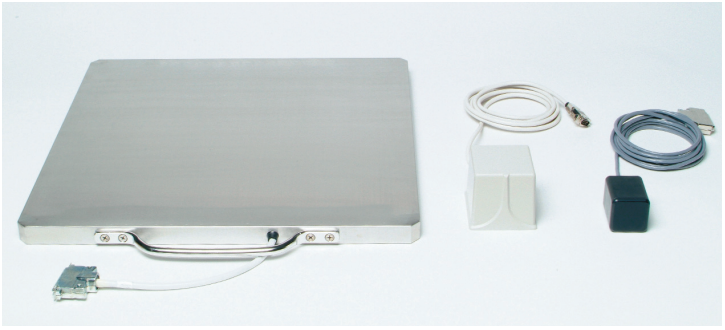
3D Guidance™

Medically Compliant: Class 1, Type CF, Defib Proof

Electronics unit with multiple transducer and interface options

Guide Medical Instruments with Pulsed DC Magnetic Sensors



3D Guidance multiple transmitter options enable its use in medical environments once unsuitable for magnetic tracking.

- Track up to eight miniaturized 6DOF sensors simultaneously
- Localize in 3D without ionizing radiation
- Guide flexible tools without line-of-sight restrictions
- Overcome limitations of earlier generation medical trackers
- Navigate catheters, probes, and scopes with low cost, disposable sensors

3D Guidance's miniaturized sensors are routinely deployed in medical instruments and catheters for safer and less intrusive tracking and localization. Here a 1.3 mm sensor is seen protruding from the working channel of a bronchoscope. Sensors with sub-millimeter diameters are available to extend the reach of catheters and scopes deep into the periphery of organs and vessels.

PRECISE UNOBTRUSIVE AFFORDABLE

Ascension Technology Corporation

Making Minimally Invasive Possible

3D Guidance

Medically Compliant: Class 1, Type CF, Defib Proof

Specifications

Technical

	Model 800 (8.0 mm sensors) Model 180 (1.8 mm sensors) Model 130 (1.3 mm sensors)
Degrees of Freedom	6 (Position and Orientation)
Translation Range	Short & Mid-Range Transmitter • ± 58 cm in any direction for models 180 & 130 • ± 76 cm in any direction for model 800 Flat (Metal-Immune) Transmitter • 52 cm in X, Y, Z for all models
Angular Range	All Attitude: ± 180° Azimuth & Roll; ± 90° Elevation
Static Accuracy*	Position: 1.4 mm RMS Orientation: 0.5° RMS
Static Resolution	Position: 0.5 mm @ 30.5 cm Orientation: 0.1° @ 30.5 cm
Update Rate	Short- & Mid-Range Transmitter • up to 375 updates/second Flat (Metal-Immune) Transmitter (4-Axis) • up to 200 updates/second
Outputs	X, Y, Z positional coordinates, orientation angles, or orientation matrix
Interface	RS-232, USB
Data Format	Binary data records
Communication	Ascension supplied Windows API or direct via Flock of Birds protocol

Physical

Electronics Unit	27.9 cm x 27.3 cm x 6.4 cm
Transmitters	3 Options: Short-Range, Mid-Range, Flat (Metal-Immune)
Sensor Specifications	Model 800: 8 mm OD; length (TBD) with 2 mm OD cable, 1.8 m in length Model 180: 1.8 mm OD; length 6.5 mm with 0.6 mm OD cable, 1.8 m in length Model 130: 1.3 mm OD; length 6.5 mm with 0.6 mm OD cable, 1.8 m in length Model 180 & 130 only: • Ascension Medi-Mag Cable, USP class 6 jacket material. • USP class 6 epoxy sensor housing. • USP 6 polyester protective wrap (bare sensor only). • Maximum temperature 150° C. • Sensor assembly and cable materials are EtO, gamma and cold sterilant tolerant. Semiconductor devices in connector are not gamma shielded and may be damaged or erased if exposed to gamma radiation.
Power	US/European version
Operating Temperature	15°C to 35°C; 95% non-condensing humidity
Environment	Ferromagnetic objects and stray magnetic fields in the operation volume may degrade performance. Contact us for assistance in using our Optimization Tools to minimize metallic distortion and noise interface.

***Ranges for Accuracy Testing**

Sensor Size	TRANSMITTERS Short-Range	Mid-Range	Flat (Metal-Immune)
800 (8 mm)	20 to 36 cm X, ± 15 cm Y, Z	20 to 61 cm X, ± 30 cm Y, Z	± 20 cm X, Y -10 to -46 cm Z
180 (1.8 mm)	20 to 36 cm X, ± 8 cm Y, Z	20 to 51 cm X, ± 23 cm Y, ± 15 cm Z	± 20 cm X, Y -10 to -46 cm Z
130 (1.3 mm)	20 to 36 cm X, ± 8 cm Y, Z	20 to 36 cm X, ± 15 cm Y, Z	± 20 cm X, Y -10 to -46 cm Z

*Accuracy verified for each sensor/transmitter combination at the above ranges.

FEATURE	BENEFITS
Metal tolerant	Five times less distortion due to conductive metals compared to AC trackers. Outputs unaffected by composite materials. Capable of driving errors induced by highly conductive metals (such as aluminum) to zero by using 3D Guidance Optimization Tools.
Advanced new magnetic technology	3rd generation developments overcome environmental limitations of earlier AC and DC tracking technologies.
Low cost sensors	Designed for disposability in volume applications.
No occlusions	Accuracy of measurements unaffected by insertion of sensors into human body.
Software support	3D Guidance Visualization Toolkit lets you collect, display, and graphically use data with no programming. API with expert support facilitates incorporation into user applications. Fully integrated with partners' medical imaging software for 3D rendering and visualization of anatomical structures.

Regulatory Certifications

3D Guidance users must obtain and comply with all pertinent FDA/CE/IRB and international medical certifications prior to using this device in humans. Biomedical references in this document are examples of what medical practitioners can do with 3D Guidance after complying with all regulatory requirements.

*Notes on Accuracy

Accuracy is defined as the root mean square (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 specified translation range. Accuracy varies from one location to another over this range and will be degraded if there are interfering electromagnetic noise sources or metal in the operating environment, which have not been identified and minimized using 3D Guidance optimization tools.

Ascension Technology Corporation
Making Minimally Invasive Possible

www.ascension-tech.com | P.O. Box 527 | Burlington, VT 05402 USA | (802) 893-6657 ext. 34 | USA: (800) 321-6596