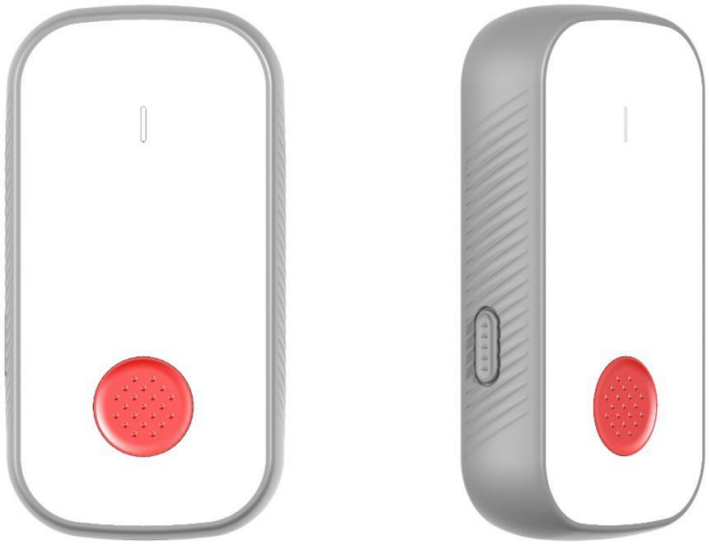


LW004-PB V3

APP Guide

MOKO TECHNOLOGY LTD.

Version 1.0

www.mokosmart.com

CONTENT

1 About this Manual

The purpose of this manual is to outline how to use MKLoRa APP for LW004-PB V3.

2 MKLoRa APP

For the detailed operation of the MKLoRa app to configure and read device information, please refer to the following instructions:

2.1 Install MKLoRa APP

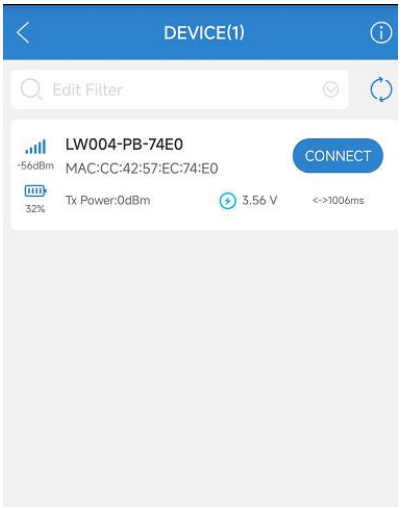
User can get the APP download link by search “MKLoRa” in your phone APP store: Please allow Bluetooth to be enabled during the installation process. This APP communicates with the device via Bluetooth, and it only supports above android 4.4 and IOS 9.0 system.

***Note**: After the successful installation of the APP, the APP will request some mobile phone permissions, such as Bluetooth access permissions. Please click "OK", otherwise the APP will not work well.*

2.2 Connect to LW004-PB

After the device is turned on, the device Bluetooth will start broadcasting. Open the MKLoRa APP and choose LW004-PB, then you can search the LW004-PB device by click the refresh icon. The default broadcast name of the device: LW004-PB -XXXX.

The Edit Filter at the top can help user filter the keywords and RSSI. RSSI ranges from -100dBm to 0dBm;

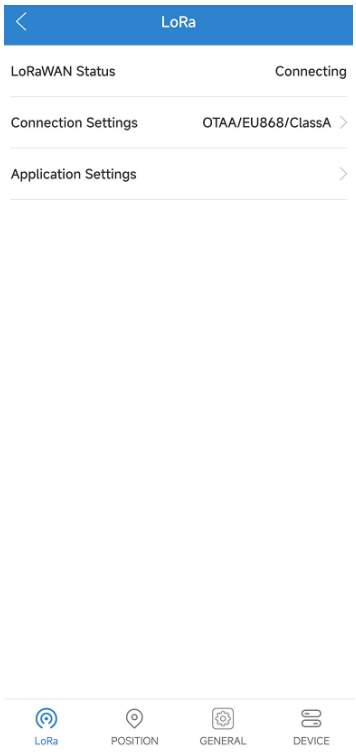


***Note**: If a password is not entered within one minute, the login box will disappear, you should click “CONNECT” again.*

***Note**: If there is no action within 3 minutes after login, the system will automatically login out.*

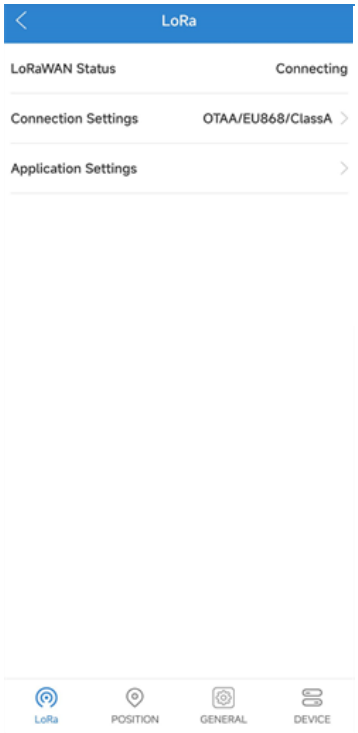
***Note**: LW004-PB only can be connected when the device broadcasts Bluetooth information. The Bluetooth broadcast mechanism is described in chapter 5.4 Bluetooth Broadcast Capabilities of the LW004-PB specification.*

2.3 Configure LW004-PB-BG Parameters



When you log into the device successfully, you will enter the main page. There are four parts of the parameter configuration: LORA, POSITION, GENERAL and DEVICE.

2.3.1 LORA Parameters

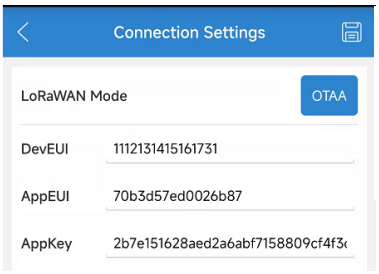


LoRaWAN Status: Indicates the status of the LoRaWAN network connection.

Connection Settings: Configure LoRaWAN network parameters.

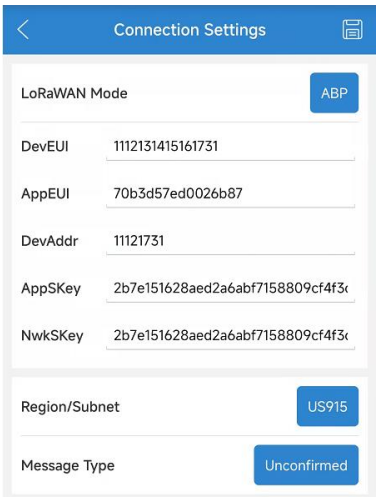
Application Settings: Configure LoRaWAN application parameters.

2.3.1.1 Connection Settings



LoRaWAN Mode: LoRaWAN join-in mode selection

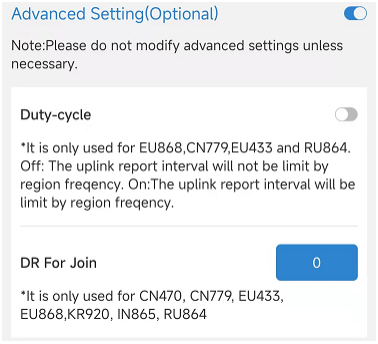
DevEUI/AppEUI/AppKey: Network parameters in OTAA mode.



DevEUI/AppEUI/DevAddr/AppKey/NwkSKey: Network parameters in ABP mode.

Region/Subnet: Device frequency band selection, AS923/ AU915 /CN470 /CN779 /EU433 /EU868 /KR920 /IN865 /US915 /RU864 can be set.

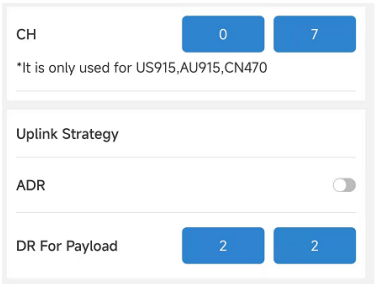
Message Type: Uplink payload type, it can be set unconfirmed or confirmed, the default is unconfirmed.



Advanced Setting: Some advanced parameter settings, if not necessary, it is not recommended to modify.

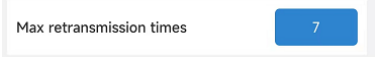
Duty-Cycle: It is only used for EU868, CN779, EU433 and RU864. The default is off.

DR for join: It is only used for CN470, CN779, EU433, EU868, KR920, IN865, RU864. DR selection for Join Request of OTAA mode. The default is DR0, it ranges from DR0 to DR5.

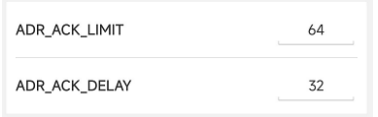


CH: Channel Setting, Generally, the default is fine.

Uplink Strategy:
Option1: ADR on, ADR mechanism following the standard protocol stack.
Option2: ADR off. The device will choose the DR to send the payload within the set DR range, and will try to ensure that the time taken to send the payload is the same every time.

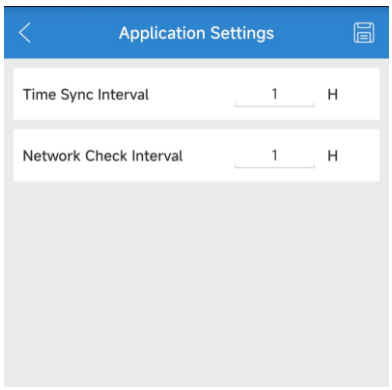


Max retransmission times: Maximum number of retransmissions when selecting a confirmation frame to transmit an uplink Payload. The default is 3 times. The value ranges from 0 -7 times.



***Note**: If the data length of the current payload exceeds the transmission capacity of the selected DR, it will automatically make the DR plus one*
***Note**: Please do not modify advanced settings unless necessary.*

2.3.1.2 Application Settings



Time Sync Interval: It is used to sync the device time via MAC command. The default is 1, means that the device's time will be synchronized every 1 hour via LoRaWAN MAC commands.

The value ranges from 0 -255H. 0 means disable.

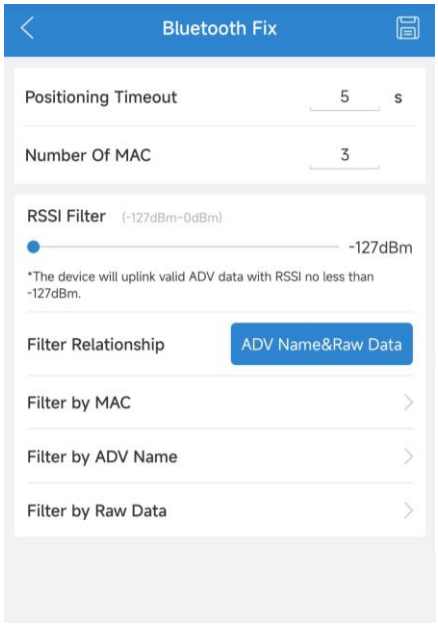
Network Check Interval: The device will periodically check the LoRaWAN network status via MAC command.
The default is 1, means that the device will check the network status every 1 hour via LoRaWAN MAC commands.

The value ranges from 0 -255H. 0 means disable.

2.3.2 POSITION Parameters

In this page, you can configure parameter for POSITION Part:

2.3.2.1 Bluetooth Fix



Positioning Timeout:
Bluetooth positioning maximum scan time.
The value ranges from 1s -10s.
The default is 5s.

Number of MAC: Number of devices required for successful Bluetooth positioning.
The value ranges from 1 -5.
The default is 3.

RSSI Filter: The default value is -127 dBm, the range of this value is from -127dBm to 0 dBm. For example, if user set this value to -100dBm, the device will store valid ADV data which's RSSI is bigger than -100dBm.

- Filter by RSSI - To filter the ADV packet by the Received Signal Strength Indication of BLE devices.
- Filter by MAC Address - To filter the ADV packet by the MAC address of BLE devices.
- Filter by ADV Name - To filter the ADV packet by the advertising name of BLE devices.
- Filter by Raw Data - To filter the ADV packet by the advertising raw data of BLE devices.
- Filter Relationship - This is "OR" and "AND" logical settings for filtering by MAC Address, ADV Name and Raw Data. The logic among relationship result, RSSI is "AND".

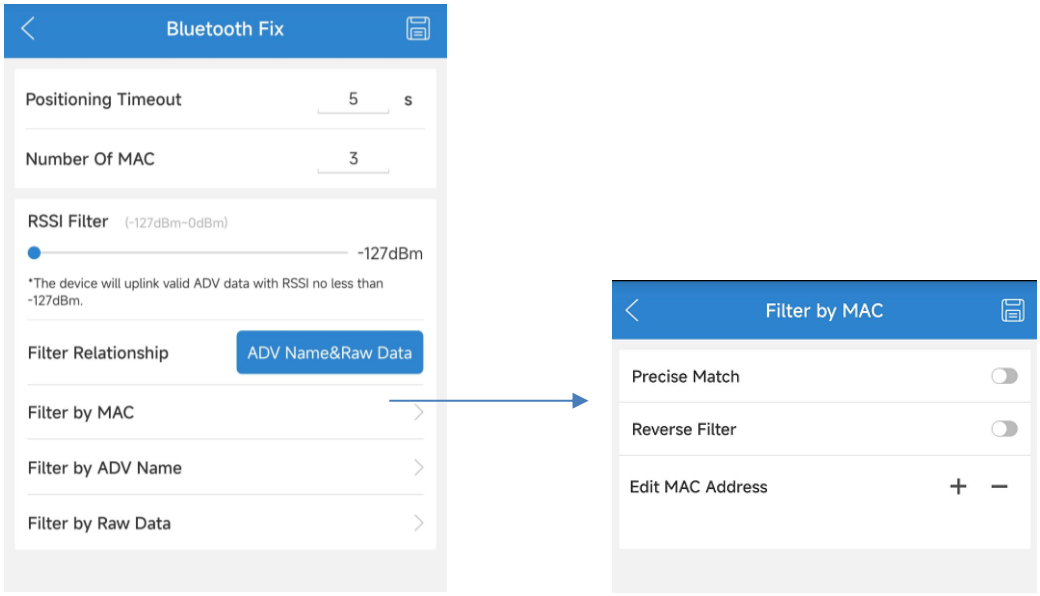
2.3.2.1.1 Filter by RSSI

LW004-PB will upload the beacon advertising data with RSSI no less than the setting value.

Parameter	Description
RSSI	Default: -127 dBm, range: -127~0 dBm

2.3.2.1.2 Filter by MAC Address

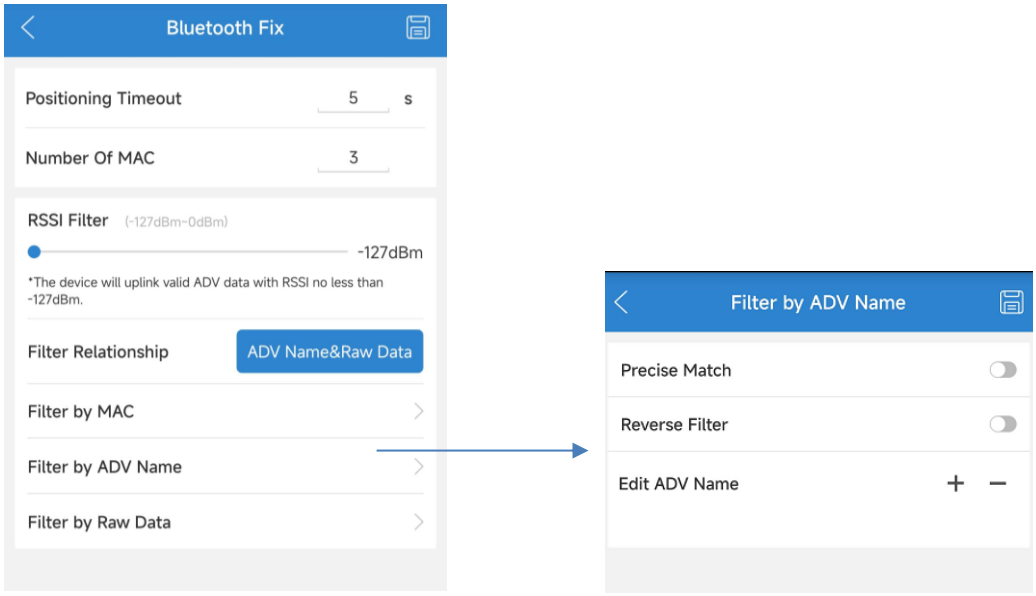
The device filters beacon data according to beacon MAC address, and it supports at most 10 set of MAC address at the same time.



Parameter	Description
Precise match	OFF: The beacon data whose MAC address contains the input content will be uploaded to server. ON: The beacon data whose first N(N<=6) bytes of MAC is the same as the input content will be uploaded to server.
Reverse filter	OFF: The beacon data whose MAC address conforms the input content will be uploaded to server. ON: The beacon data other than the above will be uploaded to server.
MAC address	Click the “+” icon, it can add at most 10 set of MAC address, the relationship of each MAC is “or”, and case insensitive. Click the “-“ icon, it will delete the MAC address input box.

2.3.2.1.3 Filter by ADV Name

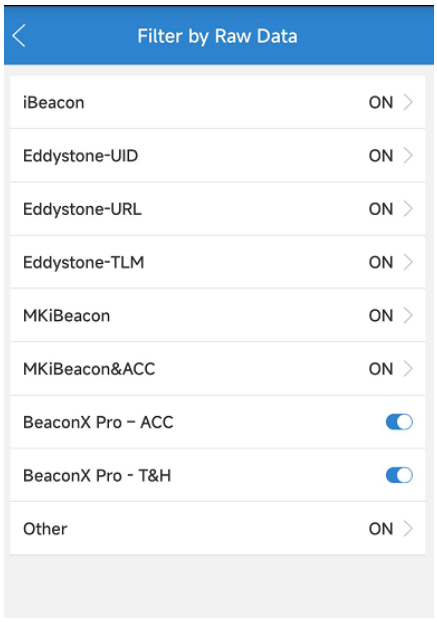
The device filters beacon data according to beacon advertising name, and it supports at most 10 set of advertising name at the same time.



Parameter	Description
Precise match	OFF: The beacon data whose advertising name contains the input content will be uploaded to server. ON: The beacon data whose first N(N<=20) bytes of advertising name is the same as the input content will be uploaded to server.
Reverse filter	OFF: The beacon data whose advertising name conforms the input content will be uploaded to server. ON: The beacon data other than the above will be uploaded to server.
ADV name	Click the “+” icon, it can add at most 10 set of advertising names, the relationship of each ADV name is “or”, and case insensitive. Click the “-“ icon, it will delete the ADV name input box.

2.3.2.1.4 Filter by Raw Data

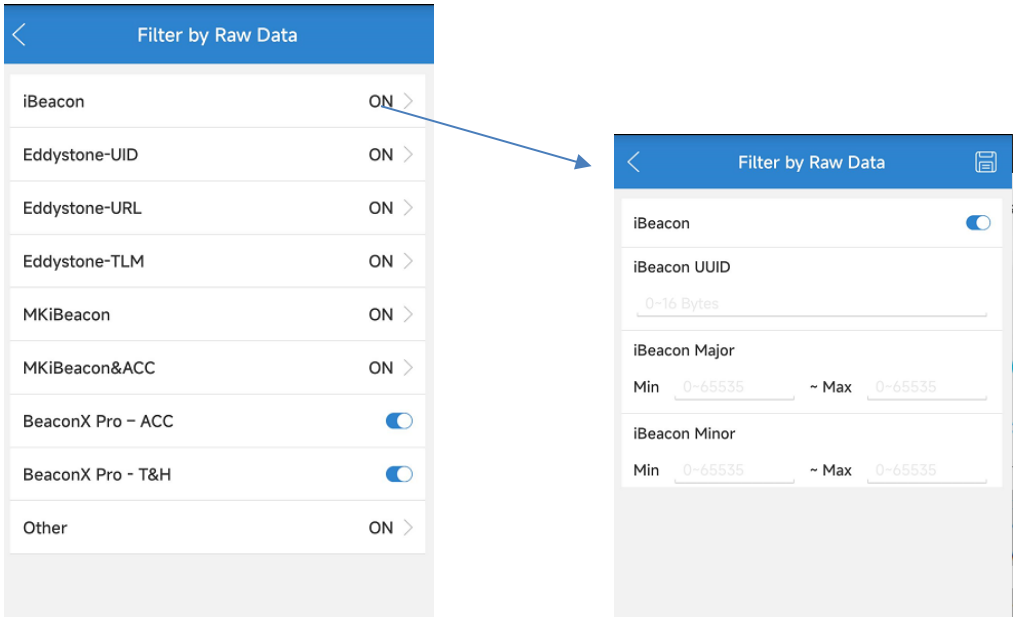
The device filters beacon data according to advertising raw data.
There are 9 beacon types, the gateway will upload advertising data of all beacon types by default.



2.3.2.1.4.1 iBeacon

Filter iBeacon data by the iBeacon UUID, major and minor.

If the iBeacon switch is on, but the iBeacon UUID, major and minor are empty, the device will upload all detected iBeacon data. If the iBeacon UUID, major and minor are filled with some value, the device will upload only the iBeacon data which conforms the value.

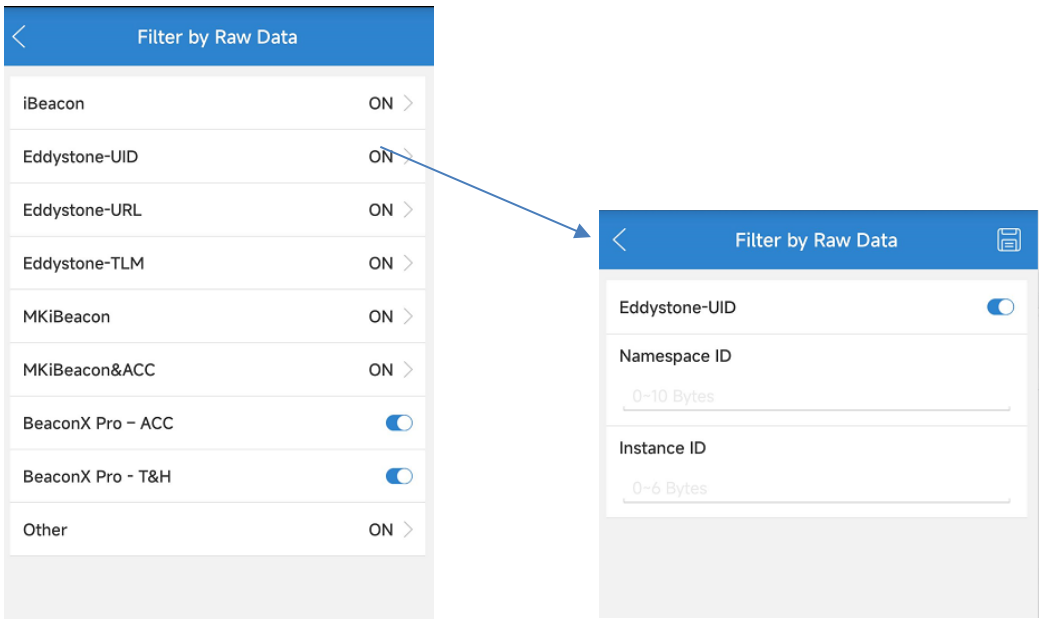


Parameter	Description
Switch	ON: iBeacon data will be uploaded OFF: iBeacon data won't be uploaded
iBeacon UUID	0~16 bytes iBeacon UUID with HEX format
iBeacon major	From 0~65535, the max value must be no less than the min value
iBeacon minor	From 0~65535, the max value must be no less than the min value

2.3.2.1.4.2 Eddystone-UID

Filter Eddystone - UID data by the Namespace ID and Instance ID.

If the Eddystone-UID switch is on, but the Namespace ID and Instance ID are empty, the device will upload all detected Eddystone - UID data. If the Namespace ID and Instance ID are filled with some value, the device will upload only the Eddystone - UID data which conforms the value.

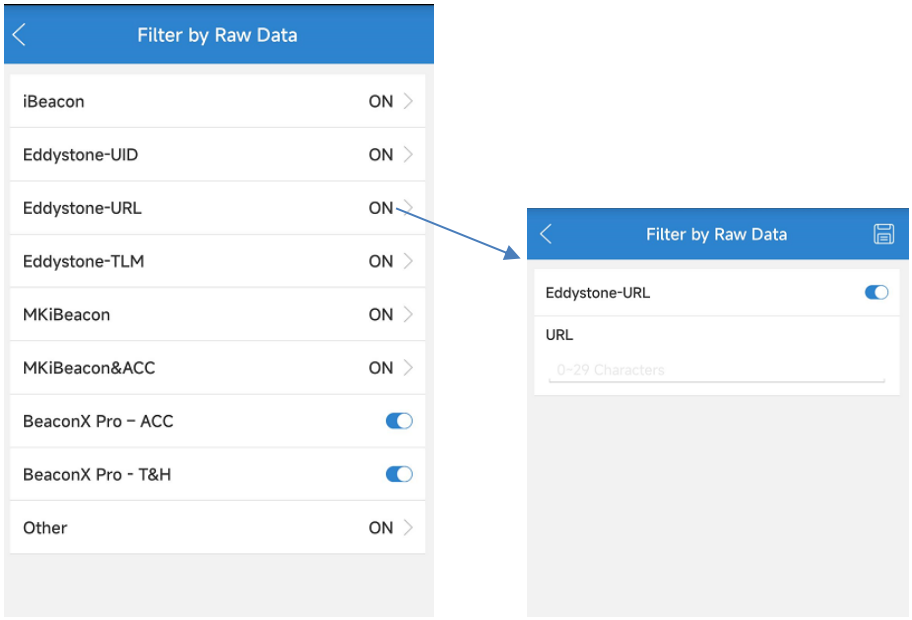


Parameter	Description
Switch	ON: Eddystone-UID data will be uploaded OFF: Eddystone-UID data won't be uploaded
Namespace ID	0~10 bytes HEX data
Instance ID	0~6 bytes HEX data

2.3.2.1.4.3 Eddystone-URL

Filter Eddystone - URL data by the URL.

If the Eddystone - URL switch is on, but the URL is empty, the device will upload all detected Eddystone - URL data. If the URL is filled with some value, the device will upload only the Eddystone - URL data which conforms the value.

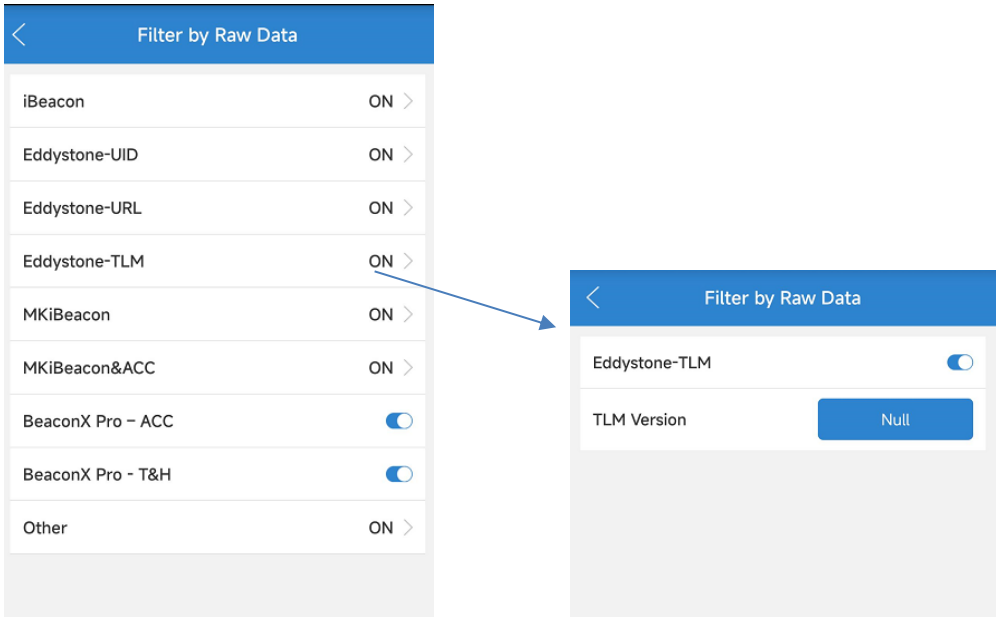


Parameter	Description
Switch	ON: Eddystone-URL data will be uploaded OFF: Eddystone-URL data won't be uploaded
URL	0~29 characters

2.3.2.1.4.4 Eddystone-TLM

Filter Eddystone - TLM data by the TLM version.

If the Eddystone - TLM switch is on, but the TLM version is null, the device will upload all detected Eddystone - TLM data. If the TLM version is configured to 0 0r 1, the device will upload only the Eddystone - TLM data whose TLM version conforms the configuration.

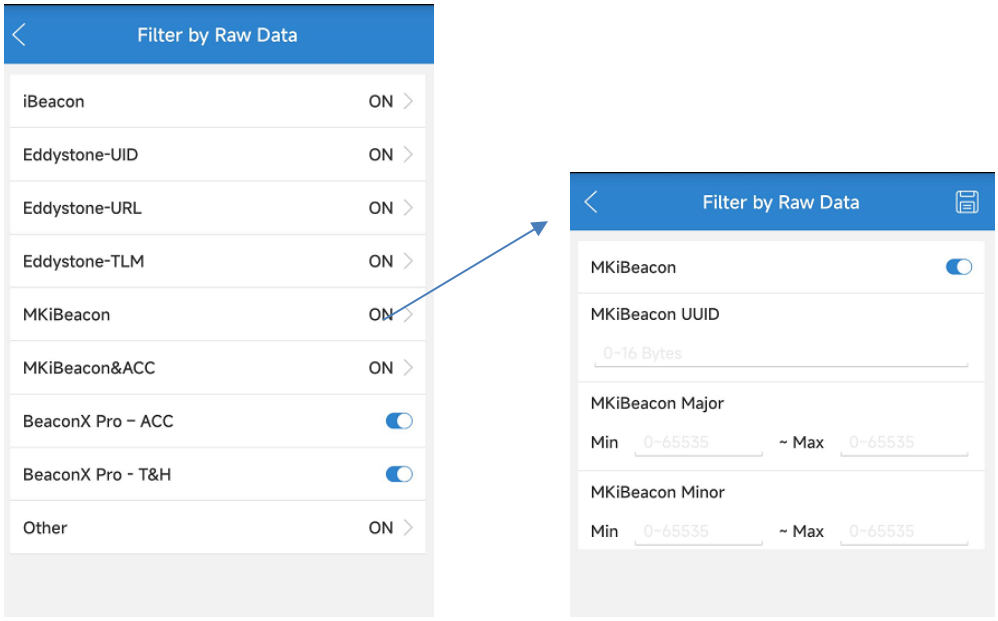


Parameter	Description
Switch	ON: Eddystone-TLM data will be uploaded OFF: Eddystone-TLM data won't be uploaded
TLM version	Range: Null/ version 0/ version 1 Null: All versions will be uploaded; Version 0: Unencrypted TLM; Version 1: Encrypted TLM

2.3.2.1.4.5 MKiBeacon

If the MKiBeacon switch is on, but the MKiBeacon UUID, major and minor are empty, the device will upload all detected MKiBeacon data.

If the MKiBeacon UUID, major, minor is filled with some value, the device will upload only the MKiBeacon data which conforms the value.

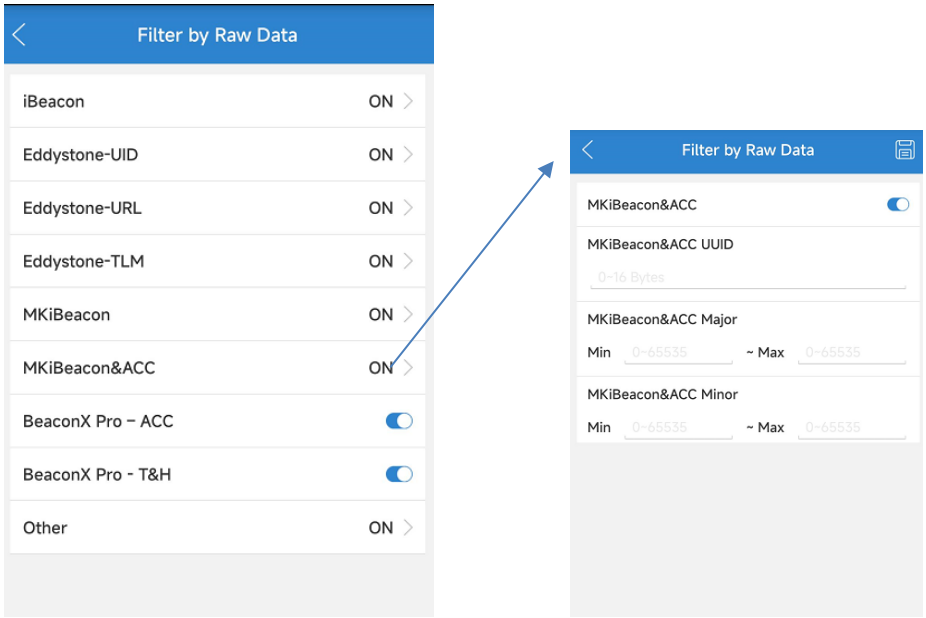


Parameter	Description
Switch	ON: MKiBeacon data will be uploaded OFF: MKiBeacon data won't be uploaded
MKiBeacon UUID	0~16 bytes MKiBeacon UUID with HEX format
MKiBeacon major	From 0~65535, the max value must be no less than the min value
MKiBeacon minor	From 0~65535, the max value must be no less than the min value

2.3.2.1.4.6 MKiBeacon & ACC

If the MKiBeacon& ACC switch is on, but the MKiBeacon UUID, major and minor are empty, the device will upload all detected MKiBeacon& ACC data.

If the MKiBeacon& ACC UUID, major, minor is filled with some values, the device will upload only the MKiBeacon& ACC data which conforms the value.



Parameter	Description
Switch	ON: MKiBeacon&ACC data will be uploaded OFF: MKiBeacon&ACC data won't be uploaded
MKiBeacon&ACC UUID	0~16 bytes MKiBeacon UUID with HEX format
MKiBeacon&ACC major	From 0~65535, the max value must be no less than the min value
MKiBeacon&ACC minor	From 0~65535, the max value must be no less than the min value

2.3.2.1.4.7 BeaconX PRO – ACC

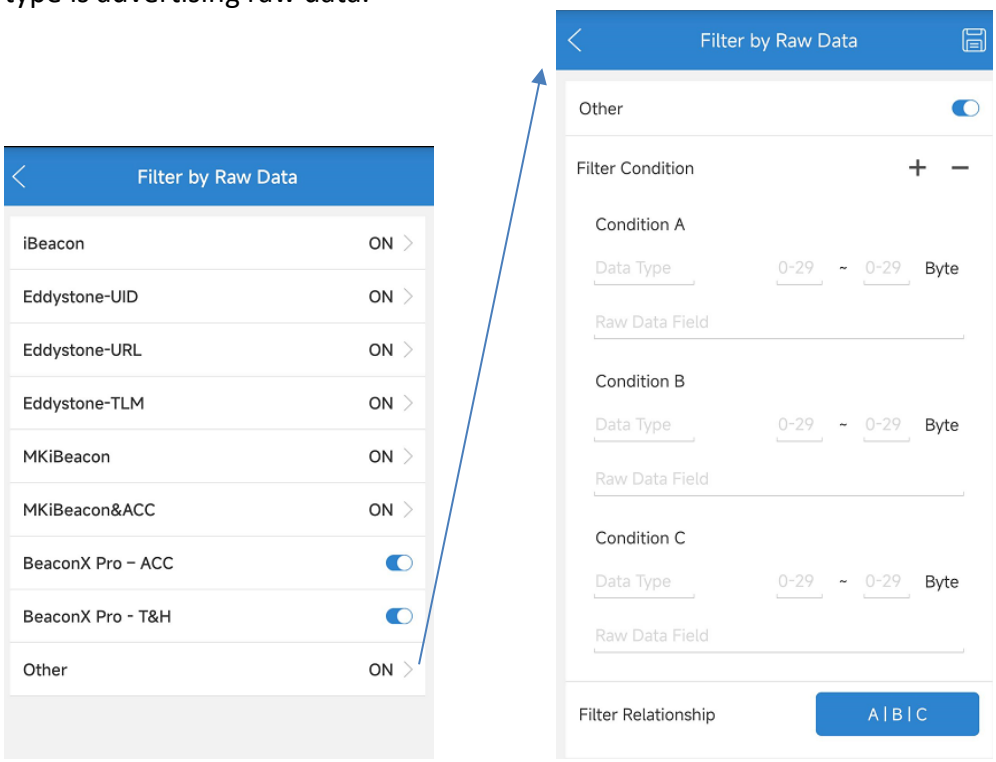
Parameter	Description
Switch	ON: BeaconX Por-ACC data will be uploaded OFF: BeaconX Por-ACC data won't be uploaded

2.3.2.1.4.8 BeaconX PRO - T&H

Parameter	Description
Switch	ON: BeaconX Por-T&H data will be uploaded OFF: BeaconX Por- T&H data won't be uploaded

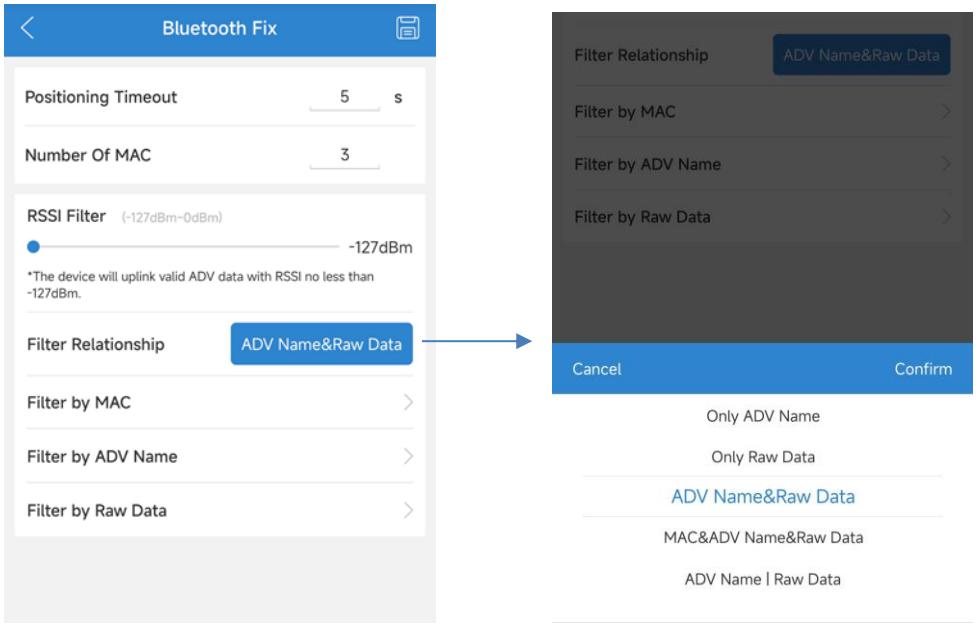
2.3.2.1.4.9 Other

The Beacon data other than the above 8 types will be judged as "other". The data format of other type is advertising raw data.



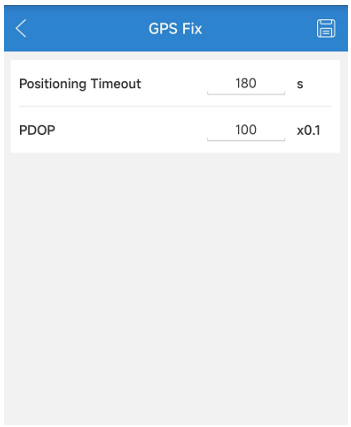
Parameter	Description
Switch	ON: Other type data will be uploaded OFF: Other type data won't be uploaded
Condition A	Data type: Bluetooth data type, it should conform with the *Bluetooth Generic Access Profile* Data range: The start and end bytes under the data type. It can be set to 0~0 or any two values from 1~29, the end value must be no less than the start value. Raw data field: Raw data value under the data type, and the data length should match the data range.
Condition B	The same to condition A
Condition C	The same to condition A
Filter relationship	The "AND/OR" logic setting for the conditions

2.3.2.1.5 Filter Relationship



Parameter	Description
Filter Relationship	Default: Null Range: Null/ Only MAC/ Only ADV name/ Only raw data/ ADV name & Raw data/ MAC & ADV name & Raw data/ ADV name | Raw data If you set one or more filters, but relationship is set as “Null”, the filters won’t take effect. The relationship should match the filters, otherwise there won’t be data uploaded.

2.3.2.2 GPS Fix

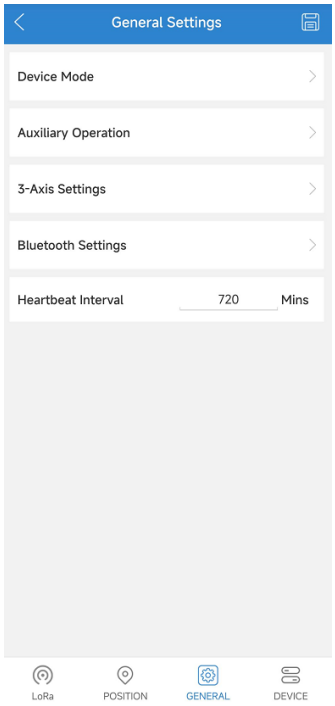


Positioning Timeout: GPS positioning time.
The value ranges from 60s -600s.
The default is 180s.

PDOP: The PDOP is a measure of how imprecise a GPS fix is, due to the satellites used being too close together to triangulate effectively. This parameter sets an upper bound on the imprecision, for a fix to be considered valid. The value ranges from 2.5 -10. The default is 10.

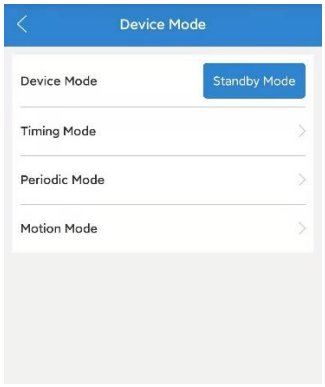
2.3.3 GENERAL Settings

In this page, you can configure parameter for general settings:



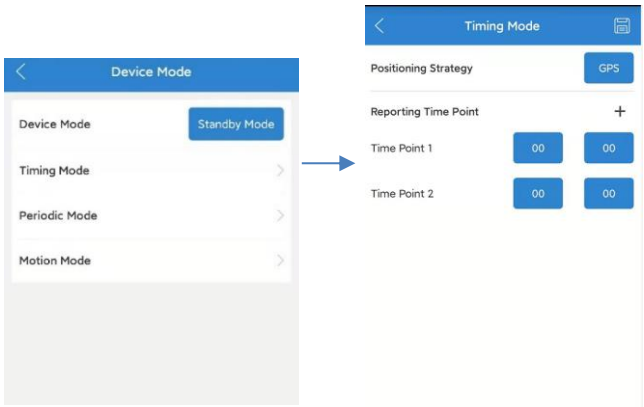
Heartbeat Interval: The Report interval of heartbeat payload. The value ranges from 1 -14400 mins. The default is 720min.

2.3.3.1 Device Mode Settings



Device Mode: Users can choose different working modes according to different application scenarios. It can be set to standby mode, periodic mode, timing mode or motion mode. The default is periodic mode.

2.3.3.1.1 Timing Mode



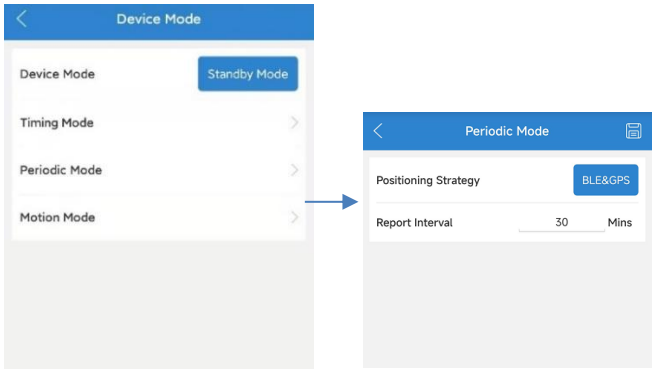
Positioning Strategy: Position strategy selection in Timing mode, the default is GPS&BLE.

Report Time Point: Reporting time point setting, up to 10 groups can be set, every 15 minutes for a time point.

Click on the + sign to add a set of time points.

Swipe your finger left to right on the mobile screen to delete a group of time points.

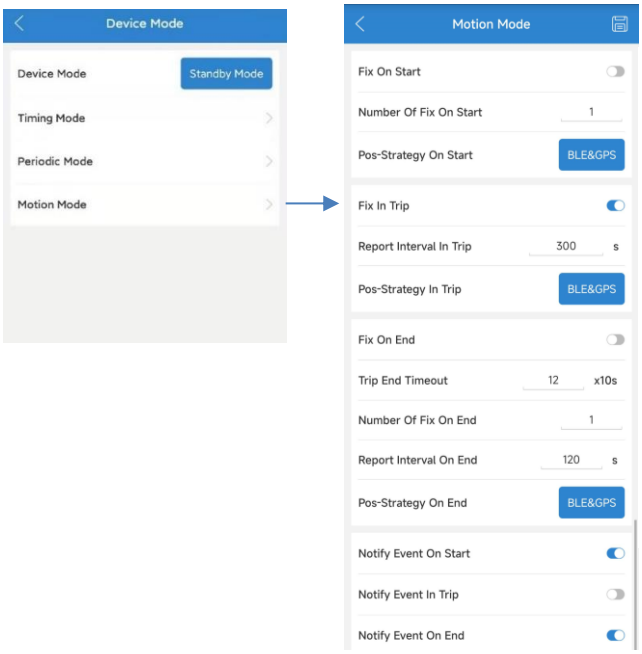
2.3.3.1.2 Periodic Mode



Positioning Strategy: Position strategy selection in periodic mode, the default is GPS&BLE.

Report Interval: Location payload reporting interval in periodic mode. The value ranges from 1 -14400mins. The default is 30mins.

2.3.3.1.3 Motion Mode



Fix on start: Whether the beginning of the movement requires positioning. The default is off.

Number of fix on start: Number of times positioning data is reported at the start of the movement. The value ranges from 1 -255. The default is 1.

Pos-Strategy on start: Position strategy selection during the start of the movement. The default is GPS&BLE.

Fix in trip: Whether in the movement requires positioning. The default is ON.

Report interval in trip: Location payload reporting interval in the movement. The value ranges from 10s -86400s. The default is 300s.

Pos-Strategy in trip: Position strategy selection in the movement. The default is GPS&BLE.

Fix on end: Whether the end of the movement requires positioning. The default is off.

Trip end timeout: The time threshold for judging the motion stop, when the device does not move in N seconds continuously, the device is considered to enter the end of movement. The value ranges from 3 -180, the unit is 10s. The default is 120s.

Number of fix on end: Number of positioning at the end of movement state. The value ranges from 1 -255. The default is 1.

Report interval on end: Location payload reporting interval at the end of movement state. The value ranges from 10s -300s. The default is 120s.

Pos-Strategy on end: Position strategy selection at the end of movement state. The default is GPS&BLE.

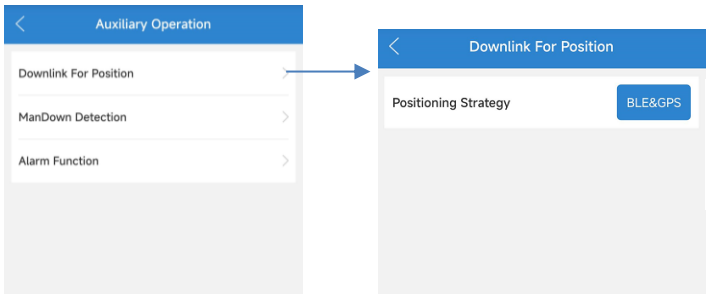
Notify event on start: Event message can be sent when the preset moving trigger condition (Motion Threshold & Motion Duration) is reached. The default is on.

Notify event in trip: When the device is in movement, Event messages can be sent whenever the device starts positioning. The default is off.

Notify event on end: Event message can be sent when the device come into End of movement state. The default is on.

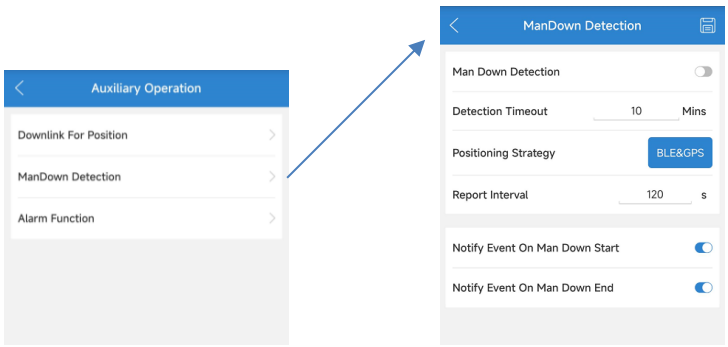
2.3.3.2 Auxiliary Operation Settings

2.3.3.2.1 Downlink for Position



Pos-Strategy: Position strategy selection. The default is GPS&BLE.

2.3.3.2.2 Man Down Detection



Man Down Detection: The function switch, the default is OFF.

Detection Timeout: The value ranges from 1 -120mins. The default is 10.

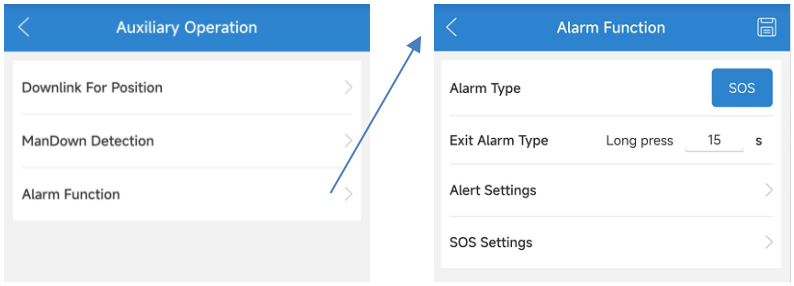
Pos-Strategy: Position strategy selection. The default is GPS&BLE.

Report interval: Location payload reporting interval for man down detection. The value ranges from 10s -600s. The default is 120s.

Notify event on Man Down Start: Event messages can be sent when device come into man down status. The default is ON.

Notify event on Man Down End: Event messages can be sent when device exits man down status. The default is ON.

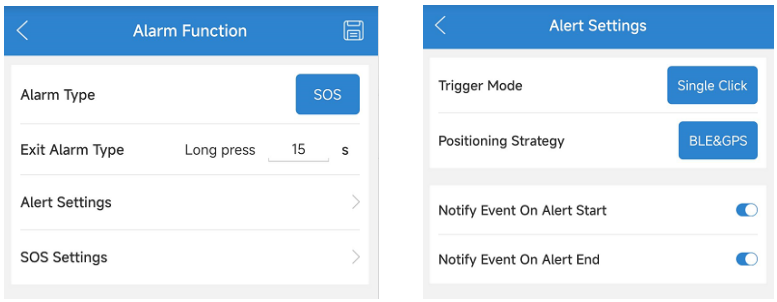
2.3.3.2.2 Alarm Function



Alarm Type: User can select from NO, Alert and SOS. The default is SOS alarm

Exit Alarm Type: Long press the SOS button can exits the alarm status. User can set the duration of long press, it can be set from 5~15, the default is 15s.

2.3.3.2.2.1 Alert Alarm



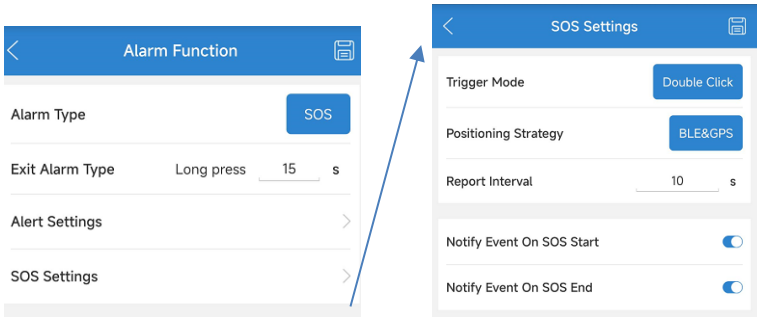
Trigger Mode: User can select the trigger way for Alert alarm. The default is single click.

Positioning-Strategy: Position strategy selection. The default is GPS&BLE.

Notify event on Alert Start: Event messages can be sent immediately when alert alarm is triggered. The default is ON.

Notify event on Alert End: Event messages can be sent immediately when device exits alert alarm. The default is ON.

2.3.3.2.2.2 SOS Alarm



Trigger Mode: User can select the trigger way for SOS alarm. The default is double click.

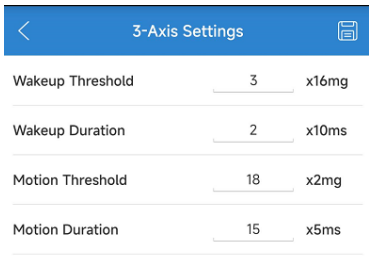
Positioning-Strategy: Position strategy selection. The default is GPS&BLE.

Report Interval: The location payload report interval when device is in SOS alarm. The default is 120s.

Notify event on SOS Start: Event messages can be sent immediately when SOS alarm is triggered. The default is ON.

Notify event on SOS End: Event messages can be sent immediately when device exits SOS alarm. The default is ON.

3.3.3 3-Axis Settings



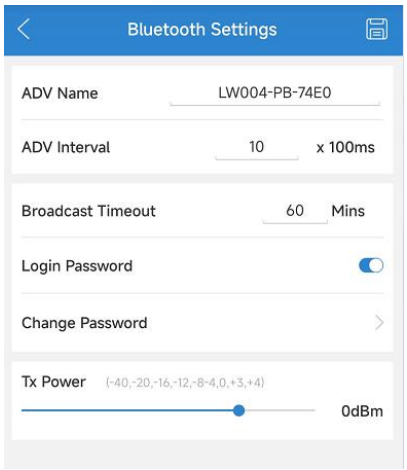
Wakeup Threshold: The wake-up threshold of the tri-axis function will automatically increase the sampling frequency when the tri-axis is woken up. The value ranges from 1 - 2, the unit is 16mg. The default is 48mg.

Wakeup Duration: The device will be woken up when the motion reaches the wake-up threshold and lasts for a period of time. The value ranges from 1 - 10, the unit is 10ms. The default is 20ms.

Motion Threshold: Judgment threshold for device motion. The value ranges from 10 - 250, the unit is 2mg. The default is 36mg.

Motion Duration: When the device motion reaches the motion threshold and lasts for a period of time, the device is considered to be in motion. The value ranges from 1 - 50, the unit is 5ms. The default is 75ms.

2.3.3.4 Bluetooth Settings



ADV Name: The ADV name of LW001-BG PRO, can be set to 16 characters at most.

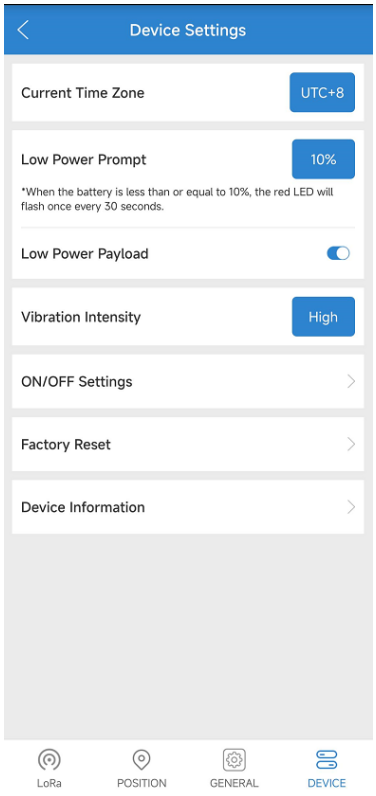
ADV interval: The Bluetooth broadcast interval. The value ranges from 1 -100. The default is 10, the unit is 100ms.

Broadcast Timeout: The duration of each Bluetooth broadcast. The value ranges from 1min - 50 mins. The default is 3 mins.

Login Password: Whether need password verification when login in MKLoRa APP.

Tx Power: The Bluetooth Tx power.

2.3.4 DEVICE Settings



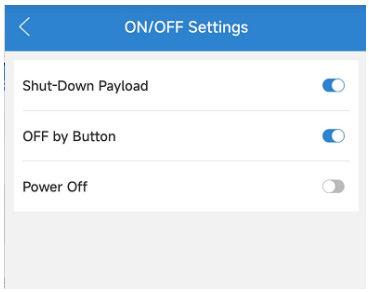
Current Time Zone: Selection of the time zone in which the current device is located.
The value ranges from UTC-12 to UTC+14. The default time zone is UTC.

Low Power Prompt: The default is 10%. It can be set 10% or 20% or 30% or 40% or 50% or 60%.

Low-power Payload: Whether to report heartbeat payload when the device enters low power.

Vibration Intensity: The moto vibration intensity. It can be set No, low, medium or high, the default is high.

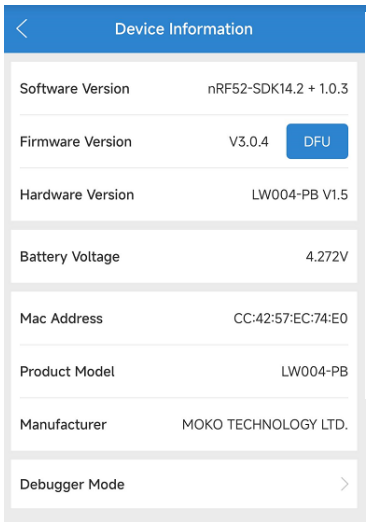
2.3.4.1 ON/OFF Settings



Shut-Down Payload: Whether to report shut-down payload. The default is ON.

OFF by Button: Whether to turn off device by power button. The default is ON.

2.3.4.2 Device Information



Update Firmware (DFU): To update the firmware via the DFU should use the upgrade package that MOKO provides with ZIP format. If you use an android phone, place the ZIP file of firmware upgrade package into the phone folder, select the upgrade package file from the OTA page of the APP, and click to upgrade.

IOS phones need to share the upgrade package file with MKLoRa via computers and iTunes tools. and then select the upgrade package file from the OTA page of the APP, and click to upgrade.

3 Revision History

Version	Description	Editor	Date
3.0	Suitable for firmware V3.0.4	Allen	2022-04-12

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