

# Hall-Effect Rotary Position Sensors Line Guide



**Round and round the globe, it's Honeywell.** So trust Honeywell Sensing and Control (S&C) for your Hall-effect rotary position sensor needs. These sensors vary output voltage or current in response to changes in a magnetic field — using a magnetically biased Hall-effect integrated circuit (IC) to sense rotary movement of the actuator shaft. The rotation of the shaft changes the IC's position to the magnets, and then detects the change in

flux density. The output of the IC is converted to a linear output up to 360 degrees of travel. Honeywell S&C seals the IC together with conditioning and protection circuitry and two permanent magnets in a rugged package featuring enhanced reliability. What's more, our non-contacting approach to Hall-effect rotary position applications provides longer-life solutions that excel in most harsh environments.

## FEATURES

### HALL-EFFECT ROTARY POSITION SENSORS

#### RTY Series.

**Features:** 35 M cycle product life

- Solid-state Hall-effect technology
- Rugged IP67-sealed package with integral connector
- Automotive-grade EMI/EMC testing, integrated reverse polarity, and short circuit
- Industry-standard AMP termination, 32 mm mounting pitch, North American and European pinout styles, and compact package
- Eight sensing ranges up to 360°
- Low voltage and high voltage versions

**Benefits:** Angle monitoring in harsh transportation and industrial applications at a competitive cost. 35 M cycle product life provides long life in the application. Solid-state, Hall-effect technology provides non-contact operation, long service life, low torque actuation and reduces worn-out mechanisms. IP67 sealing and integral connector allows for use in harsh environments. EMI/EMC testing, reverse polarity and short circuit provide protection against installation errors and frequencies in the environment. Industry-standard termination, mounting pitch and pinout provide drop-in replacement for existing

applications. Choice of sensing ranges provides flexibility in multiple applications, allowing OEMs the range of travel needed for the application. Potential applications include position and movement detection of pedals, throttles, gear shift, levers, steering, linkages, and hitches (trucks, buses, off-road vehicles, industrial/construction/agricultural vehicles and equipment, cranes); suspension displacement/kneeling (buses, trucks); tilt/trim position (boat engines, tilling equipment), as well as industrial valve and HVAC damper control, and irrigation pivot control

#### RPN Series.

**Features:** Solid-state Hall-effect technology • 30 M cycle product life

- Eight sensing ranges up to 360°
- Reverse polarity, short circuit and EMC protection
- Choice of operating ranges, outputs, and levers
- IP67- or IP69K-sealed package with integral connector

**Benefits:** Long service life, low torque actuation, and reduced mechanism wear-out. Enhanced resistance to damage from incorrect wiring and electrical noise. Wide choice of sensing ranges provides range of travel for most applications; tolerant to overtravel. Output choices provide

application flexibility. Sealed package with integral connector for durability. Often ideal for detecting position and movement of potential applications such as pedals, throttles, gear shift levers, linkages, suspension and hitches in trucks, offroad vehicles, cranes and construction/agricultural/industrial equipment.

#### HRS100 Series.

**Features:** Solid-state Hall-effect technology • 10 M cycle product life (typical) • Two sensing ranges • Choice of termination

**Benefits:** Use of magnetically coupled technology in place of a mechanical wiper assembly provides long life and a cost-effective solution for harsh environments that include temperature, vibration, dither, moisture and dirt. Non-contact operation, long service life, low torque actuation and reduced wear-out of mechanisms. Potential applications include position and movement detection of pedals, throttles, gear shift, levers, steering, linkages, and hitches (off-road vehicles and industrial/construction/agricultural vehicles/equipment), tilt/trim position (boat engines), and industrial material handling equipment (forklifts, robotics)

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## More are turning to Honeywell, for more value.

Honeywell S&C RTY and RPN Series Hall-effect rotary position sensors respond to the presence or to the 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. The IC, circuitry and magnets are galvanized with an integral connector — more than a match for the most unforgiving conditions. The HRS100 Series uses magnetically-coupled technology in place of a mechanical wiper assembly which provides long life and a cost-effective solution for harsh environments. These sensors are often ideal for potential transportation applications, such as throttle and speed position and control, inboard lever control, foot pedal, gearshift, steering, lever, linkage, seat, mirror, tilt and manipulator arm position.

Other benefits include:  
360-degree operating range with multi-turn allowable rotation, low torque actuation and greatly reduced wear-out mechanisms, enhanced resistance to damage from incorrect wiring and electrical noise, wide operating angle tolerant to overtravel, integrated reverse polarity, short circuit and EMC protection.

### Hall-Effect Rotary Position Sensors



#### RTY Series

<b>Sensing range</b>	50° (±25°), 60° (±30°), 70° (±35°), 90° (±45°), 120° (±60°), 180° (±90°), 270° (±135°), 360° (±180°)
<b>Redundant version</b>	no
<b>Input voltage</b>	low voltage: 5 Vdc ±0.5 Vdc high voltage: 10 Vdc to 30 Vdc
<b>Output</b>	low voltage: 0.5 V to 4.5 V ratiometric (standard); 4.5 V to 0.5 V ratiometric (inverted) high voltage: 0.5 V to 4.5 V ratiometric (standard); 4.5 V to 0.5 V ratiometric (inverted)
<b>Input current</b>	low voltage: 20 mA max.; during output to ground short, 25 mA max. high voltage: 32 mA max.; during output to ground short, 47 mA max.
<b>Operating temperature range</b>	-40 °C to 125 °C [-40 °F to 257 °F]
<b>Connector</b>	AMP super seal
<b>Life</b>	35 M cycles
<b>EMI/EMC</b>	<ul style="list-style-type: none"> <li>• EMI radiated immunity: 100 V/m from 200 MHz to 1000 MHz per ISO11452-2</li> <li>• EMI conducted immunity: <ul style="list-style-type: none"> <li>- low voltage: 100 mA BCI per ISO11452-4 from 1 MHz to 200 MHz</li> <li>- high voltage: 100 mA BCI per ISO11452-4 from 1 MHz to 400 MHz</li> </ul> </li> <li>• EMC: exceeds CE requirements</li> </ul>
<b>Housing material</b>	PBT plastic
<b>Dimensions</b>	55 mm L x 43 mm W x 41 mm H [2.17 in L x 1.69 in W x 1.61 in H]



## Hall-Effect Rotary Position Sensors

### RPN Series

### HRS100 Series

<b>Sensing range</b>	50° (±25°), 60° (±30°), 70° (±35°), 90° (±45°), 120° (±60°), 180° (±90°), 270° (±135°), 360° (±180°)	90° ±2°, 180° ±2°
<b>Redundant version</b>	yes	no
<b>Input voltage</b>	5 Vdc, 8 to 30 Vdc, 10 Vdc to 30 Vdc	5 Vdc ±10%
<b>Output</b>	0.25 V to 4.75 V, 0.5 V to 4.5 V, 1 V to 9 V, 3 V to 5 V, 4.5 V to 0.5 V, 4.75 V to 0.25 V, 4 mA to 20 mA, 20 mA to 4 mA	5% to 95% of applied Vdd, approx. (programmable) (output ratiometric to supply)
<b>Input current</b>	20 mA max.	5 mA typ.
<b>Operating temperature range</b>	-40 °C to 125 °C [-40 °F to 257 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
<b>Connector</b>	AMP 1-1419168-1, AMP Superseal 282087-1, Deutsch DT04-3P	solder lug, flying wire leads
<b>Life</b>	30 M cycles	10 M cycles
<b>EMI/EMC</b>	EMC: 200 V/m ISO 11452-3	EMI: 30 V/m, 10 kHz to 1000 MHz at 3 m
<b>Housing material</b>	PA66 plastic	metal
<b>Dimensions</b>	63 mm L x 38,8 mm W x 56 mm H [2.48 in L x 1.53 in W x 2.20 in H]	32,27 mm [1.3 in] H x 27,79 mm [1.1 in] W

**Warranty.** Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all 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 we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer 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 printing. However, we assume no responsibility for its use.

For more information about Sensing and Control products, visit [www.honeywell.com/sensing](http://www.honeywell.com/sensing) or call +1-815-235-6847. Email inquiries to [info.sc@honeywell.com](mailto:info.sc@honeywell.com)

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