

ER-FINS-70 High Performance & Low Cost FOG INS

1. Production

ER-FINS-70 High Performance & Low Cost FOG INS mainly composed of three solid fiber optic gyroscopes, three quartz flexible accelerometers, data packing plates, body structural parts and related software. It measures the angular velocity and linear acceleration of the carrier motion; performs the error compensation of temperature, installation misalignment angle, non-linearity and zero position etc.; automatically searches and outputs true north heading; provides three-dimensional attitude; provides information for carrier attitude and navigation control and the measurement result is output through RS422 serial interface.

2. System Structure and Functions

The system consists of a chassis, an IMU body (with a three-axis fiber optic gyroscope, a three-axis accelerometer), a gyro motherboard, a metered motherboard, a secondary power supply, a navigation computer, and connectors.

It can meet the requirements of all-weather full-autonomous three-axis attitude measurement of the carrier and has self-alignment function. It can realize short-term pure inertial navigation and combined navigation functions, and output carrier real-time attitude data.

3. Specifications

3.1 Performance Specifications

3.1.1 Full Temperature Sensor Parameter

The gyro is better than $0.05^{\circ}/h$, and the accelerometer is better than $200\mu g$ (10s, 1σ).

3.1.2 Initial Alignment (at normal temperature $25^{\circ} C$)

Alignment mode: self-alignment;

Alignment time: less than 5min (static base)

Horizontal attitude (pitch, roll) alignment accuracy (1σ): $\leq 0.03^{\circ}$;

Heading alignment accuracy (1σ): $\leq 0.3^{\circ}$;

3.1.3 Attitude Maintaining Accuracy

1h pure inertia state:

Horizontal attitude (pitch, roll) maintaining accuracy (1σ): $\leq 0.05^{\circ}$;

Heading accuracy (1σ): $\leq 0.2^{\circ}$.

8h position combination status:

Position accuracy (CEP): 10m;

3.2 Volume, weight

3.2.1 ER-FINS-70A

The system volume is: $237mm \times 157mm \times 122mm$;

System weight: less than 5Kg;

3.2.2 ER-FINS-70B

The system volume is: $140mm \times 140mm \times 100mm$;

System weight: less than 3Kg;

3.3 Environmental conditions requirements

Operating temperature range: $-40^{\circ}C \sim +60^{\circ}C$;

3.4 Power supply and power consumption

The average power consumption is 15W, 10W at normal temperature;

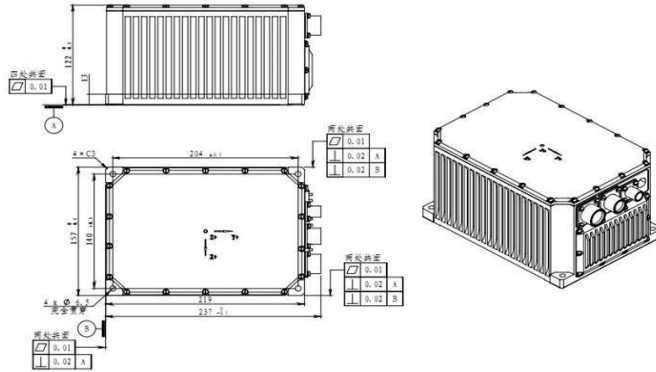
Power supply 24V, working voltage $16 \sim 32V$.

3.5 input and output interface

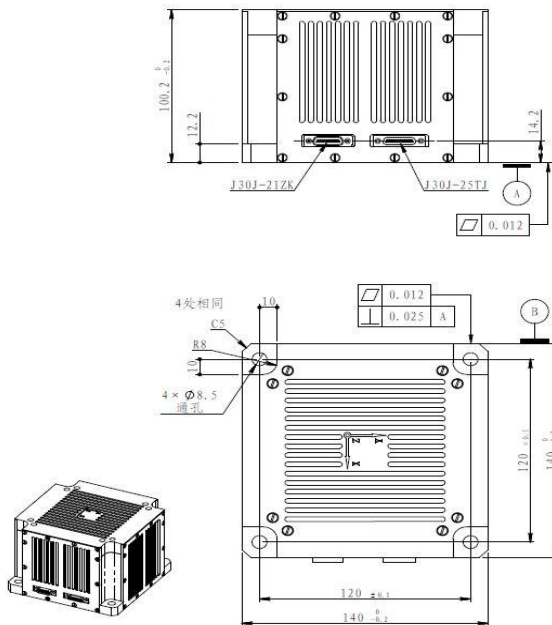
RS422 input and output interface: send navigation parameters and receive control commands.

4. Mechanical installation structure

The system outline structure and installation are shown in the following figure:



ER-FINS-70A



ER-FINS-70B