

Autonomous Charging Dock Quick Start Guide V1.0

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**LIMX
DYNAMICS**
<https://limxdynamics.com>

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1. Safety Instructions

Please read the following safety instructions carefully before using this product. Use of this product constitutes understanding and acceptance of all the terms below.

Key Safety Instructions:

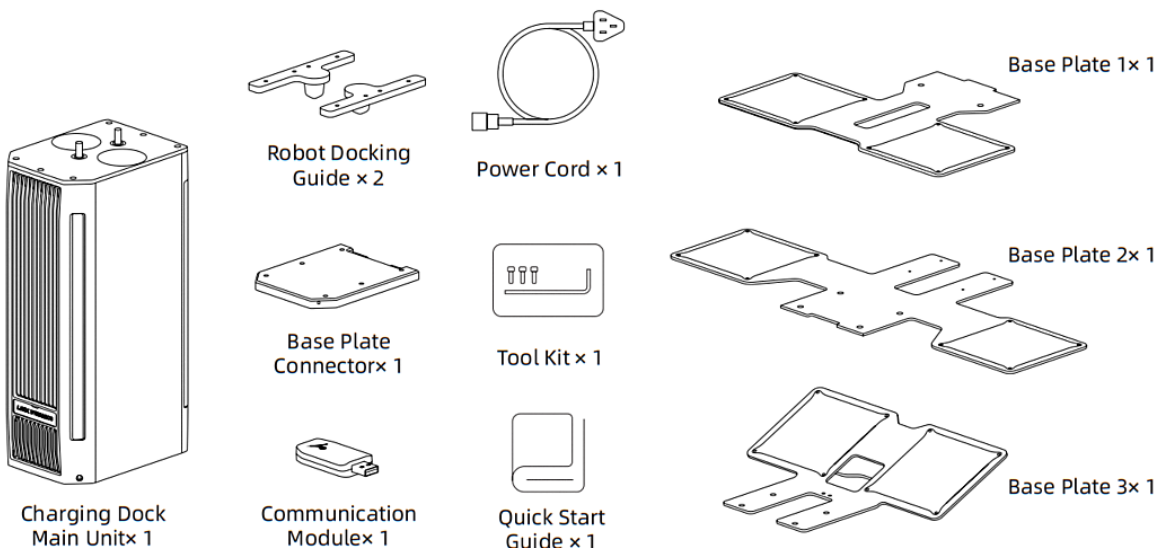
- This product is not a toy. It is not recommended for persons under 18 years of age. Keep it out of the reach of children.
- During the docking process, keep hands, feet, and foreign objects out of the docking area.
- Installation, wiring, and maintenance of the charging dock must be performed by professionally trained personnel. Unauthorized disassembly, modification, or non-standard repair is strictly prohibited.
- Only use the original power cord and adapter, and make sure the voltage matches the rated input (100-240 V AC). If smoke, unusual odor, overheating, or a damaged enclosure occurs, cut off power immediately and contact after-sales service.
- Keep the charging-contact area clean and dry. Do not allow metal objects or standing water to touch the contacts, and do not cover the status indicator or the QR codes.
- Place the charging dock indoors on a dry, level surface. Do not move it while it is running; disconnect the power before moving it.

Disclaimer:

LimX Dynamics shall not be liable for injury or loss caused by improper operation, for faults or damage caused by unauthorized disassembly or modification, for equipment problems caused by use in extreme environments, or for issues caused by natural wear of components or battery aging. The free warranty period under normal use is 12 months.

2. Packing List

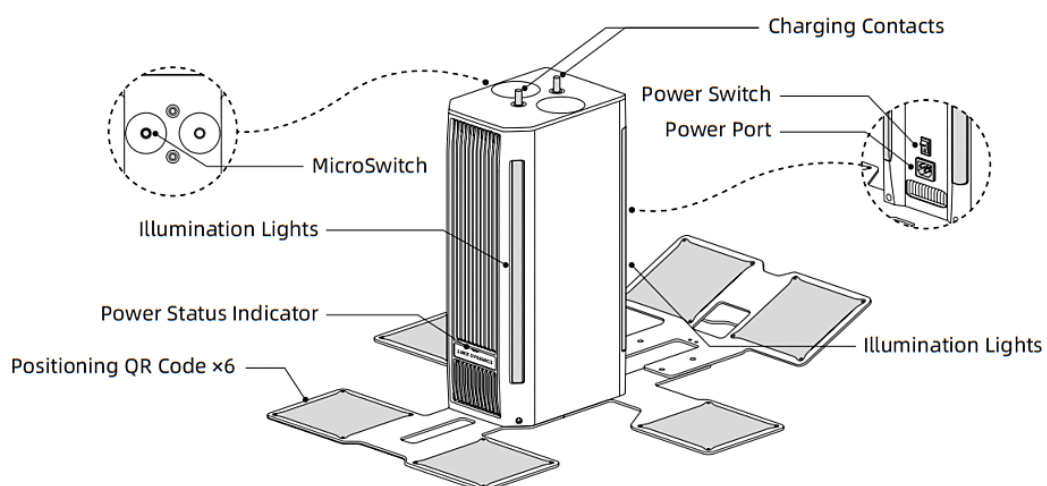
After unpacking, check the items in the box against the figure below. If anything is missing or damaged, contact after-sales service. The shipping list included with the product shall prevail.



3. Specifications

Category	Item	Specification
General Information	Compatible Model	TRON 2 Wheeled-legs Configuration only
	Applicable Floor	Flat, level ground
	Overall Dimensions	600×721×423 mm
	Dimensions with Robot Docked	600×721×692 mm
	Material	Steel, aluminum alloy, copper, engineering plastic
Features & Performance	Autonomous Docking Algorithm	Supported
	Low-Light Docking	Supported
	Docking Detection Range	Distance: 200-650 mm Angle: within 180° in front of the charging dock
	Average Docking Time	≤ 30 s
Electrical Parameters	Rated Input Voltage	100-240V
	Maximum Input Current	8A
	Maximum Output Voltage	54.2V
	Maximum Output Current	10A
	Charging Time (tested at an ambient temperature of 15-25 °C)	20% → 80%: approx. 31 min 20% → 100%: approx. 66 min
Safety Protections	Reverse Polarity Protection	Charger shuts off if the battery polarity is reversed
	Output Short-Circuit Protection	Charger shuts off if the output is short-circuited
	Output Overvoltage Protection	Output shuts off when DC voltage > 1.05 × Vout
	Output Overcurrent Protection	Output shuts off when current > 1.1 × Iout
	Anti-Arc Protection	Power-on only after the MicroSwitch confirms proper contact; no contact, no power
Other	Warranty Period	12 months

4. Components Overview



5. Installation Guide

Scan the QR code below to watch how to install the charging dock and attach its accessories to the robot.



6. Operating Status

6.1 Power Indicator

The front of the charging dock main unit has a power indicator that reflects the current operating status of the dock.

Indicator Status	Meaning
Steady green	Powered on and idle; or the robot is docked and fully charged
Steady orange	Charging in progress
Flashing red	Dock fault detected

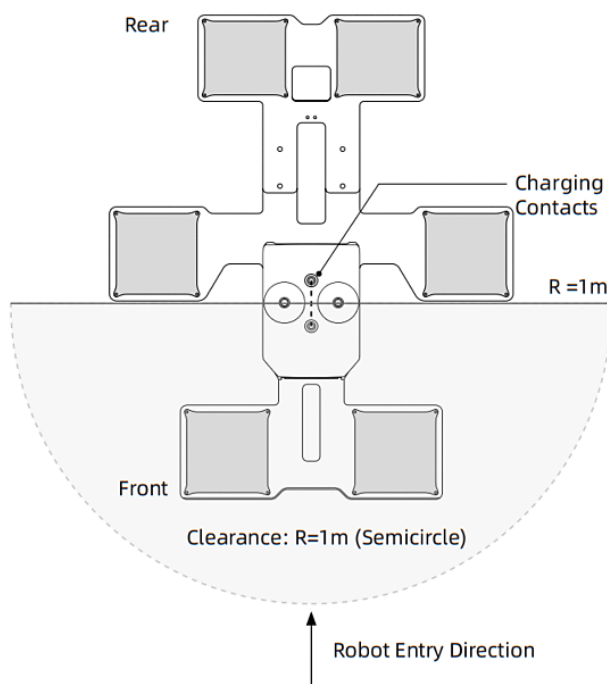
6.2 Illumination Lights

Four illumination light strips are arranged around the charging dock main unit. They light up only during the **Docking** and **Undocking** processes and remain off at all other times. The lights turn off automatically once the robot has docked successfully and entered the seated charging state; they light up again when the undocking process begins and turn off after the robot has left the dock.

7. Usage Instructions

7.1 Environmental Requirements

To ensure a high docking success rate and safe operation, the placement of the charging dock must meet the following spatial and environmental requirements.



- **Space requirements:** With the center of the charging contacts on top of the charging dock as the center point, no obstacles may be placed within a semicircle of radius 1 m facing the robot entry direction (front).
- **Floor requirements:** The installation floor should be flat, solid, and dry, with no standing water or oil stains. Nothing should be wedged between the base plates and the floor.
- **Lighting requirements:** The docking system performs well in dim or low-light environments. Avoid placing the charging dock where it is exposed to strong direct light.

7.2 First-Time Setup

1. **Power on the dock:** Confirm that installation, securing, and wiring are complete. After connecting the power, the dock indicator shows steady green.
2. **Prepare the robot:** Confirm that the battery is sufficiently charged and the robot is powered on; the **Bluetooth communication module** on its back is installed and the robot is remote-controllable.
3. **Position the robot:** Move the robot to a position 20-65 cm in front of the charging dock, within a 180° range facing the dock.

8. Docking and Undocking

Docking means the robot autonomously approaches from the recharging start point, docks with the charging dock, and enters the seated charging state. Undocking means the robot stands up and leaves the charging dock after charging is complete. Both actions can be triggered via the remote controller or via the API.

8.1 Triggering via Remote Controller

The remote controller buttons can trigger the start of recharging and undocking. Being seated on the dock is an automatic intermediate state during the docking process.

Action	Buttons	Screen Display	Description
Docking	L2 + X	Docking	The robot autonomously moves forward onto the dock and slowly squats down, using the physical guide structures to align itself. Before docking, make sure the robot is within 20-65 cm in front of the charging dock.
Seated Charging	–	Charging	The charging dock indicator shows steady orange
Undocking	L2 + □	Undocking	The robot stands up and leaves the charging dock. Once finished, it stands in place awaiting further commands



- After pressing the remote controller buttons, if nothing seems to happen, wait a few seconds.

When multiple charging docks are present in the environment, the Bluetooth module automatically searches for and connects to the dock it is paired with.

8.2 Triggering via API

When a recharging command is triggered through the SDK/API, the request must include the Bluetooth ID of the target charging dock, which specifies which dock to wake up and dock with. For the full list of interfaces, refer to the document below and look for the **charging dock** related interfaces.

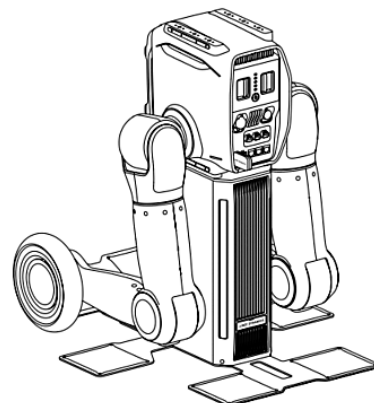
<https://www.limxdynamics.com/en/documents/856848486581276672>



TRON 2 SDK
Development Guide

9. Seated Charging State

After the robot has docked with the charging dock successfully, the charger starts delivering power, and the motors in the robot's legs enter the damping state so that the robot lowers naturally. Charging stops once the battery reaches 100%. As long as the robot remains seated on the dock, it automatically keeps a full charge.



10. After-Sales Service & Maintenance

10.1 Routine Care

- When the enclosure is dirty, wipe it with a clean soft cloth. Do not use chemical cleaners or sprays. Always disconnect the power before cleaning.
- Regularly check that the charging contacts are bright, free of oxidation, and free of foreign matter. If they are dirty, disconnect the power first, then clean them with a dry soft cloth or a dedicated contact-cleaning tool.
- For long-term storage, disconnect the power and keep the product indoors in a dry environment free of corrosive gases and away from direct sunlight.

10.2 Warranty

- **Free warranty period:** 12 months, starting from the date of purchase.
- **Warranty coverage:** Non-human-caused quality issues that occur under normal use.
- **Not covered by the warranty:** Damage caused by unauthorized disassembly, modification, or the addition of non-designated devices; no valid proof of purchase provided; product labels altered or removed.
- If a fault occurs, contact LimX Dynamics after-sales service and cooperate with the technical engineers to complete problem diagnosis and troubleshooting.