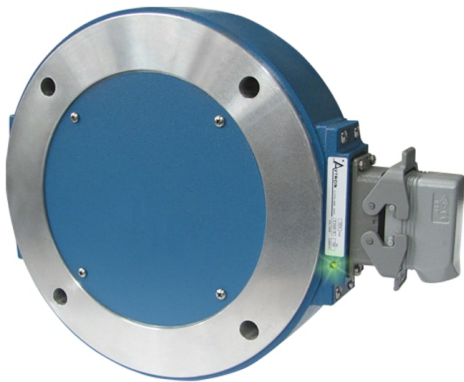


## Avtron XR125 SMARTSafe™ Encoders



**Hazardous Duty Magnetic Encoder,  
Heavy Duty 12.5" Modular**

### Magnetic Durability in a Compact Encoder

Fits NEMA 12.5" Flanges
Fits Shafts up to 7 7/8" [200mm]
ATEX/IECEX Rated for Zone 1, 2, 21 & 22 Applications
Ideal for Oil and Gas Drilling
No Bearings to Wear Out
Fully Potted Electronics
Up to 8192 PPR
Self-Diagnostic LED and Alarm Output
3 Year No-Hassle Warranty
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

### XR125

XR125 SMARTSafe 12.5" modular incremental quadrature rotary encoders are a breakthrough in hazardous duty encoders to fit large shaft applications. They are ATEX/IECEX and cULus approved and offer incredibly reliable no-bearing construction! SMARTSafe encoders can be used in ATEX/IECEX gas and dust and UL gas environments. Also available: hollow shaft models (XR45, XR685), shafted models (XR4F, XR485), no-bearing modular encoders to fit other flange sizes (XR56A, XR85A, XR115, XR850), and modular sensors (XR5, XR12).

For applications requiring ATEX/IECEX Zone 2 or 22 or UL Class I, Division 2, Groups A,B,C,D use the XR125 directly in your application, with no barrier, isolator or cable gland required.

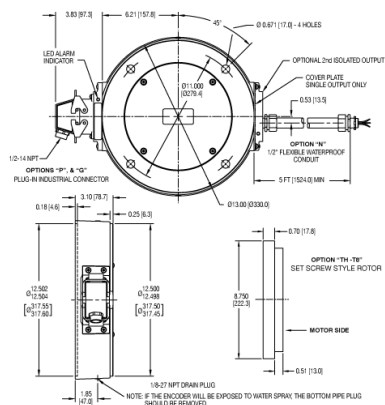
For applications requiring UL Division 1, ATEX/IECEX Zone 1 or 21 use the XRB3 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion proof conduit or glands. The XR125 can also be used in UL Class I Division 1 and Zone 0 applications using the XRB3 Isolator.

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 XR125 directly on your main application shaft. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe XR125 encoders! Paint booths, draw works, coil tubing rigs...XR125 can keep them all working 24/7/365.

Eliminate the biggest cause of industrial encoder failure--eliminate the bearings with XR125 hazardous duty encoders!

## OUTLINE DRAWING



## MORE XR125 ADVANTAGES

- Easy-swap electronic modules
- Sensors can be directly machine-mounted for OEM flexibility
- No air gap adjustment required
- Shrugs off dirt, oil, and water contamination
- No glass disks to break or optics to fail
- 4,500,000+ hour MTBF design
- Wide Sensor-Rotor Gap: No Shimming or Scraping

## MORE XR125 SPECIFICATIONS

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

Division 1, Zone 1 (XRB3): 12-24VDC In, 10.6V Out, 150mA

Division 2, Zone 2: 5-24VDC In/Out, 100mA

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

**Frequency Range:** 0 to 165 kHz

PPR: 8-8192

**Speed:** 5000 RPM Max. (contact factory for higher speeds)

**Maximum Cable Length:**

Division 1, Zone 1 (Local/Remote): 1000' [300m] / 400' [120m]

Division 2, Zone 2: 500' [150m] @ 5-12V; 200' [60m] @ 24V

**Rotor Positioning:** Up to  $\pm 0.100"$  [ $\pm 2.54\text{mm}$ ] 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, 20G; 100G Shock

**Weight:** 15-18 lbs. [7-8kg]

**Certifications:**

ATEX/IECEx Zone 1 &amp; Zone 21 Group IIC

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

ATEX/IECEX Zone 2 &amp; 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)



Nidec Industrial Solutions  
243 Tuxedo Avenue - Cleveland, Ohio 44131  
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SELECTION GUIDE

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MODEL	ROTOR BORE SIZE	COVER PLATES	LEFT OUTPUT LINE DRIVER	LEFT OUTPUT PPR	RIGHT OUTPUT LINE DRIVER	RIGHT OUTPUT PPR	CONNECTOR OPTIONS	MODIFICATIONS



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XR125	CH - 1.375 in. Thru-Shaft Rotor CJ - 1.625 in. Thru-Shaft Rotor CL - 1.875 in. Thru-Shaft Rotor CM - 2.000 in. Thru-Shaft Rotor CN - 2.125 in. Thru-Shaft Rotor CQ - 2.250 in. Thru-Shaft Rotor CP - 2.375 in. Thru-Shaft Rotor CR - 2.500 in. Thru-Shaft Rotor CT - 2.625 in. Thru-Shaft Rotor C2 - 2.875 in. Thru-Shaft Rotor CV - 3.125 in. Thru-Shaft Rotor CW - 3.250 in. Thru-Shaft Rotor CY - 3.375 in. Thru-Shaft Rotor C4 - 3.875 in. Thru-Shaft Rotor C1 - 4.000 in. Thru-Shaft Rotor CB - 4.125 in. Thru-Shaft Rotor C5 - 4.250 in. Thru-Shaft Rotor CC - 4.375 in. Thru-Shaft Rotor C6 - 4.500 in. Thru-Shaft Rotor CD - 4.625 in. Thru-Shaft Rotor CE - 4.690 in. Thru-Shaft Rotor CA - 4.875 in. Thru-Shaft Rotor CG - 5.000 in. Thru-Shaft Rotor TZ - 5.001 in. Thru-Shaft Rotor CK - 5.250 in. Thru-Shaft Rotor C7 - 5.375 in. Thru-Shaft Rotor C3 - 6.000 in. Thru-Shaft Rotor CF - 6.250 in. Thru-Shaft Rotor TU - 6.375 in. Thru-Shaft Rotor C8 - 6.750 in. Thru-Shaft Rotor T9 - 7.875 in. Thru-Shaft Rotor DG - 25mm Thru-Shaft Rotor DY - 85mm Thru-Shaft Rotor D1 - 100mm Thru-Shaft Rotor DC - 110mm Thru-Shaft Rotor DE - 120mm Thru-Shaft Rotor DK - 120mm Thru-Shaft Rotor for ISO m6 DF - 160mm Thru-Shaft Rotor D8 - 170mm Thru-Shaft Rotor TH - Obsolete, use CH for 1.375 in. Thru-Shaft Rotor, Cam Screw Mount TJ - Obsolete, use CJ for 1.625 in. Thru-Shaft Rotor, Cam Screw Mount TL - Obsolete, use CL for 1.875 in. Thru-Shaft Rotor, Cam Screw Mount TM - Obsolete, use CM for 2.000 in. Thru-Shaft Rotor, Cam Screw Mount TN - Obsolete, use CN for 2.125 in. Thru-Shaft Rotor, Cam Screw Mount TQ - Obsolete, use CQ for 2.250 in. Thru-Shaft Rotor, Cam Screw Mount TP - Obsolete, use CP for 2.375 in. Thru-Shaft Rotor, Cam Screw Mount TR - Obsolete, use CR for 2.500 in. Thru-Shaft Rotor, Cam Screw Mount TT - Obsolete, use CT for 2.625 in. Thru-Shaft Rotor, Cam Screw Mount T2 - Obsolete, use C2 for 2.875 in. Thru-Shaft Rotor, Cam Screw Mount TV - Obsolete, use CV for 3.125 in. Thru-Shaft Rotor, Cam Screw Mount TW - Obsolete, use CW for 3.250 in. Thru-Shaft Rotor, Cam Screw Mount	F - Flat Outboard Cover T - Outboard Seal Plate for Thru-Shaft X - No Cover Plates	X - No Left Output 7 - Level 2 Protection, (ATEX/IECEX Zone 2 & 22) 5-24v, 5-24V out H - Level 1 Protection (ATEX/IECEX Zone 1 & 21), 5-7v in, 5v out (NOTE Requires XRB3 Isolator) 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 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 - Non-Standard	X - No Right Output 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 Right 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 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 - Non-Standard	A - 10 pin MS style without Mating Plug (Avtron large encoder pinout) B - 10 pin MS style with Plug (Avtron large encoder pinout) J - 7 pin MS style with Plug (A, B, Z signals) (Avtron/BEI HS35 style pinout) K - 7 pin MS style with Plug (A, B, Z signals) (Avtron/BEI HS35 style pinout) G - Industrial EPIC Style with LED alarm P - Industrial EPIC Style with LED and remote alarm contact (level 2 protection only) R - Baldor Mini MS style with Plug W - 3 ft. Sealed Cable with Color Coded Leads 2 - "Tall" conduit box, 3/4" NPT threads 4 - Std conduit box (ATEX/IECEX/UL/cUL), 1/2" NPT threads, mating term. blocks 5 - Std conduit box (ATEX/IECEX/UL/cUL), 3/4" NPT threads, mating term. blocks 6 - Std conduit box (ATEX/IECEX/UL/cUL), 1" NPT threads, mating term. blocks 7 - Std conduit box (ATEX/IECEX/UL/cUL), 25mm threads, mating term. blocks X - No Connector/Sensor, Housing & Rotor Only	000 - None 004 - Super Magnetic Shielded Sensors 008 - Modify to "Tall" conduit box (ATEX only), 3/4" NPT threads (conduit box '4' only) 018 - Include XRB3 Remote Level 1 Isolator for Cabinet Mount 405 - 16 (Special) Left PPR, (Set PPR Codes = 0) 404 - 16 (Special) Right PPR, (Set PPR Codes = 0) 406 - 6000 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 407 - 2800 (Special) Left PPR, 2800 PPR Right Output (Set PPR Code = 0) 408 - 1400 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 410 - No Left Output, 6000 (Special) Right PPR (Set PPR Codes = 0) 901 - Special 1'/0.3m cable built into sensor 902 - Special 2'/0.6m cable built into sensor 903 - Special 3'/0.9m cable built into sensor 905 - Special 5'/1.5m cable built into sensor 910 - Special 10'/3m cable built into sensor 915 - Special 15'/4.5m cable built into sensor 920 - Special 20'/6m cable built into sensor 925 - Special 25'/7.5m cable built into sensor 930 - Special 30'/9m cable built into sensor 933 - Special 33'/10m cable built into sensor
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