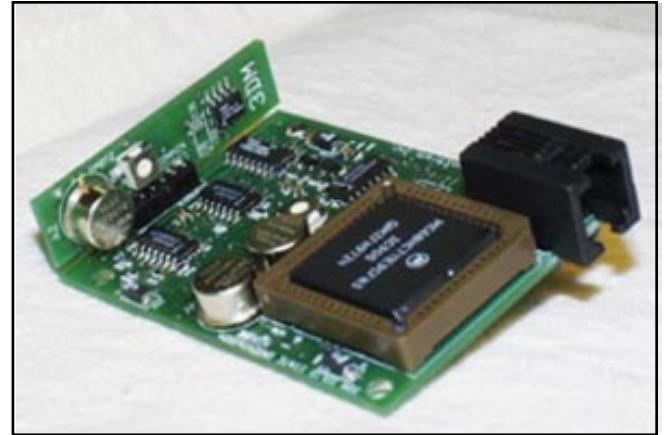


This solid state orientation sensor combines micro-miniature, solid state sensors with embedded software to meet the needs of a wide variety of applications.

Orthogonal arrays of magnetometers and accelerometers are used to compute the pitch, roll and yaw angles over a wide angular range. Since the 3DM relies on Earth's gravitational and magnetic field vectors, no pulsed magnetic field reference is required.



Actual Size

APPLICATIONS

- ▲ navigation systems
compassing, guidance
- ▲ biomedical
joint angle tracking, control systems
- ▲ civil engineering
structural deflections, geomechanics
- ▲ computer science
animation input, pointing devices
- ▲ virtual reality
tracking systems, gaming input devices

Sourceless operation, combined with embedded software (for angle computation) allows the user unrestricted freedom of movement. The output may be programmed to provide raw magnetic field and accelerometer outputs, or processed pitch, roll, and yaw outputs. 3DM's can be used alone or combined in networked arrays.

As with all MicroStrain products, every device is carefully tested prior to shipment, and calibration data are included with each order.

To place an order, or for more information, call us today at 800-449-3878.

How it works

An orthogonal array of DC accelerometers is used to measure the orientation of the module with respect to Earth's gravity vector, providing pitch and roll information (fig.2).

These data are used to perform Eulerian coordinate transformations of Earth's magnetic field vector, as measured by an orthogonal array of magnetometers. This is used to compute yaw.

3DM nodes on the network perform these calculations; the host module then provides a data stream of pitch, roll, and yaw in degrees from each polled module.

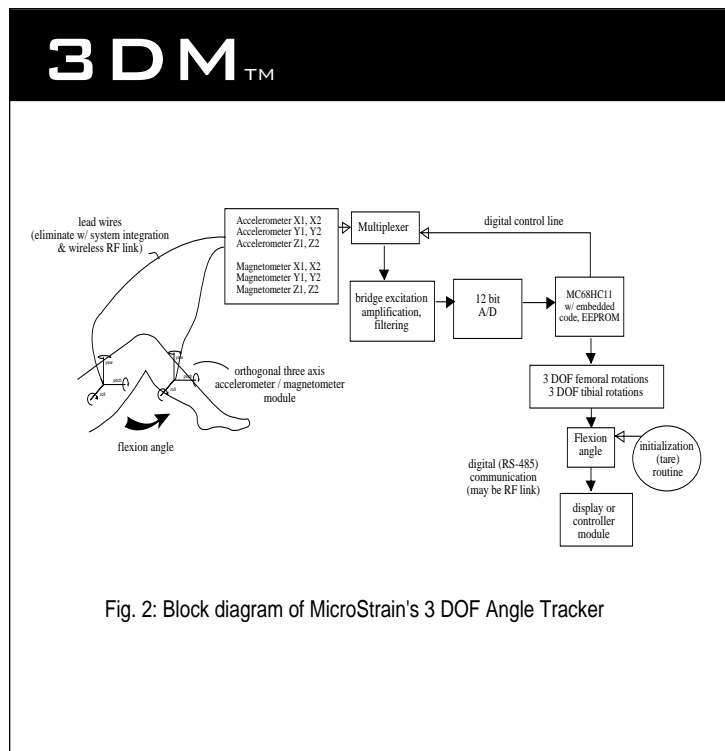


Fig. 2: Block diagram of MicroStrain's 3 DOF Angle Tracker

SPECIFICATIONS

▲ Range	<i>yaw: ±180 degrees pitch: ±180 degrees roll: ±70 degrees</i>	▲ Update rate (angle mode)	30 Hz/ 3 channels
			(raw mode) 70 Hz/ 6 channels
▲ A/D resolution	12 bits	▲ Output modes:	<i>raw: ax,ay,az accel. bx,by,bz mag. field units: pitch, roll, & yaw in degrees</i>
▲ Filter	<i>Infinite Impulse Response</i>	▲ Output format	<i>RS-232 serial, or RS-485 multidrop network</i>
▲ Angle resolution	<i>Pitch: < 0.1 degrees Roll: < 0.1 degrees Yaw: < 0.1 degrees (angle resolution specs. taken at most aggressive filter setting)</i>	▲ Transmission rate	9600 bits/sec
▲ Temperature drift	<i>Pitch: +/- .025 %/deg C. Roll: +/- .083 %/deg C. Yaw: +/- .057%/deg C. (temperature specs. represent 95% confidence intervals)</i>	▲ Supply voltage	5 volts DC min.
▲ Accuracy	<i>Pitch: ±0.7 degrees typical (yaw from 0 - 360 deg. & roll=0 deg.) Roll: ±0.7 degrees typical (yaw from 0 - 360 deg. & pitch =0 deg.) Yaw: 1.5 degrees typical (pitch & roll=0 deg.) (accuracy specs. taken at constant ambient temp.)</i>	▲ Supply current	50 milliamps/node
		▲ Connectors	<i>sensor: RJ11 type power: min. coaxial jack</i>
		▲ Operating temp.	- 25 to 70 degrees C
		▲ Module size	<i>1.7" wide, 2.3" long, 0.3 " thick or 1.46" wide, 5.5" long, 0.63" thick</i>
		▲ Module mass	26.3 grams

Patents Pending