

MicroStrain, Inc. announces Inertia-Link™ Wireless Orientation Sensor and IMU

Immediate Release: Williston, Vermont

MicroStrain announces the new Inertia-Link™ wireless inertial sensor suite (Patents Pending). Inertia Link™ includes three orthogonal rate gyroscopes, three orthogonal accelerometers, microprocessor, data logger, and RF transceiver. The sensor provides user adjustable sampling rates, and digital data output rates. It supports a variety of communications options, including: wireless IEEE802.15.4, USB, RS-232/485, and CAN bus.



Applications For machines, Inertia-Link™ will enable smarter machines and robots, which will possess the ability to sense their own angular position, and to estimate their transient linear displacements. These new sensors can be used to stabilize cameras, antennas, and other sensitive equipment on moving platforms. They can be used in the oil industry for logging borehole orientations. Consumer product applications include yaw and roll control for cars, trucks, and SUV's.

For athletes, Inertia-Link™ will enable a new generation of smarter hand held sports equipment. Golf clubs, tennis rackets, lacrosse sticks, and human arms can be instrumented wirelessly to report their orientation and transient position. Sports training will no longer be limited by the availability of video cameras or optical tracking systems. A new generation of sports training systems will be enabled by breaking down the barriers to tracking the orientation and position of hand held equipment.

Inertia Link™ solves measurement problems in a wide variety of applications, including:

- Unmanned vehicle navigation
- Platform stabilization
- Biomechanics
- Wearable inertial sensing (smart pedometer)
- Borehole surveying
- Attitude sensing
- Athletic performance enhancement

Features Inertia-Link packs these advanced sensing capabilities in a very small size package (44mm x 58mm x 21mm) and at an extremely low weight (45 grams w/o battery). Inertia-Link also features low power consumption (500mW), and is provided with full sensor calibration and is fully temperature compensated (over a range of -20 to +60 deg C). The module is also compensated for coning and sculling errors. This is a

technique which improves the ability of the system to accurately measure high speed, complex motions without having to employ very high computation rates.

Inertia-Link's sensor/processor can be used by itself in OEM applications. A variety of output data quantities are available, including delta angle & delta velocity. Delta velocity and delta angle are similar to Acceleration and Angular Rate vectors except that they have been time integrated over one system clock cycle (for example, over one 10 millisecond period). This eliminates the need for the host system to perform the time integration. These outputs are important for integration into host system algorithms.

Digital Output Formats

An on-board complementary filtering algorithm is included which generates attitude estimates. The range of data output quantities are fully software selectable, and include:

- Acceleration, Angular Rate
- Delta velocity
- Delta angle
- Pitch, roll
- Orientation matrix
- Quaternion

Specifications

- Wireless sample rate: 100 Hz sweep of user's choice of three data output modes. with 2X data redundancy
- USB sample rate: 400 Hz sweep of user's choice of three data output modes.
- Data output modes: Mode 1) three axes of acceleration and three axes of angular rate; Mode 2) three axes of delta velocity and three axes of delta angle; Mode 3) orientation matrix or quaternion
- Embedded memory: 2 Mbytes (one million data points)
- Operating temperature: -20 to +85 deg C
- Programmable full scale ranges: +/- 1200 deg/sec (angular rate) , +/- 10 G's (linear acceleration)
- A/D Resolution: 16 Bits
- Orientation accuracy: +/- 2 degrees, dynamic conditions
- RF communications band: 2.45 GHz, IEEE 802.15.4 standard
- Wireless communications range: 70 meters line of sight
- Digital outputs: serial USB or CAN bus
- Weight: 45 grams (not including battery)
- Size: 44mm x 58mm x 21mm

Contact information:

MicroStrain, Inc.

www.microstrain.com

Tel: +1-802-862-6629

sales@microstrain.com