



MOKO SMART



Product Specification

M3 Industrial Beacon

Version 1.0

Revision History

| Version | Date | Notes | Contributor(s) |
|---------|--------------|-----------------|----------------|
| V1.0 | May 16, 2022 | Initial version | Daniel/Sara |

About document

This **product specification** was designed to help users to know the hardware overview and feature instructions of **M3 Industrial Beacon** product. Through this document, users will be initial to understand the application scenarios, hardware specifications, basic instructions as well as packaging information of product.

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1. Overview

This *Product specification* is mainly applicable for MOKO **M3 Industrial Beacon** product, and mainly contained below parts:

- [*Product brief*](#)
- [*Application scenarios*](#)
- [*Hardware specifications*](#)
- [*Basic instructions*](#)
- [*Package information*](#)

For more information about user guidance of product functions and configuration APP, please ask our sales team directly for official document – “**MOKO Standard APP User Manual**”.

2. Product brief

M3 is a modern Bluetooth Low Energy (BLE) enabled Industrial Beacon designed and engineered to provide top-tier positioning and tracking services, especially for the industrial sector. It's integrated with a 3-axis sensor and a red LED indicator. It uses Bluetooth standard 4.2 (compatible with Bluetooth 5.0). M3 industrial beacon is compatible with both Eddystone and iBeacon protocols. Due to its multiple installation options, M3 can be employed in manufacturing firms, zoos, construction areas, and other outdoor and indoor locations.



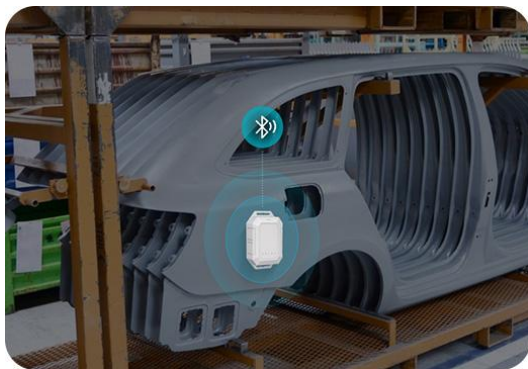
M3's high-power detachable batteries (2*8000mAh Li ER18505) enables a long lifetime up to 20 years and broadcast over long distances up to 150 meters. M3 is waterproof, anti-collision, and can resist high and low temperatures enhancing its durability.



3. Application scenarios

Building site

- > Tracking of tools and heavy machinery
- > Geo-fence monitoring
- > Outdoor navigation tag



Logistics

- > Tracking of pallets, containers and forklifts
- > Inventories accuracy improvements
- > Indoor navigation tag

Manufacturing

- > Tracking of rawmaterial, semi-finished and finished products
- > Real-time workflow management



Pasture/Zoo

- > Tracking of animals
- > Animal info pushing and enhance visitor interaction.
- > Indoor navigation tag

4. Hardware specifications

4.1 General specifications

| General specifications | |
|------------------------------|--|
| Main chip | Nordic nRF52 series |
| Bluetooth | Bluetooth 4.2(Hardware compatible with Bluetooth 5.1) |
| Dimension | 122.6mm x 72.9mm x 33.8mm |
| Range | Up to 150 meters (in the open area and no obstacles) |
| Material | ASA & PC |
| Waterproof | IP67 |
| Color | Gray |
| Installation | Screw, Sticker, Cable tie |
| Button | Inner Mechanical Button |
| LED | Single Red LED |
| Sensor | 3-axis accelerometer sensor (optional) Hall sensor |
| Operating temperature | -40°C / + 85°C |
| Storage temperature | -20°C / + 70°C (without battery) 10°C / + 25°C (with battery) |
| Humidity | 0% ~ 95% (non-condensing) |
| Antenna type | PCB onboard |
| Power supply | 2*AA ER18505, 8000mAh, replaceable battery |

Table 1: General specifications of M3 Industrial Beacon

4.2 Battery consumption

Here we have described battery consumption in some common configurations which refer to different use cases. You can refer to below table to create the use case and estimate battery lift time.

| 3-axis sensor sampling rate | Single press mode | | | Consumption (uA) | Life time (Year) |
|-----------------------------|-------------------|----------|----------------------|------------------|------------------|
| | Alarm mode | Tx power | Advertising interval | | |
| 10Hz | OFF | 0dBm | 1000ms | 28.4 | 20.9 |
| 10Hz | OFF | 0dBm | 500ms | 42.9 | 13.8 |
| 10Hz | OFF | 0dBm | 1000ms | 156.2 | 3.8 |
| 10Hz | OFF | 4dBm | 1000ms | 30.7 | 19.3 |
| 10Hz | OFF | 4dBm | 500ms | 48.8 | 12.1 |
| 10Hz | OFF | 4dBm | 1000ms | 187.6 | 3.2 |
| 25Hz | OFF | 0dBm | 1000ms | 35.2 | 16.8 |
| 50Hz | OFF | 0dBm | 1000ms | 46.4 | 12.8 |
| 100Hz | OFF | 0dBm | 1000ms | 69.3 | 8.6 |

Table 2: Battery consumption in different conditions

5. Basic instructions

5.1 How to wear/install M3?

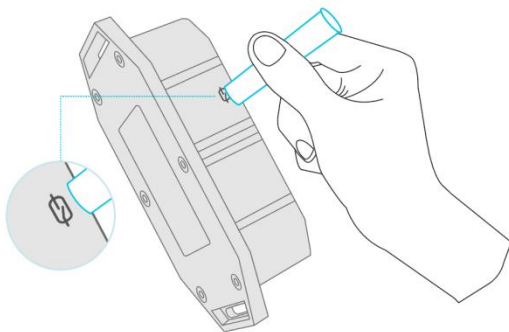


Figure 2: How to wear/install M3 Industrial Beacon?

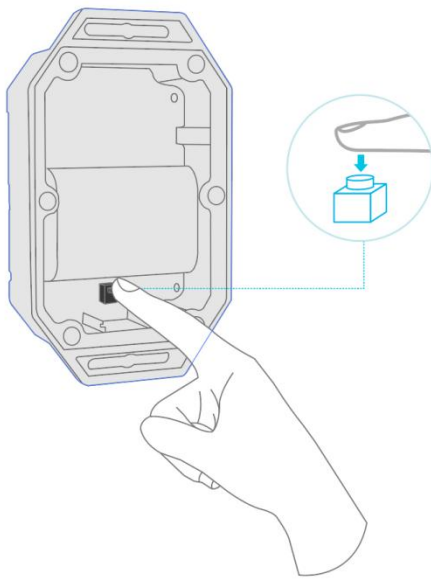
5.2 How to power ON/OFF M3?

There have two ways to power on/off M3.

- Magnetic switch : Magnet approaching to pull-down hall effect sensor.



- Inner power button: Take out back cover and long press inner mechanical button.



5.3 How to restore factory settings?

There have two ways to restore factory settings.

- **BeaconX Pro (Software reset):** Connect M3 with “BeaconX Pro” APP and then execute “reset Beacon” operations to finish the software reset.
- **Inner mechanical button (Hardware reset):** There is an inner mechanical button on the PCB, so you should open the back cover to press the button for 10s or more, then release button and single press button again within 2s, device will proceed to factory reset.

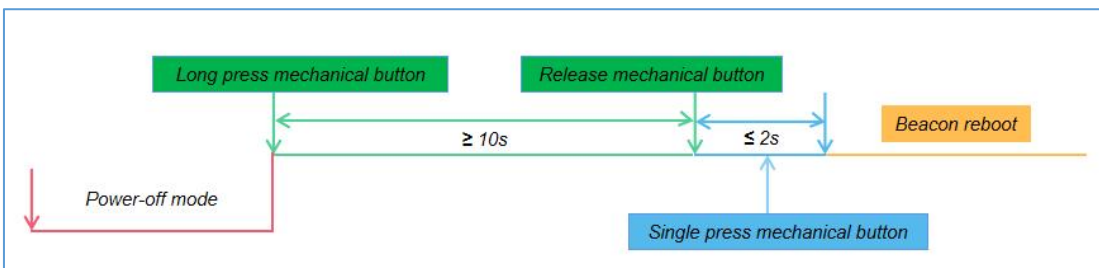


Figure 3: Hardware reset flowchart of M3 Industrial Beacon

Remark: Software reset will not reset connection password.

6. Package information

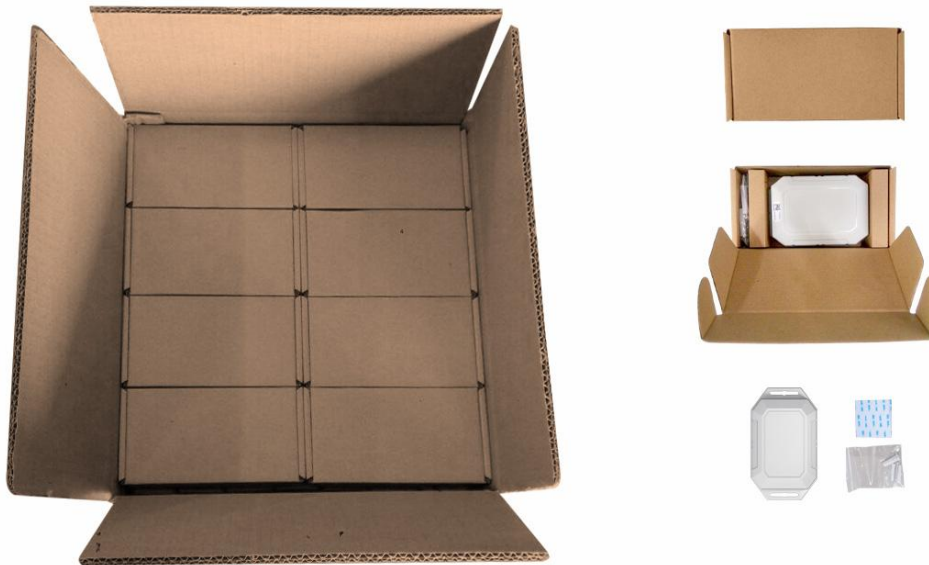


Figure 4: Package information of M3 Industrial Beacon

| Package information | | |
|---------------------|----------|---|
| Item | Quantity | Remark |
| M3 Device | 1 | Main equipment |
| Double-sided tape | 1 | Used for sticking equipment |
| Strap | / | Optional |
| Magnet | / | Optional |
| Screw | 2 | Used for fixing equipment |
| Wall Plug | 3 | A type of fixing used in building, assets, etc. |

Table 3: Package information of M3 Industrial Beacon

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