SOFTWARE INSTRUCTIONS

How to download software and driver

PC Software Download:

https://drive.google.com/drive/u/1/folders/1dnwmnH7mi4zBpNqDywLzrzsV7BfeKaD9

PC Software DEMO Video:

https://www.youtube.com/c/WITMOTION

Install Driver

https://drive.google.com/drive/u/1/folders/1R8Wmzrl8vKhVd9u7JXWcg6Ala5MACEu0

3-in-1 CH340 driver:

https://drive.google.com/file/d/1JidopB42R9EsCzMAYC3Ya9eJ8JbHapRF/view?usp=share_link

6-in-1 CP2102 driver:

https://drive.google.com/file/d/1JidopB42R9EsCzMAYC3Ya9eJ8JbHapRF/view?usp=share_link

PS. We make this ordinary document for a better update in the future. Please according to your sensor type to check the content. For example, WT901BLECL will output acceleration/angle/angular/magnetic field, it won't output GPS data, so you can skip this part content.

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1 Use Instructions with PC

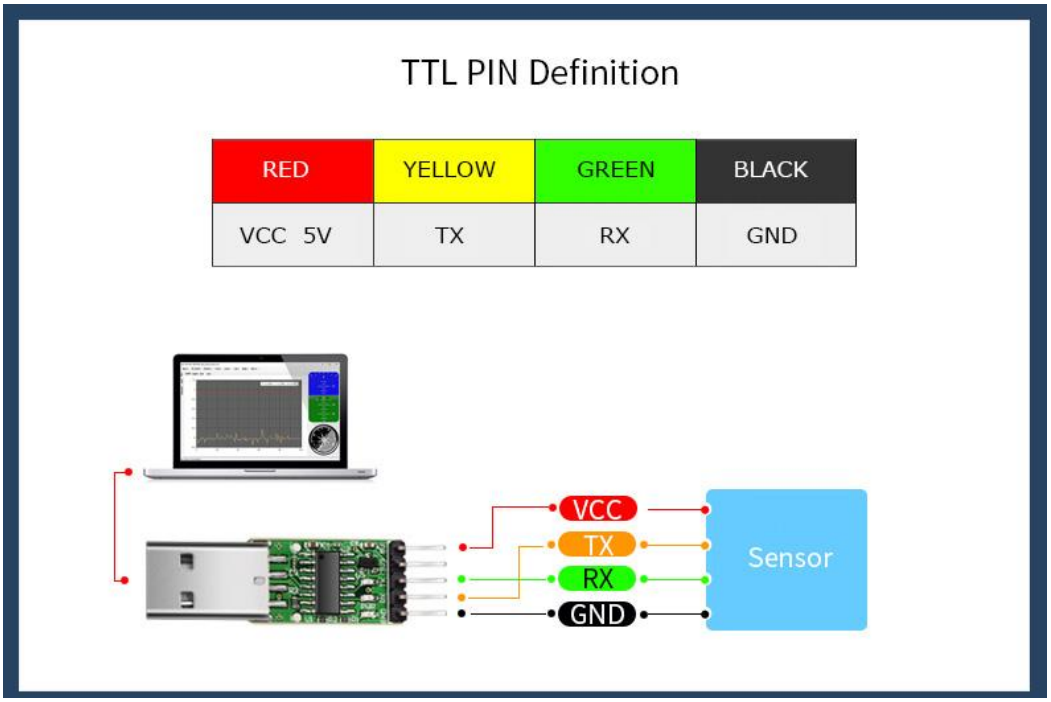
1.1 Connect with wiring sensor

Step 1 Serial Connection

1) TTL Connection

PIN Connection:
VCC - 5V
TX - RX
RX - TX
GND - GND

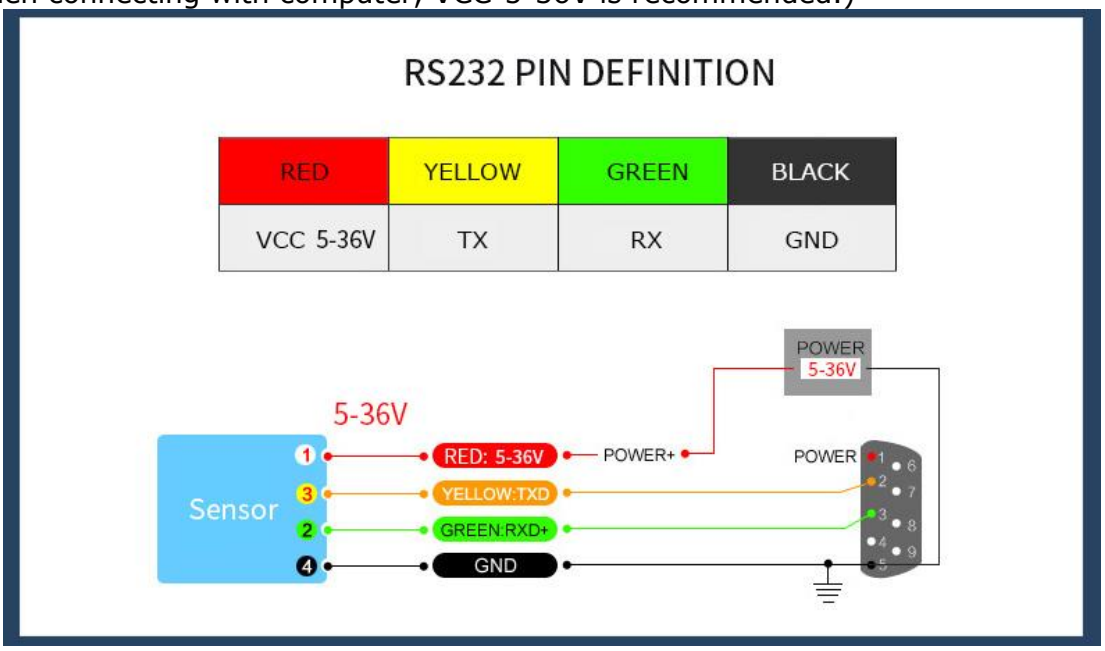
(When connecting with computer, VCC-5V is recommended.)



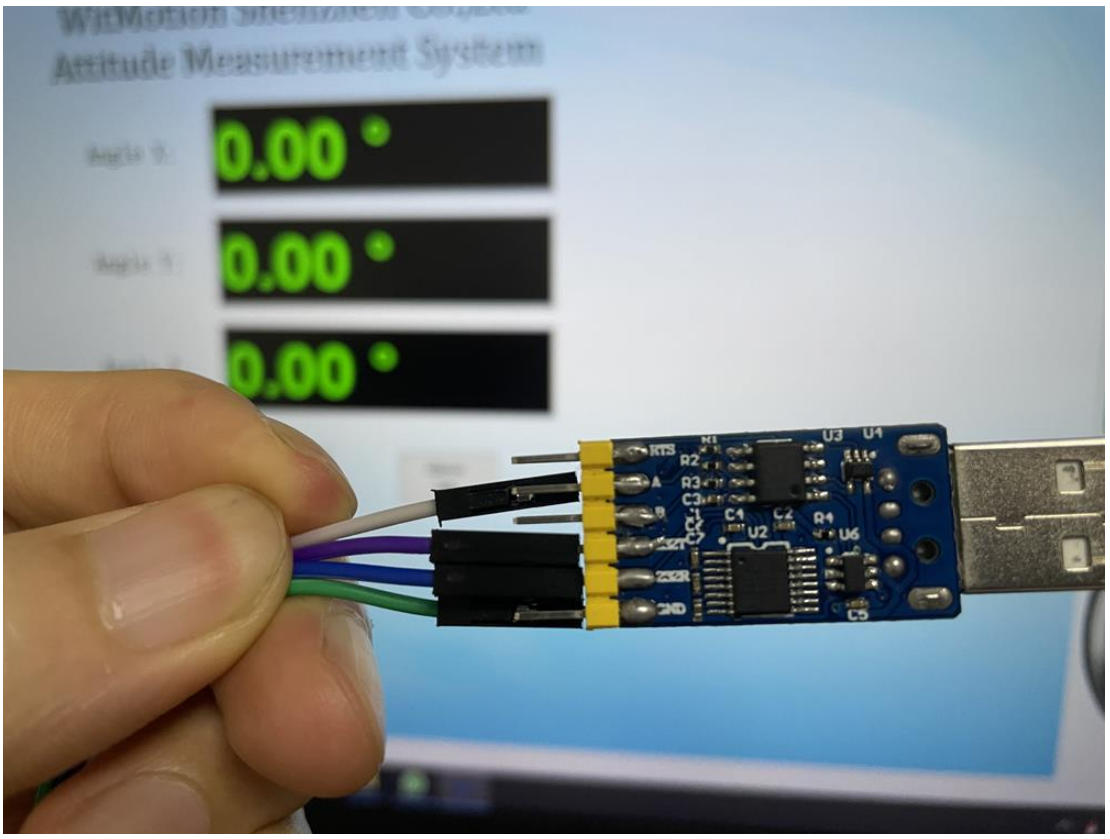
2) 232 Connection

PIN Connection:
VCC - 5~36V
TX - Yellow
RX - Green
GND - GND

(When connecting with computer, VCC-5-36V is recommended.)



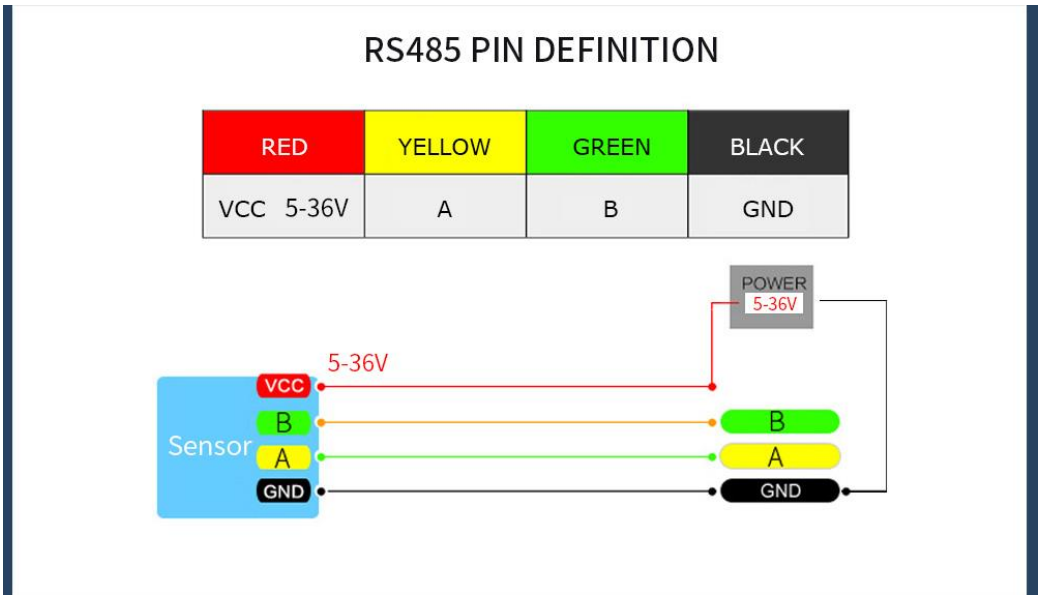
Please check the wiring picture to help you connect.



3) 485 Connection

PIN Connection:
VCC - 5-36V
B - B
A - A
GND - GND

(VCC 5-36V is recommended for connection

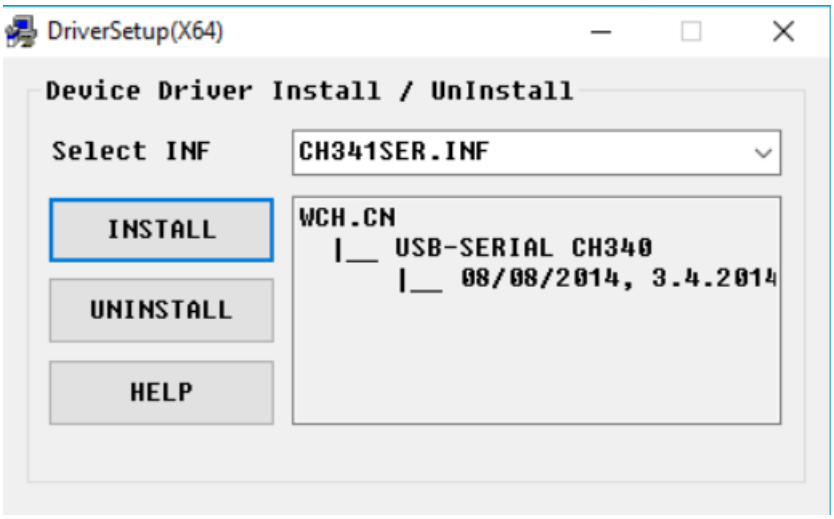


Step 2 Unzip the software and install the driver CH340

https://drive.google.com/file/d/1I3hl9Thsj9aXfG6U-cQLpV9hC3bVEH2V/view?usp=sharing

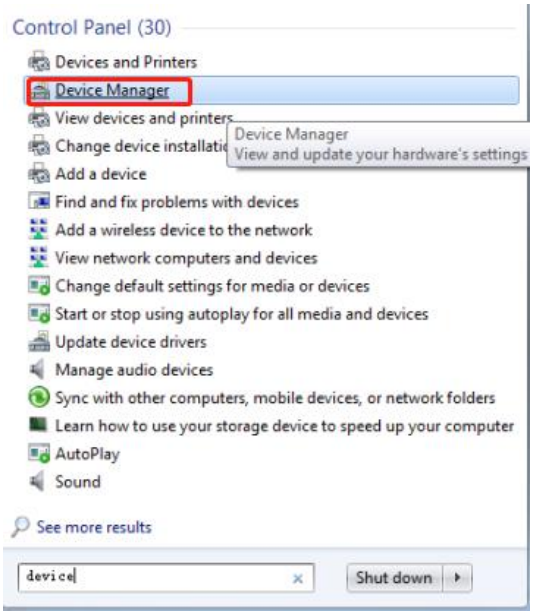
*How to Install and update the CH340 driver

Click the "Uninstall" button first. Then click on the "Install" button.

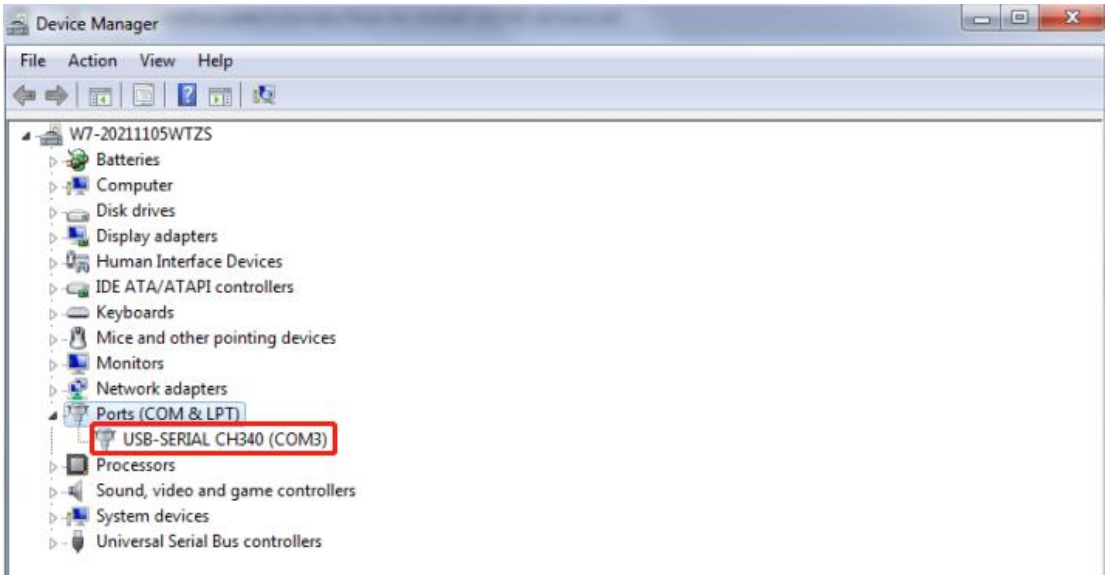


*How to verify your driver is working

1）To check that the CH340 enumerates to a COM port, you can open the device manager. You can click the Start or ⊞ (Windows) button and type "device manager to quickly search for the application.

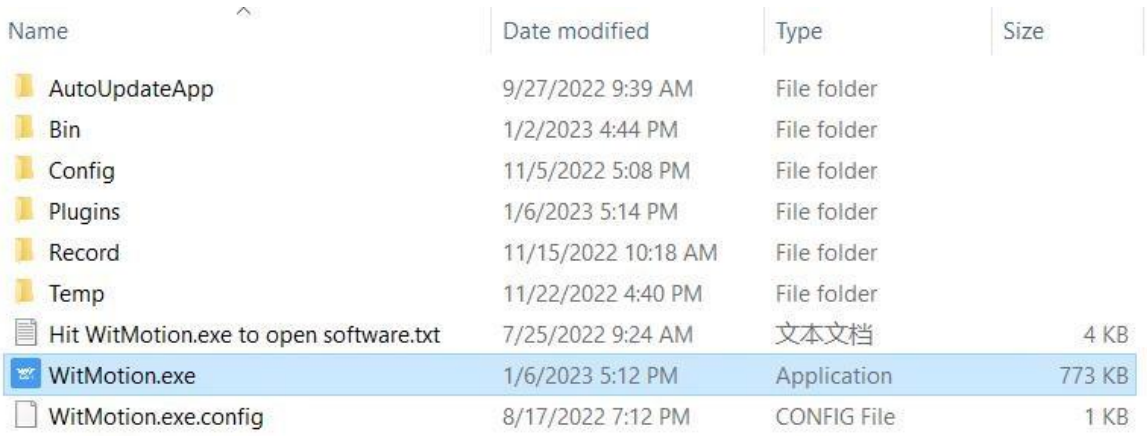


2）After opening the device manager, you will need to open the Ports (COM & LPT) tree. The CH340 should show up as USB-SERIAL CH340 (COM##). Depending on your computer, the COM port may show up as a different number.



Step 3 Open the software

Open the WitMotion.exe software in the [PC Software Folder], click the serial port selection menu,and select the COM number you check before in the device manager.



Name	Date modified	Type	Size
AutoUpdateApp	9/27/2022 9:39 AM	File folder	
Bin	1/2/2023 4:44 PM	File folder	
Config	11/5/2022 5:08 PM	File folder	
Plugins	1/6/2023 5:14 PM	File folder	
Record	11/15/2022 10:18 AM	File folder	
Temp	11/22/2022 4:40 PM	File folder	
Hit WitMotion.exe to open software.txt	7/25/2022 9:24 AM	文本文档	4 KB
WitMotion.exe	1/6/2023 5:12 PM	Application	773 KB
WitMotion.exe.config	8/17/2022 7:12 PM	CONFIG File	1 KB

Step 4 Select COM number

After opening the WitMotion.exe software, on the serial port selection menu, select the device model of the product and the COM number seen in the device manager. Then perform one of the following operations to allow the PC software to connect to the sensor.

Step 5 Choose baud rate

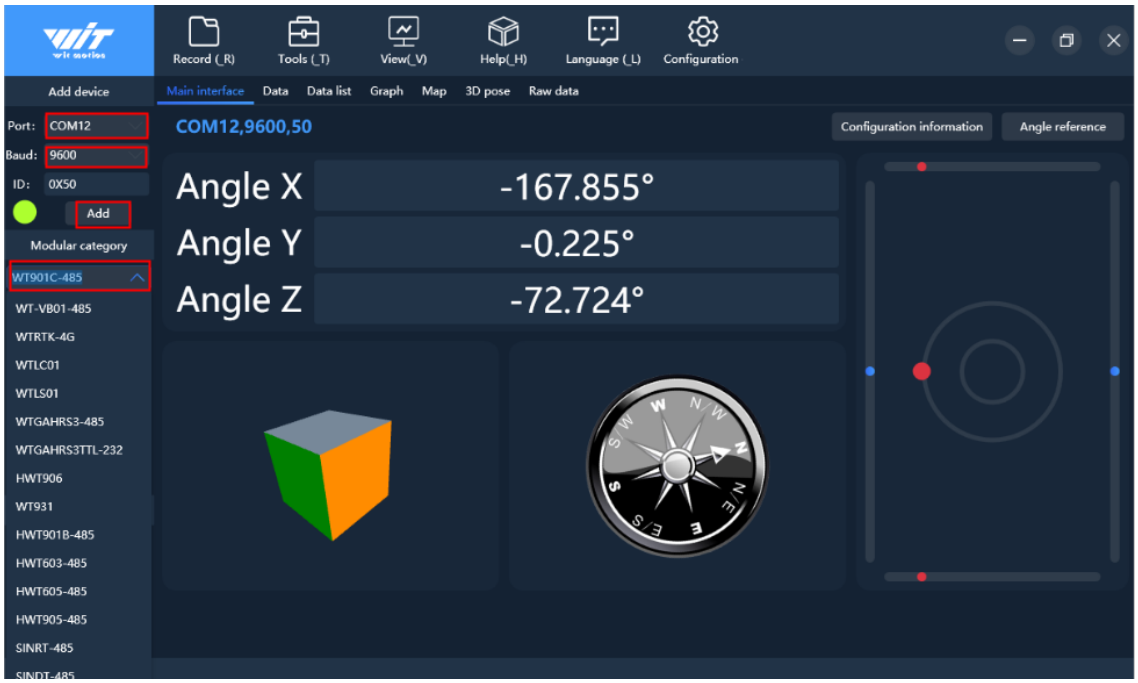
Click the baud rate menu to select the default baud rate (please check the product specification for the default baud rate of the product). After the selection is complete, click "Add Device" to display the data on the PC software.

Step 6 Select Sensor Model

Click the drop-down box of the sensor model, and the models of all the sensors supported bythe PC software will be displayed below. We need to select the

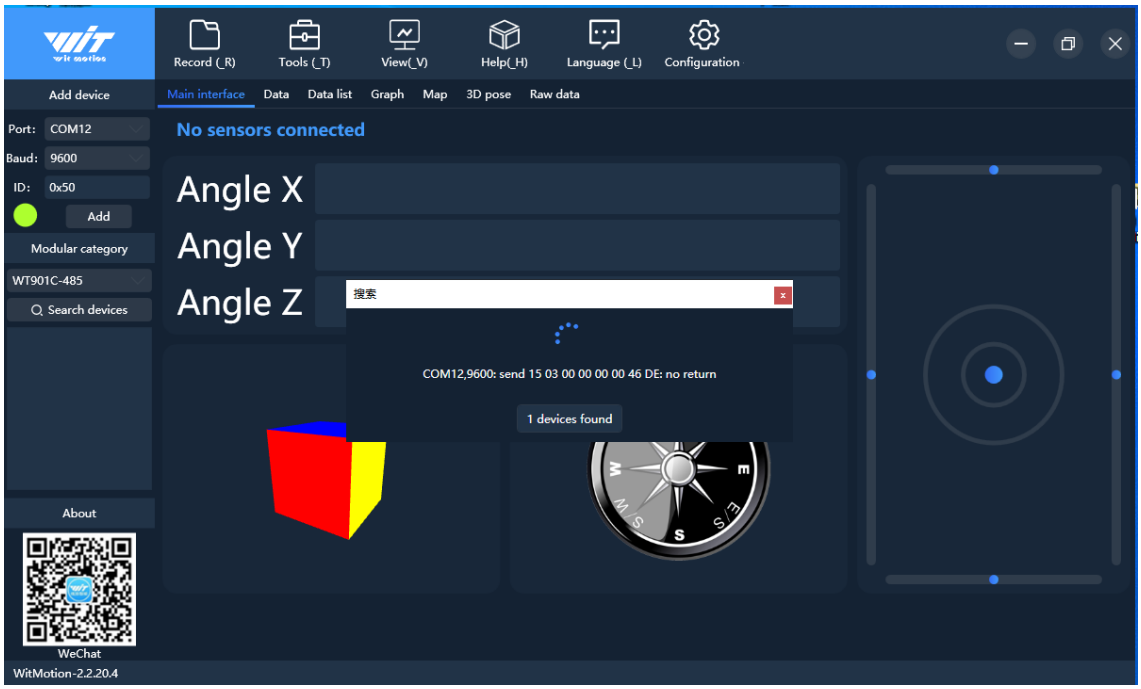
corresponding sensor model and then connect the PC software and the sensor.

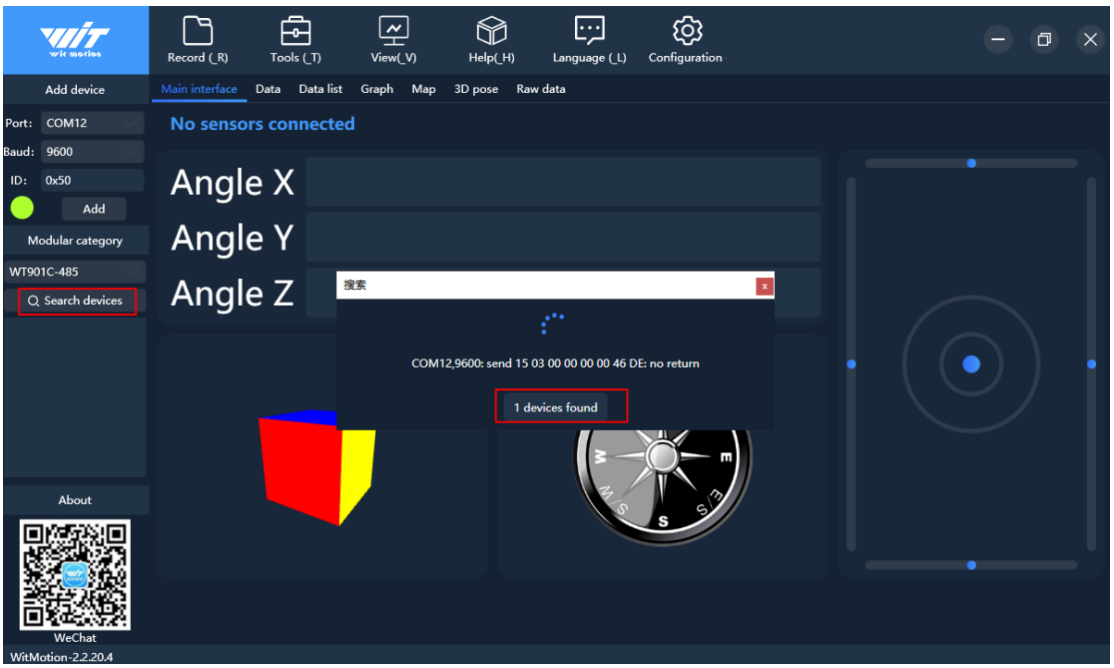
***Note: Only products with 485 interface have product ID**



Step 7 Click Search device.

Click "Search Device", a search prompt box will appear in the center of the host computer software, and the search prompt box will automatically seek the connection with the sensor. After the sensor device is found, the data will appear on the host computer software.

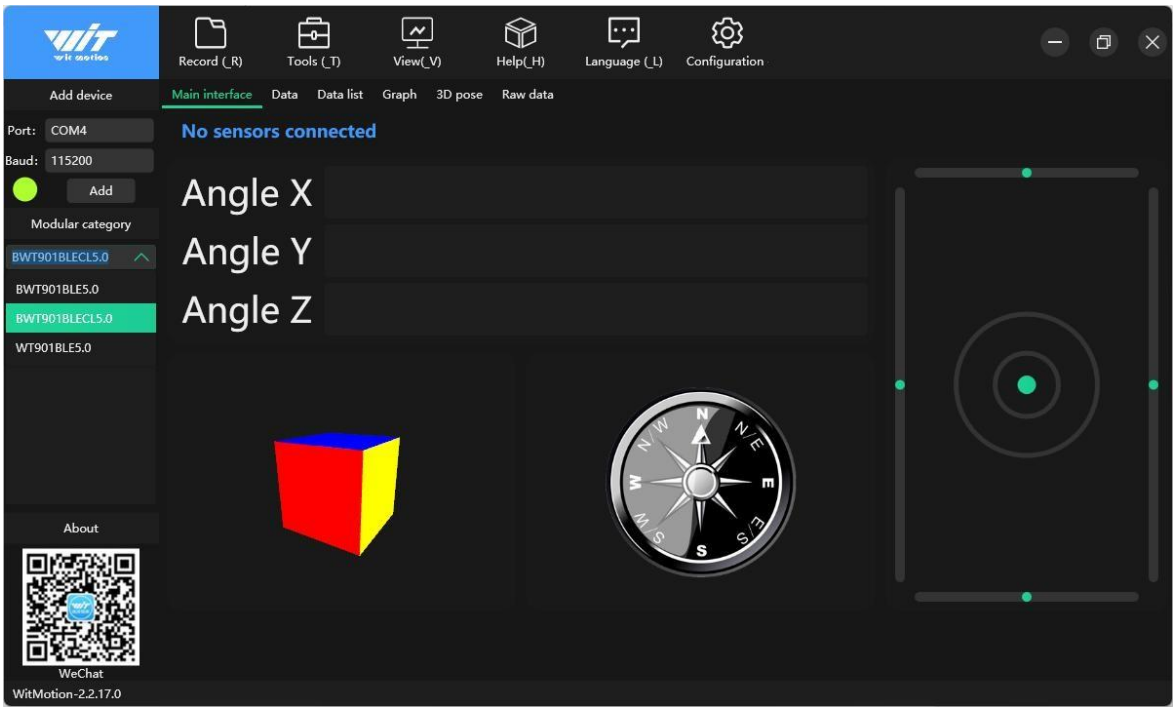



Record (_R)
Tools (_T)
View(_V)
Help(_H)
Language (_L)
Configuration
Add device
Main interface
Data
Data list
Graph
Map
3D pose
Raw data
Port: COM12
Baud: 9600
ID: 0x50
Add
Modular category
WT901C-485
Search devices
No sensors connected
Angle X
Angle Y
Angle Z
搜索
COM12,9600: send 15 03 00 00 00 00 46 DE: no return
1 devices found
About
WeChat
WitMotion-2.2.20.4

1.2 Connecting with Bluetooth Sensor

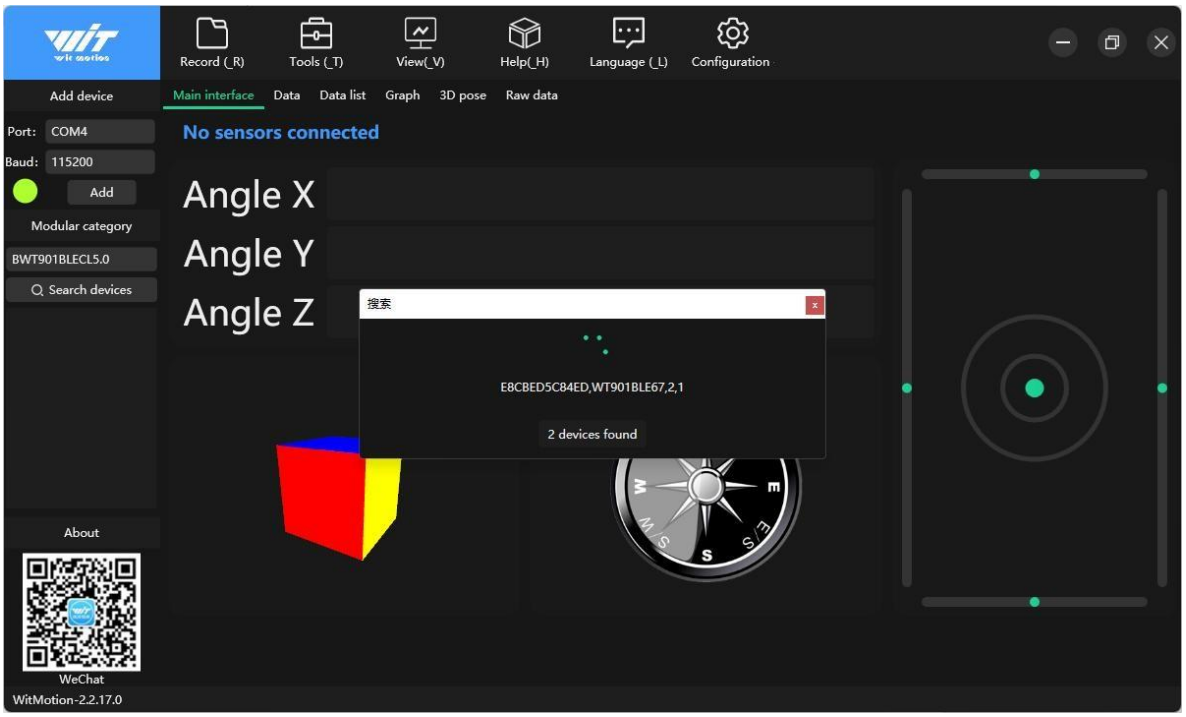
1.2.1 Select Sensor Model

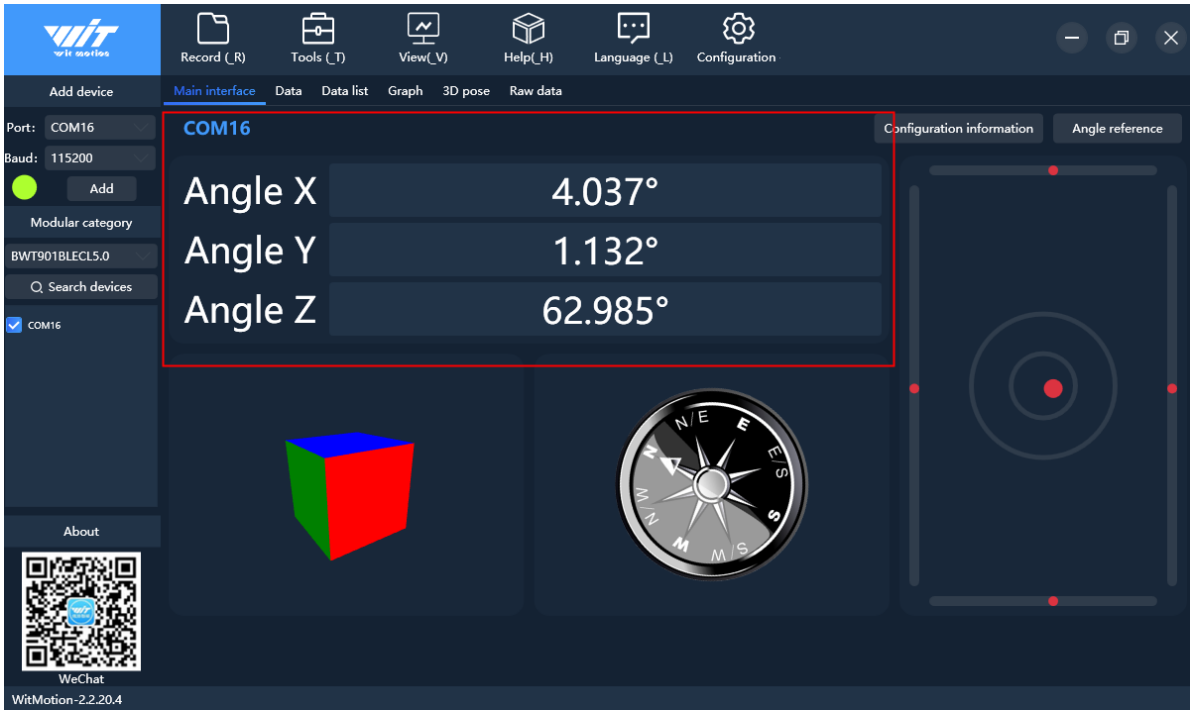
Click the drop-down box of the sensor model, and the models of all the sensors supported bythe PC software will be displayed below. We need to select the corresponding sensor model and then connect the PC software and the sensor.



1.2.2 Search Device

Click "Search Device", a search prompt box will appear in the center of the PC software, the search prompt box will automatically seek the connection with the sensor, and data will appearon the PC software after the sensor device is found.


Record (_R)
Tools (_T)
View(_V)
Help(_H)
Language (_L)
Configuration
Add device
Main interface
Data
Data list
Graph
3D pose
Raw data
Port: COM4
Baud: 115200
Add
Modular category
BWT901BLECL5.0
Search devices
No sensors connected
Angle X
Angle Y
Angle Z
搜索
E8CBED5C84ED,WT901BLE67,2,1
2 devices found
About
WeChat
WitMotion-2.2.17.0


Record (_R)
Tools (_T)
View(_V)
Help(_H)
Language (_L)
Configuration
Add device
Main interface
Data
Data list
Graph
3D pose
Raw data
Port: COM16
Baud: 115200
Add
Modular category
BWT901BLECL5.0
Search devices
COM16
COM16
Configuration information
Angle reference
Angle X
4.037°
Angle Y
1.132°
Angle Z
62.985°
About
WeChat
WitMotion-2.2.20.4

2 Main Menu

2.1 Function configuration

Introduction to the main interface of the PC software:

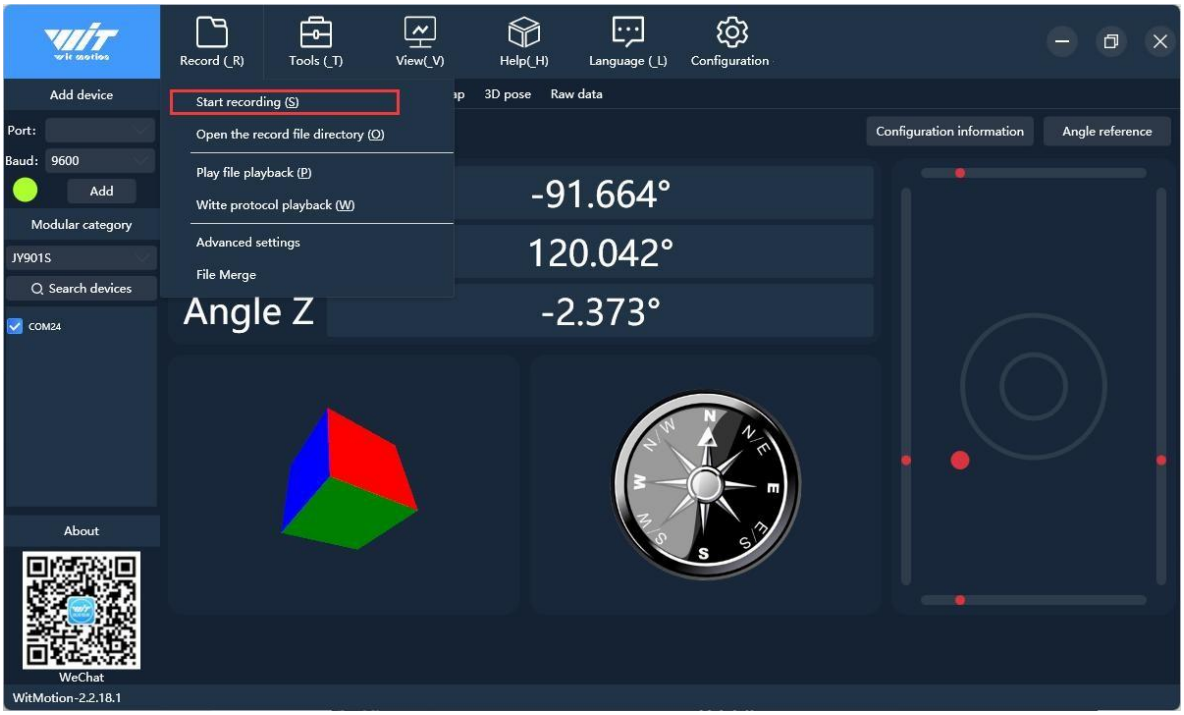
2.1.1 Record

In the main menu record function options, there are functions such as record data, view record file storage directory, play file playback, and Witmotion protocol playback.

Record data

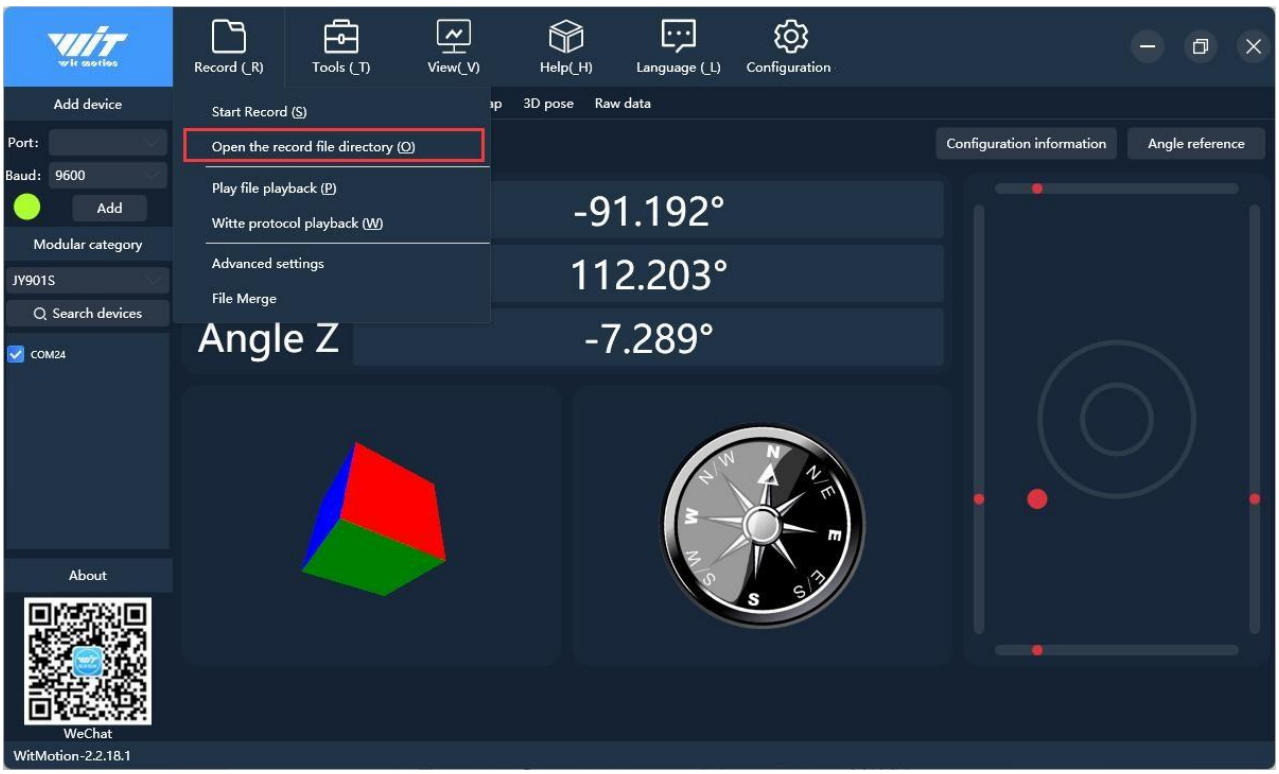
Start recording

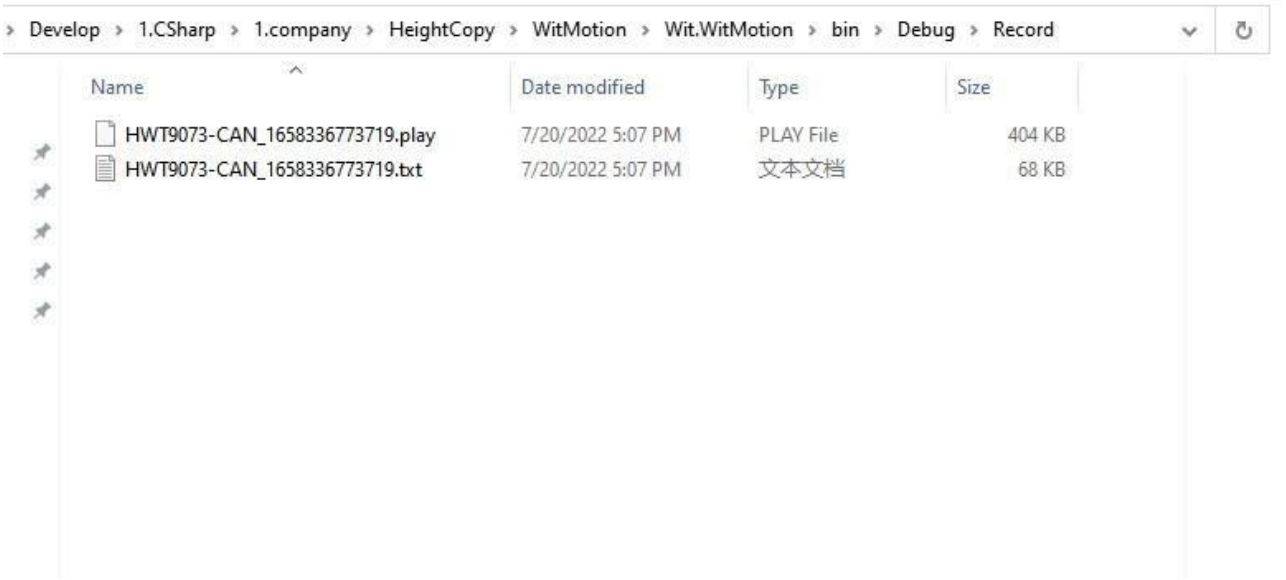
Click the record button to display the drop-down box, click start recording to start recordingsensor data, and when you want to end the recording, you can directly click the end recording.



Where are the record files stored?

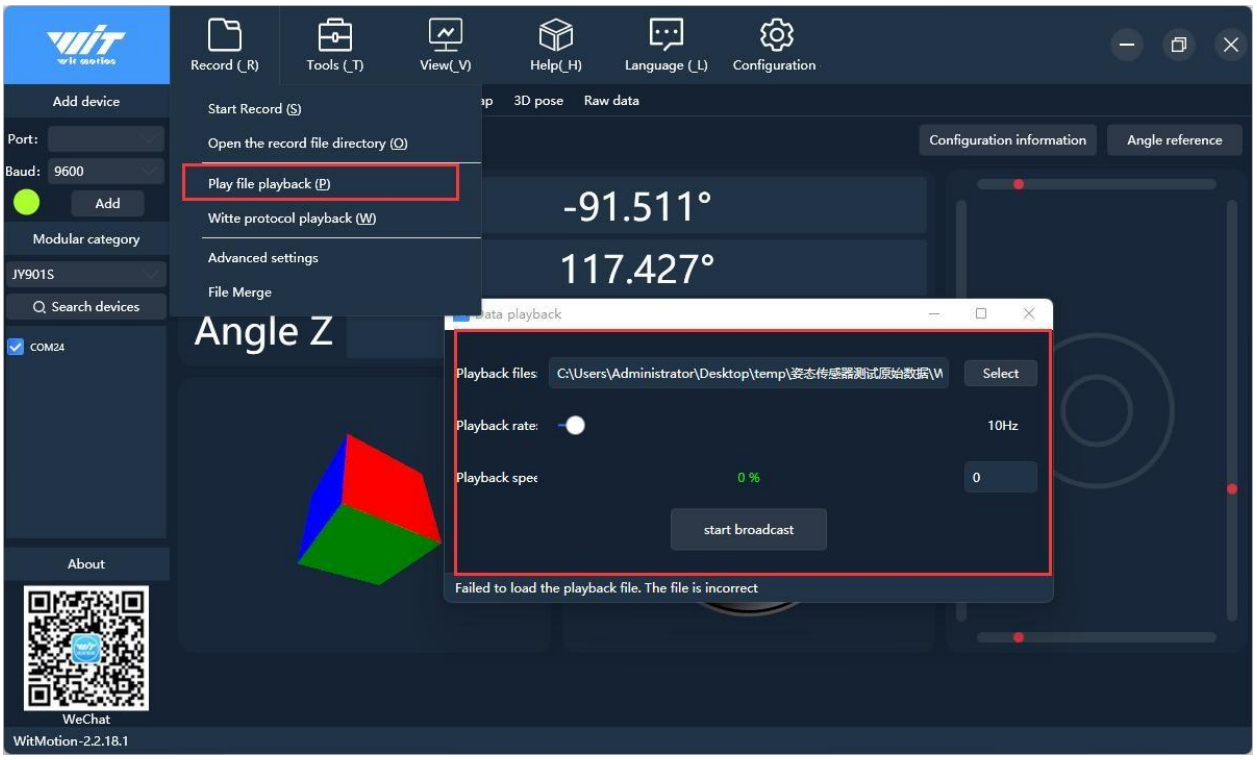
Click the record file directory to check the location where the record file is stored.





2.1.2 Data playback

Click Play file playback, in the data playback window, first select the play file to be played back, the file path can be clicked to open the record file directory and then copy the path ofthe corresponding file, you can adjust the playback rate of the data, and finally click to startplaying.



2.1.3 Tools

In the tool function options of the main menu, there are functions such as calculator, ISP upgrade tool, and firmware upgrade.

2.1.4 View

In the main menu view function options, there are three page display styles to choosefrom, simplified style, default style, and dark style.

2.1.5 Help

In the help function options of the main menu, there are functions such as developer,PC software data source, environment setting, and checking and upgrading.

2.1.6 Language

In the main menu language function options, there are two languages, Chinese and English, which can be selected.

2.1.7 Configuration

In the configuration function options of the main menu, there are various setting

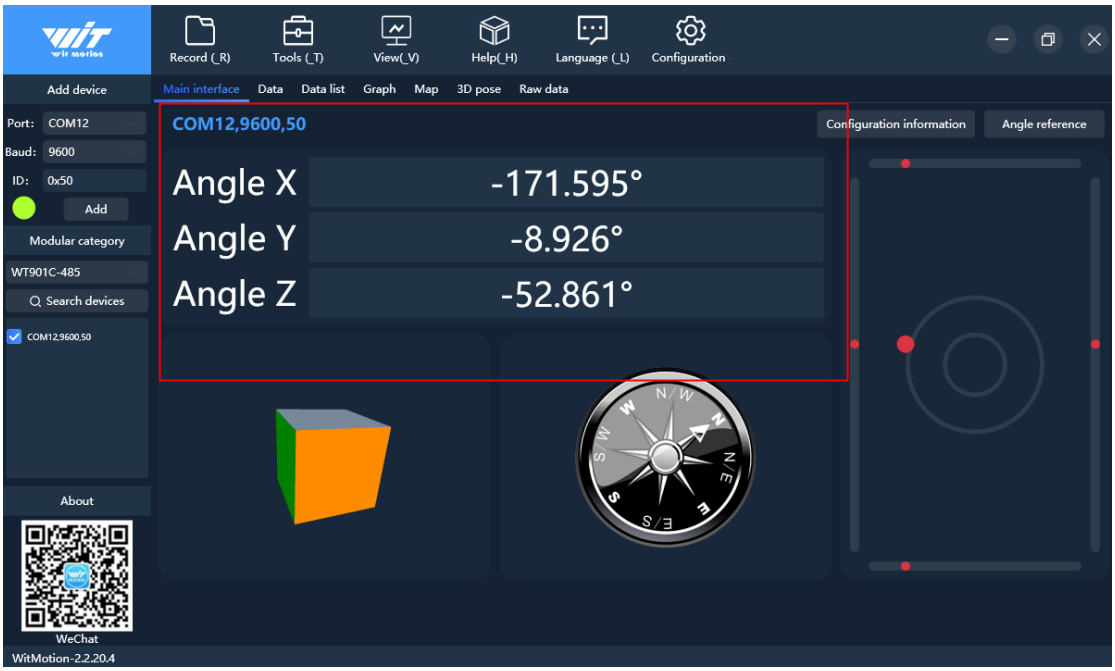
function options for the sensor, and the configuration of the sensor can be adjusted to meet the requirements of use.

2.2 Data Review

Main interface, Data curve, Data list, Map, 3D pose, Raw

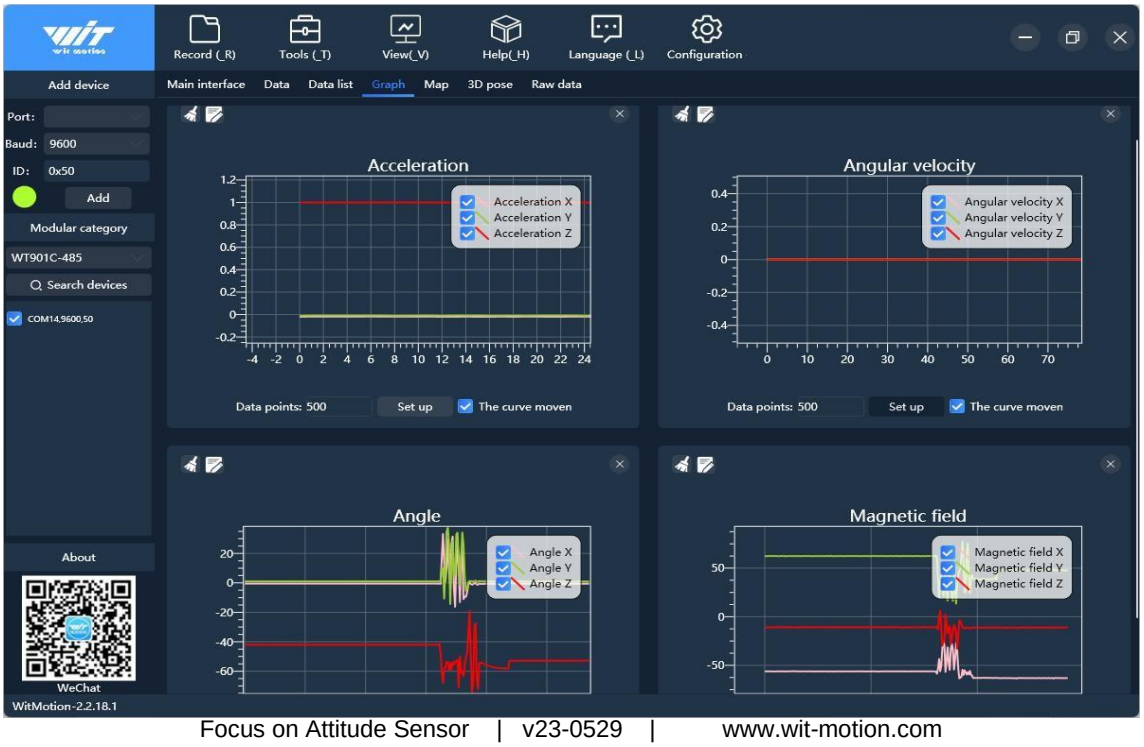
2.2.1 Main Interface

As the data presentation effect of the main interface, the data grid integrates all the data presentation of the sensor, and can present the data of the sensor more comprehensively and intuitively.



2.2.2 Curve Display

The curve graph has three presentation effects, it is acceleration curve, angular velocity curve,and angle curve.



2.2.3 Map Function

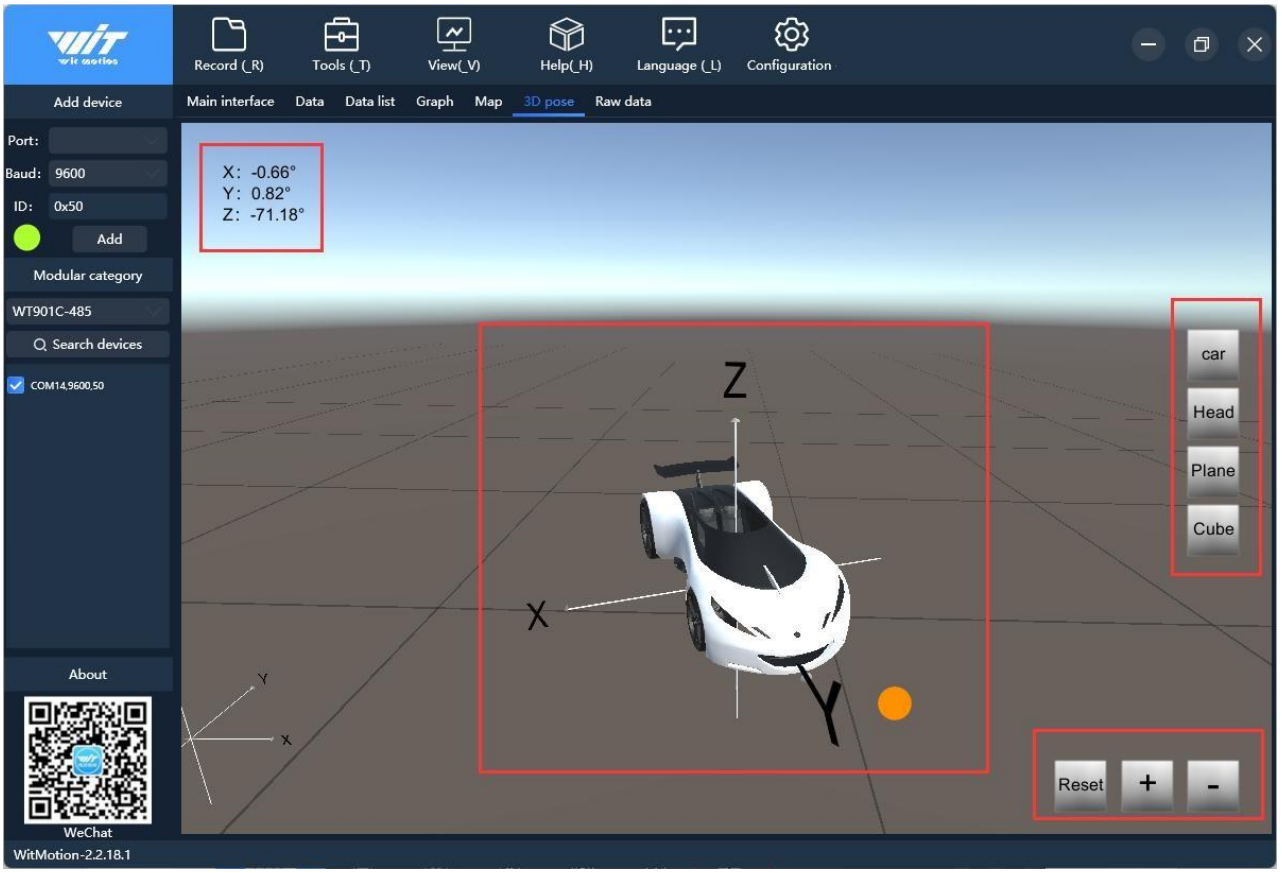
In the data presentation options, there is also a map function, which can view the specificlocation of the sensor.

Note: The map display function is available for GPS IMU of WitMotion.WTGAHRS1, WTGAHRS2, WTGAHRS3, and so on.

2.2.4 3D Demo

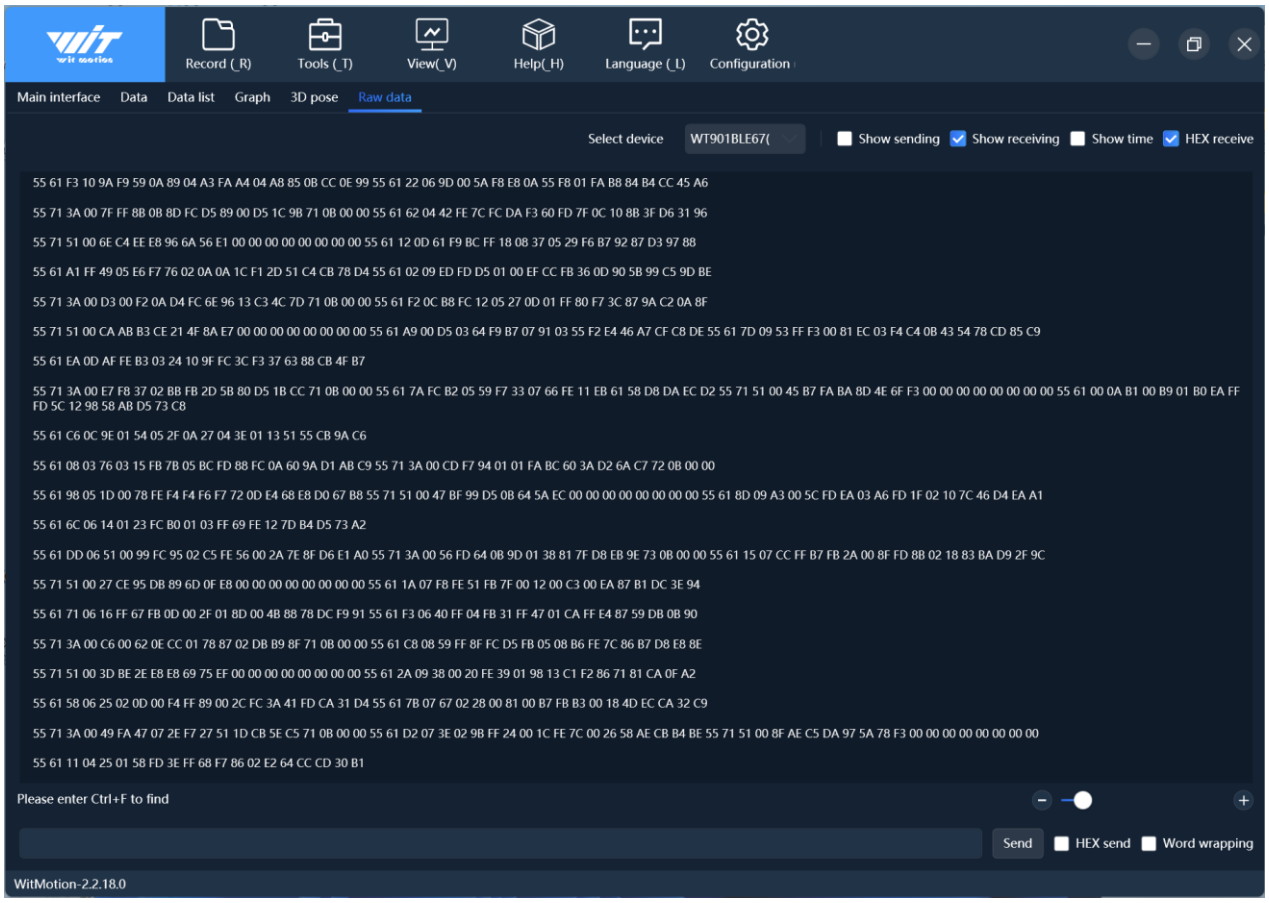
In the presentation effect of 3D, the 3D model will change the display direction with the change of the three-axis angle; on the right side of the 3D display area, there are four 3D models that can be replaced, and you can click the +- button to enlarge and reduce the 3Dmodel.

Note: There must be data output of angle X, Y, Z to display 3D



2.2.5 Raw data

You can free to check the sensor's raw data.

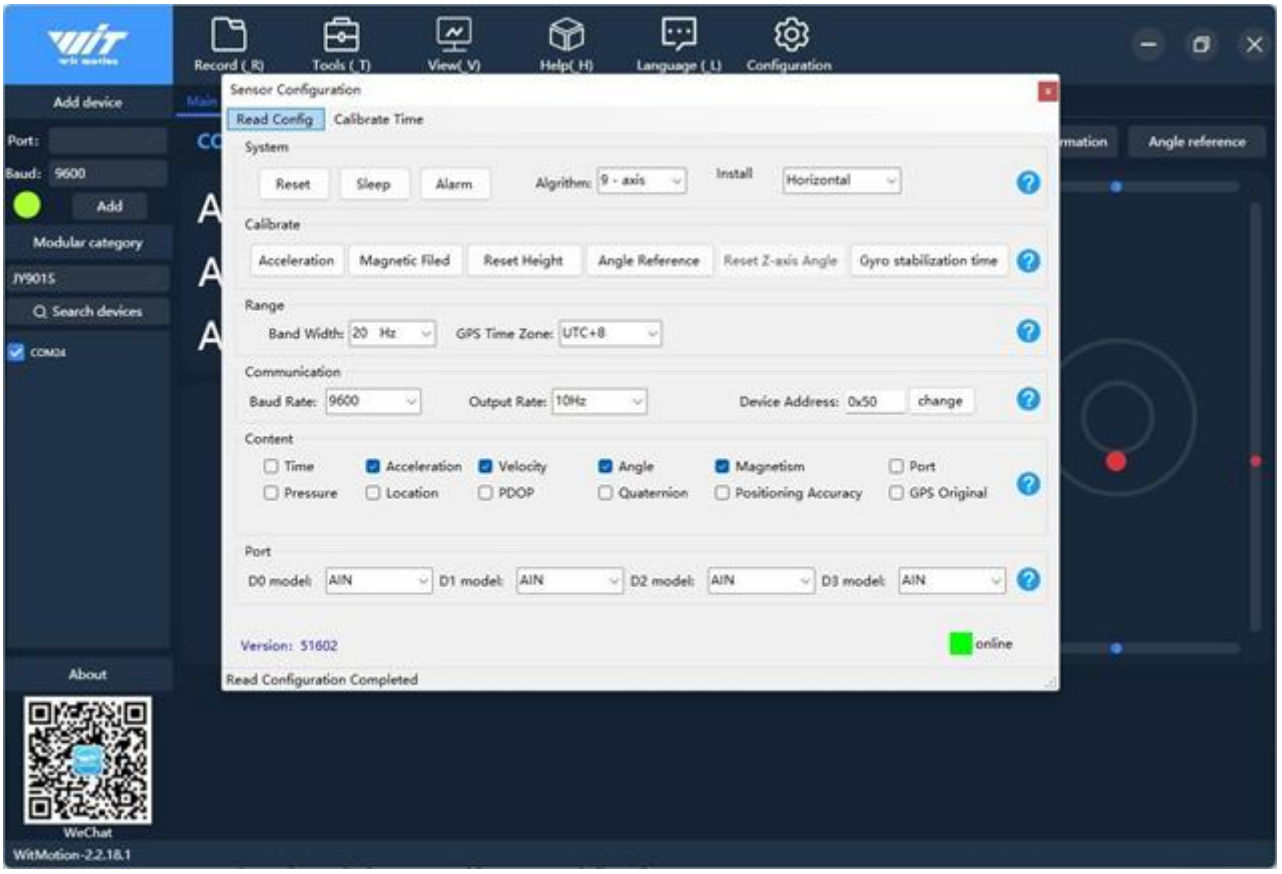


3. Configuration

3.1 Read sensor configuration

Click this tab to read the sensor configuration. When the configuration is opened, the module configuration is read by default. When you need to change the configuration, please click this tab after the change to check whether the configuration is successful.

Note: The sensor to be online to read the configuration.



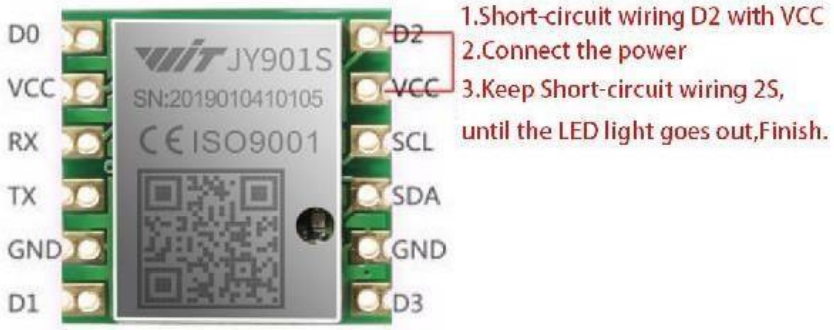
3. 2 System settings

3.2.1 Reset

There are two ways to reset, short-circuit method and command method

Short-circuit method operation method:

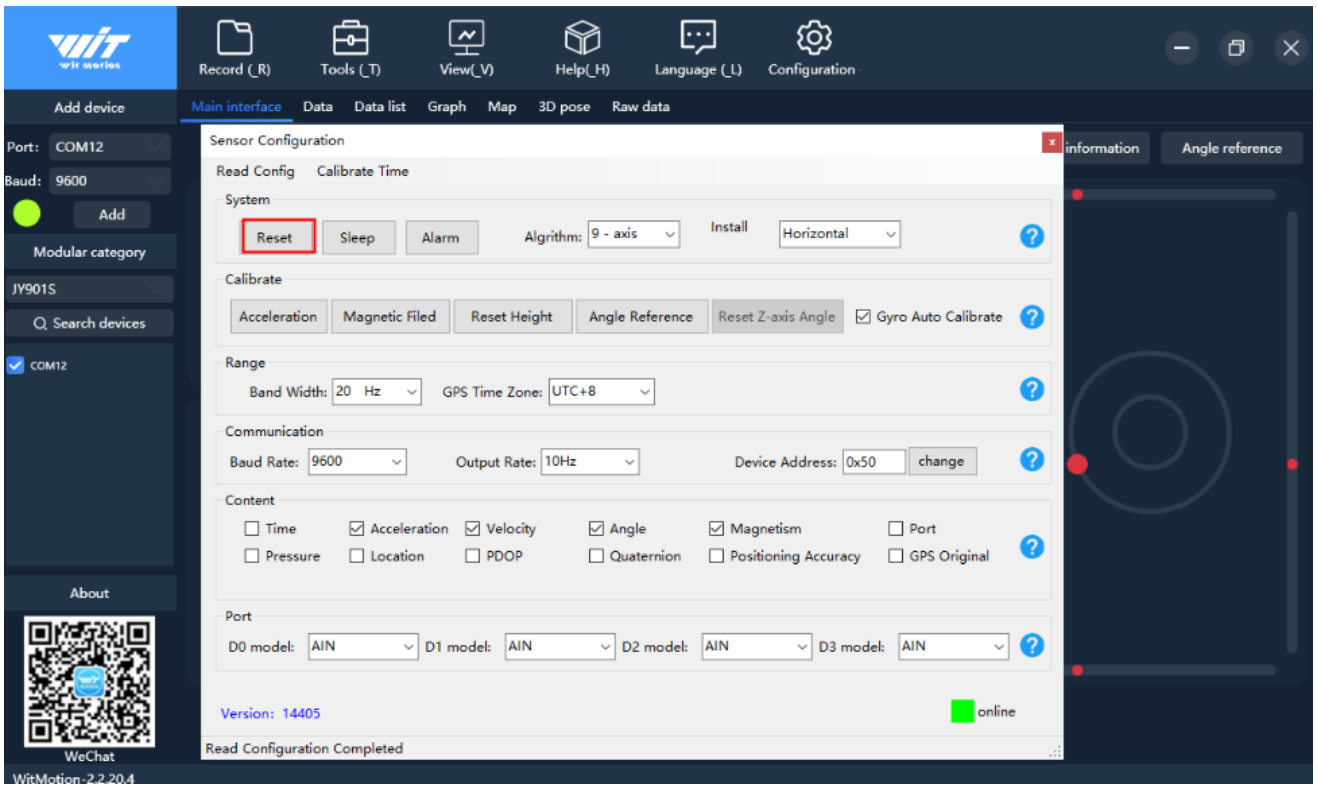
Short-circuit the D2 pin and VCC pin of the module with a wire, then power on the module, the module LED light will be on for about 2 seconds, and the LED light will be off, completing the reset operation.



Note: Only module type sensors with exposed VCC and D2 pins can use the short circuitmethod.

Instruction operation method:

When the sensor is online, click the "Configuration" , and click "Reset " in the sensor configuration interface. (This method needs to use the PC software to connect the sensor, and the configuration interface shows that it is online. If it shows that the offline command will not take effect, please try to use the short-circuit method to reset).

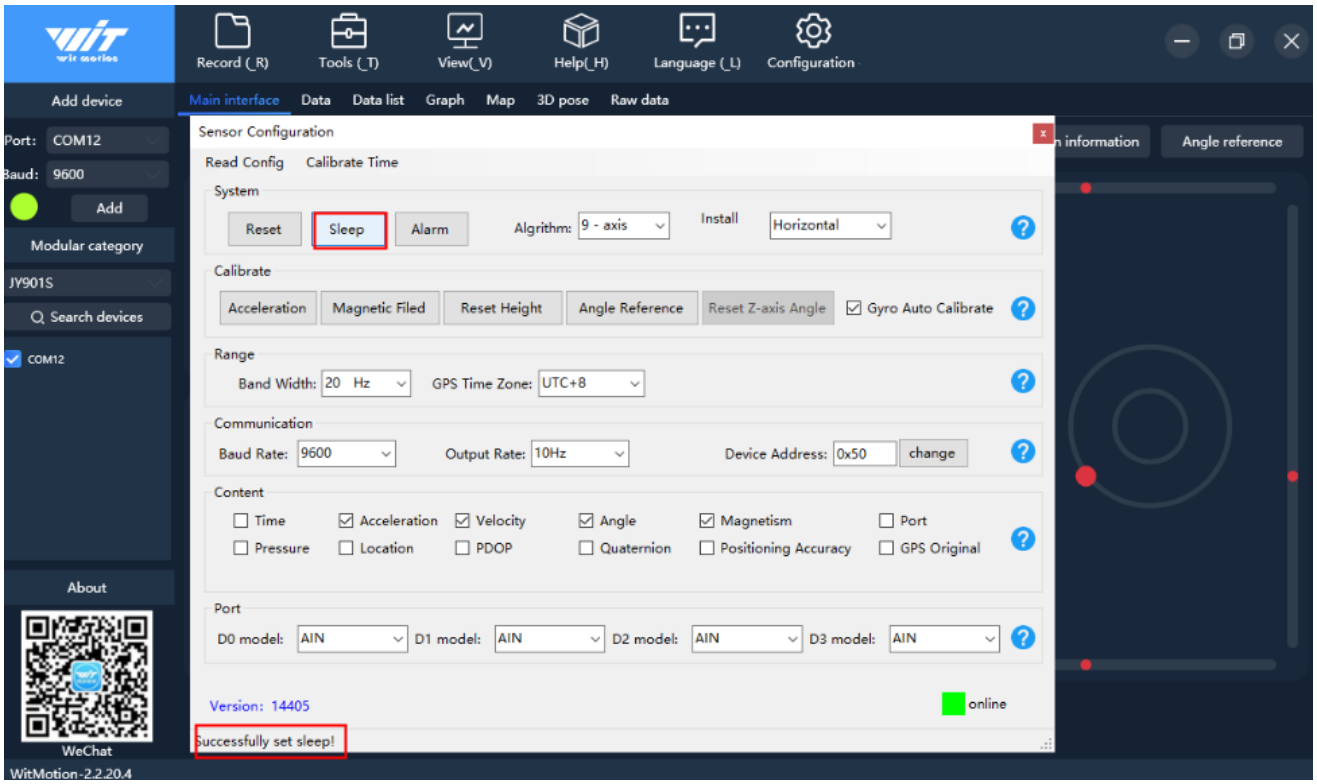


3.2.2 Sleep and disable sleep settings

Sleep: The module suspends work and enters the standby state. Power consumption canbe reduced after sleep.

Disable sleep settings: The module enters the working state from the standby state.

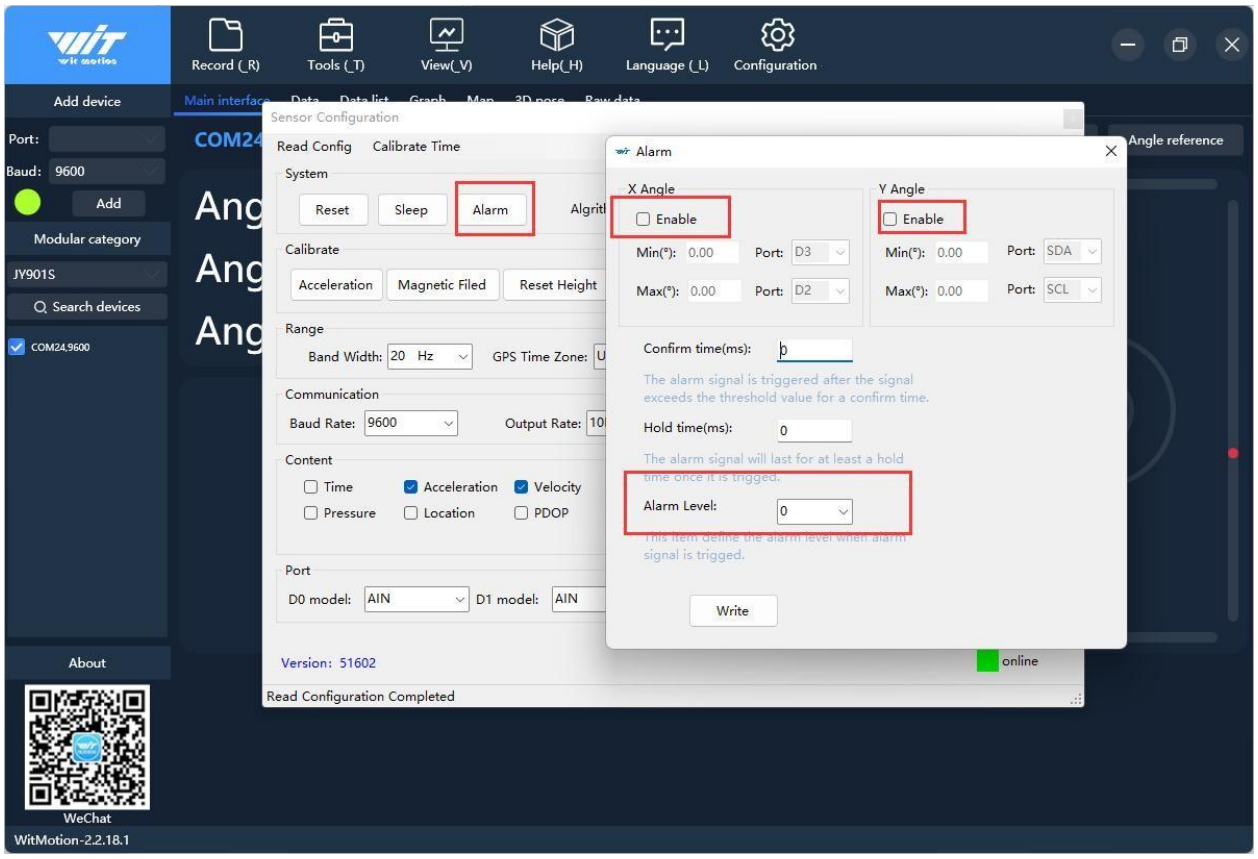
How to use: The module is in the working state by default. Click the "Sleep" option in the configuration bar of the PC to enter the hibernation state. The lower left corner will prompt that the sleep setting is successful, and then click the "Sleep" option to release the modulefrom hibernation.



3.2.3 Alarm setting

Through the PC software alarm setting, the following pins can be set as the alarm status output port. Take the following settings as an example, in normal state, the output of the fourports is low level (0V), and when the X, Y axis angle value is greater than 10° or less than - 10°, the corresponding port will output a high level (3.3V).

Name	Function
D2	Output the alarm status of X +
D3	Alarm status of output X-
SCL	Output the alarm status of Y +
SDA	Alarm status of output Y-


Record (_R)
Tools (_T)
View(_V)
Help(_H)
Language (_L)
Configuration
Add device
Port:
Baud: 9600
Add
Modular category
JY901S
Search devices
COM24,9600
About
WeChat
WitMotion-2.2.18.1
Sensor Configuration
Read Config
Calibrate Time
System
Reset
Sleep
Alarm
Calibrate
Acceleration
Magnetic Filed
Reset Height
Range
Band Width: 20 Hz
GPS Time Zone:
Communication
Baud Rate: 9600
Output Rate:
Content
Time
Acceleration
Velocity
Pressure
Location
PDOP
Port
D0 model: AIN
D1 model: AIN
Version: 51602
Read Configuration Completed
online
Angle reference
Alarm
X Angle
Enable
Min(°): 0.00
Port: D3
Max(°): 0.00
Port: D2
Y Angle
Enable
Min(°): 0.00
Port: SDA
Max(°): 0.00
Port: SCL
Confirm time(ms): 0
The alarm signal is triggered after the signal exceeds the threshold value for a confirm time.
Hold time(ms): 0
The alarm signal will last for at least a hold time once it is trigged.
Alarm Level: 0
signal is trigged.
Write

3.2.4 Switch Algorithm

6-axis sensors such as WT61P use a 6-axis algorithm, and the Z-axis angle is mainlycalculated based on the angular velocity integral.

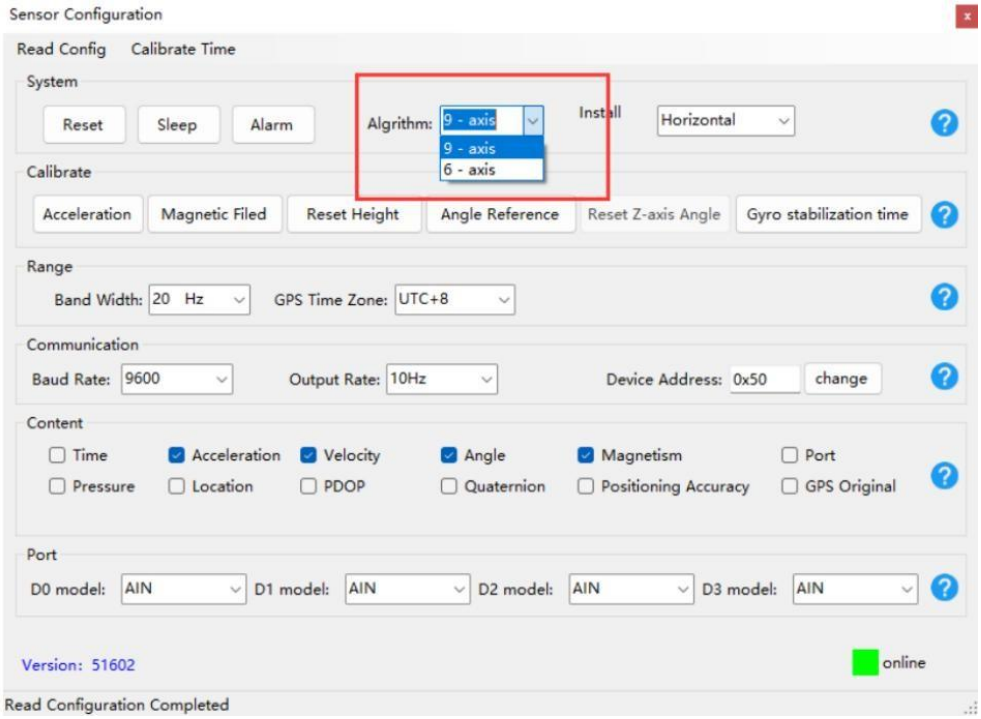
9-axis sensors such as WT901 use a 9-axis algorithm, and the Z-axis angle is mainly calculated based on the magnetic field, and there will be no drift. When the WT901 is usedin the environment with magnetic field interference, it can try to use the 6-axis algorithm todetect the angle.

How to use the 9-axis algorithm to 6-axis algorithm: Change the algorithm to "six-axis" in the configuration column of the PC software, and then perform the addition calibration and Z-axiszero calibration. After the calibration is completed, it can be used normally.

Note: Only 9-axis sensors such as WT901 can convert the algorithm, and the systemdefaults to 9-axis algorithm. Six-axis sensors such as WT61P cannot perform conversion algorithms.

Note: Z-axis return to 0 is only valid for 6-axis algorithm. Switching nine-axis sensors such as WT901 to 6-axis algorithm can realize Z-axis return to0.

The Z-axis angle of the nine-axis sensor such as WT901 under the 9-axis algorithm is an absolute angle, which takes the northeast sky as the coordinate system and cannot be returned to 0 relatively.

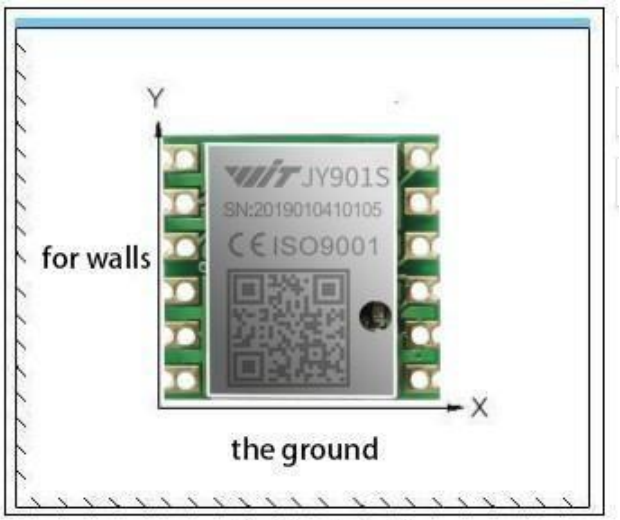

Sensor Configuration
Read Config
Calibrate Time
System
Reset
Sleep
Alarm
Algrithm:
9 - axis
9 - axis
6 - axis
Install
Horizontal
Calibrate
Acceleration
Magnetic Filed
Reset Height
Angle Reference
Reset Z-axis Angle
Gyro stabilization time
Range
Band Width:
20 Hz
GPS Time Zone:
UTC+8
Communication
Baud Rate:
9600
Output Rate:
10Hz
Device Address:
0x50
change
Content
Time
Acceleration
Velocity
Angle
Magnetism
Port
Pressure
Location
PDOP
Quaternion
Positioning Accuracy
GPS Original
Port
D0 model:
AIN
D1 model:
AIN
D2 model:
AIN
D3 model:
AIN
Version: 51602
online
Read Configuration Completed

3.2.5 Installation direction

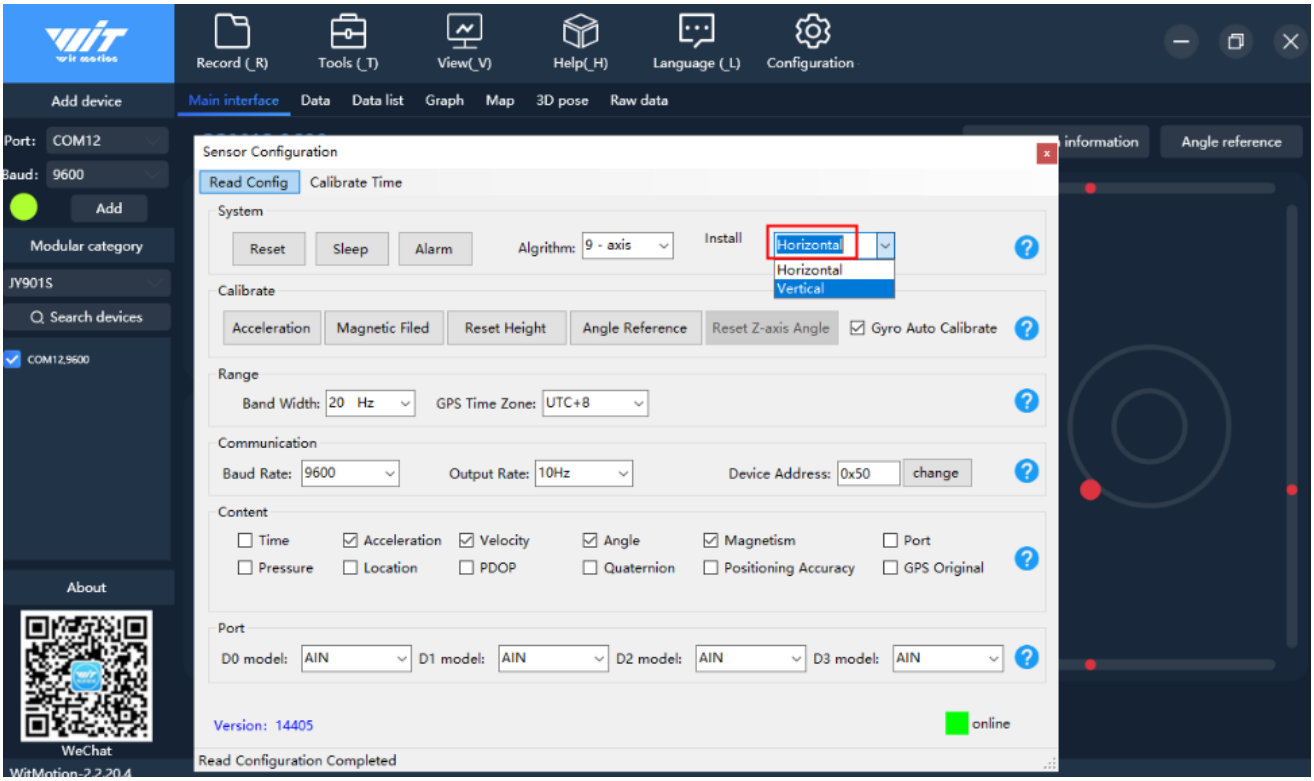
The default installation direction of the module is horizontal installation. When the moduleneeds to be placed vertically, vertical installation can be used.

Vertical installation method: When installing vertically, rotate the module 90° around the X axis and place it vertically upward, and select "Vertical" in the "Installation Direction" optionin the configuration column of the host computer. After the setting is completed, it needs tobe calibrated before it can be used.

The module is installed horizontally by default. When the module needs to be installedvertically, the vertical installation setting can be used.
Vertical Installation:



vertical installation


Record (_R)
Tools (_T)
View(_V)
Help(_H)
Language (_L)
Configuration
Add device
Main interface
Data
Data list
Graph
Map
3D pose
Raw data
Port: COM12
Baud: 9600
Add
Modular category
JY901S
Search devices
COM12:9600
About
WeChat
WitMotion-2.2.20.4
Sensor Configuration
Read Config
Calibrate Time
System
Reset
Sleep
Alarm
Algrithm: 9 - axis
Install
Horizontal
Horizontal
Vertical
Calibrate
Acceleration
Magnetic Filed
Reset Height
Angle Reference
Reset Z-axis Angle
Gyro Auto Calibrate
Range
Band Width: 20 Hz
GPS Time Zone: UTC+8
Communication
Baud Rate: 9600
Output Rate: 10Hz
Device Address: 0x50
change
Content
Time
Acceleration
Velocity
Angle
Magnetism
Port
Pressure
Location
PDOP
Quaternion
Positioning Accuracy
GPS Original
Port
D0 model: AIN
D1 model: AIN
D2 model: AIN
D3 model: AIN
Version: 14405
online
Read Configuration Completed
information
Angle reference

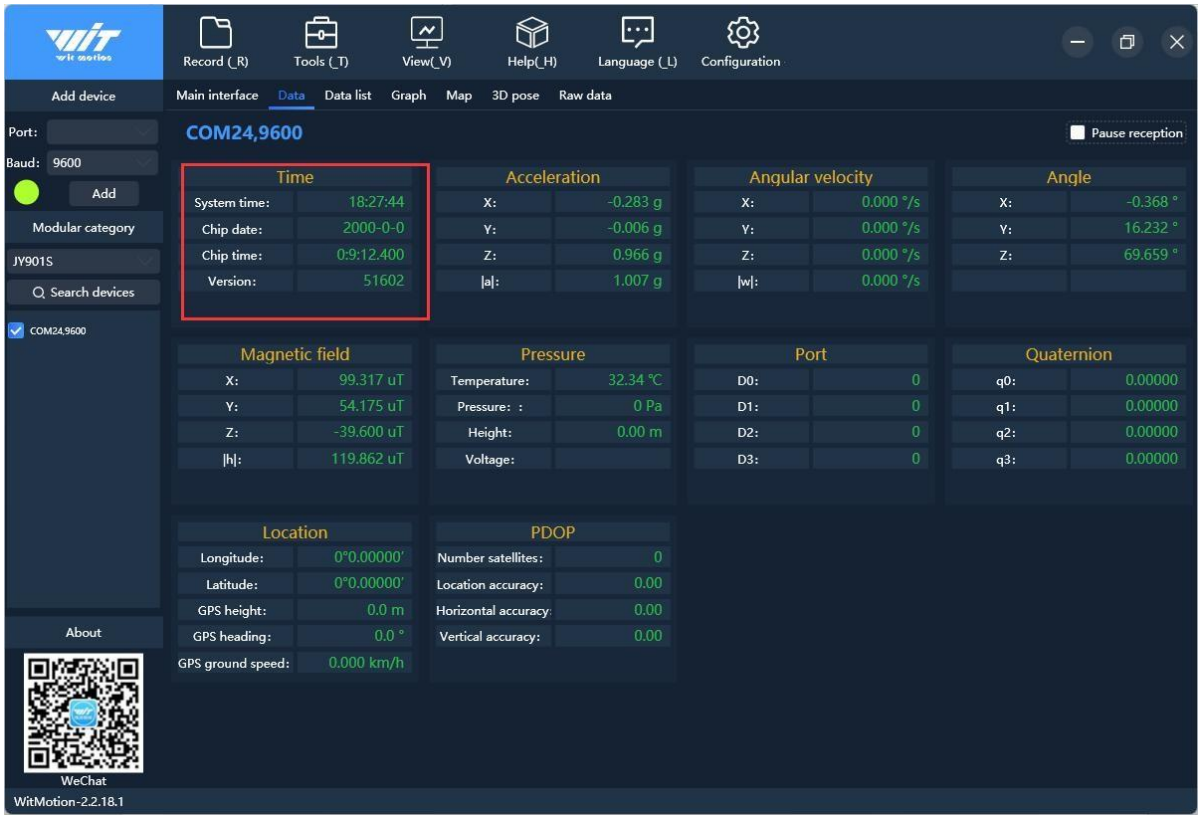
3.3 Sensor calibration

3.3.1 Calibration time

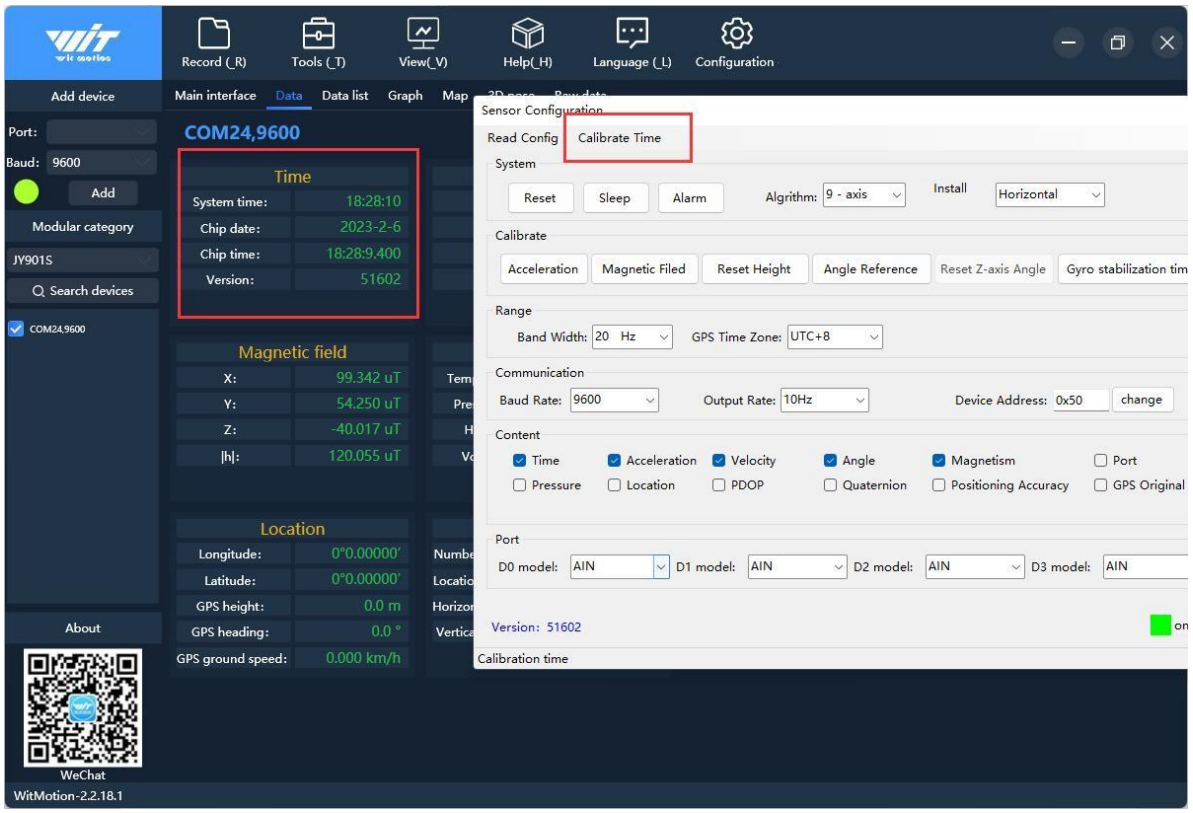
After clicking the "Calibrate Time", in the data tab of PC software---the on-chip time will be synchronized with the current computer time. For example, the default time before calibrationis 2000-0-0, and the time after calibration is 2022-5-18 14:12:38.

Note: Before calibrating the time, be sure to check the Time tab to let the sensoroutput time data, as follows:

Before calibration time:



After calibration time:



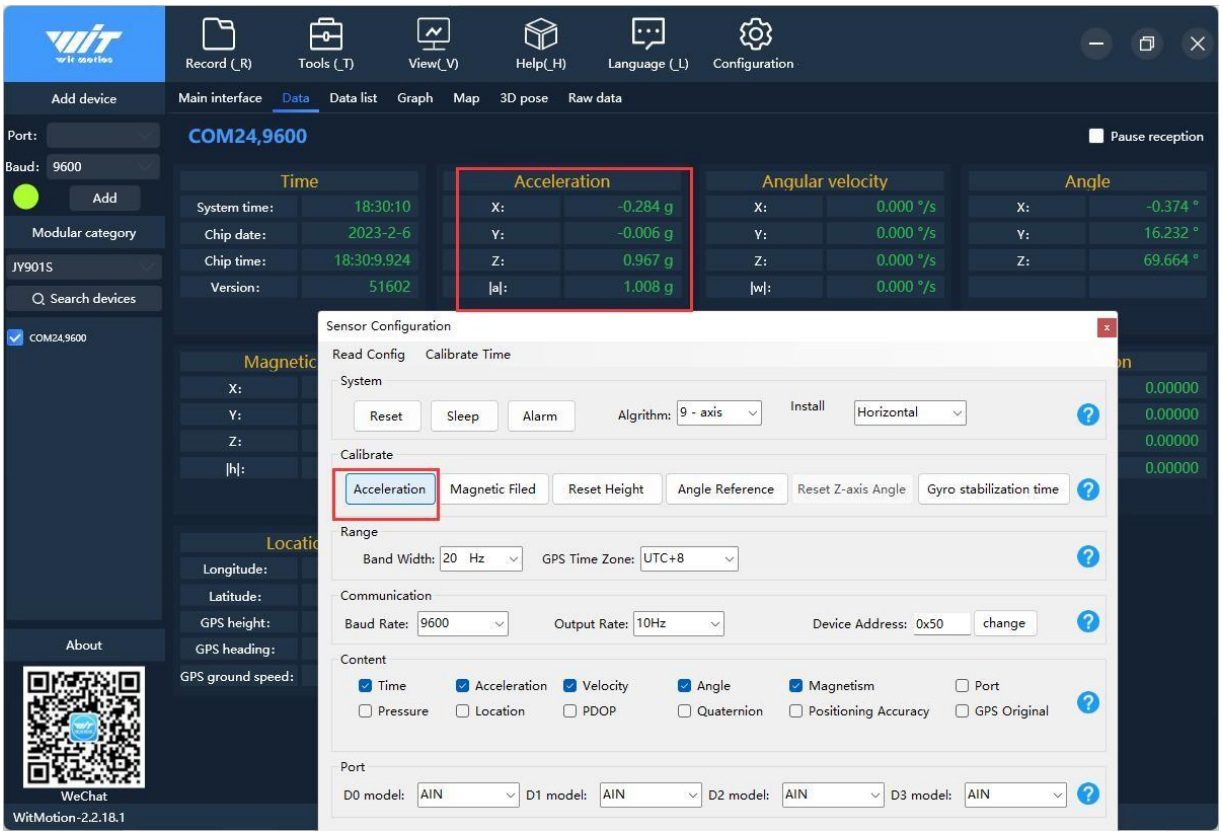
3.3.2 Acceleration calibration

Acceleration Calibration: Used to remove the zero offset of the accelerometer. The sensor will have different degrees of zero offset error when it leaves the factory, and the measurement will be accurate only after manual calibration.

Acceleration calibration method:

First, keep the module horizontally still, and click the acceleration in the calibration bar under the sensor configuration window. After 1 to 2 seconds, the acceleration values of the three axes of the module will be around 0 0 1, and the angles of the X and Y axes will be around 0°.The XY axis angle is more accurate after calibration.

Note: When the Z axis is horizontally stationary, there is a gravitational acceleration of 1G.



3.3.3 Magnetic Field Calibration

1) Ellipsoidal magnetic field Calibration

Video reference link for Magnetic Field Calibration：

https://drive.google.com/drive/folders/1Dlu5Rhs7uqkigJeU7tIfYGzCbLwP-Ebq?usp=share_link

Magnetic field calibration: used to remove the zero offset of the magnetic field sensor. Usually, the magnetic field sensor has a large zero point error during manufacture. If it is notcalibrated, it will bring a large measurement error, which will affect the accuracy of the heading angle Z-axis angle measurement.

Note:

1.Only 9-axis products have the function of magnetic field, while 6-axis products do not.

2.The earth's magnetic field is weak and easily disturbed, especially metal

materials such as iron, cobalt and nickel, or magnets, which will cause local magnetic field distortion. Calibration needs to be far away from these sources of interference.

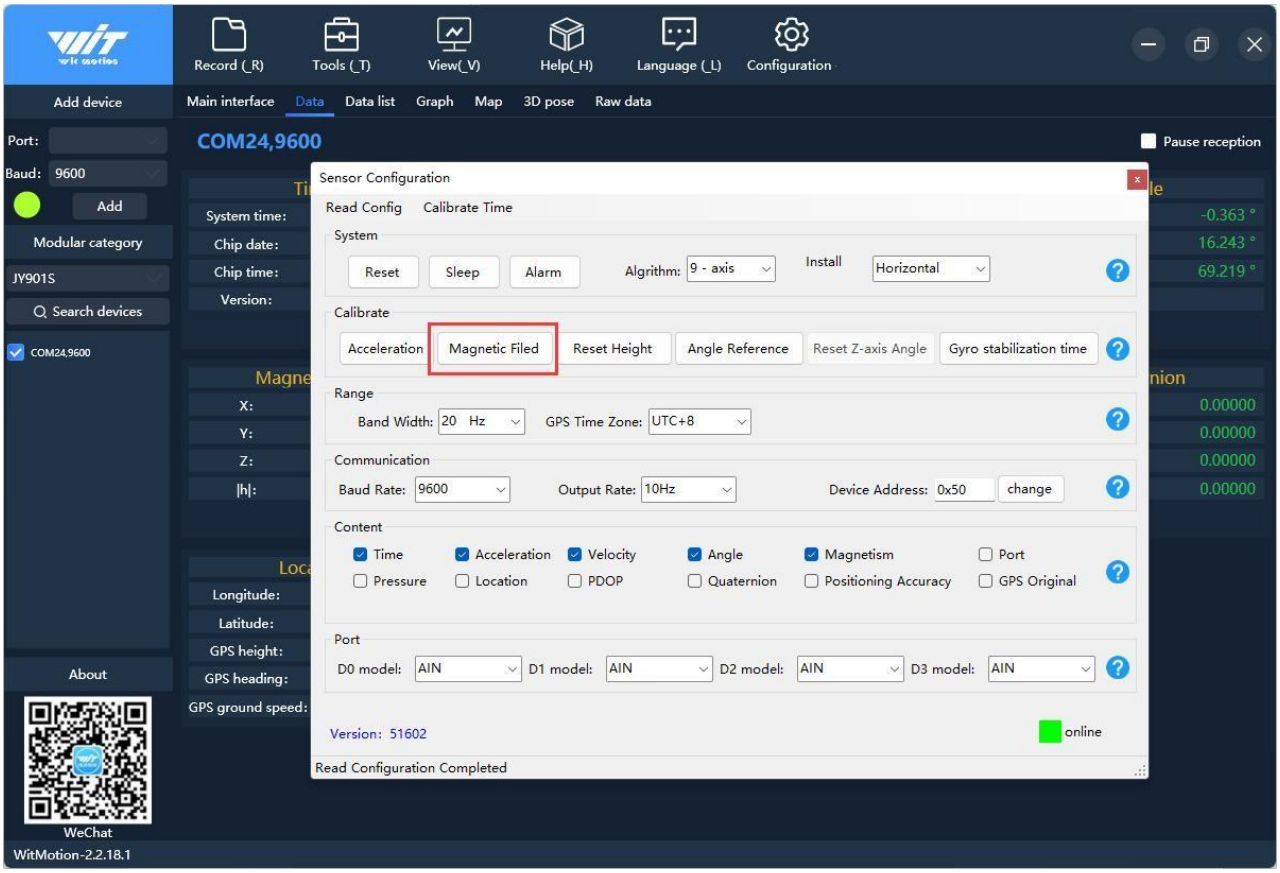
3.Common sources of interference include computer speakers, iron beam support underthe desk, steel mesh in the middle of the floor, etc.

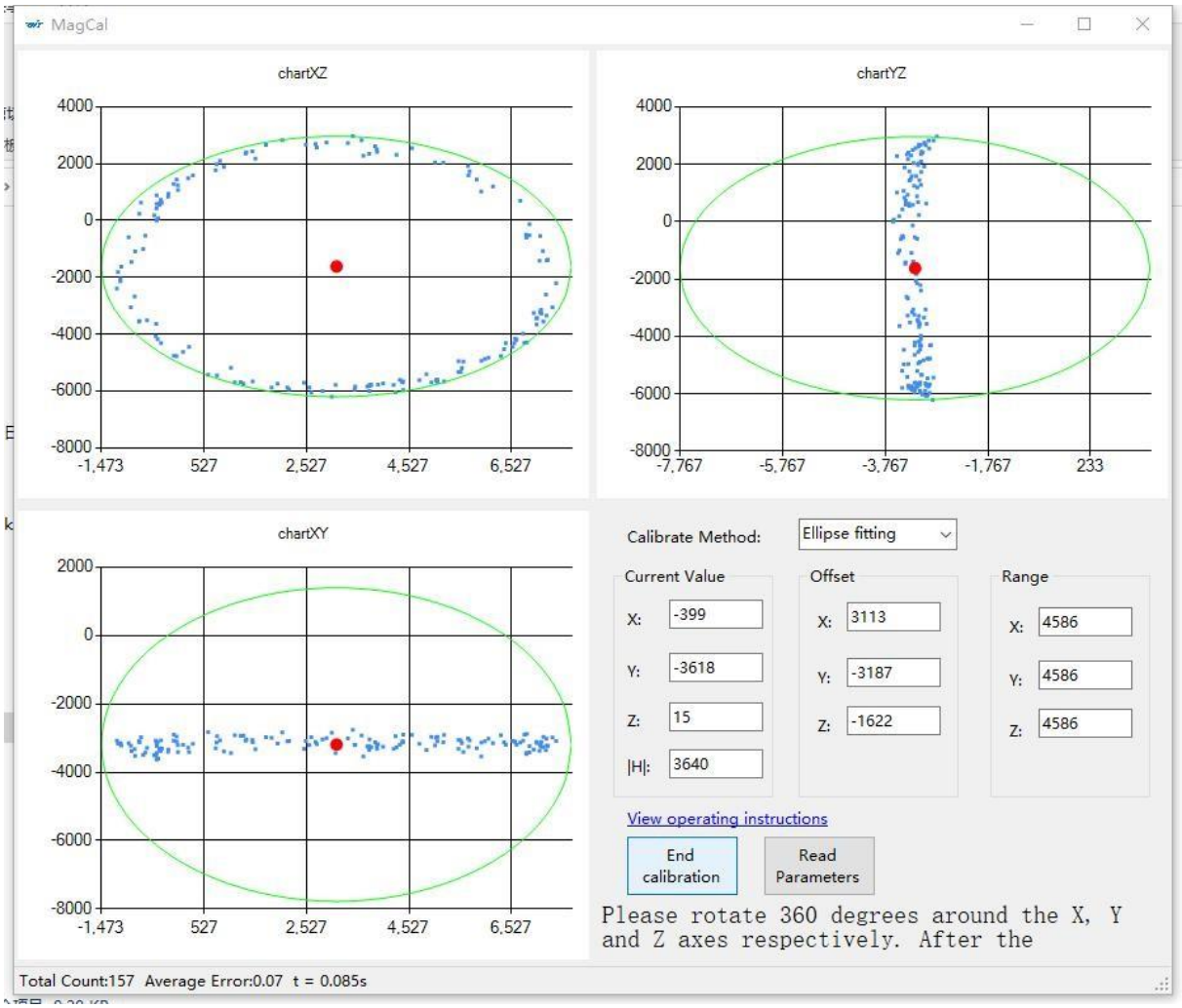
4.When calibrating, it is best to place the sensor 50cm away from the computer, and take it in the air for calibration. It must not be rotated directly on the desktop, because there is usually an iron beam under the desktop.

The magnetic field calibration method is as follows:

Connect the module to the computer first, place the module away from the interferencemagnetic field (50cm away), and then open the host computer software.

On the setting page, click the Magnetic Field button under the Calibration column to enterthe Magnetic Field Calibration mode, then the MagCal window pops up, click Start Calibration in this window.

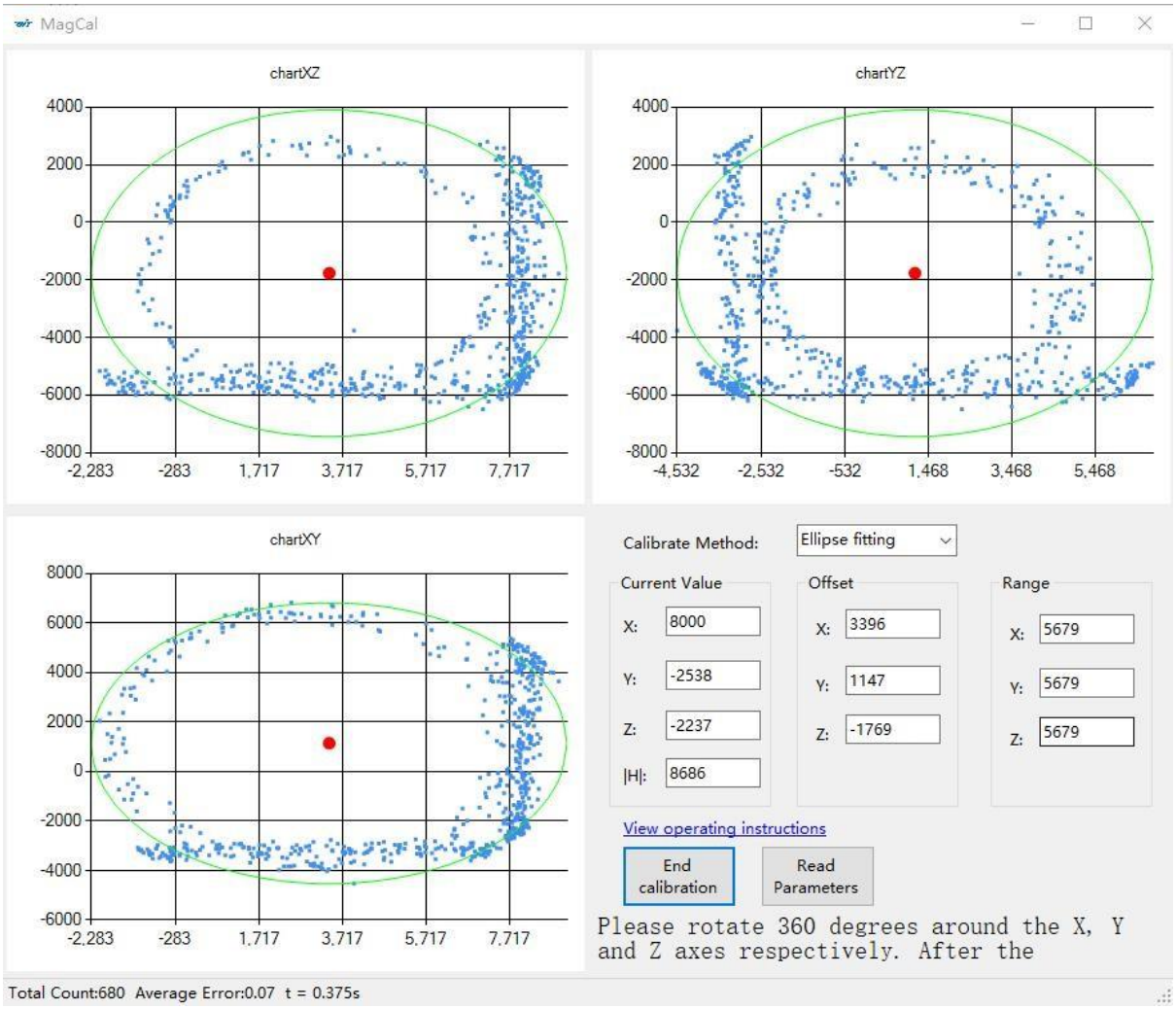




In order to achieve the best magnetic field calibration effect, when rotating around the threeaxes below, try to rotate the circle in the vertical plane in the **north-south** direction.

Take out the phone first, rotate the phone freely in the horizontal plane for a few times,and find the north-south direction.

Rotate the XZ, YZ, and XY planes 1-3 circles in the numerical plane in the north- south direction respectively, and stop the calibration after drawing a relatively regular ellipse. Aftercalibration is complete, click Write Parameters.



2) Dual Plane Magnetic Field Calibration Method

Magnetic field calibration: used to remove the zero offset of the magnetic field sensor. Usually, the magnetic field sensor has a large zero point error during manufacture. If it is notcalibrated, it will bring a large measurement error, which will affect the accuracy of the heading angle Z-axis angle measurement.

Note: Only 9-axis products have the function of magnetic field, while 6-axisproducts do not.

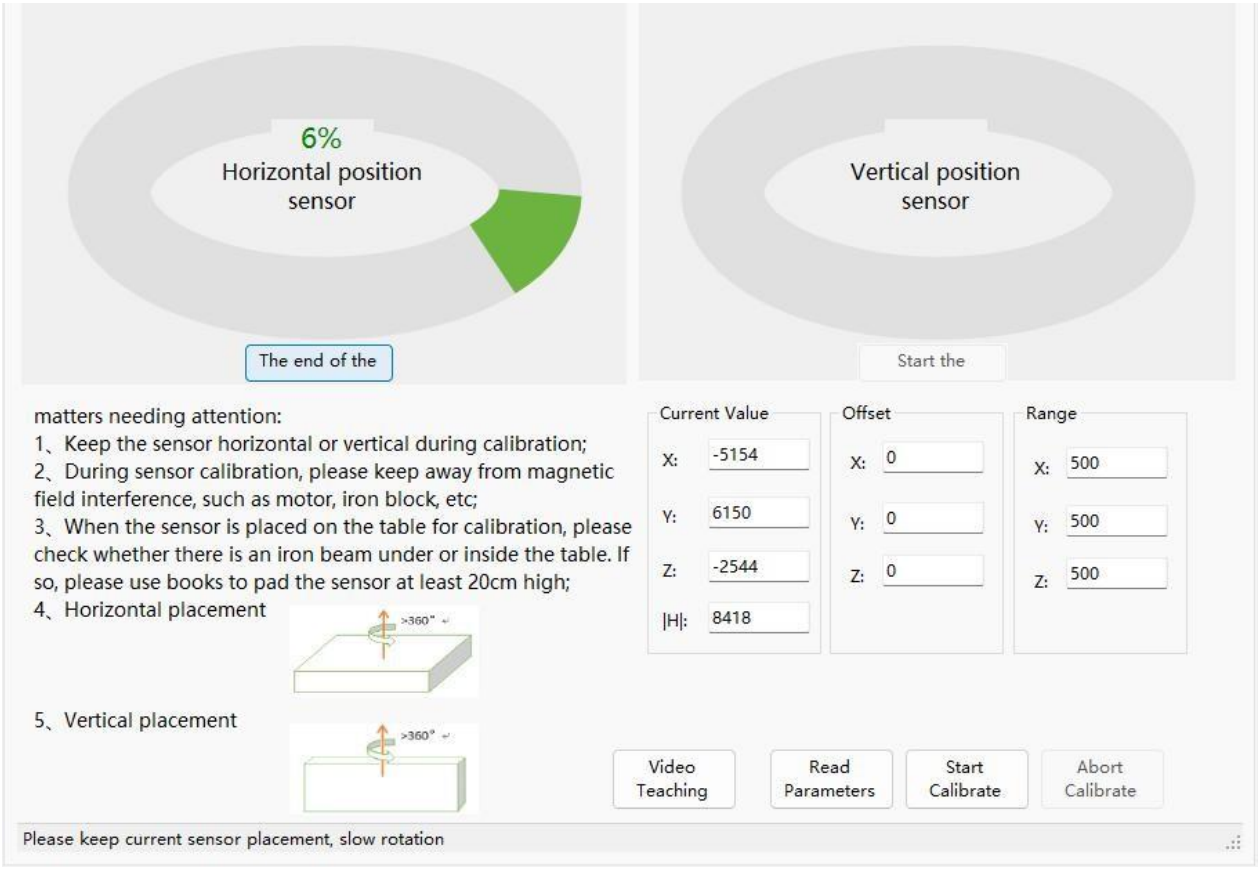
Note:

1. The earth's magnetic field is weak and easily disturbed, especially metal materialssuch as iron, cobalt and nickel, or magnets, which will cause local

magnetic field distortion. Calibration needs to be far away from these sources of interference.

2. Common sources of interference include computer speakers, iron beam support underthe desk, steel mesh in the middle of the floor, etc.

3. When calibrating, it is best to place the sensor 50cm away from the computer, and take itin the air for calibration. It must not be rotated directly on the desktop, because there is usually an iron beam under the desktop.



3.3.4 Reset Z axis angle to zero

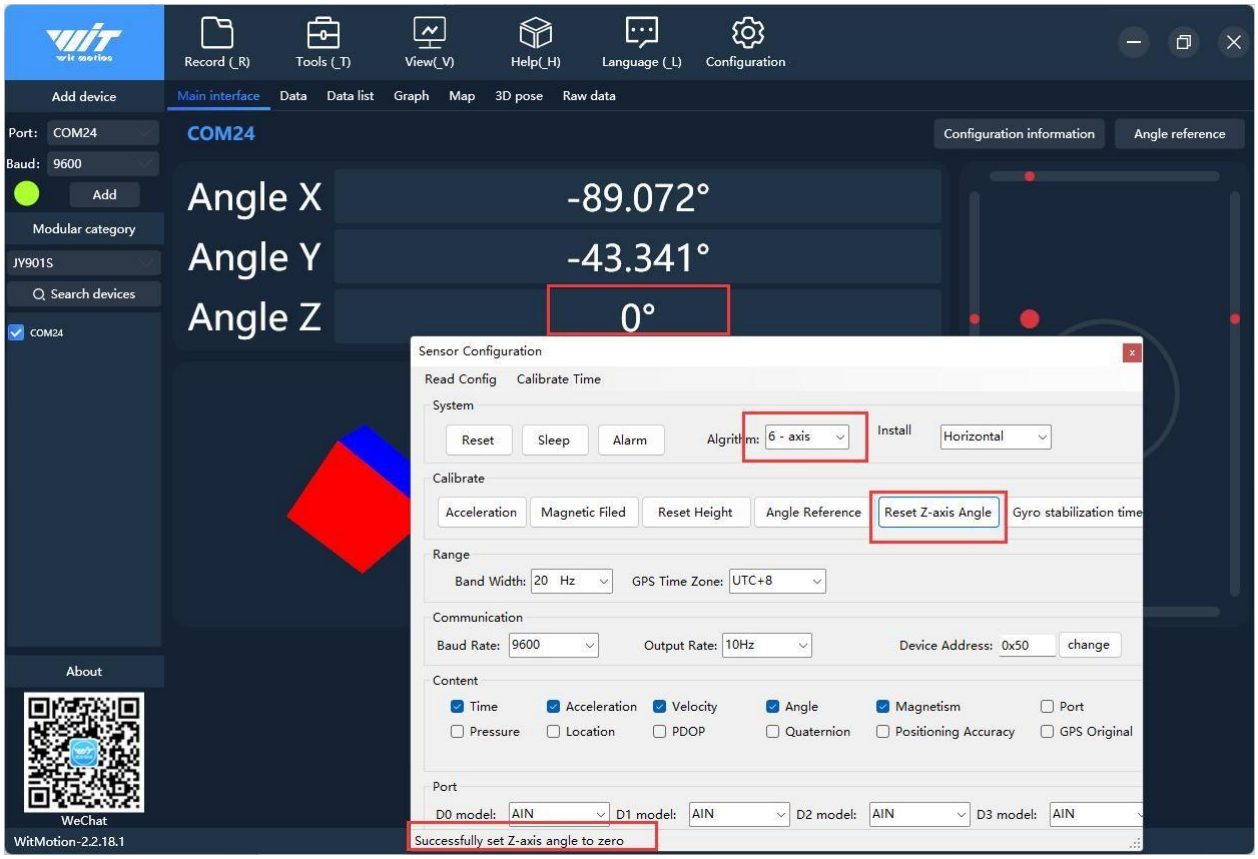
Note:

The Z-axis return to 0 is only valid for the 6-axis algorithm. Switching the nine-axissensor such as WT901 to the 6-axis algorithm can realize the Z-axis return to 0.

The Z-axis angle of the nine-axis sensor such as WT901 under the 9-axis algorithm is anabsolute angle, which takes the northeast sky as the coordinate system and cannot be returned to 0 relatively.

Returning the Z-axis to 0 is to make the initial state of the Z-axis angle of the module to be arelative 0 degree angle. Before the module is used and the Z-axis drifts greatly, the Z-axis can be calibrated to 0. When the module is powered on, the Z-axiswill automatically return to 0.

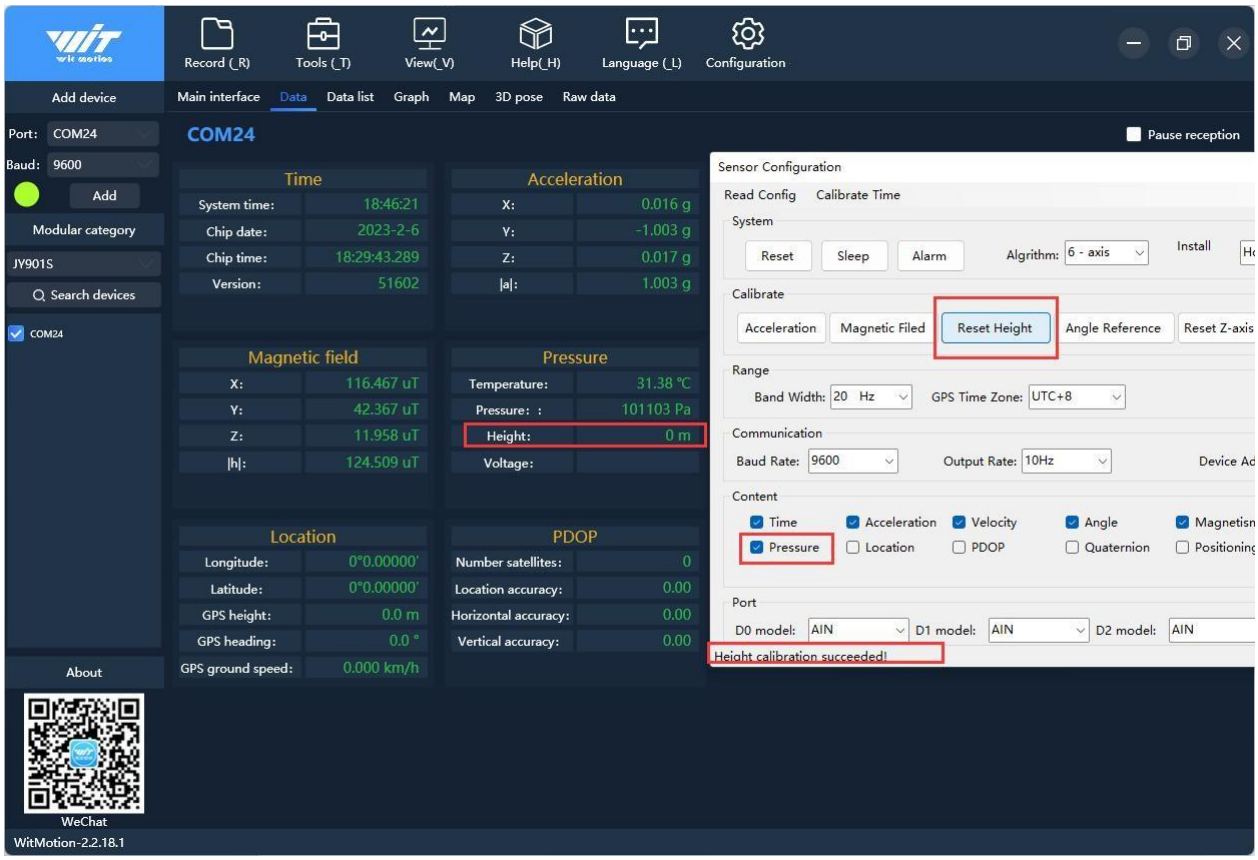
The way to reset the Z-axis of the host computer to 0 is as follows: First, the module is placed statically, click configure to open the configuration bar, and in the **"**Z-axis angle zero**"** option in the configuration bar, you can see that the Z-axis angle returns to 0**°** in themodule data bar.



3.3.5 Reset Height to zero

The altitude output of the module is calculated according to the air pressure, and the operation of returning the altitude to 0 is to calculate the current air pressure value as the zero altitude position. The operation method is to click the "Height" option in the configuration

bar. **Note: Only with air pressure modules (WT901B, WT61PB, etc.) have altitude output.**



3.3.6 Set the reference angle

Set the current angle and attitude of the module to the horizontal plane

Note: There is a problem with the simultaneous use of angle reference and acceleration calibration, which may cause abnormal acceleration and abnormal angle. If you need to use it at the same time, please contact relevant technical support for assistance

3.3.7 Gyroscope automatic calibration

Gyro calibration is to calibrate the angular velocity, and the sensor is calibrated by default.

Only when the module is rotating at a constant speed, the automatic calibration of thegyroscope can be removed.

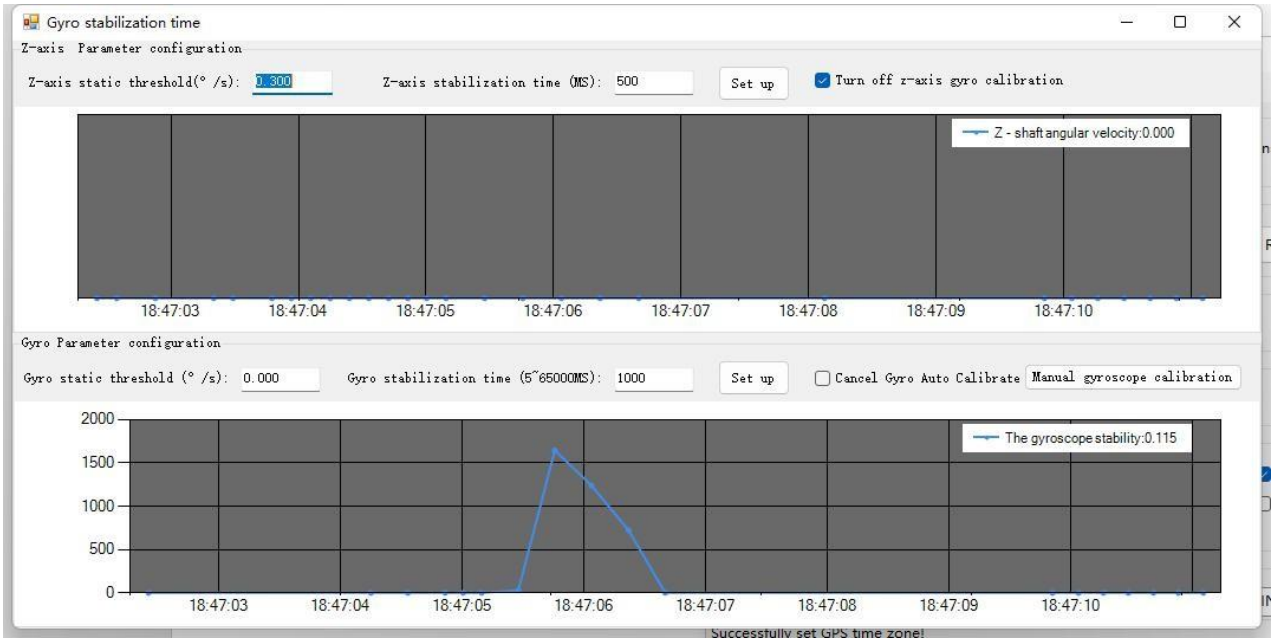
The automatic gyro calibration is able to compare the angular velocity of the last time with the angular velocity of this time. If the comparison value is less than our set value, it will be set to a static state by our module, and the angular velocity output is 0 at this time. So why does the module move at a constant speed while the value of the angular velocity is zero. Therefore, it needs to be turned off when it rotates at a constant speed, and it is not necessary to turn it offwhen it is not at a constant speed.

Gyro settings

This is the advanced configuration only for HWT9073.

Z-axis static threshold: It can be changed according to personal requirements. You can checkthe maximum jitter value of Z-axis angular velocity in this environment through the waveform, and then set a threshold value based on the maximum adjustment value. The Z-axis static threshold refers to The point is that when the angular velocity does not exceed the set value, the sensor is regarded as a static state, and the angular velocity clutter will be filtered and theoutput will be 0 to avoid the cumulative drift of the heading angle.

Z-axis stabilization time: This parameter indicates that when the Z-axis angular velocity is less than the Z-axis stationary threshold for a period of time (Z-axis stabilization time), the sensor is regarded as a stationary turntable, the angular velocity clutter begins to be filtered,and the output is 0.



3.4 Range Setting

3.4.1 Acceleration range setting

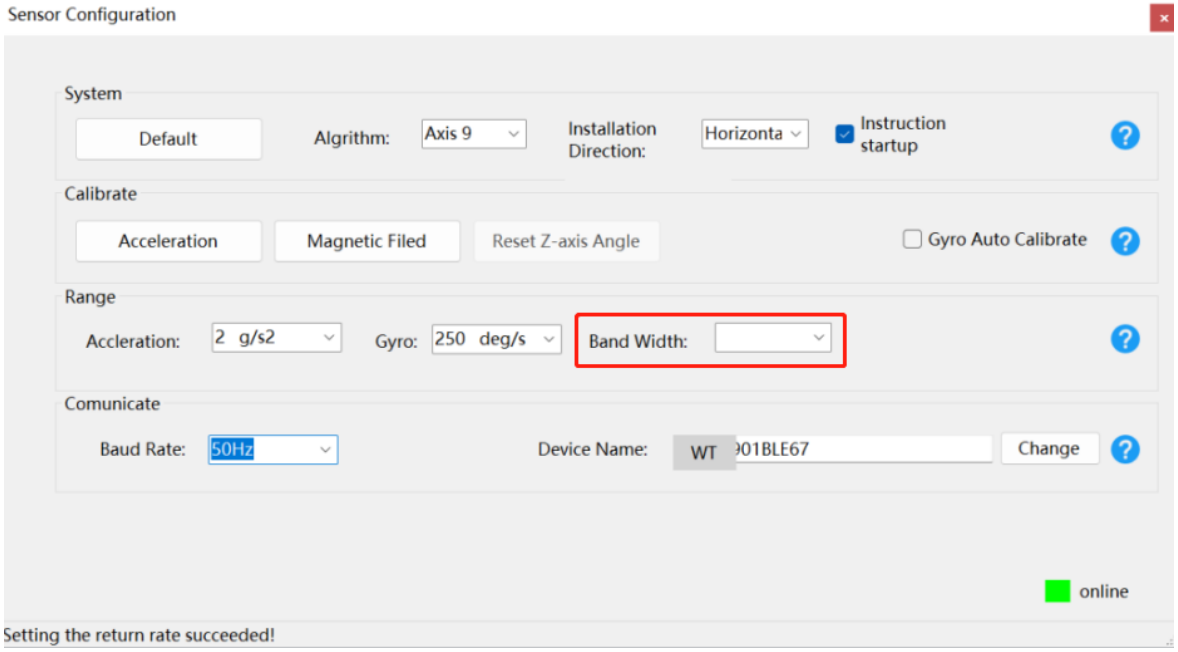
The new version of the software does not have this function, and the angular velocity range is adaptive.

3.4.2 Angular velocity range setting

The new version of the software does not have this function, and the angular velocity range is adaptive.

3.4.3 Bandwidth

Default bandwidth is 20Hz.



Function:

1. The higher rate of bandwidth setting will lead to the higher fluctuation in data waveform. Conversely, the lower rate of bandwidth, data will become more fluent.

For example:

Bandwidth as 20Hz, Output rate as 10Hz. The waveform is very steady.

Bandwidth as 256Hz, Output rate as 10Hz. The waveform will show more fluctuation.

2. The higher rate of bandwidth will solve the data-repeating problem.

For example, if the bandwidth setting is 20Hz, retrieval rate as 100Hz, there will be 5 repeating data.

If you prefer there is no repeating data, it is required to increase the bandwidth more than 100Hz.

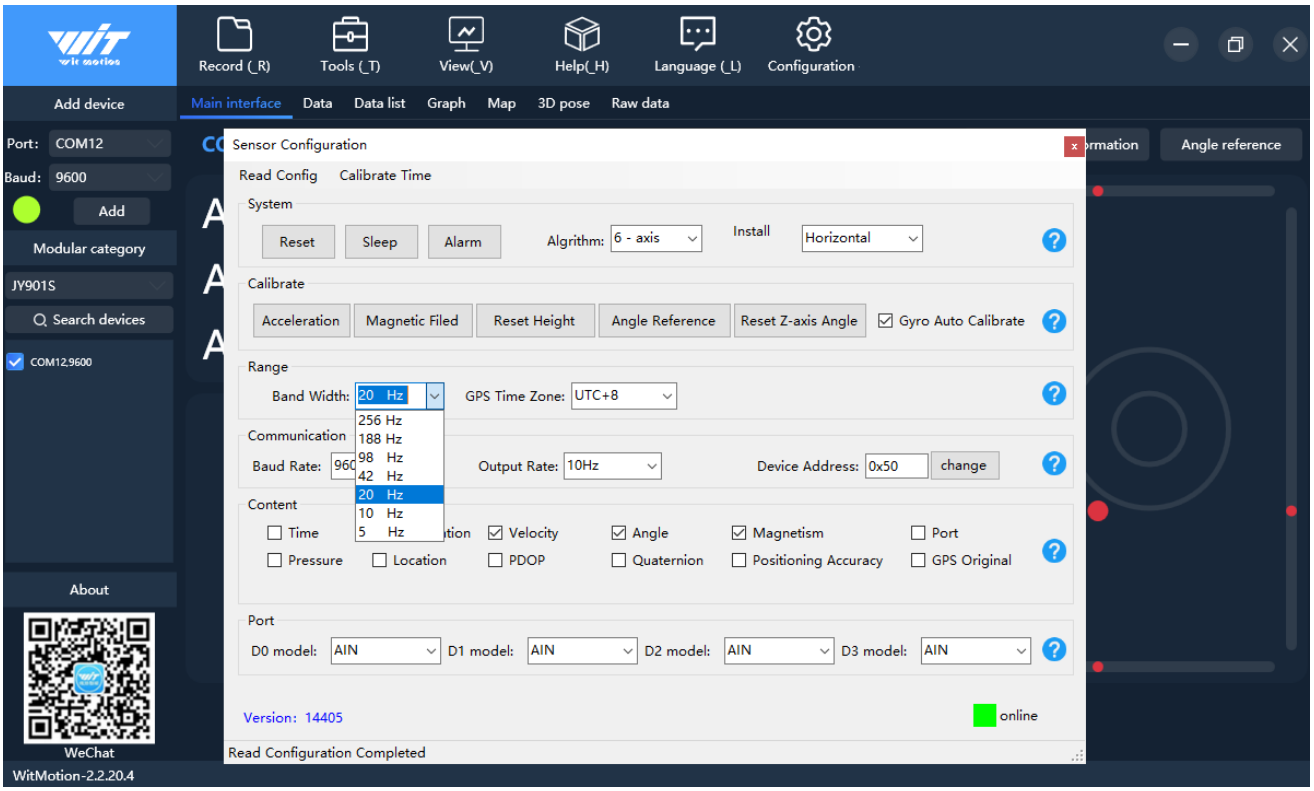
If the data output rate is higher than the bandwidth, resampling may occur, that is, the data is exactly the same two or several times adjacent to each other.

Summarized as follows:

	high bandwidth	low bandwidth
data smoothness	not smooth	smooth
noise	big	small
responding speed	fast	slow

Instructions:

Click the "Measure Bandwidth" option in the configuration column of the PC software to config, default is 20HZ.



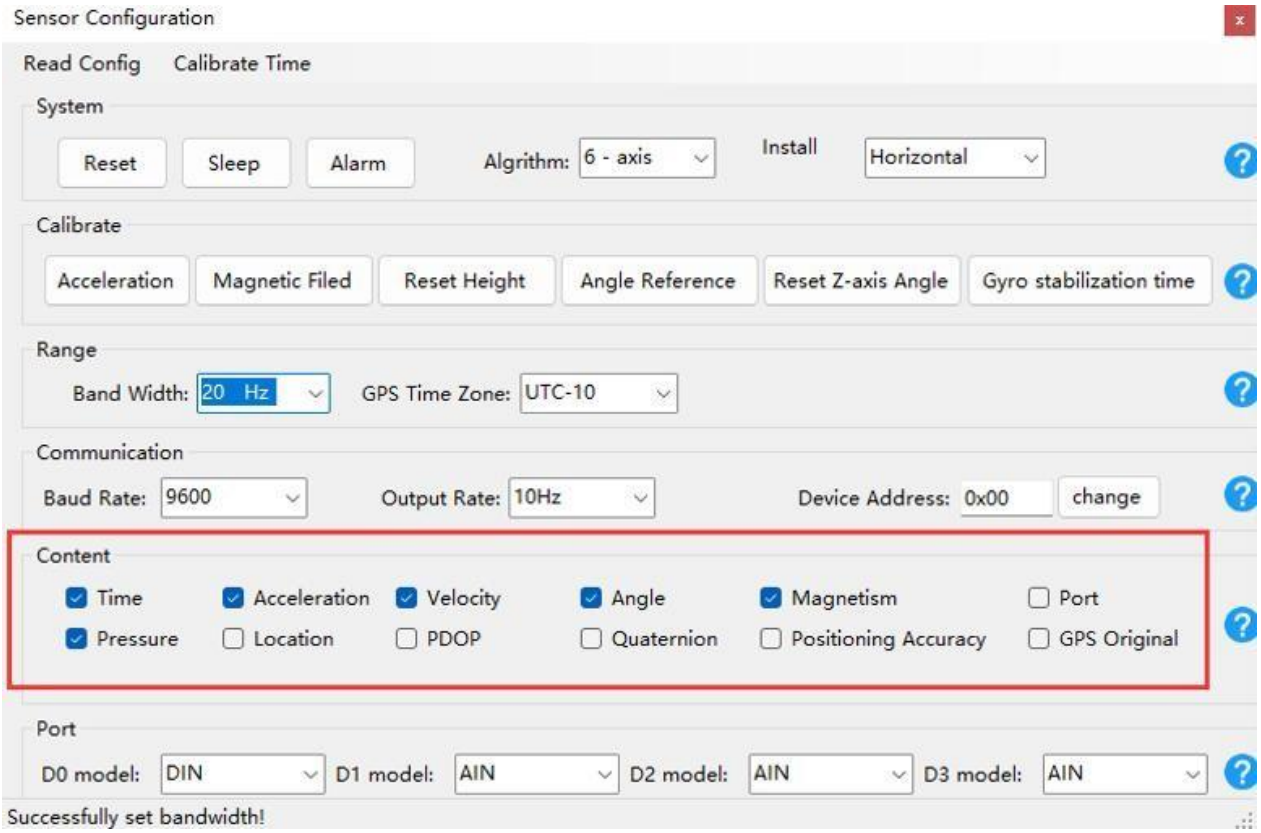
3.5 Output content

Set output content

Setting method: The content of the data return can be customized according to the user's needs, click the configuration option bar, and tick the data content that needs to be output.Taking JY901 as an example, the default output of the module is acceleration, angular velocity, angle, and magnetic field.
The time is the internal time of the module. The default is that the initial time of power-on is0:0:0.0 on January 1, 2015. If the GPS module is connected, the time received by the GPS
is taken as the time of the module. Note that GPS time will be 8 hours later than Beijing time.Air pressure data only supports JY901B and JY61PB sensors equipped with air pressure sensors, and is invalid for JY901 without air pressure sensors.

The latitude, longitude and ground speed information is only valid when the module is connected to the GPS module. To get the correct data, you also need to check the "latitudeand longitude", "ground speed" and "positioning accuracy" in the settings.

Note: If the GPS analog output is checked, the serial port will output the 0183GPS protocol (if there is a GPS module), which will cause the attitude data to fail to output,and the host computer cannot search for the device,



etc. Use the command to restorethe default.

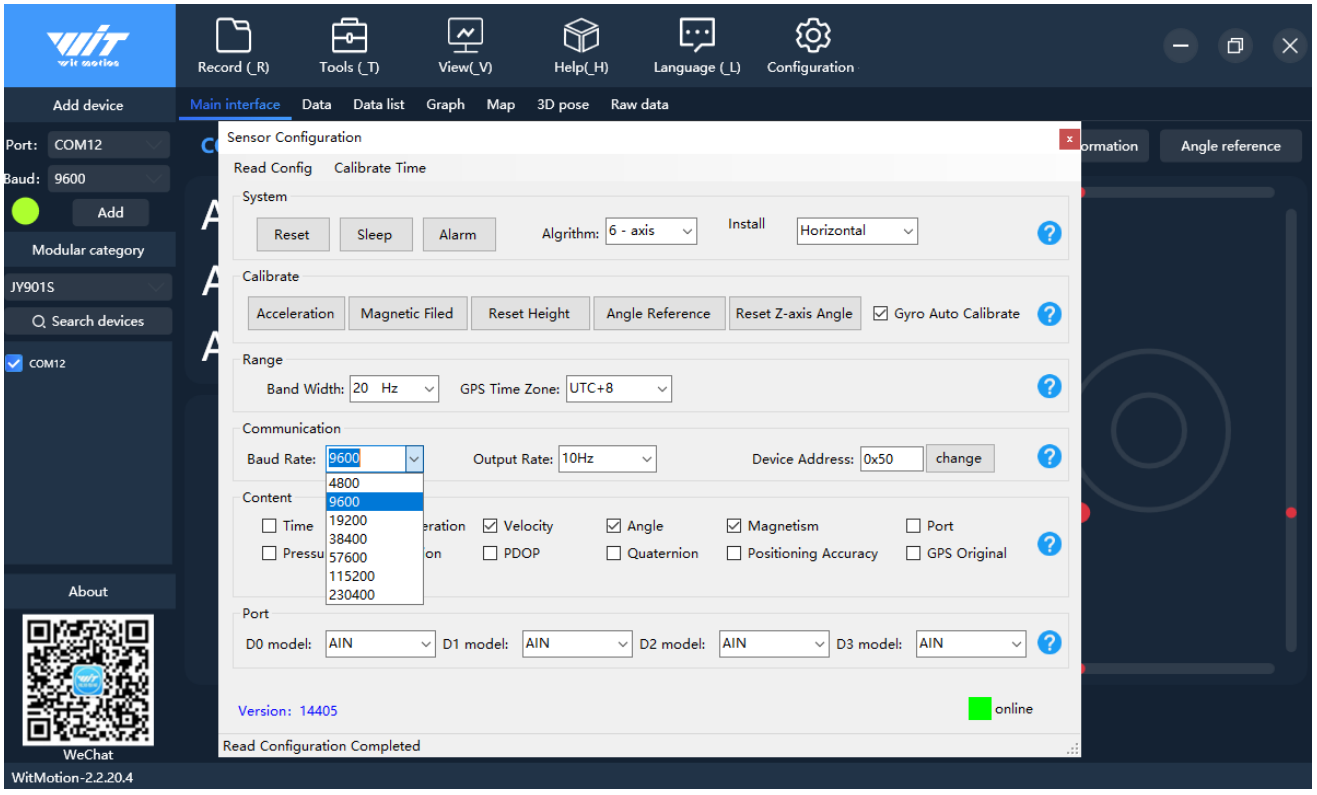
3.6 Communication settings

3.6.1 Baud Rate

Set serial port baud rate

Setting method: The module supports multiple baud rates, the default baud rate is 9600. Setting the baud rate of the module needs to be based on the correct connection between thesoftware and the module. Select the baud rate that needs to be changed in the communication rate drop-down box in the configuration bar (sensor configuration), the setting is successful or the lower left corner will prompt the setting is successful, as follows asshown in the figure.

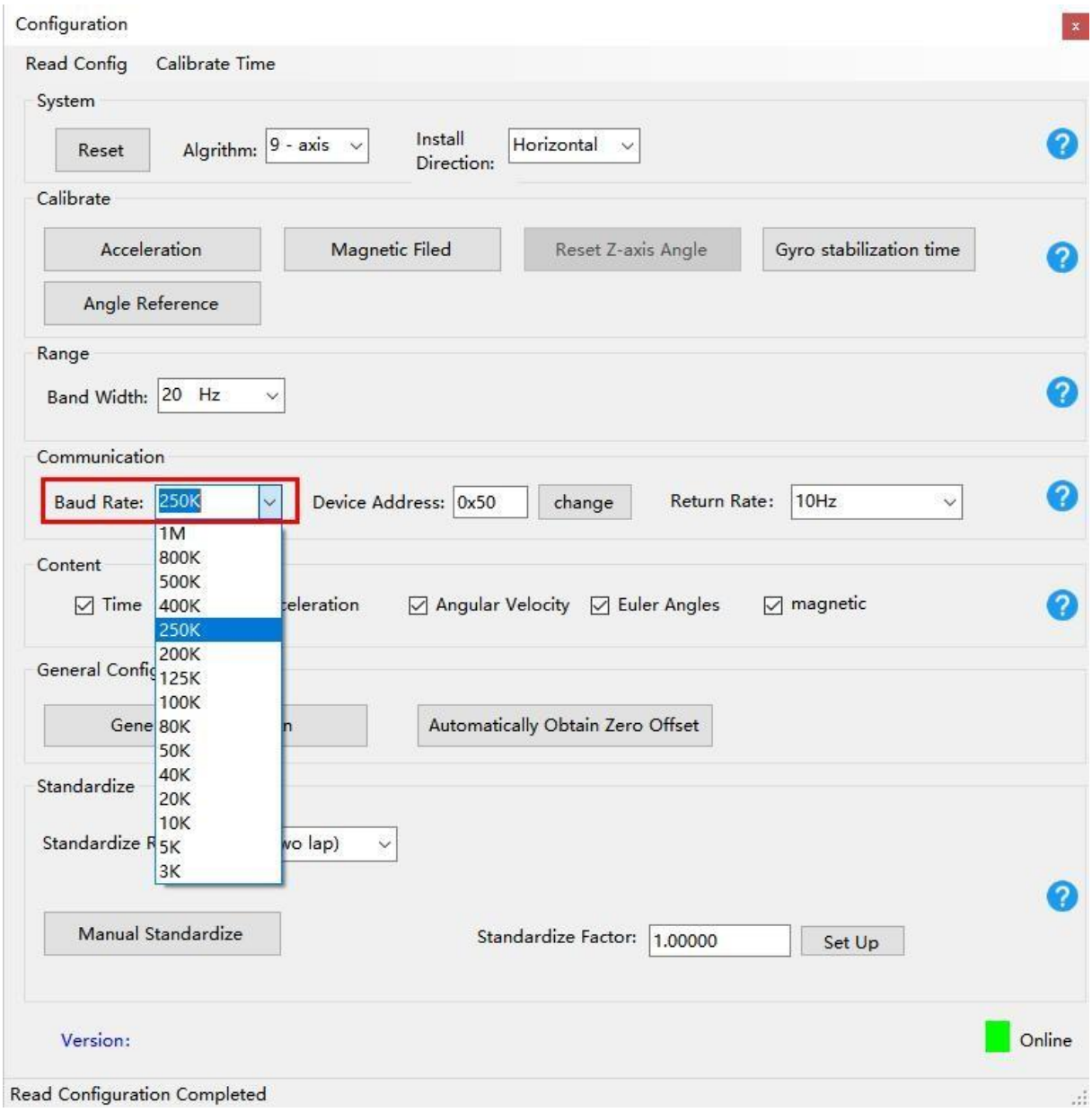
Note: After the change, the data output by the module at the original baud rate isincorrect.



Set CAN baud rate

Setting method: The default CAN baud rate is 250K. Setting the CAN baud rate of the module needs to be based on the correct connection between the software and the module. Select theCAN baud rate that needs to be changed in the communication rate drop-down box in the configuration bar (sensor configuration), and the setting is successful or the lower left corner will prompt that the setting is successful.

As shown below



Note: When modifying the CAN-side baud rate, if a CAN-USB device is used, the corresponding CAN-side baud rate of the adapter must also be set to a consistent value.

3.6.2 Output rate

Setting method: Click the PC software configuration option, and select the return rate from

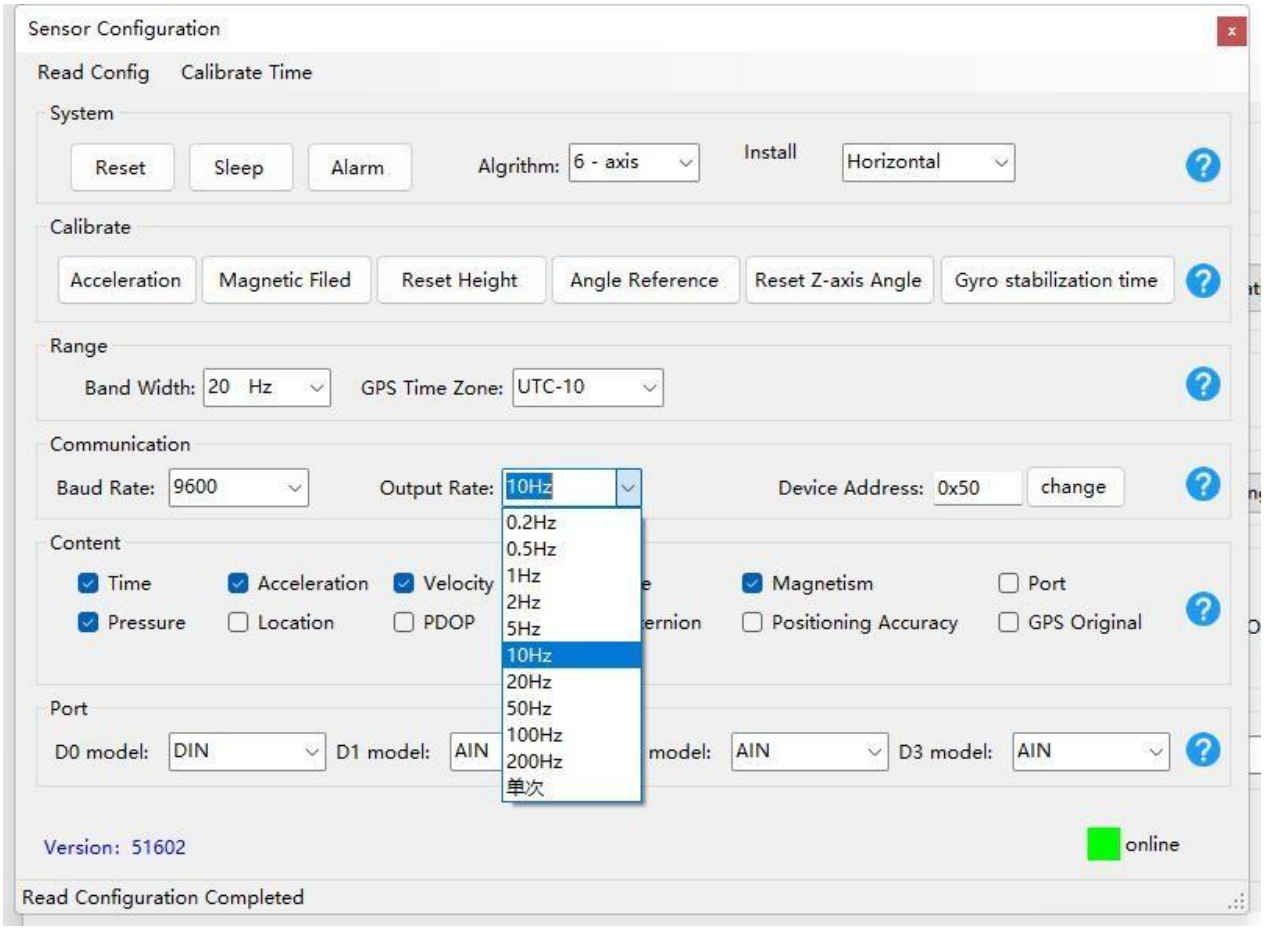
0.1 to 200HZ in the configuration column.

The default return rate of the module is 10Hz, and the maximum return rate supports 200Hz.

10HZ refers to 10 data packets sent back in 1S, and 1 data packet sent back by default is 11bytes.

Note: If there is a lot of returned content and the baud rate of the communication is low at the same time, it may not be able to transmit so much data. At this time, the module will automatically reduce the frequency and output at the maximum allowable output rate. To put it simply, if the return rate is high, the baud rate should also be sethigher, generally 115200.

Note: If you need a return rate of 200HZ, you can only check three quantities, such as"acceleration", "angular velocity", "angle".

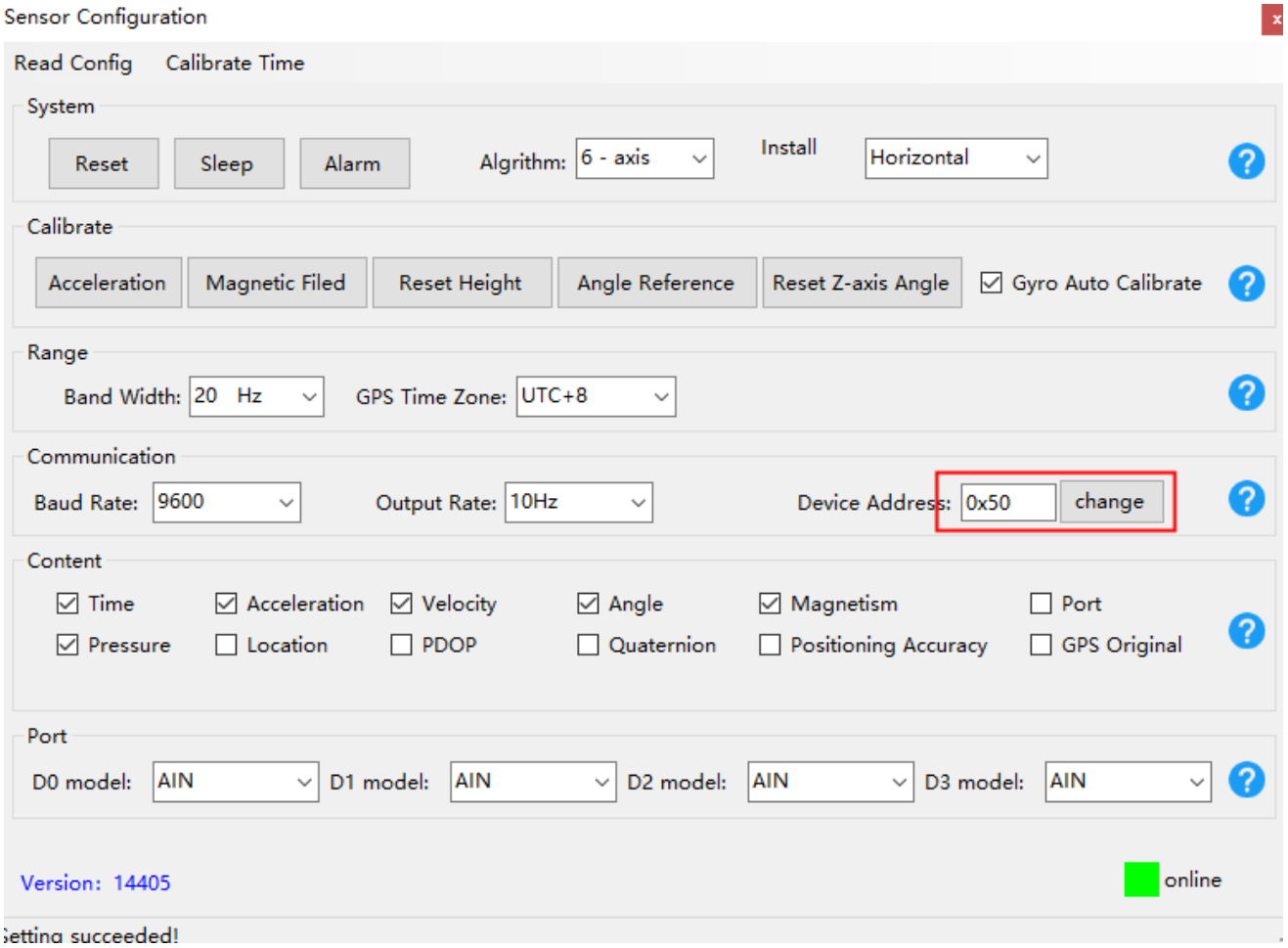


3.6.3 Device address

Set IIC address

The IIC communication address of the module is 0x50 by default and can be changed by software. To set the IIC address of the module, based on the correct connection between thesoftware and the module, enter a new hexadecimal IIC address in the IIC address text box of the setting option, and then click the "Change" button at the back.

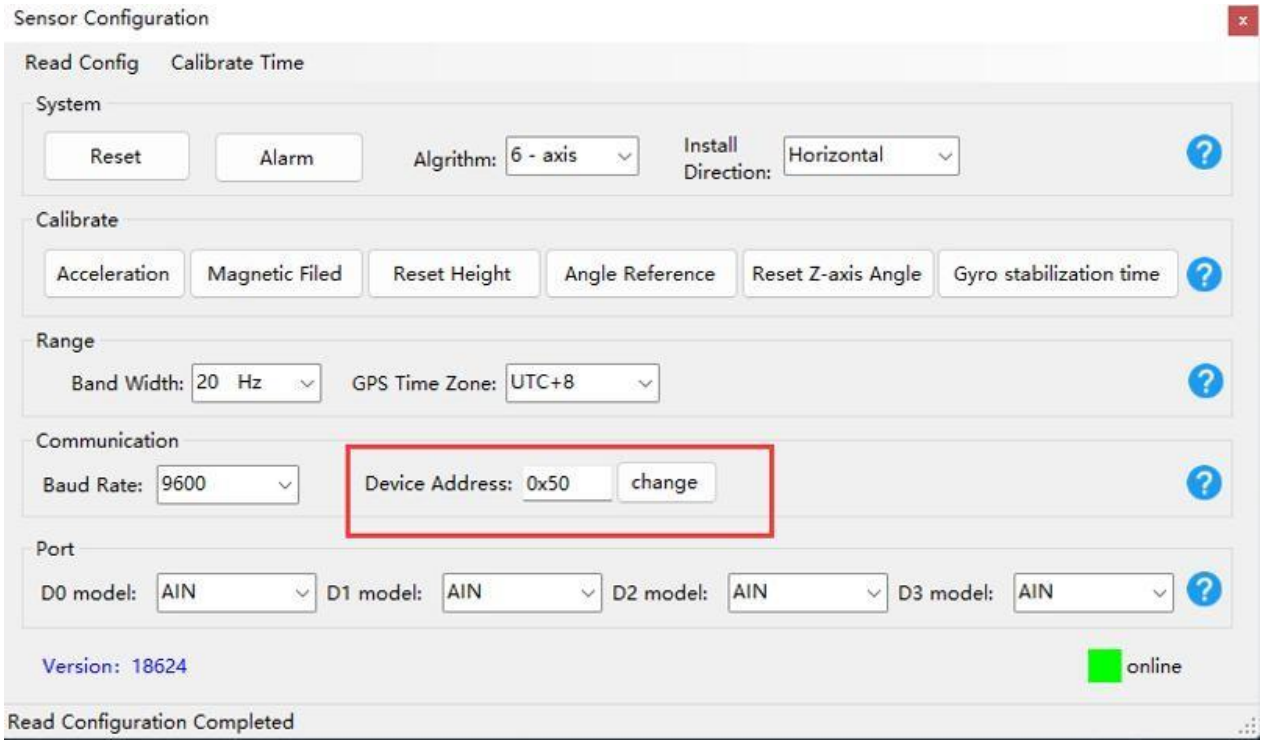
Note: After the change, the IIC address of the module will not be changed immediately,and it will take effect only after the power is turned on again.



Set Modbus address

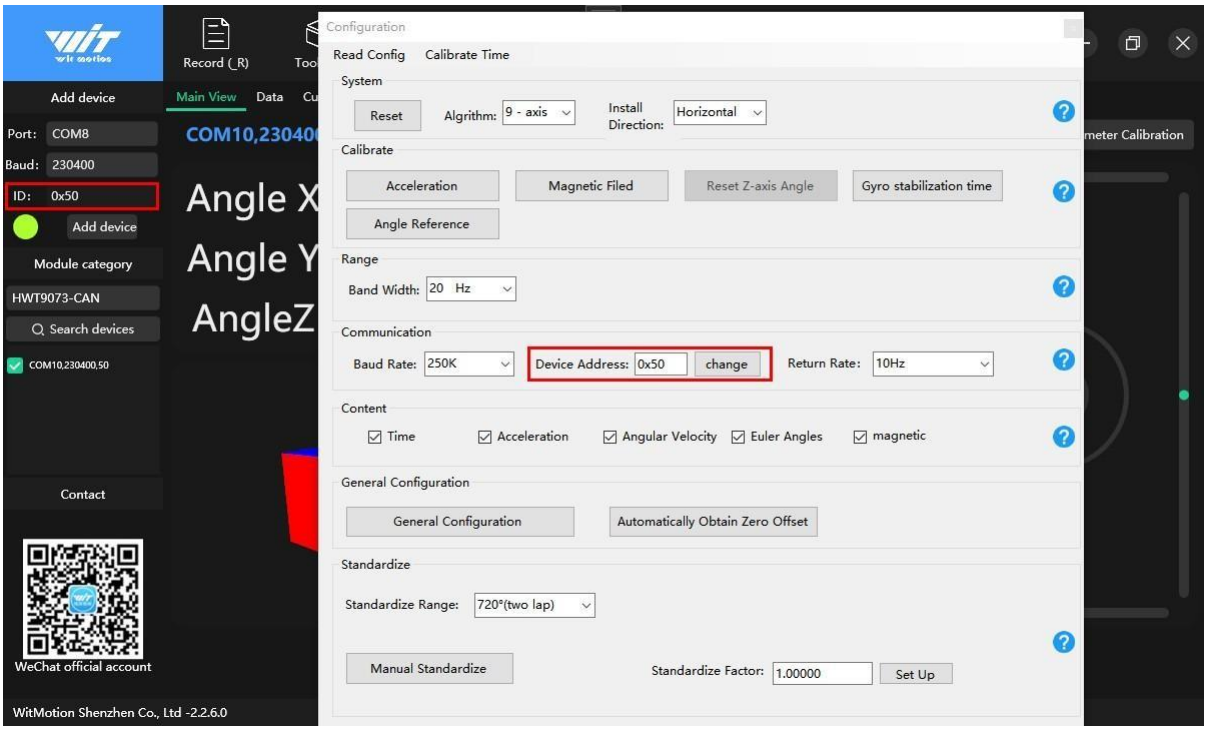
The Modbus communication address of the module is 0x50 by default and can be changedby software. To set the Modbus address of the module, based on the correct connection between the software and the module, enter a new hexadecimal Modbus address in the Modbus address text box of the setting option, and then click the "Change" button at the back.

Note: After setting the modbus address (that is, the non-default 0X50), the host computercannot directly search for the device, and it is necessary to manually select the COM portnumber and add the device ID. There is no such problem with the multi-connected upper computer



Set CAN frame ID

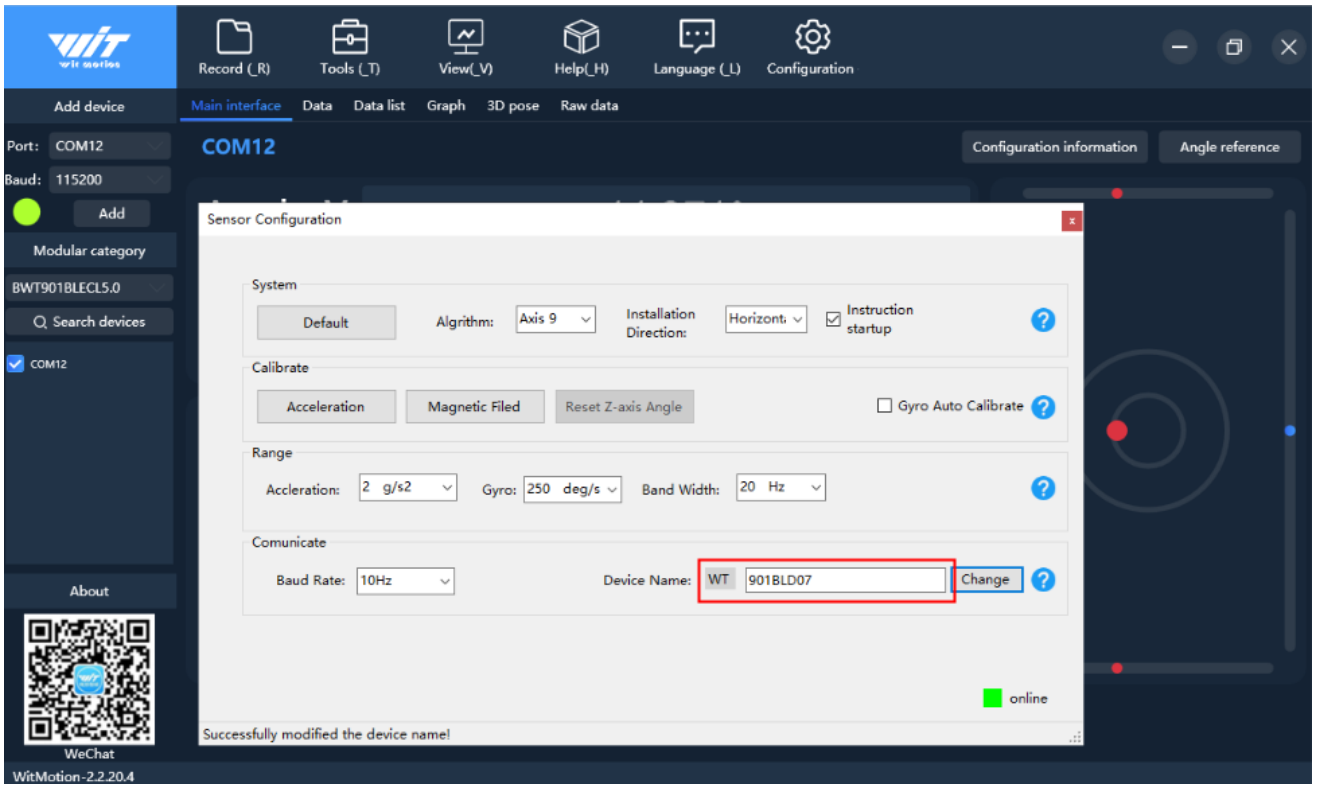
The CAN protocol has a CAN frame ID. Before adding a device, you need to set the CAN frameID of the sensor in the ID text box; the default CAN frame ID is 0x50, which can be changed by software. To set the CAN frame ID of the module, you need to connect the software to the module correctly. On the basis of , enter the new hexadecimal CAN frame ID in the device address text box of the setting option, and then click the "Change" button at the back.



3.6.4 Set Bluetooth name

The name of the Bluetooth module can be modified by software. After connecting to the Bluetooth device, modify the desired other name on the text prompt box of the device nameunder the sensor configuration window, and then click Change to complete the modification.

Note: The sensor needs to be reconnected after changing the Bluetooth name.



3.7 Port

Set up expansion ports

The WT901/WT61P module has 4 multi-function expansion ports, which can be set to different functions according to needs. The set expansion port mode needs to change thecontent of the drop-down box behind the port mode on the basis of the correct connectionbetween the software and the module.

The expansion port supports analog input mode, digital input mode, digital output mode. TheD1 port also supports analog input mode by default.

The port status data packet output by the module contains the status information of theexpansion port. In different modes, the meaning of the port status data DxStatus is as follows:

Type	Meaning
Analog input mode	analog voltage
Digital input mode	Port high and low level status
Digital high level output mode	port output status
Digital low level output mode	port output status
CLR（D1）	The relative attitude of the X and Y axesreturns to 0

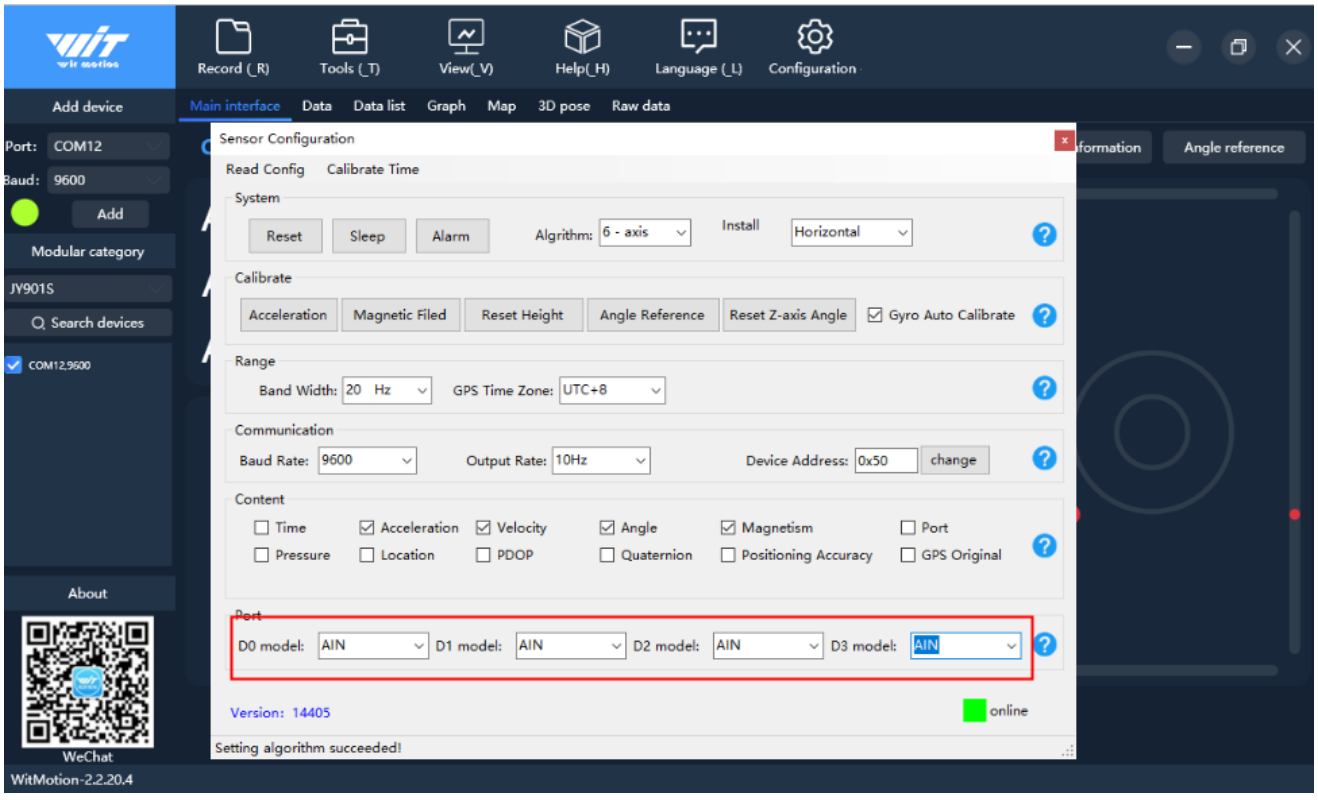
The analog input mode is used to measure analog voltages on ports, such as potentiometers or analog sensors, etc. The actual voltage is calculated according to thefollowing formula

U=DxStatus/1024*Uvcc

Uvcc is the power supply voltage of the chip. Since there is an LDO on the chip, if thepower supply voltage of the module is greater than 3.5V, Uvcc is 3.3V. If
the module power supply voltage is less than 3.5V, Uvcc=power supply voltage -0.2V.

The digital input mode is used to measure the high and low level status on the port, if it ishigh level, DxStatus=1, if it is low level, DxStatus=0.

Digital high level output mode is used to output high level, DxStatus=1. Digital low leveloutput mode is used to output low level, DxStatus=0.



3.8 Standardize

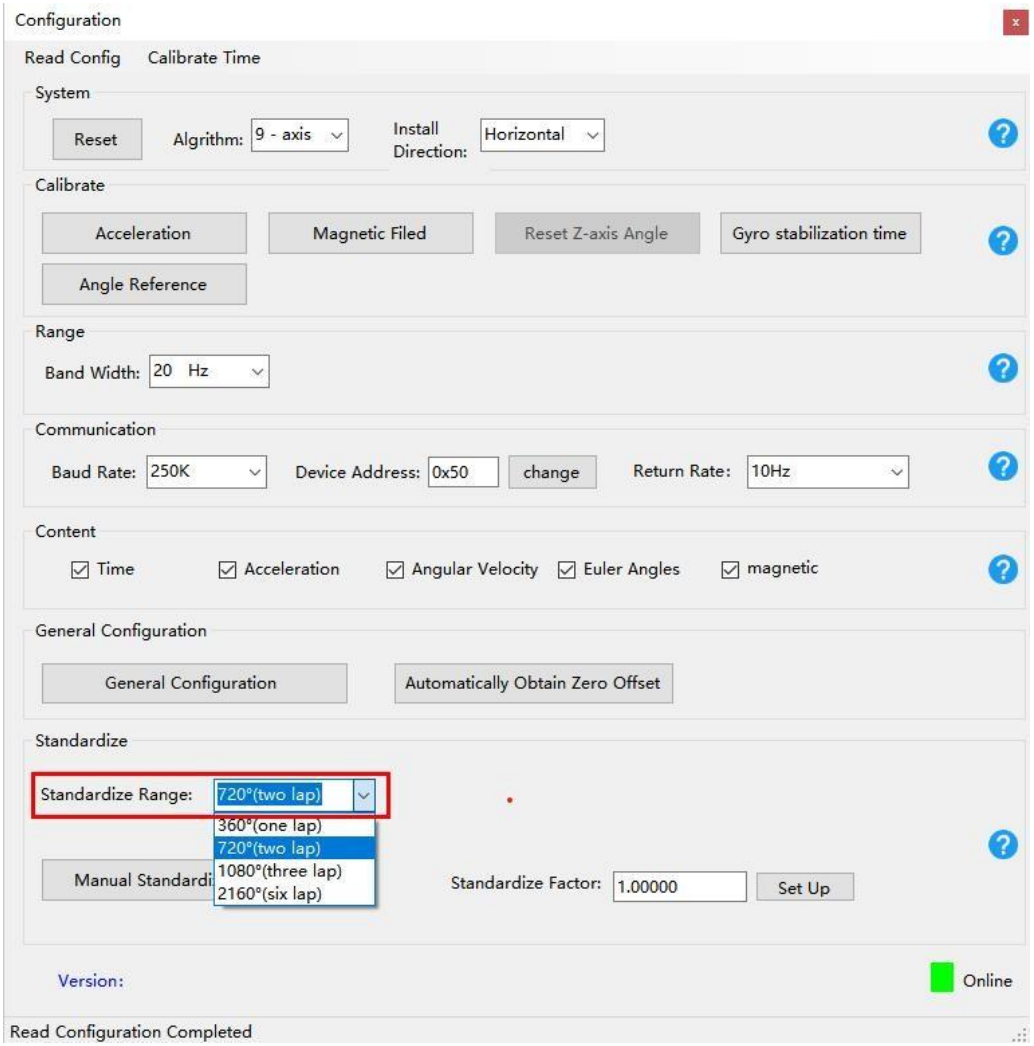
Note: This is a high-precision sensor-specific function

Calibration process: first set the calibration range (default 720°) - click "Manual Calibration",after entering the calibration, the sensor rotates horizontally for two circles (720°) - after returning to the original position, click Finish.

Calibration range

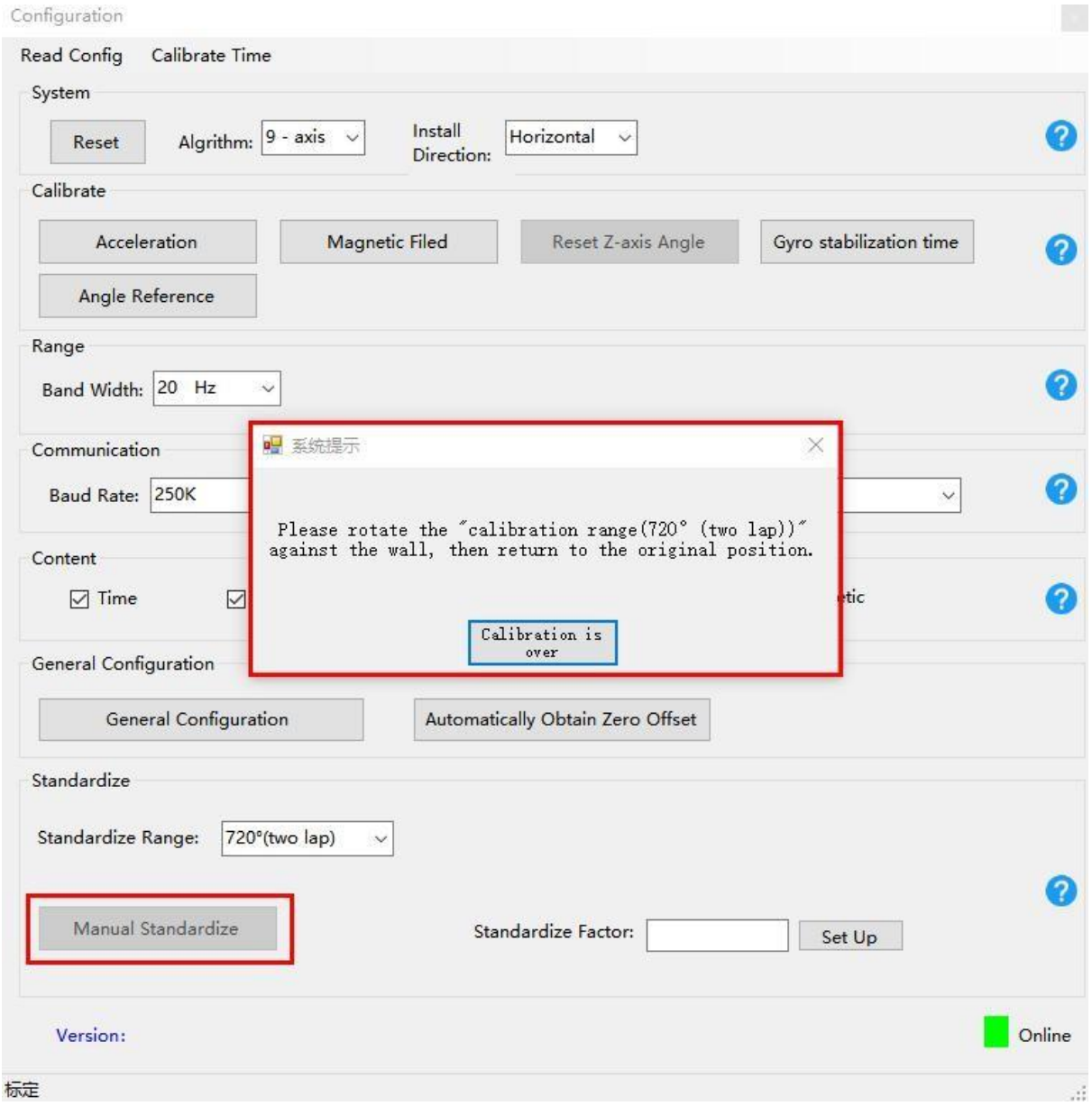
The required rotation angle of the Z axis in the "scale factor mode" is generally set to aninteger multiple of 360°.

The default calibration range is 720° (2 circles). You can select the calibration method in thedrop-down box of the calibration range. After the setting is complete, the manual calibration method will also be updated in real time.



Manual calibration

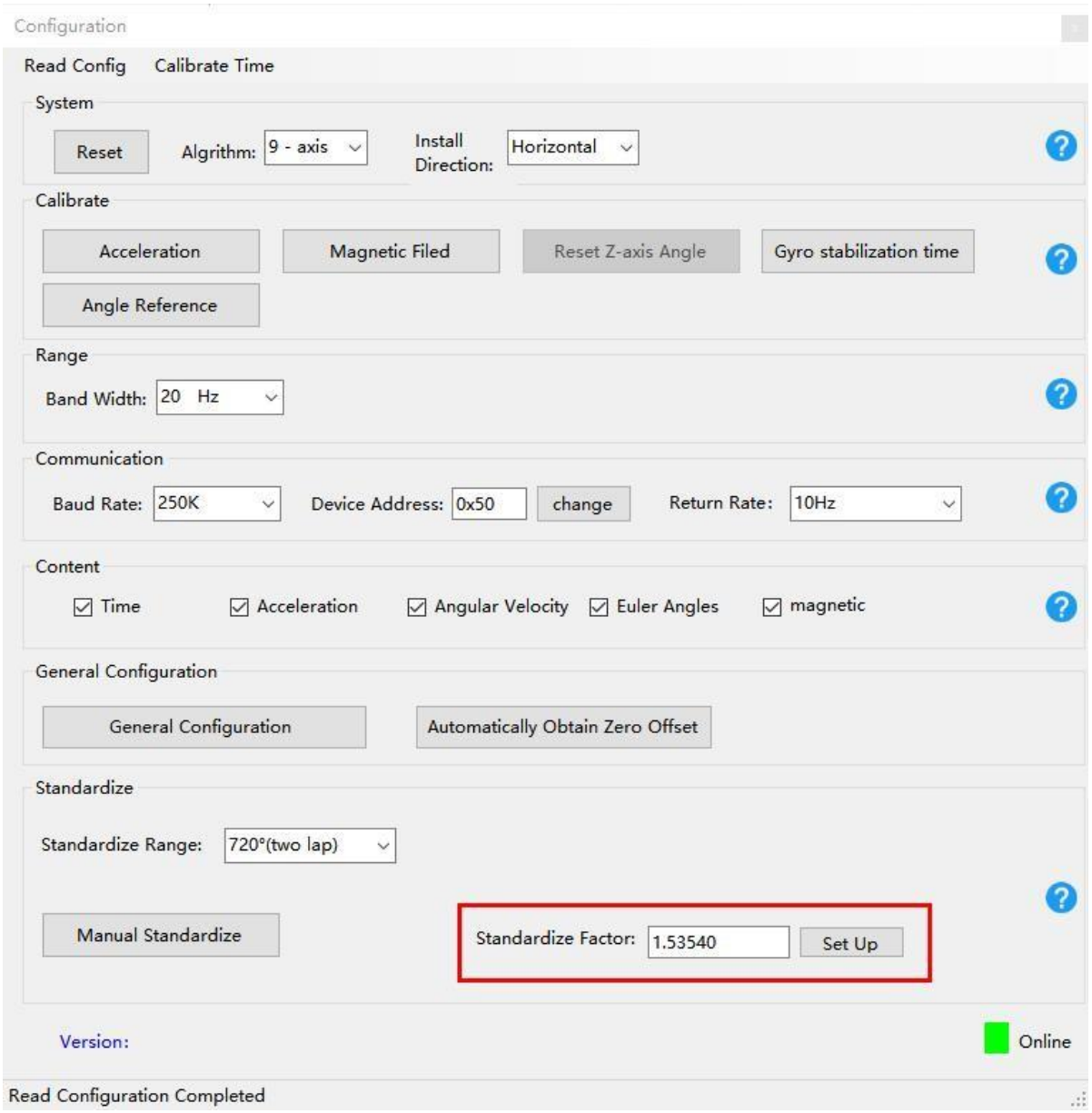
To set manual calibration, you need to click the manual calibration button first, the system willprompt the calibration risk, click OK to proceed to the next step, complete the requirements prompted by the system, and then click the calibration to end.



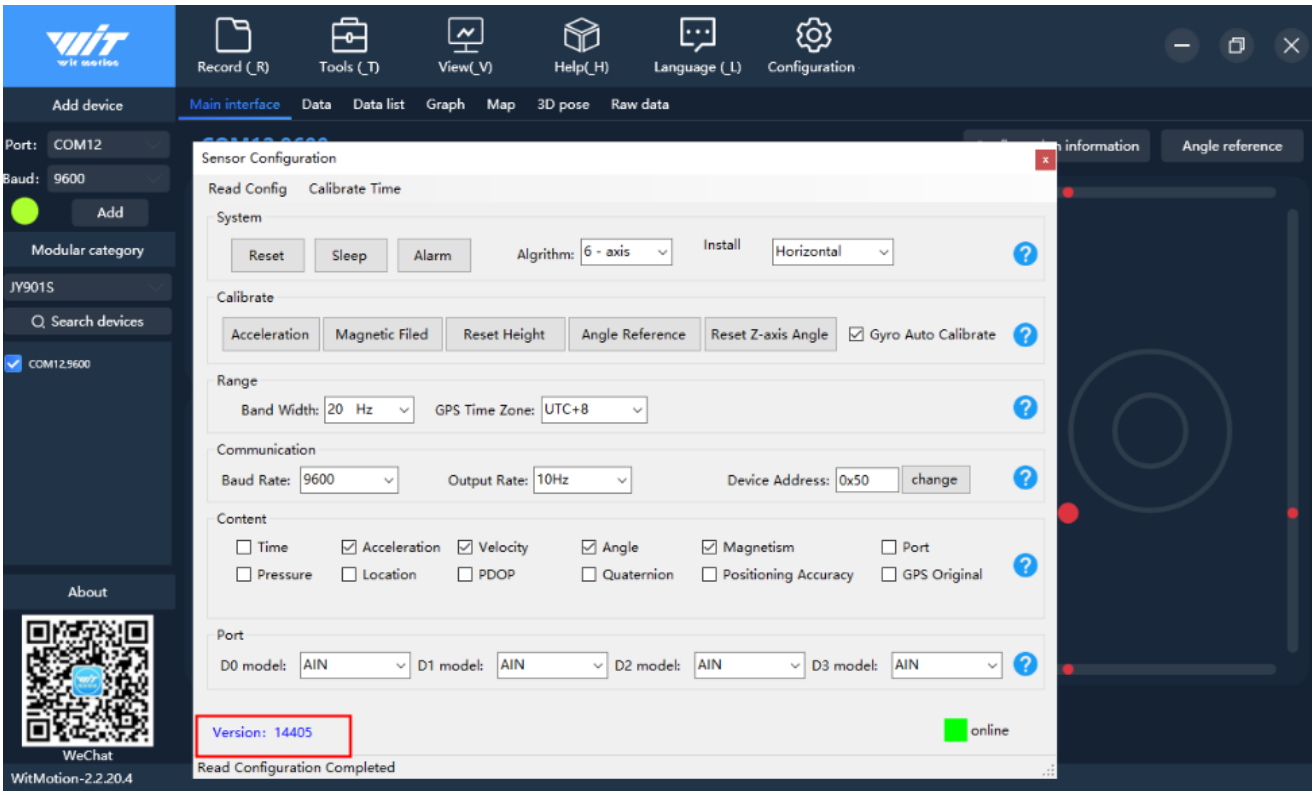
Standardize factor

There is an error in the measurement of the Z-axis gyroscope, and a high-precision turntablewill be used to measure this error when leaving the factory, and this parameter will be writteninto the sensor. Do not modify this parameter unless necessary. This parameter can be automatically calculated in the "scale factor mode". After entering the "scale factor mode", rotate the sensor by the angle set by "GSCALERANGE" to calculate the calibration factor.

The calibration factor defaults to 1.00000 and can be changed by software. To set the calibration factor of the module, based on the correct connection between the software and the module, enter a new calibration factor in the calibration factor text box of the setting option, and then click the "Change" button at the back.



3.9 Version Number

To view the version number of the sensor, please click the configuration button first, and the version number of the sensor will be displayed in the lower left corner of the sensor configuration window.

Note: The sensor need to be online to read the version number.