H1 Remote Control

User Manual V2.2

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.

User Notice

Starting from December 2024, the R1 remote control has been fully upgraded to the new R3 remote control. The operation method of the new remote control remains consistent with the old version, ensuring a seamless transition and allowing you to enjoy the convenience brought by the upgrade.
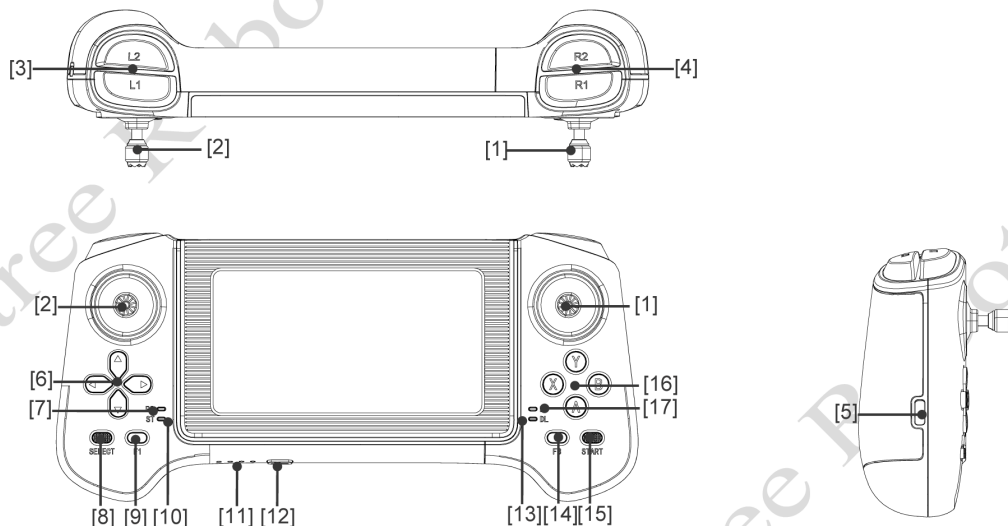
Both the new and old versions of the remote control will be shipped randomly, please refer to the actual product received. Thank you for your support.
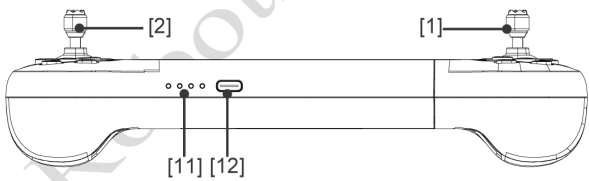
R3 Remote Control

Introduction

The R3 remote control is part of the H1 remote control module, and the remote control handle is equipped with a digital transmission module and a Bluetooth module. The robot and the remote control are bound through the Unitree Explore App, and once successfully bound, they can be connected upon powering on. It can control the robot to achieve 3-axis posture and 3-axis position stability when standing, and can also control the robot to move forward, backward, left, right, turn in place, and walk according to certain rules (straight line, circular, linear, rectangular) on flat ground, as well as go up and down slopes/steps. The remote control handle adopts a more ergonomic design for easier grip, providing a more comfortable feel.

Parts Name

[1] Right Rocker   [2] Left Rocker   [3] Key L1/L2   [4] Key R1/R2   [5] Type C Charging Interface

[6] Left Key   [7] Power Connect Indicator   [8] SELECT   [9] F1 (Function Setting Key)

[10] Charging Status Indicator   [11] Power Connect Indicator   [12] Power Button

[13] Data Transmission Indicator Light   [14] F3 (Function Setting Key)   [15] START

[16] Right Key   [17] Bluetooth Signal Indicator Light

Technical Specifications

Parameter	Specification	Remarks
Charging Voltage	5.0V	
Charging Current	700mA	
Lithium Battery Capacity	780mAh	
Communication Mode	Data Transmission Module, Bluetooth	
Running Time	5h	
Remote Control Distance	Above 100m	Open Environment

Install the joystick

Step 1: Take out the joystick. As shown in the picture, use your right hand to pull out the remote control smoothly and slowly, and remove the two joysticks from the storage slot.
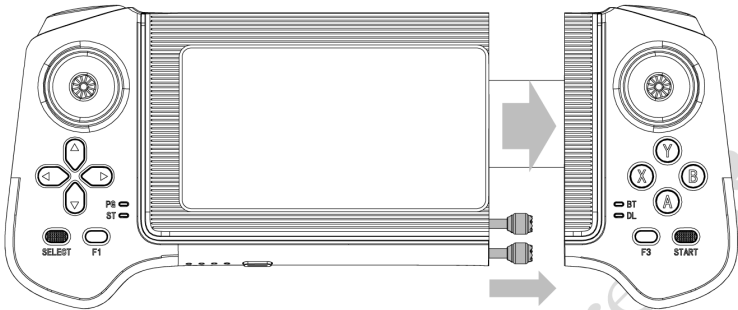
Step 2: Install the joystick. As shown in the figure, secure the remote control to the remote control in a clockwise direction and tighten it.
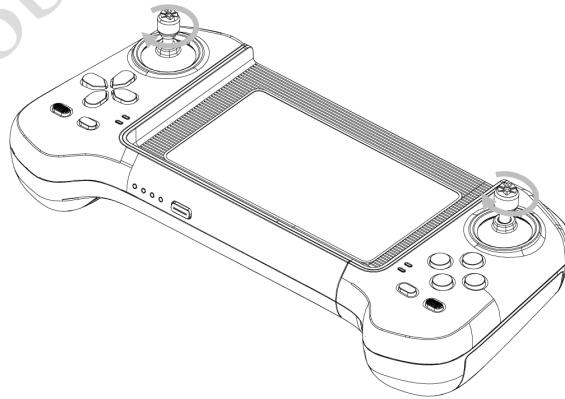
☼ ● If you need to store it, please remove the remote control and place it in the storage slot.
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Remote Control Handle Rocker Calibration

Hold the remote control without touching the rocker, press the upper buttons F1 and F3 on the remote control and release them at the same time. At this time, the remote control will emit a continuous "beep~beep~" sound (1 time/sec) to indicate that it has entered the calibration mode. After entering the calibration mode, the users need to turn the left and right rockers to full rudder and rotate several times until the sound of "beep~beep~" stops, and the calibration is ready. Press F3 once to make the calibration take effect and complete the calibration.

☼ ● Attention! When calibrating the remote rod, please do not touch the rocker before calibration. The rocker can only be moved after entering the calibration mode.

Remote Control Turn on/Turnoff

Turn on the remote control: Shortly press the power button once, then long press the power button for more than 2 seconds, and hear two "beeps", which means the remote control is turned on.

Turn off the remote control: Shortly press the power button once, then long press the power button for more than 2 seconds, and hear three "beeps", which means the remote control is turned off.
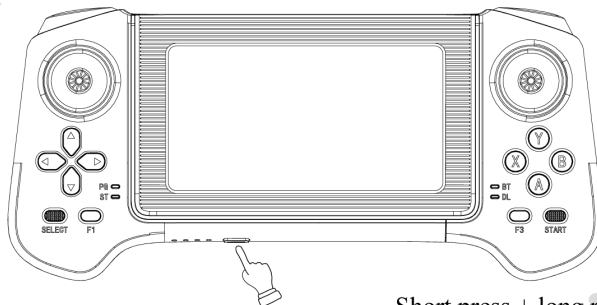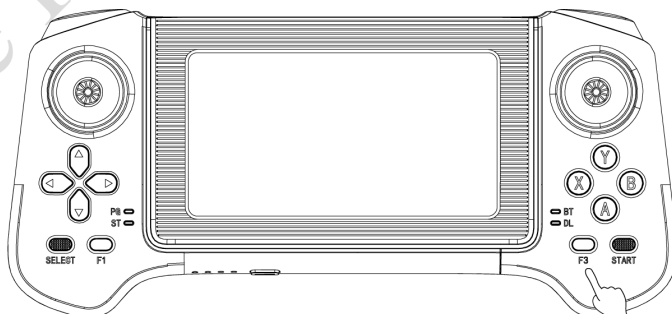

Short press + long press for 2 seconds or more

Vibration/Sound Toggle

Switching vibration: Quickly press the F3 button 3 times to switch to vibration mode.

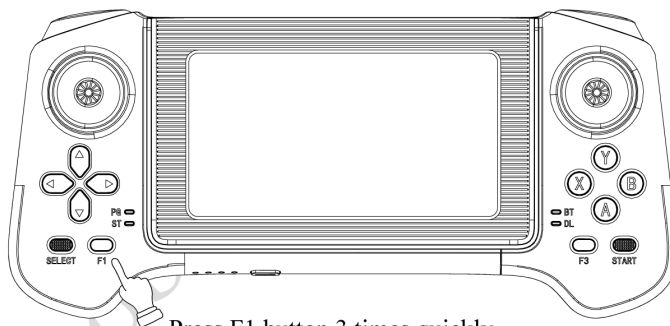**Switch sound:** Quickly press the F3 button 3 times to switch to sound mode.

Press F3 button 3 times quickly

Vibration/Sound Switch

Turn off vibration/sound: Quickly press the F1 button 3 times to turn off vibration/sound.

Turn on vibration/sound: Quickly press the F1 button 3 times to turn on vibration/sound.

Press F1 button 3 times quickly

⚬ ● After modifying the remote control feedback function, it is not saved by default. If you want the changes to take effect the next time you turn on the remote control, hold down the F1 button during shutdown to save the current mode.

Remote Control Charging

When the remote control battery indicator shows low power, the remote control should be connected to the charger, as shown in the figure below:
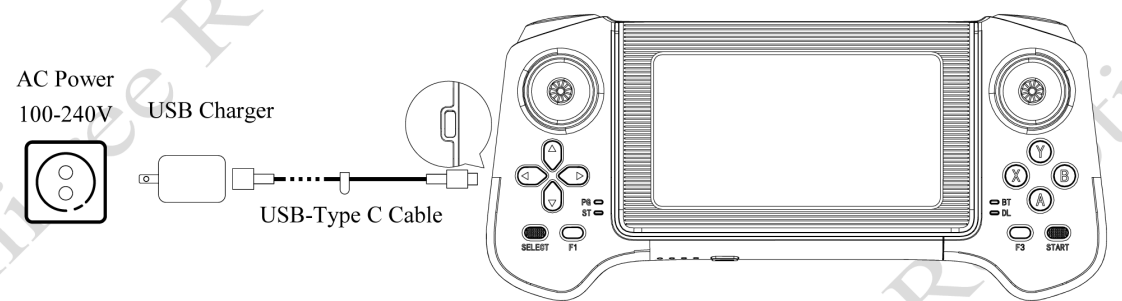

a) We recommend you to use a 5V/2A USB charger which meets FCC/CE standard.

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

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

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

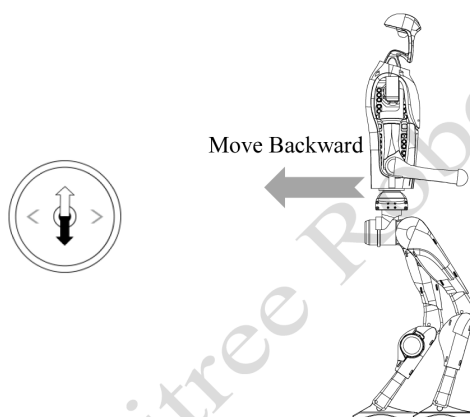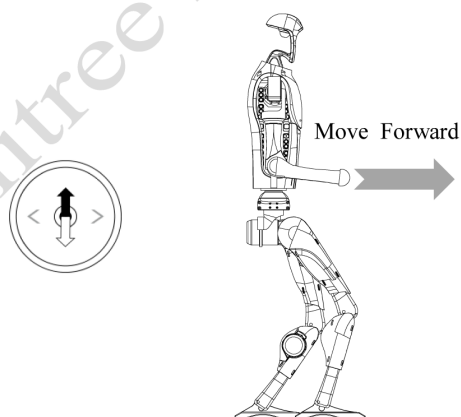| Charging Indicator Light				
LED1	LED2	LED3	LED4	Current Battery
☀	○	○	○	0%-25%
☀	☀	○	○	25%-50%
☀	☀	☀	○	50%-75%
☀	☀	☀	☀	75%-100%
☀	☀	☀	☀	Full Charged

R3 Remote Control Basic Operation

To use the remote control for the first time, you need to bind the remote control in the Unitree Explore App. Go to [Settings], turn on the remote control switch, enter the corresponding remote control code, and then the remote control can be bound to the digital transmission module on the robot.
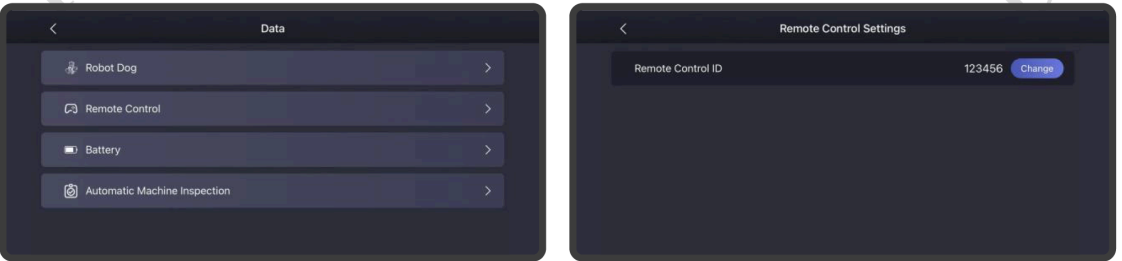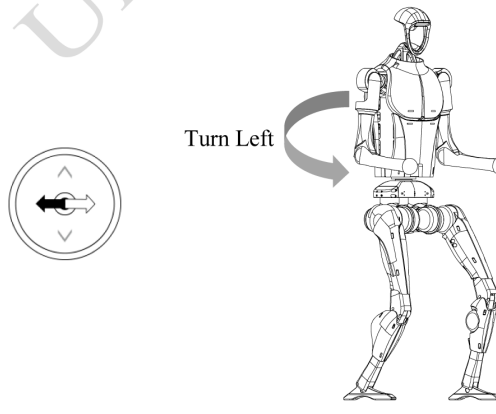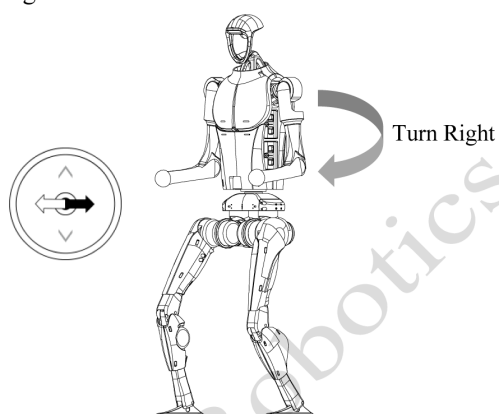
    Once the remote control is powered on and successfully connected to H1, the right DL indicator light is on. This indicates that the remote control is connected to the H1 digital transmission module, and you can now control H1 with the remote control. When using the remote control to maneuver H1 with the joysticks, the control methods are as follows:
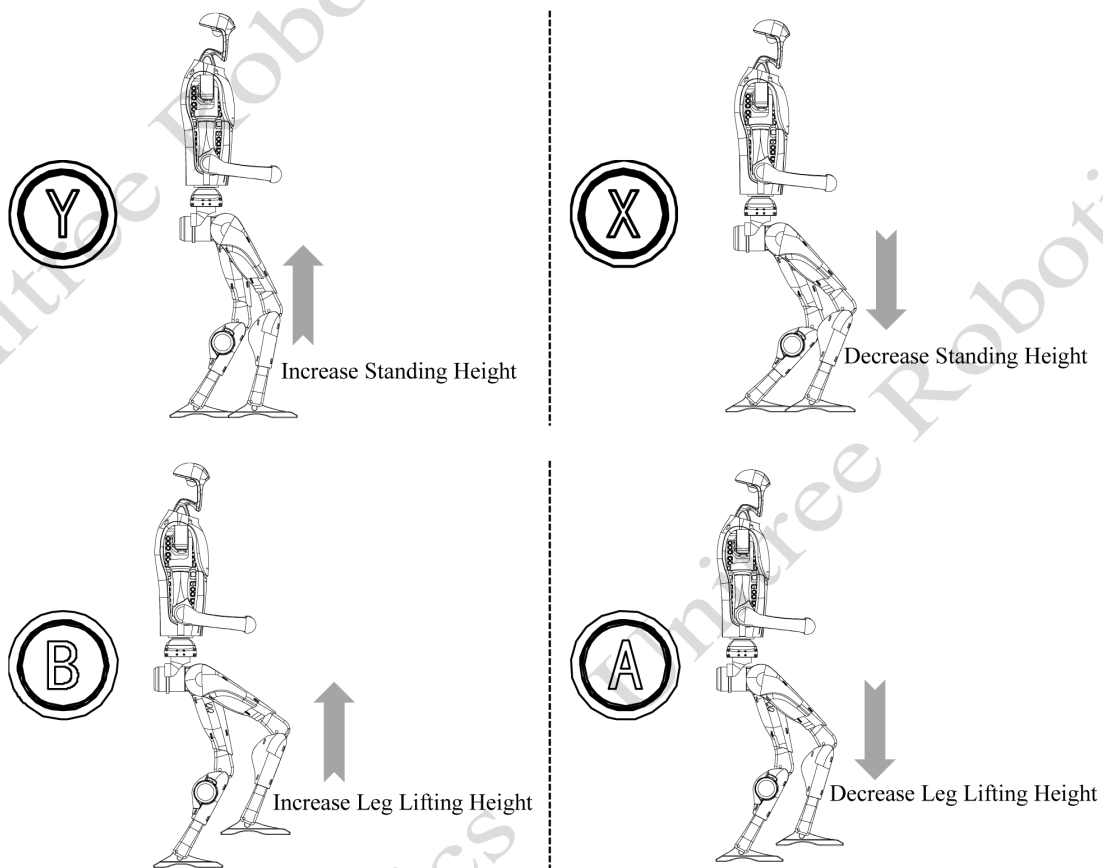
Left rocker

Move Forward

Move Backward

Right rocker

Turn Right

Turn Left

Key

(Y) Increase Standing Height

(X) Decrease Standing Height

(B) Increase Leg Lifting Height

(A) Decrease Leg Lifting Height

START Switch between continuous walking mode/standing mode

- Rocker back to center/neutral position: The rocker of the handle is in the middle position.
- Rocker amount: The deviation of the remote Quadruped control rocker from the center of the rocker.
- Walls, doors, and other obstacles greatly weaken the signal between the robot and the remote control module. Please be sure to operate the robot in an open space.
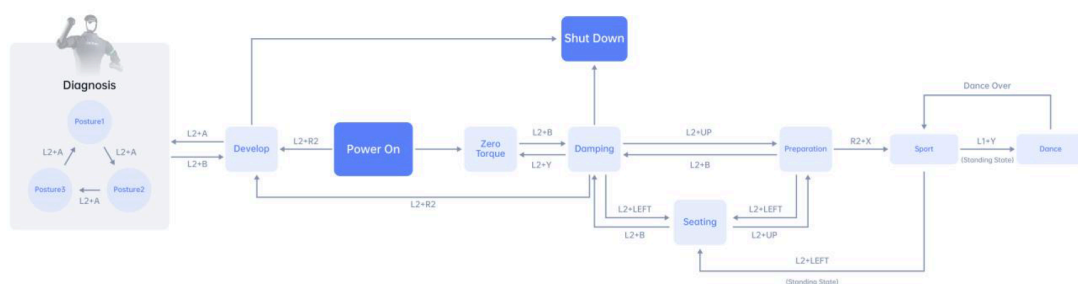

Concept description:

Concept	Description
Zero Torque Mode	All motors of the robot stop active motion, and there is no damping feeling when swinging.
Damping Mode	All motors of the robot stop active motion, and there is a clear damping feeling when swinging, which can enter the ready mode.
Seating Mode	The robot will slowly enter a seated position within 5 seconds.
Ready Mode	The robot will slowly swing out the preparatory posture before the motion mode within 5 seconds.
Motion Mode	A mode in which the robot can be controlled to move by a remote control.
Standing Mode	In this mode, when the joystick instruction is zero, the robot stops stepping and enters the standing state; when the joystick instruction is not zero, or the robot is disturbed and difficult to maintain balance, the robot will start to take steps.
Dance Mode	Whole-body dynamic coordinated dance Reference Video.
Debug Mode	For bottom-level development. When you need to use the SDK for development and debugging, please make sure that H1 has entered the debug mode to stop the motion control program from sending commands, which can avoid potential command conflicts. You can press L2+A to confirm whether you have entered the debug mode.

> ⚠️ ● The robot's current walking mode does not include the function for climbing stairs. Please avoid having the robot climb stairs at will to prevent damage to the robot.

Mode switch:

> 💡 ● Attention! When entering the seating mode, it is necessary to press against the robot back, and push the robot back when cutting out this mode.

Key Description:

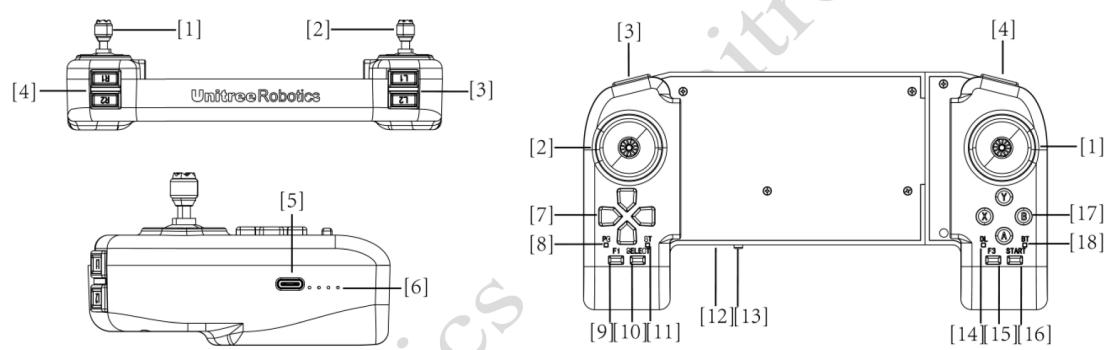| Mode	Button	Description
General	L2 + B	Enter Damping Mode
	L2 + R2	Enter Debug Mode
Damping Mode	L2 + UP	Enter Ready Mode
	L2 + Y	Enter zero torque mode
Motion Mode	R2 + X	Enter Motion Mode
	Left Joystick	Translational velocity command (v_x, x_y)
	Right Joystick Horizontal	Yaw angular velocity command (ω_{yaw})
	X	Decrease standing height
	Y	Increase standing height
	A	Decrease leg lifting height
	B	Increase leg lifting height
	START	Switch between Continuous Walking Mode and Standing Mode
	L1 + Y	Enter dance mode and automatically return to motion mode after the dance ends
	SELECT + A	Handshake
	SELECT + Y	Wave Hand
	L2 + LEFT	Sit Down
Develop mode	L2 + A	Perform position control, control the robot to perform diagnostic actions
	L2 + B	Stop the diagnostic action, and the robot enters the damping state
Function	F3 (Pressed 3 times)	Sound/Vibration Toggle
	F1 (Pressed 3 times)	Sound/Vibration Switch

> ⦿ ● If the R3 remote control is not connected to the robot or phone after turning on, it will automatically shut down within 10 minutes if there is no operation. If you need to connect and use it, please turn it on again.

R1 Remote Control

Introduction

The remote control is part of the H1 remote control module, and the remote control handle is equipped with a digital transmission module and a Bluetooth module. The robot and the remote control are bound through the Unitree Explore App, and once successfully bound, they can be connected upon powering on. It can control the robot to achieve 3-axis posture and 3-axis position stability when standing, and can also control the robot to move forward, backward, left, right, turn in place, and walk according to certain rules (straight line, circular, linear, rectangular) on flat ground, as well as go up and down slopes/steps. The remote control handle adopts a more ergonomic design for easier grip, providing a more comfortable feel.

Parts Name

[1] Right Rocker   [2] Left Rocker   [3] Key L1/L2   [4] Key R1/R2   [5] Type C Charging Interface

[6] Data Transmission Signal Light   [7] Left Key   [8]Power Connect Indicator

[9]F1 Left Rocker Calibration Key   [10]SELECT   [11]Charging Status Indicator   [12]Power Indicator Light

[13] Power Button   [14] Data Transmission Indicator Light   [15] F3 Right Rocker Calibration Key

[16] START   [17] Right Key   [18] Bluetooth Signal Indicator Light

Technical Specifications

Parameter	Specification	Remarks
Charging Voltage	5.0V	
Charging Current	2A	
Lithium Battery Capacity	2500mAh	
Communication Mode	Data Transmission Module, Bluetooth	
Running Time	4.5h	
Remote Control Distance	Above 100m	Open Environment

Remote Control Handle Rocker Calibration

Hold the remote control without touching the rocker, press the upper buttons F1 and F3 on the remote control and release them at the same time. At this time, the remote control will emit a continuous "beep~beep~" sound (1 time/sec) to indicate that it has entered the calibration mode. After entering the calibration mode, the users need to turn the left and right rockers to full rudder and rotate several times until the sound of "beep~beep~" stops, and the calibration is ready. Press F3 once to make the calibration take effect and complete the calibration.

> ☼ Attention! When calibrating the remote rod, please do not touch the rocker before calibration. The rocker can only be moved after entering the calibration mode.

Remote Control Turnon/Turnoff

Turn on the handheld remote control: Shortly press the power button once, then long press the power button for more than 2 seconds, and hear a "beep", which means the remote control is turned on.

Turn off the handheld remote control: Shortly press the power button once, then long press the power button for more than 2 seconds, and hear three "beeps", which means the remote control is turned off.

Remote Control Charging

When the handheld remote control battery indicator shows low power, the handheld remote control should be connected to the charger, as shown in the figure below:
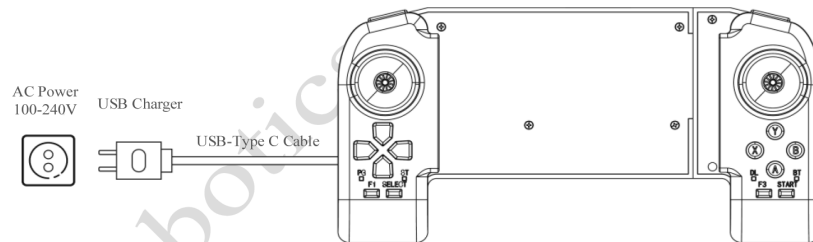
e) We recommend you to use a 5V/2A USB charger which meets FCC/CE standard.

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

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

h) When the power indicator light is all off 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%
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To use the remote control for the first time, you need to bind the remote control in the Unitree Explore App. Go to **[**Settings**]**, turn on the remote control switch, enter the corresponding remote control code, and then the remote control can be bound to the digital transmission module on the robot.
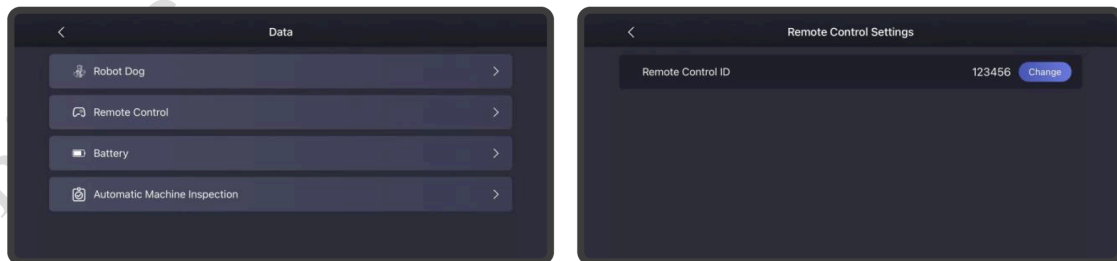
Once the remote control is powered on and successfully connected to H1, the data transmission light on the left side will be fully illuminated. This indicates that the remote control is connected to the H1 digital transmission module, and you can now control H1 with the remote control. When using the remote control to maneuver H1 with the joysticks, the control methods are as follows:

Left rocker

Move Forward

Move Backward

Right rocker

Turn Right

Turn Left

Key

Increase Standing Height

Decrease Standing Height

Increase Leg Lifting Height

Decrease Leg Lifting Height

Switch between continuous walking mode/standing mode

● Rocker back to center/neutral position: The rocker of the handle is in the middle position.

● Rocker amount: The deviation of the remote Quadruped control rocker from the center of the rocker.

● Walls, doors, and other obstacles greatly weaken the signal between the robot and the remote control module. Please be sure to operate the robot in an open space.

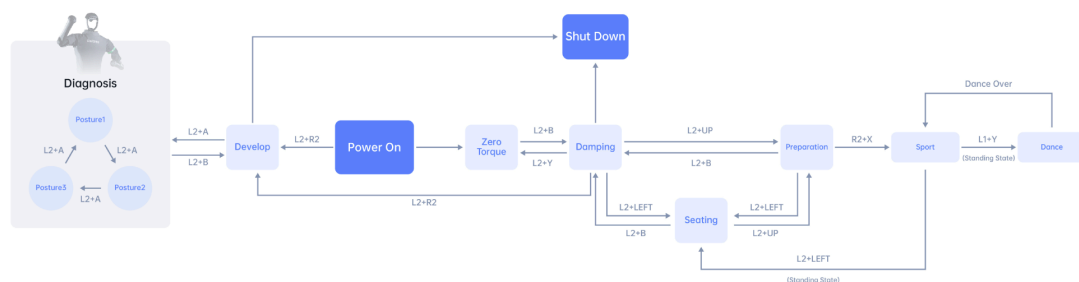**Concept description:**

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⚠️ ● The robot's current walking mode does not include the function for climbing stairs. Please avoid having the robot climb stairs at will to prevent damage to the robot.

Mode switch:

💡 ● Attention! When entering the seating mode, it is necessary to press against the robot back, and push the robot back when cutting out this mode.

Key Description:

Mode	Button	Description
General	L2 + B	Enter Damping Mode
	L2 + R2	Enter Debug Mode
Damping Mode	L2 + UP	Enter Ready Mode
	L2 + Y	Enter Zero Torque Mode
Motion Mode	R2 + X	Enter Motion Mode
	Left Joystick	Translational velocity command (v_x, x_y)
	Right Joystick Horizontal	Yaw angular velocity command (ω_{yaw})
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	Y	Increase standing height
	A	Decrease leg lifting height
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	START	Switch between Continuous Walking Mode and Standing Mode
	L1 + Y	Enter dance mode and automatically return to motion mode after the dance ends
	SELECT + A	Handshake
	SELECT + Y	Wave Hand
	L2 + LEFT	Sit Down
Develop mode	L2 + A	Perform position control, control the robot to perform diagnostic actions
	L2 + B	Stop the diagnostic action, and the robot enters the damping state
Function	F3 (Pressed 3 times)	Sound/Vibration Toggle
	F1 (Pressed 3 times)	Sound/Vibration Switch

Revision History

Version	Date	Modification Content
2.2	April 18, 2025	Remote Control Button Update: 1. Damping Mode: L2 + B 2. Zero Torque Mode: L2 + Y 3. Ready Mode: L2 + UP 4. Dance Mode: L1 + Y 5. Handshake: SELECT + A 6. Wave Hand: SELECT + Y New Remote Control Commands Added: Sit Down: L2 + LEFT
2.1	March 10, 2025	New Remote Control Commands Added: 1. Handshake: Double-click UP 2. Wave Hand: Double-click DOWN
2.0	December 9, 2024	Instructions for Using the R3 Remote Control Added
1.0	May 20, 2024	Initial Version