

BW-IMU620 Series

High Performance Inertial
Measurement Unit

Technical Manual

V3.0



Introduction

BW-IMU620 is a large-range and high-performance inertial measurement unit, which can measure the angular velocity and acceleration of the carrier's motion parameters, with a built-in large-range accelerometer and high-stability gyroscope.

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: $\pm 400^\circ/s$
- Accelerometer range: $\pm 20g$
- RS422 interface output
- Wide temperature range: $-40^\circ C \sim +85^\circ C$, temperature compensation
- Volume and shape: $L44.8 * W38.6 * H20mm$

Application

- Pipeline survey engineering
- Model attitude angle measurement
- Platform stabilisation
- Self-driving navigation platforms
- Underwater robotic navigation
- Unmanned aerial vehicles

Specification

Electrical Indicators

Power Supply	5V DC
Operating current	70mA (Typical)
Operating temperature	-40~85°C

Performance Indicators

gyros	Range (deg/s)	±400
	Normal temperature stability (10S)	≤15
	Angular random wander	≤0.001
		≤0.05
	Zero bias instability (deg/h)	≤0.01
accelerometer	Angular rate wander (deg/h/h ^{0.5})	±10 ±20 ±40可选
	Range (g)	≤0.1
	Zero bias stability (10S smoothing)	≤0.01
	Velocity random wander (m/s/s ^{0.5})	≤0.01
	Zero bias instability (m/s ²)	≤0.05
systems	Acceleration wander (m/s ² /s ^{0.5})	2000
	Shock resistance (g)	20



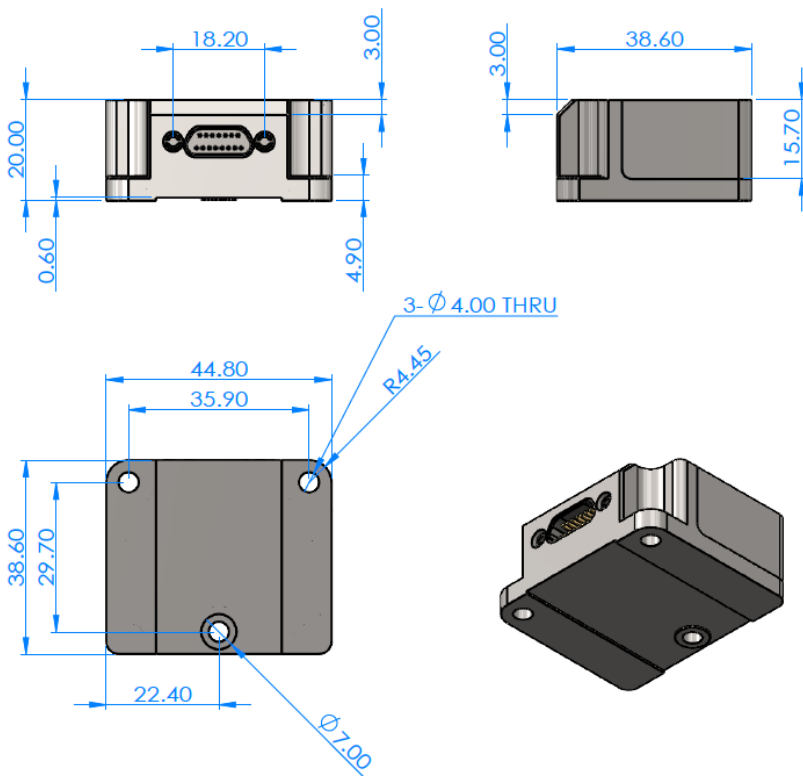
Mechanical Characteristic

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



Package Size

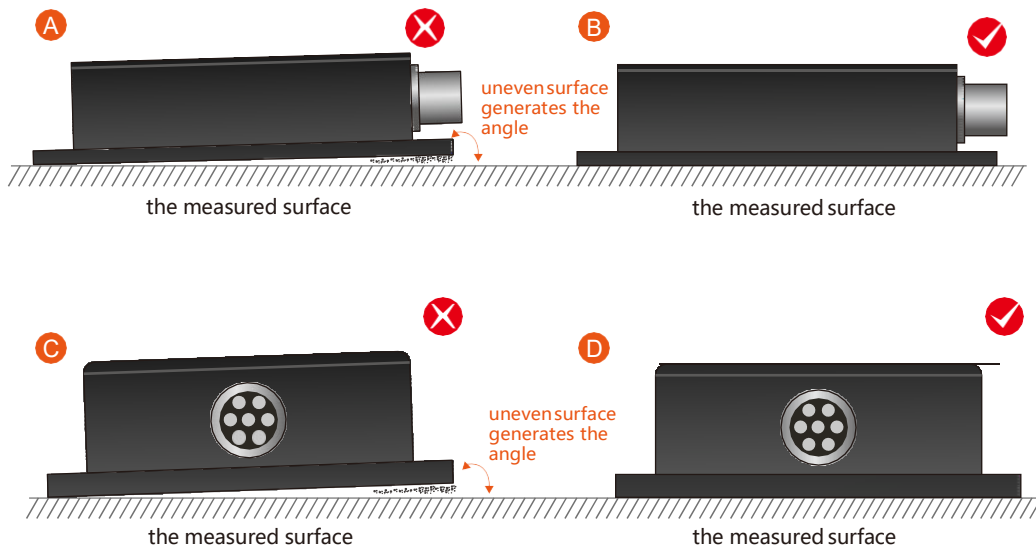
Product size: L44.8 * W38.6 * H24.8 (mm)



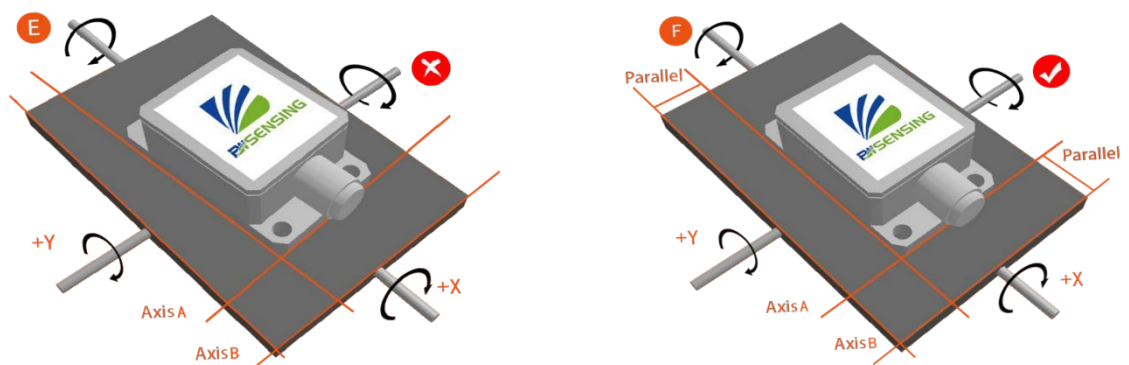
Installation

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.

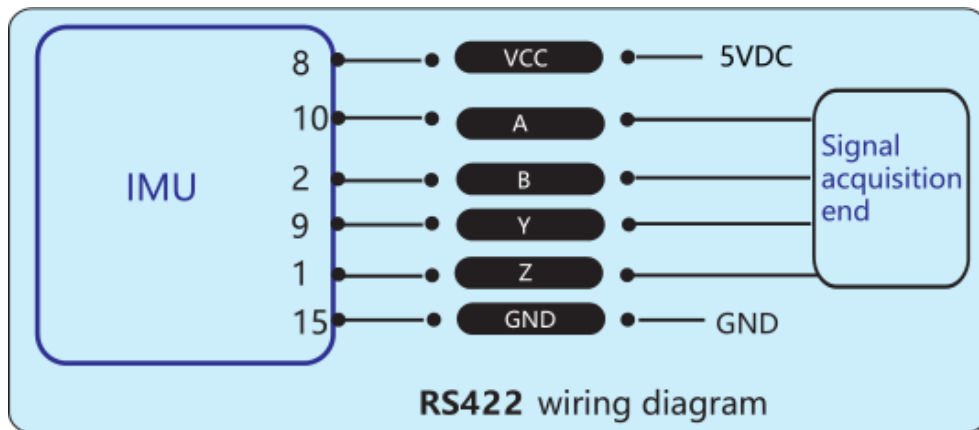


Finally, the mounting surface of the sensor and the surface to be measured must be tightly fixed, smooth in contact, and stable in rotation, and measurement errors due to acceleration and vibration must be avoided.

Connections

Wiring definition

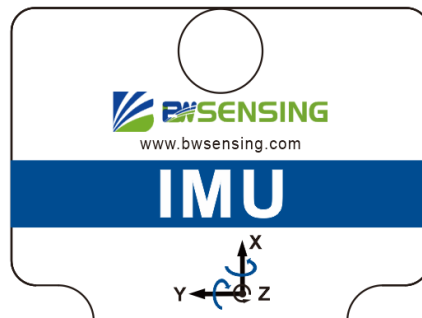
Thread	8	15	2	10	1	9
color&	VCC	GND	RXD-	RXD+	T/R-	T/R+
Function	DC 5V		(B)	(A)	(Z)	(Y)



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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