



Linker Hand L6 Product Manual



Linkerbot Beijing Technology co., Ltd

Version revision record

Version	Change date	Change description
V1.0	2025.09.02	Linker Hand L6 First edition
V1.1	2025.09.04	Update the sports performance parameters, product presentation and appearance dimension drawings.

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1. Product Overview

1.1 Product Introduction

Linker Hand L6 is a high-precision bionic manipulator. It adopts a unique dexterous joint design of "6 active + 5 passive", which elevates precision, response speed and operation capability to a new level. The independently developed joint modules, combined with link transmission technology, endow it with high rigidity, while the overall weight of the manipulator is only 618.5g. It can easily handle both the delicate operations of precision assembly and the flexible grasping of irregularly shaped objects, constantly breaking through the application limits of bionic manipulators.

1.2 Product Display



Figure 1-1 Product Diagram of Linker Hand L6



Figure 1-2. Structure and Characteristics Display Diagram of Linker Hand L6

1.3 Appearance dimensions

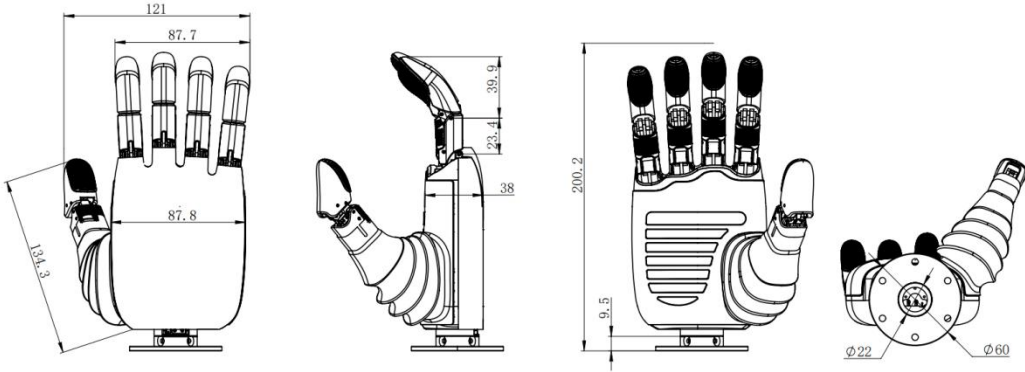


Figure 1-3 Appearance dimensions (unit: mm)

Definition	Parameter(mm)
Length from middle finger tip to palm base	190.7
Maximum palm width	121
Length from thumb tip to palm base	134.3
Wrist height	9.5
Wrist diameter	60

1.4 Product Features

➤ **Compact and Lightweight**

With an ultra-lightweight design of only 618.5g for the entire unit and a compact structure, it can be easily adapted to various systems such as collaborative robotic arms and service robots, significantly improving integration flexibility and motion efficiency.

➤ **High-Precision Force Control Capability**

It adopts a high-rigidity link transmission system and a self-developed high-precision joint module, achieving a repeat positioning accuracy of $\pm 0.2\text{mm}$ and ensuring precise and reliable movement every time.

➤ **Rapid Response Performance**

It features an ultra-fast opening and closing response in 0.35 seconds. Combined with independent motion control of the thumb and synchronized precise movement of the four fingers, it achieves flexible operation similar to a human hand.

2. Product Performance Introduction

2.1 Degrees of Freedom (DoF)

Linker Hand L6 integrates 11 joints, including 6 active joints and 5 passive joints. The 6 active joints are equipped with miniaturized high-precision drive modules, which can quickly respond to control commands and realize precise finger movements such as flexion, extension and lateral swing, providing stable power support for lightweight precision operations. The 5 passive joints adopt a bionic elastic damping structure, which can adaptively fit the contour of the operating object during movement. Whether grasping special-shaped parts or contacting soft objects, it can reduce damage to the workpiece through flexible buffering, while reducing the load of the active drive system and further optimizing energy consumption performance.

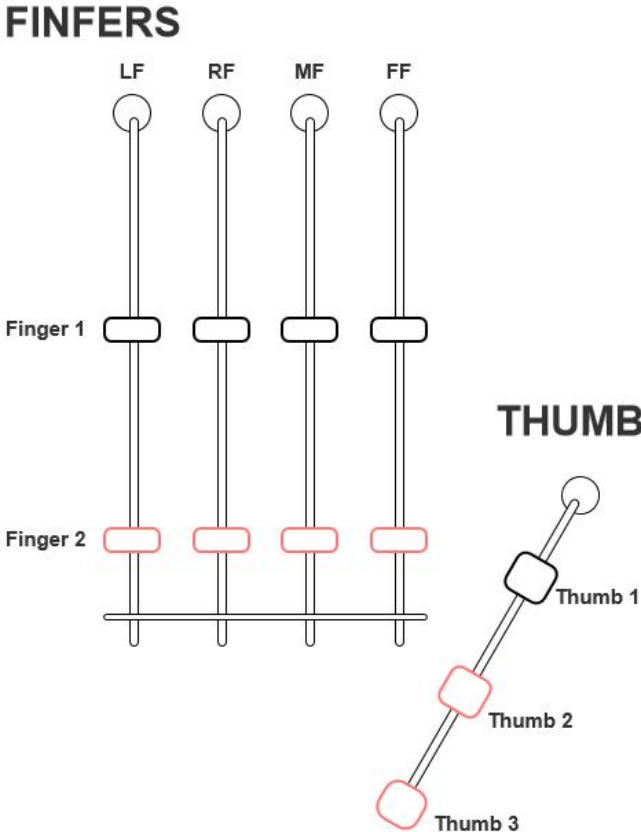


Figure 2-1 Joint degree of freedom diagram

2.2 Four-Finger Motion Range

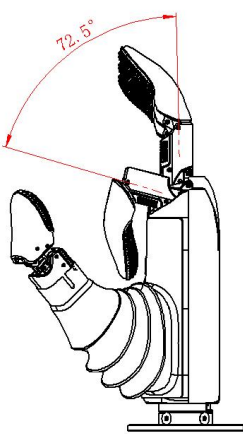


Figure 2-2 Bending Angle Diagram of Four-Finger First Joint

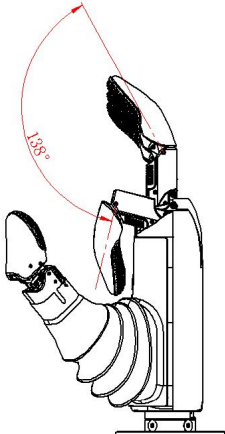


Figure 2-3 Bending Angle Diagram of Fourth Finger Second Joint

2.3 Range of Motion of Thumb

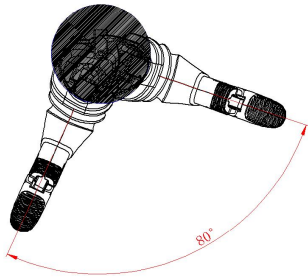


Figure 2-4 Thumb Side - sway

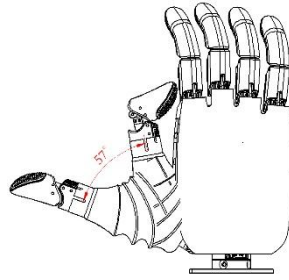


Figure 2-5 Thumb First Joint

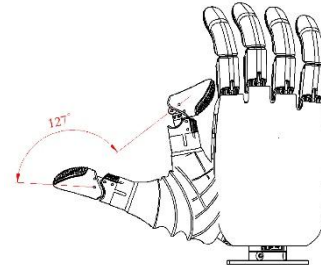


Figure 2-6 Thumb Second Joint

2.4 Motion Performance Parameters

Movement Part	Angle Range (°)	Movement Speed (°/s)
Base of Thumb	57	152.82
Base of Index Finger	72.30	213.27
Base of Middle Finger	72.90	208.29
Base of Ring Finger	73.10	202.49
Base of Little Finger	72.60	201.11
Tip of Thumb	69.90	192.84
Tip of Index Finger	64.60	192.84
Tip of Middle Finger	65.10	185.32
Tip of Ring Finger	66.90	185.32
Tip of Little Finger	66.70	184.76
Side Swing of Thumb	80	235.29
Opening and Closing Time	-	0.35s

2.5 Product Parameters

2.5.1 Basic Parameters

Model	Linkerhand L6
Degrees of Freedom (DOF)	6
Number of Joints	11 (6 Active + 5 Passive)
Transmission Mode	Linkage Transmission
Control Interface	CAN
Weight	623.5g
Maximum Load	28kg
Operating Voltage	DC24V±10%
Static Current	0.2A
Average Current (No-Load Movement)	0.75A
Maximum Current	1.4A
Repeat Positioning Accuracy	±0.2mm

2.5.2 Force Performance Parameters

Performance Indicator	Specific Parameter
Maximum Tip Force of Thumb	10N
Maximum Tip Force of Four Fingers	8N
Maximum Grasping Force of Five Fingers	50N

3. Function Introduction

3.1 Control Functions

➤ **Online Upgrade**

It supports online updates of the dexterous hand system firmware via the host computer, enabling continuous iteration of functional modules and optimization of core performance parameters. It is adaptable to industrial scenarios and scientific research needs that require long-term upgrades and iterations, ensuring the equipment operates efficiently for an extended period.

➤ **Position Control**

It can precisely control the spatial position of the entire hand and each finger joint, and smoothly execute preset trajectory movements. This ensures operational accuracy from overall movements to single-joint fine adjustments, meeting scenarios with high position accuracy requirements such as precision assembly and path-based operations.

➤ **Speed Control**

The finger movement speed can be flexibly adjusted according to task requirements to accurately match different operation rhythms. The high-speed mode improves efficiency, while the low-speed mode ensures the safety of fine operations. This effectively balances operation efficiency and safety, making it suitable for diverse task scenarios.

➤ **Haptic Feedback (Force Control)**

With the help of fingertip sensors, it can real-time detect and precisely control the force and torque applied by the fingers, and dynamically adjust the output force: it not only prevents damage to fragile objects due to excessive force but also avoids object slippage caused by insufficient force, providing reliable force control support for fine operations such as screw tightening and thin sheet grasping.

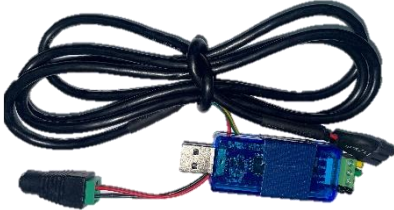


3.2 Sensors


Parameter	Specification
Piezoresistive Array	6*12
Sensor Force-Bearing Area	9.6*14.4mm
Trigger Force	5g
Measurement Range	20N
Service Life	100,000 Cycles
Communication Frame Rate	200FPS
Value Range	0~4095

4. Installation and Commissioning

4.1 Accessory List

Before installing the dexterous hand, check whether all accessories are complete.

Serial No.	Name	Quantity	Picture
1	USB-to-CAN Debugging Cable	1	
2	Connector Cable XT30 (2+2)	1	
3	Power Adapter	1	

4	Power Cable	1	
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4.2 Flange Interface

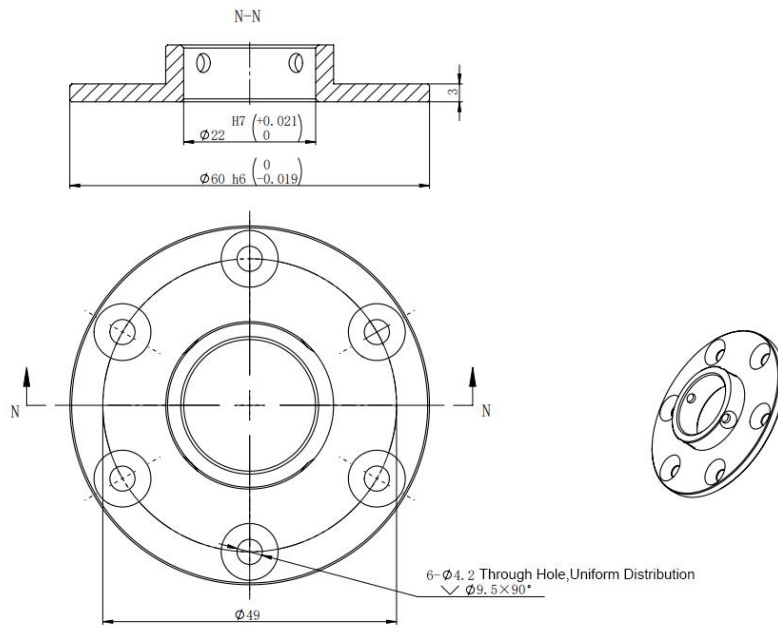


Figure 4-1 Layout Drawing of End Fixing Holes

4.3 Introduction to Communication Interface

The dexterous hand adopts the XT30 (2+2) connector, and its pin sequence is as follows:

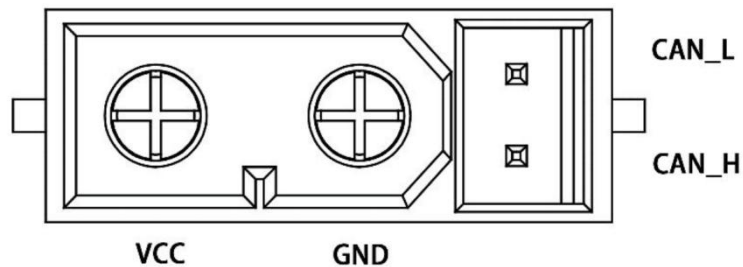


Figure 4-2 Terminal Definition Diagram

4.4 Storage

When the product is not in use for an extended period, it is recommended to place

it back in its original packaging box.

The storage environment requirements are as follows:

- 1) Store indoors, away from dust, flammable, explosive, or corrosive gases and liquids.
- 2) Temperature: -10~50°C.
- 3) Humidity: Not exceeding 80%, no condensation.

While meeting the above conditions, it is recommended to use the original packaging for storage.

5. After-Sales Service Terms

- 1) **Warranty Period:** From the date of purchase, the product is eligible for a 12-month limited warranty.
- 2) **Warranty Coverage:** During the warranty period, if the product malfunctions due to inherent manufacturing defects or material flaws, we will provide free repair services or replace the faulty components.
- 3) **The following situations are NOT covered by the warranty:**
 - Appearance wear and tear caused by normal use.
 - Damage resulting from improper operation, accidental impact, unauthorized disassembly/modification, or failure to follow the user guide.
- 4) Returns or exchanges are not supported for issues unrelated to product quality.
- 5) If the product malfunctions, please contact the official after-sales customer service for assistance immediately. Do not disassemble the product by yourself, as this may cause further damage.
- 6) For repair services after the warranty period expires, relevant fees will be charged based on the actual repair requirements.

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