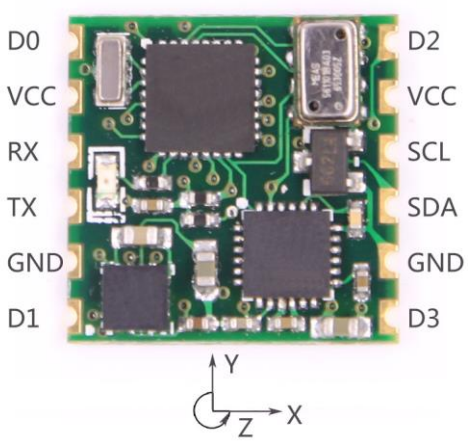
High precision gyroscope module JY-901 Series

Quick Start

1 Pin Description



Name	Function
VCC	Power，3.3V or 5V Input
RX	Serial data input ，TTL level
TX	Serial data output ，TTL level
GND	GND
SCL	I2C Clock line
SDA	I2C Data line
D0	Extended port 0
D1	Extended port 1
D2	Extended port 2
D3	Extended port 3

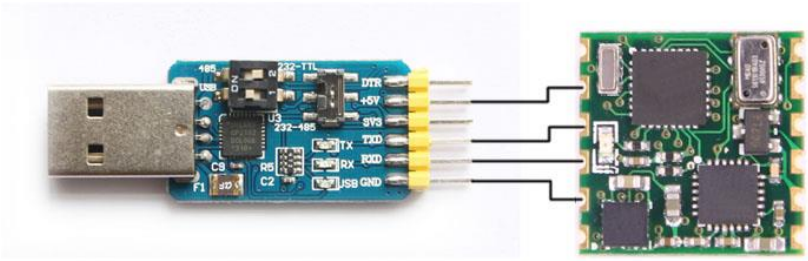
As shown in the figure above, the coordinates of the module are indicated, and the right is the X axis, the upper is Y axis, the Z axis is perpendicular to the surface of the paper to yourself. The direction of rotation is defined by the right hand rule, that is, the thumb of the right hand is pointed to the axial direction, and the four is the direction of the bending of the right hand.

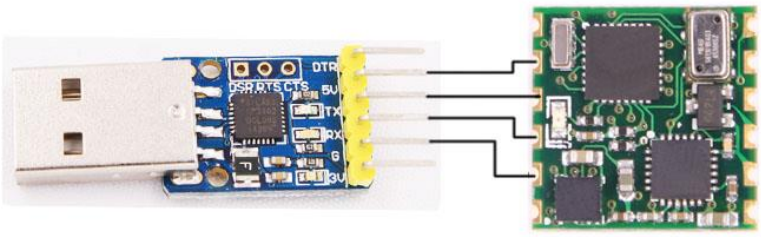
2 Step

2.1 Connect to PC

USB to TTL tool connect to JY-901 module：USB to TTL tool:+5V，TXD，RXD，GND are respectively connected JY901 module :VCC，RX，TX，GND。Note TXD and RXD should be crossover。

(Notice：The switch of Six serial interface module needs to be configed as the following figure when connecting to 6050 module)

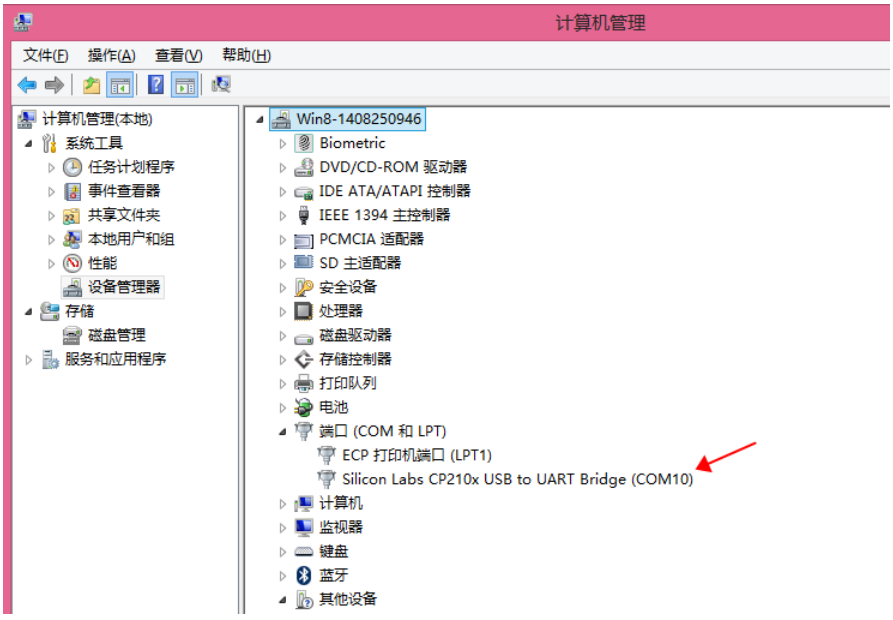




2.2 Installation USB-TTL module driver

First, the module is connected via USB-TTL module to the computer, install the USB-TTL module driver. If you use the USB-TTL modules in our shope, please click on the following link to download the driver:http://yunpan.taobao.com/s/2PnLxH3K1o1

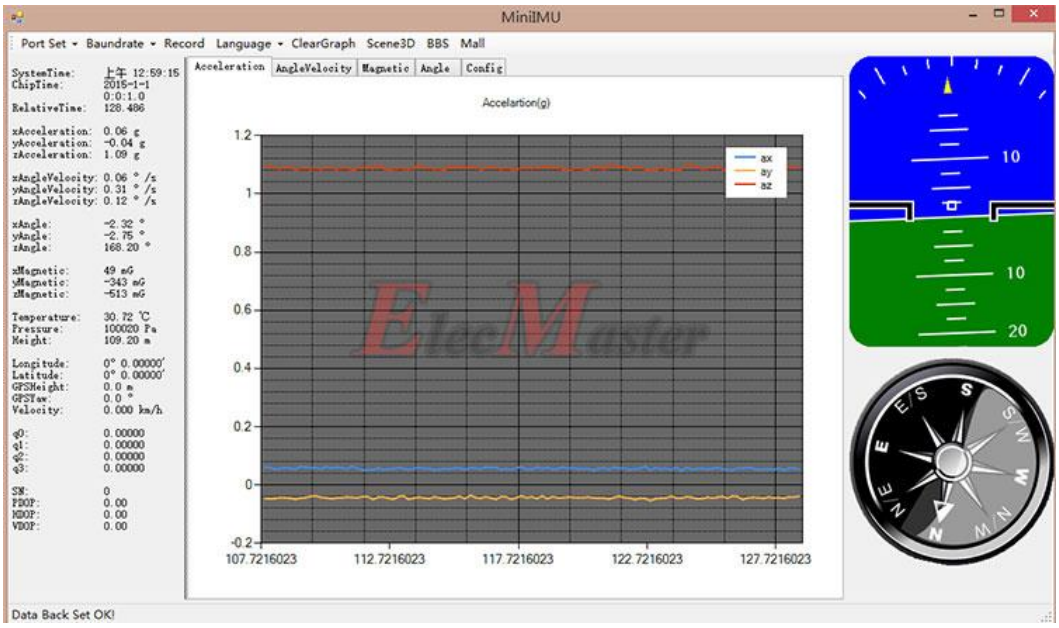
After installing the USB-TTL module driver, and then Device Manager can query corresponding serial number, as below figure shows:



2.3 Open PC program of JY901

Open the PC software, first click on the baud rate menu, select the baud rate module, the default setting is 9600. Then click Serial port Settings menu, select the Port number the same as

the USB-TTL module which query in 2.2. As shown below.



After you open the serial port, if there was no data of the image, check wiring is correct, then confirm the baud rate is set correctly, if you forget the module baud rate is the number, you can click on the menu baud -> Auto. The software will automatically search the baud rate , Prerequisite for automatic search module ,the output rate should be greater than 5Hz, if the rate is too low, the automatic detection module will not work.If it like this, you can try to set the module to the factory settings.

Click the record button, the software can record data to a text file, click on the record button, and when finish recording ,need to click the stop , the file will be written to the hard disk, the file path to the root directory of the PC program of JY-901 module,the file name is the start time.

Click on the language menu, you can switch the language between Chinese and English

Click clear diagram button, you can clear the data displayed in the chart. When collecting this data with the previous data collection interval for a long time, the chart will update slower, then you can click on the clear button, It will become faster.

Click the three-dimensional buttons, call up the three-dimensional display screen, displaying three-dimensional posture of the module. After starting the three-dimensional model, the default interface is full screen, and to change back to the window mode, you can press the [F] key, if you can not switch, press ctrl + Space to change the input method to English,then press [F]key.

2.4 Module calibration

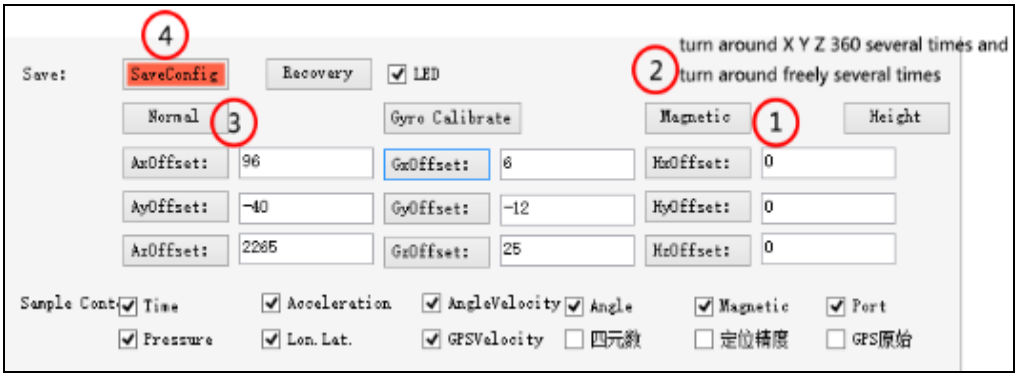
First, the module needs to be calibrated. Calibration module includes a gyroscope calibration, Magnetic calibration and height set to 0.

Gyroscope calibration measurement is used to remove the gyroscope bias. When the module is still, if the angular speed is not near 0 °/ s, then need to calibrate the gyro. Click the Settings tab, and enter the settings page. Click on "Gyro calibration" button, when GXOFFSET, GYOFFSET, GZOFFSET are stable, then click on "normal" button to complete the calibration. Then click the "Save Config" button to save the bias data to the module's internal FLASH in order to Power-down save. Then at the stationary state, the gyro output will return to 0 °/ s vicinity.

The calibration value of the gyroscope can be set up manually, and the corresponding value is filled in the GxOffset GyOffset GzOffset.

It should be noted that the calibration process is not applied to acceleration. Normally it is no need . Advanced users can manually use set bias acceleration. It is the same as gyro calibration method .

Magnetic field sensor calibration for the removal of bias. Generally there will be magnetic error in the when manufactured, if not calibration, measurement errors will bring great impact on angle measurement accuracy. During calibration, first connect the module and the computer, the module is placed in a place where far away from magnetic interference, then open the PC software. Click the Settings tab, and enter the settings page. Click on "magnetic" button, rotate around X-axis 360 °several times, and then turn around the Y-axis 360 °several times, and then turn around the Z-axis 360 °several times, then freely rotate a few times, when HxOffset, HyOffset, HzOffset are still, and then click on "normal " button to complete the calibration. Then click the "Save Config" button to save the bias data to the module's internal FLASH in order to power-down save. Thereafter, the angle will be accurate.



Calibration of the magnetic field can also be manually set, after input value, click on the

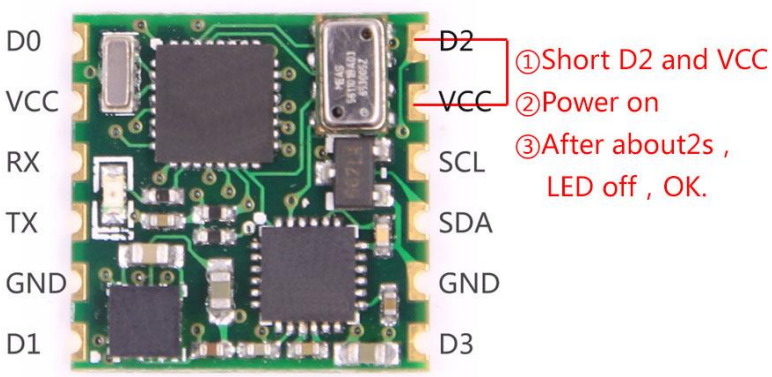
button on HxOffset to set the X axis magnetic bias, empathy click HyOffset can set the Y-axis magnetic bias.

Zero height is the height of module which can be setted to 0. JY-901B type has the function .The height of the output is calculated based on the pressure,so it is only for reference. height set to 0 operation is the current barometric pressure value as a zero height calculation.

2.5 Restore factory settings

There are two methods, short circuit method and instruction methods.。

Short Circuit Method : D2 pin are short to VCC pin, then power on the module, the module LED lights long bright, lasts about two seconds, LED light is off, complete restore factory settings operation.



Instruction method : JY-901 module connected to a PC via USB-TTL module , click the Settings tab, click “Recovery”. After restore the factory settings ,need to restart the module again. (This method requires advance knowledge to know baud rate of the module, if the baud rate does not match the command will not take effect, try using a short-circuit recovery method)