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THALES

InterSense® IS-1500
GPS-Denied Navigator

InterSense® IS-1500 GPS Denied Navigator

The IS-1500 provides Position Location Information (PLI) and head-orientation data to dismounted warfighters in GPS-denied or GPS-compromised environments. The demonstrator, we call CHIRON, has a miniature sensor head, a small wearable computer, and a battery. It outputs PLI data that is displayed on a user's ATAK situational awareness device. A network connects multiple devices to share this PLI data for squad-level sharing of Common Operating Picture information. How does it work? The IS-1500 sensor head sends video and inertial data to the wearable computer, which path-integrates (or "dead-reckons") to determine its position and orientation. The computer outputs position as Cursor on Target (CoT) messages, which flows across the network to the ATAK devices or connected squad members. Users can initialize their starting point on the ATAK and can click their current location on the map when desired to cancel accumulated drift.

Technical Specifications

Key Features

- Unprecedented Software Capabilities
- Total Mobility
- Ruggedness and Reliability
- Simplicity

Overall Specifications	
Pitch and Roll Accuracy	0.25° RMSE
Max Angular Rate	2000 °/s
Linear Acceleration	16 g
Latency (average)	10 milliseconds (prediction off)
Prediction	Up to 50 milliseconds
Synchronization	Virtual (software)
Supported Operating Systems	Windows & Linux (contact sales for other operating systems)

InertiaCam Sensor Module	
Dimensions	65mm x 20mm x 20mm
Mass (not including cable)	36 grams (metal reference design housing)
Interface (power and data)	Single USB 2/3 cable (type-c connector)
Power Consumption	1.2 watts (typical)
Temperature (Operating/Storage)	-20° to 65°C, -30° to 85°C
Humidity (Operating/Storage)	20 to 80%, 20 to 95% (non-condensing)

Tracking Performance: Fiducial Markers	
Position Accuracy	2mm (typical)
Max Tracking Distance from Fiducials	20x the Fiducial diameter
Min Fiducials in View for Pose Recovery	2 (recommend 10-12 for optimal performance)
Orientation Drift Rate with no Fiducials	0.6°/minute (RMSE)

Tracking Performance: Natural Features	
Position Drift (traveling)	1% of distance traveled (RMSE)
Yaw Drift (traveling)	0.7°/minute (RMSE)
Static Wander	±1 cm position, 1° RMSE Yaw (RMSE)
Global Relocation Accuracy	See Fiducial marker accuracy above

Specifications are subject to change without notice.

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