

# Gyroscope Bluetooth Version BWT901CL

## SPECIFICATION



Model : BWT901CL

Description : Nine axis Bluetooth attitude angle sensor

Production Standard

Enterprise quality system standard: ISO9001:2016

Tilt switch production standard : GB/T191SJ 20873-2016

Criterion of detection : GB/T191SJ 20873-2016

Revision date : 2017.8.30

| Version | Update content | Author | Date     |
|---------|----------------|--------|----------|
| V1.0    | Release        | Snow   | 20170831 |

# Catalog

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# 1 Description

Reminder: The built-in module chip of this product is JY901, adding the function of a Bluetooth connection. For detailed parameters, please refer to the instructions of JY901.

Instructions of JY901: <https://pan.baidu.com/s/1qYhQUgW>

The baud rate of this product is 115200 and cannot be changed.

The interface of this product only leads to serial port, so there is no expansion port and IIC function.

- ✧ JY901 module was integrated to the BWT901CL, Small and delicate shell protects the module and it is convenient to carry. On the basis of the original function, the Bluetooth interface is added. The wireless transmission can be realized by connecting Bluetooth to the PC software.
- ✧ The module integrated high precision gyro accelerometer and geomagnetic field sensor. The product can solve the current real-time motion posture of the module quickly by using the High - performance microprocessor, advanced dynamic solutions and Kalman filter algorithm.
- ✧ The advanced digital filtering technology of this product can effectively reduce the measurement noise and improve the measurement accuracy.
- ✧ The attitude solver is integrated into the module, and the dynamic Kalman filter algorithm can accurately output the current attitude of the module in the dynamic environment.
- ✧ An internal voltage stabilizing circuit module, voltage 3.3v~5v, pin compatible with the 3.3V/5V embedded system, convenient connection.
- ✧ Support serial port, convenient for users to choose the best way to connect.
- ✧ Maximum 200Hz data output rate. Input content can be arbitrarily selected, the output speed 0.1HZ ~ 200HZ adjustable.
- ✧ In the 4 layer PCB board process, thinner, smaller, more reliable

## The build-in core module - JY901



## 2 Product Parameters

- 1) Voltage: 3.3V-5V
- 2) Current: <40mA
- 3) Size : 51.3mm x 36mm X 15mm
- 4) Pad pitch: up-down 100mil(2.54mm) right-left 600mil(15.24mm)
- 5) Dimension: Acceleration-3d Angular velocity -3d Magnetic field-3d Angle-3d  
Air pressure - 1d
- 6) Range : Acceleration  $\pm 16g$  Angular velocity  $\pm 2000^\circ/s$  Angle--- $\pm 180^\circ$
- 7) Stability: Acceleration-0.01g Angular velocity -0.05 $^\circ/s$
- 8) Attitude measurement stability: 0.01 $^\circ$
- 9) Output content: Time
- 10) Output frequency: 0.1Hz--200Hz
- 11) Date interface: Serial TTL level Bate rate--115200(default and can't be changed)
- 12) Bluetooth transmission distance : >10m

## 3 Product Display

Delicate shell, comes with 150MAH lithium battery, volume: 51.3mm x 36mm x 15mm, you can check the state of charge and power supply by the switch control module



## 4 Pin description



| Parameter | Function                       |
|-----------|--------------------------------|
| VCC       | Module power, 3.3V or 5V input |
| RX        | Serial data input, TTL level   |
| TX        | Serial data output, TTL level  |
| GND       | Ground                         |

## 5 Axial direction

As shown in figure above, The axis of the module is in the upper picture, upward for x-axis, to the left for y-axis, Perpendicular to the paper, outward is z-axis, The direction of rotation is defined by the Law of the right hand. That is to say The direction of four-fingers bending is the direction of

rotation around the axis. The thumb of the right hand points to axis.

## 6 Connection

### 6.1 Serial connection

Reminder: When connected with the sensor through Serial port cable connection, you can only get the data and unable to set the sensor. If you need to set the sensor, you need a Bluetooth connection.

Hardware connection:

USB - TTL serial module: Firstly connect the module with the USB - TTL and then connect the to the computer. The ways of connecting module with USB -TTL are:

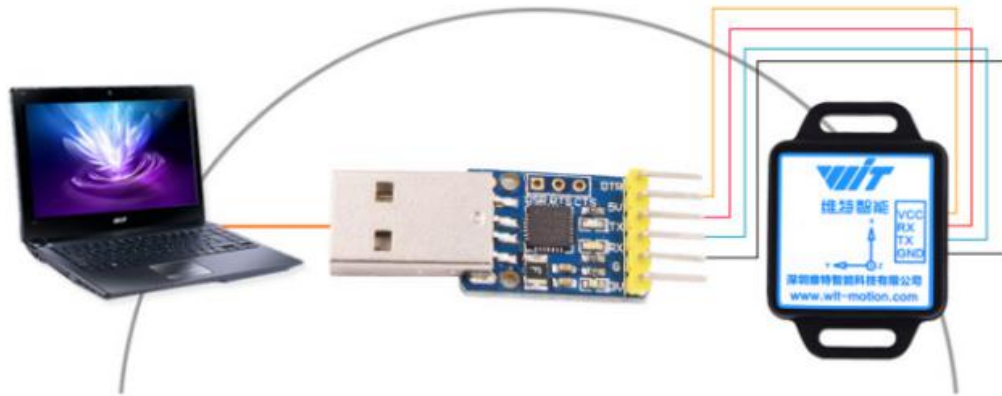
VCC TX RX GND of the module connected to +5V RX TX GND of the serial module respectively. Make sure that TX and RX need to be crossed--- RX connected to TX, TX connected to RX.

Module USB -TTL:

[https://www.aliexpress.com/store/product/Usb-converter-cp2102-usb-ttl-485-232-3-3v-and-5v-output-three-multifunctional-functions/2029054\\_32873159970.html?spm=2114.12010612.8148356.3.30b57b82smrtiU](https://www.aliexpress.com/store/product/Usb-converter-cp2102-usb-ttl-485-232-3-3v-and-5v-output-three-multifunctional-functions/2029054_32873159970.html?spm=2114.12010612.8148356.3.30b57b82smrtiU)



## Connect to USB -TTL

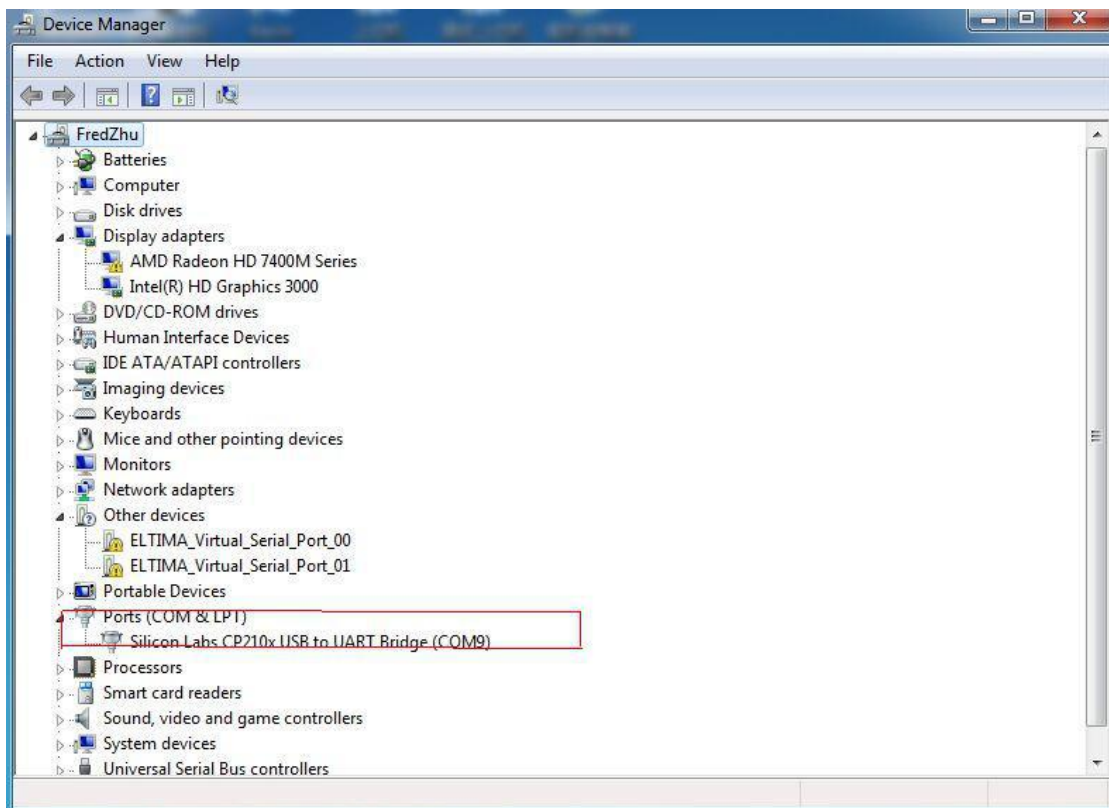


### Driver installation:

First, install the driver CP210X when we used the USB serial module ,after installed the driver. then get the corresponding Com number in the device manager. Driver as followed:  
CH340:[https://wiki.wit-motion.com/english/doku.php?id=communication\\_module](https://wiki.wit-motion.com/english/doku.php?id=communication_module)

If choose the USB-TTL(CP2102),the driver is :

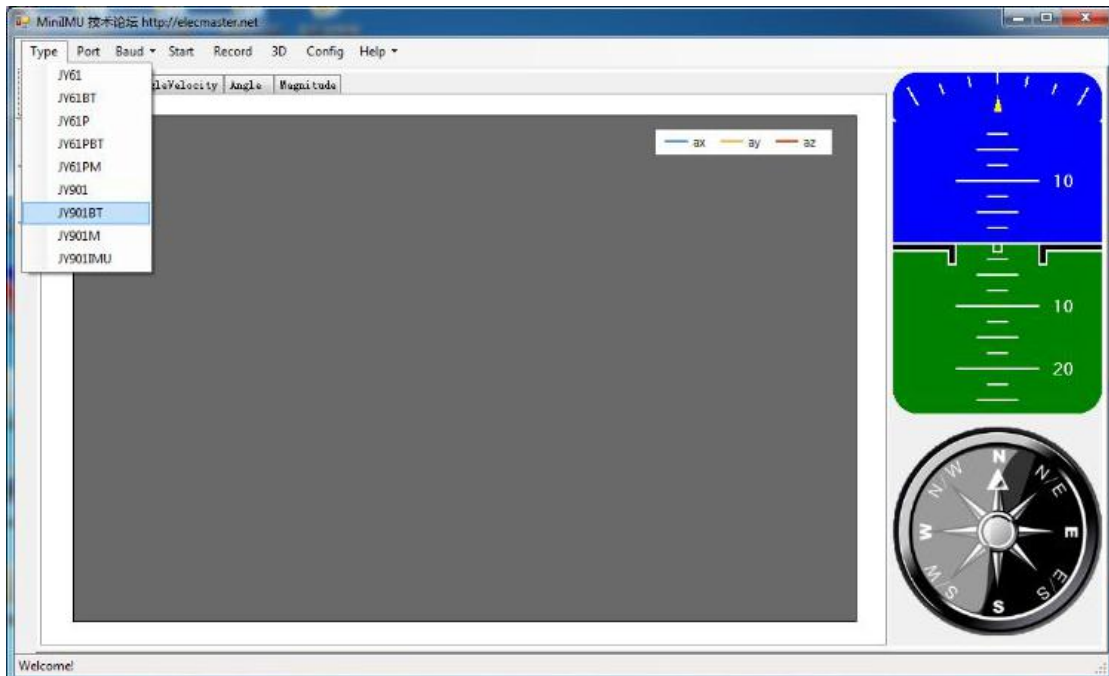
CP210X:[https://wiki.wit-motion.com/english/doku.php?id=communication\\_module](https://wiki.wit-motion.com/english/doku.php?id=communication_module)



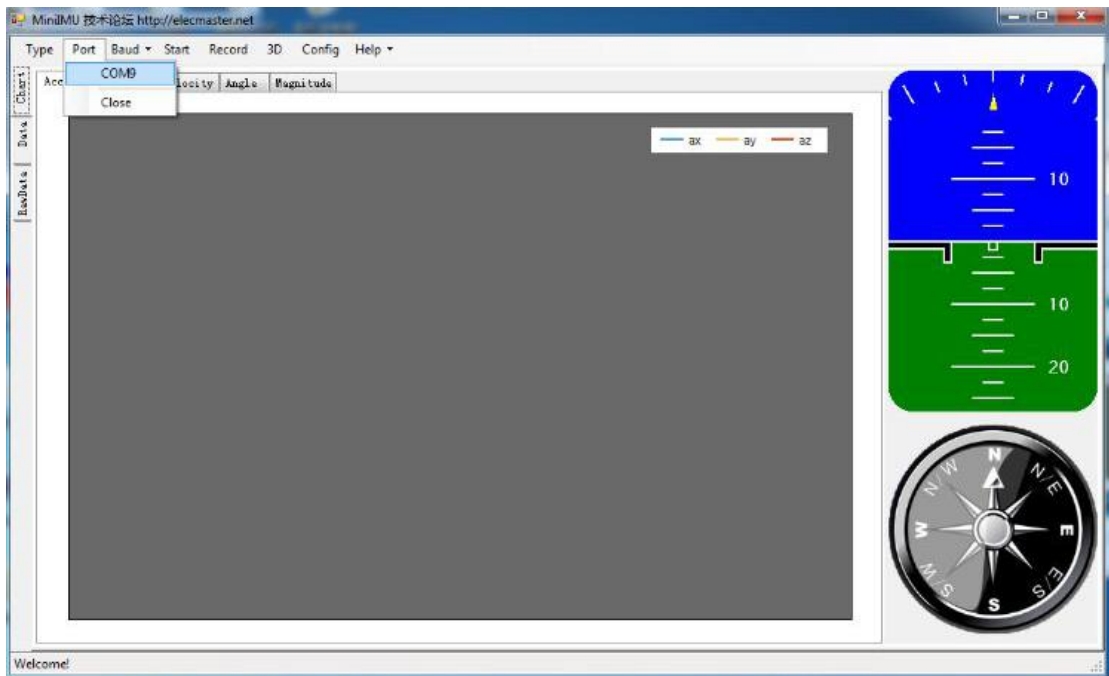


## Connect through PC software

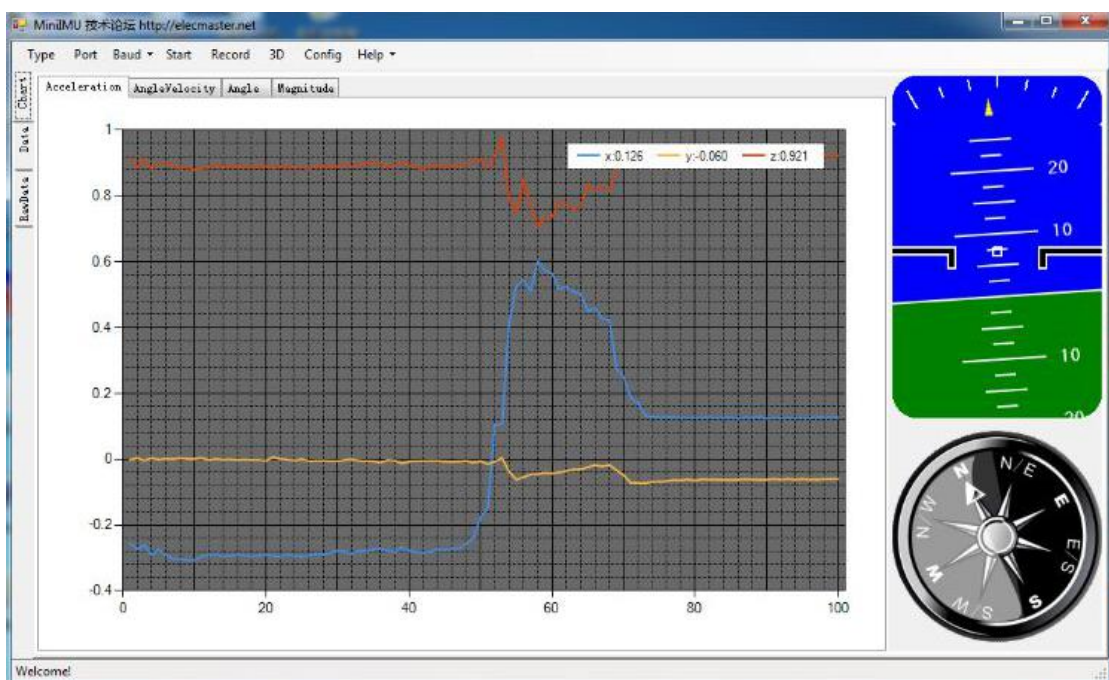
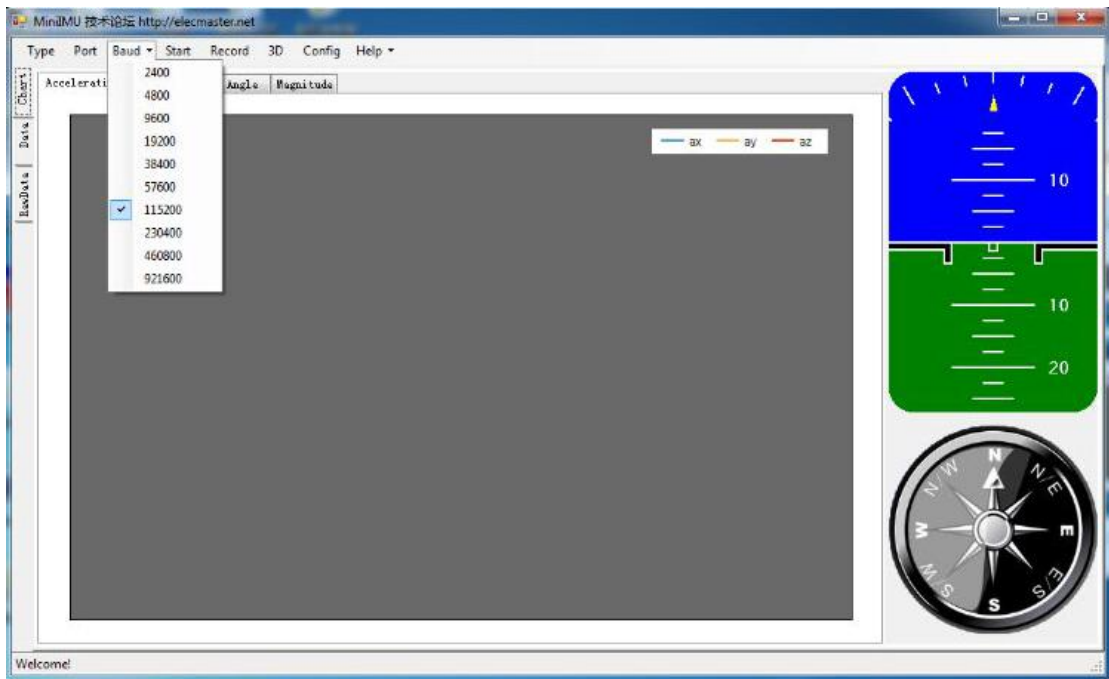
Open the software MiniIMU. exe and then click the Port-selection. Select the Com number which you have got in the device manager before.



Click the menu “Type”, Select the model as JY901BT in the software.



Click the menu “Baud ”in the software and then select 115200, then the software will show the data.



## 6.2 PC-Bluetooth connection

### 6.2.1 USB-HID connection

Connect the USB -HID to the PC USB interface and turn on the attitude sensor.

Tel : (+86)755-33185882 E-mail : [wit@wit-motion.com](mailto:wit@wit-motion.com) Web : [www.wit-motion.com](http://www.wit-motion.com)

The red led in the USB -HID is flashing, and the blue led of the BWT901CL is also flashing, which means the Bluetooth is in the pairing connection.

### Build-in core module--HC06-HID

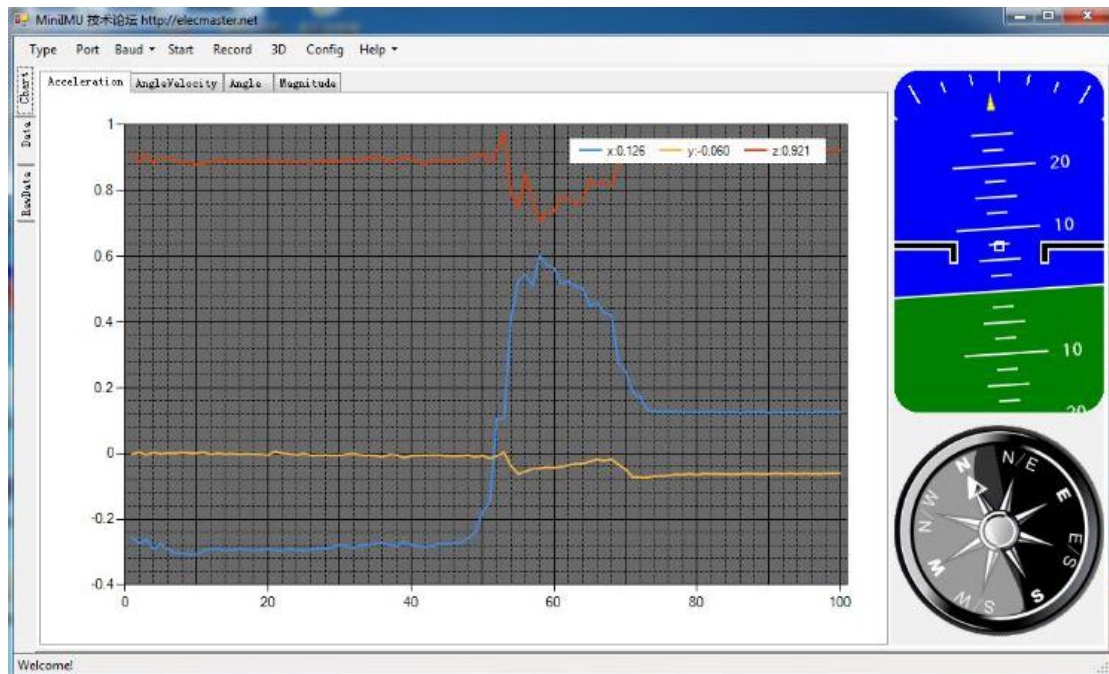


## 6.2.2 Bluetooth connection

If there is no Bluetooth in the PC. You can connect the device with sensor through the Bluetooth adapter.



First, turn on the Bluetooth sensor and connect the Bluetooth adapter 4.0 to the PC



### 6.2.3 Connect to Phone

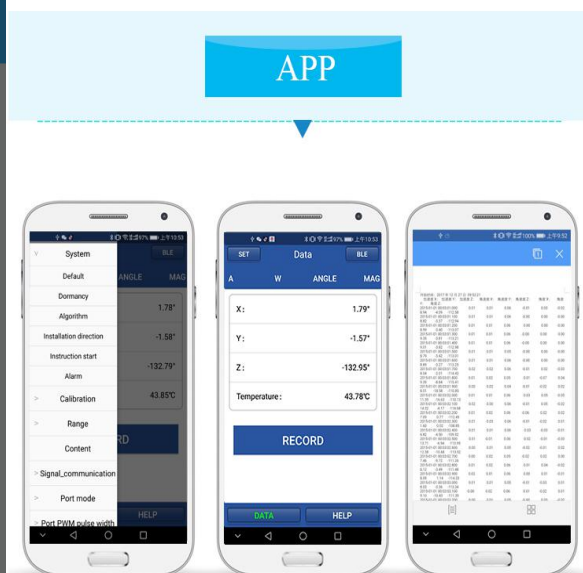
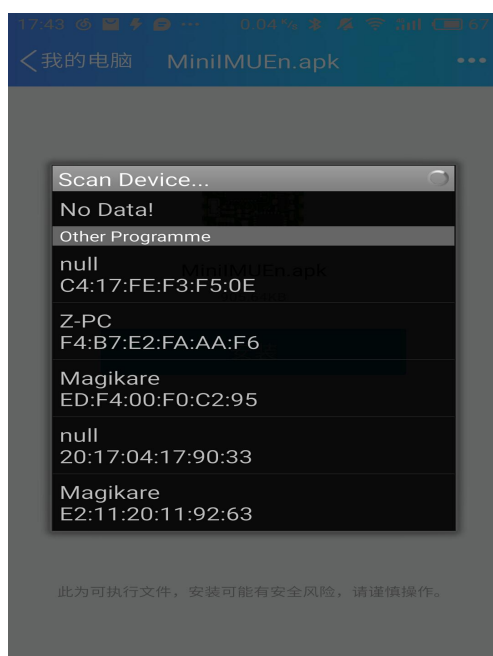
- 1) Install the app in the Phone, then turn on the Bluetooth sensor BWT901CL and the Bluetooth in the Phone.
- 2) Search the Bluetooth in the Phone, the name of which was "HC -06 ", password is 1234.
- 3) When pairing is done, you will get the data through the Phone.

APP download address:

<https://wiki.wit-motion.com/english/doku.php>

Tel : (+86)755-33185882 E-mail : [wit@wit-motion.com](mailto:wit@wit-motion.com) Web : [www.wit-motion.com](http://www.wit-motion.com)

## Connect to the Phone





ElecMaster connected:HC-06
ElecMaster connected:HC-06

Data
Data

|             |         |
|-------------|---------|
| X Axes:     | 0.58°   |
| Y Axes:     | 0.27°   |
| Z Axes:     | -96.29° |
| Temprature: | -8.60°C |

|              |         |
|--------------|---------|
| X Axes:      | 0.54g   |
| Y Axes:      | -0.01g  |
| Z Axes:      | 0.76g   |
| Temperature: | -7.72°C |

Time

Accelrat  
ion

Gyro

Angle

Time

Accelrat  
ion

Gyro

Angle

Magnitu  
de

Port

Pressur  
e

Lon Lat

Velocity

quater

Satellite  
Number

Velocity

quater

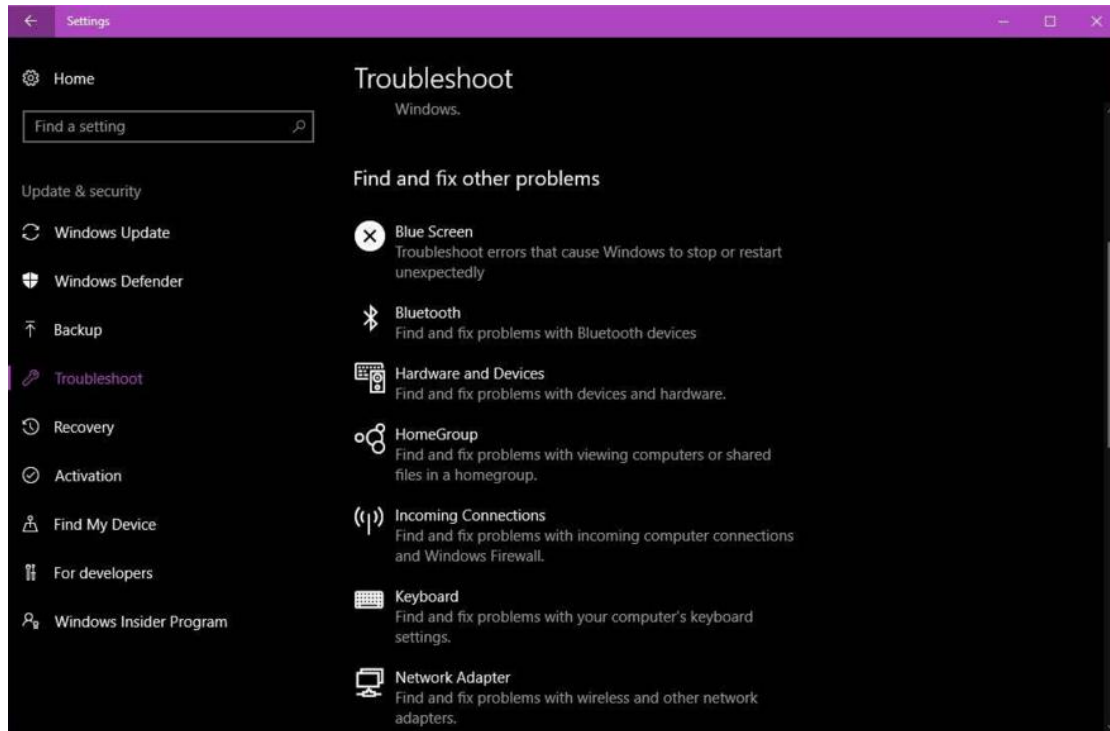
Satellite  
Number

Data
Record
Config
Help
Data
Record
Config
Help

## 6.2.4 Connect to PC Bluetooth

When the PC has its own Bluetooth, you can search the device through the Bluetooth directly. Take WIN10 for example:

- 1、Turn on the Bluetooth in the PC to search the device named “HC-6”, Right - click on the device name to match.



2、 Type the Bluetooth pairing password, it will get the COM number automatic when in was finished.





- 3、Open the Bluetooth and find the COM number.
- 4、Open the software, choose the Model, baud rate, and the COM number which you have got before. The software will display the data.



## 7 Application area

Agricultural machinery



Internet of things



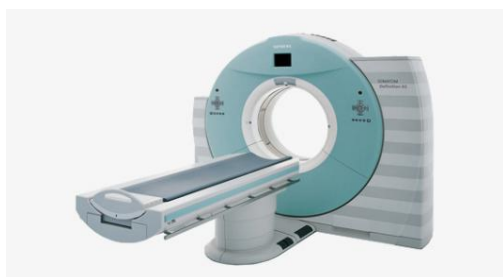
Solar energy



Power monitoring



Medical instruments



Construction machinery



Geological monitoring





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