



# **ROH-LiteS001 DEXTEROUS HAND USER MANUAL**

**V1.0.5**

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## 1. Trademarks and Patents

ROHAND dexterous hand (ROH-LiteS001) is designed and produced by OYMotion Technologies Co., Ltd with IPs developed by the company. Any other group or individual may not reproduce and transmit any part of this article in any form or by any means (electronic, mechanical, etc.) for any purpose without the written permission from the company.

## 2. Warning and Caution

### **Warning: ROH-LiteS001 dexterous hand is not waterproof.**


- 2.1. Like all non-waterproof electronic products, the precision electronic circuits, power motors and mechanical structures inside the ROH-LiteS001 dexterous hand will cause circuit short circuits, rust, and irreversible damage when contaminated by liquid. Users must ensure that no liquid enters the dexterous 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 ROH-LiteS001 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 ROH-LiteS001 dexterous hand.

## 3. Introduction

ROH-LiteS001 dexterous hand features 11 movable joints, with 6 built-in motor drivers and motor control circuits, providing 6 active degrees of freedom. Equipped with a built-in PID motor control algorithm, it can simulate various human hand grasping operations. Typical applications include robotic end-effectors, educational and research equipment, and bionic prosthetics etc. Utilizes an integrated cable, features fingertip rubber with raised dots and touchscreen functionality, and boasts a compact, lightweight design.

ROH-LiteS001 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	Pictures
ROH-LiteS001LB ROH-LiteS001LB-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001RB ROH-LiteS001RB-C	■Right	■Proximal phalanx: Black ■Back: Black	
ROH-LiteS001L01 ROH-LiteS001L01-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R01 ROH-LiteS001R01-C	■Right	■Proximal phalanx: Black ■Back: White	
ROH-LiteS001L04 ROH-LiteS001L04-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R04 ROH-LiteS001R04-C	■Right	■Proximal phalanx: Black ■Back: Red	
ROH-LiteS001L05 ROH-LiteS001L05-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R05 ROH-LiteS001R05-C	■Right	■Proximal phalanx: Black ■Back: Orange	
ROH-LiteS001L06 ROH-LiteS001L06-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R06 ROH-LiteS001R06-C	■Right	■Proximal phalanx: Black ■Back: Yellow	
ROH-LiteS001L07 ROH-LiteS001L07-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R07 ROH-LiteS001R07-C	■Right	■Proximal phalanx: Black ■Back: Tiffany Blue	
ROH-LiteS001L08 ROH-LiteS001L08-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R08 ROH-LiteS001R08-C	■Right	■Proximal phalanx: Black ■Back: Blue	

Type	Left/Right	Color	Pictures
ROH-LiteS001L09 ROH-LiteS001L09-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R09 ROH-LiteS001R09-C	■Right	■Proximal phalanx: Black ■Back: Purple	
ROH-LiteS001L10 ROH-LiteS001L10-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R10 ROH-LiteS001R10-C	■Right	■Proximal phalanx: Black ■Back: Light Pink	
ROH-LiteS001L11 ROH-LiteS001L11-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R11 ROH-LiteS001R11-C	■Right	■Proximal phalanx: Black ■Back: Magenta	
ROH-LiteS001L12 ROH-LiteS001L12-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R12 ROH-LiteS001R12-C	■Right	■Proximal phalanx: Black ■Back: Champagne	
ROH-LiteS001L13 ROH-LiteS001L13-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R13 ROH-LiteS001R13-C	■Right	■Proximal phalanx: Black ■Back: Deep Pink	
ROH-LiteS001L14 ROH-LiteS001L14-C	■Left	■Main body: Black ■Wrist: Black	
ROH-LiteS001R14 ROH-LiteS001R14-C	■Right	■Proximal phalanx: Black ■Back: Violet	

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

## 5. Product Main Parts and Size

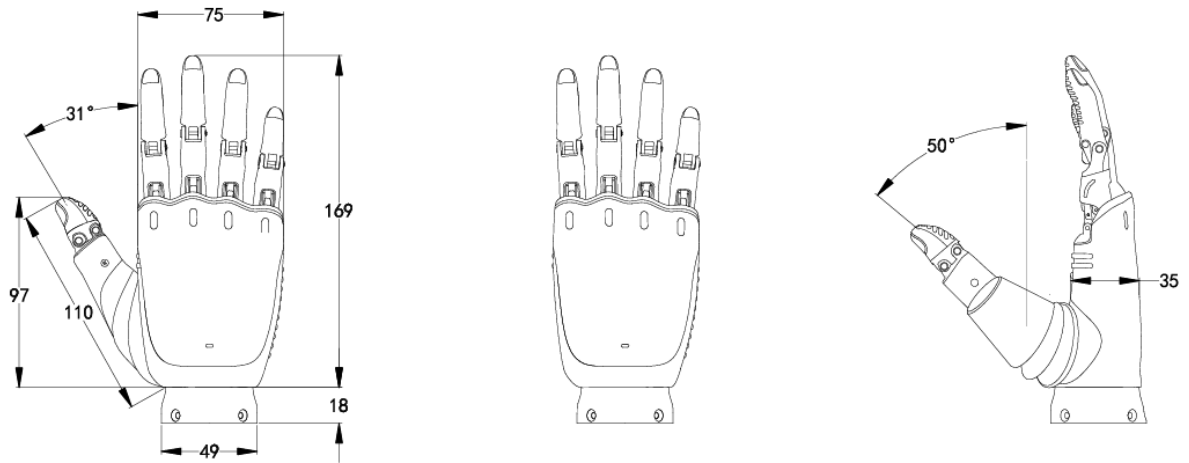
### 5.1. Material

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

### 5.2. Structure



### 5.3. Dimensions



**ROH-LiteS001 Dimensions and Angles**

Vertical distance from the tip of the middle finger to the wrist	169 mm
Vertical distance from thumb tip to wrist	97 mm
Thumb length	110 mm
Maximum palm width	75 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- LiteS001 provides a variety of wrist designs to choose from and to meet different needs.

## 6. Storage, Transportation and Use Environment

Storage and transportation requirements:	Temperature: -10 degrees Celsius ~ +40 degrees Celsius
Placed in the original packaging box	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. Load and speed

Bending/stretching time for full range at maximum speed	0.7 second
Rotation time of thumb for full range at maximum speed	0.7 second
Active force of each finger tip on stretched state	$\geq 0.45$ Kgf
Active force of each finger tip on bended state	$\geq 1.0$ Kgf
Maximum active force of thumb tip	$\geq 1.0$ Kgf
Maximum passive load for four fingers on bended state	25 Kg
Maximum passive load for each fingers on bended state	8 Kg
Maximum passive load for each finger on stretched state	5 Kg

#### 7.2. Weight

Weight (including wrist)	457g $\pm$ 5g
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#### 7.3. Power and communication interface

ROH-LiteS001 dexterous hand adopts DC 12-24V power supply, rated power 48W.

ROH-LiteS001 dexterous hand supports UART, RS485, CAN interface, various interface parameters are as follows:

Communication Interface	Baud Rate	Supported Protocol
UART	9600/19200/38400/57600/115200/230400/460800/921600	SerialCtrl ModBus-RTU
RS485	9600/19200/38400/57600/115200/230400/460800	SerialCtrl ModBus-RTU
CAN	1M	SerialCtrl

The ROH-LiteS001LB/ROH-LiteS001RB type is equipped with 4-conductor 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**




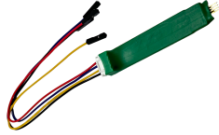


- 8.3.1. Usage and technical support services are provided through internet or telephone.
- 8.3.2. During the warranty period, the manufacturer provides free maintenance and parts replacement; outside the warranty period, the manufacturer provides paid maintenance services. If parts are damaged, the 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 tear 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-LiteS001): 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

Interface	Tools	Amount	Figure	Description
	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

## 11.Contact Information

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## 12.Revision Hisitory

Date	Revision	Modified content
2025.5.15	V1.0.0	Initial version.
2025.5.22	V1.0.1	Modified parameters of load. Modified revision history.
2025.5.23	V1.0.2	Modified figures in tool package. Modified revision history.
2025.6.10	V1.0.3	Modified of CAN protocol description; Adjusted of the contents of the optional tool package; Modified revision history.
2025.9.11	V1.0.4	Added product model; Modified address information.
2025.10.13	V1.0.5	Modify the cover image; Modified revision history.