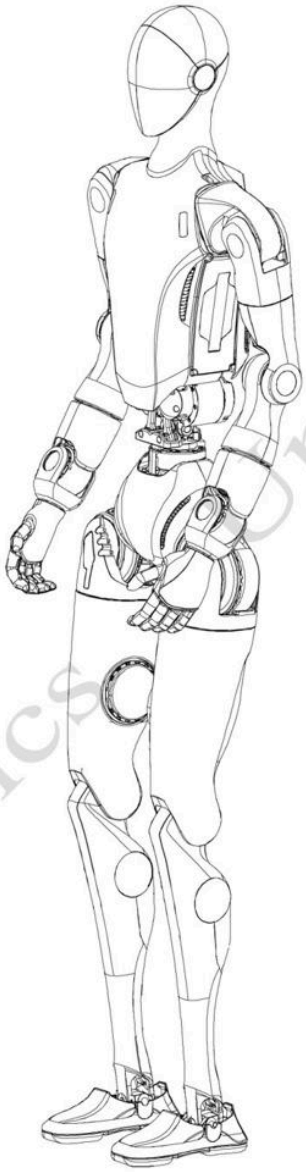
H2

User Manual V1.1



Unitree

This product is a civilian robot. We kindly request that all users refrain from making any dangerous modifications or using the robot in a hazardous manner.

Please visit Unitree Robotics Website for more related terms and policies, and comply with local laws and regulations.

Unitree Robotics

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1. Disclaimer

To avoid illegal behavior, potential harm, and loss, it is essential to adhere to the following regulations:

1) Please be sure to read this article carefully before using the product, understand how to use the product correctly and your legitimate rights, responsibilities, and safety instructions. Otherwise, it may bring property damage, safety accidents and personal safety hazards. Once used this product, you are deemed to have carefully read, understood, recognized, and accepted all the terms and contents of this article. Users are responsible for their own actions and the consequences thereof. Users undertake to use this product only for legitimate purposes and agree with these terms and any relevant policies or guidelines that Unitree may establish.

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3) Subject to legal compliance, Unitree reserves the right of final interpretation of the above terms. Unitree has the right to update, amend or terminate this term without prior notice.

4) Unitree Robotics does not provide any explicit or implied commercial and technical guarantees not involved in this article.

5) Unitree Robotics does not guarantee that the products / services provided are completely free from defects and fully meet the customer's requirements. It also does not guarantee that Unitree Robotics can completely repair these defects.

6) In any case, Unitree Robotics shall not bear legal liability for direct or indirect economic losses to the customers due to this service specification, and the maximum compensation amount of Unitree Robotics for losses to the customers caused by its own product liability shall not be higher than the amount paid by the customers for the products/services.

7) The purchased parts are not within the scope of services included in this service specification.

8) No on-site services are provided for terminal products and accessories. The maintenance service provided by Unitree Robotics for more than one year is an optional service. The customers can choose whether to purchase related services and choose when to terminate them. If the customers choose to purchase related services, it means that the customer allows Unitree Robotics to access, collect and process information related to faults, detection, positioning and debugging when providing services. Unitree Robotics will access and process relevant information in accordance with the customers' request under the premise of the customers' consent, and the information will only be used to provide maintenance services. Since the users are the controller of such information, Unitree Robotics cannot confirm whether such information contains customers' confidential information or personal data, and the customers shall guarantee that it will obtain or retain all necessary consents, licenses, authorizations ("Agree") is used to allow Unitree Robotics to provide this service, so that Unitree Robotics will not violate applicable legal requirements, the customers' privacy policy, or the

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agreement between the customer and the user when providing related services. Unitree will take reasonable measures to ensure the security of such users information, but Unitree Robotics is not responsible for direct or indirect responsibility for the act of obtaining and processing such information in the process of providing services.

2. Safety Instructions

The H2 is a high-efficiency innovative product integrating multi-dimensional perception, robust computing power, and self-developed high-performance motors. It is a versatile humanoid robot designed for industrial-grade applications, tailored for complex environments, and aims to demonstrate exceptional motion performance and broad potential for widespread use.

1) This product is not a toy and is not intended for use by persons under the age of 18. Keep out of reach of children and be careful when operating in the presence of children.

2) You are obliged to be aware of the laws in your area and to comply with relevant laws and regulations.

3) This chapter is an introductory chapter for new users to manipulate robots. New users can quickly master how to use the Remote Control to control the robot to show excellent movement performance by reading this section. This chapter is also a chapter that old users often need to refer to. Old users can read this chapter repeatedly to grasp the essentials of operating the robot, and then they can draw inferences from case, and know what kind of movements are not recommended.

4) When the users run the program developed by themselves in the developer mode: The remote control commands are still valid when the high-level (application layer) is developed. At this time, if the high-level API commands and the remote control commands are sent to the robot, both commands will be executed by the robot. It may cause the robot to become unstable. Please be sure to judge whether the users need to use the remote control according to the running state of the robot. Remote control commands fail during low-level development.

5) During use, maintain visual contact with the robot while controlling it, keep a safe distance from the humanoid robot, and do not touch the robot with your hands after it is powered on!

6) When the robot is in motion, ensure the surrounding area is clear or use a safety tether to prevent tripping accidents that could cause it to fall onto objects or people.

7) When moving the robot or when the robot is in motion, do not touch the joint areas of the robot to prevent pinching.

8) When the last battery indicator is flashing, promptly stop and shut down the robot, remove the battery for charging, to prevent the robot from losing power and falling due to low battery, which could cause damage!

9) 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, and 2) this device must accept any interference received, including interference that may cause undesired operation.

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3. Product Overview

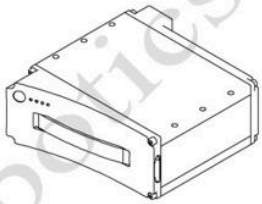
3.1 Introduction

The Unitree H2 is a full-size humanoid robot measuring 182 cm, designed with the philosophy of "Elegant Rebirth." Its body is constructed from aviation aluminum, titanium alloy, and high-strength engineering plastics, achieving high rigidity while maintaining a lightweight of 70 kg. The robot features 31 high degree-of-freedom joints throughout its body. Combined with low-inertia high-speed motors and industrial-grade bearings, the joints respond swiftly, with a peak leg torque of 360 Nm, enabling precise replication of various complex dynamic movements. Equipped with a human-like binocular vision system and an array microphone, it supports natural interaction. In terms of computing power, it can be optionally configured with the Jetson AGX Thor module, delivering robust AI performance of 2070 TOPS, capable of deploying various embodied large models to empower diverse work scenarios. Through OTA updates, its motion control algorithms continuously evolve, demonstrating exceptional operational adaptability and technological expansion potential, and consistently exploring the application boundaries of bionic robots.

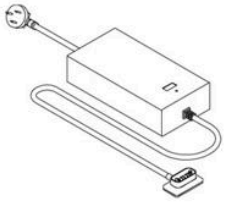
3.2 Accessory List



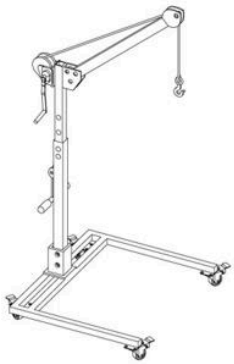
Remote Controller *1



Battery *1



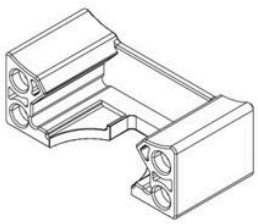
Battery Charger *1



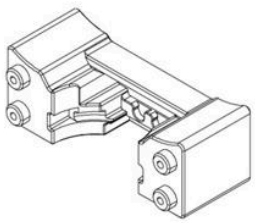
Protective Stand *1



Lying-Posture Packaging Case *1



Waist Calibration Block A*1



Waist Calibration Block B*1

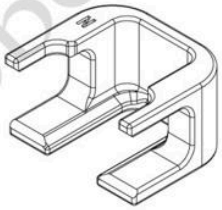


Hip Calibration Fixture A*1

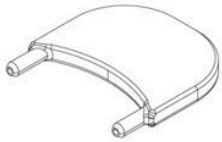
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Hip Calibration Fixture B*1



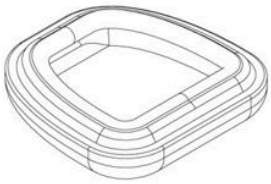
Ankle Calibration Fixture *2



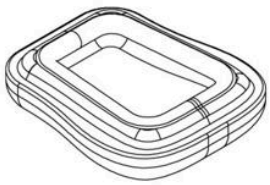
IMU Calibration Fixture *1



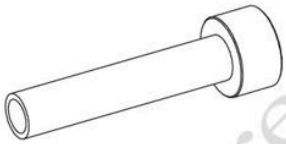
Specialized Lanyard *1



Front foot airbag*4



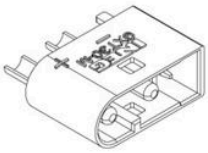
Rear foot airbag*4



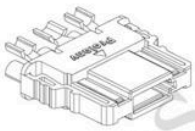
M4X20 Screws *4



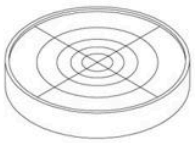
M4 Hex Wrench *1



XT30-M Connector *6



Power Connector *4



Level *1

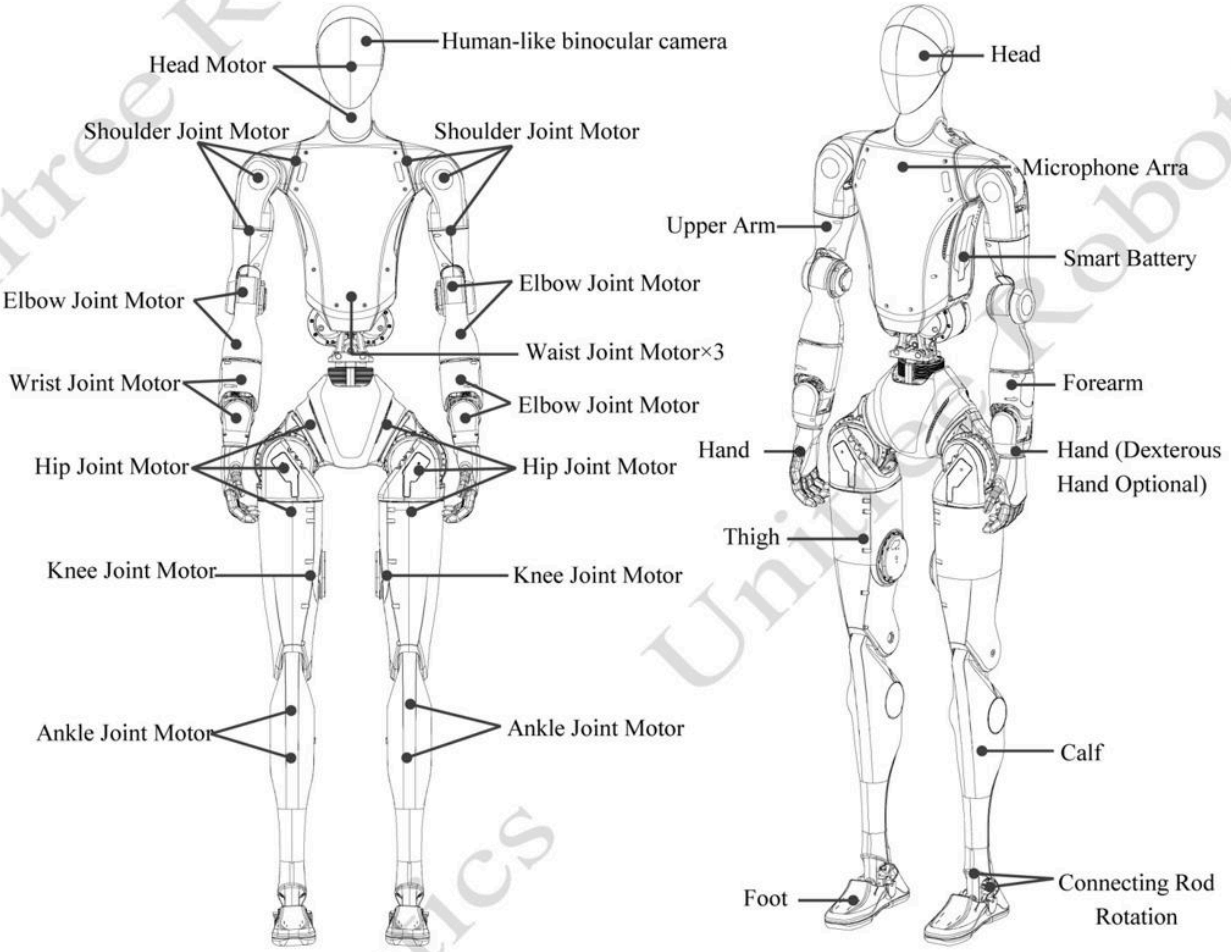
⚠ ● Images are for reference only. If the actual product differs from the manual, the actual product shall prevail.

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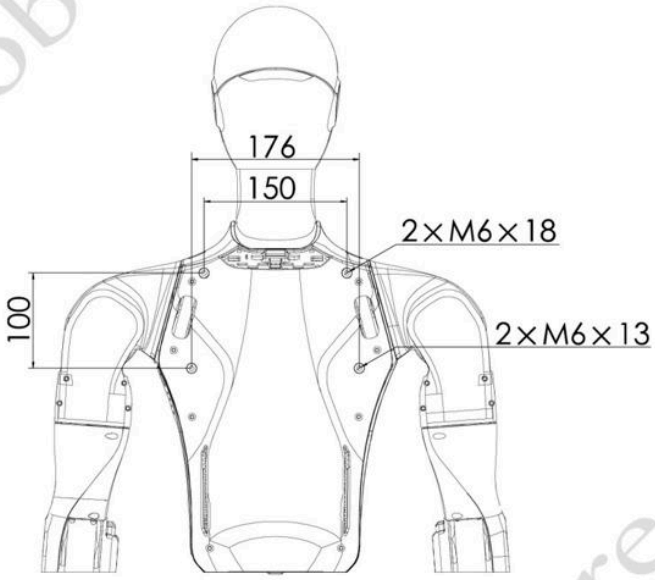
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3.3 Parts Name

The H2 humanoid robot body is as shown in the image below. Please refer to the actual product for specifics!



H2 Back Mounting Hole Dimension Diagram: M6 threaded hole, unit: mm.



Back

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3.4 Specification Comparison

	H2	H2 EDU
Height, Width and Thickness(Stand)	1820x456x218mm	1820x456x218mm
Weight (With Battery)	About 70kg	About 70kg
Degree of Freedom(Total Joints)	31	31
Single Leg Degrees of Freedom	6	6
Single Arm Degrees of Freedom	7	7
Waist Degrees of Freedom	3	3
Head Degrees of Freedom	2	2
Dexterous Hand	/	Dexterous Hand (Multiple Model Options)
Bionic Head with Facial Features	YES	YES
Joint output bearing	Industrial grade crossed roller bearings (high precision, high load capacity)	Industrial grade crossed roller bearings (high precision, high load capacity)
Joint motor	Low inertia high-speed internal rotor PMSM (permanent magnet synchronous motor,better response speed and heat dissipation)	Low inertia high-speed internal rotor PMSM (permanent magnet synchronous motor,better response speed and heat dissipation)
Maximum Torque of Arm Joint	120N.m	120N.m
Maximum Torque of Leg Joint	360N.m	360N.m
Arm Maximum Payload	Peak: ~15 kg; Rated: ~7 kg	Peak: ~15 kg; Rated: ~7 kg

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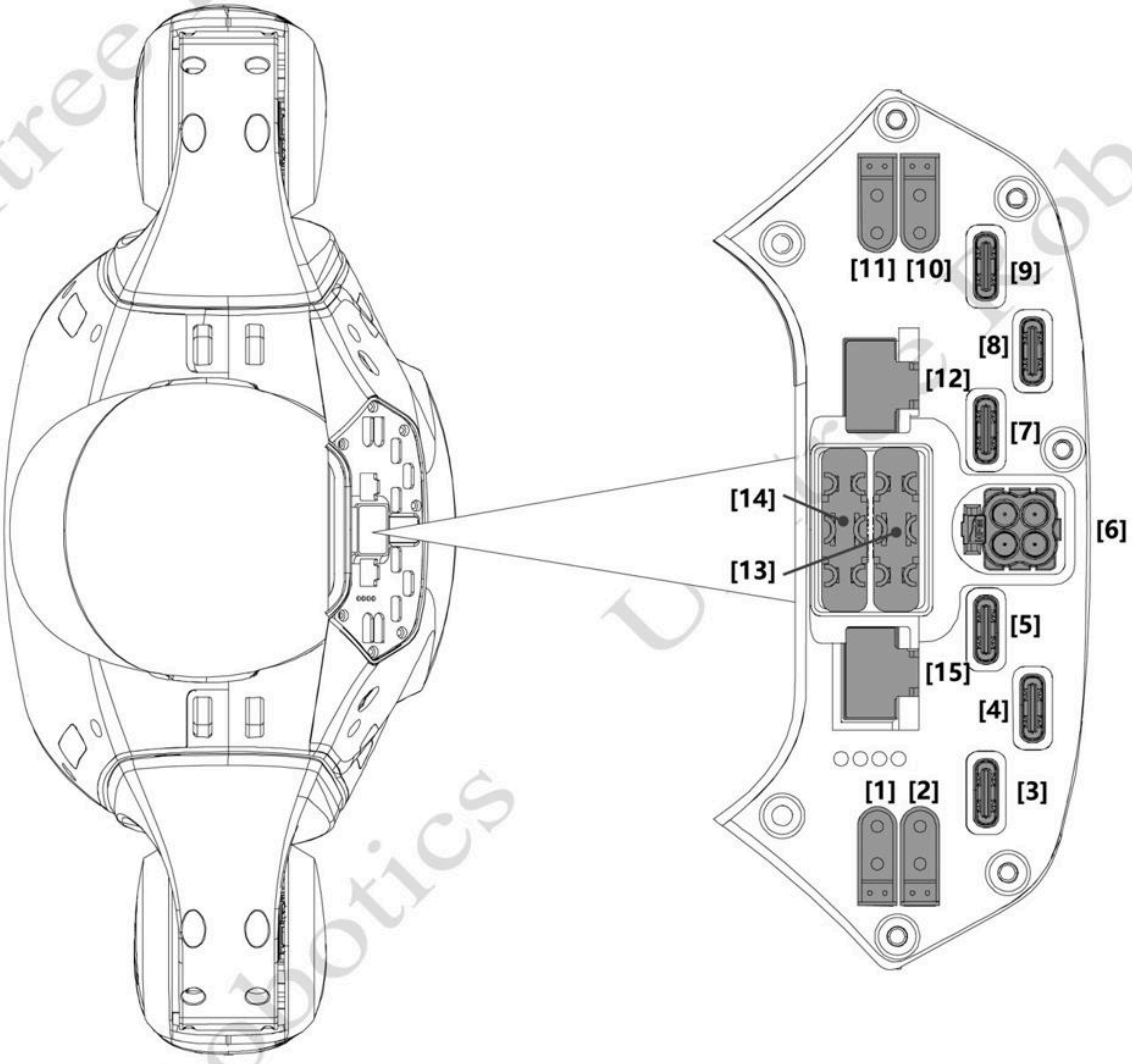
Calf + Thigh Length	1045mm	1045mm
Forearm + Upper Arm Length	690mm	690mm
Materials Used in Construction	Aircraft-Grade Aluminum + Titanium Alloy + High-Strength Engineering Plastics	Aircraft-Grade Aluminum + Titanium Alloy + High-Strength Engineering Plastics
Cooling System	Local air cooling	Local air cooling
Power Supply	Premium Lithium Battery with Low Internal Resistance	Premium Lithium Battery with Low Internal Resistance
Battery Capacity	15Ah(0.972KWh)	15Ah(0.972KWh)
Battery Voltage	Maximum Voltage: 75.6 V	Maximum Voltage: 75.6 V
Basic Computing Power	PC1:Intel Core i5 (Platform Capabilities)	PC1:Intel Core i5 (Platform Capabilities) PC2:Intel Core i7 (Custom Development)
Sensing Sensor	Humanoid Binocular Camera with Wide Field of View	Humanoid Binocular Camera with Wide Field of View
Voice Interaction	Array Microphone and High-Power Speaker for Voice Interaction	Array Microphone and High-Power Speaker for Voice Interaction
WiFi 6 、Bluetooth 5.2	YES	YES
Upgraded Intelligent OTA	YES	YES
Secondary Development	/	YES
High-Power Computing Module	/	Multiple brands and models available such as Thor, etc.

- Please visit the Unitree Documentation Center to obtain the H2-EDU Secondary Development Guide.
- If you need to purchase optional accessories such as the dexterous hand, please contact Unitree Technical Support.

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3.5 Interface Description

The back of the H2 is equipped with electrical interfaces, which are used to connect various body joint motors, sensor peripherals, Ethernet ports, and more. This design allows you to conveniently perform debugging, troubleshoot issues, and carry out secondary development.



H2 Top View

Number	Interface Type	Interface Abbreviation	Interface Description
[1]	GXT30(2)-M	VB AT+485	54 V / 10 A battery power output (direct connection to battery) + RS-485 communication (to PC2)
[2]	GXT30(2)-M	24V+CAN	24 V / 10 A power output + CAN (to PC2)
[10]	GXT30(2)-M	12V+485	12 V / 10 A power output + RS-485 communication (to PC2)
[11]	GXT30(2)-M	24V+CAN	24 V / 10 A power output + CAN (to PC2)

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[3]	Type-C	Type-C	Supports USB 3.0 host, DP 1.4, PD 3.0 (connected to PC2 only)
[4]	Type-C	Type-C	Supports USB 3.0 host, 5 V / 2 A power output (connect to PC2 when PC3 is not present) Optional: Supports USB 3.0 host, DP 1.4, PD 3.0 (applicable only when optional PC3 is installed; connect to
[5]	Type-C	Type-C	Supports USB 3.0 host, 5 V / 2 A power output (connect to PC2 when PC4 is not present) Optional: Supports USB 3.0 host, DP 1.4, PD 3.0 (applicable only when optional PC4 is installed; connect to PC4)
[6]	GMSL	GMSL	Video input (supported when optional PC3 is installed; connect to PC3 only)
[7]	Type-C	Type-C	Supports USB 3.0 host, 5 V / 2 A power output (connected to PC2 only)
[8]	Type-C	Type-C	Supports USB 3.0 host, 5 V / 2 A power output (connect to PC2 when PC3 is not present; connect to PC3 when optional PC3 is installed)
[9]	Type-C	Type-C	Supports USB 3.0 host, 5 V / 2 A power output (connect to PC2 when PC4 is not present; connect to PC4 when optional PC4 is installed)
[12]	RJ45	1000 BASE-T	Gigabit Ethernet (connect to 192.168.123.x network segment)
[15]	RJ45	1000 BASE-T	Gigabit Ethernet (connect to 192.168.124.x network segment)
[13]	Board-to-Wire Connector	Dexterous Hand Interface	Standard: 24 V / 10 A power output + RS-485 (to PC2) + USB 2.0 (to PC1) Optional: 24 V / 10 A power output + 100 Mbps Ethernet (to 192.168.123.x network segment)
[14]	Board-to-Wire Connector	Dexterous Hand Interface	Standard: 24 V / 10 A power output + RS-485 (to PC2) + USB 2.0 (to PC1) Optional: 24 V / 10 A power output + 100 Mbps Ethernet (to 192.168.123.x network segment)

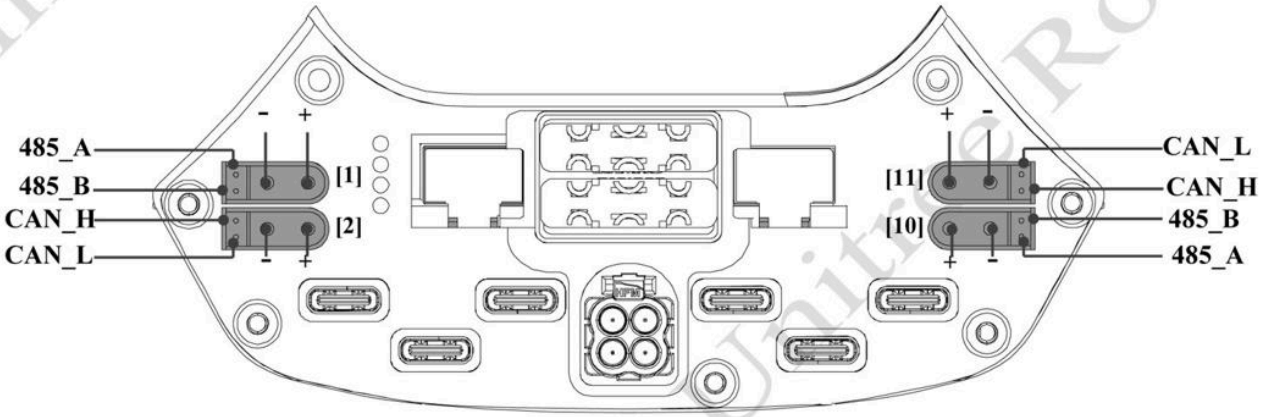
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⚠ ● The total power of the above external power output ports (excluding the direct battery power output) shall not exceed 500 W.

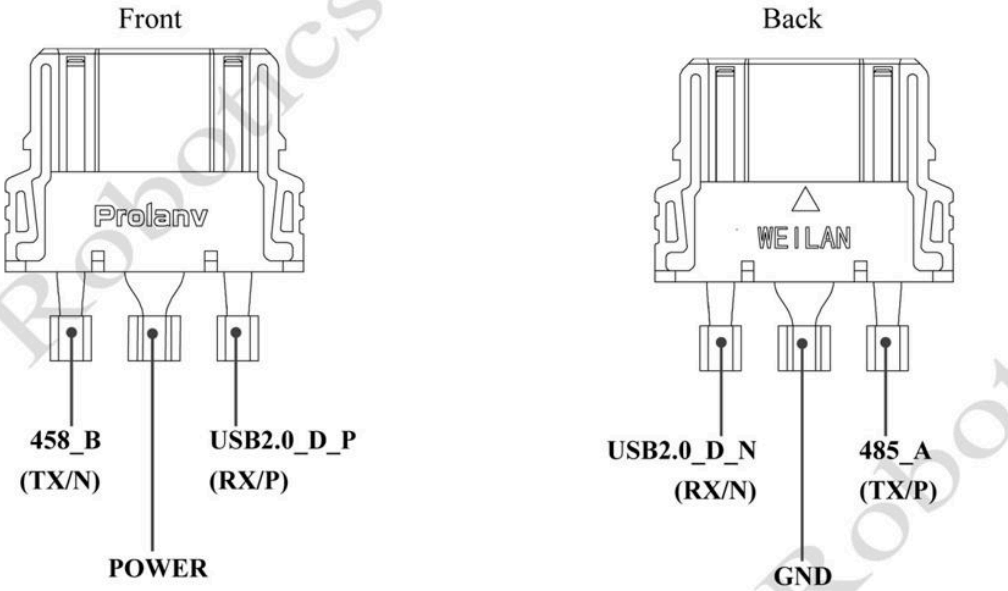
● The voltage of the direct battery connection varies with the battery level; the voltage range is 54–75.6V, with a rated current of 10A.

● When [13] and [14] are configured as RS-485 + USB: the RS-485 on [10] and [13] are on the same bus, and the RS-485 on [1] and [14] are on the same bus.

[1] [2] [10] [11] GXT30(2)-M Electrical Interface Definition:



[13] [14] Board-to-Wire Connector Interface Definition:



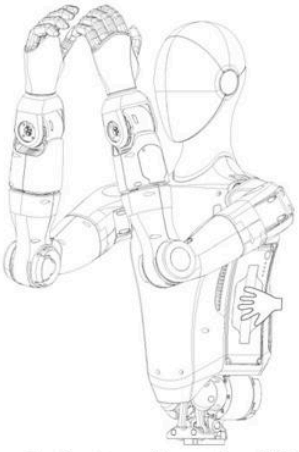
TX/N, RX/P, RX/N, TX/P, compatible with 100 Mbps Network.

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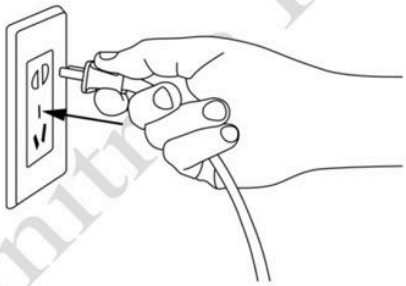
4. How to charge

During first-time use, the battery is in shipping mode and needs to be charged as described below to exit shipping mode. Due to factors such as self-discharge during transportation and storage, it is normal for the battery level to be low or depleted when used. Please fully charge the battery first before preparing to power on the device.

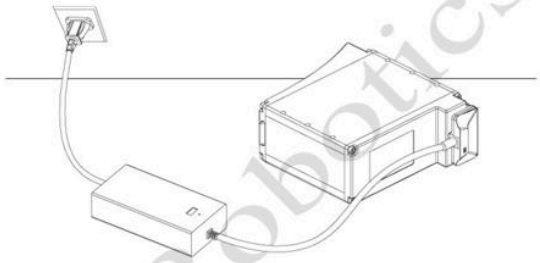
4.1 Charge the Battery



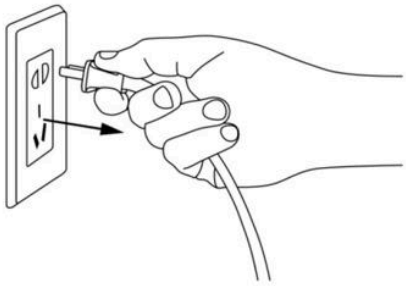
1) Remove the battery from the H2 body (by pulling the battery strap outward)



2) Charger input AC power (100-240V, 50/60Hz)



3) Connect the H2 battery



4) Manually disconnect the power when fully charged

1) Connect the charger to an AC power source (100-240V, 50/60Hz). It must be ensured that the external power supply voltage matches the rated input voltage of the charger before connecting. Otherwise, the charger will be damaged (the rated input voltage of the charger is marked on the nameplate of the charger).

2) Plug in the input AC power first before charging the battery, then connect the charger to the battery.

3) Before charging the battery, ensure that the battery pack is switched off. Otherwise, the battery and charger may be damaged.

4) The users need to remove the battery pack from the robot itself when charging the battery pack.

5) In the charging state, the battery indicator of battery pack will flash at a frequency of 1Hz (1 second/time) and indicate the current battery.

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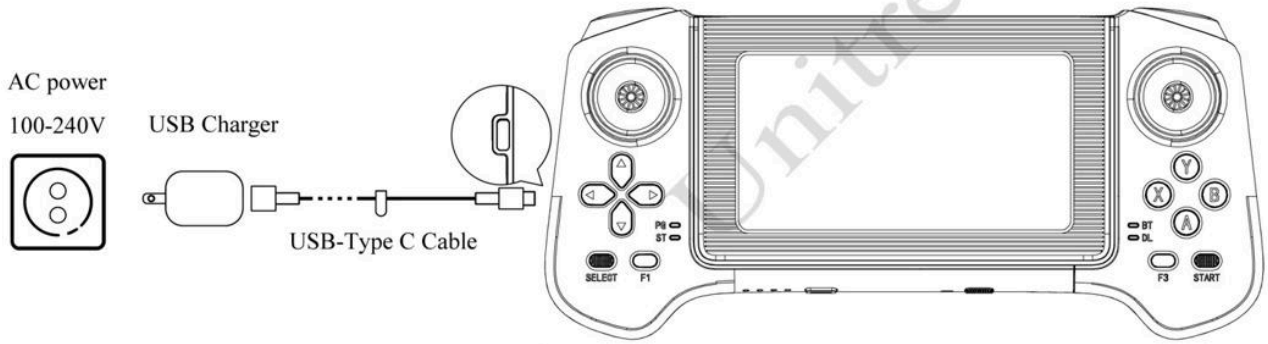
6) If the battery indicator is off, the battery pack is fully charged. Please remove the battery pack and charger to finish charging.

7) The temperature of the battery pack may be high after running, t, and the battery pack must be charged after the temperature of the battery pack has dropped to room temperature.

⚠ ● The H2 battery charging system is equipped with a thermal protection feature. If the charging temperature exceeds 50°C, an overheating fault alarm will be triggered. Charging at high temperatures will reduce the charging speed. Please allow the battery pack to cool down to room temperature before recharging it.

4.2 Remote Control Charging

When the battery indicator light of the companion remote control shows that the battery is low, you should connect the companion remote control to the charger as shown in the figure below:



1) We recommend you to use a 5V/2A USB charger which meets FCC/CE standard.

2) Ensure that handheld remote control is switched off before charging it.

3) The power indicator light will flash at 1Hz (1 second/time) in charging status and indicate the current power level.

4) When the power indicator light is all on it means the battery pack is full, please remove the charger to finish charging.

Charging Indicator Light				
LED1	**LED2**	**LED3**	**LED4**	**Current Battery**
☼	○	○	○	0%-25%
☼	☼	○	○	25%-50%
☼	☼	☼	○	50%-75%
☼	☼	☼	☼	75%-100%
☼	☼	☼	☼	Full Charged

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5. Instructions for use

5.1 Operating Environment Requirements

1) Operate in good weather conditions at temperatures ranging from 0°C to 40°C. Do not operate in adverse weather conditions, such as fog, snow, rain, thunderstorms, sandstorms, storms, tornadoes, etc. The robot is NOT waterproof. Do not operate on wet ground, in rain, snow, or humid environments! The robot is not dustproof. Do not operate on gravel ground or in dusty environments!

2) When using the robot, keep it within your field of vision and a safe distance of at least 2 meters from obstacles, complex terrain, crowds, water and other objects.

3) Please do not run the robot in an electromagnetic interference environment. Sources of electromagnetic interference include but are not limited to: high-voltage power lines, high-voltage transmission stations, mobile phone base stations, and television broadcast towers.

4) Please do not run the robot in the Wi-Fi signal interference environment. Wi-Fi signal interference is usually caused by co-channel interference. In case of interference, be sure to turn off the Wi-Fi signals on some or all other wireless devices before using the remote control to operate the robot.

5) Due to the varying levels of proficiency among actual operators, for reliability and safety, please use the robot in an open, flat, and unobstructed environment. If the robot needs to travel on complex terrain or terrain with certain ups and downs and slopes, the operator should reduce the robot's walking speed and carefully control it to avoid tripping over obstacles.

6) The robot has certain requirements for the ground on which it walks. Do not use the robot on very low friction ground, such as ice. Do not use the robot on soft ground, such as thick spongy ground. If the robot is used on smooth ground, such as glass and ceramic tile, the users need to control the robot movement carefully and smoothly, avoid violent movement, and reduce the walking speed of the robot to prevent the robot foot from slipping and falling.

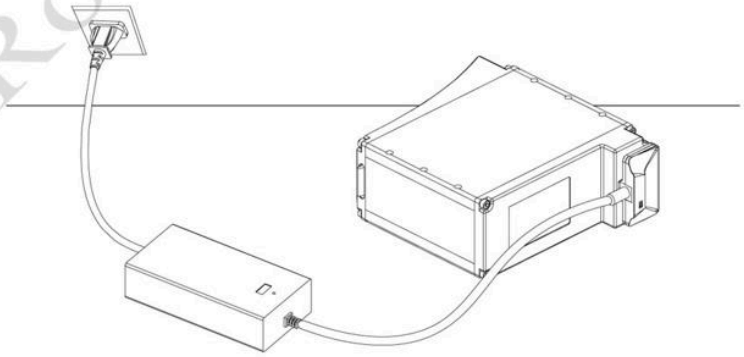
5.2 Unboxing

● Please scan the QR code to visit the Unitree Documentation Center and access the **unboxing video**.

Place the case on a level surface according to the placement requirements (with the front side facing up), then open the upper case. Remove the protective foam covering the top, take out the included lanyard, and install it onto the suspension latches on both shoulders of the H2. Connect the lanyard to the suspension hook of the lifting frame, remove the foam covering the legs and hips, and use the lifting frame to raise the H2. Remove accessories such as the remote controller and charger from the case separately, and then proceed with startup preparation.

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When using the battery for the first time, it must be charged to activate it and exit shipping mode; otherwise, the battery cannot power on. The activation method is as follows: Connect the battery to the charger, and then connect the charger to a 220V AC power source to exit shipping mode.



5.3 Check before Power on

1) Use only genuine Unitree components and ensure all parts are in good working condition.

2) Ensure that the firmware and other software are updated to the latest versions.

3) The user must ensure they are not operating the robot while intoxicated, under the influence of medication, or unable to concentrate.

4) Be familiar with the characteristics of each gait mode. Understand the emergency braking methods in case the robot becomes unstable or loses control.

5) Ensure that the robot and all its internal components are free of any foreign objects (e.g., water, oil, sand, soil, etc.).

6) Ensure that the remote control module and battery pack have sufficient charge.

7) Check that the protective stand is correctly installed and the caster wheels at the base are locked.

8) Ensure the battery has exited shipping mode.

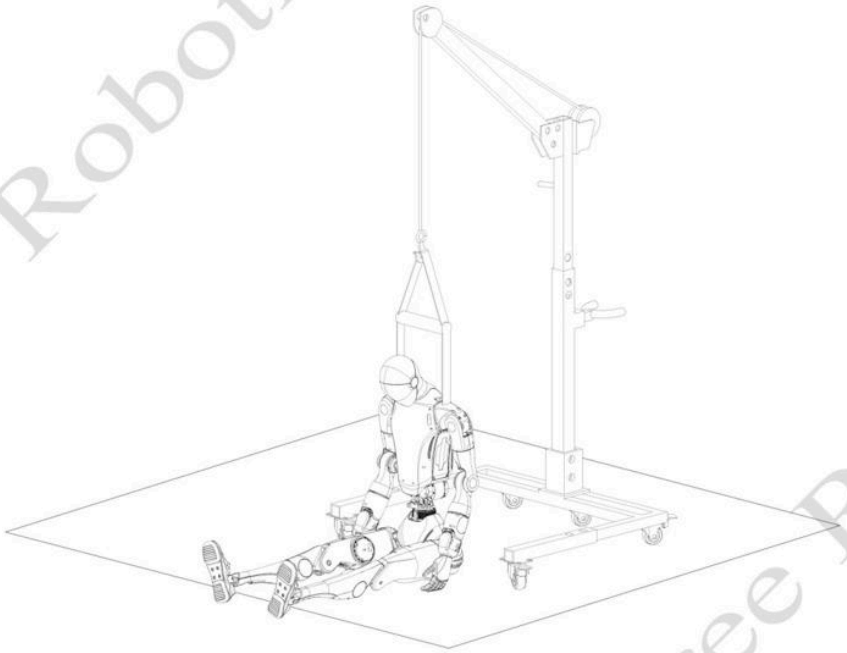
5.4 Powering On While Suspended

● Please scan the QR code to visit the Unitree Documentation Center and access the **power-on/power-off video**.

1) Suspending the H2

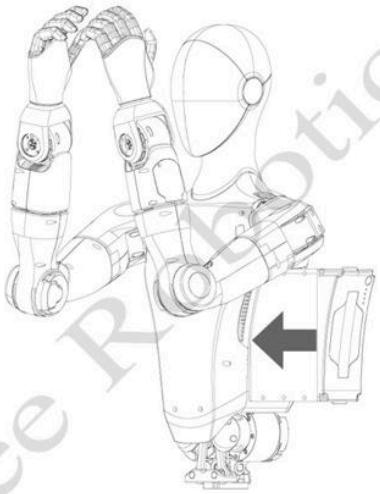
Securely place the H2 on the ground. Pass the suspension lanyard through the dedicated suspension latches located on both shoulders of the robot. Hook the lanyard onto the suspension hook of the protective stand. Gradually raise the H2 by adjusting the stand, ensuring the robot's body is completely suspended in the air and its feet are not touching the ground.

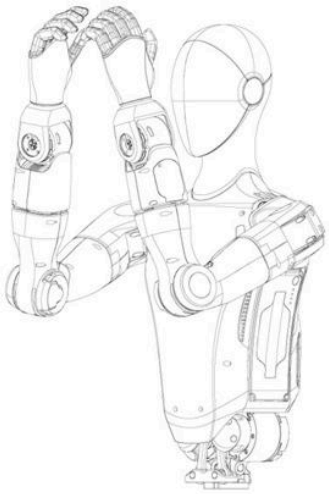
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2) Installing the Battery Pack

Insert the battery pack into the battery slot from the side of the robot, paying attention to the orientation. The power switch should face the robot's head. If the battery pack cannot be fully inserted, adjust its direction. Do not force it, as this may damage the battery interface or latches. Installation is complete when you hear a "click" sound. Ensure the latch is fully engaged! Exercise caution during installation to prevent pinching your fingers!



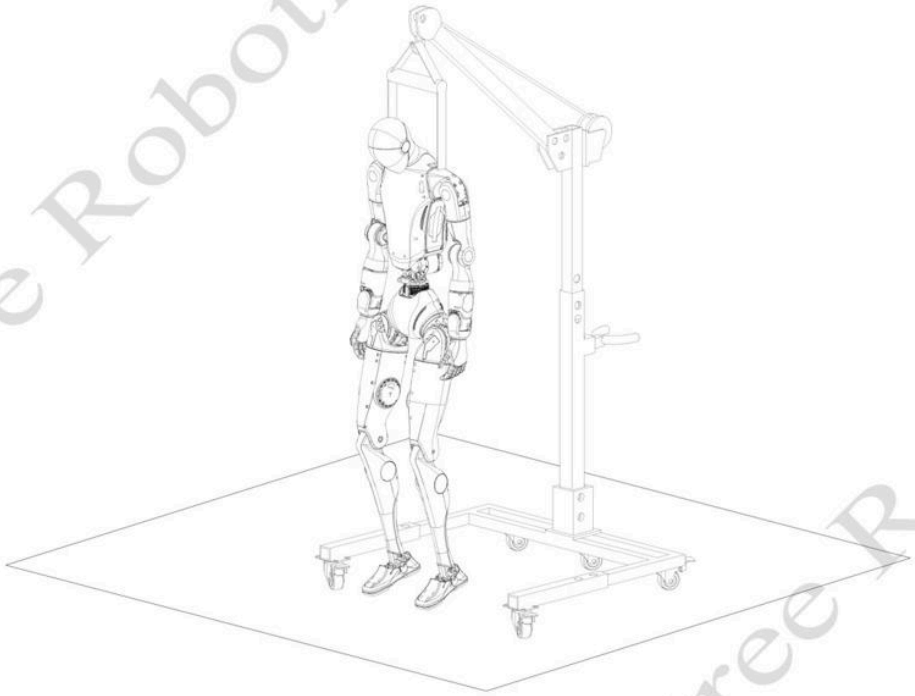


3) Positioning the Body (IMPORTANT STEP!!!)

For suspended power-on: Allow the H2's arms and thighs to hang down naturally. Let the head hang forward naturally.

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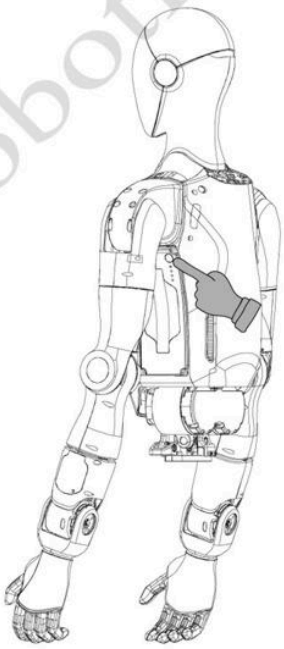
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⚠ ● The zero positions for the H2's upper limbs and ankle joints are set based on the power-on posture. If the body is not positioned correctly, zero-position deviation may occur in these joints, leading to abnormal movement after power-on.

4) Powering On

After completing the pre-startup checks and positioning the robot as required for startup, power it on according to the following steps: Briefly press the battery's power button once, then press and hold the power button for more than 2 seconds.



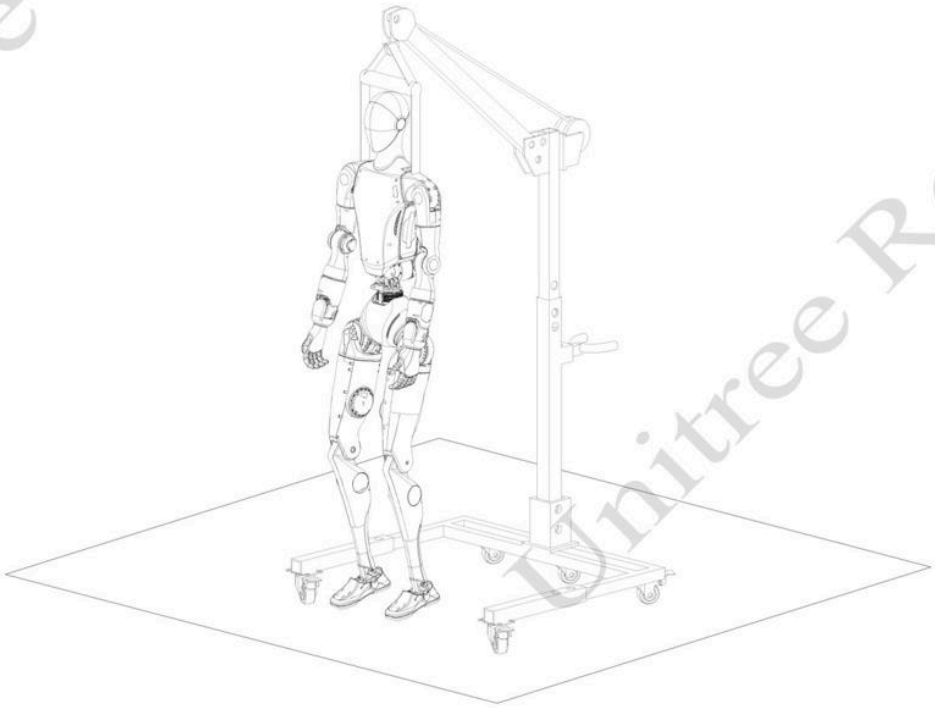
Short press + Long press for more than 2 seconds

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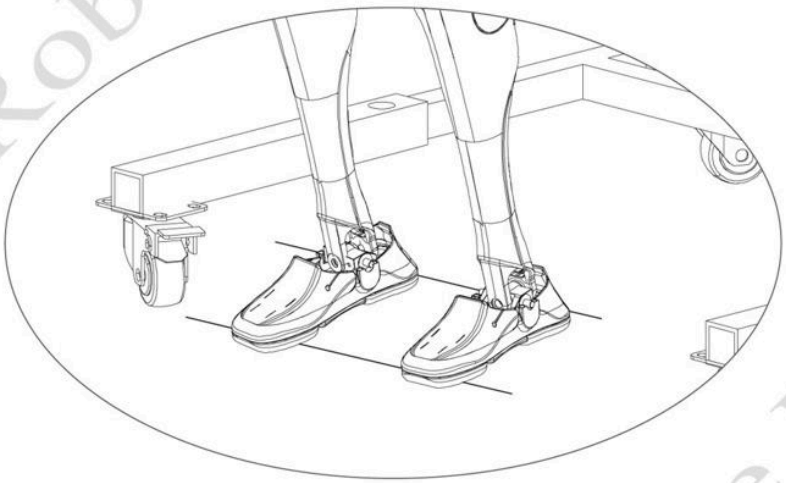
5) Successful Startup

The entire startup process lasts approximately 120 seconds. Please wait patiently after the battery is activated. The robot has successfully initialized when it enters zero-torque mode. In this mode, press the L2+B buttons on the remote controller to enter damping mode and unlock control. Then, press L2+UP to enter the ready state. The H2's posture at this point is shown in the image below.



6) Lowering the Suspension Rope

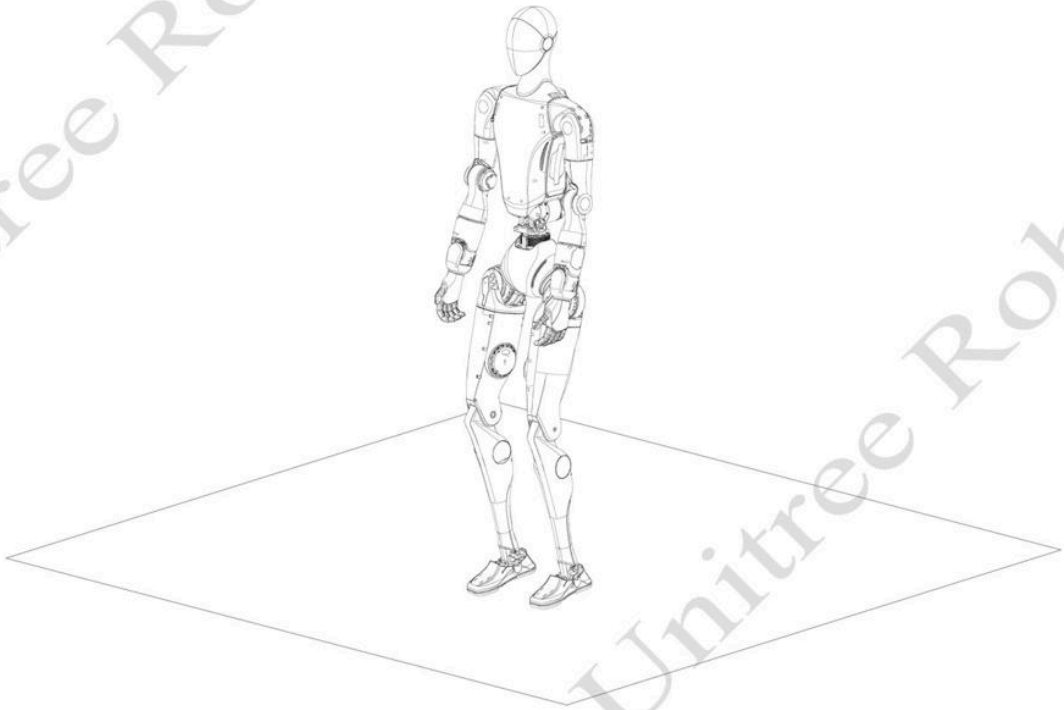
After the robot enters the ready state, lower the suspension rope until the H2's feet touch the ground. Press the R1+X buttons on the remote controller again. The control program will now start, and the H2 will transition from the ready state to the motion state, beginning to stand in place.



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7) Releasing the Suspension Rope

Once the H2's movement stabilizes, you can completely release the hook of the protective stand. You can now use the left and right joysticks on the remote controller to move the H2.



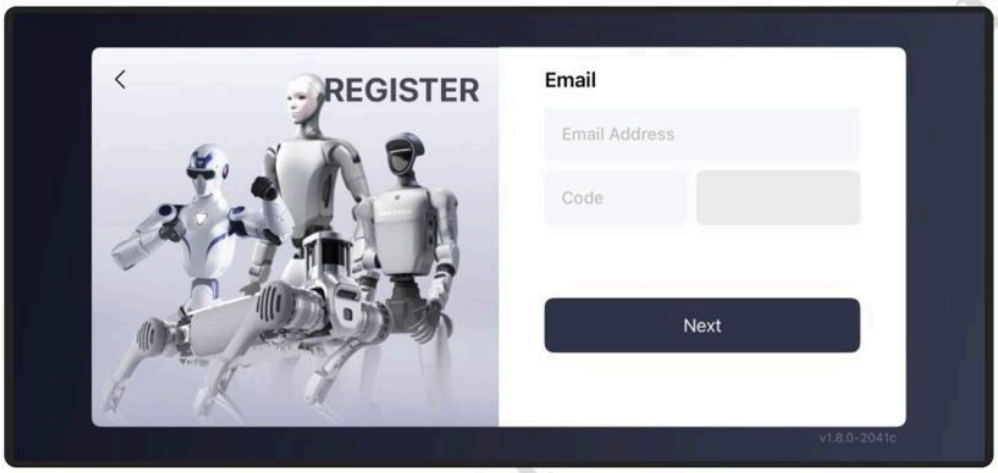
⚠ ● **Emergency Stop:** If the H2 experiences an unexpected state, press L2+B. The H2 will enter damping mode and will slowly lower itself to the ground.

5.5 Connecting to the Unitree Explore App

● Please scan the QR code to visit the Unitree Documentation Center and access the **network connection video**.

1) Scan the QR code to download and install the Unitree Explore App, then log in using the enterprise account and password provided by Unitree.

Unitree Explore App Download Link



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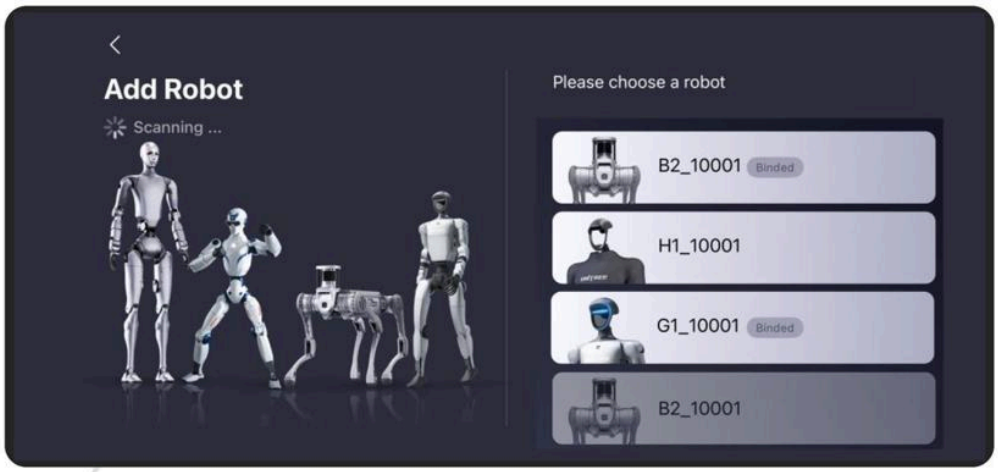
● If you do not have an enterprise account, please contact Unitree sales service personnel to open an account!

● The Unitree Explore App is specifically designed for the B2, H1, G1, and R1 series robots, providing an excellent control experience and feature support!

2) After the H2 is powered on, click "Add Robot."



3) Click on the device you want to add.



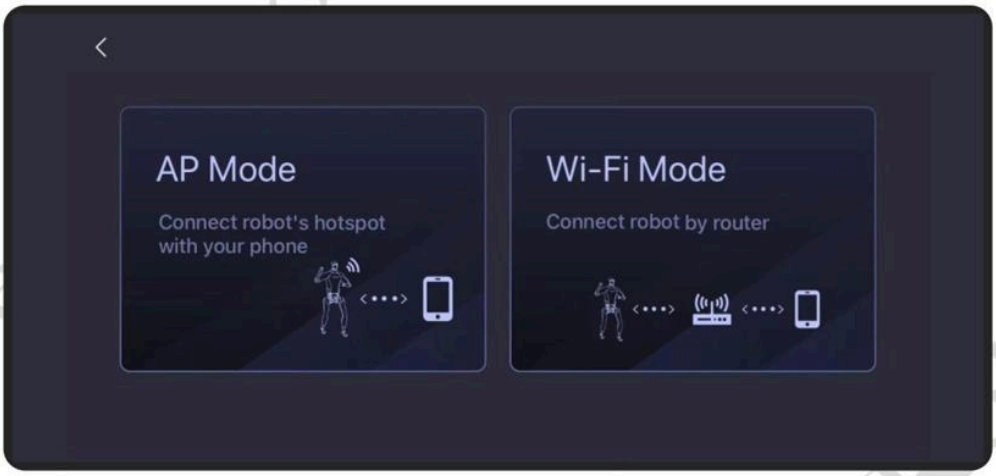
● Please keep your phone's Bluetooth turned on during the connection process!

● Bluetooth connection error: The Unitree Explore App requires Bluetooth permissions. Please enable Bluetooth permissions for Unitree Explore in your phone's app settings.

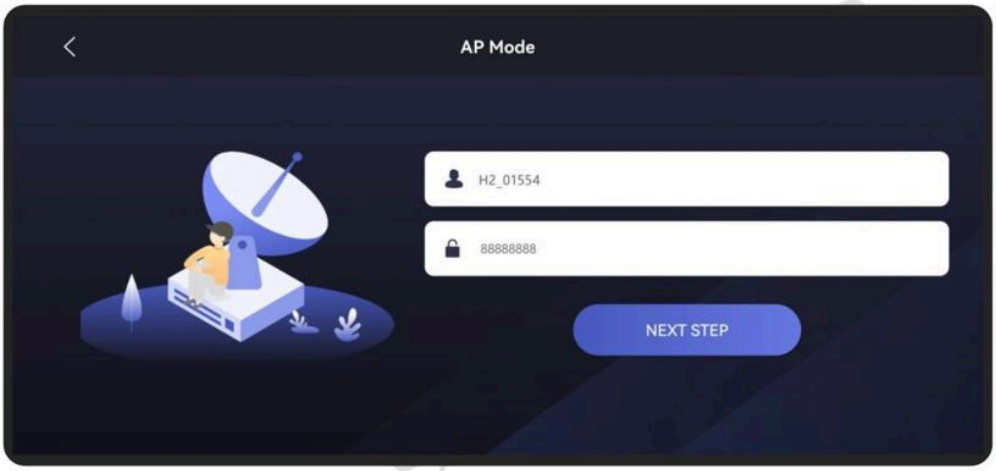
● If you forget the bound account or lose the account, please contact Unitree personnel!

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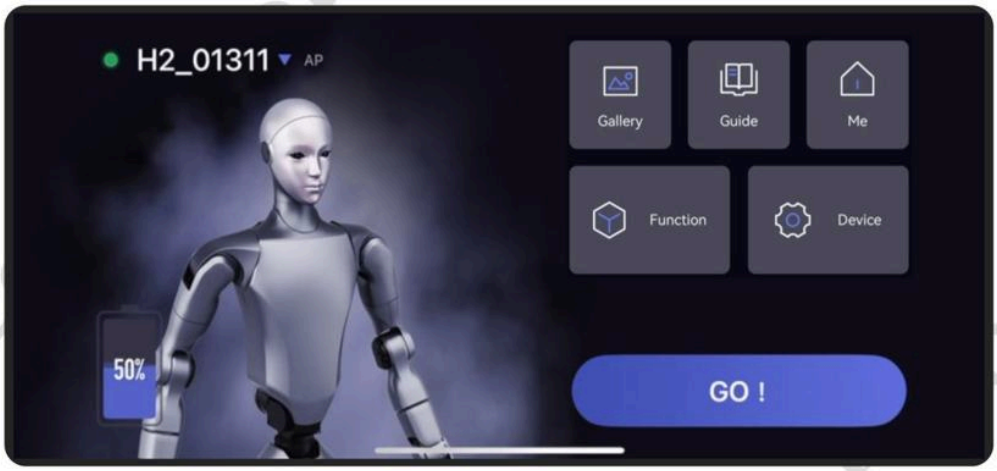
4) AP Direct Connection Mode



Step1: Click on "AP Direct Connection"



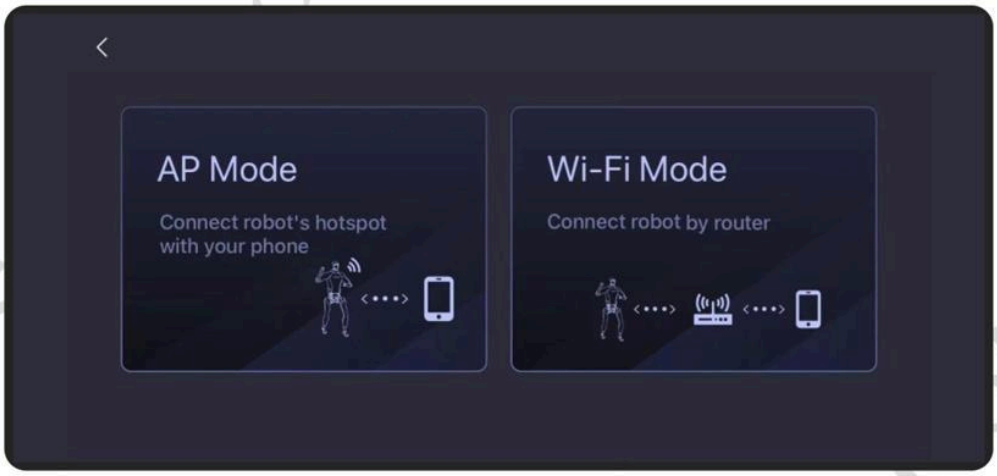
Step2: The robot account will be read



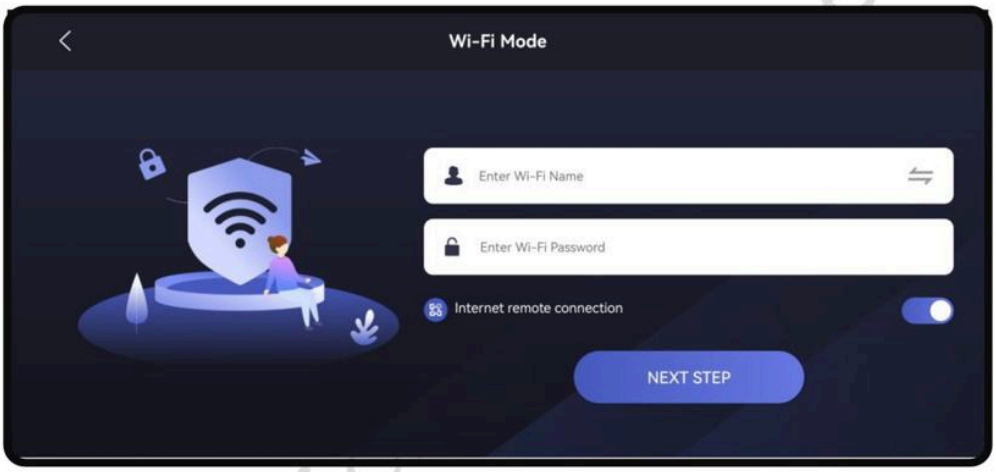
Step3: Connection successful

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5) Wi-Fi Connection Mode



Step1: Click on "Wi-Fi Connection Mode"

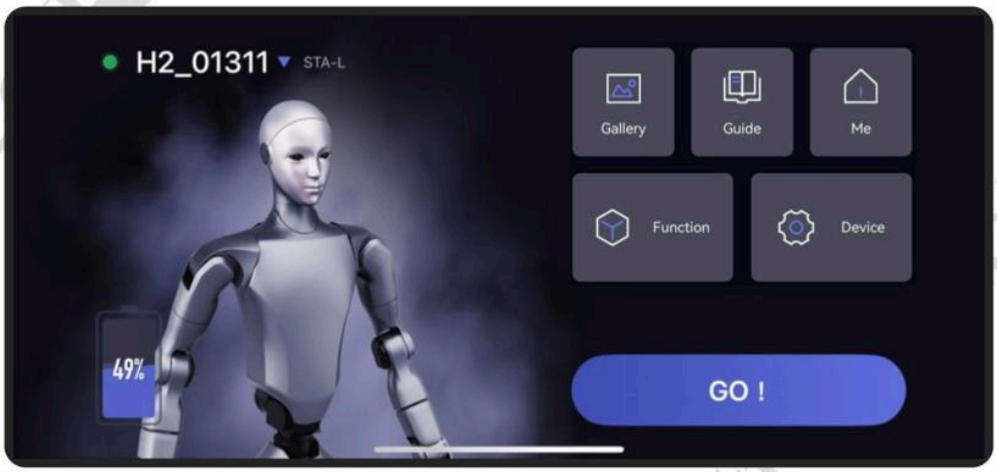


Step2: Select the Wi-Fi network, enter the password, and click "Next"

(The phone needs to be connected to the target Wi-Fi first; the App can recognize it automatically)

(After enabling public network remote connection,

you can connect to the public network, which can be used to upgrade the robot's software)

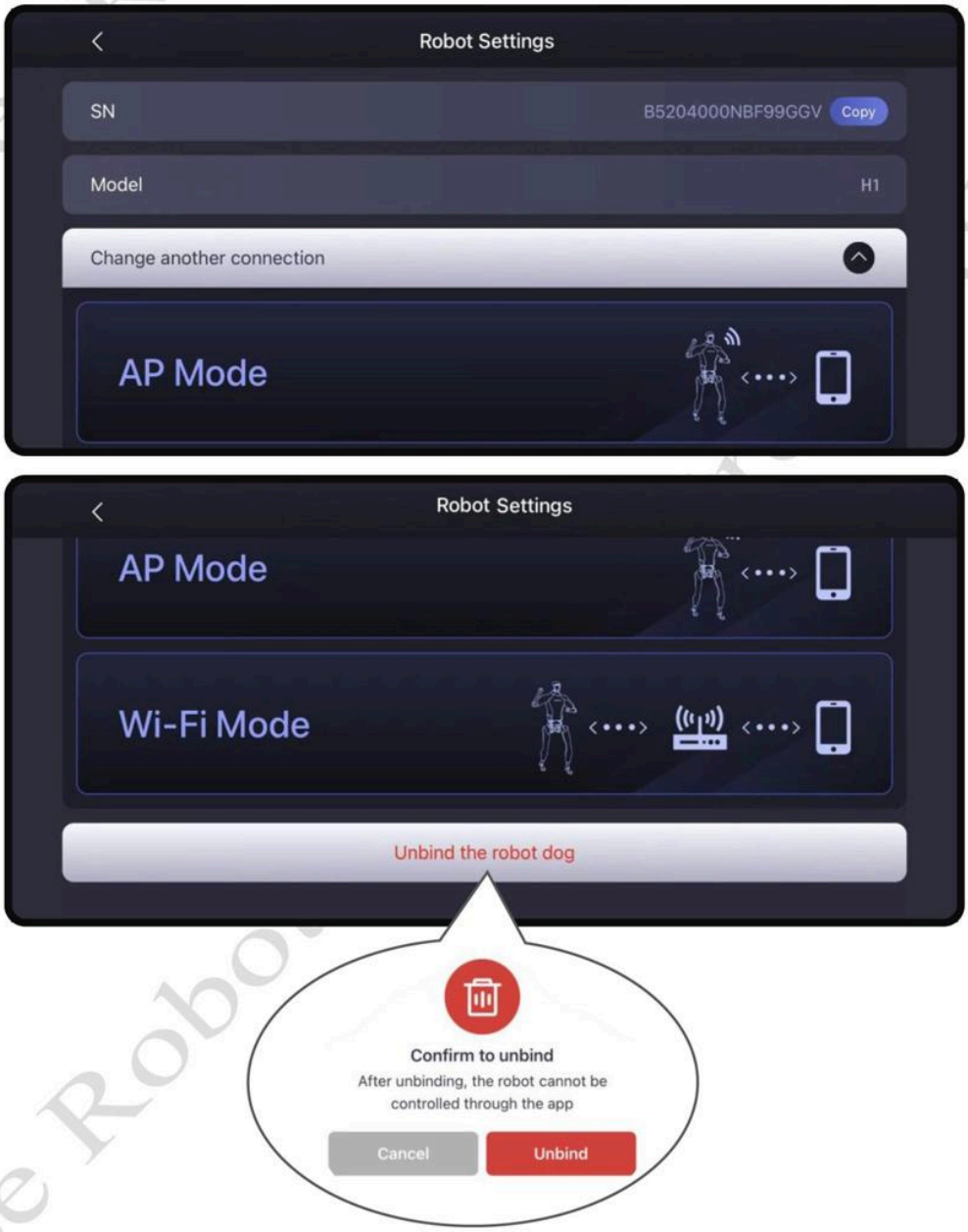


Step3: Connection successful

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6) How to Change Account Binding

On the home page, click **[Settings]** - **[Robot Settings]**, select and click "Unbind" to unbind a robot that is already bound. After the robot is unbound, it can be bound by another account.

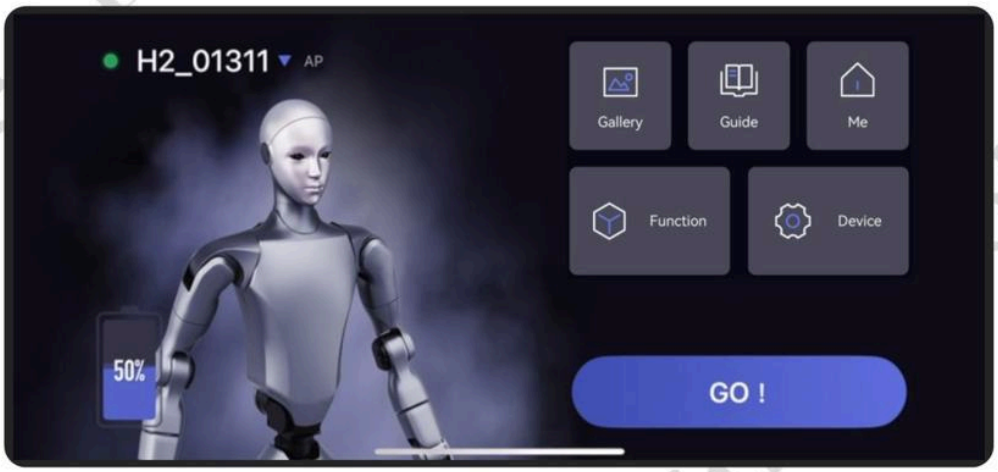


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5.6 Operate your H2

1) Using the Unitree Explore App to Operate the Robot

Click **[GO]** to enter the first-person perspective operation interface.



2) Using the Remote Controller to Operate the Robot

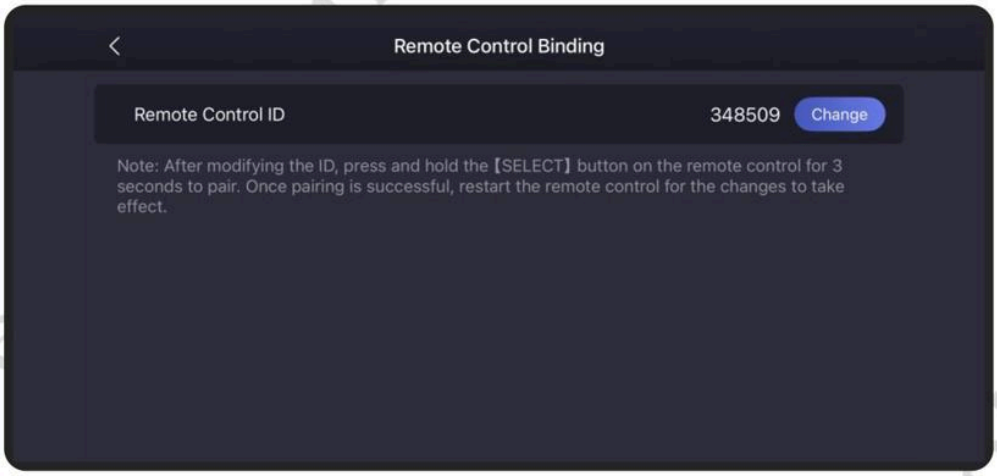
● Please scan the QR code to visit the Unitree Documentation Center and access the **remote controller binding operation video**.

First, briefly press the remote controller's power button once, then press and hold the power button for more than 2 seconds. You will hear a "beep" sound, indicating that the remote controller is powered on.

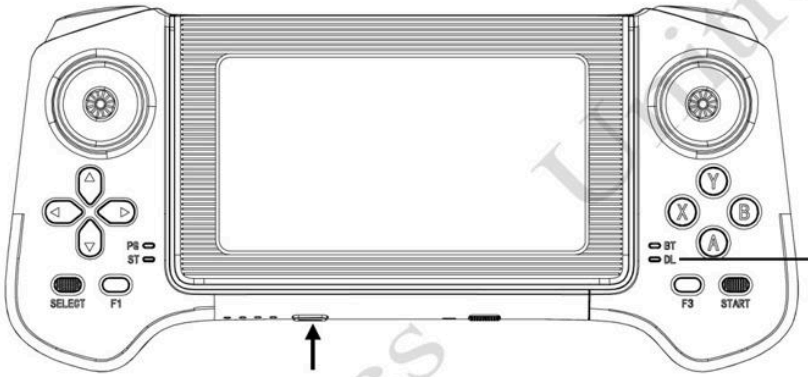
For first-time use, the remote controller needs to be bound via the Unitree Explore App. Go to **[Settings]** -> **[Remote Controller Settings]**, enter the corresponding remote controller code, and it will be bound to the data transmission module on the robot. Click **[Modify]** to switch to a different remote controller for operation. After switching, press and hold the **SELECT** button for 3 seconds to pair. Once paired successfully, restart the remote controller to begin use.



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After the remote controller is powered on and successfully connected to the H2, the DL indicator light on the right side will illuminate. This indicates that the remote controller is connected to the H2's data transmission module, and you can now use the commands on the remote controller's interface to operate the robot and perform corresponding actions.



3) Usage instructions for the remote controller emergency stop button.

Soft Emergency Stop

Press and hold **[L2+B]** for more than 5 seconds. The H2 will enter a damped state and slowly fall to the ground.

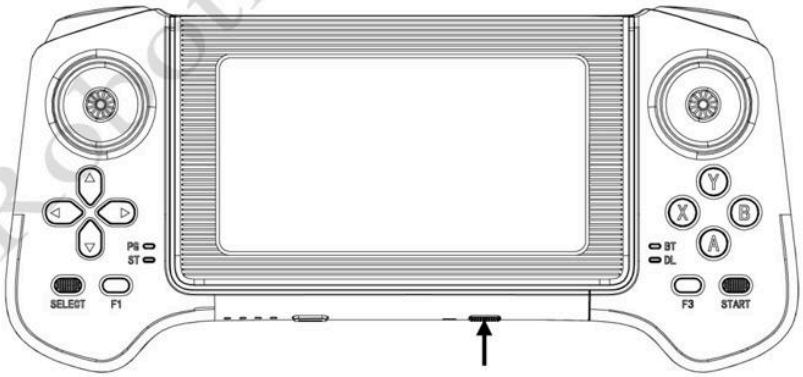
After activating the soft emergency stop, you can enter locked standing mode by pressing **[L2+**  **] - >** then proceed to use the robot normally.

Hard Emergency Stop

Press the **[Emergency Stop Button]** on the remote control, H2 enters emergency stop mode, the robot's joints are powered off, and the robot will lose power and fall to the ground directly.

After activating the hard emergency stop, you need to restart the robot's power before you can use the robot again.

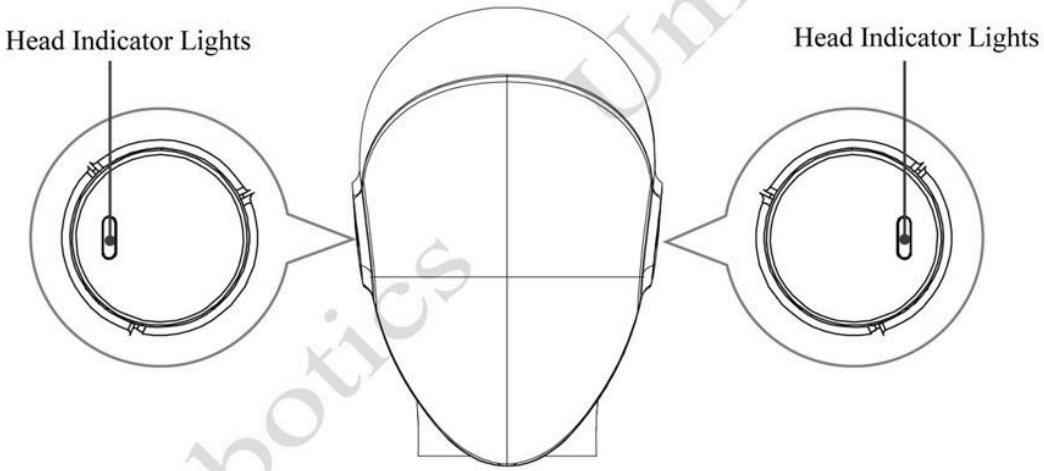
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Emergency Stop Button(New version remote control)

● After pressing the **[Emergency Stop Button]**, you must wait for 3 seconds or more before restarting the robot.

5.7 H2 Head Indicator Light Description



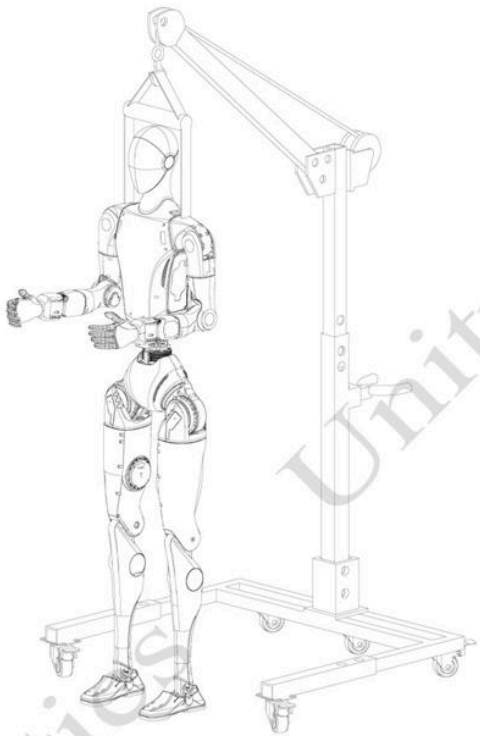
Color	Description
Cyan Breathing Light	Powering On/Starting Up
Blue Breathing Light	Recording In Progress
Green Breathing Light	Voice Command Received After Wake-Up
Blue Light Steady On	Balance Control
Orange Light Steady On	Damping Mode
Green Light Steady On	Seated Mode
Yellow Light Steady On	Debug Mode
Purple Light Steady On	Zero-Torque Mode
Dark Blue Light Steady On	Ready Mode

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5.8 Debugging Instructions

● Please scan the QR code to visit the Unitree Documentation Center to access the **H2 debugging video**.

When the H2 is in a suspended state and in damping mode, simultaneously press the L2+R2 buttons on the remote controller to enter debugging mode. Then, press L2+A, and the H2 will enter position mode and assume a specific diagnostic posture.



Press L2+B, and the H2 will enter damping mode. Press L2+B again, and it will enter zero-torque mode. This process can be used to confirm whether the H2 has successfully entered debugging mode or for hardware fault diagnosis. You can now begin development and debugging using the SDK.

● Please control the robot using the commands on the remote controller's overlay, or visit the Unitree Explore App to access the remote controller user manual. In the current system version, once the H2 is powered on, the built-in motion control program starts automatically, even if you are not operating the remote controller. This program periodically sends commands with zero velocity. However, if you use the SDK for low-level development in this state, command conflicts may occur, potentially causing the H2 to shake.

● Therefore, when you need to use the SDK for development and debugging, you must ensure the H2 has entered debugging mode to stop the motion control program from sending commands, thereby avoiding potential command conflicts. You can press L2+A to confirm if debugging mode is active.

● If the behavior after pressing L2+A does not match the instructional video, press L2+R2 multiple times to ensure entry into debugging mode.

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5.9 Calibration Instructions

● Please scan the QR code to visit the Unitree Documentation Center to access the **H2 calibration video**.

5.10 Switching off H2

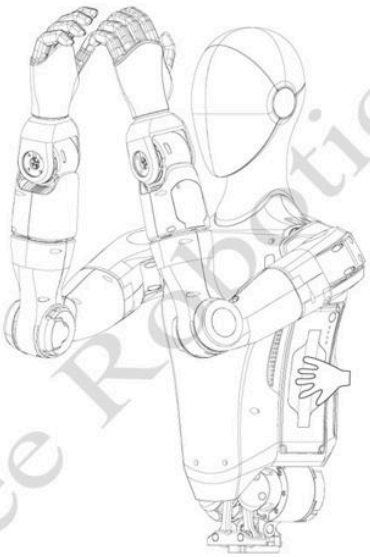
● Please scan the QR code to visit the Unitree Documentation Center to access the **power-on/power-off video**.

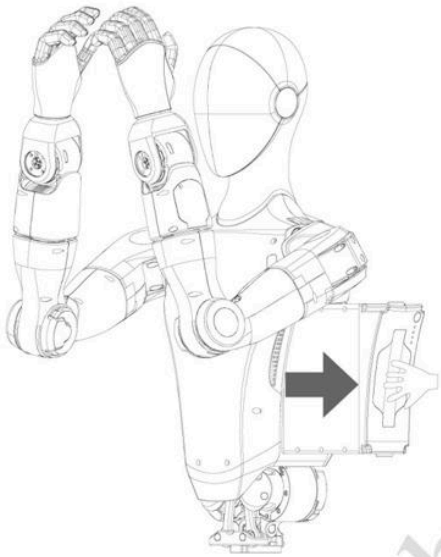
Before shutting down, it is essential to first re-suspend the H2 on the protective stand, ensuring the robot is in a static state (the robot is in the initial posture after successful startup, with no remote controller input, standing statically) and the suspension ropes are applying tension to the H2.

1) Press L2+B to put the H2 into damping mode again.

2) After the robot enters damping mode, briefly press the power button once, then press and hold the power button for more than 2 seconds to power off.

After powering off, if the H2 will not be used for an extended period, promptly remove the battery pack: pull the battery strap outward, and the battery pack will pop out for removal.





⚠ ● Ensure the robot is suspended on the protective stand, hanging in the air, and in damping mode before shutting down. Otherwise, when the robot powers off and loses power, it may fall heavily to the ground, potentially causing body damage and posing safety risks! If startup fails, please check if the robot's body is positioned correctly.

● Beware of pinching hazards near the moving joints! Proceed with caution!

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5.11 Packing

● Please scan the QR code to visit the Unitree Documentation Center and access the **unboxing video**.

Packing Instructions:

1) Suspend the H2 robot vertically and prepare the designated case.

2) Lift the thighs and calves of the H2 robot until they are level with the waist.

3) Slowly lower the suspension rope and rotate the two legs, allowing the H2 robot's legs to enter the case first.

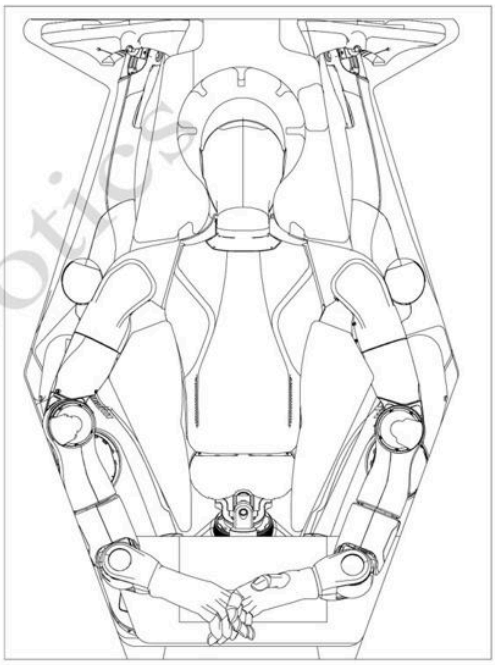
4) Continue lowering the rope until the robot's lower body is completely inside the case, ensuring the upper body can lie face down within the case.

5) Place the leg protective foam inside the case.

6) Position the two arms on the left and right sides of the robot.

7) Insert the hip protective foam and the top cover.

8) Secure impact protection for all contact surfaces of the robot, place related accessories such as the remote controller and charger inside, and complete the packing.



Robot placement Illustration

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6. Abnormal Condition Description

When using the H2 robot, the robot may be abnormal. Most abnormal situations are controllable (there are solutions). The users should not panic when encountering these problems. Read the following contents in detail and solve the problems step by step.

If you have any questions, please contact Unitree Robotics official technical support: https://global-serviceconsole.unitree.com/#/work-order

1) Unsuccessful Startup Self-Check

If the robot does not show any head movement after waiting for 2 minutes during suspended startup, it indicates initialization failure and unsuccessful startup. Re-examine the robot according to the "Pre-Startup Inspection" and "Pre-Startup Preparation" steps before attempting again.

2) Robot Fall Self-Protection

When using the official Unitree motion control program (controlling the robot with the remote controller), if the robot loses balance and falls due to external environmental factors (e.g., insufficient ground friction) or improper user operation, it will automatically switch to self-protection mode. The robot's motors will automatically engage the brake state to protect all components.

3) App Connection Exception

In AP Direct Connection mode: Check if the phone is connected to the AP hotspot emitted by the H2. If hotspot configuration fails, ensure the set hotspot name contains no special symbols or spaces. After ensuring the robot and phone are close together, restart both the robot and the App before attempting to connect again.

In Wi-Fi Connection mode: Check if the connected Wi-Fi network is functioning normally and has external internet access.

4) How to Shut Down the Robot When the Remote Module Fails

If unable to use the remote module to suspend the robot for standby due to remote module failure (e.g., remote controller or phone battery depletion), you can only force shutdown by pressing the battery power button.

Forced Shutdown Procedure: Suspend the robot on the protective stand with its feet off the ground. Maintain a safe distance of at least 2 meters from obstacles, complex terrain, crowds, water surfaces, etc. Briefly press the battery power button once, then immediately press and hold it for more than 2 seconds to power off.

5) Robot Prone to Falling While Walking

This may be caused by using an incorrect startup posture, leading to erroneous motor angles. Use the correct startup posture and restart the robot. If restarting does not resolve the issue, follow the relevant steps in the Unitree Explore App to recalibrate the robot's joints.

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Note: The H2 is calibrated by default upon leaving the factory. Do NOT perform joint calibration during normal use! If the H2 exhibits abnormal behavior, consult Unitree official technical support first to determine whether joint recalibration is necessary!

The App joint calibration entry is: [Settings] -> [Data] -> [Robot] -> [Calibration].

6) How to Maintain Long-Term Standby

If long-term standby is required, suspend the robot and control it into damping mode (press L2+B) to prevent damage from the robot falling due to automatic shutdown from low battery!

⚠ ● Caution! When lifting the robot, do not place your hands near the joints, such as the hip joints, to avoid pinching hazards!

● If a forced shutdown is performed while the robot is standing without protective measures, it will fall flat to the ground after power loss.

7. Precautions

1) **Regarding Runtime:** The robot's overall operational runtime is approximately 3 hours. The specific duration depends on the actual operating conditions. For example, prolonged walking at higher speeds, frequent and intense adjustments of the body posture while standing, standing with legs bent, operation under load, walking at a lower body height, and operation on terrain with moderate unevenness or slopes will all reduce the runtime.

2) **R egarding Uneven Terrain:** When the robot is walking on complex ground or terrain with some unevenness or slopes, the operator should reduce the robot's walking speed and control it carefully to prevent the robot from tripping.

3) **Regarding Speed:** The maximum running speed on flat terrain under stable control can reach 3m/s. Please stay clear of crowds when operating the robot to run!

4) When the robot is in motion, please keep the surrounding area clear. Use a tether or protective stand whenever possible to prevent tripping, which could cause damage to the machine, people nearby, or objects. Do not touch the robot while it is moving or being transported! Beware of pinch hazards near the joints, such as the knee joints.

⚠ ● The maximum running speed of 3m/s is achieved under specific configurations; for safety reasons, the speed is limited in practice.

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8. Daily Care and Maintenance

8.1 Whole Machine Clean

1) Cleaning: After using the H2, promptly clean the surface of the unit if there are any stains. Ensure the power is off before wiping. Use a dry, clean, soft cloth to wipe the body, paying special attention to ensuring the surfaces of the cameras and lidar are clean.

2) Storage: The H2 is not dustproof or waterproof. It should be stored indoors in a dry, cool place, avoiding direct sunlight and rain to prevent water ingress, corrosion of components, and shortened service life. Remove the battery pack for long-term storage.

8.2 Inspection and Maintenance

Carrying out routine inspection before and after operation can greatly improve the reliable performance of products, reduce potential safety hazards and extend the service life span.

Uncharged checklist

Type	Main points
Appearance of the whole robot	1) Whether the appearance of the body is clean and free of damage or deformation marks. 2) Whether the lens on the camera surface has foreign matters.
Structure	1) Visually and touch to check whether the body, joints, connections, and foot end parts are in good condition. If there are cracks or damages, replace them in time and contact Unitree Robotics after-sales service. 2) Ensure that the screws of all connecting parts are locked, especially the screws of joint connectors and battery locking knobs. 3) Check for any obstructions in the intake and exhaust of the cooling fan.
Battery packs	1) Check the battery pack interface of the body for foreign matters and deformation. 2) Whether the battery pack is installed reliably to ensure that it will not loosen during operation. 3) Check whether the battery pack shell is obviously damaged. The battery pack with obvious damage is forbidden to be used.
Remote Control	1) Whether the remote control rocker is in the middle position and whether the rocker enters sand and other foreign matters. 2) Check whether each key of the remote control is lagged.

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Charged checklist

Type	Main points
Remote control	1) Confirm whether the basic operation function of the rocker is normal. 2) Confirm whether the current power is sufficient
Battery	Confirm whether the current power is sufficient.
Cooling fan	Listen carefully with ears to confirm that the cooling fan works normally and there is no sound such as scratching.

Battery Pack Maintenance

1) Never charge the battery pack in an environment where the temperature is too high or too low

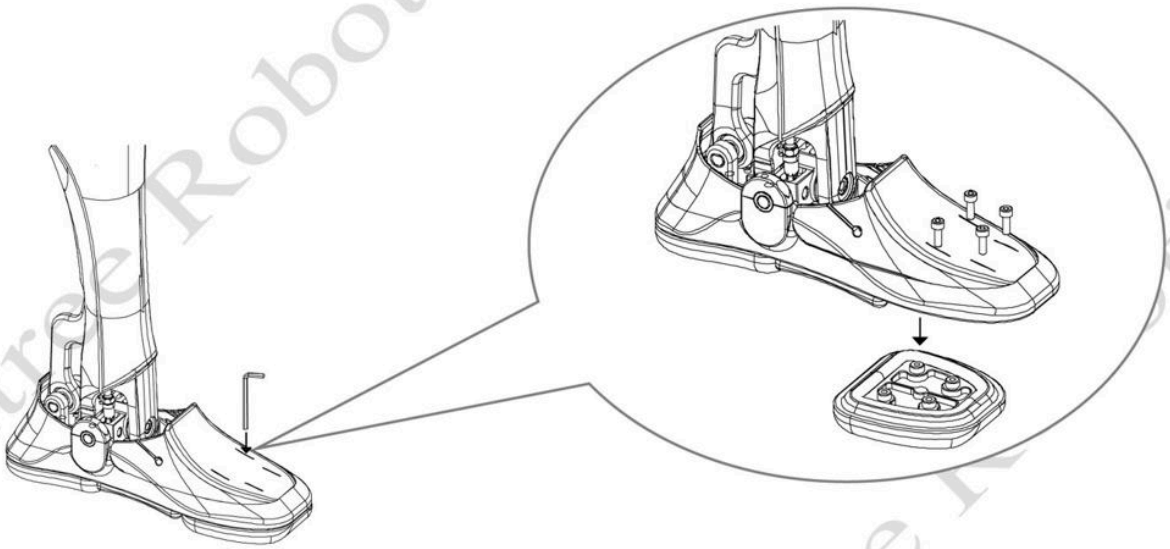
2) Never store the battery pack at room temperatures above 40°C.

3) Do not overcharge the battery pack as this will cause damage to the cells.

4) If you do not use the battery for a longer period of time, please check the remaining battery power regularly, if the power is less than 30%, please charge the battery to 70% before continuing to store. So as not to over-discharge the battery and damage the battery.

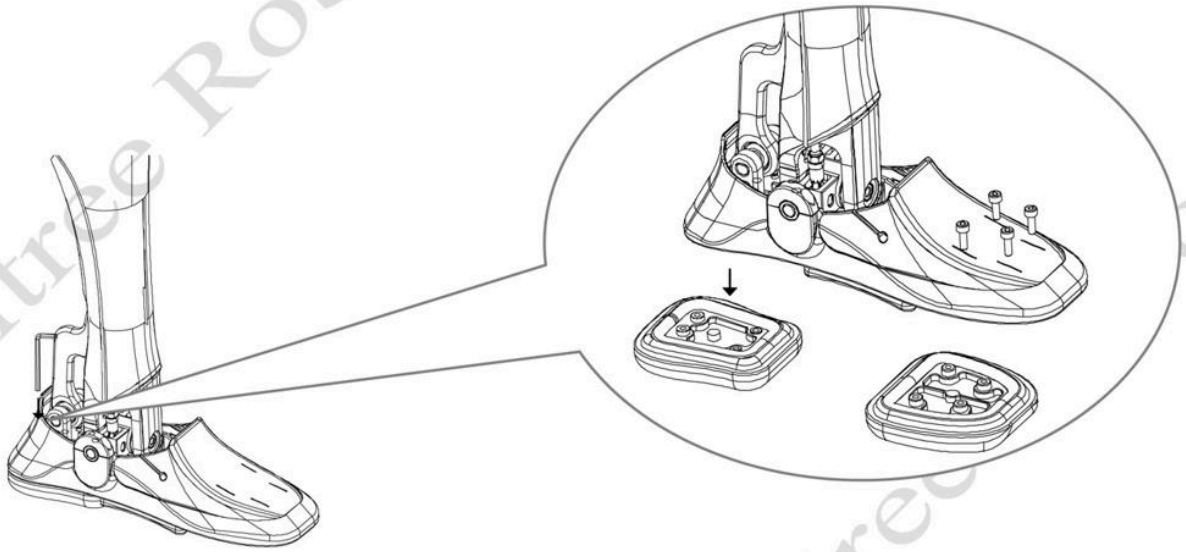
Foot Airbag Replacement

1) Insert an M4 wrench through the four openings on the front foot's soft rubber cover to loosen the fixing bolts of the front footpad soft rubber.

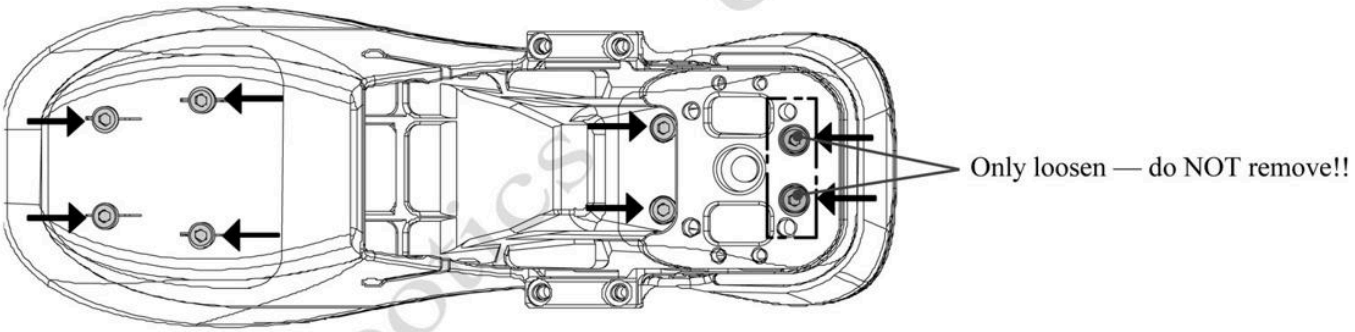


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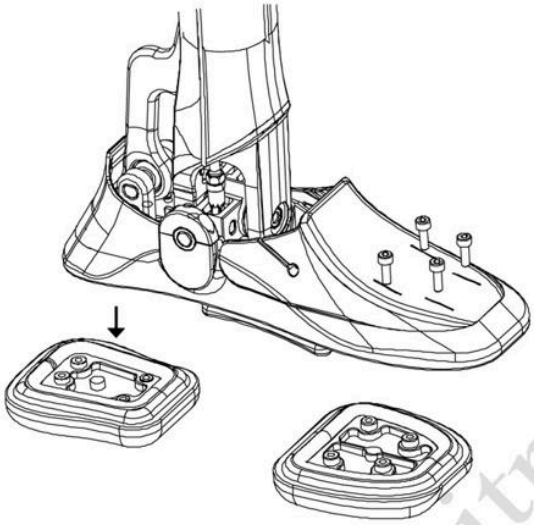
2) Insert an M4 wrench through the structural gap on the back of the rear foot to loosen the fixing bolts of the rear footpad soft rubber.



3) As shown in the diagram, to remove the front and rear footpad soft rubber, eight bolts need to be removed. The two bolts inside the dashed box should only be loosened and must not be fully removed!

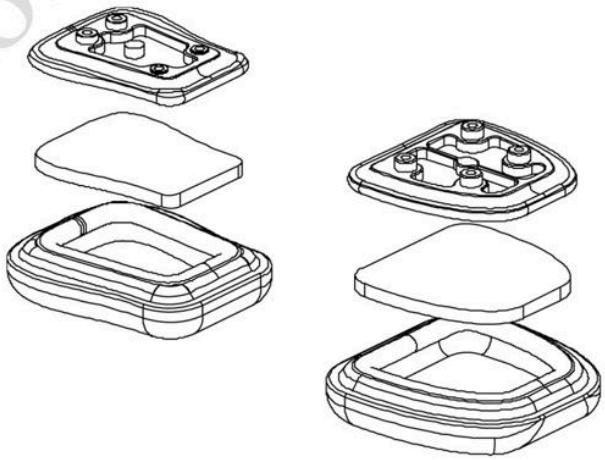


4) After removing the eight bolts, the soft rubber and its accompanying metal parts can be taken off.



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5) The metal parts and soft rubber can be directly separated. After replacing the soft rubber, reinstall the metal parts and cushioning components in their original positions.



9. Product Warranty

9.1 Warranty Description

1) Unitree is introducing a warranty of up to 12 months for all of our products from the date of purchase (the period varies from models, please refer to commodity detail page). Unitree charges repair costs for the products out of warranty period.

2) Please ensure that the product is properly packed before its delivery. We are not responsible for any damage or loss during delivery.

3) Unitree reserves the right to refuse service or charge for repair and service fees if any of the following occurs, even if the product is within the warranty period:

a) Damage caused by usage deviating from the product manual.

b) Damage caused by usage under abnormal conditions, such as heat, freezes, corrosion, fire, soak and sands.

c) Damage caused by equipment removal, repair, customization, or other operations undertaken by personnel or service providers without the authorization of Unitree.

d) Damage caused by operator error or negligence, natural disasters or theft.

e) Damage caused by defective equipment with damaged product label or natural wear.

9.2 Warranty Coverage

	Warranty Coverage	Warranty Period
H2	Full Insurance	8 Months
H2 EDU	Full Insurance	12 Months

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Industry Canada

This device complies with Industry Canada licence-exempt RSS standard(s):

Operation is subject to the following Two conditions:(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux

appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi,même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

RESTRICTIONS IN THE 5 GHZ BAND

Within the 5.15 to 5.25 GHz band, UNII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel Mobile Satellite System (MSS) operations.

RESTRICTIONS DANS LA BANDE DE 5 GHZ

Dans la bande de 5,15 à 5,25 GHz, les appareils UNII seront restreints aux opérations intérieures pour réduire toute possibilité d'interférence pouvant nuire aux opérations du Système satellite mobile dans le même canal(MSS).

RF Exposure

RF Radiation Exposure Statement Caution: This Transmitter must beinstalled to provide a separation distance of at least 20 cm from all persons.

Déclaration d'exposition Attention: Cet émetteur doit être installé pour fournir une distance de séparation d'au moins 20 cm de toute personne.

FCC Statement

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 Federal Communications Commission (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

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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.

Changes or modifications to this equipment not expressly approved by the Party responsible for compliance could void the user's authority to operate the equipment.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation. Privacy of communications may not be ensured when using this device.

General Information

RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.

Radio Frequency Specifications

Specifications

2.4GHz Wi-Fi (2412-2472MHz): 20dBm (EIRP)

Bluetooth(2402-2480MHz): 20dBm (EIRP)

2.4GHz SRD (2400.8-2480MHz) : 14dBm (EIRP)

Sub 1GHz Bands (865-868, 868-868.6, 869.4-869.65, 869.7- 870MHz): 14dBm (ERP)

5GHz Wi-Fi: 5150-5250MHz: 23dBm (EIRP) 5250-5350MHz, 5470-5725MHz: 20dBm (EIRP) 5725-5850MHz: 14dBm (EIRP)

Wi-Fi 5150-5350MHz frequency range is limited to indoor use in all EU/EFTA member states and Turkey.

RF exposure:

The equipment complies with radiation exposure limits set for an uncontrolled environment. To avoid the possibility of exceeding radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm during normal operation. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

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BE	BG	CZ	DK	DE	EE
IE	EL	ES	FR	HR	IT
CY	LV	LT	LU	HU	MT
NL	AT	PL	PT	RO	SI
SK	FI	SE	UK (NI)	TR	NO
CH	IS	LI			

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

The appliance is only to be used with the power supply unit provided with the appliance.

ANATEL Res. 680 RF warning sentence

The equipment complies with radiation exposure limits set for an uncontrolled environment. To avoid the possibility of exceeding radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm during normal operation. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

ANATEL website:

Para maiores informações, consulte o site da ANATEL http://www.gov.br/anatel/pt-br.

Revision History

Edition	Date	Modify Content
1.1	July, 2, 2026	1) Added front foot airbags and rear foot airbags along with replacement instructions. 2) Interface description updated. 3) Added certification content.
1.0	May 29, 2026	Initial Version

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