

PARTNERS PROVIDING **TECHNICAL SAFETY & PRODUCTIVITY SOLUTIONS.**

Transportation Products



Honeywell



tti.com

TRANSPORT YOUR BUSINESS TO A BETTER PLACE: LEADING THE RACE

Honeywell is committed to providing the right product for your application.

Whether you need a standard product or a highly customized solution, our sales and engineering teams have decades of experience in the Transportation industry. We understand your applications and work diligently to ensure we provide a solution that optimally meets your technical and financial needs. Our unique combination of a broad product portfolio, deep technical capabilities and extensive application experience culminates into a powerful ability to meet your design needs.

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TTI, Inc., a world-leading specialist distributor of electronic components, has a long-term strong partnership with Honeywell Sensing and IoT investing in inventory and technical support for new product introductions.

TTI's Transportation sales team is poised to assist you in design and development activity to find the optimum solution from Honeywell's broad sensor product offering within Automotive, Electric, Commercial, and Off-Road vehicle applications.

For technical support, email: tti.sensors@de.ttiinc.com

The Specialist in Electronic Component Distribution: www.ttiEurope.com/sensors



TRANSPORTATION ATTITUDE REFERENCE SENSORS (TARS-IMU)



The Transportation Attitude Reference System or TARS-IMU is a packaged sensor array designed to report vehicle angular rate, acceleration, and attitude data for demanding applications in industries such as heavy-duty and off-highway transportation.

FEATURES

- Reports angular rate, acceleration, and inclination
- Ruggedized PB8 thermoplastic housing
- IP67 and IP69K certified
- Advanced filtering of raw sensor data
- Optional metal guard for added protection
- Supports 5 V and 9 V to 36 V vehicle power systems
- Operating temperature of -40°C to 85°C [-40°F to 185°F]
- Small form factor

BENEFITS

- Enables semi-autonomous vehicle operation and enhanced efficiency and productivity
- Suitable for the most demanding application and environmental conditions
- Improved positioning accuracy
- Minimizes unwanted noise and vibrations



APPLICATIONS

- Safety, productivity, and comfort functions on agricultural, mining, material handling, platform lift, and construction equipment
- Cab/equipment leveling
- Tip avoidance/stability control
- Operator-assisted control

COMMERCIAL-GRADE SEALED TOGGLE SWITCHES: NT & MT (MINIATURE) SERIES

Honeywell MICRO SWITCH NT and MT toggle switches meet the need for a rugged, cost-effective, panel-mounted, sealed toggle. These switches are suitable for applications in many demanding outdoor environments where the panels are subjected to vibration from equipment, dust and splashing or hose-directed water.



FEATURES

- NEMA 3, 3R, 4, 13 and IP67/68
- UL recognized, CSA certified, and CE certified
- Three popular styles of termination and many configuration options
- Larger standard metal or plastic levers
- Optional “Easy Start” threaded bushing
- MT Series smaller behind-panel size

BENEFITS

- Environmental sealing for demanding applications
- Qualified for global use
- Configurable to your specific needs
- Well suited for gloved-hand operation.
- Quick alignment of the mounting nut to minimize any cross threading
- Enables more compact designs

APPLICATIONS

- Machine control applications in harsh environments, where heads up operation is required or controls are subject to splashed or sprayed water, dust and dirt
- Concrete pumping
- Cranes
- Material handling
- Boom trucks
- Remote controls
- Platform lifts
- Road construction equipment
- Agricultural equipment

HONEYWELL OFFERS AN EXTENSIVE RANGE OF TOGGLES SWITCHES INCLUDING TS, MT, NT, TL, TW, AT, AND ET SERIES:

<https://sensing.honeywell.com/switches/toggle-switches>



MILITARY-GRADE SEALED TOGGLE SWITCHES: TL SERIES

The robust design of the TL Series toggle is well-suited for many military, aerospace, and other demanding applications where reliability is essential, including environments where the panels are subjected to mechanical shock, vibration, and temperature extremes as well as dust, splashing or hose-directed water. A long history in military and aerospace applications has shown the TL Series toggle provides reliable performance with long operating life under the toughest conditions.



FEATURES

- MIL-DTL-3950 qualified, UL recognized, CSA certified, and CE approved
- 1-, 2-, and 4-pole, 2- and 3-position, maintained and momentary toggle action
- Optional locking levers for critical applications
- Step-design case
- Choice of silver alloy or gold-plated contacts

BENEFITS

- Designed to withstand the most demanding indoor and outdoor applications
- Qualified for global use
- Configurable to your specific needs
- Added space between terminals to prevent shorting

APPLICATIONS

- Applications requiring MIL-DTL-3950 qualification or any application requiring a sealed toggle with a higher tolerance to vibration than conventional commercial grade toggles
- Military and commercial aircraft and helicopters
- Aviation ground support equipment
- Military land vehicles
- High vibration applications



HONEYWELL OFFERS AN EXTENSIVE RANGE OF TOGGLES SWITCHES INCLUDING TS, MT, NT, TL, TW, AT, AND ET SERIES:

<https://sensing.honeywell.com/switches/toggle-switches>

MICRO SWITCH LIMIT SWITCHES

Honeywell limit switches offer superior flexibility and performance.

No limit leadership. Available with a variety of actuators, electrical specifications, terminations, circuitries and sealing ratings, Honeywell limit switches offer superior flexibility and performance. These precision snap-action switches — sealed in rugged housings — are used to detect presence or absence in areas where physical contact is allowed.

The key to the performance reliability is by meeting the unique demands of the application. No matter if it is a lightweight option, or low profile, pre-cabled or maximum durability, the Honeywell limit switches offer a portfolio of products to meet demand.

SERIES-SPECIFIC OPTIONS, INCLUDE

- Low profile case
- Stainless steel construction
- Heavy-duty epoxy sealed
- ATEX approved range

FEATURES

- Reliability, repeatability, accuracy
- Extensive portfolio of product offerings
- Tested-tough, for industrial machinery
- Supreme performance, through superior application understanding

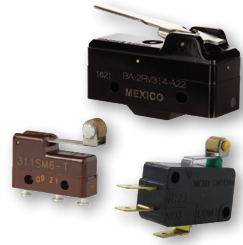


HONEYWELL OFFERS AN EXTENSIVE RANGE OF LIMIT SWITCHES INCLUDING GLS, HDLS, BX, NGC AND 14CE SERIES:

<https://sensing.honeywell.com/switches/limit-switches>

MICRO SWITCH BASIC SWITCHES

With decades of engineering excellence in the design of snap action switches, Honeywell offer a range of products to meet market demands. No matter if you require a simple or precision on/off detection, or an electromechanical interface for pressure monitoring or to support a manual operator interface, there are options to serve numerous applications.



Potential uses include valves, manually operated devices, vending machines, water heaters, appliances, and industrial controls.

SERIES-SPECIFIC OPTIONS, INCLUDE

- High load current
- Variety of thermoplastic housing options
- Numerous actuator and termination styles
- IEC Ex approved range

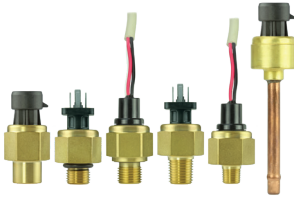
FEATURES

- Max 26 A Load
- Up to 20 million mechanical cycles
- IP67 sealed
- MIL-PRF-8805 listings



HONEYWELL OFFERS AN EXTENSIVE RANGE OF BASIC SWITCHES INCLUDING BZ, V7, V15W2, SM/SX, AND ZM SERIES:

<https://sensing.honeywell.com/switches/basic-switches>



PRESSURE SENSORS (PX)

PX Series heavy duty pressure sensors are utilised in a wide range of applications and industries where reliability and value is a top priority. PX Series products are ideally suited to HVAC applications, maximising efficiency, whilst reducing downtime and service costs.

- **PX2**, pressure range 0 psi to 1,000 psi (70 bar)
- **PX3**, pressure range 0 psi to 700 psi (50 bar)
- High freeze/thaw resistance
- Life-time rating 10 million cycles



PRESSURE SENSORS (MLH)

MLH heavy duty pressure sensors are utilised in a wide range of applications and industries where proven reliability and durability is a top priority. Extensive media compatibility combined with greater than one million configurations makes MLH the ideal pressure sensing solution for demanding applications.

- MLH, pressure ranges up to 8,000 psi (550 bar)
- Absolute, gage, and sealed-gage measurement
- Wide selection of port/connector types
- High-end stainless steel (corrosion resistance)



PRESSURE SWITCHES

Pressure switches form the last line of defence in many critical applications, protecting people, equipment and the environment. Extensive media compatibility combined with high proof/burst pressure ratings make Honeywell pressure switches the ideal solution for demanding applications and environments.

- **LE/LP**, low pressure range 150 psi (10 bar)
- **ME/MH**, medium pressure range 500 psi (35 bar)
- **HE/HP**, high pressure range 4500 psi (300 bar)
- Life-time rating 1 million cycles



TEMPERATURE SENSORS

High performance cost-effective low temperature probe, specifically designed for transportation and industrial applications (e.g. hydraulic and engine management). Utilises thermistor-based sensing element with integral connector.

- Industry standard design, highly configurable
- Temperature range: -40°C to 150°C
- Probe length: 20 mm to 50 mm
- Fast response time: <15 sec



SPEED SENSORS

SNG-Q series speed sensors are utilised to monitor and control the speed and direction of rotating equipment. Magnetic speed sensors contain no moving parts and provide superior performance and reliability.

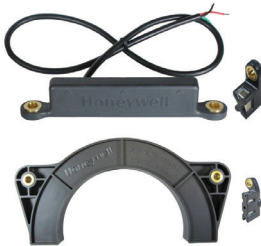
- Speed detection 3 Hz to 20 kHz
- Wide selection of connector types
- Environmental sealing: IP69K
- Life-time rating 2 million cycles



POSITION SENSORS

The **RTY/RTP** Series hall-effect rotary position sensors provide non-contact sensing in harsh transportation and industrial applications at a competitive cost. Hall-effect integrated circuits sense rotary movement of the actuator over a set operating range.

- Operating range: 50° to 360°
- Supply voltage: 5 Vdc to 30 Vdc
- Environmental sealing: IP69K
- Life-time rating 35 million cycles



SMART POSITION SENSORS

SMART position sensor are durable, adaptable, and lightweight, enabling enhanced accuracy in motion control and improving operational efficiency and safety. The non-contact design facilitates ease of integration in the application, promoting performance even in the harshest environments.

- Non-contact design eliminates wear and tear
- Easy to install, reducing set-up costs
- Life-time rating 35 million cycles
- Environmental sealing: IP67, IP69K



CSNV500M CURRENT SENSOR

Based on Honeywell Active Close Loop Hall-effect technology and using proprietary Digital Compensation technology, the CSNV500M brings the best combination of performance and reliability.

- High accuracy and low temperature drift; helps the customer calculate battery SOC accurately
- Excellent EMC performance
- CAN Bus output, convenient for system integration
- Measures up to 500 A



SHIFTERS

Honeywell shifters are designed for demanding off-highway applications, delivering high performance and reliability. Shifters are completely sealed and built to withstand rugged conditions and harsh environments.

- Wide selection of configuration options
- 2.5 N-m torque to shift F N R
- Electrical load 2 A @12.8 Vdc
- Environmental sealing: IP67



TURN SIGNALS

Honeywell turn signals are designed to complement our line of industry-leading shifters, or can be mounted as independent units. A wide variety of operations are available; wiper speeds, headlamp controls, and auto-cancel buttons etc.

- Vast array of optional features
- Life-time rating 1 million cycles
- Electrical load 2 A @ 12.8 Vdc
- Environmental sealing: IP67



E-STOP SWITCHES

Push-pull and E-stop switches are durable, environmentally sealed, sliding contact switches incorporating two circuits with multiple combinations. Dual O-ring design protects the contact chamber by isolating it from moisture, debris and other contaminants.

- Self-cleaning, sliding contact technology delivers outstanding reliability and performance.
- Vibration resistance 18 Hz to 1000 Hz
- UL and CE certified listings offered



KEY SWITCHES

Heavy duty key and rotary switches designed for demanding applications and environments. Ignition and starter switches, On-Off switching, headlamp, flasher, and feature controls.

- Rugged durable design
- Life-time rating 25,000 cycles
- Environmental sealing: IP67

SENSOR AND SWITCH APPLICATIONS



PRODUCT	APPLICATIONS
Hall-effect sensor ICs	Wheelspeed, power seat motor Cam/crankshaft
Turn signal and shifter	Operator controls
Hour meter	Usage monitoring
Inertial measurement unit (IMU)	Vehicle angular rate, acceleration, and inclination
Key switch Smart key	On/off Operator specific functionality
Limit and basic switch	Back-up alarm Machine and cab position Jib, outrigger position Brake switch
Current sensor	Battery management system
Particle sensor	Environmental particle detection
Potentiometer	Foot pedal and machine controls Gear shifters/ joysticks Throttles
Pressure sensor	Hydraulic/brake system Fuel level Outrigger load

PRODUCT	APPLICATIONS
Pressure switch	Hydraulic/engine oil sensing Brake monitoring Airflow monitoring
Push/pull switch	Emergency stop
Rotary Hall-effect position sensor Linear Hall-effect sensor	Jack position Power steering control Stability control Throttle position
Rotary position sensor SMART position sensor	Boom and steering angle sensing Gear position Throttle by wire Vehicle and load position
Speed sensor Speed & direction sensor	Wheel speed Hydraulic pump speed Cam/crankshaft speed Turbo speed RPM/MPH/speedometer Forward/reverse sensing
Temperature probe	Cabin air Air inlet Oil, coolant, fuel Hydraulic fluid Exhaust gas recirculation
Thermostat	Fan control Fire suppression sensing
Toggle and rocker switch	Manual operator switch

SERVING THE TRANSPORTATION INDUSTRY



Heavy Duty On and Off Road



Agricultural



Material Handling Equipment



Mining and Construction



Power Generation



Rail



Aerial Lifts



Lawn and Garden



Cranes



Sports and Recreation



Aircraft



Military Vehicles

For more information

Honeywell Sensing and Internet of Things services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit sensing.honeywell.com or call:

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