 4 dBm to -40 dBm. Low cost customizing housing would be provided to potential customers.

## **Features**

- Modes can be switched freely.

- Built-in Beacon firmware. Compatible with BLE.
- Accurate digital RSSI. Excellent link budget (up to 97dB).
- Enable remote application, AES security coprocessor.
- Ultra wide range transmission power: 4dBm— -40dBm.
- Stable performance and controllable state.
- All hardware interface completely open. Developers do not need to rely on the SDK for development. The requirement of hardware interface can be customized (achieved a certain number).
- All the parameters can be configured (UUID, Major, Minor, Measured Power, TX Power, etc.). Encrypted parameter, a password is needed when access to configure.
- Provide IOS and Android SDK.
- Apple iBeacon certified.
- Support “SLEEP” and “WAKE-UP”.

## **Jaalee Beacon Parameter Default Setting**

- UUID: EBEFD083-70A2-47C8-9837-E7B5634DF524
- Major and minor identifier: 0x0001, 0x0001
- Default pairing password: 0x666666
- Power Value: 0xCB
- Broadcast Interval: 0x0A
- It can be rang when starting or wake-up.
- The default mode is sleep.

# How to Start Using

Step 1: Download the latest version eBeacon software (version 1.5.0) from apple store.

Step 2: Open the Bluetooth and eBeacon software.

Step 3: Tapping the Beacon for three to five times on hard things. Beacon can be connected at this moment when you heard buzzing.

Step 4: Click on the Beacon in the eBeacon software that need to configure, and enter the password to connect.



Step 5: Now, you can configure and use Jaalee Beacon normally.

## Working Mode Detail

There are three types working mode of Jaalee Beacon. The first is sleep mode, the second is connectable mode, and the third is non-connectable mode. When hit Beacon will enter the connection mode, which can last for 45 seconds. When timeout Beacon will enter the connection mode or sleep mode according to the different configuration. After the disconnection Beacon will enter the connection mode, last for 45 seconds. It will return to sleep mode or disconnected mode after 45 seconds.



## Sleep Mode

When Beacon stays asleep, this mode will wait for being wake-up.

## **Connectable Mode**

Beacon can only be connected in this mode, which needs triggered by tapping Beacon, and it will last for 45 seconds. It means that Beacon can be connected in 45 seconds after being triggered. And Beacon will restore to sleep mode or non-connectable mode if it is not connected in 45 seconds.

## **Non-Connectable Mode**

Beacon can radio Beacon's data properly in the non-connectable mode. Beacon will begin to work normally when configured to this mode and it cannot be connected. If you want connect it again, you must tap it five times, and it can be connected within 45 seconds. Once timeout, it will restore to non-connectable mode. If connection is needed, Beacon must be tapped again.

## **Key Words**

**Power Value:** This value represents the power value mobile scanned when the distance between Beacon and phone is within a meter.

**TX Power:** This value represents the Beacon's firmware Transmit Power

**RSSI:** The value is the signal strength of the scanned device which can be used to measure the distance

## **Electronic Parameters**

Item	Test Data	Remarks
Chip model	nRF51822	Nordic Semiconductor 256k

Operation Frequency	2400-2483.5MHz	Programmable
Frequency Error	+/- 20KHz	Null
Modulation	Q-QPSK	Null
Sleep current	About 3.6uA	Null
Output Power	4 dBm--40dBm	Programmable
Receiving Sensitivity	-93dBm	High gain mode
Transmission distance	70meters	BER<0.1%, Open space
Antenna	50ohm	Onboard

## Operation State and Power Consumption

State	Operation Current ( $\mu$ A)
Sleep Mode	About 3.6
Connectable Mode	About 142
Non-Connectable Mode(Broadcast Interval: 1s)	About 22.5

## FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.



Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. such modifications could void the user's authority to operate this equipment.

Warning:Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**RF warning statement:**

The device has been evaluated to meet general RF exposure requirement.The device can be used in portable exposure condition without restriction.