

# Installation Instructions for the RTP Series Hall-effect Rotary Position Sensors

**32307666**  
Issue A

## 1.0 GENERAL INFORMATION

The RTP Series Hall-effect Rotary Position Sensors provide non-contact sensing 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 over a set operating range. Rotation of the actuator changes the magnet's position relative to the IC. The resulting flux density change is converted to a linear output.

## 2.0 MOUNTING INFORMATION (see Figures 1 and 2)

### 2.1 Housed magnet actuator

1. Locate the sensor and the magnet in the desired position. Ensure the air gap between the sensor and the magnet will not exceed that noted in Table 2.
2. Clamp the sensor on the customer-provided mounting plate and place the magnet on the customer-provided mounting shaft. Ensure the orientation arrow on the magnet points toward the connector end of the sensor.
3. Apply the supply voltage to the sensor and monitor the output voltage. When the output voltage is at the midpoint as shown in Table 4, tighten the set screws on the magnet. The sensor angle is 0°.
5. If needed for harsh applications, apply a suitable thread locking compound to all screw threads.

### 2.2 Bare magnet actuator

1. Locate the sensor and the magnet in the desired position. Ensure the air gap between sensor and magnet will not exceed that noted in Table 2.
2. Clamp the sensor on the customer-provided mounting plate and place the magnet on the desired actuator. Ensure the orientation hole on the magnet points towards the connector end of the sensor.
3. Apply the supply voltage to the sensor and monitor the output voltage. When the output voltage is at the midpoint as shown in Table 4, mount the magnet. The sensor angle is 0°.
5. If needed for harsh applications, apply a suitable thread locking compound to all screw threads.

**Table 1. Electrical Specifications**

Characteristic	LV (Low Voltage)	HV (High Voltage)
Supply voltage:	5 ±0.5 Vdc	10 Vdc to 30 Vdc
Supply current: normal during output to ground short	20 mA max. 25 mA max.	32 mA max. 47 mA max.
Output: standard	0.5 Vdc to 4.5 Vdc ratiometric	0.5 Vdc to 4.5 Vdc non-ratiometric
inverted	4.5 Vdc to 0.5 Vdc ratiometric	4.5 Vdc to 0.5 Vdc 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	
Resolution	12 bit	
Output load resistance (pull down to ground)	10 kOhm typ.	
EMI: radiated immunity	100 V/m per ISO11452-2 from 200 MHz to 1000 MHz	
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	

**Table 2. Mechanical Specifications**

Characteristic	LV (Low Voltage)	HV (High Voltage)
Expected life	infinite rotation	
Air gap: bare magnet actuator housed magnet actuator misalignment	3,00 mm ±0,5 mm [0.12 in ±0.02 in] 2,00 mm ±0,5 mm [0.08 in ±0.02 in] 2,00 in [0.08 in]	
Material: magnet sensor housing housed magnet overmold sensor/housed magnet bushing	NdFeB PBT plastic PPS plastic brass	
Mating connector	AMP Superseal 282087-1	
Mechanical end stop	no	
Mounting screw sizes: sensor to mounting surface	non-magnetic, stainless steel M4 X 0,7 screws and 8 mm [0.39 in] OD washers	
housed magnet actuator to customer-provided mounting pin	non-magnetic, stainless steel, M3 X 0.5 plain cup point set screws	
Approvals	CE	

# RTP Series Hall-effect Rotary Position Sensors

Issue A  
32307666

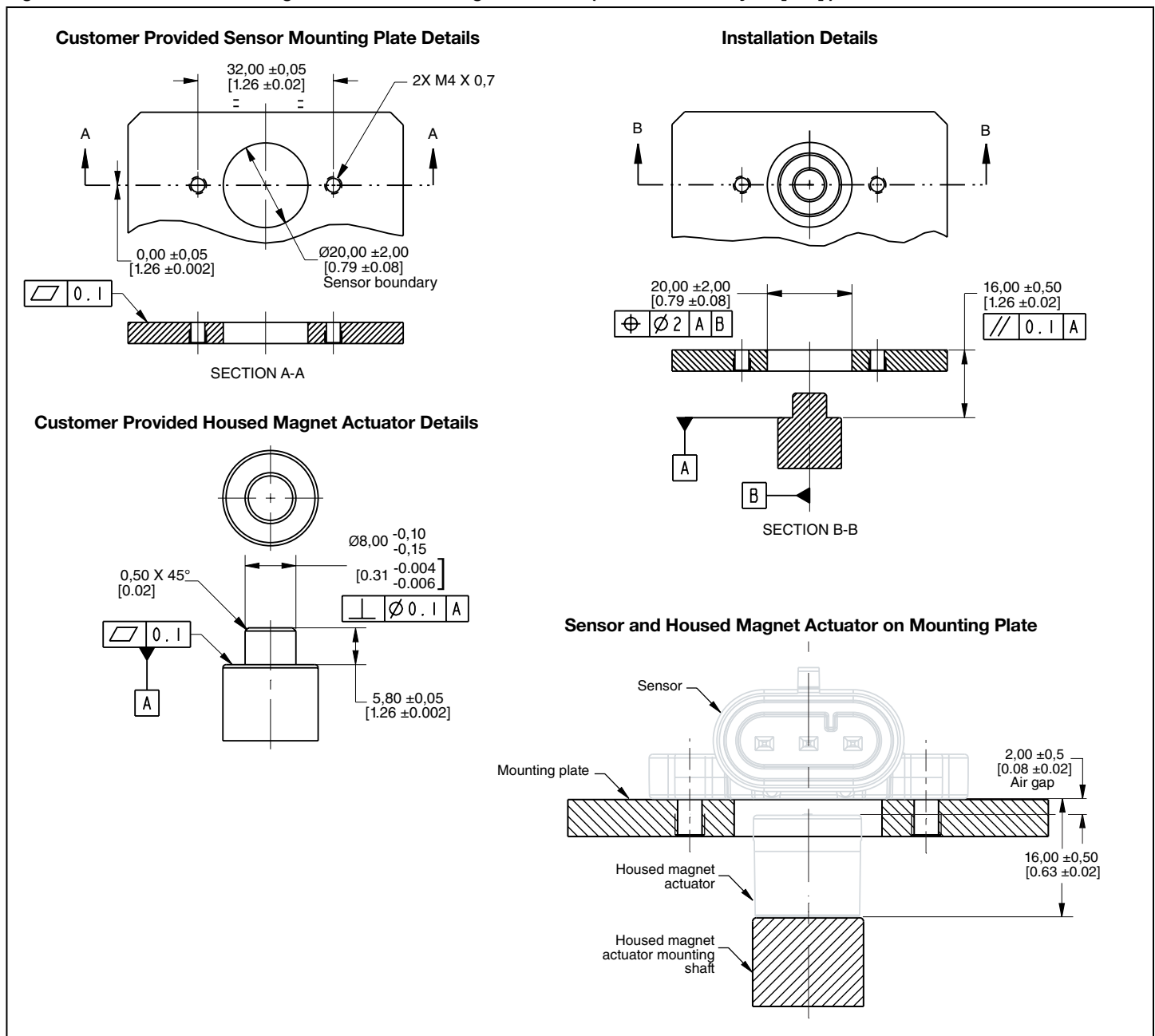
Table 3. Environmental Specifications

Characteristic	LV (Low Voltage)	HV (High Voltage)
Operating temperature range	-40 °C to 125 °C [-40 °F to 257 °F]	
Ingress protection	IP69K	
Media compatibility	heavy transportation fluids	
Shock	50 G peak	
Vibration	20 G peak	
Salt fog	bare magnet: 96 hr for as per ASTM B117 housed magnet: 240 hr per ASTM B117	



**NOTICE**  
Ferrous material or magnet material more than 300 Gauss within 10 mm [0.39 in] from sensor boundary may impact sensor performance.

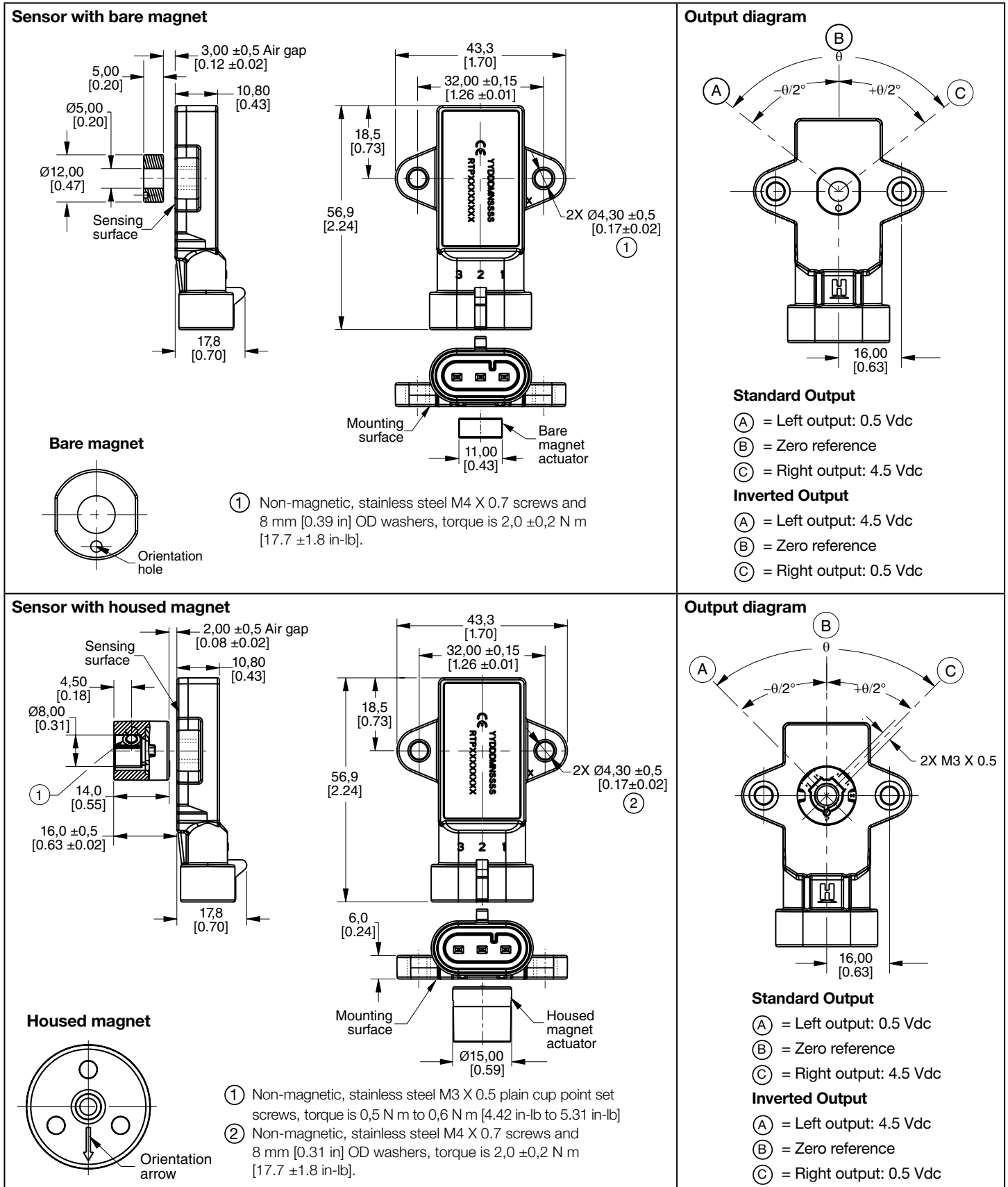
Figure 1. Sensor and Housed Magnet Actuator Mounting Information (For reference only: in/[mm].)



# RTP Series Hall-effect Rotary Position Sensors

Issue A  
32307666

Figure 2. Mounting Dimensions (For reference only: mm [in].)



# RTP Series Hall-effect Rotary Position Sensors

Issue A  
32307666

Table 4. Functional Characteristics<sup>1</sup>

Characteristic			Standard Output	Inverted Output
Sensing Angle	Linearity Error <sup>2</sup>	Accuracy Error		
50° (±25°)	±2.0%	—		
60° (±35°)				
70° (±35°)				
90° (±45°)				
120° (±60°)				
180° (±90°)				
270° (±135°)				
350° (±175°)				
360° (±180°)				

**Notes:**

1. See Figure 2 for references to (A) (B) (C).
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.

# RTP Series Hall-effect Rotary Position Sensors

Issue A

32307666

## **▲ 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.

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](mailto:info.sc@honeywell.com)

Internet: [sensing.honeywell.com](http://sensing.honeywell.com)

Phone and Fax:

USA/Canada +1-800-537-6945

International +1-815-235-6847; +1-815-235-6545 Fax

Sensing and Control

**Honeywell**

1985 Douglas Drive North

Golden Valley, MN 55422

[honeywell.com](http://honeywell.com)

32307666-A-EN IL50

May 2015

© 2015 Honeywell International Inc. All rights reserved.

**Honeywell**

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Industrial Motion & Position Sensors](#) category:*

*Click to view products by [Honeywell](#) manufacturer:*

Other Similar products are found below :

[595002M9474](#) [01071901](#) [6015-1002-030](#) [D02318603](#) [70U1N048S104U](#) [G8652](#) [G8744](#) [GA1T040F103UA](#) [GA1T100F502UA-A](#)  
[GA2E056P102UA](#) [GA2G140F252UA-A](#) [GA2T044S103UA-B](#) [GPS8627](#) [GS1N048P103UA](#) [GS2T032F253BA](#) [GS4P048F503UC](#)  
[GS4T040F503UC](#) [GS8367B](#) [GS8819](#) [9811405](#) [17M701-C](#) [JA3G032P501UA-A](#) [KJ5-M18MB60-AZS](#) [RV8NAYSB104A](#) [27M226](#) [29M426](#)  
[9810825](#) [9870706](#) [F07008036](#) [SPSN048P202U](#) [F65118112](#) [GA2M028S102MC](#) [GA2M028S502RA](#) [GA2P056F254UA](#) [GA2T056F502UA](#)  
[GH8810](#) [25M921](#) [GS8362](#) [GS8368B](#) [CM47070](#) [CR121250](#) [31M573](#) [380000M8643](#) [385500M9303](#) [388037M6962](#) [388281M9646](#)  
[388517025480039](#) [388580038670069](#) [388818078120022](#) [388860073800031](#)