

FOG Photonics®INS8000 Ring Laser Gyro - Positioning Sensor



PRODUCT OVERVIEW

INS8000 Ring Laser Gyro - Positioning Sensor systems is built in 0.008 degrees/hr high precision ring laser gyro, 10ug high precision quartz accelerometer, with the aid of the innovative inertial device error calibration compensation and strapdown navigation technology, it can achieve precision of 0.06 degrees self north seeking and 1nmile/hr autonomous navigation accuracy.

To ensure the compatibility requirements, the product is equipped with a new integrated navigation sensor together with “Starneto Fusion Engine (SFE)”, the GNSS receiver can be external connected, making the use of the SFE block with GNSS, Optimal design of multi path interference, and with the auxiliary conditions of GNSS the product maintain the high accuracy output with much longer time.

In order to meet more applications, This device accept the external sensors such like Milemeter /DVL/Barometric altimeter. Multi sensors(Milemeter /DVL/Barometric altimeter) integrated into our INS8000 system, it guarantees this system with the high accuracy output for a long time. The INS8000 Systems have an excellent performance in application like Compass for vessels and high precision positioning and orientation(POS) application.

About Ring Laser Gyro Technology



Optical technologies RLG & FOG sensing technologies form the basis of many of our motion sensors. Their role is to measure the rotation of a device in free space. Both technologies use a phase interferometry to achieve these rotational measurements. The RLG or the FOGs are arranged in a group of 3, and complimented with 3 matched accelerometers, to form a 6 Degree Of Freedom (DOF) inertial measurement unit (IMU).

RLG technology The monolithic RLGs used by FOG photonics are extremely stable over a range of temperatures and are available in 2 performance grades. A wide range of products, from the MiniRLG to the INS8000 are available with this technology. They are also available as positioning solutions, as they have embedded inertial navigation algorithms. When supplied with a DVL, the system can use the data from the DVL directly to aid the solution. Where most other technologies would have a hard time operating, RLGs are able to perform under adverse environmental conditions.

PRODUCT HIGHLIGHTS:



Military grade device

Built in tactical inertial measurement device: 0.008° /hr
Ring laser gyro, 10ug accelerometer



Autonomous Navigation

High precision, Totally inertial navigation: 1nmile/hr



Self seeking north

High precision self seeking north: 0.06 degrees north
seeking accuracy



Good compatibility

Built-in GNSS Receiver: Support Compass B1、B2, and GSM Band2/3/8, TDS Band34/39, TDD-LTE Band38/39/40



Compass function

With Drift Free Compass function



Low noise, high update rate Solution(High bandwidth)

high update rate : 200Hz data update rate



Support storage

With 16G data storage added, Support the storage of navigation data / raw data / external user data



Excellent scalability

Support a variety of external sensors (odometer /DVL/ altimeter etc.)



Flexible configuration protocol

NMEA0183 standard protocol output match with as many as 20 kinds of proprietary protocols



Waterproof and dust proof

Waterproof and dust proof, IP CODE:IP67



Customizable selection

Interface, storage, precision grade

TECHNICAL SPECIFICATIONS

System accuracy	
Self seeking north	0.06SecL (1 σ)
Attitude accuracy	0.01° (1 σ)
Totally inertial navigation accuracy	1nmile/hr (CEP)
GNSS Group Horizontal positioning accuracy	single-point L1/L2 : 1.2m (1 σ)
	DGPS : 0.4m (1 σ)
	RTK : 2cm+1ppm (1 σ)
GNSS Group speed accuracy	0.02m/s (1 σ)
Combined Odometer Positioning precision	0.1%Mileage (depending on the external odometry accuracy)
The Accuracy of heavy movement	5cm or 1%

Start time		≤10s
Self seeking time		<5min
Measuring range		
Azimuth measuring range		0° - 360°
Pitch angle measuring range		±90°
Rolling angle measuring range		±180°
Angular rate		±300°/s
Acceleration		±10g
Latitude		±85°
Main device performance		
Gyro	Type	Ring laser gyro
	Measuring Range	±300°/s
	Bias stability	0.008°/hr
Accelerometer	Measuring Range	±10g
	Bias stability	≤10ug
Data interface		
COM	2 channels (RS232/RS422 Customizable configuration) 、 1channel RS232	
CAN2.0b	1 channel	
LAN	1channel	
Pulse	1 way differential signal、 2 ways of Single-Ended Support PPS、 EVENTMARK In/Out	
Auxiliary sensors	Milemeter /DVL/Barometric altimeter interface	
Storage capacity	16GB (CUSTOMIZE)	
Data update rate	200Hz (Customize)	
Power Requirements		
Voltage	24V DC Rated (18-36V DC)	
Power consumption	≤30W	
Physical characteristics ;		
Dimension	240mm×240mm×173mm	
Weight	≤10kg	
Environmental characteristics		
Vibration	20~500Hz、 Vibration acceleration:5g	
Impact	15g	
Operating temperature	-40°C - +71°C	
INGRESS PROTECTION	IP67	
MTBF	2000h	
Optional accessories		
Mileage meter Kit	Doppler speed radar/ wheel speed sensor	
Barometric altimeter Kit	10~1200Hpa , Resolution 0.1Hpa , Height measurement accuracy10m (Max)	
RTK Differential radio	radio modem 433 MHz /900MHz/2.4GHz	
Navigation post processing software	The processing results can reach level requirements of Surveying and mapping	

Typical Applications

Land field	Unmanned aerial vehicle Aerial survey Flight recorder Land positioning and orientation	High dynamic range High bandwidth measurement Full temperature calibration compensation (-40°C~60°C) The optimization of Virbration environment precision INS/GNSS Integrated design The built-in 16G data storage Barometric altimeter combination
Air field	Intelligent unmanned vehicle City surveying and mapping High-speed railway track inspection Vehicular satellite communication	High-accuracy Inertial Measurement Unit(Military Grade) After surveying and mapping navigation processing function High precision time synchronization Ethernet/CAN interface Support the standard 12V vehicle DC power source SFE Multi sensor fusion technology GNSS/odometer/RTK
Sea field	Hydrological survey Channel detection Ship compass Unmanned surface vehicle	0.06°self seeking north High precious measurement technology of ship heavy movement Support connection of Ship carrying equipment(maxium 4 ways) IP67 protection grade Support the NMEA standard protocol
Underwater field	Underwater vehicle	SFE the multi-sensor data fusion technology DVL/UBSL Support the" Drift Free "compass function

Dimensions

