

# Avtron XR12 SMARTSafe™ Sensor



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

### Magnetic Durability in a Compact Encoder

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

cULus Class I, Div 1 Listed, Groups A,B,C,D

cULus Class I, Div 2 Listed, Groups A,B,C,D

ATEX IECEx Rated: Zone 1 & 2, 21 & 22

cULus Class I Zone Group IIC

### XR12

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 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.

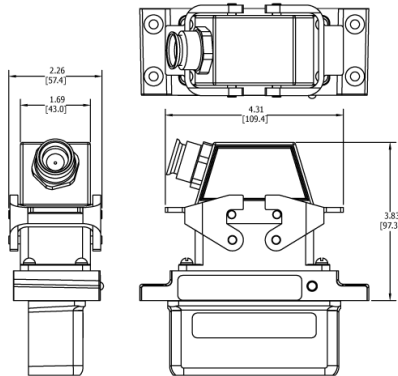
For applications requiring UL Division 1, ATEX/IECEx Zone 1 or 21 protection use the XRB3 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion-proof conduit or glands. The XR56 can also be used in UL Class I Div 1 & Zone 0 applications using the XRB3 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



## 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

## MORE XR12 SPECIFICATIONS

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

Division 1, Zone 1 (XRB3): 12-24VDC in/out, 150 mA

Division 2, Zone 2: 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:**

Division 1, Zone 1: Encoder 500' Isolator 1000'

Division 2, Zone 2 (5 to 12 VDC in): 500'

Division 2, Zone 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:**

ATEX/IECEX Zone 1 & Zone 21 Group IIC

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

ATEX/IECEX Zone 2 & 22 Group IIC

cULus Class I, Division 2 Group 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	LINE DRIVER	PPR	CONNECTOR OPTIONS	MODIFICATIONS
XR12-	H - Level 1 Protection (ATEX/IECEX Zone 1 & 21), 5-7v in, 5v out (NOTE Requires XRB3 Isolator) 7 - Level 2 Protection, (ATEX/IECEX Zone 2 & 22) 5-24v, 5-24V out F - Level 1 Protection, (UL Class I, Div 1, UL/cUL Class I, Zone 0 Listed) 5-7v, 5V out (NOTE Requires XRB3 Isolator) G - Level 2 Protection, (UL Class I, Div 2 Listed) 5-24v, 5-24V out R - US CLASS I, DIV 2, ZONE 2, RECOGNIZED, 5-24v in, 5-24v out	X - No Left Output F - 60 PPR G - 100 PPR H - 120 PPR A - 128 PPR L - 240 PPR N - 256 PPR P - 300 PPR E - 360 PPR B - 480 PPR Q - 500 PPR R - 512 PPR S - 600 PPR V - 900 PPR J - 960 PPR W - 1000 PPR Y - 1024 PPR Z - 1200 PPR 6 - 1800 PPR 3 - 2000 PPR 4 - 2048 PPR 5 - 2500 PPR D - 4096 PPR 8 - 4800 PPR 9 - 5000 PPR 0 - Special PPR	A - 10 pin MS style w/o Mating Plug B - 10 pin MS style w/Plug J - 7 pin MS style w/Plug (A, B, Z) (Standard Phasing) K - 7 pin MS style w/Plug (A, A', B, B') (Standard Phasing) G - Industrial EPIC Style w/LED alarm P - Industrial EPIC Style w/LED and remote alarm contact (level 2 protection only) R - Baldor Mini MS style w/Plug W - 3' Sealed Cable w/Color Coded Leads 2 - "Tall" conduit box, 3/4" NPT threads (ATEX/IECEX/UL/cUL rating) 4 - Std conduit box, 1/2" NPT threads (ATEX/IECEX/UL/cUL rating) 5 - Std conduit box, 3/4" NPT threads (ATEX/IECEX/UL/cUL rating) 6 - Std conduit box, 1" NPT threads (ATEX/IECEX/UL/cUL rating) 7 - Std conduit box, 25mm threads (ATEX/IECEX/UL/cUL rating)	000 - No Special Options 004 - Super Magnetic Shielded Sensor(s) 405 - 16 PPR (Special) Left Output 406 - 6000 PPR (Special) Left Output 407 - 2800 PPR (Special) Left Output 408 - 1400 (Special) Left Output PPR 901 - Special 1/0.3m cable length built into sensor 902 - Special 2/0.6m cable length built into sensor 903 - Special 3/0.9m cable length built into sensor 905 - Special 5/1.5m cable length built into sensor 910 - Special 10/3m cable length built into sensor 915 - Special 15/4.5m cable length built into sensor 920 - Special 20/6m cable length built into sensor 925 - Special 25/7.5m cable length built into sensor 930 - Special 30/9m cable length built into sensor 933 - Special 33/10m cable length built into sensor



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