

PRODUCT DESCRIPTION

SPECTEC's Non-Incendive / Increased Safety digital output linear and angular position sensors are designed for installation in hazardous locations. They are offered in a wide variety of configurations as outlined on page 2. Custom sensors can also be created to meet specific needs.

For connector version refer to N220 Bulletin.

These sensors are designed to sense continuous variations in magnetic field and convert field strength to a proportional voltage. The output voltage produced for zero magnetic field is nominally 2.5V, with a standard transfer function of $\pm 5\text{mV}/\text{Gauss}$. Magnetic sensitivity is in one axis only. Several units can be combined to measure (X, Y, Z) magnetic field vectors.

INSTALLATION

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

SPECIFICATIONS

Supply Voltage: 8 to 30 Vdc @ $\leq 8\text{ mA}$

Output Range: Voltage
 $< 0.5\text{V}$ to $> 4.5\text{V}$
 (0.06 - 4.95V typical)

Current
 -1.0mA (source) Max.
 10.0mA (sink) Max.

Quiescent Output Voltage: $2.500\text{V} \pm 0.075\text{V}$ at Zero field equivalent to $\pm 15\text{ Gauss}$ (Standard) (R Load $\geq 1\text{M}\Omega$ for stated accuracy and output)

Output Resistance: $300\ \Omega$ typical

Frequency Range: DC to $\sim 30\text{ kHz}$

Sensitivity: See Page 2

Sensing Orientation: No Magnet stabilizes at 2.5V
 North Pole shifts towards 0V
 South Pole shifts towards 5V

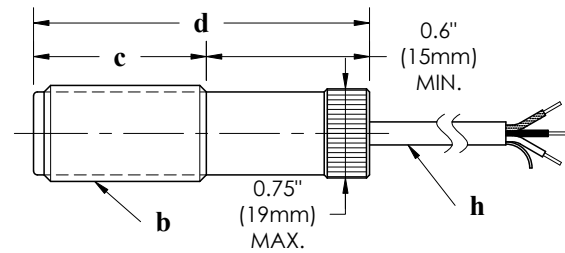
Sensing Distance: 0 to $> 1.0''$
 $\text{@ } 3000\text{ Gauss typical}$

Connection: Connector, See page 2

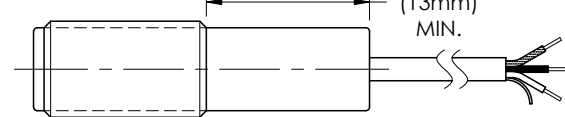
Construction: 300 Series Stainless Steel
 Solid Epoxy Encapsulation

For mating connector/cable assemblies refer to respective bulletins: 3000 for MO, 3001 for B, 3004 for MC, and 3005 for MD.

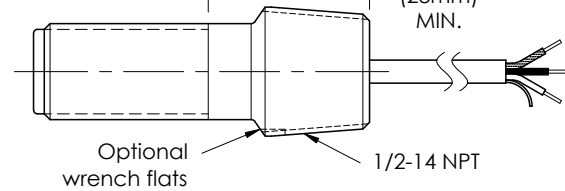
K shell type



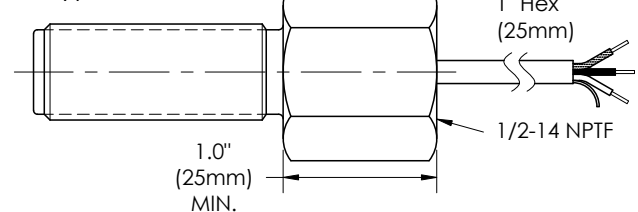
A shell type



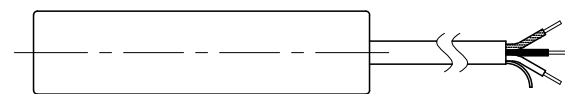
X shell type



Y shell type



S shell type



CERTIFICATIONS for N220

USA:

Class I, 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 @ $-40^\circ\text{C} \leq T_{\text{amb}} \leq +85^\circ\text{C}$
 T6 @ $-40^\circ\text{C} \leq T_{\text{amb}} \leq +65^\circ\text{C}$

ATEX & UKEX:



II 3 G Ex ec IIC T6...T3 Gc
 FM08ATEX0067X
 FM22UKEX0109X

CE:



Compliance with
 EN55011, EN50082-2

IECEX:



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

T3 @ $-40^\circ\text{C} \leq T_{\text{amb}} \leq +135^\circ\text{C}$
 T4 @ $-40^\circ\text{C} \leq T_{\text{amb}} \leq +120^\circ\text{C}$
 T5 @ $-40^\circ\text{C} \leq T_{\text{amb}} \leq +85^\circ\text{C}$
 T6 @ $-40^\circ\text{C} \leq T_{\text{amb}} \leq +65^\circ\text{C}$



FEATURE SELECTION for N221-xx

SPECTEC P/N	a Shell Type	b Thread / Diameter	c Thread Length	d Overall Length	h Lead Wires	k Sensitivity
N221-xx	K A H	1/2-20 UNF 5/8-18 UNF 11/16-24 UNEF 3/4-16 UNF 3/4-20 UNEF M16x1.5 M18x1.5	0.75" (19mm) Minimum 13.0" (330mm) Maximum	1.25" (32mm) Minimum 14.0" (356mm) Maximum	Shielded Cable 18 to 24 AWG (depending on shell size) PVC or TFE insulation Red - Supply Black - Common White - Output Shield - Floating (Not connected to shell) 12" (.3m) 36" (1m) 120" (3m) NOTE: Other lead wire lengths are available.	Standard: 5 mV/Gauss Medium: 3.125 mV/Gauss High: 2.5 mV/Gauss
	X	5/8-18 UNF 11/16-24 UNEF 3/4-16 UNF 3/4-20 UNEF	0.70" (18mm) Minimum 13.0" (330mm) Maximum	1.88" (48mm) Minimum 14.0" (356mm) Maximum		
	Y	5/8-18 UNF 3/4-20 UNEF	1.1" (28mm) Minimum 13.0" (330mm) Maximum	2.35" (60mm) Minimum 14.0" (356mm) Maximum		
	S	5/8" (15.9mm)	N/A	1.25" (32mm) Minimum 14.0" (356mm) Maximum		

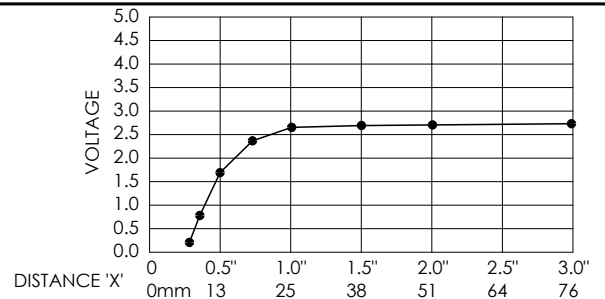
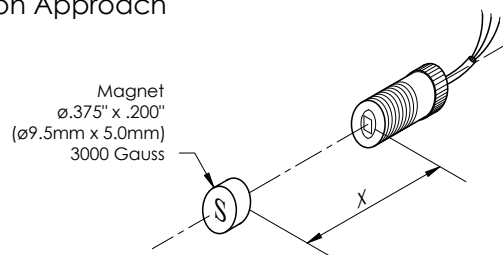
The above features give the range of products available under the certifications. Please specify your specific needs when contacting sales.

SPECIFIC MODELS

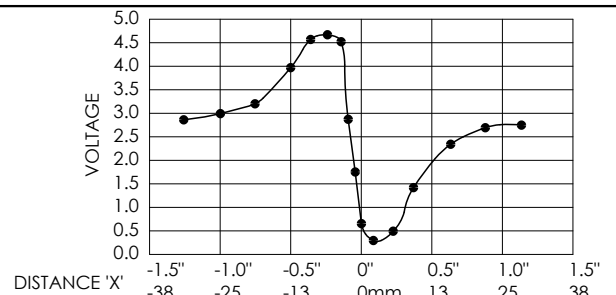
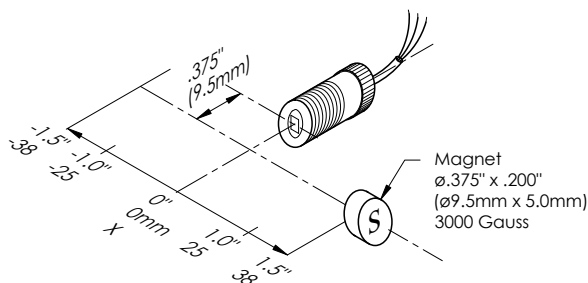
N221-01	K	5/8-18 UNF	1.8" (45mm)	2.5" (64mm)	36" (1m) TFE	5 mV/Gauss
N221-02	Y	5/8-18 UNF	1.5" (38mm)	2.8" (71mm)	10' (3m) TFE	
N221-03	A	M18x1.5	2.0" (51mm)	2.5" (64mm)		

TYPICAL PERFORMANCE DATA

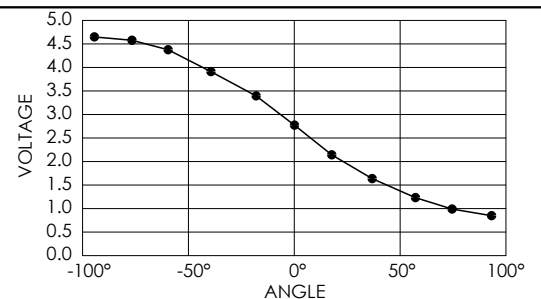
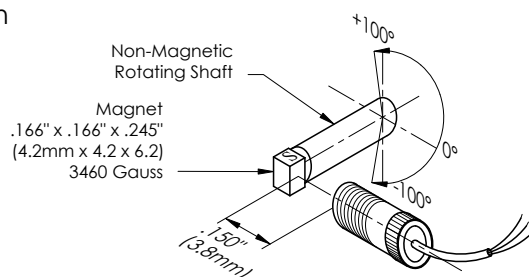
Head-on Approach



Fly By



Shaft Rotation



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