

Inertial Labs, IncTM

Weapon Orientation Module

WOM

**Datasheet
Revision 1.2**

July, 2010

This document contains information proprietary to Inertial Labs, IncTM

The **Inertial Labs™ WOM** weapon orientation module provides a level of performance previously unseen in the world of miniature 3DOF orientation sensors. WOM employs the use of three axes each of gyroscopes, accelerometers, and magnetometers to track both slow and fast movements of weapons in real-time. With fully embedded capabilities to calibrate against soft- and hard-iron interference present within different weapons, the unit is able to be mounted to the weapon and calibrated by soldiers in the field. Orientation output can either be pulled on command or provided automatically as a result of a weapon firing events.

Highlights

- Real-time orientation tracking
- Data provided on command
- Accurate through full temp range (-30 to +50 C)
- Compact size (~3in³)
- Automated power controls
- Embedded blank-fire indicator

Applications

- Weapon orientation tracking
- Real-time casualty assessment
- High accuracy head tracking
- Unmanned air & ground vehicle navigation
- Pedestrian Navigation



WOM is designed to operate on a multitude of weapons from small arms weapons like M16 and M4 to mortar systems and towed artillery. For each weapon system WOM has specific functions to best fit the operational utilization of the weapon on which it is mounted. In operation WOM has embedded intelligence that allows it to assess each operational situation and determine the best means of providing accurate orientation output. When operating in a poor magnetic environment, WOM identifies this and adjusts its algorithms accordingly to maintain accuracy even in the presence of long term magnetic disturbances. When in a static position, WOM identifies this and adjusts its operation to both maintain accuracy and minimize power consumption at the same time.



WOM Specifications (T=25 °C, Vdd = 6.0V, unless otherwise is noted)

Parameter	Value	Units
Output data	Quaternion, Euler angles, Inertial sensor data (angular rate, acceleration, magnetic field strength)	-
Update rate	1 ... 100 (user settable)	Hz
Start-up time	<1	S
Range (pitch, roll, heading)	full 3D	-
Angular Resolution	≤0.01	Deg
Static Accuracy (heading)	≤0.17	Deg
Static Accuracy (pitch, roll)	≤0.1	Deg
Noise (at 100 Hz output) (heading)	0.03	Deg
Noise (at 100 Hz output) (pitch, roll)	0.02	Deg
Gyro Range	±300 ... 1800	°/s
Accelerometer range	±2	G
Magnetometer range	1.6	Gauss
Environment		
Operating temperature	-30 to +50	°C
Storage temperature	-40 to +85	°C
Electrical		
Supply voltage	5.5 to 8.4	V DC
Current draw		mA
• in readiness mode	90	
• in awake mode	60	
• in sleep mode	8	
Interface		
Standard	UART or RS232	-
Baud Rate	115200	Bps
Data Bits	8	Bits
Physical		
Size	76 × 27 × 26	Mm
Weight	67	Gram

Dimensions drawing (mm)

