# TYPE 70 LASER STRAPDOWN INERTIAL NAVIGATION SYSTEM

## PRODUCT DESCRIPTION

The RL70 Inertial Navigation System is a high-performance solution based on the Type 70 Ring Laser Gyroscope and Quartz Flexible Accelerometer. It seamlessly integrates with GNSS, altimeters, and airspeed meters, providing accurate navigation information for air and ground carriers. This system is suitable for tanks, armored vehicles, aircraft, drones, ships, automobiles, high-speed rail, unmanned vehicles, satellite communication systems, and drilling operations. It ensures precise navigation with a CEP of 0.6 nmile in pure inertial mode and less than 5m in integrated GNSS mode. The system offers exceptional accuracy in heading angle, horizontal attitude (roll and pitch), pure inertial velocity, and GNSS integrated velocity. With its reliability and versatility, the RL70 is the ideal choice for various navigation applications.

## PRODUCT FEATURES

- Medium-level ring laser gyro and quartz accelerometer
- Optional static or moving base self-alignmentError 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

- Sea vehicle navigation
- Under-water vehicle navigation and positioning
- 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<br>System Accuracy | Pure Inertial Navigation/Pure Inertial Navigation | 0.6 nmile/1h, CEP |
| | Integrated Navigation/Navigation with GNSS | ≤5m , 1σ _ |
| | Heading angle /Heading | 0.03°, RMS |

| | | | |
|---|---|---|---|
| | Horizontal attitude (roll and pitch ) Horizontal Attitude (roll & pitch) | | 0.006°, RMS |
| | Pure Inertial Velocity | | 1 .5 m/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 | ≤0.005 deg/h, 1σ |
| | | Zero bias repeatability Bias Repeatability | ≤0.005 deg/h, 1σ |
| | | Scale Factor non-linearity | 5 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 | | ≤ 5min _ |
| | Air/In-Flight Start | | ≤10min |
| 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<br>RS422 × 3<br>CAN × 2<br>Ethernet × 1<br>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) | | 140 x 233 x 112 mm _ |
| | Weight/ Weight | | 3 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: