

iμIMU-02

Micro IMU with integrated GPS, Magnetometer, Barometer, Odometer

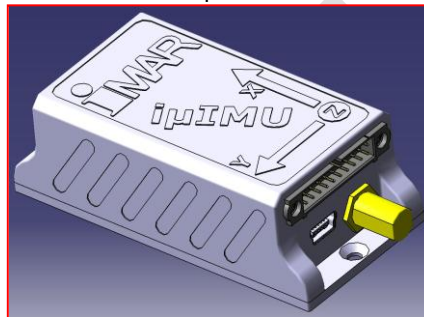
The iμIMU-02 is a MEMS based low-cost IMU consisting of 3 MEMS gyro axes and 3 advanced MEMS accelerometer axes with an open user interface to be used with factory set or customized firmware.

- Calibrated sensors
- Up to 1'000 Hz data rate with calibrated data
- Filtered power supply
- Used for Attitude Heading Reference, Surveying, UAV & missile Guidance & Control Applications
- Integrated L1 GPS, magnetometer, barometer (altimeter) and odometer interface
- Provides precise UTC referenced output
- RS232, RS422, USB, CAN
- SYNC input and output for time stamping
- Option: external 2-antenna GPS for improved heading; external RTK GPS

The iμIMU-02 is delivered with calibrated gyro and accelerometer axes. The IMU is designed for ruggedized industrial applications on autonomous guided

vehicles, land vehicles, marine vessels and aircrafts. The iμIMU-02 can be operated at an unregulated wide range power supply (6-34 V DC, e.g. USB) and is protected against wrong polarity.

An AHRS processor can be integrated as an option to provide roll, pitch, heading, position and velocity information.



The iμIMU-02 is delivered with some basic software incl. source code. A Software Development Kit is available as an option to imple-

ment your own additional features on the integrated processor.

The iμIMU-02 does not require any export license.

Technical Data of iμIMU-02 (1 sigma values):

| | Angular Rate ¹ | Acceleration ¹ | Altitude (Baro) | Magnetometer |
|--------------------------------|--|---------------------------|---------------------------------|-----------------------|
| Sensor Range [max]: | ± 250 °/s [2'000 °/s] | ± 2 g [16 g] | 300...1100 hPa -500...9000 m | ± 8 Gauss ± 0.8 mT |
| Bias (OTR): | < 1 °/s | < 8 mg | < 1 hPa | < 2 mGauss / 0.2 μT |
| Bias Stability (const. temp.): | < 0.05 °/s | 2 mg | < 0.1 hPa | |
| Resolution [@range]: | 0.01 °/s [@ 250 °/s] | < 0.2 mg [@ 2 g] | 0.01 hPa (0.1 m) | < 1 mGauss / 0.1 μT |
| Linearity / Scale error: | < 0.2 % / < 0.3 % | 0.15 % / < 0.2 % | | 0.1 % / 5 % |
| Angular random walk, Noise: | 0.005 °/s/√Hz (@ 10 Hz) | < 150 μg/√Hz | 0.01 hPa/√Hz | |
| g dependent Drift: | < 0.1 °/s/g | | | |
| Data Rate / Bandwidth: | up to 1'000 Hz / 200 Hz | | 40 Hz | 75 Hz |
| GPS: | 2.5 m CEP, 27 sec cold start, 3 sec aided start; WAAS/EGNOS/MSAS supported | | | |
| Output: | rate, acceleration, pressure, magnetic field vector, odometer counts, GPS with active strapdown EKF: roll/pitch 0.5° static, 2° dynamic; mag. heading < 1° | | | |
| Inertial Axis Misalignment: | < 2 mrad between all inertial sensor axes (calibrated) | | | |
| Digital Interface: | RS232, RS422, USB, CAN | | | |
| Connector: | Harwin M80, 20 pin; SMA for GPS antenna; Micro USB | | | |
| Data rate: | up to 1'000 Hz for rates and acceleration | | | |
| SYNC: | Option: RS422 level SYNC input to reset internal package counter | | | |
| Temperature: | -40...+71 °C (operating, case temperature); magnetometer: -30...+85 °C -45...+85 °C (storage) | | | |
| Shock, Vibration: | 6 g, 20 ms ½ sine saw-tooth; 10...2000 Hz 2 g rms (operation) 6.3 g rms (endurance); shock and vibration can affect performance | | | |
| Environment / MTBF/ MTTR: | IP54 / > 25.000 hrs (estimated) / 2 minutes | | | |
| Size, Weight: | approx. 73.5 x 33 x 34 mm (plus connector), approx. 50 gr | | | |
| Power, Start-up-Time: | 6...34 V DC ; approx.. < 1.5 W; < 4 sec; reverse-voltage protection | | | |

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

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

www.imar-navigation.de • sales@imar-navigation.de

¹ Systems with other (higher and lower) sensor performance available on request