ER-FINS-98 High Performance FOG INS (Replace PHINS)

Introduction

ER-FINS-98 FOG inertial navigation system (Substitute of PHINS) uses triaxial fiber optic gyro to sense angular motion and output digital signal in proportion to the carrier movement angular rate; uses three orthogonal collocation of quartz accelerometer to sense carrier linear acceleration and output proportionable current signal, which is switched to frequency signal though I-F conversion circuit, then input to navigation computer. Computer finishes data receipt of gyro, accelerometer and external GPS, system compensation error calculation, navigation solution and externally sending real-time speed, position, attitude and navigation information affixed the cycle through the monitoring port .

The initial alignment of ER-FINS-98 is divided into two modes: static alignment and double position alignment. The position accuracy of the two position alignment is higher than that of the static alignment.

ER-FINS-98 has high precision and best stability and showed excellent performance in comparison test with PHINS related INS products.

Specifications

Pure Inertial Mode	
Azimuth accuracy	≤ 0.1°secψ (1σ)
Attitude accuracy	≤ 0.02° (1σ)
Azimuth holding accuracy	0.05°/h
Attitude holding accuracy	0.03°/h
Positioning accuracy (50%CEP)	≤ 2nm/h (10min Static alignment)
Horizontal velocity precision (RMS)	≤ 2m/s (10min Static alignment)
Positioning accuracy (50%CEP)	≤ 1nm/h (Two position alignment, Alignment time is less than 30min)

Horizontal velocity precision (RMS)	≤ 1m/s (Two position alignment, Alignment time is less than 30min)
GNSS Assisted Navigation Mode (External receiver)	
Azimuth accuracy	≤ 0.1°secψ (1σ)
Horizontal attitude accuracy	≤ 0.02° (1σ)
Azimuth holding accuracy	≤0.05°
Horizontal attitude holding accuracy	≤ 0.01° (1σ)
Positioning accuracy	≤ 5m (1σ)
Speed accuracy	≤ 0.1m/s (1σ)
Power and environment	
Data measurement frequency	Maximum 100Hz
Power Supply	23~31V DC Power Supply, Nominal Supply Voltage27V
Power	Normal temperature steady-state power consumption is less than 17W
	High and low temperature steady-state power consumption is less than 20W
	Start transient power consumption is less than 50W
Working Temp	-40°C~+60°C
Storage Temp	-45°C~+80°C
Installment Dimension	180mm×180mm×160mm
Quality	＜6kg
Fiber Optic Gyroscope	
Time to Prepare	≤15s
Bias Stability (100s)	≤0.02°/h (1σ)
Bias repeatability	≤0.02°/h (1σ)
Random Walk Coefficient	≤ 0.005°/√ Hz
Scale Factor Non-linearity	≤ 50ppm (1σ)
Scale Factor Repeatability	≤ 50ppm (1σ)

Gyro Measurement Range	≥ ±300°/s
Quartz Accelerometer	
Measurement Range	1-20g~+20g
The Threshold Value	≤ 5×10-6g
Scale Factor Repeatability	≤ 3.5×10-5 (1σ)
Scale Factor Temperature Coefficient	≤ 6×10-5/°C (-40° C~+60° C)
The Second Order Nonlinear Coefficient	≤ 3×10-5g/g2
Bias	≤ 6×10-3g
Bias Repeatability	≤ 2.5×10-5g (1σ)
Bias Temp Coefficient	≤ 2.5×10-5g/°C(-40° C~+60° C)
Band width	≥ 800Hz