

**use  
iNAT-M200  
for new projects!**



GESELLSCHAFT FUER INERTIALE MESS-,  
AUTOMATISIERUNGS- UND REGELSYSTEME MBH  
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## iVRU-SN-M

### Small Size Vertical Reference Unit with Low Drift MEMS Gyros, MEMS Accelerometers, GPS and integrated Strapdown Processor

iVRU-SN-M is a MEMS sensor based vertical reference and motion reference unit (IMS) used for applications which require stable accuracy and simple usage.

- Three MEMS rate gyros and three MEMS accelerometers
- < 0.000'3 deg/s short time bias stability
- internal GPS receiver (SBAS capability) and odometer interface
- CAN / RS232 / RS422 interfaces
- AHRS, vehicle guidance and stabilization, UAV control; integrated 15+ state INS/GNSS EKF
- Navigation, Guidance & Attitude Control



three MEMS accelerometers and an integrated powerful micro-processor with >20 bit sensor data digitalisation included to provide digital data transmission (CAN, RS232, RS422) and extended internal error modelling with high bandwidth. As an option an internal GPS or/and external magnetometer can be provided as well as a wheel sensor to achieve higher performance also in

difficult environment. As an option an additional flange plate is available.

iVRU-SN-M is a triaxial gyro system with three orthogonal mounted rugged MEMS gyroscopes,

difficult environment. As an option an additional flange plate is available.

#### Technical Data of iVRU-SN-M:

	Gyro Performance	Accel Performance
Sensor Range:	$\pm 400$ °/s	$\pm 10$ g
Bias:	< 0.001 °/s (stabil. at const. temp.) < 0.003 °/s (OTR -40...+71 °C, filtered) < 0.07 °/s (day-to-day, without filtering) < 0.5 °/h (short time stability; AllanVar)	< 1 mg < 2 mg < 8 mg < 0.05 mg
Resolution:	< 0.000'1 °/s	< 0.01 mg
Linearity / Scale error:	< 0.005 % / < 0.05 % (1 sigma OTR)	< 0.15 % / < 0.15 %
g-sensitivity:	< 0.001 °/s/g	
Noise:	0.15 °/√h (ARW)	< 0.2 mg/√Hz
Bandwidth:	0...200 Hz	0...200 Hz
Orthogonality:	< 1 mrad	< 1 mrad
Attitude / Heading Range:	$\pm 180$ ° Roll, $\pm 90$ ° Pitch, $\pm 180$ ° true or magn. or COG related or relative heading	
Attitude Accuracy:	< 0.1 ° rms (typical) roll/pitch under sufficient motion with GPS aiding < 0.5 ° rms (typical) roll/pitch under cont. static condition without any GPS aiding	
Heading:	< 0.5° rms (typical) true heading using GPS aiding under sufficient dynamics < 0.5 ° rms mag. heading using external 3D magnetometer iMAG-DMC (if connected)	
Attitude / Heading Resolution:	< 0.005 °	
Position/Velocity:	GPS / INS (WGS84), with up to 100 Hz data rate; advanced 15+ state Kalman filter	
Digital Output:	$\omega_x, \omega_y, \omega_z, a_x, a_y, a_z$ (rate and acceleration), position, velocity, roll, pitch, true heading or course over ground or magnetic heading, BIT	
Further integrated features:	Standard L1 GPS; odometer interface as option;	
Digital Interface; start-up-time:	CAN (up to 1 MBit/s; remote and continuous), External Sync Input available, RS232 and RS422 (up to 115,200 Bd), WLAN as option; < 1 sec	
Output Data Rate, Connector:	up to 100 Hz via CAN / RS232; MIL-C-38999 III 37 pin; SMA for GPS antenna	
Available Options:	L1L2 GPS/GLONASS/GALILEO, 200 Hz data output rate	
Temperature:	-40...+71 °C (case temperature);option: +85°C; storage: -55...+85 °C	
Power, shielding:	11...34 V DC, approx. 7 W ; EMI/EMC shielded / protected	
Size:	L x H x W = 105 x 70 x 75 (metal case, IP65); height depends on options optional additional flange plate with 125 x 75 x 3 mm mounting holes available	
Weight, Shock, Vibration:	approx. 570 grams; 90 g, 6 ms ; 20...2'000 Hz 5 g(rms) endurance	

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