

TRON 2 Dual-Arm Robot Teleoperation Quick Start Guide

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Quick Start Guide V1.0



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LIMX DYNAMICS
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Safety Information and Disclaimer

- 1. Read Before Use:** Read and understand this guide and the **TRON 2 User Manual**, available in the Documentation Center on the LimX Dynamics website, before operating the robot.
- 2. Operator Responsibility:** This product integrates motor drives and moving parts, and its robotic arms move quickly with significant force. Only trained personnel may operate it, for lawful and compliant purposes only. The user is liable for injury, property damage, or third-party loss caused by improper use, unauthorized modification, or operation in hazardous environments.
- 3. Safe Operating Environment:** Keep everyone outside the robot's operating range and the robot within your line of sight at all times. Keep it away from moisture, flammable or explosive materials, and strong electromagnetic interference.
- 4. Emergency Stop Awareness:** Before operation, locate the Remote Emergency Stop and the robot's Emergency Stop Button and learn how to use them.
- 5. Revisions:** This guide may be revised as firmware and features update. Always use the latest version published by LimX Dynamics.



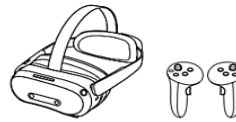
An Emergency Stop cuts power to all motors instantly, and unsupported arms may drop. Keep people and fragile objects clear of the robot.

1. Preparation and Power-On

1.1 Prepare the Equipment



Remote Controller:
Used for Mode Switching,
Emergency Stop, and Zero Calibration.

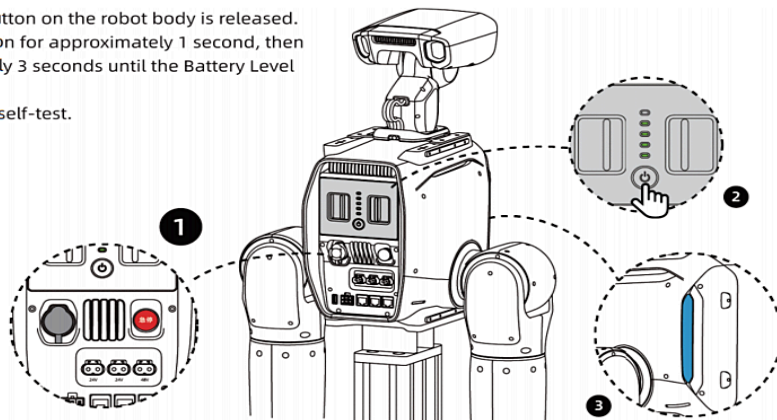


PICO 4 Ultra VR device:
Used to control robot motion tracking, grippers,
Data Collection, and other functions.

- **TRON 2 Dual-Arm Robot:** Connect the Power Adapter to the External Power Supply Port on the robot body, then connect it to a 220 V AC power supply. For the Mobile Dual-Arms Version, turn on the power switch at the rear of the Mobile Base.

1.2 Power On the Robot

1. Make sure the Emergency Stop Button on the robot body is released.
2. Short-press the robot Power Button for approximately 1 second, then press and hold it for approximately 3 seconds until the Battery Level Indicator turns on.
3. Wait for the robot to complete its self-test.



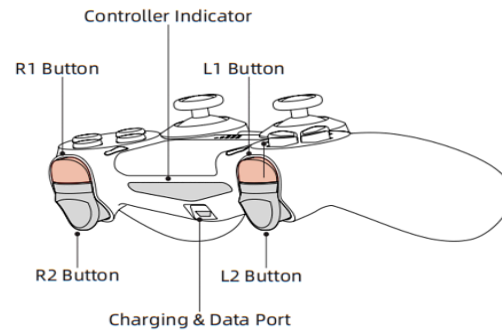
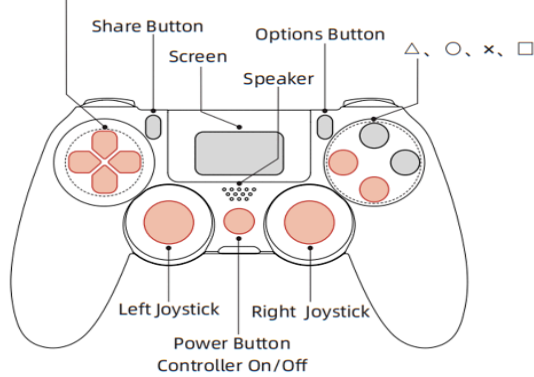
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2. Remote Controller Operation

2.1 Remote Controller Buttons

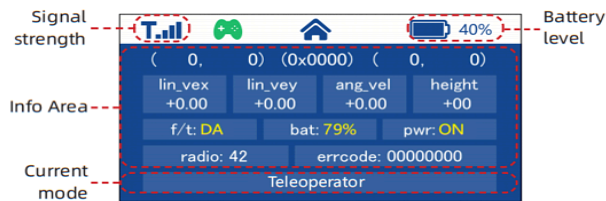
Before operation, locate the Power, L1, R1, D-pad, X, $\square$, and the Left Joystick and Right Joystick buttons.

D-pad (Up, Down, Left, Right)



2.2 Power On the Remote Controller and Check the Display

Press and hold the Power Button on the Remote Controller for approximately 2 seconds. When the display turns on, check the Signal Strength, Battery Level, and current mode.



Display Information	What to Check
Signal	Blue signal bars in the upper-left corner indicate that the Remote Controller is connected to the robot
Current Mode	Before teleoperating the arms, switch the mode to Teleoperator
Battery Level	Make sure the Remote Controller has sufficient battery power
Information Area	Shows the current robot mode, robot Battery Level, and whether the robot is powered on

2.3 Switch to VR Teleoperation Mode

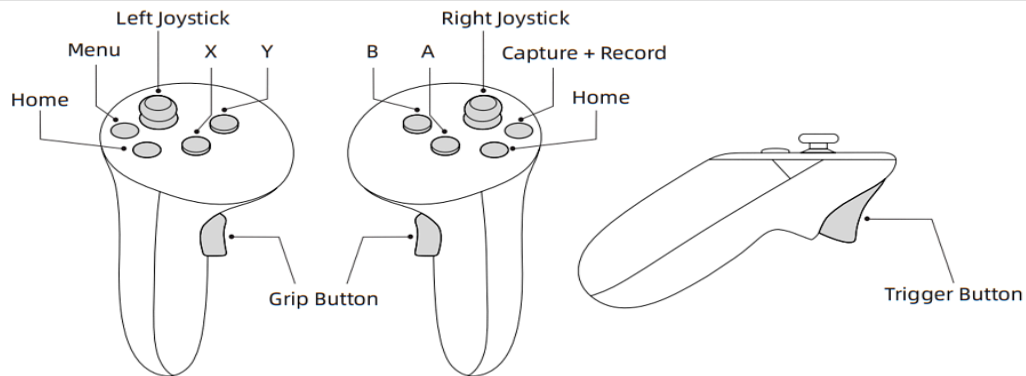
1. Press **L1 + $\square$** to place the robot in the Idle State. Press **R1 + Right** or **R1 + Left** to switch modes.
2. Mode Switching is complete when the Remote Controller displays Teleoperator and the robot's light strip remains steady blue. Switch modes only when the robot is in the Idle State.

2.4 Remote Controller Command Quick Reference

Function	Operation	Description
Mode Switching	R1 + Right : Cycle forward through the modes R1 + Left : Cycle backward through the modes	Available only in the Idle State
Homing Action	L1 + X	Both arms return to the lowered position, enter Idle mode, and initiate the tabletop collision-avoidance safety motion
Enter Idle	L1 + $\square$	Enters the Idle State
Remote Emergency Stop	Press the Left Joystick and Right Joystick buttons simultaneously	Immediately cuts power to all motors
Remote Emergency Stop Release	Press the Right Joystick button	Enters the Damping state after release
Joint Zero Calibration	L1 + R1	Use only after a Main Controller upgrade, a severe impact, or a joint zero-position fault
Remote Controller On/Off	Press and hold Power for approximately 2 seconds	Turns the display on or off

3. Connect the VR Device

3.1 VR Controller Buttons



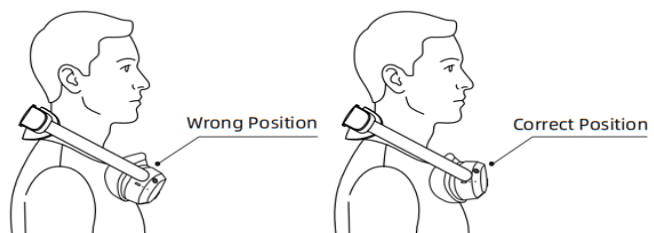
3.2 Connect the VR Device for the First Time

- Confirm the robot is in Teleoperator mode with the light strip steady blue.
 - For first-time setup, **wear the VR Headset** and follow the steps below in the VR interface.
 - Tip: Point with the right controller; short-press its **Trigger Button** to select or confirm.
1. Power on the VR device: hold the Headset's right-side Power Button for about 3 seconds.
 2. Connect to the robot Wi-Fi: select **TRON2A_XXX_2.4G** or **TRON2A_XXX_5G**, then enter password **12345678**.
 3. Start the teleoperation app: **Library > Unknown Sources > Limx_teleop**.
 4. Select tron2-offline, enter 10.192.1.2, then select Connect. Success is shown by the TRON 2 teleoperation view.

4. Dual-Arm VR Teleoperation

4.1 Headset Position and Operator Stance

1. Hang the VR Headset horizontally around your neck with the front of the Headset facing forward.
2. Hold the corresponding controller in each hand and stand facing the robot.



4.2 Return Both Arms to the Initial Position

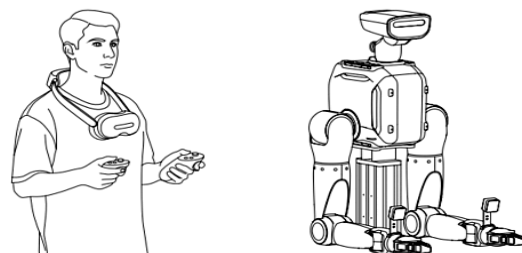
1. Simultaneously press and hold the 'X' Key on the left controller + 'A' Key on the right controller for more than 1 second.
2. The robot moves both arms to the teleoperation ready position. The upper arms rest at the sides of the body, the forearms are raised forward by approximately 90°, and the grippers perform Zero Calibration automatically.

4.3 Unlock Arm Tracking

1. Hold both controllers. **Match your arms to the robot's ready position**, keeping both controllers level and pointing forward.
2. Short-press the X Key (left controller) and A Key (right controller) together for approximately 0.2 seconds to unlock arm motion.
3. Slowly move both hands. Teleoperation is active when the robot's arm tips begin tracking the controllers in real time.



Keep everyone outside the arms' operating range while the robot is moving. For first-time use, move the controllers slowly in small increments and allow for the approximately 100 ms Teleoperation Delay.



4.2 Teleoperation and Data Collection Commands

Function	Operation	Result
Return Both Arms to the Initial Position	Press and hold X on the left controller and A on the right controller simultaneously for more than 1 second	Both arms enter the ready position, the forearms are raised forward by approximately 90°, and the grippers perform Zero Calibration automatically
Unlock Arm Tracking	Short-press X + A simultaneously for approximately 0.2 seconds	Both arm tips begin tracking the controllers
Pause or Resume the Left Arm	Short-press X on the left controller	Pauses or resumes tracking for the left arm
Pause or Resume the Right Arm	Short-press A on the right controller	Pauses or resumes tracking for the right arm
Left/Right Gripper Control	Press the Trigger Button on the corresponding controller	Press once to close the gripper; press again to open it
Start Data Collection	B Key on the right controller	Starts Data Collection
Stop Data Collection	Y Key on the left controller	Stops Data Collection

5. Mobile VR Teleoperation

Function	Operation	Result
Chassis Mode Selection	Press and hold the Right Joystick for 1 second to switch to Diagonal Movement Mode. Press and hold the Left Joystick for 1 second to switch to Ackermann Mode .	The factory-default setting is Ackermann Mode
Forward/Backward Movement	Push/Pull the Left Joystick	The farther you move the Joystick, the faster the robot moves. Speed is zero when the Joystick is centered.
Ackermann Rotation	In Ackermann Mode , push the Right Joystick left/right	The drive wheels steer and turn the Mobile Base left/right
Diagonal Movement	In Diagonal Movement Mode , push the Right Joystick left/right	The Mobile Base maintains its orientation and moves diagonally left/right
Parking State	Press and hold the Grip Button on the left controller and the Right Joystick simultaneously for 1 second	Use when the robot must remain stationary for an extended period. All four wheels lock in an X pattern.
Emergency Stop	Press the Left Joystick and Right Joystick simultaneously	The Mobile Base stops immediately when an Emergency Stop is triggered

5.2 Lift Stand

Function	Operation	Description
Raise/Lower	Hold the Grip Button on the right controller and push/pull the Left Joystick	Raises or lowers the robot using the Lift Stand
Return to Zero	Press and hold the Grip Button on the right controller and the Left Joystick simultaneously for 1 second	Returns the stand to its uppermost zero position for battery removal

6. Power-Off Procedure

- Stop operation. Make sure no one and no obstacles are near the robot.
- Press **L1 + X** on the Remote Controller to return both arms to their natural hanging position. Wait until the arms enter Idle.
- Short-press the **Power Button** for about 1 second, then hold it for about 3 seconds until the Battery Level Indicator and Status Indicator turn off.
- For the Fixed-stand version, disconnect external power. For the Mobile Dual-Arms Version, turn off the switch at the rear of the Mobile Base.
- Hold the Remote Controller's **Power Button** to turn it off, then power off the VR device.



Return both arms to their hanging position and wait for Idle before powering off.
Disconnecting power directly may cause the arms to drop suddenly.

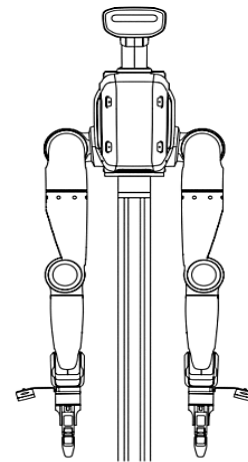


TRON 2 User Manual



Operation Videos

Scan to access the Video Center.
Select TRON 2 > Tutorial, or
search for the relevant feature.



Robot Homing State