

# JIOPTICS

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## Ring Laser Gyroscope Single-Axis Indexing Inertial Navigation System

Ring Laser Gyroscope Single-Axis Indexing Inertial Navigation System-D90B is an inertial navigation system based on ring laser gyroscope and quartz flexible accelerometer. Can be combined with altimeter,GNSS, airspeed meter and other auxiliary equipment, can provide air carrier,ground carrier and other navigation information,such as speed, position and attitude.

### Ring Laser Gyroscope Single-Axis Indexing Inertial Navigation System-D90B Introduction

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D90B series of inertial navigation systems can be widely used in tanks,all kinds of armored vehicles,self-propelled artillery,rockets,all kinds of unmanned aerial vehicles,aircraft,ships,automobiles,high-speed rail,unmanned vehicles,mobile satellite communication systems,drilling and other carrying platforms.Flight control,attitude stabilization,weapon stabilization platform, positioning and positioning, etc.

#### Technical features

- Sing-axis indexing mechanism for error mitigation
- High accuracy ring laser gyro and quartz accelerometer
- Optional static or moving base self-alignment
- Error parameters calibration and compensation in full temperature range
- Optional diverse input interfaces for GNSS/Odometer/DVL
- Configurable navigation modes
- Excellent environmental suitability
- Military standards

#### Typical application scenarios

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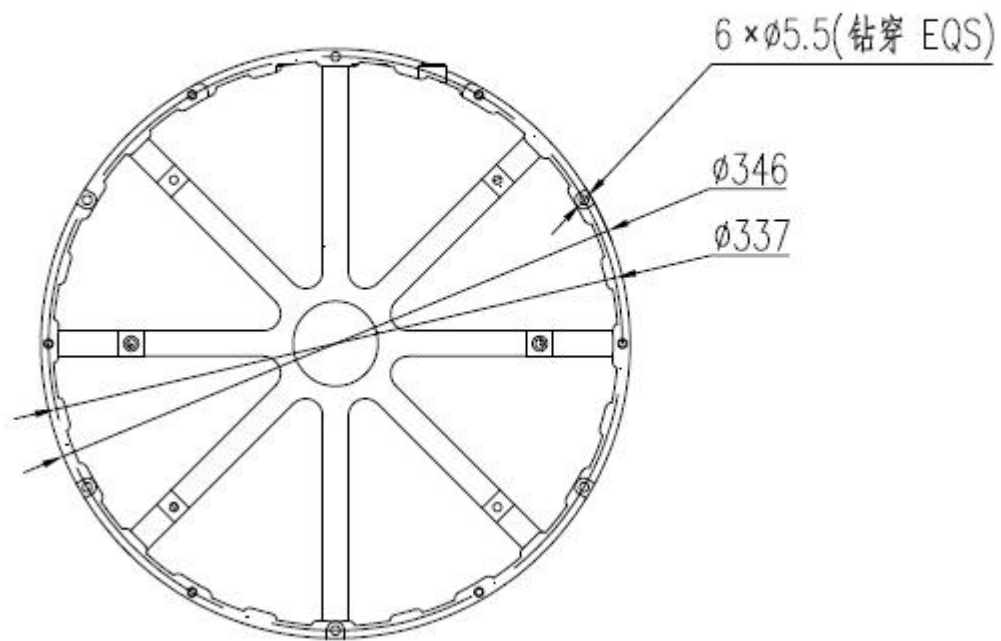
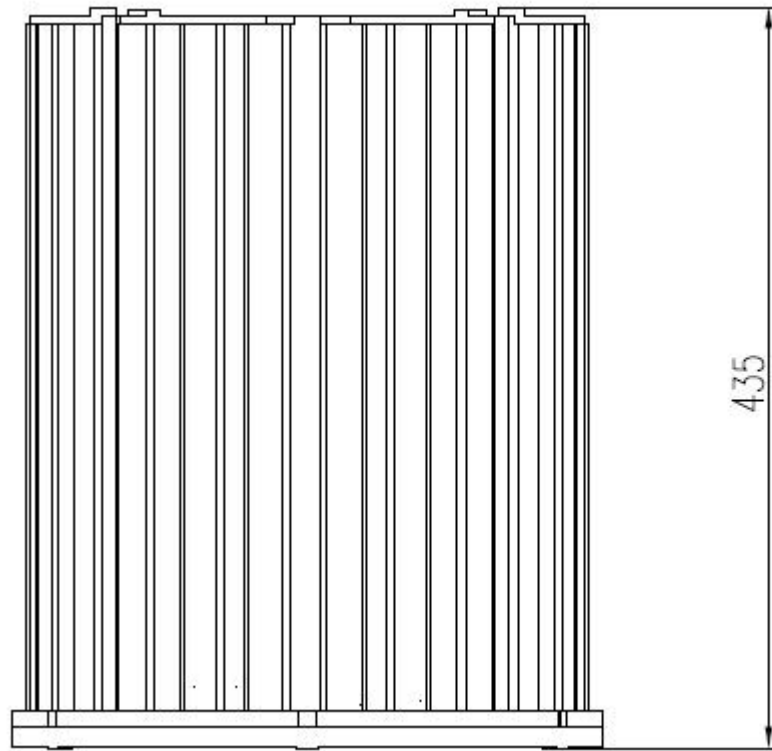
Under-sea vehicle navigation  
Positioning and north-finding for land vehicle  
Stabilization and control for moving carrier  
Attitude measurement for demanding applications

## Main functions of the system

It has the function of outputting information such as carrier position, heading, attitude angle, angular rate and speed in real time;  
It has working modes such as pure inertial navigation and INS/GNSS (including Beidou) integrated navigation;  
Possess the function of receiving satellite navigation information provided by external time system frequency standard equipment;  
It has the function of ground self-alignment and supports the function of air alignment;  
It has functions such as power-on self-test, periodic self-test, status report, installation error compensation, and non-volatile storage.

## System composition and dimensions

The whole system is composed of two parts: the inertial navigation main instrument and the inertial navigation main instrument bracket. Among them, the external dimensions of the main instrument are as follows:



Main technical indicators of the system

System accuracy	Pure Inertial Navigation/Pure Inertial	2.0nmile/3d, PEAK
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System Accuracy	Navigation			
	Integrated Navigation/Navigation with GNSS		≤5m , 1σ _	
	Heading angle /Heading		0.01°, RMS	
	Horizontal attitude (roll and pitch ) Horizontal Attitude (roll & pitch)		0.005°, RMS	
	Pure Inertial Velocity		1m/s , RMS	
	GNSS Integrated navigation Velocity		0. 1 m/s , RMS	
Indicators of inertial devices Gyro and Accelerometer Parameters	laser gyroscope _ Gyroscope	Range/Range	± 6 00 deg/s	
		Bias Stability	≤0.02 deg/h, 1σ	
		Zero bias repeatability Bias Repeatability	≤0.02 deg/h, 1σ	
		Scale Factor non-linearity	1 ppm	
	Accelerometer Accelerometer	Range/Range	± 15g _	
		Bias Stability	≤10μg , 1σ	
		Zero bias repeatability Bias Repeatability	≤10μg , 1σ	
		Scale Factor non-linearity	15 ppm	
	align time Alignment Time	Cold Start		≤ 8 min
		Re-Start		≤15min
Air/In-Flight Start		more than 10h		
Interface Features interface	Supply voltage/Voltage		18~36VDC	
	Power Consumption		≤ 40W @ 24VDC	
	Electrical interface/Electrical		RS232 × 2 RS422 × 3 CAN × 2 Ethernet × 1 1pps × 1	
	Data Update Rate (configurable)		200Hz@115.2kbps _ _ _	
Use environment Environmental	Operating Temperature		-40°C~+65°C	
	Storage temperature/Storage		-55°C~+85°C	

	Temperature	
	Use Altitude/Altitude	20000m
	Humidity	95% (+25°C)
	Vibration/Vibration	5g @ 20~2000Hz
	Shock/Shock	40 g, 11 ms, 1/2 Sine
Physical properties Physical	Dimensions/ Size (L*W*H)	346 x 435 mm _
	Weight/ Weight	45 kg

Note: The structure can be customized according to the user's requirements.