

New

DMU30

High Performance MEMS Inertial Measurement Unit (HPIMU)

SILICON
SENSING®



Key features

- Precision 6-DOF MEMS Inertial Measurement Unit
- Silicon Sensing's latest VSG3Q^{MAX} inductive gyro and capacitive MEMS accelerometer
- Excellent Bias Instability and Random Walk
Angular - 0.1°/hr, 0.02°/√hr Linear - 15µg, 0.05m/s/√hr
- 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 manufacture from MEMS fabrication to IMU calibration
- Evaluation kit and integration resources available
- First class customer technical support
- Future developments and expansion capability, e.g. magnetometer, barometer, GPS

Description

DMU30 is the first 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.

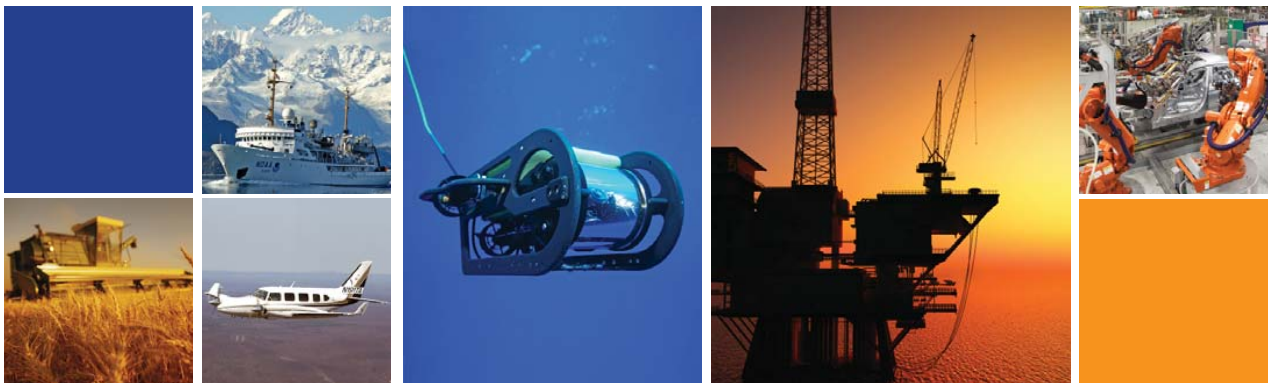
DMU30 is a six-degree-of-freedom inertial measurement unit providing precise 3-axis outputs of angular rate and acceleration, delta angle and velocity, and temperature, at 200Hz. It uses a unique Multi-MEMS architecture to blend the inputs from dual independent MEMS sensing elements per axis to achieve benchmark all-MEMS inertial performance across the duty cycle.

DMU30 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, DMU30 utilises Silicon Sensing's class leading MEMS inertial sensors integrated and calibrated using an in-house state-of-the-art test facility.

Applications

- Hydrographic surveying
- Airborne survey and mapping
- INS (Inertial Navigation Systems)
- AHRS (Attitude and Heading Reference System)
- GPS drop-out aiding
- Maritime guidance and control
- GNSS (Global Navigation Satellite System)
- Autonomous vehicle control and ROVs
- Machine control
- MEMS alternative to FOG/RLG IMUs



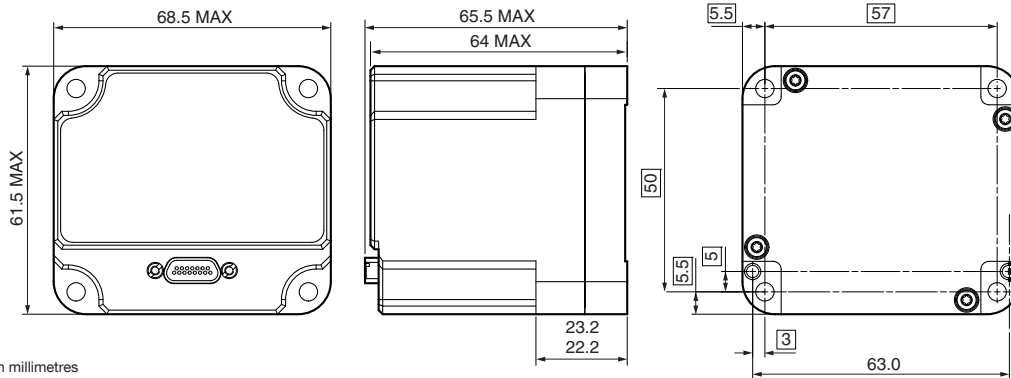
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DMU30

High Performance MEMS
Inertial Measurement Unit (HPIMU)



DMU30



All dimensions in millimetres

Typical Data

Parameter	Specification
Gyroscope Properties	
Dynamic range	$\pm 490^\circ/\text{s}$
Scale factor over temp ($\pm 200^\circ/\text{s}$)	$\pm 250\text{ppm}$
SF non-linearity ($\pm 200^\circ/\text{s}$)	$\pm 100\text{ppm}$
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 ($\pm 1\text{g}$)	$\pm 250\text{ppm}$
SF non-linearity ($\pm 10\text{g}$)	$\pm 1000\text{ppm}$
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	$\pm 3.0^\circ\text{C}$
IMU Properties	
Operating temperature	-40 to 85°C
Start-up-time (full performance)	$< 1.0\text{s}$ ($< 20\text{s}$)
Power	$< 3\text{W}$
Supply voltage	4.75 to 36V
Mass	345g



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

Specification subject to change without notice.

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Headquarter Switzerland:
Pewatron AG
Thurgauerstrasse 66
CH-8050 Zurich
Phone +41 44 877 35 00
info@pewatron.com

Office Germany:
Pewatron Deutschland GmbH
Edisonstraße 16
D-85716 Unterschleißheim
Phone +49 89 374 288 87-0
info.de@pewatron.com



PEWATRON
SENSORS · POWER SOLUTIONS

We are here for you. Addresses and Contacts.

Sales Germany & Austria

Postcode 00000 – 31999
Postcode 38000 – 39999
Postcode 80000 – 99999
Austria

Kurt Stritzelberger

Phone +49 89 260 52 80
Mobile +49 171 803 41 35

kurt.stritzelberger@pewatron.com

Postcode 32000 – 37999
Postcode 40000 – 79999

Gerhard Vetter

Phone +49 674 394 75 75
Mobile +49 163 762 74 30

gerhard.vetter@pewatron.com

Geometrical sensors
Sensor elements

Thorsten Ravagni

Phone +49 60 479 53 627

thorsten.ravagni@pewatron.com

Sales Switzerland & Liechtenstein

Postcode 3000 – 9999

Basil Frei

Phone +41 44 877 35 18
Mobile +41 76 279 37 26

basil.frei@pewatron.com

Postcode 1000 – 2999

Christian Mohrenstecher

Mobile +41 76 444 57 93

christian.mohrenstecher@pewatron.com

Sales International Key Accounts

Peter Felder

Phone +41 44 877 35 05
Mobile +41 79 406 49 83

peter.felder@pewatron.com

Sales Other Countries / Product Management

Pressure Sensors

Philipp Kistler
Phone +41 44 877 35 03
philipp.kistler@pewatron.com

Accelerometers / Level Flow sensor elements

Thorsten Ravagni
Phone +49 60 479 53 627
thorsten.ravagni@pewatron.com

Drive technology CH Postcode 5000 – 9999 / DE

Roman Homa
Mobile +41 76 444 00 86
roman.homa@pewatron.com

Gas sensors / Gas sensor modules Load cells

Dr. Thomas Clausen
Phone +41 44 877 35 13
thomas.clausen@pewatron.com

Power supplies

Sebastiano Leggio
Phone +41 44 877 35 06
sebastiano.leggio@pewatron.com

Drive technology CH Postcode 1000 – 4999 / AT / IT / FR

Christian Mohrenstecher
Mobile +41 76 444 57 93
christian.mohrenstecher@pewatron.com

Flow / Level / Medical products

Dr. Adriano Pittarelli
Phone +49 8245 774 95 44
adriano.pittarelli@pewatron.com

Linear position sensors Angle sensors

Eric Letsch
Phone +41 44 877 35 14
eric.letsch@pewatron.com

Current sensors Power solutions

Osman Coban
Phone +49 71 635 363 898
osman.coban@pewatron.com