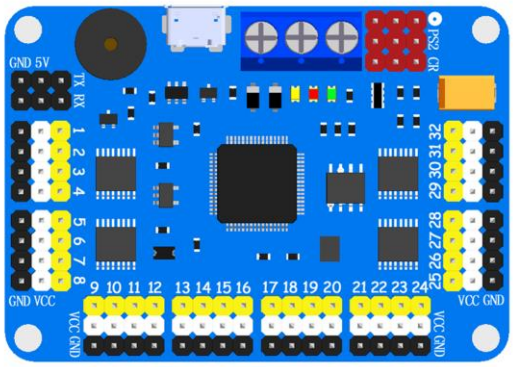
Servo Motor Controller Instructions for use

Ver 3.0

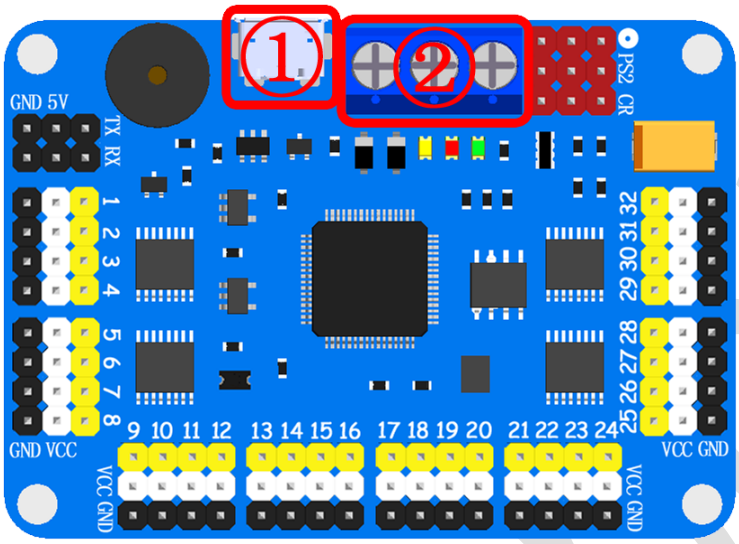
Parameters:

Operating Voltage	5V
Servo Motor Input Voltage	4.2V～7.2V（According to the servo）
CPU	32bit
Baud Rate（USB）	115200
Baud Rate（Bluetooth、UART）	4800、9600、19200、38400、57600、115200
Flash Capacity	16M
Servo Motor Controller the Number Of Simultaneous	32
Max Action Groups	256
control precision	1us
Servo Motor signal isolation	Yes
Indicator led	1.CPU power indicator led（red） 2.Servo motor power indicator led（green） 3.PS2 wireless remote control（yellow，led off is one servo motor control; led on are action groups control）
Size	63mm X 45mm
Communication Protocol	UART
Computer Software	Windows XP or later，Mac OS 10.8 or later，Linux(kernel 3.0 or later)
Low pressure alarm	Default Open
Servo motor initial value	Default 1500
Support The Servo motor Type	9G~55G（3.3V~7.2V）
Online Operations Support	C51、Arduino、ARM、DSP、Bluetooth、WIFI、Computer
PS2 wireless remote control	1. one servo motor control 2. action groups control



Wiring methods:

Ⅰ. Power supply access method, *P.1* location:



P.1

VCC: Servo motor power input VCC, can be connected to 4.2 V ~ 7.2 V power supply; plugged into power supply for the anode, please.

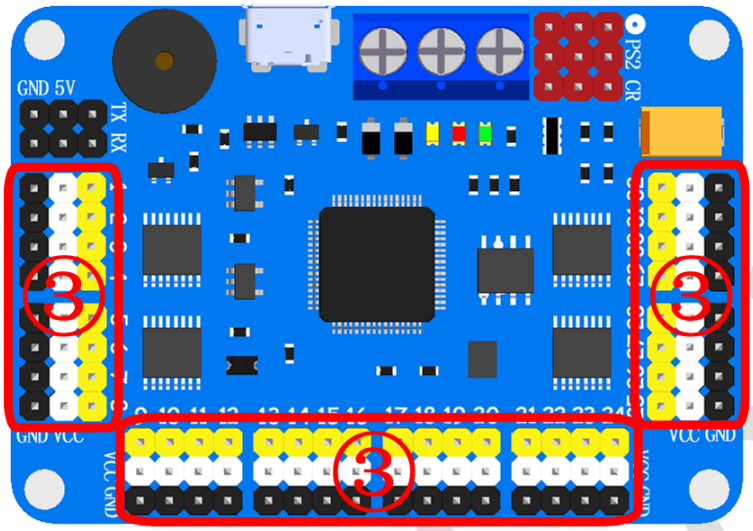
GND: The overall GND of servo motor controller, can be connected to servo motor power GND or CPU power GND; plugged into power supply for the cathode, please.

5V: Servo motor controller CPU power input, Voltage range:5V~8.5V.

USB(①): Servo motor controller CPU power input and data communication port.

Note: 5V interface and USB interface can not access the same time. Only choose one powered.

Ⅱ. Servo motor access method, *P.2* location:



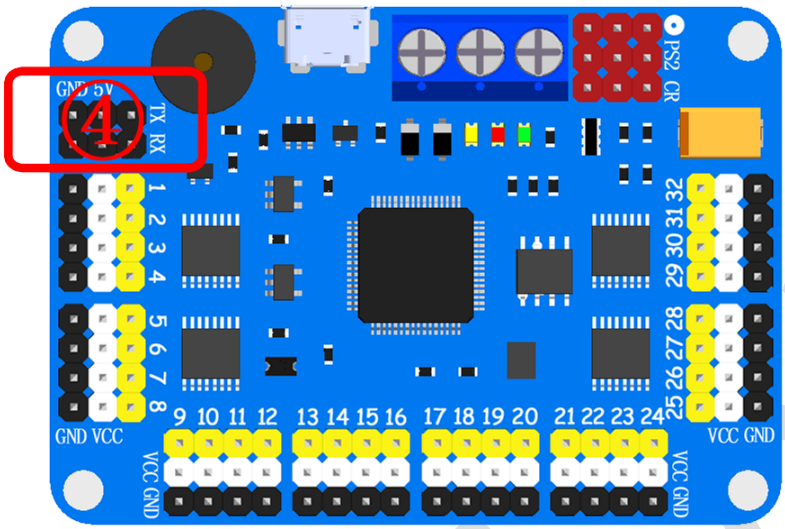
P.2

Yellow Pin: Servo motor I/O connected with the entrance, it usual be servo motor yellow or yellow soil.

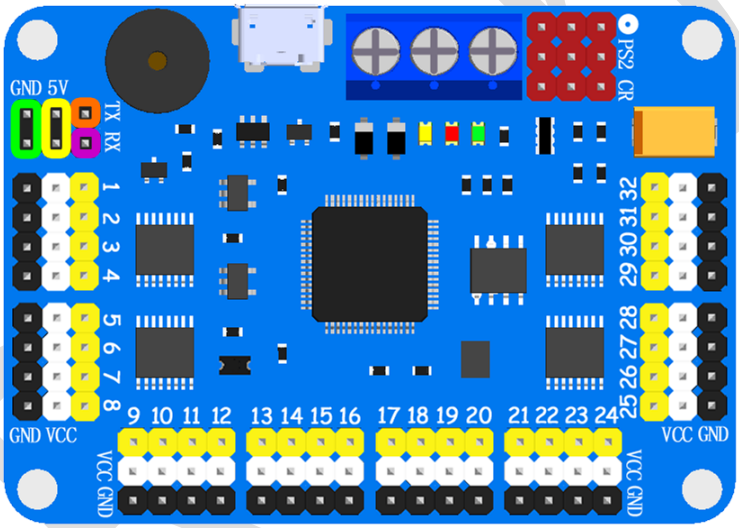
White Pin: Servo motor VCC connected with the entrance, it usual be servo motor red or dark red.

Black Pin: Servo motor GND connected with the entrance, it usual be servo motor brown or black.

Ⅲ. UART access method, *P.3* location, with the *P.4* reading:



P.3



P.4

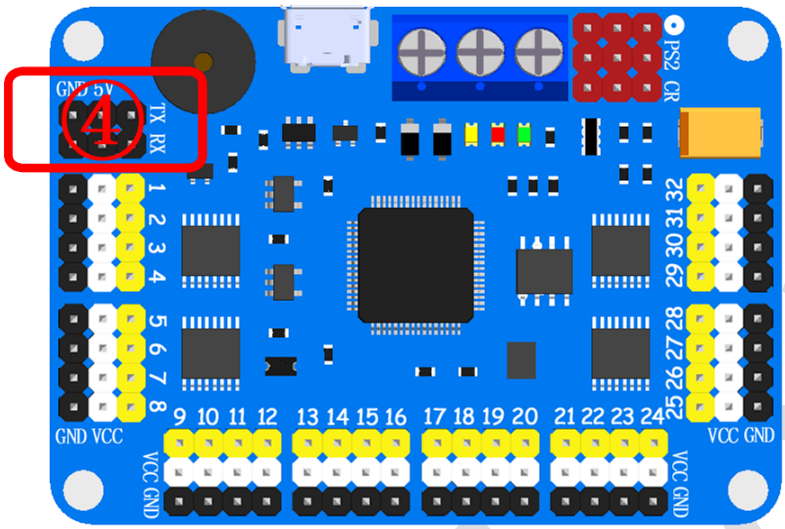
Green circle position: CPU power input of GND for servo motor controller.

Yellow circle position: CPU power input of VCC for servo motor controller.

Purple circle position: UART RX port for servo motor controller.

Orange circle position: UART TX port for servo motor controller.

IV. Bluetooth and WIFI sensor access method, *P.5* location:



P.5

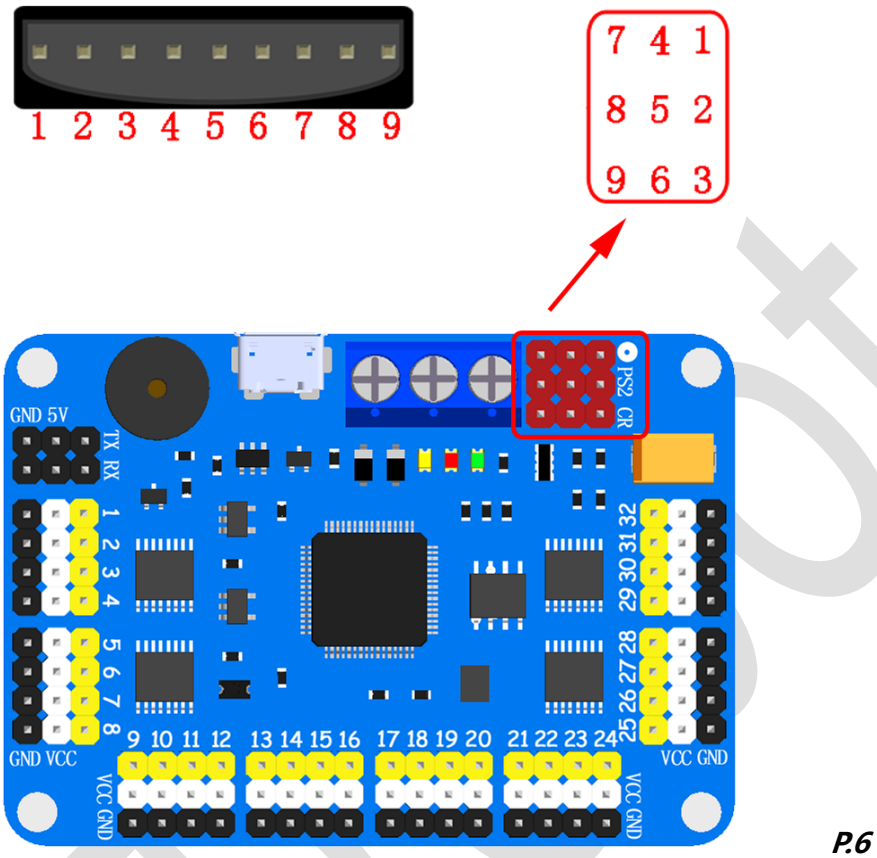
P.5 location,use four lines to line the Bluetooth sensor, 5V-VCC, GND-GND, RX-TX, TX-RX.

Pairing your phone with a Bluetooth module, and Install app.

Fill in WIFI module settings TCP address can be controlled.

first time use app must input "RTrobot".

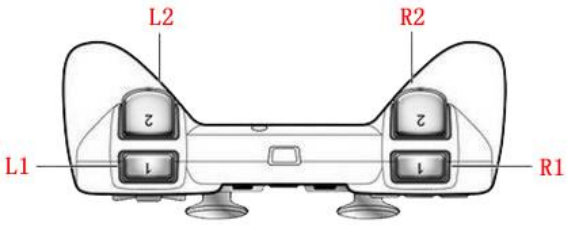
V. PS2 wireless remote control access method, *P.8* location:



P.6

Using the PS2 wireless remote control receiver and servo motor controller linked together. like ***P.6***,1-1、2-2、3-3....., don't forget the handle also need two batteries. PS2 wireless remote control have two mode, mode one is one of the servo motor to control (LED ON) , mode two is action groups operations(LED OFF). At different mode, the button have different function; but, have some buttons in both modes are same.

Note: After power-up, you must pass a "START" to start servo.



P.7

Same buttons:

SELECT: Exchange modes

START: Start to work

One of the servo motor to control:

Square: All servo motor moves to 2500

Cross: All servo motor moves to 1500

Round: All servo motor moves to 500

Triangle: None

Group one :1、3、5、7、9、11、13、15

L2: Exchange group one servo, descending order

R2: Exchange group one servo, ascending order

L3-Left: Group one servo motor value increased

L3-Right: Group one servo motor value reduced

Group two:2、4、6、8、10、12、14、16

L1: Exchange group two servo, descending order

R1: Exchange group two servo, ascending order

R3-Left: Group two servo motor value increased

R3-Right: Group two servo motor value reduced

Group three:17、19、21、23、25、27、29、31

Left: Exchange group three servo, descending order

Right: Exchange group three servo, ascending order

L3-Up: Group three servo motor value increased

L3-Down: Group three servo motor value reduced

Group four:18、20、22、24、26、28、30、32

Down: Exchange group four servo, descending order

Up: Exchange group four servo, ascending order

R3-Up: Group four servo motor value increased by 50

R3-Down: Group four servo motor value reduced by 50

Action groups to control:

L2: AG 0

L1: AG 1

R2: AG 2

R1: AG 3

Up: AG 4

Left: AG 5

Down: AG 6

Right: AG 7

L3-Up: AG 8

L3-Left: AG 9

L3-Down: AG 10

L3-Right: AG 11

R3-Up: AG 12

R3-Left: AG 13

R3-Down: AG 14

R3-Right: AG 15

Square: AG16

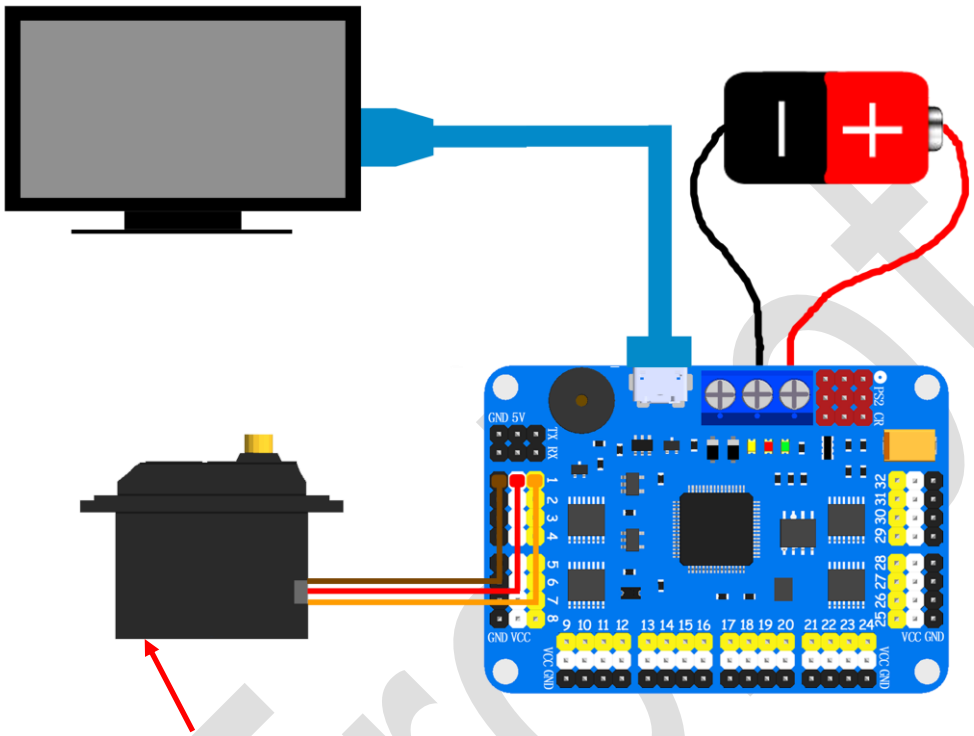
Cross: AG17

Round: AG18

Triangle: AG19

Overall Wiring example:

Ⅰ. use of computer-controlled :

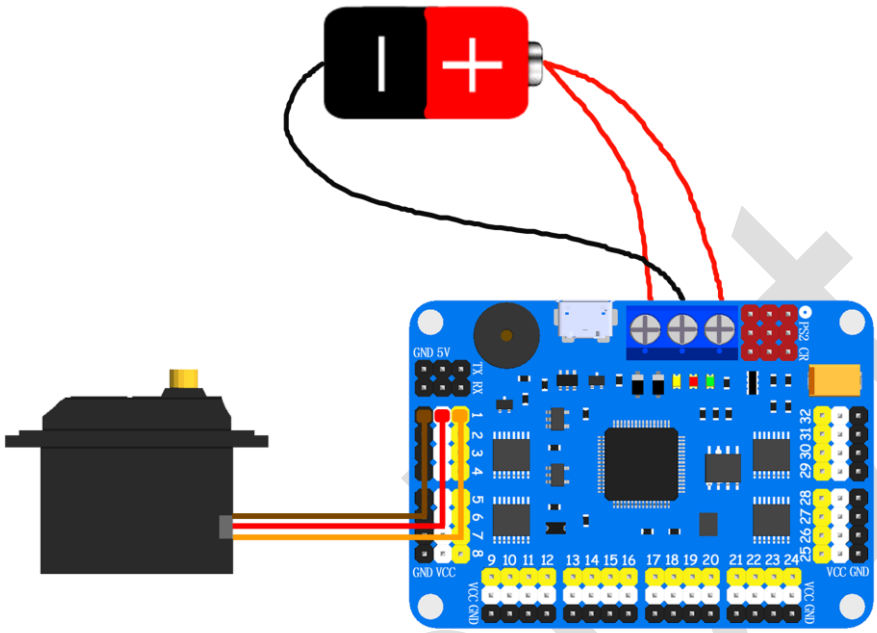


P.8

Use the USB line to Computer and servo motor controller linked together.

The power of the servo motor access please reference **Wiring methods: I** (don't use VDD interface).

Ⅱ. Servo motor controller automatically :



P.9

Before use, first with software Settings, and then open the power supply work.

if you want to use USB power supply, don not link red line for VDD.

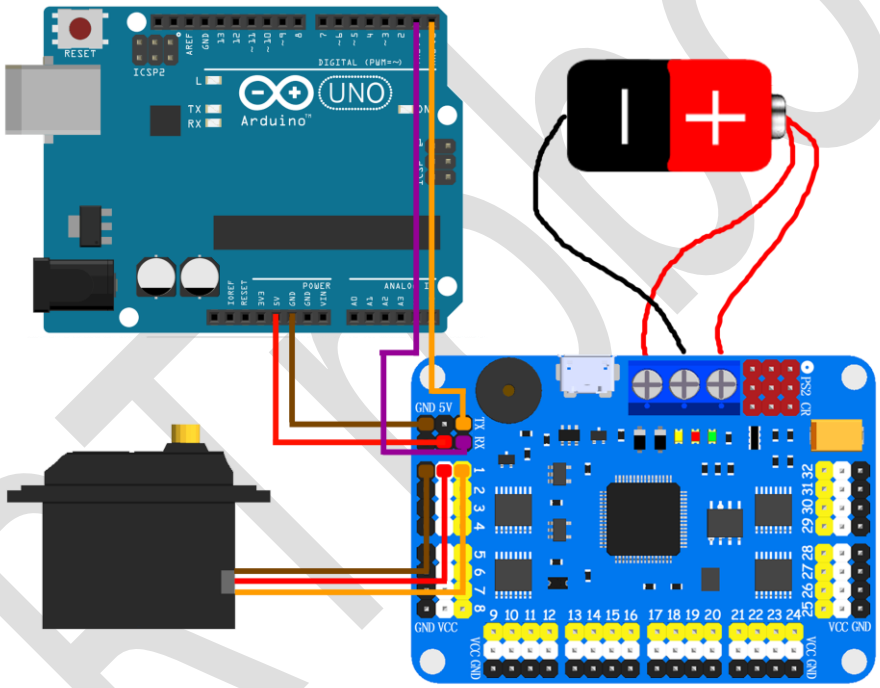
Set up and restart the power supply will work automatically.

Ⅲ. Using MCU to control

Servo motor controller of power supply to the MCU:

Here is an example with Arduino UNO, Other MCU can reference here. Servo motor controller 5V link Arduino UNO 5V, Servo motor controller GND link Arduino UNO GND, Servo motor controller TX link Arduino UNO RX, Servo motor controller RX link Arduino UNO TX. like ***P.10:***

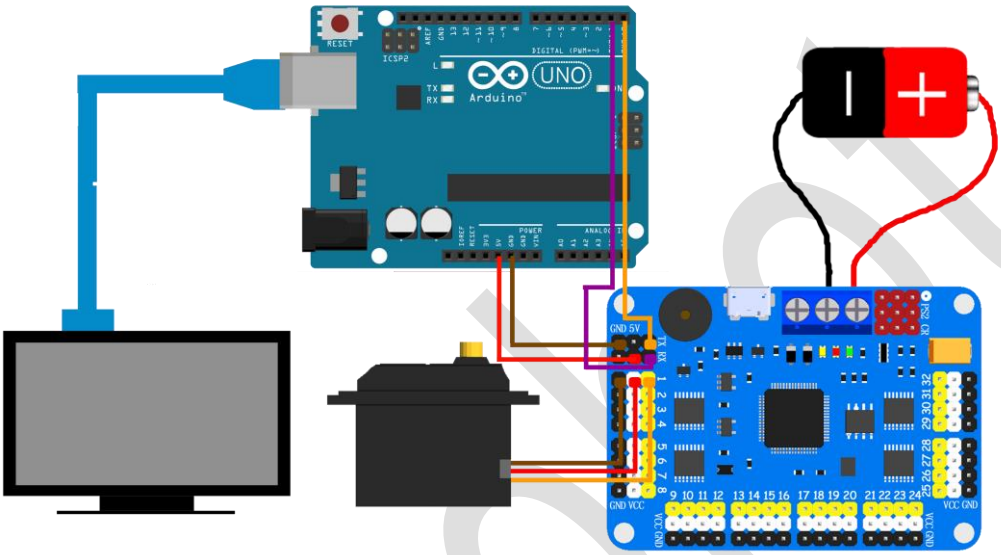
NOTE: Note: all of the power supply is powered by one battery.



P.10

MCU power supply to the servo motor controller:

Servo motor controller 5V link Arduino UNO 5V, Servo motor controller GND link Arduino UNO GND, Servo motor controller TX link Arduino UNO RX, Servo motor controller RX link Arduino UNO TX.



P.11

Note: the UNO Arduino and the Servo motor controller provide power through the computer. The servo motor is an independent power supply.

Software Operation:

Ⅰ: Software Settsings:

Check “Setting” -> “Software”, You can set up the software, like ***P.12***.

Servo Value:Set up max value and mix value of servo motor.

Software Panel:Set up software control panel.

Servo On/Off:Hide the servo motor are not used.

After completion of the software configuration will automatically restart the softw

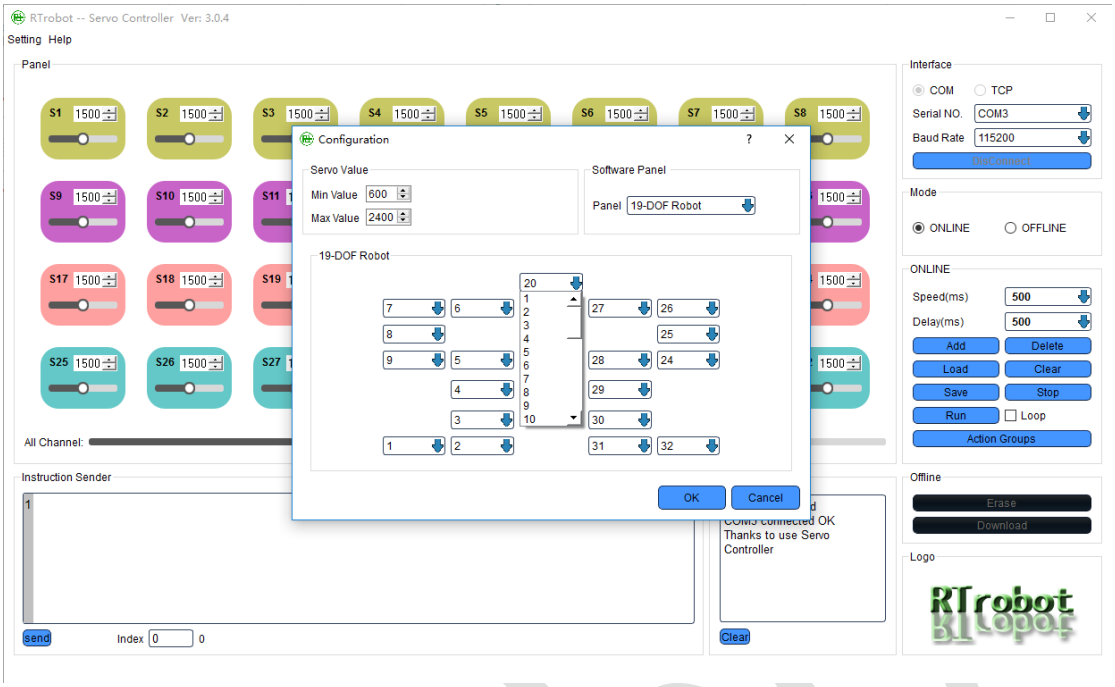
are.

P.12

Software Panel: After selection interface can specify each position servo motor

serial number. like ***P.13***.

Note: If there is a repeat of the servo motor serial number, can not be saved.



P.13

Ⅲ:Controller settings:

Check “Setting” -> “Hardware”, You can set up the controller, like ***P.14***(This option must link controller to display).

Servo initial value:Set the initial value of each servo motor start.

Uart Baud Rate:Set up ***P.5*** ④ the location of the serial port baud rate.

Buzzer:Low pressure alarm switch.

Start Automatic run:Turn on or off automatically run action group.

Automatic run group:Set up automatically run action group number.

Automatic run times:Set up automatically run action group run times.

Note: configure complete do not forget to click on the "Apply", waiting for the settings to complete. Configured after the controller needs to restart will come into effect.

IV.Software control:

1. Select a suitable connection mode, and use the USB line to connect to the computer.

2. Installation controller driver(Servos Controller Drive.exe).

NOTE: If warning, no digital signature can't installed. The computer with the "disable the program to drive mandatory signature" way to start the computer, run the installation of the driver again

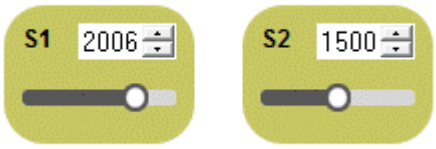
3. Open the software “ServoController.exe”.

4. Select serial number, and open the serial. If used WIFI mode , chosee the “TCP”, write the Server IP and Port.

NOTE: In order to use all of the features only USB link.

① Single servo motor operation:

like ***P.15***, drag or fill can change servo motor angle values.



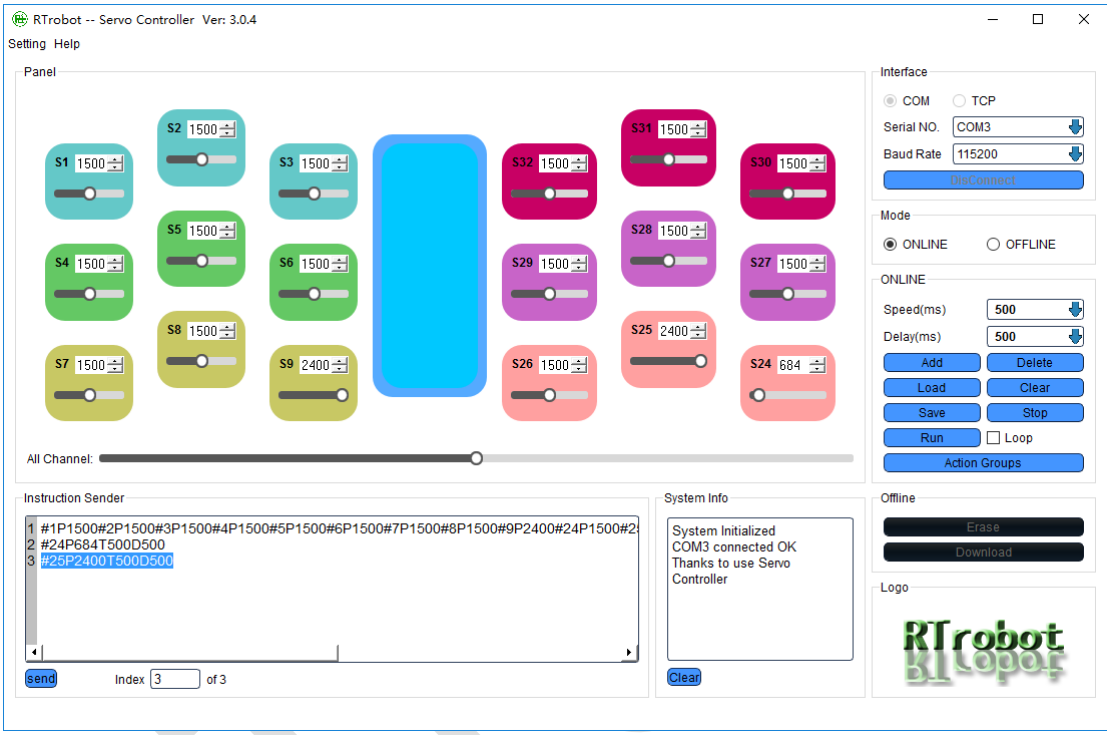
P.15

② Multiple servo motor operation:

Configure each servo motor first run value, And then configure the running speed of servo motor and waiting time after the completion. Check “Add” ,then configure each servo motor second run value, check “Add”. All the preset run value were configure over, check “Run” to test.

running speed of servo motor: Finish the instruction at the specified time (not exceeding the maximum physical speed of the servo motor).

waiting time of servo motor: After completing the current instruction, delay the specified time, to perform the next instruction.



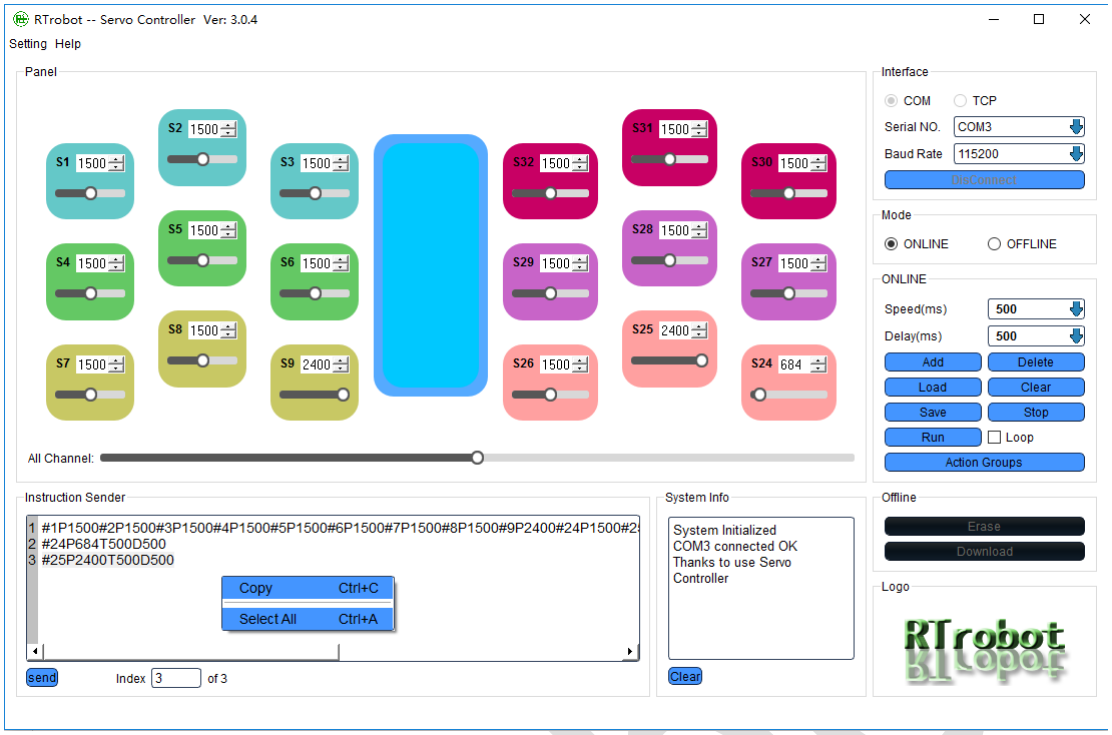
P.16

③ Using the file import operation:

like ***P.18***, Refer to the text file "Instruction.txt", manual input operation instruction and save; choose "Load" to software, choose "Run" to test.

④ Copy command:

In the instruction message box right click"Select All" and then right click "Copy"



P.17

⑤ Save command:

choose “Save” to svae instruction, In order to import used next time.

⑥ Offline operate independently:

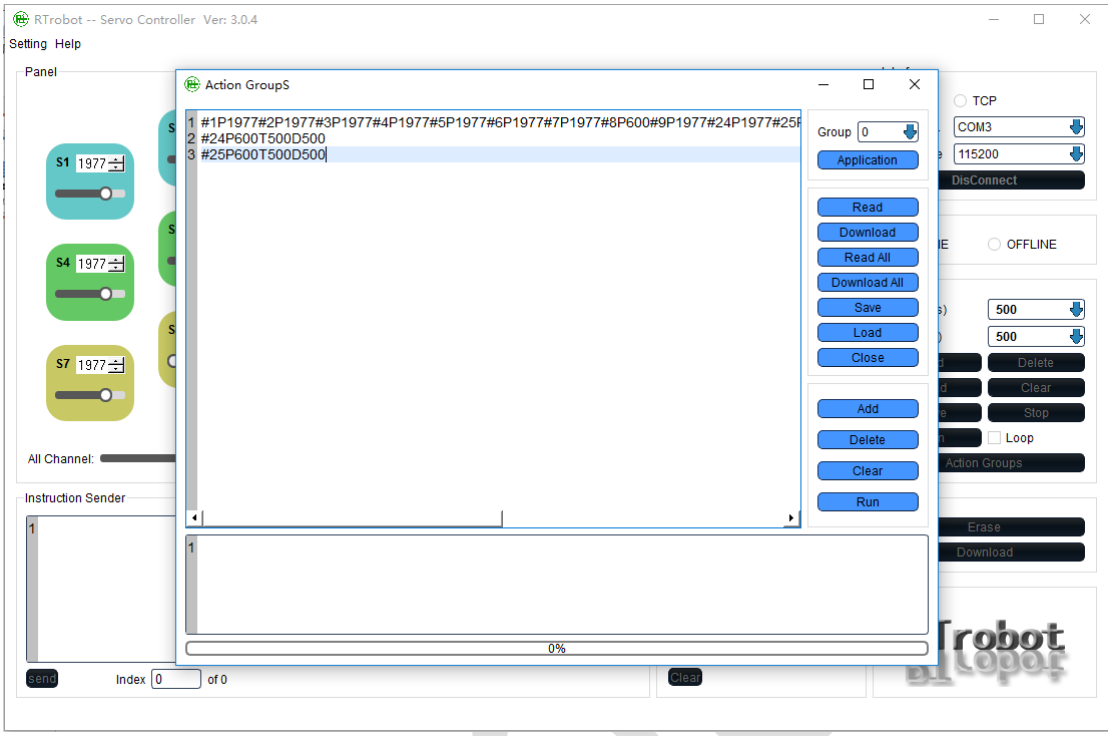
The configured Download instructions, click on the "Download" to the servo motor controller, in the pop-up dialog box enter the serial number need to Download the action group, realize the off-line operation, don't forget to open the controller automatically switch and operation of action group number.

⑦ Erase all action groups

Click "Erase" to erase all the action groups instructions, erase time is about 30 seconds.

V. Action group Settings:

Click"Action Groups" there will be Action group Settings interface, like ***P.18***.



P.18

① “Group” : Select the action group number you need to edit.

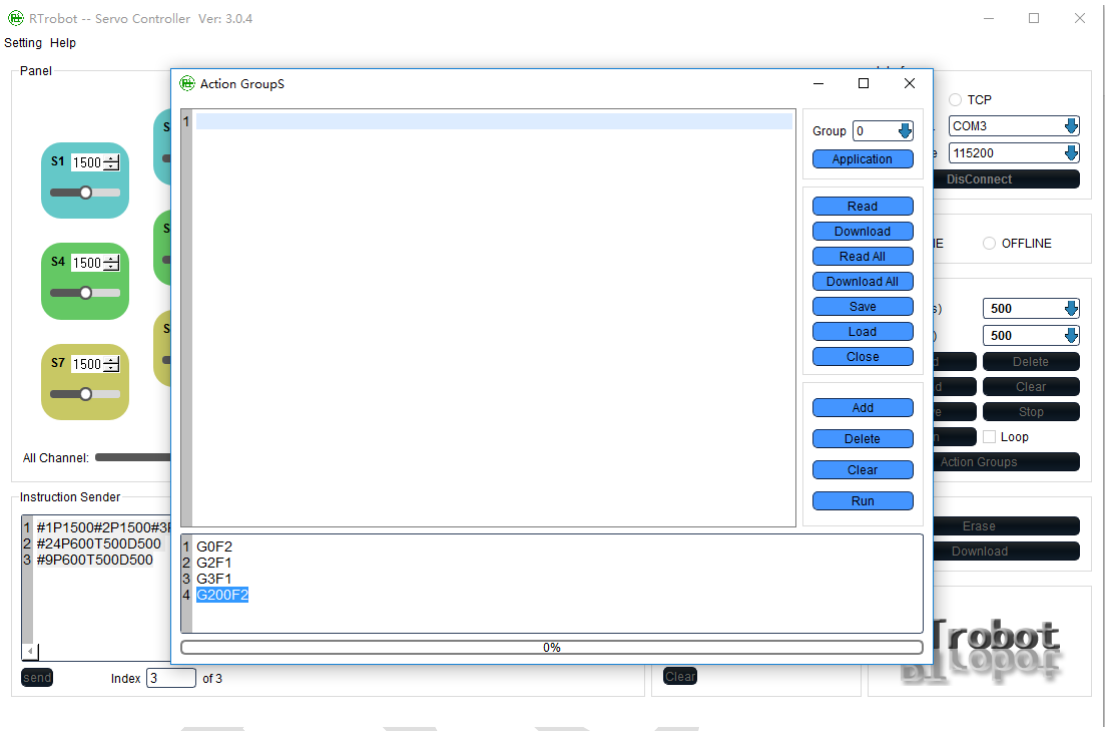
② “Application”:In the edit box, after the completion of the edit, click "Application".

③ “Read” and “Read All” :can read the instruction has been downloaded to the controller action group.

④ “Download” and “Download All” :Download the edit completed instruction to the action group. Don't forget to click "Application" and then download it.

Test action group:

Click "Add" after the input needs to test the action group number and the number of run times, after the completion of the completion of the click "Run" to test.



VI. instruction:

Communication Protocol:

serial communication	baud rate	parity bit	data bits	stop bits
TTL	9600(default)	none	8	1

Instruction format:

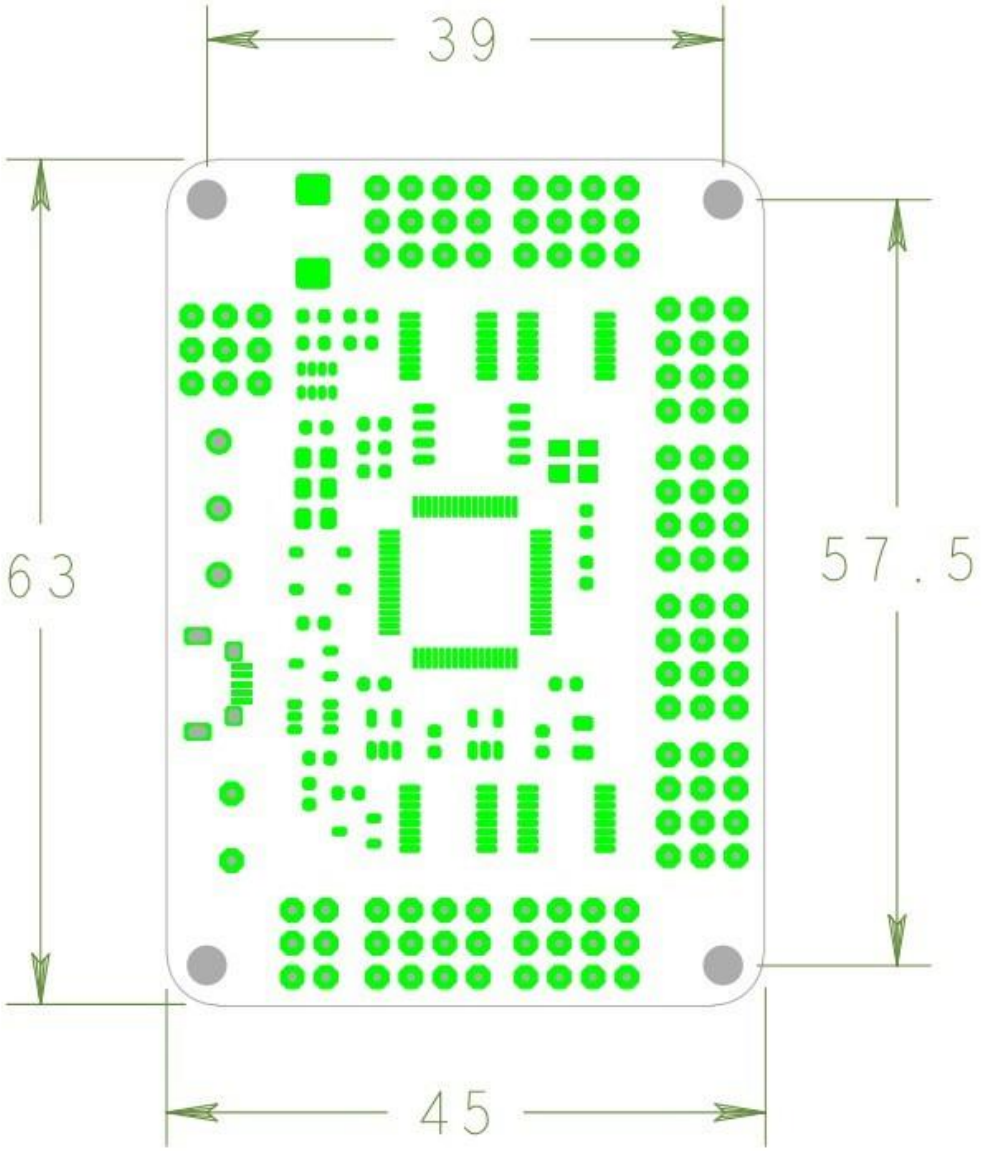
name	command	description
Controller single servo	#1P1500T1000D800\r\n	Data 1 refers to the servo' s channel Data 1500 Refers to the servo' s location, in the range 500-2500 Data 1000 refers to the time of execution and represents the speed, in the range 100-9999 Data 800 refers to the Instruction interval of delay time, in the range 100-9999
Controller multiple servo	#1P1500#2P1500T1000D800\r\n	Data 1、2 refers to the servo' s channel Data 1500 Refers to the servo' s location, in the range 500-2500 Data 1000 refers to the time of execution and represents the speed, in the range 100-9999 Data 800 refers to the Instruction interval of delay time, in the range 100-9999
run action groups	G1F3\r\n	Data 1 refers to the group' s channel Data 3 refers to the frequency of runs

Note: "\r\n" converted to hexadecimal is "0X0D 0X0A" ;All command is ASCII.

"0x0D" == "\r" == "CR"

"0x0A" == "\n" == "LF"

Ⅶ. Size chart:



Ⅷ. About:

Thank you for using RTrobot of servo motor controller, have any questions about the controller in use need to consult to mail :admin@rtrobot.org