

Inertial Labs, IncTM

Sub-miniature Orientation Sensor

OSv3

**Datasheet
Revision 1.4**

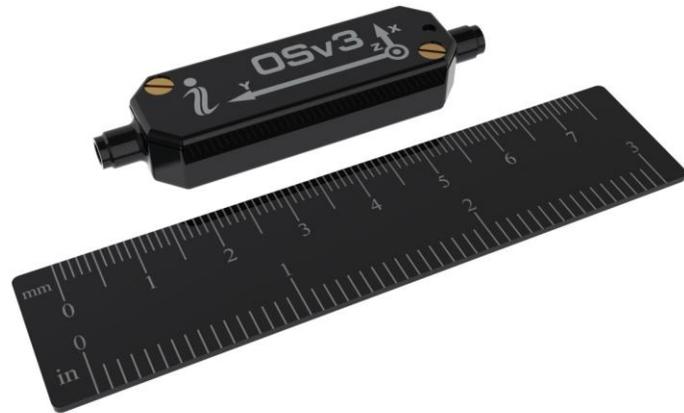
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The **Inertial Labs™ OSv3** is a multi-purpose subminiature 3D orientation sensor. It includes three types of sensing elements: tri-axial MEMS gyros, tri-axial MEMS accelerometers and tri-axial magneto-resistive magnetometers. It is designed for such real time applications as motion capture and stabilization of manned/unmanned equipment. The OSv3 can provide output data of the following types: quaternion data, raw inertial sensors data, and Euler angles (optionally).

Highlights

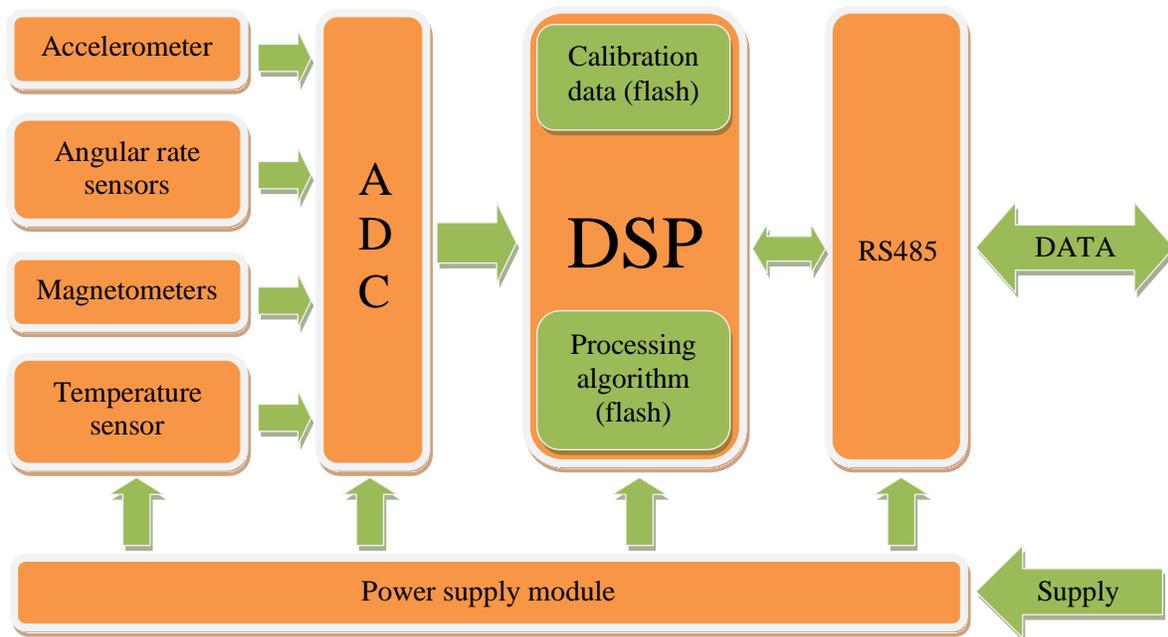
- Real-time 3-axis orientation
- 500Hz internal update rate
- Temperature calibrated
- Ultra compact metal case
- Low power consumption
- TIA/EIA–485A serial interface
- Multi–device daisy chaining
- OEM version



Applications

- Virtual reality systems
- Head tracking
- Remotely operated vehicles
- Avionics systems
- Robotics

Data from the gyros, accelerometers, and magnetometers, as well as the internal temperature sensor are gathered and processed by a digital signal processor (DSP). The fusion algorithm can be updated via RS485 interface. It is possible to request data of the following types: raw inertial sensors data and quaternion data. Each **OSv3** module is individually calibrated in a special non-magnetic laboratory where reference accelerations, angular rates and magnetic fields at a known temperature are applied to device. Additionally each device is able to be customer calibrated against soft- and hard-iron interference present in the end application.



OSv3 Specifications (T=25 °C, Vdd = 5.6V, unless otherwise is noted)

Parameter	Value	Units
Output data	Quaternion, Euler angles, Raw data (angular rate, acceleration, magnetic field strength)	-
Internal update rate	500	Hz
Start-up time	<1	s
Range (pitch, roll, yaw)	full 3D	-
Angular Resolution	≤0.01	deg
Static Accuracy (yaw)	≤1	deg
Static Accuracy (pitch, roll)	≤0.2	deg
Repeatability Accuracy (yaw)	<0.5	deg
Gyro Range	±1200	°/s
Accelerometer range	±2	g
Magnetometer range	±2	Gauss
Environment		
Specified temperature	+25	°C
Operating temperature	-40 to +85	°C
Storage temperature	-40 to +85	°C
Electrical		
Supply voltage	3.5 to 5.7	V
Power consumption	< 300	mW
Interface		
Standard	TIA/EIA-485A (half-duplex)	-
Baud Rate	1000000	bps
Byte Size	8	bits
Stop Bites	1	bits
Parity	No	-
Physical		
Size (w/ housing)	56.4 × 14.5 × 9.2	mm
Size (OEM version)	32.0 × 12.0 × 4.0	mm
Weight	11.2	gram

Dimensions drawing (mm)

