

New



AMU30

High Performance MEMS IMU with magnetometer and AHRS capability



Description

AMU30 is the second of a new family of High Performance MEMS IMUs (HPIMU) incorporating Silicon Sensing's tried and tested precision VSG3Q^{MAX} high-Q inductive and VSG5 low-noise PZT resonating ring gyroscopes and capacitive accelerometers.

AMU30 is a ten-degree-of-freedom inertial measurement unit with 3-axis magnetometer, pressure sensor and sophisticated AHRS algorithm, providing precise outputs of angular rate and acceleration, plus roll/pitch/heading angles, altitude/pressure and temperature, at 200Hz. It uses a unique Multi-MEMS architecture to blend the inputs from dual independent MEMS sensing elements per axis to achieve benchmark all-MEMS inertial performance across the duty cycle.

AMU30 represents a realistic alternative to established FOG/RLG based IMUs due to its exceptional bias stability and low noise characteristics, yet it is comparatively compact, lightweight and offers low cost of ownership.

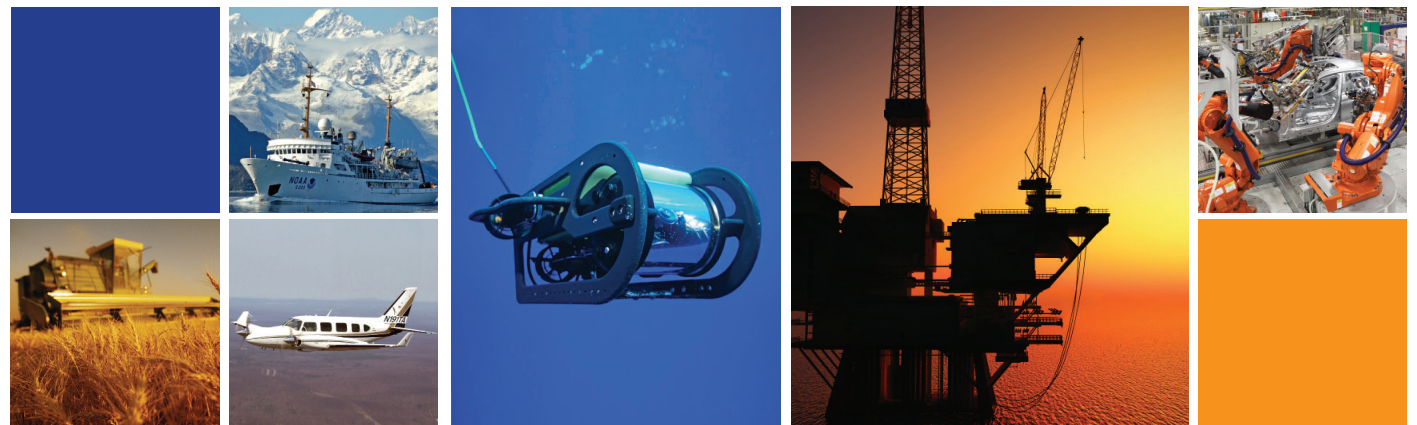
Designed specifically to meet the growing demand from high-end commercial and industrial market applications for a 'tactical' grade non-ITAR IMU, AMU30 utilises Silicon Sensing's class leading MEMS inertial sensors, integrated and calibrated using an in-house state-of-the-art test facility.

Key features

- Advanced AHRS algorithms
- Precision 10-DOF MEMS Inertial Measurement Unit
- Silicon Sensing's latest VSG3Q^{MAX} inductive gyro and capacitive MEMS accelerometer
- Roll, pitch and heading outputs
- Excellent Bias Instability and Random Walk
- Pressure or altitude output
- Non-ITAR
- Compact and lightweight - 68.5 x 61.5 x 65.5H (mm), 345g
- Internal power conditioning to accept 4.75V to 36V input voltage
- RS422 interfaces
- -40°C to +85°C operating temperature range
- Sealed aluminium housing (IP67)
- RoHS compliant
- In-house MEMS fabrication and IMU calibration
- Evaluation kit and integration resources available
- First class customer technical support

Applications

- Hydrographic surveying
- Airborne survey and mapping
- INS (Inertial Navigation Systems)
- GNSS drop-out aiding
- Maritime guidance and control
- Autonomous vehicle control and ROVs
- Machine control

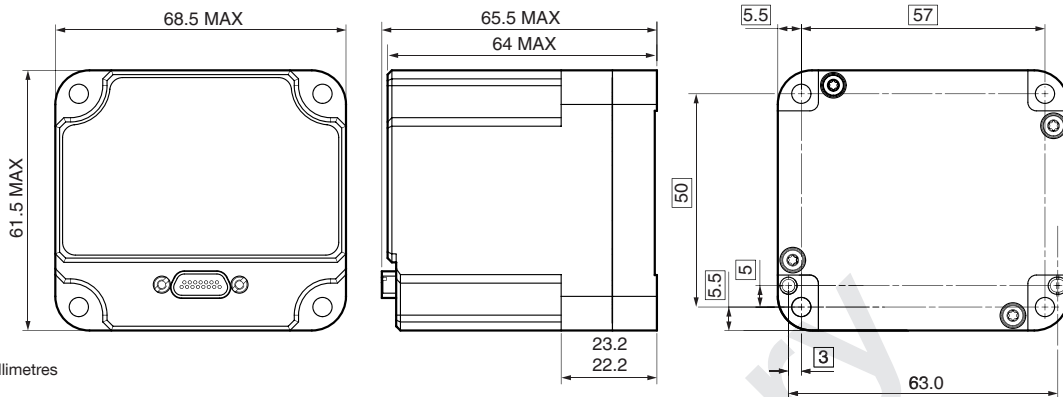


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All dimensions in millimetres

Typical Data

Parameter	Specification
AHRS Properties	
Roll/pitch error (static)	$\pm 0.1^\circ$
Heading error (magnetic)	$\pm 1.0^\circ$
Altitude	0-60,000ft
Altitude output	$< \pm 1\text{m}$
Gyroscope Properties	
Dynamic range	$\pm 490^\circ/\text{s}$
Scale factor over temp ($\pm 200^\circ/\text{s}$)	$\pm 250\text{ppm}$
Bias instability	$< 0.1^\circ/\text{h}$
Random walk	$< 0.02^\circ/\sqrt{\text{h}}$
Bias over temp	$\pm 15^\circ/\text{h}$
Noise (rms to 100Hz)	$0.05^\circ/\text{s}$
Accelerometer Properties	
Dynamic range	$\pm 10\text{g}$
Scale factor over temp ($\pm 1\text{g}$)	$\pm 250\text{ppm}$
Bias instability	$< 0.015\text{mg}$
Random walk	$< 0.05\text{m/s}/\sqrt{\text{h}}$
Bias over temp	$\pm 1.5\text{mg}$
Noise (rms to 100Hz)	0.90mg
Cross Axis Sensitivity	
Over temperature	$\pm 0.20\%$
IMU Temperature Sensor Properties	
Range	-45 to 100°C
Accuracy at temperature	$\pm 3.0^\circ\text{C}$
AMU Properties	
Operating temperature	-40 to 85°C
Start-up-time (full performance)	$< 1.0\text{s}$ ($< 20\text{s}$)



AMU30 EVK Evaluation Kit
(P/N DMU30-00-0500)

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

Silicon Sensing Systems Limited
Cliffatford Road, Southway,
Plymouth, Devon
PL6 6DE United Kingdom

T +44 (0)1752 723330
F +44 (0)1752 723331
E sales@siliconsensing.com
W siliconsensing.com

Silicon Sensing Systems Japan Limited
1-10 Fuso-Cho,
Amagasaki,
Hyogo 6600891, Japan

T +81 (0)6 6489 5868
F +81 (0)6 6489 5919
E sssj@spp.co.jp
W siliconsensing.com

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