CB1020-00 Ruggedized

High Power BLE Beacon

User Guide

Ruggedized, waterproof, long life high power BLE beacon designed to minimize deployment and maintenance costs. Ideal for applications that require withstanding repeated abuse and harsh conditions with five+ year battery life.

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Getting Started

The CB1020 is a ruggedized high power BLE beacon designed for deployment in wide open outdoor environments. With a 5dBi external antenna and an extra thick and strong ABS housing, the beacon is designed to be punished in any outdoor environment while providing the signal reliability and coverage that will keep your devices connected at all times.

The CB1020 offers a secure mounting option with flanges that will take either M4 or M5 pan head screws.

The beacon is powered by one non-rechargeable ER34615 Lithium battery that provides more than 5+ years of operation at 18 dBm (22 dBm EIRP with included antenna) transmit power and 300 msec beaconing interval. Access to the battery is secured by four screws on the case.

What's In the Box

The CB1020-00 package includes the following:

- One (1) CB1020 Ruggedized BLE Beacon

Tools required:

- Magnet for Activation
- We recommend M4 x 25mm Phillips Pan head self-tapping or M4 x 25mm Torx Security pan head self-tapping screw 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 –CB1020-00 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 three (3) times across the top side of the beacon, near the mounting tab, as shown in the figure above. To see if the CB1020 has been activated check the beacon utility app. If the beacon is not responding in the app, remove the cover to manually check if the beacon is active. See the *appendix* on page 14 for more information.

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.

The QR code identifier contains the product information and complete BLE MAC address. The information in the above QR code 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 is

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

where fields are defined:

- [company] – company identifier,
- [model] – device model name,
- [claimkey] – device claimkey (for use with codepoint claimkey services) provides device manufacturing data. The first 16 characters are the device serial number.,
- [deveui] – LoRaWAN device identifier (ignore for CB1000),
- [blemac] – Complete BLE Mac address.

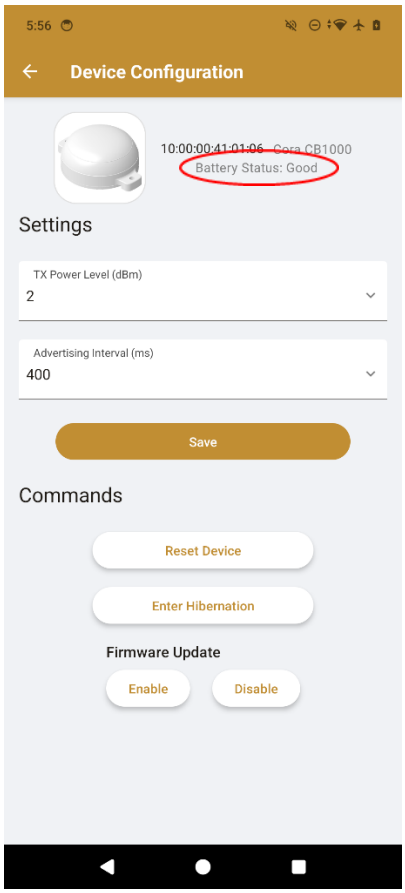
When installing the beacon, it is strongly recommended that these QR codes are captured in entirety, providing a complete record of what was installed for later audits. The Cora Beaconing Utility has features for capturing this information during deployment.

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

Checking Battery Status

Battery status can be monitored by electronically checking it with the Cora Beacon App by checking the device configuration menu as shown below (see Accessing the Device Configuration Menu on page 8 for more information). If it is needed to physically check the battery status see the appendix on page 14.

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



Installation

Applications

The CB1020'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 mounted it provides IP66 protection meaning the device is protected against almost all-weather conditions.

Mounting the Device

Mount the CB1020 using M4 or M5 panhead screws.

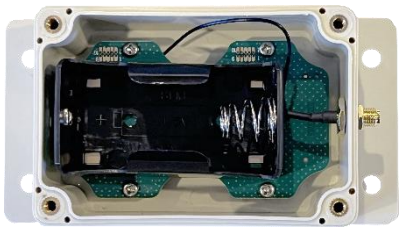
1. Drill four holes two on each side of the device. Refer to the bottom image for hole sizing. See Appendix for mounting template.
2. Insert your choice of screw into the holes on the top and bottom of beacon.

3. Mount device in accordance with proper mounting techniques for the surface and material. The Beacon is recommended to be mounted vertically with the antenna facing downwards.
4. Mounting with screws is strongly recommended for permanent deployment in harsh environments.

Replacing the Batteries

1. Remove the battery cover by removing set screws on top of device and remove the cover.

2. Remove the old battery



3. Install one new ER34615 non-rechargeable Lithium battery.

⚠ Battery direction is noted in the battery holder. Make sure the negative (-) end of the battery is on the side with the spring.

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

Configuring the Device

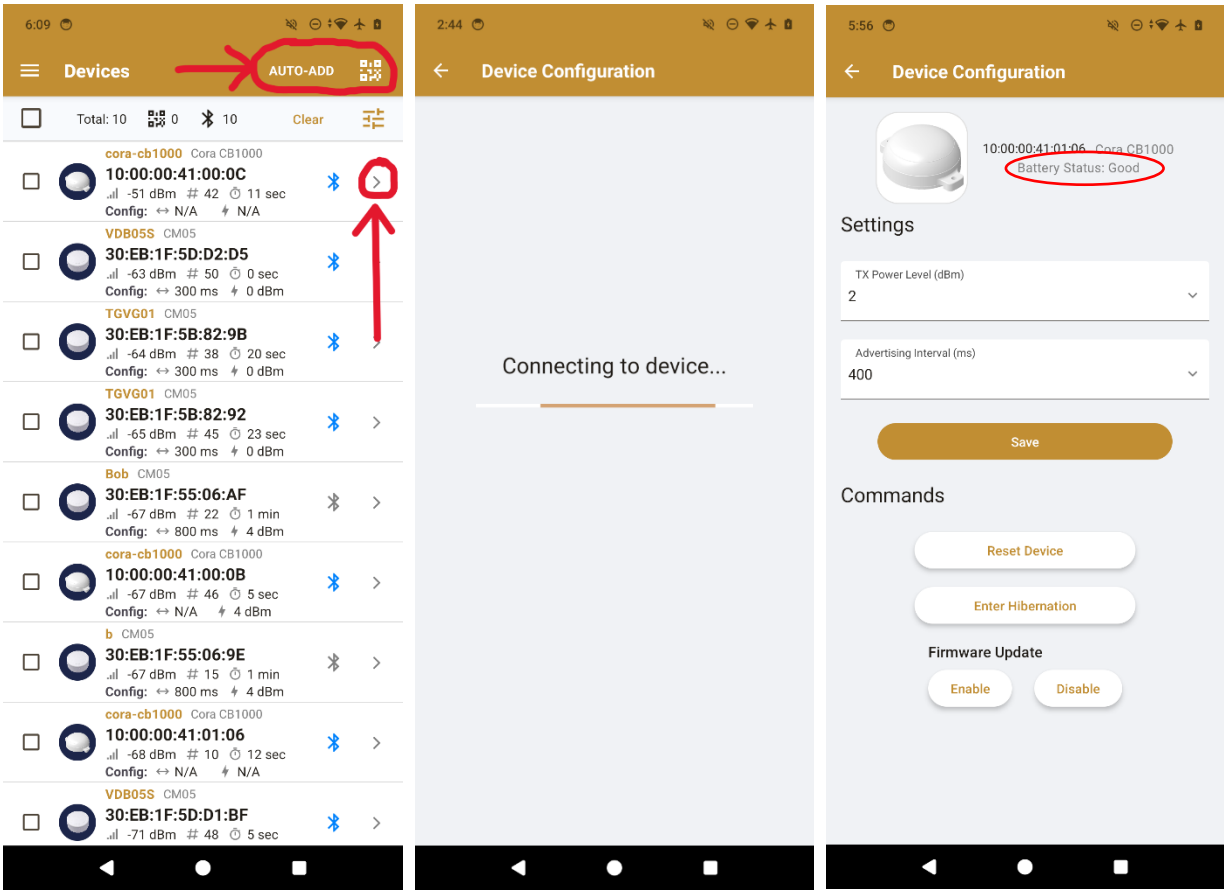
Downloading the Beacon Utility App

Currently the Android-Only App is only available through Codepoint Technologies. 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.

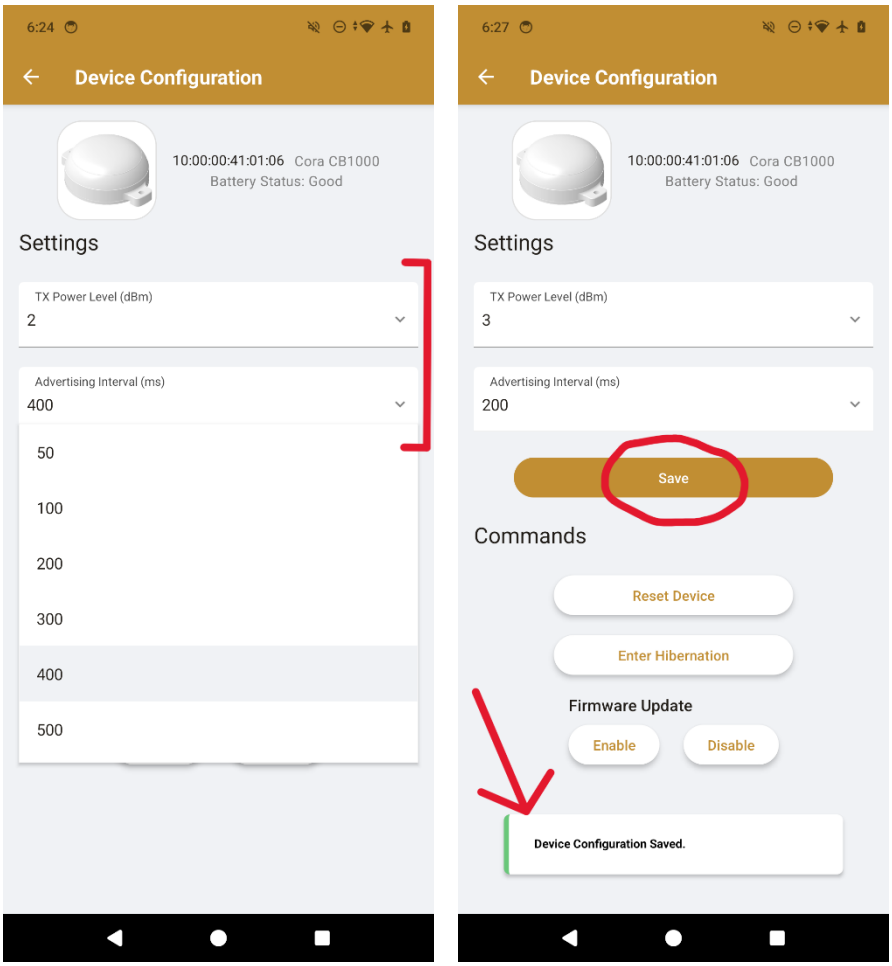
In the top menu bar, tap either the auto-add button or the QR code icon to add your beacons to your device list. Once the devices are added to the app, click the arrow on the side of the screen next to each device listed. The app will then display the configuration menu. On this menu you can configure 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.

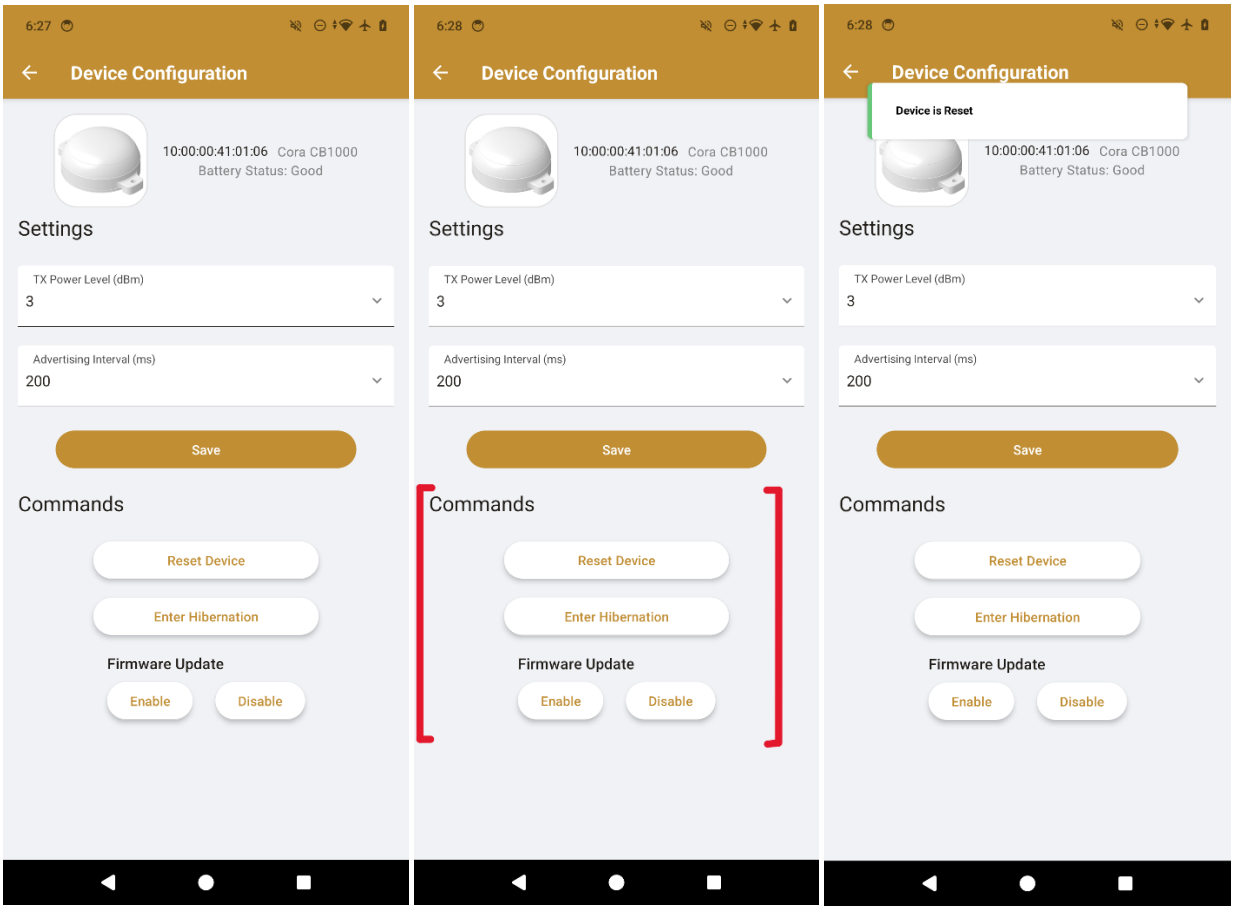


Commands: Reset, Hibernation, Device Firmware Update Mode

To run commands on the device, access the configuration menu as shown above. Once in the configuration menu you will see the commands section with several command buttons. 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]: 5.23 x 2.67 x 2.01 inches (133 x 68 x 51 mm)
- Mounting holes: 4 holes, 4.55 x 1.66 inches (115.69 x 42.25mm).
- M4 or M5 pan head screws for mounting.
- ABS plastic ruggedized case
- Adjustable power and transmit intervals: -4 to +20.0 dBm, 20 to 10240 msec.
- Power: One ER34615non-rechargeable lithium battery (3.6V)
  - Battery Life: ~5 years, in default configuration of 10 dBm transmit power, 300ms beaconing interval
- **Environmental:**

  Operating Temperature Range: -4°F – 176°F (-20°C – +80°C).

  UV Exposure: Some UV protection, for longest life possible place device out of direct sunlight when possible.
- IP Rating: IP66 compliant.
- External Antenna Supported

Accessories

The CB1020 has two accessories that can be purchased when ordering. The following SKUs below represents the item:

- AC0001-00 – Keychain Magnet
- AC0002-00 – SMA Female to SMA Male 90-degree Elbow

Ordering Information

Communication Options

Contact: sales@codepoint.xyz for ordering information.
Wholesale minimum order size is 40pcs.

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: CB1XXX –Cora Beacon ♦ CB1020 – Cora Ruggedized High Power Beacon
Version	2	Device version specification identifying one or key variations that differentiate this version of the component relative to others. Available options: 00 –Base device version with Cora branding.
Packaging	2	Packaging configuration. This code determines the packaging format for the device. Available standard options: 00 – Standard reseller packaging. Device identification details included. Mounting screws not included. 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. 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."

Appendix

Accessing the LED light inside the CB1020

As mentioned, the CB1020 has no visible LED light when fully assembled. However, inside the case there is a visible LED that can be accessed by removing the lid on the CB1020 case. This will not have to be checked often, if at all, as all functions of the CB1020 can be checked in the beacon utility app. If there is a need to check the CB1020's status if the app isn't working or if another issue emerges, remove the lid and the CB1020's LED will light up. See the section below for more information on the LED indicators.

Checking Battery Status Manually

To physically check battery status, remove lid on CB1020 then swipe a magnet once at the top of the case as depicted on page 3. The LED will flash three (3) times with color indicating battery status. See Table 1 below 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.

LED Indicators

Swiping a magnet across the magnet symbol will trigger a LED status indication.

Table 1 – LED Blink Patterns

LED	Status
Very short red blink	Device is in Hibernation
Short Green Blink Four (4) Times	Hibernation Exit to Normal Operation
Long Green Blink Three (3) Times	Healthy Battery
Long Red Blink Three (3) Times	Battery at End of Life
No LED Activity	Dead Battery Error State
12 short blinks orange LED	Manual entry to Factory Hibernate

Mounting Template