ISOTRAK II

THE AFFORDABLE ANSWER

ISOTRAK® II is the cost effective solution for six-degrees-of-freedom tracking and 3D digitizing. A perfect answer for the position/orientation sensing requirements of 3D applications and environments where cost is a primary concern, it's ideal for head tracking, biomechanical analysis, computer graphics, cursor control, and stereotaxic localization.

▶ FEATURES

Cost Effective
Provides position/orientation data at a minimum cost.

Ease of Use
Install and operate in minutes.

Multiple Output Formats
Position in Cartesian coordinates (inches or centimeters); orientation in direction cosines, Euler angles, or quaternions.

Multiple Receiver Operation
Permits measurement of up to two receivers with a single system. No additional electronic units are required.

Reliable
The pioneer in 3D position/orientation measuring devices, in business since 1970. Factory calibrated, never needs adjustment.

Two Solutions in One
The ISOTRAK II is a 3D digitizer and a dual receiver motion tracker, making it perfect for a wide array of applications requiring medium resolution, accuracy, and range. By computing the position and orientation of a small receiver as it moves through space, it provides dynamic, real-time measurements of position (X, Y, and Z Cartesian coordinates) and orientation (azimuth, elevation, and roll).

Real-time Measurement
By measuring position and orientation in real time, ISOTRAK II can update data continuously, discretely (point by point), or incrementally. You can mount up to two receivers on head or hands to capture real-time data for virtual reality or simulator environments. With the optional stylus, you can trace the outline of a physical object or collect polygon facets and get pinpoint accuracy of unlimited X, Y, and Z data points.

A/C Magnetics
Quiet and stable, the system is essentially unaffected by facility power grids. Update rates are always maintained, as A/C magnetics offer the best signal-to-noise ratios and incorporate sophisticated digital signal processing capabilities. In addition, adaptive filtering is available as a standard feature.

▶ APPLICATIONS

Virtual Reality
From the beginning, Polhemus 3SPACE® systems have been the top choice for VR head and body tracking. ISOTRAK II does it all for less.

Head-mounted Displays
A high quality military, VR, and simulator solution, ISOTRAK II is also the most economical.

Biomechanical Analysis
Collect real-time relative movement data for gait and limb analysis. Perfect for leg, knee, joint, spinal, or shoulder rotational movement.

Graphics
Easily changes and controls the lighting of computer generated images in real time, with the ability to move objects on screen without the loss of environmental changes (i.e., lighting and shadowing).

Stereotaxic Localization
Mounted on any non-metallic object (such as a robotic prosthesis), the receiver determines its position and orientation.

CAD Database
Perfect low cost tool for developing databases of complex, non-metallic objects for CAD, CAE, computer graphic models, or simulation with optional stylus.

Dimensional Archiving
Collect the actual dimensions of artifacts, archaeological items, museum sculptures, and other items.

COMPONENTS

The 3SPACE ISOTRAK II system includes a System Electronics Unit (SEU), a power supply, one receiver, and one transmitter. You can expand the system's capabilities simply by adding an additional receiver.

System Electronics Unit

Contains the hardware and software necessary to generate and sense the magnetic fields, compute position and orientation, and interface with the host computer via an RS-232.

Transmitter

The transmitter contains electromagnetic coils enclosed in a plastic shell that emit the magnetic fields. The transmitter is the system's reference frame for receiver measurements.

Receiver

The receiver contains electromagnetic coils enclosed in a plastic shell that detect the magnetic fields emitted by the transmitter. A lightweight cube, the receiver's position and orientation is precisely measured as it is moved. The receiver is completely passive, having no active voltage applied to it.

SPECIFICATIONS ▶

Position Coverage

The system will provide the specified performance when the receivers are within 30 inches of the standard the TX2 transmitter (42 inches with the TX4). Operation at greater ranges will result in slightly degraded performance.

Latency

20 milliseconds (without software filter)

Update Rate

60 updates/second divided by the number of receivers

Interface

RS-232 with selectable baud rates up to 115.2 K

Static Accuracy

0.1 inches RMS for the X, Y, or Z position; 0.75° RMS for receiver orientation

Resolution

0.0015 inches per inch of transmitter and receiver separation; 0.1° orientation

Range

Up to five feet with our TX2 transmitter, or up to seven feet with our optional TX4 transmitter

Synchronization

Measurements cycle may be synchronized to an internal or external clock pulse.

Angular Coverage

The receivers are all-attitude.

Operating Environment

Large metallic objects, such as desks or cabinets, located near the transmitter or receiver, may adversely affect the performance of the system.

Operating Temperature

10°C to 40°C at a relative humidity of 10% to 95%, noncondensing

Communications

System outputs over standard RS-232 communications port

Physical Characteristics

SEU - 11.0" L x 11.4" W x 3.6" H
Power Supply - 7.0" L x 3.7" W x 2.2" H
Transmitter - 2.3" L x 2.2" W x 2.2" H
Receiver - 0.9" L x 1.1" W x 0.6" H

Power Requirements

25 W, 90-250 VAC, 38-65 Hz

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