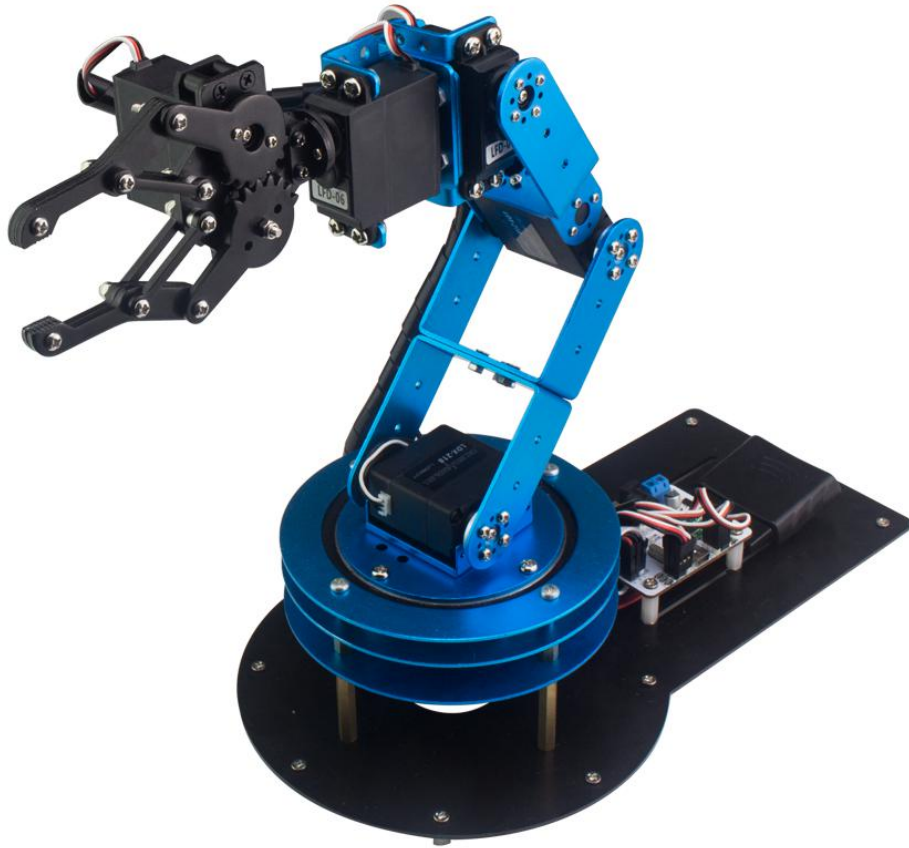


LeArm User Manual



Warming tips

1. When the robotic arm moves, please keep your fingers away from the range of motion, prevent from getting hurt.
2. Please remember to turn off the the switch if there is something wrong with servo, and examine whether the servo wire loose or not.
3. Please do not forcibly twist the joint when the robotic arm is powered on so that it will not cause any joint damage.
4. Robotic arm's servo that we used is a high-precision device and also a consumable so that it needs to be replaced after a long time.
5. The heat of servo will raise if the robotic arm keeps running for a long time. You should make the robotic arm take a rest until it totally cool down so that it can keep on running. Please remember to turn off the switch while you are not using it.
6. Because the paws use a fire-proof servo, a stall protection is added. There will be a loud buzzing sound. This is just a stalled protection. Can be used normally.

catalog

Warming tips

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1 Introduction

1.1 Product introduction

In order to meet the interest of robotic arm from majority of robot enthusiasts, we launched the high performance desktop robotic arm. It has 6 servos which allow it to grab in any direction.

It has a cool shape and lots of amazing plays. The robotic arm also supports the users to program on the computer. The user can control it by mobile phone APP or wireless handle to execute other fantastic actions. You can also interact with it as a lovely partner in your life which brings you lots of fun.

We have the dream that everyone can learn robotics and have a better life with a desktop robotic arm.

1.2 Features

- a All-metal Construction: Metal Claw + Aluminum Bracket + Metal Larger Bottom Plate
- b 6DOF structural design can make the robotic arm move flexibly, so it can grab objects in any direction
- c All using high-precision digital servo, which make control more accurate
- d Uses 6 channel servo controller with build-in bluetooth 4.0 module
- e Various control methods, we provide wireless handle and free Android/iOS APP, It is convenient for you to remotely control the robotic arm
- f Provide detailed video tutorials to learn how to use LeArm; Provide 3D animation to show you how to assemble the robotic arm

2 Main assembly


2.1 Components

| | | | | | | | |
|--|-------|--|------|---|---------|---|------|
|  Long U-shaped bracket | 3pcs |  Side cover bracket | 1pcs |  Small U-shaped bracket | 1pcs |  Multifunctional Bracket | 2pcs |
|  Rotational station | A Set |  Bearing | 1pcs |  Power Adapter | 1pcs |  Large bottom plate | 1pcs |
|  Clamper | 1pcs |  LDX-218 digital servo | 2pcs |  LFD-06 digital servo | 2pcs |  LD-1501 MG digital servo | 1pcs |
|  Wireless handle and handle receiver | A Set |  Controller | 1pcs |  Winding tube | Several |  Screwdriver | 1pcs |

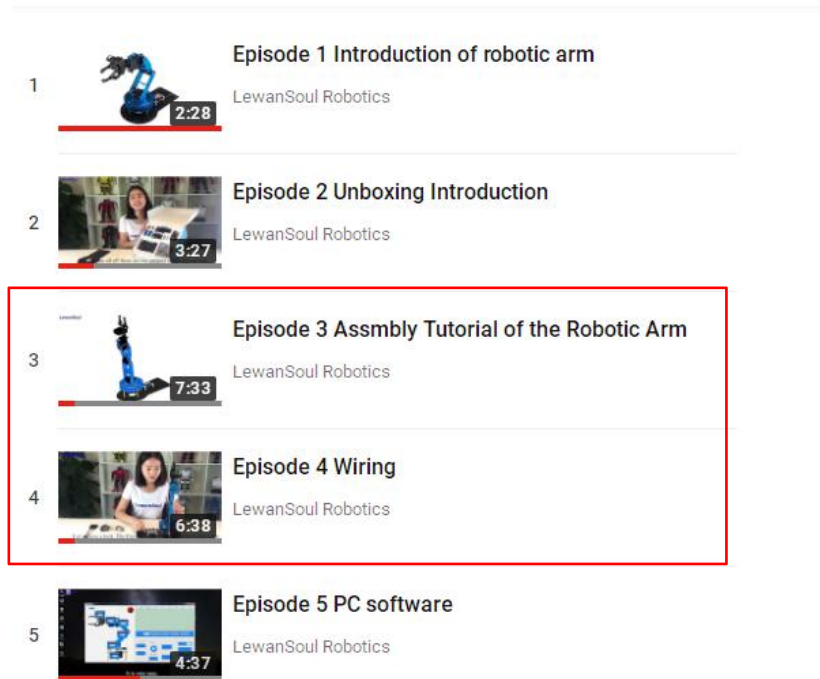
| | | | | | | | |
|---|---|--|--|--|---|--|--|
|  M4*40 Copper Column 4pcs |  M4*8 Copper Column 4pcs |  M3*8 Nylon Column 10pcs |  M4*35 Screw 5pcs |  Small Bearing 1pcs |  M4 Screw Nut 20pcs |  M3 Screw Nut 10pcs |  M2 Screw Nut 10pcs |
| |  M4*15 Copper Column 4pcs |  M3*15 Nylon Column 4pcs | |  M4*20 Screw 5pcs |  M4*8 Screw 12pcs |  M3*10 Screw 1pcs |  M3*8 Screw 10pcs |
| | | | | |  M3*6 Screw 20pcs |  M2*6 Screw 10pcs |  M2*5 Screw 35pcs |


2.2 Assembly and wiring


(1) We provide detailed 3D animation to show you how to assemble and wiring the robotic arm, please refer to the link and QR code.


| Link | QR code |
|---|--|
| http://bit.ly/2gtHLoo |  |


(2) When you open the link (<http://bit.ly/2gtHLo0>), will see many videos about LeArm. Episode 3 is assembly tutorial of the robotic arm and Episode 4 is wiring.




1  **Episode 1 Introduction of robotic arm**
LewanSoul Robotics
2:28

2  **Episode 2 Unboxing Introduction**
LewanSoul Robotics
3:27

3  **Episode 3 Assmby Tutorial of the Robotic Arm**
LewanSoul Robotics
7:33

4  **Episode 4 Wiring**
LewanSoul Robotics
6:38

5  **Episode 5 PC software**
LewanSoul Robotics
4:37

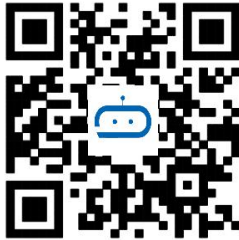
2.3 Overall component display



3 Installation and Operation

3.1 Overview

1. Support various control methods, we provide wireless handle and free Android/iOS APP. It is convenient for you to remotely control the robotic arm.
2. The default installation is Bluetooth and handle receiver so that you can use the cell phone and wireless handle to control the LeArm directly.
3. If you want to learn more about LeArm. Here are the link and QR code about it.

| Link | QR code |
|---|---|
| <p>http://bit.ly/2xJ8140</p> <p>Includes: Action group, Attention, Mobile APP, PC software...</p> |  |

3.2 Mobile phone APP

3.2.1 Download Mobile APP

Here are the link and QR code concerning mobile phone app of LeArm

| Types | Android System | iOS System |
|---------|---|---|
| Link | http://bit.ly/2Czq9h8 | https://apple.co/2qzoaYK |
| QR code |  |  |

- (1) If you open the Installation package you can find the Mobile App(Android Only) , LeArm Android app released version 1.2
- (2) If your phone system is Android, this file prepares for it. If it is Apple system, you can search for "LeArm" in APP Store and download it.

(3) LeArm iOS system released version 1.8, the modification information is as follows:

- a Adjust the first pawl servo position range from 1500 to 2500
- b Increase communication error tips

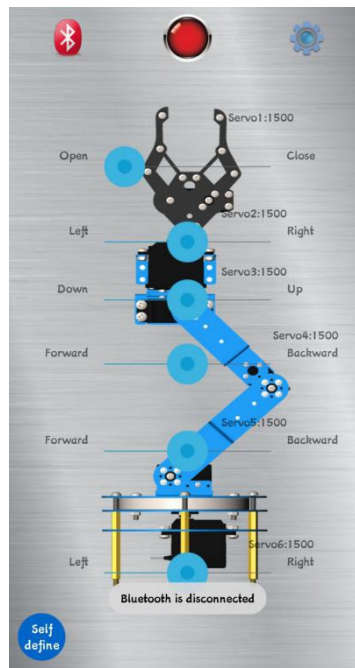
3.2.2 Mobile phone APP to control the LeArm


(Take Android as an example)

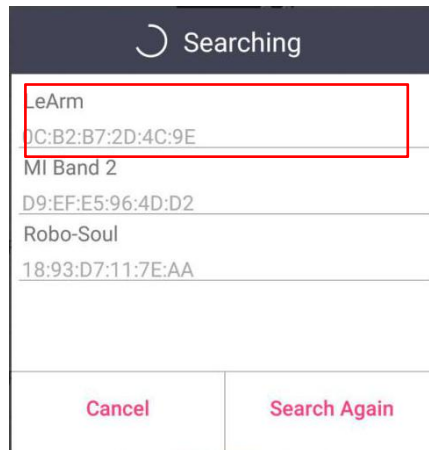
(1) Please connect adapter to controller , then turn on the switch of the LeArm



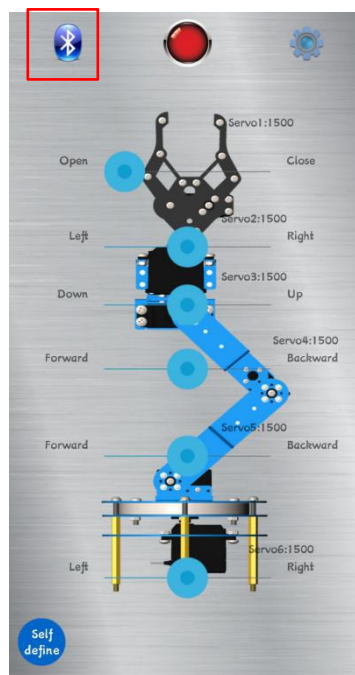
1. Double click LeArm on your phone and open the interface (Please remember using the bluetooth inside our phone app rather than using the one of the system.)




(2) Click  and enter Bluetooth search mode, and you will see this interface, then, click LeArm

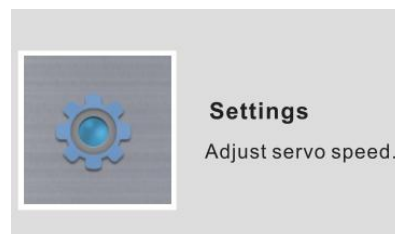
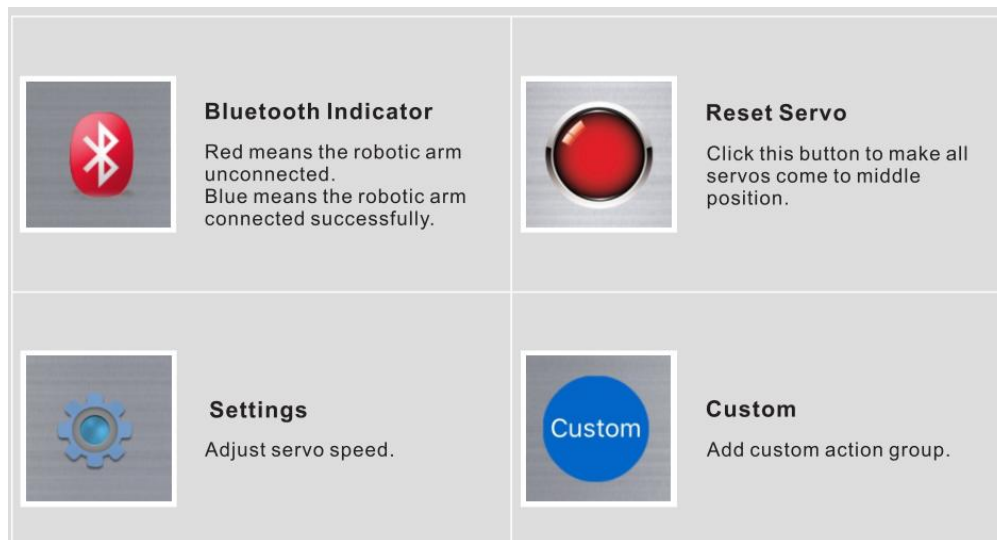


(3) Select LeArm and click it , Bluetooth indicator is blue means the robot connected successfully

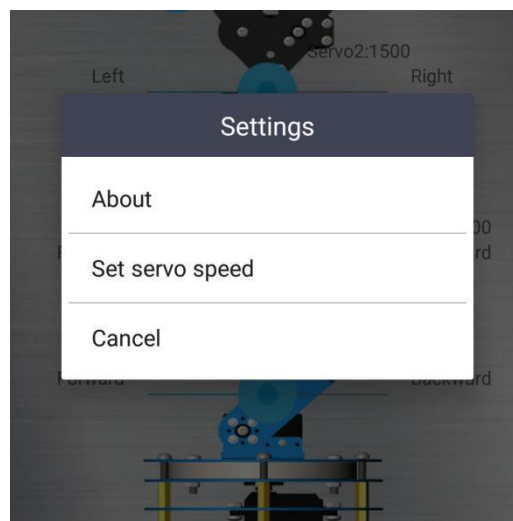


(4) After the connection is successful, you can drag the slider to control the movement of each servo. Click  to make all servos come to middle position, the servo value is 1500. The range of servo value is 500-2500. (Except mechanical claw)

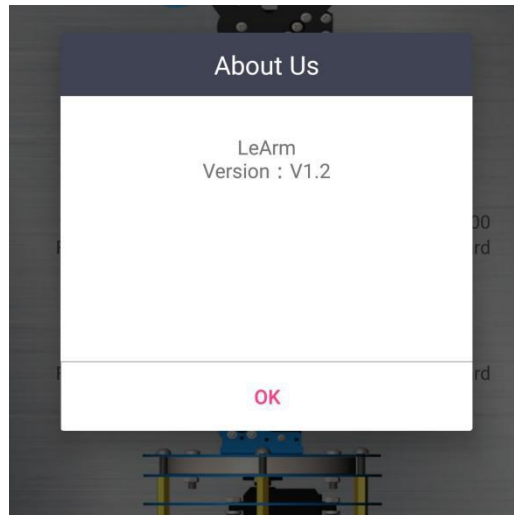
(5) Here is the introduction of each icon:



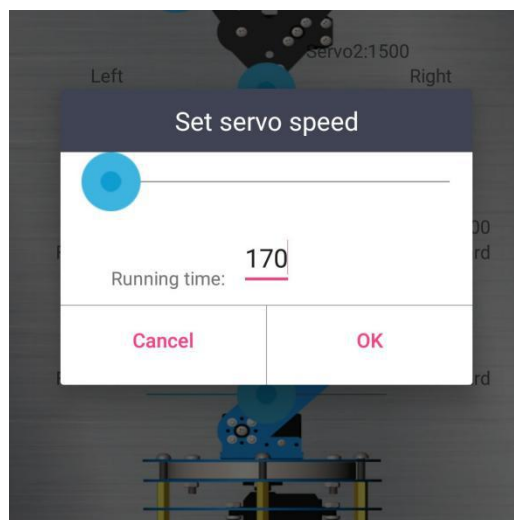
(6) Click Settings button, open the set operation box, you can set three operations.



1. About: induction LeArm Version.



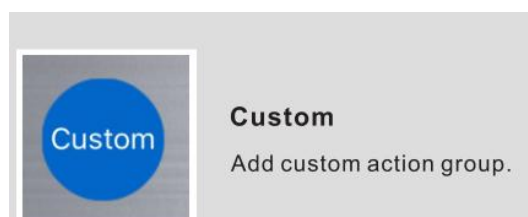
2. Click it you will see this interface, we can set servo speed by set time. The longer the time, the slower the servo's speed. We can set running time or drag the slider to completed. For example, we set running time is 170, it means that the servo takes 170ms to complete an action. If you click cancel button, the set servo speed dialogue box will be canceled.

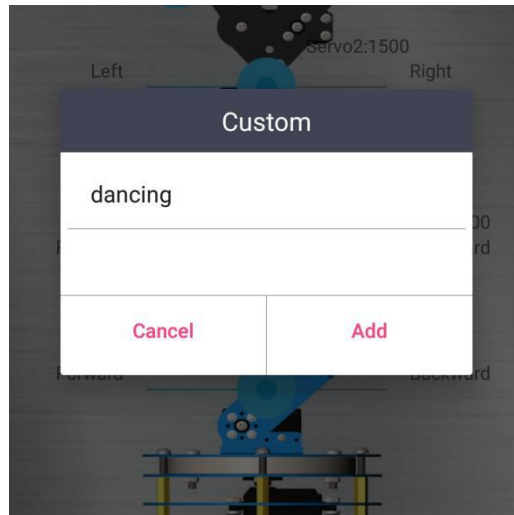


3. Cancel the settings, do not change anything.

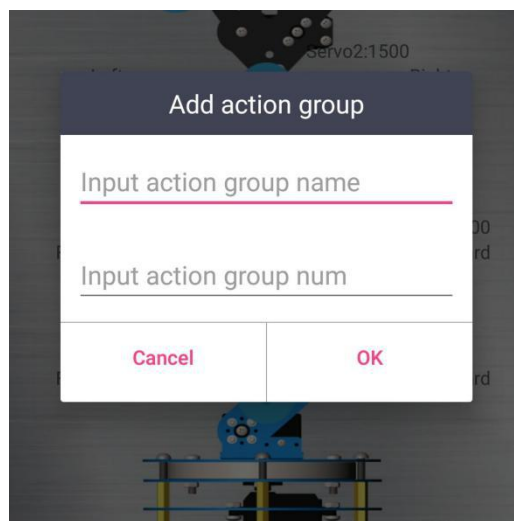


(7) Click custom button, open the custom operation box, you can see this interface.

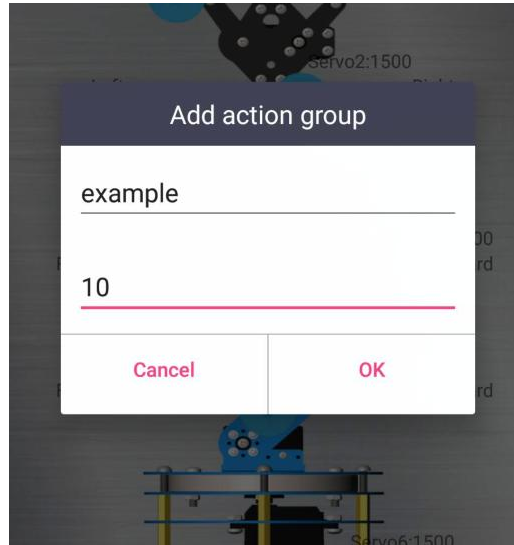




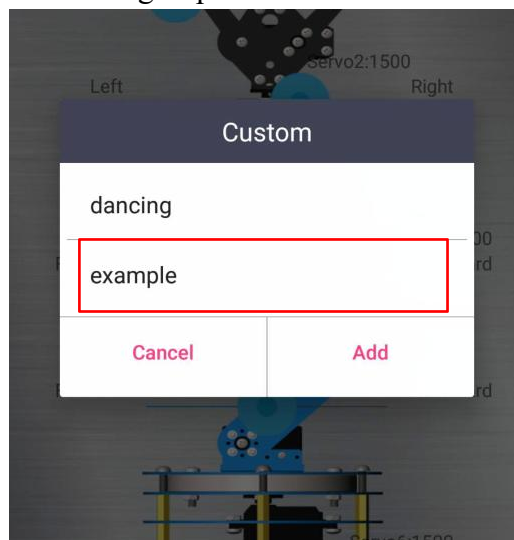
1. If you select “Cancel” and back to Initial page.
2. Click “Add” button, open the Add Action Group dialog box. We can name the action group and action number in this dialog box, the name each action group by ourselves, but the action group number that we have completed download by PC software. If we want to save it, please click ok icon. Cancel means drop out dialog box.



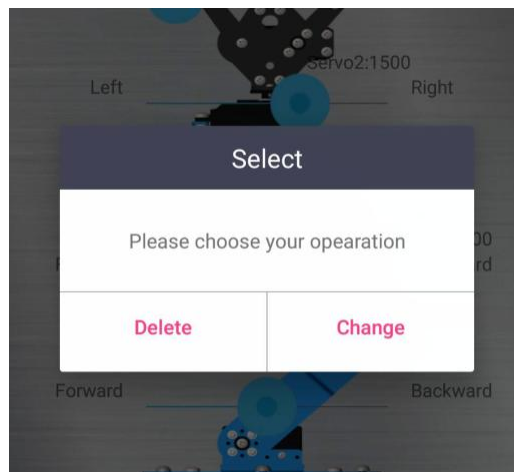
3. For example, we name this action group as “example”, (you can name it as you like.) Then, choose the action group number is 10, (please refer to PC software’s action group) as the dialog box shows:



4. When we click ok button, the action group will be added. Open Custom button again and we will see this action group.







5. Click "example" and a dialog box will appear. We can choose to "Delete" or "Change" the action group.



3.3 PC software

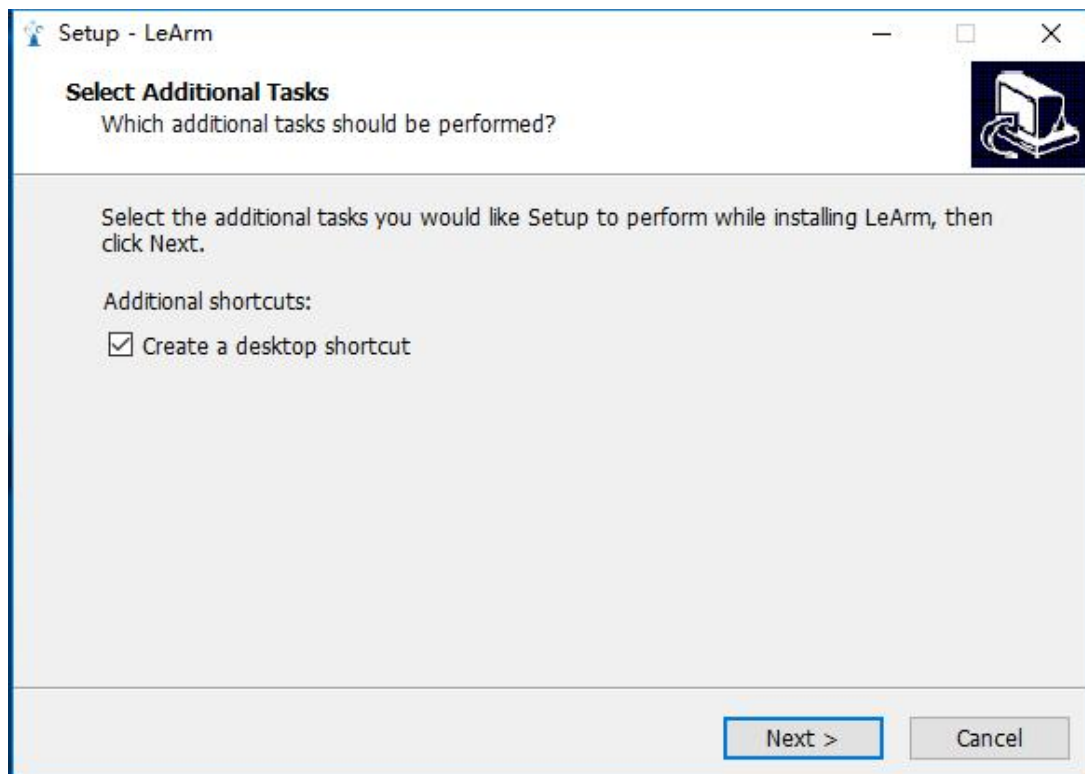
3.3.1 How to download PC software

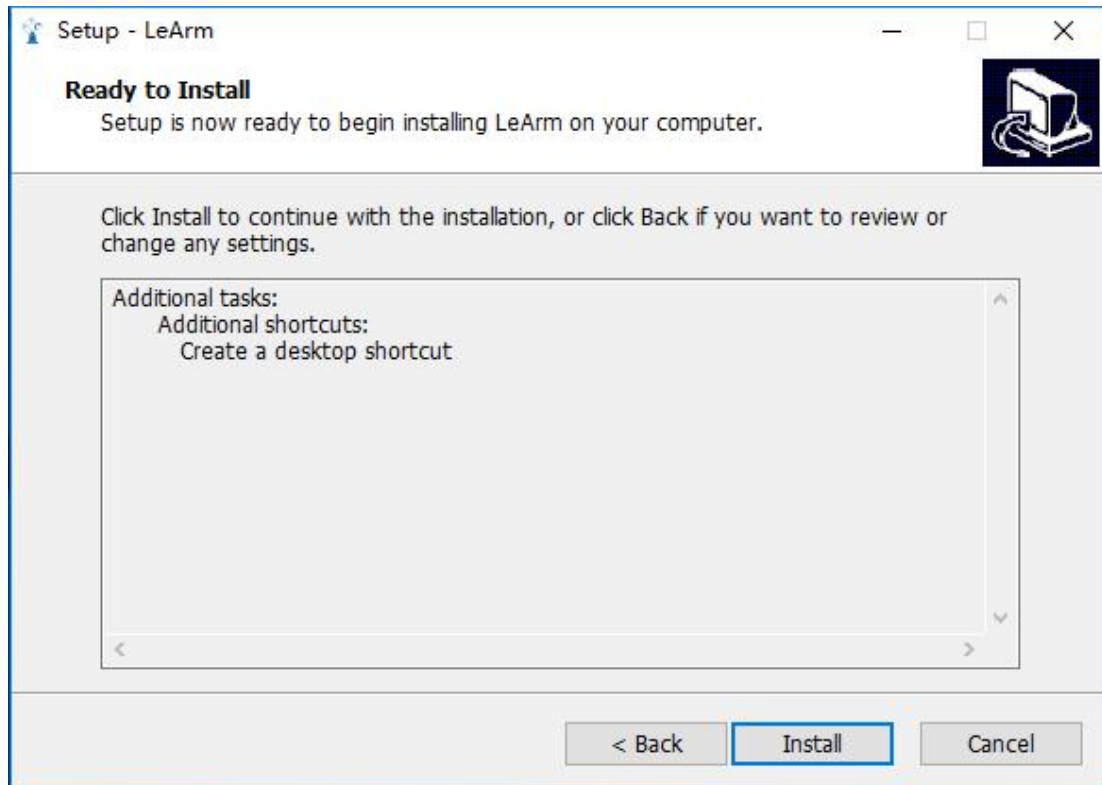
You can download the installation file of PC software.

| Icon | systems | link | QR code |
|---|--|---|---|
|  PC Software |  Win XP | http://bit.ly/2xJ8140 |  |
| |  Win 7 8 10 | | |

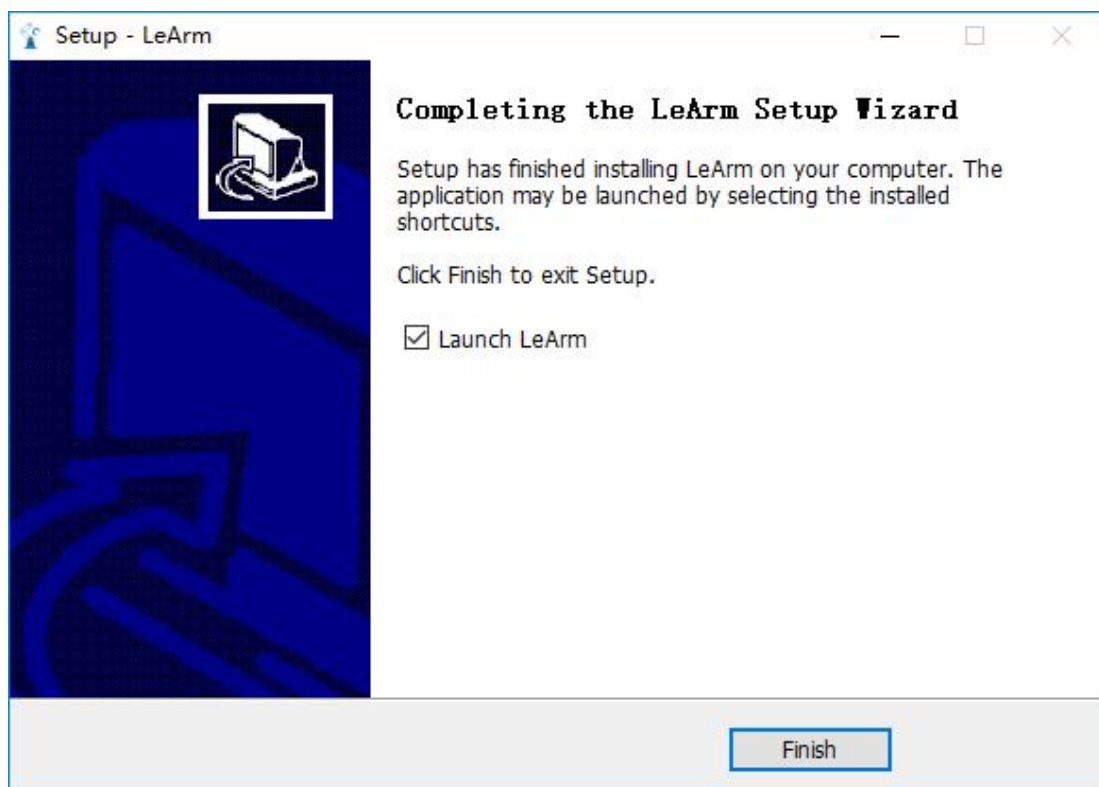
3.3.2 How to install PC software on your computer

Open installation file and select installation path.
Click “next”





The installer is now ready to install PC software into your computer. Click install to continue with this installer, if you want to review or change the settings, please click “back”.



The PC software installation wizard finishes. The installer has installed PC software into your computer, this application can be run

by selecting the installed shortcut.

Click “finish” exit the installer.

Only after LeArm is connected to PC software, we can use PC software to program LeArm.

Note :

(1) After installing the LeArm PC software, the open prompt fails.

This issue may be caused by anti-virus software. PC software be considered is a virus. Resulting in the killing of anti-virus software. But our software is safe, not a Trojan horse. Please turn off the antivirus software or add our software to the white list of antivirus software to try it out.

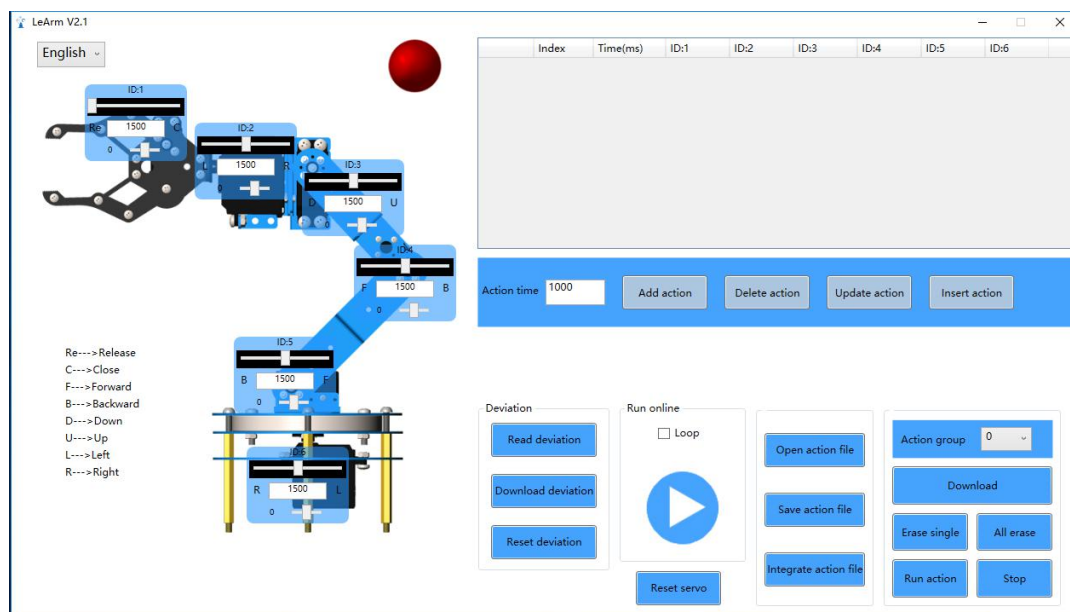
(1) Please setup this file if the pc software can't run

| | |
|----------------|--|
| System version | Installation package |
| Win 7 8 10 | NDP452-KB2901907-x86-x64-AllOS-ENU.exe |
| Win XP | NetFx40_Client_x86_x64.exe |




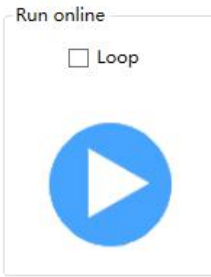

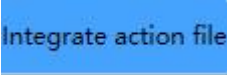
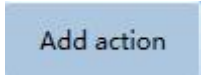
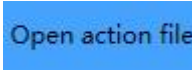
3.3.3 Software function introduction

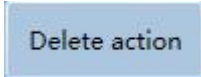
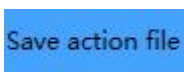
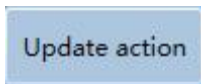

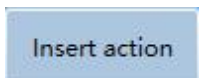
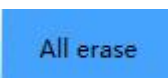
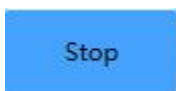
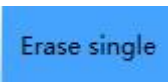
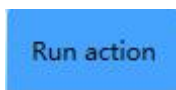



Double click the PC software and open the software



Here is the introduction of each icon:

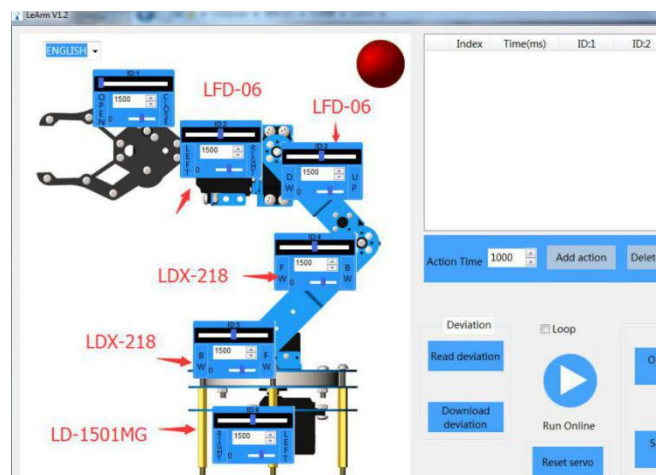
| Icon | Meaning | Icon | Meaning |
|---|--|--|--|
|  | Connect the computer and LeArm with the Mini USB cable, drive automatic installation (if installation is unsuccessful , try to plug in or unplug the LeArm several times or restart the computer). |  | the red indicator on the interface turns meanings green.connection succeeded |
|  | Language switch. automatically recognizes languages, supports Simplified Chinese, Traditional Chinese, and English, and can also be manually switched. |  | When you connect LeArm and add a series of actions, you need to test your actions consistently, you can click this button to test, check the loop can always cycle your edited action. |
|  | the time for the action group to run.The longer the time, the slower the action(ms). We can adjust action group to run by time. |  | You can open multiple action group files and chain them together. |
|  | Record servo position value and action time information as an action item |  | Open the previously saved action file with the unified suffix name .rob. After opening, action items will be loaded into the interface. |

| | | | |
|---|--|--|---|
|  | <p>Select an action to delete</p> |  | <p>When you design your own action content, you need to save these actions in the form of a file for the next time. The suffix is .rob</p> |
|  | <p>After adjusting the servo value, click this button to update the selected action</p> |  | <p>LeArm's 6 servos position at 1500, and the PC software interface is also adjusted to 1500. Servo back to the middle position, (expect servo 1)</p> |
|  | <p>Insert an action group action before the selected action group</p> |  | <p>Delete all action group information in the controller Tips: Be careful! Click this button and all group actions on you controller will be erased.</p> |
|  | <p>Controller stops running action group</p> |  | <p>After selecting the action group number, click this button and the corresponding action group information in the controller can be deleted.</p> |
|  | <p>Press this button to let the controller run the corresponding numbered action group</p> |  | <p>Select the action group number, range 0~230. For example, selected action group number is 10 , click download button , then the No.10 action group will be download to controller. When you add action group number is 10 on you phone APP, it will run the No.10 action group</p> |

| | | | |
|--|---|---|---|
| <p style="text-align: center;">Download</p> | <p>The edited action group is downloaded to the controller and the controller will save the action group information.</p> | <p style="text-align: center;">Read deviation</p> | <p>Display the deviation in the controller Tips:LeArm needs to adjust the deviation of the servo. It is because of the existence of the position value and the deviation value, so the actual position of the servo should be the position + deviation.</p> |
| <p style="text-align: center;">Download deviation</p> | <p>When the deviation of each servo is adjusted, click it and the all deviations will be downloaded to the controller</p> | <p style="text-align: center;">Reset deviation</p> | <p>The reset deviation will not change the deviation parameter in the controller, only the deviation parameter in the reset interface is 0 when you click again to read the deviation. The actual deviation in the controller will be displayed again in the interface.</p> |

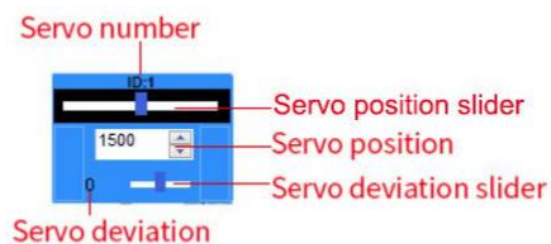
3.3.4 The introduction of servo

(1) LeArm has 6 servos, when connect successfully, we can drag the slider to change the position of the robotic arm. The range of servo 1 is 1500~2500, other servo position range 500-2500.



(2) Single servo debugging

1. When servo controller is connected to the computer, the interface indicator turn green indicates that connecting is successful.
2. Connected to the power supply. Make sure your power supply is not lower than 5V. (Consistent with the operating voltage of the servo you control)
3. Connect the servo to the No. 1 controller. Please do not insert the wrong Line



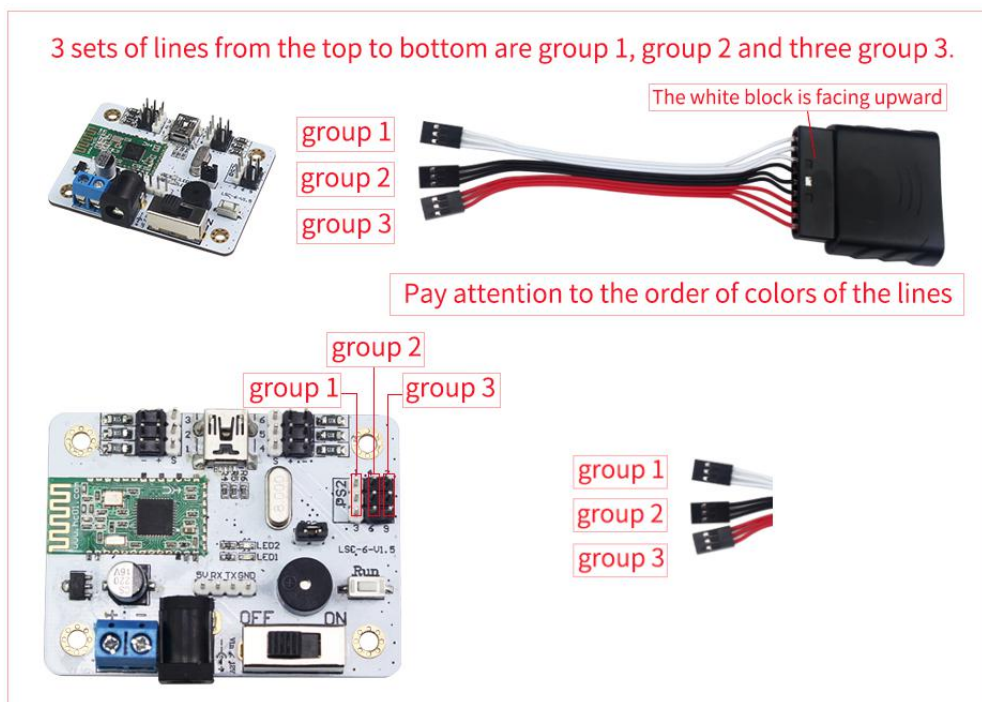
The servo slider can be free to drag (the range is 500-2500). Click the white area of the servo position, the slider moves to the direction of the mouse, the step value is 5, the slider will continue to move when you press and hold it. The P value will change as the slider moves, and it can visually show the position of the servo at this time.

Servo deviation represents the relative position of the servo, ranges from -100~100. Click the white area of the servo deviation, the slider moves to the direction of the mouse, the step value is 1.

3.4 wireless handle

3.4.1 How to use wireless handle

(1) First, connect wireless handle receiver to controller.



(2) The receiver can work properly only if the orientation of DuPont metal heads of three groups of DuPont line are consistent, as shown below.



(3) The handle requires **2 AAA batteries(self-provided)**, open the power switch of the handle. When the two LED lights on simultaneously, the connection is finished. Then you can run the action group saved by upper computer software.



3.4.2 function of wireless handle

There are two modes in wireless handle: action group mode and servo mode. The following instruction the two modules.

A action group mode instruction

Action group mode is the default mode. In this mode, every button of wireless handle corresponds to one action group. We can download action group to servo controller and make servo controller execute one certain.



| | | |
|--|-------|---------------------------|
| | START | Run 0th action group once |
| | Up | Run 1st action group once |
| | Down | Run 2nd action group once |
| | Left | Run 3rd action group once |
| | Right | Run 4th action group once |
| | | Run 5th action group once |
| | | Run 6th action group once |
| | | Run 7th action group once |
| | | Run 8th action group once |



| | |
|----|----------------------------|
| L1 | Run 9th action group once |
| R1 | Run 10th action group once |
| L2 | Run 11th action group once |
| R2 | Run 12th action group once |

B servo mode instruction

Servo mode is each two buttons correspond to the forward and reverse rotation of a certain servo. Press “SELECT” and ”START” simultaneously to switch to servo mode.



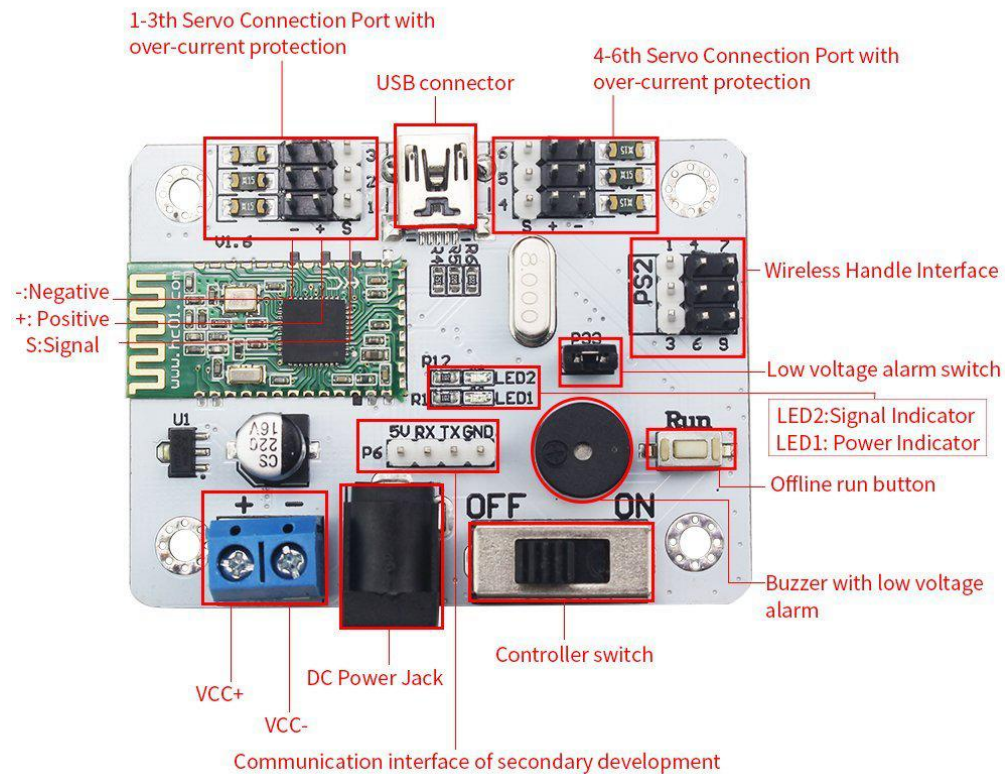
| | |
|---|--------------------------------------|
| ↑ | No. 5 Servo rotates counterclockwise |
| ↓ | No. 5 Servo rotates clockwise |
| ← | No. 6 Servo rotates counterclockwise |
| → | No. 6 Servo rotates clockwise |
| ↑ | No. 4 Servo rotates counterclockwise |
| ↓ | No. 4 Servo rotates clockwise |
| ← | No. 3 Servo rotates counterclockwise |
| → | No. 3 Servo rotates clockwise |



| | |
|----|-------------------------------------|
| L1 | No.2 Servo rotates clockwise |
| R1 | No.2 Servo rotates counterclockwise |
| L2 | Open mechanical claw |
| R2 | Close mechanical claw |

3.5 Introduction to the Bluetooth controller

3.5.1 Bluetooth controller interface



3.5.2 Buzzer with low voltage alarm

Low voltage alarm has prompt function, if the power supply is below 5V, the servo controller will make sound of beep(DIDI), please replace the battery or charge the battery in time.



3.5.3 About offline running

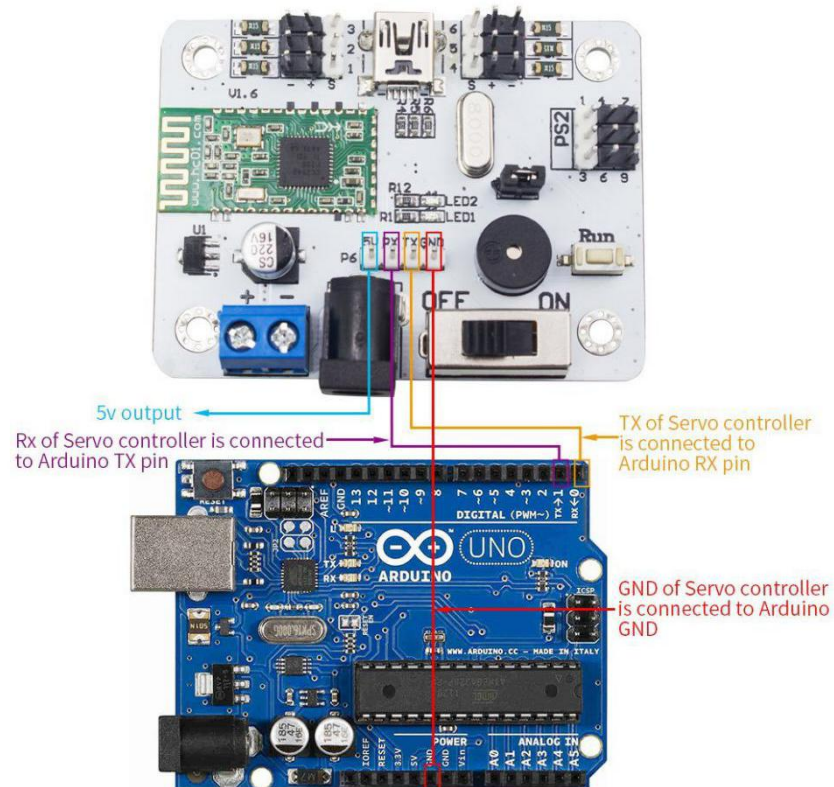
Offline running means: disconnected from the computer and the robot works Automatically

1. Download action files that need to be run offline to No.100 action group
2. Press the flexible button on the controller



3. Press once to offline run button once; press and hold for 3 seconds (until the blue light flashes) and it will run all the time.
4. Restart the controller to remove the cycle run.

3.5.4 Advanced Control(Serial Port Communication, Secondary Development)



Note: only to show how to connect, it's not included.

Note: Please read the <Communication Protocol of Servo Controller> for a full understanding on how to use the servo control secondary development instruction.

4 Troubleshooting

1. After installing the LeArm PC software, the open prompt fails

Solution: This issue may be caused by anti-virus software deleting the .dll file that the software needs to run. Please disable it temporarily. then installed again. It is recommended to install the drive letter other than the C drive.

2. After installing LeArm PC software, open the prompt and need .NET 4.0 Client operating environment

Solution: The LeArm PC software has software for XP version and Win7 and above. Please confirm the installation the right software. XP system version please find dotNetFx40_Client_x86_x64.exe to install in the package. Win7 8 10, please find NDP452-KB2901907-x86-x64-AllOS-ENU.exe to install in the package

3. Software crashes when LeArm PC software clicks Add Action or Open Action Group File

Solution: The LeArm PC software has software for XP version and Win7 8 10. Please confirm the installation. the right software. Usually this problem occurs only in Win7 8 10 , please find in the package NDP452-KB2901907-x86-x64-AllOS-ENU.exe can be installed to solve the problem.

4. Android App Click on the Bluetooth button to search for no Bluetooth devices

Solution: First, make sure your LeArm is working properly. Android 6.0 and above will ask after installation. Whether to allow positioning rights, be sure to click Allow, or go to rights management to enable location rights. Restart LeArm with App, if multiple attempts still fail, please contact customer service.

5. Android App can connect Bluetooth, but not control LeArm

Solution: Test some Huawei mobile phones may have this problem, please use other Android phones to test and contact the customer service staff explains their Huawei mobile phone model and EMUI version. We will solve the problem as soon as possible.

6. iOS App" communication error, please restart your iphone

Solution: iOS 11.0 and later system Bluetooth sometimes enters an abnormal state, causing Bluetooth communication failure. Restarting iPhone can solve this problem.

7. Turn on the power and Le Arm beeping like “Di Di Di”

Solution: The power supply voltage is too low.

(1) Please check whether the USB cable is used to connect the computer to the LeArm directly. The USB cable is only for information transmission and cannot be

used as a power cable, but it can be powered by an adapter and a battery.

(2) If you use battery, please note that after a long time, the battery will have a certain loss, the battery voltage will reduce and power shortage, please replace the battery in time.

(3) When selecting an adapter for power, please check whether the correct adapter is used and the output voltage can achieve the requirements.

8. The PC software always shows no connection

Solution: This issue may be caused by anti-virus software. PC software be considered is a virus. Resulting in the killing of anti-virus software. Please turn off the antivirus software or add our software to the white list of antivirus software to try it out.

9. Why does a joint have no control.

Solution : Please check if the servo interface is loose. Generally, the cable can be inserted tightly. If you still can't, you can try to change to other interfaces, if not, please contact our customer service.

10. After you read the LeArm User Manual, if you have any questions, please feel free to contact us.

Website: www.lewansoul.com

Forum: www.lewansoul.com/forum

Email: support@lewansoul.com

5 The Historical version of the user manual

| Version | Modification date | Instructions | Modifier |
|---------|-------------------|---|----------|
| V1.2 | 2018.5.19 | The add information: (1) Introduction to the Bluetooth controller (2) Troubleshooting | Carey |