MEMS MRM10 6DOF Analog IMU

- **Low Cost Silicon MEMS 6DOF Analog IMU**
- **Excellent Bias, Bias Over Temp. & G-Sensitivity**
- **Bias Over Temperature**
  ≤ 0.5º/sec performance available
- **Low Power** *< 200mW*
- **Light Weight** *< 122 grams*
- **Small Size** *<4.13³/67.5³*
- **Low Voltage** *+5V (single sided power)*
- **Bandwidth** *100Hz*
- **Vibration Isolation**
- **Precision Axis Alignment** *±1 degree*
- **3 Internal Temp. Sensors**
- **Self Test**
- **Shock Resistant**
- **Long Life**

- ***Excellent Bias Performance***
- ***Available in Various Ranges ****
- ***Custom Packaging Available ****

Export Classification: Commerce ECCN7A994

**** Consult Factory***

The all new MEMS MRM10 Motion Reference Module is a low power and light weight silicon 6 degree of freedom (6DoF) analog inertial measurement unit. Weighing less than 122 grams and consuming less than <200mW this low cost and rugged device also includes three internal temperature sensors.

The signature feature of the MRM10 is our impressive bias over temperature performance ranging from ≤ 0.5º/sec to ≤ 3.0º/sec depending on the model number. Designed with Finite Element Analysis (FEA) software, the unit includes precision alignment and built-in vibration isolation, which enables the unit to withstand environmental vibration and shock typically associated with commercial aircraft requirements. The MRM10 is ideal for applications requiring analog output, ultra low power, small size *(<4.13*), light weight *(<122 grams*) and long life.

The MRM10 is available in various standard rate and linear ranges and various grades of performance. Designed for embedded system, antenna stabilization, commercial and instrumentation applications as well as laboratory use, the MRM10 is ideal where excellent bias performance coupled with small size, low power and light weight are desired for commercial environments and applications.

Gladiator Technologies, Inc.

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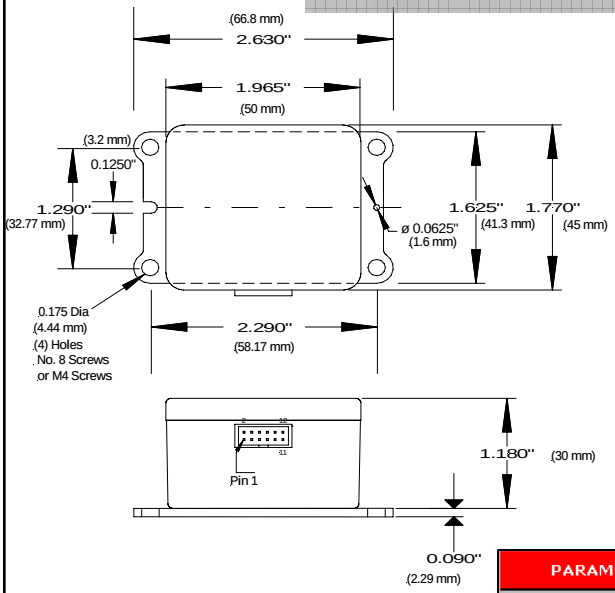
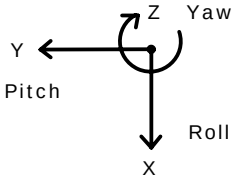


Axes (Top View)
Right Hand Rule



Standard MRM10	Customer configurable options of accelerometers and gyros are available. Please contact the factory for more information.
MRM10-075-02-100 MRM10-150-02-100 MRM10-150-12-100 MRM10-300-12-100	

Pin No.	Assignment
1	Z Rate
2	Z Accel
3	Power Ground
4	Temperature
5	Input Voltage +3.0V to +5.25V
6	X Rate
7	X Accel
8	Y Rate
9	Y Accel
10	2.5 Voltage Reference
11	Self Test
12	Case

PARAMETER	RATE AXES			ACCEL AXES	
Range	**±75°/sec**	**±150°/sec**	**±300°/sec**	**±1.7g's**	**±12g's**
Scale Factor	15 mV/°/sec	12.5 mV/°/sec	5 mV/°/sec	1.2V/g	150 mV/g
Tolerance	±2.25 mV/°/sec	±1.25 mV/°/sec	±0.4 mV/°/sec	±1.25 mV/°/sec	±0.4 mV/°/sec
Bias Nominal Output	2.5 V	2.5 V	2.5 V	±48mV/g	±6mV/g
Bias (Ambient)					
High Perf. Grade A	≤0.5°/sec	≤0.5°/sec	≤1.5°/sec	<1mg *typical*	<8mg *typical*
High Perf. Grade B	≤0.5°/sec	≤0.5°/sec	N/A	<1mg *typical*	<8mg *typical*
Med Perf. Grade C	≤0.5°/sec	≤0.5°/sec	≤1.5°/sec	<1mg *typical*	<8mg *typical*
Std. Perf.	≤0.5°/sec	≤0.5°/sec	≤1.5°/sec	<1mg *typical*	<8mg *typical*
Bias Over Temperature					
High Perf. Grade A	≤0.5°/sec	≤0.5°/sec	≤1.5°/sec	3mg *typical*	12mg *typical*
High Perf. Grade B	≤1.0°/sec	≤1.0°/sec	N/A	3mg *typical*	12mg *typical*
Med Perf. Grade C	≤2.0°/sec	≤2.0°/sec	≤3.0°/sec	3mg *typical*	12mg *typical*
Std. Perf.	≤3.0°/sec	≤3.0°/sec	≤6.0°/sec	3mg *typical*	12mg *typical*
G-Sensitivity RMS					
High Perf. Grade A	≤ 1°/sec/g	≤ 1°/sec/g	≤ 1.5°/sec/g	N/A	N/A
High Perf. Grade B	≤ 2°/sec/g	≤ 2°/sec/g	N/A	N/A	N/A
Med Perf. Grade C	≤ 3°/sec/g	≤ 3°/sec/g	≤ 3°/sec/g	N/A	N/A
Std. Perf.	Not specified				
Noise	0.05°/sec/Hz	0.05°/sec/Hz	0.1°/sec/Hz	70µg/√Hz	0.5mg/√Hz
Bandwidth	100 Hz			40Hz	400Hz
Q	(2nd Order Pole)				
Self Test On	Logic 1 = 4V to 5V @ Pin 7				
Self Test Change Both Axes	+0.8 ± 0.4V	+0.7 ± 0.3V	+0.27 ± 0.18V	>4.75V	1.0V ± 0.2V
Self Test Off	Logic 0 < 1V or Open				
Alignment	± 1 degree				
Temperature Sense	2.5 V @ 298°K				
	8.4 mV/°C				
Temperature Range	-40°C to 85°C				
Power	200 mW @ 5V, 40 mA				
Size U.S.	1.962 x 1.77 x 1.18 = 4.1in^3				
Metric	5.0 x 4.5 x 3.0 = 67.5 cm^3				
Mounting	4ea - No. 10 Screws (4 Metric)				
Weight	0.27 lbs. / 122 grams				
Connector	Molex – 87833-1220				
Connector Mate	Molex – 51110-1251				
Shock	500g's ½ sine 30 msec powered				
Vibration	6gRMS				
MTBF	No inherent wear out modes for long life.				

Specification subject to change without notice

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