CB1000 Ruggedized BLE Beacon

# User Guide

Ruggedized, waterproof, long life BLE beacon designed to minimize deployment and maintenance costs. Ideal for applications that require withstanding repeated abuse and harsh conditions with more than five (5+) years of battery life.


Version: 1.0
February 2025

Codepoint
Technologies, Inc.
www.codepoint.xyz

# Contents

Getting Started ..... 3
What's In the Box ..... 3
Tools required: ..... 3
Activating the Device ..... 4
MAC Address ..... 4
Checking Battery Status ..... 5
LED Indicators ..... 5
Installation ..... 6
Applications ..... 6
Mounting the Device ..... 6
Replacing the Batteries ..... 7
Configuring the Device ..... 8
Downloading the Beacon Utility App ..... 8
Accessing the Device configuration menu ..... 8
Configuring Advertising Intervals & Power Levels ..... 9
Commands: Reset, Hibernation, Device Firmware Update Mode ..... 10
Specifications ..... 11
Accessories ..... 11
Ordering Information ..... 12
Communication Options ..... 12
Product SKU ..... 12
FCC Statement ..... 13

# Getting Started

The CB1000 is a ruggedized BLE beacon designed for deployment in harsh indoor and outdoor environments. With extra thick and strong ABS housing, the beacon is designed for punishment. It is the ideal choice for location applications where reliability is key and minimal maintenance and deployment costs are required.

The beacon is powered by two non-rechargeable CR123A Lithium batteries that provide more than five (5+) years of operation at 0 dBm transmit power and 300 msec beaconing interval. Access to the batteries is secured when it is mounted using security (not provided) screws.

## What's In the Box

The CB1000-00 package includes the following:

- One (1) CB1000 Ruggedized BLE Beacon

## Tools required:

- Magnet for Activation
- We recommend M4 x 25mm Phillips Pan head self-tapping, M4 x 25mm Torx Security pan head self-tapping screws or double-sided tape for mounting the device depending on application.
- T20 Security Torx Screwdriver (or screw bit) or Phillips Screwdriver (or screw bit)

The beacon is a self-contained unit. See installation details to learn more about setup and deployment.

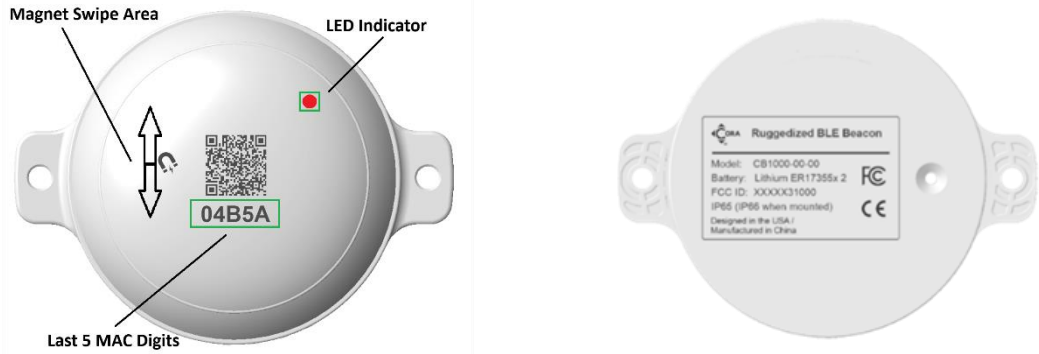



*Figure 1 –CB1000-00 Ruggedized BLE Beacon*

## Activating the Device

Devices are shipped in a hibernation mode that conserves power and does not broadcast any BLE signals. To enter normal operation, swipe a magnet vertically three (3) times across the magnet symbol on the beacon. Magnet swipes in hibernation will show a short red flash from the Beacon LED. After 3 sequential passes, the Beacon LED will blink green four (4) times and enter normal operation.

If the device does not boot up correctly it will show a solid red light acknowledging that there was an error. The device can be reset through the beacon utility app or by removing the batteries. Refer to *replacing the batteries* on page 7 to see how to access them, and refer to *Commands: Reset, Hibernation, Device Firmware Update Mode* on page 10.

## MAC Address

All CB1xxx series beacons have a QR code identifier as shown below where the last five (5) digits of the BLE MAC address are shown below.


*Figure 2 – Beacon QR code identifier.*

*NOTE: Capturing just the last five (5) digits of the BLE MAC manually can be problematic as the remaining 7 digits may not be constant.*

The QR code identifier contains the product information and complete BLE MAC address. The stored data is formatted using the Codepoint device URI format as follows:

```
codepoint/cb1000-00/qx6b-5ghdec-641s-
hrhtwsjgjer3rag1jj?deveui=2486254000010103&blemac=248625410103
```

The device URI format has the following structure:

[company]/[model]/[claimkey]?[deveui]=[value]&[blemac]=[value]

With field definitions:

- [company] – company identifier,
- [model] – device model name,
- [claimkey] – device claimkey (for use with codepoint claimkey services) provides device manufacturing data. The first sixteen characters are the device serial number.,
- [deveui] – LoRaWAN device identifier (ignore for CB1000),
- [blemac] – Complete BLE Mac address.

When installing the beacon, it is recommended that these QR codes are captured in entirety, providing a complete record of what was installed for later audits. The Cora Beaconing Utility has features for capturing this information during deployment.

## Checking Battery Status

Battery status can be monitored two ways: electronically with Cora Beacon App (see Accessing the Device Configuration Menu on page 8) or physically at the beacon with a magnet and LED indicator.

To physically check battery status, swipe a magnet once above the magnet symbol on the case. The LED will flash three (3) times with color indicating battery status. See Table 1 for LED status indications meaning. If there is no response from the LED, the batteries may be dead. Refer to the section, *Replacing the Batteries* for more information.

*NOTE: Devices in Factory Hibernation need to be awake prior to checking battery status.*

## LED Indicators

Swiping a magnet vertically up and down over the magnet symbol will indicate device status according to the blink patterns in the table below.

*Table 1 – LED Blink Patterns*

| LED | Status |
|---|---|
| **Rapid red blink** | Device is in Hibernation |
| **Fast Green Blink Four (4) Times** | Hibernation Exit to Normal Operation |
| **Slow Green Blink Three (3) Times** | Healthy Battery |
| **Slow Red Blink Three (3) Times** | Battery at End of Life |
| **No LED Activity** | Dead Battery Error State |
| **12 fast blinks orange LED** | Manual entry to Factory Hibernate |

# Installation

## Applications

The CB1000's ruggedized form factor makes it ideal for commercial and other deployments that require the device to be able to withstand repeated abuse and harsh weather conditions. When the device is unmounted, it provides IP65 protection, meaning it can keep most weather conditions from damaging the beacon. When mounted it provides IP66 protection allowing the device to be protected against almost all-weather conditions.

## Mounting the Device

Mount the CB1000 using M4 or M5 panhead screws.

1. For M4 sized panhead screws, drill two 3.5mm holes 3.6 inches (91.75mm) apart.

2. Choice of screw is dependent on mounting surface. We recommend either M4 x 25mm Torx T20 security pan head self-tapping screw or M4 x 25mm Phillips Pan head self-tapping screw. Screws shown below:

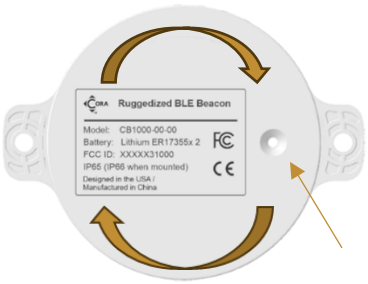

3. Mount device in accordance with proper mounting techniques for the surface and material.

4. Mounting with screws is strongly recommended for permanent deployment in harsh environments.

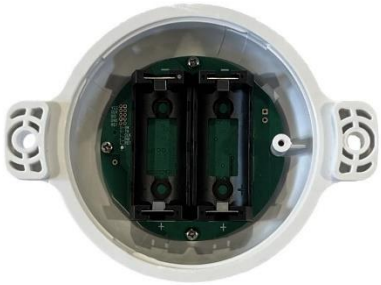
5. Double sided tape can suffice initially but will likely fail within the lifespan of the device.

# Replacing the Batteries

1. Remove the battery cover by removing set screw on back of device and turn the back plate clockwise.

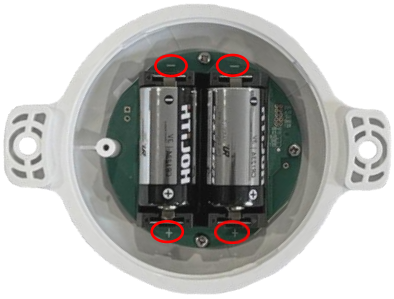



2. Remove the old batteries

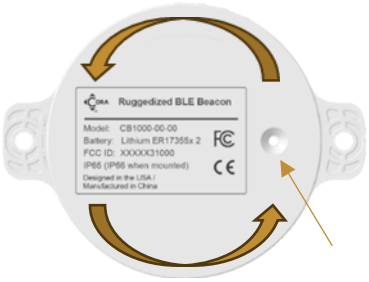


3. Install two new CR123A non-rechargeable Lithium batteries.

⚠ Do <u>not</u> mix old and new batteries. Battery direction is noted on circuit board. Align plus (+) and negative (-) symbols as shown.



4. Place cover back onto the device making sure the waterproof gasket is set in place. Then screw in set screw.



# Configuring the Device

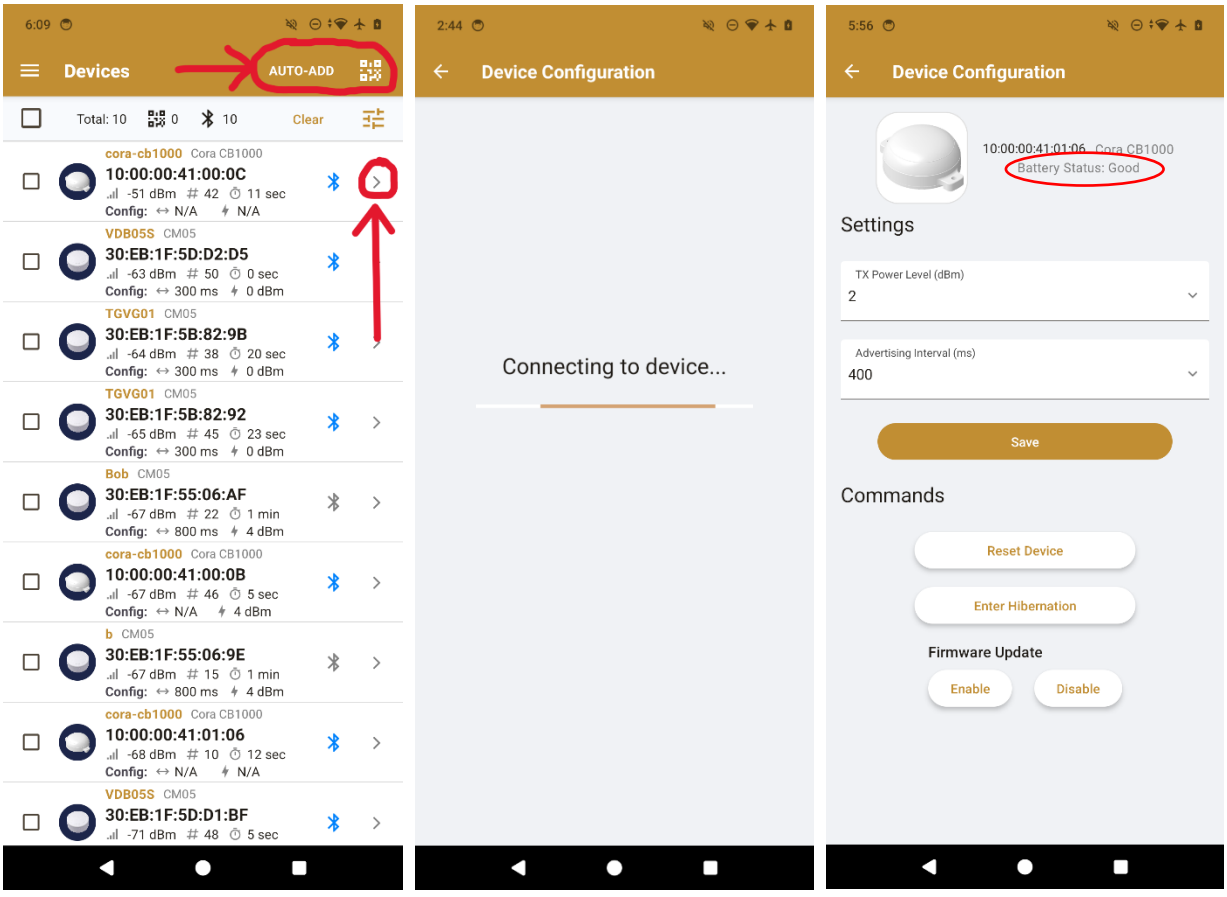
## Downloading the Beacon Utility App

Currently, the Android supported application is available through Codepoint. Please contact a Codepoint representative to obtain an installation package. Once you have received that app, install it. On first start up you will be prompted to either create an account or sign into a current one. Once an account is created or logged into, devices can be added to that account. See below to learn how to add devices to your account.

## Accessing the Device configuration menu

To access the device configuration menu, go to the Devices screen on the beacon utility app. The device's screen is immediately shown upon signing into the app.

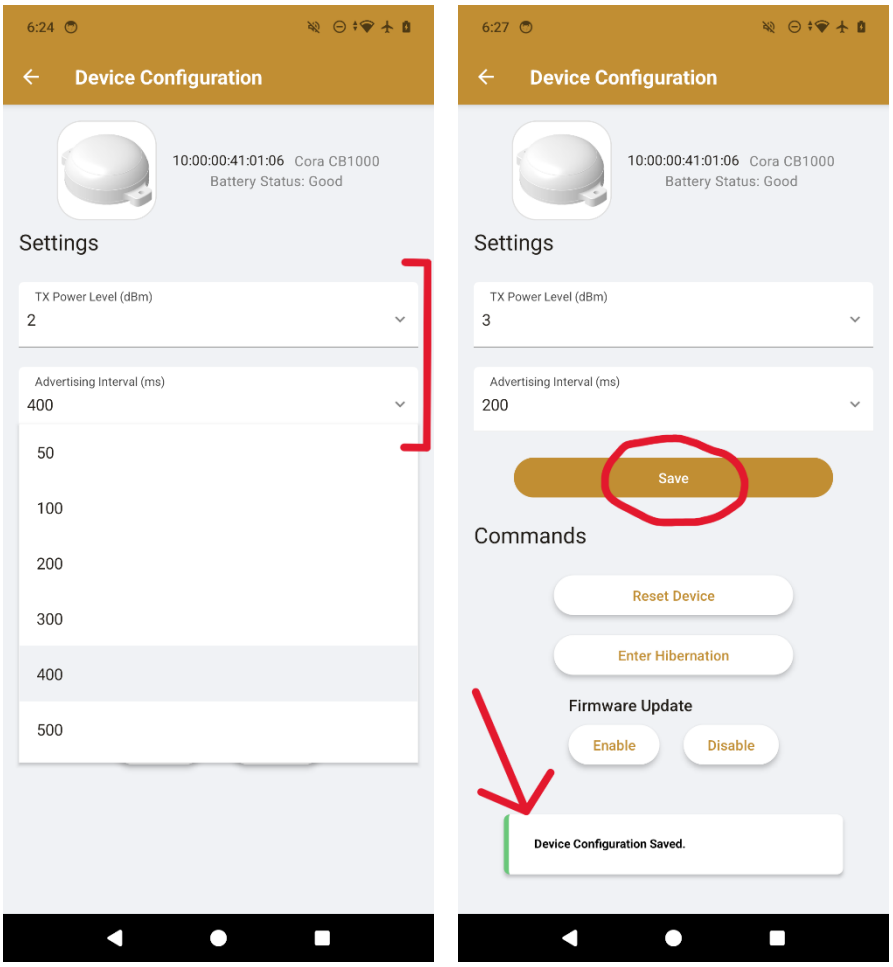
In the top menu bar, tap either the auto-add button or the QR code icon to add your beacons to your device list. Once the devices are added to the app, click the arrow on the side of the screen next to each device listed. The app will then display the configuration menu. On this menu you can configure the power level and advertising intervals, as well as check the battery status of the device. Refer to images below:



## Configuring Advertising Intervals & Power Levels

Once the configuration menu is open, the beacon can now be configured. To configure the beacon's advertising interval and power levels interact with the two dropdowns shown in the image below. Once the desired values have been set, tap the "Save" Button, if the device was successfully configured, a "Device Configuration Saved" notification will appear.

*Note: Battery life is specified at default settings. Lowering the TX Power level and/or increasing the Advertising Interval can increase the battery lifetime of the device beyond 5 years.

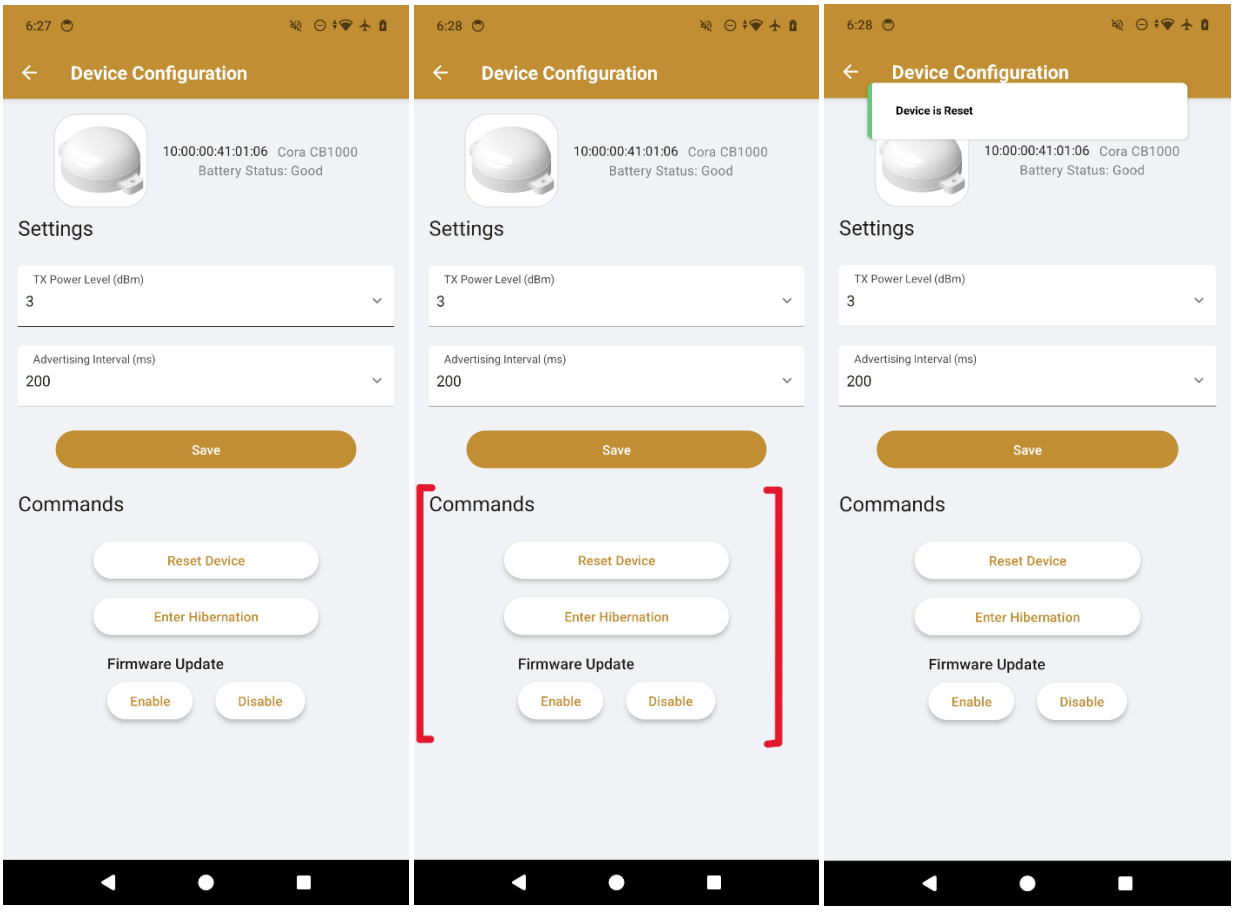


## Commands: Reset, Hibernation, Device Firmware Update Mode

To run commands on the device, access the configuration menu as shown above. Once in the configuration menu you will see the "Commands Section", providing various configuration options. To execute a command, simply press the corresponding button with the desired action. If a command is successful, the LED on the beacon will blink and a notification will be shown in the app.

Currently, the following commands are supported in the App:

- **Reset Device** – Beacon will restart immediately.
- **Enter Hibernation** – Beacon will stop broadcasting and will enter hibernation mode. To exit hibernation mode, see "Activating Device Section."
- **Enable/Disable DFU (Device Firmware Update) Mode** – Beacon will enter DFU mode, allowing for installation of new firmware.



# Specifications

- 2.4GHz BLE Beacon
- Color: White
- Dimensions [L x W x D]: 4.09 x 3.11 x 1.51 inches (104 x 79 x 38.43 mm)
- Mounting holes: M4 Screws, 3.6 inches (91.75mm) apart
- M4 or M5 pan head screws for mounting.
- Multi-color status LED
- ABS plastic ruggedized case
- **Power:**
  - Two CR123A non-rechargeable lithium batteries (3.6V)
  - Battery Life: ~5 years, 0 dBm transmit power level, 300ms beaconing interval.
- **Environmental:**
  - Operating Temperature Range: -4°F – 131°F (-20°C – 55°C).
  - UV Exposure: Some UV protection, for longest life place device out of direct sunlight when possible.
- IP Rating: IP65 compliant, IP66 when mounted.
- 2.4GHz internal ceramic antenna (external not supported).

## Accessories

The CB1000 has one accessory that can be purchased when ordering. The following SKU below represents the item:

- AC0001-00 – Keychain Magnet

# Ordering Information

## Communication Options

Contact: sales@codepoint.xyz for ordering information.
Wholesale minimum order size is 100pcs.

## Product SKU

When placing an order use the following SKU structure to determine the specific version, profile, hardware revision, and packaging needed for the application.

The specification below details the SKU fields and character length.

**[id: 6]-[version:2]-[Packaging:2]**

The fields are defined as follows.

| Field name | Character Length | Description |
|---|---|---|
| **ID** | 6 | Device six (6) character identification code, Available options:<br>CB1XXX –Cora Beacon<br><br>♦ CB1000 – Cora Ruggedized Beacon |
| **Version** | 2 | Device version specification identifying one or key variations that differentiate this version of the component relative to others. Available options:<br><br>00 –Base device version with Cora branding. |
| **Packaging** | 2 | Packaging configuration. This code determines the packaging format for the device. Available standard options:<br><br>00 – Standard reseller packaging. Device identification details included. Mounting screws not included.<br>01 – Solution provider / reseller packaging. Only manufacturing ID provided. Provider receives CSV file with all identifiers to load into their database. Torx (size T20) security mounting screws included in packaging.<br>02 – Solution provider / reseller packaging. Only manufacturing ID provided. Provider receives CSV file with all identifiers to load into their database. Standard Screws (Phillips) packaging is also included. |

# 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 the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, 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.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio / TV technician for help.

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

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

**FCC RF radiation exposure statement**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. "To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."