

iM

internet of Mobilities



# USER MANUAL

ZTACOM

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# 1. Introduction

## 1.1. What does iM provide?

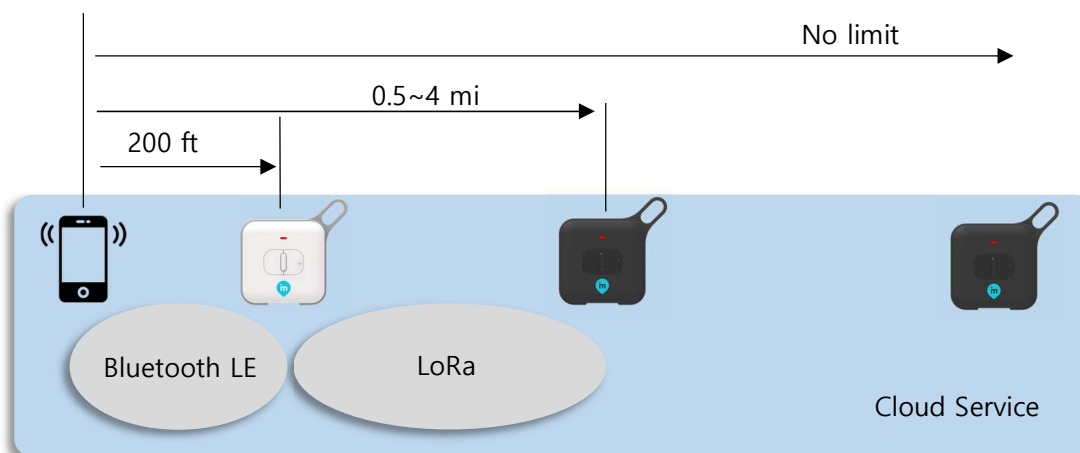
iM has a unique communication function that can be used in both non-communicable areas and communicable areas with LoRa technology. It has significantly improved working distance compared to existing smart devices. iM uses GPS and sensing functions to check your child's location and real-time information about the situation of the vehicle. iM also has helpful built-in smart health are function.

## 1.2. What is LoRa?

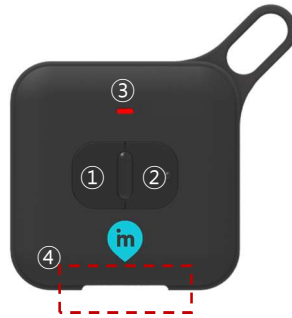
LoRa (Long Range) is a low-power wide-area network (LPWAN) technology. It is a spread spectrum modulation technique derived from chirp spread spectrum (CSS) technology.

## 1.3. Service Architecture

The iM device working as a master connects to a smartphone via Bluetooth. iM devices are connected by LoRa communication technology. You can check the location and status of other devices with LoRa modules through the smartphone's mobile application. The information delivered through the iM device is sent to the server through the mobile application, which allows the devices to form a community (Cloud Service).



## 2. Functions



- ① Power button
- ② SOS/Function button
- ③ LED
- ④ Charge

## 3. Specifications

(1) Long range Low Power LoRa RF Transceiver



### Internal Antenna

- 32-bit ARM® Cortex®-M0+, 192KB Flash Memory (LoRa)
- 32-bit ARM® Cortex®-M3, 128KB Flash Memory (BLE)

(2) Tracking & Positioning

- 1.5GHz GNSS Acquisition (GPS/GLONASS)
- 2.4GHz BLE indoor positioning(optional)

(3) Embedded Sensors

- 3D accelerometer:  $\pm 2 \sim 16g$ , fall detection
- 3D accelerometer:  $\pm 2 \sim 16g$ , fall detection
- 3D gyroscope:  $\pm 125 \sim 2000$  dps
- Temperature:  $-40 \sim 120 @ \pm 0.5/1^\circ C$  accuracy
- Humidity:  $0 \sim 100\%RH @ \pm 3.5/5\%RH$
- Barometer:  $260 \sim 1260hPa @ \pm 0.1/1hPa$  absolute accuracy

(4) Operating Temperature

- $-20^\circ C$  to  $+ 80^\circ C$

(5) Dimensions

- L 48x W 48x H 13mm

(6) Polycarbonate/ABS Housing

(7) Status LED Indicator

- Indicating device status: Low Battery, Network connection, Alert Events, etc.

(8) Push Button (2ea) with Tactile Feedback

- On/Off, Emergency Call

(9) Bluetooth LE 4.2

**Internal Antenna**

- BLE Advertising (Beacon Broadcasting) applicable for indoor positions
- OTA/P2P Firmware upgrading & easy pairing via smartphone
- For history dumping of data logger or device operation scenario changing

(10) Battery

- Rechargeable Lithium Polymer battery with micro-USB 5-pin connector

## 4. Device Size

iM plus is designed to be compact and portable.



## 5. Service Operation (Mobile Application)

We provide two type of applications which are Android and iOS to manage and utilize iM Plus. You can download the applications through Google Play and Apple Store with below QR codes.

### 5.1. QR Code



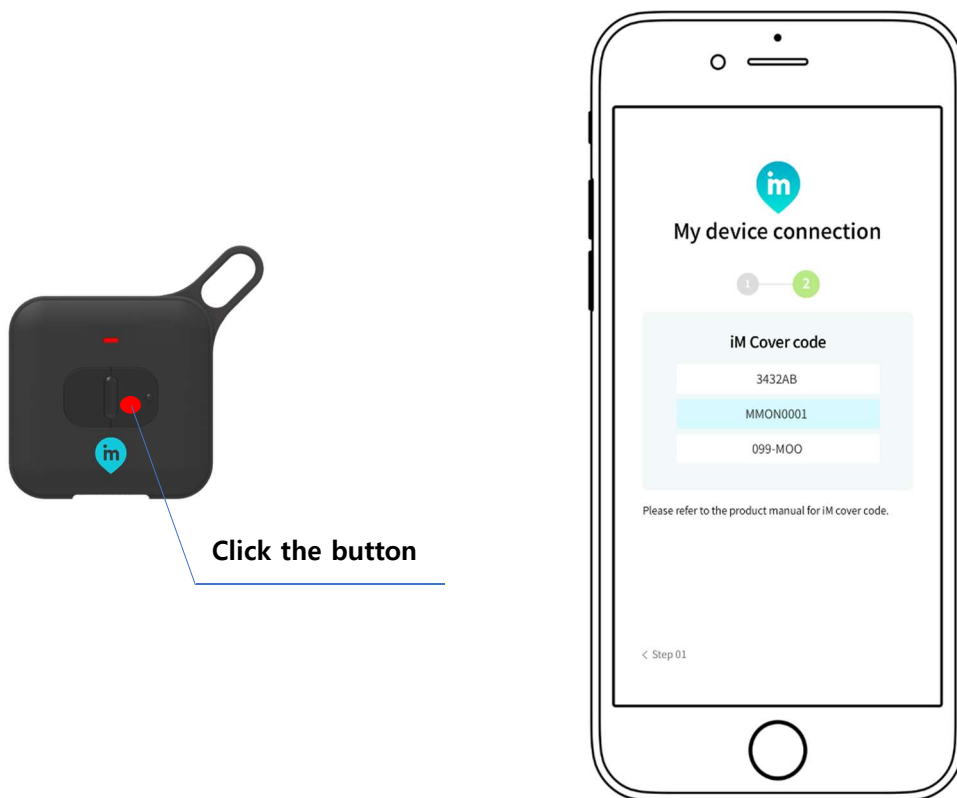
iOS (Apple Store)



Android (Google Play)

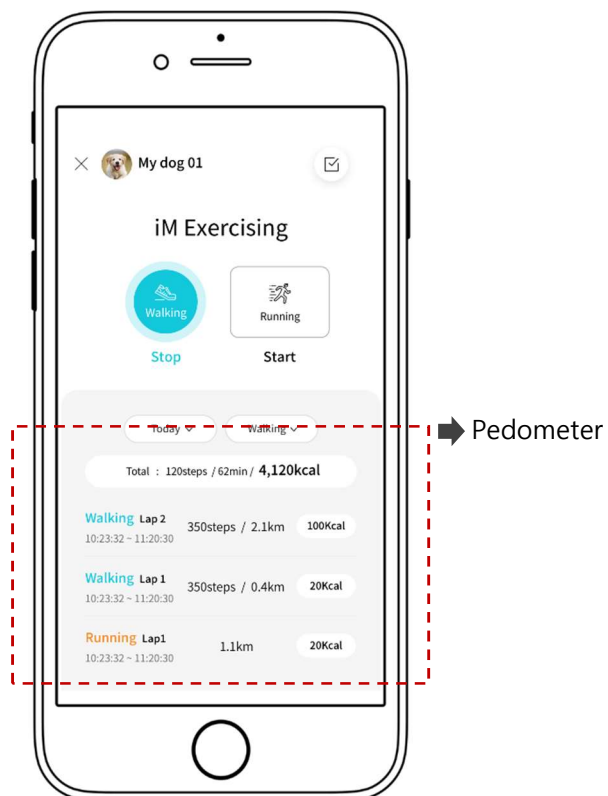
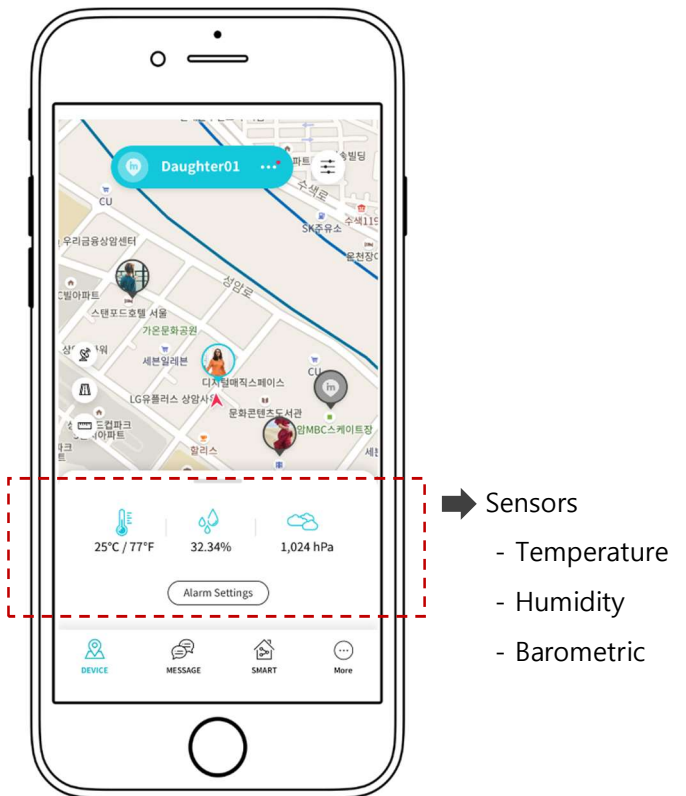
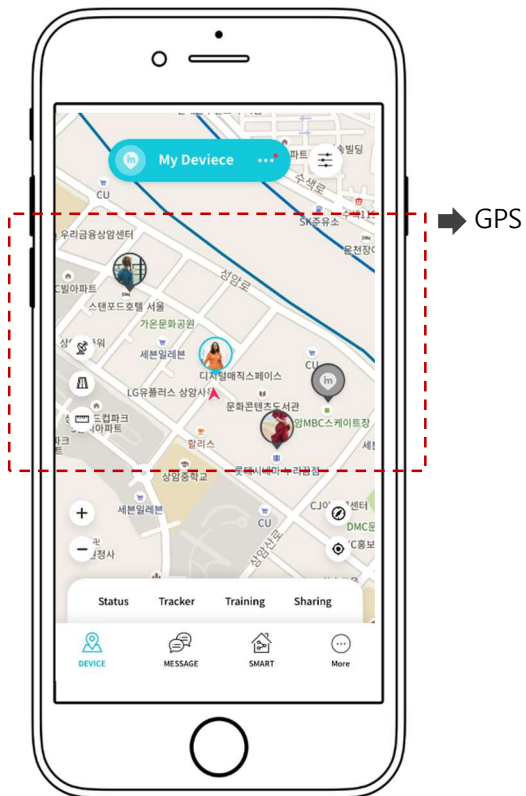
## 5.2. Mobile Application

### A. Device Connection to Smartphone with BLE



In order for the device to connect with the smartphone, it is necessary to click the right button to enable BLE to advertise. You can see the list of iM devices around you and choose the yours.

### B. Transmit GPS (location) and Environment information





The iM provides the latest place and the location history feature. The iM app shows you the latest locations of your lost items and the users of iM keep you up to date with your lost items. You can also check environmental factors (temperature, humidity, air pressure).

The iM device provides a pedometer service. You can see how long you walk or run and how much burn your calories.

### C. Direct Message and Smart Alerts



You can text your iM members in a no-cell-coverage area. You can send or receive Individual messages, Group messages and smart alerts. iM device detects various physical events (fall and impact) and notifies you through the iM app. Press the emergency button on your iM device to let your friends know about your SOS.

## FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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 correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

## WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

"CAUTION : Exposure to Radio Frequency Radiation.

Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.