

# 3D Guidance<sup>®</sup>

Track the most precise 3D movements in real time with the electromagnetic tracking solution that's free of line of sight restrictions – the 3D Guidance<sup>®</sup> product suite from NDI.



# No Clear Line of Sight? No Problem.

Track the most precise 3D movements in real time without line of sight occlusions. The 3D Guidance<sup>®</sup> Electromagnetic (EM) Tracking product suite from NDI provides you with extremely accurate and precise tracking of real-time motion in six degrees of freedom (6DOF) via miniaturized sensors.

Sensors are attached externally to the body or an object, or embedded directly inside the object itself. Up to sixteen (16) sensors of different sizes can be tracked at once, allowing multiple areas of interest to be captured synchronously within the tracking (measurement) volume. Low latency and fast update rates ensure the most subtle of movements are instantly tracked and recorded.

The 3D Guidance system uses an electromagnetic transmitter to establish the tracking volume. Although the sensors and transmitter work together, a clear light of sight between them is not required to maintain accurate drift-free tracking. This makes 3D Guidance the optimal solution for tracking applications that involve body regions/objects that are difficult to view and/or access.

What's more, because the 3D Guidance solution is based on D/C electromagnetic tracking technology, it's highly resistant to ferrous interference. The result is a versatile yet cost-effective real-time electromagnetic tracker that delivers exceptionally accurate and precise 3D tracking data for the most challenging applications.

## Why Choose 3D Guidance<sup>®</sup>

- Dynamic 6DOF tracking of sensor position and orientation
- No line of sight occlusions ensures uninterrupted tracking
- Exceptionally accurate and precise drift-free tracking data
- Low latency and fast update rates for 3<sup>rd</sup> party software integration
- System configuration can be customized to your application



## Example Tracking Applications

### Neuroscience Research

- Track real-time finger movements of human or primates during reaching and grasping experiments.

### Biomechanics Research

- Track simultaneous motion of the head, torso and limbs in 6DOF without line of sight occlusions.

### Orthopaedics Research

- Capture the position and complex motion of a joint by placing small sensors directly under the skin.

### Prosthetics Design and Testing

- Record the movement of prosthetic components or determine the displacement of the skin layer.

### Robotics and Automation

- Determine the position and orientation of the robot end effector and manipulator within 3D space.

### Simulation and Virtual Reality

- Visualize the position and orientation of tools within a virtual environment for real-time navigation.

# System Components

## Sensors

The 6DOF sensors come in a variety of sizes including the general purpose reference sensor that consists of an 8 mm square cross-section, to a sensor as small as 0.56 mm for use in the smallest areas/objects.



## Electronics Unit

Integrate the 3D Guidance® driveBAY™ or trakSTAR™ electromagnetic tracking unit into your existing system for 6DOF tracking of sensors with no line of sight requirements.



### trakSTAR™

A desktop electronics unit with integrated power supply which can track up to four 6DOF sensors simultaneously.

### driveBAY™

The electronics unit fits into the drive bay of a PC chassis and tracks up to four 6DOF sensors simultaneously. The unit uses the PC power supply – no additional power source is required.



### Mid-Range Transmitters

The Mid-Range Transmitter (MRT) offers a flexible setup that can be integrated into most applications where the tracking volume needs to cover a larger area of interest.

### Short-Range Transmitters

The Short-Range Transmitter (SRT) provides a solution for smaller difficult to access regions. The SRT can be mounted on third-party mobile equipment for a versatile tracking solution.

# Technical Specifications

trakSTAR™



driveBAY™



## Accuracy

1.4 mm RMS, 0.5 degrees RMS

1.4 mm RMS, 0.5 degrees RMS

## Performance

NUMBER OF SENSORS Four (4) 6DOF per unit  
(up to 16 sensors)

Four (4) 6DOF per unit  
(up to 16 sensors)

MEASUREMENT RATE 80 Hz default,  
user-configurable from 20-255 Hz

80 Hz default,  
user-configurable from 20-255 Hz

## Dimensions & Weight

DIMENSIONS 290 mm x 184 mm x 64 mm

180 mm x 147 mm x 41 mm  
(Fits a 5.25-inch PC drive bay)

WEIGHT 1.31 kg

0.84 kg

## Power & Interface

POWER 100-240 VAC, 50/60 Hz

Molex Power Connector; +12 V: 1.6 A nominal,  
2.9 A maximum; +5V: 600 mA nominal

INTERFACE USB, RS-232

USB

Mid-Range Transmitter

Short-Range Transmitter

## Max. Tracking Distance

MODEL 800 SENSOR ON POSITIVE X-AXIS 660 mm - Normal Mode  
1800 mm - Expanded Volume Mode\*

410 mm

\*reduced specifications with optimized system settings

## Dimensions & Weight

DIMENSIONS 96 mm x 96 mm x 96 mm

64 mm x 46 mm x 52 mm

WEIGHT 2.3 kg

0.29 kg



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