Honeywell



Hall-Effect Rotary Position Sensors



DESCRIPTION

The RTY Series Hall-Effect Rotary Position Sensors provide angle monitoring in harsh transportation and industrial applications at a competitive cost.

These products use a magnetically biased, Hall-effect integrated circuit (IC) to sense rotary movement of the actuator shaft over a set operating range. Rotation of the actuator shaft changes a magnet's position relative to the IC. The resulting flux density change is converted to a linear output.

The IC, together with conditioning and protection circuitry, and the permanent magnet, is sealed in an IP67-qualified rugged package for durability in most harsh environments.

FEATURES AND BENEFITS (★=competitive differentiator)

- ★ 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
- Rugged IP67-sealed package with integral connector: Allows for use in harsh environments
- Automotive-grade EMI/EMC testing, integrated reverse polarity, and short circuit: Provides protection against installation errors and frequencies in the environment
- Industry-standard AMP termination, 32 mm mounting pitch, North American and European pinout styles, and compact package: Provide drop-in replacement
- Eight operating ranges up to 360°: Provides flexibility in multiple applications, allowing OEMs the range of travel needed for the application

Eight operating ranges (50°, 60°, 70°, 90°, 120°, 180°, 270° and 360°) are tolerant to over-travel and allow use in most common applications. Low voltage and high voltage versions cover an input voltage range of 4.5 Vdc to 30 Vdc.

Most applications require no lever, and no brackets are necessary.

Honeywell's industry-leading capabilities in research and development provide the customer with known quality and support.

POTENTIAL APPLICATIONS

Transportation:

- 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)

Industrial:

- Valve control
- HVAC damper control
- · Irrigation pivot control

RTY Series

Table 1. Specifications

Characteristic	Parameter				
	LV (Low Voltage)	HV (High Voltage)			
Supply voltage	5 ±0.5 Vdc	10 Vdc to 30 Vdc			
Supply current	20 mA max.	32 mA max.			
Supply current (during output to ground short)	25 mA max.	47 mA max.			
Output	0.5 V to 4.5 V ratiometric	0.5 V to 4.5 V non-ratiometric			
Output signal delay	4 ms typ.				
Overvoltage protection	10 Vdc	_			
Reverse polarity protection	-10 Vdc	-30 Vdc			
Output to ground short circuit protection	continuous				
Output load resistance (pull down to ground)	10 kOhm				
EMI:		· · · · · · · · · · · · · · · · · · ·			
radiated immunity	100 V/m from 200 MHz to 1000 MHz per ISO11452-2				
conducted immunity	100 mA BCI per ISO11452-4	100 mA BCI per ISO11452-4			
	from 1 MHz to 200 MHz	from 1 MHz to 400 MHz			
EMC	exceeds CE requirements				
Operating temperature range	-40 °C to 125 °C [-40 °F to 257 °F]				
Storage temperature range	-40 °C to 125 °C [-40 °F to 257 °F]				
Ingress protection	IP67 according to DIN 40050				
Expected life	35 M cycles				
Media compatibility	heavy transportation fluids				
Housing material	PBT plastic				
Shock	50 G peak				
Vibration	20 G peak tested from 10 Hz to 2000 Hz				
Salt fog	concentration 5% ±1% for 240 hr per SAE M1455 Section 4.3.3.1				
	(at 5.0 Vdc. 38 °C [100 F °])				
Resolution	12 bit				
Mating connector	AMP Superseal 282087-1				
Mechanical end stop	no				
Approvals	CE				

Hall-Effect Rotary Position Sensors

Figure 1. Mounting Dimensions (For Reference Only: mm/[in].)

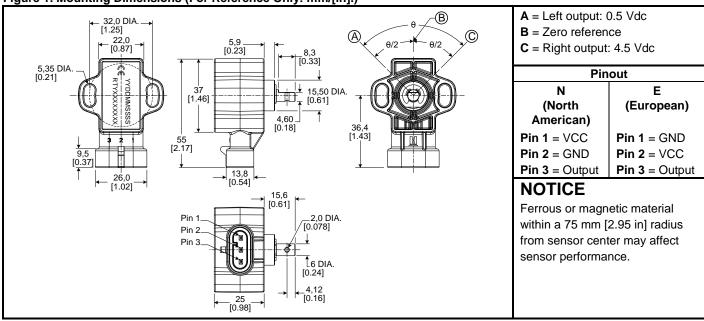
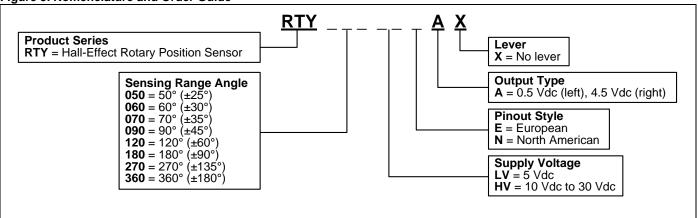


Figure 2. Functional Characteristics

Sensing Angle	Linearity	Accuracy	Clamp High	Notes:
50° (±25°)	Error ¹	Error ²	(Vdc)	The linearity error is the deviation of the measured
60° (±30°)	±1.0%	±1.6%	Ontput Voltage (Vdc)	value from the best fit line and is the quotient of the measured output ratio
70° (±35°)			ndtho 0.5-	deviation from the best fit line at the measured
90° (±45°)			(A) (B) (C)	temperature to the best fit line output ratio span at the measured temperature.
120° (±60°)			-25 0 +25 -30 0 +30 -35 0 +35 -45 0 +45 -60 0 +60 -90 0 +90 -135 0 +135 Actuator Position (°)	Accuracy is measured as a deviation from the index line,
180° (±90°)				where the index line is defined as the line with the
270° (±135°)				ideal slope and sensor output voltage corrected at 0º position for its ideal value
360° (±180°)			4.5 0.5 0.0 A) B) C) -180 0 +180 Actuator Position (°)	at 25 °C ±5 °C. Accuracy is valid only when the sensor output is correct at 0° position for its ideal value in the application.

Figure 3. Nomenclature and Order Guide



A WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

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 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 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.

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

E-mail: info.sc@honeywell.com

Internet: www.honeywell.com/sensing

Phone and Fax:

Asia Pacific +65 6355-2828

+65 6445-3033 Fax

Europe +44 (0) 1698 481481

+44 (0) 1698 481676 Fax

Latin America +1-305-805-8188

+1-305-883-8257 Fax

USA/Canada +1-800-537-6945

+1-815-235-6847

+1-815-235-6545 Fax

Sensing and Control Honeywell 1985 Douglas Drive North Golden Valley, MN 55422

Honeywell

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Honeywell:

RTY180LVEAA	RTY360LVNAA	RTY090LVNAA	RTY360HVEAA	RTY180LVNBX	RTY090HVNBX	RTY090LVEAA
RTY360HVNAA	RTY180HVEAA	RTY360LVEBA	RTY180HVNAA	RTY090HVEAA	RTY180HVNBX	RTY090LVEBA
RTY090HVEBX	RTY360LVEBX	RTY090LVNBX	RTY360HVNBA	RTY180LVNBA	RTY090HVNBA	RTY180LVNAA
RTY360HVEBX	RTY360HVNBX	RTY180LVEBX	RTY180HVEBA	RTY360LVEAA	RTY360LVNBA	RTY180HVEBX
RTY090HVNAA	RTY180HVNBA	RTY090LVNBA	RTY360HVEBA	RTY360LVNBX	RTY090LVEBX	RTY180LVEBA
RTY090HVEBA						