BW-IMU620 Series

High Performance Inertial Measurement Unit

Technical Manual

V3.0

BW-IMU620

High Performance Inertial Measurement Unit

Introduction

BW-IMU620 is made in China 100%,all key chip components is made in China 100%.
BW-IMU620 adopts highly reliable MEMS accelerometers and gyroscopes with algorithms to ensure the measurement accuracy. Meanwhile, the hermetically sealed design and strict production process ensure that the product can still accurately measure the carrier's angular velocity, acceleration, and other motion parameters under harsh environments. Through the non-linear compensation, quadrature compensation, temperature compensation and drift compensation and other compensation, can greatly eliminate the source of error of BW-IMU620, improve the level of accuracy of the product.BW-IMU620 has a digital interface, it can be very easy to integrate into the user's system.

Feature

- Quadrature compensation
- Gyroscope range: ±500°/s
- Accelerometer range: ±20g, Optional ±5g, ±50g
- RS422 interface output
- Wide temperature range: -40℃~+85℃, temperature compensation
- Volume and shape: L44.8 * W38.6 * H21.5mm

Application

- Pipeline survey engineering
- Model attitude angle measurement
- Platform stabilisation
- Autonomous driving navigation platform
- Under water robot navigation
- Unmanned aerial vehicle

Specification

Electrical Indicators

Power Supply	5V DC
Operating current	200mA （Typical)
Operating temperature	-40~85℃

Performance Indicators

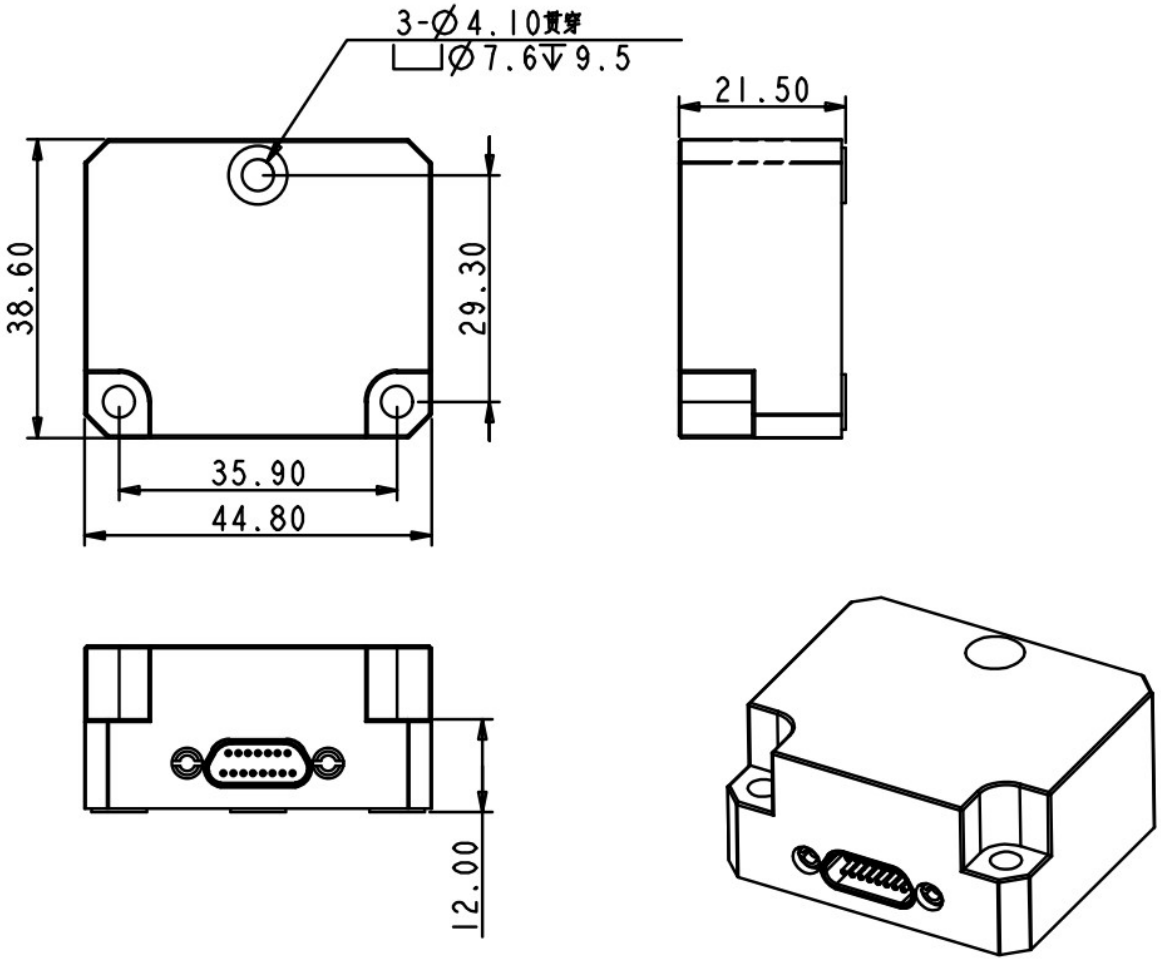
Gyro	Resolution	0.00006°/s		
	Range	±500°/s		
	Zero Bias Stability at normal Temperature(10s Smoothing)	< 5°/h		
	Zero bias repeatability at room temperature	< 3°/h		
	ARW	0.25°/ √h		
	Zero bias at full temperature (without temperature compensation)	30°/h		
	Zero bias at full temperature (with temperature compensation)	< 10°/h		
	Scale factor non-linearity	< 150ppm		
	Bandwidth	200Hz		
Accelerometer	Range	±20g	±5g	±50g
	Resolution	25ug	12.5ug	100ug
	Zero bias stability at room temperature (10s smoothing)	15ug	8ug	50ug
	Normal Temperature Zero Bias Stability (ALLAN)	5ug	2ug	10ug
	Normal temperature zero bias repeatability	10ug	5ug	20ug
	Bandwidth	150Hz	150Hz	150Hz
	Scale Factor Non-linearity	1500ppm	1500ppm	3000ppm
	Noise	25μg/√Hz	12.5μg/√Hz	100μg/√Hz
Maximum output	500Hz			
Start delay	200ms			

Mechanical Characteristic

Connector	J30J-15TJL (30cm)
Protection Level	IP65
Shell material	Magnesium alloy sanding oxidation
Installation	Three M4 screws

Package Size

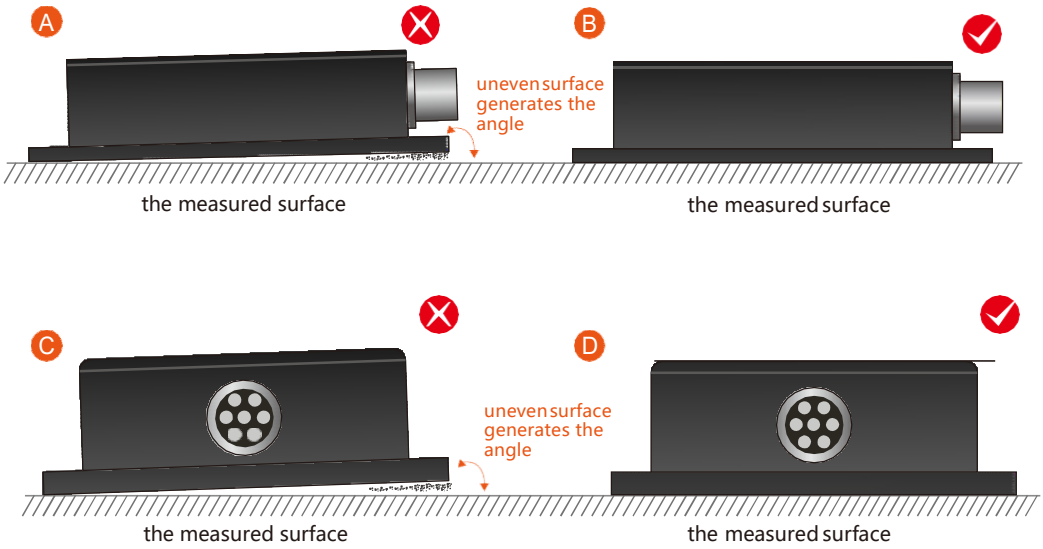
Product size：L44.8 * W38.6 * H21.5（mm）



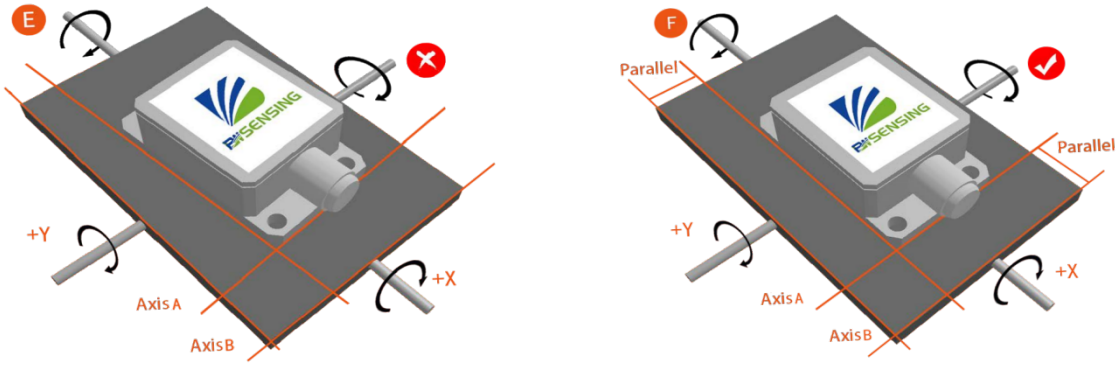
Installation

The correct installation method can avoid measurement errors. When installing the sensor, please do the following:

First of all, make sure that the sensor mounting surface is completely close to the measured surface, and the measured surface should be as level as possible, and there should be no included angles as shown in Figure A and Figure C. The correct installation method is shown in Figure B and Figure D



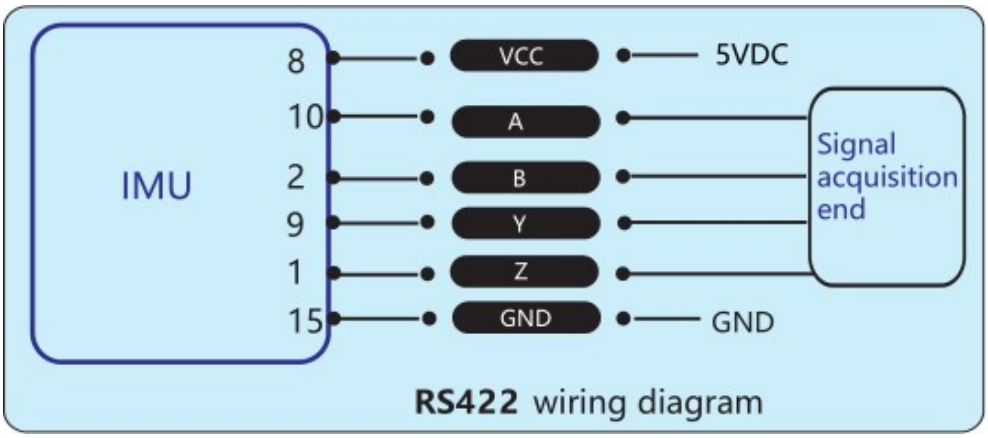
Secondly, the bottom line of the sensor and the axis of the measured object cannot have an angle as shown in Figure E. When installing, keep the bottom line of the sensor parallel or orthogonal to the axis of rotation of the measured object. This product can be installed horizontally or vertically (vertical installation needs to be customized), and the correct installation method is shown in Figure F.



Finally, the mounting surface of the sensor and the surface to be measured must be tightly fixed, smooth in contact, and stable in rotation, and measurement errors due to acceleration and vibration must be avoided.

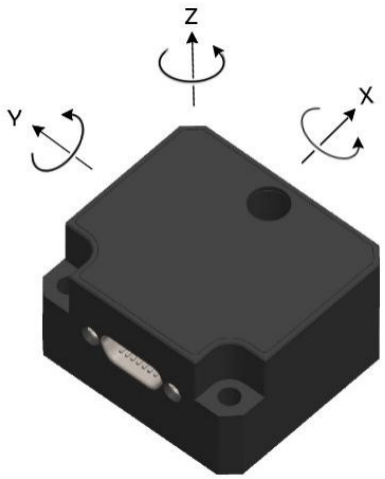
Connections

Wiring definition						
Thread	8	15	2	10	1	9
color& Function	VCC DC 5V	GND	RXD- (B)	RXD+ (A)	T/R- (Z)	T/R+ (Y)



Axial definition

Three-axis attitude, gyroscope, acceleration
Data axis conforms to the right-hand rule.



Order Information

Model	Communication mode	IP Level
BW-IMU620-422	RS422	IP65 Package/Metal joint

Executive standard

- National Standard (Draft) for Static Calibration of Biaxial Inclination Sensors
- GB/T 191 SJ 20873-2003 General Specification for Tiltmeters and Levelling Devices

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