Application FAQ of WT901C

1. What should I do if there is no data when the device connected with the PC software MiNIIMU?

Answer:

1. It should be confirmed that there are no issues with the wiring connection.

TTL communication: VCC-VCC TX-RX, RX-TX, GND-GND.(TTL)
RS232 communication: VCC-VCC , TX-232RX , RX-232TX , GND-GND.(RS232)
RS485 communication: VCC-VCC , A-A ,B-B, GND-GND.(RS485)

2. It should be checked whether the convert module can be available or not.

RS232 & TTL communication: short-circuit the TX and RX of USB-TTL(USB-RS232) module.
Then sending data via the serial port assistant tool.
The USB-TTL, (USB-RS232) module is available if it can output the same data compared with the sending data. If no, the convert module should be replaced .

485 communication: Two USB-485 modules should be used for sending and receiving together.

3. If there is no problem about the point 1 & 2, then it is necessary for checking the operation on the MiNIIMU

a Confirming the correct serial port No has been generated after installing the corresponded drive of the convert module.

b Checking the communication protocol of PC software correspond with the usage sensor

c It should be required for selecting the correct serial port No and the correct baud rate (The default baud rate could be found in the corresponding datasheet)

d Checking whether the original data starting with code “55 50” If no,it should be changed under serial mode for data.

2.The definition about 3 ,6 ,9 ,10 axis

Answer:

The 3 axis sensor means that the 3 axis accelerometer sensor, the X, Y angles are calculated by the value of acceleration.

The 6 axis sensor means the one integrated with 3 axis accelerometer and 3 axis gyroscope, the X, Y, Z angles are calculated by the values of acceleration and angular velocity.
(Note: The the Z-axis angle will exist the accumulative error due to the solution about the integral calculation of gyroscope)

The 9 axis sensor means the one integrated with 3 axis accelerometer and 3 axis gyroscope and 3 axis magnetometer, the X, Y, Z angles are calculated by the values of acceleration, angular velocity and magnetic field.
(Note: The Z-axis angle is calculated by the magnetic field. And it will be affected by the magnetic field surrounded)

The 10 axis sensor means the one integrated with 3 axis accelerometer, 3 axis gyroscope, 3 axis magnetometer and barometer.

3.The MiNiIMU could not run on PC

Answer:

It should be requested for certain conditions for running with MiNiIMU.

Please install the Microsoft .NET Framework 4 firstly, and the download link shows as below:

https://www.microsoft.com/zh-cn/download/details.aspx?id=17718

4.It could not support receiving data concerning sample code

Answer:

1. Checking whether there are data output and the correction of data on MiNiIMU or not

2. Checking it has been compiled and download concerning the sample code

3. Checking the wired connection corresponds with the manual of sensor

4. Checking the value of baud rate and No of serial port

5.Note that the development board should be the same as the one we used. It should be modified concerning the sample code if the development board is different from ours.

5.The standard about calibration of accelerometer

Answer:

Horizontal installation :
The sensor should be under horizontal level for default installation.

Vertical installation:
The Y-axis of the sensor should be upward if you choose the vertical installation.

6.How to create the custom App for reading data from sensor

Answer:

Please have a reference with the communication protocol of sensor which concerning the reading data and config of commands for custom App.

7. Why the sensor could not be searched on MiNIIMU?

Answer:

1.The function of the automatic searching device would be invalid if the other serial ports have been occupied. Closing the other serial ports for opening the corresponded serial port automatically

2.Notice that choice with the available baud rate and the corresponded serial port.

3.Close the tip of the searching box and you can open the serial port corresponded with the sensor manually.

8.Why is messy concerning the data of log file

Answer:

Please update the latest version for MiNiIMU

9. Definition of rotation axis

Answer:

It is defined by the right-hand rule concerning the definition of the axis rotation. The direction of the axis would correspond with the thumb of right-hand points. The bending direction of the four fingers in the direction of rotation around this axis after the four fingers make a fist.

The definition of three axial directions have been shown in the datasheet.

10. Why is incorrect about the parameter value of record time by PC Software MiNIIMU?

Answer:

This is the issue of resolution on the laptop. The resolution of time is 0.1 seconds on PC. For example, The duration of time is 0.05 seconds if the sample rate of the sensor is 20Hz, and that is why the parameter of record time will be shown repeatedly. The data sample will be output with a certain duration but we check the defeat time on the file of TXT
We can choose the output of parameter time on config if it is requested

11. Does the module could offer displacement and speed?

Answer:

It is not recommended to use due to the certain error of accuracy, the calculated error data will be a large one as time go on

12. The blue screen problem and the mouse jump randomly?

Answer:

The steps of operation should be as below:

1.Open the MiNiIMU
2.Insert the convert on PC
3.Confg the parameter on MiNiIMU
4.Connected the sensor with convert

How to avoid the issues
Activate the module via command or change the different baud rate between the sensor and other devices

13. Why is there 1g of acceleration concerning the Z-axis?

Answer：

There is 1 g of acceleration data concerning gravity after placing horizontally

14.Does it should be calibrated again for usage?

Answer:

Yes. There is a bias error when production of AHRS sensors, it should be calibrated concerning acceleration and magnetometer for usage under different places

15.What is the purpose concerning calibration of magnetic field.

Answer:

It could reduce the affect of magnetic field surrounded.

16.It requests the output of yaw angle under the surrounding of the motor.

Answer:

It could not be done under the 9 axis sensor, you can have a try with the HWT101 module or HWT101DT.

17.The record file shows that the repeated data under the sample rate of 200Hz

Answer:

Please config the higher value for the parameter of bandwidth

18.Why the angle value of the Z-axis is not correct?

Answer:

1.The direction of the Z-axis is based on the calibration of geomagnetism for the parameter yaw value
And it could not be affected by the other magnetic material.
What types of surroundings would exist the affect concerning calibration of geomagnetism?

Such as the motor, stainless steel, strong alternate current(AC), iron, which could be magnetized by the material of surrounding easily. But it will be available if it exist the aluminum and copper in the surrounding.

2.Here is a solution could confirm the sensor has been affected by the surrounding.
The parameter of |H| which means the magnetic field of the sensor should not be larger than 300 if it does not be affected by surrounding.

2. If points 1, and 2 could be ignored, we could make the calibration of the magnetometer for correcting the angle of the Z-axis. You can follow the videos and manuals concerning sensor for the idea of calibration of the magnetic field.

19.How to calculate the parameter value of temperature concerning the chip?

Answer:

Here is the raw data concerning the value of acceleration "55 51 09 F9 1B 03 7D 02 07 0D 59", the detailed code "07 0D" stands for the raw data of temperature concerning chip.
And the data value of "07 0D" should be transformed into the decimal mode.

20.What is the meaning of parameter Quaternion?

Answer:

The value of quaternion is designed for the calculation concerning the parameter of Euler angles.

21.It could be recorded concerning raw data?

Answer:

The MiNiIMU could not record the raw data directly, it could be recorded with files under the format of "BIN, TXT" in decimal mode.

22.How could confirm the value of the return rate has been changed.

Answer:

Sending the command of value concerning baud rate "FF AA 27 03 00", the corresponded value would means the register of "03".

The returned data would be the beginning with "55 5F".The next value after "5F" would be the value of the return rate.

Please check the meaning of the returned value based on the communication protocol of the datasheet.

23.How to make calibration of accelerometer via command?

Answer:

Please make the correct connection with the sensor, and keep the sensor under a horizontal level.

And sending 3 commands one by one concerning the operations "Unlock"," Acceleration Calibration"," Config Save" as below:

1.Sending the command "FF AA 69 88 B5" for unblocking the config of the sensor.
2.Sending the command "FF AA 01 01 00" for calibration of acceleration.
3.Sending the command "FF AA 00 00 00" for saving the config.

24.What about second development

Answer:

The second development is concerning the functions of the sensor which based on the requirements and applications of IMU data, it does not support the firmware development of the sensor.

25.What are the differences in angle of the Z-axis between 6 axis sensors and 9 axis sensors?

Answer:

6 Axis:
The Z-axis of angle will be returned to zero after power on the second time.

9 Axis:
The angle of the Z-axis will keep the previous data even though after power on the second time.