POLHEMUS
INNOVATION IN MOTION™

PATRIOT

THE MOST AFFORDABLE
6DOF Electromagnetic Tracker

PATRIOT™ is the cost effective, two-sensor solution for 6 Degree-of-Freedom tracking from Polhemus. This system delivers the tracking standard Polhemus is known for, yet at an entry level price. The system is simple to set up and easy to use, but performs all the complex calculations that provide both position and orientation data. It's the perfect affordable solution for 3D applications such as training and simulation, biomechanical analysis, 3D digitizing and more.

FEATURES

COST EFFECTIVE
Provides both position and orientation at a reasonable cost

EMBEDDABLE SENSORS
Sensors can be embedded—no line-of-sight required

EASE OF USE
Install and operate in minutes—no user calibration required

MULTIPLE OUTPUT FORMATS
Position in Cartesian coordinates (inches or centimeters); orientation in direction cosines, Euler angles or quaternions

MULTIPLE SENSOR OPERATION
One system can track up to two sensors

RELIABLE
Factory calibrated and never needs adjustment

ANGULAR COVERAGE
Sensors are all-attitude

DRIFT FREE
Not an Inertial Measurement Unit (IMU) based system, providing drift-free, solid state performance

MULTI-SYSTEM OPERATION
Several frequency sets available—multiple PATRIOT systems can be operated in the same environment without any signal interference

PATRIOT SYSTEM ELECTRONICS UNIT, SENSOR AND SOURCE

TWO SOLUTIONS IN ONE—POSITION AND ORIENTATION
The PATRIOT is a two-sensor motion tracker, making it perfect for a wide array of applications requiring accurate 6DOF measurements. It computes both the position and orientation of a small sensor as it moves through space, without the need for further calculations.

REAL-TIME MEASUREMENT
Measuring position and orientation in real-time, PATRIOT can update data continuously or discretely (point-by-point). Up to two sensors can capture real-time data simultaneously. The Polhemus stylus, an optional accessory, allows you to trace the outline of a physical object and get pinpoint accuracy of unlimited X, Y and Z data points.

WHY 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. Also, because magnetics do not require line-of-sight, sensors can be embedded inside of many objects, enabling realistic solutions for virtual reality and training and simulation needs.

APPLICATIONS
PATRIOT is currently being used in a broad spectrum of applications, including training and simulation, virtual or augmented reality, biomechanics, sports analysis, digitizing and more.

ALSO AVAILABLE
For those who require a more strenuous EMC and Safety testing standard, PATRIOT M™ is also available. PATRIOT M is tested to IEC 60601-1 Ed 2 1997 and IEC 60601-1-2 Ed. 3 2007 Certification. This additional testing can make it easier for a customer to receive certification of their end-user product. The entire line of PATRIOT products can be found on our website, including PATRIOT™ Digitizer.

COMPONENTS

The PATRIOT system includes a System Electronics Unit (SEU), a power supply, one sensor, and one source. You can expand the system's capabilities simply by adding an additional sensor.

SYSTEM ELECTRONICS UNIT

The SEU 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 or USB interface. 6.75 in (17.1 cm) L x 6.25 in (15.9 cm) W x 1.75 in (4.4 cm) H

SOURCE

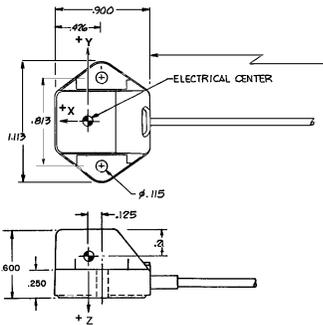The source is the system's reference frame for sensor measurements.
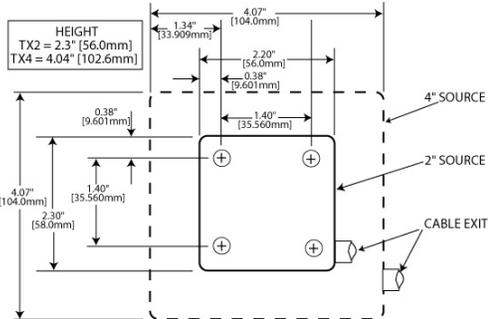
WEIGHT

TX2: 8.8 oz (250 g) Thread size: 1/4" x 20
TX4: 1.60 lbs (726 g) Thread size: 1/4" x 20
TX1: 0.32 oz (9 g) Same dimensions as RX2 sensor below

SENSOR

A lightweight, small cube (RX2), the sensor's position and orientation is precisely measured as it is moved.

WEIGHT

0.32 oz (9.1 g)

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POLHEMUS.COM

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SPECIFICATIONS

UPDATE RATE

60 Hz per sensor simultaneous sampling

LATENCY

Less than 18.5 milliseconds

STATIC ACCURACY

0.06 in. RMS for X, Y, Z position; 0.40º RMS for sensor orientation. The system will provide the specified performance in a non-distorting environment when standard (RX2) sensors are within 36 inches of the standard (TX2) source; 42 inches with the optional TX4 source (Non-standard, smaller, sensors may reduce the specified range slightly). Operational out to 60 inches with slight degradation in performance.

INTERFACE

RS 232 with selectable baud rates up to 115.2 K USB 2.0 (high speed)
USB; RS-232 to 115,200 Baud rate; both are standard

RANGE VS. RESOLUTION
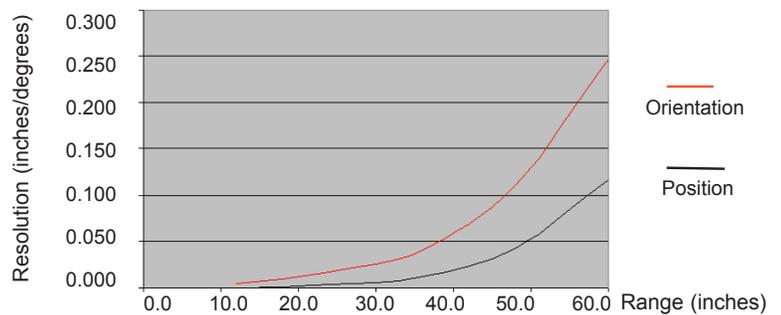
Range (inches)	Position Resolution (inches)	Orientation Resolution (degrees)
12.0	0.00046	0.0038
24.0	0.0035	0.0168
36.0	0.0113	0.0407
48.0	0.0428	0.1108
60.0	0.1175	0.2470

DATA FORMAT

Operator selectable ASCII or IEEE 754 binary; English/Metric Units

SOFTWARE TOOLS

PiMgr GUI for Microsoft Windows®
USB driver package for Microsoft Windows®
PDI SDK for Microsoft Windows®
GUI for Linux®

OPERATING TEMPERATURE

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

POWER REQUIREMENTS

4W, 100-240 VAC, 50-60 Hz

REGULATORY

FCC Part 15, Class B
CE: EN61326-1: 2006 EMC requirements
Class B (Emissions) Class A (Immunity)

PATRIOT M—In addition to above, PATRIOT M is tested to the following: IEC 60601-1 Ed. 2 1997 and IEC 60601-1-2 Ed. 3 2007.

*Large metallic objects, such as desks or cabinets, located near the source or sensor, may adversely affect the performance of the system.