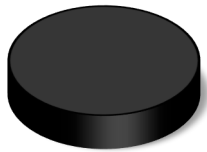




## Description and models

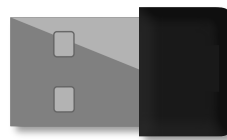
There are 3 models of easiBeacon:



**easiBeacon Mini** (iB001N/e): round form-factor, 2.5 cm diameter and CR2032 battery. Small, cheap and convenient, it can be hidden anywhere.



**easiBeacon Pro** (iB004N/e): square form-factor, 4 cm side and CR2450 battery. Increased battery life and distance range for larger area coverage.



**easiBeacon USB** (iB005N/e): USB form-factor, less than 2 cm, no battery required, can be plugged on a power socket with an AC adapter.

All of them share the same configuration and operation model described in this guide, with some minor exceptions regarding the USB model. .

## Default configuration

easiBeacon units come already pre-configured with the following default values:

<b>PIN</b>	111111 (you can leave it blank in the app)
<b>UUID</b>	A7AE2EB7-1F00-4168-B99B-A749BAC1CA64
<b>Major</b>	1
<b>Minor</b>	1
<b>Broadcast rate</b>	Mini/Pro: 0x0A (10 x 100 ms = 1 second) USB: 0x01 (100 ms)
<b>Power value at 1 meter</b>	-69 dBm (easiBeacon Mini/USB) -59 dBm (easiBeacon Pro)

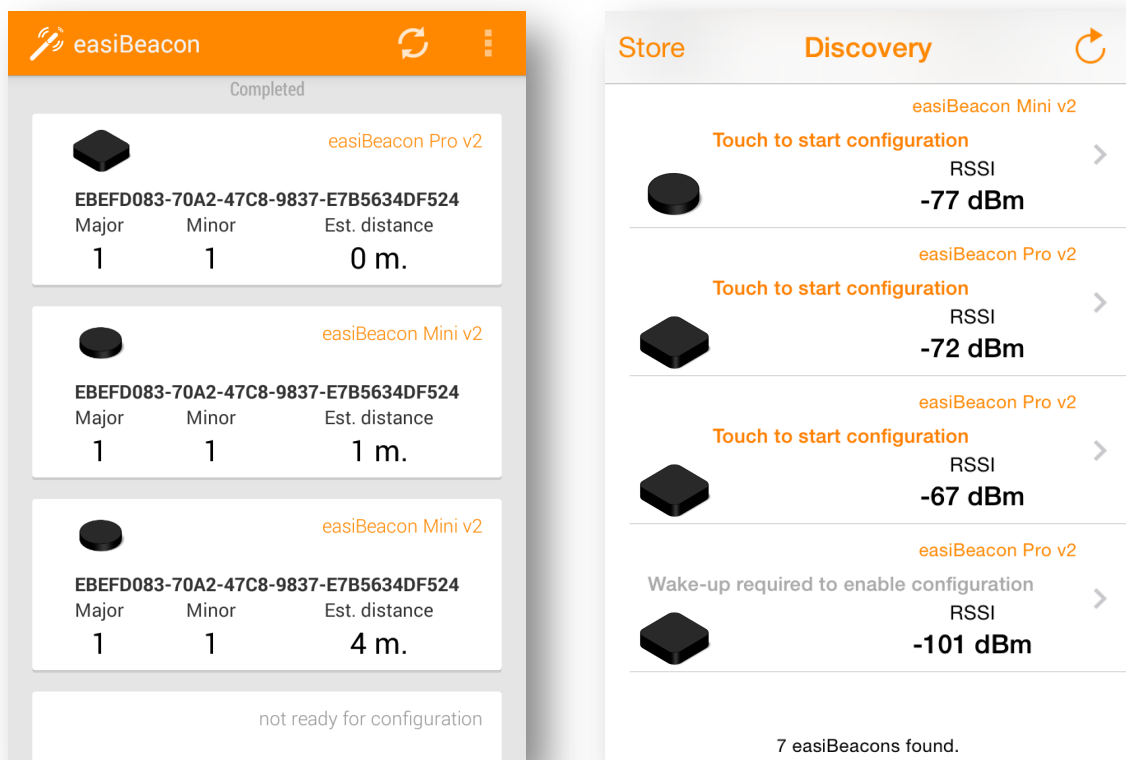
These and all the other parameters can be configured via our configuration app or directly accessing the Bluetooth 4.0 GATT profile.



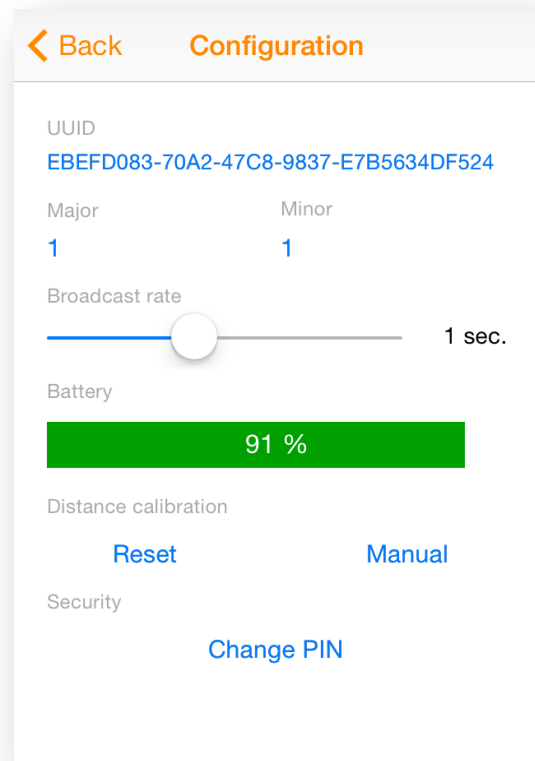
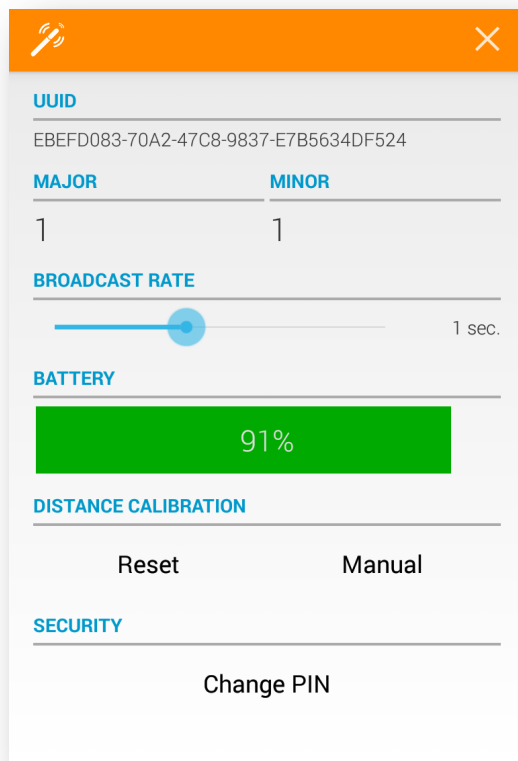
## Configuring your easiBeacon Mini/Pro unit with the app

In order to configure your easiBeacon unit, you must wake-up the device for configuration

1. Tap your easiBeacon unit 3-5 times against a hard surface (eg: a table) until you hear a buzz sound from the device alerting that is ready for configuration. In the case no sound is generated, please try again a little harder (different easiBeacon units may have different sensitivity).
2. After hearing the buzzing sound, your easiBeacon unit will be available for the next 45 seconds waiting for the configuration app. After that period without being connected by the app the unit will enter sleep mode again.
3. Open the easiBeacon app and search for surrounding easiBeacons. Units ready for configuration will appear with an indication.



4. Click on the unit you want to configure and enter the PIN or click on default PIN if you did not change it. NOTE: if you enter the wrong PIN 10 consecutive times, the unit will lock for 30 minutes rejecting further configuration requests during that period.
5. Now you can modify the parameters as desired. After configuration please go back to the main screen to finish configuring the easiBeacon unit and save changes.



NOTE: our easiBeacon units implement an efficient energy management scheme to extend battery life, keeping the battery in a very low-energy mode. Due to this low-energy mode you may receive inconsistent battery reports over time with values even in the range 50%-60% while the battery is almost full. You don't have to worry about that: the battery will last for months and eventually will report the right battery level (even 100% after some weeks of use).

## Configuring your easiBeacon USB unit with the app

In order to configure your easiBeacon USB unit, you must wake-up the device for configuration

1. Connect your easiBeacon USB unit to a USB port or AC adapter.
2. Your easiBeacon USB unit will be available for the next 45 seconds waiting for the configuration app.
3. Follow steps 3-5 as described in the previous section on configuring easiBeacon Mini/Pro.
4. After 45 seconds without being connected, the unit will enter sleep mode again, broadcasting iBeacon packets, but rejecting the configuration app. If you want to configure it again, disconnect the easiBeacon USB unit from power and connect it again. It will be available for the next 45 seconds as described in step 2.



## Accessing the Bluetooth 4.0 GATT Profile

You can also read and write the GATT Profile services and characteristics of your easiBeacon unit.

In order to access your easiBeacon GATT profile, you must first wake-up the device for configuration as described in the previous section, and write the PIN to the 0xFFFF1 characteristic (Enter PIN) within the 45 seconds period after wake-up:

- a. If the PIN is correct, you will be able to read and write the available characteristics.
- b. If the PIN is wrong, the easiBeacon unit will close the Bluetooth 4.0 connection.

Please, find below the list of services and characteristics.

Description	Service	Characteristic	Length	Example (hexadecimal)
<b>Enter PIN to access (write only)</b>	0xFFFF0	0xFFFF1	3 bytes	0x111111
<b>UUID</b>	0xFFFF0	0xFFFF2	16 bytes	0xA7AE2EB71F004168B99B A749BAC1CA64
<b>Major</b>	0xFFFF0	0xFFFF3	2 bytes	0x0001
<b>Minor</b>	0xFFFF0	0xFFFF4	2 bytes	0x0001
<b>Power value at 1 meter</b>	0xFFFF0	0xFFFF5	1 byte (signed)	0xC5 (-59 dBm)
<b>Broadcast rate in periods of 100 ms.</b>	0xFFFF0	0xFFFF6	1 byte	0x0A (10 x 100 ms = 1 second)
<b>Set new PIN</b>	0xFFFF0	0xFFFF8	3 bytes	0x222222
<b>Battery level (read only)</b>	0x180F	0x2A19	1 byte	0x64 (100%)
<b>TX Power</b>	0x1804	0x2A07	1 byte	0x02 (0 dBm)
<b>PIN error lock period</b>	0xFF50	0x2A60	1 byte	0x01 Valid values: 0x01 (30 min) to 0x14 (10 hours)

TX Power valid values and maximum signal range (under lab conditions) are:

Value	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09
TX Power (dBm)	4	0	-4	-8	-12	-16	-20	-30	-40
Mini range (meters)	30	25	20	17	14	10	7	4	2.5
Pro range (meters)	75	65	53	45	30	21	15	8	4



## Replacing the battery of your easiBeacon Mini

**IMPORTANT: Please, be careful manipulating the electronics, follow all the regular recommendations about discharging static electricity.**

Our new black rubber housing is very nice to touch, robust, high quality, and provides an hermetic closing. The easiest way to open it for battery replacement is to insert the edge of a cutter (or very sharp tool) over the part of the closing that looks more separated, apply a small pressure with the edge of the cutter to allow it enter in that separation and then open it by inclining/moving the edge of the cutter.

1. Open your easiBeacon unit with the help of a sharp tool (eg: a cutter) to separate the two parts of the housing at the point most convenient (where they already have a certain separation).
2. Inside the housing you will find two pieces: the main electronics board with the battery holder, and the speaker disc located in a small hole in the housing with the “radio waves” symbol.
3. Extract the battery from the electronics board (eg: pushing it with a pen) and replace it with a new battery. Please, take all the traditional recommendations about discharging static electricity and do not touch the electronics of the board directly.
4. Be sure to place the speaker disc in the right position in the hole, with the complete golden part facing the housing and the golden ring with white center facing the electronics board above it.
5. Once everything is in the right position, close the housing. If the speaker is not placed properly, it will not buzz when the easiBeacon unit enters configuration mode (although you can still configure the unit, there will be no sound feedback). In that case, open the unit again and try to place the speaker properly.

## Replacing the battery of your easiBeacon Pro

**IMPORTANT: Please, be careful manipulating the electronics, follow all the regular recommendations about discharging static electricity.**

Our new black rubber housing is very nice to touch, robust, high quality, and provides an hermetic closing. The easiest way to open it for battery replacement is to insert the edge of a cutter (or very sharp tool) over the part of the closing that looks more separated, apply a small pressure with the edge of the cutter to allow it enter in that separation and then open it by inclining/moving the edge of the cutter.

1. Open your easiBeacon unit with the help of a sharp tool (eg: a cutter) to separate the two parts of the housing at an edge close to the round hole.
2. Extract the battery from the electronics board opening the small metal flap and replace it with a new battery. Please, take all the traditional recommendations about discharging static electricity and do not touch the electronics of the board directly.
3. Close the flap again to secure the battery.
4. Once everything is in the right position, close the housing.



## Apps and platform development

Our easiBeacon units are suitable for the creation of any proximity-aware iOS or Android app with or without associated cloud-based content management service. Official iOS libraries (CoreLocation<sup>1</sup>) and Android libraries (Bluetooth Low Energy<sup>2</sup>) can be used to create your own apps, as well as most of third-party libraries which are wrappers of the official Apple™ and Google™ libraries.

If you want us to develop all or part of your app, or have a customized version of our cloud-based content management service, please contact us at [info@easibeacon.com](mailto:info@easibeacon.com) and we will be happy to study your case.

## Contact information

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<sup>1</sup> [https://developer.apple.com/library/ios/documentation/CoreLocation/Reference/CoreLocation\\_Framework/\\_index.html](https://developer.apple.com/library/ios/documentation/CoreLocation/Reference/CoreLocation_Framework/_index.html)

<sup>2</sup> <https://developer.android.com/guide/topics/connectivity/bluetooth-le.html>