



MOKO SMART

MKBAL-C25-P

AoA Locator



Product Specification

MKBAL-C25-P AoA Locator

Version 1.1

Revision History

Version	Data	Notes	Contributor(s)
V1.1	July 20, 2023	Initial version	Leo

About document

This **product specification** was designed to help users to know the hardware overview and basic instructions of MKBAL-C25-P AoA Locator product. Through this document, users will be initial to understand the application scenarios, hardware specifications, basic instructions of the product.

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1. Overview

This *Product specification* is mainly applicable for MOKO **MKBAL-C25-P AoA Locator** product, and mainly contained below parts:

➤ [General specifications](#)

➤ [Basic instructions](#)

For more information about user guidance of product functions , please contact our sales team directly for official document – “**MOKO AoA CoreLocation System User Guide**”.

● **Applicable version descriptions:**

CCS: Version 2.6.2 or above

CLE: Version 2.6.2 or above

MKBAL-C25-P firmware: Version 1.1.3 or above

2. General specifications

2.1 Product Specifications

General specifications		
Physical Specification	Dimensions(L*W*H)	180.7mm*180.7mm*40.7mm
	Weight	582g
	Material	ABS+PC
	Color	White
Hardware Specification	Bluetooth	Bluetooth 5.1 / Bluetooth 4.2
	Frequency band	2.401~2.481 GHz
	Network connection	Ethernet 10/100Mbps (support hand in hand cascade*)
	Power supply	PoE (support hand in hand cascade*); DC (12 - 30V, 1A)
	Antenna type	PCB antenna (AoA array antenna)
	LED	Yes
Structural Specification	Waterproof	IP66
	Operating temperature	-20°C / + 60°C
	Storage temperature	Normal temperature
	Humidity	0% ~ 90% (non-condensing)
Technical parameter	Installation mode	Ceiling
	Installation height	Up to 10m
	Scan coverage	Up to 500m ² (open area)
	Positioning accuracy	0.1m ~ 1m
	Network protocol	MQTT/ HTTP/ Websocket/ UDP
Certification	CE	
Application scenarios:	Personnel location; Asset management; Animal location; Indoor navigation; Geo-fencing	

Table 1: General specifications of MKBAL-C25-P Locator

Hand in hand cascade*: MKBAL-C25-P Locator supports the power supply and network supply by PoE switch, and the PoE interface of the Locator also supports input and output, which can realize the installation of a network cable for multiple Locators (the length of the network cable between each two base stations not exceed 10m, and up to 8 base stations can be cascaded using Class six network cables).

2.2 Mechanical Drawings

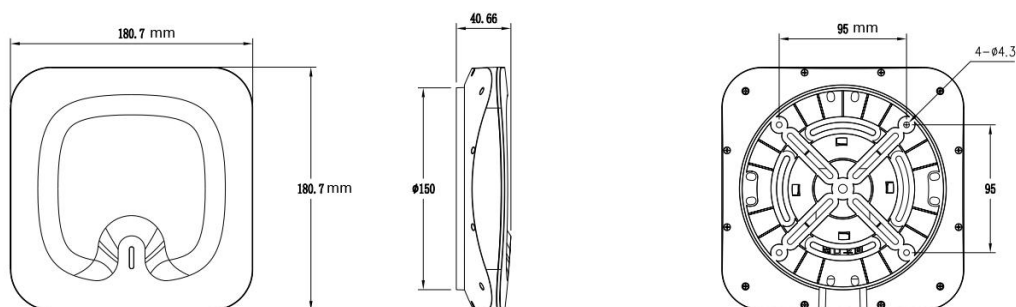


Figure 1: MKBAL-C25-P AoA Locator Mechanical Drawings

3. Basic instructions

3.1 Product instruction

MKBAL-C25-P Locator uses BLE AoA (Angle of Arrival) precision positioning technology, equipped with high-precision positioning antenna array and high-precision adaptive algorithm, the positioning accuracy can up to sub-meter level.

This product uses standard Ethernet data communication, 802.3af Poe 48V power supply mode, and supports PoE cascading power supply mode, reducing wiring length, saving switch ports, and reducing costs.

3.2 Interface description

The following is the description of the AoA Locator interfaces

- **RJ45*2:** Divided into PoE IN and PoE OUT power supply and data transmission interface, the PoE interface can be connected to a standard PoE switch through a network cable or through the similar dual network port of AoA Locator by hand in hand cascade;
- **DC jack:** Adaptation of power supply voltage to PSE power supply
- **Reset button:** Restore factory settings button. Long press the reset button for 3 seconds, the green light of the AoA Locator will flashes 5 times, indicating recovery factory setup successful.

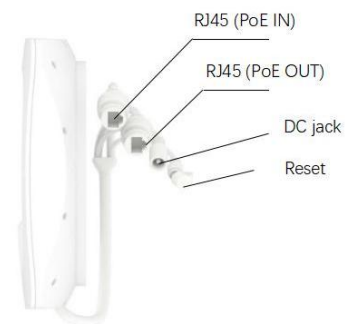


Figure 2: Interface of AoA Locator

3.3 Installation instruction

Please confirm that the fixed position can bear 2kg or more before installation.

- As shown in the figure 3, use KA4 screws to fasten the rack on the ceiling (direction indicated by the arrow)
- Align the mounting plate rack buckle and push the base station into the mounting plate rack bayonet. The direction of the network port marked on the buckle surface of the plate rack should be the same as the direction of the network port marked on the back of the AoA Locator.
- Connect the upper-level network cable to the base station RJ45 interface (PoE IN)
- If there is a lower-level cascaded base station, connect the RJ45 interface (PoE OUT) of the base station and the RJ45 interface (PoE IN) of the lower base station through a network cable. It is recommended that the base station cascade does not exceed 8 levels.

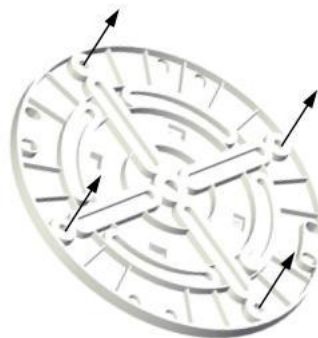


Figure 3: How to install the AoA Locator

3.4 LED indicator instruction

After the AoA Locator is correctly installed and connected with the PoE switch, the AoA Locator will start automatically. After starting, the running status of the AoA Locator can be judged by the LED indicator.

The rules of AoA Locator LED indicator are shown in the table below:

AoA Locator LED indicator instruction	
LED Status	Locator running status instruction
Green LED flashes quickly for 5s	Locator start/reset button long press to restart
Red LED flashing	Locator is getting IP address
The green LED flashes slowly	Locator IP address obtained successfully
Green LED keep solid on	Locator Successfully connected to the positioning engine
Red LED keep solid, after 30s, the AoA Locator will automatically reset	Locator at this level is faulty or not connected
Green and Red LED flash alternately and slowly	The next level AoA Locator is faulty or not connected
LED off	No power connection

Table 2: AoA Locator LED indicator instruction Table

The rules of the RJ45 interface LED indicator are shown in the table below:

RJ45 interface LED indicator instruction	
LED Status	Locator running status instruction
LED keep solid on	Network connection is successful
LED flashing	There is data transmission
LED off	No internet connection

Table 3: RJ45 interface LED indicator instruction

3.5 Notes

*Please be sure that the AoA Locator is connected to the specified standard PoE power supply equipment (PSE equipment conforming to IEEE 802.3af protocol)

*The AoA Locator works at -20°C to +60°C, and the humidity is 0~90%. There is no condensation in the indoor environment. It is necessary to avoid rain or long-term outdoor exposure, and keep away from fire sources and strong electromagnetic interference sources

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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.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body

Contact

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