ROHAND DEXTEROUS HAND
USER MANUAL

V1.2.1

OYMotion Technologies Co., Ltd
Addr: 6/F, Bldg 2, 222 Guangdan Rd, Shanghai, PRC
Tel: +86-21-63210200
Email: info@oymotion.com

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1. Trademarks and Patents

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2. Warning and Caution

Warning: ROH-A001 dexterous hand is not waterproof.

2.1. Like all non-waterproof electronic products, the precision electronic circuits, power motors and mechanical structures inside the ROHAND dexterous hand will cause circuit short circuits, rust, and irreversible damage when contaminated by liquid. Users must ensure that no liquid enters the bionic hand during use, and users must not use the bionic hand in a humid or heavily dusty environment.

2.2. The main frame of the ROHAND dexterous hand is composed of high-strength zinc, aluminum alloy and stainless steel, but its load-bearing must be within the design spec. A load that exceeds the design range will bring permanent metal deformation or even fracture, and the internal structure will be permanently damaged. Falling and hitting with heavy objects will also cause damage to the mechanical structure and circuitry of ROHAND's dexterous hand.

3. Introduction

The ROHAND dexterous hand has a total of 11 motion joints, with 6 built-in motor drivers and the motor control circuit. With 6 active degrees of freedom, and a built-in PID motor control algorithm, the hand can mimic the human hand to achieve a variety of grasping grips. Typical applications include robot end effectors, educational and scientific research equipment, bionic prosthetics, etc.

ROHAND can provide SDK for multiple platforms, including Linux, Windows, Embedded Systems (a license agreement needs to be signed).

4. Product Model

Type	Left/Right	Color	Interface Type	Other Functions
ROH-A001LS	■Left □Right	■Silver	■Integrated cable	■Rubber bumps on finger pads ■Finger touch screen function
ROH-A001RS	□Left ■Right	□Black	□4-pin LEMO	
ROH-A001LSA	■Left □Right	■Silver	□Integrated cable	
ROH-A001RSA	□Left ■Right	□Black	■4-pin LEMO	

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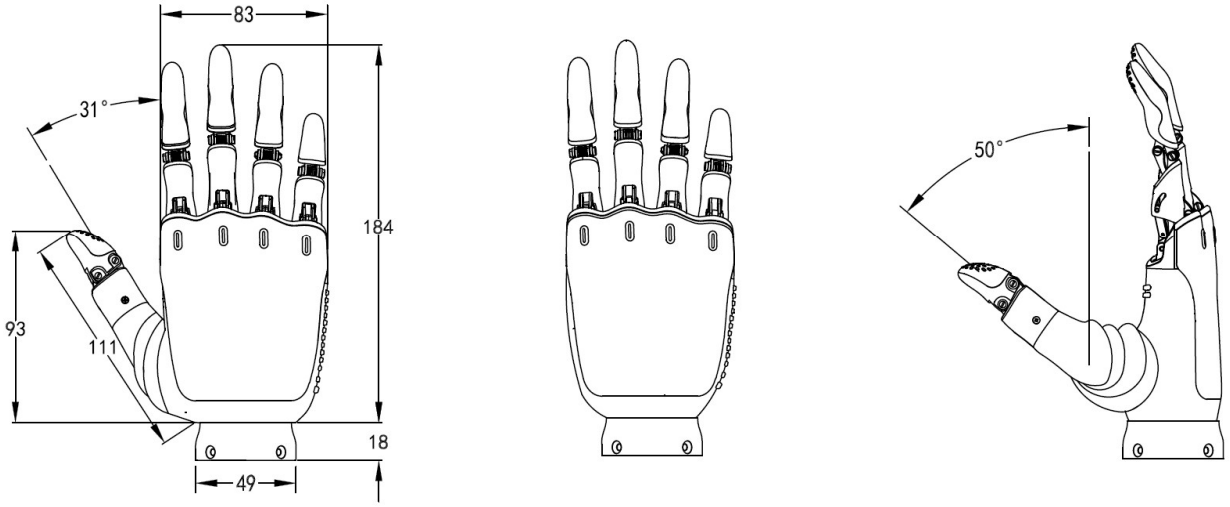
5. Product Main Parts and Size

5.1. Material

Aluminum alloy, zinc alloy, stainless steel, silicone, plastic.

5.2. Structure

5.3. Dimensions



ROHAND Dimensions and Angles

Measurement location	Dimensions and angles
Vertical distance from the tip of the middle finger to the wrist	184 mm
Vertical distance from thumb tip to wrist	93 mm
Thumb length	111 mm
Maximum palm width	83 mm
Wrist diameter	49 mm
Maximum opening and closing angle of the thumb side	0~31 Degrees
Maximum opening and closing angle of thumb to palm	0~50 Degrees
Thumb lateral rotation angle	0~90 Degrees
Finger touch screen function	Supported

5.4. Wrist

ROHAND provides a variety of wrist designs to choose from and to meet different needs.

6. Storage, Transportation and Use Environment

Storage and transportation requirements: Placed in the original packaging box	Temperature: -10 degrees Celsius ~ +40 degrees Celsius Humidity: Maximum relative humidity 85%
Working environment	temperature: -10 degrees Celsius ~ +40 degrees Celsius Humidity: Maximum relative humidity 85%
Design service life-span	3 years

7. Technical parameters

7.1. Loads and speeds

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Measuring Position	Parameters
Fastest time from fully open to fully closed finger	1.0 second
Fastest time from fully closed to fully open fingers	1.0 second
Fastest time for thumb side and opposite palm rotation	1.0 second
Maximum active thrust force of the index finger tip	≧0.45 Kgf
Maximum active thrust force of thumb tip	≧1.0 Kgf
Maximum active pinching force of two/three fingertips	≧1.0 Kgf
Maximum weight lifted (power grip)	30 Kg
Maximum single finger static load (power grip)	10 Kg
Maximum static load on fingertip of single finger (flat extension)	8 Kg

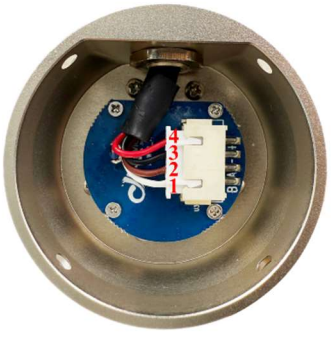
7.2. Weight

Measuring position	parameters
Weight (including wrist)	545g±5g

7.3. Power and communication interface

ROHAND is divided into ROH-A001LS/ROH-A001RS - waterproof interface version, and ROH-A001LSA/ROH-A001RSA – LEMO base type. There is an RS485 interface PCB board installed inside the ROHAND wrist.

(1) The ROH-A001LS/ROH-A001RS type is equipped with 4-connector XH2.54 terminal blocks with a pitch of 2.54 mm on the PCB, and the connector definitions are as follows. To meet the customer's different wiring and waterproof fastening needs, the ROH-A001LS/ROH-A001RS version is provided with waterproof fasteners. This type provides a communication cable with one end connected to the PCB board, and the other end is a bare wire with a length of 25CM, and the user can customize the wiring for a fee.



Pin No.	Signals	Colors
1	Marked "B", the DATA+ / B signal line of the RS485 bus	White
2	Marked "A", the DATA- / A signal line of the RS485 bus	Brown

3	Marked “-”, power ground wire	Black
4	Marked as "+", DC 24V power input, 2A current	Red

(2) The ROH-A001LSA/ROH-A001RSA type is equipped with a EXG.0B.304.HLN type LEMO chassis connector on the PCB. The LEMO chassis connector is mounted on the side of the wrist piece. Viewed from the front of the chassis connector, with the red marking point facing down and clockwise from its left side, the signal definition and interface wire color of the 4-pole is as follows. This type provides a communication cable with one end connected to the LEMO chassis connector, and the other end is a bare wire with a length of 25CM, and the user can customize the wiring for a fee.

Pin No.	Signals	Colors
1	Marked "A", the DATA- / A signal line of the RS485 bus	Brown
2	Marked "B", the DATA+ / B signal line of the RS485 bus	White
3	Marked as "+", DC 24V power input, 2A current	Red
4	Marked “-”, power ground wire	Black

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8. Maintenance, Warranty and After-sales Service

8.1. Maintenance

8.1.1. Clean regularly during use. It is recommended to use disinfectant wiper to clean up the outer surface of the product, be careful not to let the cleaning liquid seep into the palm of the hand.

8.1.2. Do not disassemble it by yourself. If the product needs service, contact the designated after-sales service center.

8.2. Warranty

8.2.1. 12-month warranty period from the date of sale.

8.3. After-sales service

8.3.1. Usage and technical support services are provides through internet or telephone.

8.3.2. During the warranty period, the manufacturer provides free maintenance and parts replacement; outside the warranty period, the manufacturer provides paid maintenance services. If parts are damaged, the manufacturer will charge for the parts. User bears shipping costs.

8.3.3. When the product needs to be sent for repair, the user should ensure that the product is properly packaged and suitable for transportation. Damage or loss caused by transportation is not covered by the warranty.

8.3.4. The following situations do not fall within the scope of warranty promised by Party A, including:
(1) Wear and wore caused by normal use of the product;
(2) Product damage caused by human factors, such as damage caused by water immersion, impact, improper storage, unauthorized disassembly, improper transportation, etc.;
(3) Damage caused by force majeure factors.

8.3.5. If the failure is caused by human error, or beyond the warranty period, or force majeure factors, the manufacturer will charge parts and maintenance fees.

9. Packing list

9.1. ROHAND dexterous hand (model ROH-A001): 1 piece

9.2. User manual: 1 copy

9.3. Certificate: 1 piece

9.4. Warranty card: 1 piece

10. Contact Information

Address: 6/F, Bldg 2, 222 Guangdan Road, Shanghai, PRC

Postal code: 201318 Tel: 021-63210200

Email: info@oymotion.com Web: www.oymotion.com

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11. Revision Hisitory

Date	Revision	Modified content
2024.2.14	V1.0	Initial version.
2024.9.23	V1.1	Updated photo; Added revision history.
2024.10.28	V1.2	Updated photo; Added new interface description; Added revision history.
2024.11.12	V1.2.1	Modified table of product model; Added revision history.