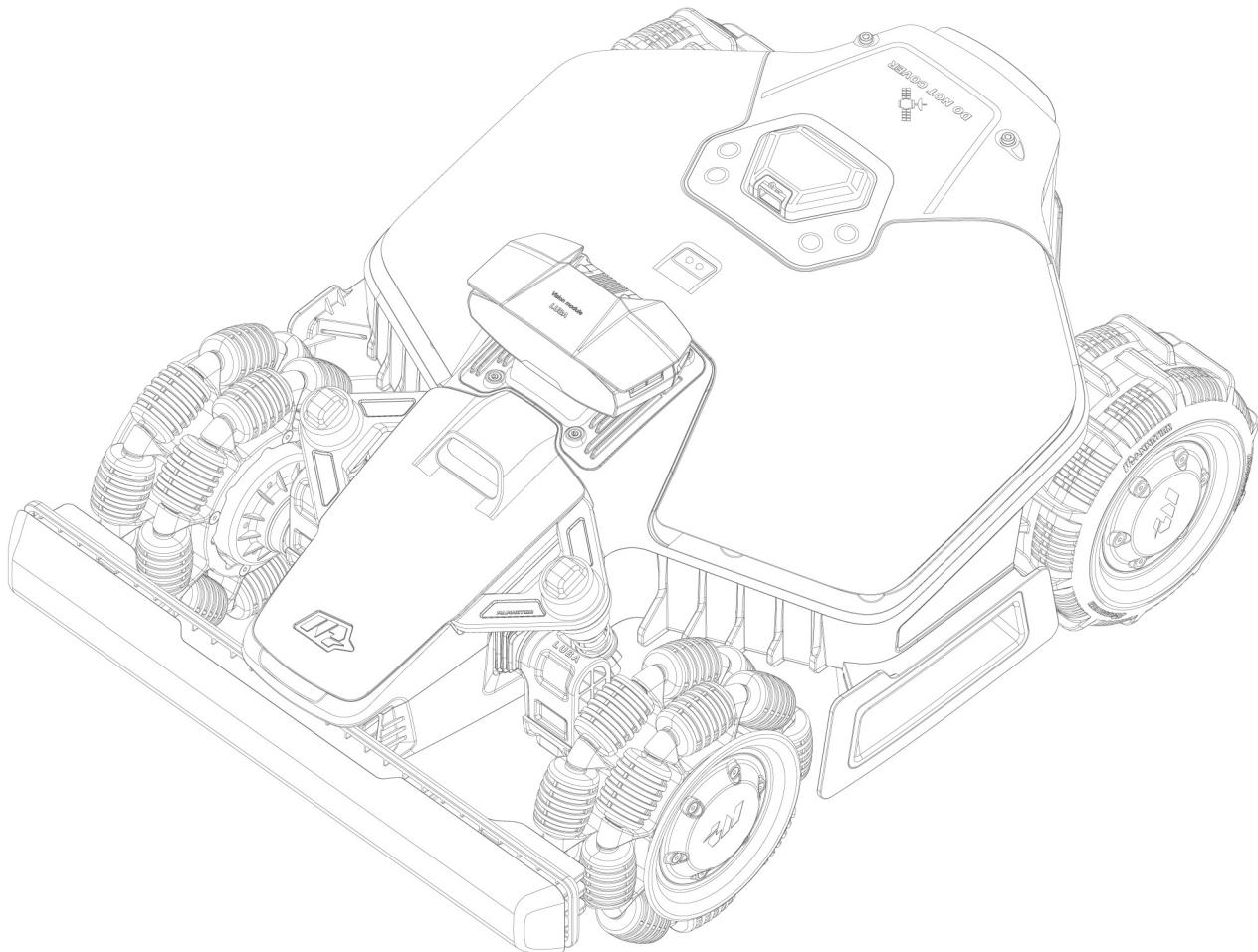




USER MANUAL

LUBA mini AWD



Original Instructions Version **V1.0**

2024.12

Thank you for choosing Mammotion as your garden care lawn mower. This user manual will help you learn and operate Mammotion Luba, a 4-wheel-drive and perimeter-free lawn mower, to cut grass and maintain your lawn.

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Unless explicitly agreed otherwise, this manual serves solely as a usage guide, and all statements and information contained herein do not constitute any form of warranty.

Revision Log

Date	Version	Description
2024.12	V1.0	Initial version

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1 Safety Instructions

1.1 General Safety Instructions

- Carefully read and understand the user manual before using the robot.
- Only individuals who are legally considered adults in their state of residence are recommended to use the robot.
- Only use the equipment recommended by Mammotion with the robot. Any other usage is incorrect.
- Never allow children, persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge or people unfamiliar with these instructions to use the robot, local restrictions may restrict the age of the operator.
- Do not allow children to be in vicinity or play with the robot when it is operating.
- Do not use the robot in areas where people are unaware of its presence.
- When manually operating the robot with the Mammotion app, do not run. Always walk, watch your steps on slopes, and maintain balance at all times.
- Avoid touching moving hazardous parts, such as the blade disc, until it has completely stopped.
- Avoid using the robot when there are people, especially children or animals, in the work area.
- If operating the robot in public areas, place warning signs around the work area with the following text: "Warning! Automatic lawn mower! Keep away from the robot! Supervise children!"
- Wear sturdy footwear and long trousers when operating the robot.
- To prevent damage to the robot and accidents involving vehicles and individuals, do not set work areas or channels across public pathways.
- Seek medical aid in case of injury or accidents.
- Set the robot to **OFF** and remove the key before clearing blockages, performing maintenance, or examining the robot. If the robot vibrates abnormally, inspect it for damage before restarting. Do not

- use the robot if any parts are defective.
- Do not connect or touch a damaged cable until it is disconnected from the power outlet. If the cable becomes damaged during operation, disconnect the plug from the power outlet. A worn or damaged cable increases the risk of electrical shock and should be replaced by service personnel.
- Only use the charging station included in the package to charge the robot. Incorrect use may result in electric shock, overheating, or corrosive liquid leakage from the battery. In case of electrolyte leakage, flush with water/neutralizing agent and seek medical aid if the corrosive liquid comes into contact with your eyes.
- Only use original batteries recommended by Mammotion. The safety of the robot cannot be guaranteed with non-original batteries. Do not use non-rechargeable batteries.
- Keep extension cords away from moving hazardous parts to avoid damage to the cords which can lead to contact with live parts.
- The illustrations/screens used in this document are for reference only. Please refer to the actual products.

1.2 Safety Instructions for Installation

- Avoid installing the charging station in areas where people may trip over it.
- Do not install the charging station in areas where there is a risk of standing water.
- Do not install the charging station, including any accessories, within 60 cm/24 in of any combustible material. Malfunctioning or overheating of the charging station and power supply can pose a fire hazard.
- For users in the USA/Canada: If installing the power supply outdoors, there is a risk of electric shock. Only install it in a covered Class A GFCI receptacle (RCD) with a weatherproof enclosure, ensuring that the attachment plug cap is inserted or removed.

1.3 Safety Instructions for Operation

- Keep your hands and feet away from the rotating blades. Do not place your hands or feet near or

below the robot when it is turned on.

- Do not lift or move the robot when it is turned on.
- Stop the robot when there are people, especially children or animals, in the work area.
- Ensure that there are no objects such as stones, branches, tools, or toys on the lawn. Otherwise, the blades may be damaged when they come into contact with an object.
- Do not put objects on top of the robot, charging station or RTK reference station.
- Do not use the robot if the **STOP** button is not functioning.
- Avoid collisions between the robot and people or animals. If a person or animal comes in the path of the robot, stop it immediately.
- Always set the robot to **OFF** when it is not in operation.
- Do not use the robot simultaneously with a pop-up sprinkler. Utilize the Schedule function to ensure that the robot and pop-up sprinkler do not operate at the same time.
- Avoid setting a channel where pop-up sprinklers are installed.
- Do not operate the robot in the presence of standing water in the work area, such as during heavy rain or water pooling.

1.4 Safety Instructions for Maintenance

- Power off the robot when performing maintenance.
- Disconnect the plug from the charging station before cleaning or performing maintenance on the charging station.
- Do not use a high-pressure washer or solvents to clean the robot.
- After washing, ensure that the robot is placed on the ground in its normal orientation, not upside down.
- Do not reverse the robot to wash the chassis. If you do reverse it for cleaning purposes, make sure to restore it to its proper orientation afterward. This precaution is necessary to prevent water from leaking into the motor and potentially affecting normal operation.

1.5 Battery Safety

Lithium-ion batteries can explode or cause a fire if disassembled, short-circuited, exposed to water, fire, or high temperatures. Handle them with care, do not dismantle or open the battery, and avoid any form of electrical/mechanical abuse. Store them away from direct sunlight.

- Only use the battery charger and power supply provided by the Manufacturer. The use of an inappropriate charger and power supply can cause electric shocks and/or overheating.
- DO NOT ATTEMPT TO REPAIR OR MODIFY BATTERIES! Repair attempts may result in severe personal injury, due to explosion or electrical shock. If a leak develops, released electrolytes are corrosive and toxic.
- This appliance contains batteries that are only replaceable by skilled persons.

1.6 Residual Risks

To avoid injuries, wear protective gloves when replacing the blades.

1.7 Intended Use

Mammotion robots are designed for residential lawn care and are not intended for commercial use.

1.8 Disposal

Dispose of this product in compliance with local electronic waste (WEEE) regulations. Do not dispose of it with regular household waste. Instead, bring it to an authorized recycling center or collection point to ensure safe handling and environmentally responsible disposal of electronic components.

2 Introduction

2.1 About Mammotion LUBA Mini

The LUBA mini AWD series, herein referred as LUBA or robot, is a 4-wheel-drive robotic lawnmower with a suspension system that provides better grip through its spring. The robot is equipped with RTK GNSS navigation and virtual-mapping systems, which allow users to customize their mowing tasks by defining different mowing areas and schedules in the Mammotion app. Additionally, the robot offers an IoT service and a rain sensor, providing a hands-free and picture-perfect lawn maintenance experience.

The robot is newly equipped with a 3D vision module, 4G module, voice control, anti-theft, etc., which are explained in the following sections.

The robot includes two types of models:

- Standard version (Model: 800 and 1500) – provides cutting height of 20-65 mm (0.8-2.6 in).
- H version (Model: 800H and 1500H) – provides cutting height of 55-100 mm (2.2-4 in).

2.1.1 About 3D vision module

The robot is equipped with a 3D vision module that provides 3D vision positioning, 3D vision obstacle detection, and FPV mode.

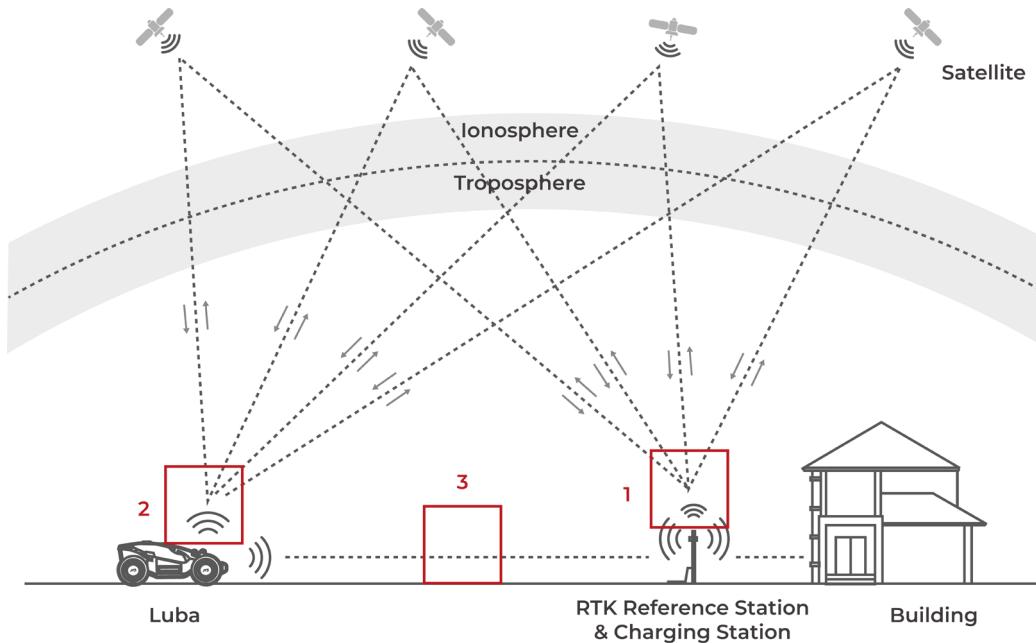
- 3D vision positioning helps to guarantee positioning accuracy when RTK positioning fails due to poor satellite signals.
- 3D vision obstacle detection identifies obstacles in the front.
- FPV mode can be used for monitoring as a security camera.

2.1.2 About positioning

The robot is equipped with a RTK (real-time kinematic) navigation system, a multi-sensor integrated navigation system, and a 3D vision positioning system, which provide more accurate positioning data.

RTK positioning

RTK is a differential GNSS positioning technology that greatly enhances positioning accuracy to approximately 5 cm/2 in. The robot accesses four global navigation systems (GPS, GLONASS, BeiDou, and Galileo) and incorporates supplementary sensors, thus, providing nearly 100 times improved accuracy than conventional GPS systems.



1. To perform its work, the RTK reference station receives satellite signals, requiring an obstruction-free environment and open-sky view.
2. The robot operates similarly, requiring an open sky view to receive satellite signals.
3. Data transmission from the RTK reference station to the robot is possible. This does not imply that there must constantly be an unobstructed view from every point on your lawn to the RTK reference station. As long as the transmission path is not completely blocked, the data can be transmitted via radio.

3D vision positioning

The robot primarily uses RTK positioning to locate itself. However, in situations where satellite signals are obstructed by obstacles such as eaves or trees during mapping and mowing, The robot can still operate effectively using the 3D vision positioning.

2.1.3 About obstacles detection

The robot supports both visual and ultrasonic obstacle detection. The 3D vision system can identify obstacles and respond accordingly, while the ultrasonic system is used to detect obstacles in low-light environments where visual identification is difficult.

2.1.4 About connectivity

The robot supports three methods of connectivity, namely, Bluetooth, Wi-Fi, and 4G cellular data. Bluetooth is used to connect the robot with your phone, while Wi-Fi and 4G cellular data are used to access the internet.

2.1.5 About lawn printing art

By utilizing AI algorithms to tailor the cutting path, cutting height, and angle, the robot can create special patterns via the Mammotion app. See [Create a Pattern](#) for more information.

2.1.6 About auto-recharge

Auto-recharge function allows the robot to automatically return to charge when the battery is lower than 15%.

2.1.7 About voice control



NOTE

The robot now supports voice commands in English, German, and French.

The robot is compatible with both Alexa and Google Home voice control. Once linked, you can easily start or stop working or recharging using simple voice commands. See [Link Your Alexa Account](#) or [Link Your Google Home Account](#) for more information.

2.1.8 About anti-theft system

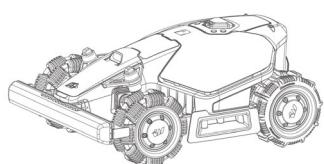
The robot has an anti-theft system to prevent unauthorized removal.

- The alarm is triggered when the robot is lifted.
- Users can track the robot's location by GPS and 4G positioning through the Mammotion app, as long as it is online.
- Additionally, the robot's structure allows for an AirTag to be attached to track its location.

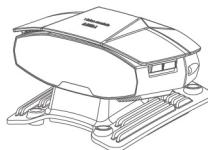
2.2 In the Box

Ensure the parts can be found in the package according to your option. If any parts are missing or damaged, contact your local dealer or our after-sales support. Mammotion recommends keeping the package for future transportation or storage.

2.2.1 LUBA Mini Installation Kit



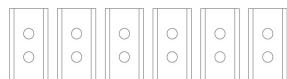
LUBA mini x1



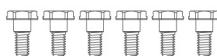
Vision Module x1



Security Key x1

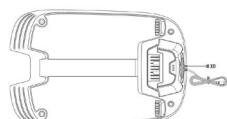


Blade x6 (for spare use)



Screw x6 (for spare use)

2.2.2 Charging Station Installation Kit



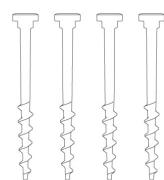
Charging Station Base x1



Cover

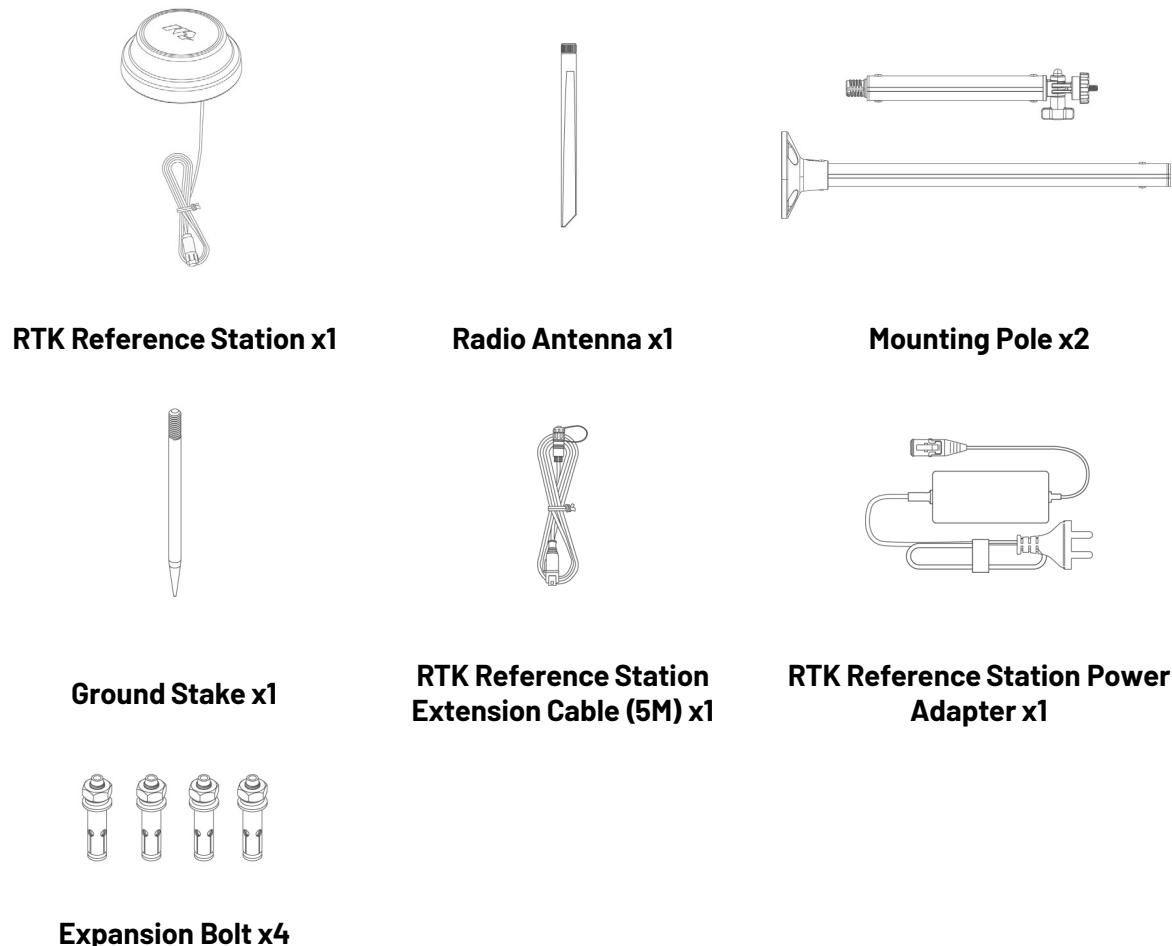


Charging Station Power Adapter x1

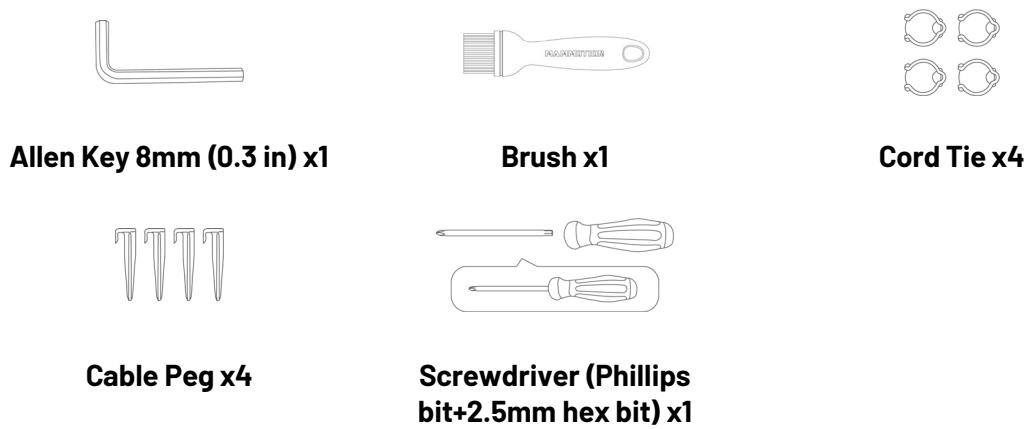


Stake x4

2.2.3 RTK Installation Kit



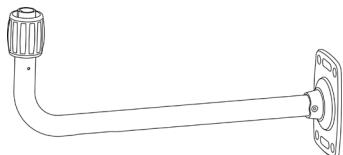
2.2.4 Tool Kit



2.2.5 Other Accessories (optional)

The following accessories are sold separately.

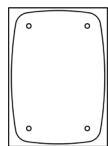
RTK reference station wall mount kit



RTK Wall Mount x1

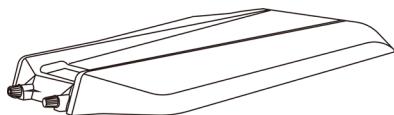


M8x50 Expansion Bolt x4



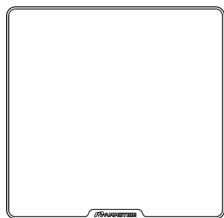
Drilling Template x1

Garage

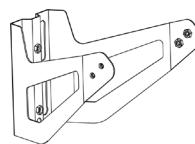


Garage x1

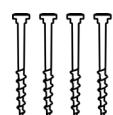
RTK solar panel kit



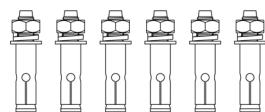
Solar Panel x1



Mounting Bracket x1



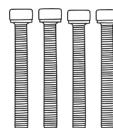
Stake x4



Expansion Bolt x6
(2pcs for spare use)



Screw x6
(2pcs for spare use)



M5x40 Screw x4
(2pcs for spare use)



Allen Key 1.5mm x1



Allen Key 4mm x1

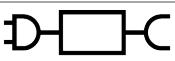


Allen Key 8mm x1

2.3 Symbols on the Product

2.3.1 Symbols

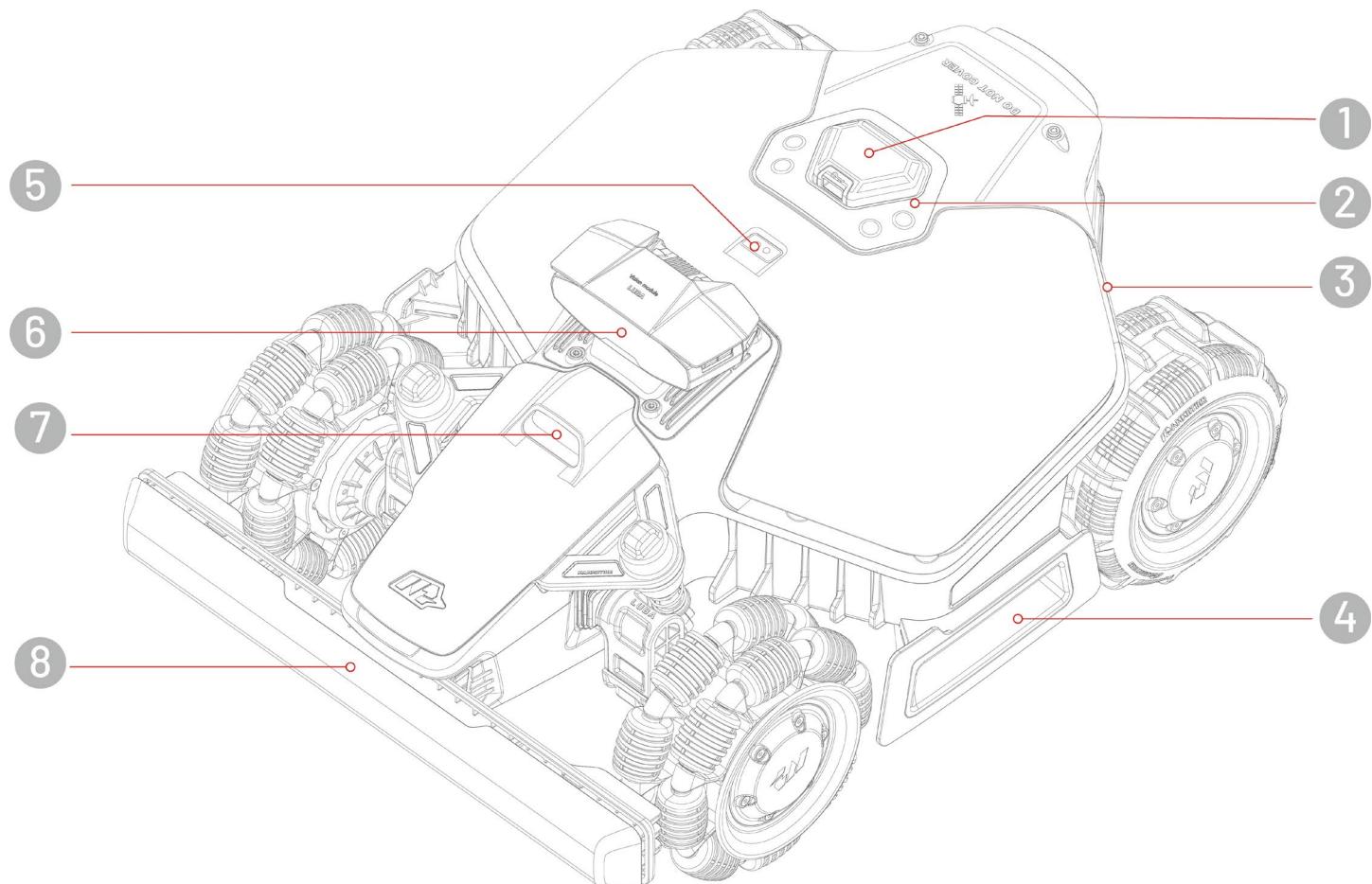
These symbols can be found on the product. Study them carefully.

Symbol	Description
	Warning.
	Read the user manual before operating the product.
	This product complies with the applicable EU Directives.
Made in China	This product is manufactured in China.
	It is not permitted to dispose of this product as normal household waste. Ensure that the product is recycled in accordance with local legal requirements.
 TS-A060-2802151	Use a detachable supply unit TS-A060-2802151.
 TS-A012-1201002	Use a detachable supply unit TS-A012-1201002.
	This item can be recycled.
	Keep the pack of this product dry.
	The pack of this product should not be covered.
	Prohibit flipping.
	This product is fragile.
	The pack of this product/the product should not be tread.

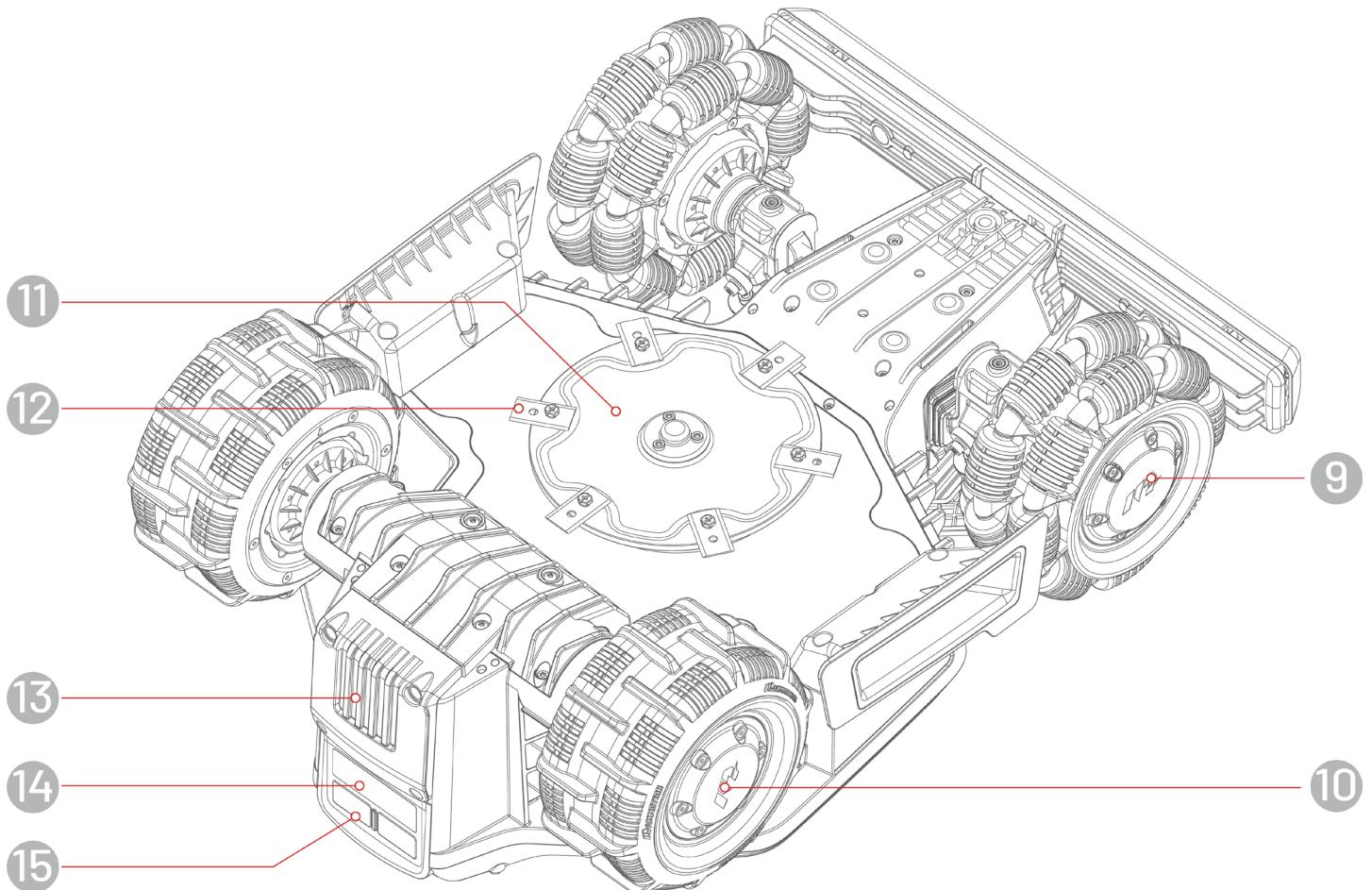
Symbol	Description
	Class III appliance.
	Keep hands or feet away from movable blades.
	Do not ride on the product.
	Keep a safe distance from your product when operating.
	WARNING: Do not touch rotating blade.
	WARNING: Read the user instructions before operating the product.
	WARNING: Danger of projections of objects against the body. Keep an adequate safe distance from the machine while it is running.
	WARNING: Do not put hands and feet near or under the opening of the cutting means. Remove the disabling device before operating on the machine or before lifting it.
	WARNING: Do not ride on the product. Never put your hands or feet close to or under the product.

2.4 Product Overview

2.4.1 LUBA Mini



1. Emergency Stop Button	2. Control Center
3. Side LED	4. Handle
5. Rain Sensor	6. Vision Module
7. Auxiliary Light	8. Front Bumper



9. Omni Wheel

11. Cutting Disc

13. Removable Battery

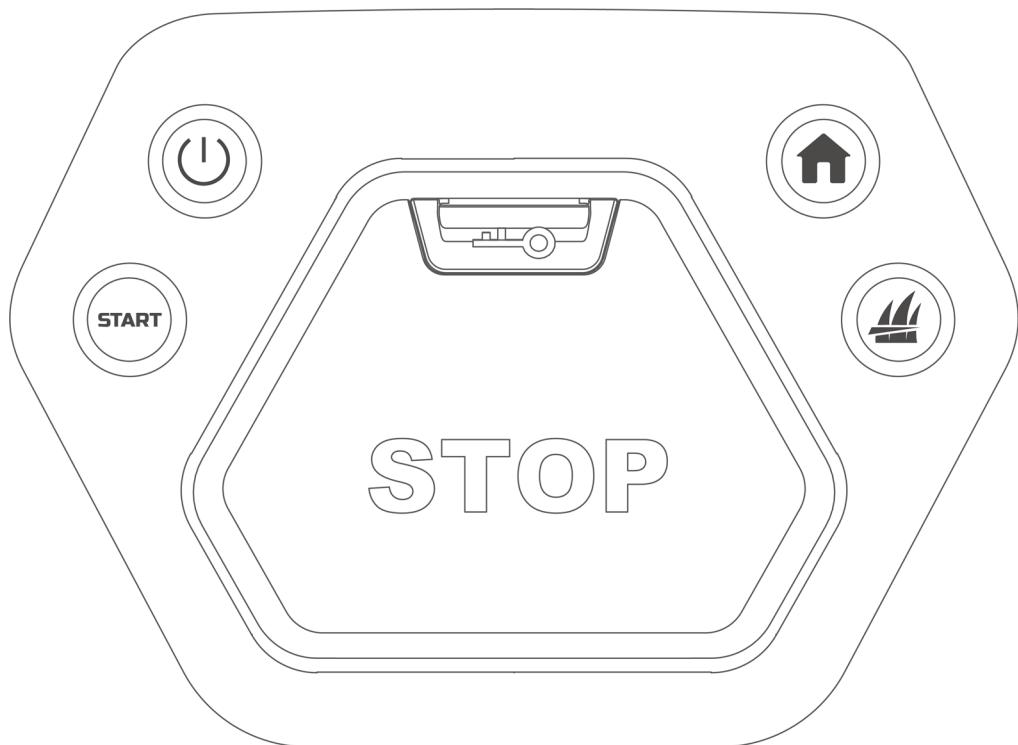
15. Charging Pad

10. Rear Wheel

12. Cutting Blade

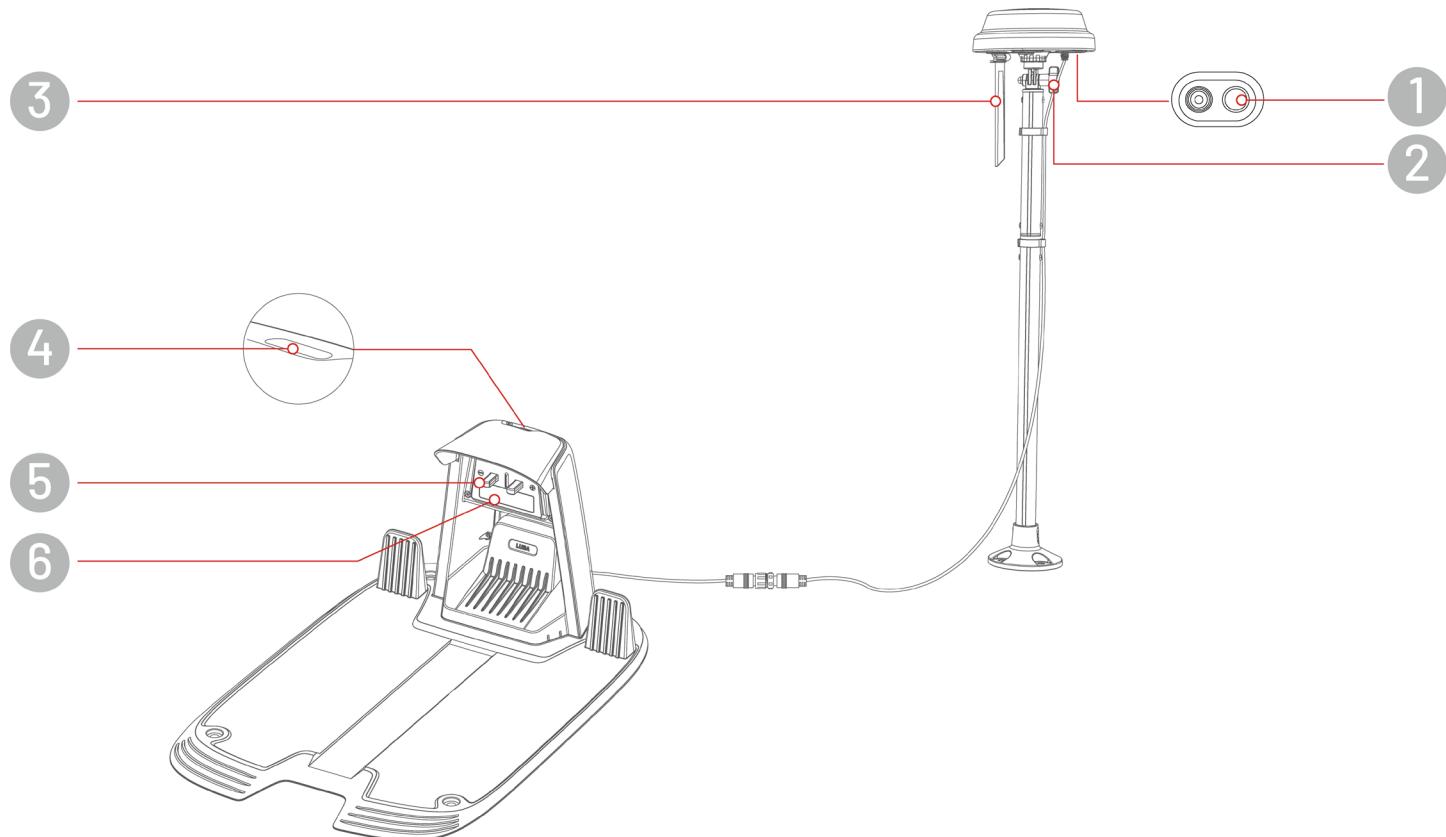
14. Infrared Receiver

Control Center



Button/Icon	Name	Description
	Home Button	<ul style="list-style-type: none"> Press , then press START to return to the charging station.
	Grass Button	<ul style="list-style-type: none"> Press , then press START to continue working/unlock the robot.
START	Start Button	<ul style="list-style-type: none"> Double-click to fully lower the cutting disc for cleaning.
	Power Button	Long press the button to turn on/off the robot.
	Emergency Stop Button	If any unexpected problems arise, press the button to stop the robot immediately.

2.4.2 Charging Station and RTK Reference Station



- 1. RTK Reference Station LED Indicator
- 2. Knob – turn to fix the RTK reference station
- 3. Radio Antenna
- 4. Charging Station LED Indicator
- 5. Charging Pin
- 6. Infrared Transmitter

2.4.3 LED Codes

Robot

Indicator	Status	Description
Side LED	Constant red	<ul style="list-style-type: none"> System initialization Manual control mode Automatic work mode Charging finished (The robot still on the charging station)
	Breathing red	OTA upgrade in progress
	Slow flash red	<ul style="list-style-type: none"> Emergency stop activated Charging in progress
	Fast flash red	<ul style="list-style-type: none"> Low battery Bumper triggered The robot got stuck RTK positioning failed The robot has been lifted/tilted/flipped over
	Very fast flash red	<ul style="list-style-type: none"> System upgrade failed Systematic error
	Off	<ul style="list-style-type: none"> Pause Standby Sleeping
Positioning Indicator	Constant green	RTK positioning is working well.
	Flash green	The RTK positioning has failed, but the vision positioning is working well.
	Constant red	Both RTK and vision positioning have failed.
	Flash blue	Robot's firmware is being upgrading.
	Constant blue	Robot powered on successfully.

Charging Station

Color	Description
Flash green	The robot is being charged.
Green	The robot is fully charged or uncharged.
Red	An error has occurred.

RTK Reference Station

Color	Description
Flash blue	The reference station is powering on.
Flash green	The reference station is initializing.
Constant green	The initialization is finished and the reference station works well.
Off	The initialization is finished and the local time is between 18:00 and 8:00.
Constant red	An error has occurred.
Slow flash green	Low power consumption.

3 Installation

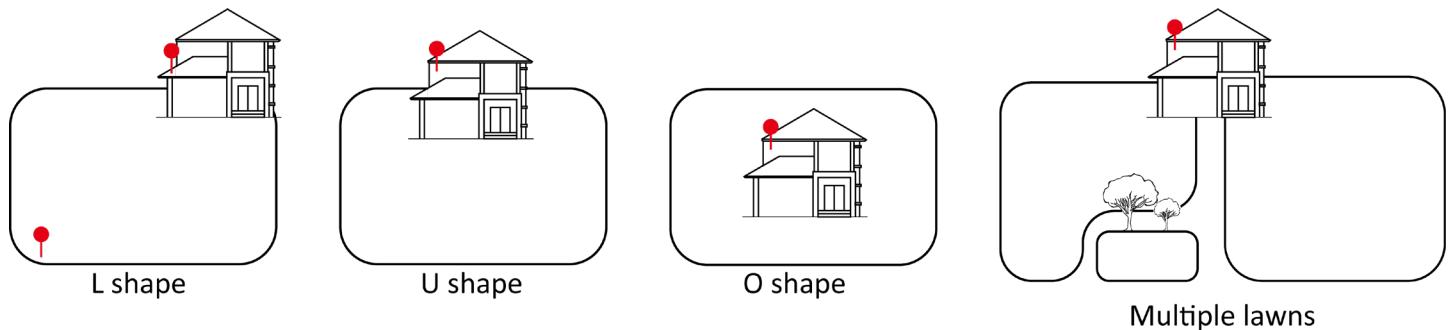
3.1 Preparation

- Read and understand the safety instructions prior to installation.
- Use original parts and installation materials.
- Sketch your lawn and mark up obstacles. This will make it easier to examine where to place the charging station and RTK reference station, and to set the virtual boundaries.

3.2 Choosing a Location for RTK Reference Station

3.2.1 Without Solar Panel Kit

To optimize the performance of the RTK system, the RTK reference station must be in an open area to receive satellite signals. You can install the RTK reference station on flat, open ground or on an unobstructed wall or roof. In general, if your lawn is L-shaped, you can place the RTK reference station on a wall or roof or on the ground; if your lawn is O-shaped or U-shaped, or if you have multiple lawns, we recommend that you place the RTK reference station on a wall or roof.

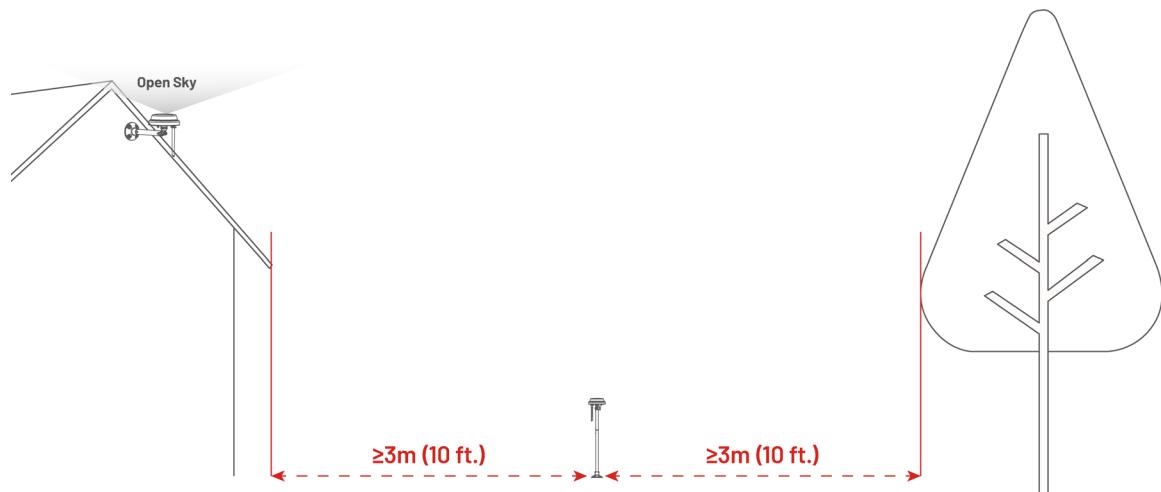


The location requirements are as follows:

- The RTK reference station should be oriented vertically, as shown below:



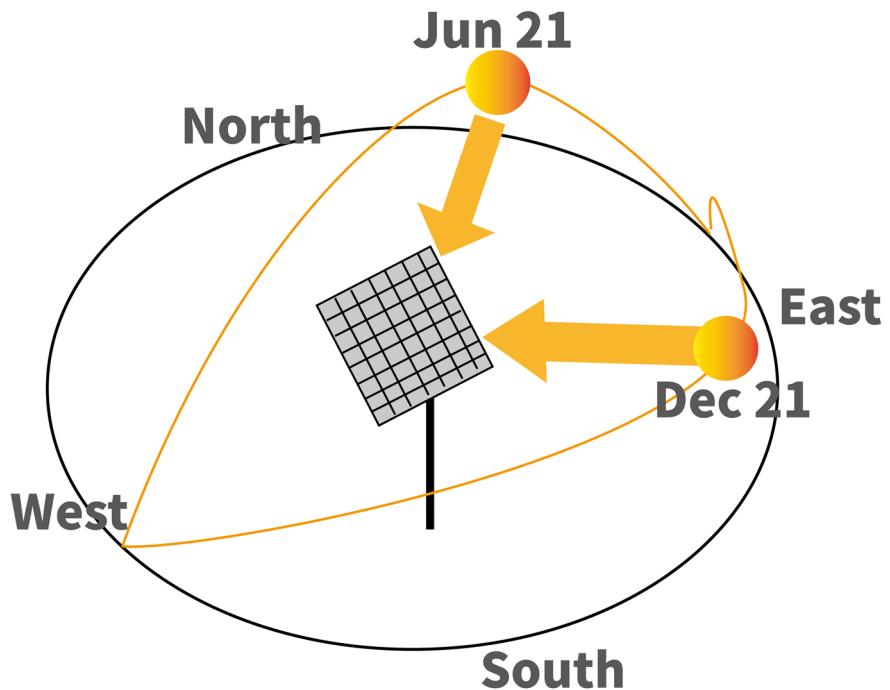
- Place the RTK reference station on a flat, open ground or on an unobstructed wall or roof. Make sure there are no eaves or trees that may obstruct the satellite signals.
- Maintain a distance of at least 3 meters (10 feet) between the RTK reference station and any wall or tree.



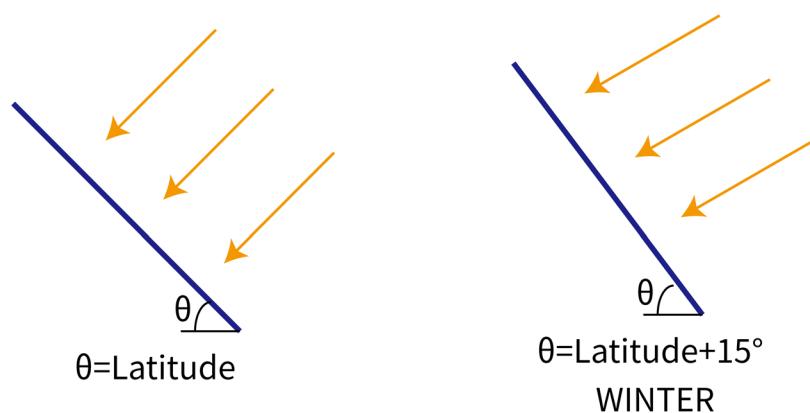
3.2.2 With Solar Panel Kit (Sold separately)

If you need to install an RTK solar panel kit, for optimal exposure to sunlight, Mammotion recommends the following locating guidelines:

- If your home is located north of the equator, place the solar panel unit facing south;
- If your home is located south of the equator, place the solar panel unit facing north;

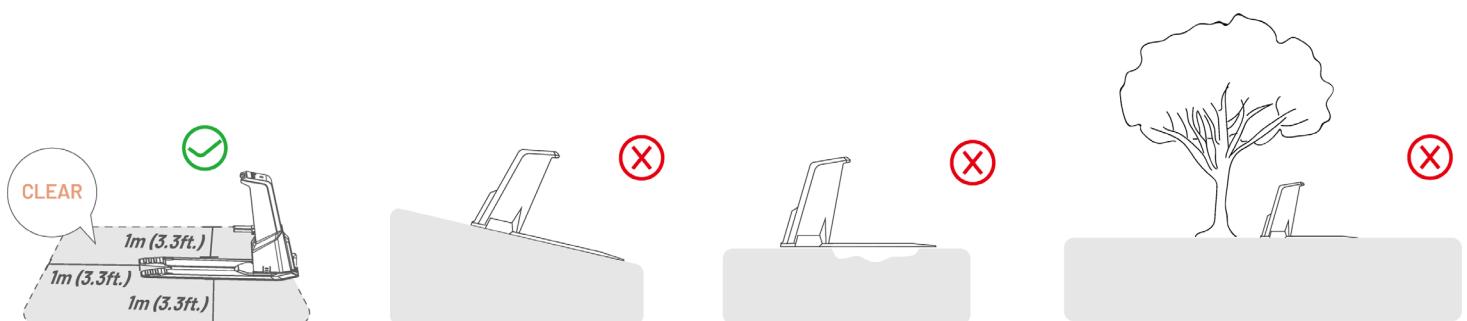


- The ideal angle for the solar panel kit is parallel to your location's latitude.
- In winter, it is generally recommended to add 15 degrees more than your location's latitude to maximize its efficiency.



3.3 Choosing a Location for Charging Station

- Place the charging station on a flat ground.
- DO NOT install the charging station at the corner of an L-shaped building or on a narrow path between two structures.
- The charging area (1x1 m/3x3 ft. in front of the charging station) should be free of obstacles or other items.
- The base plate of the charging station must not be bent or tilted.



3.4 Install

3.4.1 Install the Vision Module

1. Remove the cover.
2. Connect the vision module wires, matching the corresponding three wires by both color and shape.
3. Properly organize the wires, then secure the vision module in place and tighten the screws using a hex-bit screwdriver.
4. Peel off the vision module sticker.

