CR-6 Hexapod Robot

User Manual

Warming tips

1. The user age should be better than 14, Children under 14 should use it under adult supervision.

2. When the robot moves, please keep yourself at a safe distance from accidental injury.

3. When the robot moves, please keep your fingers away from the range of motion from getting hurt.

4. Please remember to put the robot on a smooth ground if you want to use it.

5. Please remember to turn off the switch to prevent the servo from burning out if there is something wrong with servo, such as shivering or locked-rotor.

6. Please don't forcibly twist the joint when the robot is powered on so as not to cause joint damage caused by that.

7. Please be careful to prevent it from falling from a high place. We will not responsible for the damage caused by that.

8. Please remember to remember to prevent the battery from over charging or over discharging. Turn off the switch while you are not using it. If you find the robot start beeping like" Di Di Di", please switch off the electricity and charge it right away.

9. If you find the robot moving unsteadily, you can check the capacity of battery, please remember to charge it when the battery is running out. If there is no problem in battery, you can check the servo whether it is aging or not. Servo is consumables.It needs to be replaced after overusing it.

10. If you find the individual servo doesn't work while you are controlling the robot, please check the servo wire whether it is loosing or not.

11. After keeping running for over 15 min, please remember to make our robot take a reset until the servo cools down.

12. Do not take the robot apart by yourself. If you have any questions, please feel free to contact us.

13. If there is a plastic nylon column or copper pillar, please fix the nylon column or copper column on the control board first to prevent the metal objects from touching the metal objects at the bottom of the control board during the commissioning process to burn the control board.

14. When the power line is connected, the positive and negative electrodes are connected to the control board first, and then you connect the battery to the wiring,

finally, turn on the switch to guard against short circuit. Do not expose the wiring head when the control panel is connected.

15. When the control board does not connect to the power supply and only connect to USB, the buzzer will send the alarm, so be sure to connect the power supply, and generally use 7.4v lithium battery for power supply.

16. If you have trouble with the instruction manual or the complete video tutorial, you can contact our customer service feedback if there is any problem or suggestion that you can't solve.

Catalog

1 Introduction

1.1 Product introduction

LewanSoul CR-6 Hexapod Robot is an educational robot based on graphical programming. This robot is perfect for learning programming and robotic knowledge. Perfect choice for robot lovers and beginners to learn robotics, electronics and programming. Beside, CR-6 Hexapod Robot support four control methods: PC software, PS2 handle, mobile App. The holes in the robot can be compatible with other sensor and you can extend its function yourself, this means that CR-6 Hexapod Robot will have infinite possibilities. (which means that CR-6 Hexapod Robot will have infinite possibilities for you to discover.)

Hope that CR-6 Hexapod Robot can be a good partner in your study and life!

1.2 Features

A Hybrid structure

Made of hard aluminum alloy and fiberglass material, greatly reducing the weight of the body makes the robot more flexible and stronger.

B Plug-in digital servo

With the new plug - in digital servo, the torque is large, the precision is high, the virtual bit is small, the dead zone is small, the robot action is more flexible and powerful, the new plug type makes the installation or replacement of the servo more convenient.

C Super long endurance

All aspects of the robot are optimized to improve the endurance of the robot by 300% to 90 minutes.

D Avoid shock pads

In the whole industry, only our home is equipped with cushioning pads, which makes the gait more stable and the wear down greatly.

E Integrated structure

Add leg support plate to make the structure of the robot stronger.

F Visual programming

Simplify the complexity and provide free PC visual programming software to make programming easier and more efficient.

G Multiple control methods

Support for mobile phones, handles, tablets, computer control, and secondary development.

H Cool Appearance

New design, a more handsome CR-6 Hexapod Robot outlook.

2 Main assembly

The following configuration is standard edition configuration(first edition) , there may be a difference in your actual purchase, please refer to our actual purchase configuration.

2.1 Product list

Body part

Complete set of bracket for robots	1
LDX-218 High precision digital servo	18
PS2 handle+PS2 handle signal receiver	1
7.4V Lithium battery+charger	1
Digital servo cord	1
20 channel servo controller	1
USB cable	1
Winding pipe	Several

Whole set of development kit

CR-6 Hexapod Robot body	1
Photosensitive sensor	3
Infrared remote controller+Infrared remote receiver	1
OLED LCD screen	1
Ultrasonic module	1
Infrared sensor	6
Sound sensor	1
Data cable	1

LEONARDO controller	1
Dupont cord	60
Bread broad	1
Bluetooth module(Separate purchase)	1
Charger	1
9g Micro servo	1
Acrylic switchboard	1

Tips:
1.The Bluetooth module needs to be purchased separately.

2.2 Product parameters

Weight	About 1.92kg
Material	Extra-lightweight aluminum alloy
Leg length	23cm
Trunk length	17.5cm
Width	15.5cm
DOF	18(3DOF*6)
Running time	About 80 min
Bluetooth module	Support
Programming software	LSC-20 Control
Power supply	7.4V 2200mAh Lithium battery

3 Installation and Operation

3.1 Overview

Note:

1. Please adjust all the servo position to the middle place before assembling and the P value is 500.
2. Please pay attention to distinguish the different types and length of the screw.
3. The servo is not allowed to rotate during assembly. If the servo is not successfully installed and happen to rotate, please remove it and readjust the servo's P value to 1500.
4. Please connect the Bluetooth in the App not setting. After the connection is successful, it can be operated. The android version of the App holds down the icon to change the name of the action.

Here are the link and QR code concerning installation package of CR-6 Hexapod Robot. (Table 1)

Table 1

Link	QR code
http://bit.ly/2jVgf1R	

3.2 Mobile phone App(This part of the function requires a bluetooth module)

3.2.1 Download Mobile App(Android Only)

Here are the icon and link and QR code(Table 2) :

Table 2

Icon	Link	QR code
 Mobile Phone(Android)	http://bit.ly/2GeaBAD	

Tips:

1. If you open the Installation package you can find the Mobile App icon as shown in the figure above.

Here is the icon of CR-6 Hexapod Robot App.

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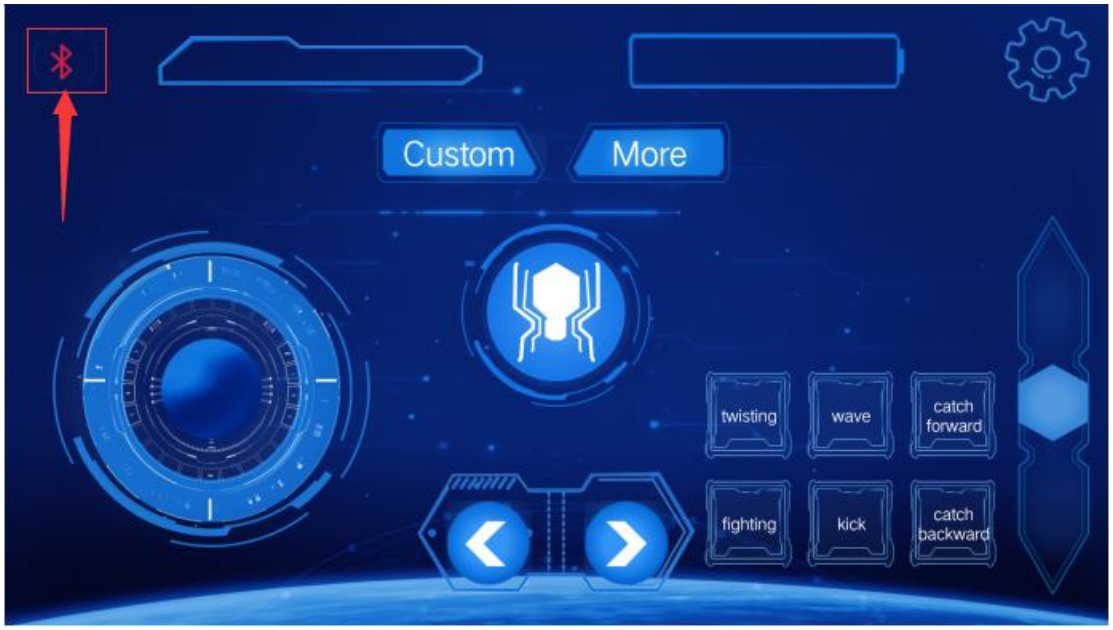
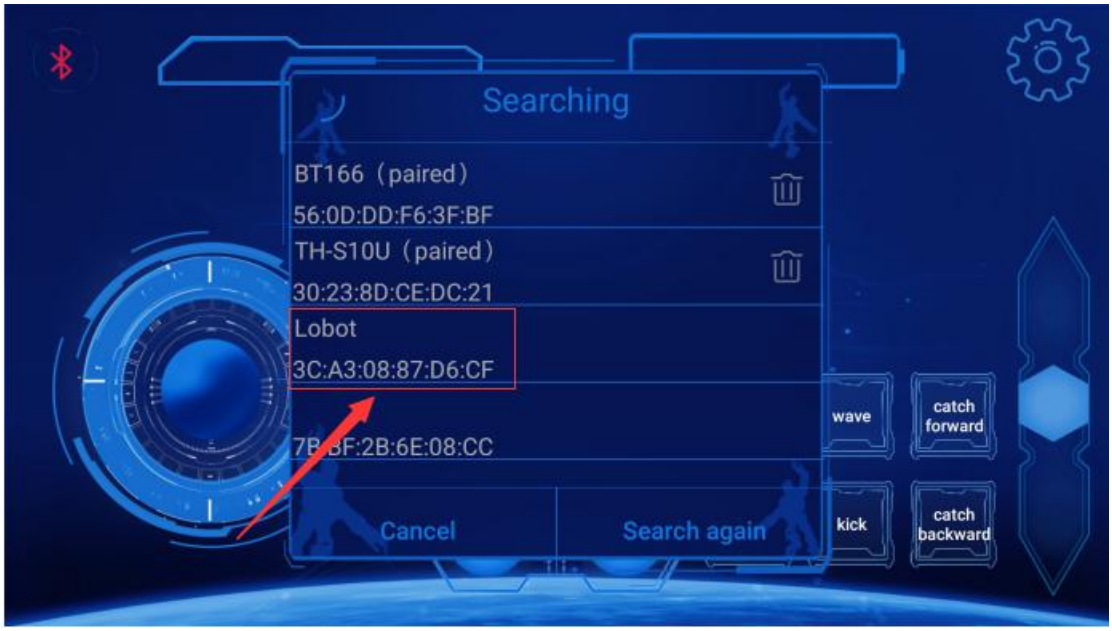
3.2.2 Mobile phone App control the CR-6 Hexapod Robot

(1) First turn on the switch of the CR-6 Hexapod Robot

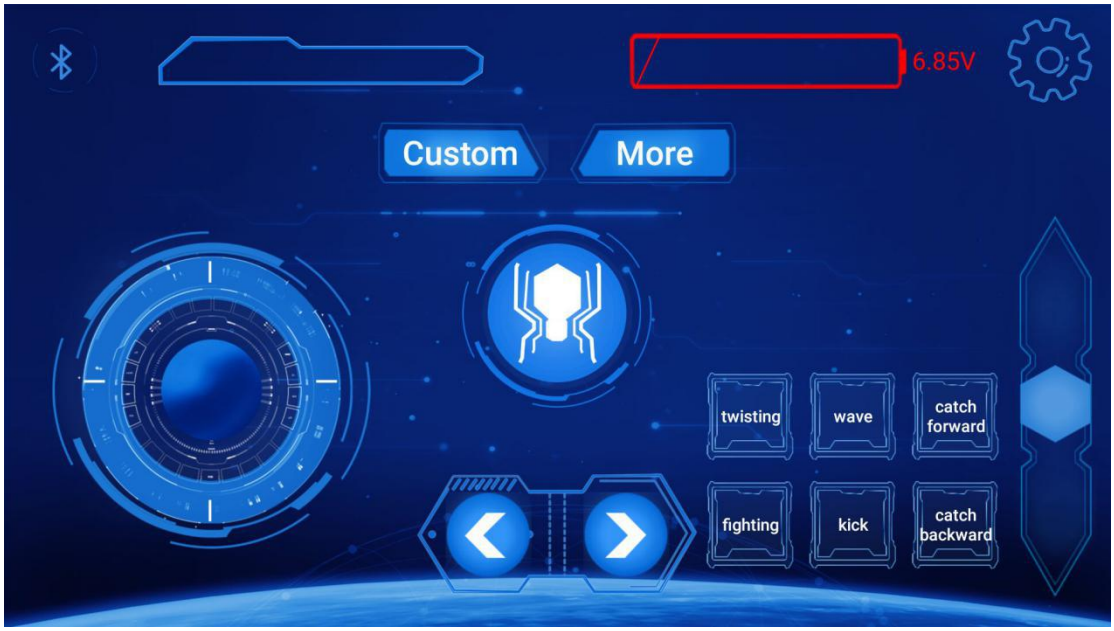
(2) Then open the CR-6 Hexapod Robot App that have been download on your mobile phone.

(3) After connecting the Bluetooth,you can start controlling your CR-6 Hexapod Robot.



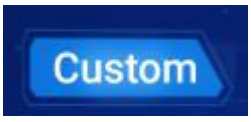


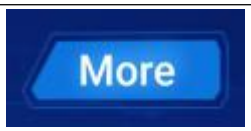
If the connection fails, restart the App and reconnect several times. (Please remember using the Bluetooth inside the phone App rather than the one on your phone system.)
If you connect to the CR-6 Hexapod Robot successfully, you can do the following.
Here is the interface of the App:

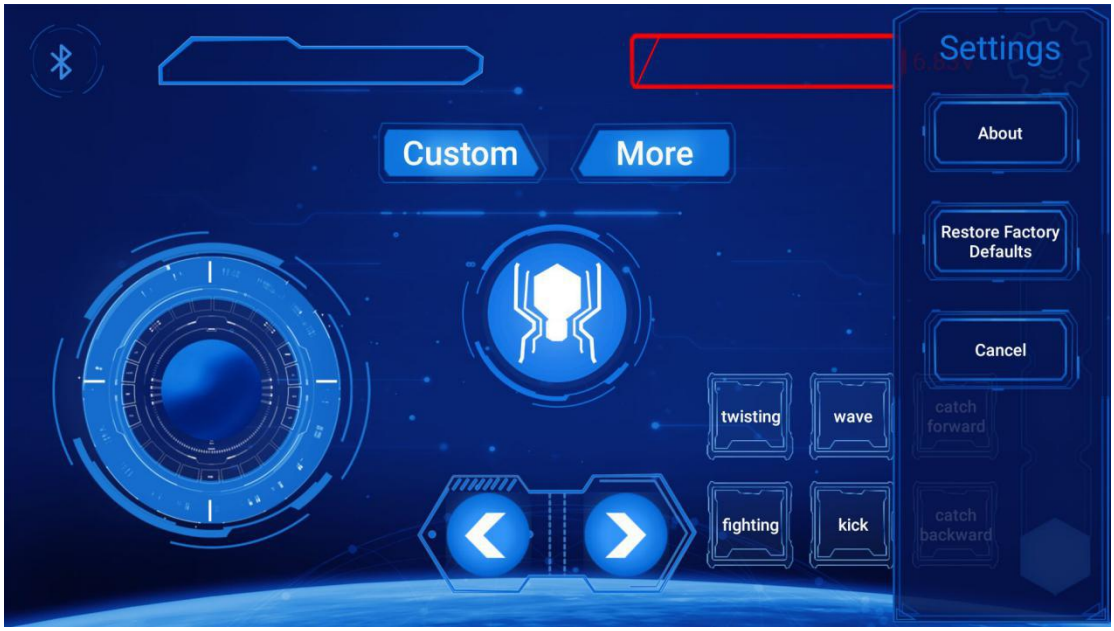


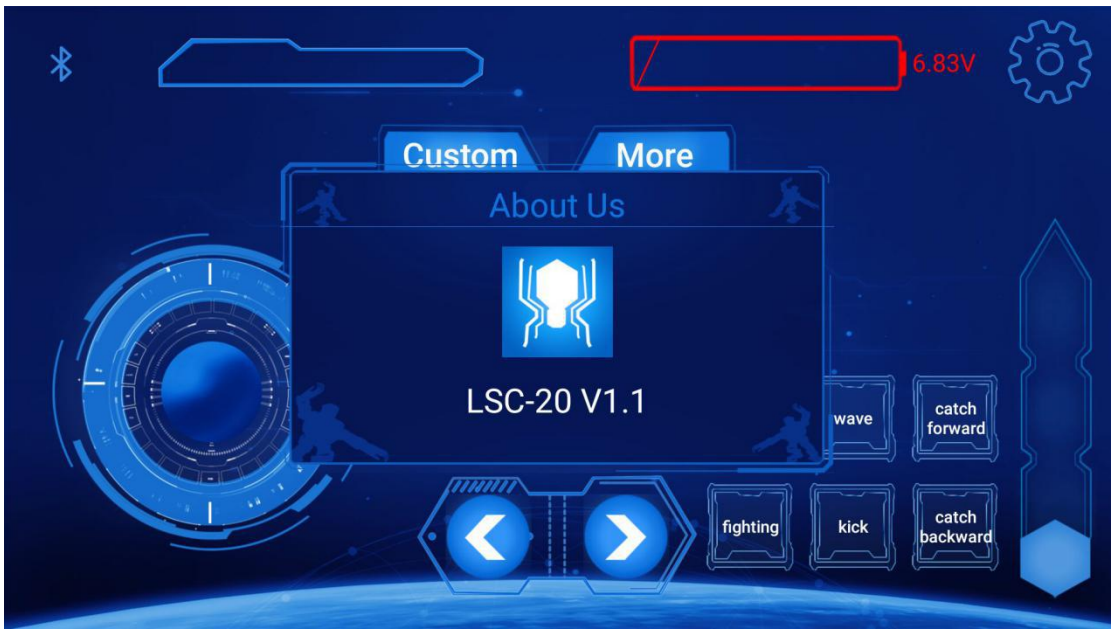
Here is the introduction of each icon:

Table 4

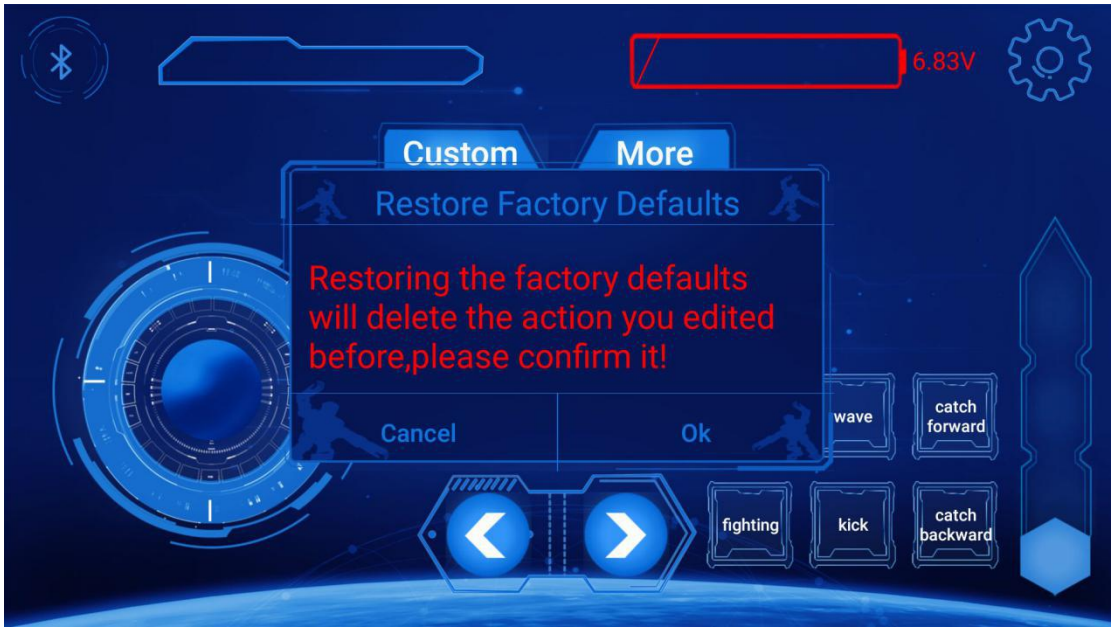
Icon	Meaning	Icon	Meaning
	The value is displayed as a voltage value, Box shows the power, when the box is blue said power is enough, when the box was red battery is low.		This button means that you can import dance actions programs in CR-6 Hexapod Robot.

	This button means that you can import action group programs in CR-6 Hexapod Robot.		This mini bubble uses to control the movement of CR-6 Hexapod Robot.
	If you click it, CR-6 Hexapod Robot will perform wave this action.		If you click it, CR-6 Hexapod Robot will perform catch forward this action.
	If you click it, CR-6 Hexapod Robot will perform fighting this action.		If you click it, CR-6 Hexapod Robot will perform kick this action.
	If you click it, CR-6 Hexapod Robot will perform catch backward this action.		





If you click the About button, you will see the picture above. It shows the version information of the App you installed.



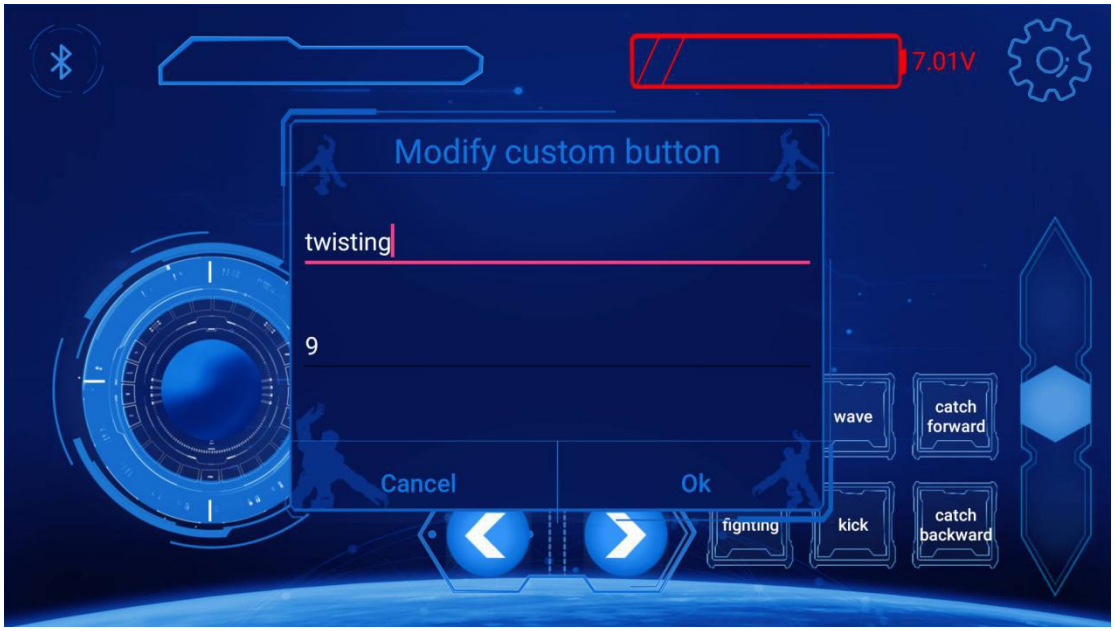
If you click the Restore Factory Defaults button, you will see the picture above.This button means that clear all previous program data and back to the factory settings.

If you click the Custom button or More button, you will see the picture above. The results presented by these two buttons are the same.The Custom button means that you can import dance action, the More button means that you can import action group.

If you click add button, you can add actions that download to the control board before. You will see the picture like below:

If you long press the twisting this button, you can rename this program.

You will see the picture like below:



Note:

1. Each button corresponds to a specific action group, which cannot be repeated, and the default is those actions, otherwise it will go wrong.

2. The action name can be re-edited after the long press button, but the number cannot be changed because the number is the unique identification mark of the different action group and cannot be changed at will.

3. The control part of mobile phone or PS2 handle is secondary development.

4. At present, we provide the program of action group NO.0~NO.12, NO.21~NO.42.

3.3 PC operation

3.3.1 Overview

Here are the icon and link and QR code(Table 3):

Table 3

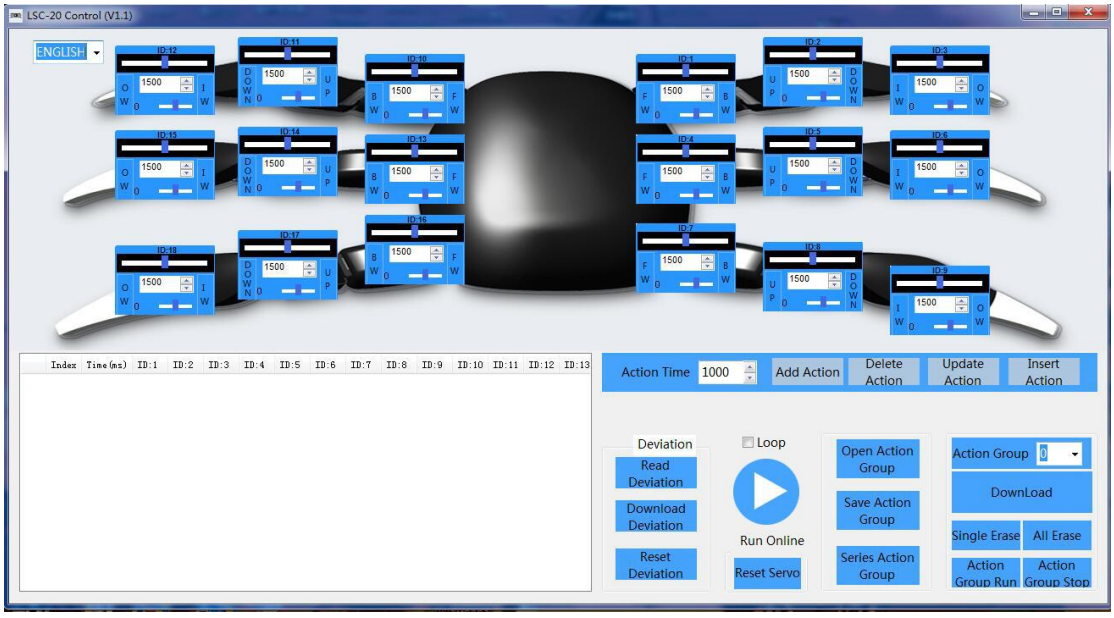
Icon	Link	QR code
LSC-20 Control.exe	http://bit.ly/2jVgf1R	

You can also refer to 3.1 Overview.

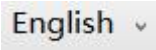
3.3.2 Software interface introduction

Open the PC software, here is the icon of the PC software:

Here is the interface of the PC software :

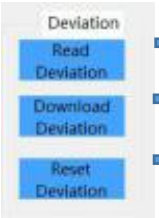


1. Language



The software automatically recognizes languages, supports Simplified Chinese, Traditional Chinese, and English, and can also be manually switched.

2. Deviation operation window

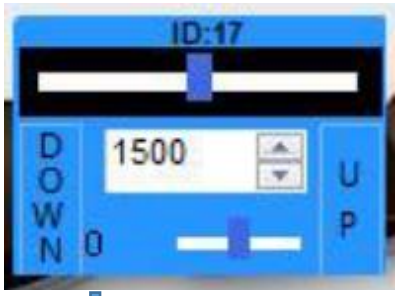


Display the deviation in the control board in the interface.

Download the deviation in the control board in the interface.

Return the deviation to 0 status (middle position).

3. Introduction of sliding block function of servo



Number of servo.

Slide pole for servo position.

Servo position.

Servo deviation

Slide pole for servo deviation

The servo slider can be dragged at will (the default is 1500) range from 500 to 2500. Click the white area of the slider, the slider moves in the direction of the mouse, the step value is 5, and press and hold will move continuously. When the slider is sliding, the position value of the servo will also change, which can visually show the rotation position of the servo at this time.

In the production of robots, due to the errors caused by some installation, some minor adjustments need to be made. When the adjustment is made, the adjustment deviation is needed.

Servo deviation (default is 0), the relative position range of the servo is -100-100. Click on the white area of the slider, the deviation value slider moves towards the mouse direction, the step value is 1, and press and hold will move continuously. After adjusting the deviation of each servo, click the "download deviation" button and the deviation will be downloaded to the control panel. If later want to modify the deviation, then click on "read error", deviation will be automatically displayed in the interface, you can manually change, after the change, can download the deviation to panel again.

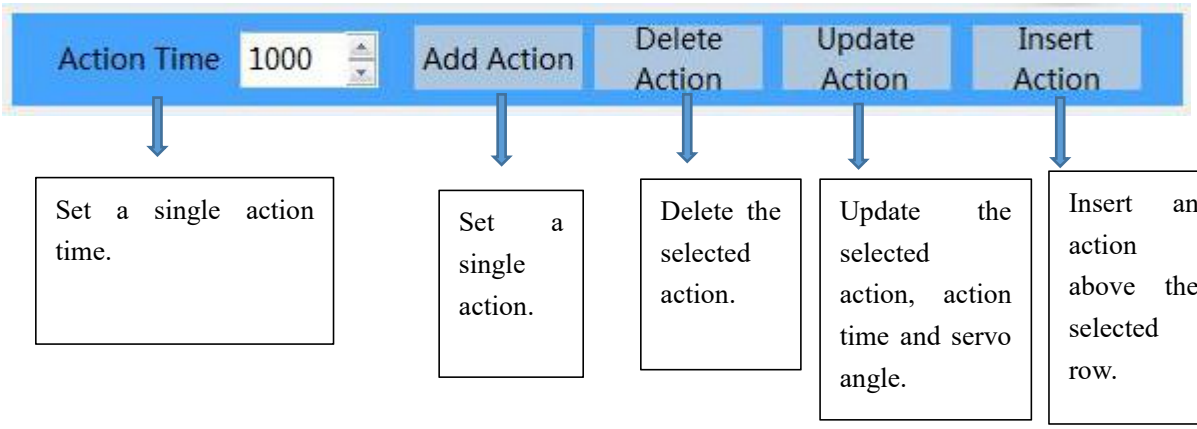
It is precisely because of the existence of position value and deviation value, the actual position of the servo should be position + deviation.

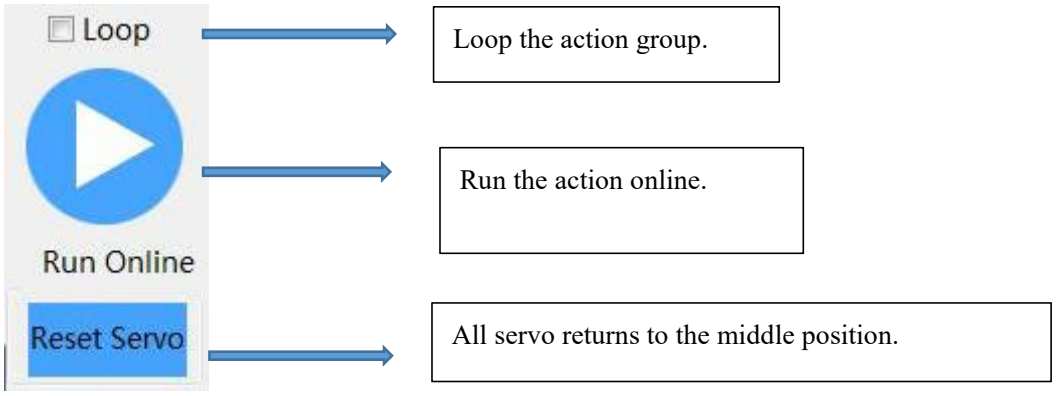
4. Introduction to the action data display area

The ID indicates the servo, and the corresponding column indicates the position of the servo. Time indicates the Time when the servo runs to that position.

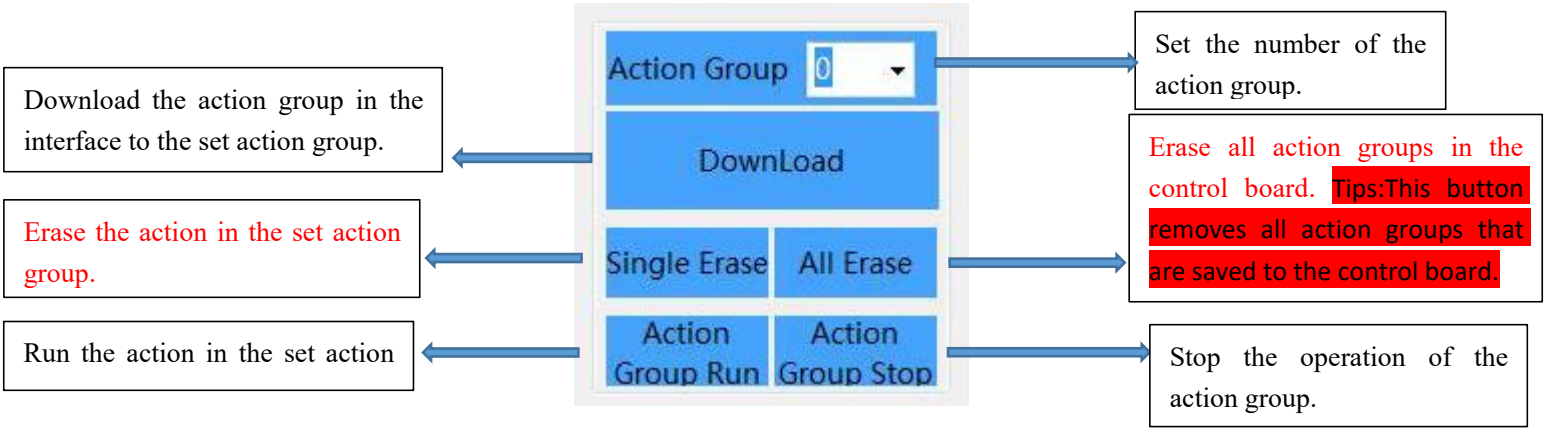
Index	Time(ms)	ID:1	ID:2	ID:3	ID:4	ID:5	ID:6	ID:7	ID:8	ID:9	ID:10	ID:11	ID:12	ID:13
1	1000	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
2	1000	1000	1000	1000	1500	1500	1500	1500	1500	1500	1500	1500	1500	1339
3	1000	1000	1000	1000	1500	1500	1500	1500	1500	1500	1500	1500	1500	1339

5. Download action group and debug window

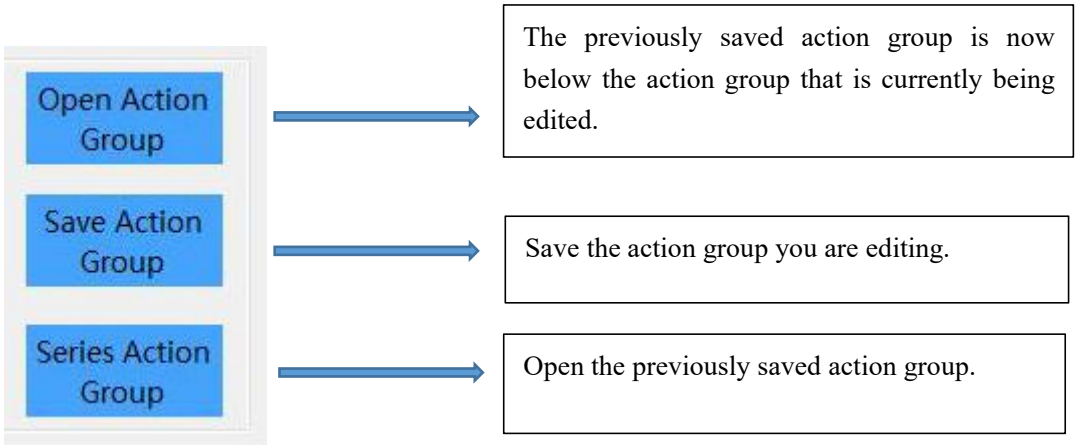




6. Action online debug window.



7. File operation window



3.3.3 About the PC software driver.

1. When the control board is connected to the computer for the first time, the computer will automatically install the driver. Connect the control board to the computer with the USB cable, turn on the power of the control panel, and wait for the computer to automatically install and drive, about 30 seconds to 1 minute. When finished, the interface indicator turns green to indicate success.

2. Commissioning of a single servo

1) When the control board is connected to the computer, the indicator light of the interface will turn green. This indicates that the connection is successful.

2) Ensure that the voltage of 7.4V lithium battery is no less than 6.4V. (7.4V lithium battery full of electricity is 8.4V, please ensure that the voltage is not less than 6.4V, preferably full power)

3) Pull the slider

The pull of the servo will rotate with the rod.

5) Placed in the position of 500, 1000, 1500,200, 2500, and add the action in turn, and can change the time T value by itself.

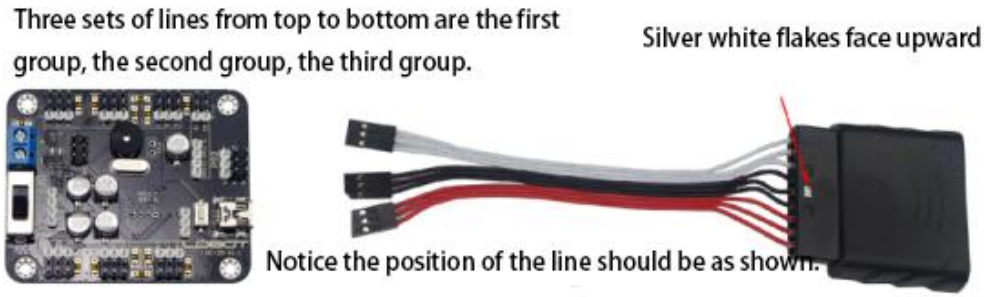
6) "run online" to see the steering effect of the servo

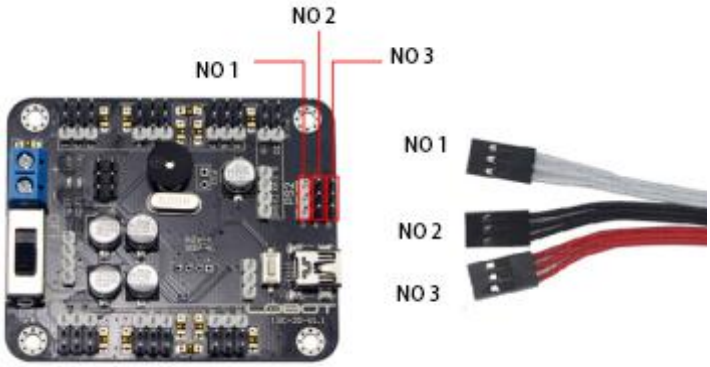
7) Save action group can save the action group and name the file name.

8) Restart the software and click "open action group" to open the saved file.

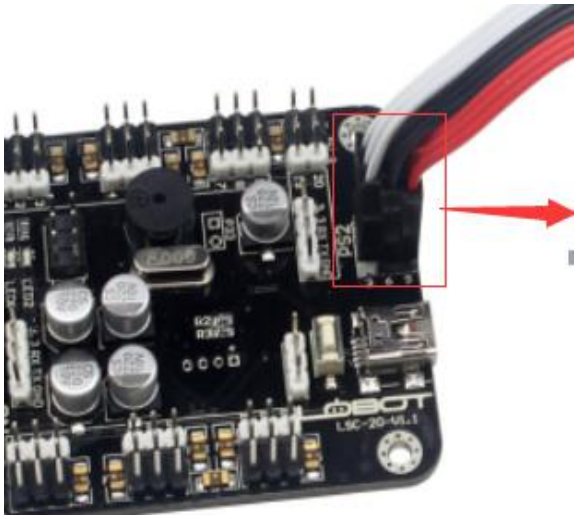
3.4 PS2 handle

3.4.1 Connection method for handle receiver and steering board.





PS2 interface 9P line interface specification (receiver of NO.1 to NO.9 with the main board 1-9, should be one to one correspondence can effectively work), head of three groups of dupont line metal dew export orientation should be consistent and as shown in the figure below, the receiver can work normally.



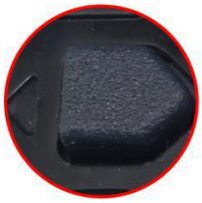
Dupont head shows the direction of the exit.

3.4.2 PS2 Handle control the CR-6 Hexapod Robot

The handle requires 2 AAA batteries(self-provided), open the power switch of the handle, you can run the action group saved by upper computer software.

Wireless handle Instruction

	Description	Comments
	Forced to stop current action group running and run the 0th action group once	
 up	Press to keep running group 1st , release to run 0th action group once	

 down	Press to keep running 2nd action group, release to run 0th action group once	
 left	Press to keep running 3rd action group, release to run 3rd action group once	
 right	Press to keep running 4th action group, release to run 4th action group once	
	Run 5th action group once	
	Run 6th action group once	

 L1	Run 9th action group once	
 R1	Press to keep running 10th action group, release to run 10th action group once	
 **L2**	Run 11th action group once	
 **R2**	Press to keep running 12th action group, release to run 12th action group once	
	Run 13th action group once	Press the select button first, then press the △
	Run 14th action group once	Press the select button first, then press the ×
	Run 15th action group once	Press the select button first, then press the □
	Run 16th action group once	Press the select button first, then press the **O**

		
 **SELECT+L1**	Run 17th action group once	Press the select button first, then press the **L1**
 **SELECT+R1**	Run 18th action group once	Press the select button first, then press the **R1**
 **SELECT+L2**	Run 19th action group once	Press the select button first, then press the **L2**
 **SELECT+R2**	Run 20th action group once	Press the select button first, then press the **R2**

Tips:

1. The mode button and stick on the handle are not set. Do not press it or you can make mistakes.

2. As long as it is already had the game, the user cannot duplicate the edit, otherwise it will cause errors.

3. Different functions require different code.

4. Different parts of CR-6 Hexapod Robot have different functions, you can explore more fun from it.

5. The PS2 handle can only control the NO.0-NO.20 action group, and the remaining action group needs to be operated by mobile APP or computer.

6. The mode keys and joysticks are not set up the function, do not press the these buttons otherwise it is possible to make mistakes.

3.5 Gameplay and Its Corresponding Programs(This section is wrote for 2 times development)

You can get gameplay and its corresponding programs on the following. Here is the icon, link and QR code:

Icon	link	QR code
 Hexapod Action Groups	http://bit.ly/2jVgf1R	