

## SNDH-H Series Hall-Effect Speed Sensors



### DESCRIPTION

The SNDH-H Series Hall-Effect Speed Sensors use a magnetically biased Hall-effect integrated circuit to accurately sense movement of ferrous metal targets. The specially designed IC (integrated circuit) and a permanent magnet are sealed in rugged, probe-type packages.

The flux density of the permanent magnet alters when approached by ferrous metal. This is detected by the Hall ICs.

### FEATURES

- Solid state, non-contacting Hall-effect magnetic sensing allows the device the ability to sense through dust, dirt and debris, enhancing reliability and product life
- Air gap up to 2,5 mm [0.098 in] allows sensor to be up to 2,5 mm away from target
- High frequency switching capability (to 15 kHz) allows the device to handle high RPMs (SNDH-H3L-G01, SNDH-H3C-G03, SNDH-H3C-G05, SNDH-H3C-G06)
- O-ring seal allows device to be sealed into housings
- Two housing materials allow flexibility within the application: stainless steel (corrosion and rust resistant): SNDH-H3L-G01; plastic: SNDH-H3C-G03, SNDH-H3C-G04, SNDH-H3C-G05 and SNDH-H3C-G06, SNDH-H3P-G01
- Various probe lengths (20,3 mm [0.80], 24 mm [0.94 in], 27,5 mm [1.08], 40 mm [1.57 in], 46 mm [1.81 in], 67 mm [2.64 in]) simplify use within the application
- High operating temperature [-40 °C to 150°C (-40 °F to 302 °F)] (SNDH-H3C-G03, SNDH-H3C-G05, SNDH-H3C-G06) allows the device to be used in high temperature applications (e.g., engines)
- Digital current sinking output (open collector) simplifies electrical interfacing to control systems

If the sensor is positioned at the circumference of a revolving gear wheel, for example, it detects the teeth and tooth spaces, supplying a digital pulse output with frequency proportional to gear wheel speed.

Optimum performance is dependent upon variables which must be considered in combination: target material, geometry and speed, sensor/target gap, and environmental temperature.

- Multiple connector options (Bosch 928000453, Delphi-Packard Metripak 150.2 Type 101, Deutsch DT06-3S) simplify installation
- Omnidirectional capability eliminates the need to align the sensor to the target, allowing the user to simply bolt the device (SNDH-H3C-G0, SNDH-H3L-G01)
- Zero speed versions indicate that the rotation has stopped, allowing the device to work at extremely low RPMs (SNDH-H3L-G01, SNDH-H3C-G04, SNDH-H3P-G01)
- Stable performance over temperature range and airgap range

### POTENTIAL APPLICATIONS

#### Transportation

- Engine camshaft and crankshaft speed
- Transmission speed
- Vehicle speed
- Wheel speed
- Pump speed
- Motor speed

#### Industrial

- Flow meters and flow turbines
- Pump speed
- Motor speed

# SNDH-H Series

**Table 1. Specifications**

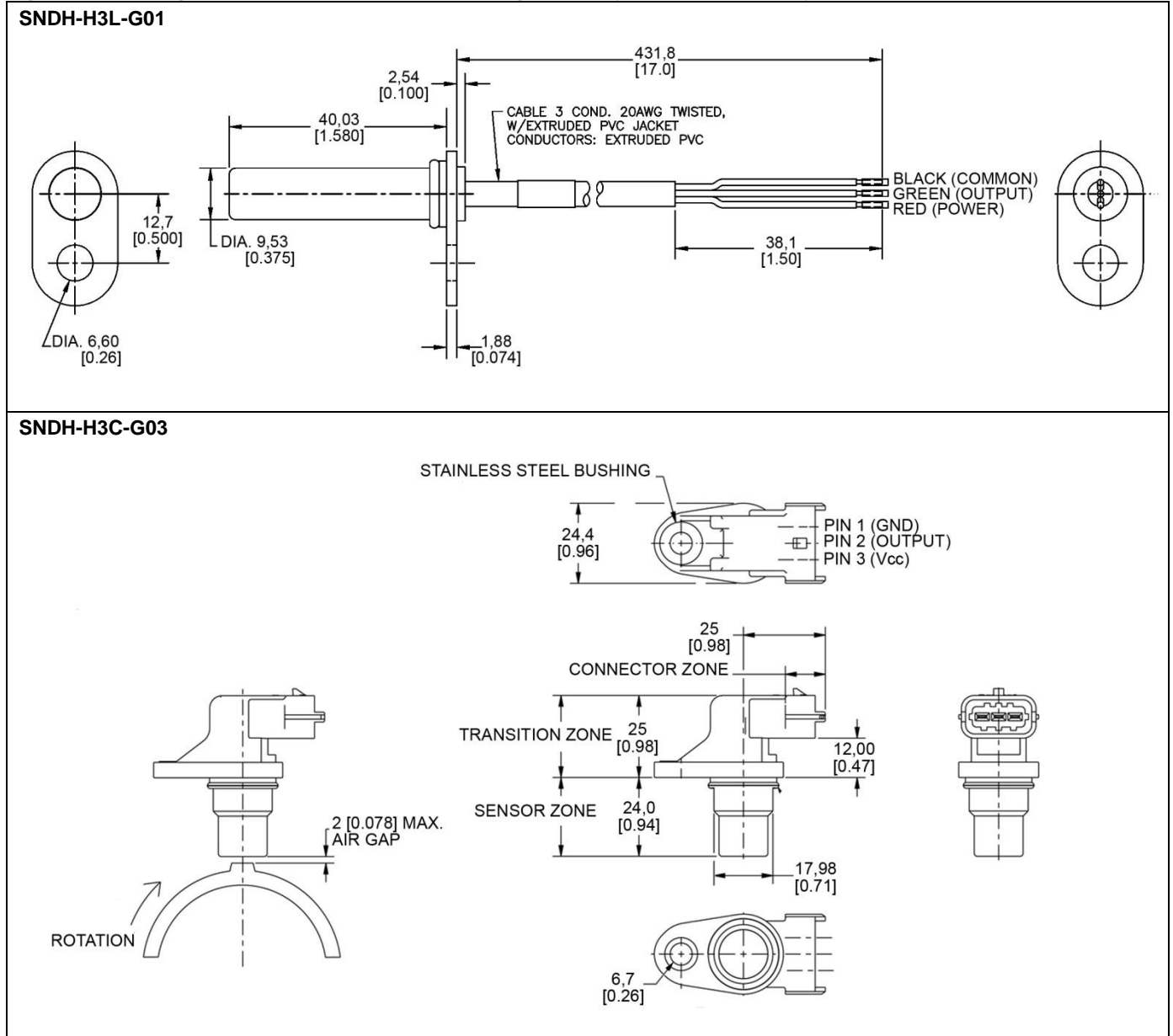
| Characteristic               | SNDH-H3L-G01                             | SNDH-H3C-G03                           | SNDH-H3C-G04                                 | SNDH-H3C-G05                           | SNDH-H3C-G06    | SNDH-H3P-G01                           |
|------------------------------|--|--|--|--|-----------------|--|
| Supply voltage range         | 4 Vdc to 24 Vdc                          | 4.5 Vdc to 24 Vdc                      | 6.5 Vdc to 24 Vdc                            | 4.5 Vdc to 24 Vdc                      |                 | 6.5 Vdc to 24 Vdc                      |
| Output                       | digital current sinking (open collector) |  |  |  |                 |  |
| Supply current               | 6 mA max.                                | 20 mA max.                             | 14 mA max.                                   | 20 mA max.                             |                 | 14 mA max.                             |
| Output current               | 30 mA <sup>1</sup>                       | 20 mA sinking                          |  |  |                 |  |
| Output leakage current       | 10 µA                                    |  |  |  |                 |  |
| Reverse output voltage       | -  |  | -0.5 V                                       | -                                      |                 |  |
| Rise time (10% to 90%)       | 400 ns                                   | 15 µs max.                             | 1 µs   | 15 µs max.                             |                 | 1 µs                                   |
| Fall time (90% to 10%)       | 400 ns                                   | 0.01 µs max.                           | 0.6 µs                                       | 0.01 µs max.                           |                 | 0.6 µs                                 |
| Target orientation           | omnidirectional                          |  | alignment required                           | omnidirectional                        |                 | alignment required                     |
| Zero speed                   | yes                                      | no                                     | yes  | no                                     |                 | yes                                    |
| Operating frequency range    | 0 kHz to 15 kHz                          | 2 Hz to 15 kHz                         | 0 kHz to 12 kHz                              | 2 Hz to 15 kHz                         |                 | 0 kHz to 12 kHz                        |
| Operating temp. range        | -40 °C to 100 °C<br>[-40 °F to 212 °F]   | -40 °C to 150 °C<br>[-40 °F to 302 °F] | -40 °C to 125 °C<br>[-40 °F to 257 °F]       | -40 °C to 150 °C<br>[-40 °F to 302 °F] |                 | -40 °C to 125 °C<br>[-40 °F to 257 °F] |
| Dielectric                   | 200 Vdc                                  | -                                      |  |  |                 |  |
| Housing material             | stainless steel                          | plastic                                |  |  |                 |  |
| Sensing air gap              | up to 2,5 mm<br>[0.098 in]               | up to 2 mm<br>[0.079 in]               | up to 2,5 mm<br>[0.098 in]                   | up to 2 mm<br>[0.079 in]               |                 | up to 2,5 mm<br>[0.098 in]             |
| Target tooth width           | 2 mm [0.079 in]                          | 2,5 mm [0.098 in]<br>may vary          | 3 mm [0.118 in]                              | 2,5 mm [0.098 in]<br>may vary          |                 | 3 mm [0.118 in]                        |
| Target slot width            | 2 mm [0.079 in]                          | 5 mm [0.197 in],<br>constant           | >2 mm [0.079 in]                             | 5 mm [0.197 in]<br>constant            |                 | >2 mm [0.079 in]                       |
| Tooth height                 | 5 mm [0.197 in]                          | 3 mm [0.118 in]                        | >2 mm [0.079 in]                             | 3 mm [0.118 in]                        |                 | >2 mm [0.079 in]                       |
| Target width                 | ≥3 mm<br>[0.118 in]                      | >2 mm [0.079 in]                       |  |  |                 |  |
| Sensor misposition to target | dependent on target geometry             |  |  |  |                 |  |
| Probe length                 | 40 mm [1.57 in]                          | 24 mm [0.94 in]                        | 27,5 mm [1.08 in]                            | 46 mm [1.81 in]                        | 67 mm [2.64 in] | 20,3 mm [0.80 in]                      |
| Probe diameter               | 9,53 mm<br>[0.375 in]                    | 17,98 mm<br>[0.71 in]                  | 18,6 mm<br>[0.73 in]                         | 17,98 mm<br>[0.71 in]                  |                 | 15,37 mm<br>[0.605 in]                 |
| Connector                    | lead <sup>3</sup>                        | Bosch 928000453                        | Delphi-Packard<br>Metripak 150.2<br>Type 101 | Bosch 928000453                        |                 | Deutsch<br>DT06-3S                     |

**Notes:**

1. Short circuit protected.

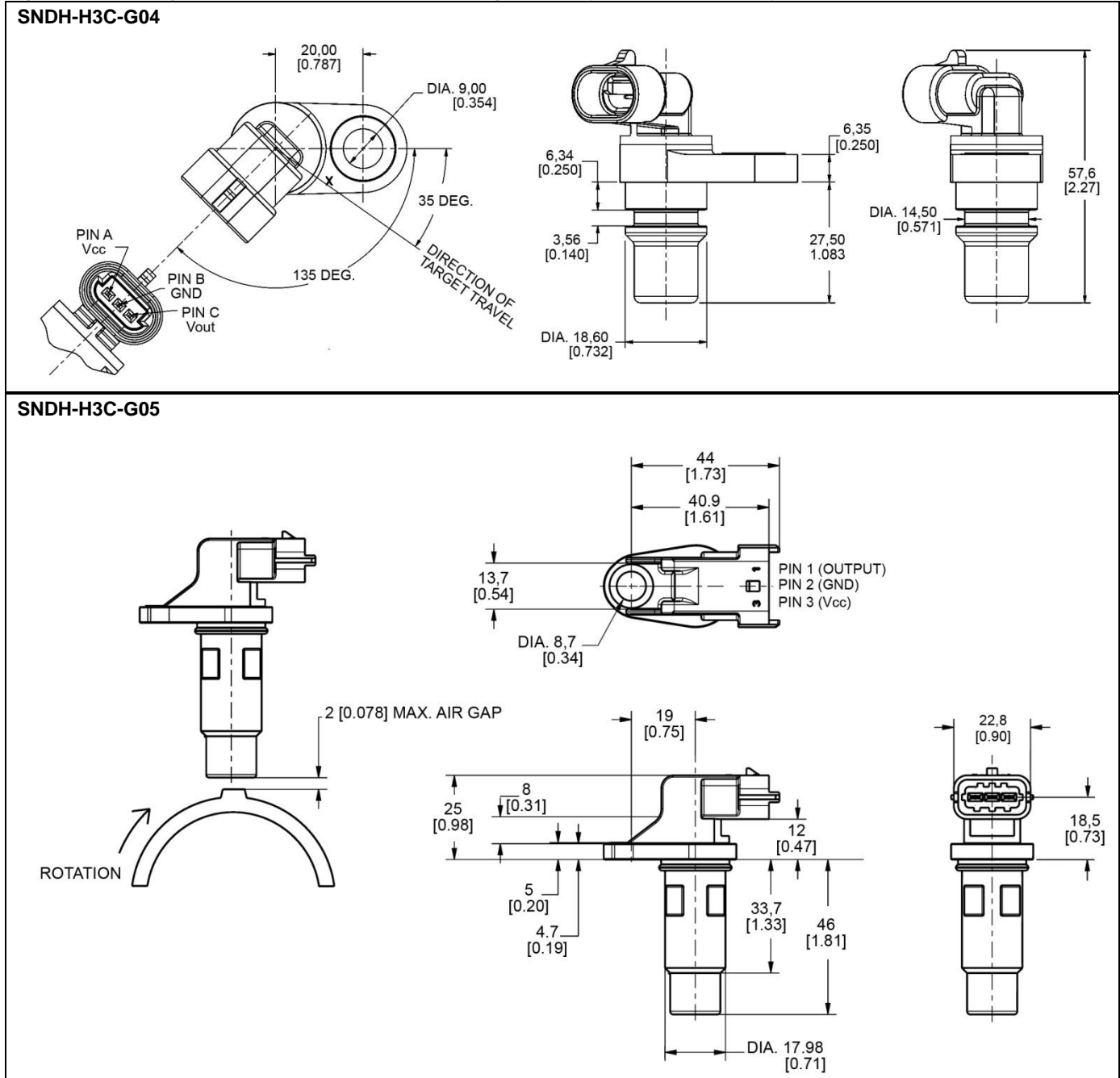
# Hall-Effect Speed Sensors

Figure 1. Mounting Dimensions and General Mounting Geometry (For reference only: mm [in.])



# SNDH-H Series

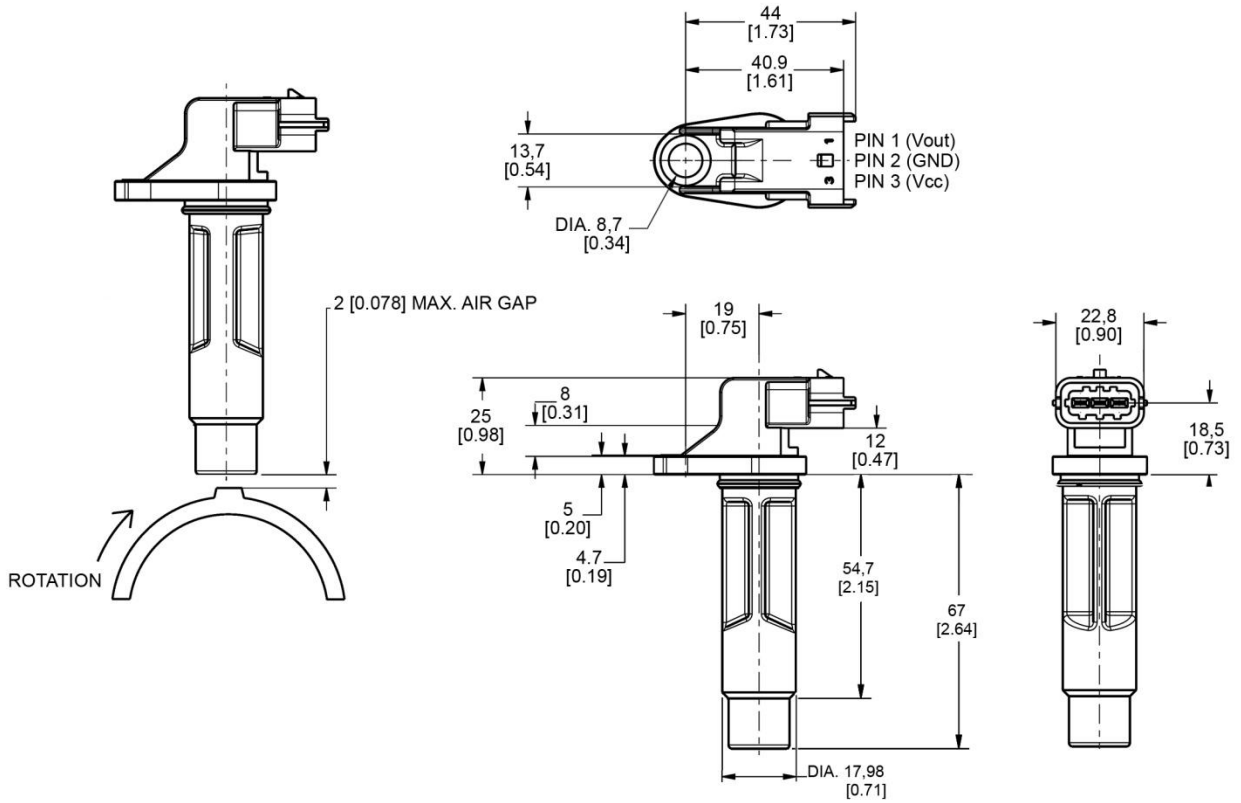
Figure 1. Mounting Dimensions and General Mounting Geometry (For reference only: mm [in.]) (continued)



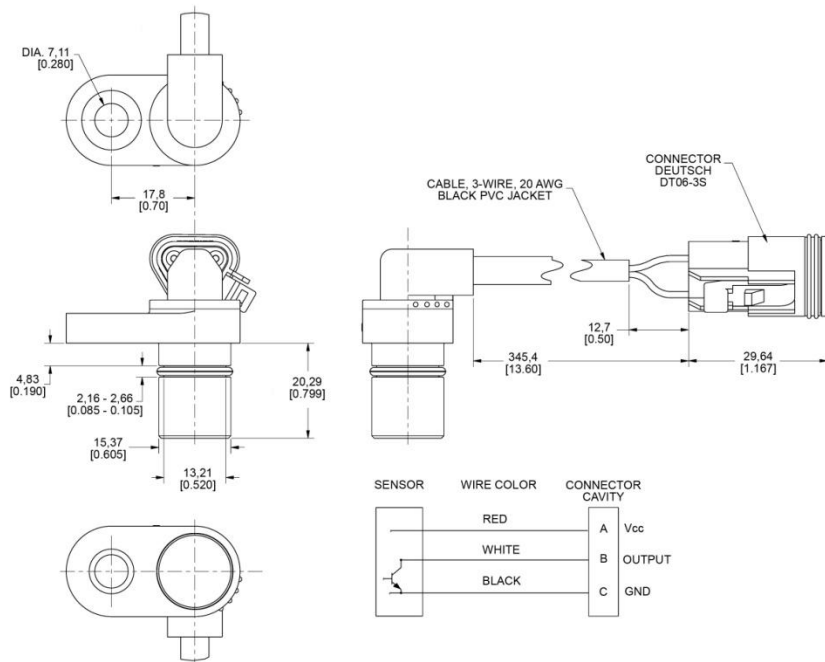
# Hall-Effect Speed Sensors

Figure 1. Mounting Dimensions and General Mounting Geometry (For reference only: mm [in.]) (continued)

## SNDH-H3C-G06



## SNDH-H3P-G01



## Order Guide

| Catalog Listing | Description   |
|-----------------|---|
| SNDH-H3L-G01    | SNDH-H Series, Hall-effect speed sensor, zero speed, omnidirectional, stainless steel, 40 mm [1.57 in] probe length, leaded connector       |
| SNDH-H3C-G03    | SNDH-H Series, Hall-effect speed sensor, omnidirectional, plastic, 24 mm [0.94 in] probe length, Bosch 928000453 connector                  |
| SNDH-H3C-G04    | SNDH-H Series, Hall-effect speed sensor, zero speed, plastic, 27,5 mm [1.08] probe length, Delphi-Packard Metripak 150.2 Type 101 connector |
| SNDH-H3C-G05    | SNDH-H Series, Hall-effect speed sensor, omnidirectional, plastic, 46 mm [1.81 in] probe length, Bosch 928000453 connector                  |
| SNDH-H3C-G06    | SNDH-H Series, Hall-effect speed sensor, omnidirectional, plastic, 67 mm [2.64 in] probe length, Bosch 928000453 connector                  |
| SNDH-H3P-G01    | SNDH-H Series, Hall-effect speed sensor, zero speed, plastic, 20,3 mm [0.80] probe length, Deutsch DT06-3S connector                        |

### **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**

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005933-2-EN  
February 2012  
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