

# Avtron XR5 SMARTSafe™ Sensor



**Severe Duty Magnetostrictive Sensor for XR485, XR685 & XR850 Encoders, Rotor Fits Shafts 5/8"-4 1/2" [16mm-115mm]**

### Magnetic Durability in a Compact Encoder

- \_\_\_\_\_ Fits Shafts up to 4 1/2" [115mm]
- \_\_\_\_\_ 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
- \_\_\_\_\_ cULus Class I, Div 2 Listed, Groups A,B,C,D
- \_\_\_\_\_ cULus Class I, Div 1 Listed, Groups A,B,C,D
- \_\_\_\_\_ ATEX IECEx Rated: Zone 1 & 2, 21 & 22
- \_\_\_\_\_ cULus Class I Zone 0 Group II C

### XR5

XR5 SMARTSafe™ modular sensors enable the world's first hazardous duty 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 larger bore applications (XR12).

For applications requiring ATEX/IECEx Zone 2 or 22 or cULus Class I, Division 2, Groups A,B,C,D use the XR5 directly in your application, with no barrier, isolator or cable gland required.

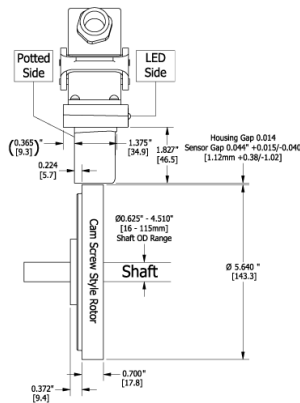
For applications requiring UL Division 1, ATEX/IECEx Zone 1 or 21 protection use the XRB3 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion proof conduit or glands. The XR56 can also be used in UL Class I Div 1 & Zone 0 applications using the XRB3 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 XR5 directly on your machine and install the rotor on your main application shaft. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe XR5 encoders! Paint booths, draw works, coil tubing rigs...XR5 can keep them all working 24/7/365.

Eliminate the biggest cause of industrial encoder failure--eliminate the bearings with XR5 hazardous duty encoder sensors!

## OUTLINE DRAWING



## MORE XR5 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
- Mount in XR485, XR685, and XR850 encoders
- Direct Machine-Mount Option
- Self-Diagnostic LED and Alarm Output

## MORE XR5 SPECIFICATIONS

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

Division 1, Zone 1 (XR83): 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:** 8-5000

**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:** Up to +/-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-IP54 (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)



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# SELECTION GUIDE

MODEL	LINE DRIVER	PPR	CONNECTOR OPTIONS	MODIFICATIONS
XR5-	F - Level 1 Protection, (UL Class I, Div 1, UL/cUL Class I, Zone 0 Listed) 5-7v, 5V out (NOTE Requires XRB3 Isolator) 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 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 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) 401 - 1270 PPR (Special) Left Output 402 - 150 PPR (Special) Left Output 403 - 50 PPR (Special) Left Output 404 - 16 PPR (Special) Right Output 405 - 16 PPR (Special) Left Output 406 - 6000 PPR (Special) Left Output 407 - 2800 PPR (Special) Left Output 408 - 1400 (Special) Left Output PPR 409 - 30 PPR (Special) Left Output 410 - 6000 PPR (Special) Right Output 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