Overview

Welcome to use MyCobot collaborative robot and thank you for your purchase. This manual describes the precautions for proper installation and use of MyCobot. Please read this manual and other related manuals carefully before installing this robot system. After reading, please keep it in a safe place so that you can access it at any time. Reading objects of the manual

This manual is targeted to:

- installer.
- Debugger.
- Maintenance staff.

Those who install/debug/maintain the MyCobot collaborative robot must be trained in Elephant Robotics and have the mechanical and electronic knowledge required for the above work.

How to use

This manual should be used when doing the following works:

- Installation work: Move the robot to the working position and fix it to the base according to the installation instructions.
- Debugging: Debugging the robot to work status.
- Maintenance work: regular maintenance robot system to ensure its normal functioning. When the robot malfunctions due to environmental influences or improper operation of the user, or a certain component of the robot system exceeds the normal service life, the robot needs to be repaired.

Note:
1. This manual is applicable to international users, as well as users in Hong Kong, Macao, and Taiwan.
2. This manual is not updated regularly. The updated date is the version number. Users can download the latest version from the official website of Elephant Robot at any time.

Security

This chapter details general safety information for people who perform installation, maintenance, and repair work on the robots. Please read and understand the contents and precautions of this chapter before handling, installing, and using it.

1.1 Hazard Identification

The safety of the collaborative robot is based on the premise of proper configuration and use of the robot, and even if all safety instructions are observed, the injury or damage caused by the operator may still occur. Therefore, it is very important to understand the safety hazards of robot use, which is beneficial to prevent problems before they occur.

Tables 1-2~4 below are common safety hazards that may exist in the context of using robots:

Table 1-2 Dangerous safety hazards

<table>
<thead>
<tr>
<th></th>
<th>Dangerous safety hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Personal injury or robot damage caused by incorrect operation during robot handling.</td>
</tr>
<tr>
<td>2</td>
<td>Personal injury or robot damage is caused because the robot is not fixed as required, for example, the screw is not screwed or tightened, and the base is not enough to stably support the robot for high-speed movement, causing the robot to tip down.</td>
</tr>
<tr>
<td>3</td>
<td>Failure to perform proper safety function configuration of the robot, or installation of safety protection tools, etc., may cause the safety function of the robot to fail.</td>
</tr>
</tbody>
</table>

Table 1-3 Warning level security risks

<table>
<thead>
<tr>
<th></th>
<th>Warning level security risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Play around with the robot, you may be hit by a running robot, or be tripped by an obstacle such as a cable to cause personal injury.</td>
</tr>
<tr>
<td>2</td>
<td>Unauthorized personnel changes the security configuration parameters, causing the safety function to fail or danger.</td>
</tr>
<tr>
<td>3</td>
<td>Scratches and punctures are caused by sharp surfaces such as other devices in the work environment or robot end effector.</td>
</tr>
<tr>
<td>4</td>
<td>The robot is a precision machine and pedaling may cause damage to the robot. If the clamp is not in place or before the power supply of the robot is turned off or the gas source is turned off (it is not determined whether the end effector firmly holds the object without falling off due to loss of power). If the clamped object is not removed, it may cause danger, such as people being injured by crashing.</td>
</tr>
</tbody>
</table>
There is a risk of accidental movement of the robot. Under no circumstances should you stand under any axis of the robot!

A robot is a precision machine. If it is not placed smoothly during handling, it may cause vibration and may cause damage to the internal components of the robot.

| Table 1-4 Potential safety hazards that may result in electric shock |
|--|---|
| 1 | Using a non-original cable may pose an unknown hazard. |
| 2 | Contact with liquids by electrical equipment may result in a risk of electric leakage. |
| 3 | There may be an electric shock hazard when the electrical connection is incorrect. |
| 4 | Be sure to handle replacement work after turning off the power to the controller and related equipment and unplugging the power cord. If the work is performed while the power is on, it may cause electric shock or malfunction. |

### 1.2 Safety Precautions

The following security rules should be followed when using my robot:

- myCobot is electrical equipment. Non-professional technicians cannot modify the wire, otherwise, it is vulnerable to injuring the device or the person.
- Please use myCobot in the specific environment scope. If not, exceeding the specifications and load conditions will shorten the service life of the product even damage the equipment.
- Before operating and maintaining myCobot, the personnel responsible for the installation, operation, and maintenance must be trained to understand the various security precautions and the correct methods of operation and maintenance.
- Do not use myCobot in a damp environment for a long time in order to avoid damage, myCobot belongs to precision electronic components.
- Do not use myCobot in a high-temperature environment. The outer surface of the myCobot is made of photosensitive resin as raw material, high temperature will damage the shell and lead to failure.
- Highly corrosive cleaning is not suited to cleaning myCobot. The anodized components are not suitable for immersion cleaning.
- Do not use my robot without a mounting base to avoid damage to the equipment or accidents. myCobot should be used in a fixed and unobtrusive environment.
- Do not use other power adapters to supply power to myCobot. If it is damaged due to the use of a nonconforming adapter, it will not be included in after-sales service.
- Please do not disassemble or unscrew the screws and their shell. If it’s opened, no warranty service can be provided.
- People cannot repair myCobot without professional training. If there is a problem with my robot, please contact myCobot technical support engineer in time.
- Please comply with the relevant laws to deal with scrapped myCobot, and protect the environment.
- Do not burn other product drivers to the terminal Atom. If the device is damaged because of that, it will not be included in the after-sales service.
- Please do not disassemble or unscrew the screws and their shell. If it’s opened, no warranty service can be provided.
- Be sure to handle replacement work after turning off the power to the controller and related equipment and unplugging the power cord. If the work is performed while the power is on, it may cause electric shock or malfunction.
- Do not use myCobot in a high-temperature environment. The outer surface of the myCobot is made of photosensitive resin as raw material, high temperature will damage the shell and lead to failure.

### 1.3 Usage scenarios

**About myCobot**

#### 2.1 Background

Upholding the mission of "Enjoy Robots World", Elephant Robotics designed and developed myCobot, the world's smallest and lightest collaborative robot, retaining most of the functions of industrial robots. With compact and elegant industrial design, excellent and powerful performance, and huge software and hardware development space, myCobot has unlimited possibilities in application expansion.

The design prototype of myCobot 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 ward", 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.

#### 2.2 Introduction

myCobot is the world's smallest and lightest six-axis collaborative robot, jointly produced by Elephant Robotics and M5Stack. It is more than a productivity tool full of imagination, can carry on the secondary development according to the demands of users to achieve personalized customization.

With a weight of 850g, a payload of 250g, and an arm-length of 350mm, myCobot is compact but powerful, can not only be matched with a variety of end effectors to adapt to different kinds of application scenarios also support the secondary development of multi-platform software to meet the needs of various scenarios such as scientific research and education, smart home, light industry, and commercial applications.
myCobot – Basic Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Freedom</td>
<td>6</td>
</tr>
<tr>
<td>Payload</td>
<td>250g</td>
</tr>
<tr>
<td>Arm span</td>
<td>350mm</td>
</tr>
<tr>
<td>Working radius</td>
<td>280mm</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5mm</td>
</tr>
<tr>
<td>Weight</td>
<td>850g</td>
</tr>
<tr>
<td>Power Input</td>
<td>8V, 5A</td>
</tr>
<tr>
<td>Working Condition</td>
<td>-5°~45°</td>
</tr>
<tr>
<td>Communication</td>
<td>USB Type-C</td>
</tr>
</tbody>
</table>

### 2.3 Features

- **Unique Industrial Design & Extremely Compact**
  myCobot is an integrated modular design and only weighs 850g which is very easy to carry. Its overall body structure is compact with fewer spare parts and can be quickly disassembled and replaced to realize plug and play.

- **High configuration & Equipped with 2 Screens**
  myCobot contains 6 high-performance servo motors with fast response, small inertia, and smooth rotation. The body carries 2 display screens supporting the fastest library to show the expanded application scene more easily and clearly.

- **Lego Connector & Thousands of M5STACK Ecological Application**
  The base and end of myCobot are equipped with a Lego Connector, which is suitable for the development of various miniature embedded equipment. Its base is controlled by M5STACK Basic, and thousands of application cases can be used directly.

- **Blocky Programming & Supporting Industrial ROS**
  Using UIFlow visual programming software, programming my robot is simple and easy for everyone. You can also use RoboFlow, software of industrial robots from Elephant Robotics, supporting multiple functional modules Arduino + ROS open-source system.

- **Track Recording & Learn by hand**
  Get rid of the traditional point saving mode, myCobot supports drag trial teaching to record the saved track and can save up to 60mins different Tracks making it easy and fun for new players to learn.

### 2.4 Patents

#### Related Patents about my robot

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No.8194138</td>
<td>Mechanical arm linkage and a mechanical arm</td>
<td>ZL 2018 20017484.4</td>
<td>Elephant Robotics</td>
</tr>
<tr>
<td>2</td>
<td>No.8186088</td>
<td>Mechanical arm joint connector and a mechanical arm</td>
<td>ZL 2017 21700594.2</td>
<td>Elephant Robotics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Product</th>
<th>Patent Type</th>
<th>Title</th>
<th>Patent No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lightweight robotic arm</td>
<td>Appearance patent</td>
<td>Collective Robot Arm</td>
<td>2020030683471.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Invention title</th>
<th>Application Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Method and system for robot posture maintaining, dragging, and teaching</td>
<td>ZL 2018 1 1634649.3</td>
</tr>
<tr>
<td>2</td>
<td>A robot online collision detection method and system based on momentum model</td>
<td>ZL 2019 1 0030748.9</td>
</tr>
<tr>
<td>3</td>
<td>A Kind of Robot Dynamic Parameter Identification Method Independent of Joint Angular Acceleration</td>
<td>ZL 2019 1 0773865.4</td>
</tr>
</tbody>
</table>
Hardware

3.1 Controller and Actuator

3.1.1 M5STACK Basic Main Controller

**M5STACK BASIC Kit**, like its namesake, is a starter kit among the M5STACK development kit series. It's a modular, stackable, scalable, and portable device that is powered with an ESP-32 core, which makes it open-source, low cost, full-function, and easy for developers to handle new product development on all stages including circuit design, PCB design, software, mold design, and production. This Basic Kit provides a friendly price and full-featured resources which makes it a good starter kit for you to explore IoT.

If you want to explore the fastest way of IoT prototyping, the M5STACK development board is the perfect solution. Not like others, the M5STACK development board is highly efficient, covered with an industrial-grade case and ESP32-based development board. It integrates with Wi-Fi & Bluetooth modules and contains a dual-core and 16MB of SPI Flash. Together with 30+ M5Stack stackable modules, 40+ extendable units, and different levels of program language, you can create and verify your IoT product in a very short time.

Supportive development platforms and programming languages: Arduino, Blockly language with UIFlow, Micropython. Regardless of what level of programming skill you have, M5STACK would guide you in every step of the way to realize your idea as well as to the final productization. If you ever played with ESP8266, you would realize that ESP32 is a perfect upgrade out of ESP8266. In comparison, ESP32 has more GPIOs, more analog inputs, two analog outputs, multiple extra peripherals (like a spare UART). Official developing platform ESP-IDF has been transplanted with FreeRTOS. With dual-core and real-time OS, you can get more organized code and a much high-speed processor.

M5STACK Basic is consist of two separable parts. The upside part has all kinds of processors, chips, and some other slot components. M-BUS socket, and extendable pins on both sides.

### 3.1.1.1 Product Features

- ESP32-based
- Built-in Speaker, Buttons, Color LCD, Power/Reset button
- TF card slot (16G Maximum size)
- Magnetic suction at the back
- Extendable Pins & Holes
- M-Bus Socket & Pins
- Program Platform: UIFlow, MicroPython, Arduino

#### 3.1.1.2 Parameter

<table>
<thead>
<tr>
<th>Resources</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESP32-D0WDQ6</td>
<td>240MHz dual-core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual-mode Bluetooth</td>
</tr>
<tr>
<td>Flash</td>
<td>16MB</td>
</tr>
<tr>
<td>Power Input</td>
<td>5V @ 500mA</td>
</tr>
<tr>
<td>Port</td>
<td>TypeC x 1, GROVE(2C+i/I0+UART) x 1</td>
</tr>
<tr>
<td>Core Bottom Port</td>
<td>PIN (G1 G2 G3 G16, G17, G18, G19, G21, G22, G23, G25, G26, G35, G36)</td>
</tr>
<tr>
<td>IPS Screen</td>
<td>2 inch, 320×240 Colorful TFT LCD, ILI9342C Brightness853nit</td>
</tr>
<tr>
<td>Speaker</td>
<td>1W-0928</td>
</tr>
<tr>
<td>Button</td>
<td>Custom button x 3</td>
</tr>
<tr>
<td>Antenna</td>
<td>2.4G 3D Antenna</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F to 104°F (0°C to 40°C)</td>
</tr>
<tr>
<td>Net Weight</td>
<td>47.2g</td>
</tr>
<tr>
<td>Gross weight</td>
<td>93g</td>
</tr>
<tr>
<td>Product Size</td>
<td>54 x 54 x 18mm</td>
</tr>
<tr>
<td>Package Size</td>
<td>95 x 65 x 25mm</td>
</tr>
<tr>
<td>Case material</td>
<td>Plastic (PC)</td>
</tr>
</tbody>
</table>

### 3.1.2 M5STACK Atom

**ATOM Matrix**, which has a size of only 24*24mm, is the most compact development board in the M5Stack development kit series. It provides more GPIO pins and is very suitable for handy and miniature embedded device development.

The main control adopts the ESP32-PICO-D4 chip, which comes integrated with Wi-Fi and Bluetooth technologies and has 4MB of integrated SPI flash memory. The Atom board provides an Infrared-LED along with the 5 * 5 RGB LED matrix on the panel, a built-in IMU sensor (MPU6886), and an HY2.0 interface. A general-purpose programmable button is provided below the RGB Led matrix to enable users to add input support to their various projects. The onboard USB interface (Type-C) enables rapid program uploading and execution. One M2 screw hole is provided on the back for mounting the board.

**Note:** When using the manipulator, please avoid burning the firmware to ATOM at the end of the manipulator. The device only supports our original firmware. Please kindly understand the inconvenience brought to you.

#### 3.1.2.1 Features

- ESP32 PICO-based
- Programmable button
- 5*5 RGB LED matrix panel (WS2812C)
- Built-in Infrared LED
- Built-in MPU6886 Inertial Sensor
- Extendable Pins & Holes
- Program Platform: Arduino UIFlow

#### 3.1.2.2 Specification

<table>
<thead>
<tr>
<th>Resources</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESP32-PICO-D4</td>
<td>240MHZ dual-core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual-mode Bluetooth</td>
</tr>
<tr>
<td>Flash</td>
<td>16MB</td>
</tr>
<tr>
<td>Power Input</td>
<td>5V @ 500mA</td>
</tr>
<tr>
<td>Port</td>
<td>TypeC x 1, GROVE(2C+i/I0+UART) x 1</td>
</tr>
<tr>
<td>Core Bottom Port</td>
<td>PIN (G1 G2 G3 G16, G17, G18, G19, G21, G22, G23, G25, G26, G35, G36)</td>
</tr>
<tr>
<td>IPS Screen</td>
<td>2 inch, 320×240 Colorful TFT LCD, ILI9342C Brightness853nit</td>
</tr>
<tr>
<td>Speaker</td>
<td>1W-0928</td>
</tr>
<tr>
<td>Button</td>
<td>Custom button x 3</td>
</tr>
<tr>
<td>Antenna</td>
<td>2.4G 3D Antenna</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F to 104°F (0°C to 40°C)</td>
</tr>
<tr>
<td>Net Weight</td>
<td>47.2g</td>
</tr>
<tr>
<td>Gross weight</td>
<td>93g</td>
</tr>
<tr>
<td>Product Size</td>
<td>54 x 54 x 18mm</td>
</tr>
<tr>
<td>Package Size</td>
<td>95 x 65 x 25mm</td>
</tr>
<tr>
<td>Case material</td>
<td>Plastic (PC)</td>
</tr>
</tbody>
</table>
ESP32
240MHz dual-core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual-mode Bluetooth

Flash
4MB

Power Input
5V @ 500mA

Port
TypeC x 1, GROVE(I2C+I/O+UART) x 1

PIN Interface
G19, G21 G22 G23 G25, G33

RGB LED
WS2812C 2020 x 25

MEMS
MPU6886

IR
Infrared transmission

Button
Custom bottom x 1

Antenna
2.4G 3D Antenna

Operating Temperature
32°F to 104°F (0°C to 40°C)

Net weight
3g

Gross weight
14g

Product size
24 x 24 x 14 mm

Package size
24 x 24 x 14 mm

Case material
Plastic (PC)

3.1.3 Servo Motor
myCobot shares 6 high-performance servo servos in 6 joints with the advantages of fast response, small inertia, smooth rotation, stable torque, etc.

Resources

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>23.2<em>12.1</em>28.5mm</td>
</tr>
<tr>
<td>Power input</td>
<td>4.8~7.4V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-15~70°</td>
</tr>
<tr>
<td>Rated torque</td>
<td>1.5kg.cm@6V</td>
</tr>
<tr>
<td>Stall torque</td>
<td>4.5kg.cm@6V</td>
</tr>
<tr>
<td>Rotation angle</td>
<td>300° Angle can be limited by software</td>
</tr>
</tbody>
</table>

3.2 Mechanical Structure

3.2.1 Size and working range
A mycobiotas

<table>
<thead>
<tr>
<th>J1</th>
<th>J2</th>
<th>J3</th>
<th>J4</th>
<th>J5</th>
<th>J6</th>
</tr>
</thead>
<tbody>
<tr>
<td>-165 ~ +165</td>
<td>-165 ~ +165</td>
<td>-165 ~ +165</td>
<td>-165 ~ +165</td>
<td>-165 ~ +165</td>
<td>-175 ~ +175</td>
</tr>
</tbody>
</table>

Picture of Coordinate System
3.2.2 Unpacking and Installation
3.2.2.1 Unpacking

Note: After the packaging box is in place, please confirm that the robot packaging is intact and undamaged. If there is any damage, please contact the logistics company and the local supplier in time. After unpacking, please check the actual items in the box according to the item list.
Please install the robot system in an environment that meets the conditions described in the table in order to exert and maintain the performance of the machine and use it safely.

### Operating Environment and Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-10℃~45℃</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>20%~70%</td>
</tr>
<tr>
<td>Indoor/Outdoor</td>
<td>Indoor</td>
</tr>
<tr>
<td></td>
<td>- Avoid sunlight.</td>
</tr>
<tr>
<td></td>
<td>- Keep away from dust, oily smoke, salt, iron filings, etc.</td>
</tr>
<tr>
<td></td>
<td>- Keep away from flammable and corrosive liquids and gases.</td>
</tr>
<tr>
<td></td>
<td>- Do not contact with water.</td>
</tr>
<tr>
<td></td>
<td>- Does not transmit shock, vibration, etc.</td>
</tr>
<tr>
<td></td>
<td>- Keep away from strong electromagnetic interference sources.</td>
</tr>
</tbody>
</table>

#### 3.2.2.2 Installation

The actual weight of the mycobota collaborative robot is 850g. Considering the movement of the robot, the center of gravity will move as the robot moves. Therefore, the robot needs to be fixed on a solid base to be used normally.

**Interface size of robot base:** The pedestal fixing hole is the interface that fixes the robot to other bases or planes. The specific hole size is shown as follows. It is 4 through holes with a diameter of 4.5mm, which can be fixed with M4 bolts.

Make sure that there is a corresponding threaded hole on the fixed base before installing. Before you officially install, please confirm:

- The environment to be installed complies with the requirements above.
- The installation position is not less than the working range of the robot, and there is enough space for installation, use, maintenance, and repair.
- Place the stand in the proper position.
- Installation-related tools are ready, such as screws, wrenches, etc.

After confirming the above, move the robot to the mounting surface of the base, adjust the position of the robot, and align the fixing hole of the robot base with the hole on the mounting surface of the base.

**Note:** When adjusting the position of the robot on the mounting base, please avoid pushing the robot directly on the mounting surface of the base to avoid scratches. When manually moving the robot, please try to avoid applying an external force to the weak part of the robot body to avoid unnecessary damage to the robot.

#### 3.3 Electronics and Electrical

myCobot has three external terminals. They are the external terminals of M5Stack Basic on the base, the two Grove terminals near the power socket and the external terminal pins of the M5Stack Atom J6 joint.

a MSSTACK Basic Electrical Diagram

b MSSTACK Atom Circuit Diagram
Software

For software updates, please check out our Github first.  
[https://github.com/elephantrobotics/myCobot](https://github.com/elephantrobotics/myCobot)

4.1 Firmware Upgrade and Recovery – my studio

my studio is a one-stop platform for robots of my robot/mycobiotas.

The main functions of my studio 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.).

The link to youtube videos about myStudio is:  
[https://youtu.be/Kr9I62ZPf4w](https://youtu.be/Kr9I62ZPf4w)

If you need to upgrade or maintain your mycobiotas, make sure that the development environment is set up. If not, please install the serial port driver first and then try to use the software.

The download link is as follows:

Official website: [https://www.elephantrobotics.com/myCobot/](https://www.elephantrobotics.com/myCobot/)

Github: [https://github.com/elephantrobotics/MyStudio/](https://github.com/elephantrobotics/MyStudio/)

If you use a Windows system, please choose "my studio-windows.exe" to download, and then unzip it into your project folder. Be careful not to use it with complex paths, which may lead to problems with unrecognized paths.

If your development environment is already set up, you can directly open the file "myCobot.exe".
After opening, the interface is as follows:

Connect your myCobot with "Basic" or "Atom", choose "language" and then click "Connect" to enter the main interface is shown below:

If you connect both Basic and Atom, Select the software you want to burn again in the Board bar in the upper right corner, and then click Basic or Tools to select the firmware you want to burn.

4.2 Built-in Track Recording

M5STACK Basic main control board has 3 buttons supporting custom programming and data writing. This program is open source, you can check our GitHub.

Drag Teaching Demonstration

1. Recording: After entering the recording mode, select the recording storage location
   Button A: Store to Ram
   Button B: Store to Memory Card
   Button C: Exit the Recording Mode
2. Start Recording
   After selecting the storage location, manually drag the robotic arm to complete the target action, then the action will be recorded and stored.

3. Play
   Button A: Start Playing the Recorded Action
   Button B: Pause
   Button C: Exit Playback

4.3 Arduino Libraries
A library is a collection of codes that allows you to easily connect and use sensors, displays, modules, etc. For example, the built-in LiquidCrystal library can realize easy communication with character LCD displays.

The functions of the Arduino development board can be expanded when using the library. Because of the library, we can easily realize the collaboration between Arduino and external hardware or data communication. Arduino IDE is pre-installed with a series of standard library files. At the same time, you can also install and import third-party libraries (such as open-source libraries downloaded from the Internet) into Arduino IDE. You can even create libraries and import them into Arduino IDE. The existence of the library helps users to bypass more specialized content such as registers and address pointers, greatly reducing the difficulty of development. If you need to know how to add third-party libraries for the installation of ARDUINO IDE, please refer to the driver installation address and method: https://docs.m5stack.com/#/zh_CN/arduino/arduino_development

You can also check out our Github for more information.

https://github.com/elephantrobotics/myCobot
As follows:
4.4 API Interface and Communication

- UNIFLOW
- Arduino
- micro python
- FreeROTS

4.4.1 UIFlow
Use UIFlow Beta Version and Select Cooperation – mycobiota
https://docs.m5stack.com/#/zh_CN/quick_start/m5core/m5stack_core_get_started_MicroPython
ROS is under development and will be updated according to the progress.

As of 12.31:

1. Updated the ROS setup so either Python2 or 3 can now install.
2. Change to manually enter serial port instead, so Windows users can run directly.
3. Update the new Interface specification document in API Library, please look up “README”.
4. Joint Calibration
   If your mobot needs to calibrate joints, please use the firmware of mycobiota or Arduino and other tools to burn Calibration first.
   After uploading the firmware, the Basic interface is shown below:

   ![](image)

   At this time, rotate J1 to the standard zero position aligning with the groove, and press the A button (the left button), then the J1 will go from a dynamic motion into a static position and be fixed to this standard zero position.
   Repeat the steps following this method to set up the remaining J2-J6. After J6 is set, press the A key (the left key) again to save all the Settings.
   When all joints are back to the standard zero position, you also need to check whether myCobot can operate normally. Press the B button (the middle button), then my robot will detect J1 to J6 in sequence.
   Please ensure that there are no obstacles or personnel interference within the operating range in order to prevent damage to equipment and personnel during testing.

Visual Programming and Industrial Software

5.1 Visual Programming Software-UIFlow
   For detailed usage, please get the UI Flow operation manual from the link below.
   M5STACK Basic: [https://docs.m5stack.com/#/zh_CN/quick_start/m5core/m5stack_core_get_started_MicroPython](https://docs.m5stack.com/#/zh_CN/quick_start/m5core/m5stack_core_get_started_MicroPython)
   M5STACK Atom: [https://docs.m5stack.com/#/zh_CN/quick_start/atom/atom_quick_start UIFlow](https://docs.m5stack.com/#/zh_CN/quick_start/atom/atom_quick_start UIFlow)

5.2 Industrial Visualization Programming Software-RoboFlow
   myCobot supports RoboFlow operating by Elephant Robotics industrial collaborative robots. The operation process of RoboFlow is simple and easy to use, and the interactive interface is clear and easy to understand, which is convenient for users to quickly master and use, and effectively helps users to complete operations and programming tasks efficiently. Even novice users can also achieve target functions through simple operations.
   For detailed usage, please get the RoboFlow operation manual from the link below.
   [https://www.elephantrobotics.com/wp-content/uploads/2019/06/%E6%93%8D%E4%BD%9C%E4%B8%8E%E7%8C%96%E7%A8%8B%E6%8B%87%E5%9F%8E%E5%9C%BA.pdf](https://www.elephantrobotics.com/wp-content/uploads/2019/06/%E6%93%8D%E4%BD%9C%E4%B8%8E%E7%8C%96%E7%A8%8B%E6%8B%87%E5%9F%8E%E5%9C%BA.pdf)

After-sales Service

- 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 use 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. The following is warranty terms of detailed components:

- Note: If there is a conflict with the Product Brochure, the User Manual shall prevail.

- a Sever motor
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