THALES

www.intersense.com

Thales' industry-leading InterSense line of trackers, sensors and IMUs are used in a wide range of industries from aerospace, robotics, agriculture, oil & gas, entertainment, research, engineering and visualization industries. Thales offers a range of InterSense trackers including the advanced 3-DOF InertiaCube4, the IS-900, the industry's leading 6-DOF hybrid ultrasonic and inertial tracker and the industry's newest and most advanced hybrid optical and inertial tracker, the IS-1200+ HObIT. Thales offers a tracker, sensors and IMUs to meet your tracking needs.

The IS-1200+ HObIT is well suited for a range of applications:

- Augmented, Virtual, or Mixed-Reality
- Head/Helmet Tracking for Fixed or Rotary-Wing Aircraft
- Object or Head Tracking in Simulators
- Industrial Robotics
- Oil & Gas, Industrial, Manufacturing

INTERSENSE® IS-1200+ HObIT

Precision Inertial-Optical 6-DOF Motion Tracking System

INTERSENSE® IS-1200+ HObIT

The innovative IS-1200+ HObIT (Hybrid Optical-based Inertial Tracker) is the world's most advanced 6-DOF tracker designed for precision and performance for the most demanding military and commercial tracking applications. Mounted on a head or helmet, the IS-1200+ HObIT precisely tracks head movements for mission-critical tactical augmented reality applications in the world's most advanced fixed-wing, rotary-wing and fighter jet aircrafts.

New advanced sensor fusion algorithms blend the information from the built-in MEMS inertial sensors, with a wide-angle optical sensor locked onto passive reference patterns (fiducials) in cockpits or rooms to continuously provide the most accurate, error-free roll, pitch, yaw, x, y and z information for any application. The built-in ARM Processor automatically processes the fusion of sensor data to provide extreme low latency, high refresh rate, jitter-free tracking.

Rugged and reliable - the IS-1200+ HObIT is designed for the rigors of challenging environments. The optical sensor can track fiducials in direct sunlight. With the optional built-in illuminator, the IS1200+ HObIT can track in total darkness. Designed for mission-critical, aerospace and industrial conditions the tough machined aluminum packaging protects the precision optics and electronics from contaminants.

The IS-1200+ HObIT low-power, small-sized package can be head-worn with minimal impact or integrated into any object for virtually unlimited tracking. The power and interface for the IS-1200+ HObIT comes from a USB port for flexibility and ease of integration into your tracking application.

The IS-1200+ HObIT is delivered fully factory calibrated and simple-to-use. Fiducial constellation can be installed and mapped to ~50 microns accuracy in just a few minutes using new VisualMapper software provided with the IS-1200+ HObIT. Once installed, the sensor is always ready without need for additional calibration. For use on vehicles, an auto-harmonization algorithm allows the system to self-align the fiducial constellation with the vehicle INS or attitude reference.

IS-1200+ HObIT PERFORMANCE SPECIFICATIONS

Weight
- **75 g**

Operating Temperature
- **+10C to +45C**

Degrees of Freedom
- 6 (Yaw, Pitch, Roll, X, Y, and Z)

Maximum Angular Rate
- 2000° per second

Maximum Linear Acceleration
- 16 G

Orientation Accuracy
- 0.3° RMS*

Position Accuracy
- 2 mm RMS, typical cockpit conditions*

Latency
- 5 ms (with prediction off)

Prediction
- Adjustable 0 to 50 milliseconds

Lens Field of View (FOV)
- 130°

Max Tracking Range
- 25 times the fiducial diameter

Min Fiducials in View for Optical Lock
- 4 in FOV

Orientation Drift Rate Out of Optical Lock
- 10 mrad RMS per minute

Position Out of Optical Lock
- Frozen at last position before leaving optical lock

Time to Acquire Optical Lock
- <0.1 second

Max Fiducials Per Installation
- 200

Orientation Update Rate
- 200 Hz

Position Update Rate **(fixed installation)**
- 200 Hz

Position Update Rate (moving platform)
- ~20 Hz

*Accuracy will vary due to factors such as distance from fiducials, and the number and spread of fiducials in the camera FOV.

Additional Software Utilities
Test & Configuration Program: sfStudio (includes all diagnostic and demo capabilities, fiducial printing, and VisualMapper)
InterSense SDK: Example source code, Include files and library support for Windows (.dll) and Linux (.so)

U.S. Patents
5,645,077; 5,807,284; 6,162,191; 6,176,837; 6,314,055; 6,361,507; 6,409,687; 6,474,159; 6,681,629; 6,757,068; 6,786,877; 6,922,632; 7,000,469; and Patents Pending.

	IS-1200+ HObIT (Day)	IS-1200+ HObIT (Day and Night)	IS-1200+ OEM
Illumination Source	Ambient visible light	Built-in Infrared Illuminator [1]	Contact Thales for additional information on custom OEM configurations to meet your tracking needs.
Fiducial Type	Black-and-white paper markers (print your own)	Retro-reflective markers (purchase from Thales)	
Maximum Tracking Range	25x the fiducial diameter	25x the fiducial diameter, up to a max illumination range of TBD	
Operations	Indoors (daylight or artificial lighting)	Unrestricted, from total darkness to direct sun exposure	
Interface Options	USB or RS422	USB or RS422	
Available Focus Ranges	150 - 600 mm 500 mm - infinity	75 - 225 mm 150 - 600 mm	

[1]NVG-compatible version of the illuminator available - contact Thales for part number and export control information.

- Non-U.S. Government sales are subject to U.S. Government approval.
- Specifications are subject to change without notice.

Thales Visionix, Inc.
700 Technology Drive, Suite 102 | Billerica, MA 01821
Phone: +1.781.541.7650 | Email: sales@intersense.com
Website: www.intersense.com | www.thalesvisionix.com

Intertek

2606:112614:V1