

## Sensors for Measuring Force, Displacement, Pressure, or Acceleration

### FEATURES

- Miniature, lightweight sensors with foil strain gages
- Measure force, displacement, pressure, or acceleration
- Custom and standard designs available
- Substrates made of metal, polymer, or composites
- Pre-attached lead wires and connectors available
- On-board or separate signal amplifiers available

### BENEFITS

- Eliminate strain gage adhesive bonding
- Increase productivity of assembly operations
- Achieve consistent performance characteristics
- Eliminate soldering for hybrid sensors having preattached lead wires and connectors

### APPLICATIONS

- Ideal for high-volume OEM requirements
- **Consumer:** appliances, sporting equipment, hand tools, lawn and garden equipment, universities, educational research
- **Process Control:** HVAC, liquid-level, motor-control, and vibration monitoring
- **Automotive:** passenger weighing, foot-pedal pressure, seatbelt tension, emergency-brake application, suspension control, and engine monitoring
- **Medical:** pumps, respirators, and personal medical devices
- **Industrial:** elevators, tank monitoring, bearing insertion, safety systems, gas and liquid cylinder pressure, and load monitoring

Hybrid Sensors consist of foil strain gages adhesively bonded to flat substrates made of metal, polymer, or composites. Mass production is made possible by the application of manufacturing processes similar to those used in the production of precision strain gages. The result is sensors with consistent performance characteristics from batch to batch at an economical price in high volume applications.

One of the principal advantages of Hybrid Sensors is the elimination of adhesive bonding by end users. Hybrid sensors can be attached via mounting holes with screws, via spotwelding, or clamping. Assembly operations can be simplified and, combined with the consistent



performance of Hybrid Sensors, large productivity gains are possible. Hybrid Sensors are also available with preattached leadwires and connectors. This further simplifies the customer's handling requirements by eliminating soldering. Miniature signal amplifiers are available as separate components or even attached to the Hybrid Sensor itself.

Applications are diverse and ideally suited to custom OEM applications. Hybrid Sensors lend themselves to assembly production lines for consumer products such as appliances, sports and exercise equipment, personal medical devices, hand tools, and lawn and garden equipment. Similarly for automotive applications, Hybrid Sensors can be adapted to module assemblies for passenger weighing, braking, seat belt tension, suspension control, and engine monitoring. Process control and industrial applications also benefit from the ease of installation and the availability of signals proportional to force, displacement, pressure, or acceleration. From elevators, to HVAC, to motor control, to bearing insertion, the applications are widespread.

Contact Micro-Measurements to discuss how Hybrid Sensors can help you simplify your measurement or control requirements. Complete application engineering services are available to determine the best Hybrid Sensor solution for you.



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