

# Avtron XR97 SMARTSafe™ Sensor



**Severe Duty Magneto-resistive Sensor for 97mm Rotor, Rotor Fits Shafts 1/2"-3 3/16" [10mm-85mm]**

## Hazardous Duty Encoder Sensor XR97

- 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
- Fits Shafts up to 3 3/16" [85mm]
  - Ideal for Oil and Gas Drilling
  - Fully Potted Electronics
    - Up to 5000 PPR
- Wide Sensor-Rotor Gap: No Shimming or Scraping
  - 3 Year No-Hassle Warranty
  - ATEX/IECEX Zone 1,2,21,22

XR97 SMARTSafe™ modular sensors enable OEMs to achieve a world first-- hazardous duty encoders with removable electronics, embedded inside their machine. They are ATEX, IECEx and cULus 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 larger bore applications (XR5, XR12).

For Level 2 applications requiring ATEX/IECEX Zone 2 or 22 or cULus Class I, Division 2, Groups A,B,C,D use the XR97 directly in your application, with no barrier, isolator or cable gland required.

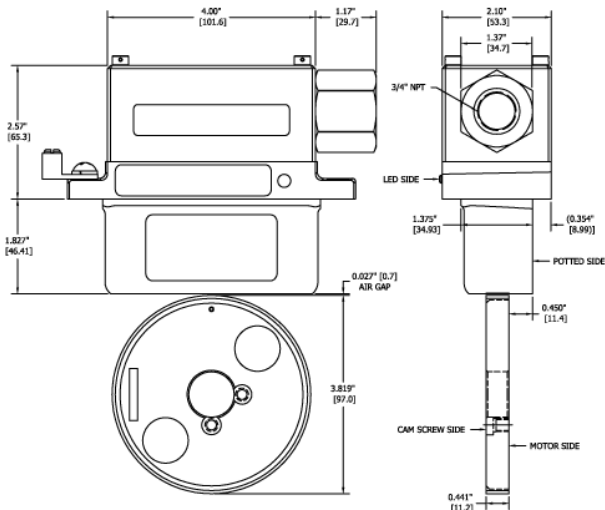
For Level 1 applications requiring ATEX/IECEX Zone 1 or 21 protection use the XRB1 or XRB2 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion-proof conduit or glands. The XR56 can also be used in UL Class I Div 1 & Zone 0 applications using the XRB2 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 XR97 directly on your machine and install the rotor on your main application shaft. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe encoders! Paint booths, top drives, draw works, coil tubing rigs...XR97 can keep them all working 24-7-365.

Eliminate the biggest cause of encoder failure--eliminate the bearings with XR97 hazardous duty encoder sensors.

## OUTLINE DRAWING



## MORE XR97 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
- 4,500,000+ hour MTBF design
- Full protection against short circuits, reverse voltage, phase-to-phase shorts
- Direct Machine-Mount
- Self-Diagnostic LED and Alarm Output

## XR97 SPECIFICATIONS

**Operating Power:** (add load and 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, 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" 1-0.030" [1.02mm +0.381-0.76mm]

**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:** 2.2lbs [1kg]

**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

XR97 Sensor Part Numbers					
Model	Line Driver	PPR		Connector Options	Modifications
XR97-	See chart at right	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	See chart at right	000- none 004- Super Magnetic Shielding 018- w/ Isolator XBR1 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	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			
XRB2	XRB2	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 are dual labeled for for both cULus Class / Div and ATEX / IECEX Zones



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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.