Elephant Robotics 大象机器人

大象小六轴机械臂-树莓派版

mechArm pi 270

全球最紧凑便携的小六轴机械臂

The most compact 6-axis articulated robot

www.elephantrobotics.com

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⚠ Warning

BEFORE USING MECHARM 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 60 °C (140 °F).

⚠ Attention

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

Official Website: https://www.elephantrobotics.com/mecharm

mechArm pi 270

The World's Smallest Collaborative Robot

Raspberry Pi



The most compact 6-axis articulated robot

The mechArm Pi 270 belongs to the "mechArm" series of six-axis articulated robotic arms from Elephant Robot. It uses a Raspberry Pi microprocessor and supports ROS simulation software. It is an industrial-like configuration launched by Elephant Robot for maker innovation and robot industry-university-research services.

The body weight of mechArm270 Pi is 1kg, the load is 250g, and the working radius is 270mm. The design is compact and portable. It is small but powerful, easy to operate, and can work with people safely. As the first small six-axis robotic arm of Elephant Robot, it has three advantages of ease of use, safety and economy, and is a cost-effective choice.

Classic industrial configuration, the first choice for robotic enthusiast

- The most classic six-axis centrosymmetric structure of industrial robots, compact and robust.
- The preferred platform for universal and vocational education, colleges and individual development, applying what you have learned to break through the barriers of production, education and research.

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.

Highly opened source, compatible with massive software and API

- Compatible with a various of API software, built-in ROS/Moveit to simulate the operation state of the manipulator, super expansibility
- From introductory drag teaching and Blockly visual programming to industrial practical operation platform, one machine opens up the whole platform of industry, academia and research.

High configuration, powerful performance

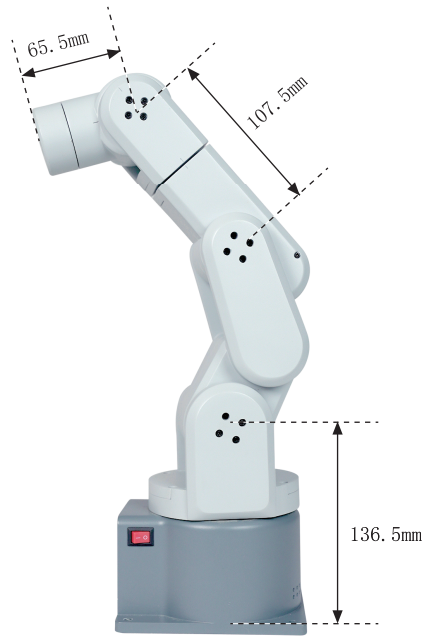
- The use of brushless DC servos can achieve a repeat positioning accuracy of ±0.5mm.
- The base and the end are equipped with installation interfaces, which are suitable for the development of various peripheral products and equipment.

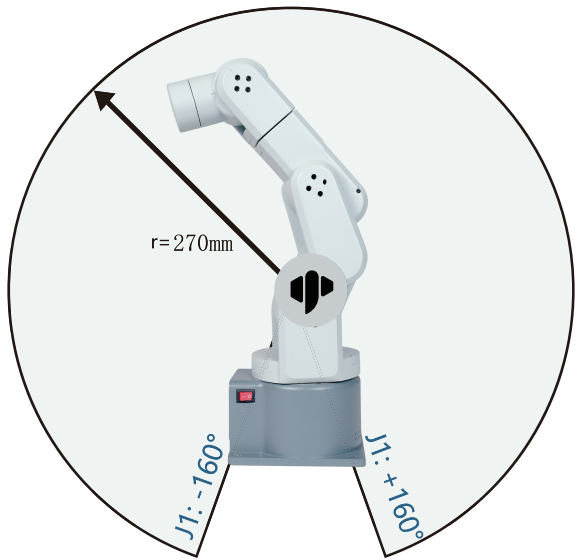
Specifications

Product Name	mechArm
model	mechArm Pi 270
DOF	6
Repeatability	±1mm
Payload	250g
Weight	1kg

Product Name	mechArm
Working radius	270mm
Material	Plastic
Power supply	8-12V 5A
Max speed	120°/s
Motor	High precision magnetic encoder servo moter

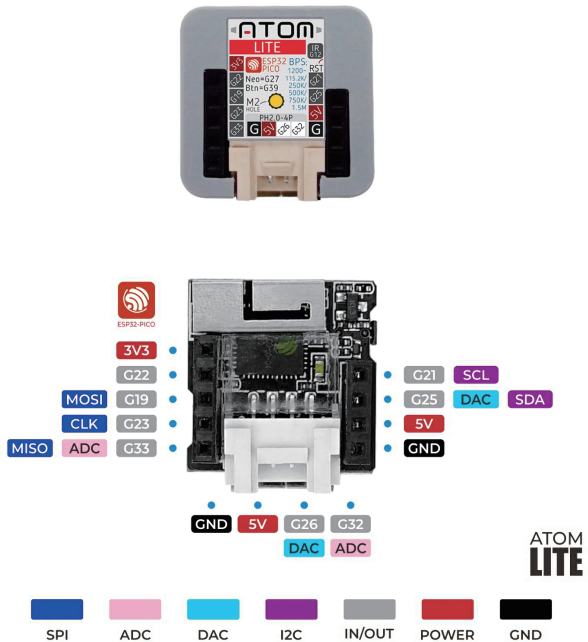
mechArm pi 270 - Size and Working Range Diagram



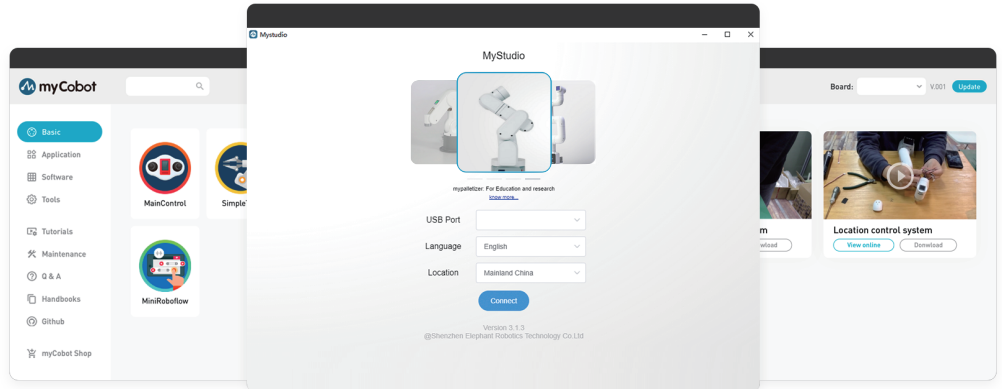


Control Board Pin Map





myStudio



myStudio is a one-stop platform for robots

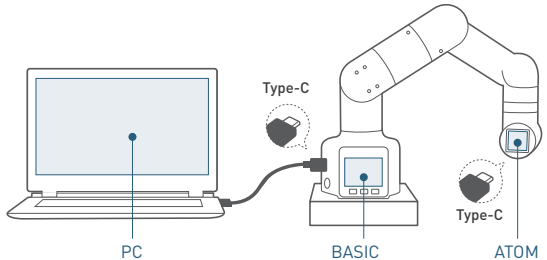
myStudio integrates mechArm software and various materials.
The main functions of myStudio are: 1) Update the firmware; 2) Provide video tutorials on how to use the robot; 3) Provide maintenance and repair information (such as video tutorials, Q&A, etc.).

Please download the latest version of myStudio to use.

The download link is as follows:
Officail website: https://www.elephantrobotics.com/mechArm/
Github: https://github.com/elephantrobotics/MyStudio/

Burn Table

Development environments that support the secondary development mechArm are: myBlockly, RoboFlow, Arduino, ROS, python, etc.



Development Environment	Library on PC	Basic Firmware	Atom Firmware
Default Program	N/a	mainControl	atomMain
Visual Programming	myBlockly	myBlockly	atomMain
RoboFlow Industrial Programming Software	RoboFlow	Transponder	atomMain
Arduino Maker!	Arduino IDE + M5Stack Lib + MycobotBasic Lib	All Exapmles	atomMain
API on Desktop	Python/ C+	Transponder	atomMain
ROS Development	ROS	Transponder	atomMain
USB/TxRx0(G1/G3)	Read Protocol	Transponder	atomMain
BlueTooth	Read Protocol	BT_Transponder	atomMain
phoneApp	Mobile phone Android/iPhone	BT_Transponder	atomMain

mechArm Accessory



Adaptive Gripper



Camera Flange



Suction Pump



G Base

Elephant Robotics are targeted at robotic collaboration applications, making “my-series” product line. For new information about the accessories, Follow us on Shopify and Twitter.

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

Twitter: @cobotMy

⚠ 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60℃(140℃F)的高温下。

⚠ 开机必读

本册为mechArm pi 270大象小六轴机械臂-树莓派版产品画册画册

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/mecharm

mechArm pi 270

全球最紧凑便携的小六轴机械臂 - 树莓派版

Raspberry Pi
树莓派版



全球最紧凑便携的小六轴机械臂

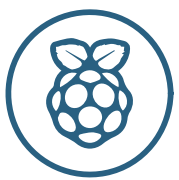
mechArm Pi 270隶属于大象机器人“mechArm”系列小六轴机械臂，采用树莓派微处理器，支持ROS仿真模拟软件，是大象机器人面向创客创新和机器人产学研服务推出的仿工业构型小六轴机械臂。

mechArmPi270本体重量1kg，负载250g，工作半径270mm，设计紧凑便携，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小六轴机械臂，具有易用性、安全性和经济性三大优 势，是高性价比之选。



经典工业构型，机器人产学研首选利器

- 工业机器人最经典的六轴中心对称式结构，紧凑且稳健。
- 普适职教、高校和个人开发的首选平台，学以致用打通产学研壁垒。



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。



高度开源，兼容海量软件与API

- 海量API软件兼容，内置ROS/Moveit仿真机械臂运行状态，超强扩展性
- 从入门拖动示教和Blockly视觉编程到工业实操平台，一机打通产学研全平台。



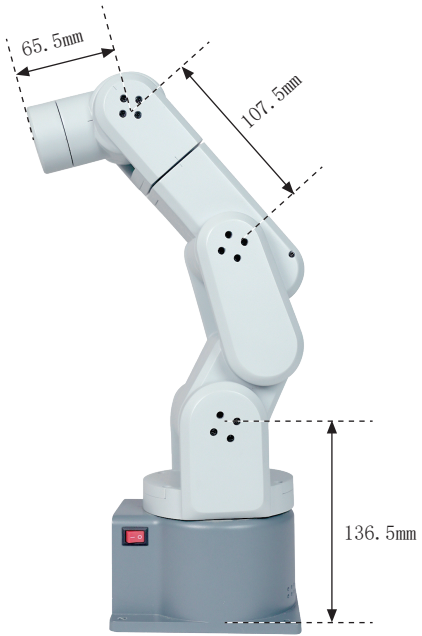
高配置，搭配Lego接口

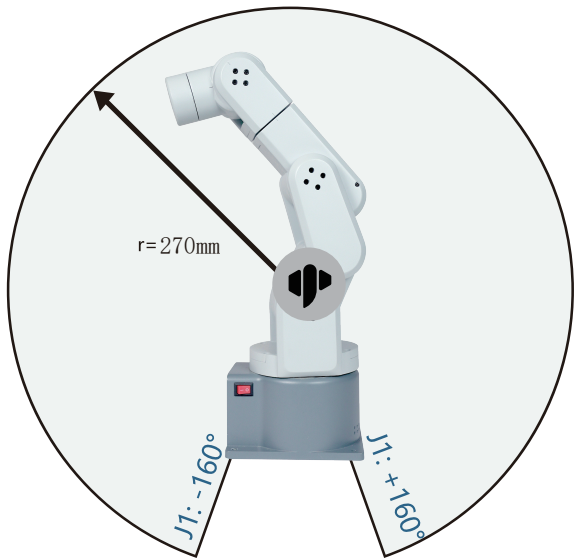
- 内含6个高性能伺服电机，响应快，惯量小，转动平滑
- 底座及末端带有乐高科技件接口，适用于各项微型嵌入式设备开发

产品参数

名称	大象小六轴机械臂
型号	mechArm Pi 270
自由度	6
重复定位精度	±1mm
负载	250g
自重	1kg

名称	大象小六轴机械臂
工作半径	270mm
材料	Plastic
充电电压	8-12V 5A
最大运动速度	120°/s
电机类型	高精度磁编码器伺服电机

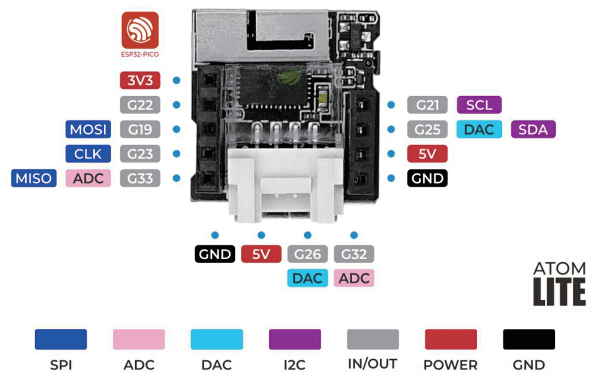




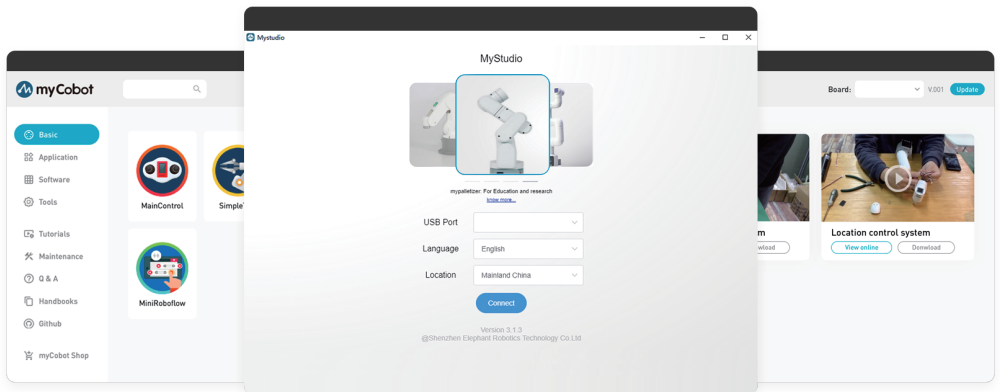
全球最紧凑便携的小六轴机械臂







myStudio



myStudio是一个一站式的机器人的使用平台。

myStudio整合了myCobot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

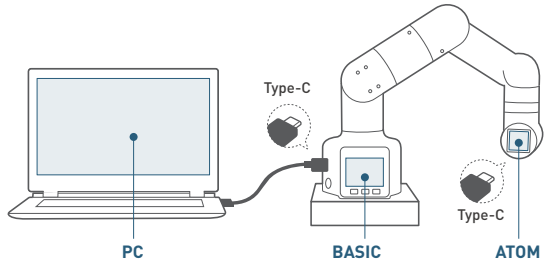
软件下载链接如下：

1、官网：https://www.elephantrobotics.com/mechArm/

2、Github：https://github.com/elephantrobotics/MyStudio/

固件烧录

可支持mechArm小象机械臂进行二次开发的开发环境有：myBlockly、RoboFlow、Arduino、ROS、python等



开发使用环境	PC所需Library	Basic所需固件	Atom所需固件
默认程序 Default Program	N/a	mainControl	atomMain
UIFlow可视化编程 Visual Programming	myBlockly	myBlockly烧录器 由M5提供	atomMain
RoboFlow 工业级可视化编程软件 Industrial Programming Software	RoboFlow库	Transponder文件	atomMain
Arduino 创客!Maker!	Arduino IDE + M5Stack Lib 库 + MycobotBasic Lib 库	各类程序自定义 All Exapmles	atomMain
API 开发软件接口 on Desktop	Python/ C+	Transponder文件	atomMain
ROS Development ROS 开发	ROS库	Transponder文件	atomMain
通信协议 – USB/TxRx0(G1/G3)	通信协议阅读 Read Protocol	Transponder文件	atomMain

mechArm 产品配件



自适应夹爪



摄像头法兰



摄像头法兰



G型底座

大象机器人面向机械臂扩展应用，打造“my-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

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 sever motor and bear the freigh.
1-3 months	Elephant Robotics offers a free new sever motor, customs shall bear the freight.
≥3 months	Customers need to buy it themselves.
Electrical Parts (M5 Hardware)	
≤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.

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