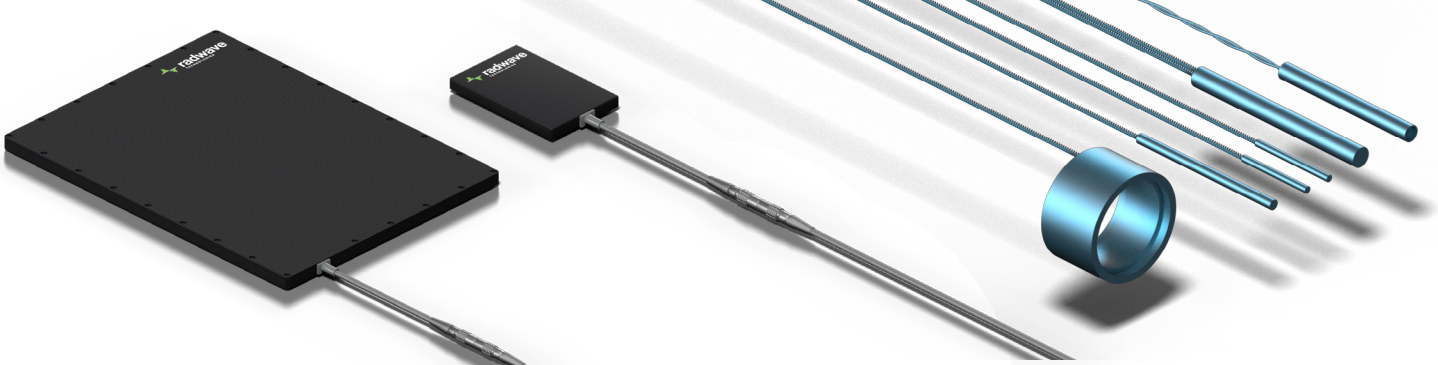




# ELECTROMAGNETIC TRACKING FOR SURGICAL NAVIGATION



# EM TRACKING PLATFORM



# SENSOR TECHNOLOGY

## WHY ELECTROMAGNETIC TRACKING?

- Real-time motion tracking when there's no line of sight
- No radiation
- Accurate, reliable, and low cost
- Easily integrates with new and existing medical devices and platforms

## EM Tracking Platform for Advanced Surgical Procedures

The Radwave(TM) EM Tracking Platform has been designed from the ground up using advanced technologies and modern components to deliver high performance object tracking solution.

### Top Features:

- Seamless integration into MIS & robotic procedures
- Accurate and reliable with high sampling rates
- Add real-time distortion detection and mitigation
- Able to track many different sizes & types of sensors
- Customisable system with sensing volume that can grow or shrink to match the procedure's needs.
- Translucent field-generating antenna compatible with intraoperative CT and fluoroscopy imaging
- Easy to integrate into medical devices using a simple to use encrypted API with an open-source SDK

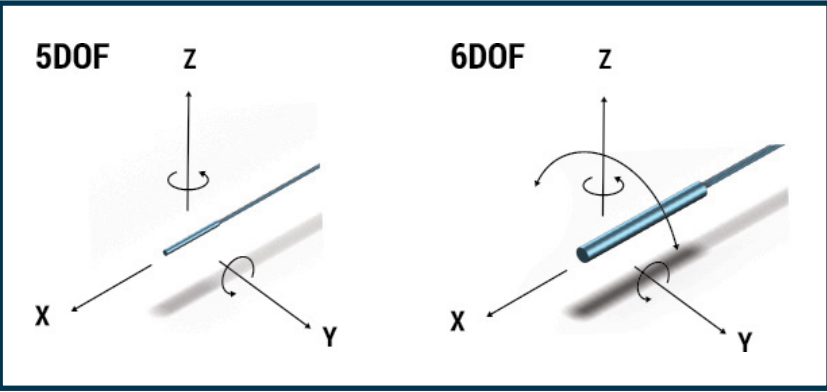
**Radwave(TM) EM Tracking Platform provides exceptional accuracy, reliability and performance needed for advanced MIS and robotic procedures**

### COMPLETE ELECTROMAGNETIC TRACKING SOLUTION FOR SURGICAL NAVIGATION

**Sensor Technology**  
EM sensors  
EM surgical tools  
Manufacturing & assembly  
Customization

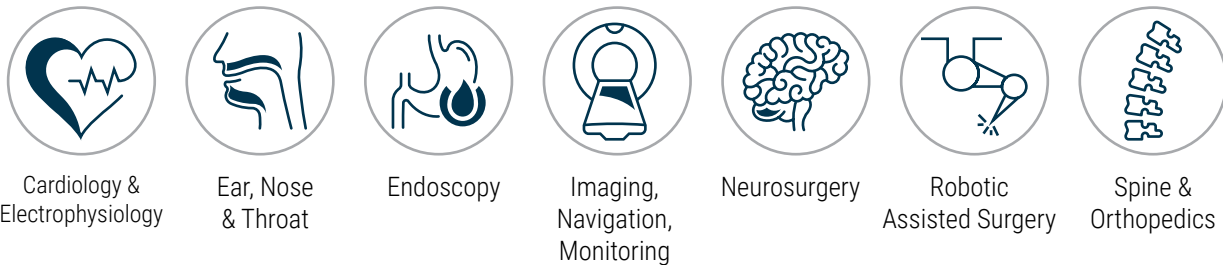
TT's sensor technologies deliver the highest degree of accuracy and precision, even in challenging settings where other EM systems have been limited by interference or sensing volume constraints. We have sensors in both 5 degrees of freedom and 6 degrees of freedom configurations. TT's sensor technologies are easily integrated into a variety of interventional and minimally invasive devices.

	RANGE	
Sensor OD (mm)	≥ 0.33 mm	→
Length (mm)	≥ 3.8 mm	→
Strength	Small	→ Large
DOF	5 DOF or 6 DOF	
Core	Air / Solid	
Winding Orientation	Straight / Angled	

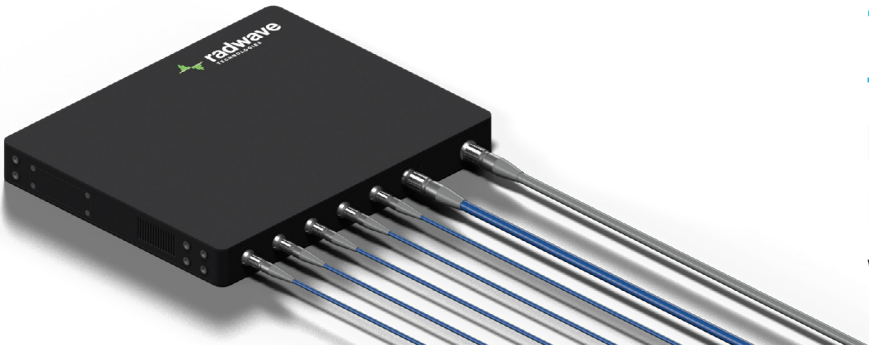


TT Electronics is ISO 13485 certified and offers FDA registered and clean room manufacturing facilities. Our clean room facilities are flexible and expandable. They can be configured to meet the specific needs of each unique project with maximum efficiency.

## HEALTHCARE MARKETS

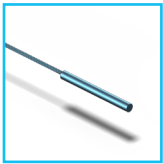


**TT Electronics' sensor technologies deliver the highest degree of accuracy and precision.**

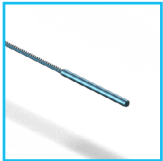




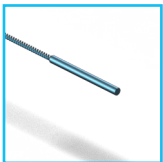
## 5DOF Sensors



**019-9388-00R**  
Sensor OD (mm) Max: 0.47  
Sensor Length (mm) Max: 5



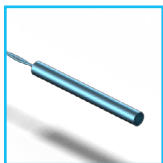
**019-9388-01R**  
Sensor OD (mm) Max: 0.33  
Sensor Length (mm) Max: 4.3



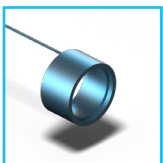
**019-9388-02R**  
Sensor OD (mm) Max: 0.33  
Sensor Length (mm) Max: 3.8



**019-9388-03R**  
Sensor OD (mm) Max: 0.48  
Sensor Length (mm) Max: 8



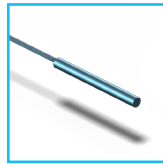
**019-9352-00R (RWSEN1001)**  
Sensor OD (mm) Max: 0.41  
Sensor Length (mm) Max: 4



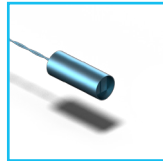
**019-9389-XXR**  
Sensor OD (mm) Max: Varies  
Sensor Length (mm) Max: Varies

Single straight coil of ID 3 French and above.  
Sensor OD and Sensor Length are configurable with the use of different toolings.

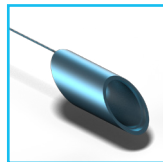
## 6DOF Sensors



**019-9391-00R**  
Sensor OD (mm) Max: 0.94  
Sensor Length (mm) Max: 9.7



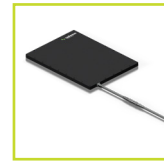
**019-9354-00R (RWSEN1004)**  
Sensor OD (mm) Max: 1.25  
Sensor Length (mm) Max: 3



**019-9390-XXR**  
Sensor OD (mm) Max: Varies  
Sensor Length (mm) Max: Varies

Dual angular wound coil of ID 3 French and above.  
Sensor OD and Sensor Length are configurable with the use of different toolings

## EM Tracking Platform



### Field Generator / Antenna

Thin and light antenna with large tracking volume and low-intensity electromagnetic field

### RWAP1-01 Table Antenna

Radiolucent polycarbonate board presents minimal artifacts on intraoperative fluoro- or CT-scan  
Size: 45.8 x 61.0 x 2.2 cm (width, length, height)  
Tracking Volume: 46 x 61 x 55 cm (W x L x H)  
Standard Tracking Volume starts 2.5 cm above the antenna surface

### RWAP2-01 Compact Antenna

Size: 17.8 x 15.2 x 1.9 cm (W x L x H)  
Tracking Volume: 20 x 23 x 30 cm (W x L x H)  
Standard Tracking Volume starts 0.5cm above the antenna surface



### Control Unit

Size: 1U rack mountable unit, 33 x 45 x 4.5 cm (W x L x H)  
Optional mounting brackets

1x antenna pad connector  
A/C power  
Ethernet interface with modern & encrypted TCP/IP connection  
Sampling rates: 30 to 500Hz

Available in 3 options:

#### RWCU-01

5x three-coil port connectors  
1x nine-coil port connectors

#### RWCU-01-4P

4x three-coil port connectors

#### RWCU-01-2P

2x three-coil port connectors

## About TT Electronics plc

TT Electronics is a global provider of engineered electronics for performance critical applications. TT solves technology challenges for a sustainable world. TT benefits from enduring megatrends in structurally high-growth markets including healthcare, aerospace, defence, electrification and automation. TT invests in R&D to create designed-in products where reliability is mission critical. Products designed and manufactured include sensors, power management and connectivity solutions. TT has design and manufacturing facilities in the UK, North America, Sweden and Asia. For more information about TT Electronics, visit [www.ttelectronics.com](http://www.ttelectronics.com).



**SURGICAL NAVIGATION** | RADWAVE PLATFORM WITH TT's SENSORS

## About Radwave Technologies Inc.

Radwave Technologies Inc. is a technology company that develops and manufactures electromagnetic-based tracking platforms for use in biomedical and other applications. The company's patented modular platform is accurate, precise, and can be easily customized to meet customer's exact specifications.

The company was founded in 2018, and is based in St. Paul, MN.

For more information, visit [www.radwavetech.com](http://www.radwavetech.com)

