MINUTEMAN

ACCURATE AND AFFORDABLE ORIENTATION TRACKING

THE COST EFFECTIVE, PRECISION ORIENTATION SYSTEM

The affordable answer for totally drift free, stable Three-Degree-of-Freedom (3DOF) orientation tracking. MINUTEMAN™ is the ideal solution for orientation sensing requirements of 3DOF applications where price and performance is a principal concern. MINUTEMAN offers fast update rates, low latency and high resolution which makes it perfect for Head Mounted Display-based (HMD) virtual reality, game, simulation and training applications

FEATURES

Cost Effective
Provides stable orientation (azimuth, elevation and roll) at a minimum cost.

Ease of Use
Install and operate in minutes.

Multiple Output Options
User-definable orientation available in direction cosines, Euler angles or quaternions.

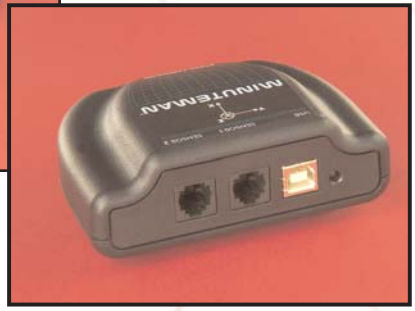
Multiple Sensor, Multiple Unit Operation
Each system permits up to two sensors. Each system is available with one of four different operating frequencies which allows up to four systems to operate in the same environment.

Reliable
Factory calibrated, never needs adjustment.

Advanced A/C Magnetic Technology
MINUTEMAN is a dual sensor orientation tracking device that has been designed with state-of-the-art advanced signal processing which provides stable, drift free data. The system consistently provides accurate, dynamic, real-time orientation measurements at a speed of 75 updates per second per sensor.

MINUTEMAN's advanced A/C magnetic technology provides the best signal-to-noise ratios and incorporates sophisticated digital signal processing that is unsurpassed in its class. This means no line of sight restrictions and full 360 degree field-of-regard tracking.

Ease of Use Interface and Set-up
MINUTEMAN incorporates its own on-board microprocessor technology, which means it does not tie up your CPU time to make complicated process calculations. The interface to the host and power is provided via a 17 foot USB cable. Easy to understand Graphical User Interface (GUI) and Software Developer's Kit (SDK) are also provided to insure fast and straightforward set-up. Mounting brackets on sensors are compatible with the spacing of standard Polhemus sensors as well as most competing system footprints. Full InertiaCube^2 emulation software provided for plug-and-play hardware replacement without having to worry about rewriting code.



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TECHNICAL SUMMARY

COMPONENTS

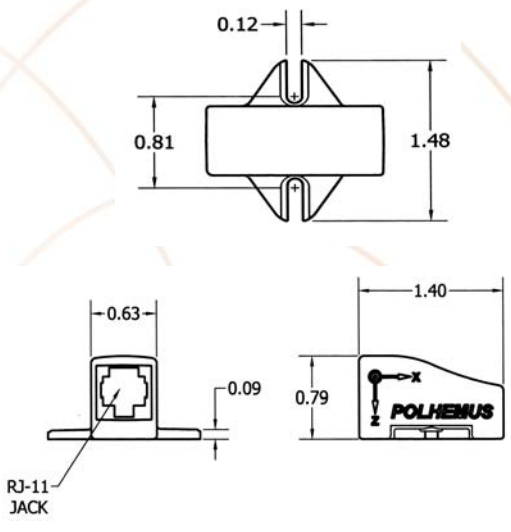
The MINUTEMAN system includes an E-Pod which houses the magnetic source, one external sensor with a removable 7 foot cable, and a 17 foot USB cable. The system may be expanded by the addition of a second sensor.

E-Pod

The E-Pod contains the hardware and software necessary to generate and sense the magnetic fields, compute orientation, and interface with the host computer via the USB interface. The E-Pod internally contains the source which emits the electromagnetic field and thus becomes the system's reference frame for sensor measurements. Orientation measurements of the sensor are with respect to the E-Pod. Since power is provided through the USB connection there is no need for an external power supply. The E-Pod includes an integral tripod mount for easy setup and positioning.

Sensor

The sensor contains electronics enclosed in a hard plastic shell that detect the magnetic fields emitted by the E-Pod. The lightweight sensor's orientation is precisely measured as it is moved through space. The cable is detachable from the E-Pod and from the sensor for easy replacement.



MINUTEMAN sensor installation data (dimensions in inches)

SPECIFICATIONS

Coverage
No angular limitations and full 360 degree coverage on all 3 axes.

Line-of-Sight Restrictions
None

Maximum and Minimum Angular Rates
Unlimited

Minimal Latency
2 milliseconds

Update Rate
Imbedded processing produces a true 75 Hz (fixed)/per sensor update rate regardless of Windows® operating system.

Prediction Filtering
The system incorporates a host driven, Polhemus proprietary Kalman filter that can predict motion up to 50 ms into the future. Filtering is adjustable from 1 to 50 ms.

Interface
USB 1.1 or 2.0, 17 foot cable provided
WIN/XP driver supplied

Static Accuracy
Better than 2 degrees RMS accuracy throughout operating temperature range of 0 - 50 C at specified operational range.

Operational Range
Specified operation at 24 inches with useful range up to 48 inches. Operation at ranges greater than specified will result in slightly degraded performance.

Data Output Format
Single precision IEEE-754 standard floating point binary

Multiple Output Options
Euler angles, direction cosines, quaternions available

Operating Environment
No line-of-sight restrictions, full 360 degree field-of-regard. Precautions should be taken to minimize the amount of metal in close proximity to the tracking system, as some metals can degrade the accuracy of the system.

Communications
GUI and SDK included
USB driver for Windows® included

Physical Characteristics
Sensor:
Length: 1.4 inch (3.6cm)
Width: .66 inch (1.7cm), body and 1.48 inch (3.8cm) including mounting flanges
Height: .78 inch (2cm)
E-Pod:
Length: 3.00 inch (7.6cm)
Width: 4.00 inch (10.2cm)
Height: 1.40 inch (3.6cm)
E-Pod has standard tripod screw mount, 1/4-20UNC

Weight (of Sensor and E-Pod)
Sensor: .3oz (8.5gm)
E-Pod: 4 oz (113.4gm)

USB Power Requirement
5V DC, 0.5A

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