Document Number: 990-01123
Product Part Number: 100-02195, 100-02386, 100-02395
Rev. 1.09
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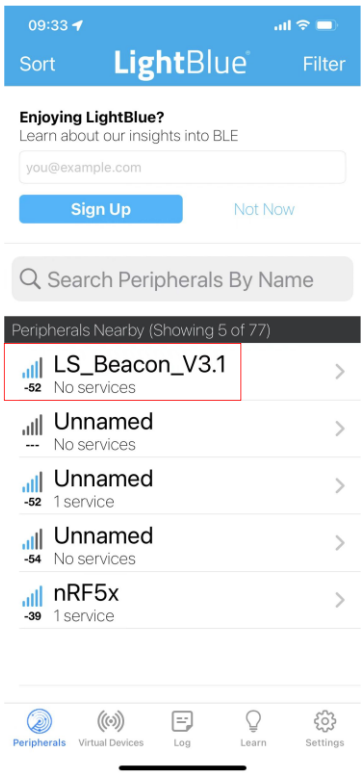
1. Configuring Lansitec BLE Beacon with an iPhone

Notice: all parameters are in hexadecimal coding.

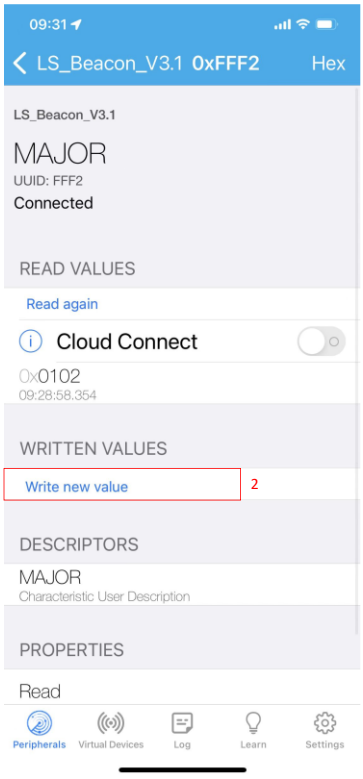
Step 1: Search and download 'LightBlue' in App Store.

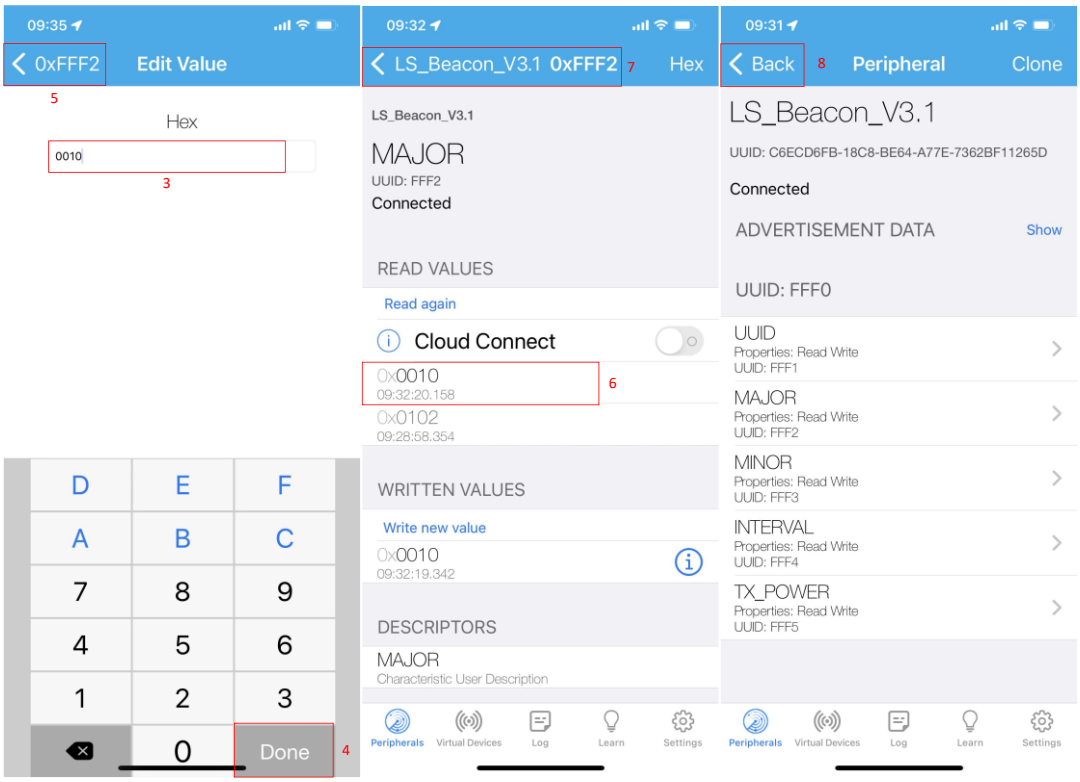
Step 2: Power up. Open the beacon and turn it on. A red light will blink once it is on.

Step 3: Open LightBlue, a beacon with "LS_Beacon" will show in the app, click the corresponding one to enter the configuration page. Please click the iBeacon within 1 minute after power on or it must be restarted to enter the configuration mode again.



Major Configuration:





1) Click “Major”;
2) Click “Write new value”;
3) Enter new Major value;
4) Click “Done” to save;
5) Click the Back sign (step 7) to return to the Peripheral page;
6) Click “Back” (step 8) to exit the configuration. The change will not be saved if no existing the configuration.

Use the same way to configure minor, UUID, TX power, or other parameters. Please exit LightBlue after configuration. The light stops blinking after configuration.

Advertisement interval Default value is 500ms; the maximum Adv interval is 10s.

Value Type	Value	Interval (ms)
Hex	010000000	100
	020000000	200
	030000000	300
	040000000	400
	050000000	500
	……	……
	640000000	10,000

2. Advertising Feature

Standard iBeacon Advertising Packet

Byte Offset	Default Value	Description	Properties
0	0x02	Data length – 2 bytes	Constant Preamble
1	0x01	Data type – flags	Constant Preamble
2	0x06	LE and BR/EDR flag	Constant preamble
3	0x1A	Data length – 26 bytes	Constant preamble
4	0xFF	Data type - Manufacturer specific data	constant preamble
5	0x4C	Manufacturer data	Constant preamble
6	0x00	Manufacturer data	Constant preamble
7	0x02	Manufacturer data	Constant preamble
8	0x15	Manufacturer data	Constant preamble
9	0xF2	Proximity UUID 1st byte	User UUID
10	0xA5	Proximity UUID 2nd byte	User UUID
11	0x2D	Proximity UUID 3rd byte	User UUID
12	0x43	Proximity UUID 4th byte	User UUID
13	0xE0	Proximity UUID 5th byte	User UUID
14	0xAB	Proximity UUID 6th byte	User UUID
15	0x48	Proximity UUID 7th byte	User UUID
16	0x9C	Proximity UUID 8th byte	User UUID
17	0xB6	Proximity UUID 9th byte	User UUID
18	0x4C	Proximity UUID 10th byte	User UUID
19	0x4A	Proximity UUID 11th byte	User UUID
20	0x83	Proximity UUID 12th byte	User UUID
21	0x00	Proximity UUID 13th byte	User UUID
22	0x14	Proximity UUID 14th byte	User UUID

23	0x67	Proximity UUID 15th byte	User UUID
24	0x20	Proximity UUID 16th byte	User UUID
25	AA	Major 1st byte	Major value
26	BB	Major 2nd byte	Major value
27	CC	Minor 1st byte	Minor value
28	CC	Minor 2nd byte	Minor value
29	0xB3	Signal power (Calibrated SSI@1m)	Signal power value

Byte Offset	Default Value	Description	Properties
0	0x02	Data length – 2 bytes	Constant Preamble
1	0x01	Data type – flags	Constant Preamble
2	0x06	LE and BR/EDR flag	Constant preamble
3	0x1B	Data length – 27 bytes	Constant preamble
4	0xFF	Data type - Manufacturer specific data	constant preamble
5	0x05	Advertise interval value	Constant preamble
6	0x06	TX power value	Constant preamble
7	0x02	Manufacturer data	Constant preamble
8	0x16	Manufacturer data	Constant preamble
9	0xF2	Proximity UUID 1st byte	User UUID
10	0xA5	Proximity UUID 2nd byte	User UUID
11	0x2D	Proximity UUID 3rd byte	User UUID
12	0x43	Proximity UUID 4th byte	User UUID
13	0xE0	Proximity UUID 5th byte	User UUID
14	0xAB	Proximity UUID 6th byte	User UUID
15	0x48	Proximity UUID 7th byte	User UUID
16	0x9C	Proximity UUID 8th byte	User UUID
17	0xB6	Proximity UUID 9th byte	User UUID
18	0x4C	Proximity UUID 10th byte	User UUID
19	0x4A	Proximity UUID 11th byte	User UUID
20	0x83	Proximity UUID 12th byte	User UUID
21	0x00	Proximity UUID 13th byte	User UUID
22	0x14	Proximity UUID 14th byte	User UUID
23	0x67	Proximity UUID 15th byte	User UUID
24	0x20	Proximity UUID 16th byte	User UUID
25	AA	Major 1st byte	Major value
26	BB	Major 2nd byte	Major value
27	CC	Minor 1st byte	Minor value

28	CC	Minor 2nd byte	Minor value
29	0xC4	Signal power (Calibrated SSI@1m)	Signal power value
30	0x64	Battery level	Battery level

About accuracy, several factors influence the accuracy distance measuring with BLE RSSI.

1) Shadow effect: signals can be reflected by walls and glasses around many times during the transmission. If there is an object moving due to diffraction, the signal path will be changed. This results in receiving unstable signal strength.
2) There are many devices on 2.4G, Wi-Fi, Bluetooth, Zigbee. The signal may overlap with each other which makes the received signal strength unstable.

When using a beacon for positioning, please consider the follow method for measuring the distance.

1) While the beacon is advertising, repeatedly sample the RSSI at a 1 meter distance for a minimum of 10 seconds.
2) Discard the highest 10% of the RSSI samples
3) Discard the lowest 20% of the RSSI samples
4) Average the remaining samples to obtain the Measured Power value.

We recommend another two algorithms for calculating the distance and position:

1) Moving average algorithm, refer to document number 930-00171.
2) Position Calibration, refer to document number 930-00172.

3. Battery Life

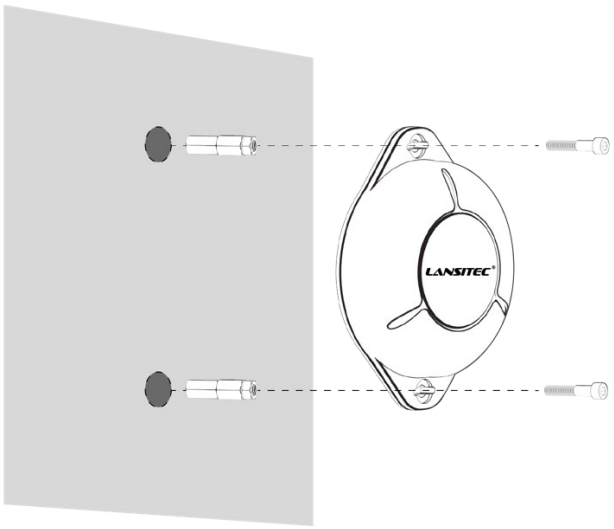
Broadcast Interval (ms)	**100**	**300**	**500**	**1000**
Battery Life (Year)	1.2	3.5	5	>6

4. Specification

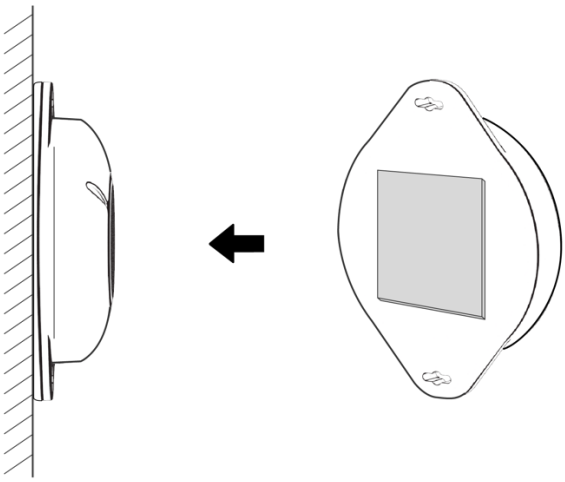
Protocol	**iBeacon**
RF Power	-1.14dBm (MAX)
Distance	Max 80m
Density for indoor tracking	>10m
Broadcasting	Minimum 100ms
Power consumption	35μA @ 500ms interval and -1.14dBm TX power
Battery	CR2477x2
Weight	57g

IP Protection	IP68
Dimension	82*64*21mm (with the lug)
Certification	FCC, CE

5. How to install a beacon

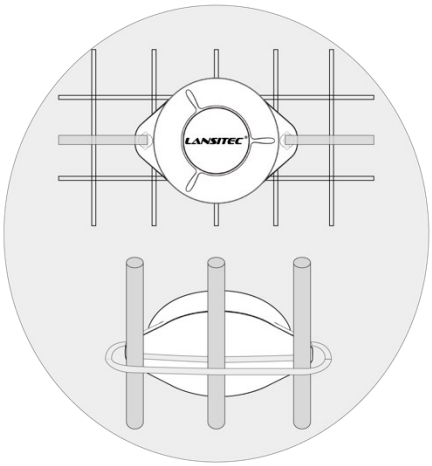


Option1: Screw fixation.

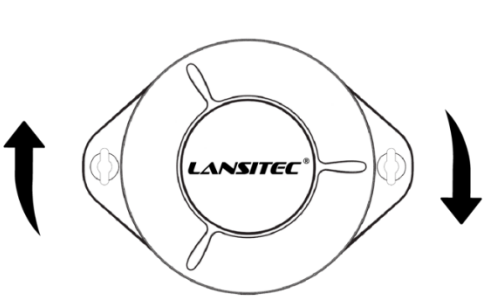


Option2: Double-sided adhesive tape.

Option 3: Metal wire strapped to the poles.



6. How to replace the batteries



FCC Statement

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

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, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

Note : 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.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.