UNITREE R1 BASE

Compact 26-DoF humanoid for demonstration and interaction

Compact bipedal platform for motion, interaction and research-oriented robotics.

1,230 mm | approx. 29 kg | 26 body DoF

Product overview

The Unitree R1 Base is a compact bipedal humanoid for motion demonstrations, human-robot interaction and controller-based presentations. The platform combines 26 active body degrees of freedom with a binocular depth camera, microphone array, speaker, Wi-Fi 6 and Bluetooth 5.2. A replaceable battery supports flexible demonstration workflows. Secondary development is not enabled for the Base version.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

DEMONSTRATION
Dynamic motion sequences and product presentations

INTERACTION
Voice- and vision-based HRI demonstrations

EDUCATION
Illustration of humanoid kinematics and balance

EVENTS
Controller-based shows in controlled environments

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

8-core CPU; no secondary development. Standard arms without developer hand bundle.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	No
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** — No.
- **PERCEPTION** — Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** — PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** — Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** — No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.

UNITREE R1 EDU U1

ROS 2 and SDK entry platform with 40-TOPS development computer

Compact bipedal platform for motion, interaction and research-oriented robotics.

1,230 mm | approx. 29 kg | 40 TOPS

Product overview

The Unitree R1 EDU U1 combines the 26-DoF humanoid platform with a rear-mounted development computer in the 40-TOPS class. Unitree SDK2, CycloneDDS and documented ROS 2 environments provide access to joint and sensor data for education, whole-body control and embodied-AI projects. The configuration is supplied without hands and is intended as an entry point for research and software development.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

EDUCATION
ROS 2, kinematics and control engineering

RESEARCH
Whole-body control and motion planning

DATA CAPTURE
Evaluation of camera, IMU and joint data

PROTOTYPING
SDK-based algorithms in laboratory settings

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

40-TOPS distributor/RBTX bundle. No hands included in bundle.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	SDK2, C++/Python, ROS 2
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** SDK2, C++/Python, ROS 2.
- **PERCEPTION** Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.

UNITREE R1 EDU U2

Humanoid development platform with 100-TOPS onboard compute

Compact bipedal platform for motion, interaction and research-oriented robotics.

1,230 mm | approx. 29 kg | 100 TOPS

Product overview

The Unitree R1 EDU U2 expands the programmable R1 platform with a development computer in the 100-TOPS class. Its 26 body degrees of freedom, stereo depth vision and SDK2 access provide a basis for onboard inference, perception, motion planning and whole-body control. The version is supplied without hands and is designed as a powerful base for customer-specific research software.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

EMBODIED AI
Onboard inference and multimodal research

VISION
Stereo depth processing and scene perception

CONTROL
Whole-body control and motion planning

DEVELOPMENT
C++, Python and ROS 2 prototypes

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

100-TOPS distributor/RBTX bundle. No hands included in bundle.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	SDK2, C++/Python, ROS 2
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** SDK2, C++/Python, ROS 2.
- **PERCEPTION** Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.

UNITREE R1 EDU U3

Development platform with two Dex3-1 three-finger hands

Compact bipedal platform for motion, interaction and research-oriented robotics.

40 total DoF | 2 x 710 g | 0.5 kg test load

Product overview

The Unitree R1 EDU U3 combines the 100-TOPS EDU platform with two Unitree Dex3-1 three-finger hands without tactile arrays. Each hand has seven active degrees of freedom and is intended for research-oriented grasping and manipulation tests. The R1 arm limit of approximately 2 kg remains decisive; a maximum grip test load of 500 g on a rigid 50-mm cylinder is documented for Dex3-1.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

GRASPING
Research trials with three-finger kinematics

MANIPULATION
Object transfer and simple laboratory PoCs

IMITATION
Data capture for hand and arm movements

EDUCATION
Grasp planning, kinematics and control

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

100-TOPS development computer. 2 x Dex3-1 without tactile arrays.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	SDK2, ROS 2; hand via USB 2.0
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** SDK2, ROS 2; hand via USB 2.0.
- **PERCEPTION** Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.

UNITREE R1 EDU U4

Visuotactile research with two tactile Dex3-1 hands

Compact bipedal platform for motion, interaction and research-oriented robotics.

40 total DoF | 66 pressure points | 1 kHz hand bus

Product overview

The Unitree R1 EDU U4 adds tactile Dex3-1 hands to the U3 configuration. A total of 66 pressure measurement points in 18 arrays capture contact pressure. Joint, temperature, current, voltage and hand IMU data are also available. The platform is intended for visuotactile research and advanced grasping experiments. Unitree advises against walking or balance trials while the hands are installed.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

TACTILE RESEARCH
Contact and pressure data for grasping models

GRASP PLANNING
Visuotactile object interaction in the lab

DATASETS
Synchronized hand, vision and joint data

EDUCATION
Sensor fusion and force-aware manipulation

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

100-TOPS development computer. 2 x tactile Dex3-1, 33 points each.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	SDK2, ROS 2; hand data up to 1 kHz
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** SDK2, ROS 2; hand data up to 1 kHz.
- **PERCEPTION** Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.

UNITREE R1 EDU U5

Anthropomorphic manipulation with two BrainCo Revo 2 Basic hands

Compact bipedal platform for motion, interaction and research-oriented robotics.

38 active DoF

2 x 383 g

>= 50 N grip force

Product overview

The Unitree R1 EDU U5 combines the 100-TOPS platform with two lightweight BrainCo Revo 2 Basic five-finger hands. Each hand provides eleven mechanical degrees of freedom, six active joints and documented RS-485 and CAN-FD interfaces. Python and C SDKs with Linux, Windows and ROS support enable imitation-learning and gesture projects. The Basic hand does not include tactile sensing.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

IMITATION LEARNING
Anthropomorphic hand and arm trajectories

GESTURES
Five-finger movements and interaction prototypes

MANIPULATION
Light grasping tests in research and education

SOFTWARE
Hand control through SDK and ROS

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

100-TOPS development computer. 2 x Revo 2 Basic, no tactile sensing.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	SDK2 plus Revo 2 Python/C SDK
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** SDK2 plus Revo 2 Python/C SDK.
- **PERCEPTION** Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.

UNITREE R1 EDU U6

Tactile five-finger research with two BrainCo Revo 2 Touch hands

Compact bipedal platform for motion, interaction and research-oriented robotics.

38 active DoF | EtherCAT hand | Tactile sensing

Product overview

The Unitree R1 EDU U6 is the most extensive RBTX bundle in the bipedal R1 range. Two BrainCo Revo 2 Touch five-finger hands add pressure, friction, direction and proximity sensing to the 100-TOPS EDU platform. In addition to RS-485 and CAN-FD, EtherCAT is documented at component level. The high sensor and interface density is suited to tactile research but increases integration and validation effort.

Mechanics

Standing dimensions	1,230 x 357 x 190 mm
Folded dimensions	690 x 450 x 300 mm
Body degrees of freedom	26
Legs	6 DoF per leg
Arms	5 DoF per arm

Operation & performance

Weight	approx. 29 kg
Arm payload	approx. 2 kg, pose-dependent
Operating time	approx. 1 h
Actuators	PMSM
Battery	replaceable

Typical applications

TACTILE AI
Contact models and sensor-based grasp strategies

FIVE-FINGER GRASP
Anthropomorphic manipulation research

TELEOPERATION
Hand data capture and motion transfer

INTEGRATION
EtherCAT-based hand connection in research systems

Technical data & integration

Core configuration

HUMANOID PLATFORM

Bipedal R1 with 26 body DoF, internal cable routing, local air cooling and a replaceable battery.

VARIANT CONFIGURATION

100-TOPS development computer. 2 x tactile Revo 2 Touch.

Sensors & communication

Camera	Binocular depth camera
Camera FOV	146° horizontal / 124° vertical
RGB	1,280 x 1,080 @ 30 Hz
Depth	544 x 448 @ 10 Hz
Audio	4-microphone array, speaker
Wireless	Wi-Fi 6, Bluetooth 5.2

Interfaces & software

Ethernet	1 Gbit/s
Power outputs	24 V / 3 A; 36 V / 5 A
External stop	STOP / NC / GND
Development	SDK2 plus Revo 2 SDK; EtherCAT hand
Simulation	URDF; Gazebo low-level
Body fieldbus	not natively documented

Functions, integration and operation

- **CONTROL** SDK2 plus Revo 2 SDK; EtherCAT hand.
- **PERCEPTION** Stereo depth camera, joint encoders and the robot IMU support development and interaction tasks.
- **INTEGRATION** PLC, MES or cloud connections require external Linux/ROS middleware or an IPC gateway.
- **ENERGY** Replaceable battery; runtime depends on motion, compute load, hands and operating conditions.
- **SAFETY** No publicly documented overall robot approval for PL/SIL or industrial safety functions.

Deployment and integration

The platform is intended for controlled demonstration, education and research environments. Firmware status, ROS version, compute configuration, hand adapters and scope of supply must be agreed in writing before ordering. Production automation requires an application-specific risk assessment, protective measures and system validation.

NOTE

Technical data according to manufacturer specifications and the product information provided. Subject to change.