

Test and Measurement

Honeywell



SENSING AND CONTROL

**Part Innovation.
Part Engineering.
Total Solutions.**

More reliability & accuracy. When you need it most.

The Test and Measurement arena presents challenges in both demanding applications and accurate results.

Harsh and demanding conditions require sensors that you can rely on. Test and measurement applications call for precise, accurate, and dependable solutions that have longevity. When you're responsible for selecting or working with a supplier to provide a reliable solution, you won't have the time to experiment, especially if it is a customized solution.

That's why you need Honeywell Sensing and Control (S&C). With a long history of delivering high-quality sensor solutions, we can help you make quick work of finding just the right answer to your Test and Measurement question. Whether you've known us as Honeywell, Sensotec, or Lebow in the past, know that your future is a whole lot simpler when you turn to Honeywell for all your sensing and instrumentation needs.

Simple, because Honeywell can be your single source for load cells, pressure sensors, torque sensors, accelerometers, displacement sensors, wireless telemetry instrumentation, and repair/calibration services.

Simple, because it doesn't matter if you need one product or thousands, a standard catalog item or a customized solution. And simple, because when you work with Honeywell, you work with engineers with extensive domain knowledge and technology resources who will develop and deliver cost-effective, individually tailored solutions designed to meet your specific needs.

So when your application is demanding, Honeywell is up to the challenge. Test us. Measure us. Find out why more engineers worldwide turn to Honeywell when they need solutions for some of the most exacting test and measurement solutions.



Automotive

Accurate, durable torque, load, and pressure sensors for powertrain dynamometers



Aerospace

Customized load, pressure, and torque sensors for complex aerospace systems



Oil and Gas

Tough, intrinsically safe, reliable pressure and load sensors for many harsh land and off-shore installations



Test Labs

Reference-grade sensors for research and validation testing



Automation Equipment

Precise sensors to validate in-process quality requirements



Medical

High-performance sensors to enable precision procedures for patients



Semiconductor Fabrication

Superior quality transducers and instrumentation for all phases of wafer fabrication, packaging, and testing



Power and Turbines

Intrinsically safe, explosion-proof and wireless sensors for precision measurement in many demanding conditions



Propulsion Monitoring

Precise, fatigue-rated sensors for on-board, long-term service

Honeywell S&C: More than just a one-stop Test & Measurement solution

Honeywell Sensing and Control has more than 50 years of experience delivering Test and Measurement sensors. Our Sensotec and Lebow product lines offer unmatched value – with robust sensor solutions for virtually any test and measurement need. Take a look at all Honeywell has to offer:

Comprehensive Portfolio: Honeywell S&C brings you one of the broadest switching and sensing portfolios on the planet. Just take a look at our amazing breadth of solutions covering a wide array of technical platforms, eliminating the need for multiple suppliers. We also offer products that comply with specified agency approvals or other industry standards, including FM, CSA, ATEX, DNV, and CE to give you product performance you can trust.

Application Expertise: Honeywell S&C delivers expert thinking and extensive expertise to help address your issues. Whether it's assisting you in determining which existing product best serves your needs or designing a new sensor, you'll get superior performance from each product and solution.

Quality and Reliability: Honeywell has been providing world-class test and measurement product solutions for the past 50 years. Our attention to design detail, rigorous manufacturing processes, and integration of high-quality materials ensure that Honeywell sensors offer more reliability, accuracy, and longer-lasting performance when you need it most.

Fast Delivery: And it's not just what you get, it's how you get it. Need it fast? We'll get you the product you specify in the shortest time possible, even if it's a customized solution. Hundreds of stocked catalog products are out the door within five days or less.

Custom Engineering: Have an idea of what you need, but no "standard" part seems just right? Our engineers will design a custom solution usually by performing minor – or sometimes major – modifications to our sensors. Quickly. In-house design, engineering, and manufacturing expertise means fast delivery for both large and small batches of custom-engineered solutions.

Calibration and Repair: Need calibration or repair of your test and measurement products? Our facilities provide repair and certified calibration services for every Honeywell test and measurement product we make. Our calibration services conform to industry procedures and/or standards such as ISO 9001:2000, A2LA to ISO/EIC 17025, ANSI/NCSL Z540-1, ISO 10012-1, MIL-STD-45662A, and ASTM E74. Need extremely fast turnaround? We offer fast-track calibration service, which takes five days or less, on many of our products. Plus, we welcome the opportunity to talk about your custom repair or calibration needs on non-Honeywell products.

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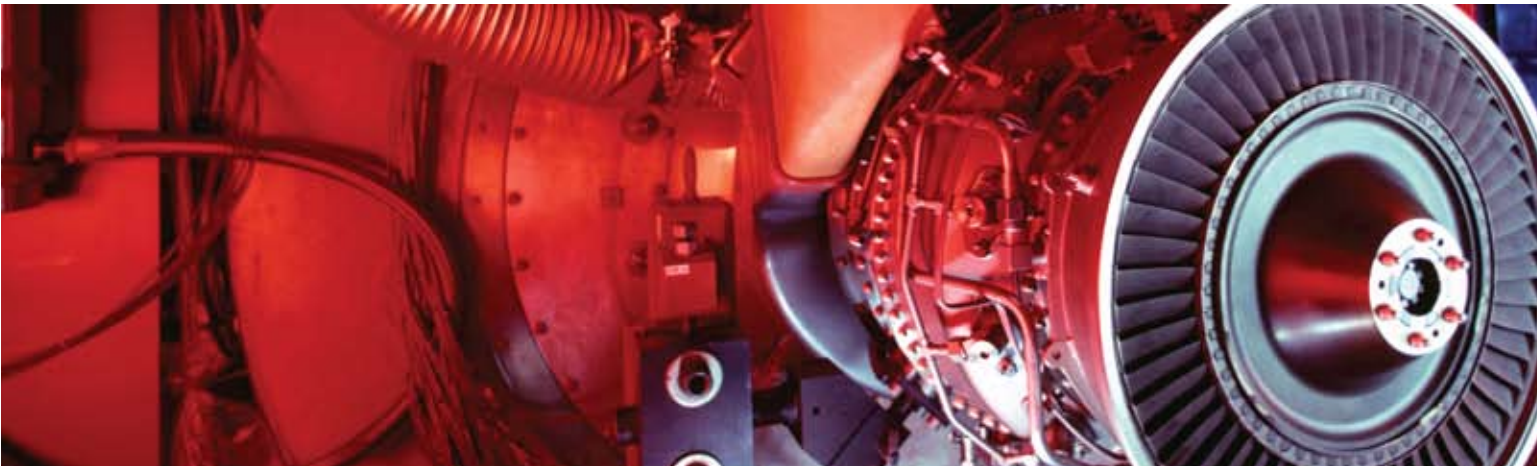
**An aerospace controls system developer had a problem...
and they came to Honeywell S&C to solve it.**

This manufacturer required specialized load cells for throttle controls used in military aircraft. Their supplier was not meeting their product specification requirements.

Looking for a vendor that had the expertise to customize products, they approached Honeywell with the problem. Honeywell's engineering team developed a miniature load cell with a special thread, internal amplifier, and specialized connector, thus meeting the customer's exact specification requirements – something their previous supplier could not achieve.

By designing a superior load cell to meet the customer's specifications for the application along with ongoing service and support as a single-source supplier, Honeywell has been supporting this customer for more than 10 years. **Problem solved.**





Extraordinary expertise & resources, driving cost-effective, customized products & solutions

TECHNOLOGIES... BEST IN CLASS ENGINEERING

Our solutions are engineered for enhanced precision, repeatability, and ruggedness – technology designed to meet even highly customized requirements.

Load Cells. Constructed from stainless steel, carbon steel, or aluminum • Stainless steel load cells hermetically welded to ensure performance in many hostile environments • A variety of tension, compression, and universal measurement cells

- 50 grams to 3 million pounds [13,500 kN] miniatures • Available in most common footprints • Accuracy down to 0.03 %
- Unamplified, amplified, and digital output • Dual bridge, vibration, and fatigue rated

Pressure and Differential Pressure Transducers. Wide range of absolute, gage, and differential pressure transducers and transmitters, specializing in high pressure and flush diaphragm

- 10 inches of water [25 mBar] up to 150,000 psi [10,350 Bar]
- Differential pressure to 10,000 psi [690 Bar] • Miniatures the size of a fingernail • Unamplified, amplified, and digital output
- Temperatures to 220 °C [425 °F] • Sub sea • Flush mount
- 1 psid [6.9 kPA] wet/wet differential measurement that can withstand full line pressure up to 1500 psi [10.3 MPa]
- Enhanced long-term stability

Torque Transducers. Both rotary and reaction (non-rotating) torque transducers, featuring bonded strain-gauge technology

- Offers both in-line mounting configurations and clamp-on sensors • Slip ring • Rotary transformer • Digital telemetry with high-resolution data transmission • 25 oz-in [0,18 Nm] to 250,000 ft-lb [339,000 Nm] • Miniature reaction through clamp-on style from 100 mm [4 in] to 900 mm [35 in] diameter

Wireless Telemetry. Wireless capability to facilitate signal transmission from rotating equipment for the measurement of torque, temperature, acceleration, or other parameters

- Frequency response from dc to 1 kHz • Typical RF operating frequencies ranging up to 16 MHz • RF modulation types include FSK and PWM • Compact transmitters with ability to withstand high vibration/G forces up to 40,000 G • Capability to withstand high temperatures (up to 140 °C [284 °F], 125 °C [257 °F]) is typical • Custom configurations available

Instrumentation. Single and multi-channel units – portables and handhelds • Digital pressure gage • In-line amplifiers • Power supplies • Transducer simulation • Analog and micro-processor based

Displacement Transducers. Family of rugged industrial linear displacement transducers • 0,5 mm [0.02 in] up to 950 mm [37 in] stroke • dc/dc • ac/ac • Precision • Long stroke

- Submersible • Miniatures

Accelerometers. Cover a wide range of applications and environments • Frequency range: 0 Hz to 25 kHz • 500 g shock

- Velocity output • Acceleration and temperature • Built-in signal conditioning • Miniature



HONEYWELL

POTENTIAL TEST AND MEASUREMENT APPLICATIONS

Using our extensive technology resources and working closely with each customer, Honeywell S&C delivers cost-effective, tailored solutions to meet virtually any requirement. Basic and complex applications, enhanced precision, repeatability, and ruggedness – covering a wide range of needs – our designs enable unprecedented customization.

Automotive

- Powertrain testing
- Engine, vehicle, and component testing
- Emission control system testing

Aerospace

- High precision, long-life OEM flight-rated products
- Force and pressure in flight- and ground-testing applications
- Airframe/structural and hydraulic systems testing
- Ground-support testing
- Jet engine turbine stress, temperature, and vibration monitoring
- Pressure testing in actuators and engines

Oil and Gas

- Upstream oil field sensors
- Intrinsically safe
- Wireline tension
- Coiled tubing loads
- Well logging sensing
- Mud pressure monitoring
- Measuring pressure in drilling applications

Test Labs

- Material testing
- R&D testing
- Hydraulic test rigs
- High frequency and fatigue tests
- New product design validation
- Load vs. displacement studies

Automation Equipment

- Force-displacement pressure monitoring
- Quality control and assessment
- Process monitoring
- End-of-line testing

Medical

- Pressure sensing and monitoring of medical gases and fluids in patient use
- Pressure measurement in equipment sterilizers
- Medical device manufacturing and design validation

Semiconductor Fabrication

- Load and displacement in wafer fabrication
- Monitoring machinery vibration levels for wear
- Load, accelerometer, and instrumentation in assembly, packaging, and testing

Power and Turbines

- Torque, temperature, and vibration monitoring of rotating equipment
- Intrinsically safe and explosion-proof sensors for turbine powered electrical generation stations

Propulsion Monitoring

- Torque, temperature, speed, and power monitoring of rotating propeller shafts
- Precise fatigue rated sensors for many extreme environments

From pressure, torque, and load cells to acceleration and instrumentation, no other company delivers sensors for Test and Measurement applications in so many critical categories.

So whether you need one unit or several thousand, look to Honeywell for the solution – from off-the-shelf catalog components to fully customizable systems. The convenience of one call. The comfort of superior customization and quality. Only Honeywell helps you achieve your test and measurement goals globally, easily.

Products and Technologies:

- Pressure Transducers • Differential Pressure Transducers
- Load Cells • Torque Transducers • Accelerometers
- Displacement Transducers • Instrumentation • Wireless Telemetry

Potential Applications:

- Automotive • Aerospace • Oil and Gas • Test Labs
- Automation Equipment • Medical • Semiconductor Fabrication
- Power and Turbines • Propulsion Monitoring

Find out more

To learn more about Honeywell's test and measurement products, call **+1-614-850-5000**, email inquiries to **info.tm@honeywell.com**, or visit **www.honeywell.com/sensotec**

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