RTY SERIES
Hall-Effect Rotary Position Sensors

For more information about this product, visit our website at:
www.potentiometers.com

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.

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.

Features

- 35 Million cycle product life
- Solid-state Hall-effect technology
- Non-contact operation, low torque actuation
- IP67-sealed package with integral connector
- Automotive-grade EMI/EMC testing,
- Integrated reverse polarity, and short circuit protection
- Industry-standard AMP termination
- Compact package
- Eight operating ranges up to 360°

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

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RTY Series

Electrical Specifications

	VL (Low Voltage	HV(High Voltage)
Resolution	12 bit	12bit
Supply Voltage	5 ± 0.5 V	10Vdc to 30Vdc
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	4 ms
Overvoltage protection	10 Vdc	-
Reverse polarity protection	-10 Vdc	-30 Vdc
Output to ground short circuit protection	continuous	continuous
Output load resistance (pull down to ground)	10 kOhm	10 kOhm
EMI - radiated immunity	100 V/m from 200 MHz to 1000 MHz per ISO11452-2	100 V/m from 200 MHz to 1000 MHz per ISO11452-2
EMI - conducted immunity	100 mA BCI per ISO11452-4 from 1 MHz to 200 MHz	100 mA BCI per ISO11452-4 from 1 MHz to 400 MHz
EMC	exceeds CE requirements	exceeds CE requirements

Mechanical Specifications

Ingress protection	IP67 according to DIN 40050
Expected life	35 M cycles
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 °])
Mating connector	AMP Superseal 282087-1
Mechanical end stop	no
Approvals	CE

Environmental Specifications

Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-40°C to +125°C
Rotational Life	35,000,000 cycles
Media Compatibility	Heavy Transportation Fluids

Specifications subject to change without notice.

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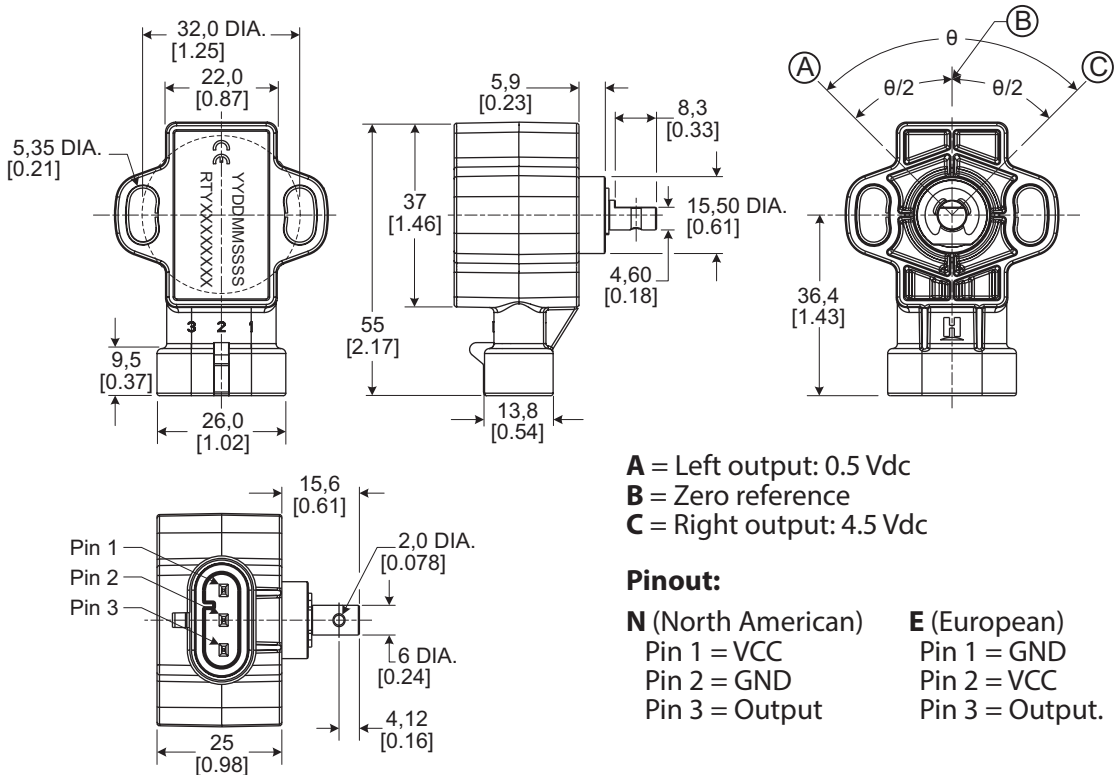
RTY Series

Outline Dimensions (mm/inch)



A = Left output: 0.5 Vdc
B = Zero reference
C = Right output: 4.5 Vdc

Pinout:

N (North American)	**E** (European)
Pin 1 = VCC	Pin 1 = GND
Pin 2 = GND	Pin 2 = VCC
Pin 3 = Output	Pin 3 = Output.

NOTE: Ferrous or magnetic material within a 75 mm [2.95 in] radius from sensor center may affect sensor performance

Ordering Information

RTY 050 LV N A X

Product Series
RTY = Hall-Effect Rotary Position Sensor

Sensing Range Angle
050 = 50° (±25°)
060 = 60° (±30°)
070 = 70° (±35°)
090 = 90° (±45°)
120 = 120° (±60°)
180 = 180° (±90°)
270 = 270° (±135°)
360 = 360° (±180°)

Supply Voltage
LV = 5 Vdc
HV = 10 Vdc to 30 Vdc

Pinout Style
E = European
N = North American

Output Type
A = 0.5 Vdc (left), 4.5 Vdc (right)

Lever
X = No lever

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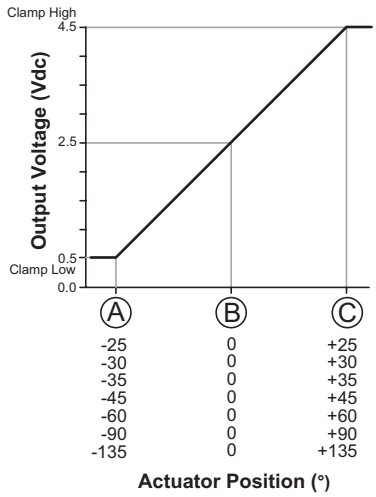
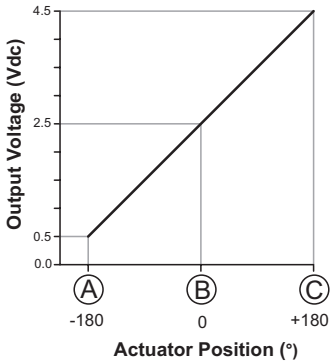
Linearity and Accuracy

Sensing Angle	Linearity Error[1]	Accuracy Error[2]	
50° (±25°)	±1.0%	±1.6%	
60° (±30°)			
70° (±35°)			
90° (±45°)			
120° (±60°)			
180° (±90°)			
270° (±135°)			
360° (±180°)			

NOTES:

1. The linearity error is the deviation of the measured value from the best fit line and is the quotient of the measured output ratio deviation from the best fit line at the measured temperature to the best fit line output ratio span at the measured temperature.

2. Accuracy is measured as a deviation from the index line, where the index line is defined as the line with the ideal slope and sensor output voltage corrected at 0º position for its ideal value at 25 °C ±5 °C. Accuracy is valid only when the sensor output is correct at 0º position for its ideal value in the application. s

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