MRM 10 Analog IMU

- Low Cost & Rugged Analog IMU
- ±5 Volt Signal Output Swing
- Low Gyro Noise *<0.014°/sec/√Hz 1σ*
- Low Accel Noise *<0.07mg/√Hz 1σ (2g)*
- In Run Gyro Bias *25°/hour 1σ*
- Fully Temperature Compensated Bias and Scale Factor
- Compensated Misalignment *1mrad* and g-Sensitivity *<0.03°/sec/g 1σ*
- Low Power *< 3/4 watt typical*
- Light Weight *<111 grams*
- Small Size *< 72cm³/4.4in³*
- Low Voltage *+3.1 or +5.5V (single sided)*
- Wide Sensor Bandwidth *140 Hz*
- External Sync Input *(1 kHz or 1pps)*
- Internal Vibration Isolation
- Precision Alignment
- 3 Internal Temperature Sensors
- Self Test

Export Classification:
Commerce ECCN7A994 (NLR)

Applications

Airborne Platform Stabilization
Antenna Stabilization & Pointing
EO/IR Stabilization
LIDAR Stabilization
Navigation
Flight Testing
Racing Yacht Marine Compass

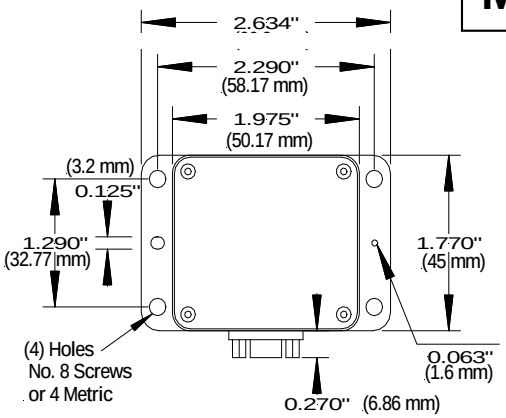
Low Noise, Compensated Rugged Analog IMU

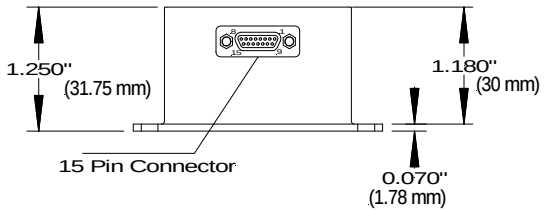
Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS

Gladiator Technologies Division
LKD Aerospace, Inc
8020 Bracken Place SE
Snoqualmie, WA 98065 USA

Rev. 15Feb03
SN: 250

MRM 10 Analog IMU





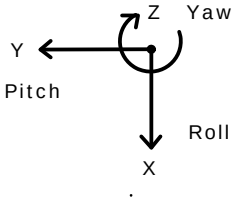
Mating Connector: M83513/01-BN

Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Case
5	**+3.1V to +5.5V Max Input Power**
6	External Sync Input (1kHz) Option Connect to ground if not using
7	Temperature = 50mV/° C typical
8	P/N -200: Signal Ground P/N -250: Signal Reference +2.5V
9	Self Test 3.3V Logic Level
10	Roll Gyro (X) Analog Out ± 5V
11	Pitch Gyro (Y) Analog Out ± 5V
12	Yaw Gyro (Z) Analog Out ± 5V
13	X Accelerometer Analog Out ± 5V
14	Y Accelerometer Analog Out ± 5V
15	Z Accelerometer Analog Out ± 5V

Standard -200 Model: The analog signals are ±5 volt scaled maximum measured with respect to signal ground pin 8. Load ≥ 5K Ohms & <100pf on each signal.

Special -250 Model: All analog signals are scaled ±2.5 volt maximum with respect to signal reference +2.5V on pin 8. Load ≥ 5K Ohms & <100pf on each signal.

Axes (Top View) Right Hand Rule



MRM 10 Analog IMU
MRM10IMU-075-**02**-200 or -**10** MRM10IMU-150-**02**-200 or -**10** MRM10IMU-300-**02**-200 or -**10**

Specification

PARAMETER	RATE AXES			ACCEL AXES	
Range = ±5V Output	±75°/sec	±150°/sec	±300°/sec	±2 g's	±10g's
Bias (Over Temp.)	<0.1°/sec *1 σ*			<3mg *1 σ*	<5mg
Bias (In Run Stability)	25°/hour *1 σ*			0.1mg *1 σ*	0.25mg
Scale Factor (± 5V Scaled)	15°/sec/V	30°/sec/V	60°/sec/V	0.4 g/V	2 g/V
Scale Factor Error %	≤0.2% (over temperature) *1 σ*				
Resolution	0.007°/sec			0.035mg	0.25mg
Angle Random Walk	0.014° /sec/√Hz *1 σ*			0.07mg /√Hz 1σ	0.5mg
Alignment	<1 mrad *1 σ*				
G-Sensitivity	<0.03°/sec/g *1 σ*				
Self Test On	Δ 50 ± 25°/sec			Δ1.5g ±0.5g	Δ0.6g ±0.4g
	Logic 1 = 3V to 5V at Pin 9				
Temp Range Operating: Non-Operating:	-40°C to +85°C -55°C to +85°C				
Bandwidth	140 Hz Sensor with 500Hz data update rate				
Temp Sensors	3 Internal Temperature Sensors				
Start-up Time	< 0.3 sec				
Input Power	**+3.1V or +5.5V Max. Input Power (*single sided*)**				
Power Consumption	750 mW at 3.3V *Typical* 900 mW at 3.3V *Maximum*				
Size U.S.: Metric:	1.97 x 1.77 x 1.25 = 4.4 in^3 5 x 4.5 x 3.2 = 72 cm^3				
Weight	111 grams				
Mounting	4ea No.8 or M4 Screws				
Shock	500g's ½ sine 30 msec powered				
Vibration	6gRMS *(10g accelerometers)*				
MTBF	33,000 hrs *(per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)*				

Specification subject to change without notice

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