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 solution. The system has 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 lithium ion battery assembly that provides up to 2.5 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. Each receptor can cover up to 50 sq. ft. (4.7 sq m).

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.

THE ONLY WIRELESS CHOICE

Unique in Wireless 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 6 Degree-Of-Freedom 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 Windows® 2000/XP GUI 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".

AC Magnetics: increased Stability, Resolution, Speed and Range
Incorporating state of the art Digital Signal Processor (DSP) electronics in concert with AC 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

Military Operations in Urban Terrain (MOUT)
Having the ability to track 12 markers over a large area and not having to be concerned about line-of-sight obstacles, LIBERTY LATUS makes an ideal system for MOUT applications. Tracking over an entire house or scene including stairways is easily achieved by appropriate receptor location. Placing a marker on the weapon and the head allows the instructor to track location (X,Y,Z) and direction (Az., El., Rl.) of both the weapon and the head for after-action review.

Biomechanical and Sports Analysis
With an update rate of 188 Hz per marker and no wires to encumber movement, LIBERTY LATUS can collect data from the swing of a baseball bat, an athlete's fast-paced movements, or gait movement and limb rotation for real-time analysis of both children and adults.

Virtual or Augmented Reality
From the beginning, Polhemus systems have been the selected choice for Virtual or Augmented Reality head and body tracking. A totally wireless system, LIBERTY LATUS is the only logical choice for CAVE, Power Wall, VR and AR applications.

LATUS

TECHNICAL SUMMARY

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 contain the electromagnetic source, control electronics and a rechargeable lithium ion battery assembly. The system reports the position and orientation of each marker that is within range of at least one receptor. The system is capable of accommodating up to 12 markers. The battery assembly provides power for approximately 2.5 hours and is easily removed for recharging. Markers weigh 2 ounces and are easily mounted on the body with our optional body mount kit.

Receptor

Receptors contain electromagnetic receiving elements cast into a solid assembly that detects the magnetic signals emitted by the marker(s) for up to 8 feet (2.44m) in diameter. Cable length is 60 feet (18.3m). This lightweight, small cube can be easily mounted to almost any surface. The system is capable of accommodating up to 16 receptors.

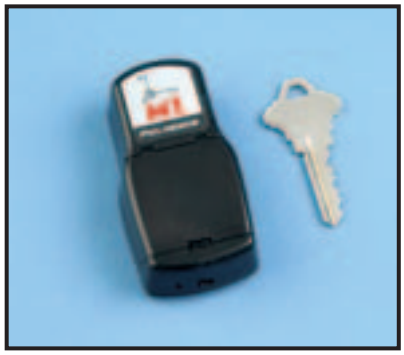
Battery Charger

The QUAD Charger is capable of charging four battery assemblies simultaneously. Charge time is approximately 2 hours.

POLHEMUS
First in the third dimension®

The systems are not certified for medical or bio-medical use. Any reference to medical or bio-medical use are examples of what medical companies have done with the systems after obtaining all necessary or appropriate medical certifications. The end user/OEM must comply with all pertinent FDS/CE and all other regulatory requirements.

SPECIFICATIONS



Update Rate

188 Hz for 1 to 8 markers
94 Hz for 9 to 12 markers

Latency

Approximately 5 milliseconds

Number of Wireless Markers

1 - 12

Number of Receptors

1 - 16

Static Accuracy

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

Resolution

0.00015 inches (0.038mm) at 12 inches (30cm) range; 0.0012 degrees orientation

I/O Ports

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

Range

Each receptor may report position and orientation of a marker within an 8 foot (2.4m) diameter

Multiple Systems

Multiple systems may be concatenated to extend range

Angular Coverage

All-attitude

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

Physical Characteristics

SEU
12.2 inches (31cm) L x 7 inches (17.8cm) W x 11 inches (27.94cm) H
10.5 pounds (4.8kg)

Wireless Marker
2.92 inches (7.4cm) L x 1.56 inches (3.96cm) W x 0.85 inches (2.16cm) H
2 ounces (56.7gm)

Receptor
2.5 inches (6.35cm) L x 1.4 inches (3.56cm) W x 1.4 inches (3.56cm) H 3.2 ounces (90.7gm)
Cable length: 60 feet (18.3m)

Power Requirements

85-264 VAC, 47-440 Hz, single phase, 50 W

Regulatory

FCC part 15, class A
CE: En50081-1, class A, emissions
EN50082-1, class 2, immunity
EN61010, safety

40 Hercules Drive • PO Box 560 • Colchester, Vermont 05446-0560
US and Canada 800.357.4777 • 802.655.3159 • fax 802.655.1439 • www.polhemus.com

ISO9001