TYPE 90 LASER STRAPDOWN INERTIAL NAVIGATION SYSTEM

🔷 PRODUCT DESCRIPTION

The RL90 Ring Laser Gyro Inertial Navigation Device is a high-performance inertial measurement product. It utilizes the Model 90 Ring Laser Gyro and flexible quartz accelerometer, ensuring accurate and reliable navigation data. With meticulous error calibration and compensation, the system delivers exceptional precision. Its design features, such as electromagnetic shielding, thermo-balance, vibration mode, and sealing, guarantee excellent environmental suitability. The RL90 achieves a CEP of 1.0 nmile (4h) in pure inertial navigation mode and provides integrated navigation accuracy of less than 5 meters (1σ) when combined with GNSS. It offers outstanding heading angle accuracy of 0.01° RMS and horizontal attitude (roll and pitch) accuracy of 0.005° RMS. The system also provides reliable velocity data, with pure inertial velocity accuracy at 1.0 m/s RMS and GNSS integrated navigation velocity accuracy at 0.1 m/s RMS. The RL90 is the ideal solution for applications that require precise and dependable navigation performance.

🔷 PRODUCT FEATURES

- 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

🔷 APPLICATION AREAS

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

🔷 MAIN FUNCTIONS

- 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.

🔷 PERFORMANCE INDICATORS

System accuracy System Accuracy	Pure Inertial Navigation/Pure Inertial Navigation	1.0nmile/4h, CEP
	Integrated Navigation/Navigation with GNSS	≤5m , 1σ _

Indicators of inertial devices Gyro and Accelerometer Parameters	Heading angle /Heading		0.01°, RMS
	Horizontal attitude (roll and pitch) Horizontal Attitude (roll & pitch)		0.005°, RMS
	Pure Inertial Velocity		1.0 m/s , RMS
	GNSS Integrated navigation Velocity		0. 1 m/s , RMS
	laser gyroscope _ Gyroscope	Range/Range	± 6 00 deg/s
		Bias Stability	≤0.002 deg/h, 1σ
		Bias Repeatability	≤0.002 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		≤ 15 min
	Re-Start		≤ 10 min _
	Air/In-Flight Start		≤15min
Working hours Operation Time	Continuous working time/Operation Time		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 Temperature		-55°C~+85°C
	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)		370 x 275 x 244 mm _
	Weight/ Weight		19 kg

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

GYROSCPE MOUNTING 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: