WitMotion WT901SDCL Inclinometer Sensor Acceleration Data Logger User Manual

Contents

WitMotion WT901SDCL Inclinometer Sensor Acceleration Data Logger

Product Information

Specifications

- **Product Name:** WT901SDCL Inclinometer Sensor Acceleration Data Logger
- **Model:** WT901SDCL
- **Manual Version:** v23-0711
- **Manufacturer:** WITMOTION
- **Website:** www.wit-motion.com

Product Usage Instructions

Introduction

The WT901SDCL is a multi-sensor device that detects acceleration, angular velocity, angle, and magnetic field. It is suitable for industrial retrofit applications such as condition monitoring and predictive maintenance. The small size of the device makes it ideal for various use cases by interpreting the sensor data using smart algorithms.

The WT901SDCL, also known as the AHRS IMU sensor, accurately measures the 3-axis angle, angular velocity, acceleration, and magnetic field. Its algorithm provides precise calculations for three-axis angles. It is commonly used in applications where high measurement accuracy is required. The WT901SDCL offers several advantages over competing sensors.

Advantages:

- Accurate measurement of 3-axis angle, angular velocity, acceleration, and magnetic field
- Small size for easy installation in industrial retrofit applications
- Smart algorithms for interpreting sensor data

Use Instructions
To access the necessary documents and resources, follow the provided hyperlink or visit the download center on the website. The following resources are available:

- Software and driver download
- Quick-guide Manual
- Teaching Video
- Common Software with detailed instructions
- SDK Sample Code
- SDK Tutorial Documentation
- Communication Protocol

Preparation

Connection to the Computer
This product comes with an attached Type-C cable for connecting to a computer. Use the provided cable to connect the product to the computer. The data cable should be used to establish the connection.

Note: The SD card functions as a switch. The sensor will only work when the SD card is plugged in.

FAQ (Frequently Asked Questions)

- **Q: What should I do if I put more than 5 volts across the sensor wiring?**
  A: Putting more than 5 volts across the sensor wiring of the main power supply can lead to permanent damage to the sensor. Please ensure that you do not exceed the specified voltage limit.
- **Q: Can I use third-party cables or accessories for the instrument grounding?**
  A: For proper instrument grounding, it is recommended to use WITMOTION's original factory-made cable or accessories. The use of third-party cables or accessories may not provide optimal performance.

Tutorial link

Google Drive

Link to instructions DEMO: WITMOTION Youtube Channel WT901SDCL Playlist.

If you have technical problems or cannot find the information that you need in the provided documents, please contact our support team. Our engineering team is committed to providing the required support necessary to ensure that you are successful with the operation of our AHRS sensors.

Contact
Technical Support Contact Info

Application

- AGV Truck
- Platform Stability
- Auto Safety System

- 3D Virtual Reality
- Industrial Control
- Robot
- Car Navigation
- UAV
- Truck-mounted Satellite Antenna Equipment

Introduction

The WT901SDCL is a multi-sensor device detecting acceleration, angular velocity, angle as well as magnetic field. The small outline makes it perfectly suitable for industrial retrofit applications such as condition monitoring and predictive maintenance. Configuring the device enables the customer to address a broad variety of use cases by interpreting the sensor data with smart algorithms. WT901SDCL's scientific name is AHRS IMU sensor. A sensor measures 3-axis angle, angular velocity, acceleration, and magnetic field. Its strength lies in the algorithm which can calculate three-axis angle accurately.

It is employed where the highest measurement accuracy is required. WT901SDCL offers several advantages over competing sensors:

- Heated for best data availability: new WITMOTION patented zero-bias automatic detection calibration algorithm outperforms traditional accelerometer sensor
- High precision Roll Pitch Yaw (X Y Z axis) Acceleration + Angular Velocity + Angle + Magnetic Field output
- Low cost of ownership: remote diagnostics and lifetime technical support by the WITMOTION service team
- Developed tutorial: providing manual, datasheet, Demo video, free software for Windows computer, APP for Android smartphones, and sample code for MCU integration including 51 serial, STM32, Arduino, Matlab, Raspberry Pi, communication protocol for project development
- WITMOTION sensors have been praised by thousands of engineers as a recommended attitude measurement solution

Warning Statement

- Putting more than 5 Volts across the sensor wiring of the main power supply can lead to permanent damage to the sensor.
- For proper instrument grounding: use WITMOTION with its original factory-made cable or accessories
- For secondary developing project or integration: use WITMOTION with its compiled sample code.

Use Instructions

Hit the hyperlink directly to the document or download center:

- **Software and driver download**
- **Quick-guide Manual**
- **Teaching Video**
- **Common Software with detailed instructions**
- **SDK (Sample Code)**
- **SDK Tutorial Documentation**

- [Communication Protocol]

Preparation

Connection to the Computer

- This product has an attached Type-C cable that connects the computer and the product. Please use the cable that comes with the product. Use the data cable to connect the product
- **Note:** The SD card is equivalent to a switch, only when the SD card is plugged in, the sensor can work

Indicator Status

1. The product is connected to the power supply. At this time, the power indicator (red) is always on, indicating that the product is charging. The red light will go out after charging is completed.
2. After inserting the SD card for about 1 second, the blue light flashes, indicating that the SD card is recording data.

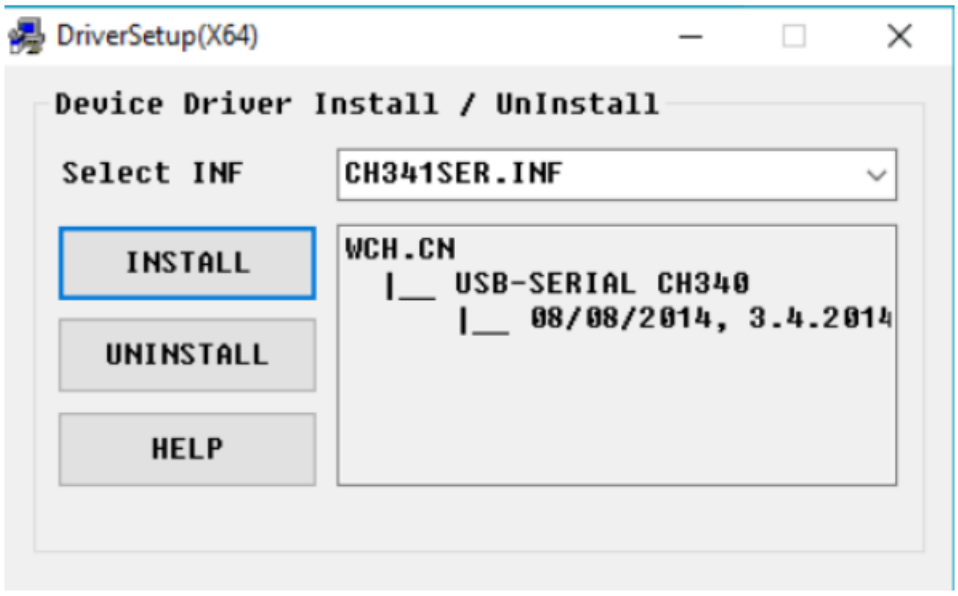
Software Preparation

Unzip the software and install the driver CH340

[Link to CH340 driver]

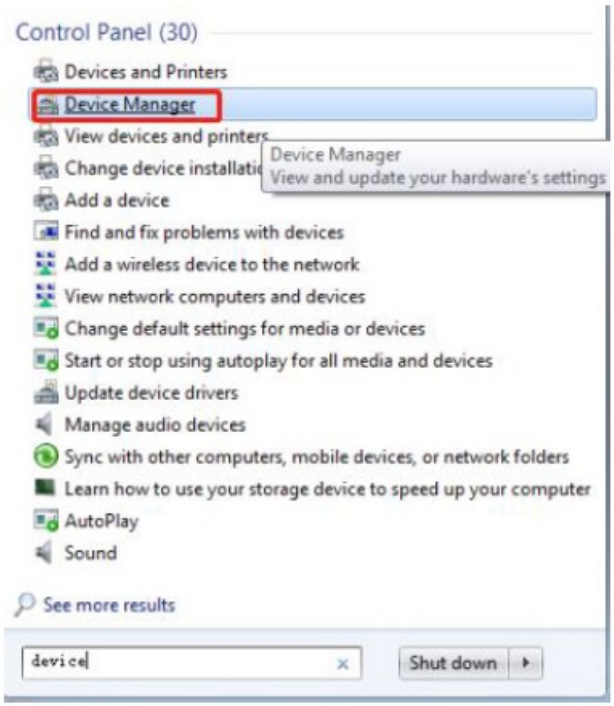
1. **Step 1.** Connect the sensor with offered Type-C cable.
   (Warm Reminder:If you wanna use a longer cable,it should be a standard Type-C data cable)
2. **Step 2.** Unzip the software and install the driver CH340 [https://drive.google.com/file/d/1l3hl9Thsj9aXfG6U-cQLpV9hC3bVEH2V/view?usp=sharing]

How to Install and update the CH340 driver
Click the “Uninstall” button first. Then click on the “Install” button.

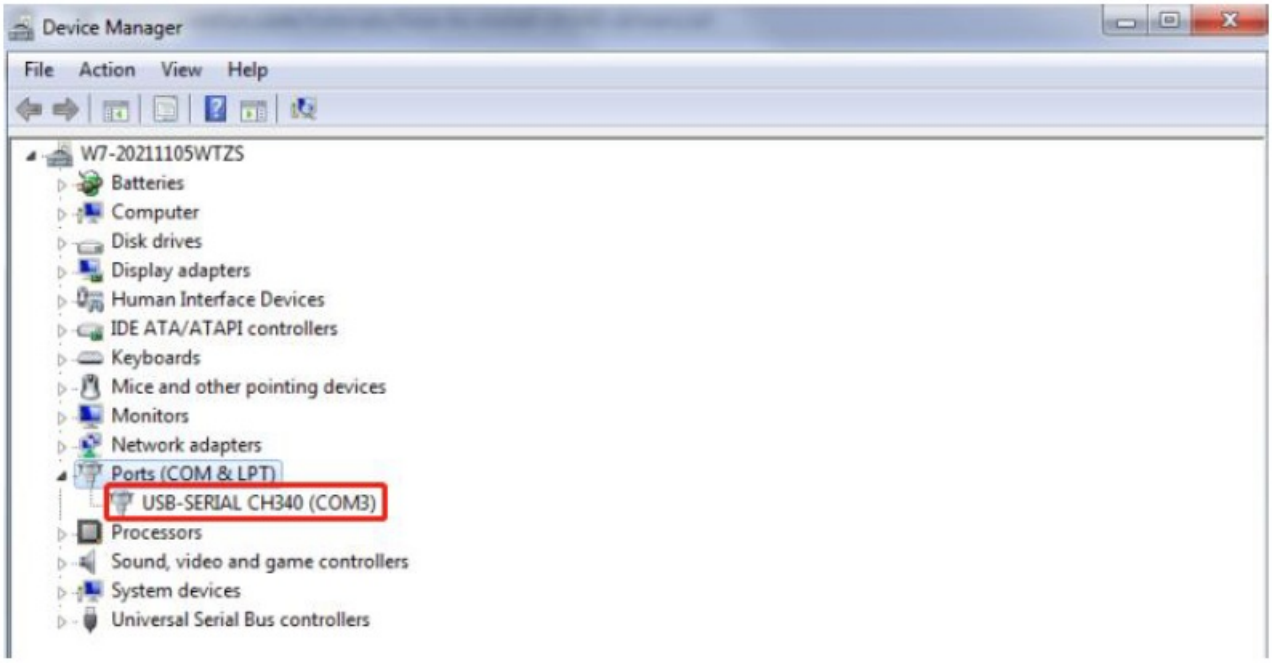


How to verify your driver is working

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.

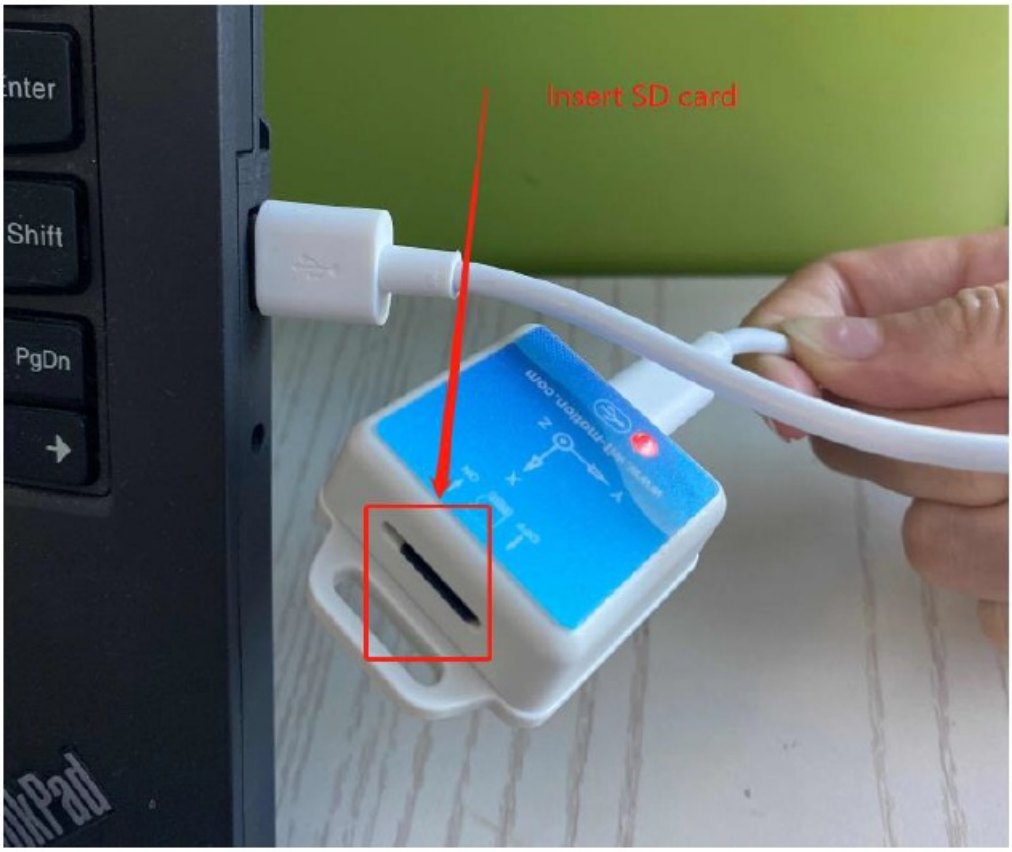


2. After opening the device manager, you will need to open the Ports (COM & LPT) tree. The CH340 should show up as USB-SERIAL CH340 (COM##). Depending on your computer, the COM port may show up as a different number.

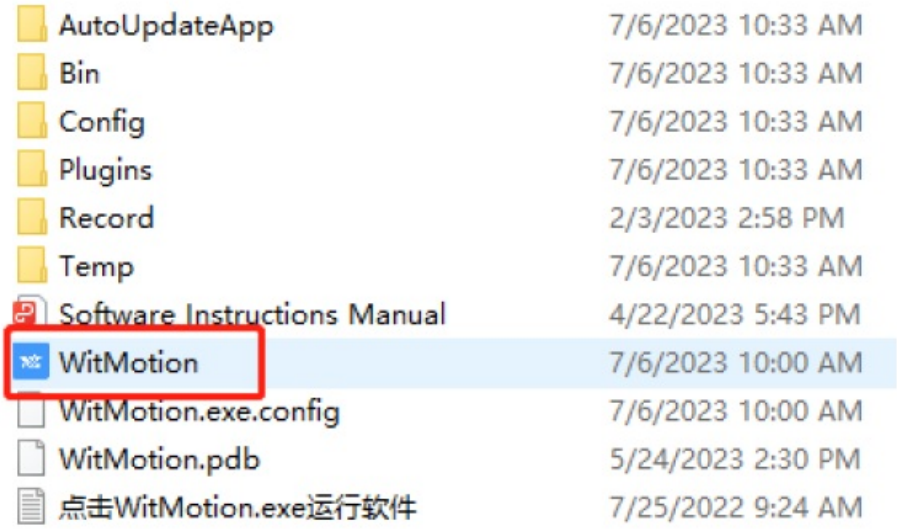


Type-C Cable Connection

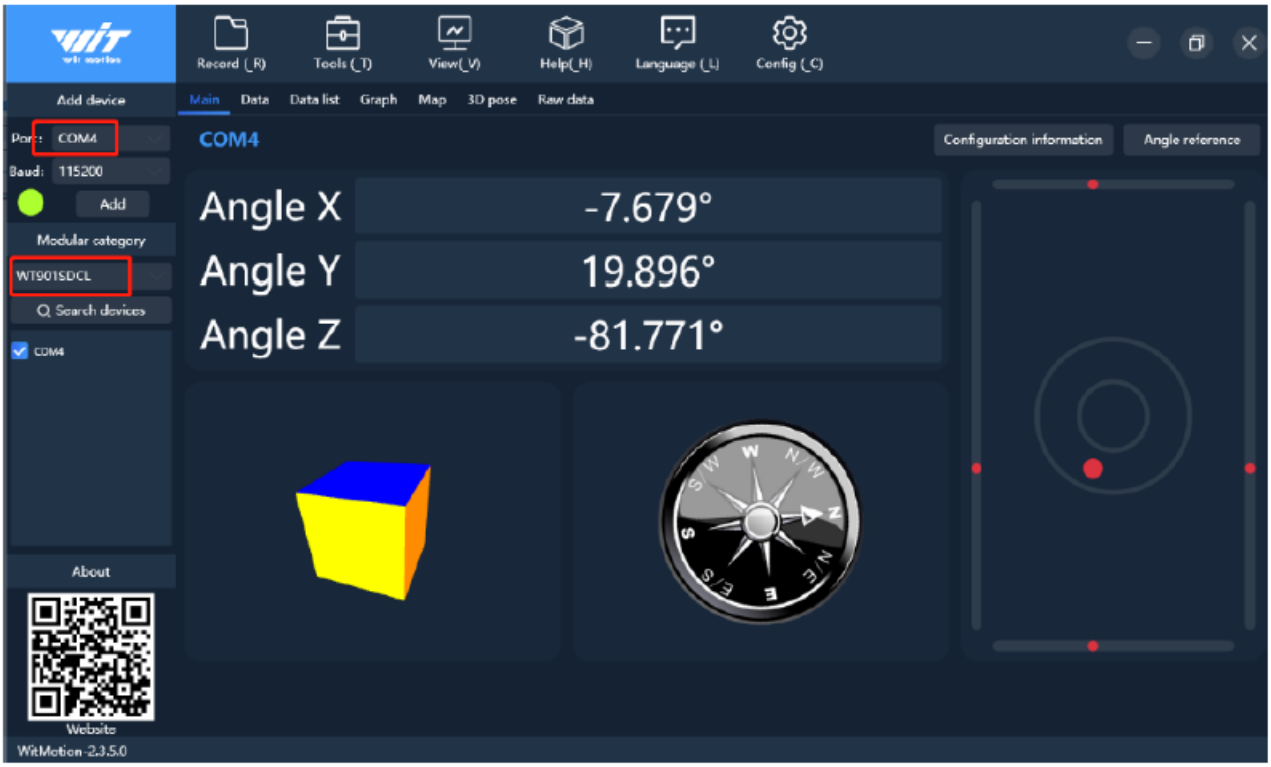
- **Step 1:** Insert the SD card, and connect the sensor to the PC with a Type-C cable.
  Note: The SD card is equivalent to a switch, only when the SD card is plugged in, the sensor can work.



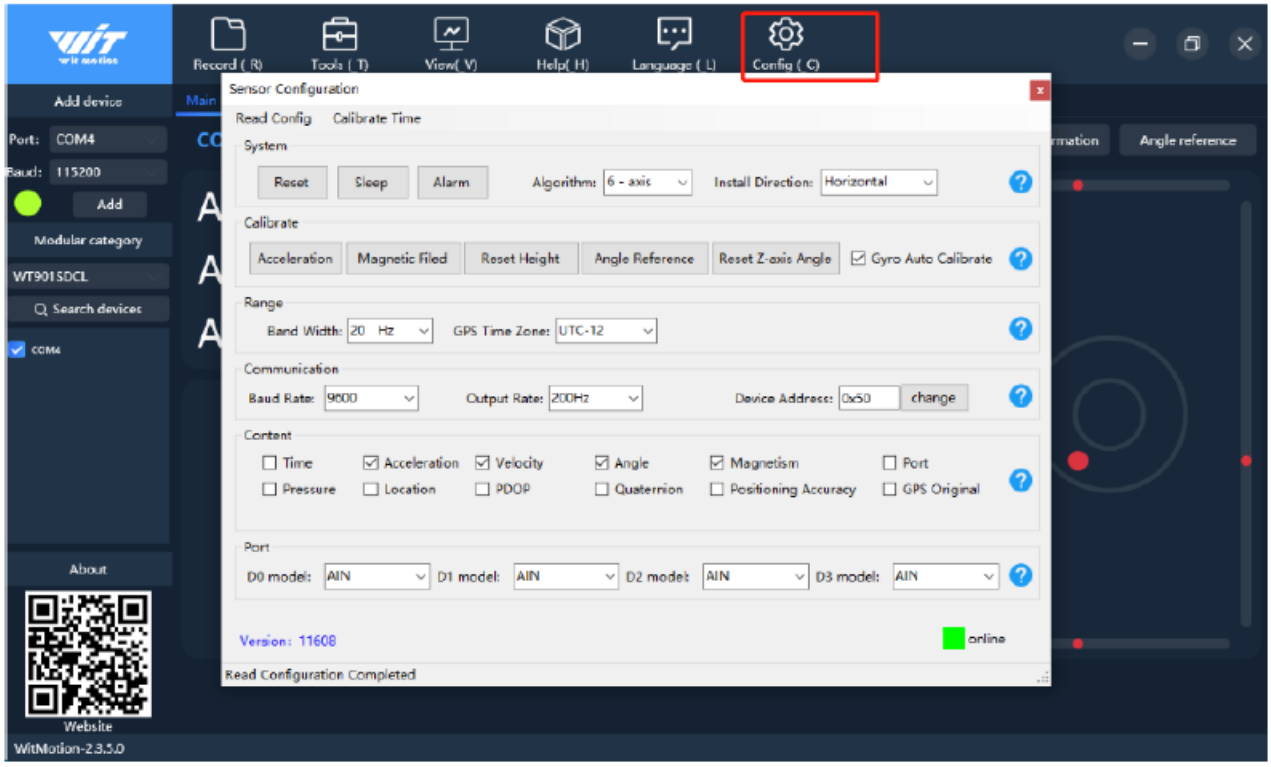
- **Step 2:** Hit the “WitMotion.exe”, and open the software.



- **Step 3:** Choose the right Port and product “WT901SDCL”.

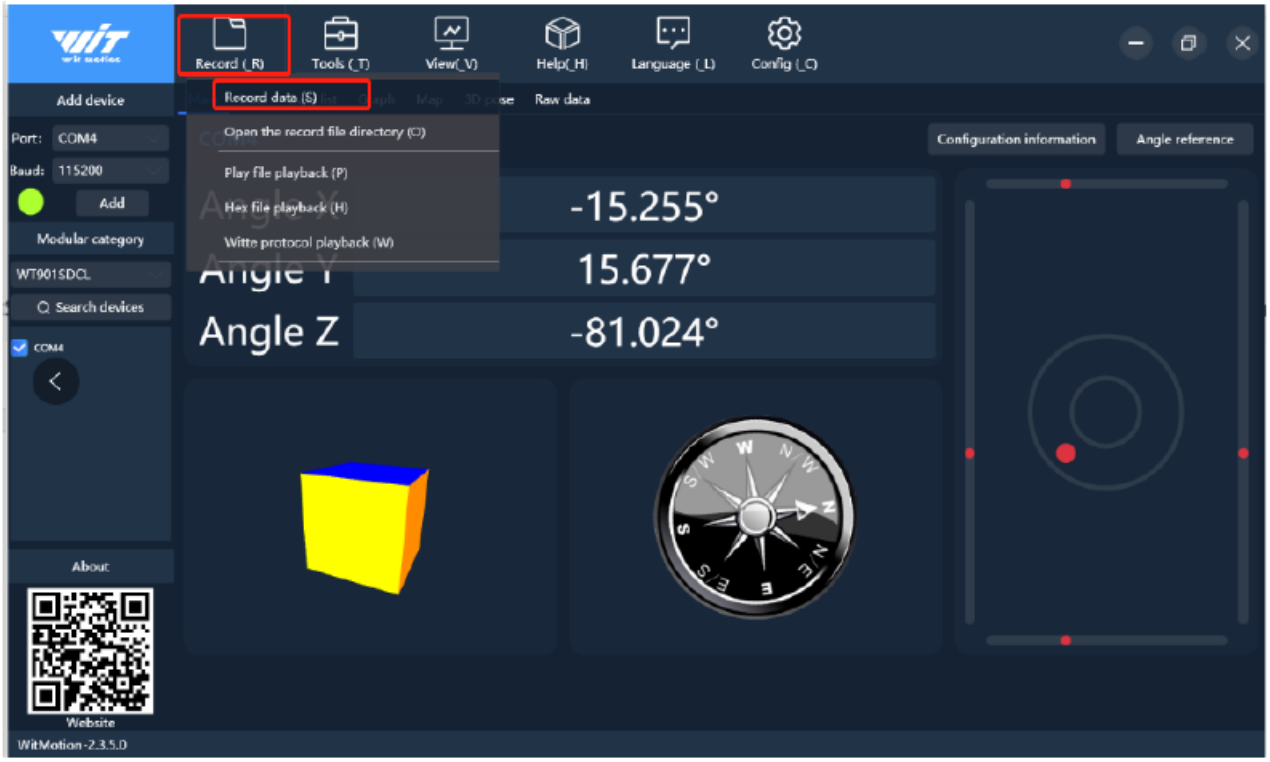


- **Step 4:** You can set configuration in the Config.

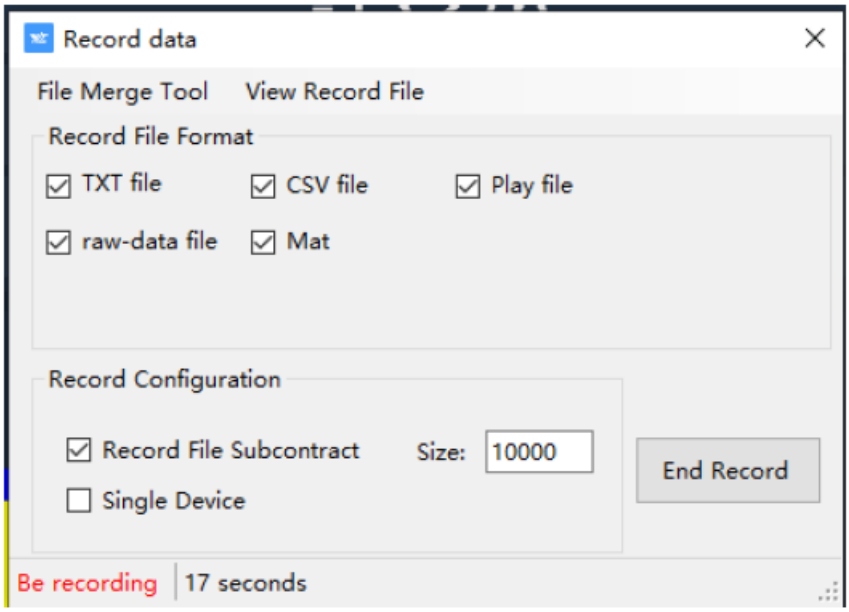


Record the data

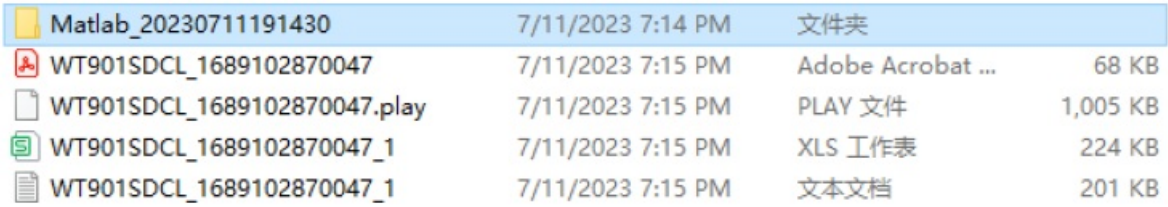
- **Step 1:** Please hit the “Record”, then hit “Record data”.



- **Step 2:** Please choose the format of data you need, then hit “Start Record”.

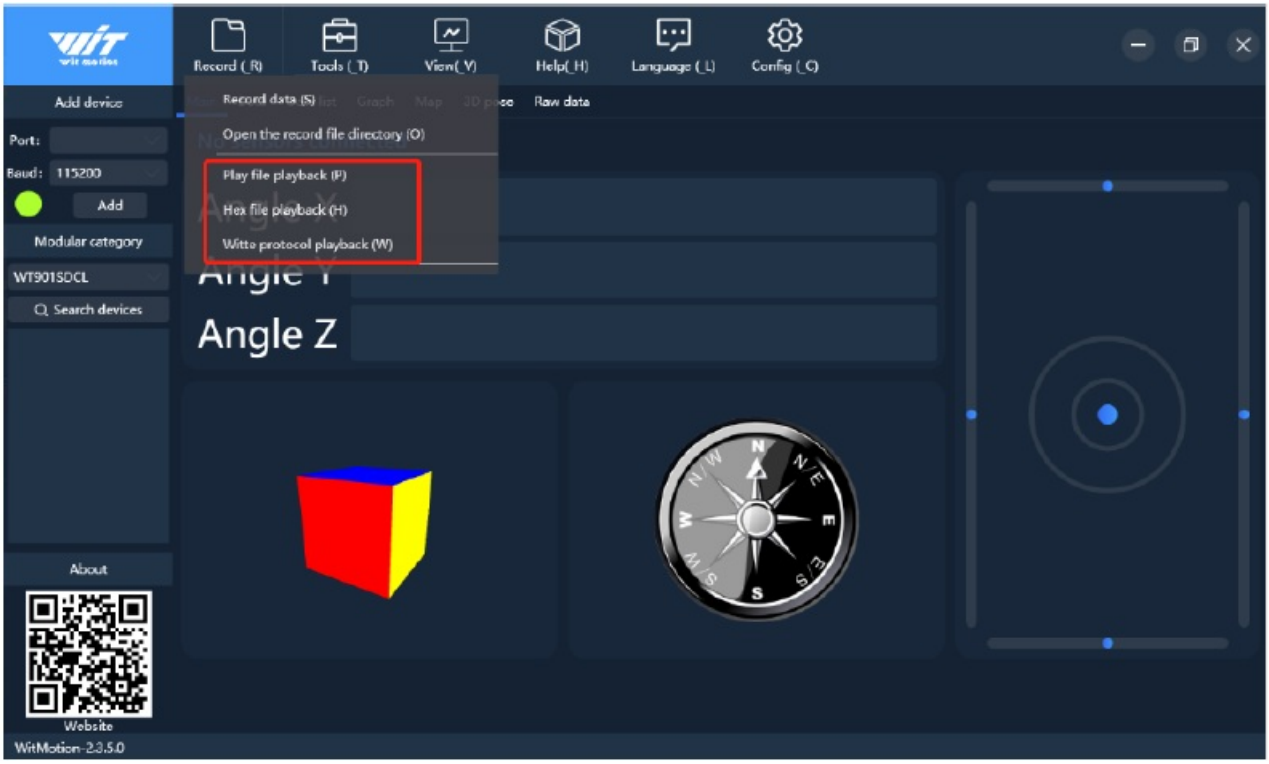


- **Step 3:** You can check the following five files: TXT\CSV\Play\raw-data\Mat

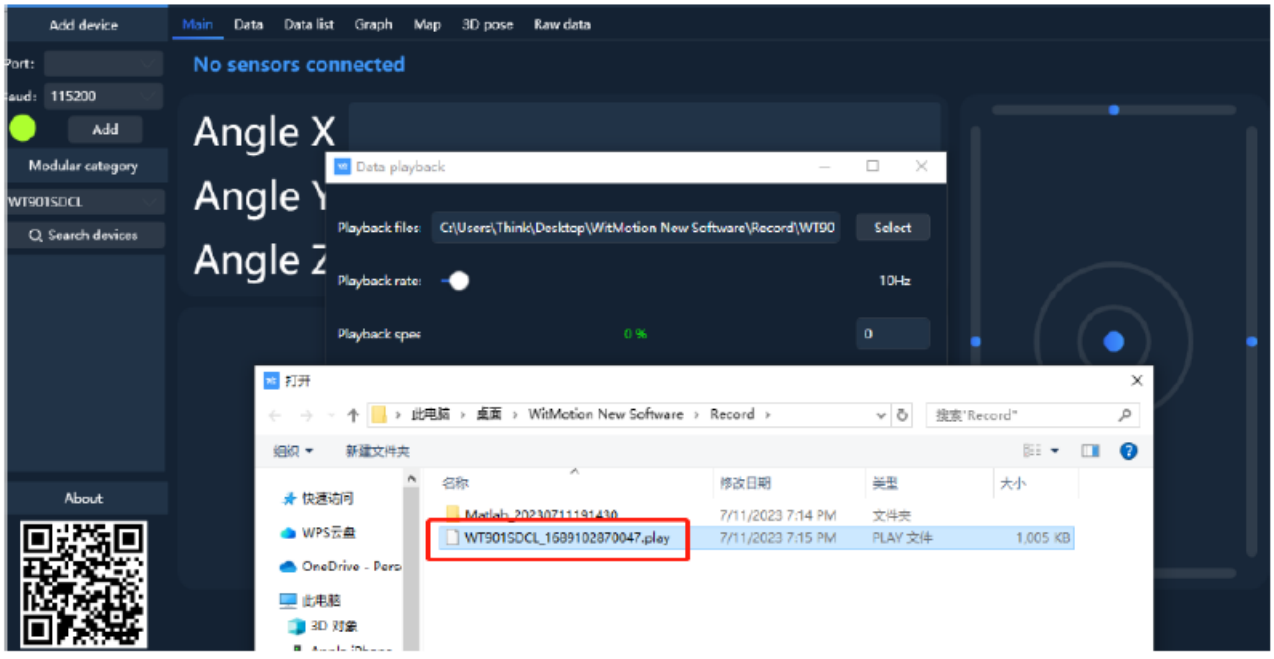


Playback data

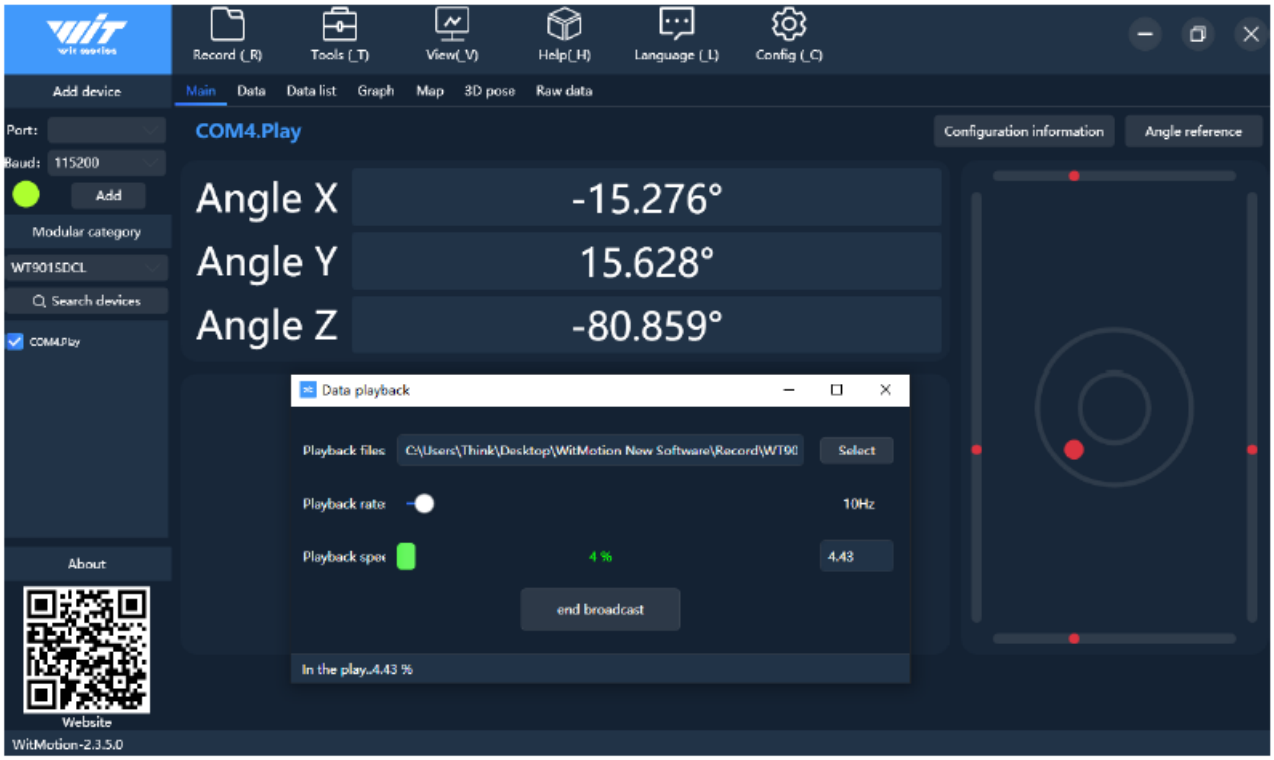
- **Step 1:** Please choose the way of playback: Play file/Hex file/Witte protocol



- **Step 2:** Choose the right file, then click “Start record”.



- **Step 3:** You can check the data is playback.



Offline Record

Guidelines

1. Offline record requires the configuration of calibrating time. So the data will have a “Time” to know when the data starts to be recorded. There will be a 16G SD card and an SD card reader that comes with the sensor as an accessory.
2. In this product, the SD card is mainly used to record data. Only when the SD card is inserted will the product start to work and the data will be transferred.
3. Each time an SD card is inserted, the data will be getting recorded. The data will be stored in the SD card as text. The LOG with the largest number is the latest file.

Instructions

[Link to WT901SDCL’s demo video]

Note:
The TXT format of the offline record is garbled, please record the playing data to get the raw data.

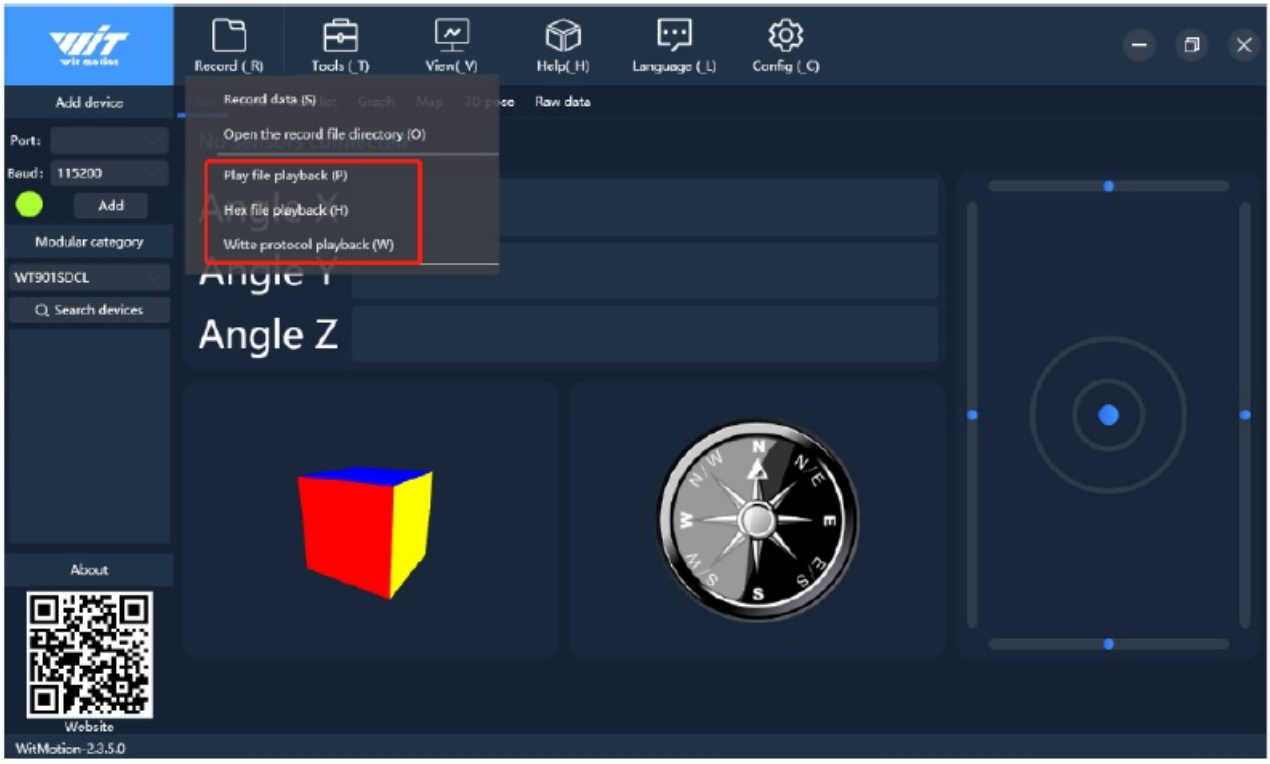
When the data is playing back, click on the “Record data” to get the original data such as csv/txt/play. (Please refer to chapter 4.1)

- **Step 1.** Disconnect with the computer (Unplug the cable)
- **Step 2.** Insert the SD card into the sensor, the sensor will start to record the data.

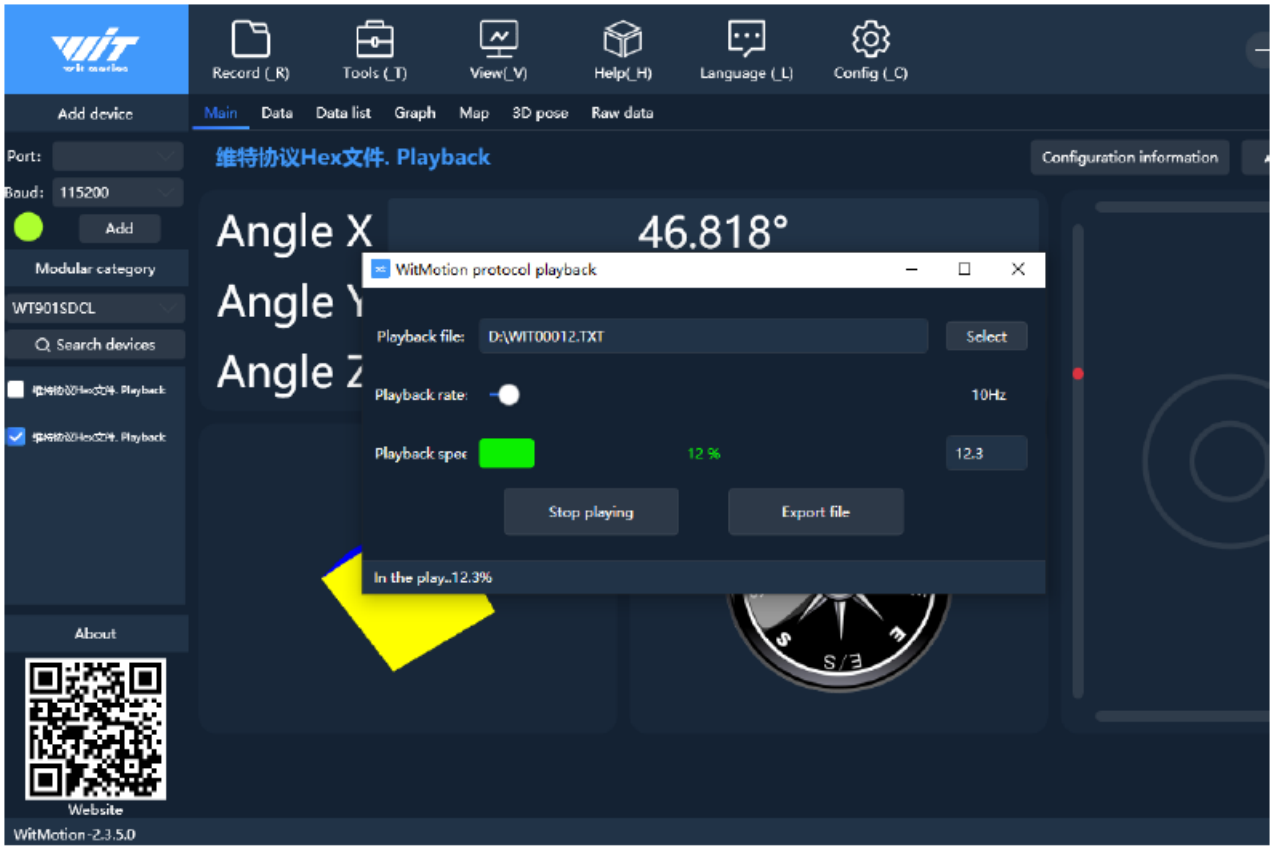
- **Step 3.** Remove the SD card and insert it into the card reader, than you can check the recoding file as txt.

名称	修改日期	类型	大小
ET T.XT		XT 文件	0 KB
IT00001T.XT		XT 文件	0 KB
SET		文本文档	1 KB
WIT00000		文本文档	12 KB
WIT00001		文本文档	483 KB
WIT00002		文本文档	5,642 KB
WIT00003		文本文档	397 KB
WIT00004		文本文档	60 KB
WIT00005		文本文档	724 KB
WIT00006		文本文档	318 KB
WIT00007		文本文档	161 KB
WIT00008		文本文档	890 KB
WIT00009		文本文档	139 KB
WIT00010		文本文档	1,235 KB
WIT00011		文本文档	183 KB

- **Step 4.** Plugin the reader Open the software, and click the “Record”, then click the method of playback.



- **Step 5.** Select the recorded file from the USB Drive path and load the recorded file, click “Start playing” and data will be playback.



Documents / Resources

	WitMotion WT901SDCL Inclinometer Sensor Acceleration Data Logger [pdf] User Manual WT901SDCL, WT901SDCL Inclinometer Sensor Acceleration Data Logger, Inclinometer Sensor Acceleration Data Logger, Acceleration Data Logger, Data Logger, Logger

References

- Hukseflux | #1 in solar radiation & heat flux measurement
- Accelerometer, Gyroscope, 6050 Mpu, Ahrs Sensor, Mpu-6050 Supplier
- SDK - WITMOTION SDK
- STM32_SDK Quick Start - WITMOTION SDK
- User Manual