

AnkhMaway iBeacon User Guide

For USB Beacon

Firmware Version: V3.01

● Introduction

Ankhmaway 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.

● Products Details

USB Beacon is a small and exquisite iBeacon with a far transmitting distance. It can be powered by computer USB port, USB AC adapter, portable power, etc. 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. For iBeacon agreement, all of the parameters can be reconfigured, including Proximity UUID, Major, Minor, Power and so on. In order to meet different customers' needs, broadcast interval can also be set, which ranges from 100ms to 10s. 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:

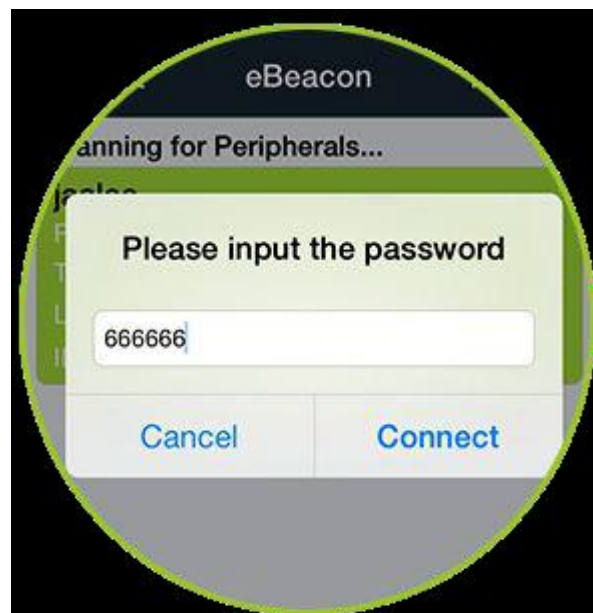
- Built-in Beacon firmware. Compatible with BLE.
- Accurate digital RSSI. Excellent link budget (up to 97dB).
- Enable remote application, AES security coprocessor.
- Ultra wide range transmission power: 4dBm — -40dBm.
- Stable performance and controllable state.
- All firmware interfaces completely open. Developers do not need to rely on the SDK for development. The requirement of firmware 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.

● Ankhmaway USB 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: 0x01

● How to Start Using

- Step 1: Download the latest version eBeacon software (version 1.6.0) from apple store.
- Step 2: Open the Bluetooth and eBeacon software.
- Step 3: Supply power to USB Beacon with the way you chose.
- 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 USB Beacon normally.

● Working Mode Detail

There are two types working mode of USB Beacon. The first is connectable mode, and the second is non-connectable mode. USB Beacon can be connected and configured when plugged the power within 45 seconds. After 45 seconds Beacon will enter non-connectable mode. Then if configuration is needed, you should re-plug the Beacon. And it can be connected within 45 seconds. Once timeout, it will restore to non-connectable mode.

Connectable Mode

USB Beacon can only be connected in this mode. It stays this mode only within 45 seconds when power on, which means the Beacon should be plugged when configure. And Beacon will restore to 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 re-plug the Beacon. And it can be connected within 45 seconds. Once timeout, it will restore to non-connectable mode.

● Services Introduction

Service 0xFFFF0

Characteristic	Property	Value Length	Function	Write example
0xFFFF1	Read/Write	2 Byte	Input Password	0x666666
0xFFFF2	Read/Write	16Bytes	Config UUID	0xEBEFD08370A247C89837 E7B5634DF524
0xFFFF3	Read/Write	2Bytes	Config Major Value	0x0001
0xFFFF4	Read/Write	2Bytes	Config Minor Value	0x0001
0xFFFF5	Read/Write	1Bytes	Config Power Value	0xC5
0xFFFF6	Read/Write	1Bytes	Configure Broadcast Interval	0x01
0xFFFF7	Read/Write	2Bytes	Configure Mfgr	0x4C00

0xFFFF8	Read/Write	3Bytes	Change Password	0x123456
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Note: The default configuration password is 0x666666, broadcast interval in units of 100 milliseconds, 0x01 is equivalent to $1 * 100 \text{ (ms)} = 100 \text{ (ms)}$. When connected, the user must input the password to 0xffff1 port within 1 minute, otherwise the Beacon will disconnect with your phone.

Service 0xFF80

Characteristic	Property	Value Length	Function	Write example
0x2A90	Read/Write	18 Byte	Change Device Name	0x6A61616C6565

Note: The value needs to be input the port should be converted to hexadecimal ASCII characters. For example, the corresponding hexadecimal ASCII for “jaalee” is {0x6A, 0x61, 0x61, 0x6C, 0x65, 0x65}, then the value should be input is 0x6A61616C6565 .

Service 0x1804

Characteristic	Property	Value Length	Function	Write example
0x2A07	Read/Write	1 Byte	Configure TX Power	0x01

Note: The relationship between the value input and its corresponding TX Power is as the following table.

Write Value	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09
TX Power(dBm)	4	0	-4	-8	-12	-16	-20	-30	-40

Service 0xFF50

Characteristic	Property	Value Length	Function	Read Value
0x2A60	Read/Write	1 Byte	Configure lock time	0x01

Note: The service is used to configure the lock time when the user input the wrong password for 10 times. Can be configured: 0x01 - 0 x14. The unit of the lock time is half an hour that is 30 minutes to 10 hours.

● 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	nRF51822	Nordic Semiconductor 256K
Operation Voltage	1.8-3.6V	DC
Operation Frequency	2400-2483.5MHz	Programmable
Frequency Error	+/- 20KHz	Null
Modulation	Q-QPSK	Null
Output Power	4 dBm - -40dBm	Programmable
Receiving Sensitivity	-93dBm	High gain mode
Transmission distance	40 meters	BER<0.1%, Open space
Antenna	50ohm	Onboard
Size	18.5mm x14.5mmx6mm	Null

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