

### PRODUCT DESCRIPTION

SPECTEC's Non-Incendive / Increased Safety digital output magnetic 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. 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

<b>Supply Voltage:</b>	8 to 30 Vdc @ ≤15 mA
<b>Output Voltage:</b>	See page 2 (25 mA maximum current sinking)
<b>Frequency Range:</b>	Standard: ~5 Hz to 25 kHz Noise Canceling: ~5 Hz to 5 kHz
<b>Sensitivity:</b>	See page 2
<b>Rise/Fall Time:</b>	.04 / .18 μs Nominal
<b>Air Gap:</b>	5DP: ~ .070" Max. 48DP: ~ .015" Max depending on surface velocity
<b>Magnetization:</b>	Standard: 700 - 1200 Gauss Low: Specify (300 Gauss typ.)
<b>Pole Piece:</b>	Flush or extended, See page 2
<b>Connection:</b>	Connector or lead wires, See page 2
<b>Construction:</b>	300 Series Stainless Steel Solid Epoxy Encapsulation


### CERTIFICATIONS for N90 & N91

**USA:** N90: Class I, Division 2  
 GROUP ABCD T6...T5   
 N91: Class I, II, III, Division 2 APPROVED  
 GROUP ABCDEFG T6...T5  
 Class I, Zone 2, AEx nC IIC T6...T5

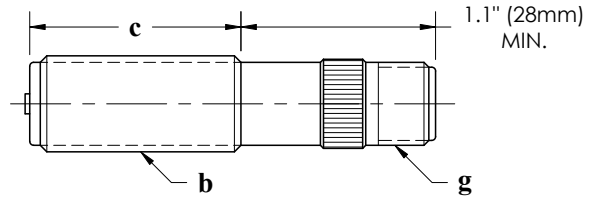
**Canada:** Class I, Division 2  
 GROUP ABCD T6...T5  
 Class I, Zone 2, Ex nL IIC T6...T5  
 T5 @ -40°C ≤ T<sub>amb</sub> ≤ +85°C  
 T6 @ -40°C ≤ T<sub>amb</sub> ≤ +65°C

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

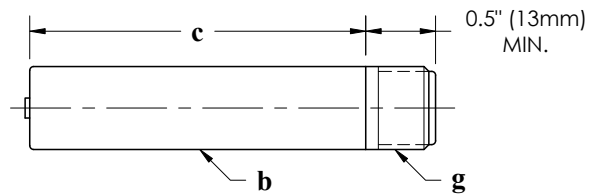
**CE:**   
 Compliance with EN55011, EN50082-2

**IECEx:** 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

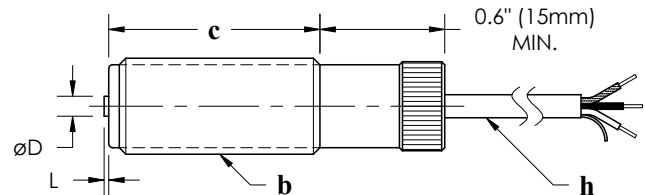
- N90** K shell type, knurled (shown below)  
 A shell type, all-thread (knurl removed)  
 H shell type, hex (knurl replaced by hex)



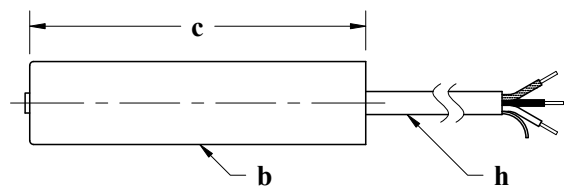
- N90** S shell type, smooth (custom units available)



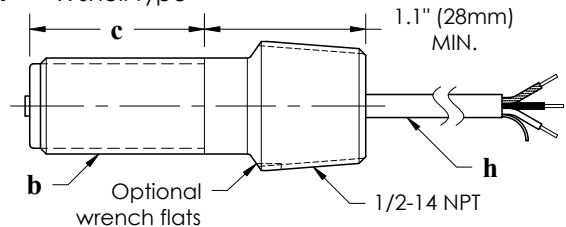
- N91** K shell type, knurled (shown below)  
 A shell type, all-thread (knurl removed)  
 H shell type, hex (knurl replaced by hex)



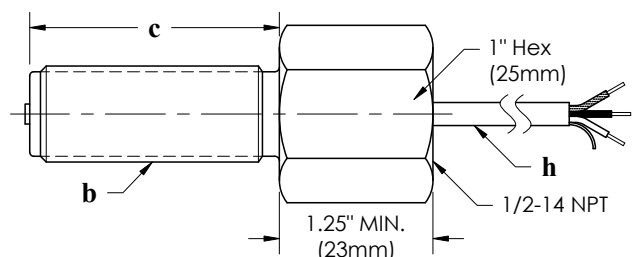
- N91** S shell type, smooth (custom units available)



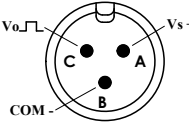
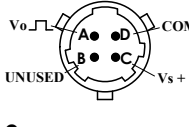
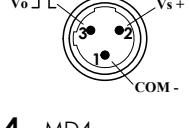
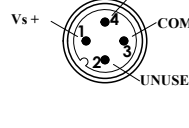
- N91** X shell type



- N91** Y shell type



# FEATURE SELECTION for N90-abcfgjk and N91-abcfhjk

SPECTEC P/N	a Shell Type	b Thread / Diameter	c Thread Length	f Pole Piece	Connection Type		j Output Signal	k Sensitivity	
					g Connector (N90 Only)	h Lead Wires (N91 Only)			
<b>N90-</b> (Connector Version)  <b>or</b>  <b>N91-</b> (Lead Wire Version)	<b>K</b> <b>A</b> <b>H</b>	<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> - FP <b>2</b> - EP62 <b>3</b> - EP93 <b>4</b> - EP106 <b>5</b> - EP125 <b>6</b> - EP188 <b>7</b> - EP250 <b>8</b> - CP10 <b>9</b> - CP45 <b>A</b> - FPS <b>B</b> - EPS106 <b>C</b> - EPS125	<b>1</b> - MO3 Mate: Amphenol MS3106A10SL-3S  <b>2</b> - B4 Mate: Amphenol MS3116F8-4S  <b>3</b> - MC3 Mate: Turck KB 3T  <b>4</b> - MD4 Mate: Turck RK 4.4T 	<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>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>1</b> - 12 mV <b>2</b> - 30 mV	
		<b>S</b>	<b>2</b> - $\varnothing 5/8"$ (15.9mm)	Same as above	For details see below.				
		<b>X</b> (N91 only)	<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>Y</b> (N91 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)					

## Pole Piece details:

FP - Flush pole  $\varnothing$ .130  
 EP106 - Extended pole  $\varnothing$ .106 x .03 long, number after 'EP' describes diameter  
 (all Extended pole options are .030" long except EP125 is .070" long)  
 CP45 - Chisel pole, .045" chisel edge x .03 long  
 Pole types FPS, EPS106, & EPS125 have a stainless steel face on the sensing end.

## Variants:

**N90-abcfgjk-300G** The magnetization level for low magnetic drag sensors is designated as a suffix to the part number. This example designates a gauss level of 300. The standard magnetic level does not require a suffix.

## P/N Examples:

**N90-K345132** K shell type, 11/16-24 x 2.5" thread, EP125 pole piece, MO3 connector, 0-Vs NPN output, 30mV sensitivity  
**N91-Y231312** Y shell type, 5/8-18 x 2.0" thread, FP pole piece, 120" leads, 0-5V output, 30 mV sensitivity

**Please Note:** Some combinations of options are not possible, please contact sales with any questions.  
 Noise Canceling output options are only available with thread lengths of 2.0" or longer (2.5" or longer for 'S' shell type)

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

N90-01 → N90-K221132	N90-04 → N90-K224132	N90-07 → N90-K221211
N90-02 → N90-K221142	N90-05 → N90-K221112	N90-41 → N90-K315111
N90-03 → N90-K224122	N90-06 → N90-K25A122	N91-01 → N91-K224412

**SPECTEC Thunderbird International Corporation**

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

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