

BW-IMU620 Series

High-Precision

Inertial Measurement Unit

Technical Manual



Introduction

BW-IMU620 is a large-range, high-performance inertial measurement unit that measures the angular velocity and acceleration of a carrier's kinematic parameters, with a built-in large-range accelerometer and a highly stable gyroscope.

BW-IMU620 uses a highly reliable MEMS accelerometer and gyroscope with algorithms to ensure accuracy, a hermetically sealed design and a rigorous production process to ensure precise measurement of angular velocity, acceleration and other motion parameters of the carrier even in harsh environments. BW-IMU620's accuracy is enhanced by a variety of compensations including non-linear, quadrature, temperature and drift compensations, which greatly eliminate sources of error in BW-IMU620. BW-IMU620 is equipped with a digital interface and can be easily integrated into the user's system.

Feature

- Quadrature compensation
- Gyro measuring Range: 400°/s
- Accelerometer range: $\pm 20g$
- RS422 Interface output
- Wide temperature range: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$, Temperature compensation
- Dimensional profile: L44.8 * W38.6 * H20 (mm)

Application

- Pipeline survey engineering
- Model attitude angle measurement
- Stable platform
- Autopilot navigation platforms
- Underwater robotic navigation
- Unmanned Vehicle

Specification



Electrical Indicators

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



Performance Indicators

Gyro	Range (deg/s)	±400
	Room temperature stability (10s smooth) (deg/h)	≤15
	Angular random wander (deg/h ^{0.5})	≤ 0.001
	Zero bias instability (deg/h)	≤0.05
	Angular rate wander (deg/h/h ^{0.5})	≤ 0.01
Accelerometer	Range (g)	±10 ±20 ±40 selectable
	Zero bias stability (10S smooth) (mg)	≤ 0.1
	Speed random wandering (m/s/s ^{0.5})	≤ 0.01
	Zero bias instability (m/s ²)	≤ 0.01
	Acceleration wander (m/s ² /s ^{0.5})	≤0.05
System	Impact resistance (g)	2000
	Vibration (grms)	20



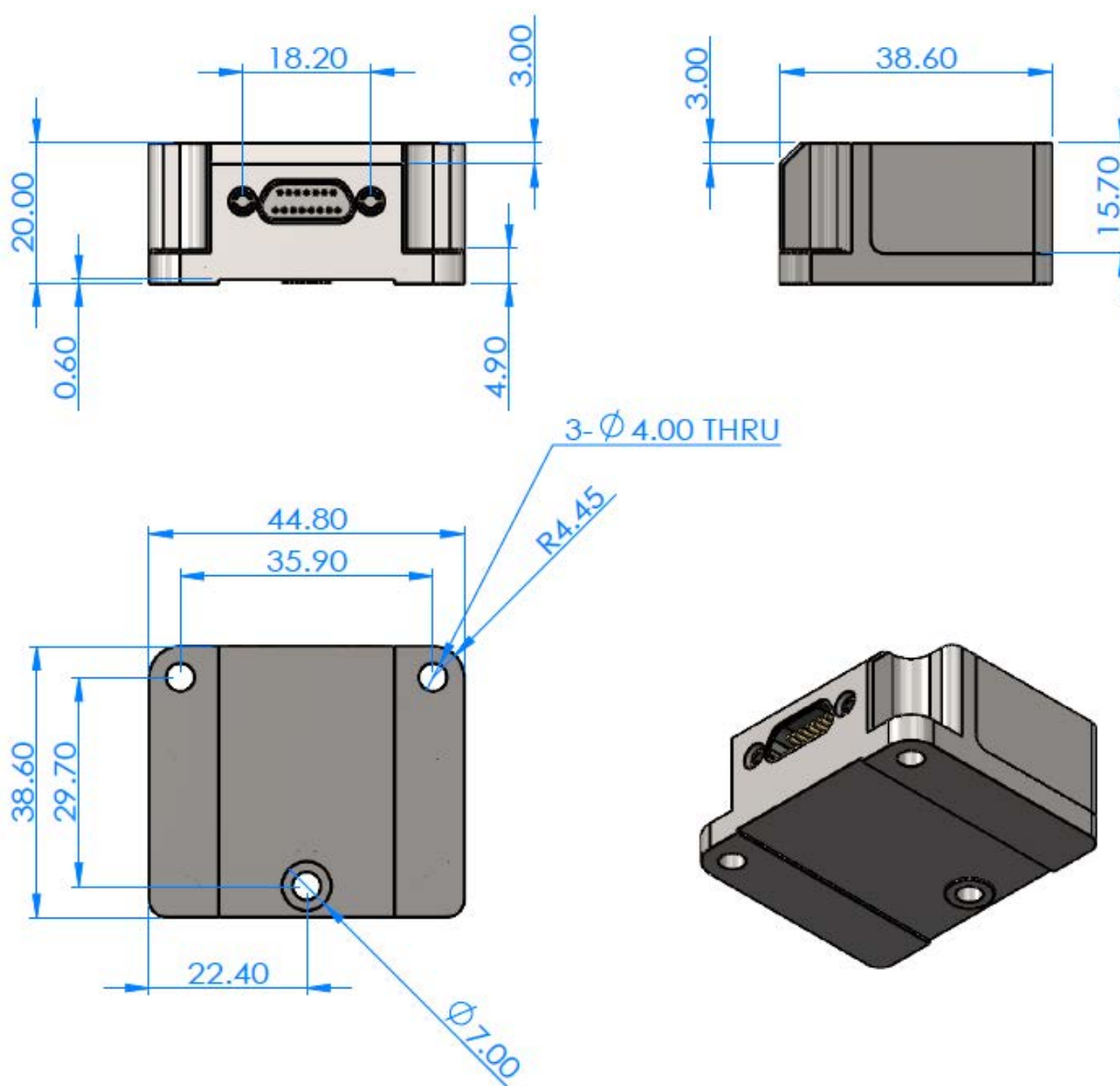
Mechanical Characteristic

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



Package Size

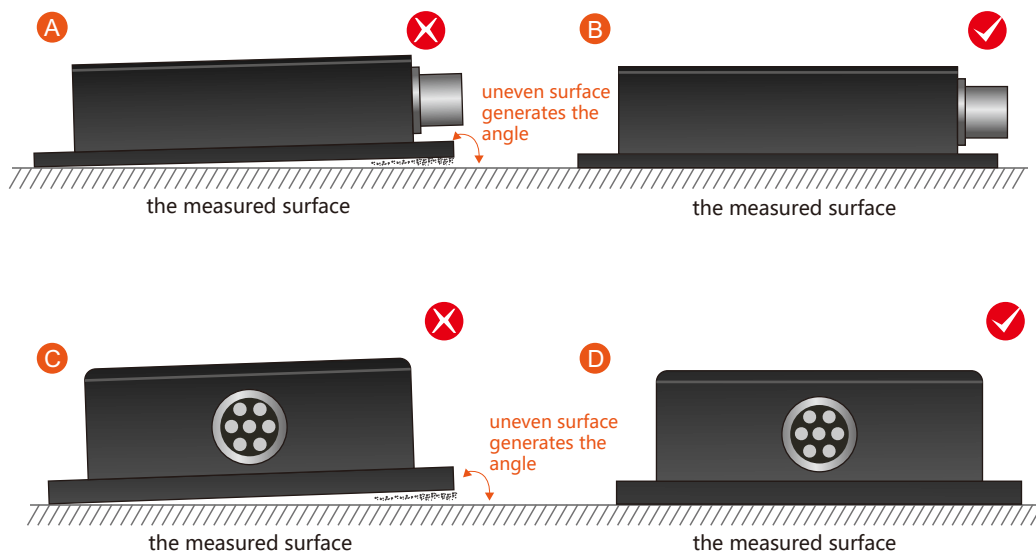
Product size: L44.8 * W38.6 * H20 (mm)



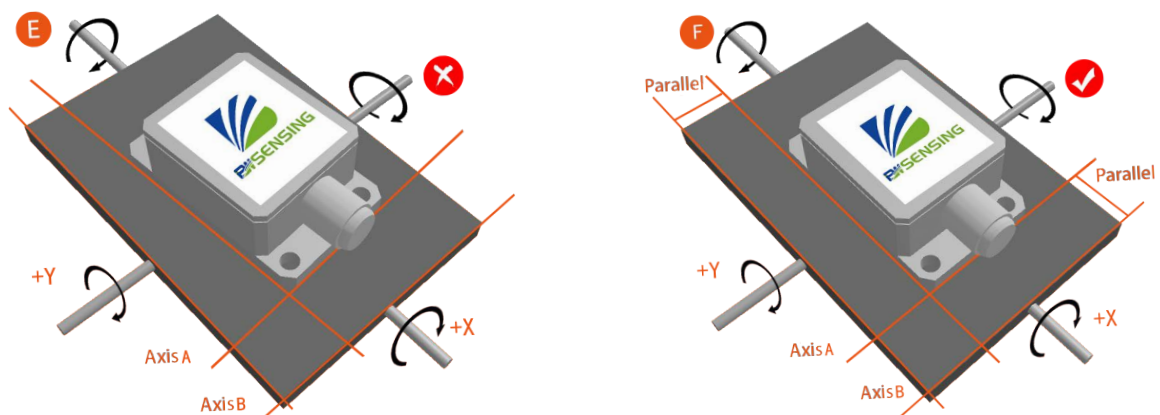
Installation

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.

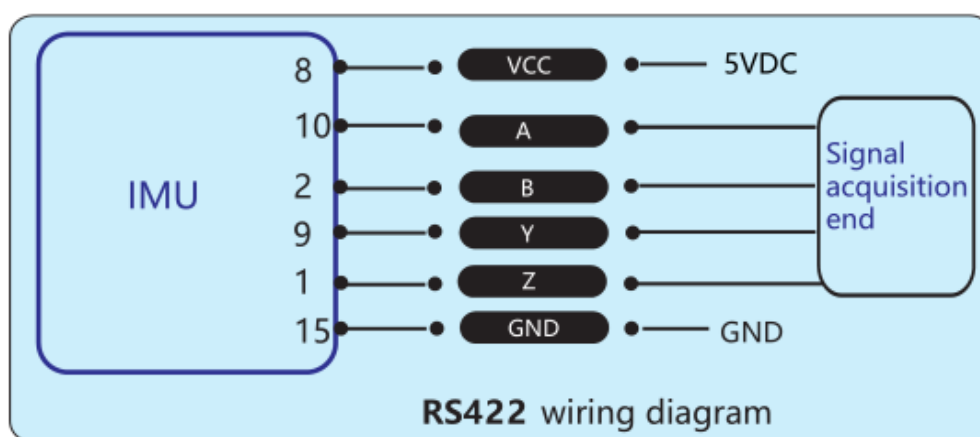


Finally, the mounting surface of the sensor and the surface to be measured must be tightly fixed, smooth in contact, and stable in rotation, and measurement errors due to acceleration and vibration must be avoided.

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



Order Information

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

Reference Standards

- Specification for static calibration of biaxial tilt sensors National standard (draft)
- GB/T 191 SJ 20873-2003 General Specification for Inclinometers and Levelers

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