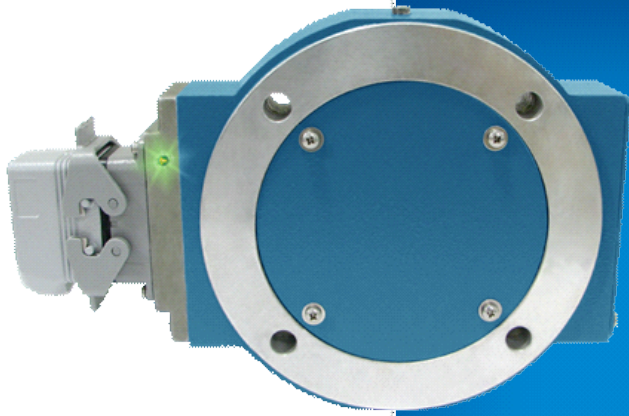


# Avtron XR850 SMARTSafe™ Encoders



## Hazardous Duty Magnetic Encoder, Heavy Duty 8.5" Modular

### Hazardous Duty No-Bearing Modular Encoder

- Fits NEMA 8.5" Flanges
  - Fits Shafts up to 4 1/2" [115mm]
- ATEX/IECEX Rated for Zone 1, 2, 21 & 22 Applications
  - Ideal for Oil and Gas Drilling
  - No Bearings to Wear Out
  - Up to 5000 PPR
- Self-Diagnostic LED and Alarm Output
  - 3 Year No-Hassle Warranty
- cULus Class I Division 1 Groups A,B,C,D Listed
- cULus Class I Zone 0 Group IIC
- cULus Class I Division 2 Groups A,B,C,D Listed

## XR850

XR850 SMARTSafe 8.5" modular incremental quadrature rotary encoders are a breakthrough in hazardous duty encoders. They are ATEX/IECEX, cULus approved and offer reliable no-bearing construction! SMARTSafe encoders can be used in UL gas and ATEX/IECEX gas and dust hazardous environments. Also available: hollow shaft models (XR45, XR47, XR685), shafted models (XR4F, XR485), no-bearing modular encoders to fit other flange sizes (XR56, XR67, XR85, XR115, XR125, XR850), and modular sensors (XR5, XR12).

For Level 2 applications requiring ATEX/IECEX Zone 2 or 22 or UL Class I, Division 2, Groups A,B,C,D, use the XR850 directly in your application, with no barrier, isolator or cable gland required.

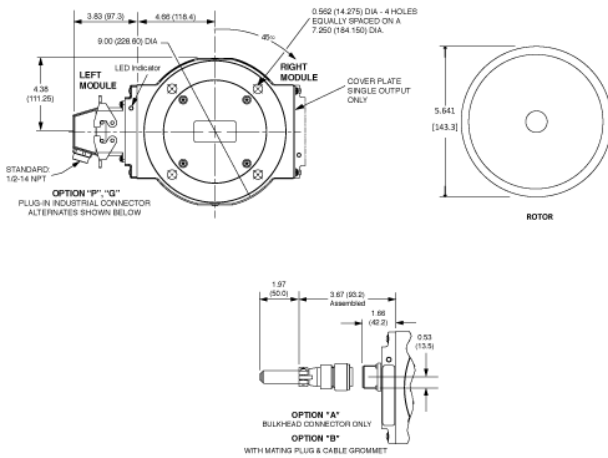
For Level 1 applications requiring ATEX/IECEX Zone 1 or 21 use the XRB1 or XRB2 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion proof conduit or glands. The XR850 can also be used in UL Class I, DIV 1 and Zone 0 applications using the XRB2 Isolator.

Unlike the competition, Avtron SMARTSafe encoder systems are protected against short circuits, power-to-output wiring, and output-to-ground faults.

Instead of mounting a tiny optical encoder with weak bearings on a wobbling stub shaft, mount XR850 directly on your main application shaft. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe XR850 encoders! Paint booths, draw works, coil tubing rigs...XR850 can keep them all working 24-7-365.

Eliminate the biggest cause of industrial encoder failure eliminate the bearings with XR850 hazardous duty encoders.

# OUTLINE DRAWING



# MORE XR850 ADVANTAGES

- Easy-swap XR5 electronic sensors
- Sensors can be directly machine-mounted
- Shrugs off dirt, oil, and water contamination
- No glass disks to break or optics to fail
- 4,500,000+ hour MTBF design

# XR850 SPECIFICATIONS

**Operating Power:** (add load and cable drive current as req'd)  
 Level 1 (XR81): 12-24VDC In, 10.6V Out, 150 mA  
 Level 1 (XR82): 12-24VDC In/Out, 150 mA  
 Level 2 Protection: 5-24VDC In/Out, 150mA  
**Output Format:** A Quad B with marker (A,A; B,B; Z,Z)  
**Frequency Range:** 0 to 165 KHz  
**PPR:** 8-6000  
**Speed:** 5000 RPM  
**Maximum Cable Length:**  
 Level 1: Encoder 500' Isolator 1000'  
 Level 2 (5 to 12 VDC in) 500'  
 Level 2 (15 to 24 VDC in) 250'  
**Rotor Position:** +/- 0.100" [+/- 2.54mm].  
**Sensor Rotor Gap:** 0.04", +0.015"/-0.030" [1.02mm +0.38/-0.76mm]  
**Temperature:** -40°C to 80°C (storage -40°C to 100°C)  
**Environmental:** IP54 (see manual for details)  
**Vibration:** 5-2000Hz, 20G, 100G Shock  
**Weight:** 9lbs [4kg]  
**Certifications:**  
 Level 1: ATEX/IECEX Zone 1 & 21 Group IIC  
 Level 1: cULus Class I Div 1 and Zone 0 Group A,B,C,D\*  
 Level 2: ATEX/IECEX Zone 2 & 22 Group IIC  
 Level 2: cULus Class I Div. 2 Groups A,B,C,D  
 \*See installation drawings for Warnings and Limitations.

Check out our website for more detailed specifications, drawings, and installation instructions. [www.avtronencoders.com](http://www.avtronencoders.com)

# SELECTION GUIDE

Model	Rotor Bore			Inboard & Outboard Cover Plates	Left Module		Right Module		Connector Options	Modifications
	US Thru	Metric Thru	GE EOS		Line Driver	PPR	Line Driver	PPR		
	XR850	XX- none CB- 0.625 CA- 0.750 CC- 0.875 CE- 1.000 CF- 1.125 CH- 1.375 CJ- 1.625 CK- 1.750 CL- 1.875 CM- 2.000 CN- 2.125 CO- 2.250 CP- 2.375 CR- 2.500 CT- 2.625 CS- 2.771 CT- 2.875 CW- 3.250 CY- 3.375 CZ- 3.421 CZ- 3.438 C3- 3.500 TD- 3.625 TG- 3.750 T4- 3.875 T1- 4.000 T7- 4.250 T6- 4.500	MG- 25mm MF- 30mm MJ- 42mm MZ- 80mm MY- 85mm MA- 95mm MC- 110mm		UF- CD180-32x UN- CD36x UP- CD44x UQ- CD444 UR- CD507-509 UV- CD43x, 44x, 54x, 64x, 65xxx UW- CD45x, 75x, 78xx UY- CD46x, 47x, 85xx, 86x, 90xxx UZ- CD68x U9- CD69x-82xx v67xx-69xx CD180- CD9xxx U4- ABB 95mm	X- none B- inboard, thru out board F- no inboard, flat outboard N- inboard, flat outboard T- no inboard, thru out-board	X- none F- 60 G- 100 H- 120 A- 128 L- 240 N- 256 P- 300 E- 360 B- 480 Q- 500 R- 512 S- 600 V- 900 J- 960 Y- 1024 Z- 1200 3- 2000 4- 2048 5- 2500 D- 4096 8- 4800 9- 5000 0- Special	X- none F- 60 G- 100 H- 120 A- 128 L- 240 N- 256 P- 300 E- 360 B- 480 Q- 500 R- 512 S- 600 V- 900 J- 960 Y- 1024 Z- 1200 3- 2000 4- 2048 5- 2500 D- 4096 8- 4800 9- 5000 0- Special		

Line Driver Code		Level 1		Level 2		Connector Options
Class 1 Div 1	Zone 1 & 21 (a)	Class 1 Div 2	Zone 2 & 22	Class 1 Div 2	Zone 2 & 22	
		F	H	n/a	7	
F	H	n/a	7	*- 7 Pin MS		
F	H	n/a	7	R- 10 Pin mini twist lock		
F	H	n/a	7	W- Flexible cable with Gland		
F	H	n/a	7	G- 10 Pin Industrial with Plug		
F	G			4- Conduit Box, Terminal Block 1/2" NPT		
F	G			5- Conduit Box, Terminal Block 3/4" NPT		
F	G			6- Conduit Box, Terminal Block 1" NPT		
F	G			7- Conduit Box, Terminal Block 25mm PT		
XR82	XR82	None	None	Required Isolator: order separately or with option code 018		

\*= E, F, J, K, S, T, U, V,  
 Units with connector options 4, 5, 6, or 7 are dual labeled for for both cULus Class / Div and ATEX / IECEx Zones



Nidec-Avtron Makes the Most Reliable Encoders in the World  
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All dimensions are in inches [millimeters].  
 Specifications and features are subject to change without notice.  
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