

IMU20™



Rugged, Compact MEMS Inertial Measurement Unit

IMU20™ is a new precision all MEMS IMU incorporating Silicon Sensing's ultra-reliable industry-leading inductive resonating ring gyroscopes and high performance dual axis MEMS capacitive accelerometers.

IMU20™ is a compact six-degree of freedom inertial measurement unit providing precise outputs of angular rate, acceleration and temperature. With high levels of shock survivability, IMU20™ is designed specifically to meet the growing needs from the high-end commercial and industrial market applications for a high performance, non-ITAR IMU. IMU20™ utilises Silicon Sensing's class leading MEMS inertial sensors that are integrated and calibrated over the full temperature range using an in-house state of the art test facility.

Offering a convenient form factor when space and payload is at a premium, and able to perform through extremes, IMU20™ will continue to perform due to its ultra-reliable all MEMS sensors.

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.

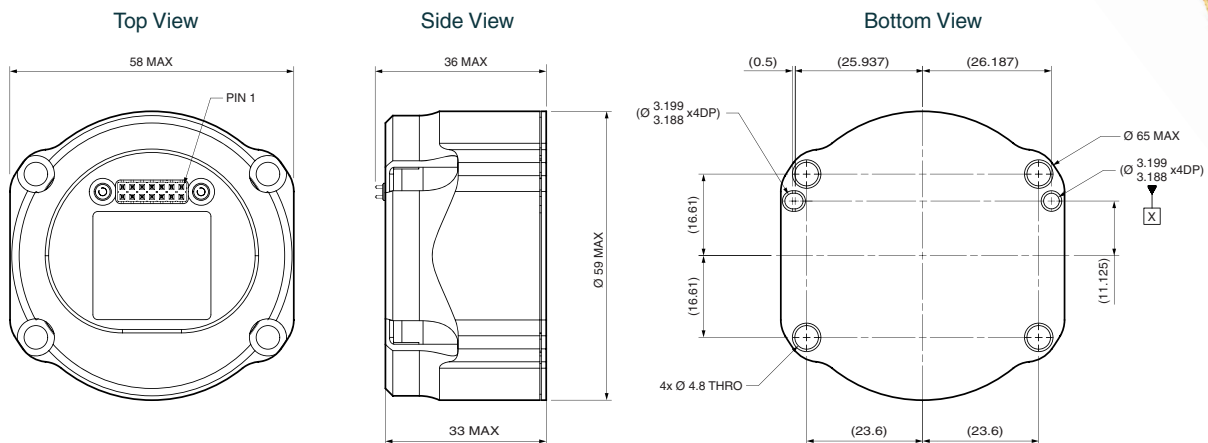
KEY FEATURES

- Precision 6-DOF MEMS inertial measurement unit
- Compact and lightweight - 58.0 x 59.0 x 36.0H (mm), 190g
- Rugged, high shock survivability
- RoHS compliant
- -40°C to +75°C operating range
- RS422 interfaces
- Dynamic range: Angular $\pm 498^\circ/s$
Linear $\pm 30g$
- Bias instability: Angular $2.5^\circ/hr$
Linear 0.5mg
- Random walk:
Angular $\leq 0.25^\circ/\sqrt{hr}$
Velocity Acc 1: $\leq 1.2m/s/\sqrt{hr}$
Acc 2 & 3: $\leq 0.6m/s/\sqrt{hr}$
- Non-ITAR
- First class customer technical support

APPLICATIONS

- Small satellite stability control
- Precision guidance and navigation
- Launch vehicles
- Unmanned aerial vehicles
- Unmanned marine systems
- Machine control
- INS (Inertial Navigation System)
- AHRS (Attitude and Heading Reference System)

IMU20™



All dimensions in millimeters

Typical Data

Parameter	Specification
Gyroscope Properties	
Dynamic range	$\pm 498^\circ/\text{s}$
Scale factor over temperature ($\pm 498^\circ/\text{s}$) (1σ)	± 500 ppm
Scale factor non-linearity ($\pm 498^\circ/\text{s}$) (1σ)	± 250 ppm
Bias instability	$\leq 2.5^\circ/\text{hr}$
Angle random walk	$\leq 0.25^\circ/\sqrt{\text{hr}}$
Bias over temperature (1σ)	$\pm 50^\circ/\text{hr}$
Noise (rms to 85Hz)	$\leq 0.3^\circ/\text{s}$
Accelerometer Properties	
Acceleration range	$\pm 30g$
Scale factor over temperature ($\pm 1g$) (1σ)	± 700 ppm
Scale factor non-linearity ($\pm 10g$) (1σ)	± 1300 ppm
Bias instability	≤ 0.50 mg
Velocity random walk	Acc 1: $\leq 1.2\text{m/s}/\sqrt{\text{hr}}$ Acc 2 & 3: $\leq 0.6\text{m/s}/\sqrt{\text{hr}}$
Bias over temperature (1σ)	± 7 mg
Noise (rms to 85Hz)	Acc 1: ≤ 10 ms Acc 2 & 3: ≤ 6 rms
IMU Properties	
Operating temperature	-40°C to 75°C
Start-up time (full performance)	< 400 ms
Supply voltage	4.75V to 5.25V
Power	nom 3.75W
Mass	190 grams
Interfaces	
Multiple interfaces available. Contact factory for further information.	

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



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