



MOKO SMART



# Product Specification

## *L02 Series Products*

*Version 2.0*



MOKO TECHNOLOGY LTD.

# Revision History

Version	Data	Notes	Contributor(s)
V2.0	May 30, 2024	Initial version	Daniel

## About document

This **product specification** was designed to help users to know the hardware overview and feature instructions of **L02 Series Products**. Through this document, users will be initial to understand the application scenarios, hardware specifications, basic instructions as well as packaging information of product.

# Table of Contents

<b>1. Overview.....</b>	<b>3</b>
<b>2. Product brief.....</b>	<b>4</b>
<b>3. General specifications .....</b>	<b>5</b>
3.1 Hardware specifications .....	5
3.2 Lifecycle estimation .....	5
3.3 LED functionality.....	6
<b>4. Basic instructions .....</b>	<b>7</b>
4.1 How to install device?.....	7
4.2 How to power ON/OFF device?.....	7
4.3 How to restore factory settings?.....	8
4.4 How to replace battery? .....	9
<b>5. Ordering information .....</b>	<b>10</b>
<b>6. Package information.....</b>	<b>11</b>

# 1. Overview

This *Product specification* is mainly applicable for MOKO **L02 Series Products**, which contains:

- ✧ L02 – Asset Tag, *with* hangers in the enclosure
- ✧ L02S – Temperature & Humidity condition monitoring, *with* hangers in the enclosure

L02 Series Products - Overview			
Product model	Use cases	Applicable series firmware	Applicable configuration APP
L02	Asset Tag	BeaconX Pro series	BeaconX Pro
L02S	Temperature & Humidity Data logger	MK Sensor series	MK Sensor

**Table 1:** Overview of L02 Series Products

Both L02 and L02S have the same casing and only hardware difference, which dedicated to different use cases, so the product specifications shall be similar and mainly contained below parts:

- [Product brief](#)
- [General specifications](#)
- [Basic instructions](#)
- [Ordering information](#)
- [Package information](#)

For more information about user guidance of product functions and configuration APP, please contact our sales team directly for official document.

## 2. Product brief

The **L02 Series Products** have two different hardware models, which are all Bluetooth Low Energy technology based.

*L02 product model*, is mainly dedicated for asset tracking in the warehouse, with its rugged casing design.

*L02S product model*, is mainly dedicated for temperature and humidity data logger in the cold chain logistics, with its built-in temperature and humidity sensor. Monitoring the door status and temperatures of the vehicle or trailer, broadcasting the data via BLE to be picked up by trackers or BLE gateways and transmitted to server eventually. It can also store 50000 groups of sensor data, which is design in response to industry demands for environment monitoring to resolve losses caused by unallowable temperature deviation and unauthorized opening.



**Figure 1:** Appearance overview of L02 Series Products

## 3. General specifications

### 3.1 Hardware specifications

Hardware specifications			
Item	Specs	L02	L02S
Casing	Dimension	69.9*46.7*18.0mm	
	Material	ABS	
	Waterproof	IP67	
	Color	Gray	
	Installation	Sticker   Zip Tie   Screw	
Connectivity	Bluetooth	Bluetooth 5.0	Bluetooth 5.1
	MCU	Nordic series	Silicon Labs series
	Maximum Tx Power	+4dBm	+6dBm
	Long range mode*	No	Yes
	Transmission range*	Legacy mode - 150 meters Long range mode – Not Support	Legacy mode - 150 meters Long range mode – 350 meters
Hardware	Accelerometer sensor	Yes	Yes
	Magnetic switch	Optional	Yes (Door detection sensor)
	Temperature sensor	No	Yes Accuracy tolerance (Typical): $\pm 0.5^{\circ}\text{C}$
	Humidity sensor	No	Yes Accuracy tolerance (Typical): $\pm 2\% \text{ RH}$
	Barometer sensor	No	Yes Accuracy relative: $\pm 6\text{Pa}$ Measuring range: 30kPa – 125kPa
	LED	Red	Red
	External Flash	No	2M Bytes – 50000 groups data logger
	Capacity	1000mAh	
	Replaceable battery	Yes	
	Operating temperature	$-20^{\circ}\text{C} / + 60^{\circ}\text{C}$	
Regulatory	Certifications	FCC   CE   RoHS   REACH	

**Table 2:** Hardware specifications of L02 Series Products

\*Transmission range tested in the open area and no obstacles in the route.

\*Long range mode means “Coded PHY advertising mode”.

### 3.2 Lifecycle estimation

Please refer to documents – “**MOKO Beacon\_Battery Lifecycle summary**” for more details on battery lifecycle.

**Remark:** L02 Series Products can be applicable for different series firmware, please double check before battery lifecycle calculations.

### 3.3 LED functionality

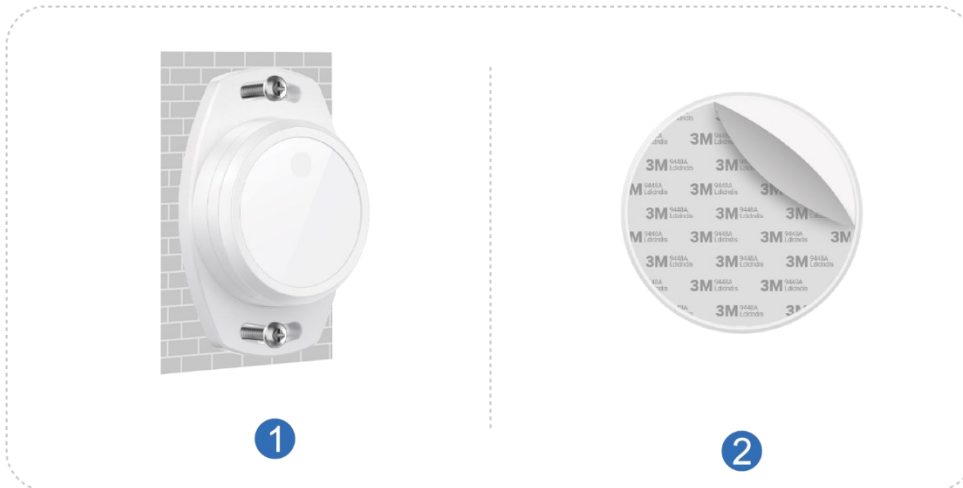
Here we have described the LED response status in some common situations.

LED response status		
Scenarios	LED color	Response
Power ON	Red	Blinking for 3 seconds
Device connect	Red	Blinking twice
Power OFF	Red	Solid for 3 seconds
Factory restore	Red	Solid for 3 seconds and then device reboot
DFU upgrade	Red	Blinking during DFU upgrade, and solid for 3 seconds after finished, then device reboot
Low battery	Red	Blinking twice every 10 seconds
LED notification	Red	Blinking once --- Trigger mechanism applied

**Table 3:** LED response status in various situations

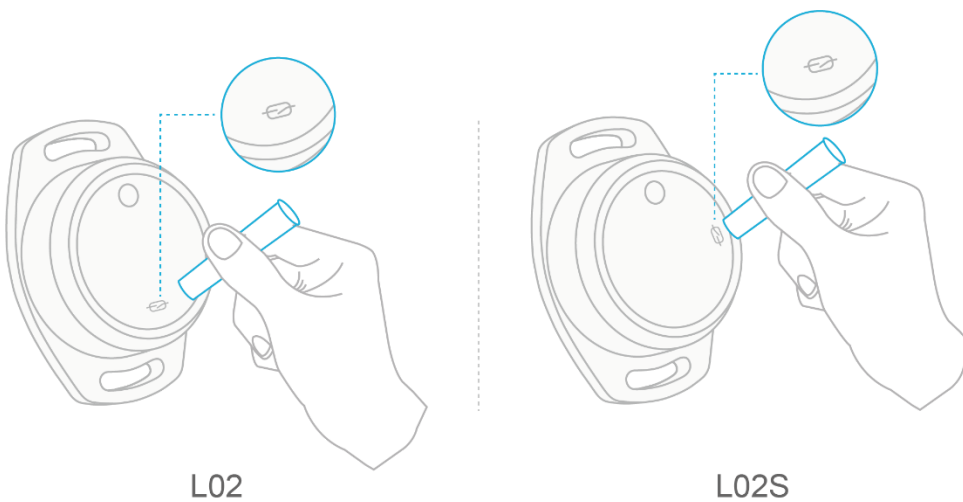
## 4. Basic instructions

### 4.1 How to install device?



**Figure 2:** How to install L02 Series Products?

### 4.2 How to power ON/OFF device?



**Figure 3:** How to power on/off L02 Series Products?

The *L02 Series Products* do not reserve the external mechanical button but with inner mechanical button, and the magnetic switch is an optional equipment, so you can follow up below steps to power ON/OFF device.

**Power ON:** Long press inner button (or take the magnet to approach to the magnetic switch positions if hardware contains the magnetic switch), hold on for 3 seconds and then Red LED will **keep blinking** for 3 seconds to indicate device power on status.



**Power OFF:** Long press inner button (or take the magnet to approach to the magnetic switch positions if hardware contains the magnetic switch), hold on for 3 seconds and then Red LED will **keep solid** for 3 seconds to indicate device power off status.

**Remark:** If the product does not have the magnetic switch icon, then it means that this product does not contain the magnetic switch, and you will need to power on/off device through the inner button.

### 4.3 How to restore factory settings?

There have two ways to restore factory settings.

➤ **Software reset:** Connect with device through configuration APP and then execute “Reset Beacon” operations to finish the software reset.

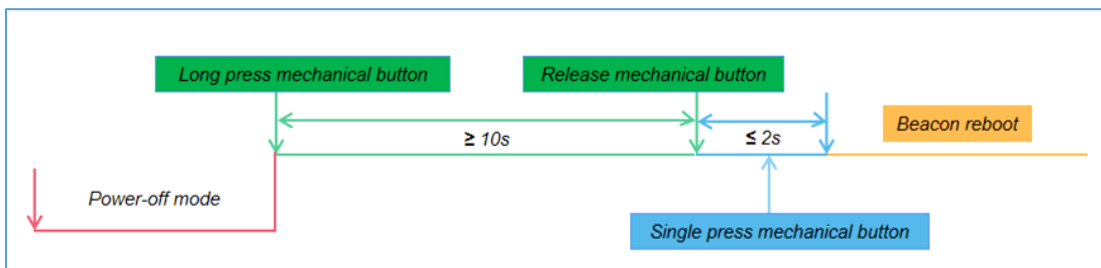
➤ **Hardware reset:**

**Step 1:** Keep the device power ON.

**Step 2:** Long press inner button (or take the magnet to approach to the magnetic switch positions) , hold for more than 10 seconds, during that device will power on and LED start flashing for 3 seconds.

**Step 3:** After Long press inner button (or take the magnet to approach to the magnetic switch positions) for more than 10 seconds, release button (or take away the magnet) and then single press button (or approach to magnetic switch) again within 2 seconds, then device will proceed on factory reset, along with the LED solid for 3 seconds.

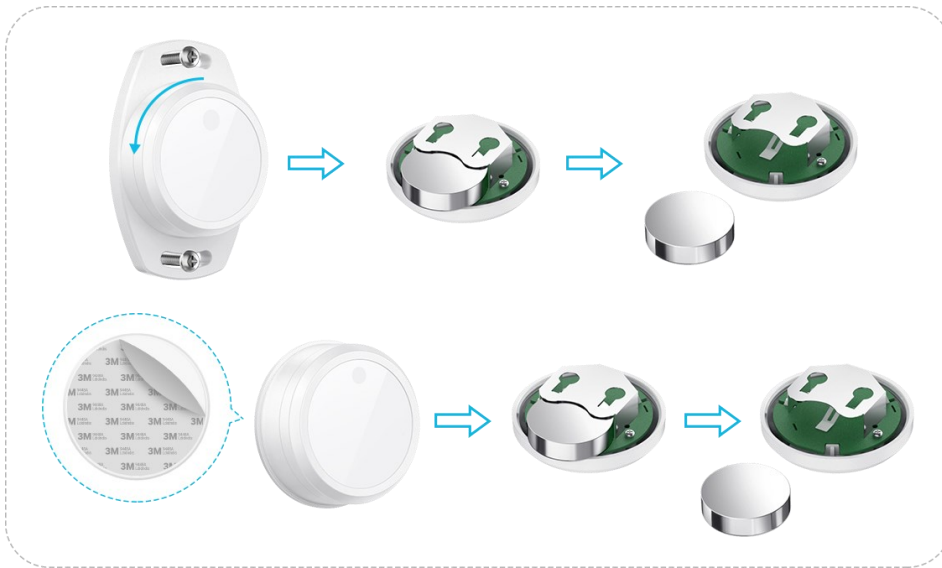
**Step 4:** Device will reboot and LED start flashing for 3 seconds to indicate the factory reset success.



**Figure 4:** How to reset L02 Series Products?



**Remark:** Software reset won't reset connection password.

## 4.4 How to replace battery?

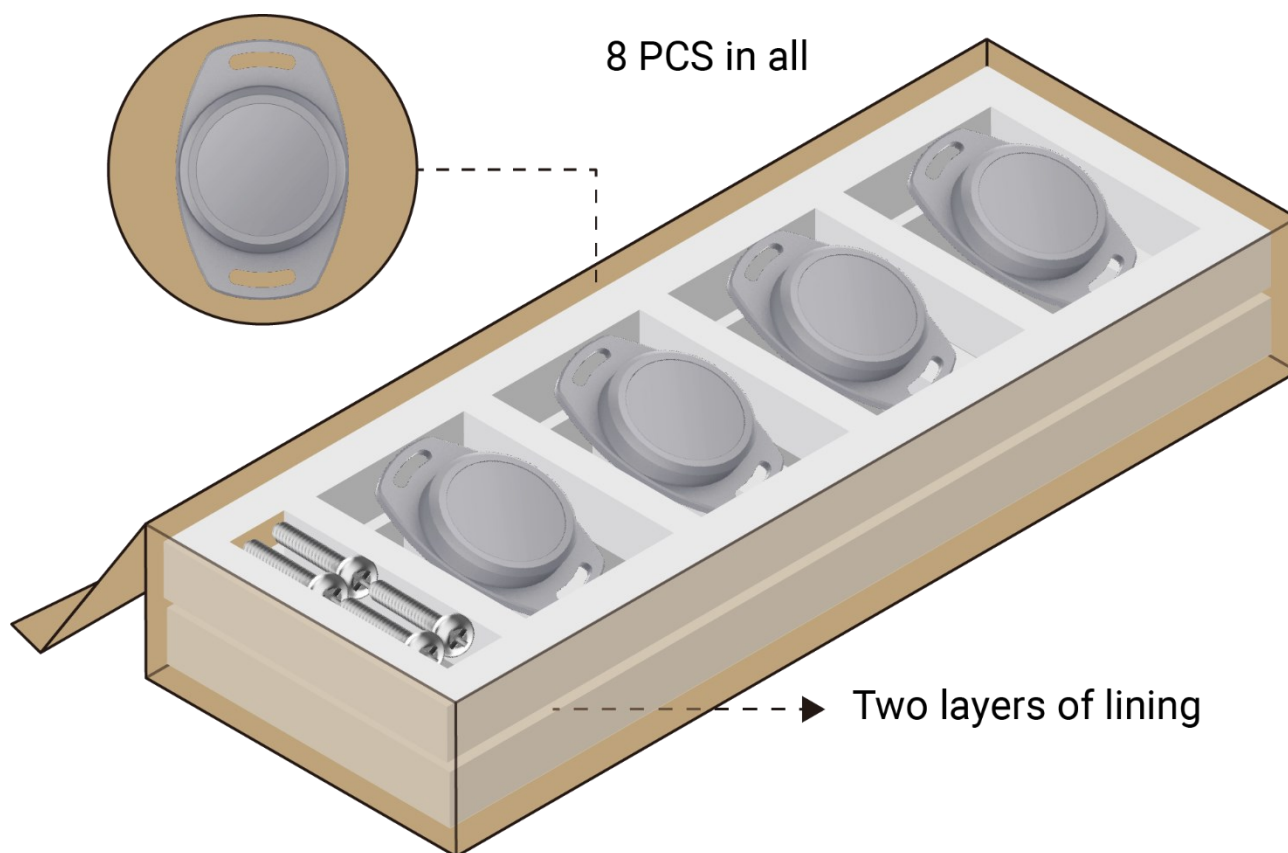


**Figure 5:** How to replace the battery of L02 Series Products?

## 5. Ordering information

Ordering information					
Ordering model	Temperature sensor	Humidity sensor	External Flash	Hall sensor	Product ID
L02	No	No	No	Bottom position	
L02S	Yes	optional	Yes	Side position	
<b>Remark:</b> 1. Magnetic switch is an optional hardware equipment, which is excluded in the standard sample delivery. 2. If humidity sensor is not equipped, there will not the airflow hole in the enclosure.					

## 6. Package information



**Figure 6:** Packaging information of L02/L02S

Package information			
Ordering model	Item	Giftbox	Carton box
L02/L02S	L02/L02S Device	8pcs/Giftbox	80pcs/Carton
	3M sticker	8pcs/Giftbox	80pcs/Carton
	Screw & Rubber plug (package unit)	8pcs/Giftbox	80pcs/Carton

**Table 4:** Package information of L02 Series Products

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#### FCC STATEMENT

1. 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.

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

2. 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.

RF warning statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

## Contact

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