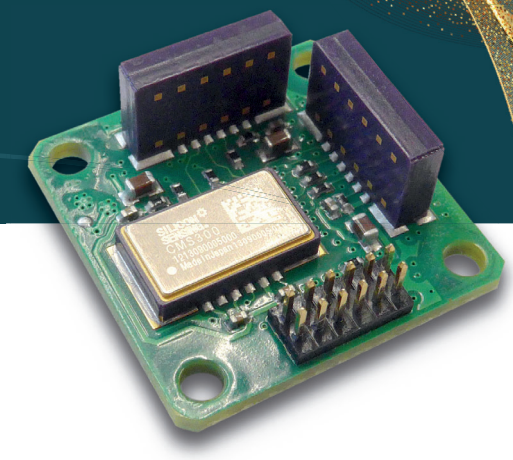
DMU11



Low Cost Precision Inertial Measurement Unit

DMU11 is a low-cost six-degree-freedom inertial measurement unit, designed for both low and high volume applications. Performance is optimised by calibrating each IMU individually over its full temperature range, using Silicon Sensing's state-of-the-art in-house calibration facility.

DMU11 is built around three of Silicon Sensing's CMS combi-sensors, plus associated processing for data management and calibration. Each sensor comprises a silicon MEMS gyro and dual axis accelerometer, designed and manufactured in-house.

Piezoelectric resonating ring MEMS gyros offer robust performance in challenging real-world conditions. The dual axis silicon MEMS accelerometers enable performance improvement through elimination of common mode errors and reduction in noise. Individual calibration maximises performance over the entire temperature range and corrects for axes misalignment.

Silicon Sensing Systems is a market leader in silicon MEMS gyroscopes, accelerometers and inertial measurement systems, specialising in high performance, reliability and affordability. With a strong heritage in inertial sensing that can be traced back over 100 years, all sensors are based on in-house patented designs which are produced in its own state of the art MEMS foundry. Silicon Sensing has delivered over 40 million sensors to thousands of satisfied customers worldwide, and continues to drive performance through technical expertise and continuous innovation.

KEY FEATURES

- Precision 6-DOF MEMS Inertial measurement unit
- In-house manufacture from MEMS fabrication to IMU calibration
- Silicon Sensing's low-noise silicon piezoelectric MEMS gyros
- Silicon Sensing's dual axis capacitive MEMS accelerometer
- Dynamic range ±300°/s and ±10g
- Class-leading bias instability and random walk
  - Angular <10°/hr, 0.4°/√hr
  - Linear -0.05mg, 0.05m/s/√hr
- Non-ITAR
- 3.2V to 5.25V input
- RS422 interface and synch pulse output
- -40°C to +85°C operating temperature range
- Compact - 22 x 22.5 x 10.6mm
- Conformally coated OEM PCB
- RoHS and REACH compliant
- Evaluation kit and integration resources available
- First class customer technical support

APPLICATIONS

- Motion tracking
- INS (Inertial Navigation System)
- GNSS integrated navigation and solutions
- Object tracking
- Robotic control
- Autonomous vehicles, UAVs and ROVs
- Machine control and motion measurements
- Platform/Camera/Antenna stabilisation
- Precision agriculture
- Personal navigation
- Attitude measurement systems

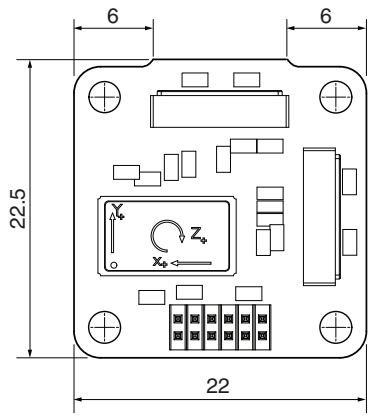
SILICON SENSING®

SUPERIOR SENSORS

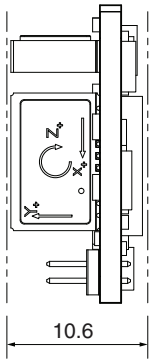
SURVEY AND MAPPING
MARINE
RAIL
SATELLITE CONTROL
ROBOTICS
AUTONOMOUS VEHICLES
OIL AND GAS/MINING
POSITIONING AND NAVIGATION

DMU11

Top View



Side View



All dimensions in millimeters

Typical Data

Parameter	Specification
Gyroscope Properties	
Rate range	±300°/s
Scale factor over temperature (1σ)	±0.09%
Scale factor non-linearity (1σ)	±0.025%
Bias instability	<10°/hr
Bias over temperature (1σ)	±0.07°/s
Noise (rms to 100Hz)	0.1°/s
Angle random walk	<0.4°/√hr
Accelerometer Properties	
Acceleration range	±10g
Scale factor over temperature (1σ)	±0.085%
Scale factor non-linearity (±10g) (1σ)	±0.4%
Bias instability	<0.05mg
Bias over temperature (1σ)	±2.0mg
Noise (rms to 100Hz)	0.1mg
Velocity random walk	<0.05m/s/√hr
Misalignment	
Orthogonality (1σ)	0.07°
IMU Temperature Sensor Properties	
Range	-45°C to 100°C
Accuracy at temperature (Iσ)	±2°C
IMU Properties	
Operating temperature	-40°C to 85°C
Start-up time	<0.5s
Supply voltage	3.20 to 5.25V
Power	0.45W
Mass	4 grams

DMUII EVK Evaluation Kit
(P/N DMU11-21-0500)

For full technical datasheets please visit:
www.siliconsensing.com

DMU11-00-0100-131 Rev 5 DCR No. 710017637

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