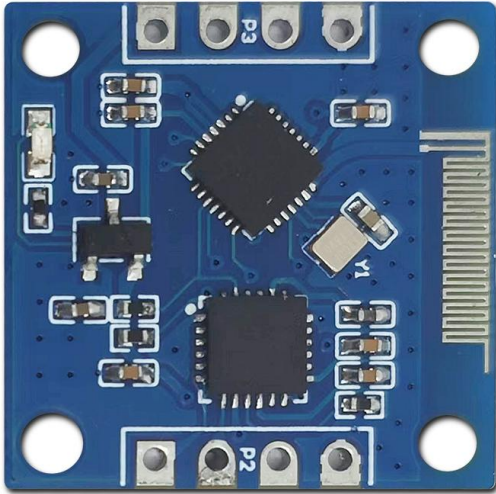

**Serial port Bluetooth output accelerometer gyroscope
attitude angle sensor MPU6050 module
QS-EM-1287**

a) About

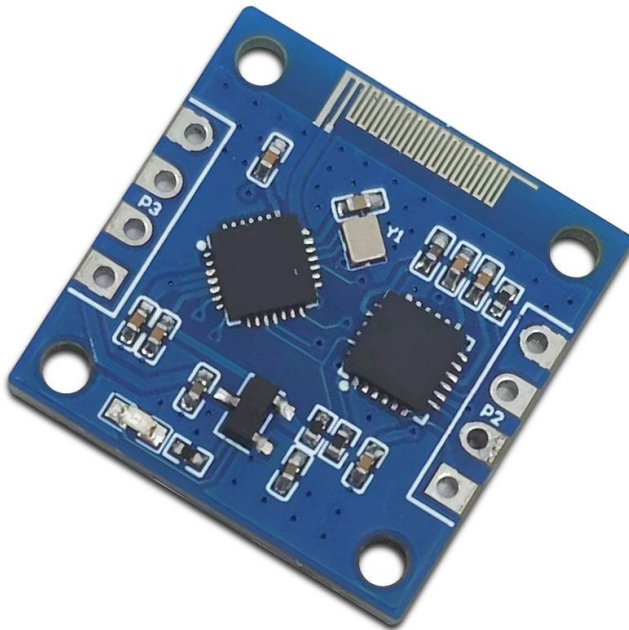
This module will obtain 3-axis angular velocity and 3-axis acceleration by reading the MPU6050 sensor, and calculate the 3-axis attitude angle through DMP attitude calculation. Transfer hexadecimal data through a serial port with a fixed baud rate of 115200, a fixed serial return rate of 50Hz, and a Bluetooth return rate of 20Hz (depending on the network environment)

b) View

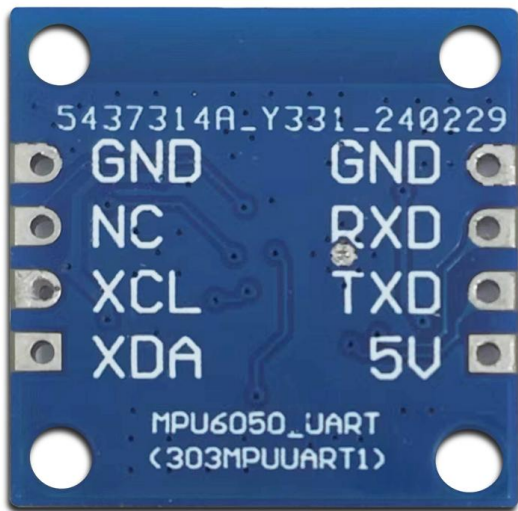
① Front view



② Side view

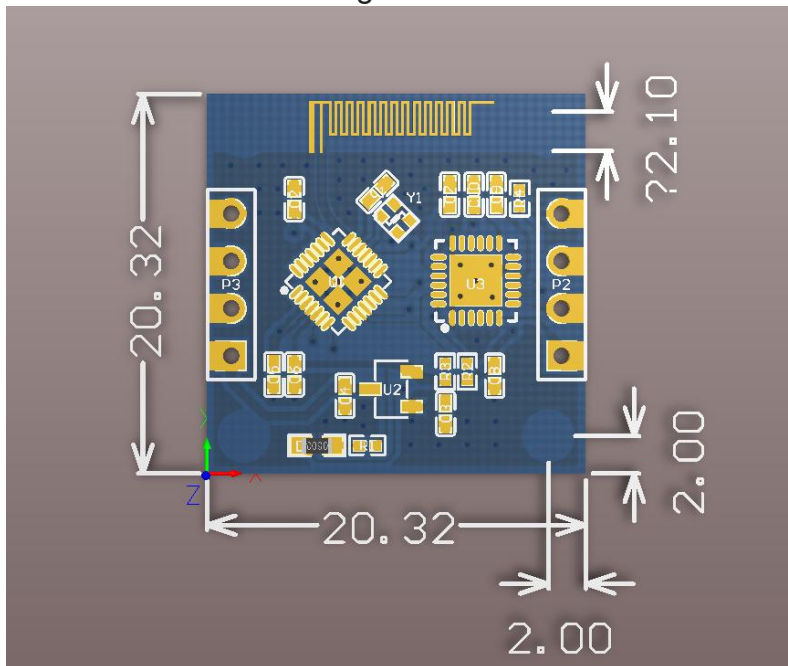


③ Reverse image



c) Introduction and Explanation

Board size: 20 * 20mm/6g



d) Functional Features

- Small size, easy to install
- Both wired and wireless can be used
- Serial port return rate 50Hz
- Bluetooth return rate 20Hz, up to 3M

e) Instructions for use

Pin	Function Description
GND	Negative pole of power supply
NC	Short circuit GND, can upgrade CH582 firmware, generally suspended
XCL	External magnetometer, program needs to be modified by oneself; Otherwise, it will remain suspended
XDA	External magnetometer, program modification required by oneself; Otherwise, it will remain suspended
RXD	Data receiving end
TXD	Data sender
5V	Positive pole of power supply, compatible with 3.3V~5V

Use CH340 serial port to connect the board, TX RX crossover. The blue light on the board will remain on (initialization) and then start flashing (normal operation). Open the serial assistant to see the data transmission.

f) Protocol analysis

The output format is JustFloat format, where every 4 bytes represents a Float data and ends with 00 00 80 7F

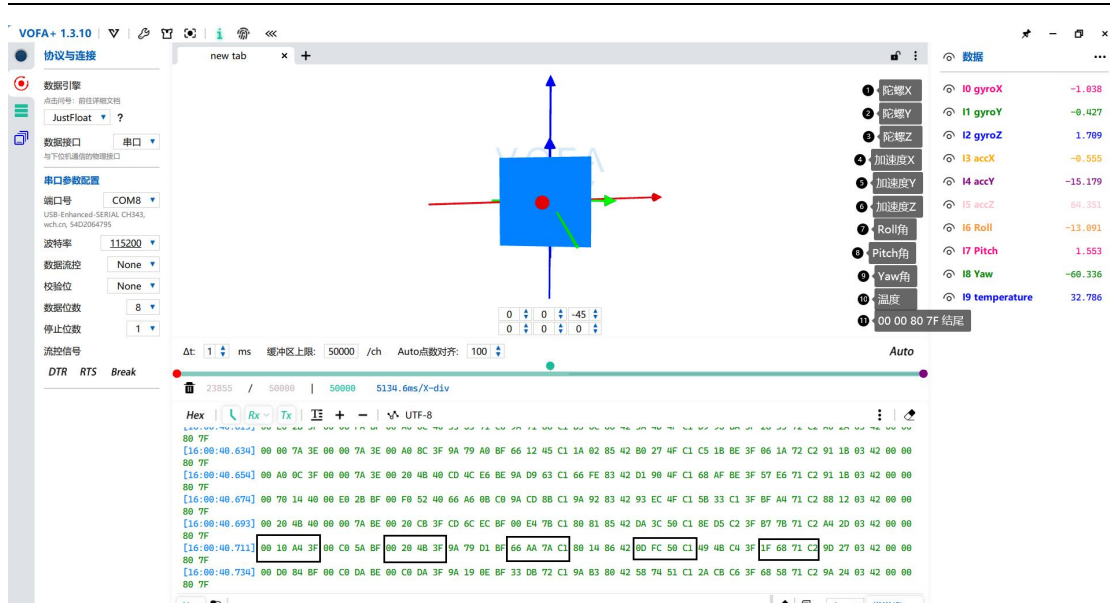
[JustFloat | VOFA-Plus upper computer](#) [VOFA-Plus upper computer | VOFA-Plus upper computer](#)

You can view data using the VOFA upper computer, and drag the Cube control to view attitude changes online

A total of 10 types of data are output, all from the internal registers of MPU6050, and the attitude angle is calculated by DMP

In order, they are:

1. gryoX
2. gryoY
3. gryoZ
4. accX
5. accY
6. accZ
7. Roll
8. Pitch
9. Yaw
10. temperature



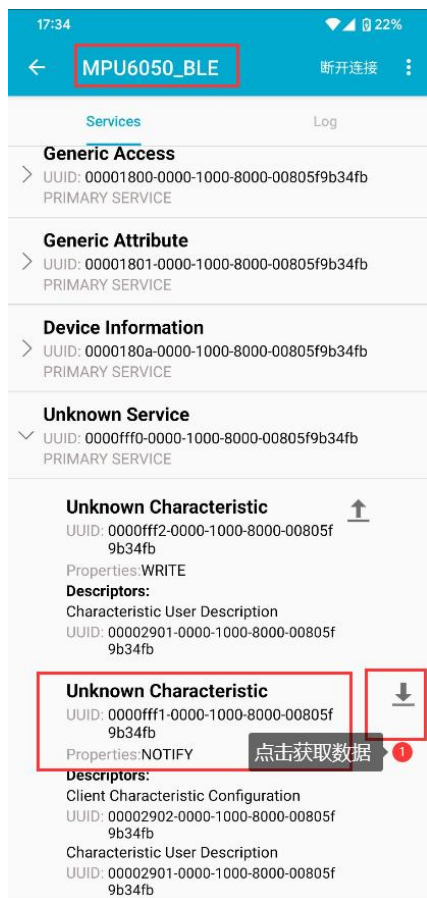
Right click save to view large image

g) Bluetooth transmission

[BLEAssist.ZIP - Nanjing Qinheng Microelectronics Co., Ltd \(wch.cn\)](#)

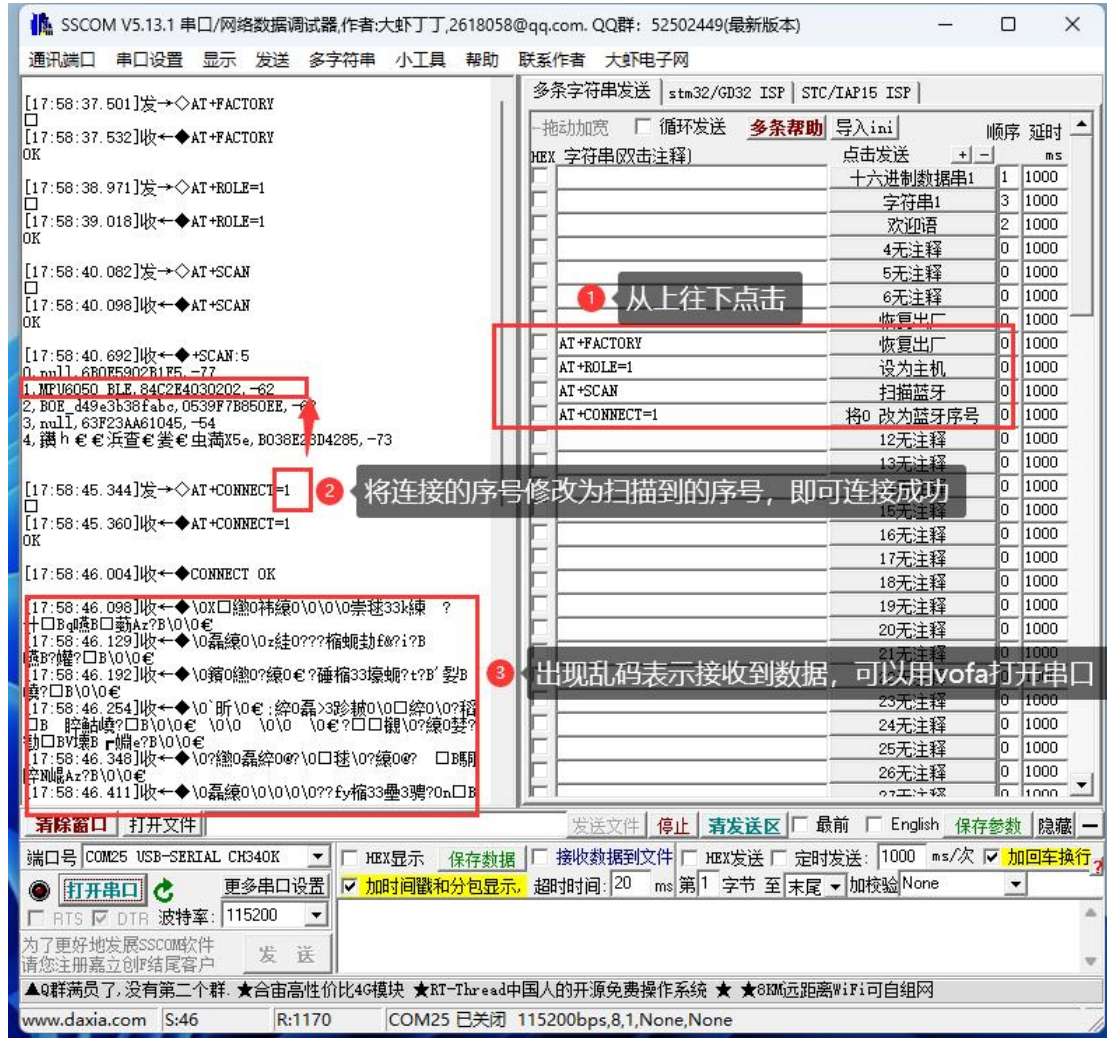
Install Bluetooth analysis tool on Android phone and connect the Bluetooth of MPU6050uBLE in the tool

Find the last service and click the arrow to retrieve the data



[Bluetooth serial port module BLE5.2 ECB02C BLE serial port transparent transmission secondary development - Taobao \(taobao.com\)](#)

By using this Bluetooth to serial port tool, data can be obtained directly on the computer
Just send the command as shown in the picture. The serial tool has already set the command in the compressed file



If the MPU6050uBLE serial number is scanned as 1, then AT+CONNECT=1 sends
 If the MPU6050uBLE serial number is scanned as 2, then AT+CONNECT=2 will be sent
 You need to modify the sequence number of the sending instruction by yourself
 If unable to connect, power off and restart both MPU6050 and Bluetooth serial port
 before reconnecting