E1 Humanoid Robot Delivery Document

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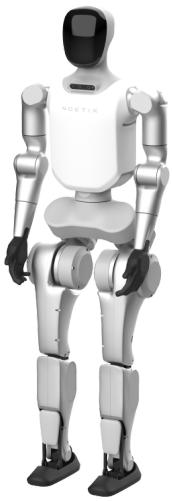
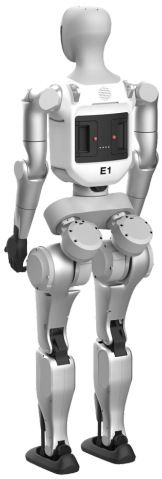
E1 is a humanoid robot launched by Noetix in 2025 with voice interaction, high motion performance, and expandability. Length * width * height: 48 * 32 * 140cm





Parameters	E1	E1-Education Edition
Height, width, and thickness (standing)	1400x480x320mm	
Weight with battery	Approximately 44.5kg	
Total degrees of freedom	19~24	
Single leg degree of freedom	6	
Single arm degree of freedom	5	
Computing power module	/	Jetson Orin Nano Super
Joint communication method	CAN	
Joint motor communication baud rate	1M	

Maximum joint torque	150 N·m	
Maximum arm load	kg	
Calf + thigh length	Approximately 0.7M	
Arm span	Approximately 0.6M	
Joint encoder	Dual encoder	
Cooling system	Local air cooling	
Power supply mode	Lithium battery	
Basic computing power	6+67Tops	
Perception sensor	Depth camera	
Microphone array	Standard configuration	
Speaker	Standard configuration	
High computing power module	/	NVIDIA Jetson Orin
Smart Battery (Quick Release)		
Charger		
Remote Controller	Yes	
Battery Life		
Secondary Development	/	Yes

I. Robot Delivery Details

Name	Description	Quantity
Robot body	Humanoid robot body	*1
Lifting ring	Used to connect the robot body and the lifting rope	*2
Lifting rope	Used for robot body lifting	*1
Tool kit	Used for robot-related maintenance	*1
Battery	Used for robot body power supply	*1

Battery charging compartment	Used for robot battery charging	*1
controller + controller receiver	Used for robot body control	*1
Product manual	Basic robot operation instructions	*1
Warranty card	Used for robot subsequent warranty	*1
SDK files + documentation	Software Development Kit (SDK)	*1
URDF file	Standardized Robot Description Format	*1

Robot board information

Among them, the secondary development computing board is only available in the EDU education version

Type	Model	User	IP	Password	Computing power	Frequency	Memory
Motion control board	Rockchip RK3588S	Not open to users			6Tops	2.4GHz	6+64GB
Secondary development computing power board	NVIDIA Jetson Orin Nano Super	noetix	192.168.55.101	noetix	67 Tops	1.7GHz	8+128GB

The username and password for the early delivery version are: rpdzkj, and the early IP is not statically fixed.

[!CAUTION]

During the robot's motion control program, please do not connect to the robot's motion control board (RK3588S) via SSH, otherwise it will occupy EtherCAT bandwidth, causing the robot's motion control program to be interrupted, and the robot will immediately collapse on the ground, which may cause damage.

If you need to make an SSH connection, be sure to let the robot lie on the ground or hang on the protective frame to enter a disabled state. During the connection process, please ensure that there are

no items placed around the robot, and that people maintain a safe distance from the robot to avoid collisions caused by accidental movements.

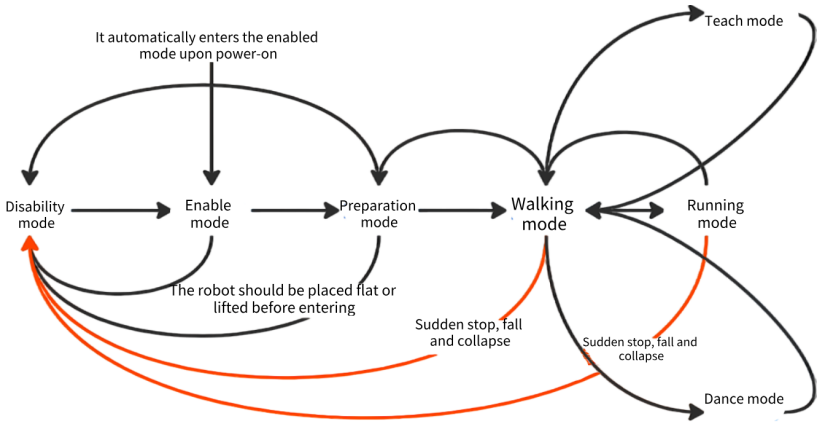
Our company is not responsible for any losses caused by SSH connections that are not performed in accordance with the above requirements!!!

2. Robot Operation Process

Robot Mode

Mode	Function	Remarks (The following button operations are based on the Aojia Lion gamepad controller)
Disabled Mode	Robot's whole body joints are soft	**Pressing the + button will enter the disabled mode (emergency stop) in any case**
Enabled Mode	Robot's whole body joints damping	Press the + button in the disabled mode to enter the enabled mode
Preparation Mode	The robot's limbs are slightly bent, preparing for movement.	In enable mode, press LB + "-" to enter preparation mode.
Walking Mode	The robot can stand and walk autonomously.	In preparation/running mode, press LB + X to enter walking mode.**In this mode, do not let the robot's feet leave the ground, otherwise the robot will kick randomly.**
Running Mode	The robot can autonomously fence and run.	In walking mode, press LB + Y to enter running mode.**In this mode, do not let the robot's feet leave the ground, otherwise the robot will kick randomly.**
Teaching Mode	Users can customize hand gestures without code	In walking mode, press RB + Y to enter the teaching mode. In this mode, do not let the robot's feet leave the ground, otherwise the robot will kick randomly.

Flowchart



The black arrow pointing left is the normal shutdown process.

The black arrow pointing right is the normal usage process.

The red arrow represents the emergency stop operation in an emergency.

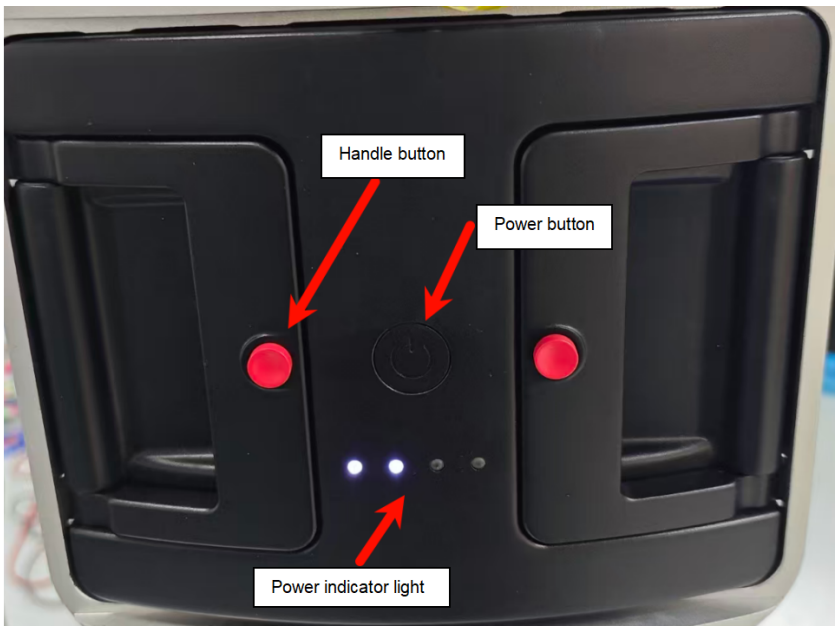
Usage flow

Remove the robot from the packaging box. It is recommended to hang the robot on a rack to start it, or you can let the robot prone/lie on the ground to start it.

Install the battery

Install the battery: Press and hold the red buttons on the battery handle with both hands to lift the handle, put the battery into the battery compartment (battery indicator down), and after the battery is completely inserted (the buckle is fastened), press and hold the red button on the handle to lower the handle to lock the battery.

Precautions: Pay attention to the battery direction when placing the battery,**the button is on the top and the indicator light is on the bottom**



Battery schematic diagram

Install the controller

Install the controller receiver: Insert the controller USB receiver into any USB port on the back of the robot, making sure it is not loosely connected.

Start the machine

After inserting the battery into the back of the robot, first short press the power button on the battery, and after the indicator light is on, long press the button. At this time, there will be a flowing light effect. The indicator lights of each part of the robot will light up, indicating that the machine is turned on.

Pair the controller

If the controller and receiver are paired for the first time, you need to turn on the robot and plug in the controller receiver, then long press the home button on the controller until the indicator light is always on. Release the button at this time, and the indicator light will flash quickly to enter the pairing mode. When the controller vibrates and the three indicator lights below are always on, it means the pairing is successful.

After pairing, you can directly click the home button for direct memory pairing in the future.

The following operations are exemplified by the Australian Jia Shi gamepad controller

Enter walking mode

After the robot is powered on, it will automatically enter the enable mode (damping mode) after waiting for about 10 seconds.

After the robot enters the enable mode, make the robot stand upright on the ground, and press LB and - to put the robot into the ready mode.

Observe whether the robot's legs are slightly bent. If they are, press LB and X to enter the walking mode. If the legs are not bent, repeat the previous step.

Note: The robot cannot walk on stairs or obstacles higher than 5cm, and cannot walk on slopes greater than 25 degrees (risk of falling).

Please refer to the button function chart below for subsequent operations.

Please refer to the flowchart and button function chart below for subsequent operations.

Shutdown process

After use, you need to hold the robot and press LB and - to return the robot to the ready mode. At this time, the robot loses the ability to stand independently and needs to be held by a person.

After lifting the robot or laying it flat (prone), press the + key to put the robot into disabled mode.

Then press and hold the motor switch, and remove the battery after shutting down.

controller button function table (pay attention to the notes)

Basic functions

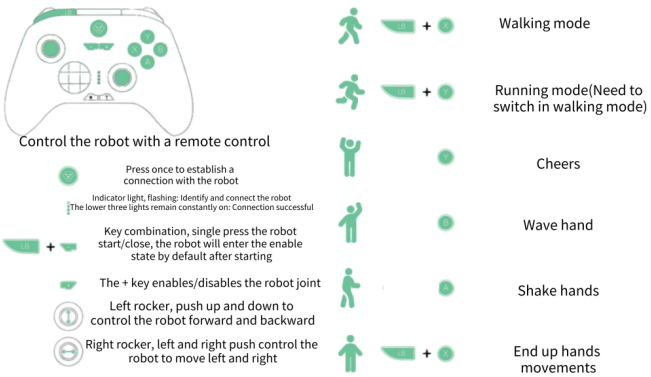
Prerequisites	Key bindings	Function	Remarks
Disable/Enable Mode	**“+”**	Enable and Disable	The robot automatically enters enable mode after being turned on, no need to press for non-shutdown operations
Enabled Mode	**LB & "-"**	Squat Ready Mode	At this time, autonomous balance is not possible and manual assistance is required to maintain standing.
Preparation Mode	**LB & X**	Walking Mode	Enter walking mode after performing hand movements to reset
Walking Mode	**A**	Preset handshake action	Re-enter walking mode to reset
Walking Mode	**B**	Preset greeting action	Re-enter walking mode to reset
Walking Mode	**Y**	Preset cheering action	Re-enter walking mode to reset
Walking Mode	**LB & Y**	Running Mode	**Please reserve enough space and stop about one meter in advance**
Walking/Running Mode	**Left joystick**	Forward and backward	
Walking/Running Mode	**Right joystick**	Turn left and right	

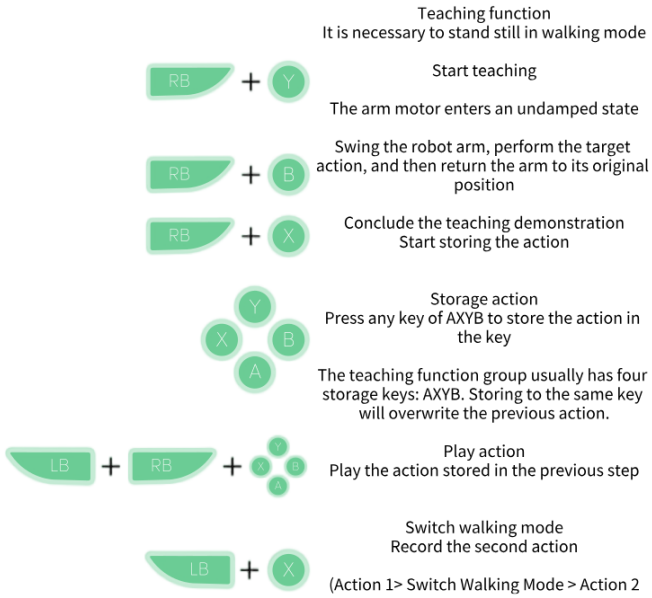
Teaching function

Prerequisites	Key bindings	Function	Remarks
Walking Mode	**RB & Y**	Start teaching mode	At this time, the E1's double arm joints are soft, and the user can start teaching the robot upper limb arm movements.
Walking Mode	**RB & B**	End teaching	End the teaching state, at this time the arms are still in a soft state
Walking Mode	**RB & X**	Save Teaching	At this time, press any key [A, B, X, Y] to save the just-taught action to the corresponding key.
Walking Mode	**RB & LB & [A, B, X, Y]**	Play the action saved under the corresponding key	**After playing, be sure to switch back to walking mode first, and then play other teaching actions or switch to other modes.**

Controller button function diagram

The button functions in the figure below have no sequential relationship and are not sequential operations.





Controller drift:

When the controller buttons drift or malfunction, please refer to the official user manual for reset or calibration operations to ensure normal function (please unplug the receiver for operation): https://mp.weixin.qq.com/s/cL3EBsndt2_ChM5iNgraSQ (Under normal circumstances, there is no need to pay attention to this manual)

Precautions: When you feel that the controller is malfunctioning, please contact technical support personnel first to determine whether it is a problem with the robot or the controller.

III. Introduction to Voice Function

Introduction to Voice Function: The robot head with voice interaction function is equipped with a ring-shaped 6-mic pickup, AI sound card, and speakers. The stereo audio format is 2CH, the sampling rate is 16KHz, the sampling accuracy is 16bits, and it is connected to the iFlytek AI large model (iFlytek Spark4.0Ultra) to provide Q&A functions.**Wake-up word "你好小E" (ni hao**

xiao E), wake-up distance 3~5M, currently the wake-up word can be customized once at the factory, sleep waiting time 30s, can also be customized once at the factory, the main control has a built-in operator-specific 4G-SIM card, monthly traffic 100G, providing one year of network service from the date of activation.

Precautions：The voice module uses an operator's IoT SIM card, which provides one year of traffic service by default from the date of activation. Subsequent use requires customers to purchase data traffic services themselves. Our company provides the SIM card number and necessary technical support. Customers are responsible for the consequences caused by SIM card damage, forgotten numbers, or illegal use. Our company is not responsible for network connection failures caused by operators during use.

Voice SDK Description

To be improved later, please see

Voice Module User Manual

IV. Robot Operation Video

To be improved later

V. Robot SDK Description

[dds_demo_release_e1.tar.gz]

Please see the instructions for use

E1 SDK Development Guide

E1's lowcontrol mode is currently not open and will be opened after further improvement.

VI. URDF File

Not yet finalized

VII. Official Website Link

- https://noetixrobotics.com/

VIII. Contact Information

- FAE Technical Support Manager: Tang Ziyang
- Contact Information: ziyangtang@noetixrobotics.com