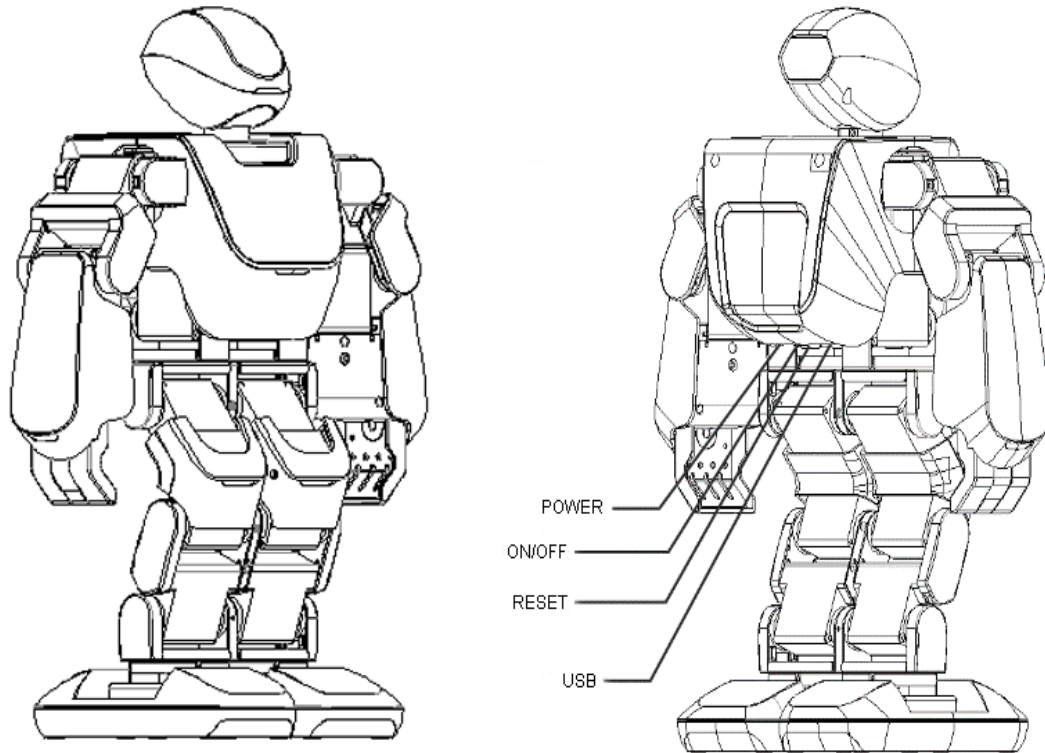


Aelos Pro User Manual



Content

Chapter One: Introduction

1. Product Introduction
2. Product Functions
3. Safety Precautions
4. Charging Instructions
5. Declarations

Chapter Two: Software Installation

1. Version
2. Operating Requirements
3. Software Operation

Chapter Three: Configure project file

1. Open the software
2. Prepare the project files
3. Open the serial port
4. Open the files
5. Open .Pro file
6. Check the "Action order" column
7. Download the project file
8. Setting the transmitting frequency signal

Chapter Four: Remote controller

1. Remote controller button introduction
2. Set the remote controller transmitting frequency signal.

Chapter Five: Control the robot via remote controller

1. Turn on the robot and the remote controller
2. Set the remote controller signal value
3. Device connection
4. Check the connection of the remote controller

Chapter Six: Edit new actions project

1. Edit new actions
2. Create new action
3. Save action group
4. Load action and load action group
5. Upload action
6. Add background music
7. Compile and download
8. Project management
9. Zero point setting

Chapter Seven Configure music and robot performance.

Chapter One: Introduction

1. Product Introduction

Aelos, a beautiful name comes from Greek Myths, means ingenious and smart. Hope Aelos could bring you ingenious and happy life!

2. Product Functions

Aelos is a mini humanoid robot which has 17 DOF. It can achieve complicated actions such as dancing, boxing, and playing football, etc. It also provides a learning platform for robot geeks through PC programming software.

3. Safety Precautions

- 1) Children should use under adult supervision.
- 2) Please keep a safe distance from the robot while operating to avoid any personal injury.
- 3) Do not disassemble the robot joints on your own. If there is any problem with the robot, please take reasonable maintenance according to the warranty terms.
- 4) Keep the robot away from water or fire. In addition, please put the robot in a flat, smooth surface while operating.
- 5) Avoid violent impact to the robot while playing the robot. Shut down the robot immediately if the robot is on abnormal condition to prevent damage to the robot.
- 6) While the robot is operating, do not break off the robot joints vigorously to prevent damaging the servo or the main board.

7) While operating the robot, please place the robot on the flat surface or the center of the table, to avoid the risks of falling down and damage.

8) The servo will be overheat after using for a long time. This is a normal situation. Please shut down the robot until the servo recovers its normal temperature.

9) If the robot is emitting smoke or scorched smell, please shut down the robot immediately and contact our after-sales service center.

10) If the robot is damaged by water or other foreign matters, please shut down the robot immediately and contact our after-sales service center.

11) If the robot can not perform actions, reset the robot or recharge the robot to full battery and try again. Do not impact the robot with violence.

12) If the servo is damaged, please contact the manufacturer for maintenance. Do not replace the components by yourself.

13) Robot is precision device. Please do protective measures when transporting the robot.

4. Charging Instructions

1) The robot will voice prompt “Low battery, please charge” when the robot is in low power status.

2) Please use the original adapter to charge the robot.

3) While the robot is charging, the adapter indicator is red. It takes about 2 hours to fully charge the robot. And when the adapter light is green, it indicates that the battery is full.

5. Declarations

- 1). Do not disassemble the battery privately.
- 2). Do not insert any foreign objects into the robot's main board.
- 3). We do not take responsible for any man-made damage.

Chapter Two: Software Installation



1. Version

PC

2. Operating Requirements

Support windows7/windows8/windows10 system

3. Software Operation

3.1 Obtain

Download and install the Aelos 1 PC programming software from the following webpage:

<http://www.lejurobot.com/en/welcome/service#point1>

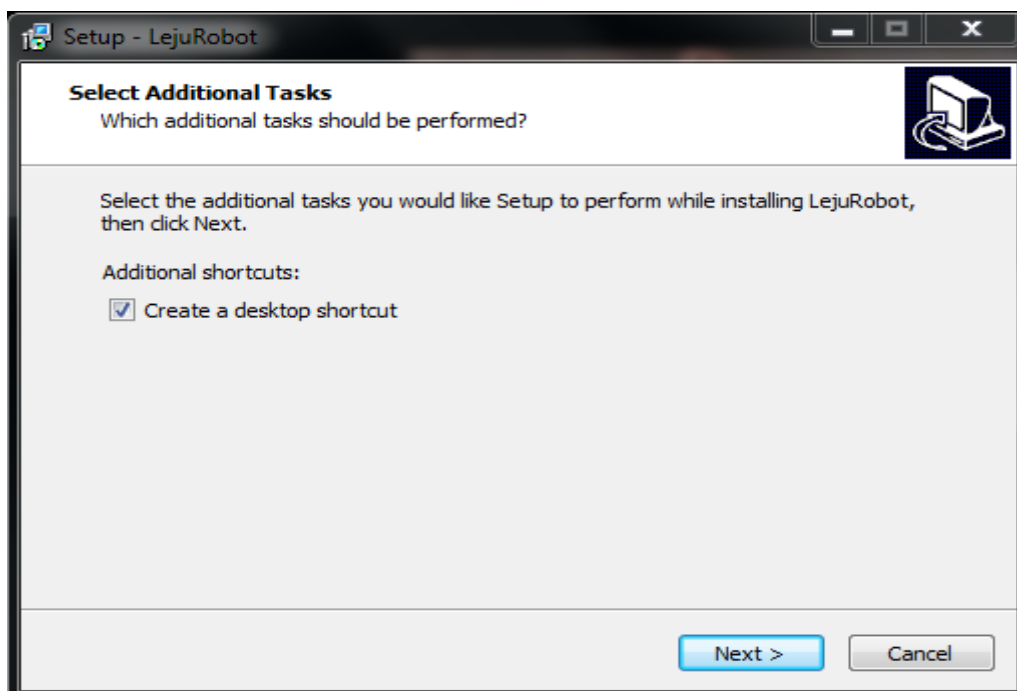


Pic2-1. AELOS_ simplified version.exe file

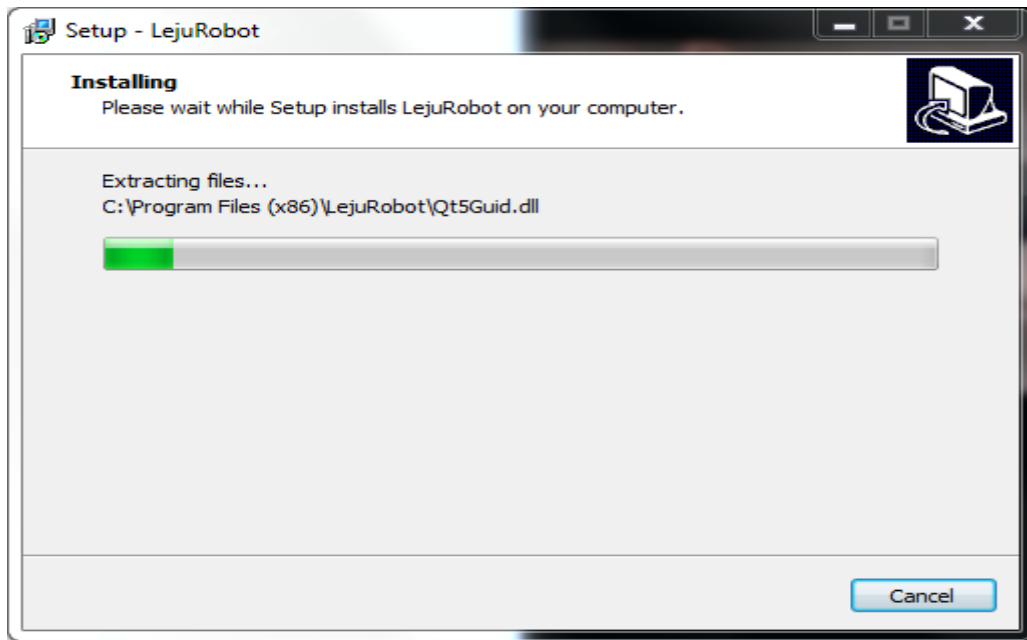
3.2 Installation

3.2.1 Before installing, please confirm the PC System first.

3.2.2 Double click the software, in the pop up prompt interface, choose the corresponding Device Driver according to your PC system.



Pic2-2. Choose installation path

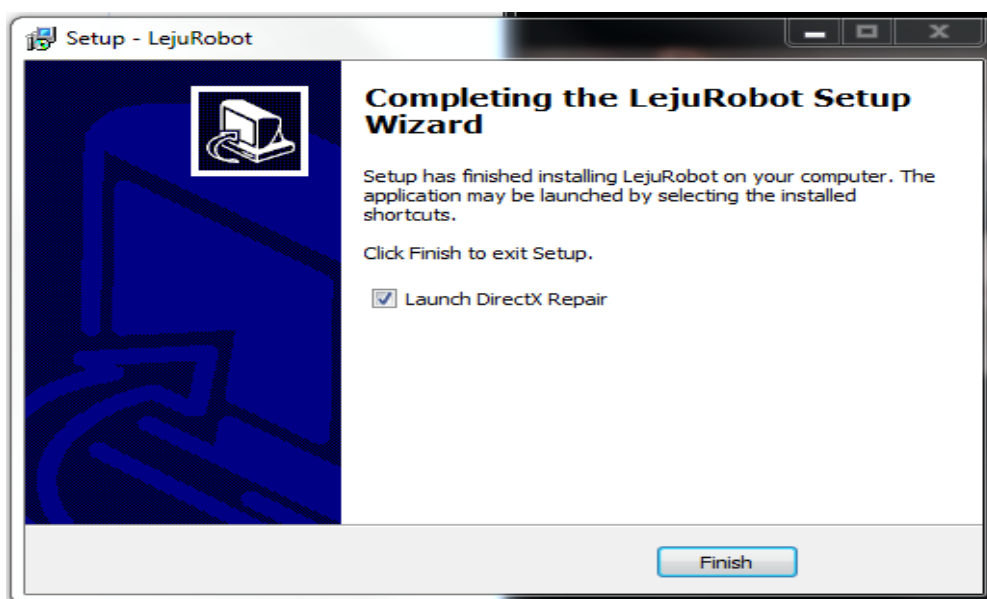


Pic2-3. Software installing

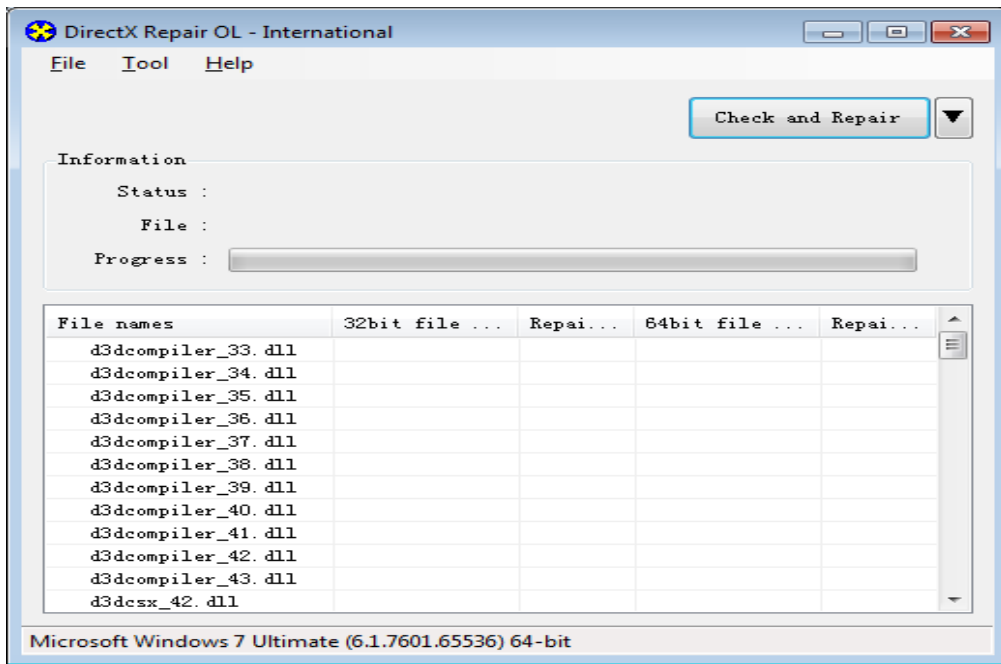
3.2.3 For windows 10 system, no need to install the device driver, you can install the robot software directly. For windows7/windows8 system, click “next” to install the device driver.

3.2.4 While installing, if it prompts lack of MSVCPXX.dll project document, you can download the needed DirectX repair tool through the website:

http://www.pc6.com/softview/SoftView_57945.html

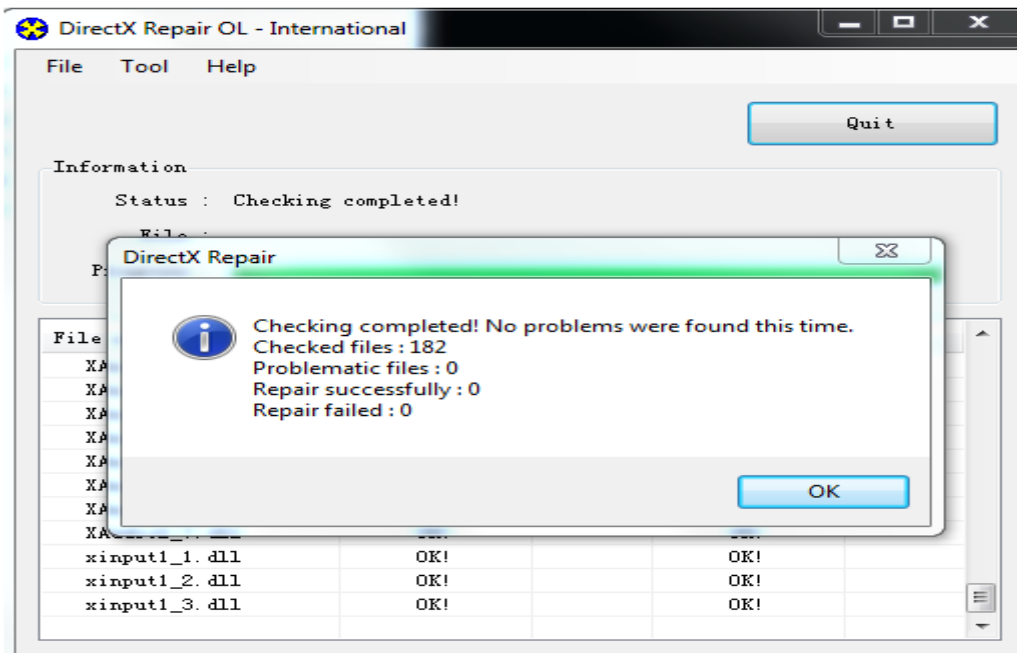


Pic2-4. Prompt lack of .dll file



Pic2-5. DirectX repair tool interface

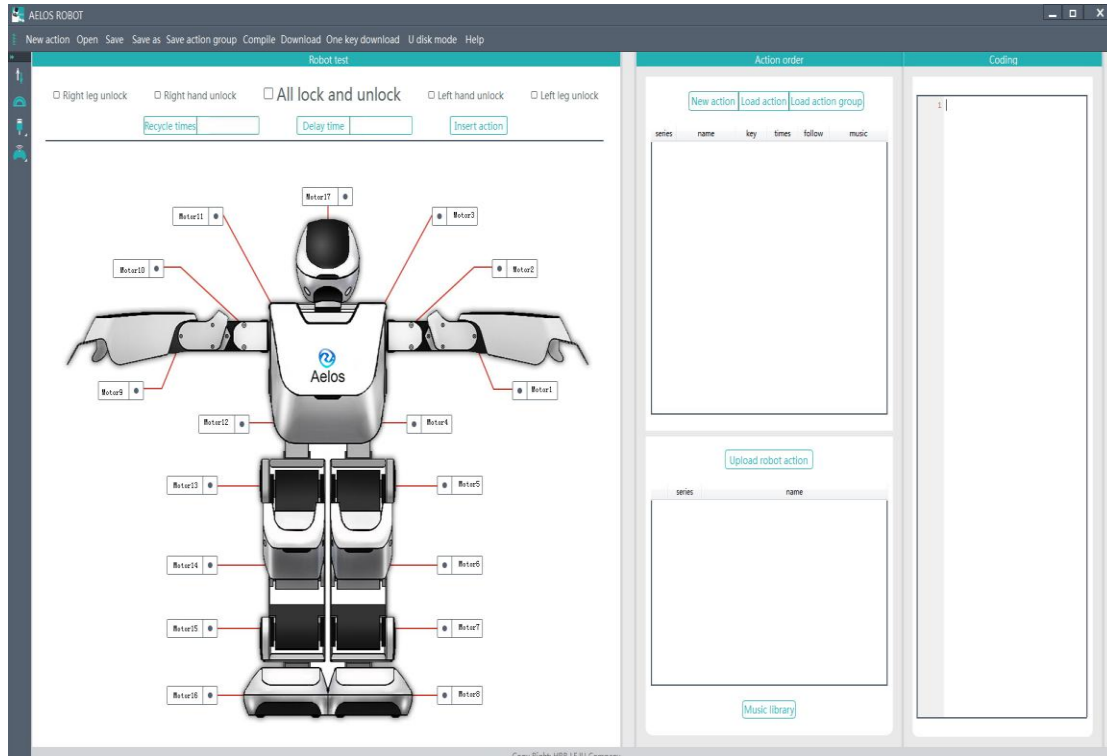
3.2.5 After completing repairing, click “OK”.



Pic2-6. DirectX Repair successfully

3.3 Connect the robot

3.3.1 Double click the LejuRobot desktop shortcut to open the software.



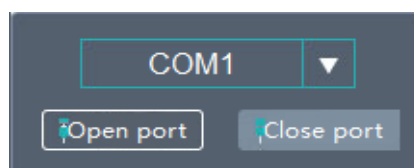
Pic2-7. Software main interface

3.3.2 Turn on the robot, connect the USB cable to the USB port on the robot.

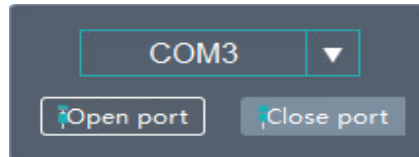
3.3.3 Connect the COM serial port: click the serial port



, click the triangle drop down list icon, choose COM3(different USB may have different serial port, choose the one except COM1).



Pic2-8. COM icon and COM selection



Pic2-9 open and connect the robot COM

3.3.4 Click “Open port”. If it connects successfully, it will pop up “open port successfully” window, click “confirm”. If the connection fails, please check whether the USB is connected firmly, or check if the USB COM driver has been installed correctly.

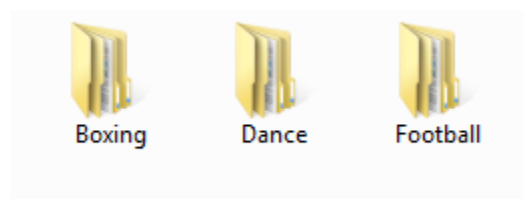
Chapter Three: Configure project file

1. Open the software

For details, please refer to Chapter Two, section 3.3 Connect the robot.

2. Prepare the project files

Unzip the provided project files and put on the desktop.

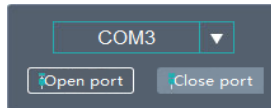


Pic3-1.project files

3. Open the serial port

Open the software, choose and open the COM serial port

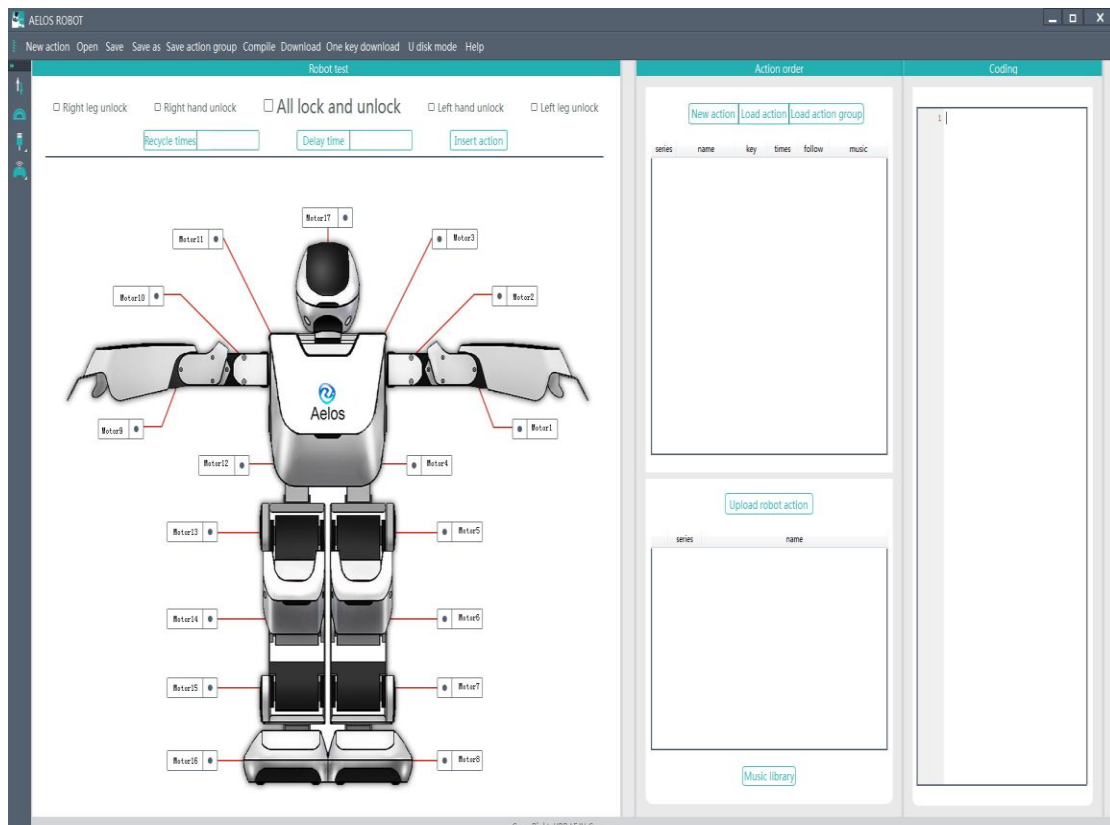




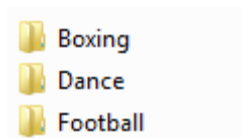
Pic3-2 open and connect the robot COM

4. Open the files

Click “Open” in the main interface, then choose one of the provided files, such as: football.



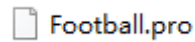
Pic3-3 Open the files



Pic3-4 select file

5. Open .Pro file

Choose and open the “.pro” file.



Pic3-5 Select .pro file

6. Check the “Action order” column

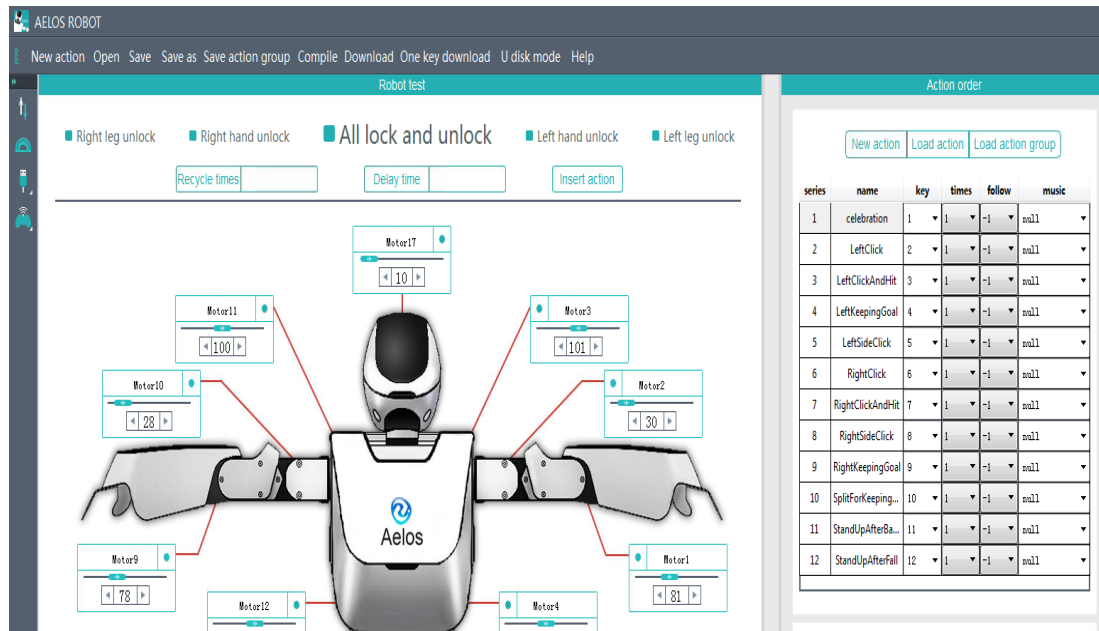
Open “.pro” project file, then check the “Action order” column: each action corresponds to each “key” number. The “key” number corresponds to the button of the remote controller. For example, “celebration” action corresponds to number 1. Press “1” button in the remote controller, then the robot will perform the action.

series	name	key	times	follow	music
1	celebration	1	1	-1	null
2	LeftClick	2	1	-1	null
3	LeftClickAndHit	3	1	-1	null
4	LeftKeepingGoal	4	1	-1	null
5	LeftSideClick	5	1	-1	null
6	RightClick	6	1	-1	null
7	RightClickAndHit	7	1	-1	null
8	RightSideClick	8	1	-1	null
9	RightKeepingGoal	9	1	-1	null
10	SplitForKeeping...	10	1	-1	null
11	StandUpAfterBa...	11	1	-1	null
12	StandUpAfterFall	12	1	-1	null

Pic3-6 action order column

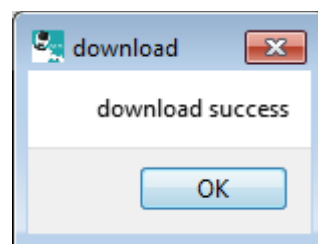
7. Download the project file.

Click “one key download”, to download the “project files” to the robot.



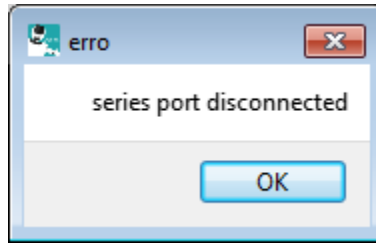
Pic3-7. “one key download” icon

It will pop up “download successfully” window, click “OK”;



Pic3-8. Download successfully

then it will pop up “serial port disconnected” window: it means the project file has been downloaded to the robot already.

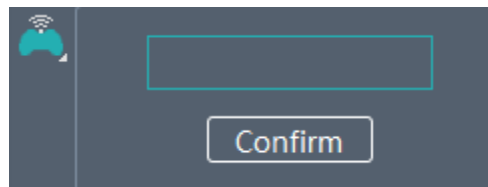


Pic3-9 serial port disconnected

8. Set the transmitting frequency signal

8.1 click the transmitting frequency signal icon.

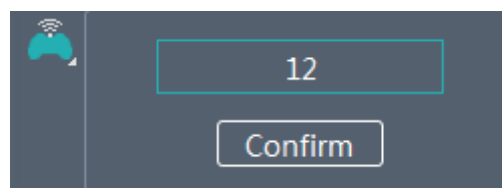
After opening the serial port, click the signal icon .



Pic3-10. signal setting icon

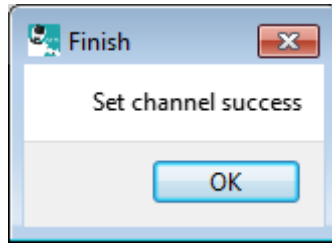
8.2 Set the signal value

Follow step 8.1, you can enter any number between 1 to 99 to set as signal value. For example, enter "12", then click "Confirm".



Pic3-11. Signal Value setting

It will pop up a window indicates signal setting successfully, then close the serial port, then the signal value is set.



Pic3-12. Signal value setting success

Chapter Four: Remote Controller



Pic 4-1. Remote controller front view

1. Remote controller button introduction

There are 15 buttons and 2 joysticks on the remote controller. Each button corresponds to a signal.

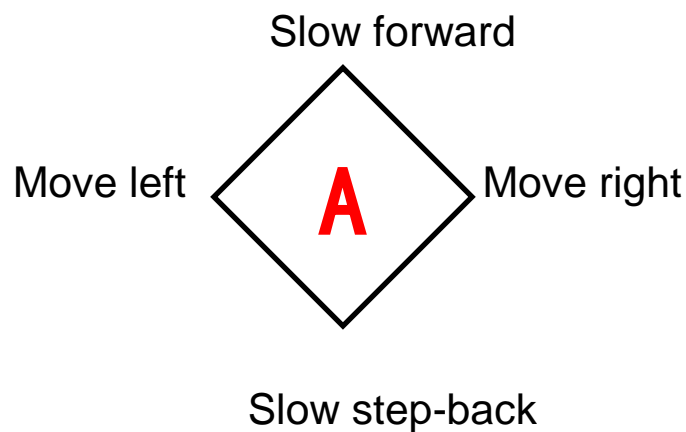
1.1 Power switch button: 

1.2 Reset/Stop/Back button: press this button, the robot will stop acting immediately and go back to its initial standing state.

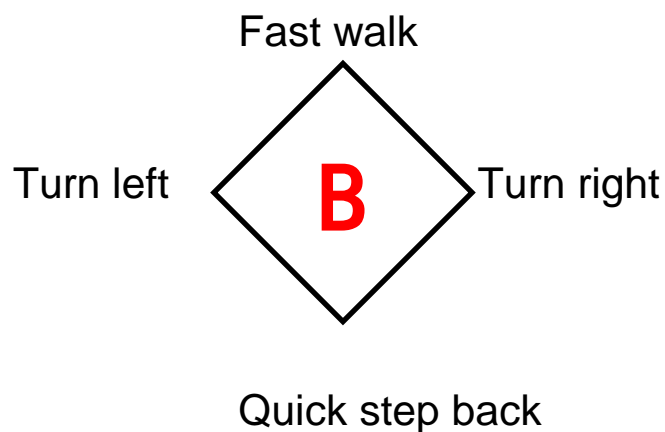
1.3 Roly-poly button: press this button, the robot will be in a roly-poly mode.

1.4 Remote controller button: there has 12 buttons on the remote controller. Each button corresponds to each action. So, you can not set the key number above 12.

1.5 Left joystick diagram:



1.6 Right joystick diagram:



2. Set the remote controller transmitting frequency signal.

2.1 Make sure the remote controller is full of battery. Turn on the remote controller, the switch button will turn red.

2.2 Set the remote controller transmitting frequency signal: long press button 5 (yellow “Y” button) and button 7 (green “A” button) simultaneously for more than 5 seconds, you will hear a short tweet, then it is in signal setting mode.

2.3 Set the transmitting frequency signal value: the value range between 1 to 99;

Left joystick: press once represents ten digit;

Right joystick: press once represents one digit.

(warm tips: To set the signal value, make sure you hear a short tweet every time you press the joystick, no tweet sound means setting fails.)

2.4 For example to set the signal value as 12: press left joystick once and press right joystick twice.

2.5 Confirm the signal value: after setting the signal value, press “reset” button (“back” button), the signal value is set.

Chapter Five: Control the robot via remote controller

1. Turn on the robot and the remote controller

Turn on the robot, you can hear a greeting from the robot; turn on the remote controller, the switch button will be red.

2. Set the remote controller signal value

Refer to Chapter Four and set the signal value as 12.


3. Device connection

After setting the remote controller signal value, turn on the robot. Wait for 3 seconds. The robot will connect with the remote controller.

4. Check the connection of the remote controller

4.1 Check the battery of the robot and the remote controller;

4.2 Set both transmitting signal value of the robot and the remote controller as 12;

4.3 Open “AELOS” software, click transmitting frequency signal icon  and reset the signal value, check the key number which showed in the action order column.

series	name	key	times	follow
1	Ballet	1 	1 	-1 
2	Bow	2 	1 	-1 
3	Brahms	3 	1 	-1 
4	Cheer	4 	1 	-1 
5	DistantKiss	5 	1 	-1 
6	doremi	6 	1 	-1 

Pic5-1. Key number of the software corresponds to the remote controller button

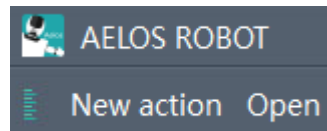
4.4 Refer to Chapter Four and reset the signal value, and try to control the robot again through remote controller.

Chapter Six: Edit new actions project

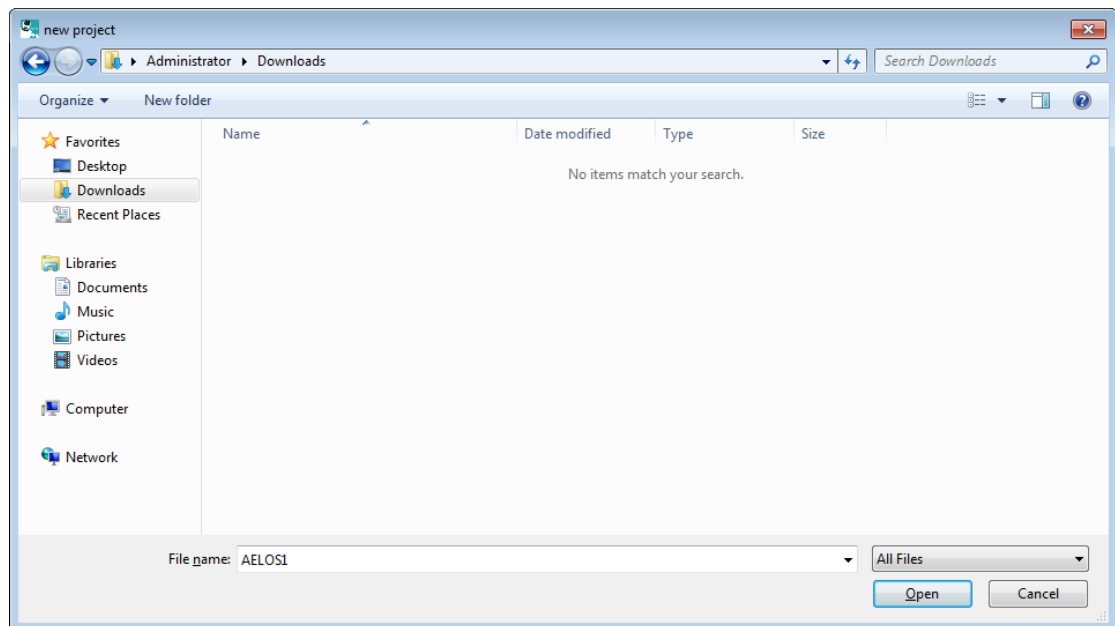
Program actions of your robot is the main function of this software. You can program a variety of actions for the robot by adjusting its posture, reading back its actions into the software, or changing the servo value by dragging the cursor in the software with the mouse.

1. Edit new actions

New action: Create a project file(pic6-1), enter the file name in the pop up window then create a new project(pic6-2: new action name: AELOS1)



Pic6-1 new action icon



Pic6-2 create new project file"AELOS1"

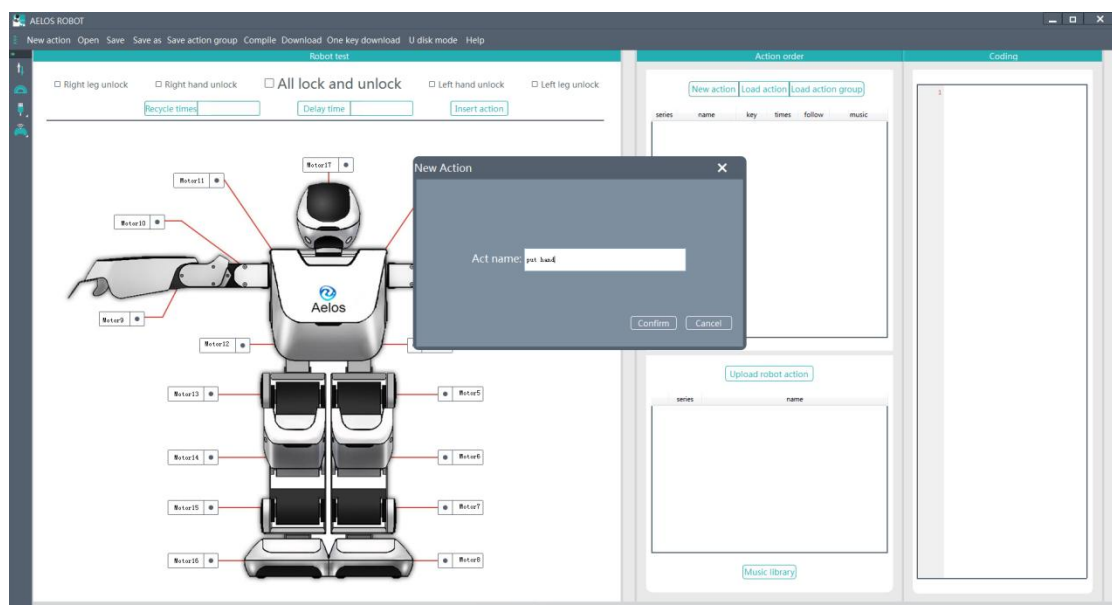
2. Create new action

After step 1, click the “new action” in the action order area(pic6-3), enter the new action name, click “confirm” to create a new action.

Notice: action name may not contain character such as “/.*<>”. (pic6-4 new action “raise hands”)



Pic6-3 create new action button



Pic6-4 create a new action: raise hands

2.1 New action 1

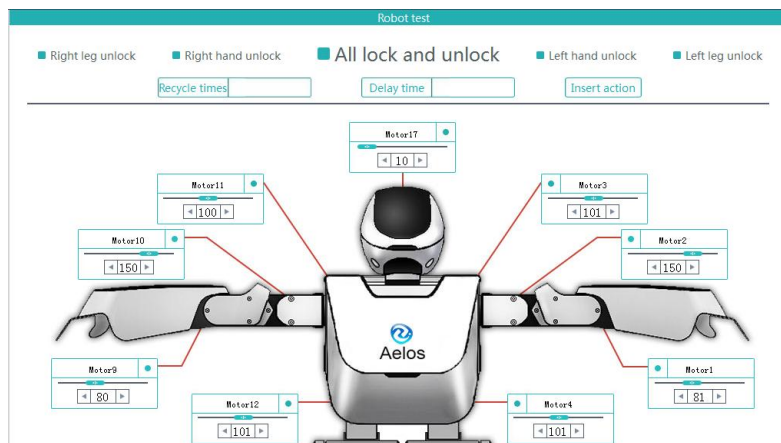
After creating “raise hands” new action, you can use your mouse to drag the cursor to change the servo value for more extensive editing of the robot’s actions or you can adjust the robot’s posture to send the action back to the software.

2.1.1 Method one: adjust the actions by editing the servo value.

Servo No.: “Motor 1~17” are the servo numbers of the robot’s joints which correspond to the actual robot.

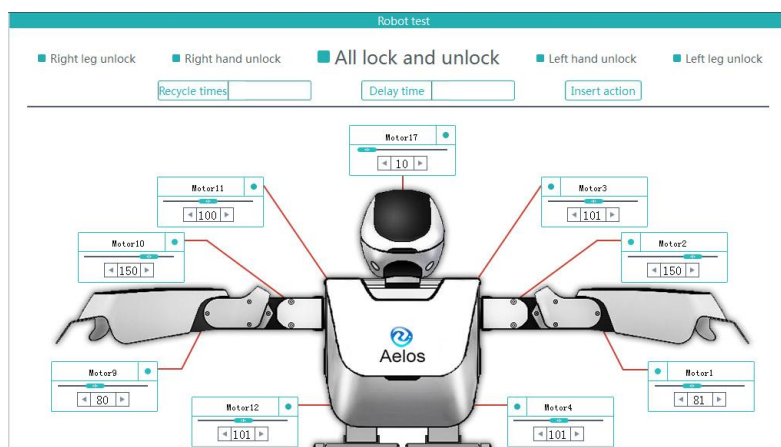
In the “robot test” area, left-click the mouse to select the servo value to be adjusted. Then, left-click and hold to drag the servo value to adjust.

For example(like pic6-5), adjust the servo 10 value as “150” while the servo 2 value as “150” , click “insert action” to add the action code to the “Coding” area.(pic6-7-1)



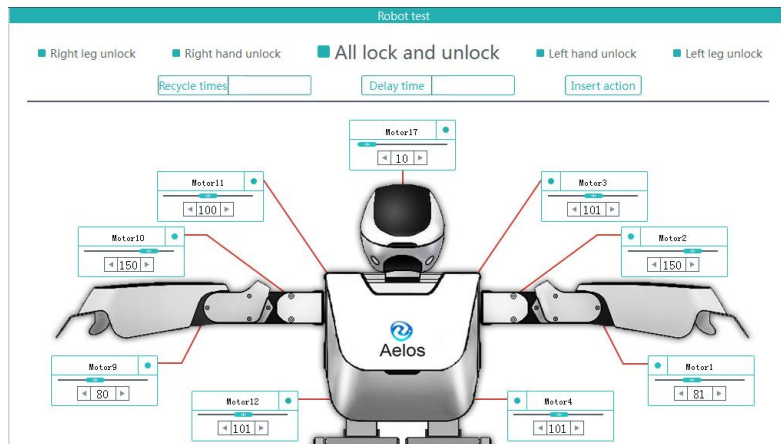
Pic6-5 Change the servo value by dragging the cursor 1

In the “robot test” area, drag the cursor to change the servo value(pic6-6). For example, adjust the servo 10 value as “40” while the servo 2 value as “40” , click “insert action” to insert the action code to the “Coding” area.(pic6-7-2)



Pic6-6 Change the servo value by dragging the cursor 2

into the “robot test” area. Drag the cursor to change the servo value(pic6-7). For example, adjust the servo 10 value as “100” while the servo 2 value as “100” , click “insert action” to insert the action code to the “Coding” area(pic6-7-3).



Pic6-7 change the servo value by dragging the cursor 3

Repeat on changing the servo value, then you can get a series of new actions.

“DELAY” means the continued time of the action.

The below code value equals to the servo value.

first frame action

```

MOTORA,101,77,144,92,100
MOTORB,100,77,145,93,102
MOTORC,101,150,81
MOTORD,100,150,80
Wait

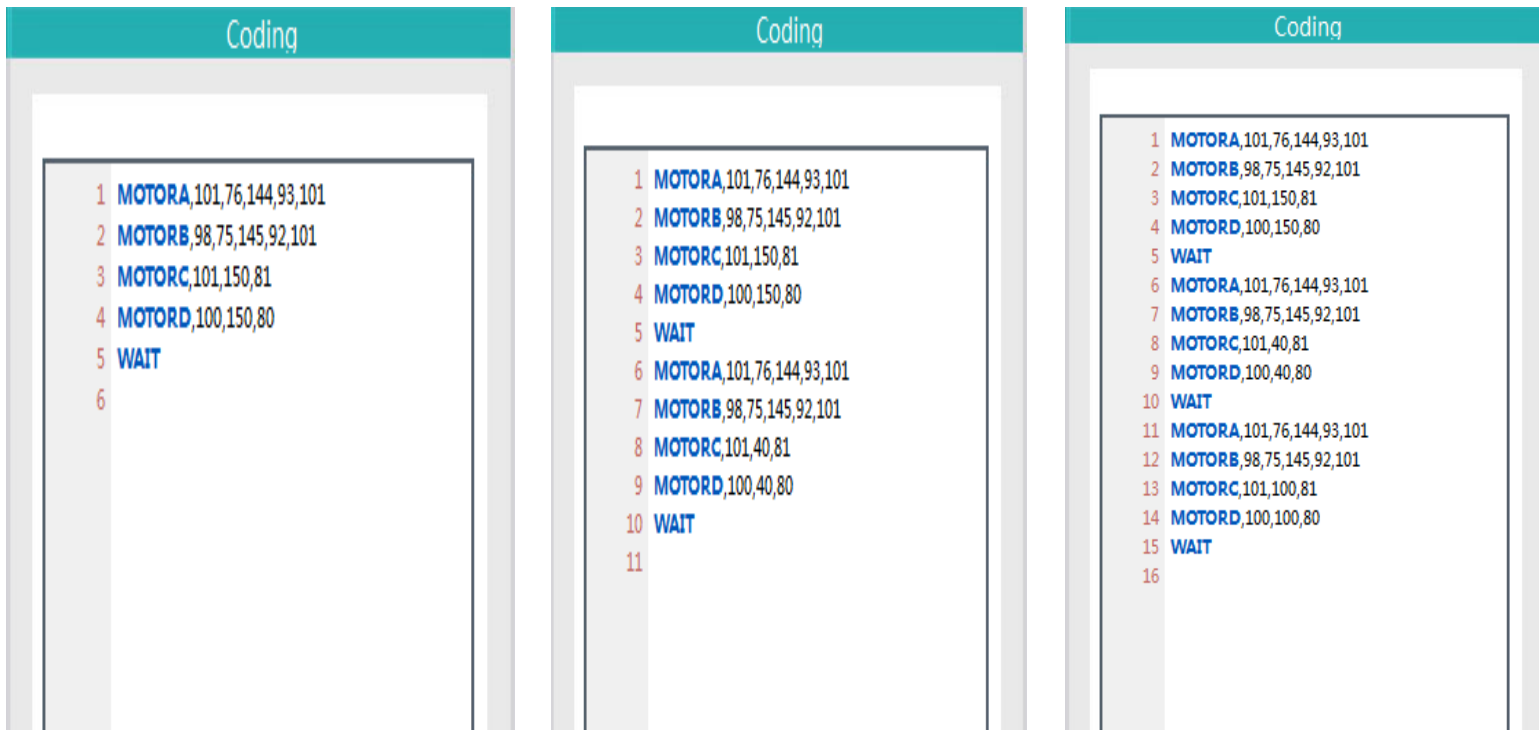
```

second frame action

MOTORA,101,77,144,92,100
MOTORB,100,77,145,93,102
MOTORC,101,40,81
MOTORD,100,40,80
Wait

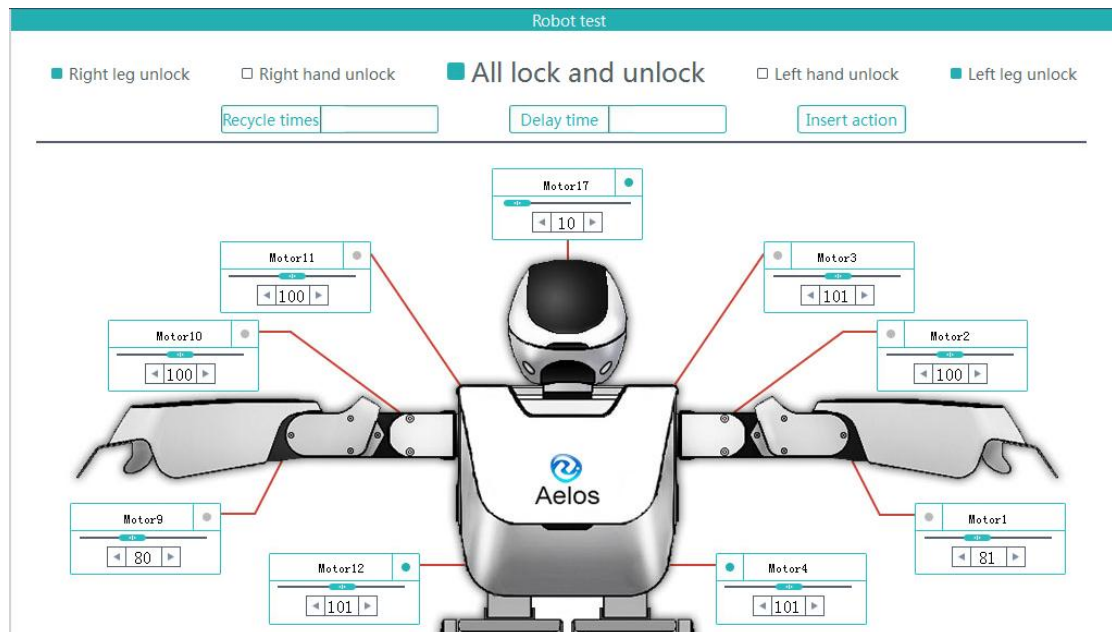
third frame action

MOTORA,101,77,144,92,100
MOTORB,100,77,145,93,102
MOTORC,101,100,81
MOTORD,100,100,80
Wait



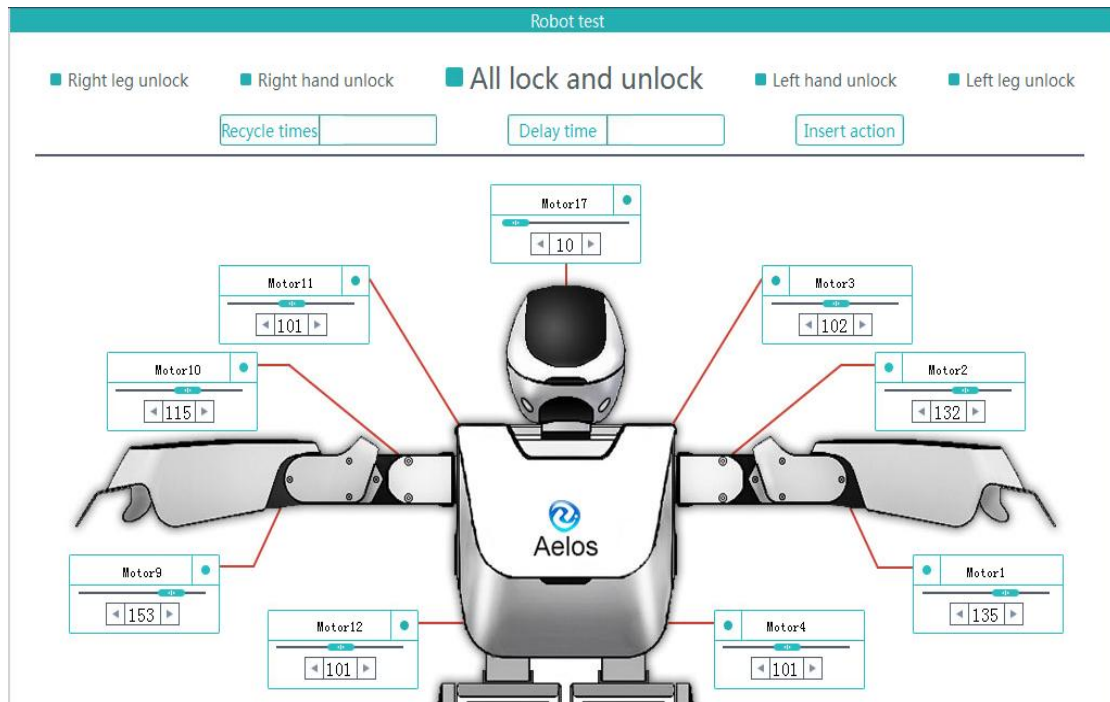
Pic6-7-1 coding editing column

2.1.2 Method two: in the “Robot test” area, unlock the robot’s servo (left and right hands), the joint of the robot will be loose. You can rotate the loose joint of the robot to adjust the angle as you want(pic6-9).



Pic 6-9 robot unlock state

Click “right hand unlock” and “left hand unlock”, then you can rotate the joint of the robot to create the new actions(pic6-10). Lock the robot to change the servo value, then the new action is created.



Pic6-10 rotate the robot to create new action and lock up

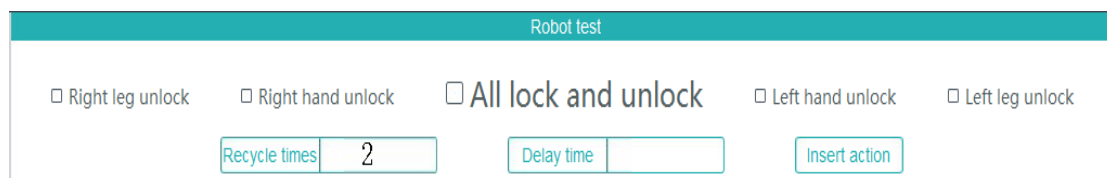
Click “insert action” to insert the action code to the “Coding” area.(pic6-7)

2.1.3 Set the recycle times value

After creating the new action, you can set the recycle time or add background music(refer to the Chapter of adding background music) to the new action.

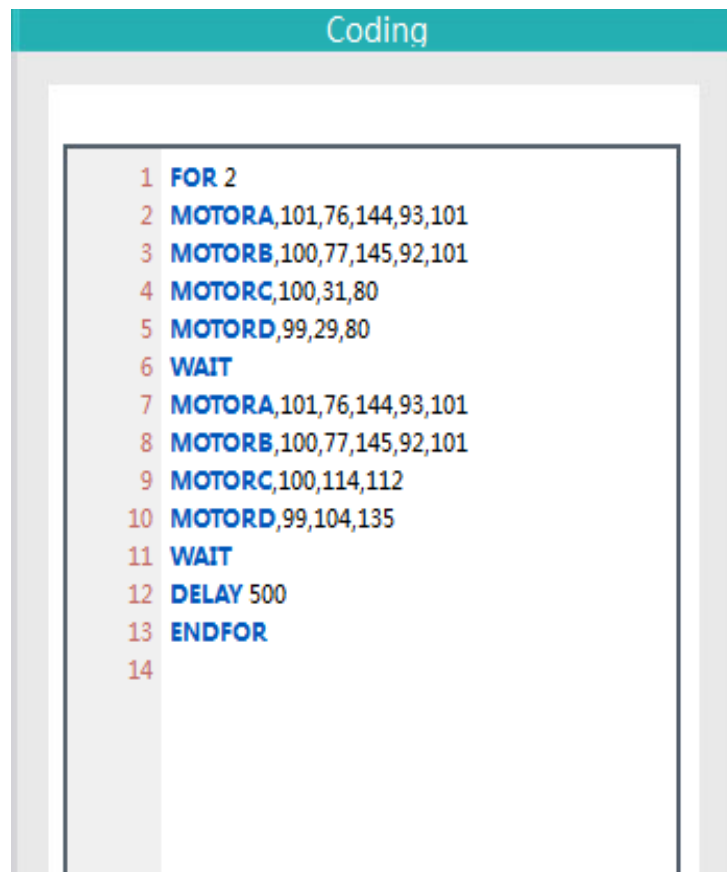
For example: set the recycle time as: 2(pic6-11)

(codes as pic6-12)



Pic6-11 set recycle times as “2”

Notice: the code of the action should repeat if you set the recycle times as “2”. For example, refer to the below pic6-12: after setting the recycle times as “2”, move the cursor to the front of the code “ENDFOR”, click “Enter”, then insert another action frame.



```
1 FOR 2
2 MOTORA,101,76,144,93,101
3 MOTORB,100,77,145,92,101
4 MOTORC,100,31,80
5 MOTORD,99,29,80
6 WAIT
7 MOTORA,101,76,144,93,101
8 MOTORB,100,77,145,92,101
9 MOTORC,100,114,112
10 MOTORD,99,104,135
11 WAIT
12 DELAY 500
13 ENDFOR
14
```

Pic6-12 action codes of two times recycle

2.1.4 Set the extended period of time

After creating the new action, you can set the recycle time or add background music(refer to the Chapter of adding background music).

For example: set the delay time as: 500ms(pic6-13)

(code pic6-14)

Robot test

Right leg unlock Right hand unlock All lock and unlock Left hand unlock Left leg unlock

Recycle times Delay time

Pic6-13 set delay time as “500ms“

```
Coding
```

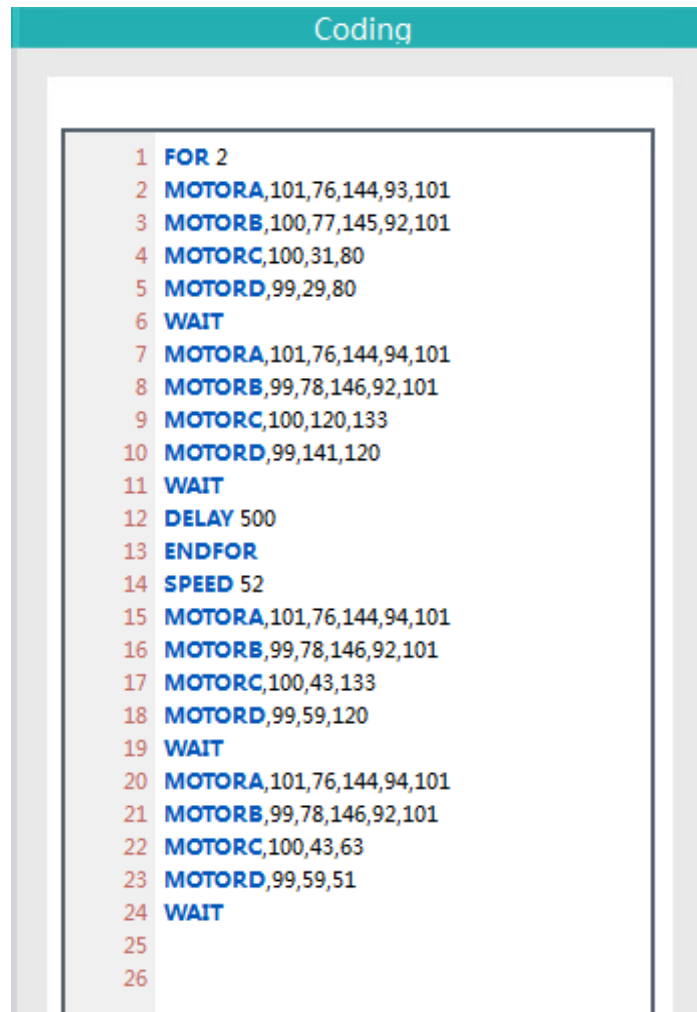
```
1 FOR 2
2 MOTORA,101,76,144,93,101
3 MOTORB,100,77,145,92,101
4 MOTORC,100,31,80
5 MOTORD,99,29,80
6 WAIT
7 DELAY 500
8 ENDFOR
9
```

Pic6-14 codes of delay time

2.1.5 SPEED instruction

The SPEED instruction indicates the move speed of the robot. The default SPEED value is 30, we usually set the value between 30-80. The larger the value is, the faster the robot moves. And if you want to control the speed of

the robot, you need to manually enter the SPEED instruction in the Coding area.(pic6-15)



```
Coding
1 FOR 2
2 MOTORA,101,76,144,93,101
3 MOTORB,100,77,145,92,101
4 MOTORC,100,31,80
5 MOTORD,99,29,80
6 WAIT
7 MOTORA,101,76,144,94,101
8 MOTORB,99,78,146,92,101
9 MOTORC,100,120,133
10 MOTORD,99,141,120
11 WAIT
12 DELAY 500
13 ENDFOR
14 SPEED 52
15 MOTORA,101,76,144,94,101
16 MOTORB,99,78,146,92,101
17 MOTORC,100,43,133
18 MOTORD,99,59,120
19 WAIT
20 MOTORA,101,76,144,94,101
21 MOTORB,99,78,146,92,101
22 MOTORC,100,43,63
23 MOTORD,99,59,51
24 WAIT
25
26
```

Pic6-15 speed codes

You can also change the action by changing the code if the previous action is not qualified. Put the cursor into the action code which you want to change, press "F6" to check the action, change the code and insert the action again.

2.1.6 Action order column setting

After setting the action, you can set other properties of the new actions in the action order column, such as "key", "times", "follows", "music" etc.(pic6-16)

series	name	key	times	follow	music
1	11	1 ▼	1 ▼	-1 ▼	null ▼

Pic6-16 action order setting

Key: corresponding to the button of the remote controller.

Times: the performed times of the action.

Follow: which action will follow after this action. The follow value means the following action's number.

Music: background music when performing the action.

3. Save action group

Choose the action which needs to be saved. Click "Save action group"(pic6-17), choose the folder path and save the action.

Save action group

Pic6-17

4. Load action and Load action group

Click "Load action" in the action order area(pic6-18), choose the project path and download the action project(.src project) to the current interface.

Load action

Pic6-18

Click “Load action group”(pic6-19), choose the action group file (.gro project) in the corresponding folder path, download to the current project.

Load action group

Pic6-19

5. Upload action

In the action order column, click “upload robot action”, you can upload all the actions which were already stored in the robot.

Then check the box of each action to synchronously upload the actions.

Upload robot action

	series	name
<input type="checkbox"/>	1	dianjiao176b
<input type="checkbox"/>	2	dianjiao-you179
<input type="checkbox"/>	3	nobody9k
<input type="checkbox"/>	4	kais9k
<input type="checkbox"/>	5	kick
<input type="checkbox"/>	6	main
<input type="checkbox"/>	7	RightSideHit
<input type="checkbox"/>	8	StandUpAfterBackRoll

Pic6-20 upload the action

6. Adding background music

USB Disc Mode

After connecting with the robot, click “USB drive” mode, the robot will shift into a USB disc mode.

The user can manually copy audio files into the music folder of the U disc, press “reset” button in the back of the robot to exit the USB disc mode.

NOTICE: Remember to exit the “USB disc mode” after completing adding the audio file, otherwise you can not connect the robot through serial port or have other operation through the software. And the robot can only exit the “USB disc mode” by pressing “reset” button.

Warm tips: file name may not contain character such as “/:*<>”. (the music should be .mp3 format with bit rate less than 128kbps).

Add music:

Reconnect the serial port, click “Music library”(pic6-21), you can preview the music files stored in the TF card.

In the “action order” column, click the triangle icon of the “music” (pic6-22), you can choose the stored music as you like.



Pic6-21

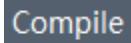


Pic6-22

7. Compile and download

Compile project file

Click “Compile” button(pic6-23), it will pop up a window indicates “compile successfully”, it will also indicate if it is in error.



Pic6-23

Download project file:

Click “download”, you can download the compiled project into the robot.

One key download:

Click “One key download” button, it will compile the project files and then download into the robot.

8. Project management

Open project file

Click “open” button(pic6-24), choose the .pro project file in the pop up window, click open.



Pic6-24

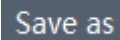
Save project file:

For the revised project file, click “save” button(pic6-25) to update the project file, it will pop up a window indicating “save successfully”.



Pic6-25

Save as: save the current project file as a new title or in a new location.


A rectangular button with a dark grey background and the text "Save as" in white.

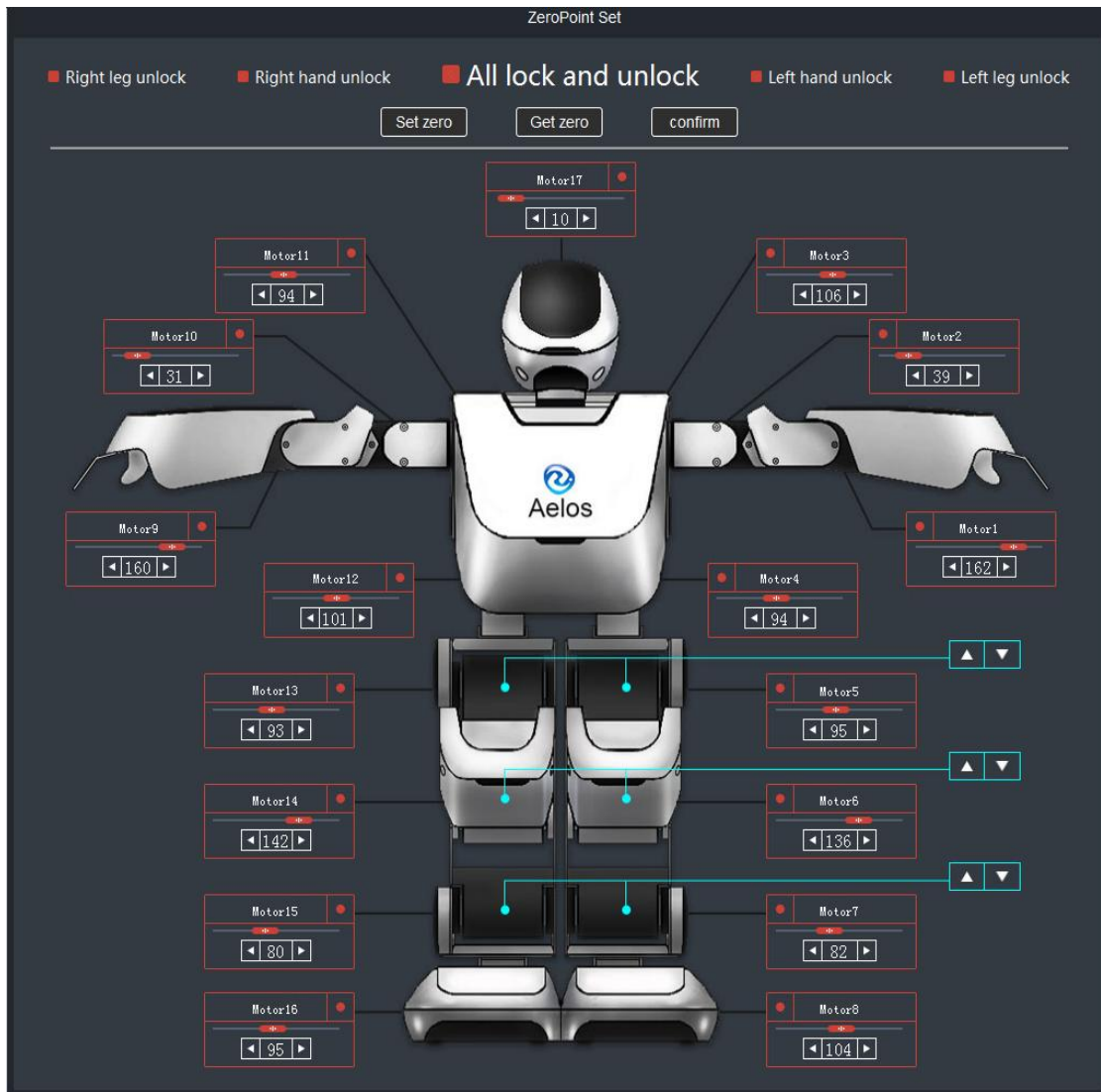
Pic6-26

Help: “help” icon contains some supporting information about operating the robot.

9. Zero point setting

Under normal circumstances, the robot will be at standing status after turning on. But when the robot can not stand upright or easily falls down when performing actions, that means the servos have deviation. In this circumstance, you need to adjust the servos to the initial state, i.e. zero point setting.

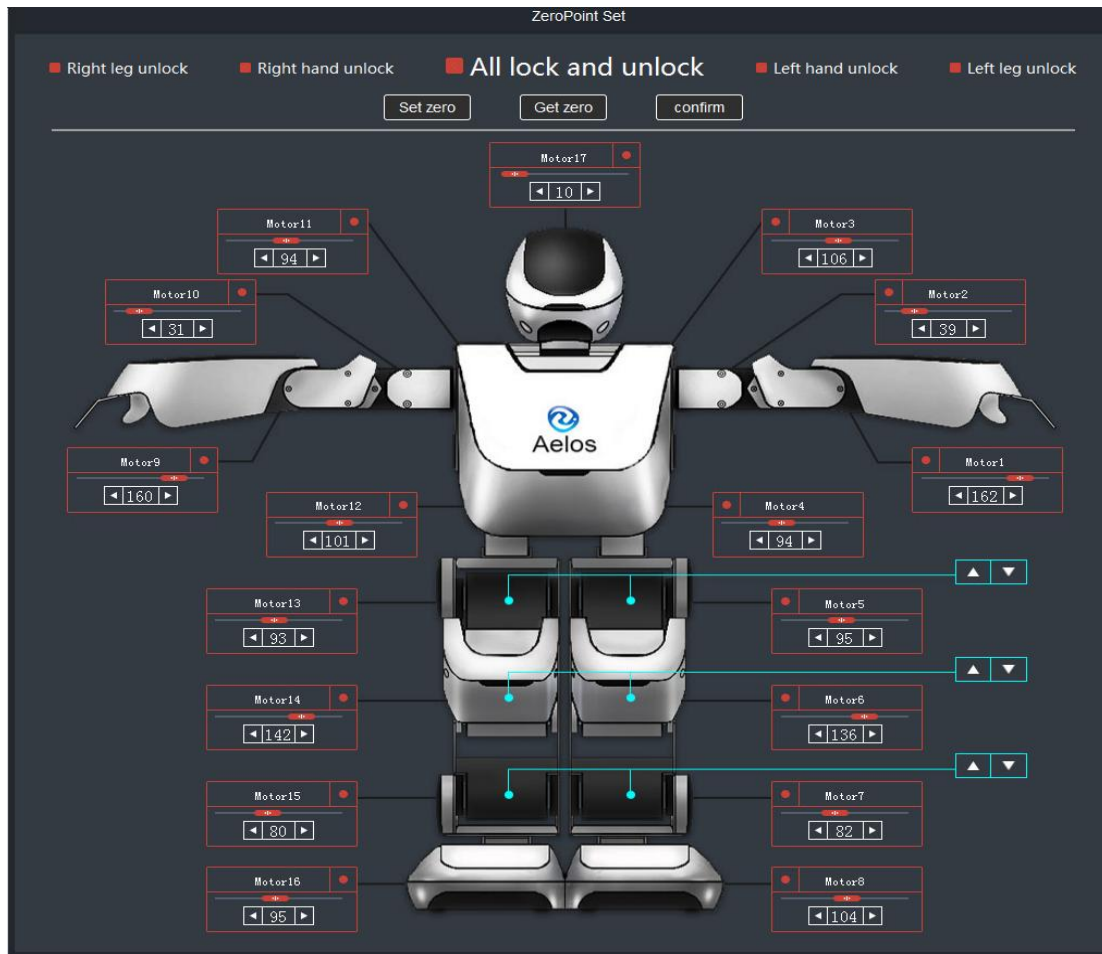
Connect the COM with the robot, click icon  to get into the zero point setting interface.



Pic6-27 zero point setting interface

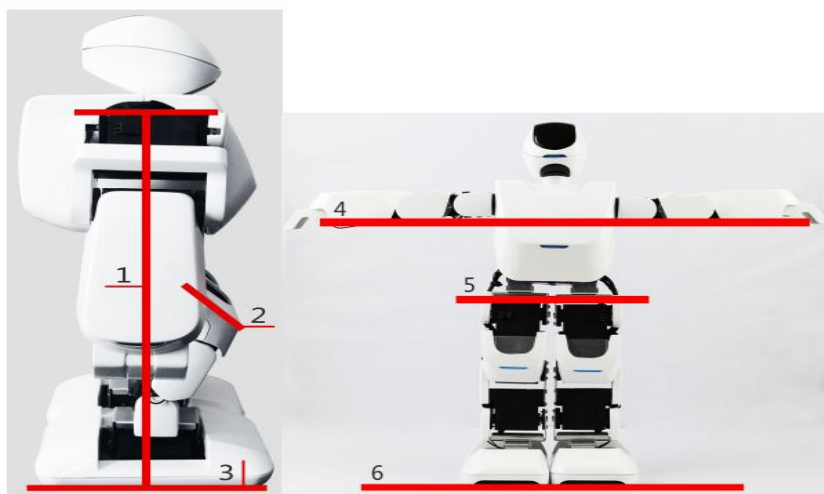
9.1 Place the robot in a flat surface and hold the robot with one hand to prevent the robot from falling in the following process of zero point setting.

9.2 Click “**Get zero**” to obtain the robot zero point state. (pic6-28)



Pic6-28 obtain zero point

9.3 adjust the zero point setting value. Follow step 9.2, you can adjust the zero point setting value according to the below pic6-29.



Pic6-29 robot standard zero point reference

When adjusting the zero point setting value, you can refer to the below references for adjustment.

No. 1: adjust the robot as a straight line when looking from the side.

No. 2: the robot knee surface would be a straight line when looking from the side.

Line 4: the lower edge of the robot arms should be a straight line when looking from the front side.

Line 5: the connected line between the thigh and the body of the robot should be a straight line when looking from the front side.

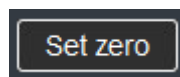
Line 3 & 6: the lower edge of the foot should be a straight line when the robot is in a standing status.

9.4 Final adjustment

Check the robot from all directions, slightly adjust the zero point if needed.

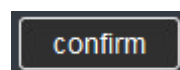
9.5 Set the zero point

Set the zero point value according to the above standards, click “Set zero”, the zero point setting value will be applied to the robot now.



Pic6-29

Click “Confirm” to shut down the zero point setting interface.



Pic6-30

Notice: the former zero point value can not be recovered after the new zero point value is set.

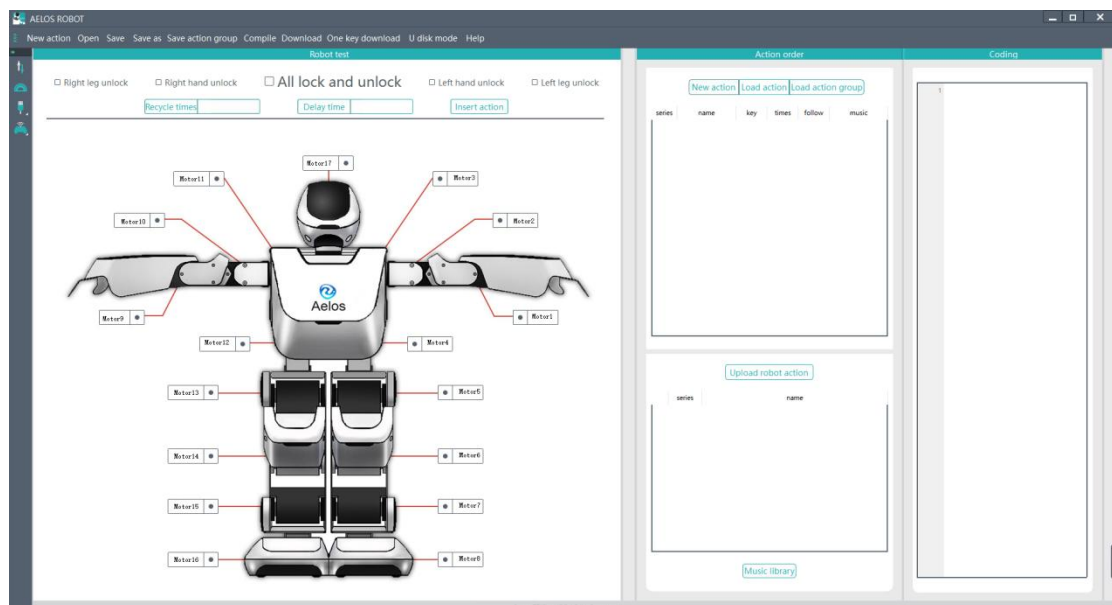
Chapter Seven

Configure music and perform actions

1. Open Aelos software and connect the robot

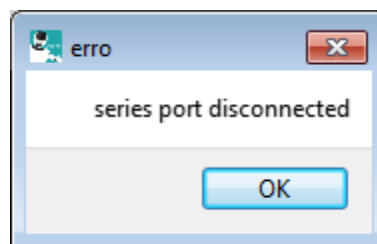
For details, please refer to Chapter 2 Software Installation, Section 3.3 Robot Connection Procedure

2. choose USB Disc Mode



Pic7-1 main interface

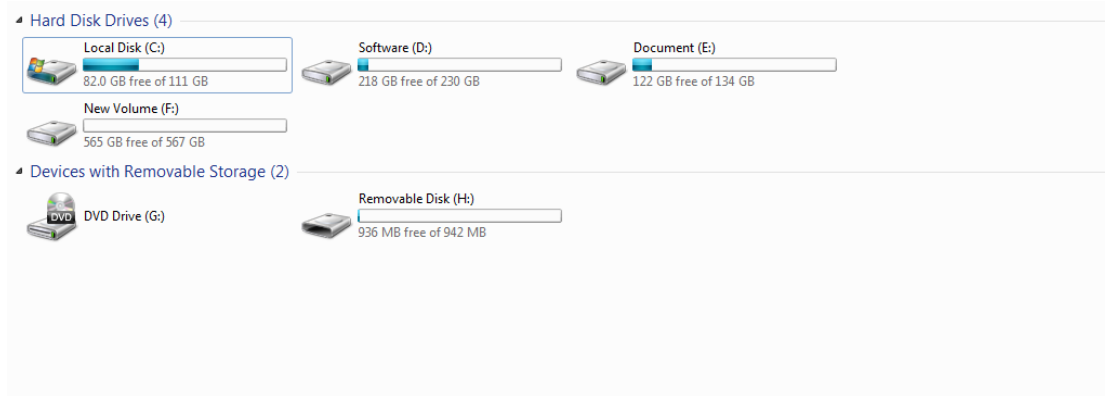
In the pop up window, it will indicate “series port disconnected”, click “OK”.



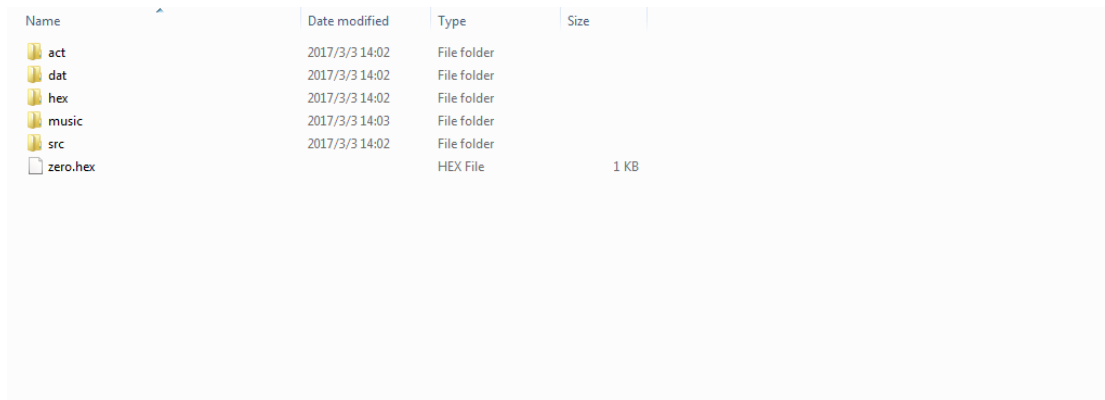
Pic7-2 port disconnected

3. Get into the robots internal storage root directory

Open my computer, you can find another removable disk, double click to get into the root directory.



Pic7-3 root directory



Pic7-4 root directory file

In the “music” file, you can see the background music files inside. Copy the new audio file you want into the current file.

Name	#	Title	Contributing artists	Album
9				
Ballet	2			
Brahms		CCTV	Hong Bing	
Cheer				
doremi				
GangnamStyle	2		Psy	
JingleBells				
lowp				
mylove				
nobody	1412	Nobody	Wonder Girls	NhacCuaTui.Com
ppap				
start				
tfloseint				

Pic7-5 copy the audio file to the music folder

For example, add “test.mp3” to the music folder.

Name	#	Title	Contributing artists	Album
9				
Ballet	2			
Brahms		CCTV	Hong Bing	
Cheer				
doremi				
GangnamStyle	2		Psy	
JingleBells				
lowp				
mylove				
nobody	1412	Nobody	Wonder Girls	NhacCuaTui.Com
ppap				
start				
tfloseint				

Pic7-6 adding”test.mp3” music file

4. Configure music

Follow step 3, restart the robot, reconnect the serial port, now you can choose the new background music in the drop down list of the music when you configure new actions.

series	name	key	times	follow	music
1	Ballet	1	1	-1	null
2	Bow	2	1	-1	Cheer
3	Brahms	3	1	-1	doremi
4	Cheer	4	1	-1	GangnamStyle
5	DistantKiss	5	1	-1	JingleBells
6	doremi	6	1	-1	mylove
					nobody
					ppap
					test
					tfloseint
					null

Pic7-7 select the "test" file

5. Robot action performance

After setting the same transmitting signal of the remote controller and the robot, the robot action will be performed according to the function of each button which corresponding to each key number. For example: press button 1, the robot will perform "Ballet" action.

series	name	key	times	follow
1	Ballet	1	1	-1
2	Bow	2	1	-1
3	Brahms	3	1	-1
4	Cheer	4	1	-1
5	DistantKiss	5	1	-1
6	doremi	6	1	-1

Pic7-8. Key number of the software corresponding to the remote controller button