GOING BEYOND LIMITS

Sensor and Switch Solutions

Honeywell

INDUSTRIAL EXCELLENCE RIGHT DOWN THE LINE

Whether you're manufacturing products for demanding customers, designing and maintaining your own OEM equipment, developing or enhancing automated production, operating a warehouse or a combination of any or all of these, you need reliable switch and sensor solutions to keep everything moving at the pace of today's challenging industrial market.

The global pandemic and its aftermath created new issues and uncovered others that were already percolating. For example, with fewer available workers and many current folks planning to retire, the need to make your machinery work harder is no longer optional for increased output as well as improved cost competitiveness and delivery times. In the supply chain – now a regular topic on news programs – manufacturers are facing raw material and component shortages, extended lead times and rising prices. Add surging energy costs and an explosion of new regulations around the world, and you've got your hands full…and then some.

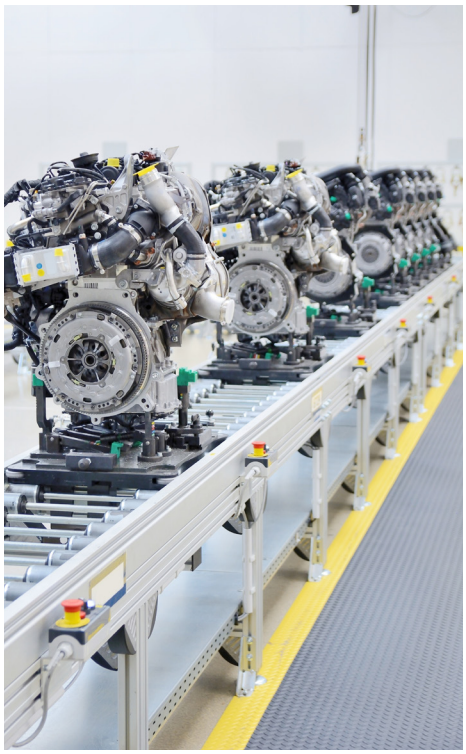
THAT'S WHERE HONEYWELL DELIVERS

True engineering excellence like ours delivers innovative, leading-edge switches and sensors that excel in industrial environments. Honeywell-patented technologies and custom application assistance deliver flexibility and value as we work with you to help identify the best solutions for your specific application needs.

With over a century of experience on the factory floor, our limit switches, hazardous location switches, safety switches and basic switches have no match when you need versatility, enhanced performance, productivity and increased safety in your applications. We invented the original MICRO SWITCH product and every year we manufacture millions of these industry-leading devices.

The same performance holds true for our pressure switches and sensors, magnetic sensors, temperature sensors, force sensors and industrial gas sensors that can withstand extreme temperature ranges, heavy vibration, shock, electromagnetic interference and voltage transients.

Our sensors and switches for logistics can create operational efficiencies to improve labor, production and quality control. From CNC fabricating machines, conveyors and pallet and packaging machinery to picking and packing orders in the warehouse, our extensive product array and global engineering support can meet your most exacting sensing and switching requirements with precision reliability and high accuracy.



CHALLENGE MET

More than ever, from the factory floor to the furthest distribution center, operational efficiency is increasingly important – and increasingly challenging.

We'll help you meet that challenge with Honeywell sensors, switches and custom-engineered solutions. We can help transform your operations. With accuracy, reliability and durability built into every powerful industrial solution, you can count on improved performance, safety and productivity. So whether you're bending, grinding, shaping, moving, cutting, mixing, batching, assembling, testing or managing a warehouse, we have you covered.

When it comes to industrial switches and sensors, we'll put it all on the line. Your line.

THEORY MEET PRACTICE

Plenty of switches and sensors for industrial applications look solid in a catalog or on a web page. Quite a few look pretty good in the box when they arrive. Some have instructions that your team can actually follow. There might even be a human being at the other end of a help-line or an office location if you would like to ask some questions or get some clarification. Theoretically, with any number of companies offering industrial switches and sensors everything will be just fine.

Theoretically.

At Honeywell, our application experience puts theory into practice. We're used to custom specs for conveyor lines, special requests for CNC machines, tweaks to use our devices on pallet and packaging machines, making modifications in material handling systems and hearing our customers' engineers saying "I have an idea" when they're talking about leading-edge robotics or 3D printers. We say, "cool."

We listen. And when we do, we can help you find a product in our vast array that exactly meets your requirements or tailor something if needed – we're great with custom assemblies, or adding wire, sheathing or connectors to a sensor or switch. We might have some suggestions you haven't thought about, and we'll talk you through any decisions you need to make. Our global footprint and channels give you immediate technical support – and help provide the best price for you too, all from one source. We haven't seen every application for all of our devices, but we're up to that challenge!

Let's take a look at some of our industrial workhorses and the places they work.

LIMIT SWITCHES

Limit switches are indispensable on the factory floor. Widely used on conveyor systems in dozens of ways such as controlling product position and flow, measuring the number or height or weight of products moving along the line. From machining and milling to food processing and packaging, limit switches meet literally hundreds of application needs. That is, of course, if you have enough limit switch options to fill them all.

At Honeywell, we do! We start with MICRO SWITCH limit switches. The industry-defining name, and the broadest and deepest limit switch portfolios — with rugged, dependable position detection solutions for industrial equipment, process and material-handling applications. Among many others, our extensive line includes MICRO SWITCH heavy-duty limit switches (HDLS) and global limit switches like the GLS Series, NGC Series and 914CE Series miniature limits and the E6/V6 Series compact precision limit switch.

Rugged and dependable, they are available with a wide variety of housing materials, actuators, electrical characteristics, terminations, circuitry configurations and sealing ratings to fit an extensive range of industrial applications.

HAZARDOUS LOCATION AND SAFETY SWITCHES

Hazardous location switches are very similar to heavy-duty limit switches but are housed in sealed enclosures to prevent a spark or electrical discharge from setting off an explosion. The explosion-proof design contains a flame path to contain and cool escaping hot gases.

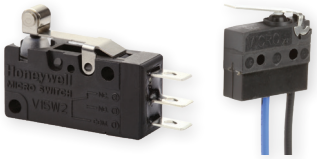
Designed for use both indoors and outdoors in potentially explosive environments such as those found in grain elevators, hazardous waste handling and treatment plants, paint booths, offshore drilling and petrochemical plants, hazardous location switches can quickly and reliably stop system operation when the switch is triggered. Honeywell offerings here include MICRO SWITCH EX, BX, CX and LSX Series Explosion-Proof Switches which feature UL, CSA, ATEX and IEC Ex certifications.

SAFETY SWITCHES

Safety switches offer solutions for potential machine guarding applications, including operator point-of operation protection, access detection, presence sensing, gate monitoring and electrical interfacing to the machine circuitry. They provide positive-opening operation of normally closed contacts through a direct mechanical linkage in the switch that forces these contacts to open when actuated, even if welded, causing associated machinery to stop in an emergency situation.

For example, cable-pull limit switches – like the 1CPS Series single-head cable pull or the 2CCP Series dual-head cable pull – provide emergency stop protection for exposed conveyor lines. Their internal mechanism latches on both slackened cable and pulled cable. Conveyor systems with a high amount of vibration and/or experience wide temperature swings are a piece of cake for the 2CCP Series. And long conveyor systems where easy-through wiring, or highly visible trip status, is required, Honeywell easily fits the bill with the CPS Series.

Designed with OEMs in mind, our safety switches are available in a wide variety of sizes and many options in sealing alternatives (including hermetic), enclosure materials, actuator styles and contact options.



BASIC SWITCHES

MICRO SWITCH basic switches are the industry-defining name in basic precision switches. Used in industrial applications ranging from control circuitry, presses, machine tools, industrial air compressors and hydraulic and pneumatic systems, these electromechanical devices have been around for nearly a century since we invented them…and show no signs of being outdated.

The original MICRO SWITCH product – the V Series, so-named for VICTORY in WWII – is compact and light weight, designed for repeatability and excellent performance and can be customized to meet many industrial applications. The **BZ Series** of large basic switches and the **Z Series** of subminiature basics are great examples of the variety available: there are various series in standard, miniature and sub-miniature sizes and they can be endlessly modified in terms of circuitry, termination, actuators/levers, voltage, operating temperature range, type of metal used in contacts, housing material, sealing and approvals and ratings.

The Honeywell **V19 Series** miniature switch provides a fully certified, reliable, and repeatable switching solution. Designed for automated manufacturing requirements with RAST 2.5, 5 and 7 termination styles available. They are often used in automatic shutters, operator controls, pump safety switches, valve controls and electric linear actuation.

Honeywell **V15W2 Series** explosion-resistant basic switch for Zone 2 environments enables safe, reliable, consistent switch performance under difficult environmental conditions in explosion-risk areas, including compressor motor control, switch coil temperature control, air flow & float switch and power control.

If you have a spot for a basic switch, we have a basic switch to fit it.

SENSORS

Honeywell sensors for industrial applications are ready to tackle sensing challenges that the industrial market has faced for years – and plenty of new ones too. From linear and rotary position sensors for presence and absence sensing to groundbreaking gas sensors helping to address climate challenges, our offerings are numbered in the tens of thousands…here are some highlights.

Our **pressure devices** are available as electromechanical pressure switches or solid-state pressure sensors. If you have a pressure sensing question, we have an answer.

Our **heavy-duty pressure sensors** ideal where supreme durability is a top priority, such as compressors and hydraulic controls where unplanned replacement could entail significant effort, and therefore cost in labor and downtime. They can also provide functionality to robotic equipment and control direction of items coming down a conveyor. In machinery, pressure transducers are used to monitor lubricating oil lines to ensure they are full and at the right pressure.

The **MIP Series** offers a media-isolated pressure transducer in a compact, stainless steel construction for use with a wide range of media including corrosive fluids and water. The hermetically welded design supports almost any media without the use of an internal seal. The transducers are designed to be used in harsh environments that see aggressive media.

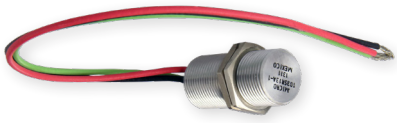
Honeywell **PX2 & PX3 Series** heavy-duty pressure transducers are a portfolio of highly configurable pressure sensors that use piezoresistive sensing technology with ASIC (Application Specific Integrated Circuit) signal conditioning in a metal housing. These products are calibrated and compensated for offset, sensitivity, temperature effects and non-linearity using the on-board ASIC.

The **MLH Series** heavy-duty pressure transducers feature ASIC technology with a media-isolated, metal diaphragm design. This digitally compensated transducer offers value and performance, making it a suitable pressure sensing solution for demanding industrial applications.

Our **13 mm & 19 mm Series** stainless steel pressure sensors are designed for high pressure applications that involve measurement of hostile media in harsh environments. This series uses a Honeywell proven piezoresistive semiconductor sensor chip in an oil-isolated housing with or without an integral ceramic for temperature compensation and calibration. This design has proven to be highly reliable, stable and accurate.

GAS SENSORS

With nearly a half-century of gas sensing experience, we can help you find the right solution for gas sensing applications for all types of gases – both hazardous types and those necessary for operations like endothermic process control – in manufacturing, refineries, food processing, wastewater treatment and mining. **Honeywell AQ Series Gas Sensors** offer high resolution and low detection limits with a 4-electrode electromechanical technology that is highly sensitive to parts per billion (ppb) concentration for a variety of toxic and combustible gases to help keep workers and assets safe in harsh commercial and factory environments. These electromechanical sensors – designed with algorithmic compensation that gives users very high resolution, maximum accuracy, and long-term stability – have good target gas specificity and are typically is installed to provide fail-safe operation.



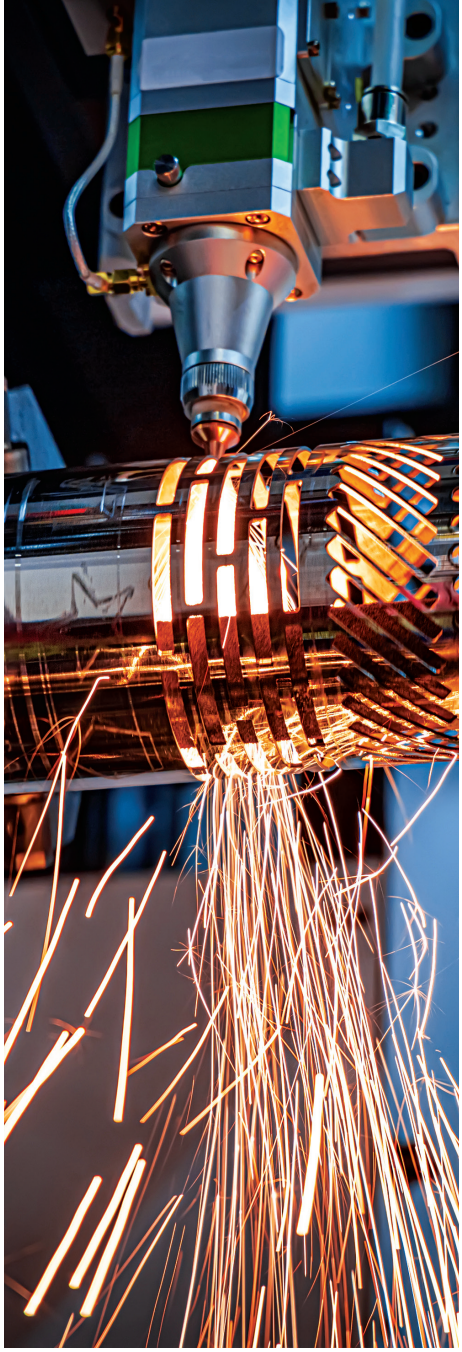
MAGNETICS

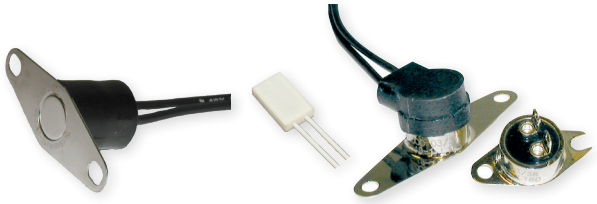
Honeywell was a trailblazer in **Hall-effect magnetic sensors** that measure the magnetic field surrounding a current-carrying conductor. For industrial applications, a wide variety of options are available from board-mount sensors used in many motors to 103SR Series Hall-effect position sensors sealed in aluminum or stainless-steel threaded housings to meet NEMA 3, 3R, 3S, 4, 4X, 12 and 13 requirements. Many styles of current sensors able to sense several hundred mA to over 1000 A are also available for demanding industrial environments requiring accurate low-cost sensing.

TEST AND MEASUREMENT

Test and measurement applications call for precise, accurate and dependable solutions that with a track record of high performance. The broad product offerings from Honeywell can make us your single source for load cells, pressure sensors,torque sensors, accelerometers, displacement sensors, wireless telemetry instrumentation and repair or calibration services.

These devices are widely used in test labs for material testing, high frequency and fatigue tests, new product design validation and load v. displacement studies; automation equipment for force-displacement pressure monitoring, process monitoring, quality control and assessment, and end-of-line testing; semiconductor fabrication to monitor machinery vibration levels for wear and in assembly, packaging, and testing; and in power and turbine applications for torque, temperature, and vibration monitoring of rotating equipment.





For your **temperature sensing** applications, we offer temperature sensors, temperature probes, thermistors and thermostats. All offer stable, fast linear outputs and operate with enhanced sensitivity, reliability, and stability under diverse environmental conditions of shock, vibration, humidity and corrosion over wide temperature ranges, such as what's needed for high-temperature and bulk-refrigeration industrial applications, industrial-grade appliances, factory HVAC or power generation systems, and compressors and hydraulic equipment.

Read on for just a glimpse as how Honeywell thermal products excel in industrial applications.

The **HRTS Series Thin Film Platinum RTDs** (Resistance Temperature Detectors) are designed to measure temperatures from -70 °C to 260 °C [-94 °F to 500 °F]. These fully assembled elements are ready to use in probe assemblies without the need for fragile splices to extension leads. They are often used in HVAC equipment, instrument and probe assemblies, process control for temperature regulation, motor windings and bearings, battery packs and environmental chambers.

The **3800 Series Precision Thermostat** excels in severe duty use, which makes it well suited for industrial settings especially motor protection applications. The series uses the same materials and manufacture as Honeywell military-grade thermostats, allowing them to be used where high levels of vibration and mechanical shock are common.

Honeywell expertise in switching and sensing for industrial applications has been legendary for nearly a century and we're ready to go for the next 100 years. Whether you've known us as Honeywell MICRO SWITCH, Honeywell Sensing and Control, Honeywell Sensing and Internet of Things, or just Honeywell, we're here to meet your every requirement from industry-standard products to engineering support.

Right down the line.

MICRO SWITCH Corporation – the inventors of the original MICRO SWITCH product – became Honeywell Sensing and Control in 1999. But after nearly a century of service, the reliability, durability and efficiency of the Honeywell MICRO SWITCH technology is still astonishing by any standard. Honeywell now manufactures over 120 million MICRO SWITCH products each year. Simple, superior, irreplaceable, the MICRO SWITCH product carries on. And on.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special or indirect damages.**

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For more information

Honeywell Sensing Solutions services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit our website or call:

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