

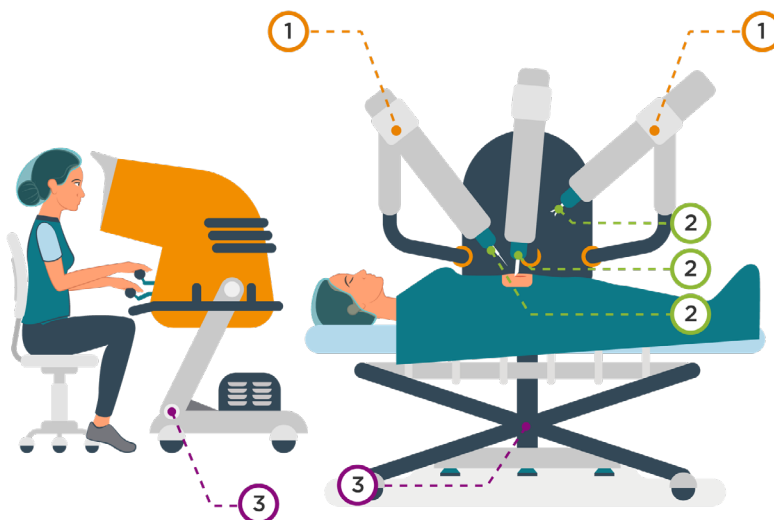
SENSORS FOR SURGICAL ROBOTS

Robot-assisted surgery is the use of surgical robots to help perform minimally invasive medical procedures which offers patients shorter hospitalization stays, reduced pain, faster recovery time and smaller incision sites. Additionally, surgical robots aid with surgeon fatigue during long and complex operations. Robotic surgery works by utilizing a surgeon console where the surgeon can control and manipulate the mechanical arms of the surgical robot by looking through a camera which magnifies the surgical site. The surgeon's hand, wrist and finger movements are mimicked through the console controls and carried over to the robotic arms to perform the surgery with a very concise, small incision while still offering the surgeon full control. The highly precise functionality needed to successfully carry out a surgery on a human life using a surgical robot would not be possible without the use of high performing sensors. TE Connectivity offers torque, force, and position capabilities to accomplish these needs.

TE CONNECTIVITY ADVANTAGES

- Portfolio Breadth
- Medical Experience
- Manufacturing Scale
- Customization Capability

SURGICAL ROBOTS

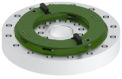



1 TORQUE

2 FORCE

3 POSITION

SENSORS FOR SURGICAL ROBOTS

Sensor Technology	Application	Key Product Features	Benefits
Safety Torque Sensor 	<ul style="list-style-type: none"> Detects unexpected loads and forces during operation 	<ul style="list-style-type: none"> Two independent channels Fast time response Designed with high strength, low mass materials Digital interface Proven MEMS microfused technology Includes stiffener for high cross load applications 	<ul style="list-style-type: none"> Redundancy, very reliable data Reduces or eliminates dangerous conditions Allows robot to operate more efficiently Easy interface and integration into system Robust and reliable feedback to system For use in joint design without cross-roller bearing
String Pots 	<ul style="list-style-type: none"> Monitors position of various components of the robot 	<ul style="list-style-type: none"> Reliable and accurate position feedback Designed for harsh environments Simple and reliable interface 	<ul style="list-style-type: none"> Provides accurate feedback to systems Reliable position feedback to system Simplifies system design