PRODUCT DESCRIPTION

SPECTEC’s Proximity/Zero Speed position sensor are designed to switch in the presence ferrous targets such as gear teeth and blade tips, etc. Gear teeth as small as module 0.5 or 48 DP can be sensed. Standard output is provided from a 3k Ohm internal pull-down resistor to a collector, which can sink 25mA. Open collector or source output can be provided. A robust sink/source NPN/PNP low independence rail-to-rail output with 60V automotive load dump and short circuit/reverse voltage protection is available. In addition, a 2 wire pulsed current loop option is available. The sensor is reverse polarity protected.

For intrinsically safe versions refer to bulletin: IS170 & IS171

SPECIFICATIONS

Orientation:
- Single: No orientation required.
- Dual: For directional applications, the alignment mark must be in line with the rotation of the target. For synchronous output, the alignment mark should be at a right angle to the rotation of the target. Differential: The alignment mark must be in line with the rotation of the gear.

Vs, Supply Voltage:
- 4.5 to 30 Vdc @ ≤ 18 mA
- 4.0 to 24 Vdc @ ≤ 24 mA (Differential)
- Reverse Polarity Protected
- 6.5 to 36 Vdc for Sink/Source Output
- Short Circuit Protection Available

Vo, Signal Out:
- Output signal is typically ‘Normally High’, except for PNP output which is ‘Normally Low’

Operating Freq.:
- 0 to ~20 kHz (Standard & Dual)
- ~15 Hz to ~30 kHz (Differential)

Air Gap:
- 24DP/Module 1: .045"(1.1mm)
- 12DP/Module 2: .070"(1.8mm)
- 5DP/Module 3: .130"(3.3mm)

Magnetization:
- Standard: ~1500 Gauss
- Low Mag: ~500 Gauss

Rise/Fall Time:
- 0.10 µs to 2 µs
  *Dependent of configuration

Temperature Range:
- 2TE: -40° to 221°F (-40° to 105°C)
  *May be reduced based on configuration
- 3TE: -40° to 302°F (-40° to 150°C)
  *May be reduced based on configuration

Construction:
- 300 Series stainless steel housing
- Solid epoxy encapsulation

Connectors & Pin Assignments:
- All have gold plated contacts

Lead Wire Assignments:
- Red: Supply (+)
- Black: Common (-)
- White: Signal A
- Green: Signal B (dual sensor only)
- Bare: Cable Shielding

CE-Compliance:
- EN55011, EN50082-2

OPTIONS

Custom configurations, special materials of construction, temperature probe (NTC10, RTD100, or others). For directional sensing, a dual sensor can be used with P/N 4033.
### ORDER INFORMATION

<table>
<thead>
<tr>
<th>STYLE</th>
<th>OPTIONS</th>
<th>THREADS/DIA.</th>
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</thead>
<tbody>
<tr>
<td>0169</td>
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<td>5/8-18 UNF with CONNECTOR</td>
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<tr>
<td>0169M</td>
<td></td>
<td>M16x1.5</td>
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<tr>
<td>0169M1</td>
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<td>M16x1.0</td>
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</tbody>
</table>

**Thread Length(A):**

1. 1.1” (28mm)  
2. 1.25” (32mm)  
3. 1.75” (43mm)  
4. 3.0” (76mm)  
5. 4.0” (102mm)  
6. 5.0” (127mm)  
7. 6.0” (152mm)

**Temp. Range:**

1. -40°F to +257°F (-40°C to +125°C)  
2. -40°F to +302°F (-40°C to +150°C)

**Vo, Signal Out:**

1. 0 – Vs, NPN, with internal 3 kOhm pull-up (Normally High)  
2. 0 – Vs, NPN, OC (Open Collector) (Normally High)  
3. 0 – Vs, PNP OC (Normally Low)  
4. 0 – Vs, PNP OC (4.7k) (Normally Low)  
5. 0 – Vs, Sink/Source with Short Circuit Protection (85°C max.)  
6. 0 – Vs, Sink/Source with Short Circuit Protection (85°C max.)  
7. 0 – Vs, Sink/Source (125°C max.)  
8. 0 – Vs, Sink/Source (125°C max.)  
9. 4-20mA, 2 Wire Pulsed Current Loop  
10. 7-16mA, 2 Wire Pulsed Current Loop

**Connector:**

0. MS: 2 Pin MS3102-10SL-4P (For two wire current loop, See Bulletin 3000)  
1. MS3: 3 Pin MS3106-10SL-3P (See Bulletin 3000)  
2. MC3: 3 Pin Micro-C (See Bulletin 3004)  
3. MS3B: 3 Pin MS3102-10SL-3P (See Bulletin 3000)  
4. B4: 4 Pin Bayonet, MS3113-H8A4P (See Bulletin 3001)  
5. MD4: 4 Pin Micro DIN (See Bulletin 3005)

### CONNECTOR PINOUTS

**COMMON**

- **DUAL SENSORS (HHF)**
- **SINGLE SENSORS (HF)**

**Note:** The magnetization level for special or low mag sensors is designated as a suffix to the P/N. i.e.: 0169-13112-500G designating a Gauss level of 500 ± 50. (Standard mag. level will not have a suffix.)

A Normally Low output signal is available for the NPN output signal option (TTL, Supply Tracking and Open Collector) by adding ‘-NL’ to the end of the part number.

Similarly, a Normally High output signal is available for the PNP output signal option by adding ‘-NH’ to the end of the part number.

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<td>5/8-18 UNF with CABLE</td>
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<td>0170A</td>
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<td>M16x1.5</td>
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<tr>
<td>0170M</td>
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<td>M16x1.0</td>
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**Thread Length(A):**

1. 1.1” (28mm)  
2. 1.25” (32mm)  
3. 1.75” (43mm)  
4. 2.0” (51mm)  
5. 3.0” (76mm)  
6. 4.0” (102mm)  
7. 5.0” (127mm)  
8. 6.0” (152mm)

**Cable Type & Temp. Range:**

1. PVC Cable: -40°F to 221°F (-40°C to +105°C)  
2. TFE Cable: -40°F to 302°F (-40°C to +150°C)

**Shielded Cable (X):**

1. 7’ - 3’ (1m) PVC Cable  
2. 8’ - 6’ (2m) PVC Cable  
3. 9’ - 10’ (3m) PVC Cable

**Note:** For Shielded Cable, shield is not connected to sensor shell, and is intended to be connected to the instrument panel ground.

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<td>5/8-18 UNF with 1/2-14 NPT Male CONDUIT</td>
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<tr>
<td>0170Y</td>
<td></td>
<td>5/8-18 UNF with 1/2-14 NPT Female CONDUIT</td>
</tr>
</tbody>
</table>

**Thread Length(A):**

1. 0.7” (18mm)  
2. 1.3” (33mm)  
3. 2.0” (51mm)  
4. 2.8” (71mm)  
5. 4.0” (102mm)