INSTALLATION INSTRUCTIONS FOR THE HALL-EFFECT ROTARY POSITION SENSORS RTY DUAL OUTPUT SERIES

093786-000
Issue 1

GENERAL INFORMATION

The RTY Series uses 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.

MOUNTING INFORMATION

Mount the sensor and/or lever using flat washers and screws as shown in Figures 2-4.

In harsh applications, treat the screw threads with a suitable thread locking compound.

TABLE 1. SPECIFICATIONS

CHARACTERISTIC	PARAMETER
Supply voltage	5 Vdc ±0.5 Vdc
Supply current	20 mA max.
Supply current (during output to ground short)	25 mA max.
Output: standard inverted[2]	 0.5 Vdc to 4.5 Vdc ratiometric 4.5 Vdc to 0.5 Vdc ratiometric
Output signal delay	4 ms typ.
Overvoltage protection	10 Vdc
Reverse polarity protection	-10 Vdc
Output to ground short circuit protection	continuous
Output load resistance (pull down to ground)	10 kOhm typ.
EMI: radiated immunity conducted immunity	 100 m/V per ISO11452-2 from 200 MHz to 1000 MHz 100 mA BCI per ISO11452-4 from 1 MHz to 200 MHz
EMC	exceeds CE, UKCA requirements
Operating temp. 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[1]	50 G peak
Vibration[1]	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	AMPSEAL 16 - 6 position, P/N 776433-1
Mechanical end stop	no
Surge test	IEC 61000-4-5, +/-1KV, CDN Method, Criteria B
Approvals	CE, UKCA

[1] Applies to RTY sensor without lever only.

[2] Removes the requirement for the customer to have to invert the logic associated with the application. This is a convenience for the customer, and in some cases, can simplify the customer's overall solution.

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Figure 1. Output

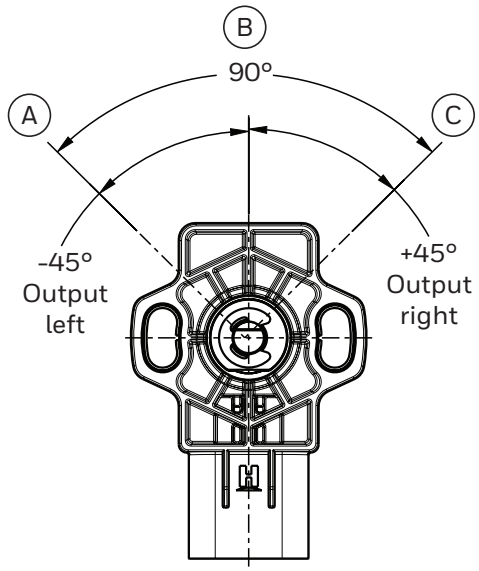


TABLE 2. DUAL SIGNAL

SIGNAL 1		SIGNAL 2	
Pin 1	GND	**Pin 4**	GND
Pin 2	Vcc	**Pin 5**	Vcc
Pin 3	Output 1	**Pin 6**	Output 2

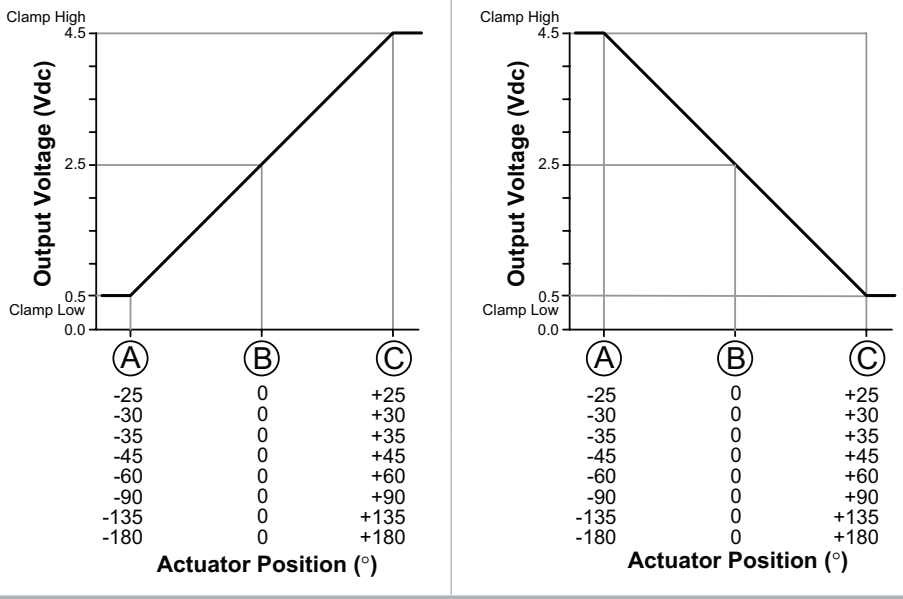
* Vcc and GND are common between channel 1 and 2

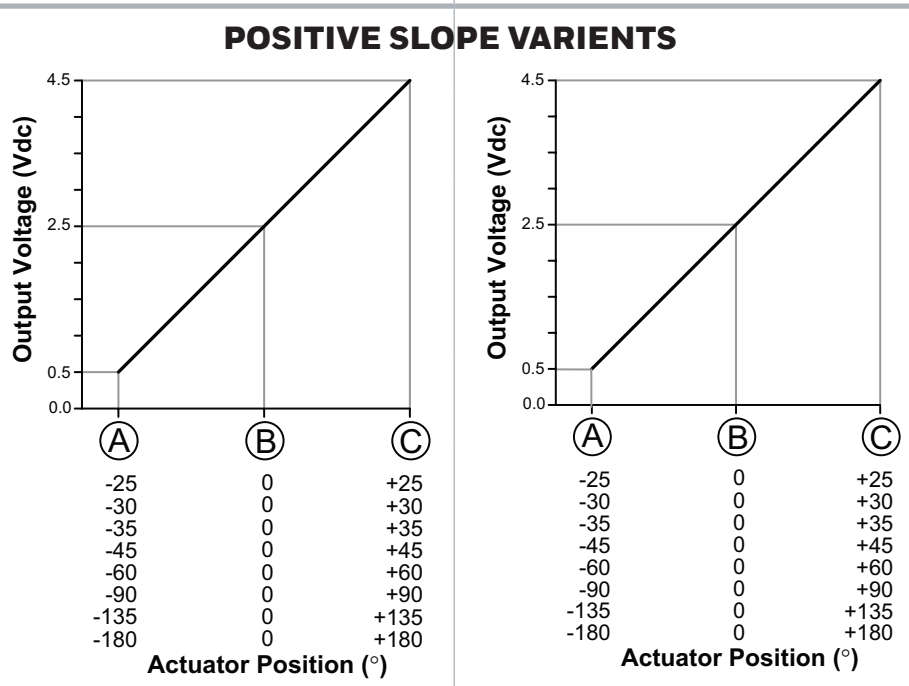
NOTICE

Ferrous material or more than 300 Gauss magnet within a 10 mm [0.39 in] radius of sensor may affect sensor performance.

TABLE 3. RTY SERIES FUNCTIONAL CHARACTERISTICS[1]

CHARACTERISTIC			CHANNEL 1, OUTPUT	CHANNEL 2, OUTPUT
Sensing Angle	Linearity Error[2]	Accuracy Error[3]		
50° (±25°)	±1.0%	±1.6%	**INVERSE SLOPE VARIENTS**	
60° (±35°)				
70° (±35°)				
90° (±45°)				
120° (±60°)				
180° (±90°)				
270° (±135°)				
360° (±180°)				
50° (±25°)	±1.0%	±1.6%	**POSITIVE SLOPE VARIENTS**	
60° (±35°)				
70° (±35°)				
90° (±45°)				
120° (±60°)				
180° (±90°)				
270° (±135°)				
360° (±180°)				





[1] See Figure 3 for references to Ⓐ Ⓑ Ⓒ

[2] 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.

[3] 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 0° position for its ideal value 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 2. Dimensional Drawings for Sensor without Lever (For reference only: mm [in])

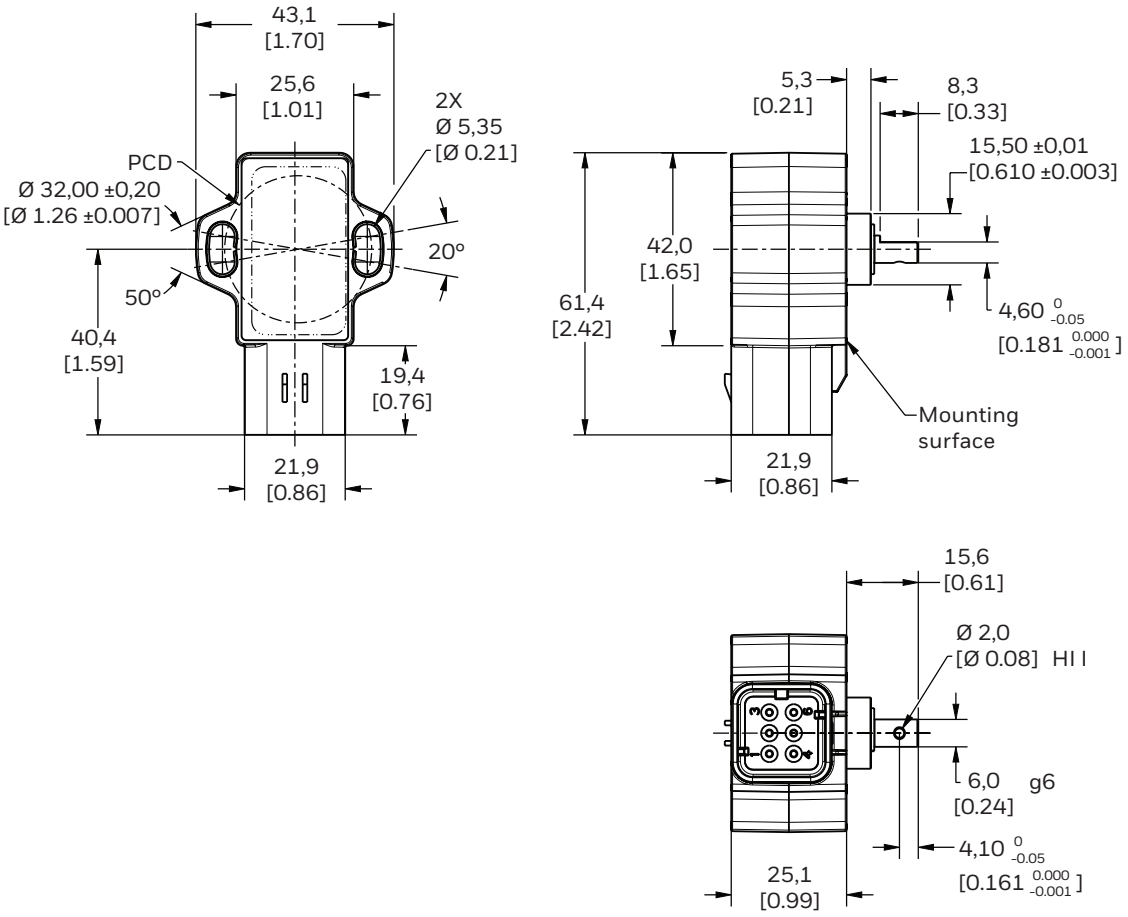


Figure 3. Dimensional Drawings for Sensor with Lever A (For reference only: mm [in])

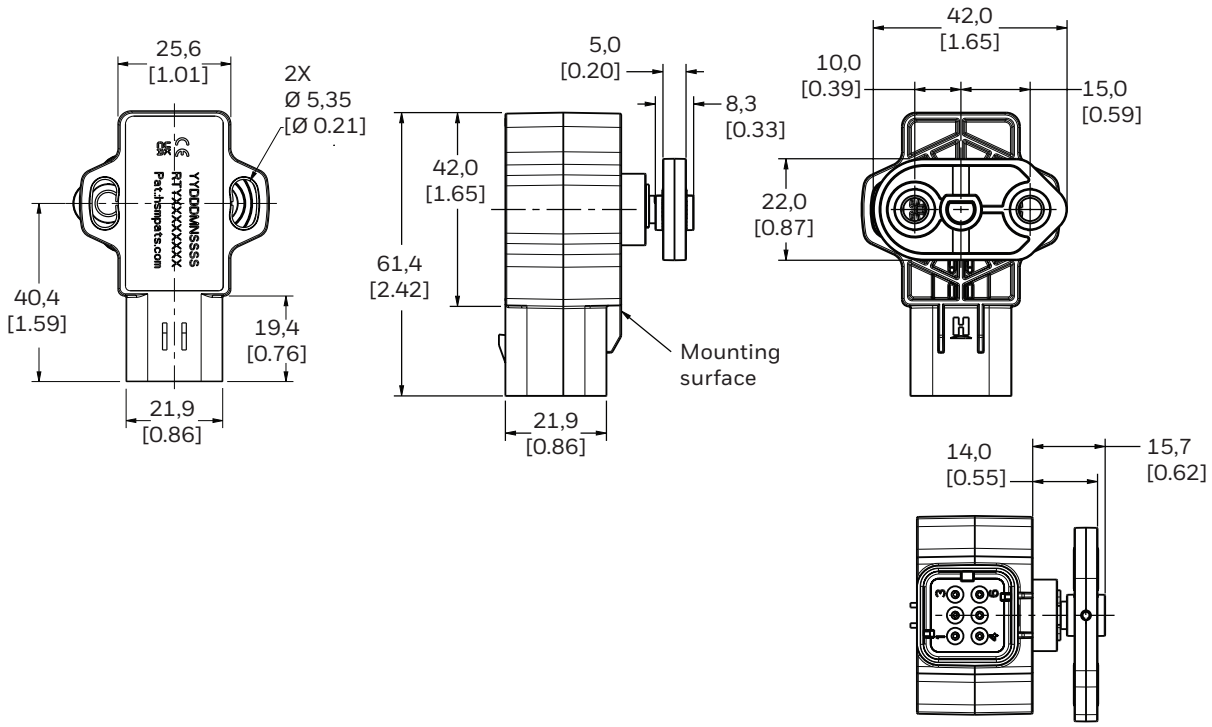
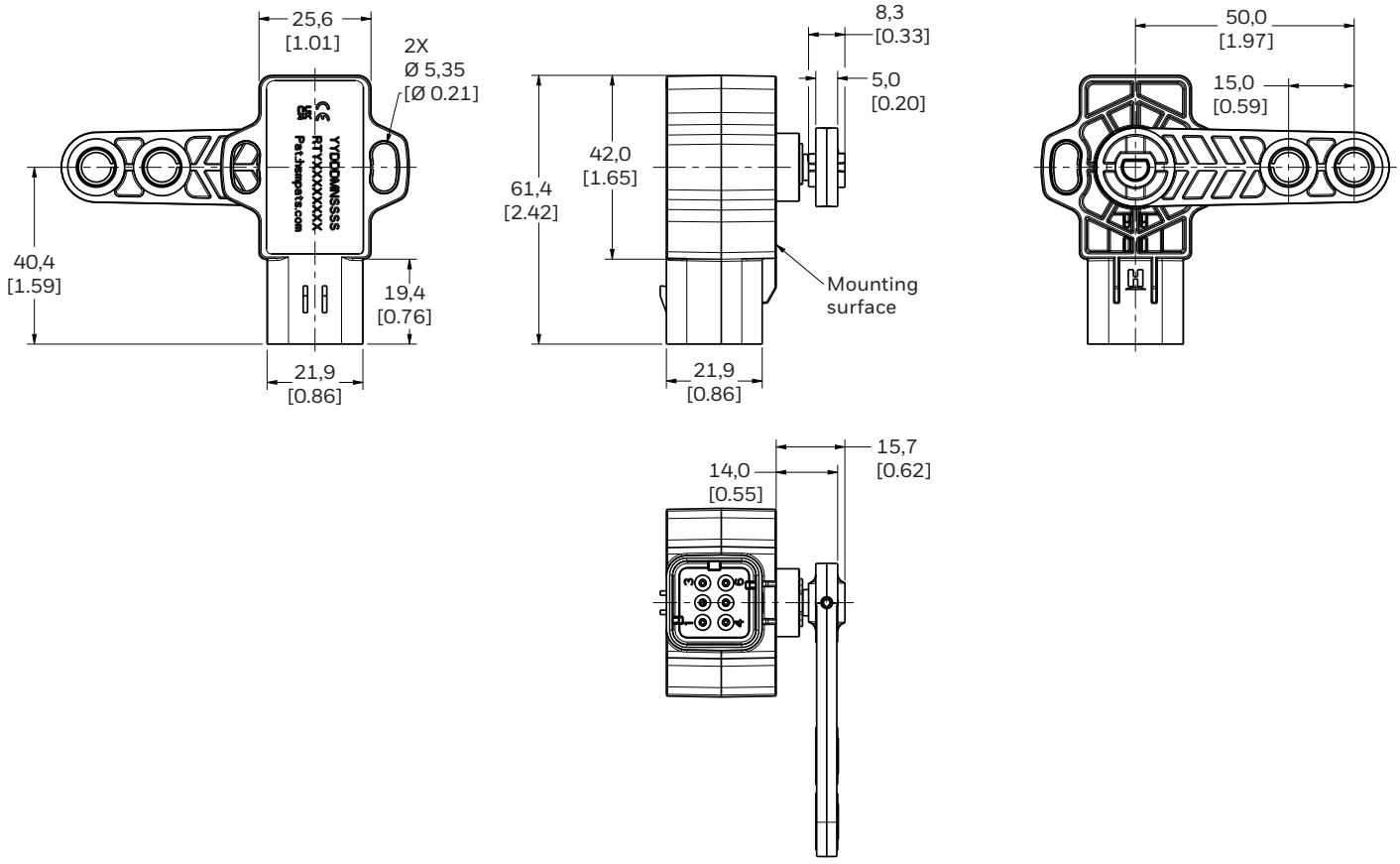


Figure 4. Dimensional Drawings for Sensor with Lever B (For reference only: mm [in])



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