

Avtron XR12 SMARTSafe™ Sensor



**Severe Duty Magneto-resistive
Sensor for XR125 Encoders,
Fits Shafts up to 7
7/8" [200mm]**

Large Bore Hazardous Duty Encoder Sensor XR12

- cULus Class I, Div 1 Listed, Groups A,B,C,D
 - cULus Class I Zone Group IIC
- cULus Class I, Div 2 Listed, Groups A,B,C,D
- ATEX IECEx Rated: Zone 1 & 2, 21 & 22
 - Fits Shafts up to 7 7/8" [200mm]
 - Ideal for Oil and Gas Drilling
 - Fully Potted Electronics
 - Up to 8192 PPR
- Wide Sensor-Rotor Gap: No Shimming or Scraping
 - 3 Year No-Hassle Warranty

XR12 SMARTSafe™ modular incremental quadrature encoder sensors enable the world's first hazardous duty rotary encoders with removable electronics. They are cULus, ATEX and IECEx certified and offer incredibly reliable no-bearing construction! SMARTSafe sensors can be used in ATEX/IECEx gas and dust and UL gas hazardous environments. Also available: hollow shaft models ([XR685](#)), shafted models ([XR485](#)), no-bearing modular encoders ([XR125](#), [XR850](#)), and modular sensors for smaller bore applications ([XR5](#)).

For Level 2 applications requiring ATEX/IECEx Zone 2 or 22 or cULus Class I, Division 2, Groups A,B,C,D use the XR12 directly in your application, with no barrier, isolator or cable gland required.

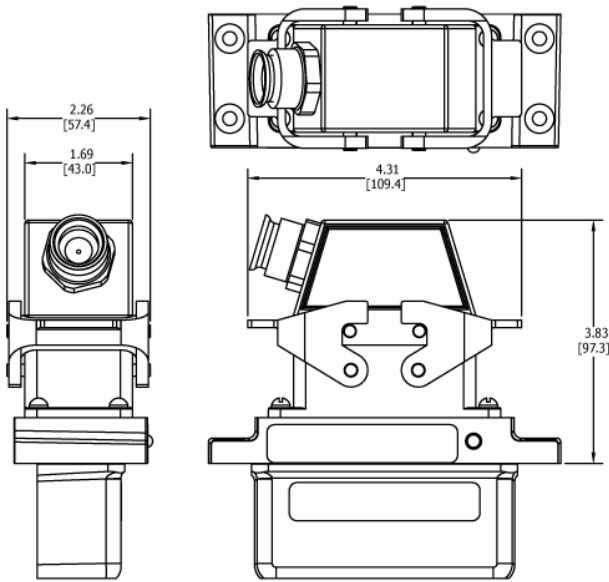
For Level 1 applications requiring ATEX/IECEx Zone 1 or 21 protection use the XRB1 or XRB2 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion-proof conduit or glands. The XR56 can also be used in UL Class I Div 1 & Zone 0 applications using the XRB2 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 XR12 directly on your machine and install the rotor on your main application or motor shaft. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe™ XR12 encoders! Paint booths, draw works, coil tubing rigs...XR12 can keep them all working 24-7-365.

Eliminate the biggest cause of industrial encoder failure--eliminate the bearings with XR12 hazardous duty encoder sensors.

OUTLINE DRAWING



Check out our website for more detailed specifications, drawings, and installation instructions. www.avtronencoders.com

MORE XR12 ADVANTAGES

- ▮ Sensor PPR can be factory reprogrammed
- ▮ Full protection against short circuits, reverse voltage, phase-to-phase shorts
- ▮ Shrugs off dirt, oil, and water contamination
- ▮ No glass disks to break or optics to fail
- ▮ Sensor for XR125 encoder
- ▮ Direct machine-mount capability
- ▮ Self-Diagnostic LED and Alarm Output

XR12 SPECIFICATIONS

Operating Power: (add cable drive current as req'd)

Level 1 (XRB1): 12-24VDC in, 10.6V out, 150 mA

Level 1 (XRB2): 12-24VDC in/out, 150 mA

Level 2 Protection: 5-24VDC in/out, 150 mA

Output Format: A Quad B with marker (A,A-, B,B-, Z,Z-)

Frequency Range: 0 to 165 KHz

PPR: 8-8192

Speed: 6000 RPM Max. (contact factory for higher speeds)

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 Positioning: +/-0.100" [+/-2.54mm] movement/misalignment

Sensor-Rotor Gap: 0.045", +0.015/-0.040" [1.14mm+0.38/-1.0]

Temperature: -40°C to 80°C (Storage -40°C to 100°C)

Environmental: Electronics-IP67 (see manual for details)

Vibration: 5-2000Hz, 18G; 100G Shock

Weight: 2.2 lbs. [1kg]

Certifications:

Level 1: ATEX/IECEx Zone 1 & Zone 21 Group IIC

Level 1: cULus Class I, Division 1 and Zone 0 Group A,B,C,D*

Level 2: ATEX/IECEx Zone 2 & 22 Group IIC

Level 2: cULus Class I, Division 2 Group A,B,C,D

*See installation drawings for Warnings and Limitations

SELECTION GUIDE

XR12 Sensor Part Numbers				
Model	Line Driver	PPR	Connector Options	Modifications
XR12-	See chart at right	X- none V- 900 F- 60 J- 960 G- 100 Y- 1024 H- 120 Z- 1200 A- 128 3- 2000 L- 240 4- 2048 N- 256 5- 2500 P- 300 D- 4096 E- 360 8- 4800 B- 480 9- 5000 Q- 500 0-special R- 512 S- 600	See chart at right	000- none 004- Super Magnetic Shielding 018- w/ Isolator XRB1 or XRB2 for cabinet mount 4xx- Special PPR (see table) 9xx- Special Cable Length (xx=ft/0.3m)

Line Driver Code				Connector Options
Level 1		Level 2		
Class I Div 1	Zone 1 & 21 (a)	Class I Div 2	Zone 2 & 22	
F	H	n/a	7	A- 10 pin MS W/O Plug B- 10 pin MS with Plug
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
F		G		2- Tall Conduit Box, Terminal Block 3/4" NPT
XRBZ	XRBZ	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, 7 or 2 are dual labeled for for both cULus Class / Div and ATEX / IECEx Zones



Nidec-Avtron Makes the Most Reliable Encoders in the World

8901 E. PLEASANT VALLEY ROAD • INDEPENDENCE, OHIO 44131-5508

TELEPHONE: (1) 216-642-1230 • FAX: (1) 216-642-6037

E-MAIL: tachs@nidec-avtron.com • WEB: www.avtronencoders.com



All dimensions are in inches [millimeters].
 Specifications and features are subject to change without notice.
 EU-SMART™, SMARTSafe™, SMARTach II™, THIN-LINE™,
 THIN-LINE II™, WIDE-GAP™, and BULLSEYE32™ are trademarks
 of Nidec Avtron Automation. All other trademarks and registered
 trademarks are the property of their respective owners.