Marins Series

Military & strategic grades Inertial Navigation Systems

Marins Series enables stealth autonomous navigation for submarines and surface vessels. It provides very accurate heading, roll, pitch, speed and position, included in GNSS-denied environments. Marins Series is based on the Exail Fiber-Optic Gyroscope (FOG) technology and offers six grades of performance. This technology is proven for superior reliability and performance. Exail high-performance Inertial Navigation Systems (INS) are chosen by world leading navies.

FEATURES

- Genuine strapdown solid-state silent system
- High baud rate / low latency
- Fully configurable
- Web-based built-in interface
- IMO/IMO HSC certified
- MIL STD qualified: 810/461
- Free of ITAR component

BENEFITS

- Autonomous navigation without GNSS
- Low cost of ownership
- Stealth: no radiated noise during operation
- Flexible and evolutive interface
- Easy to set up and to operate
- Full range of INS performances

FOG BENEFITS

- Silent true solid state technology
- Maintenance free
- Unrivalled reliability (sensor core MTBF 500,000 hours)
- No lifetime limitation
- Very low power consumption
- Resistant to extreme shock and vibration

FIBER-OPTIC GYROSCOPE TECHNOLOGY

Ultimate performance and reliability

Exail is recognized throughout the world for its pioneering work on the development of the ultimate-performance Fiber-Optic Gyroscope (FOG). Gyroscopes are the key sensor of the performance of an INS. The FOG is an extremely high performance rotation sensing device based on the Sagnac Effect. A FOG uses optical waves propagating in a fiber-optic coil to accurately measure a rotation rate. This apparently simple design takes full advantage of the reciprocity principle in the propagation of light which enables a perfect device to be created from imperfect components. FOG is the new leading technology for the naval industry.

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exail

TECHNICAL SPECIFICATIONS

Performance

	M3	M5	M7	M8	M9	M11
Position accuracy[1] No aiding	1 nm / 12h	1 nm / 24h	1 nm / 72h	1 nm / 96h	1 nm / 120h	1 nm / 360h
Velocity (RMS)	0.6 knot	0.6 knot	0.4 knot	0.4 knot	0.4 knot	0.4 knot
Heading accuracy (RMS)[2]	0.01 deg seclat	0.01 deg seclat	0.01 deg seclat	0.01 deg seclat	0.01 deg seclat	0.01 deg seclat
Roll/pitch accuracy (RMS)[2]	0.01 deg	0.01 deg	0.01 deg	0.01 deg	0.01 deg	0.01 deg
Settling time	5 min for data availability / 15 min for full attitude					

Environmental characteristics

Operating/storage temperature	0°C to 55 °C / -40 °C to 80 °C
Heading/roll/pitch	0 to +360 deg / ±180 deg / ±90 deg
Environment qualification	MIL STD 810 E[5] / 461 G[5] / 167 / 901E[4]

Physical characteristics

	M3/M5	M7/M8/M9/M11
Weight	28 kg	40 kg
Dimensions (Lx W x H) in mm	433 x 324 x 329	500 x 400 x 344

Support

Calibration	Auto-calibration at start-up
MTBF (operational)	150,000 hours
MTTR (swap out)	25 min
Support	24/7

Interfaces

Serial	RS422 or RS232
Latency	0.5 ms
Ethernet	100 MBit - UDP / TCP server / TCP client / web server (GUI)
Time synchronization	ZDA, PPS Trigger, NTP[5]
Pulse	PPS Trigger
Input/output	Configurable 7 input/ 5 output+ Pulse 4 input / 2 output - Configuration port
Sensors supported	GNSS, Depth sensors, Speed sensors
Input/ output format	Industry standards: NMEA0183, ASCII, BINARY, configurable output messages
Baud rate	600 baud to 460 kbaud
Data output rate	0.1 Hz to 200 Hz
Power supply	24 VDC
Power consumption	< 25 W

(1) TRMS | (2) Secant latitude 1/cosine latitude | (3) Optional | Specifications subject to change without notice | (4) with dedicated shockmount | (5) Please contact Exail to know if this feature is available on your product version.

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