WitMotion Shenzhen Co.,Ltd

Document Center

***Free 1-1 user support**
Not sure how to get your WITMOTION product to work properly?
Contact our world-class, friendly support team for quick solutions.
support@wit-motion.com

How to get the tutorial of your WitMotion sensors?

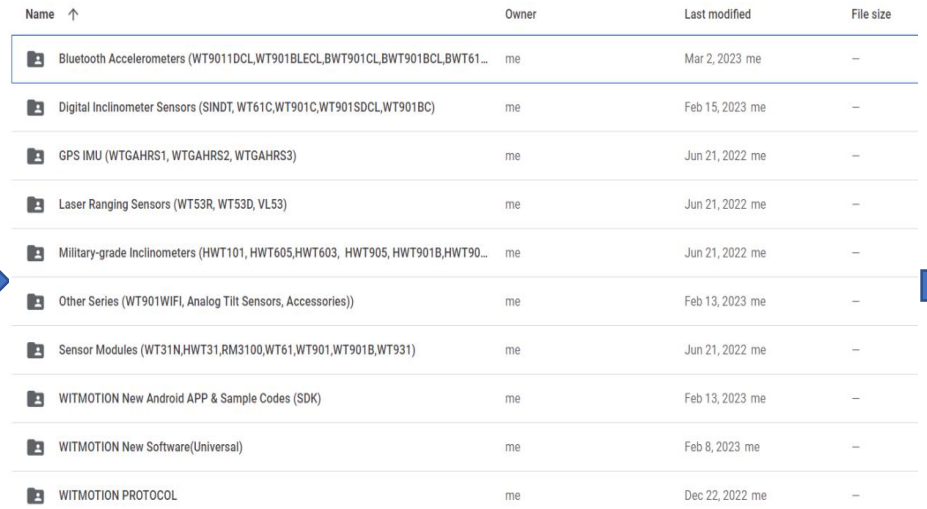
Step 1. Determine your sensor model:

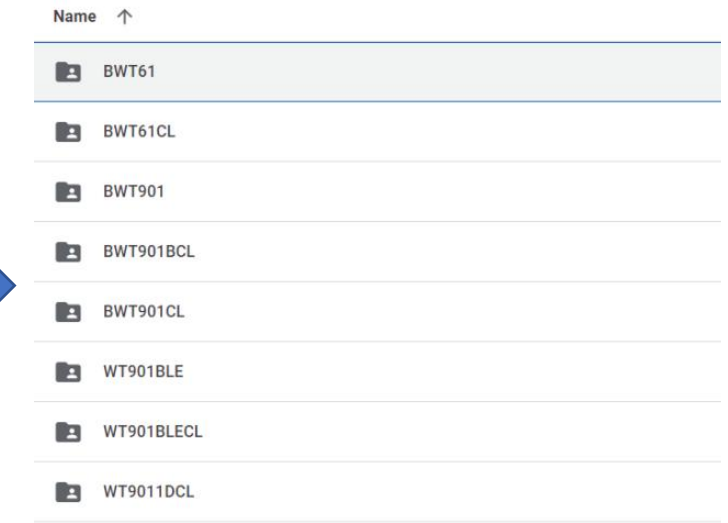
- on the sensor's silk printing (modules)
- on the back side's label of the sensor or box
- your order info

[Bluetooth Accelerometer+Inclinometer]
BWT901CL MPU9250 High-Precision 9-Axis Gyroscope+Angle(XY 0.05° Accuracy)+Magnetometer with Kalman Filter, 200

Step 2. Please check page 3-11 for series' links to visit different model's tutorial.
Or you can visit the WitMotion Document Center posted on Google Drive to get files.

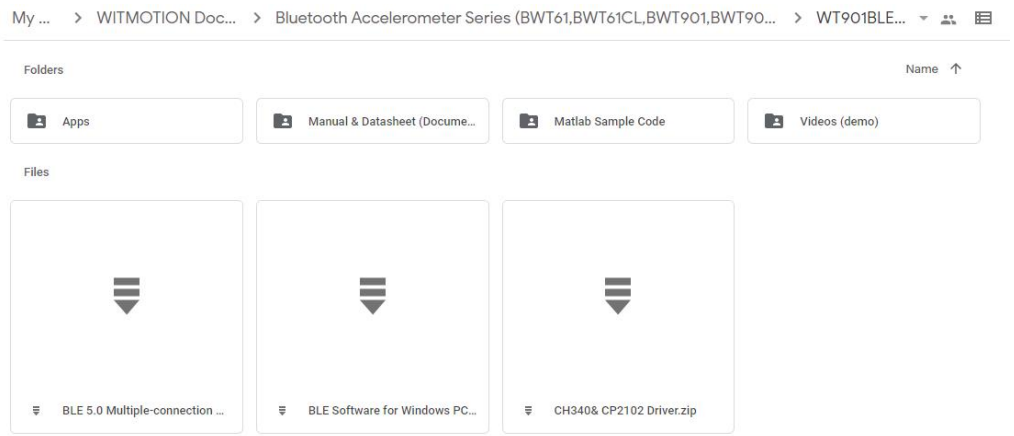
Document Center





How to set up your WitMotion sensors?

Step 3. For easy set-up, please kindly download all the necessary files including software, serial drivers, manual(involved step-by-step instructions), datasheet(involved specs and protocols).



Step 4. If you have questions, how to get in touch with us?

- support@wit-motion.com
- WhatsApp: 86 13652339539

List of series:

- Bluetooth Accelerometer Sensors
- Digital Inclinometer Sensors
- Modules
- Military-grade Inclinometers
- Analog Tilt Switch
- GPS IMU
- RTK-IMU
- Vibration Sensor
- IOT Sensor
- WIFI Sensor
- Laser Ranging Sensors
- Accessories

Bluetooth Accelerometer Sensors

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	BWT61CL	BWT901CL	BWT901BCL	WT901BLECL	WT9011DCL	WT901SDCL-BT50
Return Rate	100Hz	0.2-200Hz	0.2-200Hz	0.2-200Hz	0.2-200Hz	0.2-200HZ
Range	10m	10m	10m	50m	90m	50m (Built-in SD card)
Acceleration (X,Y,Z)	✔	✔	✔	✔	✔	✔
Angle (X,Y,Z)	✔	✔	✔	✔	✔	✔
Gyroscope (X,Y,Z)	✔	✔	✔	✔	✔	✔
Magnetic (X,Y,Z)		✔	✔	✔	✔	✔
1-axis Barometer			✔			
Working Hours	4-6hours	4hours	4-6hours	6-8hours (BLE)	41 hours	8 hours
Compatibility	Android/iOS/PC	Android/iOS/PC	PC/Android	Android/iOS/PC	Android/iOS/PC	Android/iOS/PC

Digital Inclinometer Sensors

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	WT61C-TTL	WT61C-232	WT901C-TTL	WT901C-232	WT901C-RS485	WT901SDCL	SINDT
Return Rate	100Hz	100Hz	0.2-200Hz	0.2-200Hz	Modbus RTU	0.1-200Hz	0.2-200Hz
Working Voltage	5-36V	5-36V	5-36V	5-36V	5-36V	3.7V	5-36V
Acceleration (X,Y,Z)	✔	✔	✔	✔	✔	✔	✔
Angle (X,Y,Z)	✔	✔	✔	✔	✔	✔	✔
Gyroscope (X,Y,Z)	✔	✔	✔	✔	✔	✔	✔
Magnetic (X,Y,Z)			✔	✔	✔	✔	
Interface	TTL	RS232	TTL	RS232	RS485	Type-C	RS232/RS485/TTL
Compatibility	Android/PC/ MCU, Arduino	Android/PC/ MCU, Arduino	Android/PC/ MCU, Arduino	Android/PC/ MCU, Arduino	Android/PC/ MCU, Arduino	SD Card/PC	Android/PC/ MCU, Arduino

Sensor Modules

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	WT31N	HWT31	RM3100	WT61	WT901	WT901B	WT931
Return Rate	0.2-100Hz	10-100Hz		20-100HZ	0.2-200Hz	0.2-200Hz	0.2Hz-1000Hz
Working Voltage	3.3-5V	3.3-5V	3.3V	3.3-5V	3.3-5V	3.3-5V	3.3-5V
Acceleration (X,Y,Z)	✔	✔		✔	✔	✔	✔
Angle (X,Y,Z)	✔(X,Y)	✔(X,Y)		✔	✔	✔	✔
Gyroscope (X,Y,Z)				✔	✔	✔	✔
Magnetic Field (X,Y,Z)			✔(X,Y,Z)		✔	✔	✔
1-Axis Barometer						✔	
Interface	TTL	TTL	SPI	TTL	TTL/IIC	TTL	TTL
Compatibility	Android /PC/MCU, Arduino	Android /PC/MCU, Arduino	PC/MCU, Arduino	Android/PC/ MCU, Arduino	Android/PC/ MCU, Arduino	Android /PC/MCU, Arduino	Android/PC/ MCU, Arduino

Military-grade Inclinometers

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	Return Rate	Input Voltage	Static Accuracy (X Y axis)	Acceleration (X,Y,Z)	Angle (X,Y,Z)	Gyro (X,Y,Z)	Magnetic Field (X,Y,Z)	1-Axis Barometer	Interface	Waterproof	Temperature Compensation
 HWT605	0.2-200Hz	5-36V	0.05°	✔	✔	✔			TTL/RS232/ RS485/CAN	IP67	✔
 HWT901B	0.2-200Hz	5-36V	0.05°	✔	✔	✔	✔	✔	TTL/RS232/ RS485/CAN		
 HWT905	0.2-200Hz	5-36V	0.05°	✔	✔	✔	✔		TTL/RS232/ RS485/CAN	IP67	✔
 HWT9053	0.2-200Hz	5-36V	0.001°	✔	✔	✔	✔		RS485/CAN	IP67	✔
 HWT906	0.2-1000Hz	3.3-5V	0.05°	✔	✔	✔	✔		TTL		✔
 HWT9073	0.2-200Hz	5-36V	0.001°	✔	✔	✔	✔		RS485/CAN	IP67	✔

Dual-axis Analog Tilt Switch

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	SINRT	SINVT	SINIT	SINET
Return Rate	0.2-200Hz	0.2-200Hz	0.2-200Hz	0.2-200Hz
Working Voltage	5-36V	12-36V	12-36V	5-36V
Acceleration (X,Y,Z)	✔	✔	✔	✔
Angle (X,Y)	✔	✔	✔	✔
Gyroscope (X,Y,Z)	✔	✔	✔	✔
Compatibility	PC	PC	PC	PC
Interface	RS232/RS485/TTL	RS232/TTL	RS232/TTL	RS232/RS485/TTL
Main Features	Relay-type Tilt Swtich	Voltage-Type Inclinometer	Current-type Inclinometer	Relay-type Tilt Swtich

GPS IMU

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	Model	Accuracy	Antenna	Range	Inertial Navigation	Output	Interface	Return Rate	Voltage
	WTGAHRS1	2.5m	External Antenna	1m		Acceleration, angular velocity, angle, magnetic field, latitude and longitude	TTL	0.2-200HZ	3.3-5V
	WTGAHRS2	2.5m	Internal Antenna	1m		Acceleration, angular velocity, angle, magnetic field, latitude and longitude	TTL	0.2-200HZ	3.3-5V
	WTGAHRS3	1.5m	Internal Antenna	1m/200m (RS485)	✔	Acceleration, angular velocity, time, angle, latitude and longitude, inertial navigation	TTL/232/485	0.2-200HZ	5-36V
	WTGPS-300P	1.5m	External Antenna	1m	✔	Latitude and longitude, ground speed, altitude, inertial navigation	TTL/Type-C	0.2-200HZ	3.3-5V
	WTGPS+BD	2.5m	External Antenna	1m		Latitude and longitude, ground speed, Beidou	TTL/Type-C	1-10HZ	3.3-5V

RTK Positioning Sensor

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	Model	RTK Positioning Accuracy	Antenna	Signal Reception	Base & Mobile	Protocol	Return Rate	Interface
	WTRTK-960	Level: 0.8cm+1ppm, height: 1.5cm+1ppm	Single Antenna	Full system, full frequency	Mobile stations	NMEA0183	50HZ	TTL
	WTRTK-980	Level: 0.8cm+1ppm, height: 1.5cm+1ppm	Single Antenna	Full system, full frequency	Base stations, mobile stations	NMEA0183	20HZ	TTL
	WTRTK-982	Level: 0.8cm+1ppm, height: 1.5cm+1ppm	Dual Antenna	Full system, full frequency	Base stations, mobile stations	NMEA0183	20HZ	TTL
	WTGPS-02H	Level: 1.5m CEP, height: 3.5m CEP	Dual Antenna	Full system, full frequency		NMEA0183 GNSS	10HZ	UART I2C SPI
	WTRTK-M	Level: 0.1cm+1ppm, height: 0.1cm+1ppm	Dual Antenna	Full system, full frequency	Base stations, mobile stations	NMEA0183	20HZ	TTL

Vibration Sensors

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	Model	Return Rate	Working Voltage	Vibration Speed (X,Y,Z)	Vibration Displacement (X,Y,Z)	Vibration Angle (X,Y,Z)	Working Temp	Accuracy	Waterproof	Interface
	WTVB01-485	1-100Hz	5-36V	0~50mm/s	0~30000um	0~180°	-40℃~85℃	<F.S+5%	IP68	485
	WTVB02-485	1-200Hz	5-36V	0~100mm/s	0~30000um	0~180°	-40℃~85℃	<F.S+4%	IP68	485
	WTVB01-BT50	1-100Hz	3.3-5.5V	0~50mm/s	0~30000um	0~180°	-20℃~60℃	<F.S+5%	No	Bluetooth/ Type-C

IOT Sensor ---WT301iOT

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Parameter	Specification
Output	Acceleration, Angle, Battery voltage, X/Y alarm signal, Upload interval, On-chip time
Battery Parameters	3.6V-8500mAh
Range	Acceleration: +2 g; Angle X/Y ±90°
Accuracy	0.2°
Battery Life	5 years
Size	100mm * 56mm * 44mm

WIFI Sensor --- WT901WiFi

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Parameter	Specification
Battery	3.7V-260mAh (5V input voltage)
Working Current	≈100mA (Full charge in 2 hours)
Size	36mm X 51.3mm X 21mm 1.417X2.019X 0.827
Return Rate	TCP: 1~10HZ, UDP: 1~200HZ.
Output Frequency	Acceleration, Angular velocity, Angle, Magnetic field
Communication	WiFi communication (only supports 2.4GHz frequency band)

Vibration Sensors

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	WT53R-TTL	WT53R-RS485	WT53D	VL53-400	VL53L0	VL53L1
Return Rate	20Hz	20Hz	0.2-50Hz	0.2- 50Hz	0.2-100HZ	0.2-50HZ
Working Voltage	5V~36V	5V~36V	3.3~5V	3.3~5V	3.3~5V	3.3~5V
Current	<38mA	<38mA	<33mA	<33mA	<30mA	<33mA
Measuring Distance	40mm-4000mm	40mm-4000mm	40mm-4000mm	40mm-4000mm	40mm-2000mm	40mm-4000mm
Error	±20mm	±20mm	±20mm	±20mm	±20mm	±20mm
Interface	TTL	RS485	TTL	TTL	TTL	TTL
Waterproof	✔	✔				
Housing	Metal casing	Metal casing	Metal casing	Module	Module	Module

Accessories

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Function \ Model	BLE 5.0 Adapter	USB-HID 2.0 Adapter
Range	30m	10m
Driver	CP2102 / (nRF) Driver free	CH340 / CH341
Application	WT901BLECL / WT901BLE/WT9011DCL	BWT61/BWT61CL/ BWT901CL/BWT901BCL

Friendly Reminder:
The Bluetooth adapter is designed for Bluetooth sensors wirelessly connnecting to the PC.

Accessories

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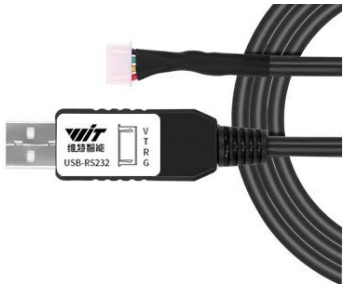
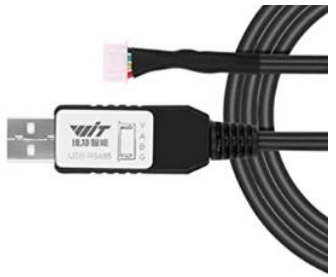
Converters	6-in-1 USB to Serial	3-in-1 USB to Serial
Driver	CP2102	CH340
Serial	USB to TTL/ USB to RS232/ USB to RS485 TTL to 232 / 232-485 / TTL to 485	USB to TTL/ USB to RS232/ USB to RS485





Serial Cable	USB to TTL	USB to RS232	USB to RS485
Interface	TTL	RS232	RS485
Compatibility	WT901C-TTL/WT61C-TTL	WT901C-RS232/WT61C-RS232	WT901C-RS485/WT61C-RS485