



Honeywell

Solutions Guide



Honeywell

Reach your local sales team at 1.800.CALL.TTI



TTI stocks an impressive inventory of Honeywell sensors, switches and control modules for industrial, transportation, medical, aerospace and military applications. Honeywell products detect and measure flow, humidity, temperature, position, pressure and more – even combinations of those conditions. When you need sensing and control, trust the broad and deep TTI inventory of Honeywell Sensing and Control products.

TTI offers:

- World Class Line Card
- Expert Product Specialists
- Broader and Deeper Product Inventories
- Commitment to Global Quality
- Supply Chain Solutions

World Class Line Card

TTI is an authorized distributor for the leading electronic components manufacturers in the world. Close partnerships with these premier manufacturers allow TTI to cover more than 75 percent of the components on our customers’ typical bill of materials and over 85 percent of their circuit board placements, with one call. The manufacturers TTI partners with are the companies that lead the industry into new component technologies. TTI directly accesses the manufacturer resources to solve any design challenge. Our focus on new product introductions ensures we have the latest and most technologically-advanced products readily available from stock.

Expert Product Specialists

TTI Specialists have more product experience and knowledge than any other distributor thanks to company-wide training programs and some of the longest tenure in the industry. Every local TTI branch has a team of these expert product managers on-site to provide any extra support customers may require. These exceptional Specialists are continually recognized by our supplier partners as the most knowledgeable in electronic component distribution.

Broader and Deeper Inventories

TTI maintains extensive inventories by stocking more than 650,000 parts domestically and 850,000 globally, with more than 80% available for immediate delivery. That’s more interconnect, passive, electromechanical, and discrete parts than from any other source. We continue to remain committed to breadth and depth of inventory, ensuring availability of C and D class parts as well as commodity parts.

Commitment to Global Quality

TTI has more than 1.2 million square feet of automated warehousing in North America, Europe, and Asia. All linked by our proprietary global warehouse management system, ensuring superior customer service and overall business efficiencies. TTI was the first distributor to be ISO registered at all sales and operations locations around the globe. TTI’s Total Quality Process assures you of the utmost in accuracy with product and delivery around the globe, tailored to your exact specifications. Wherever you are in the world, TTI can support you.

Supply Chain Solutions

TTI’s supply chain solutions are integrated into our mainstream business through our proprietary Advanced Inventory Management (AIM) system, the heart of TTI’s world-class inventory management program. Using AIM, TTI Supply Chain Specialists automate the forecasting, management, ordering, and on-time delivery of thousands of low cost IP&E and discrete components. A custom TTI Supply Chain Program ensures data processing accuracy, increases product availability, eliminates transactions that don’t add value, and ensures that your production line never goes down due to a component shortage.

The Specialist in IP&E

These are many of the reasons TTI is the world’s leading specialist in distribution of interconnect, passive and electromechanical electronic components. The company was founded on the premise that passive purchasing could be made more efficient by offering superior specialized customer-driven service provided by product knowledgeable representatives and we’ve never lost that focus. TTI’s commitment to the customer remains as valid today as when we opened our doors in 1971.



1.800.CALL.TTI

The Specialist in Electronic Component Distribution

Product Type and Industry Matrix

| PRODUCT | INDUSTRIAL | MEDICAL | MIL/AERO COMMERCIAL AIR | TRANSPORTATION |
|--|------------|---------|----------------------------|----------------|
| AIRFLOW, FORCE, AND PRESSURE | | | | |
| Airflow sensors | ◆ | ◆ | ◆ | ◆ |
| Force sensors | ◆ | ◆ | ◆ | |
| Pressure sensors - board mount | ◆ | ◆ | ◆ | ◆ |
| Pressure sensors - heavy duty | ◆ | ◆ | ◆ | ◆ |
| CONTROLS, MONITORS, AND PRESSURE | | | | |
| Key and rotary switches | ◆ | | | ◆ |
| Shifters, turn signals, and proportional retarders | | | | ◆ |
| Push-pull switches | ◆ | ◆ | ◆ | ◆ |
| Custom controls | | | | ◆ |
| Pressure and vacuum switches | ◆ | ◆ | ◆ | ◆ |
| Hour meters | ◆ | ◆ | ◆ | ◆ |
| CURRENT SENSORS | | | | |
| Digital/inductive current sensors | ◆ | ◆ | | |
| Closed loop current sensors | ◆ | | | |
| Open loop current sensors | ◆ | ◆ | | |
| MACHINE SAFETY | | | | |
| MICRO SWITCH™ key-operated safety switches | ◆ | | | |
| MICRO SWITCH™ safety limit switches | ◆ | | | ◆ |
| MICRO SWITCH™ cable-pull safety switches | ◆ | | | |
| MICRO SWITCH™ non-contact safety switches | ◆ | | | |
| OPTICAL SENSORS | | | | |
| Fiber optic SERCOS transmitters and receivers | ◆ | | | |
| Fiber optic duplexers | ◆ | ◆ | ◆ | |
| Infrared encoder detectors | ◆ | ◆ | | |
| Infrared transmissive encoders | ◆ | ◆ | | |
| Infrared photodarlington detectors | ◆ | ◆ | | |
| Infrared photodiode detectors | ◆ | ◆ | | |
| Infrared emitters | ◆ | ◆ | | |
| Infrared optoschmitt detectors | ◆ | ◆ | | |
| Infrared optoschmitt sensors | ◆ | ◆ | | |
| Infrared phototransistors | ◆ | ◆ | | |
| Infrared reflective sensors | ◆ | ◆ | | |
| Infrared low-light rejection phototransistors | ◆ | | | |
| Infrared transmissive sensors | ◆ | ◆ | | |
| Liquid level sensors | ◆ | ◆ | ◆ | |
| SPEED SENSORS | | | | |
| Speed and direction sensors | ◆ | | ◆ | ◆ |
| Variable reluctance sensors | ◆ | | ◆ | ◆ |
| Digital variable reluctance sensors | ◆ | | ◆ | ◆ |

| PRODUCT | INDUSTRIAL | MEDICAL | MIL/AERO COMMERCIAL AIR | TRANSPORTATION |
|--|------------|---------|----------------------------|----------------|
| POSITION SENSORS | | | | |
| Magnetostrictive sensor ICs | ◆ | ◆ | ◆ | ◆ |
| Hall-effect digital sensor ICs | ◆ | ◆ | ◆ | ◆ |
| Hall-effect linear sensor ICs | ◆ | ◆ | ◆ | ◆ |
| Value-added Hall-effect sensors | ◆ | ◆ | ◆ | ◆ |
| Linear potentiometric sensors | ◆ | ◆ | ◆ | ◆ |
| SMART position sensors | ◆ | ◆ | ◆ | ◆ |
| Ultrasonic sensors | ◆ | | | ◆ |
| Proximity sensors | ◆ | | | |
| Rotary position encoders | ◆ | ◆ | ◆ | ◆ |
| Hall-effect rotary position sensors | ◆ | ◆ | ◆ | ◆ |
| Cermet and wirewound resistors | ◆ | ◆ | ◆ | ◆ |
| Conductive plastic potentiometers | ◆ | ◆ | ◆ | ◆ |
| Resolvers | | | ◆ | ◆ |
| SWITCHES | | | | |
| MICRO SWITCH™ heavy-duty limit switches | ◆ | | ◆ | ◆ |
| MICRO SWITCH™ global limit switches | ◆ | | | ◆ |
| MICRO SWITCH™ medium-duty limit switches | ◆ | | | ◆ |
| MICRO SWITCH™ specialty limit switches | ◆ | | | ◆ |
| Limitless™ wireless switches and receivers | ◆ | | | ◆ |
| MICRO SWITCH™ hazardous area limit switches | ◆ | | | ◆ |
| MICRO SWITCH™ premium and standard V-basic switches | ◆ | ◆ | ◆ | ◆ |
| MICRO SWITCH™ premium and standard miniature/subminiature switches | ◆ | ◆ | ◆ | ◆ |
| MICRO SWITCH™ premium large basic switches | ◆ | ◆ | | ◆ |
| MICRO SWITCH™ watertight basic switches | ◆ | ◆ | | ◆ |
| MICRO SWITCH™ lit and unlit pushbuttons | ◆ | | ◆ | ◆ |
| MICRO SWITCH™ sealed & standard toggle switches | ◆ | | ◆ | ◆ |
| MICRO SWITCH™ sealed & standard rocker switches | ◆ | | ◆ | ◆ |
| THERMAL SENSORS | | | | |
| Discrete and packaged RTD sensors | ◆ | ◆ | ◆ | ◆ |
| Packaged temperature probes | ◆ | ◆ | ◆ | ◆ |
| Discrete thermistors | ◆ | ◆ | | |
| Precision thermostats | ◆ | ◆ | ◆ | ◆ |
| Commercial thermostats | ◆ | ◆ | ◆ | ◆ |
| Flexible heaters | ◆ | ◆ | ◆ | ◆ |
| Humidity sensors | ◆ | ◆ | ◆ | ◆ |
| SEALED SWITCHES | | | | |
| MICRO SWITCH™ sealed basic switches | ◆ | ◆ | ◆ | ◆ |
| MICRO SWITCH™ sealed limit switches | ◆ | ◆ | ◆ | ◆ |

Product Type and Industry Matrix

| HONEYWELL BRAND MATRIX | | | | | | | | | | | | | | | |
|--|-----------|-----------|------------------|---------|---------|--------|-------|-------|---------------|-----|--------|------------|---------|----------|----------------|
| Former Brand Names Now Known as Honeywell | HONEYWELL | CLAROSTAT | DATA INSTRUMENTS | ELECTRO | ELMWOOD | FENWAL | HOBBS | HYCAL | MICRO SWITCH™ | NEI | SENSYM | INDUSTRIAL | MEDICAL | MIL/AERO | TRANSPORTATION |
| ELECTROMECHANICAL SWITCHES | | | | | | | | | | | | | | | |
| BASIC | | | | | | | | | ◆ | | | ◆ | ◆ | ◆ | ◆ |
| HAZARDOUS | | | | | | | | | ◆ | | | ◆ | | | ◆ |
| LIMIT | | | | | | | | | ◆ | | | ◆ | | | ◆ |
| PUSH BUTTON | | | | | | | | | ◆ | | | ◆ | | | ◆ |
| TOGGLE | | | | | | | | | ◆ | | | ◆ | | | ◆ |
| VEHICLE | | | | | | | ◆ | | | | | ◆ | | | ◆ |
| ELECTRONIC SENSORS | | | | | | | | | | | | | | | |
| AIRFLOW | ◆ | | | | | | | | ◆ | | | ◆ | ◆ | ◆ | ◆ |
| CURRENT | ◆ | | | | | | | | ◆ | | | ◆ | ◆ | ◆ | ◆ |
| ENCODER | | ◆ | | | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| HALL-EFFECT | ◆ | | | ◆ | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| HUMIDITY | | | | | | | | ◆ | | | | ◆ | ◆ | ◆ | ◆ |
| INFRARED | ◆ | | | | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| LIQUID LEVEL | ◆ | | | | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| MAGNETORESISTIVE | ◆ | | | ◆ | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| PHOTOELECTRIC/OPTICAL | | ◆ | | | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| POSITION | ◆ | | | ◆ | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| POTENTIOMETER | | ◆ | | | | | | | | | | ◆ | ◆ | ◆ | ◆ |
| PRESSURE | | | ◆ | | | | | | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| RTD THERMISTOR | | | | | | ◆ | | | | | | ◆ | ◆ | ◆ | ◆ |
| RESOLVER | | | | | | | | | | ◆ | | ◆ | ◆ | ◆ | ◆ |
| TEMPERATURE | | | | | ◆ | ◆ | | | | | | ◆ | ◆ | ◆ | ◆ |
| THERMISTOR | | | | | | ◆ | | | | | | ◆ | ◆ | ◆ | ◆ |
| THERMOSTAT | | | | | ◆ | | | | | | | ◆ | ◆ | ◆ | ◆ |

VERTICAL MARKETS



Sensor & Switch Solutions

AIRFLOW, FORCE, AND PRESSURE SENSORS



Zephyr™ Airflow Sensors

High accuracy allows for very precise airflow measurement. These devices provide high sensitivity at very low flows, high stability, low pressure drop, linear output that saves time and money, and a low 3.3 Vdc supply voltage option. May potentially be used in medical and industrial applications.



Force Sensors

Measure the addition or backup of force, meaning the resistance of silicon-implanted piezoresistors will increase when flexed under applied force. Concentrates force directly to the silicon sensing element with the amount of resistance changing in proportion to the amount of force applied. Series include FSS, FSS-SMT, FS01/FS03, FSG, and 1865.



TruStability® Board Mount Pressure Sensors

Provide industry-leading, long-term stability, total error band, accuracy and flexibility that span low to ultra-low pressure ranges. Excellent repeatability. High overpressure and burst pressures. Allows custom calibration. Compensated and uncompensated, liquid media option. For potential use in medical and industrial HVAC applications. Series begin with HSC, SSC, TSC, and NSC.



Board Mount Pressure Sensors

Designed for customers who require a simple, cost-effective, basic performance, mV output, unamplified, high quality solution for medical and industrial applications. Often ideal for those customers who want to do their own compensation, calibration, and amplification to make use of the maximum resolution of the bare sensor output, leveraging any algorithm needed for the application. The ABP Series is temperature compensated and amplified, the TBP Series is uncompensated and amplified, and the NBP Series is uncompensated and unamplified.



Heavy-Duty Pressure Sensors and Transducers

Known for enhanced quality, reliability, and durability. Engineered with stainless steel or aerospace alloys and no internal elastomeric seals. Resistant to aggressive media and challenging environments. Series include PX2, MLH, SPT, 13 mm, and 19 mm.

CURRENT SENSORS



Digital/Inductive Current Sensors

Provide digital output that changes from Vcc to 0.4 V when sensed current exceeds operation point. Not damaged by overcurrent in the sensed conductor. Digital/inductive current sensor listings start with CSD.



Closed Loop Current Sensors

Use feedback control to provide output proportional to measured current. Engineered with enhanced accuracy and linearity to deliver fast response. Output relatively immune to electrical noise. Closed loop current sensor listings start with CSN.



Open Loop Current Sensors

Provide output proportional to measured current without using feedback control. Often preferred in battery-powered circuits due to low power requirements. Open loop current sensor listings start with CSC and CSL.

OPTICAL SENSORS



Infrared Photodiode Detectors

Offer very linear, high-speed analog output. Can sense light over broad spectrum from low visible through near infrared wavelengths. Analog detectors and digital Optoschmitt detectors are also available. Product series include SD, SDP, and SMD.



Infrared Optoschmitt Detectors

Consist of a photodiode, amplifier, voltage regulator, Schmitt trigger, and an NPN output transistor with a 10 kOhm pull-up resistor. Output rise and fall times are independent of the rate of change of incident light. Detector sensitivity has been internally temperature compensated. Series include SD5600/5610, SD5620/SD5630, and SDP8600/8610.



Infrared Low-light Rejection Phototransistors

Provide high contrast ratio in reflective applications where unwanted background reflection may exist. Consists of a phototransistor with internal base emitter shunt resistance. Transfer molding of this device provides enhanced optical centerline performance.



Infrared Photodarlington Detectors

Provide non-linear, high gain analog output. Can sense light over broad spectrum from low visible through near infrared wavelengths. Analog detectors and digital Optoschmitt detectors are also available. Product series include SD and SDP.



Infrared Emitters

Metal packaged emitters may be used in commercial/industrial applications with a glass lens that provides superior optics. Also used in commercial/industrial applications, plastic-packaged emitters are specified when a consistent infrared light source is required. Series begin with SE, SEP, and SME.



Infrared Reflective Sensors

Used when unable to locate an emitter and detector on opposing sides of an object, object is not opaque, or object presence/position detection is required. Series begin with HOA or HLC.



Infrared Phototransistors

Metal-packaged phototransistors possess higher power dissipation, whereas plastic-packaged phototransistors provide lower cost. Used in commercial/industrial analog output applications where a non-linear, fast-to-medium speed response is required. Product series begin with SD, SDP, and SMD.



Infrared Optoschmitt Sensors

Facing an Optoschmitt detector. Detector switching takes place whenever an opaque object passes through the slot between the emitter and detector. HOA09XX and HOA69XX Series utilize an IR transmissive polysulfone housing which features smooth optical faces without external aperture openings; desirable when aperture blockage from airborne contaminants is possible.



Infrared Encoder Detectors

Monolithic ICs that consist of two adjacent diodes, amplifiers, and Schmitt trigger output stages. Sensing speed and direction of mechanical motion. Catalog listings are HLC2701 and HLC2705.



Infrared Transmissive Encoders

Contain an IR LED facing a dual output encoder in a plastic-molded housing. Detector generates two output signals. May be used with an interrupter strip or disk (code wheel) to encode the rate and direction of mechanical motion. Catalog listings include HOA0901 and HOA0902.



Infrared Transmissive Sensors

Through a field of view, an infrared emitter and a photosensor are mounted facing each other. When an opaque object passes through the slot, the interruption of the infrared path is detected. Offer a variety of electro-optical characteristics and package styles. Catalog listings begin with HOA.



Liquid Level Sensors

Incorporate the principle of total optical reflection to create a fast, accurate, reliable, and cost-effective solid state sensor with no moving parts. Used for detection of liquid level or leaks, and are designed to switch digital I/Os, LEDs, coil relays, buzzers, and incandescent lamp indicators. Designed for harsh industrial environments with extremes in temperature, pressure, vibration, and shock. Catalog listings are LLE and LLN series.



Fiber Optic SERCOS Transmitters and Receivers

Transmitters convert optical input into electrical signal. Designed for data transmission in industrial LAN applications. Receivers provide digital output to indicate presence/absence of liquid. Sealed products have reverse polarity and overvoltage protection. Feature SMA fiber DIP packaging for enhanced mechanical stability and better immunity against RFI. SERCOS catalog listings begin with HFE (transmitters) or HFD (receivers).



Fiber Optic SERCOS Transmitters and Receivers

Contain two devices per module so they may communicate in opposing directions simultaneously and independently. May be used to multiplex two signals to a single fiber and where a dual fiber solution is neither possible nor economical.

SPEED SENSORS



Digital Variable Reluctance Sensors

Sense moving ferrous metal. Output signal of integrated circuit allows for direct use in digital equipment. Eliminates need for interface circuitry, reducing installation and maintenance costs. Constant output amplitude independent of speed.



Variable Reluctance Speed Sensors

Deliver direct conversion of actuator speed to output frequency. Simple, rugged devices that do not require external voltage source for operation.



Speed and Direction Sensors

Provide true zero capability, direction sensing, and precise switch point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality. A comprehensive line-up of Hall-effect and magnetoresistive sensors provide electrical compatibility to most control systems interfaces.

POSITION SENSORS CONTINUED



Magnetoresistive Sensor ICs: Nanopower Series

Ultra-sensitive devices designed to accommodate a wide range of applications with large air gaps, small magnetic fields and low power requirements. Respond to either a North or South pole applied in a direction parallel to the sensor. Can operate from a supply voltage as low as 1.65 V, promoting energy efficiency. Subminiature SOT-23 surface mount packages are available in two magnetic sensitivities to accommodate a variety of application needs.

POSITION SENSORS



SMART Position Sensors

Superior. Measurement. Accurate. Reliable. Thinking. Among the most durable and adaptable position devices available within the industry today, enabling highly accurate motion control, and improving efficiency and safety. A non-contacting sensor uses a patented combination of ASIC technology and an array of MR sensors to measure linear or angular movement of a magnet attached to a moving object.



Magnetoresistive Sensor ICs

With a built-in magnetoresistive bridge integrated on silicon and encapsulated in a plastic package, magnetoresistive sensor ICs feature an integrated circuit that responds to low fields (25 G max.) at distances up to one inch. Product listings include 2SS52MT/SS552MT omnipolar, VF401 differential, and APS00B analog digital sensor.



Hall-effect Digital Sensor ICs

Constructed from a thin sheet of conductive material, Hall-effect sensor ICs generate a high or low voltage output in response to a magnetic flux perpendicular to the surface of the sheet. Catalog listings begin with SS.



Linear Sensor ICs

Constructed from a thin sheet of conductive material, linear sensor ICs generate an analog voltage output proportional to a magnetic flux perpendicular to the surface of the sheet. Quad Hall-elements design reduces effects of mechanical or thermal stress on output and provides a stable output (SS490/SS491). Catalog listings begin with SS.



Value-added Hall-effect Sensor ICs

Consist of first-level sensors packaged in a variety of housings. Includes vane sensors, digital position sensors, and solid-state switches.

POSITION SENSORS CONTINUED



Rotary Position Encoders

Available in both mechanical and optical versions. Best suited for applications requiring panel mounted, manually operated rotary sensing. Encoder series include 510 and 600.



Conductive Plastic Potentiometers

Compact and rugged thick film devices are available in a wide range of resistance values. Use precision technology developed for military applications.



Hall-effect Rotary Position Sensors

Respond to presence or interruption of a magnetic field, using a solid-state Hall-effect IC to sense rotary movement of the actuator shaft and then producing a proportional output. Benefits include 360° operating range, low torque actuation, greatly reduced wear-out mechanisms, enhanced resistance to damage from incorrect wiring and electrical noise, integrated reverse polarity, short circuit and EMC protection.



Cermet and Wirewound Potentiometers

Compact and rugged thick film devices, these potentiometers are stable over a range of operating temperatures. Provides high power dissipation and improved resistance temperature coefficient.

THERMAL SENSORS



Flexible Heaters

Flat, molded-to-shape, spiral wrap, transparent, composite, and high-temperature configurations with single, multiple, and variable Watt densities to customize heat output to unique applications. Flexible resistive heaters - wire wound and etched foil. Wide variety of installations. On-board thermal control components can be added, such as integral thermistor, thermostat, RTD, or thermocouple controls.



Packaged Temperature Probes

Compact and lightweight. Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion.



Commercial Thermostats

Half inch snap-action, bi-metallic, SPST non-hermetic thermostats. Automatic or manual-reset options. Phenolic or ceramic housings. Both with a wide variety of mounting brackets and terminals.

THERMAL SENSORS CONTINUED



Discrete and Packaged RTD Sensors

Platinum-based thin film RTDs, laser trimmed for accuracy and interchangeability. Offer stable, fast, linear inputs. Accurate and interchangeable without recalibration. Plastic and ceramic, miniaturized, and surface-mount housings (including printed circuit board termination). Series include HEL-700, HRTS, and TD.



Precision Thermostats

Bi-metallic, snap-action, SPST thermostats. Hermetic/non-hermetic devices available. Enhanced reliability versions meet stringent requirements of military and aerospace industries for dielectric strength, moisture, resistance, vibration, and shock. Available in low profile, logic level, manual, and automatic reset.



Humidity Sensors

Configured with integrated circuitry to provide on-chip signal conditioning. Laser-trimmed sensors designed to offer stable, low-drift performance and enhanced accuracy with calibration. Absorption-based sensors provide temperature and %RH.



Discrete Thermistors

Change resistance with change in temperature. This change can occur in the surrounding temperature or by passing a current through the thermistor to self-heat. Available in a wide range of resistance values. Variety of packages and styles from leaded devices to surface-mount versions.



HumidCon™ Digital Humidity/Temperature Sensors

Combined humidity and temperature sensor in an ultra-small package. Industry-leading long-term stability, reliability, and accuracy. True, temperature-compensated digital I²C and SPI output. Wide operating temperature range. Offers customers a lowest total cost solution and helps reduce manufacturing costs. For potential use in industrial and medical applications. Series include HIIH6000, HIIH6100, HIIH7000, HIIH8000 and HIIH9000.



MICRO SWITCH™ Heavy-duty Limit Switches

Offer a rugged, die-cast body with multiple mounting and actuator options. Low- and high- temperature construction and factory sealed, pre-wired versions available. Includes boss-and-socket head design for secure head-to-body retention, unique all-metal drive train for consistent operating characteristics even at high temperature, and self-lifting pressure plate terminals to save wiring time. Type 316 stainless steel housing available.



MICRO SWITCH™ Global Limit Switches

Design meets the requirements of the International Electrotechnical Commission (IEC) for worldwide acceptance. Rugged electromechanical switches detect the position of equipment by physical contact with the switch actuator. Direct acting (NC) contacts available. Product series include GLA, GLC, GLD, GLE, 91MCE, SZL-VL, and SZL-WL.



MICRO SWITCH™ Medium-duty Limit Switches

Featuring a small metal package size and a variety of operating characteristics, heads, actuators, styles, and terminations. Medium-duty product series include 14CE/914CE, LS, BZE6/V6, and SL1.



MICRO SWITCH™ Sealed and Standard Toggle Switches

Hermetic and environmentally sealed toggle switches, enhanced reliability with MICRO SWITCH™ technology. Honeywell drives in a center pendulum for ultimate stabilization. Series include AT, TS, TW, ET, NT, and TL.



MICRO SWITCH™ Hazardous Area Switches

Electromechanical switches designed specifically to extinguish flame paths in potentially explosive environments. Major products: 14CE100, GXE, GSX, EX, and CX. Smaller sizes, lower cost options, analog output available. LSX, BX, EX weather-sealed for indoor or outdoor use, as low as -40 °C [-40 °F]. CLSX cable-pull version available.



MICRO SWITCH™ V-Basic Switches

Often used for simple or precision on/off, end-of-limit, presence/absence, pressure, temperature, and manual operator interface applications. UL, cUL, ENEC, CQC approvals. Current ratings from 0.1 A to 26 A.



MICRO SWITCH™ Miniature and Subminiature Switches

Designed for high precision, presence/absence detection, where physical contact with an object is permissible and in simple on-and-off actions. Compact, highly reliable, and rugged switches. Premium switches include SM and SX series. Standard switches include ZD, ZM, ZM1, ZV, ZW, and ZX series.



MICRO SWITCH™ Watertight Miniature Switches

Designed for harsh-duty, wash down areas. Rugged yet precise, provides machine control for turning circuits on and off. Can be used in wide range of challenging environments, IP67 (except terminal ports). Series include ZD, ZW, and V15W.

Relialign™ Door Interlock Switches

Electromechanical residential (RDI) and commercial (CDI) door interlocks designed for swing door applications. Holds the door in place and prevents it from being opened when not desired (e.g. the elevator/lift car, dumb waiter, etc. is not present at the door). Relialign™ door interlocks feature two series: RDI and CDI.



Limitless™ Wireless Limit Solutions

Broad offering of wireless switches and pressure sensors, wireless hazardous area switches, wireless operator interfaces, single switch adaptors, and wireless non-contact switches. Enables presence, absence or position detection in applications where traditional wired products are not feasible due to functionality and/or cost. Ability to reconfigure and network multiple switches with personalized addresses. Products designed for compatibility with point-to-point or ISA100 2.4 Ghz wireless networks.



MICRO SWITCH™ Large Basic Switches

Worldwide standard basic switch. Broad range of ratings, operating actions, and terminations. Low operating force and differential travel. Current ratings from 10 A to 25 A. Designed to withstand 100K operations at full load or 10M for mechanical life. Series include BZ/BA/BM/BE, DT, MT, 3MN, 6AS, AC, and DM.



MICRO SWITCH™ Lit and Unlit Pushbutton Switches

Designed to enhance manual operation with a flexible and attractive interface. Snap-in surface products are easy to apply, operate, and maintain. Switch units are potted in corrosion-resistant metal enclosures. Series include PB, AML, and MML.



MICRO SWITCH™ Sealed and Standard Rocker Switches

Unprecedented line-up of full-size and miniature rocker switches. One- or 2-pole switches in single-throw and double-throw maintained and momentary circuits. Designed to fit industry-standard mounting holes. Series include AML and MML.



MICRO SWITCH™ Key-Operated Safety Switches

Designed for use on machinery where key removal brings the machine to an immediate safe condition. Miniature switches for smaller openings. Reduced installation time and cost. Series include GK, GKM, GKE, GKN, and GKR/L.



MICRO SWITCH™ Safety Limit Switches

Electromechanical limit switches designed to be readily accessible for emergency stop applications. Reliability and safety in compact, cost-effective switches. Series include 24CE/924CE, GSS, and GSX.



MICRO SWITCH™ Cable-Pull Safety Switches

Designed to provide emergency stop protection for exposed conveyor lines. Cost-effective means of providing an emergency stop signal compared to multiple emergency stop push buttons. Internal mechanism latches on both slackened cable (push) and pulled cable. Capability enhances productivity by eliminating nuisance stops due to variations in temperature, stretch of cable over time, and other application variables. Product series include 1CPS, 2CPS.



MICRO SWITCH™ Non Contact Safety Switches

Magnetically operated, non-contact safety switches designed for use in many machine-guarding applications. Tamper-proof, standalone safety switches that can often be used to switch relays, contacts, or safety relays directly.





Key and Rotary Switches

Custom engineered. Environmentally sealed. O-rings help keep dirt and moisture out of contact chamber and prolong switch life. Two, three, and four-position switches. Honeywell can provide up to 300 unique key codes and match an existing key cut. Integral connector and screw terminal versions.



Custom Controls

For applications requiring electrical/ electromechanical control with multi-functions: throttle controls, indicator lights, custom switches, and integrated panel assemblies. Can be used in severe applications and be sealed or unsealed.



Hour Meters

Records and tracks total elapsed time of equipment usage. Parts are in-process tested for functionality and timing accuracy before shipping. Series include LM, 20000, 82000, and 85000.



Push-Pull Switches

Robust. Environmentally sealed. Activates or disrupts a particular equipment function. Sliding contact switch incorporating two circuits with multiple combinations. Available with five different circuitry options.



Shifters, Turn Signals, and Proportional Retarders

Crafted for enhanced off-highway application performance, precision, direction, and speed control. Sealed (IP67) and built to withstand rugged conditions and harsh environments. Can be configured as transmission controls for forward/neutral/reverse and gear selection. Offer headlamp, wiper, and horn controls.



Pressure and Vacuum Switches

Sense a change in pressure or vacuum, opening or closing an electrical circuit when designated point is reached. Featuring set points from 0.5 psi to 4500 psi. Switches from 1.1 in to 22 in Hg are also available. Enhanced repeatability of set points and wide media capability. Uses a diaphragm or quad seal and piston to receive actuating media. Series include 1000, 5000, HP, HE, LP, LE, and V.

AEROSPACE



MICRO SWITCH™ Sealed Basic Switches

Basic precision switches enclosed within a corrosion-resistant aluminum housing that seals the switch contacts from contamination. Qualified to MIL-PRF-8805. Excel in applications requiring compactness, lightweight, accurate repeatability, and extended life. Series include SE/XE, HM, and HS.



Key Focus Areas for TTI and Honeywell



Medical



- Dialysis Machines
- Oxygen Concentrators
- Infusion Pumps
- Blood Analyzers
- Burn Beds
- Dental Chairs
- Electric Wheel Chairs
- Respirators
- Chemistry Analyzers
- Lab Automation
- Sleep Apnea (CPAP) Machines
- Ventilators
- Anesthesia Delivery
- Hospital Hardware
- Surgical Instrument (Endoscopy, Fluid Management Systems)

Commercial Air Military/Aerospace

- Landing Gear
- Air Frame
- Cargo Bay Doors
- Engines
- Military Ground Vehicles
- Unmanned Vehicles Air/Ground
- Weapons





Discrete Manufacturing
Process Manufacturing
Material Handling
HVAC & Refrigeration
Power Generation
Commercial Appliances
Measurement & Testing Machinery
Alternative Energy

Industrial

Instrumentation
Electrical Machinery
Elevators
Compressors & Pumps
Industrial Automation
Valves/Flow Controls
Motors/Drives
Test & Measurement Equipment
Oil and Gas Equipment

Transportation

Agriculture
Bus
Construction
Industrial/Utility/Specialty
Cranes
Fork Lifts
Tractors
Marine
Material Handling
Rail – Locomotive
Recreation – Sport Vehicles (ATV, PWC)
Semi Trucks
Navigation Control
HVAC Control



Industrial Matrix

| Sub-Vertical | Features | Focus Products |
|---|---|--|
| INDUSTRIAL | | |
| MOTORS/DRIVES | Generates a high or low voltage output responsive to a magnetic flux perpendicular to the surface of the sheet. | Hall-effect Sensor ICs |
| | The integrated circuit provides a digital output in response to very low magnetic fields. | Magneto-resistive Sensor ICs |
| | Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. | Temperature Probes |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Provides high power dissipation and improved resistance temperature coefficient. | Potentiometers |
| VALVES FLOW CONTROLS | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensors |
| | Designed specifically to extinguish flame paths in potentially explosive environments. | MICRO SWITCH™ Hazardous Area Switches |
| | Beneficial for remote monitoring where wiring or wire maintenance is not physically possible or economically feasible. | Limitless™ Wireless Limit Switches |
| | Excellent in applications requiring simple on-and-off actions. | MICRO SWITCH™ Basic Switches |
| | Generates a high or low voltage output responsive to a magnetic flux perpendicular to the surface of the sheet. | Hall-effect Sensor ICs |
| ELEVATORS | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Used for conveyor runs within defined system zones. | Cable Pull |
| | Generates a high or low voltage output responsive to a magnetic flux perpendicular to the surface of the sheet. | Hall-effect Sensor ICs |
| | Electromechanical door interlock designed for residential (RDI) or commercial (CDI) swing door applications. | RDI (residential) and CDI (commercial) Door Interlocks |
| | Accurate, effective design, flexible. | SMART Position Sensors |
| | Engineered with enhanced accuracy and linearity to deliver fast response. | Current Sensors |
| | Wide electrical capability from electronic duty to power duty switches. | MICRO SWITCH™ Rocker Switches |
| Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches | |
| HVAC & R | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Damper control for heating, ventilation, and air conditioning systems. | Airflow Sensors |
| | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Absorption-based sensors can provide both temperature and %RH. | Humidity Sensors |
| | Excellent in applications requiring simple on-and-off actions. | MICRO SWITCH™ Basic Switches |
| Generates a high or low voltage output responsive to a magnetic flux perpendicular to the surface of the sheet. | Hall-effect Sensor ICs | |

| Sub-Vertical | Features | Focus Products |
|--------------------------------|---|---------------------------------------|
| INDUSTRIAL | | |
| ALTERNATIVE ENERGY | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensors |
| | Uses feedback control to provide output proportional to measured current. Immune to electrical noise | Current Sensors |
| | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Beneficial for remote monitoring where wiring or wire maintenance is not physically possible or economically feasible. | Limitless™ Wireless Limit Switches |
| | Intended for use in safety applications for guarding, visible on machinery. | MICRO SWITCH™ Safety Switches |
| INDUSTRIAL AUTOMATION | Broad range of actuators and terminations with rugged, sealed housings. | MICRO SWITCH™ Limit Switches |
| | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Enclosed Basic Switches |
| | Intended for use in safety applications for guarding, visible on machinery. | MICRO SWITCH™ Safety Switches |
| | Generates a high or low voltage output responsive to a magnetic flux perpendicular to the surface of the sheet. | Hall-effect Sensor ICs |
| | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensors |
| | Beneficial for remote monitoring where wiring or wire maintenance is not physically possible or economically feasible. | Limitless™ Wireless Limit Switches |
| | Designed specifically to extinguish flame paths in potentially explosive environments. | MICRO SWITCH™ Hazardous Area Switches |
| | Wide electrical capability from electronic duty to power duty switches. | MICRO SWITCH™ Rocker Switches |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |
| COMPRESSORS & PUMPS | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Excellent repeatability of set points at temperature extremes. | Pressure Switches |
| | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Beneficial for remote monitoring where wiring or wire maintenance is not physically possible or economically feasible. | Limitless™ Wireless Limit Switches |
| | Best suited for applications requiring panel mounted, manually operated rotary sensing. | Rotary Hall-effect Position Sensors |
| | Records and tracks total elapsed time of equipment usage. | Hour Meters |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |



Transportation Matrix

| Sub-Vertical | Features | Focus Products |
|--|--|-------------------------------------|
| TRANSPORTATION | | |
| VEHICLE BODY (CRANE) | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Industry-leading, long-term stability (TruStability™) for harsh conditions. | Board-mount Pressure Sensors |
| | Includes potentiometer sensors for linear, rotary position, or displacement measurement with PTFE bearings and precious metal multi-finger contact wipers. | Position Sensors |
| | Ideal for sensing the speed of an input or output shaft. | Speed and Direction Sensors |
| | Ideal for sensing the angle position of transmission components in the shift linkage. | Rotary Hall-effect Position Sensors |
| | Plays an important role in automation control where precision positioning is required. | Linear Hall-effect Sensor ICs |
| | Anticipates a hand grabbing a door handle and, in turn, wakes up the identification unit of a passive entry security system. | Keyless Access Sensors |
| | Available as focused or unfocused for sensing diffused surfaces. | Infrared Sensors |
| | Designed for high pressure applications that involve measurement of hostile media in harsh environments. | Heavy-duty Pressure Transducers |
| | Records and tracks total elapsed time of equipment usage. | Hour Meters |
| | Custom engineered. Environmentally sealed. O-rings help keep dirt and moisture out to prolong switch life. | Key Switches |
| | Excellent repeatability of set points at temperature extremes and wide media capability. | Pressure Switches |
| | Robust. Environmentally sealed. Activates or disrupts a particular equipment function. | Push-Pull Switches |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |
| | Precision snap-action switches with sealed in rugged housings, used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| VEHICLE CHASSIS | Crafted for enhanced off-highway application performance, precision, direction, and speed control. | Shifter/Turn Signals |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensors |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensors |
| | Ideal for sensing the speed of an input or output shaft. | Speed and Direction Sensors |
| | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Industry-leading long-term stability (TruStability™) for harsh conditions. | Board-mount Pressure Sensors |
| Designed for high pressure applications that involve measurement of hostile media in harsh environments. | Heavy-duty Pressure Transducers | |
| Excellent repeatability of set points at temperature extremes and wide media capability. | Pressure Switches | |



| Sub-Vertical | Features | Focus Products |
|--|---|-------------------------------------|
| TRANSPORTATION | | |
| VEHICLE ENGINE | Response to temperature change is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. | Packaged Temperature Probes |
| | Ideal for sensing the speed of an input or output shaft. | Speed and Direction Sensors |
| | Best suited for applications requiring panel mounted, manually operated rotary sensing. | Rotary Hall-effect Position Sensors |
| | Excellent repeatability of set points at temperature extremes and wide media capability. | Pressure Switches |
| | Detects and signals flow change in range of 10 to 85,000 gallons per minute. | Flow Switches |
| | Uses a diaphragm or quad seal and piston to receive actuating media. | Vacuum Switches |
| VEHICLE BODY (TRANSMISSION) | Plays an important role in automation control where precision positioning is required. | Linear Hall-effect Sensor ICs |
| | Ideal for sensing the speed of an input or output shaft of an automatic transmission. | Speed and Direction Sensors |
| | Response to temperature change is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Designed for high-pressure applications that involve measurement of hostile media in harsh environments. | Heavy-duty Pressure Transducers |
| VEHICLE BODY (FRONT LOADER) | Excellent repeatability of set points at temperature extremes and wide media capability. | Pressure Switches |
| | Response to temperature change is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Industry-leading, long-term stability (TruStability™) for harsh conditions. | Board-mount Pressure Sensors |
| | Generates a high or low voltage output responsive to a magnetic flux perpendicular to the surface of the sheet. | Hall-effect Sensor ICs |
| | Ideal for sensing the speed of an input or output shaft. | Speed and Direction Sensors |
| | Available as focused or unfocused for sensing diffused surfaces. | Infrared Sensors |
| | Anticipates a hand grabbing a door handle and, in turn, wakes up the identification unit of a passive entry security system. | Keyless Access Sensors |
| | Designed for high pressure applications that involve measurement of hostile media in harsh environments. | Heavy-duty Pressure Transducers |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensor |
| | Records and tracks total elapsed time of equipment usage. | Hour Meters |
| | Custom engineered. Environmentally sealed. O-rings help keep dirt and moisture out to prolong switch life. | Key Switches |
| | Robust. Environmentally sealed. Activates or disrupts a particular equipment function. | Push/Pull Switches |
| | Crafted for enhanced off-highway application performance, precision, direction, and speed control. | Shifters, Turn Signals |
| | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |
| | Ideal for sensing the speed of an input or output shaft. | Speed and Direction Sensors |
| | These sensitive magnetic sensors offer reverse polarity protection and deliver stable output. | Hall-effect Sensor ICs |
| Ideal for sensing the angle position of transmission components in the shift linkage. | Rotary Hall-effect Position Sensors | |
| Plays an important role in automation control where precision positioning is required. | Linear Hall-effect Sensor ICs | |

Aerospace & Commercial Air Matrix

| Sub-Vertical | Features | Focus Products |
|---------------------------------|---|---|
| AEROSPACE | | |
| PILOT CONTROLS | Compact and rugged thick film devices, these potentiometers are stable over a range of operating temperatures. | Precision Potentiometers |
| DOOR & SLIDES | Precision snap-action switches with sealed-in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Products include integral gearing, environmental protection, redundant channels, and higher-level assemblies. | Position Sensor Assemblies |
| | Rugged stainless steel housings, qualified to MIL-PRF-8805. High-temperature construction. | MICRO SWITCH™ Sealed Basic Switches |
| ENVIRONMENTAL CONTROLS | Integrated controls for the highest system accuracy and reliability. | Flexible Heaters |
| | Often used to indicate gas or liquid pressure in hydraulics and fire suppression systems. Meets military and DO-160 standards. | MICRO SWITCH™ Pressure Switches (Aerospace Grade) |
| | Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. | Packaged Temperature Probes |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| ENGINE & APU SYSTEMS | Provides true zero capability, direction sensing, and precise switch point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality. | Speed – Hall-effect Sensors |
| | Deliver direct conversion of actuator speed to output frequency. Simple, rugged devices that do not require external voltage source for operation. | Variable Reluctance Speed Sensors |
| | Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. | Packaged Temperature Probes |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostat |
| AERO STRUCTURES | Precision snap-action switches with sealed-in rugged housings are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Rugged stainless steel housings, qualified to MIL-PRF-8805. High-temperature construction. | MICRO SWITCH™ Sealed Basic Switches |
| FLIGHT CONTROLS SURFACE | Precision, snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |



| Sub-Vertical | Features | Focus Products |
|---|---|-----------------------------------|
| AEROSPACE | | |
| FLIGHT DECKS | Compact and rugged thick film devices, these potentiometers are stable over a range of operating temperatures. | Potentiometers |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |
| CARGO SYSTEMS | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |
| LANDING GEAR WHEELS & BRAKES | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Rugged stainless steel housings, qualified to MIL-PRF-8805. High-temperature construction. | MICRO SWITCH™ Sealed Switches |
| | Provides true zero capability, direction sensing, and precise switch point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality. | Hall-effect Speed Sensors |
| | Provides true zero capability, direction sensing, and precise switch point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality. | Variable Reluctance Speed Sensors |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |



Military Matrix

| Sub-Vertical | Features | Focus Products |
|--------------------------|---|-----------------------------------|
| MILITARY GROUND | | |
| OPERATOR CONTROLS | Records and tracks total elapsed time of equipment usage. | Hour Meters |
| | Available as focused or unfocused for sensing diffused surfaces. | Infrared Sensors |
| | Custom engineered. Environmentally sealed. O-rings help keep dirt and moisture out to prolong switch life. | Key Switches |
| | Anticipates a hand grabbing a door handle and, in turn, wakes up the identification unit of a passive entry security system. | Keyless Access Sensors |
| | Robust. Environmentally sealed. Activates or disrupts a particular equipment function. | Push-Pull Switches |
| | Crafted for enhanced off-highway application performance, precision, direction, and speed control. | Shifters/Turn Signals |
| | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| | Large selection of circuitries, contacts, bushings, and lever designs. | MICRO SWITCH™ Toggle Switches |
| ENGINE SYSTEMS | Integrated controls for the highest system accuracy and reliability. | Flexible Heaters |
| | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Provides true zero capability, direction sensing, and precise switch point measurement. Speed sensor diagnostics provide information on air gap and sensor failure for increased reliability and functionality. | Hall-effect Speed Sensors |
| | Deliver direct conversion of actuator speed to output frequency. Simple, rugged devices that do not require external voltage source for operation. | Variable Reluctance Speed Sensors |
| | Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. | Packaged Temperature Probes |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| FUEL SYSTEMS | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Response to temperature changes is extremely rapid due to the inherently low mass of the disc and the small size of the product. | Temperature Sensors |
| BRAKE SYSTEMS | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| HYDRAULIC SYSTEMS | Calibrated and temperature compensated. Stress isolated package design with a ratiometric output. | Heavy-duty Pressure Transducers |
| | Excellent repeatability of set points at temperature extremes and wide media capability. | Pressure Switches |
| | Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. | Packaged Temperature Probes |



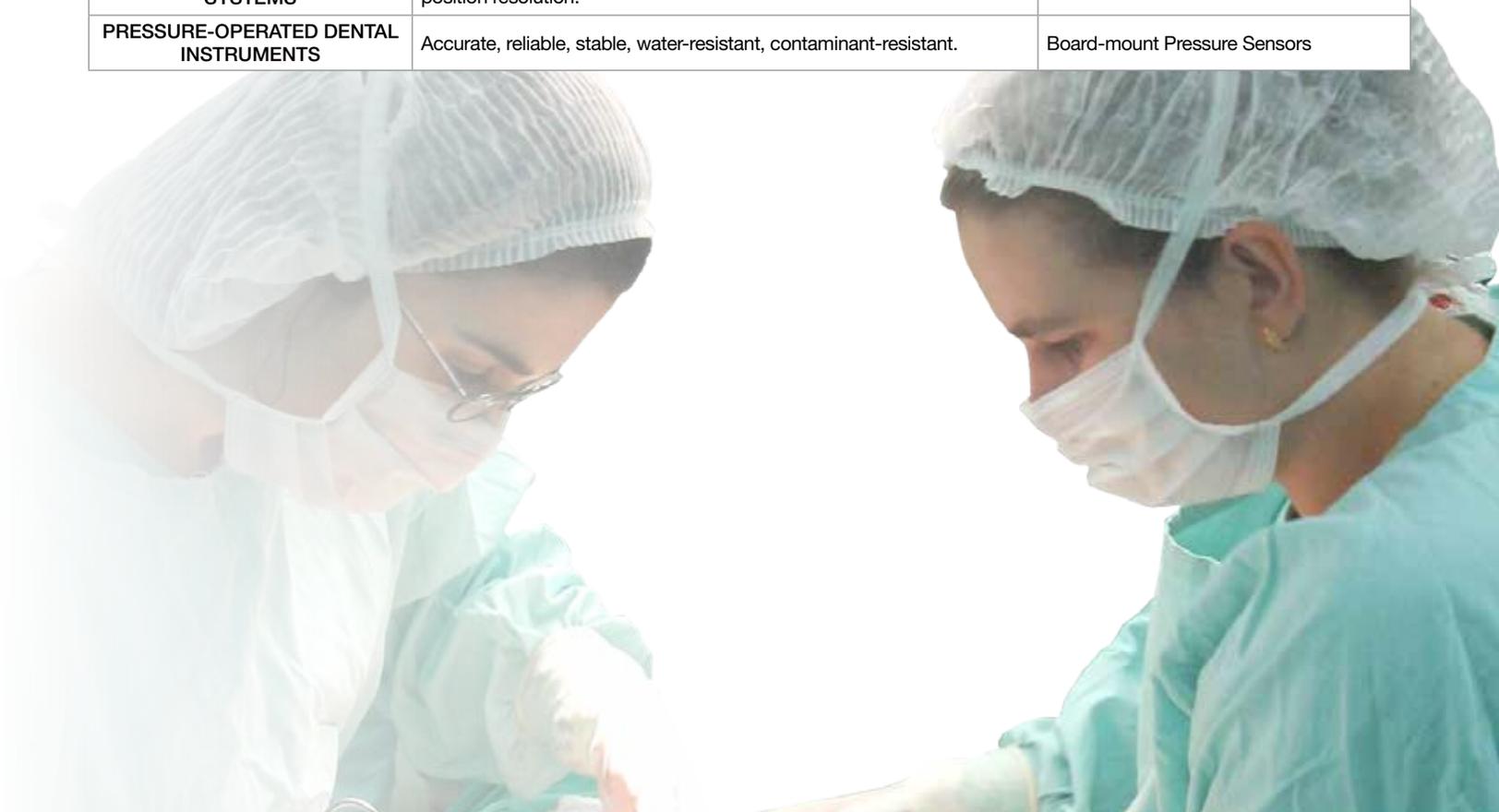
| Sub-Vertical | Features | Focus Products |
|--------------------------------|--|-------------------------------------|
| MILITARY GROUND | | |
| WHEELS & SUSPENSION | Often used for vehicle tilt control and crane/boom control sensing. Six degrees of freedom senses rotation rate about the roll, pitch, and yaw axes. | Inertial Measurement Units |
| | Ideal for sensing the speed of an input or output shaft. | Speed and Direction Sensors |
| WEAPON SYSTEMS | Precision, snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Compact and rugged thick film devices, these potentiometers are stable over a range of operating temperatures. | Potentiometers |
| | Provide non-contact measurement for 360° sensing, enhanced accuracy, resolution, and repeatability under severe environmental conditions. | Resolvers |
| | Rugged stainless steel housings, qualified to MIL-PRF-8805. High-temperature construction. | MICRO SWITCH™ Sealed Basic Switches |
| | Automatic and manual reset options for temperature tolerance and mechanical configurations. | Thermostats |
| DOORS | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Rugged stainless steel housings, qualified to MIL-PRF-8805. High-temperature construction. | MICRO SWITCH™ Sealed Basic Switches |
| VEHICLE POSITION/TILT | Often used for vehicle tilt control and crane/boom control sensing. Six degrees of freedom senses rotation rate about the roll, pitch, and yaw axes. | Inertial Measurement Units |
| | Precision snap-action switches with sealed in rugged housings, are used to detect presence or absence in areas with physical contact. | MICRO SWITCH™ Limit Switches |
| | Consists of first-level sensors packaged in a variety of housings. Includes vane sensors, digital position sensors, and solid-state switches. | Hall-effect Sensor ICs |
| | Most accurate linear position sensor available in the industry, determines the position of a magnet attached to a moving object. | SMART Position Sensors |



Medical Matrix

| Sub-Vertical | Features | Focus Products |
|-------------------------------------|---|---|
| RESPIRATORY | | |
| ANESTHESIA DELIVERY MACHINES | Improves patient comfort, eases patient breathing, reliable. | Airflow Sensors |
| | Quiet, cost-effective, efficient, effective, accurate. | Hall-effect Magnetic Sensor ICs |
| | Stable, easy to use, accurate, improves patient safety, easy to design. | Heavy-duty Pressure Transducers |
| | Flexible, cost-effective, small size. | Thermistors |
| OXYGEN CONCENTRATORS | Improves comfort, eases patient breathing, quiet, portable, reliable. | Airflow Sensors |
| | Accurate, reliable, readable, rugged. | Hour Meters |
| | Stable, sensitive, accurate, reliable, cost-effective, efficient. | Board-mount Pressure Sensors |
| | Sensitive, accurate, reliable, cost-effective, efficient. | Heavy-duty Pressure Transducers |
| SLEEP APNEA MACHINES | Accurate, reliable, extended life, one-stop shopping. | Pressure Switches |
| | Improves comfort, eases patient breathing, quiet, portable, reliable. | Airflow Sensors |
| | Flexible, customizable, improves patient comfort, improves patient safety, stable, easy to implement. | Flexible Heaters |
| | Quiet, cost-effective, improves patient safety, efficient, effective, accurate. | Hall-effect Magnetic Sensor ICs |
| | Accurate, flexible, cost-effective, durable. | Humidity Sensors |
| | Stable, reliable, efficient, accurate, sensitive. | Board-mount Pressure Sensors |
| VENTILATORS | Accurate, effective design, flexible. | Thermistors and Packaged Temperature Probes |
| | Improves comfort, eases patient breathing, quiet, portable, reliable. | Airflow Sensors |
| | Flexible, customizable, improves patient comfort, improves patient safety, stable, easy to implement. | Flexible Heaters |
| | Quiet, cost-effective, improves patient safety, efficient, effective, accurate. | Hall-effect Magnetic Sensor ICs |
| | Accurate, flexible, cost-effective, durable. | Humidity Sensors |
| | Stable, reliable, efficient, accurate, sensitive. | Board-mount Pressure Sensors |
| | Sensitive, accurate, reliable, cost-effective, efficient. | Heavy-duty Pressure Transducers |
| KIDNEY DIALYSIS MACHINES | | |
| KIDNEY DIALYSIS MACHINES | Flexible, customizable, improves patient comfort, improves patient safety, stable, easy to implement. | Flexible Heaters |
| | Reliable, sensitive, stable. | Force Sensors |
| | Quiet, cost-effective, improves patient safety, efficient, effective, accurate. | Hall-effect Magnetic Sensor ICs |
| | Reliable, works in contaminated environments, enables maximum position resolution. | Infrared Sensors |
| | Stable, efficient, accurate, easy to design in, small, extended life. | Board-mount Pressure Sensors Heavy-duty Pressure Transducers |
| | Allows application flexibility, cost-effective, small. | Thermistors |
| INFUSION AND INSULIN PUMPS | | |
| INFUSION & INSULIN PUMPS | Flexible, customizable, improves patient comfort, improves patient safety, stable, easy to implement. | Flexible Heaters |
| | Reliable, sensitive, stable. | Force Sensors |
| | Quiet, cost-effective, improves patient safety, efficient, effective, accurate. | Hall-effect Magnetic Sensor ICs |
| | Reliable, works in contaminated environments, enables maximum position resolution. | Infrared Sensors |
| | Accurate, easy to design in, stable. | Board-mount Pressure Sensors |
| HOSPITAL DIAGNOSTICS | | |
| GAS CHROMATOGRAPHY | Improves comfort, eases patient breathing, quiet, portable, reliable. | Airflow Sensors |
| HEMATOLOGY ANALYZERS | Reliable, works in contaminated environments, enables maximum position resolution. | Infrared Sensors |
| BLOOD ANALYZERS | Stable, reliable, efficient, accurate, sensitive. | Board-mount Pressure Sensors |
| | Flexible, cost-effective, small size. | Thermistors |

| Sub-Vertical | Features | Focus Products |
|--|---|---------------------------------|
| PATIENT MONITORING SYSTEMS | | |
| RESPIRATORY MONITORS | Improves patient comfort, eases patient breathing, reliable. | Airflow Sensors |
| RESPIRATORY MONITORS BLOOD PRESSURE MONITORS | Improves comfort, eases patient breathing, quiet, portable, reliable. | Board-mount Pressure Sensors |
| BLOOD GLUCOSE MONITORS | Improves patient safety with enhanced stability and low drift, fast response time, easy to design in, portable. | Board-mount Pressure Sensors |
| TEMPERATURE MONITORS | Flexible, cost-effective, small size. | Thermistors |
| HOSPITAL HARDWARE | | |
| MEDICATION DISPENSING CABINETS | Allows for enhanced security, minimizes medication dispensing errors, reliable, cost-effective, energy-efficient, size reduction, on-time delivery. | Hall-effect Magnetic Sensor ICs |
| MEDICAL INCUBATORS | Stable, reliable, allows application flexibility, cost effective, durable. | Humidity Sensors |
| BLOOD PRESSURE MONITORS | Portable, stable, accurate. | Board-mount Pressure Sensors |
| HOSPITAL BEDS | Accurate, repeatable, durable, effective design, small, light weight. | Position Switches |
| | Accurate, reliable, stable. | Board-mount Pressure Sensors |
| SURGICAL INSTRUMENTS | | |
| SURGICAL FLUID MANAGEMENT SYSTEMS | Rugged design, stable, reliable, portable and energy-efficient. | Force Sensors |
| | Accurate, improves patient safety, easy to design in. | Board-mount Pressure Sensors |
| DENTAL EQUIPMENT | | |
| DENTAL IMAGING SYSTEMS & DENTAL CHAIRS | Accurate, energy-efficient, fast response, reliable. | Hall-effect Magnetic Sensor ICs |
| DENTAL IMAGING SYSTEMS | Reliable, works in contaminated environments, enables maximum position resolution. | Infrared Sensors |
| PRESSURE-OPERATED DENTAL INSTRUMENTS | Accurate, reliable, stable, water-resistant, contaminant-resistant. | Board-mount Pressure Sensors |



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