

# Sensor/Actuator Class Descriptions



## Sensors

- **Acceleration** -- Sensors which measure the acceleration of an object. Acceleration sensors include variable-capacitance, resonant beam, tunneling, piezoresistive, and piezoelectric accelerometers.
- **Acoustic/Vibration** -- Sensors which detect vibrations or sound waves. Acoustic/vibration sensors include piezoelectric cables, resistive microphones, and solid-state acoustic detectors.
- **Biological** -- Sensors which measure and characterize organic materials. Biological sensors include enzyme sensors and DNA analysis systems.
- **Chemical** -- Sensors which measure and characterize chemical compounds. Chemical sensors include conductometric sensors, catalytic sensors, and gas sensors.
- **Electro-optical** -- Sensors which measure the presence of electromagnetic radiation. Electro-optical sensors include infrared, X-ray, ultraviolet, and visual light sensors.
- **Flow** -- Sensors which measure the flow of liquids, air or gases. Flow sensors include thermal transport sensors, electromagnetic sensors, and pressure gradient sensors.
- **Force/Strain** -- Sensors which measure the force, shear or strain exerted on an object. Force/Strain sensors include strain gauges, tactile sensors, shear sensors, and piezoelectric force sensors.
- **Magnetic** -- Sensors which measure the magnetic field present at a given point in space. Magnetic sensors include Hall sensors, reed switches, and magneto-resistive sensors.
- **Position** -- Sensors which measure absolute and relative positions of objects. Position sensors include potentiometers, inclination detectors, capacitive displacement sensors, proximity sensors, and inductive sensors.
- **Pressure** -- Sensors which measure the pressure exerted on a solid, gas, or liquid. Pressure sensors include piezoresistive sensors, capacitive sensors, mercury sensors, and potentiometric/diaphragm pressure sensors.
- **Rate** -- Sensors which measure the rate of change of the position of an object. Rate sensors include rate gyroscopes, ultrasonic sensors, Doppler radar, and electromagnetic velocity sensors.
- **Temperature** -- Sensors which measure heat intensity. Temperature sensors include resistance temperature detectors, thermistors, thermocouples, and optical temperature sensors.

## Actuators, Mechanisms, and Systems

- **Aero/hydrodynamics** -- Systems involving air or water flow dynamics. Aero/hydrodynamics systems include flaps, microbubbles, films, nozzles, and atomizers.
- **Data Storage** -- Systems involved in the electronic storage of data. Data Storage Systems include magnetic and optical storage, disk drives, storage cards, and proximal probe data storage.
- **Force Transducers** -- Systems which exert forces through mechanical actuation. Force Transducers include piezoelectric and smart-materials-based systems.
- **Heaters** -- Systems used for adding thermal energy. These systems includes heat exchangers and materials used in resistive heating systems.
- **MEMS Fabrication** -- Technology and research involved in the fabrication and testing of MEMS

devices. MEMS Fabrication includes deposition, etching, lithography, packaging, reliability and failure testing, CAD, and microvision of MEMS.

- **Microfluidics** -- Systems involved in the control of fluid flow. Microfluidics include pumps, valves, jets, and microchannels.
- **Optical MEMS** -- Systems involving optical devices and actuators. Optical MEMS includes displays, micromirrors, and prisms.
- **Power MEMS** -- Systems involved in the generation or conversion of power. Power MEMS include batteries, microturbines, fuel cells, and generators.
- **RF MEMS** -- Systems that are vital to radio signal processing and telemetry functions. RF MEMS include RF/IF filters, local oscillators, switches, resonators, antennae, active tags, and wireless sensor networks.



**Last Updated: 01/11/2014 05:57:50**