

BW-VG55R

Multiple redundant dynamic tilt sensors

Data Sheet

V4.5

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Introduction

The VG55R dynamic inclination sensor is a professional attitude measurement device that can measure the pitch and roll of a moving platform, as well as angular velocity and acceleration of its inertial attitude parameters. The attitude deviation is estimated by the 6-state Kalman filter with appropriate gain, suitable for pitch measurement in motion or vibration state. VG55R uses high-quality and reliable MEMS accelerometers and gyroscopes, and ensures measurement accuracy through algorithm

Characteristic

- Dynamic accuracy (Low dynamic scene): 1°(RMS)
- Interface: CAN/RS232
- Triple redundancy sensor fault detection
- static accuracy: 0.1°(RMS)
- size: L70*W80*H27.9 (mm)
- Triple redundancy fusion IMU algorithm
- working temperature: -40℃~+80℃

Application

- Ships
- Construction machinery
- Platform stability
- Agricultural Machinery
- ROV underwater vehicle navigation
- Driver less
- Robot
- Unmanned Aerial Vehicle

Performance

Electrical Specifications

Power supply	9-36V DC
Working current	30mA （60mA MAX）
Working Temperature	-40~+80℃
Storage Temperature	-55~+100℃

Performance index

		Gyroscope	Accelerometer
Range		±500°/s	±8g，±4g
Resolution		0.018°/s	0.25mg, 0.13mg,
Total temperature zero deviation(-20℃~+60℃)		X、Y、Z：0.1°/s	X、Y、Z：5mg Z：40mg
Zero bias instability		5°/h（Allan）	0.05mg（Allan）
Pitch/roll	Dynamic accuracy (low dynamic scenarios)		1°（RMS）
	static accuracy		0.1°（RMS）
	Resolution		0.01°
	Tilt angle		pitch±80°，roll±180°
physical property	Size		L70*W80*H27.9（mm）
characteristics of interfaces	Maximum output frequency		200Hz
	CAN		25kbps-1mbps
EMC	Follow GBT17626		
insulation resistance	≥100MΩ		
shock resistance	2000g，0.5ms，3times/axis		

Resolution: The minimum change in the measured value that the sensor can detect and distinguish within the measurement range.

Accuracy: The root mean square error between the actual angle and the measured angle obtained by the sensor after multiple measurements (≥16 times).。

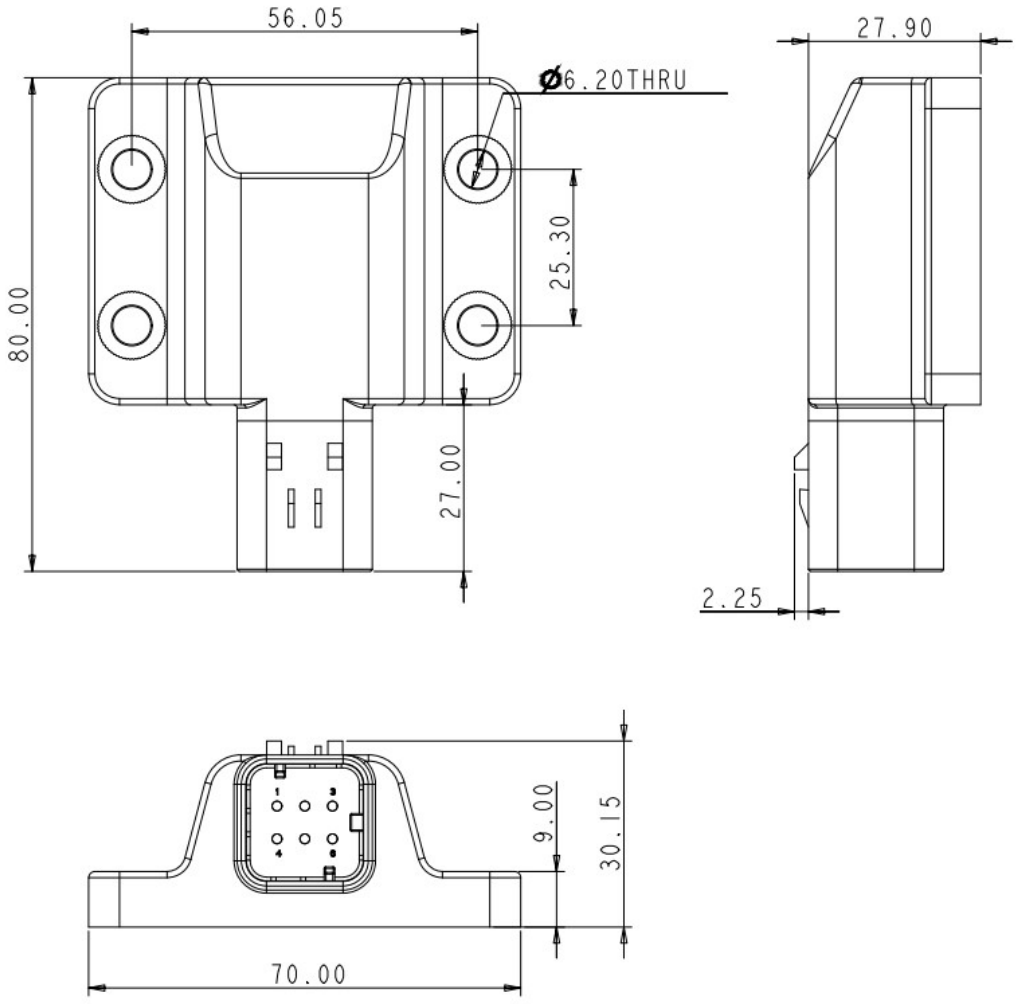
mechanical characteristics

Connector	AMPSEAL 16：male 776434-1，female776433-1（customer need order the female by themselves ）
IP	IP67
Housing material	Molding in one body
Installation	4*M6

Size

Size ： L70*W80*H27.9（mm）

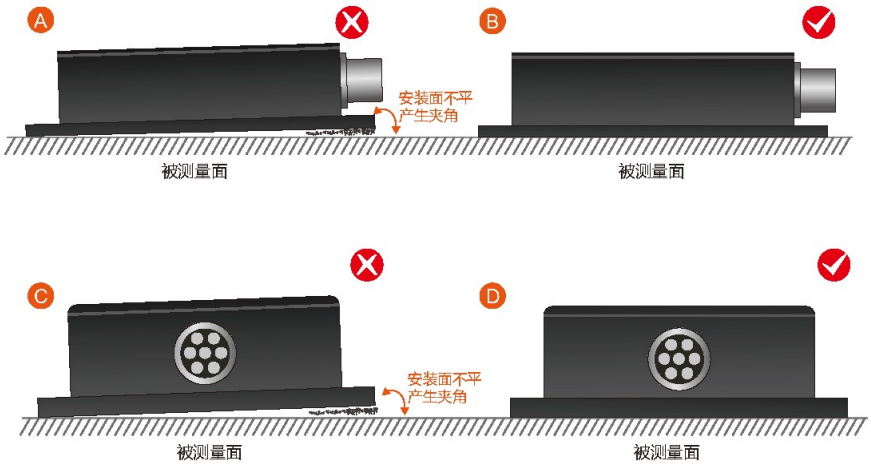
Note: The appearance of the cover product is a rendering, not the final object



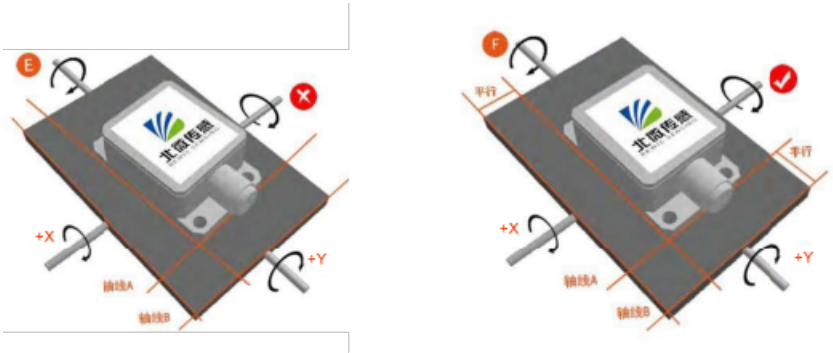
Installation

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. 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 edge line of the sensor and the axis of the measured object cannot have the angle shown in Figure E, and the installation should keep the bottom edge line of the sensor parallel or perpendicular to the rotating axis of the measured object. This product can be installed horizontally or vertically (vertical installation requires customization), and the correct installation method is shown in Figure F.



Finally, the mounting surface of the sensor and the measured surface must be fixed tightly, smooth contact, and stable rotation, to avoid measurement errors caused by acceleration and vibration.

Electrical

红色 RED	黑色 BLACK	绿色 GREEN	黄色 YELLOW	紫色 PURPLE	白色 WHITE
1	2	3	4	5	6
电源正极 DC 9-36V	GND 地	CAN L	CAN H	接收 RXD	发送 TXD

Order information

Model	Output	Installation
BW-VG55R-H1	CAN/RS232	Dual axle horizontal, mounted on the body
BW-VG55R-V1	CAN/RS232	Double shaft vertical, mounted in bucket
BW-VG55R-V2	CAN/RS232	Double shaft vertical, mounted in the lower arm

Standard

- Enterprise quality system standard: ISO9001:2015 standard (Certificate number: 064-21-Q-3290-R0-S)
- GB/T 191 SJ 20873-2003 General specification for inclinometer and level
- GBT 18459-2001 Main static performance indicators of sensors
- JJF10591-2012 Measurement uncertainty evaluation and expression
- GBT 14412-2005 Mechanical installation of mechanical vibration and shock accelerometers
- GJB 450A-2004 General requirements for equipment reliability

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