POLHEMUS
INNOVATION IN MOTION™

LIBERTY

THE ABSOLUTE BEST

The fastest, most accurate, scalable electromagnetic tracker available, LIBERTY™ represents a quantum leap in new technology. State-of-the-art Digital Signal Processor (DSP) electronics make it the perfect real-time solution for 6 Degree-of-Freedom (6DOF) needs. LIBERTY has speed, ease-of-use via an intuitive Graphical User Interface (GUI), scalability, distortion sensing, and improved signal-to-noise ratios which increase stability and resolution while providing consistent high quality data.

▶ FEATURES

Update Rate
LIBERTY tracks objects at a speed of 240 updates per second, all sensors simultaneously. Latency is less than 4ms.

Scalable
LIBERTY 240/8
Four sensor channels are available on the base product. The addition of a single circuit board inside the same chassis allows for a total of eight sensor channels.
LIBERTY 240/16
Four sensor channels are available on the base product. The system is then upgradeable to 8, 12, or 16 sensor channels within the same chassis by having additional circuit board(s) installed.

Communications Interface
LIBERTY operates via both an RS-232 serial interface and USB.

Distortion Sensing
Each sensor with LIBERTY is able to independently detect distortion within the environment, alerting the user to make appropriate changes if necessary.

Multiple User Definable Profiles
The GUI allows four independent user-definable profiles for setting system parameters such as filtering, output formats, coordinate rotations and many more.

Multiple Output Formats
User may select position in Cartesian coordinates (English or metric); orientation in direction cosines, Euler angles or quaternions.

Angular Coverage
All-attitude

Drift-Free
Solid state electronics

▶ THE PROFESSIONAL'S CHOICE

The Forerunner in Tracking Technology
LIBERTY incorporates an unprecedented speed of 240 updates per second per sensor. The system comes complete with distortion detection while providing the most accurate and consistent data. With the addition of the Polhemus stylus, LIBERTY becomes a highly accurate 3D digitizer.

Easy, Intuitive User Interface
LIBERTY comes standard with Windows® 2000/XP/Vista® GUI and a comprehensive, easy to use Software Developers Kit (SDK). The GUI allows four independent user definable profiles for setting system parameters such as filtering, output formats, coordinate rotations and many more. This is a valuable feature for multiple applications or users. For visualization, an integrated motion box provides navigable points of view and can include text data. Additional features include a data record/playback component, plus the ability to quickly export data via Microsoft® "Named Pipe."

A/C Magnetics: Increases Stability, Resolution, Speed and Range
Incorporating state of the art Digital Signal Processor (DSP) electronics in concert with A/C magnetics provides the user with improved signal-to-noise ratios which increase range, stability, resolution and speed. The system is essentially unaffected by facility power grids, and update rates are always maintained, allowing it to keep up with the voluminous rate of tracking data produced.

▶ APPLICATIONS
Limited only by your imagination!

LIBERTY

▶ COMPONENTS

LIBERTY includes a System Electronics Unit (SEU), one sensor and one source.

Optional accessories include a longer range source, stylus and a variety of cable lengths for each sensor, stylus or source.

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 RS-232 or USB.
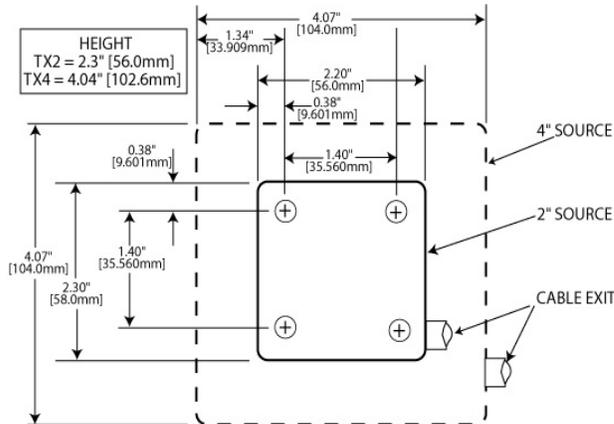12.2 in. (31 cm) L x 7 in. (17.8 cm) W x 8.5 in. (21.6 cm) H; weight 9 lbs. (4.1 kg)
240/12 and 240/16:
12.2 in. (31 cm) L x 7 in. (17.8 cm) W x 11 in. (27.94 cm) H; weight 11 lbs. (5 kg)

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


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HEIGHT
TX2 = 2.3" [56.0mm]
TX4 = 4.04" [102.6mm]
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4.07" [104.0mm]
1.34" [33.909mm]
2.20" [56.0mm]
0.38" [9.601mm]
4" SOURCE
0.38" [9.601mm]
1.40" [35.560mm]
2" SOURCE
4.07" [104.0mm]
1.40" [35.560mm]
2.30" [58.0mm]
CABLE EXIT

Weight
TX2: 8.8 oz. (250 gm) **Thread size** 1/4" x 20
TX4: 1.60 lbs. (726 gm) **Thread size** 1/4" x 20

Sensor
A lightweight, small cube, the sensor's position and orientation is precisely mea ured as it is moved.

Measurement in inches

.900
.426
+Y
ELECTRICAL CENTER
+X
.813
1.113
ø.115
.125
.2
.600
.250
+Z
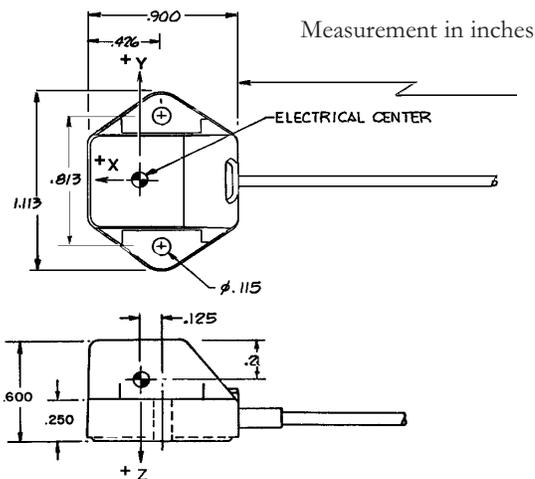
Weight
0.32 oz. (9.1 gm)

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▶ SPECIFICATIONS

Update Rate
240 Hz per sensor, simultaneous samples

Latency
3.5 milliseconds

Number of Sensors
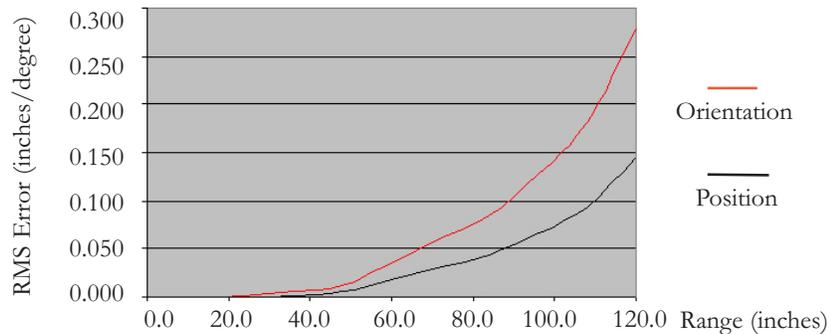240/8 has 1 to 8 sensors, 240/16 has 1 to 16

Static Accuracy
0.03 in. RMS for X, Y or Z position; 0.15° RMS for sensor orientation

Interface
USB; RS232 to 115,200 Baud rate, both standard

Range vs. Resolution

Range (inches)	Position Resolution (inches)	Orientation Resolution (degrees)
12.0	0.00005	0.0004
24.0	0.0002	0.0014
36.0	0.001	0.0048
48.0	0.005	0.0117
72.0	0.031	0.060
120.0	0.145	0.280

Multiple Systems
Provision available to operate two separate systems in same environment

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

External Event Marker
User input flag and output marker

Output Sync Pulse
TTL frame sync output

Software Tools
GUI and SDK included
USB drivers for Windows® XP/Vista® included
Linux®- contact factory

Operating Temperature
0ºC to 50ºC at a relative humidity of 10% to 95%, noncondensing

Power Requirements
100-240 VAC, 50 – 60 Hz, single phase, 50 W

Regulatory
FCC Part 15, class A
CE: EN61326-1: 1997/A1:1998/A2:2001/A3:2003 emission
EN61326-1: 1997/A1:1998/A2:2001/A3:2003 Immunity

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

www.polhemus.com

REGISTERED ISO 9001