Ankhmaway Beacon iB001N & iB004N

With Eddystone Support

User Guide V1.2

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.

Add four ways to get the battery information

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

(2) Using 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 1-100.

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

(4) Using Beacon's own ID as the Key, and broadcasting the key and the battery information to outside, which can be received by scanning. The data can be broadcasted twice every 50 seconds.

Connection Time Limit

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

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.

Product Details

Ankhmaway iB004-N is developed and produced based on BLE 4.0 and iB004 has the same housing as iB004. The iB004-N module is a circuit board, a built-in battery holder with a coin battery and housing.

It can work as an independent system. CR2450 batteries supply power for iB004-N. Three different kinds of working modes make best use of the battery power. When work in sleep mode, for example, it can standby for 16 years, longer than the life of the battery itself. 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.

Features

- Modes can be switched freely.
- Built-in Beacon firmware. Compatible with BLE.
- Built-in a coin battery (type: CR2450).
- Accurate digital RSSI. Excellent link budget (up to 97dB).
- Enable remote application, AES security coprocessor.
- High performance and low power, an available time for 5 years or more.
- Unique power management pattern, 16 years long standby time.
- 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”.

- Support the background management of battery.

Ankhmaway iB004-N 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

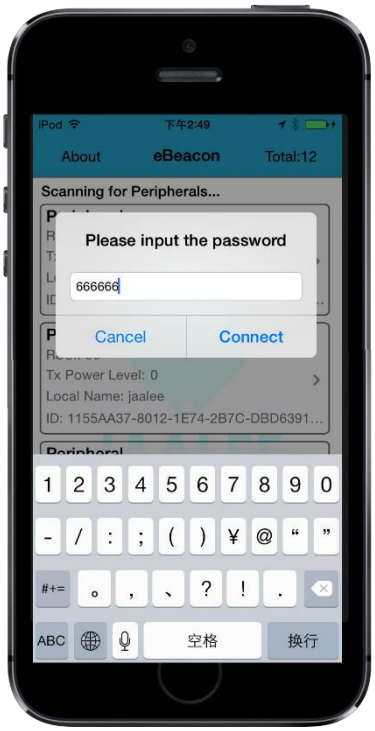
Step 1: Download the latest version eBeacon software (version 1.5.0) from apple store

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 Ankhmaway Beacon normally.

Working Mode Detail

There are three types working mode of Ankhmaway 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.

Services Introduction

Service 0xFFF0

Characteristic	Property	Value Length	Function	Write example
0xFFF1	Read/Write	2 Bytes	Input Password	0x666666
0xFFF2	Read/Write	16Bytes	Configure UUID	0xEBEFD08370A247C8 9837E7B5634DF52
0xFFF3	Read/Write	2 Bytes	Configure Major value	0x0001
0xFFF4	Read/Write	2 Bytes	Configure Minor value	0x0001
0xFFF5	Read/Write	1 Bytes	Configure Power value	0xC5
0xFFF6	Read/Write	3 Bytes	Configure Broadcast Interval	0x0A
0xFFF7	Read/Write	2 Bytes	Configure Mfgr	0x0059
0xFFF8	Read/Write	3 Bytes	Change Password	0x123456

Note: The default configuration password is 0x666666, broadcast interval in units of 100 milliseconds, 0x0A is equivalent to 10 * 100 (ms) = 1(s). When connected, the user must input the password to 0xfff1 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 Bytes	Configure 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 Ankhmaway is{0x61,0x6e,0x6b,0x68,0x6d,0x61,0x77,0x61,0x79 }, then the value should be input is 0x616e6b686d61776179.

Service 0x1804

Characteristic	Property	Value Length	Function	Write example
0x2A07	Read/Write	1 Bytes	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 0xFF70

Characteristic	Property	Value Length	Function	Write example
0x2A80	Read/Write	1 Bytes	Configure Beacon State	0x01:Disable 0x02:Always broadcast iBeacon channel data. 0x08:Always broadcast Self-Define channel data. 0x0A:Both

Note: When the state is disable, it will not broadcast Beacon's data.

Service 0xFFD0

Characteristic	Property	Value Length	Function	Write example
0xFFD1	Read/Write	20 Bytes	The former 20 bytes of UriBeacon data	0x0303d8fe0d16d8fe0021006a61616c656500
0xFFD2	Read/Write	8 Bytes	the latter 8 bytes of UriBeacon data	0x0000000000000000
0xFFD3	Read	1 Byte	the length of UriBeacon data	0x12

Note: the data of UriBeacon is 28 bytes at the most. If the data is less than 20 bytes, user only needs to write the data in channel 0xFFD1. If not, user needs to write the former 20 bytes of the data in channel 0xFFD1 and write the latter bytes in channel 0xFFD2.

Service 0xFF60

Characteristic	Property	Value Length	Function	Write example
0x2A70	Read/Write	1 Bytes	Control Beacon Audio State	0x01

Notes: When the value is 0x01, means allowing the Beacon buzzing when wake-up or reset.

0x01: Buzzing when starting or tapped (default state).

0x02: Buzzing when starting, not when tapped.

0x03: Buzzing when tapped, not when starting.

0x04: No buzzing when starting or tapped.

Service 0x1802

Characteristic	Property	Value Length	Function	Write example
0x2A06	Read/Write	1 Bytes	Call Beacon	0x01

Note: When put in value 0x01 to this port, it buzzing.

Characteristic	Property	Value Length	Function	Write example
0x2A19	Read/Notify	1 Bytes	Battery Level	0x64(100%)

Note: Read the battery level.

Service 0xFF50

Characteristic	Property	Value Length	Function	Write example
0x2A60	Read/Write	1 Bytes	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: 0 x01-0 x14. The unit of the lock time is half an hour that is 30 minutes to 10 hours.

Service 0xFF40

Characteristic	Property	Value Length	Function	Write example
0x2A50	Read/Write	1 Bytes	Configure the type of get battery level	0x01

Note: The service is used to configure the way to add data of the Beacon battery. The following details:

0x01: Add the battery information at the end of the broadcast data. User can obtain it by scanning.

0x02: Using the highest two Minor values to show the battery, and divide it into 15 levels.

0x03: Using the highest two Minor values to show the battery.

0x04: Using UUID,Major,Minor of the Beacon parameters as the Key, and broadcasting the key and the battery information to outside, which can be received by scanning. The data can be broadcasted twice every 50 seconds.

0x05: Using Ankhmaway Beacon's own ID as the Key, and broadcasting the key and the battery information to outside, which can be received by scanning. The data can be broadcasted twice every 50 seconds.

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
Battery model	CR2450	Coin battery, 3.0Vdc, 1pc
Operation Voltage	1.8-3.6V	DC
Operation Frequency	2400-2483.5MHz	Programmable
Frequency Error	+/- 20KHz	Null
Modulation	Q-QPSK	Null
Sleep current	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
Size	40 x 40 x 13.6mm	Null

Operation State and Power Consumption

State	Operation Current (μA)
Sleep Mode	3.6
Connectable Mode	142
Non-Connectable Mode(Broadcast Interval: 1s)	22.5

Contact Us

We have been trying to provide better services and products! Ankhmaway Beacon makes life more simple and cheerful! If you are interested in our product, please contact us in following ways. We will provide the best service wholeheartedly for you!

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