GESELLSCHAFT FÜR INERTIALE MESS-,
AUTOMATISIERUNGS- UND REGELSYSTEME MBH
WWW.IMAR-NAVIGATION.DE

iNAV-FJI-0025-LSURV

Inertial Navigation System for Advanced Surface Applications

iNAV-FJI is an INS product family for inertial navigation, gyro compassing and dynamically motion measurement with advanced fiber optical gyros that covers applications, which require high accuracy, reliability and an open interface to the user.

- accurate inertial navigation and surveying system for land vehicle applications
- FOG technolog with low angular random walk and high angular resolution
- very high bandwidth, fast response
- integrated time synchronisation module and GPS
- Interfaces: Ethernet TCP/IP, CAN, RS232

The iNAV-FJI-0025-LSURV for land navigation and surveying consists of three high precision fiber optical gyroscopes, three high accurate servo accelerometers, a powerful strapdown processor, an integrated L1/L2 GPS receiver and an open and flexible interface, which can be customized.

Beside of an odometer interface as an option the modular designed system provides interfaces to (D)GPS/GLONASS, external triggers and external I/Os for e.g. laser altimeter or camera platform control. Possible outputs are Ethernet, RS232/422 or analog as well as internal data storage on hard-disk or on silicon-disk. Furthermore application specific interfaces can be realized on request.

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-FJI-LSURV 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 1000 Hz and its unique resolution (< 0.0001 degree in roll/pitch/yaw) as well as superior accuracy e.g. for stabilisation tasks. The also available "L" version is a medium performance derivation of the iNAV-FJI-0025 and contains less accurate accelerometers and a L1 GPS receiver instead of a high end L1/L2 GPS receiver.

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Technical Data of iNAV-FJI-0025-LSURV:

Data Output:	Heading, Roll, Pitch, Angular Velocity, Velocity (body and world), Position, Raw data, internal statuis information, tbd	
Range:	± 750 *) deg/s (no angle limitation)	±7 g (option 2/10/35 g)
	*) The INS shall be switched on while angular rate is < 250 deg/s	
True Heading:	< 0.25 deg sec(lat) inertial, < 0.05 deg with DGPS, < 0.01 deg with DGPS post-proc	
Attitude Accuracy:	< 0.03 deg , < 0.01 deg with DGPS post-proc	
Position Accuracy:	depends on application and aiding	
Velocity Accuracy:	depends on odometer resolution (A, A/B counter interface available)	
Settling Time:	< 10 minutes	
Drift stability / Offset:	< 0.005 deg/h (const temp.)	< 5 µg (const. temp.)
	< 0.05 deg/h (OTR)	< 60 µg (OTR)
Random Walk:	0.0025 deg/$\sqrt{h}$	< 8 µg/$\sqrt{Hz}$
Resolution:	< 1 µrad (0.2 "), < 0.001 deg/s	< 1 µg
Nonlinearity / Scalef.:	< 5 ppm (30 ppm scale factor error)	< 20 µg/g² (60 ppm)
Data Output Rate:	1...500 Hz (optional 2000 Hz)	
Data Latency:	< 2 ms	
Output (options):	RS232/422, Ethernet, ARINC-429, motor control output for 3D gimbaled platform stabilisation	
Inputs:	(D)GPS (option: GPS/GLONASS integrated) , odometer (velocity)	
Synchronization:	Input for pulse-per-second [PPS] (if available)	
Power:	11...34 V DC	
Temperature:	-30...+60 °C (operating)	
	-40...+85 °C (not operating or degraded specification)	
Rel. Humidity:	8...100 %, IP67	
MTBF / MTTR:	> 25,000 hrs (estimated for surveying applications) / < 30 minutes	
Shock:	25 g, 11 ms ; 60 g, 5 ms (operating)	
Weight:	approx 10.5 kg (depends on housing; light weight version on request)	
Size:	IMU: approx. 370 x 213 x 180 mm (other on request)	

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.

In the iNAV-FJI inertial navigation and guidance systems iMAR uses advanced european FOG technology. This version with reduced accel. spec. require only an European export license.

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

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