

## 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  
 See Page 2

### Vo, Signal Out:

Output signal is typically 'Normally High', except for PNP output which is 'Normally Low'  
 See note on Page 2 for more information

### 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 &

See Page 2

### 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

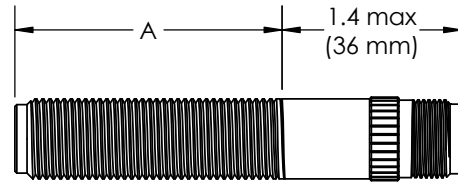
### CE-Compliance:

EN55011, EN50082-2

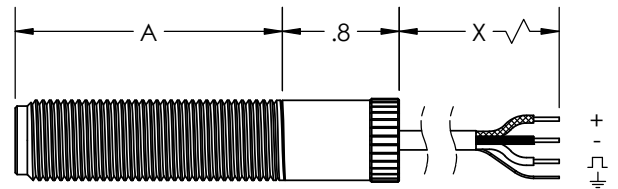
## OPTIONS

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.

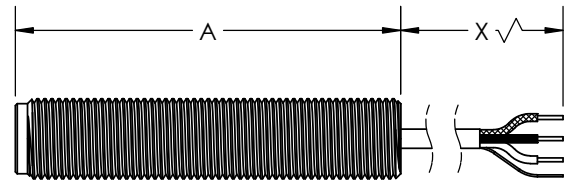
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 0169M M16x1.5  
 0169M1 M16x1.0  
 0169N M14x1.5  
 0169N1 M14x1.0



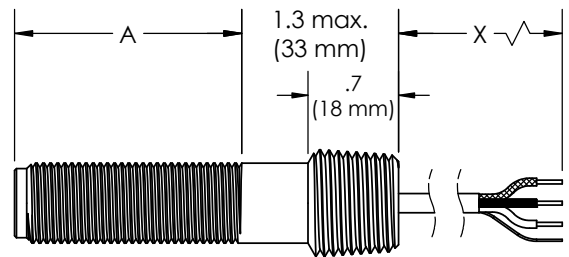
0170 5/8-18 UNF



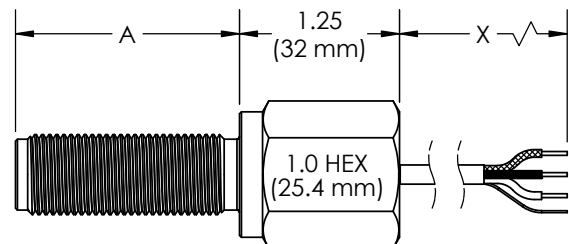
0170A 5/8-18 UNF  
 0170M M16x1.5  
 0170M1 M16x1.0  
 0170N M14x1.5  
 0170N1 M14x1.0



0170X 5/8-18 UNF w/ 1/2-14 NPT Male



0170Y 5/8-18 UNF w/ 1/2-14 NPT Female



# ORDER INFORMATION

STYLE	OPTIONS	THREADS/DIA.
0169	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	5/8-18 UNF with CONNECTOR
0169M	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	M16x1.5
0169M1	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	M16x1.0
0169N	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	M14x1.5
0169N1	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	M14x1.0

Thread Length(A):	1 - 1.1" (28mm)	4 - 3.0" (76mm)
	2 - 1.25" (32mm)	5 - 4.0" (102mm)
	3 - 1.75" (43mm)	6 - 5.0" (127mm)
	A - 2.5" (64mm)	7 - 6.0" (152mm)

Temp. Range:	1 - 2TE: -40° to 257°F (-40° to +125°C)
	6 - 3TE: -40° to 302°F (-40° to +150°C)

Vo, Signal Out:	1 - 0 - Vs, NPN w/internal 3 k Ohm pull-up [Normally High]
	2 - 0 - Vs, NPN, OC (Open Collector) [Normally High]
	3 - 0 - Vs, PNP OC [Normally Low]
	P - 0 - Vs, PNP OC (4.7k) [Normally Low]
	4 - 0 - Vs, NPN, with LED [Normally High]
	5 - 0 - 5V, NPN [TTL] [Normally High]
	6 - 0 - Vs, Sink/Source with Short Circuit Protection (85°C max.)
	7 - 0 - 5V, Sink/Source with Short Circuit Protection (85°C max.)
	8 - 0 - Vs, Sink/Source (125°C max.)
	9 - 0 - 5V, Sink/Source (125°C max.)

Sensor Type:	2 - Dual Sensor (HHF)
	3 - Standard type single sensor (HF)
	4 - Differential type (HFd)

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)
	6 - MD4: 4 Pin Micro DIN (See Bulletin 3005)

0170	0170A	0170M	0170M1	0170N	0170N1	5/8-18 UNF with CABLE
- <input type="checkbox"/>	- <input type="checkbox"/>	- <input type="checkbox"/>	- <input type="checkbox"/>	- <input type="checkbox"/>	- <input type="checkbox"/>	
						5/8-18 UNF
						M16x1.5
						M16x1.0
						M14x1.5
						M14x1.0

Thread Length(A):	0170	0170A, M, M1, N, N1
	1 - 1.1" (28mm)	1.0" (25mm)
	2 - 1.25" (32mm)	---
	3 - 1.75" (43mm)	2.0" (51mm)
	4 - 3.0" (76mm)	3.0" (76mm)
	5 - 4.0" (102mm)	4.0" (102mm)
	6 - 5.0" (127mm)	5.0" (127mm)
	7 - 6.0" (152mm)	6.0" (152mm)

Cable Type & Temp. Range:	1 - PVC Cable: -40° to 221°F (-40° to +105°C)
	6 - TFE Cable: -40° to 302°F (-40° to +150°C),

SAME AS ABOVE

Shielded Cable (X): (22 AWG)	7 - 3' (1m)	Note: For Shielded Cable, shield is not connected to sensor shell, and is intended to be connected to the instrument panel ground.
	8 - 6' (2m)	
	9 - 10' (3m)	

0170X	0170Y	5/8-18 UNF with 1/2-14 NPT Male CONDUIT
- <input type="checkbox"/>	- <input type="checkbox"/>	
		5/8-18 UNF with 1/2-14 NPT Female CONDUIT

Thread Length(A):	0170X	0170Y
	1 - 0.7" (18mm)	---
	2 - 1.3" (33mm)	2.0" (51mm)
	3 - ---	3.0" (76mm)
	4 - ---	4.0" (102mm)

SAME AS ABOVE

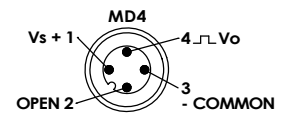
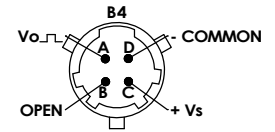
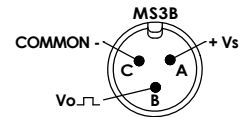
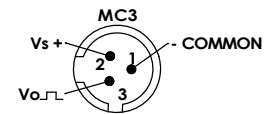
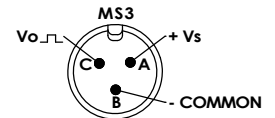
**Note:** The magnetization level for special or low mag sensors is designated as a suffix to the P/N. i.e.: 0169-13112-500G designating a Gauss level of 500 ± 50. (Standard mag. level will not have a suffix.)

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.

## CONNECTOR PINOUTS

### SINGLE SENSORS (HF)



### DUAL SENSORS (HHF)

