

MRM 20 Analog IMU



- Low Noise & Rugged Analog IMU
- Form, Fit & Function with MRM 10 and 40 Analog IMU's
- ± 5 Volt Signal Output Swing
- Low Gyro Noise $< 0.01^\circ/\text{sec}/\sqrt{\text{Hz}}$ 1σ
- Low Accel Noise $< 0.05\text{mg}/\sqrt{\text{Hz}}$ ($2g$) 1σ
- In Run Gyro Bias $15^\circ/\text{hour}$ 1σ
- Fully Temperature Compensated Bias and Scale Factor
- Compensated Misalignment 1mrad and g-Sensitivity $< 0.02^\circ/\text{sec}/g$ 1σ
- Low Power $< 680\text{mW}$ typical
- Light Weight 110 grams
- Small Size $72\text{cm}^3/4.4\text{in}^3$
- Low Voltage $+3.1$ or $+5.5\text{V}$ (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**

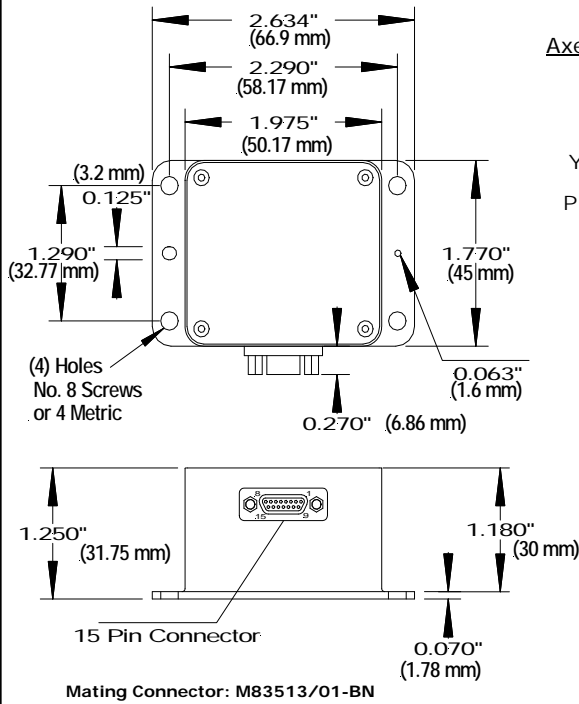


Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS

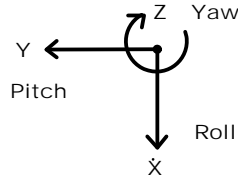
Gladiator Technologies Division
LKD Aerospace, Inc
8020 Bracken Place SE
Snoqualmie, WA 98065 USA

Rev. 15Feb03
SN: 200

MRM 20 Analog IMU



Axes (Top View) Right Hand Rule



MRM 20 Analog IMU

MRM20IMU-075-02-200 or -10
MRM20IMU-150-02-200 or -10
MRM20IMU-300-02-200 or -10

Specification

PARAMETER	RATE AXES			ACCEL AXES	
Range	±75°/sec	±150°/sec	±300°/sec	±2 g's	±10 g's
Bias (Over Temp.)	<0.05°/sec 1 σ			< 1.0mg 1 σ	< 1.5mg 1 σ
Bias (In Run Stability)	15°/hour 1 σ			0.02mg 1 σ	0.1mg 1 σ
Scale Factor (± 5V Scaled)	15°/sec/V	30°/sec/V	60°/sec/V	0.4 g/V	2 g/V
Scale Factor Error %	≤0.1% (over temperature) 1 σ				
Sensor Resolution	0.005°/sec			0.025mg	0.08mg
Angle Random Walk	0.01°/sec/√Hz	0.011°/sec/√Hz	0.012°/sec/√Hz	0.05mg/√Hz	0.16mg/√Hz
Alignment	1mrad 1 σ				
G-Sensitivity	<0.02°/sec/g 1 σ				
Self Test On	Δ 50 ± 25°/sec			Δ 1.5 ±0.5g	Δ 0.3 ±0.2g
Temp Range	Operating: Non-Operating:				
Bandwidth	140 Hz, double-pole				
Temp Sensors	Internal Temperature Sensors				
Start-up Time	< 0.3 sec				
Input Power	+3.1V to 5.5V Max. Input (single sided)				
Power Consumption	690 mW at 3.3V Typical 800 mW at 3.3V Maximum				
Size	U.S.:	1.97 x 1.77 x 1.25 = 4.4 in ³			
	Metric:	5 x 4.5 x 3.2 = 72 cm ³			
Weight	110 grams				
Mounting	4ea No.8 or M4 Screws				
Shock	500g's ½ sine 30 msec powered				
Vibration	6gRMS (20Hz to 2KHz ~ 10g accelerometers)				
MTBF	33,000 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)				

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	Signal Ground
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

The analog signals are ±5 volt scaled maximum measured with respect to signal ground pin 8.

Load > 5K Ohms & <100pf on each signal.

Specification subject to change without notice



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