ROHAND DEXTEROUS HAND
USER MANUAL

V1.3.0

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.

ROH-A001 dexterous hand with UART, RS485 or CAN FD physical interface, support SerialCtrl dedicated serial protocol, ModBus-RTU protocol and CAN protocol, can provide ROS / ROS2 platforms for secondary development with SDK (a license agreement needs to be signed).

4. Product Model

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

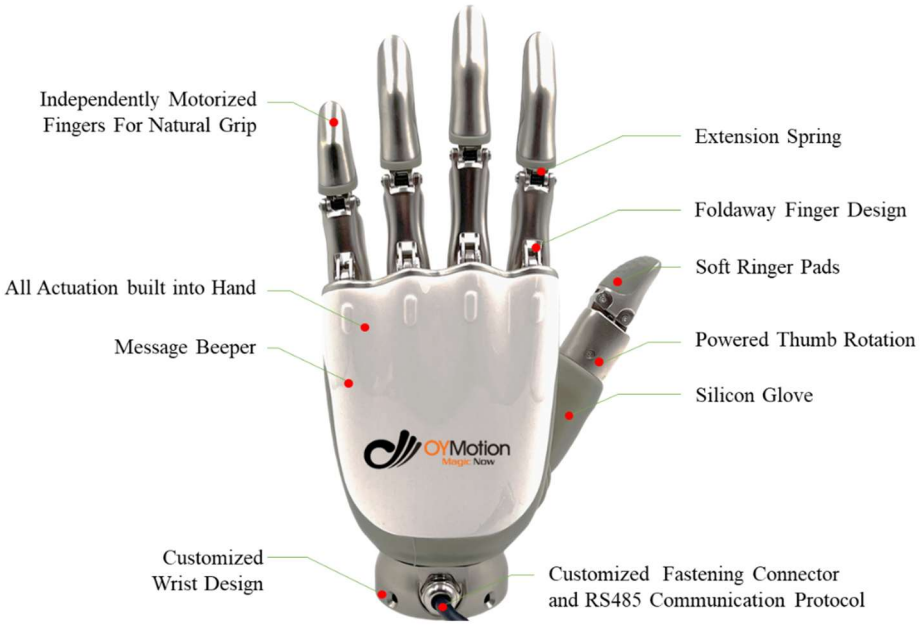
Note: Versions with suffix -C are CAN interface versions.

5. Product Main Parts and Size

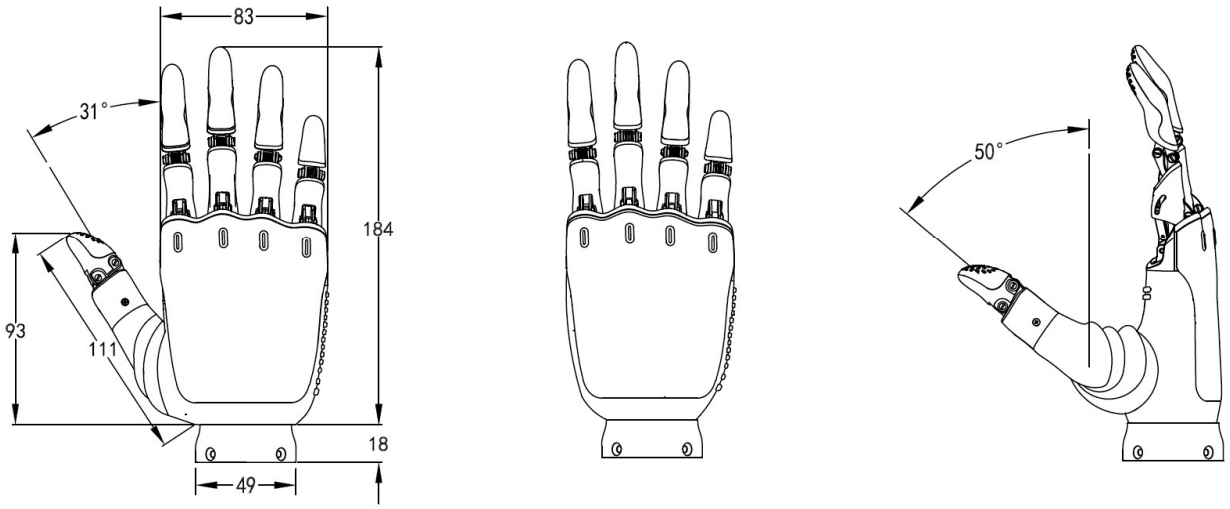
5.1. Material

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

5.2. Structure



5.3. Dimensions



ROHAND-A001 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

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

Weight (including wrist)	545g±5g

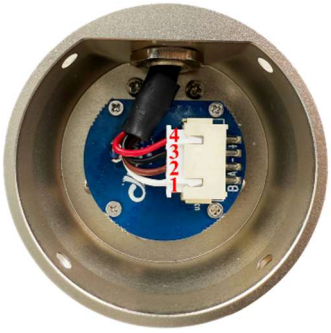
7.3. Power and communication interface

ROH-A001 dexterous hand adopts DC 12-24V power supply, rated power 48W.

ROH-A001 dexterous hand supports UART, RS485, CAN interface, various interface parameters are as follows:

Communication Interface	Baud Rate	Supported Protocol
UART	115200	SerialCtrl ModBus-RTU
RS485	115200	SerialCtrl ModBus-RTU
CAN	1M	SerialCtrl

The ROH-A001LB/ROH-A001RB 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.



Pin No.	Signals	Colors
1	Marked "B", the DATA+ / B signal line of the RS485 bus; Marked "H": CAN-H differential signaling line of the CAN bus;	White
2	Marked "A", the DATA- / A signal line of the RS485 bus; Marked "L": CAN-L differential signaling line of the CAN bus;	Brown

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

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. Optional tool package

Interface	Tools	Amount	Figure	Description
RS-485	24V / 60W Power	1		DC Stabilized Power Supply, Type:GST60A24-P1J
	USB-485 Module	1		USB to 485 converter, can be shared by multiple devices
	Power/communication cable	1		Power and communication cable with DC socket
	4-Pole quick wiring terminals	1		4-Pole quick connect terminals，for interfacing with user’s cables
	Wiring terminals	100		Tube Terminal for Wiring, Model No. E-0508
	Wiring terminal pliers	1		For wiring
CAN	24V / 60W Power	1		DC Stabilized Power Supply, Type:GST60A24-P1J

USB-CAN module	1		USB to CAN converter, type IPEH-002022, can be shared by multiple devices
Power/communication cable	1		Power and communication cable with DC socket
4-Pole quick wiring terminals	1		4-Pole quick connect terminals，for interfacing with user's cables
USB-UART Module	1		For updating firmware, can be shared by multiple devices
1.25mm 4-pole pin	1		For updating firmware, can be shared by multiple devices
Wiring terminals	100		Tube Terminal for Wiring, Model No. E-0508
Wiring terminal pliers	1		For wiring

Notes: For the power supply of ROHand, it is usually rated at 24V and 48W.

11.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

12. Revision History

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.
2024.11.26	V1.2.2	Modified photo; Modified product model; Added optional tool package; Added revision history.
2025.6.10	V1.3.0	Added of CAN version description; Added of baud rate description; Added of optional kit contents; Added revision history.