

### PRODUCT DESCRIPTION

SPECTEC's Non-Incendive / Increased Safety zero speed sensors are designed for installation in CL 1, Div 2 or Zone 2 hazardous locations and do not require a safety barrier. They are offered in a wide variety of configurations as outlined on page 2. These sensors are actuated by gear teeth and other ferrous targets. Variations with dual sensors or directional output are also available. Custom sensors can also be created to meet specific needs.

### INSTALLATION

**CAUTION: This sensor MUST be installed following the details specified in the Installation Instruction Document #85047N.**

### SPECIFICATIONS

- Supply Voltage:** 5 to 30 Vdc @ ≤15 mA
- Output Voltage:** See page 2  
(25 mA maximum current sinking)
- Frequency Range:** 0 Hz to ~20 kHz
- Rise/Fall Time:** .04 / .18 μs Nominal
- Air Gap:** 5DP: ≤ .160"  
48DP: ≤ .025"
- Magnetization:** 700 -1600 Gauss
- Direction signal: (as applicable)** Forward Logic 1 (5V max)  
(target rotating toward alignment mark)  
Reverse Logic 0 (0.06V max)  
(target rotating away from alignment mark)
- Connection:** Connector or lead wires. See page 2
- Construction:** 300 Series Stainless Steel  
Solid Epoxy Encapsulation

### CERTIFICATIONS for N170 & N171

**USA:** N170: Class I, Division 2  
GROUP ABCD T6...T5  
N171: Class I, II, III, Division 2  
GROUP ABCDEFG T6...T5  
Class I, Zone 2, AEx nC IIC T6...T5



**Canada:** Class I, Division 2  
GROUP ABCD T6...T5  
Class I, Zone 2, Ex nL IIC T6...T5  
T5 @ -40°C ≤ T<sub>amb</sub> ≤ +85°C  
T6 @ -40°C ≤ T<sub>amb</sub> ≤ +65°C

**ATEX & UKEX:** II 3 G Ex ec IIC T6...T3 Gc  
FM08ATEX0067X  
FM22UKEX0109X



**IECEx:**

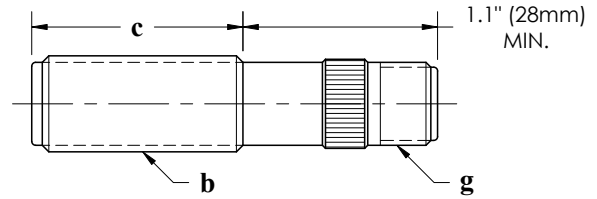


Compliance with  
EN55011, EN50082-2

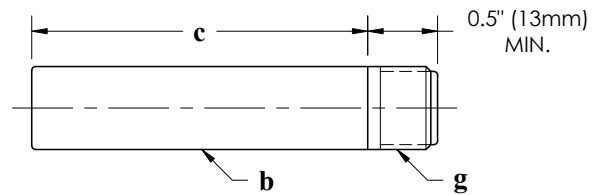
Ex ec IIC T6...T3 Gc  
IECEx FMG 16.0003X

T3 @ -40°C ≤ T<sub>amb</sub> ≤ +135°C  
T4 @ -40°C ≤ T<sub>amb</sub> ≤ +120°C  
T5 @ -40°C ≤ T<sub>amb</sub> ≤ +85°C  
T6 @ -40°C ≤ T<sub>amb</sub> ≤ +65°C

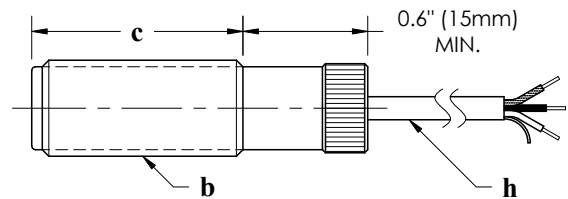
- N170** K shell type, knurled (shown below)  
A shell type, all-thread (knurl removed)  
H shell type, hex (knurl replaced by hex)



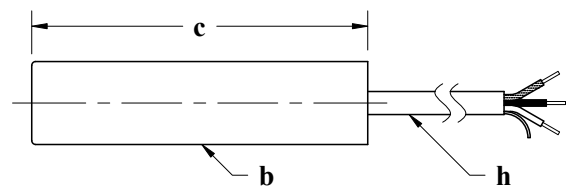
- N170** S shell type, smooth (custom units available)



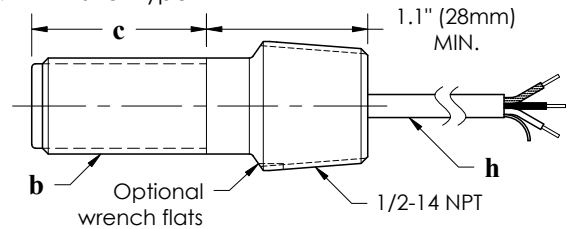
- N171** K shell type, knurled (shown below)  
A shell type, all-thread (knurl removed)  
H shell type, hex (knurl replaced by hex)



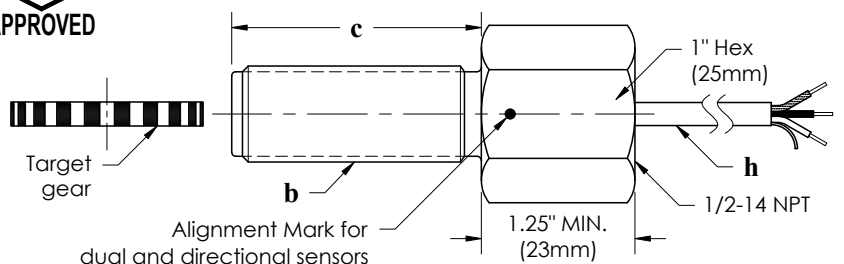
- N171** S shell type, smooth (custom units available)



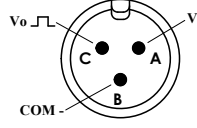
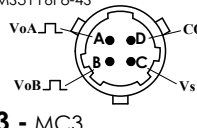
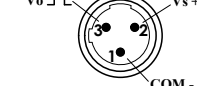
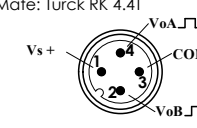
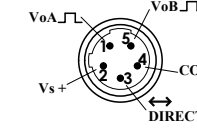
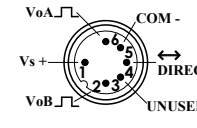
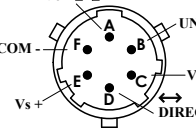
- N171** X shell type



- N171** Y shell type



# FEATURE SELECTION for N170-abcgj and N171-abchj

SPECTEC P/N	a Shell Type	b Thread / Diameter	c Thread Length	Connection Type		j Output Signal	
				g Connector (N170 Only)	h Lead Wires (N171 Only)		
<b>N170-</b> (Connector Version)  <b>or</b>  <b>N171-</b> (Lead Wire Version)	<b>K</b> <b>A</b> <b>H</b>	<b>0</b> - 3/8-24 UNF <b>1</b> - 1/2-20 UNF <b>2</b> - 5/8-18 UNF <b>3</b> - 11/16-24 UNEF <b>4</b> - 3/4-16 UNF <b>5</b> - 3/4-20 UNEF <b>6</b> - M12x1 <b>7</b> - M16x1.5 <b>8</b> - M18x1 <b>9</b> - M18x1.5	<b>0</b> - 0.75" (19mm) <b>1</b> - 1.0" to 1.3" (25-33mm) <b>2</b> - 1.5" to 1.8" (38-45mm) <b>3</b> - 2.0" (51mm) <b>4</b> - 2.5" (64mm) <b>5</b> - 3.0" to 3.5" (76-89mm) <b>6</b> - 4.0" (101mm) <b>7</b> - 6.0" (152mm) <b>8</b> - 8.0" (203mm) <b>9</b> - 10.0" (254mm)	<b>1</b> - MO3 Mate: Amphenol MS3106A10SL-3S 	<b>1</b> - 12" (.3m) <b>2</b> - 36" (1m) <b>3</b> - 120" (3m) <b>4</b> - 198" (5m) <b>5</b> - 396" (10m)	<b>Standard Hall Sensor (HF, HHF, HHFQ)</b> <b>1</b> - 0-5V, NPN(TTL) <b>2</b> - 0-10V, NPN <b>3</b> - 0-Vs, NPN <b>4</b> - 0-Vs, NPN OC <b>5</b> - 0-Vs, PNP OC <b>6</b> - 0-Vs, NPN/PNP  <b>Differential Hall Sensor (HFd, HHFd, HHFdQ)</b> <b>A</b> - 0-5V, NPN(TTL) <b>B</b> - 0-10V, NPN <b>C</b> - 0-Vs, NPN <b>D</b> - 0-Vs, NPN OC <b>E</b> - 0-Vs, PNP OC <b>F</b> - 0-Vs, NPN/PNP	
		<b>S</b> <b>0</b> - ø3/8" (9.5mm) <b>1</b> - ø1/2" (12.7mm) <b>2</b> - ø5/8" (15.9mm)	Same as above	<b>2</b> - B4 Mate: Amphenol MS3116F8-4S 	Lengths of 36" (1m) and longer use shielded cable  18 to 24 AWG (depending on shell size)  PVC or TFE insulation  Red - Supply Black - Common White - Output A Yellow - Output B Green - Direction Shield - Floating (Not connected to shell, please ground to instrumentation)  NOTE: Other lead wire lengths are available.		
		<b>X</b> (N171 only)	<b>1</b> - 1/2-20 UNF <b>2</b> - 5/8-18 UNF <b>3</b> - 11/16-24 UNEF <b>4</b> - 3/4-16 UNF <b>5</b> - 3/4-20 UNEF	<b>0</b> - 0.7" (18mm) <b>1</b> - 1.3" (33mm) <b>4</b> - 2.5" (64mm) <b>7</b> - 6.0" (152mm) <b>8</b> - 8.0" (203mm)	<b>3</b> - MC3 Mate: Turck KB 3T 		
		<b>Y</b> (N171 only)	<b>2</b> - 5/8-18 UNF <b>5</b> - 3/4-20 UNEF <b>7</b> - M16x1.5 <b>8</b> - M18x1 <b>9</b> - M18x1.5	<b>1</b> - 1.1" (28mm) <b>3</b> - 2.0" (51mm) <b>5</b> - 3.0" (76mm) <b>6</b> - 4.0" (101mm) <b>7</b> - 6.0" (152mm) <b>8</b> - 8.0" (203mm) <b>9</b> - 10.0" (254mm)	<b>4</b> - MD4 Mate: Turck RK 4.4T 		
				<b>5</b> - MC5 Mate: Turck KB 5T 	<b>6</b> - MD6 Mate: Turck RK 6T 	<b>7</b> - B6 Mate: Amphenol MS3116F10-6S 	

## Variants:

**N170-abcgjD** Dual Sensor (HHF) - with quadrature output for manual sensing of direction

**N170-abcgjQ** Directional Sensor (HHFQ) - with quadrature and directional output when properly aligned

## P/N Examples:

**N170-K3412** K shell type, 11/16-24 x 2.5" thread, MO3 connector, 0-10V output

**N171-Y2321** Y shell type, 5/8-18 x 2.0" thread, 36" leads, 0-5V output

**Please Note:** Some combinations of options are not possible, please contact sales with any questions.

For Dual Sensor (HHF), thread size must be 1/2-20 or M12x1 or larger

For Directional Sensor (HHFQ), thread size must be 5/8-18 or M16x1.5 or larger, thread length must be 2.0" or longer

Some output options are only available with thread lengths of 1.5" or longer (2.0" or longer for 'S' shell type)

## Old P/N to New P/N correlations:

N170-01 → N170-K2213

N171-01 → N171-A2333

N171-18 → N171-Y5333

N175-04 → N171-Y5334D

N170-02 → N170-K2214

N171-02 → N171-K2541

N171-80 → N171-K1243

N190-03 → N170-S2471Q

N170-03 → N170-K0615

N171-03 → N171-Y2634

N174-03 → N170-K2523D

N170-90 → N170-S1434

N171-17 → N171-Y2334

N175-03 → N171-A5333D

## SPECIALTY MODELS:

<b>N171-90</b> (was N191-90)	<b>S</b>	Customer specific shell	-	Lead Wires 120" (3m)	0-Vs, NPN w/ 5k pull-up & directional output
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**SPECTEC Thunderbird International Corporation**

Ph. 406-333-4967 · Fax 406-333-4259 www.spectecsensors.com

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