

# iTNAV-06

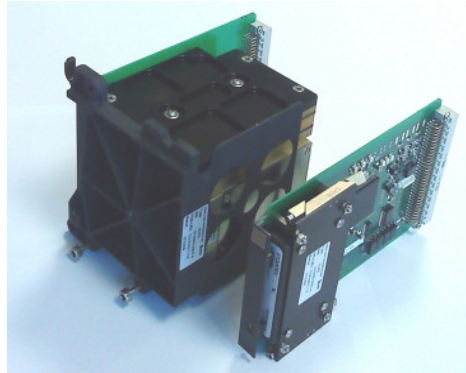
## ARHRS for Torpedo Navigation in FOG Technology

With iTNAV-06 a FOG based attitude and relative heading reference system (ARHRS) is provided for applications which require tactical grade accuracy, simple using and small size and weight.

- Three FOG rate gyros and three MEMS accels
- 0.75 %/h and 1.5 mg bias stability
- CAN / RS232 interfaces
- Trigger Input
- Stabilisation tasks
- Guidance & Attitude Control

iTNAV-06 is a triaxial system with three orthogonal mounted rugged

closed-loop FOG gyroscopes, three MEMS servo accelerometers and an integrated powerful micro-processor to provide digital data transmission (CAN, RS232) and extended internal error modelling and ARHRS calculation. A speed aiding input is available to achieve higher performance also in difficult dynamical environment. Full vehicle stabilisation and guidance algorithms



are available on request.

### Technical Data of iTNAV-06:

	Gyro Performance	Accel Performance
Sensor Range:	$\pm 450$ °/s	$\pm 5$ g
Bias:	$< 0.75$ %/h (OTR -30...+65 °C, 1 sigma)	1.5 mg
Resolution:	$< 0.001$ °/s	$< 0.1$ mg
Linearity / Scale error:	$< 0.05$ % / $< 0.05$ %	$< 0.2$ % / $< 0.2$ %
Noise (0-100 Hz):	$0.1$ % $\sqrt{h}$ (ARW)	$< 100$ $\mu\text{g}/\sqrt{\text{Hz}}$
Bandwidth:	0...200 Hz	0...60 Hz
g-sensitivity:	none	
Attitude / Heading Range:	$\pm 180$ ° Roll, $\pm 90$ ° Pitch, $\pm 180$ ° relative Heading	
Attitude Accuracy:	$< 0.1$ ° roll/pitch (static or linear unaccelerated motion, unaided mode) $< 0.2$ ° roll/pitch with velocity aiding	
Coning Insensitivity:	Fast start accuracy (10 sec after power-on): $< 5$ deg error in roll/pitch Fast start accuracy (30 sec after power-on): $< 0.5$ deg error in roll/pitch	
Track / Heading Accuracy:	0.1 Hz period, 2.5 Hz amplitude: 0.5 deg additional drift and 0.2 deg roll/pitch unaided 1 deg/hr heading drift; optional heading aiding possible	
Attitude / Heading Resolution:	$< 0.01$ °	
Output:	$\omega_x, \omega_y, \omega_z, a_x, a_y, a_z$ (rate and acceleration), BIT, Roll, Pitch, delta Yaw (attitude, rel. heading), derivation of RPY	
Digital Interface, start-up-time:	CAN (up to 1 MBit/s); SYNC input available (opto-coupler) RS232 (up to 115,200 Bd); $< 5$ sec	
Output Data Rate, Connector:	up to 50 Hz via RS232 / CAN; VG96 connectors at FOG and CPU card (requires backplane between both cards)	
Temperature:	-30...+65 °C operational, -56...+85 °C storage	
Power:	18...34 V DC, $< 25$ W	
Size, Weight:	two electronic cards (drawings on request); approx. 1'808 grams	
Shock, Vibration:	60 g, 6 ms ; 20...2000 Hz 2 g(rms)	
MTBF:	25'000 hrs	

iMAR GmbH • Im Reihersbruch 3 • D-66386 St. Ingbert / Germany

Phone: +49-(0)-6894-9657-0 • Fax: +49-(0)-6894-9657-22

[www.imar.de](http://www.imar.de) • [sales@imar-navigation.de](mailto:sales@imar-navigation.de)