

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	32	
Simultaneous		
Max Action Groups	256	
control precision	1us	
Servo Motor signal isolation	Yes	
	1.CPU power indicator led (red)	
	2.Servo motor power indicator led (green)	
Indicator led	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	cation Protocol UART	
Commuter Coffman	Windows XP or later , Mac OS 10.8 or	
Computer Software	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、	
Unline Operations Support	Computer	
BC2 withology remote control	1. one servo motor control	
	2. action groups control	



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

Wiring methods:



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:



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 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:



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.



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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 :



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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.

II. 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.



健 robot Welcome 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.



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.

🛞 RTrobot Servo Controller Ver: 3.0.4				×
Setting Help				
Panel				Interface
S1 1500 - S2 1500 - S3	1500 - S4 1500 - S5	1500-1 S6 1500-1 S7 1500-1	S8 1500	Serial NO COM3
	Configuration	7	X	Baud Rate 115200
	Serve Value	Software Panel		DisConnect
S0 1500 - S10 1500 - S11	1 Min Value 600 🗢		1500-04	Mode
	Max Value 2400 2	Panel Default	1500	
				ONLINE O OFFLINE
247 1500 ×1 240 1500 ×1 240	Servo On/Off		1500.41	ONLINE
317 1500 - 318 1500 - 319	🗹 Servo 1 🗹 Servo 2 🗹	Servo 3 Servo 4 Servo 5 Servo	6	Speed(ms) 500 👆
	🗆 Servo 7 🗆 Servo 8 🗆	Servo 9	12	Delay(ms) 500
	🗆 Servo 13 🗆 Servo 14 🗆	Servo 15 🗆 Servo 16 🗆 Servo 17 🗆 Servo	18	Add Delete
S20 1500 - S20 1500 - S27	🗆 Servo 19 🗆 Servo 20 🗆	Servo 21 🗆 Servo 22 🗆 Servo 23 🗆 Servo	24	Load Clear
	□ Servo 25 □ Servo 26 □	Servo 27 🗆 Servo 28 🗆 Servo 29 🗆 Servo	30	Save Stop
All Chappel:	Servo 31 Servo 32		-	Action Groups
Instruction Sender				Offline
1			d connected OK	Erase
		Thanks	touse Servo ler	Download
				Logo
				RTrobot
				KILODOL
send Index 0 0		Clear		57-5

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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.

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🛞 RTrobot Servo Controller Ver: 3.0.4				×
Setting Help				
Panel			I	nterface
				COM O TCP
S1 1500 ↔ S2 1500 ↔ S3	1500 ÷ S4 1500 ÷ S5	1500 ↔ S6 1500 ↔ S7 1500 ÷	S8 1500 ÷	Serial NO. COM3 🐇
	le Configuration	?	× 🔼	Baud Rate 115200 🐇
	Servo Value	Software Panel		DisConnect
S9 1500 ÷ S10 1500 ÷ S11	Min Value 600 🗢		1500 +	lode
	Max Value 2400 🖨		•	
				S ONLINE O OFFEINE
547 1500 al 549 1500 al 540	19-DUF Robot		1000 -1	ONLINE
			. 1500 -	Speed(ms) 500 👆
	7 0 6			Delay(ms) 500
	8			Add Delete
\$25 1500 ; \$26 1500 ; \$27	9 🔶 5		1500 🛨	Load Clear
	4			Save Stop
	3	➡ 10 - 30 -		Run 🗌 Loop
All Channel:	1 🚽 2	31 🐳 32 🐳		Action Groups
Instruction Sender				Offline
1		ок с	ancel	Frase
		Comp	connected OK	Download
		Contro	s to use Servo	000
				.090
				RTrobot
				KILODOC
index 0 0		Clear		

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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.

RTrobot Servo Controller Ver: 3.0.4		- 🗆 X
Setting Help		
Panel		Interface
\$1 1500 ≟ ••••••••••••••••••••••••••••••••••••	⊕ Hardware ? × 1 Servo initial value 58 Servo 1 1500 € Servo 1 1500 €	Serial NO. COM3 J Baud Rate 115200 J DisConnect
S9 1500 ≟ S10 1500 ≟ S10 1500 ≟	Servo 4 1500 2 Servo 5 1500 2 Servo 6 1500 2 Servo 1 Servo 7 1500 2 Servo 8 1500 2 Servo 9 1500 2 Servo 10 Servo 10 1500 2 Servo 11 1500 2 Servo 12 1500 2 Servo 10 Servo 10 Servo 10 Servo 11 1500 2 Servo 12 1500 2 Servo 12 Servo 12 <t< th=""><th>ONLINE OFFLINE</th></t<>	ONLINE OFFLINE
\$17 1500 ± \$18 1500 ± \$19 1500 ± ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●	Servo 13 1500 © Servo 14 1500 © Servo 15 1500 © Servo 16 1500 © Servo 17 1500 © Servo 18 1500 © Servo 19 1500 © Servo 21 1500 © Servo 21 1500 © Servo 22 1500 © Servo 21 1500 © Servo 24 1500 ©	ONLINE Speed(ms) 500
\$25 1500 ± \$26 1500 ± \$27 1500 ± ● ● ● ●	Servo 25 1500 € Servo 26 1500 € Servo 27 1500 € S32 1500 ±	Load Clear Save Stop Run Loop
All Channel:	UART Baud Rate 9600 🖶 Buzzer Open 🖶	Action Groups
Instruction Sender	Start automatic run [Yes] automatic run group [0]	Offline
	automatic run times(max:254; loop:0;) 2 Thim multiced OK s to use Servo aller	Download Logo RTrobot
Send Index 0 0	Clear	DTrobat

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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.



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

⊛ RTrobot Servo Controller Ver: 3.0.4 Satina Haln	- 🗆 X
Panel	Interface COM TCP Serial NO. COM3 Baud Rate 115200 DisConnect Mode ONLINE O OFFLINE ONLINE ONLINE Speed(ms) 500 Add Delete Load Clear Save Stop Run Loop Action Groups
Instruction Sender System Info 1 #1P1500#2P1500#3P1500#4P1500#5P1500#6P1500#7P1500#8P1500#9P2400#24P1500#2 System Initialized 2 #24P684T500D500 System Initialized 3 #25P2400T500D500 Controller Index 3 of 3 of 3	Offline Erase Download Logo RTrobot

specified time, to perform the next instruction.

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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"

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00 ±	Interface © COM O TCP Serial NO. COM3 Baud Rate 115200 DisConnect Mode
27 1500 ÷ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	ONLINE OFFLINE ONLINE Speed(ms) 500 dd Delay(ms) 500 Add Delete Load Clear Save Stop Run Loop Action Groups
stem Info	Offline
System Initialized COM3 connected OK hanks to use Servo Controller	Erase Download Logo RTrobot
	stem Initialized JM3 connected OK anks to use Servo introller

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(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:

	🖶 Action GroupS	×
s1 <u>1977</u> <u>→</u>	1 #1P1977#2P1977#3P1977#4P1977#5P1977#6P1977#7P1977#8P600#9P1977#2 2 #24P600T500D500 3 #25P600T500D500	24P1977#25f Group 0 COM3 Application 015Connect
S4 1977÷	s	Read Download Read All Download All
\$7 1977÷	s	Save 5) 500 Load 500 500 Close Delete
nannel:		Add Clear Add Stop Delete Action Groups
ction Sender	- -	Run
		Download

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.

 "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.



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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		
	#1P1500T1000D800\r\n	Data 1 refers to the servo' s channel		
		Data 1500 Refers to the servo' s location, in		
		the range 500-2500		
Controllor single sonve		Data 1000 refers to the time of execution		
Controller single servo		and represents the speed, in the range		
		100-9999		
		Data 800 refers to the Instruction interval of		
		delay time, in the range 100-9999		
	#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		
Controller multiple servo		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		
rup action groups	C1E2) due	Data 1 refers to the group's channel		
run action groups		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:



M. 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