Product Specification

M4/M4 Pro Series Products

Version 2.0

MOKO TECHNOLOGY LTD.

Revision History

Version	Data	Notes	Contributor(s)
V2.0	Nov 30, 2023	Initial version	Daniel

About document

This **product specification** was designed to help users to know the hardware overview and feature instructions of **M4/M4 Pro 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.

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1. Overview

This *Product specification* is mainly applicable for MOKO **M4/M4 Pro Series Products**, which contains:

✧ **M4** – M4 Asset Tag, Silicon Labs MCU, without temperature sensor, without waterproof

✧ **M4S** – M4 Sensor Tag, Silicon Labs MCU, with temperature sensor, without waterproof

✧ **M4P** – M4 Pro Asset Tag, Silicon Labs MCU, without temperature sensor, with IP67 waterproof

✧ **M4PS** – M4 Pro Sensor Tag, Silicon Labs MCU, with temperature sensor, with IP67 waterproof

M4/M4 Pro Series Products - Overview		
Product model	**M4/M4S**	**M4P/M4PS**
ID Appearance		

Table 1: *Overview of M4/M4 Pro Series Products*

All above product models have the similar casing and only main difference on the hardware, 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 *M4/M4 Pro Series Products* have two different use cases regarding of several hardware models, which are all Bluetooth Low Energy technology based.

M4/M4P product model, are mainly dedicated for asset tracking with its compact design and up to 350m transmission distance based on BLE 5.0 Coded PHY settings.

M4S/M4PS product model, are mainly dedicated for asset tracking as well as the additional temperature monitoring in the warehouse or logistics, with its built-in temperature sensor and memory logger.
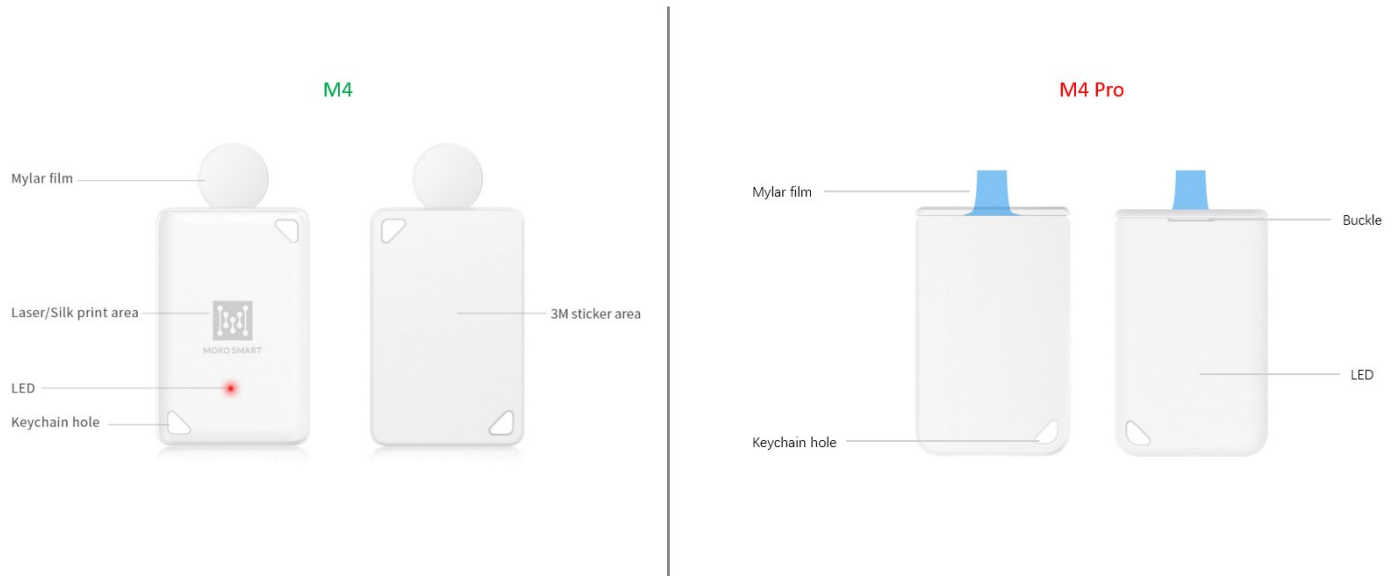
Figure 1: *Appearance overview of M4 Series Products (Left) and M4 Pro Series Products (Right)*

3. General specifications

3.1 Hardware specifications

General Specifications					
Item	**Specs**	**M4**	**M4S**	**M4P**	**M4PS**
Casing	**ID Appearance**				
	Dimension (L*W*H)	36.5*23.5*5.2mm		42.0*26.0*6.0mm	
	Material	PC		Nylon	
	Waterproof	No		IP67	
	Color	White		White	
	Installation	3M tape｜Zip tie		3M tape｜Zip tie	
Electronic	**Bluetooth**	BLE 5.1	BLE 5.1	BLE 5.1	BLE 5.1
	MCU	Silicon Labs	Silicon Labs	Silicon Labs	Silicon Labs
	Maximum Tx Power	+6dBm	+6dBm	+6dBm	+6dBm
	Long range mode	Yes	Yes	Yes	Yes
	Transmission range*	150m (Legacy mode) 350m (Long range mode)		150m (Legacy mode) 350m (Long range mode)	
	Accelerometer sensor	Yes	Yes	Yes	Yes
	Temperature sensor	No	Yes	No	Yes
	Temperature accuracy	-	±0.5 ℃	-	±0.5 ℃
	Temperature logger	-	50000 groups	-	50000 groups
	External memory	No	Yes 512K Bytes	No	Yes 512K Bytes
	LED	Red	Red	Red	Red
Battery	**Capacity**	220mAh		220mAh	
	Replaceable battery	Yes		Yes	
Environmental	**Operating temperature**	-20℃/+60℃		-20℃/+60℃	
Regulatory	**Certifications**	FCC｜CE｜RoHS｜REACH		FCC｜CE｜RoHS｜REACH	

Table 2: *Hardware specifications of M4/M4 Pro Series Products*

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

3.2 Lifecycle estimation

Please refer to documents – "***MOKO Beacon_Battery Lifecycle summary***" for more details on battery lifecycle.

Remark: M4/M4 Pro 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 power ON/OFF device?

The *M4/M4 Pro Series Products* do not reserve the external mechanical button, but equipped with the insulating strip, so you can follow up below steps to power ON/OFF device.

Power ON: Pulling the insulating strip and then Red LED will keep blinking for 3 seconds to indicate device power on status.

Remark: M4/M4 Pro Series Products do not support power off operations.

4.2   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 (Not applicable for Inplay MCU products):**

   1)   Remove the cover and the battery.

   2)   Put the battery in until you see the LED keep blinking for 2 seconds. This LED blinking means that the battery is connected successfully.

   3)   When the LED blinking finishes, put the battery in again within 5 seconds, and then repeat the process four more times, removing and replacing the battery. You should see a LED blinking each time you put the battery in, for a total of five blinks. The fifth blinking is different from the previous four and indicates that the device is factory reset successfully.

   1st – 4th : LED keep blinking for 2s. This indicates the battery is connected successfully.

   5th : LED keep solid for 2s. This indicates the device is factory reset successfully.

   4)   Replace the cover by aligning the battery room and press down on the cover.
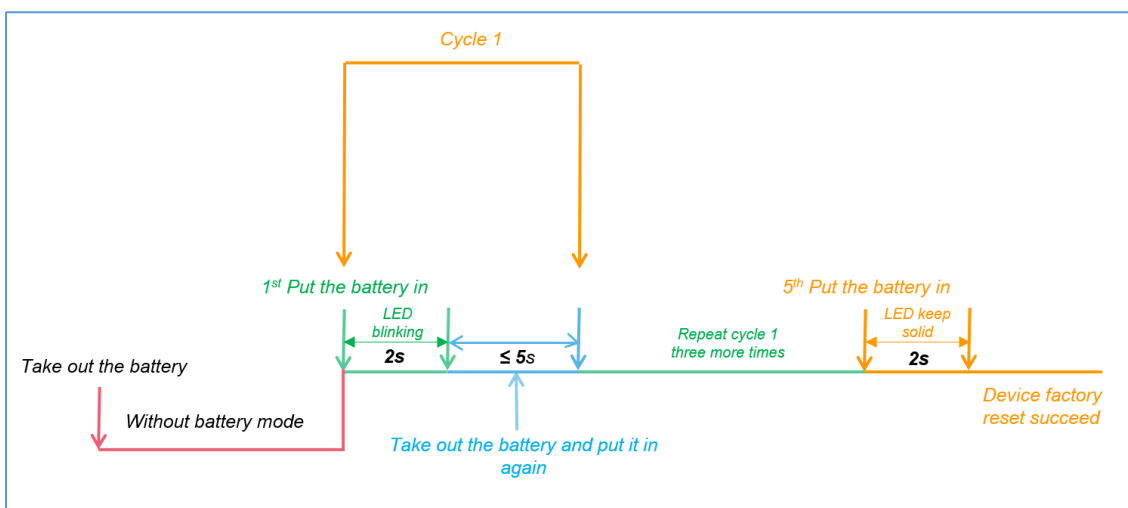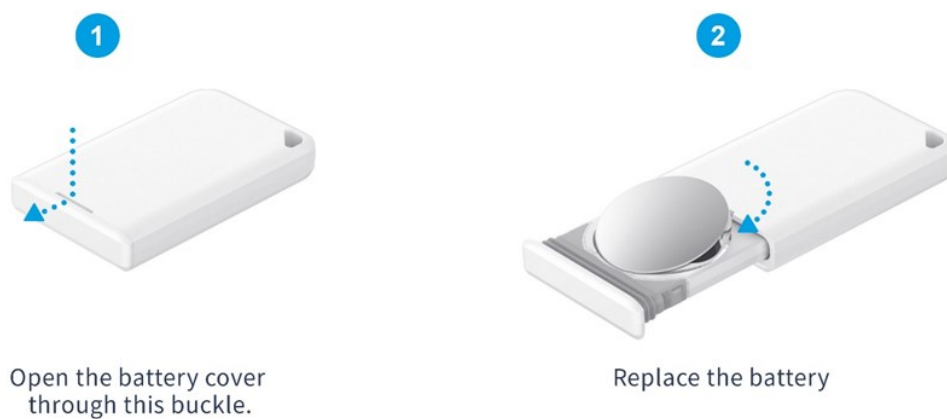

Remark: Software reset won't reset connection password.

4.3 How to replace battery?



Figure 2: How to replace the battery of M4/M4S products?

Figure 3: How to replace the battery of M4P/M4PS products?

5. Ordering information

Ordering information				
Ordering model	MCU	Temperature sensor	Waterproof	Product ID
M4	Silicon Labs	No	No	
M4S	Silicon Labs	Yes	No	
M4P	Silicon Labs	No	IP67	
M4PS	Silicon Labs	Yes	IP67	

Table 4: *Ordering information of M4/M4 Pro Series Products*

6. Package information
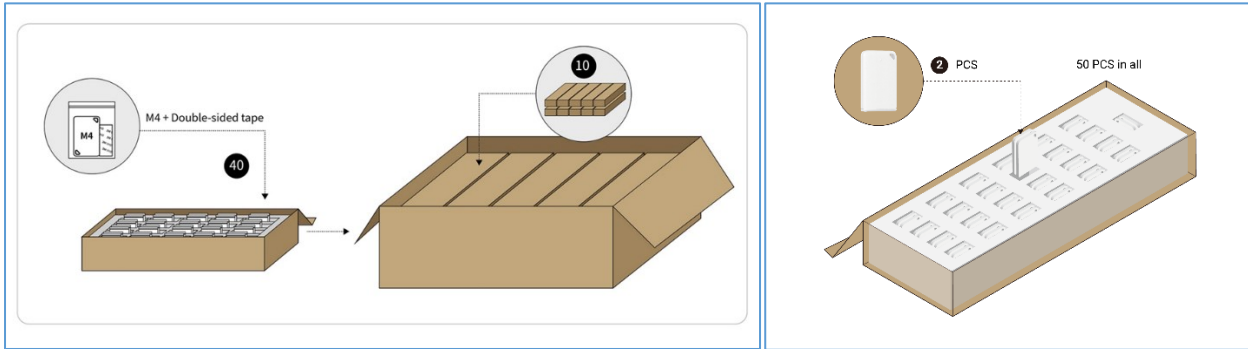
Figure 4: *Packaging information of M4 Series Products (Left) and M4 Pro Series Products (Right)*

Package information			
Ordering model	Item	Giftbox	Carton box
M4/M4S	M4/M4S Device	40pcs/Giftbox	400pcs/Carton
	3M sticker	40pcs/Giftbox	400pcs/Carton
M4P/M4PS	M4P/M4PS Device	50pcs/Giftbox	500pcs/Carton
	3M sticker	50pcs/Giftbox	500pcs/Carton

Table 5: *Package information of M4/M4 Pro Series Products*

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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