

# LIBERTY LATUS

## Large Area Tracking Untethered System

### TOTALLY WIRELESS TRACKING

The LIBERTY™ LATUS™ (Large Area Tracking Untethered System) represents a whole new dimension in tracking technology, one that offers a totally wireless, full 6 Degree-of-Freedom (6DOF) solution. The system boasts speed, ease-of-use via an intuitive Graphical User Interface (GUI) and is capable of tracking up to 12 independent markers over large areas. Because of the improved signal-to-noise ratios, LIBERTY LATUS offers increased stability while providing consistent high-quality data, all while being completely untethered.

### FEATURES

#### Wireless

Totally wireless markers are completely self-contained, each housing a high-capacity, rechargeable lithium polymer battery that provides several hours of power. Each system may track up to 12 markers independently.

#### Reduced Distortion

The system is capable of reducing any distortion effects normally seen with long range electromagnetic systems because of its short range distributed receptor architecture, and enhanced signal-to-noise ratio.

#### Scalable

Four receptor channels are available on the base product; the system is upgradeable to 8, 12, or 16 receptor channels within the same chassis by having additional circuit boards installed.

#### Communications Interface

LIBERTY LATUS communicates via RS-232 serial or USB interface. Both are included in the base unit.

#### Multiple User Definable Profiles

The GUI allows for three independent user-definable profiles for setting system parameters such as filtering, output formats, coordinate rotations and much more.

#### Multiple Output Formats

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

#### Angular Coverage

The receivers are all-attitude with no limits.

#### Drift-Free

Solid state electronics.

### Unique in Wireless Magnetic Tracking Technology—

LIBERTY LATUS provides truly wireless tracking. There are absolutely no wires—each marker is self-contained. The system is capable of tracking up to 12 markers for full 6DOF solutions over large areas. Each marker is tracked in space by a receptor that covers up to an 8-foot (2.44m) diameter. Each system is capable of connecting up to 16 receptors for total coverage of hundreds of square feet. Systems may also be concatenated for even larger area coverage. All wireless communication is via a proprietary magnetic data link.

### Easy, Intuitive User Interface

LIBERTY LATUS comes standard with a GUI for Microsoft Windows® and a comprehensive, easy-to-use Software Developers Kit (SDK). The GUI allows three independent user-definable profiles for setting system parameters such as filtering, output formats, coordinate rotations and much 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: Increased 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 or electric power motors, and provides update rates of 94 or 188 Hz measurements per second maintained for all markers, allowing for consistent, high-quality data.

### APPLICATIONS

▶ Biomechanics, virtual reality, neuroscience, sports motion analysis and more!



System Electronics Unit (SEU)  
Approximate Dimensions:  
(For Reference Only)

**Height**  
10.75  
**Width**  
6.875  
**Length**  
11.625

Measurement in inches

# LIBERTY LATUS

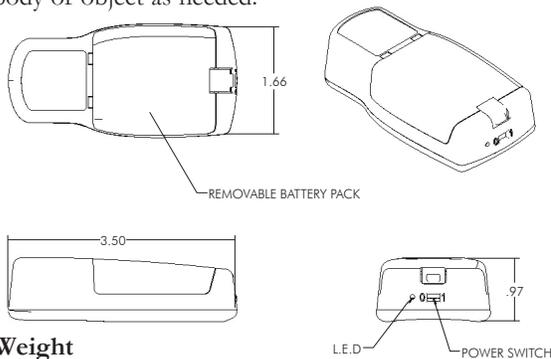
## COMPONENTS

### System Electronics Unit (SEU)

The SEU contains the hardware and software necessary to sense the magnetic fields generated by the markers, compute position and orientation, and interface with the host computer via RS-232 or USB.

### Marker

Markers weigh 2.8 ounces and can easily attach to the body or object as needed.



### Weight

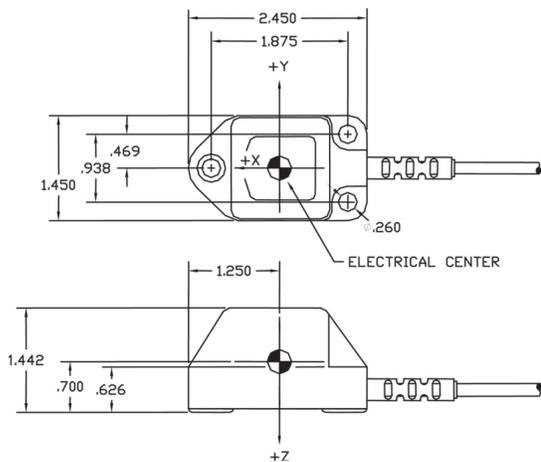
### Wireless Marker

2.8 ounces (79.4 gm)

Measurement in inches

### Receptor

This lightweight, small cube can be easily mounted to almost any surface.



### Weight

### Receptor

3.2 ounces (90.7 gm)

Measurement in inches

### Battery Charger

Single high-capacity battery charger included with each marker purchased.

### Software Tools

GUI and SDK included. USB drivers for Microsoft Windows® included

Linux®- open-source application available

## POLHEMUS

Polhemus is a Good Manufacturing Practices (GMP) Contract Manufacturer under U.S. FDA Regulations. We are not a manufacturer of Medical Devices. Polhemus systems are not certified for medical or bio-medical use. Any references to medical or bio-medical use are examples of what medical companies have done with the Products after they have obtained all necessary or appropriate medical certifications. The end user/OEM/VAR must comply with all pertinent FDA/CE regulations pertaining to the development and sale of medical devices and all other regulatory requirements.

## SPECIFICATIONS

### Update Rate (simultaneous sampling)

188Hz/marker for one to eight markers  
94Hz/marker for nine to twelve markers

### Latency

Approximately 5 milliseconds

### Number of Wireless Markers

One to twelve

### Number of Receptors

One to sixteen

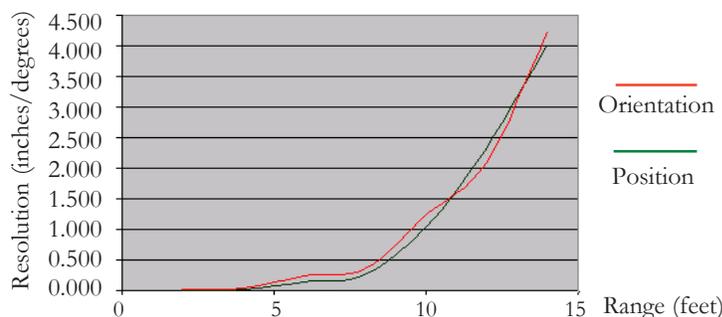
### Static Accuracy

0.5 degree and 0.1 inch (0.254 cm) using one marker and one receptor at 30 inches (76.2 cm). Accuracy is installation dependent, typical accuracy may normally result in 1 to 3 degrees and 1 to 3 inches (2.54 cm to 7.62 cm).

### Interface

USB; RS-232 to 115,200 Baud rate; both are standard

### Range vs. Resolution - Two Receptors Equally Spaced From Marker



Marker-Receptor Range (feet)	Position Resolution (inches)	Orientation Resolution (degrees)
2	0.005	0.020
4	0.015	0.046
6	0.144	0.248
8	0.262	0.355
10	1.052	1.239
12	2.347	2.106
14	4.027	4.235

### Multiple Systems

Multiple systems may be concatenated to extend range

### Data Format

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

### External Event Hardware Input

Reportable in output data stream

### Output Sync Pulse

TTL frame sync output

### Operating Temperature

0°C to 50°C 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.

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