

Two-wheel balancing Robot Test

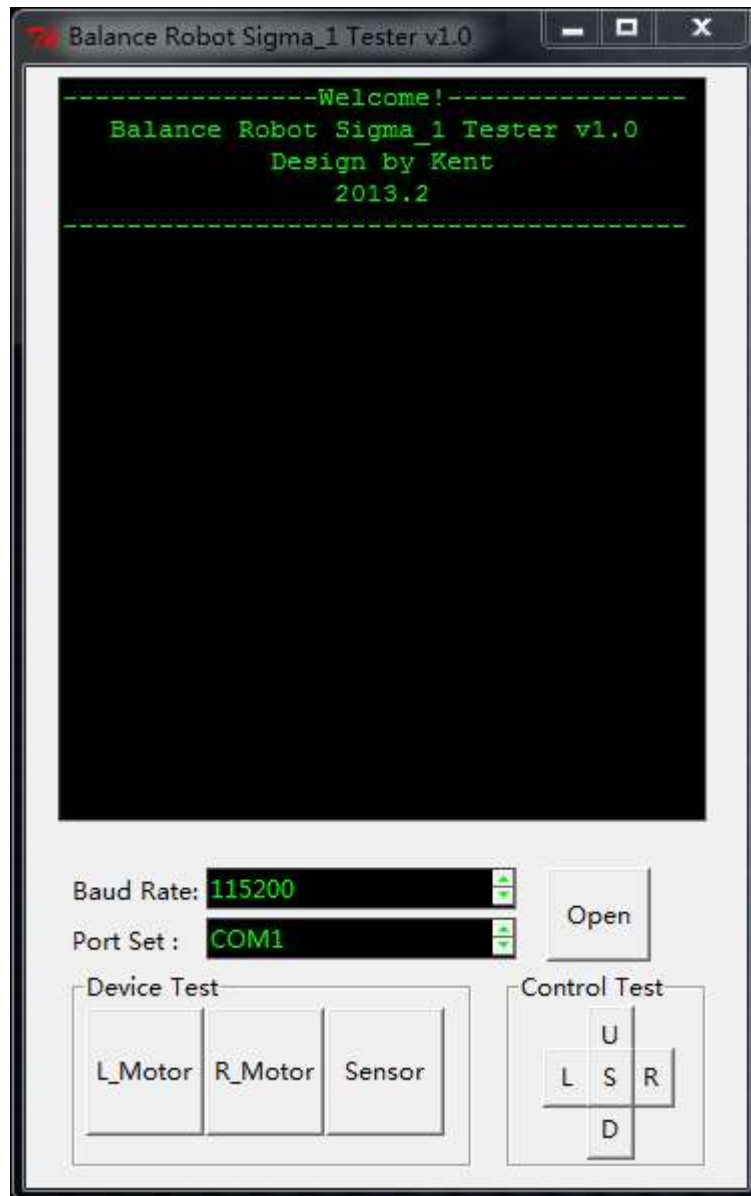
Software

1.Arduino 0022 IDE



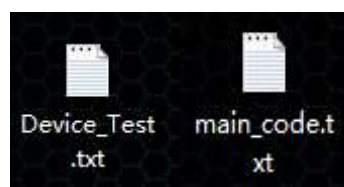
<http://arduino.cc/en/Main/Software>

2. Tesing Software



DFRobot.com

3. Testing code: Device_Test and Main_Code



(DFRobot 网站对应链接)

The Device_Test.txt can test the hardware connection and main code can run the robot

Arduino installation guide

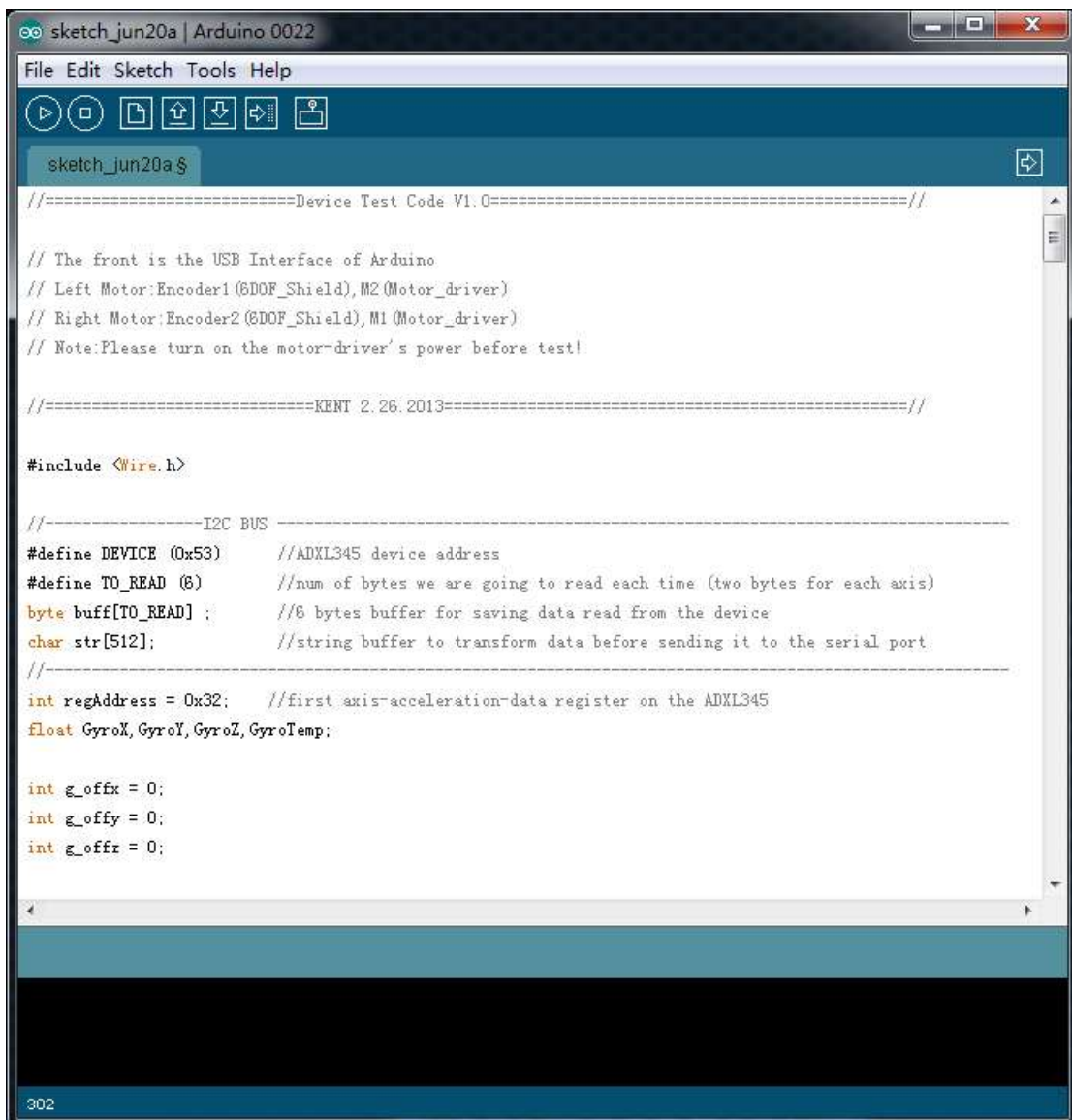
If you are flash player for the Aduino. Please follow this website

<http://arduino.cc/en/Guide/HomePage>

If you have any problem please contact us by email: pepin.xia@dfrobot.com

Upload the codes

1. Open the first code: Device_Test.txt. Copy and paste it on your Aduino IDE

A screenshot of the Arduino IDE interface. The window title is "sketch_jun20a | Arduino 0022". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". Below the menu bar is a toolbar with icons for running, stopping, saving, and other functions. The main text area contains the following code:

```
sketch_jun20a $
//=====Device Test Code V1.0=====//

// The front is the USB Interface of Arduino
// Left Motor:Encoder1 (6DOF_Shield), M2 (Motor_driver)
// Right Motor:Encoder2 (6DOF_Shield), M1 (Motor_driver)
// Note:Please turn on the motor-driver's power before test!

//-----KENT 2.26.2013-----//

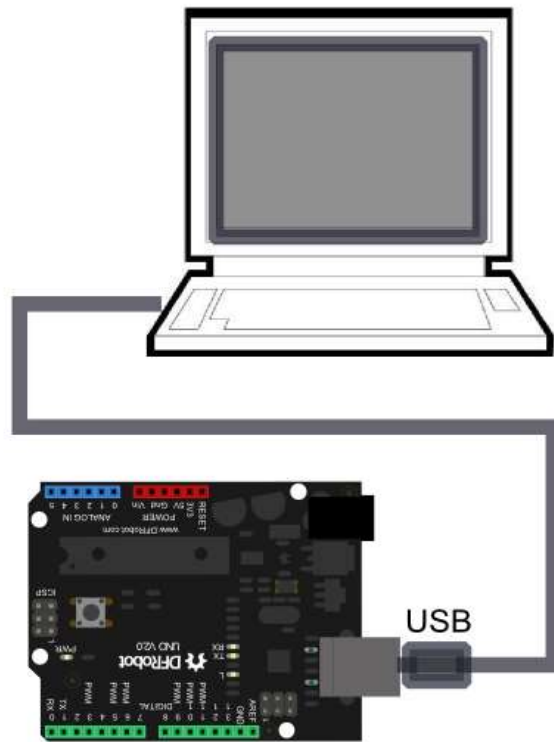
#include <Wire.h>

//-----I2C BUS-----
#define DEVICE (0x53) //ADXL345 device address
#define TO_READ (8) //num of bytes we are going to read each time (two bytes for each axis)
byte buff[TO_READ] ; //8 bytes buffer for saving data read from the device
char str[512]; //string buffer to transform data before sending it to the serial port
//-----
int regAddress = 0x32; //first axis-acceleration-data register on the ADXL345
float GyroX, GyroY, GyroZ, GyroTemp;

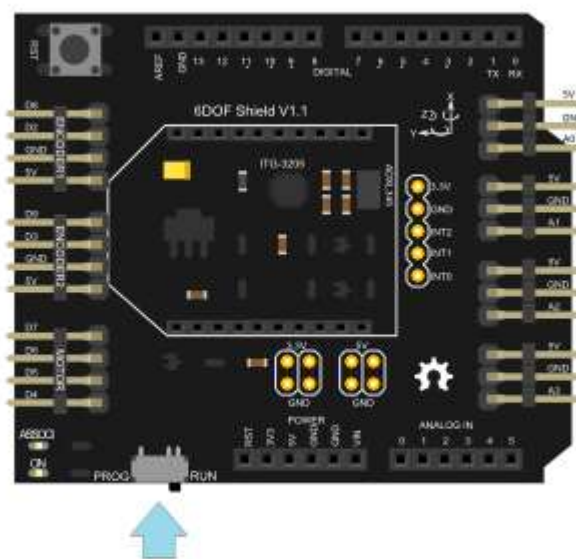
int g_offx = 0;
int g_offy = 0;
int g_offz = 0;
```

The status bar at the bottom left shows the line number "302".

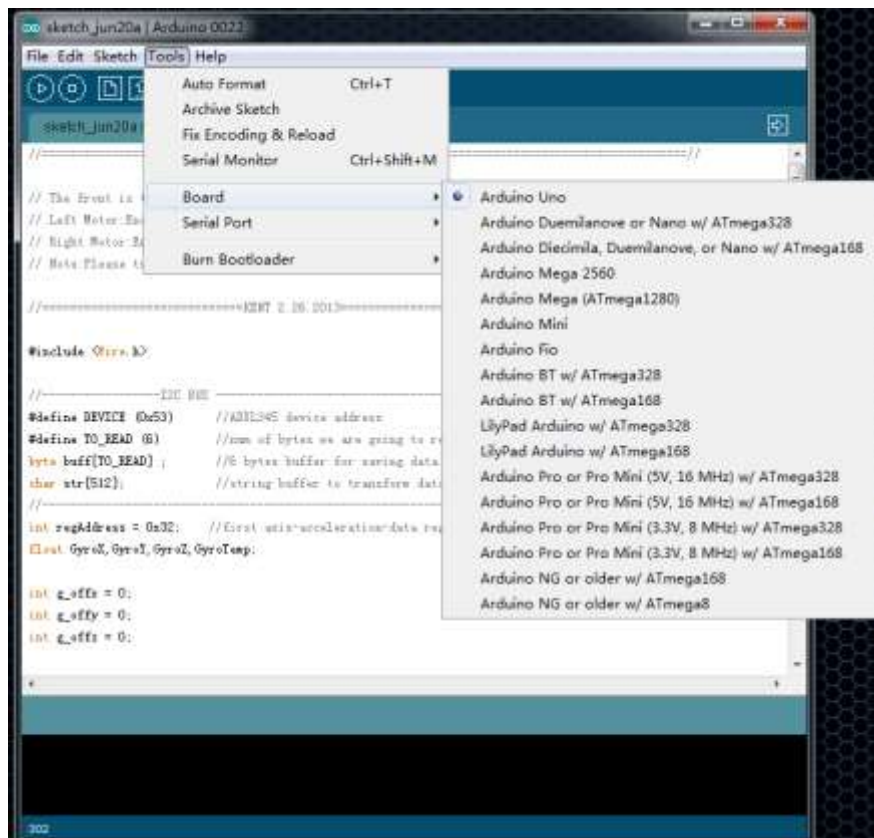
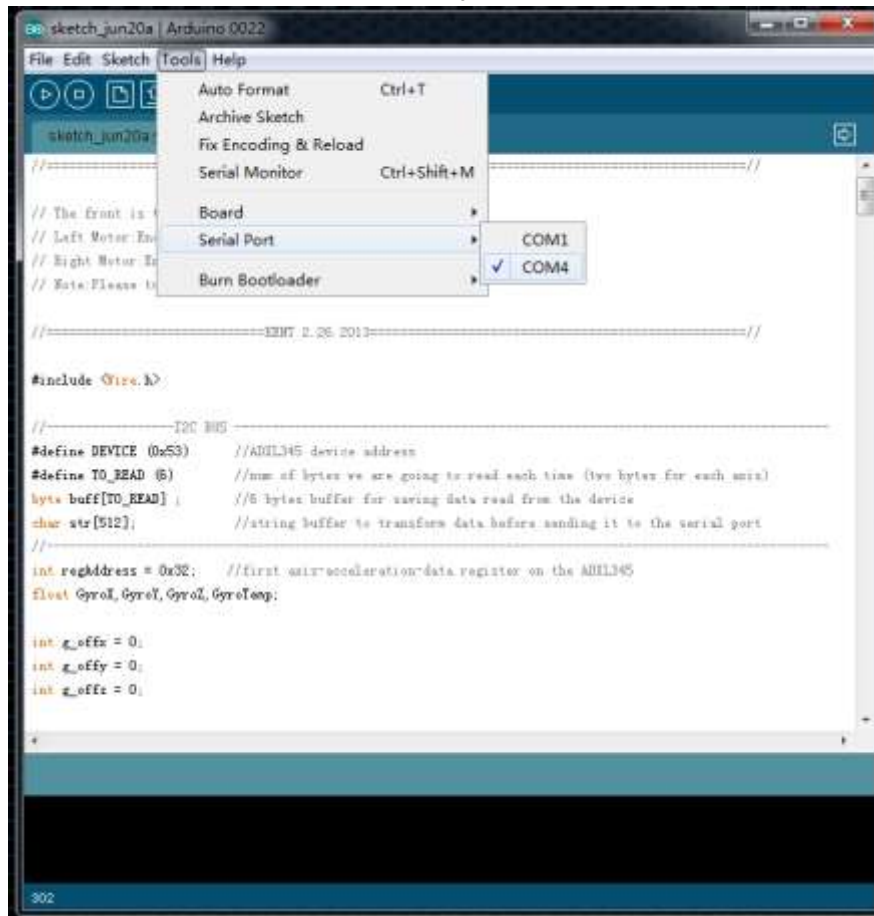
2. Connect the robot with your computer



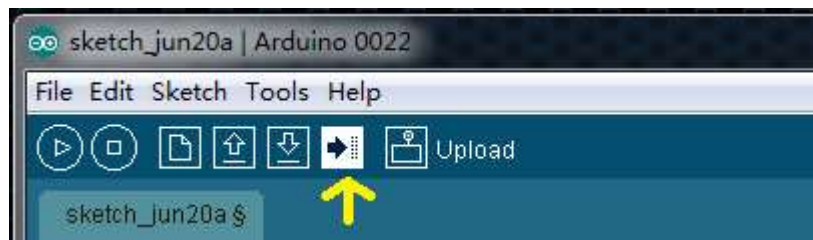
ATTENTION: SWITCH 6DOF-SHIELD TO PROG MODE



3. Choose Arduino Uno, and the correct serial port.



4. Upload the code to Adruino Uno R3



Click this

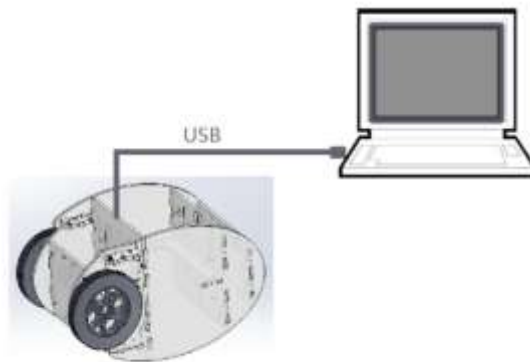
Hardware Testing

- Do not break the USB connection, close IDE, open RobotTester.exe
1. Choose the bode wide (9600) and serial port, Click Open button

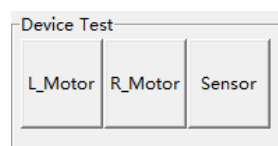


2. Put the robot on the ground, Connect the Battery(14.4v), turn on the switch button on the

robot



3. Click these buttons and follow the following picture to test the robot



Correct:

```
-----Welcome!-----  
Balance Robot Sigma_1 Tester v1.0  
Design by Kent  
2013.2  
-----  
Baud Rate: 9600  
Port: COM4  
The Port is open now!  
Right Encoder OK  
Left Encoder OK
```

Wrong:

```
-----Welcome!-----  
Balance Robot Sigma_1 Tester v1.0  
Design by Kent  
2013.2  
-----  
Baud Rate: 9600  
Port: COM4  
The Port is open now!  
Right Encoder ERROR!  
Left Encoder ERROR!
```

- (1) Check the power, switch and connection
- (2) Check the +- of the encoder and the motor

4. Click the Sensor button:



Click the Sensor button and check the value of these sensor.

Main code upload

Copy and upload the main_code.

```
sketch_jun20a | Arduino IDE
File Edit Sketch Tools Help
sketch_jun20a

/***** Balance Robot Code V1 *****/

//-----

#include <Wire.h>

//----- Variable Definition -----//

//I2C address

class Gyro{
  int x_offs = 0;
  int y_offs = 0;
  int z_offs = 0;
#define I2C_ADDR 0x40

//----- I2C -----//

#define DEVICE 0x55 //I2C device address
#define TO_READ 0x //How many bytes we are going to read each time (Max bytes for each read)
byte buff[TO_READ]; //6 bytes buffer for saving data read from the device
char str[50]; //String buffer to transform data before sending it to the serial port
int regAddress = 0x20; //I2C accel/rotation data register on the I2C device

//----- Values -----//
}
```

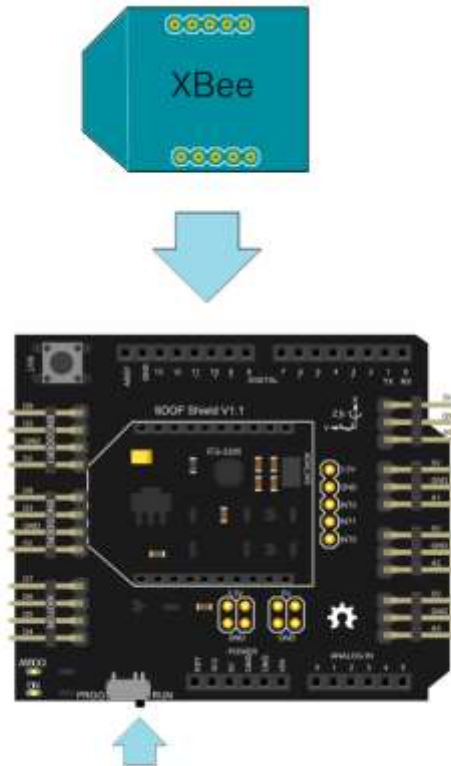
Upload

Put the battery on the robot, turn on the switch and change location of the battery made sure the robot can keep balance.

If you want to control the robot

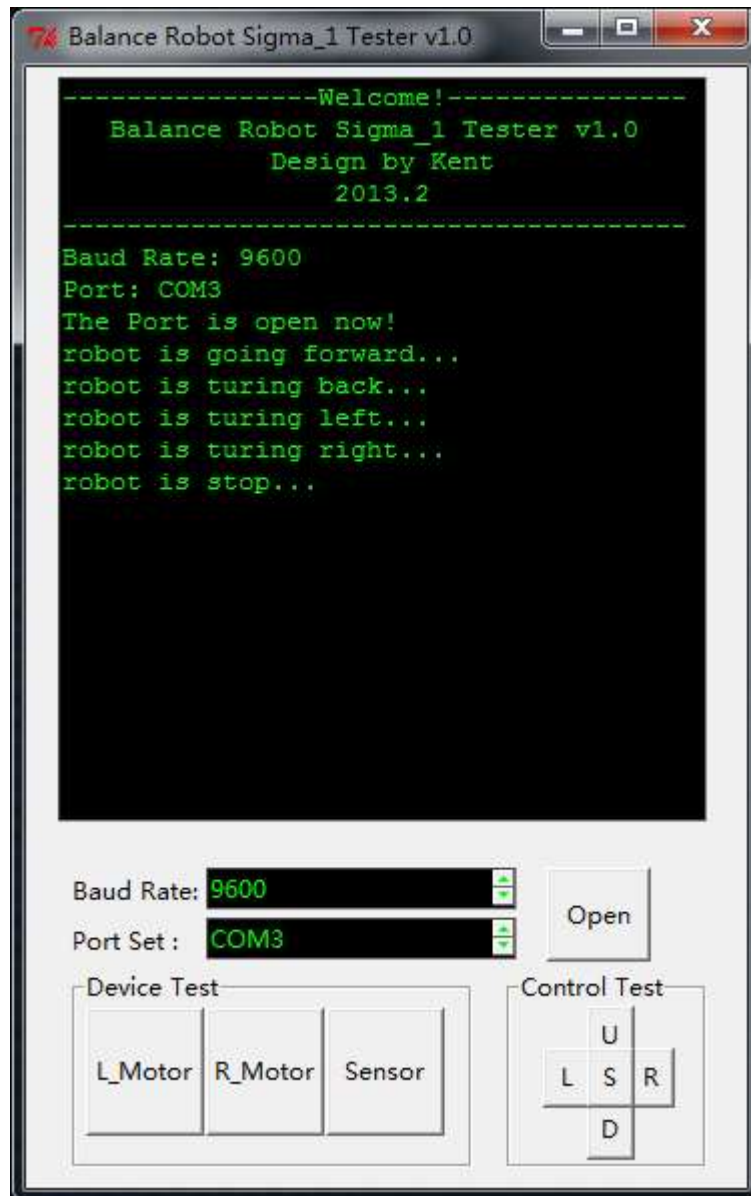
You can use the RobotTester.exe to control the robot.

1. Put the Xbee on the robot like this.



2. Switch the 6DOF to RUN mode, The another Xbee connect with computer and install the software

2. Open RobotTester.exe, Change the Bode wide (9600)。 Use the U L S R D button to control the robot



Technology support: Pepin
DFRobot

Designed by Kent