

## Six-Axis Force/Torque Sensor

A simple and inexpensive six-axis force/torque (F/T) sensor suitable for use in manufacturing, robotics, military, electronic, and computer industries has been developed. A multiaxis force/torque sensor is a critical component of an automated system for extending the capability of manipulation and assembly, especially with contact tasks that require mechanical operations involving interaction with the environment or objects. Such devices are needed for implementing advanced control structures based on compliance control, active stiffness control, hybrid position/force control, impedance control, and shared compliance control. Typically, control schemes require use of a multi-axis force sensor between the manipulator arm and the end-effector to measure and feed back forces and torques from the manipulated object.

### Applications

Another use of F/T sensors is to estimate the location of automated devices and the environment so that the position of contact and the force can be determined. For example, the sensor can be mounted on the fingertips of a robotic hand to sense the location of point contacts which transmit forces, and also to sense the components of these contact forces. It can also be used in an intelligent fixture for sensor-based control of mechanical and electronic parts assembly.

### Advantages

This invention is a low-cost, six-axis F/T sensor that can improve assembly quality.

### Development Stage

A prototype has been developed to demonstrate the technology.

### Business Opportunity

A technology license is sought with a company in the area of sensors.

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