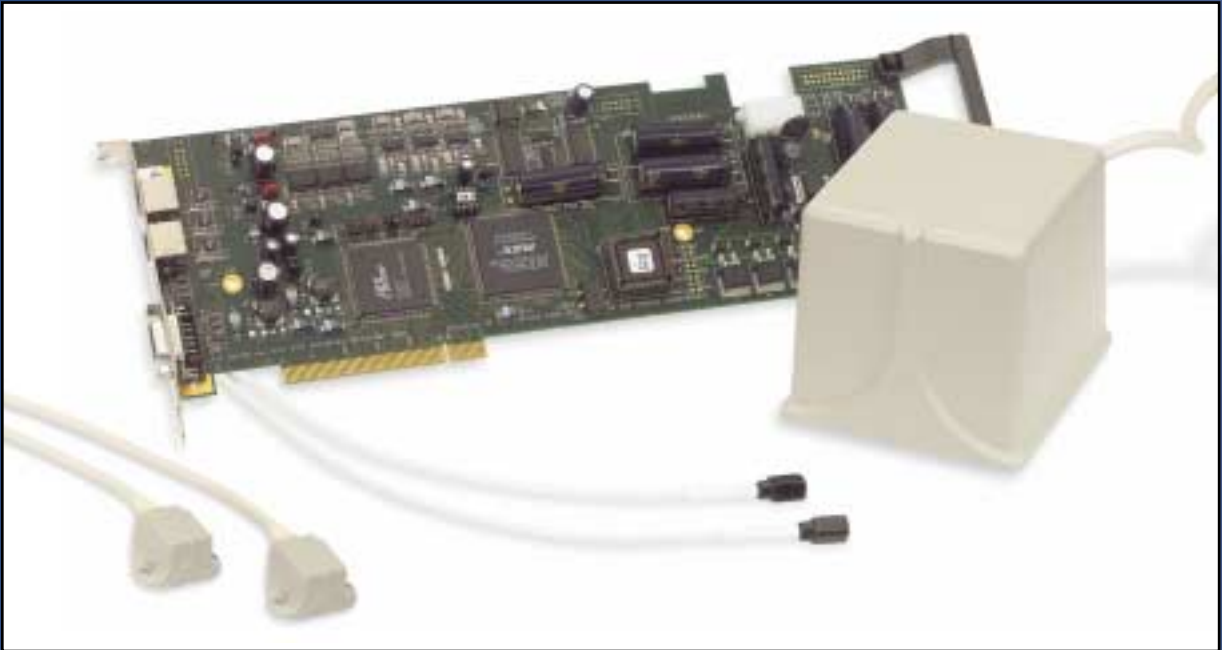


pciBIRD™

Real-time Motion Tracking



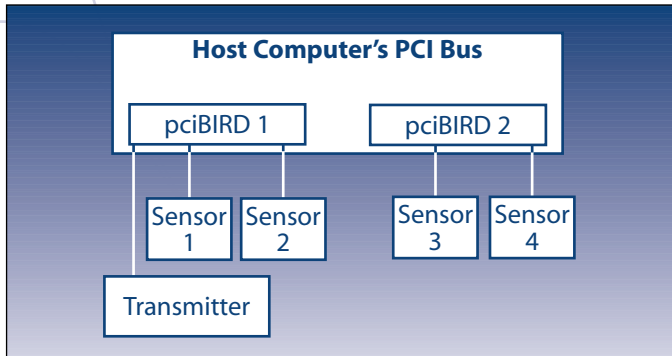
pciBIRD uses a standard, full-length PCI card, installed in your PC to control a transmitter and multiple sensors.

Track multiple sensors with your PC!

- **Position and orientation tracking without restriction.** No need for a clear line-of-sight between sensor and transmitter; blocking is not an issue.
- **Windows compatible** with advanced Applications Programming Interface (API) and drivers for a wide variety of software applications.
- **Pulsed DC magnetic technology** operates in most laboratory and real-world environments without measurement distortion.
- **Customizable tracking configurations.** Each card tracks one or two 25mm or 8mm sensors. Multiple pciBIRDs can run in one PC.

Fast. Accurate. Adaptable.

 **Ascension**
Technology Corporation



pciBIRD Block Diagram

pciBIRD is customizable for your real-time tracking application. Each card tracks one or two 25mm or 8mm sensors. Multiple pciBIRDs can be housed in one PC. pciBIRD employs pulsed DC field measurements to overcome distortion from nearby conductive metals.

TECHNICAL

Degrees of Freedom:	6 (Position & Orientation)
Translation Range:	For 25mm Sensors: ± 76.2 cm in any direction For 8mm Sensors: ± 76.2 cm in any direction
•Standard Transmitter:	
•Compact Transmitter:	For 25mm Sensors: ± 55 cm in any direction For 8mm Sensors: ± 41.6 cm in any direction
Angular Range:	All Attitude: $\pm 180^\circ$ Azimuth & Roll; $\pm 90^\circ$ Elevation
Static Accuracy Position:	25mm Sensor: 1.0mm RMS 8mm Sensor: 1.4mm RMS
Static Accuracy Orientation:	25mm Sensor: 0.15° RMS 8mm Sensor: 0.5° RMS
Static Resolution Position:	0.5mm @ 30.5cm
Static Resolution Orientation:	0.1° @ 30.5cm
Update Rate:	Up to 105 measurements per second
Outputs:	X, Y, Z positional coordinates, orientation angles, or orientation matrix
Interface:	PCI v.2.1 compliant. Requires power supply with Molex power connector to meet power needs.
Data Format:	Binary data records
Communication:	Ascension supplied API

PHYSICAL

Transmitter Options:	
Standard Transmitter:	9.6cm cube with 3.05m cable
Compact Transmitter:	5.3cm x 5.3cm x 6.9cm with 3.05m cable
25mm Sensor:	25mm x 25mm x 20mm with 3.05m cable
8mm Sensor:	18mm x 8mm x 8mm with 3.05m cable
PCI Card:	Standard full-length board (312mm x 107mm)
Power:	+12V at 1.85 amps nominal standard transmitter, 2.5A max +5V, 2A nominal
Operating Temp:	15°C to 35°C
Warm-up:	Tracker requires 5-minute warm-up for full accuracy.

Applications

- Head/Hand/Object Tracking
 - Medical Imaging, Simulation & Training, Telerobotics, Scientific Visualization, Virtual Reality
- Biomechanical/ Human Factors Analysis
- 3D Reconstruction and Quantitative Measurement of Ultrasound Images
- Intra-body Navigation
- 3D Graphics Control & Manipulation

FEATURES	BENEFITS
Pulsed DC magnetic tracking	No occlusion – can track thru tissue and bone Unrestricted 6DOF range of motion Not affected by stainless steel (300 series)
Track 25mm or 8mm sensors	Miniaturized for use with biomedical instruments
Multiple sensor configuration	Track multiple sensors simultaneously Two sensors on one card is cost-effective
Full-size PCI card	Easily integrated into today's computers
Up to 1.0mm accuracy	Precise navigation of medical instruments
Windows API	Easy command functions to simplify connectivity to your software
Windows Interface Utility	Easy to use program for communicating with tracker 3D cube demo program
Plug & Play	Quick start utility Sample programs and code
Distortion detection	Alert user to metallic distortion in operating volume

Notes on Accuracy

Accuracy is defined as the root mean squared (RMS) deviation of a true measurement of the magnetic center of a single sensor with respect to the magnetic center of a single transmitter measured over the translation range. Accuracy varies from one location to another over this translation range and will be degraded if there are interfering electromagnetic noise sources or metal in the operating environment. Accuracy will degrade with inadequate PC power supply regulation of +12V. In order to meet accuracy specifications, the tracker must operate in the forward (positive X) hemisphere.

Accuracy verified over range from 20.3cm to 76.2cm at constant orientation with Standard Range Transmitter and from 20.3cm to 55.2cm at constant orientation with Compact Transmitter. Operational range may be extended to 183cm with some degradation.

Regulatory Certifications

- EMC: EN60601-1-2: CISPR 11 Class B limit; FCC: 47 CFR: Part 15; Subpart B; Class B limit
- Safety: EN60601-1: Class I medical device; Type B Applied part



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