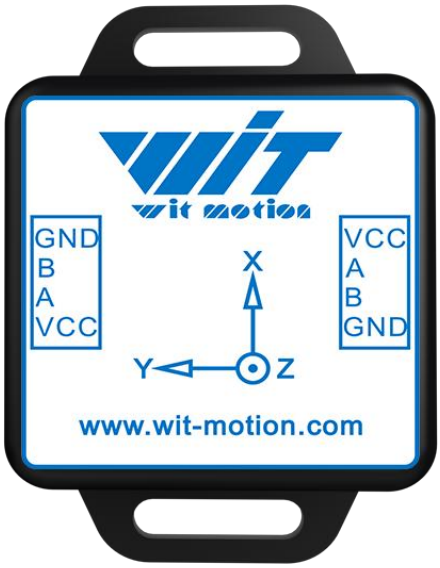
WT61PC-485 Product Specifications



Product Description

- This product is a high-performance three-dimensional motion attitude measurement system based on MEMS technology. It contains motion sensors such as three-axis gyroscopes and three-axis accelerometers. By integrating various high-performance sensors and using the independently developed attitude dynamics core algorithm engine, combined with the high-dynamic Kalman filter fusion algorithm, it provides customers with high-precision, high-dynamic, real-time compensation three-axis attitude angles, and meets different application scenarios through flexible selection and configuration of various types of data.

- Leading sensor fusion algorithm based on Kalman filtering principle and with independent intellectual property rights, which meets various high-precision application requirements and realizes accurate motion capture and posture estimation.

- Possessing the domestically leading high-precision turntable equipment and instruments, the product integrates independently developed high-precision calibration and calibration algorithms to improve the measurement accuracy of the product.

- At the same time, we provide users with PC software, instructions for use, development manuals, and development codes required to minimize the R&D time for various

need.

Features

- The module integrates high-precision gyroscopes and accelerometers, uses high-performance microprocessors and advanced dynamics solvers and Kalman dynamic filtering algorithms, and can quickly solve the current real-time motion posture of the module.
- The use of advanced digital filtering technology can effectively reduce measurement noise and improve measurement accuracy.
- The module integrates an attitude solver, which, in conjunction with the dynamic Kalman filter algorithm, can accurately output the current attitude of the module in a dynamic environment. The static attitude measurement accuracy is 0.2°, with extremely high stability, and its performance is even better than some professional inclinometers.
- The module has its own voltage stabilization circuit, the operating voltage is 5~36V, the pin level is compatible with 5V/36V embedded systems, and the connection is convenient.
- Support serial port interface. It is convenient for users to use the best connection method. The serial port rate is adjustable from 4800bps to 230400bps.

- Using MODBUS protocol, data transmission is more stable and has strong anti-interference ability.
- 485 level, the transmission distance can reach more than 10m.

Parameter index

Accelerometer parameters

Parameter	Condition	Typical
Range		±16g
Resolution	±16g	0.0005(g/LSB)
RMS noise	Bandwidth=100Hz	0.75~1mg-rms
Static zero drift	Placed horizontally	±20~40mg
Temperature drift	-40°C ~ +85°C	±0.15mg/℃
Bandwidth		5~256Hz

Gyroscope parameters

Parameter	Condition	Typical
Range		±2000°/s
Resolution	±2000°/s	0.061(°/s)/(LSB)
RMS noise	Bandwidth=100Hz	0.028~0.07(°/s)-rms
Static zero drift	Placed horizontally	±0.5~1°/s

Temperature drift	-40°C ~ +85°C	±0.005~0.015 (°/s)/℃
Bandwidth		5~256Hz

Pitch and roll angle parameters

Parameter	Condition	Typical
Range		X:±180°
		Y:±90°
Inclination accuracy		0.2°
Resolution	Placed horizontally	0.0055°
Temperature drift	-40°C ~ +85°C	±0.5~1°

Heading angle parameter

Parameter	Condition	Typical
Range		Z:±180°
Inclination accuracy	6-axis algorithm, static	0.5°(there is an integral cumulative error in dynamic) 【1】
Resolution	Placed horizontally	0.0055°

Note:

【1】In some vibration environments, there will be cumulative errors, and the specific errors cannot be estimated. The actual test shall prevail.

Module parameters

Basic parameters

parameter	Condition	Minimum	Default	Maximum
Communication Interface	RS485	4800bps	9600bps	230400bps
output content		acceleration, angular velocity, angle		
Protocol			MODBUS	
Transmission distance		10m		
Multiple connection quantity				128 个
Multiple connection quantity				1000ms
Operating temperature		-40℃		85℃
storage temperature		-40℃		100℃

Shock proof				20000g

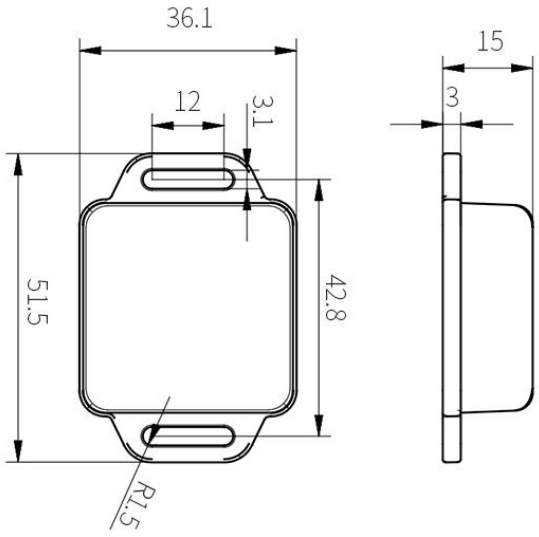
Note:

[1] 485 products use the Modbus protocol and are in master-slave mode, which is determined by the user's read content quantity and reading rate.

Electrical parameters

parameter	Condition	Minimum	Default	Maximum
Supply voltage		5V	12V	36V
Working current	Work		13mA	
	Sleep		8.6mA	

Size



Pin Definition

Pin Description

PIN	Function
VCC	5-36V input supply
A	RS485 bus, A
B	RS485 bus, B
GND	Ground

Serial port connection to host computer

Product packaging

Application areas

- Virtual reality/augmented reality, head-mounted display
- Automatic farming in large-scale agriculture
- Safety monitoring of aerial work
- UAVs, manned aircraft
- Industrial posture monitoring
- Human motion tracking/capture
- Robots, automatic guided vehicles
- Pedestrian navigation
- Unmanned driving/assisted driving

- Military, intelligent weapons and equipment