

# UNITREE R1 BASE

## Humanoid robot

Compact bipedal platform for education, research, demonstrations and human-robot interaction.

26 degrees of freedom

approx. 25 kg

up to 2.5 m/s



WHITE



BLUE

## Product overview

The Unitree R1 Base is the base version of a compact humanoid robotics platform. Its 26 degrees of freedom and PMSM actuators enable bipedal motion and coordinated full-body movement. Integrated perception and interaction features include a stereo camera, four microphones and a speaker. WiFi 6, Bluetooth 5.2, an 8-core processor, OTA updates and a swappable lithium battery support operation. The Base version is designed for education, research demonstrations and technology showcases; secondary development is not supported.

## Mechanics & motion

|                    |                            |
|--------------------|----------------------------|
| DIMENSIONS         | 1,210-1,230 x 357 x 190 mm |
| WEIGHT             | approx. 25 kg              |
| DEGREES OF FREEDOM | 26 DOF                     |
| ARM PAYLOAD        | approx. 2 kg               |
| WALKING SPEED      | up to 2.5 m/s or 9 km/h    |

## System & operation

|           |                                   |
|-----------|-----------------------------------|
| PROCESSOR | 8-Core High Performance Processor |
| BATTERY   | Lithium battery, hot-swappable    |
| RUNTIME   | approx. 1 hour                    |
| WIRELESS  | WiFi 6, Bluetooth 5.2             |
| UPDATES   | OTA updates supported             |

## Typical applications

### EDUCATION

Robotics classes, laboratory exercises and demonstrations of humanoid motion

### DEMONSTRATION

Technology centers, trade fairs and demonstrated full-body motion sequences

### RESEARCH

Motion observation, human-robot interaction and platform comparisons

### INTERACTION

Audiovisual interaction through camera, microphones and speaker

## Technical data & system

### MOBILITY

26 degrees of freedom, PMSM actuators and internal cable routing provide the mechanical basis for bipedal motion.

UP TO 2.5 M/S WALKING SPEED

### BASE VERSION

Operation via handheld controller and wireless connectivity. The Base version does not support secondary development or freely accessible APIs.

NOT PROGRAMMABLE

### Mechanics

|             |                |
|-------------|----------------|
| HEIGHT      | 1,210-1,230 mm |
| WIDTH       | 357 mm         |
| DEPTH       | 190 mm         |
| LEG LENGTH  | approx. 675 mm |
| ARM SPAN    | approx. 435 mm |
| ARM PAYLOAD | approx. 2 kg   |

### Sensors & communication

|               |                |
|---------------|----------------|
| CAMERA        | Stereo-Camera  |
| AUDIO INPUT   | 4 microphones  |
| AUDIO OUTPUT  | Speaker        |
| JOINT SENSING | Joint encoders |
| WIFI          | WiFi 6         |
| BLUETOOTH     | Bluetooth 5.2  |

## Functions, integration & operation

- **CONTROL** Handheld controller included; paired during commissioning.
- **ENERGY** Swappable lithium battery with hot-swap concept; runtime approx. 1 hour.
- **PERCEPTION** Stereo camera and joint encoders provide image and motion data for integrated functions.
- **COMMUNICATION** WiFi 6 and Bluetooth 5.2 provide wireless connectivity and device pairing.
- **MAINTENANCE** OTA updates are supported.
- **LIMITATION** No secondary development; fieldbuses and industrial interfaces are not documented.

## Application & integration

Commissioning consists of inserting the battery, switching on the robot, connecting via WiFi or Bluetooth, pairing the controller and initializing the sensors. The scope of delivery includes the robot, battery, charger and controller. As secondary development is not supported and no fieldbuses are documented, the Base version is not designed for conventional industrial automation tasks such as machine tending, palletizing or heavy handling.

#### NOTICE

Technical specifications are based on manufacturer information and the product information provided. Specifications are subject to change.