

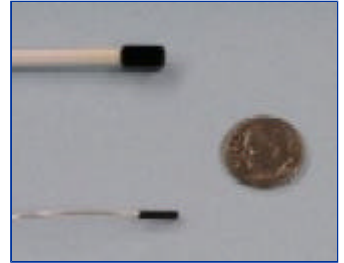
# Ascension Technology Corporation Introduces:

## *microBIRD™*

### Miniaturized Sensors for IntraBody Navigation and Localization

Locating medical instruments in 3D space is a key requirement for image-guided procedures.

With that knowledge, clinicians can display an overlay of instrument coordinates onto pre-operative scans or real-time images. They also can guide tools to anatomical targets for intervention and delivery of therapeutic agents. Combined with imaging modalities, the tracker lets clinicians "see" through the patient for internal guidance and navigation.



Because targeting devices must function within the human body and be metal tolerant, there is an emerging need for new tracking technology. It must be accurate, unobtrusive and unaffected by line-of-sight or environmental issues.

***microBIRD™*** is a new Ascension tracker that meets these requirements.

Features include 6 DOF DC magnetic tracker with a sensor diameter of just 1.8 mm - small enough for insertion into catheters as small as 7 French. It also offers conductive metal immunity. *microBIRD* provides precise, instantaneous localization of biomedical instruments.

Designed primarily for medical device manufacturers, *microBIRD* may be incorporated into medical systems once all pertinent FDA and other regulatory approvals are attained.

#### APPLICATIONS

- ✍ Intra-body navigation
- ✍ Computer-assisted procedures
- ✍ RF ablation
- ✍ Image-guided intervention and therapies
- ✍ Robotically-controlled surgery
- ✍ 3D Ultrasound
- ✍ Electrophysiology
- ✍ Brachytherapy
- ✍ Telerobotics and telesurgery

#### FEATURES & BENEFITS

##### **6DOF Tracking**

- ✍ Full six degrees-of-freedom localizer - a hard requirement for needle-guided procedures. Roll

	angle is always measured with no penalty on sensor size.
<b>Advanced New Tracking Technology for Precise Measurements</b>	✎ New signal processing electronics and improved sensor technology provide excellent tracking stability and better than 1.5 mm accuracy. Multiple transmitter options, metal detection and noise reduction tools make sure that environmental factors do not affect the tracking accuracy. Measurements highly repeatable for re-positioning purposes.
<b>Metal Tolerance</b>	✎ No distortion due to the proximity of conductive metals, such as 300-series stainless steel, titanium, and aluminum - common metals present in surgical tools and equipment.
<b>No Occlusions or Line-of-sight Restrictions</b>	✎ microBIRD transmits position and orientation data over a full range of movement even when sensors are embedded in instruments or the human body. No occlusion or line of sight restrictions.
<b>3D Tracking without Ionizing Radiation</b>	✎ Real-time guidance of instruments and delivery of devices without radiation exposure or reliance on 2D X-ray imaging. microBIRD offers a new option when radiation techniques are not acceptable, such as radio frequency ablation cases.
<b>Affordability</b>	✎ microBIRD is available now at a fraction of the cost of competing trackers for medical imaging. Sensors are configurable for repositibility and disposability.

## USES

- ✎ Precise measurement of the position and orientation of miniaturized sensors within the human body
- ✎ Navigation of the tip of flexible endoscopes and catheters to pre-defined locations
- ✎ Placement of tools and mapping of anatomical features
- ✎ 3D reconstruction of ultrasound images
- ✎ Tracking of surgical instruments and probes
- ✎ Guidance of robotic end-effectors
- ✎ Synchronization of instrument tip location with internal anatomy
- ✎ Placement and visualization of implants
- ✎ Localization of anatomical targets for delivery of therapies and medications
- ✎ Annotation (tagging) location of internal targets
- ✎ 3D localization of radioactive seeds for accurate dosimetry
- ✎ Tagging soft tissue landmarks

## REGULATORY

- ✎ microBIRD is a commercial tracking product; not designed for human use without a medical device manufacturer complying with all pertinent FDA and international regulatory standards.

## SYSTEM CONFIGURATION

- ✎ 6DOF miniaturized Sensors: 1.8 mm Diameter x 8.4 mm Length
- ✎ Electronics Unit on a PCI-bus card.
- ✎ DC Magnetic Field Transmitter
- ✎ Customization Options

## SPECIFICATIONS



TECHNICAL	
Degrees of Freedom:	6 (Position and Orientation)
Translation Range :	13 cm min to 71 cm max in X Axis; $\pm 30$ cm Y, Z. Forward Hemisphere
Angular Range:	All Attitude: $\pm 180^\circ$ Azimuth & Roll; $\pm 90^\circ$ Elevation
Static Accuracy:	1.4 mm RMS position 0.5 degree RMS Angular *Accuracy verified in test fixture with the following Motion Box: -X Axis = 20 cm -71 cm -Y, Z Axes: $\pm 30$ cm -All measurement made in forward hemisphere of transmitted field
Static Resolution Position:	0.05 mm @ 30.5 cm
Static Resolution Orientation:	0.1° @ 30.5 cm
Update Rate:	Up to 90 measurements per second
Outputs:	X,Y,Z positional coordinates, orientation angle, or orientation matrix
Interface:	PCI v.2.1 compliant. Requires disc drive power connector to meet power needs.
Data Format:	Binary data records
Communication:	Ascension Supplied Windows API
PHYSICAL	
Standard Transmitter:	9.6 cm cube with 3.05 m cable
Sensors:	Sensor max OD 1.8mm Sensor max length 8.4 mm Cable length 2 meters Ascension Medi-Mag cable, USP class 6 jacket material Cable 0.9 mm max OD USP class 6 epoxy sensor housing USP 6 polyester protective wrap (bare sensor only) Maximum temperature 150° C Sensor assembly and cable connector materials are capable of EtO sterilization Semiconductor devices in connector are not gamma shielded and may be damaged or erased if exposed to Gamma radiation.
PCI Card:	Standard full-length board (312 mm x 107 mm)
Power:	+12V at 1.85 amps nominal standard transmitter, 2.5A max +5V, 2A nominal
Operating Temp:	15° C to 35°C
Environment:	Metal objects and stray magnetic fields in the operation volume may degrade performance.
Warm-up:	System requires 5-minute warm-up for full accuracy.