TRANSPORTATION INDUSTRY PROVIDING TECHNICAL SAFETY & PRODUCTIVITY SOLUTIONS
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 combination of a broad product portfolio, deep technical capabilities and extensive application experience culminates into a powerful ability to meet your design needs.
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

HONEYWELL OFFERS A BROAD OFFERING OF POSITION SENSORS:
View our offering by clicking here.
INDUSTRIAL-GRADE SEALED TOGGLE SWITCHES

**NT SERIES**

**FEATURES**
- NEMA 3, 3R, 4, 13 and IP67/68
- UL recognized; CSA, CE, UKCA certified
- Three popular styles of termination and many configuration options
- Larger standard metal or plastic levers
- Optional “Easy Start” threaded bushing

**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

MILITARY-GRADE SEALED TOGGLE SWITCHES

**TL SERIES**

**FEATURES**
- MIL-DTL-3950 qualified; UL recognized; CSA, CE, UKCA certified
- 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

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

View our offering by clicking here.
**MICRO SWITCH**

**LIMIT SWITCHES**

Available with a variety of actuators, electrical specifications, terminations, circuitries and sealing ratings, Honeywell MICRO SWITCH 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.

**NGC Series**

**FEATURES**
- SPDT or DPDT configurable circuitry
- Snap-action, positive-break contacts
- IEC 60947-5-1, IEC 61373, EN45545-2
- NEMA 1, 4, 12, 13; IP67 sealing
- Mechanical life up to 5 million operations

**14CE Series**

**FEATURES**
- IP65/66/67/68 environmental sealing
- Pre-leaded or M12 four-pin connector
- 25 mm mounting centers
- 10 million actuation cycles

**GLC Series**

**FEATURES**
- EN 50047 footprint
- EN 45545-2 emission standard
- Sealed to IP66; NEMA/UL 1, 4, 12 and 13
- Mechanical life up to 10 million operations
- Positive opening EN/IEC 60947-5-1-3

**HDLS Series**

**FEATURES**
- IP65/66/67 environmental sealing
- Sintered bronze bearing on 303 stainless steel operating shaft for enhanced mechanical life up to 50 million actuation cycles
- Corrosion-resistant zinc head and body are phosphate treated and epoxy coated

HONEYWELL OFFERS A WIDE RANGE OF LIMIT SWITCHES INCLUDING NGC, 14CE, GLC AND HDLS SERIES:
View our offering by clicking here.
With decades of engineering excellence in the design of snap action switches, Honeywell offers 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.

**Micro Switch Basic Switches**

**Miniature V15 Series**

**Features**
- Max 26 A Load
- Up to 1 million mechanical cycles
- Highly configurable

**Miniature V15W Series**

**Features**
- Max 10 A load
- Up to 1 million mechanical cycles
- IP67 sealed
- Pre-cabled or terminal options

**Large Basic BZ/BA/BM/BE Series**

**Features**
- Max 25 A load
- Up to 20 million mechanical cycles
- MIL-PRF-8805 on selected listings

**Subminiature HD1 Series**

**Features**
- Max 0.1 A load
- Up to 300,000 mechanical cycles
- IP67 sealed

Honeywell offers an extensive range of basic switches including BZ, V15W, V15 and HD1 series:

View our offering by clicking here.
PRESSURE SENSORS AND SWITCHES

MIP Series
The MIP Series offers a heavy duty, media-isolated pressure transducer in a compact, stainless steel construction for use with a wide range of media including aggressive fluids and water. The MIP Series provides a cost-competitive solution for wide-ranging potential applications in tough environments.
- Pressure range 0 psi to 175 psi
- 1 mS response time
- High freeze/thaw resistance
- Life-time rating: 10 million cycles

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

HONEYWELL OFFERS A LARGE PORTFOLIO OF PRESSURE SENSORS:
View our offering by clicking here.

5000 Series
Honeywell’s 5000 Series pressure switch is specifically designed to stand up to extended duty applications. This switch is factory set but capable of field adjustment. It features a Kapton diaphragm for compatibility with a wide variety of fluids, and various terminations including a Metri-Pack connector.
- Brass or stainless steel base
- 75 psi to 150 psi
- Four set-point ranges
- 1 million mechanical cycles

LE Series
Pressure switches form the last line of defence in many critical applications, protecting people, equipment and the environment. Extensive configurable options with high proof/burst pressure ratings make Honeywell pressure switches the ideal solution for demanding applications.
- 3.5 psi to 10 psi (±1 psi)
- >10 psi to 50 psi (±3 psi)
- >50 psi to 100 psi (±7 psi)
- >100 psi to 150 psi (±10 psi)

HONEYWELL OFFERS AN EXTENSIVE RANGE OF PRESSURE SWITCHES:
View our offering by clicking here.
SPEED & POSITION SENSING

SPEED & DIRECTION SENSORS
SNG-Q, SNDH-T, SNG-S and SNDH-H Series sensors are utilised to monitor and control the speed and direction of rotating ferrous gears and tone wheels. Magnetic speed sensors contain no moving parts and provide superior performance and reliability.
- Speed detection up to 20 kHz and some models with zero speed detection
- Wide selection of connector types
- Environmental sealing: IP69K
- Life-time rating: 2 million cycles

ROTARY POSITION SENSORS

RTP Series
Takes non-contact sensing to the next level by separating the magnet from the sensor body. The absence of the actuator shaft removes the wear and tear on the bearings caused by radial forces.
- Life-time rating: Infinite
- Operating range: 50° to 360°
- Supply voltage: 5 Vdc to 30 Vdc
- Environmental sealing: IP67 & IP69K

SMART POSITION SENSORS
SMART position sensors 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 & tear
- Easy to install, reducing set-up costs
- Life-time rating: 35 million cycles
- Environmental sealing: IP67, IP69K
- NEW! SMART Arc 145° CAN-enabled position sensor

SPEED & DIRECTION SENSORS

RTY Series
These shaft activated products are available in two versions: an integral shaft with or without a lever.
- Life-time rating: 35 million cycles
- Operating range: 50° to 360°
- Supply voltage: 5 Vdc to 30 Vdc
- Environmental sealing: IP67 & IP69K

HONEYWELL OFFERS A WIDE RANGE OF POSITION SENSORS:
View our offering by clicking here.
MAGNETIC SENSORS
HALL AND AMR SENSOR ICs

**VF401**
The VF401 is a high performance, digital, 2-wire, AMR (anisotropic magnetoresistive) sensor in a miniature, flat, TO-92-style, plastic package with a current output, designed for sensing fine pitch ring magnets. Its robust design operates from -40 °C to 150 °C [-40 °F to 302 °F] and can withstand short durations up to 175 °C [347 °F], allowing use in potential applications with extreme temperature requirements.

**VF526DT**
The VF526DT bipolar latch, dual Hall-effect digital position sensor has two distinct Hall sensing elements precisely located 1.4 mm [0.055 in] apart on a single integrated circuit chip. The elements are encapsulated in a thermostet molding material.

- Temperature-compensated magnetics and ultra-low offset drift with temperature
- Single, miniature 4-pin SOT-89B plastic package supplied on tape and reel for automated assembly
- Wide operating voltage range of 3.4 Vdc to 24 Vdc

**VG481V1**
The VG481V1 back biased Hall-effect speed sensor IC contains a dual peak detecting circuit that is coupled with a Hall-effect element to detect the speed of a ferrous gear tooth target wheel.

- Zero-speed capable
- Low cost and easy to use
- 4 V to 24 V supply voltage range

**VF360ST, VS360NT, VF460S**
These high sensitivity latching digital Hall-Effect sensor ICs are small, sensitive and versatile devices that are operated by the magnetic field from a permanent magnet or an electromagnet.

- Qualified to the AEC-Q100 standard
- Fast response time (1.5 μs)
- Repeatable magnetics (no jitter)

**VF495A-SP**
The VF495A-SP Series are small, versatile, linear Hall-effect devices that are operated by the magnetic field from a permanent magnet or an electromagnet.

- Quad-Hall IC design
- Responds to positive or negative Gauss

**VM821Q1**
The VM821Q1 AMR 4-pin quadrature sensor ICs designed to detect the speed and direction and position of a ring magnet encoder target.

- Integrated quadrature sensor IC
- Pole size independent operation
- 4-pin quadrature, open collector outputs

HONEYWELL OFFERS A LARGE PORTFOLIO OF MAGNETIC SENSORS:
View our offering by clicking here.
**PROXIMITY SWITCHES**

**GAPS Series**

Environmentally rugged, fully hermetic packages provide long-term reliability in very harsh environments by eliminating the potential for contamination of the sensor from the application environment.

- Integral Health Monitoring Capability: Optional third output state to indicate the health of the sensor (whether it is healthy or failed).

**Honeywell Offers a Wide Variety of Proximity Sensors:**
View our offering by clicking here.

---

**AIR QUALITY MONITORING**

**HPM Series**

Enables the ability to more accurately and cost competitively monitor or control environmental particulate.

- Industry-leading long life of 10 years of continuous use
- Proven EMC performance enables the ability to perform more accurately in a variety of tough industrial environments

**Honeywell Offers a Number of Particulate Sensors:**
View our offering by clicking here.

---

**BOARD-MOUNT PRESSURE**

**HSC, SSC, ABP2 Series**

Utilises a specialized piezoresistive, micro-machined, sensing element which allows part interchangeability and enhanced performance, reliability and accuracy.

**Honeywell Offers a Range of Board-Mount Sensors:**
View our offering by clicking here.

---

**BOARD-MOUNT FORCE**

**FMA Series**

Measures the addition or backup of force, meaning the resistance of silicon-implanted piezoresistors will increase when flexed under applied force.

**Honeywell Offers a Wide Range of Force Sensors:**
View our offering by clicking here.
## SENSOR AND SWITCH APPLICATIONS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall-effect sensor IC</td>
<td>Wheel speed, power seat motor, Cam/crankshaft</td>
</tr>
<tr>
<td>Inertial measurement unit (IMU)</td>
<td>Vehicle angular rate, acceleration and inclination</td>
</tr>
<tr>
<td>Key switch</td>
<td>On/off, Operator-specific functionality</td>
</tr>
<tr>
<td>Limit and basic switch</td>
<td>Back-up alarm, Machine and cab position, Jib, outrigger position, Brake switch</td>
</tr>
<tr>
<td>Current sensor</td>
<td>Battery management systems and charging infrastructure</td>
</tr>
<tr>
<td>Board-mount products</td>
<td>Filter clogging, Fuel level detection</td>
</tr>
<tr>
<td>Particle sensor</td>
<td>Environmental particle detection</td>
</tr>
<tr>
<td>Pressure sensor</td>
<td>Hydraulic/brake system, Fuel level, Outrigger load</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure switch</td>
<td>Hydraulic/engine oil sensing</td>
</tr>
<tr>
<td>Rotary Hall-effect position sensor</td>
<td>Jack position, Power steering control, Stability control, Throttle position</td>
</tr>
<tr>
<td>Rotary position sensor SMART position sensor</td>
<td>Boom and steering angle sensing, Reach arm &amp; steering position, Gear position, Throttle by wire, Vehicle and load position</td>
</tr>
<tr>
<td>Speed sensor Speed &amp; direction sensor</td>
<td>Wheel speed, Hydraulic pump speed, Cam/crankshaft speed, Turbo speed, RPM/MPH/speedometer, Forward/reverse sensing</td>
</tr>
<tr>
<td>Thermostat</td>
<td>Fan control, Fire suppression sensing</td>
</tr>
<tr>
<td>Toggle and rocker switch</td>
<td>Manual operator switch</td>
</tr>
</tbody>
</table>
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 acknowledgment 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. While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer’s sole responsibility to determine the suitability of the product in the application. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

FOR MORE INFORMATION
Honeywell Advanced Sensing Technologies 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:

USA/Canada    +1 302 613 4491
Latin America  +1 305 805 8188
Europe         +44 1344 238258
Japan          +81 (0) 3-6730-7152
Singapore      +65 6355 2828
Greater China  +86 4006396841

Honeywell Advanced Sensing Technologies
830 East Arapaho Road
Richardson, TX 75081
sps.honeywell.com/ast

All rights reserved. Honeywell and its product names are among the trademarks and/or servicemarks owned by Honeywell International Inc., or its subsidiaries. All other trademarks are property of their respective owners.