iIMU-FSAS-NG

IMU with Odometer Interface and Integrated Power Regulation

The iIMU-FSAS-NG is a very small size IMU consisting of 3 fiber optical gyros (FOG) in closed-loop technology of class 0.75 deg/hr and 3 servo-accelerometers of class 1.5 mg. It is available as triggered and free-running version.

- class 0.75 deg/hr / 1.5 mg / 400 Hz
- odometer interface and integrated stabilized power conditioning
- used in stabilization tasks, INS/GPS navigation, surveying, guidance & control
- fully compatible to well-known iIMU-FSAS, but 6 mm less height and 3 W less power consumprion
- 1'500+ units in the field
- I/F compatible to iIMU-FSAS-HP
- ITAR free, no export control

The IMU is designed for ruggedized applications. The unit is delivered hard-mounted, i.e. without shock-absorbers, to provide best angular stiffnes in surveying applications. The iIMU-FSAS can be operated on an unregulated wide range input supply voltage and is protected against wrong polarity and moderate over-voltage. The data output can be triggered or free-running and the data are sent via RS422 on an UART or HDLC protocol. As an option the system can be delivered with an additional integrated odometer interface. All signals are provided via a robust connector of type MIL-C-38999-III.

The iIMU-FSAS is manufactured in Germany and is used in many industrial, survey- ing and defence applications, also as a replacement with even additional functionality for IMUs like LN-200 TM or HG1700/1900 TM.

The iIMU-FSAS-NG is neither affected by ITAR regulations nor covered by any export control.

Hint: With iIMU-FSAS-HP iMAR provides also a footprint and connector compatible IMU with 10 times better gyro bias and ARW.

Technical Data iIMU-FSAS-NG-SI, iIMU-FSAS-NG-EI-R, iIMU-FSAS-NG-CCI/NCCI (rms):

	Angular Rate		Acceleration
Sensor Range:	± 450 °/s		± 5 g (option: ±10 g or ± 20 g)
Bias:	0.75 deg/hr	(1 sigma)	1.5 mg
Bias Stability (AllanVariance):	< 0.1 °/hr	(const. temperature)	< 10 µg
Resolution:	0.1 arcsec / LSB		0.05 / 2^{15} m/s/LSB
Linearity / Scale factor error:	< 0.03 % / 0.05 %	(1 sigma)	< 0.1 % / 0.1 %
Angular random walk:	0.15 °/$\sqrt{h}$		< 50 µg/$\sqrt{Hz}$

Output:	3 x angular increments + 3 x velocity increments
Axis Misalignment:	< 0.1 mrad between all sensor axes
Digital Interface:	- iIMU-FSAS-NG-SI/-NCCI: data output via HDLC (RS422), 2 MBit/s; config. via UART RS422 - iIMU-FSAS-NG-EI-R/-CCI: data output and config. via UART RS422
Trigger Operation:	-SI / -EI: data output externally triggered; -CCI / -NCCI: free running output
Odometer input:	available on iIMU-FSAS-NG-EI / iIMU-FSAS-NG-CCI: RS422 level, A/B
Connector:	MIL-C-38999-III, 22 pin (male), type D38999/24WC35PA
Data rate:	up to 400 Hz (depending on version: triggered or free-running continuous output)
Sensor bandwidth:	gyro bandwidth internally 500 Hz, accelerometer bandwidth > 75 Hz
First data after Power-On:	5 sec default (allows to configure the system within the first 5 sec); can be adjusted by parameter
Temperature, Shock, Vibration:	-40...+71 °C (operating, case temperature), -40...+85 °C (storage) 30 g/11ms (without shock absorbers); 20...2'000 Hz, 6.3 g rms (endurance)
Magnetic Insensitivity:	< 0.1 deg/hr / Gauss (< 20 Gauss)
Environment / MTBF/ MTTR:	IP67 / 30.000 hrs (estimated) / 10 minutes
Size, Weight:	iIMU-FSAS-NG-xx-E1: 116 x 128 x 98 mm (plus connector), approx. 1'780 grams iIMU-FSAS-NG-xx-E2: 128 x 128 x 98 mm (plus connector), approx. 1'840 grams
Power, Start-up-Time:	10...34 V DC ; 16 W (typ. 13 W at 25 °C); < 1 sec; reverse-voltage protection Power-On/Off control line available (4...36 V, 8 mAmps)

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