MiniBeacon
Configuration Instruction
V2.0

Note:

1. The instruction applied for beacon models that doesn't load any sensors and pre-flashed MiniBeacon intelligence firmware.
2. MiniBeacon is one of Minew' software patent.

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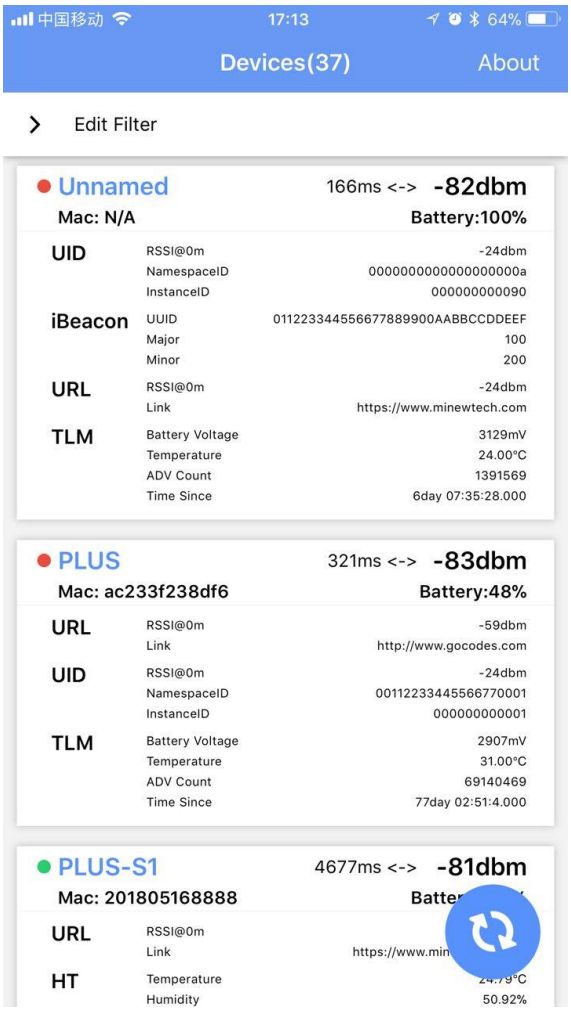
PREPARATION

1. Activate beacon device as the datasheet correctly;
2. An iOS 7.0+ / Android 4.3+ smart device with BLE 4.0;
3. Download BeaconSET+ app from Apple store or Google Paly;

ENTER INTO CONFIGURATION MODE

1. Run BeaconSET+, there are total 37 devices detected around smartphone immediately, see image 2;
2. You can click “Edit Filter” to quick search out a beacon device which you want to configure by Name, MAC ID and RSSI value, see image 3;



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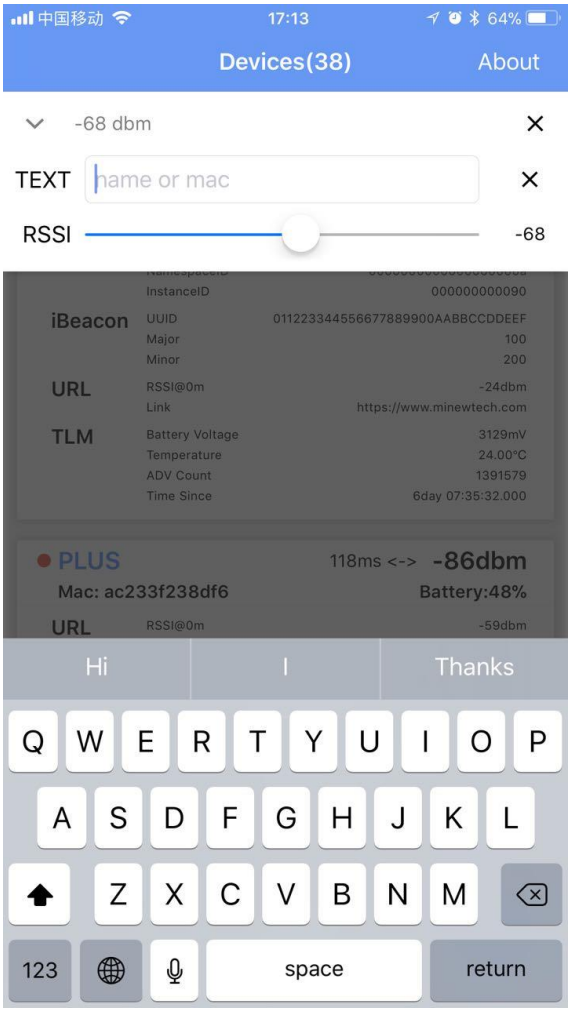

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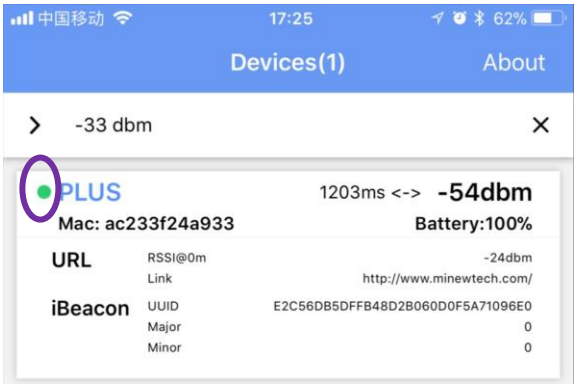
3. For example: Slide the RSSI slide bar to set the RSSI value at -33 dBm as the filter, then see image 4; there is only one beacon and its MAC address is ac233f24a933 which we want to configure it.



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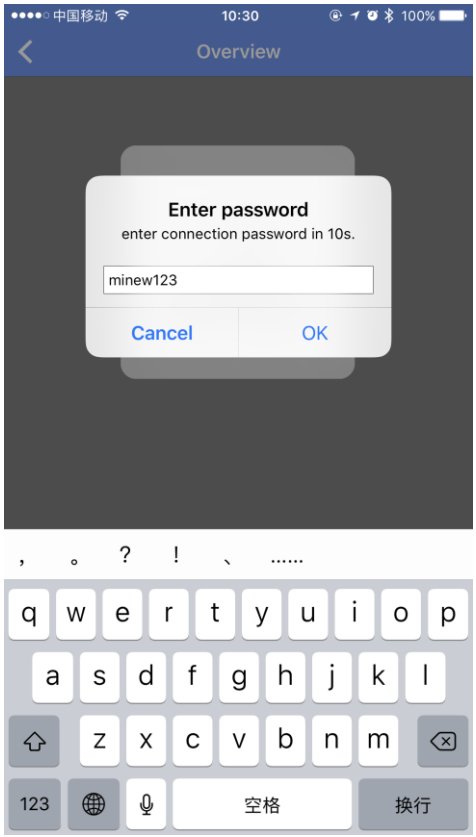
3.1 The beacon (MAC ID: ac233f24a933) can advertise total 6 different frame types iBeacon, Eddystone (UID, URL, TLM), Acc. and Info simultaneously. But now the beacon advertises only URL, iBeacon and Info frame.

3.2 The data Info includes the battery level and MAC address. It is not allowed to change by user;

4. The Beacon is connectable only when the ROUND DOT changed to green color, see above image 4; if Beacon has been set to disconnectable, the ROUND DOT keeps in red color;

5. Click the Beacon when it's connectable, and then input the password as image 5. If it is correct, the Beacon enters into configuration mode, see image 6;



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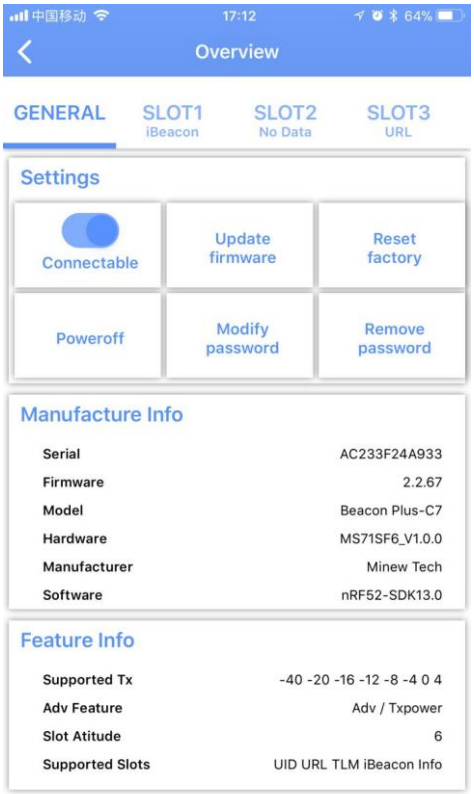

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CONFIGURATION MODE

1. Settings Definition

SLOT: Each Beacon has 6 configurable SLOTs; it is from SLOT1 to SLOT6.

Connectable: Each Beacon has 2 different advertising statuses, connectable and disconnectable.
Only when the advertising status is connectable, the Beacon is configurable. But the disconnectable advertising saves about 20% power consumption than connectable advertising's.
After completed the configuration, we strongly recommend setting the Beacon disconnect not only lower battery power consumption but also better security performance.

Update firmware (OTA: over-the-air):
- It's not allowed to load unknown firmware into tag beacon;
- If there is a bug occurred unfortunately, the manufacturer is responsible to release the latest revised firmware to help users to recover the bug by "Update firmware";

Reset factory: It will recover beacon to factory settings and ignore all changes;

Poweroff: The Beacon will stop advertising and enter into sleeping mode after used "Poweroff". But it can be activated again by push button on the beacon. **As Beacon doesn't have a push button, we are strongly opposed to use "Poweroff".**

Modify password: Change to a new password by "Modify password".

Remove password: Removing the password if someone forgot it and then set a new password by "Add password".

Manufacture info & Feature info: It's not changeable by users.

2. SLOT Configuration

Each SLOT is independent and configurable. The following parameters can be configured. The users can configure each SLOT's Frame Type, Adv. Content, Base params and Trigger by themselves via BeaconSET+.

2.1 Frame Type

Actually, the frame type is the format of advertising data packet. Each Beacon has below total 7 different frame types: UID, iBeacon, URL, Acc. Sensor, TLM, Info and NO DATA, see image 8;

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2.1.1 NO DATA

If setting a SLOT's frame type to NO DATA, It means that SLOT no data to be advertised. The Beacon will STOP advertising that SLOT.

2.1.2 iBeacon

The UUID, major and minor values provide the identifying information for the iBeacon.

2.1.3 UID

Unique and static ID consists of 10-byte Namespace and 6-byte Instance component.
The UID is required if the user want to register Beacon into Google dashboard.

2.1.4 URL

A compressed encoding format (max. 17 bytes) fits more within the limited advertisement packet. The URL must be started with a security http (HTPPS).

2.1.5 TLM

Beacon status data that is useful for beacon fleet maintenance, and powers Google Proximity Beacon API's diagnostics endpoint. TLM should be interleaved with an identifying frame such as Eddystone-UID or Eddystone-URL. It's not allowed to configure TLM by BeaconSET+.

2.1.6 Acc. Sensor / H&T Sensor / Light Sensor / Pressure Sensor

The beacon with Acc. Sensor will be waken-up and start advertising accelerometer data only when an object is moving or after an object has fallen.

The beacon detects the environment temperature and humidity by H&T sensor and start advertising the data of temperature and humidity.

The beacon detects the changes of pressure by Pressure sensor and advertises pressure data.

2.1.7 Info

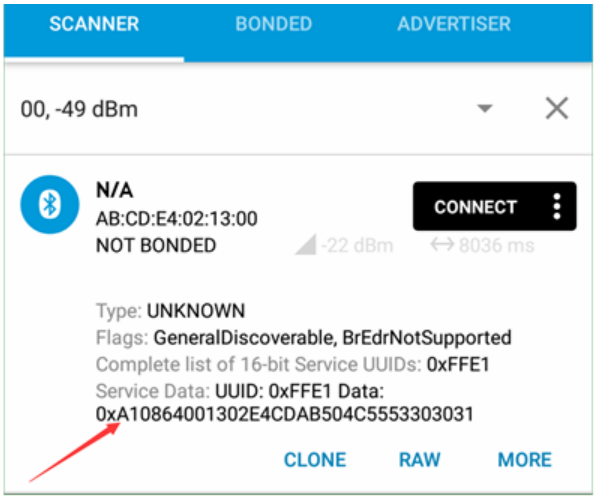
It includes beacon name, MAC address and battery level but isn't configurable. **For better monitor and distinguish beacons, we strongly recommend keeping a SLOT with Info frame.**

2.2 Advertising Data Format (Info)

The advertising data packet of Info is defined by MINEW. Here below is the completed data format and definition as below table.

Offset	Length	Type	Data	Details
0	1	Data Length	2	/
1	1	Flag data type	1	/
2	1	Flag data	0x06	/
3	1	Data Length	3	/
4	1	Complete list of 16-bit Service UUIDs	0x03	/
5	2	UUID data	0xE1FF	(little-endian) 0xFFE1
7	1	Data Length	/	/
8	1	Service data	0x16	/
9	2	UUID data	0xE1FF	(little-endian) 0xFFE1
11	1	Frame Type	0xA1	0xA1
12	1	Version Number	0x08	/
13	1	Battery level	0x64	Battery level is 100%
14	6	Mac address	0x001302E4CDAB	(little-endian) AB:CD:E4:02:13:00
20	n	Name	“PLUS001”(default)	/

Here is an example of Acc.Sensor’s advertising data from standard Minew beacon, see image 9.



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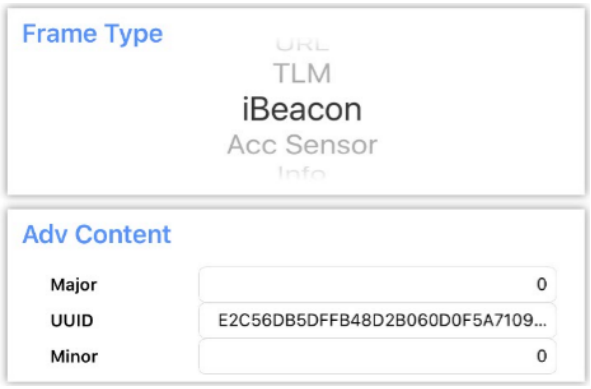
ITEM	Advertising Data Packet (Info)					
TYPE	HEAD	DATA				
HEX	0201060303E1FF1316E1FF	A1	08	64	001302E4CDAB	504C5553303031
OFFSET	0-9	11	12	13	14	20

2.3 Adv. Content

Here below are the default factory settings of Adv. Content for the Beacon.

Frame Type	Adv. Content	Default Setting	Ref. Image#
iBeacon	UUID	E2C56DB5-DFFB-48D2-B060-D0F5A71096E0	10
	Major	0	
	Minor	0	
UID	Instance ID	random	11
	Namespace ID	random	
URL	URL	https://www.minewtech.com	12
TLM	TLM	It's not configurable.	4
Info	Beacon Name	It's not configurable.	4
	MAC Address		
	Battery Level		



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2.4 Base params

Here below are the default factory settings of Base params for the Beacon. Each SLOT has an independent and configurable Adv. Interval, RSSI and Radio Power.

Frame Type	Adv. Interval (ms)	RSSI@1m (dBm)	RSSI@0m (dBm)	Radio Power (dBm)
iBeacon	900	-59	---	0
UID	2000	---	-24	0
URL	2000	---	-24	0
TLM	4000	---	-24	0
Info	4000	---	-24	-8

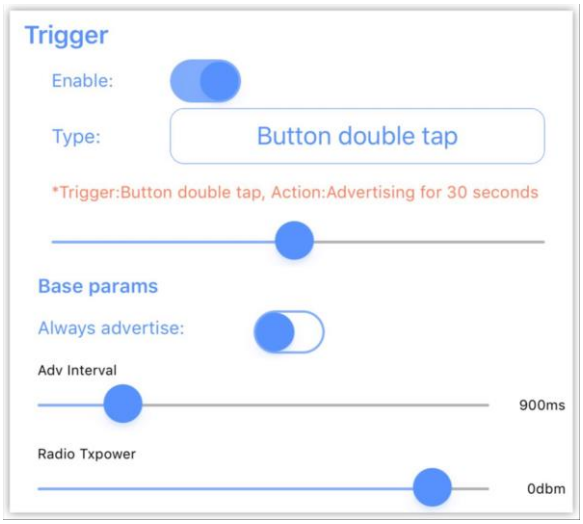
Adv. Interval: Advertising interval;
RSSI: Measured power, it's used for the calibration and calculating relative distance.
Radio Power: Transmission power;

2.5 Trigger:

The trigger function will be activated and configured ONLY when the beacon device has a push button or loaded the sensor such accelerometer, temperature, light and others.

2.5.1 Trigger Settings

1. Select the SLOT1 (iBeacon) and Enable "Trigger", see image 13 & 14;



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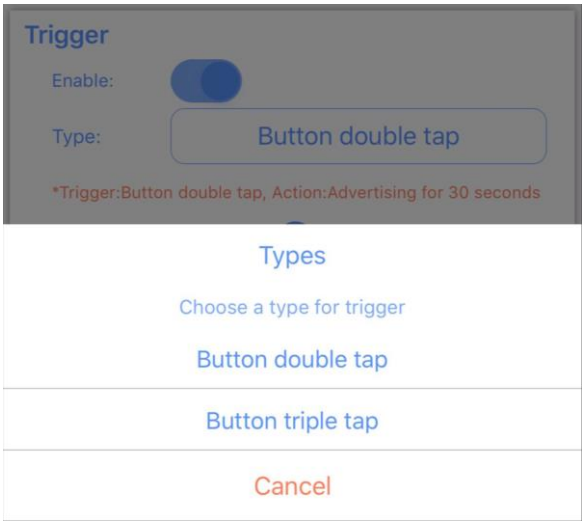

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2. Click "Button double tap" and then selcet "Button double tap" as image 14;
3. Enable "Always adverstise" as image 13;
4. Choose the "Adv interval" and "Radio Txpower" as image 13 (under "Always advertise);
5. Click "SAVE" button at the top corner of screen, all new settings take effect immediately;

After completed above step 1 to 5, the beacon device will advertise iBeacon at SLOT1 with pre-settting interval and transmission power only when dobule-clicking the push button.

2.5.2 For Beacon (accelerometer), each SLOT can be triggered by the accelerometer. For example: if the SLOT1 has been configured the Trigger, E8 starts to advertising SLOT1 ONLY WHEN an object is moving or after an object has fallen.

DEPLOYMENT NOTICE

1.1 For better security performance and lower battery power consumption, we strongly recommend making the beacon works at DISCONNECTABLE status;
1.2 The less activated SLOT, the more battery power saving;
1.3 The smaller transmission power, the more battery power saving;
1.4 The larger advertising interval, the more battery power saving;
1.5 The higher the deployment position is, the larger advertising range;
1.6 The bigger transmission power, the larger advertising range;

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.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
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.
The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction