

### PRODUCT DESCRIPTION

SPECTEC's Intrinsically Safe 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 leadwire version refer to IS221 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  $\pm 5\text{mV/Gauss}$ . 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 with an FM approved barrier and following the details specified in the Installation Instruction Document #85047.**

### 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  
 $-1.0\text{mA}$  (source) Max.  
 $10.0\text{mA}$  (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

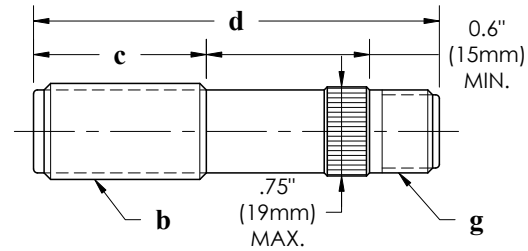
**Sensing Distance:** 0 to  $> 1.0''$   
 @  $3000\text{ Gauss}$  typical

**Connection:** Connector, See page 2

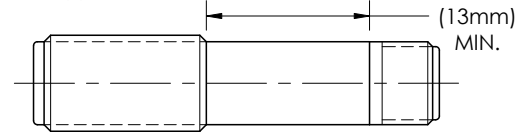
**Construction:** 300 Series Stainless Steel  
 Solid Epoxy Encapsulation

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

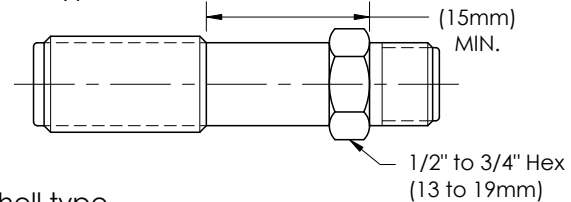
#### K shell type



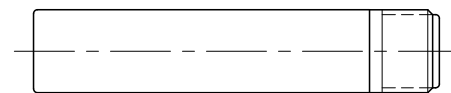
#### A shell type



#### H shell type



#### S shell type



### CERTIFICATIONS for IS220

**USA:**

Intrinsically Safe  
 Class I, II, III, Division 1  
**GROUP ABCDEFG T6...T5**  
 Class I, Zone 0, AEx ia IIC T6...T5



**Canada:**

Intrinsically Safe  
 Class I, Division 1  
**GROUP ABCD T6...T5**  
 Class I, Zone 0, Ex ia IIC T6...T5  
 T5 @  $-40^\circ\text{C} \leq T_{\text{amb}} \leq +85^\circ\text{C}$   
 T6 @  $-40^\circ\text{C} \leq T_{\text{amb}} \leq +65^\circ\text{C}$

### CERTIFICATIONS for IS220A

**ATEX & UKEX:**



II 1 G Ex ia IIC T6...T4 Ga  
 FM08ATEX0066X  
 FM22UKEX0108X



**CE:**



Compliance with  
 EN55011, EN50082-2

**IECEX:**



Ex ia IIC T6...T4 Ga  
**IECEX FMG 16.0003X**  
 T4 @  $-40^\circ\text{C} \leq T_{\text{amb}} \leq +100^\circ\text{C}$   
 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 IS220-xx

SPECTEC P/N	a Shell Type	b Thread / Diameter	c Thread Length	d Overall Length	g Connector	k Sensitivity
IS220-xx or IS220A-xx	K A H	1/2-20 UNF	0.75" (19mm) Minimum	1.75" (44mm) Minimum	 	Standard: 5 mV/Gauss  Medium: 3.125 mV/Gauss  High: 2.5 mV/Gauss
		5/8-18 UNF	13.0" (330mm) Maximum	14.0" (356mm) Maximum		
	S	5/8" (15.9mm)	N/A	1.75" (44mm) Minimum		

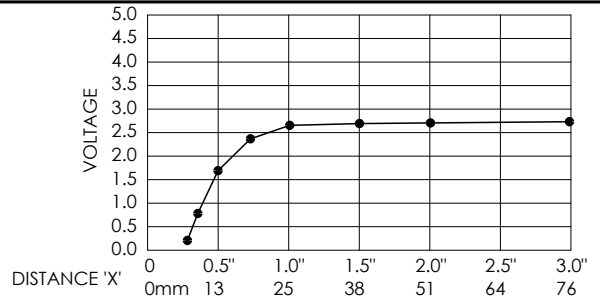
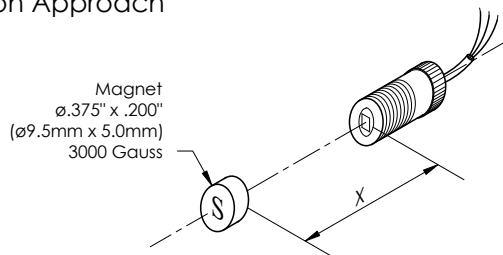
The above features give the range of products available under the certifications. Please specify your specific needs when contacting sales.

## SPECIFIC MODELS (also available with ATEX, UKEX, & IECEx certification under the part number IS220A-xx)

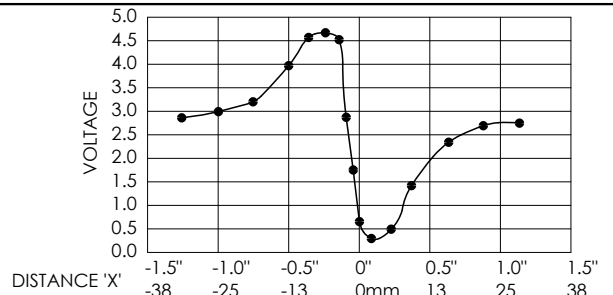
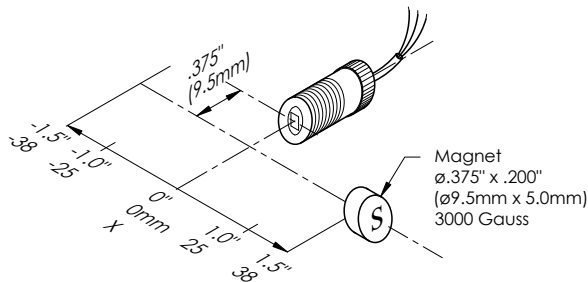
IS220-01	K	5/8-18 UNF	1.8" (45mm)	3.0" (76mm)	MO3	5 mV/Gauss
IS220-02					MD4	
IS220-03	H	3/4-16	2.5" (64mm)	3.5" (89mm)	MO3	

## TYPICAL PERFORMANCE DATA

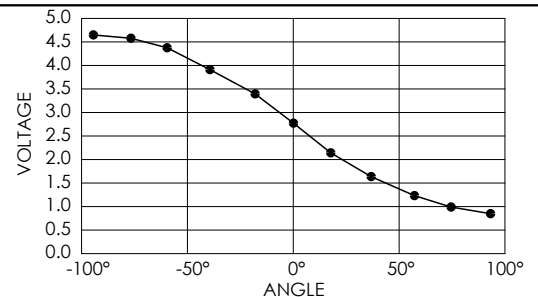
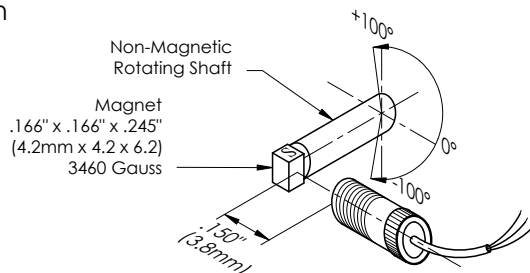
### Head-on Approach



### Fly By



### Shaft Rotation



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