



IMU800

ADVANCED MEMS IMU

- Advanced MEMS Sensors
- Low Drift < 3°/hr
- High Reliability, MTBF > 20,000 hrs
- Fully Compensated Angular Rate and Linear Acceleration
- Digital (RS-232) and Analog Outputs
- Plug-In Compatible with IMU700



Applications

- Control and Stabilization
- Avionics
- Instrumentation

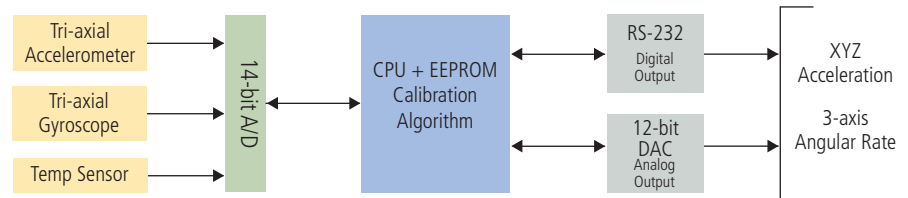
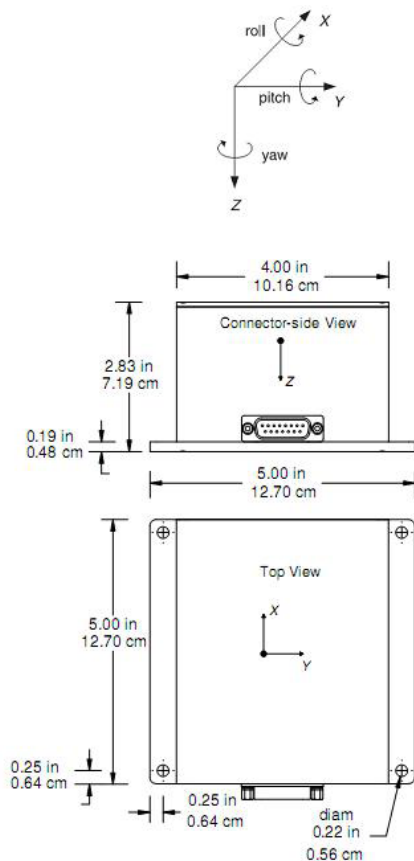
IMU800CA

The IMU800CA is a six-degree-of-freedom (6DOF) Inertial Measurement Unit providing accurate monitoring of angular rate and linear acceleration in any orientation. The IMU800CA incorporates advanced MEMS rate gyro technology resulting in exceptional reliability and performance, with in-run bias stability of < 3°/hr. Typical applications include platform stabilization, dynamic testing and avionics.

The IMU800CA allows precise measurement of angular rate and linear acceleration about 3 orthogonal axes. The IMU800CA employs on-board digital signal processing to sample data, compensate for deterministic errors, and format digital and analog outputs in engineering units.

The IMU800CA combines advanced MEMS rate gyros (precision vibrating silicon structures) that utilize Coriolis force to measure angular rate, and single crystal MEMS accelerometers (3-D silicon structures) that utilize differential capacitance to measure linear acceleration. The IMU800CA offers both digital and analog outputs to allow for easy integration into measurement and control systems.

Each Inertial System comes with a User's Manual offering helpful hints on programming, installation, and product information. In addition, MEMSIC's GYRO-VIEW software is included to assist in system development and evaluation, and to provide out-of-the-box data display and record capabilities.

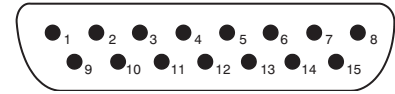


IMU Block Diagram



Specifications	IMU800CA-200	Remarks
Performance		
Update Rate (Hz)	> 125	Continuous Update Mode
Start-up Time Valid Data (sec)	< 1	
Angular Rate		
Range: Roll, Pitch, Yaw (°/sec)	± 200	
Bias In-Run (°/hr)	< 3	Constant temp, Allan Variance
Scale Factor Accuracy (%)	< 1	
Non-Linearity (% FS)	< 0.15	
Resolution (°/sec)	< 0.025	
Bandwidth (Hz)	25	-3 dB point
Random Walk (°/hr ^{1/2})	< 0.1	
Acceleration		
Range: X/Y/Z (g)	± 4	
Bias In-Run (mg)	< 1.0	Constant temp, Allan Variance
Scale Factor Accuracy (%)	< 1	
Non-Linearity (% FS)	< 1	
Resolution (mg)	< 0.5	
Bandwidth (Hz)	25	-3 dB point
Random Walk (m/s/hr ^{1/2})	< 0.5	
Environment		
Operating Temperature (°C)	-40 to +71	
Non-Operating Temperature (°C)	-55 to +85	
Non-Operating Vibration (g rms)	6	20 Hz - 2 KHz random
Non-Operating Shock (g)	100	1 ms half sine wave
Electrical		
Input Voltage (VDC)	10 to 30	
Input Current (A)	< 0.4	
Power Consumption (W)	< 5	
Digital Output Format	RS-232	
Analog ¹ Range (VDC)	± 4.096	Pins 8, 9, 10, 12, 13, 14
	0 to 5.0	Pins 5, 6, 7
Physical		
Size (in)	5.0 x 5.0 x 2.83	Including mounting flanges
(cm)	12.70 x 12.70 x 7.19	Including mounting flanges
Weight (lbs)	< 3.5	
(kg)	< 1.6	
Connector	15 pin sub-miniature "D" male	

15 Pin "D" Connector Male Pinout



Pin	Function
1	RS-232 Transmit Data
2	RS-232 Receive Data
3	Input Power
4	Ground
5	X-axis accel voltage ¹
6	Y-axis accel voltage ¹
7	Z-axis accel voltage ¹
8	Roll-axis angular rate ²
9	Pitch-axis angular rate ²
10	Yaw-axis angular rate ²
11	NC – Factory use only
12	X-axis acceleration ³
13	Y-axis acceleration ³
14	Z-axis acceleration ³
15	NC – Factory use only

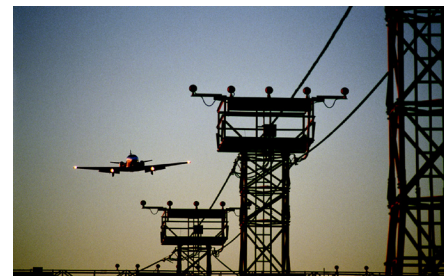
Notes

- The accelerometer voltage outputs are taken directly from the accelerometers without compensation or scaling.
- The angular rate analog outputs are scaled to represent degrees/second. Outputs are created by a D/A converter.
- The acceleration outputs are scaled to represent g. Outputs are created by a D/A converter.

Pin Diagram

Notes:

¹ All DAC analog outputs are fully buffered and are designed to interface directly to data acquisition equipment. Specifications subject to change without notice.



Ordering Information

Model	Description	Gyro (°/sec)	Accel (g)
IMU800CA-200	Advanced MEMS Inertial Measurement Unit	± 200	± 4

CALL FACTORY FOR OTHER CONFIGURATIONS

This product has been developed exclusively for commercial applications. It has not been tested for, and makes no representation or warranty as to conformance with, any military specifications or its suitability for any military application or end-use. Additionally, any use of this product for nuclear, chemical or biological weapons, or weapons research, or for any use in missiles, rockets, and/or UAV's of 300km or greater range, or any other activity prohibited by the Export Administration Regulations, is expressly prohibited without the written consent and without obtaining appropriate US export license(s) when required by US law. Diversion contrary to U.S. law is prohibited. Specifications are subject to change without notice.

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