

iVRU-SSC

Vertical Reference Unit with MEMS Gyros, MEMS Accelerometers and integrated Strapdown Processor

With iVRU-SSC a MEMS sensor based vertical reference unit is provided for applications which require medium accuracy and simple using.

- Three MEMS rate gyros and three MEMS accels
- < 0.1 deg/s bias stability
- Integrated GPS and odometer interface
- CAN / RS232 / RS422 interfaces
- Sync Input / Output available
- Guidance & Attitude Control

iVRU-SSC is a triaxial system with three orthogonal mounted



rugged MEMS gyroscopes, three MEMS accelerometers and an integrated powerful micro-processor with 16 bit sensor data digitalisation to provide digital data transmission (CAN, RS232) and extended internal error modelling. As an option also analog output data can be provided. As a further option an internal GPS or/and magnetometer can be provided as well as a speed sensor interface to achieve higher performance also in difficult environment. Interfaces for platform stabilisation are available on request.

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Technical Data of iVRU-SSC:

| | Gyro Performance | Accel Performance for 2g / 10g / 30g versions |
|--|--|---|
| Sensor Range: | ± 75 %/s (*) | $\pm 2 / 10 / 30$ g |
| Bias: | < 0.1 %/s < 1 %/s < 0.01 %/s | (stabil. at const. temp.) (OTR -40...+65 °C) (short time stability) |
| Resolution: | < 0.005 %/s | < 0.1 mg (@ 2 g range) |
| Linearity / Scale error: | < 0.2 % / < 1 % | < 0.3 % / < 0.3 % |
| g-sensitivity: | < 0.03 %/s/g | |
| Noise (0-100 Hz): | < 2 %/√h (120 %/h/√Hz, 0.03 %/s/√Hz) | < 36 / 180 / 360 μg/√Hz (< 0.02 / 0.1 / 0.2 m/s/√h) |
| Bandwidth: | 0...40 Hz | 0...200 / 200 / 100 Hz (depends on range) |
| Attitude / Heading Range: | ± 180 ° Roll, ± 90 ° Pitch, ± 180 ° relative Heading | |
| Attitude Accuracy (2 g version): | < 0.3 ° roll/pitch (static or linear unaccelerated motion, unaided mode) < 1 ° roll/pitch with proper velocity aiding (GPS or odometer) | |
| Track / Heading Accuracy: | depends on aiding options (if any: GPS and/or 3D magnetometer -> 0.2...3 °) | |
| Attitude / Heading Resolution: | < 0.01 ° | |
| Analog Output: | ± 5 V (analog output only as special option; CAN/RS232 recommended) | |
| Output: | $\omega_x, \omega_y, \omega_z, a_x, a_y, a_z$ (rate and acceleration), BIT option: Roll, Pitch, delta_Yaw (attitude, rel. heading) | |
| Digital resolution: | > 16 bit | |
| Digital Interface, start-up-time: | CAN (up to 1 MBit/s; remote and continuous); Sync-Trigger-Input/Output ; RS232 (up to 115,200 Bd); HDLC on request; < 1 sec | |
| Integrated Options: | Standard L1 GPS; odometer interface | |
| Output Data Rate, Connector: | up to 200 Hz via CAN; MIL-C-38999-III 37 pin | |
| Temperature: | -40...+65 °C (case temperature) | |
| Power: | 11...34 V DC; approx. 7 W (depends on options) | |
| Size / Weight: | 108x87x108 mm (IP41) or open-frame unit | |
| Weight, Shock, Vibration: | approx. 0.8 kg (standard, plastic housing), 200 g, 1 ms ; 20...2000 Hz 2 g(rms) | |
| (*) = other on request (50 %/s @ 80 Hz or 200 %/s @ 30 Hz; up to 1000 %/s) | | |

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