

# iNAV-RQH

## Inertial Navigation System with Laser Gyros and Servo Accelerometers

iNAV-RQH is an INS product family for inertial navigation and dynamically motion analysis with laser gyros that covers applications which require highest accuracy, reliability and an open interface to the user. iNAV-RQH consists of three high precision ring laser gyroscopes (Dig-Gyro), three servo accelerometers (Q-Flex) and a powerful strapdown processor.

As an option the modular designed system provides interfaces to (D)GPS, up to 3 odometers, external triggers and analog inputs. Possible outputs are Ethernet, RS232/422, SDLC/HDLC, CAN or



analog as well as internal data storage on hard-disk or on silicon-disk. Furthermore application specific interfaces can be realized on request. The systems can be delivered alternatively with and without internal shock mounts. Special adaptation of housing and mechanical dimensions to customer's requirements is possible. Data processing (strap-down algorithms, global or local navigation, north-seeking or motion monitoring and control) inside of the measuring system is as well possible as data transmission of pure or corrected raw data.

### Technical Data:

Range:	$\pm 500$ deg/s	$\pm 5$ g (2/5/7/10/20 g as option)
Drift/Offset (OTR):	$< 0.002 / 0.003 / 0.0035 / 0.05$ deg/h	$< 30 / 100$ $\mu$ g
Bias stability :	0.002 deg/h (const temp.)	$< 10$ $\mu$ g (@ 5 g)
Random Walk:	$< 0.0013 / 0.0018 / 0.003 / 0.01$ deg/ $\sqrt{h}$	
Noise (0...500 Hz):		$< 8$ $\mu$ g/ $\sqrt{Hz}$ rms plus rlg dithering
Resolution:	0.0003 deg (1,13")	$< 1$ $\mu$ g
Scale factor error:	$< 10$ ppm	$< 100$ ppm (stabil. $< 30$ ppm)
Linearity error:	$< 5$ ppm	$< 20$ $\mu$ g/g <sup>2</sup>
Bandwidth:	500 Hz	$> 300$ Hz
Data rate:	1...2000 Hz	
True Heading:	$< 0.015 / 0.025 / 0.04 / 0.3$ deg sec(lat)	(depends on longitude and environment)
Attitude accuracy:	$< 0.01 / 0.025$ deg	
Position accuracy:	$< 15$ m (with GPS, temporary gaps allowed) $< 0.1$ % distance travelled (with odometer and GPS) $< 1$ m /hr (free inertial with ZUPT all 4 minutes )	
Output:	RS232/422, Ethernet TCP/IP, CAN, optional iSCU interface, HDLC or custom specific; MIL connectors (MIL-C-38999 III) Internal flash disk for data storage (up to 8 GByte on request)	
Inputs:	(D)GPS (NMEA or binary data), up to 3 odometer inputs (A/B), DVL, APS, event trigger, synchronisation input/output	
Synchronization:	Input for PPS (if available)	
Power:	11...34 V DC or 36...70 V DC or other; 40 W	
Temperature:	-40...+71 °C	
Rel. Humidity:	8...100 %, IP67	
Shock:	60 g, 6 ms (depends on shock mounts)	
Weight:	9.8 kg	
Size:	approx. 299 x 213 x 179 mm (without connectors)	
Software:	internal online Kalman filter; NavCommand software; open XIO interface	

Applications with iNAV-RQH are e.g. railway surveying (INS/GPS), mining applications, high accurate motion detection and stabilization of SAR antennas, AUV/ROV guidance and surveying / land navigation. Please do not hesitate to contact us for further information or a demonstration.

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