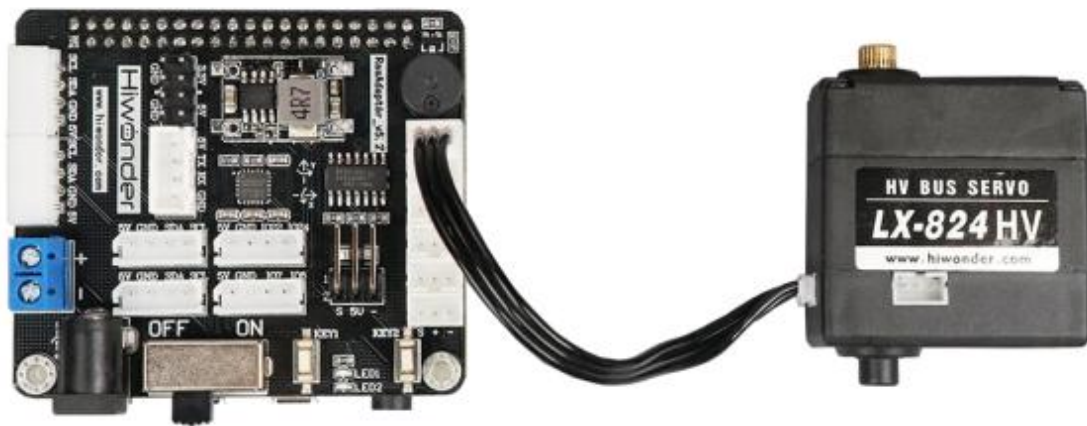


Lesson 1 Bus Servo Control

1. Preparation

1.1 Hardware wiring

Connect each bus servo to any bus servo port on the Raspberry Pi board separately. Take the LX-824HV servo as an example.



Note: the bus servo wire adopts anti-reverse plug design, please insert carefully.

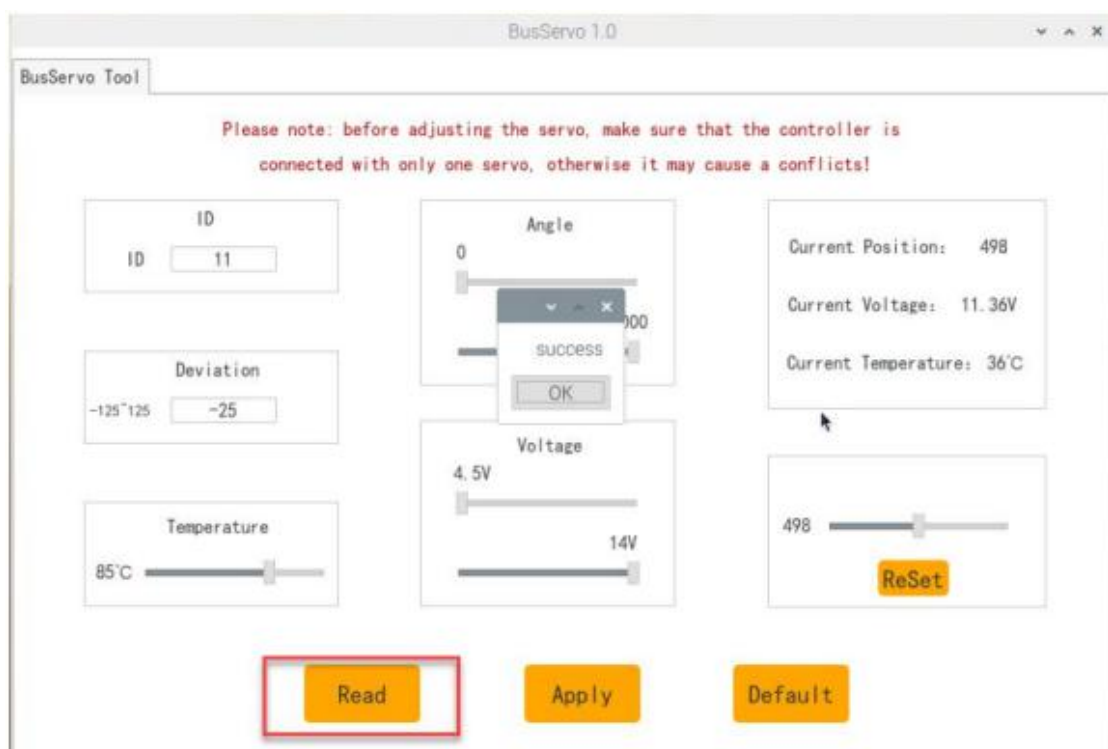
1.2 ID Setting

The sample program is set to control the ID8 servo by default. The ID number can be adjusted through the debugging tool "Bus_Servo_Tool" on the desktop.

- 1) Open "Bus_Servo_Tool" debugging tool on Raspberry Pi desktop.

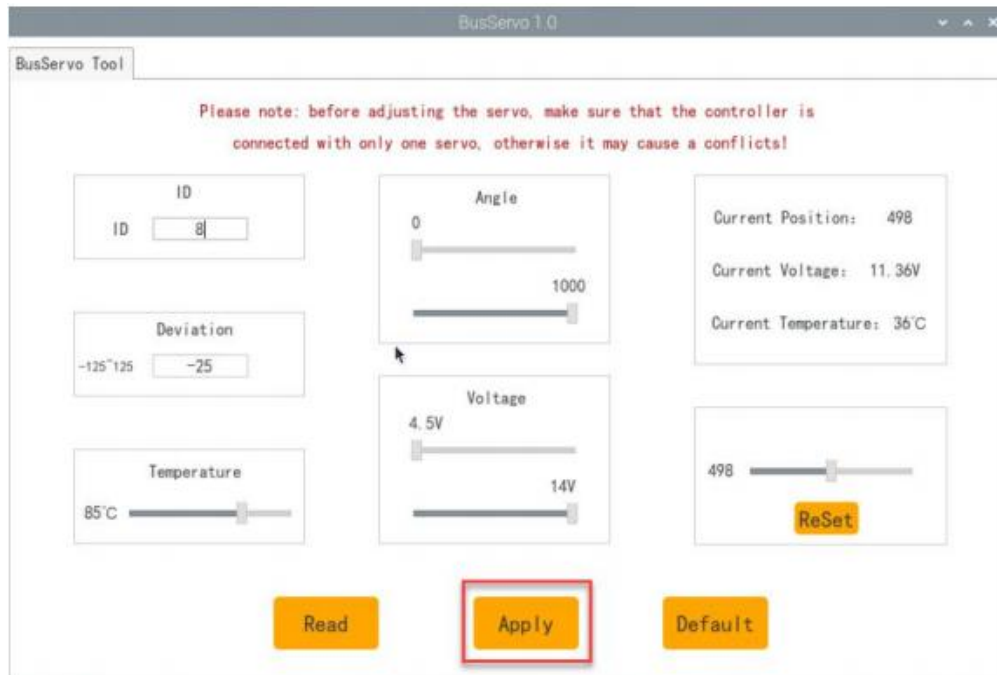


2) Click "Read" button and read servo ID.



3) Select the ID and enter the number 8, click "Set" button, and wait for the

prompt "success".



2. Working Principle

According to communication protocol, send the commands including servo ID, rotation angle and time to control the bus servo.

The source code of program is located in `/home/pi/TonyPi/HiwonderSDK/BusServoMove.py`

```

25 while True:
26     # Parameter: parameter1: servo ID; parameter2: position; parameter3: running time
27     Board.setBusServoPulse(8, 500, 500) # the running time is 500ms when No.8 servo rotates to the position 500
28     time.sleep(0.5) # the delay time is the same as the running time
29
30     Board.setBusServoPulse(8, 200, 500) # the rotation range of servo is between 0° and 240°, corresponding to 0-1000
31     time.sleep(0.5) # pulse width, that is, parameter 2 ranges from 0 to 1000
32
33     Board.setBusServoPulse(8, 500, 200)
34     time.sleep(0.2)
35
36     Board.setBusServoPulse(8, 200, 500)
37     Board.setBusServoPulse(16, 200, 500)
38     time.sleep(0.5)
39
40     Board.setBusServoPulse(8, 500, 500)
41     Board.setBusServoPulse(16, 500, 500)
42     time.sleep(0.5)
    
```

Control the bus servo through calling **setBusServoPulse()** function in Board library. Take the code "**Board.setBusServoPulse(8, 500, 500)**" as example:

The first parameter "8" represents the port number of the bus servo. Here is the No.8 port.

The second parameter "500" represents the rotation position, which is the data obtained through angle conversion. It corresponds to the servo rotation angle.

The third parameter "500" represents the rotation time (the unit is ms).

3. Operation Steps

- 1) Click the icon shown below to enter the LX terminal command line.



- 2) Enter the command "**cd TonyPi/Example/**" in the interface and press "Enter" to switch to the directory where the routine is located.

```
pi@raspberrypi:~ $ cd TonyPi/Example/  
pi@raspberrypi:~/TonyPi/Example $
```

- 3) Input command "**sudo python3 BusServoMove.py**" and press "Enter" to control one servo rotation.

```
pi@raspberrypi:~ $ cd TonyPi/Example/
pi@raspberrypi:~/TonyPi/Example $ sudo python3 BusServoMove.py

*****
*****Function:Hiwonder TonyPi expansion board, serial servo control routine
*****

-----
Official website:http://www.hiwonder.com
Online mall:https://huaner.tmall.com/
-----
The following commands need to be used in the LX terminal, which can be opened b
y ctrl+alt+t, or click
Click the black LX terminal icon in the upper bar.
-----
Usage:
python3 BusServoMove.py
-----
Version: --V1.2 2021/07/03
-----
Tips:
* Press Ctrl+C to close the program, if it fails, please try multiple times!
-----
```

4) Press "**Ctrl+C**" can close the program.

4. Project outcome

The servo connected to the Raspberry Pi expansion board will repeat rotation.