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Your Embodied AI Partner

R1 Lite

Enhanced Data Collection

Generalized Application

Accelerated Model Deployment

Meet R1 Lite !

Stable & Efficient



Superior Manipulation Capability

6 DOF AIX

Dual-Arm Collaborative Manipulation

Arm length of 60cm, spherical wrist joint mimicking human wrist flexibility; efficient data collection and smooth manipulation trajectory.



3 DOF Torso

Free vertical movement, easily adapts to 0 - 1.7 m working heights; front-back translation enables multi-directional manipulation.



6 DOF Vector Chassis

Equipped with self-developed steering wheel modules, supporting translation / spin / Ackermann motion and 360° omnidirectional movement.



Precise Perception



Platform HD binocular cameras, wrist monocular depth cameras, IMUs on chassis & torso collaborate for accurate data collection.

Convenient Teleoperation



Supports the R1 Lite isomorphic teleoperation for precise synchronization and simple operation.

Product Parameters

Key Dimensions	Total height: 1280mm Chassis width: 600mm Platform width: 670mm
Whole - body Degrees of Freedom	23
Single - arm Degrees of Freedom	6
Arm Length	60cm
Single Arm Load	Rated 3kg @ 0.6m Max 5kg @ 0.6m
Arm Mounting	Top Mounting
End - effector	Gripper
Torso Degrees of Freedom	3
Vertical Workspace	0 - 1 .7 m
Chassis Degress of Freedom	6
Chassis Movement of Speed	1.5 m/s
Configuration	Intel Core i9-12900HK 32GB RAM 1TB SSD
CPU Core Number	14
CPU Maximum Frequency	2.5 GHz
Overall Sensor Configuration	1 × Platform HD Binocular Camera 2 × Wrist-mounted Binocular Vision Camera

HELLO !

Welcome to explore R1 Lite !

- We'll guide you step by step through setup, self-check, and connection to get started quickly.

Follow the steps below to start your device smoothly.

1 Unboxing

- 1.1 Pre-Unboxing
- 1.2 Remove the machine
- 1.3 Remove the foam padding
- 1.4 Remove the platform supports
- 1.5 Disassemble the chassis fasteners
- 1.6 Disassemble the steering wheel fasteners

2 Inventory Checklist Verification

3 Start

- 3.1 Power-On
- 3.2 Torso Upright Positioning
- 3.3 Connect HDMI
- 3.4 Remote Controller Usage

4 Connect

- 4.1 Connect HDMI
- 4.2 Acquire IP Address
- 4.3 Establish SSH Connection
- 4.4 One-Touch Startup
- 4.5 Full System Self-Test
- 4.6 Hardware Diagnostic
- 4.7 Topic Frequency Monitoring

5 Demo Display

- 5.1 Preparation Before Use
- 5.2 One-Touch Startup
- 5.3 Script Execution

1 Unboxing

1.1 Pre-Unboxing

The product you purchased

☒ R1 Lite

The software version of the product

☐ ROS 1

☒ R1 Lite T

☒ ROS 2

Before unboxing, please prepare the following items:

Monitor, Keyboard & Mouse	1 unit
Laptop	1 cable
Wi-Fi Network	1
HDMI Cable	1 set
Docking station (Type-C to USB converter with ≥3 USB 2.0+ ports)	1 piece

1.2 Remove the Machine

1. Unlock the Crate
- Locate two locks on the left side of the crate. Release latch plates and rotate counterclockwise to open the door.
2. Lower the Front Panel & Retrieve Toolbox
- Detach the Velcro strip securing the wooden panel (front-facing slide rail for R1 Lite). Lay the panel flat on the ground and extract the toolbox.
3. Remove Internal Fasteners and Extract R1 Lite
- Using the 6mm L-shaped hex key from the toolbox, remove eight (8) M8 fixation screws as illustrated below. Subsequently pull out the R1 Lite unit.



1.3 Remove the foam padding

1. Cut the cable ties and remove the top cover first.
2. After checking the internal packing list, lift the outer foam upward to remove it.
3. Remove the foam from both robotic arms.
- NOTICE:** Considering the logistics needs for subsequent services, it is recommended that you properly preserve the foam.

Electrical and Structural Components and Tool Kit		1 set
1	Charger & Charging Plug	1
2	Chassis Remote Controller	1
3	Key Remote - Double Key	1
4	Button Remote - Single Button	1
5	W1 calibration plate and matching screws	3
6	Side-mounted structural parts	2
7	Repair harness kit	1
8	ST Link	1
9	Robotic arm - separately packaged accessories	6



1.4 Remove the platform supports

Please use a wrench to remove the fixing screws between the robotic arm bracket and the platform. There are two screws on each side, totaling four screws.

NOTICE: For your safety, please remove the platform support first before disassembling the chassis fixing profile.

1.5 Disassemble the chassis fasteners

1. There are fixing fork profiles next to each steering wheel. Use an L-shaped hex wrench (6mm) to remove the two screws (top and bottom).
2. Fixing profiles are installed around the chassis. Use an L-shaped hex wrench (6mm) to remove the four screws at each corner.



1.6 Disassemble the steering wheel fasteners

Execute the following sequence to disassemble fasteners from all three steering wheels:

1. Rotate the fastened steering wheel horizontally to expose the fastening screws.
2. Using a 6mm L-shaped hex key, remove two (2) fastening screws per wheel (six total).
3. Return wheels to neutral position.

2 Inventory Checklist Verification

Please check the items in the box according to the following list.

R1-LITE Body		1 set
R1-LITE Teleop		1 set
Electrical and Structural Components and Tool Kit		1 set
1	Charger & Charging Plug	1
2	Chassis Remote Controller	1
3	Key Remote - Double Key	1
4	Button Remote - Single Button	1
5	W1 calibration plate and matching screws	3
6	Side-mounted structural parts	2
7	Repair harness kit	1
8	ST Link	1
9	Robotic arm - separately packaged accessories	6

3 Start

3.1 Power-On

3.1.1 Power Interface & Charging Procedure

The power port is located on the front chassis (battery pre-installed by default).

Battery Charging Sequence:

1. Unscrew the charging port cover.
2. Connect the 2-pin aviation plug charger: DC end to chassis port, AC end to mains supply.
3. RED illuminated LED indicates active charging status.



3.1.2 Active

1. Hard Switch

Located on the underside rear chassis, press the black boat-shaped power button to toggle ON/OFF.

2. Soft Switch

A silver circular power button is located at the torso apex of R1 Lite:

- Power ON: Press and release the button → Solid BLUE LED indicates system activation.
- Power OFF: Press and hold for ≥ 3 seconds → BLUE LED extinguishes confirming shutdown.

3.2 Torso Upright Positioning

Retrieve the two-button remote and long-press Button A until full torso upright positioning is achieved.



3.3 Remote Controller Usage

NOTICE:

- 1. Before activating the remote, set all toggle switches (SWA/SWB/SWC/SWD) to the top position before pressing the power button.
- 2. When idle, keep all switches in the top position to maintain R1 Lite in a safe stop state, preventing unintended operation.

Chassis Controller (Joystick Controller)



- Turn On/Off: press and hold both power buttons until the touchscreen lights up/off.
- SWA/SWD: short-stick switches that have two positions: Top/Bottom
- SWB/SWC: long-stick switches that have three positions: Top/Middle/Bottom
- RX:  shows the successful connection to the robot.
- RX:  shows the failed connection to the robot.

TX

RX

 Controller Battery Status

 Receiver Connection Status

 Unlock/Lock Screen

 Trim Button

SWA	SWB	SWC	SWD	Function
				chassis control by host computer
				chassis control by joystick computer
				emergency stop

- **Host Computer Controlling Chassis (Down-Down-Up-Up):** In this mode, the host computer must first start the chassis motion control program before enabling control.
- **Remote Controller Controlling Chassis (Down-Down-Middle-Up):** After the robot is powered on, the remote controller can directly control chassis movement in this mode without host computer operation.
- **Activating Emergency Stop (D-Down):** In any mode, the SWD switch can be dialed down to activate emergency stop. However, after activating emergency stop, the robot must be restarted.

4 Connect

4.1 Connect HDMI

Note: For safety reasons, please turn off the power to the machine before connecting any cables, including both the soft switch and hard switch.

- 1. Soft shutdown: Press and hold the silver switch button on the torso platform for at least 3 seconds until the blue indicator light turns off, indicating R1 Lite has powered down;
- 2. Hard shutdown: Turn off the black rocker power switch located at the rear bottom of the chassis;
- 3. HDMI connection: Securely plug the HDMI cable into the designated port (the system defaults to using the labeled HDMI port for signal output).

4.2 Acquire IP Address

Keep the HDMI and USB cables connected to the monitor. Power on the R1 Lite, wait for the desktop to appear on the monitor, and then perform the following operations.

- 1. Click "Settings" and connect to WiFi.



2. Press **Ctrl + Alt + T** to open the terminal and enter the following commands:

```
ifconfig wlo1
```

3. To check wlo1 (NUC's IP address is 192.xxx.xxx.xxx):

```
wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.10.222 netmask 255.255.255.0 broadcast 192.168.10.255
    inet6 fe80::f602:30ab:5172:936e prefixlen 64 scopeid 0x20<link>
    ether 04:e8:b9:47:1e:63 txqueuelen 1000 (Ethernet)
    RX packets 3974 bytes 1186394 (1.1 MB)
    RX errors 0 dropped 99 overruns 0 frame 0
    TX packets 185 bytes 34290 (34.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

4.3 Establish SSH Connection

1. Take out the laptop.
2. Enter the following command in the terminal to connect to the R1 Lite's NUC.

```
ssh r1lite@IP address
# Default password: 1
```

NOTICE:

1. If the connection is successful, disconnect the HDMI and USB cables to avoid restricting movement.
2. If the connection fails, contact us immediately for technical support!

4.4 One-Touch Startup

NOTICE: Executing the following commands will activate all drivers and motion control interfaces.

```
cd ~/galaxea/install/startup_config/share/startup_config/script/
./robot_startup.sh boot ../session.d/ATCStandard/R1LITEBody.d
```

4.5 Full System Self-Test

1. Self-check startup program

```
cd ~/galaxea/install
source setup.bash
ros2 launch rds_ros monitor.py
```

```

rllite@rllite:~/galaxea/install$ ros2 launch rds_ros monitor.py
[INFO] [launch]: All log files can be found below /home/rllite/.ros/log/2025-08-26-11-40-46-124028-rllite-3317
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [rds_ros_monitor_node-1]: process started with pid [3318]
[rds_ros_monitor_node-1] [WARN] [1756179646.181836134] [rcl.logging_rosout]: Publisher already registered for provided node name. If
this is due to multiple nodes with the same name then all logs for that logger name will go out over the existing publisher. As soo
n as any node with that name is destructed it will unregister the publisher, preventing any further logs for that name from being pu
blished on the rosout topic.

```

4.6 Hardware Diagnostic

If the system displays "No hardware anomalies detected," it means:

- No errors in the torso and chassis IMUs.
- No errors in the left/right arms or torso.

NOTICE: If red error messages appear, contact us immediately for technical support!

```

-----硬件错误码信息(hardware_error_code_msg)-----
检测中请等待(Please wait while testing).....
剩余电量(capital): 5.97143
机器硬件错误码检测未出现异常(Robot Hardware no error) !!!

```

4.7 Topic Frequency Monitoring

```

-----话题帧率信息(topic_frequency_msg)-----
检测中请等待(Please wait while testing).....
topic_name:/hdas/imu_torso freq: 99.8254, range:99-101 频率正常(normal frequency)
topic_name:/hdas/imu_chassis freq: 99.7413, range:99-101 频率正常(normal frequency)
topic_name:/hdas/feedback_status_arm_right freq: 0.397634, range:0-2 频率正常(normal frequency)
topic_name:/hdas/camera_head/left_raw/image_raw_color/compressed freq: 14.9487, range:14-16 频率正常(normal frequency)
topic_name:/hdas/camera_wrist_left/color/image_raw/compressed freq: 14.9764, range:14-16 频率正常(normal frequency)
topic_name:/hdas/camera_head/right_raw/image_raw_color/compressed freq: 14.9487, range:14-16 频率正常(normal frequency)
topic_name:/hdas/feedback_gripper_right freq: 199.405, range:190-210 频率正常(normal frequency)
topic_name:/hdas/feedback_torso freq: 499.103, range:475-525 频率正常(normal frequency)
topic_name:/hdas/feedback_arm_left freq: 199.202, range:190-210 频率正常(normal frequency)
topic_name:/hdas/feedback_arm_right freq: 199.405, range:190-210 频率正常(normal frequency)
topic_name:/hdas/feedback_status_torso freq: 0.994092, range:0-2 频率正常(normal frequency)
topic_name:/hdas/camera_wrist_left/aligned_depth_to_color/image_raw freq: 14.9764, range:14-16 频率正常(normal frequency)
topic_name:/hdas/feedback_status_arm_left freq: 0.397649, range:0-2 频率正常(normal frequency)
topic_name:/hdas/camera_wrist_right/aligned_depth_to_color/image_raw freq: 14.9764, range:14-16 频率正常(normal frequency)
topic_name:/hdas/camera_wrist_right/color/image_raw/compressed freq: 14.9764, range:14-16 频率正常(normal frequency)
topic_name:/hdas/feedback_chassis freq: 199.621, range:190-210 频率正常(normal frequency)
topic_name:/hdas/feedback_gripper_left freq: 199.202, range:190-210 频率正常(normal frequency)
topic_name:/hdas/bms freq: 1.99693, range:1-3 频率正常(normal frequency)

```

5 Demo Display

5.1 Preparation Before Use

NOTICE: Maintain a clear 1.5-meter radius around the R1 Lite, free from personnel and obstacles (refer to the diagram below).

Before starting the test, please ensure that:

1. The dual arms of the R1 lite are accurately installed, with the arm joints in the zero position.
2. The torso of the R1 lite remains in an upright position.
3. The test is conducted strictly following the script sequence prescribed in the "Script Execution."



5.2 One-Touch Startup

NOTE:

1. Executing the following commands will activate all drivers and motion control interfaces.
2. If you have already performed the one-click startup command (as described in Section 4.4), do not repeat this step.

```
cd ~/galaxea/install/startup_config/share/startup_config/script/  
./robot_startup.sh boot ../session.d/ATCStandard/R1LITEBody.d
```

5.3 Script execution

```
source ~/galaxea/install/setup.bash
cd ~/galaxea/install/mobiman/share/mobiman/scripts/robotOpenbox/R1lite/
python3 r1_lite_test_open_box.py
```

Enter the number corresponding to each test action and press the Enter key, and the R1 Lite will start executing the test action.

```
r1lite@r1lite:~/galaxea/install/mobiman/share/mobiman/scripts/robotOpenbox/R1lite$ python3 r1_lite_test_open_box.py
1: arm_test1
2: arm_test2
3: arm_test3
4: torso_test1
5: torso_test2
6: gripper_test1
7: gripper_test2
q: quit brake mode
Press '1' or '2' or '3' or '4' or '5' or '6' or '7' or 'q': 1
```

1. arm_test_1:

Both arms will be lifted vertically upwards, then lowered, with the grippers pointing horizontally forward.

2. arm_test_2:

Raise both arms up and grab forward.

3. arm_test_3:

First raise both arms, then turn both J1s to the right, then to the left, then make a heart gesture, and then return to zero.

4. torso_test_1:

Bend and squat the torso while folding the arms on both sides of the chest cavity. (This action is used to test the T1/T2/T3 torso motors.)

5. torso_test_2:

Raise the torso to stand up and correct the torso.

6. gripper_test_1:

Gripper open.

7. gripper_test_2:

Gripper close.

**The R1 Lite unboxing procedure is now complete.
We sincerely appreciate your collaboration and trust!**

For hardware/software documentation, visit the Galaxea Documentation Hub:

URL: www.docs.galaxea-ai.com

For immediate assistance during installation/startup, contact our technical team:

Email: support@galaxea.ai

Galaxea Official: www.galaxea-ai.com



Galaxea WeChat
Official Account

Next !

Let's continue to explore R1 Lite Teleop !

- We will guide you step-by-step through unboxing, self-check, and connection procedures to help you quickly familiarize yourself with the new device and record your first data set.

Follow the steps below to start your device smoothly.

1 Unboxing

- 1.1 Pre-Unboxing
- 1.2 Inventory Checklist Verification

2 Connecting R1 Lite Teleop

- 2.1 Securing R1 Lite Teleop
- 2.2 Proper Device Placement
- 2.3 Connecting the Device

3 Software Preparation

- 3.1 Download and Extract the SDK
- 3.2 Setting up Software Dependencies

4 Data Collection Progress

- 4.1 Data Format
- 4.2 Data storage
- 4.3 Configuration File
- 4.4 Data File Storage Specification

1 Unboxing

1.1 Pre - Unboxing

The product you purchased ☒ **R1 Lite**

The software version of the product ☐ **ROS 1**

☒ **R1 Lite Teleop**

☒ **ROS 2**

Before unboxing, please prepare the following items:

Laptop (x86 & Ubuntu 20.04 ROS Humble)	1 cable
Network Cable	1

1.2 Inventory Checklist Verification

Please check against the following list to ensure all items are included in the package:

R1-LITE Teleop	1 / set
JoyCon Handles	1 / pair
G-clamp holder	2 / pcs
Power adapter and cord	1 / piece
Type - C handle charging cable	1 / piece
Ethernet cable	1 / piece

2 Connecting R1 Lite Teleop

2.1 Securing R1 Lite Teleop

Please use the G-clamp holder to fix the R1 Lite Teleop (L) and R1 Lite Teleop (R) to the desktop. It is recommended to keep the distance between the two within 30cm, as shown in the figure below.

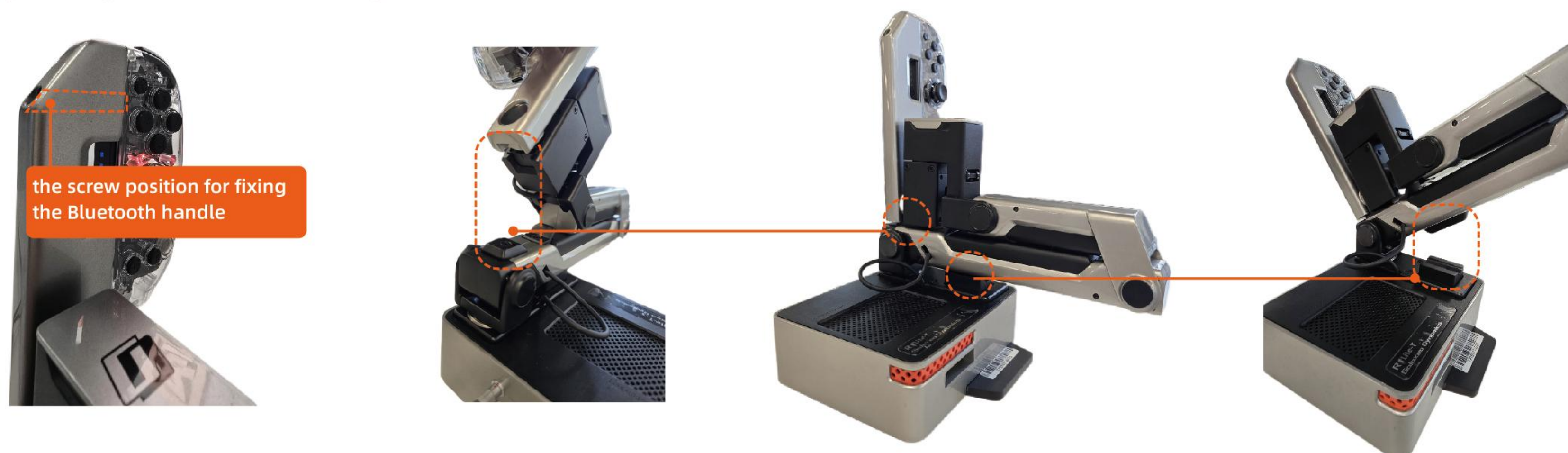


2.2 Proper Device Placement

Notice:

Before each startup of the teleoperation program, carefully verify the placement of all connecting rods to ensure the servo zero position is accurate, as this affects subsequent operations.

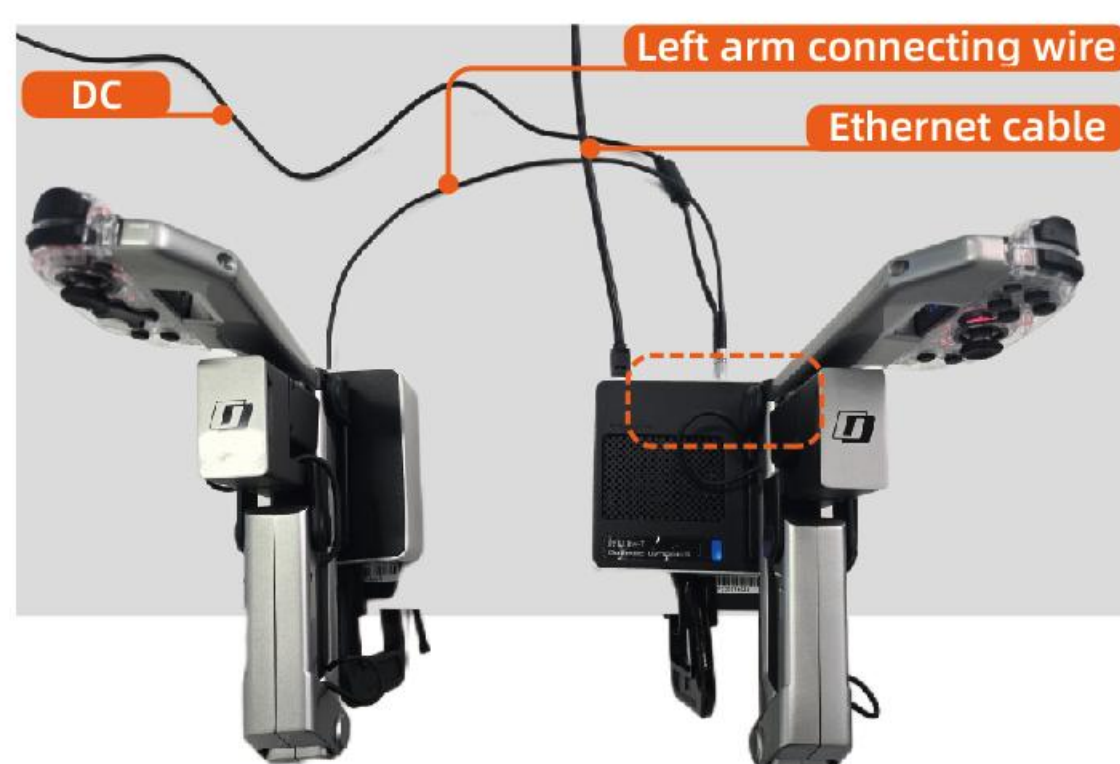
Please refer to the diagram below to correctly position all connecting rods of the R1 Lite Teleop, securely placing them in the designated slots.



2.3 Connecting the Device

Please connect the device as shown in the diagram:

1. Connect R1 Lite Teleop: Plug the 3-pin aviation connector of R1 Lite Teleop (L) into the left arm port of R1 Lite Teleop (R)..
2. Connect R1 Lite: Use an Ethernet cable to connect the Ethernet port of R1 Lite Teleop (R) to the Ethernet port of R1 Lite, ensuring normal communication.
3. Connect the power adapter: Plug the power adapter into the DC power socket of R1 Lite Teleop (R).
4. Power on R1 Lite: Turn on the R1 Lite.



3 Teleoperation Workflow

3.1 Multi-Machine Communication Setup

3.1.1 Network Configuration

Please use a wired connection to configure the network, as it enhances the stability of multi-device communication.

Connect the R1 Lite NUC to the R1 Lite Teleop host computer (as described in section 2.3).

Notice: The wired IP address of the R1 Lite NUC is typically 10.42.0.xxx, while the wired IP address of the R1 Lite Teleop host computer is typically 10.42.0.1.

3.1.2 Modify the file

Notice

1. The environment configuration for the R1 Lite NUC and R1 Lite Teleop has been completed for you prior to shipment.
2. You can verify the configuration according to the steps below. If correct, no modifications are required.

1. Connect to the R1 Lite NUC to check the environment variables.

#Check if the output path of the configuration file is displayed: /opt/galaxea/find_server/super_client_configuration_file.xml

```
echo $FASTRTPS_DEFAULT_PROFILES_FILE
```

#Check the local wired IP address
ip a

#Check if the output address is the current wired IP, e.g. <address>10.42.0.xx</address>
cat /opt/galaxea/find_server/super_client_configuration_file.xml | grep address

#If it is not the wired IP of the R1 Lite NUC, please change it to the current wired IP.
vim /opt/galaxea/find_server/super_client_configuration_file.xml

#Modify the <address>10.42.0.xx</address> in the file to the wired IP of this machine.

```
<?xml version="1.0" encoding="UTF-8" ?>
<dds>
  <profiles xmlns="http://www.eprosima.com/XMLSchemas/fastRTPS_Profiles">
    <participant profile_name="super_client_profile" is_default_profile="true">
      <rtps>
        <builtin>
          <discovery_config>
            <discoveryProtocol>SUPER_CLIENT</discoveryProtocol>
            <discoveryServersList>
              <RemoteServer prefix="44.53.00.5f.45.50.52.4f.53.49.4d.41">
                <metatrafficUnicastLocatorList>
                  <locator>
                    <udp4>
                      <address>10.42.0.44</address>
                      <port>11811</port>
                    </udp4>
                  </locator>
                </metatrafficUnicastLocatorList>
              </RemoteServer>
            </discoveryServersList>
          </discovery_config>
        </builtin>
      </rtps>
    </participant>
  </profiles>
</dds>
```

R1 Lite 有线IP

2. Confirm the environment variables of R1 Lite Teleop:
Log in to R1 Lite Teleop through R1 Lite with the username cat and password temppwd .

ssh cat@[R1_Lite_Teleop_IP] # The wired IP of R1 Lite Teleop is usually 10.42.0.1.

#Check if the path where the configuration file is stored is displayed:

```
~/home/cat/galaxea/find_server/super_client_configuration_file.xml
```

```
echo $FASTRTPS_DEFAULT_PROFILES_FILE
```

#Check if the output address is the wired IP of the R1 Lite NUC.

```
cat ~/galaxea/find_server/super_client_configuration_file.xml | grep address
```

```
# If it is not the wired IP of the R1 Lite NUC, please change it to the R1 Lite NUC IP.
vim ~/galaxea/find_server/super_client_configuration_file.xml
#Modify the <address>10.42.0.xx</address> to the wired IP of the R1 Lite NUC.
```

Notice: After modifying the above files, a restart is required to ensure the changes take effect.

3. Example: The R1 Lite and R1 Lite Teleop are connected via an Ethernet cable, and the wired IP of the R1 Lite is 10.42.0.44.

```
r1lite@r1lite:~$
r1lite@r1lite:~$ ls /opt/galaxea/find_server/super_client_configuration_file.xml
/opt/galaxea/find_server/super_client_configuration_file.xml
r1lite@r1lite:~$ echo $FASTRTPS_DEFAULT_PROFILES_FILE      环境变量文件目录配置正确
/opt/galaxea/find_server/super_client_configuration_file.xml
r1lite@r1lite:~$
r1lite@r1lite:~$ cat /opt/galaxea/find_server/super_client_configuration_file.xml | grep address
<address>10.42.0.44</address>
r1lite@r1lite:~$ |                                          IP地址为本机有线IP
```

```
cat@lubancat:~/galaxea/find_server$ ls /home/cat/galaxea/find_server/
super_client_configuration_file.xml
cat@lubancat:~/galaxea/find_server$ echo $FASTRTPS_DEFAULT_PROFILES_FILE      环境变量文件目录配置正确
/home/cat/galaxea/find_server/super_client_configuration_file.xml
cat@lubancat:~/galaxea/find_server$
cat@lubancat:~/galaxea/find_server$
cat@lubancat:~/galaxea/find_server$ cat ~/galaxea/find_server/super_client_configuration_file.xml | grep address
<address>10.42.0.44</address>
cat@lubancat:~/galaxea/find_server$                                          IP地址为Lite有线IP
```

3.2 Starting Teleoperation

3.2.1 Launching R1 Lite

Use the following commands to start all nodes of the R1 Lite:

```
# Navigate to the script directory and run the script
cd ~{your_download_path}/install/startup_config/share/startup_config/script/
./robot_startup.sh boot ../sessions.d/ATCStandard/R1LITEBody.d/
```

3.2.2 Starting R1 Lite Teleop

Notice: Before proceeding, ensure that all connecting rods of the R1 Lite Teleop are positioned at their zero points.

1. Connect the Bluetooth controller

- Briefly press the power button of the Bluetooth controller. After successful startup, you will observe a flowing blue LED light.
- Once connected, the flowing blue LED effect on the inner side of the Bluetooth controller will disappear and change to a steady blue light.



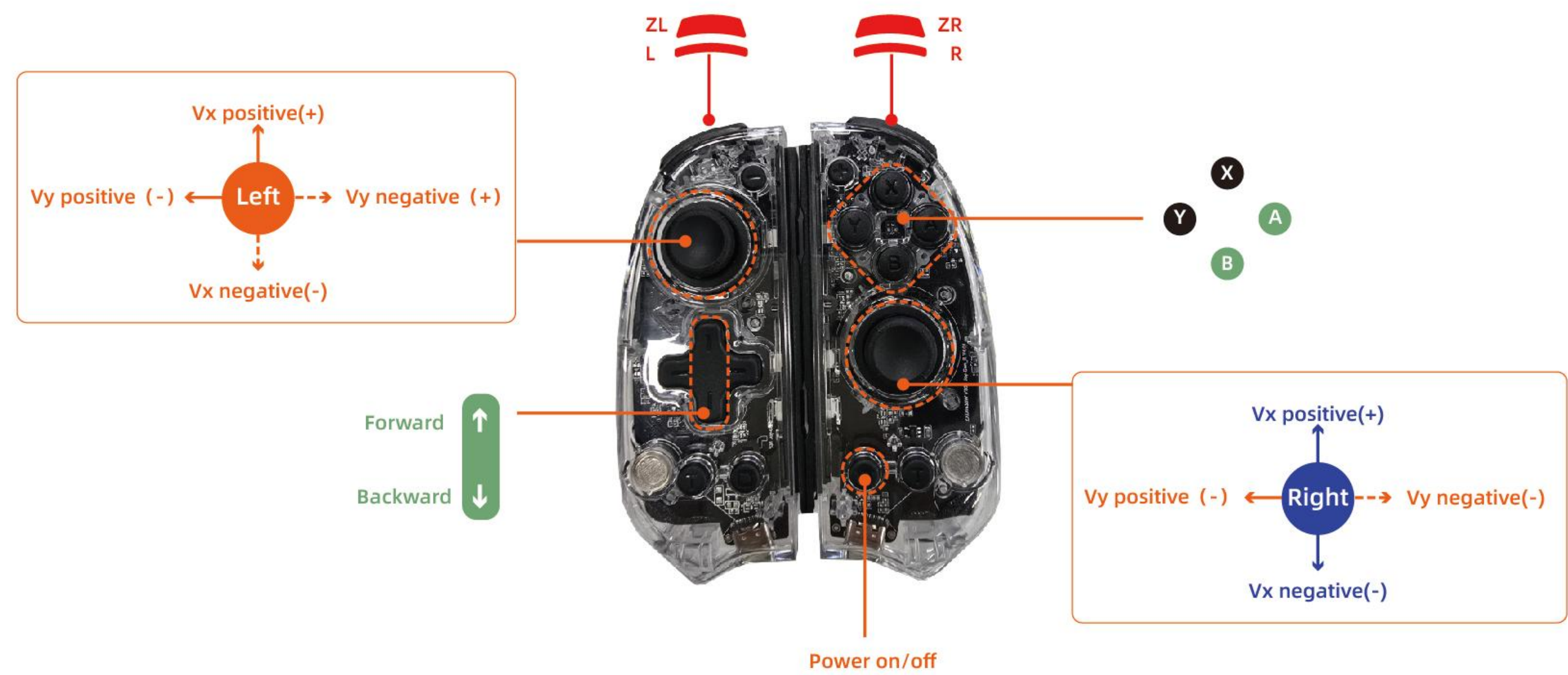
2. Node Startup

- Please ensure the R1 Lite and R1 Lite Teleop are connected via an Ethernet cable.
- After the R1 Lite Teleop is powered on, the status indicator will show a steady yellow light.
- Once the R1 Lite executes the startup nodes, the status indicator of the R1 Lite Teleop will turn to a steady green light.
- A steady green indicator light indicates that the R1 Lite Teleop has begun automatically starting its nodes. Wait for 5-8 seconds before initiating whole-body teleoperation of the R1 Lite.

3.2.3 R1 Lite Teleop Status Description

Diagram	LED	Staus
	Yellow	Initial state or disconnected (no message received from R1 Lite for over 3 seconds)
	Green	Continuously receiving messages from R1 Lite.
	Blue	After data collection begins.

3.3 Controller Button Configuration



Joystick/Buttons	Left Controller	Right Controller
Joystick +X direction	Chassis forward movement Vx positive(+)	Torso upward movement Vz positive (+)
Joystick -X direction	Chassis backward movement Vx negative(-)	Torso downward movement Vz negative (-)
Joystick +Y direction	Chassis leftward movement Vy positive(+)	Chassis counterclockwise rotation Vw positive (+)
Joystick -Y direction	Chassis rightward movement Vy negative(-)	Chassis clockwise rotation Vw positive (-)
Button ↑	Torso Pitch Angle Increase (Forward Tilt)	
Button ↓	Torso Pitch Angle Decrease (Backward Tilt)	
Button A		Torso Forward Movement Vx positive (+)
Button B		Torso Backward Movement Vx negative (-)
Button X		Start Recording (Single Press)
		Press the button again after a 5-second interval to delete the recorded data.
Button Y		Stop Recording
Button ZL	Left Gripper Close	
Button L	Left Gripper Open	
Button ZR		Right Gripper Close
Button R		Left Gripper Open
Button Home		Power on/off

4 Data Collection Process

4.1 Data Format

The file format for data collection is ros2bag, the file suffix is *.mcap .

4.2 Data Storage

Default save path: /home/r1lite/GalaxeaDataset/{date}/

date follows the format: 20250307

4.3 Configuration File Introduction

4.3.1 The default storage path for configuration files

Default configuration files for data recording are located at:

```
/opt/galaxea/data_collection/data_task_config.json
```

4.3.2 Configuration File Description

The configuration file is used to specify the information for this acquisition task, and you can modify it as needed.

```
{
  "project_info": {
    "project_name": "test"
  },
  "task_info": {
    "task_name": "sop_test_data_collection",
    "task_owner": "1"
  },
  "operation_info": {
    "teleoperation_type": "teleop",
    "location": "suzhou",
    "operator_name": "1"
  }
}
```

4.4 Data Storage File Description

Data is saved in the mcap + json format, with files corresponding one-to-one. For example:
The following two files represent one data packet:

The following two files represent one data packet:

S2R12000P18245_20240213173320125_RAW.mcap
S2R12000P18245_20240213173320125_RAW.json

Format: robot_serial_number+timestamp+RAW

robot_serial_number: Robot serial number, located at /opt/galaxea/body/RSN

timestamp: Data collection timestamp, accurate to milliseconds

RAW: This represents the raw stored data from the data collection.

Example save location: R1_Lite_data_collection

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