# Avtron XR12 SMARTSafe™ Sensor

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

## Hazardous Duty Removable Sensor

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 XR12 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
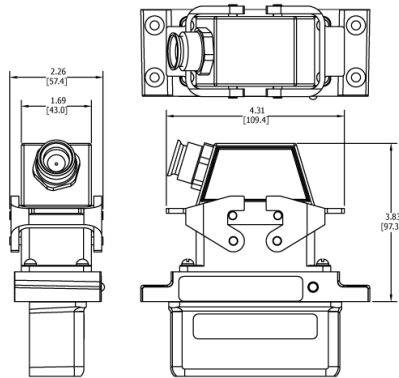


## MORE XR12 ADVANTAGES

- 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



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

**AVTRON™ ENCODERS** *A Nidec BRAND*

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