

深圳市大象机器人科技有限公司

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 **Elephant Robotics 大象机器人**

大象协作机械臂320-树莓派版

myCobot 320 Pi

六轴协作机器人

6-Axis Collaborative Robot

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Warning

Before using myCobot 320 Pi, please read all instructions and cautionary markings in this manual

1. Do not expose the product to rain or moisture to reduce fire or shock hazard.
2. Do not place the product in or near fire.
3. Do not leave the product in a car in hot or humid weather.
4. Do not disassemble, crush or pierce the product.
5. Do not expose the product to excessive shock such as dropping from a high place.
6. Do not expose the product to high temperatures above 45 °C .

Attention

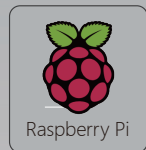
Regarding the operation and secondary development of myCobot 320 Pi, please read and download Gitbook before using it.

Official Website: <https://www.elephantrobotics.com/en/support-320-pi-en/>

Model: myCobot-320-Pi

myCobot 320 Pi

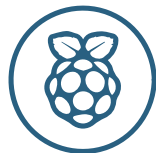
Highly Cost-Effective



6-Axis Collaborative Robot

myCobot 320 Pi is a product belonging to the "myCobot 320 series". It uses a Raspberry Pi microprocessor and embedded RoboFlow visual programming software. It is a machine "assistant" developed by Elephant Robotics for makers and researchers.

The myCobot 320 Pi has a weight of 3.3kg, a load of 1kg, and a working radius of 350mm. The volume is relatively small but powerful. It is easy to operate, can work in collaboration with people, and work safely. It has three advantages: ease of use, safety and economy, and it is a cost-effective choice.



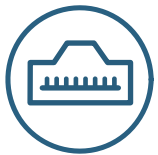
Embedded Raspberry Pi ecology, unlimited development possibilities

- Raspberry Pi 4B, 1.5GHz 4-core microprocessor, running on Debian/Ubuntu platform.
- Support 4 USB, 2 HDMI, standardized GPIO interface, TF card pluggable.



Easy to operate, open source and easy to use

- Drag to teach, users can quickly get started.
- Support development systems such as ROS/moveit and RoboFlow operating software independently developed by Elephant Robotics.



High configuration, powerful performance

- The use of brushless DC servos can achieve a repeat positioning accuracy of $\pm 0.5\text{mm}$.
- The base and the end are equipped with installation interfaces, which are suitable for the development of various peripheral products and equipment.



Economical and applicable, super cost-effective

- The standard 8-hour work system can replace repetitive and standard work.
- Cost effective for reducing costs and increasing efficiency for scientific research that requires high performance and low cost.



Integrated design, safe collaborative operation

- The exquisite structural design makes it possible to make full use of the space and perfectly blend into the actual environment.
- Equipped with the anti-collision detection function based on the accurate dynamic model, so that it can work safely with people.

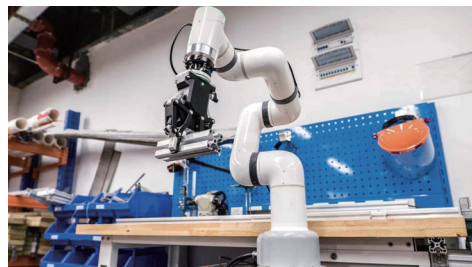
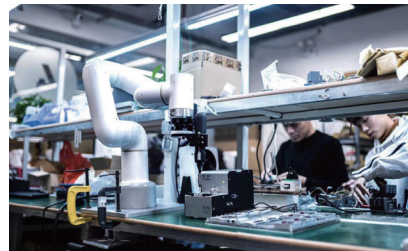


Unique industrial design

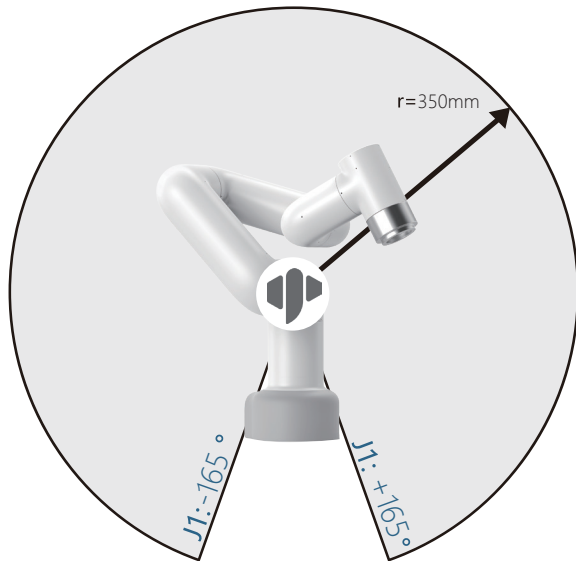
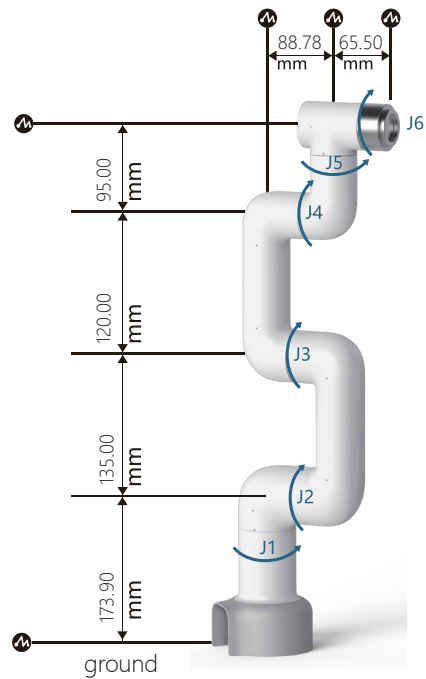
- Integrated design, the overall structure is compact, and the net weight is 3kg.
- Modular design, few spare parts, low maintenance cost, quick disassembly and replacement.

myCobot 320 - Design Prototype - Elephant Robot® C Series Robot

The design prototype of myCobot 320 is from All-in-one Robot launched by Elephant Robot in China in 2018. As the first integrated collaborative robot in China, it has won the 2019 CAIMRS Industrial Robot Innovation Award and 2019 High-tech Robot Annual "Innovation Technology Award", and has been also sold to more than 30 countries at home and abroad, receiving unanimous praise and recognition from the factories of the world's top 500 enterprises.



myCobot 320 Pi - Size and Working Range Diagram



Parameter

| Robot arm Parameter | |
|---------------------|---------------------|
| Model | myCobot 320-Pi 2022 |
| Degree of Freedom | 6 |
| Payload | 1kg |
| Working range | 350mm |
| Repeatability | $\pm 0.5\text{mm}$ |
| Weight | 3.3kg |
| Power Input | 24V, 120W |
| Working Temp. | 0-45° |
| Communication | USB |

| Software Parameter | |
|----------------------------|--------------------------|
| System Version | Ubuntu 18.04 |
| ROS/Python | Built-in |
| Blockly Visual Programming | Built-in |
| Camera | Available for any camera |
| ModelBus RTU | Ethernet |

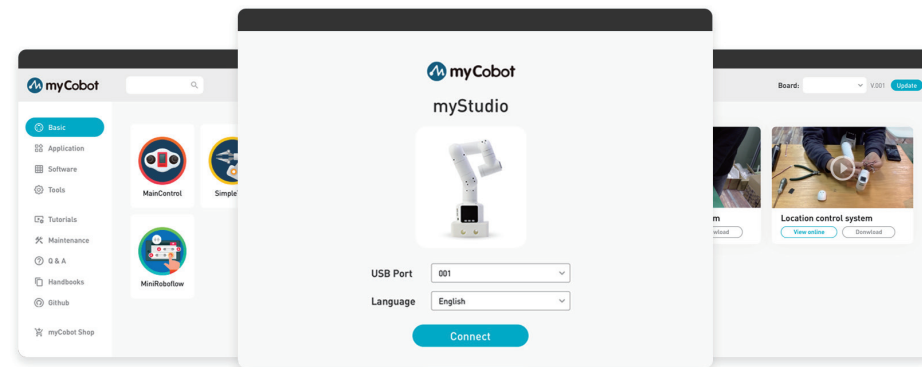
| Electric parameter | |
|------------------------------|-------------------------|
| SOC | Broadcom BCM2711 |
| CPU | 64-bit 1.5GHz quad-core |
| Bluetooth/wireless | Yes |
| USB | USB3.0 x2; USB2.0 x2 |
| HDMI port | microHDMI x2 |
| IO Port | INT x6; OUT x6 |
| Emergency Stop Button | Yes |
| Teach pendant/Keyboard/Mouse | Optional |



Control Board Pin Map



myStudio



myStudio is a one-stop platform for robots

myStudio integrates myCobot's software and various materials.

The main functions of myStudio are: 1) Update the firmware; 2) Provide video tutorials on how to use the robot; 3) Provide maintenance and repair information (such as video tutorials, Q&A, etc.).

Please download the latest version of myStudio to use.

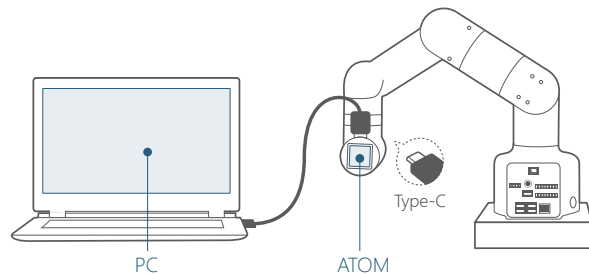
The download link is as follows:

Official website: <https://www.elephantrobotics.com/en/support-320-pi-en/>

Github: <https://github.com/elephantrobotics/MyStudio/>

Burn Table

Development environments that support the secondary development of myCobot 320 are: myBlockly, ROS, python, etc.



| Development Environment | Pico Firmware | Atom Firmware |
|--|---------------|---------------|
| Default Program | picoMain | atomMain |
| Myblockly | picoMain | atomMain |
| RoboFlow Industrial Programming Software | picoMain | atomMain |
| Python | picoMain | atomMain |
| ROS Development | picoMain | atomMain |
| BlueTooth | picoMain | atomMain |

myCobot 320 Accessory

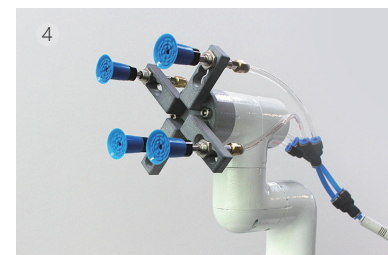
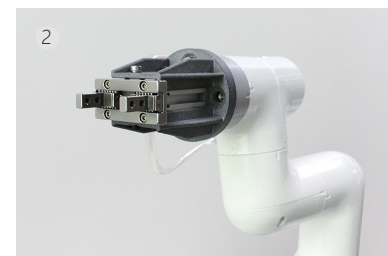
Elephant Robotics are targeted at robotic collaboration applications, making “myCobot - series” product line.

For new information about the accessories, Follow us on Shopify and Twitter.

Shopify: <https://shop.elephantrobotics.com/>

Twitter: @cobotMy

Facebook: myCobot



- 1 Electric parallel gripper
- 2 Air parallel gripper
- 3 Adaptive gripper
- 4 Vacuum suction cups

⚠ 警告

在使用本产品之前，请阅读本手册中所有说明及警告提示。

- 为避免火灾或电击危险，请勿将产品暴露在雨中或潮湿的地方。
- 请勿将产品放在火中或靠近火处。
- 请勿将本产品放置或使用在炎热潮湿的地方。
- 请勿暴力拆卸本产品。
- 请勿将产品暴露在过度的冲击下，如从高处跌落。
- 不要将产品暴露在超过45℃的高温下。

⚠ 开机必读

本册为myCobot 320-树莓派版产品画册

关于本产品的操作使用及二次开发，请先在大象机器人官网阅读并下载Gitbook相关指导说明。

下载链接：<https://www.elephantrobotics.com/mycobot-320-pi-cn/>

myCobot-320-Pi

myCobot 320 Pi

科研 超高性价比



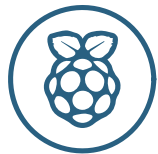
Raspberry Pi
树莓派版



六轴协作机器人

myCobot 320 Pi是隶属“myCobot 320系列”产品，采用树莓派微处理器，内嵌myBlockly可视化编程软件、Python开发环境、ROS开发环境，是大象机器人面向创客及科研人员开发的机器“助手”。

myCobot 320 Pi本体重量3.3kg，负载1kg，工作半径350mm，体积相对小巧但功能强大，操作简单、能与人协同、安全工作。作为大象机器人首款万元级机械臂，具有易用性、安全性和经济性三大优势，是高性价比之选。



内嵌树莓派生态，开发无限可能

- 树莓派4B，1.5GHz 4核微处理器，运行Debian/Ubuntu平台。
- 支持4路USB，2路HDMI，标准化GPIO接口、TF卡可插拔。



操作方便，开源易用

- 拖动示教，用户可迅速上手操作。
- 支持ROS/moveit等开发系统及大象机器人自主研发的roboflow操作系统。



高配置，性能强大

- 采用无刷直流舵机，可以达到 $\pm 0.5\text{mm}$ 的重复定位精度。
- 底座及末端带有安装接口，适用于各种周边产品设备开发。



经济适用，超高性价比

- 标准8小时工作制，能够替代重复性、标准性的工作。
- 万元级机械臂，有效为需要高性能&低成本的科研降本增效。



一体化设计，安全协同作业

- 精巧结构设计使其能够充分利用生产空间，完美融入生产环境。
- 兼备基于精确动力学模型的防碰撞检测功能使其能与人安全协同作业。



独特工业设计

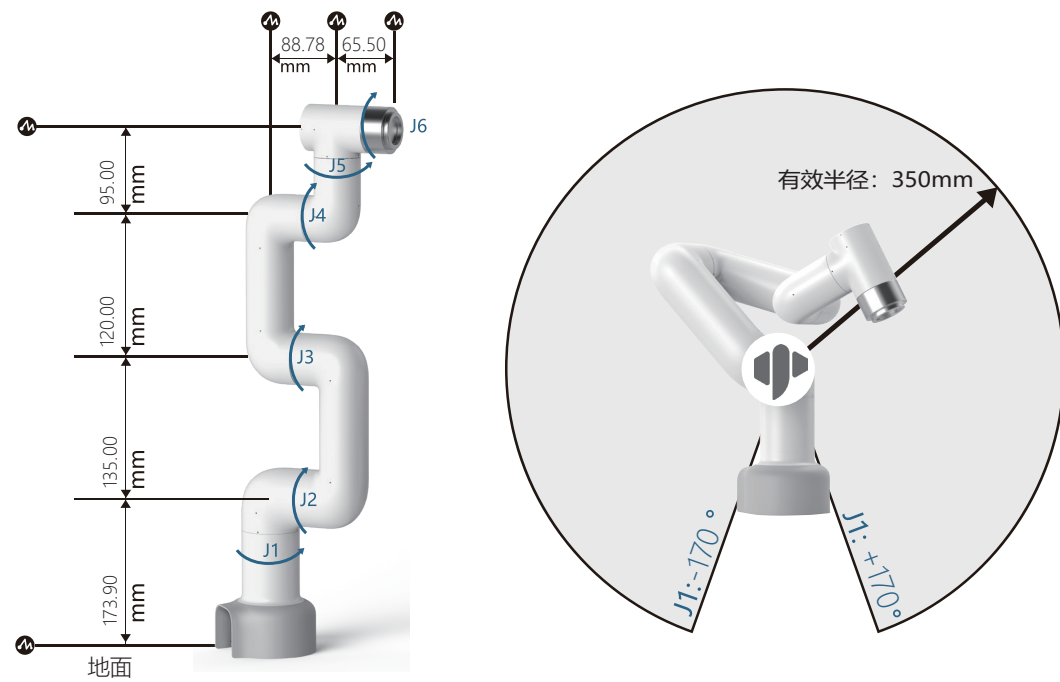
- 一体化设计，整体机身结构紧凑，净重3kg。
- 模块化设计，备件少、维护成本低，可快速拆卸更换。

myCobot 320设计原型-大象机器人C系列all-in-one机器人

myCobot 320系列的设计原型为大象机器人2018年推出的国内首款 all-in-one 一体式协作机器人。作为国内首款一体式协作机器人，它曾获得2019CAIMRS工业机器人创新奖，2019高工机器人年度“创新技术奖”，远销海内外30多个国家并备受数家来自世界500强名企的一致认可与好评。



尺寸与工作范围图



产品参数

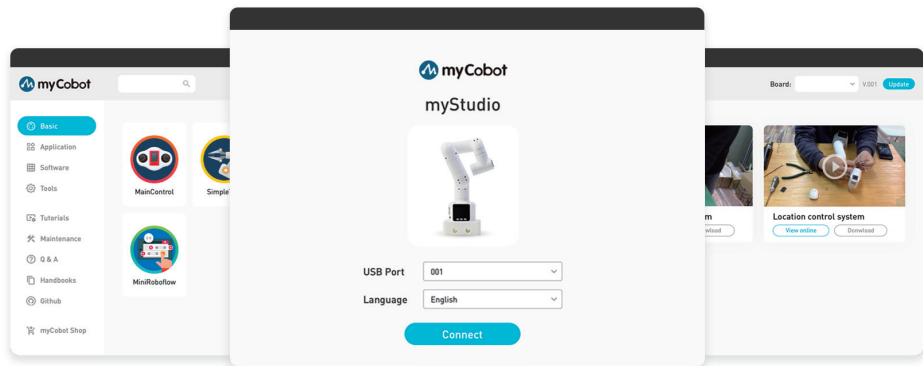
| 机械臂参数 | |
|--------|---------------------|
| 型号 | myCobot 320-Pi 2022 |
| 自由度 | 6 |
| 有效负载 | 1kg |
| 工作半径 | 350mm |
| 重复定位精度 | ±0.5mm |
| 重量 | 3.3kg |
| 电源输入 | 24V, 120W |
| 工作温度 | 0-50° |
| 通信 | USB |

| 软件平台 | |
|---------------|--------------|
| 系统版本 | Ubuntu 18.04 |
| ROS/Python | 内嵌 |
| Blockly 图形化编程 | 内嵌 |
| 搭载摄像头 | 选配任意摄像头 |
| ModelBus RTU | Ethernet |

| 电子参数 | |
|----------|----------------------|
| SOC | Broadcom BCM2711 |
| CPU | 64位 1.5GHz四核 |
| 蓝牙/无线 | 有 |
| USB | USB3.0 x2; USB2.0 x2 |
| HDMI 接口 | microHDMI x2 |
| IO 接口 | 输入 x6; 输出x6 |
| 急停开关 | 有 |
| 示教器或键盘鼠标 | 可选 |

电气接口示意图





myStudio是一个一站式的机器人的使用平台。

myStudio整合了myCobot & myCobot 320的软件资源及各类资料，主要功能为：

1) 下载更新固件；2) 查看机器人使用视频教程；3) 维护和维修方面的信息（如视频教程、Q&A等）

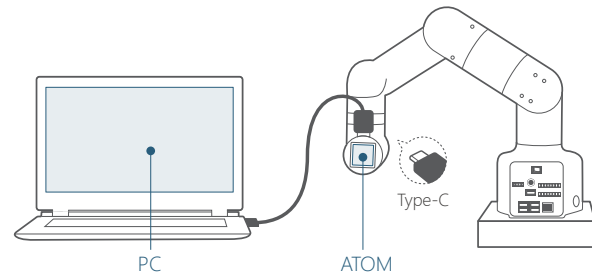
请下载最新版的myStudio进行使用

软件下载链接如下：

- 1、官网：<https://www.elephantrobotics.com/support/>
- 2、Github：<https://github.com/elephantrobotics/MyStudio/>

固件烧录

可支持myCobot 320 Pi进行二次开发的开发环境有：myBlockly、RoboFlow、ROS、python等

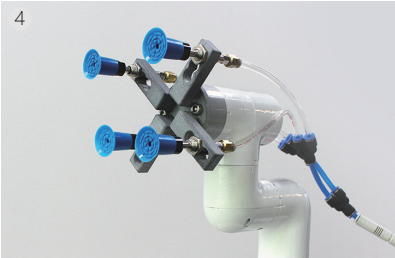
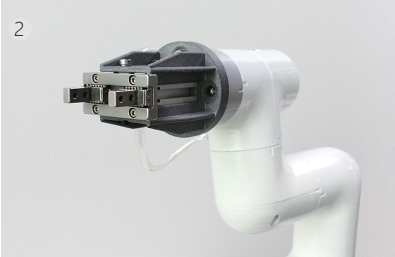


| 开发使用环境 | Pico所需固件 | Atom所需固件 |
|---------------------------|----------|----------|
| 默认程序 Default Program | PicoMain | atomMain |
| Myblockly | PicoMain | atomMain |
| RoboFlow 工业级可视化编程软件 | PicoMain | atomMain |
| API 开发软件接口 Python | PicoMain | atomMain |
| ROS Development ROS 开发 | PicoMain | atomMain |

myCobot 320 产品配件

大象机器人面向机械臂扩展应用，打造“myCobot - 系列”产品线。
相关配件的上新，请关注官方淘宝店铺。店铺名称：大象机器人

- 1 电动夹爪
- 2 气动夹爪
- 3 自适应夹爪
- 4 模块化吸泵



产品保修卡

用户信息 (必填):

购买人 _____ 订单号 _____ 联系电话 _____

地址 _____ 物流签收日期 _____

产品问题描述 (必填): _____

如需退换货，请事先联系客服确认退回相关信息。待客服确认后，填写此卡并将这一页随同产品一起寄回。
注：我司在法律允许范围内保留对本产品保修卡解释和修改的权利。

- 产品自签收起7日内未拆封可无理由退换，因产品退换所产生的费用及其他风险需由客户承担。
- 用户如需产品保修服务需提供相应的购买单据及产品保修卡作为保修凭证。
- 凡属于正常使用下由于产品本身质量问题引起的硬件故障，保修期内大象机器人给予免费维修。
- 保修起始日期为产品购买日或物流签收日。
- 维修更换的配件归大象机器人所有，必要时会收取适当的成本费用。

以下为详细的配件保修服务说明(如需以下产品售后服务，请事先联系客服沟通并确认相关信息)

| 舵机 | |
|-------|----------------------------|
| 保修期限 | 保修服务 |
| ≤1个月 | 我司免费提供一个新舵机并承担寄送运费(仅一次) |
| 1-3个月 | 我司免费提供一个新舵机，由客户自行承担运费(仅一次) |
| ≥3个月 | 客户需自己重新购买 |

电子件

| 保修期限 | 保修服务 |
|-------|------------------------------|
| ≤3个月 | 由用户拆卸后寄回，我司免费更换并承担往返运费(仅一次) |
| 3-6个月 | 由用户拆卸后寄回并承担往返运费， 我司免费更换(仅一次) |
| ≥6个月 | 客户需自己重新购买 |

结构件，含外壳部分

| 保修期限 | 保修服务 |
|------|----------------------------|
| ≤1年 | 我司免费提供新的零件， 由客户自行承担运费(仅一次) |
| ≥1年 | 客户需自己重新购买 |

特别说明: 在交付产品的保修期内， 本公司仅对正常使用机器人时发生的故障进行免费修理。
但在以下情况下， 将对客户收取修理费用(即使在保修期内):

- (1) 因不同于手册内容的错误使用以及使用不当而导致的损坏或故障
- (2) 客户未经授权进行拆卸导致的故障
- (3) 属于外壳等部件自然的消耗， 磨损及老化
- (4) 因调整不当或未经授权进行修理而导致的损坏
- (5) 因地震、洪水等自然灾害导致的损坏

因此， 请严格遵照本手册及相关手册的指示对机器人进行操作。

WARRANTY CARD

Customer Information (Required):

Purchaser _____ Order No. _____ Phone _____

Address _____ Logistics Receipt Date _____

Product problem description(Required):

If you need to apply for warranty service, please contact our customer service to confirm the detailed information. After confirmation, please fill in the card and send it back together with the product and the attached invoice. Note: Our company reserves the right to explain and modify the warranty card of this product within the scope of the law.

- Return service is limited to goods not opened within 7 days after the receipt date of logistics of the products. The freight or other risks incurred in return shall be borne by the customer.
- Customers should provide the purchasing invoice and warranty card as the warranty certification when a warranty is being asked.
- Elephant Robotics will be responsible for the hardware faults of products caused by the normal using during the warranty period.
- The warranty period starts from the date of purchase or the receipt date of the logistics.
- The faulty parts from the products will be owned by Elephant Robotics, and the appropriate cost will be charged if necessary.

If you need to apply for warranty service, please contact our customer service first to confirm the detailed information.

| Sever motor | |
|--|--|
| Warranty Period | Warranty Services |
| ≤1 months | Elephant Robotics offers a free new servo motor and bear the freigh. |
| 1-3 months | Elephant Robotics offers a free new servo motor, customs shall bear the freight. |
| ≥3 months | Customers need to buy it themselves. |
| Electrical Parts | |
| ≤3 months | Customers need to send it back after disassembly, Elephant Robotics shall send a new one for free and bear the freight out and home. |
| 3-6 months | Customers need to send it back after disassembly and bear the freight out and home, Elephant Robotics shall send a new one for free. |
| ≥6 months | Customers need to buy it themselves. |
| Structure Parts, including Shell Parts | |
| ≤1 year | Elephant Robotics offers free new components once, customs shall bear the freight. |
| ≥1 year | Customers need to buy it themselves. |

During the warranty period of the delivered product, the company only repairs the malfunctions that occur during normal use of the robot for free. However, in the following cases, the customer will be charged for repairs (even during the warranty period):

- Damage or malfunction caused by incorrect use and improper use different from the contents of the manual.
- Failure caused by unauthorized disassembly by the customer.
- Damage caused by improper adjustment or unauthorized repairs.
- Damage caused by natural disasters such as earthquakes and floods.

Therefore, please strictly follow the instructions in this manual and related manual to operate the robot.

