POLHEMUS
INNOVATION IN MOTION™

G^4

6DOF WIRELESS
Electromagnetic Tracker

THE PORTABLE TRACKER
THAT FITS IN YOUR POCKET!

With a system electronics unit the size of most mobile phones, G^4™ harnesses the powerful performance that only A/C electromagnetic technology offers. Sporting a sleek, compact design, G^4 allows for uninhibited movement. It boasts true 6 Degree-Of-Freedom technology, and delivers consistent, high-quality data, without the complications of hybrid technologies.

FEATURES

WIRELESS COMMUNICATION
Position and orientation data is sent wirelessly to the PC via simple Radio Frequency (RF) links

COMPACT SIZE
Hub is lightweight, portable, and can be belt-worn

10+ HOURS OF BATTERY LIFE*
Long-life battery is easily recharged via wall charger or a PC USB port

HIGH SPEED AND ACCURATE
Each individual sensor samples at 120 times per second

SCALABLE
Capable of increasing range and number of people or objects tracked by adding hardware components

AUTO TRACKING RECOGNITION
User-friendly system allows you to set up quickly, turn the system on and start tracking

MULTIPLE OUTPUT FORMATS
Select position in Cartesian coordinates (English or metric); orientation in Euler angles (degrees or radians) or quaternions

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

*As with all batteries, capacity (run-time) will diminish over time due to battery age and charging cycles.

THE LIGHTWEIGHT AND PORTABLE G^4 HUB

WIRELESS MATTERS
G^4 is a wireless data transmitting tracking system--enabling you to move freely, without being bound by cumbersome tether cables. Each G^4 hub is capable of accepting up to three sensors, each operating at 120 Hz, and up to eight discrete digital inputs for event triggers. Sensor data calculations are transmitted directly to the PC, making your application efficient, with a seamless stream of drift-free data.

READY-SET-TRACK
G^4 was designed with simplicity in mind. The result is a system that's both intuitive and user-friendly. G^4 comes equipped with a comprehensive Software Development Kit (SDK), thoughtfully engineered so your implementations are up and running fast.

SCALABLE + VERSATILE = LONG-TERM VALUE
G^4 allows for full 6DOF solutions over large areas. As your application needs evolve, you can continue to expand G^4's capabilities to meet your needs. Each individual hub is capable of tracking up to three sensors. Track additional objects or people by increasing the number of hubs. To increase the range of coverage, simply add additional sources. This versatility makes G^4 a scalable, long-term tracking solution.

APPLICATIONS
G^4 paves the way for cutting-edge solutions and advancement in the areas of training and simulation, rehabilitation and physical therapy, biomechanical and sports analysis, and virtual or augmented reality.

ACCESSORIES
PowerTRAK 360™ is an optional accessory for G^4. This 3D pointing device is ideal for CAVES and other 3D mouse applications.

SENSOR | HUB | SOURCE | POWERTRAK 360

THE STANDARD G^4 SYSTEM, SHOWN WITH POWERTRAK 360 ACCESSORY

COMPONENTS

The standard G^4 system includes a System Electronics Unit (hub), one sensor, one source, and one RF/USB module. You can easily expand the system's capabilities by adding additional sensors, sources, and hubs.

SYSTEM ELECTRONICS UNIT (HUB)

The hub contains embedded hardware and software necessary to compute the position and orientation of each sensor and wirelessly transmit this data to your PC. Approx. 4.2 in (10.6 cm) L x 0.75 in (1.9 cm) W x 2.6 in (6.6 cm) H
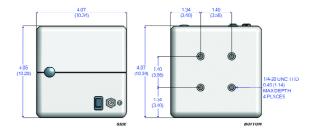
WEIGHT

Approx. 4 oz (114 g)

SOURCE

The source is the system's reference frame for sensor measurements and the magnetic field generator.
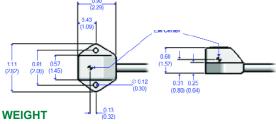Measurement in inches (cm)

WEIGHT

TX4: 1.60 lb (726 g) Thread size: 1/4" x 20

SENSOR

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

WEIGHT

0.32 oz (9.1 g)

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40 Hercules Drive • PO Box 560 • Colchester, Vermont 05446-0560
US & Canada: 800.357.4777 • 802.655.3159 • Fax: 802.655.1439

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Microsoft Windows is a registered trademark of Microsoft Corporation.
Linux is a registered trademark of Linus Torvalds.

REGISTERED
ISO 9001

SPECIFICATIONS

UPDATE RATE

120 Hz per sensor, simultaneous sampling

LATENCY

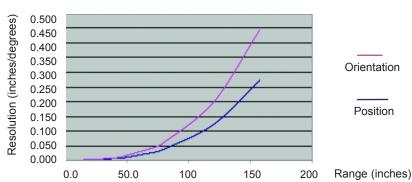Less than 10 milliseconds in optimal RF communication conditions

STATIC ACCURACY

Range	Orientation	Position
1 meter/3.3 ft	0.50 degrees RMS	0.08 inches/0.20 cm RMS
2 meter/6.5 ft	0.75 degrees RMS	0.25 inches/0.64 cm RMS
3 meter/9.8 ft	1.00 degrees RMS	0.50 inches/1.27 cm RMS

INTERFACE

Proprietary RF link; 2.4 GHz frequency-hopping architecture

RESOLUTION VS. RANGE

Range (inches)	Position Resolution (inches)	Orientation Resolution (degrees)
12.0	0.0003	0.0008
24.0	0.0010	0.0020
48.0	0.0080	0.013
96.0	0.0610	0.100

SOFTWARE TOOLS

PiMgr GUI for Microsoft Windows®
GUI for Linux®
Setup and Configuration Utilities for Microsoft Windows® and Linux®
PDI SDK for Microsoft Windows®
C Programming APIs for Microsoft Windows® and Linux®

OPERATING TEMPERATURE

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

POWER REQUIREMENTS

Source: 5 volt, 1 amp/hub: 5 volt, 500 ma/RF dongle: 5 volt, 30 ma
Internal battery, rechargeable via USB or included power supply

REGULATORY

FCC Part 15, Class B	EN61326-1: 2006 Emissions
	EN61326-1: 2006 Immunity
2.4 GHz Radio Approval:	
FCC Part 15	EN 301489-1 V1.8:2008 Emissions
IC RSS 210	EN 301489-3 V.1:2002 Immunity

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