

iNAV-RQH-N

Inertial Navigation System for Advanced Naval Applications

iNAV-RQH is an INS product family for inertial navigation, gyro compassing and dynamically motion measurement with ring laser gyros that covers applications, which require highest accuracy, reliability and an open interface to the user.

- advanced inertial navigation and surveying system for shipborne applications
- RLG technolog with very low angular random walk and angular resolution
- high bandwidth, fast response
- advanced data for weapon control
- integrated time synchronisation module and GPS
- Interfaces: Ethernet TCP/IP, CAN, RS232; synchro interface as option

The derivation iNAV-RQH-N for advanced naval applications consists of three high precision ring laser gyroscopes (Dig-Gyro), three servo accelerometers (Q-Flex), a powerful strapdown processor and an open and flexible interface, which can be customized.

As an option the modular designed system provides interfaces to (D)GPS, EM-Log, DVL, external triggers and external I/Os. Possible outputs are Ethernet, RS232/ 422, SDLC/HDLC or

analog as well as internal data storage on hard-disk or on silicon-disk. Furthermore application specific interfaces can be realized on request (e.g. NTDS, MIL-STD 1553B, ARINC 429 etc.).

Due to the modular hardware and software architecture special adaptation of

housing and mechanical dimensions to customer's requirements is also possible



even if only small quantities shall be purchased. Data processing (strap-down algorithms, global or local navigation, north-seeking, north keeping or motion monitoring and control) inside of the iNAV-RQH-N is as well possible as data transmission of pure or corrected raw data.

A key feature is its high available data rate of up to 1500 Hz and its unique resolution (0.001 degree in roll/pitch/yaw) as well as superior accuracy. As an option special designed algorithms processed in parallel HPST² mode allow to output most stable

angular and position information during definable time windows e.g. for precise radar based target tracking (HPST² = High Precision Short Time Tracking Mode) also under difficult motion conditions. iNAV-RQH is also available for AUV / UUV operation.



Technical Data of iNAV-RQH-N (different classes of accuracy available):

Data Output:	Heading, Roll, Pitch, Angular Velocity, Velocity (body and world), Position, Heave, HPST ² - Information (option)	
Range:	± 500 deg/s (no angle limitation)	± 7 g (other as option)
True Heading:	< 0.015 / 0.025 / 0.05 deg sec(lat) (< 0.01° under motion with RTK GPS)	
Attitude Accuracy:	0.01 / 0.01 / 0.02 deg (0.005 deg available as option)	
Position Accuracy:	0.05...0.8 nm/hr (unaided); 7 mtr/hr (aided with DVL with 0.2% error and velocity assumed to be 1 m/s)	
Alignment Time:	< 20 / 25 minutes (at sea), 10 / 15 minutes (dockside)	
Drift (unaided) / Offset:	< 0.002 / 0.003 / 0.005 deg/h	< 100 μ g (typ. < 60 μ g)
Random Walk:	< 0.0013 / 0.0018 / 0.003 deg/ \sqrt{h}	< 8 μ g/sqrt(Hz)
Resolution:	0.0003 deg (1,13"), 0.001 deg/s	< 1 μ g
Linearity / Scalef.Error:	< 5 / 10 ppm	< 20 μ g/g ² (< 60 ppm)
Data Output Rate:	1...1500 Hz (sampling rate 2000 Hz)	
Data Latency:	< 2 ms (< 1 ms as option)	
Output (options):	RS232/422, Ethernet, HDLC, platform stabilisation interface, MIL-C-38999 III connectors	
Inputs:	(D)GPS, DVL / EM-Log, APS, event trigger (option)	
Synchronization:	Input for pulse-per-second [PPS] (if available)	
GPS:	internal 20 Hz L1/L2 RTK or external receiver connectable option: internal GPS/GLONASS receiver	
Power:	12...34 V DC, < 40 W (other on request, e.g. 400 V DC)	
Temperature:	-20...+60 °C (operating, -40...+71°C option), -40...+85 °C (not operat.)	
Magnetic Insens.:	< 500 μ Tesla (5 Gauss)	
MTBF / MTTR:	25,000 hrs (estimated, surveying environment) / < 30 minutes	
Shock, rel. Humidity:	25 g, 11 ms ; 60 g, 5 ms (operating); 10-2000 Hz 3 g; 8...100 %; IP67	
Weight:	9.8 kg (with Data Interface Unit / synchro output / UPS approx. 35 kg)	
Size:	IMU: ca. 299 x 213 x 179 mm (other on request) optional external IPC or data distribution system (if required): 19" rack	

iMAR has extended longtime experience in the manufacturing and development of inertial navigation and guidance systems for all application areas. All systems manufactured by iMAR are maintained at iMAR in Europe / Germany.

iMAR is being licensed by Honeywell Inc. to use their latest high reliable basic ring laser gyros (Dig-Gyro GG1320) in its own advanced inertial navigation and guidance systems for industrial and defence applications.



Please do not hesitate to contact us for further information or for a demonstration.

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