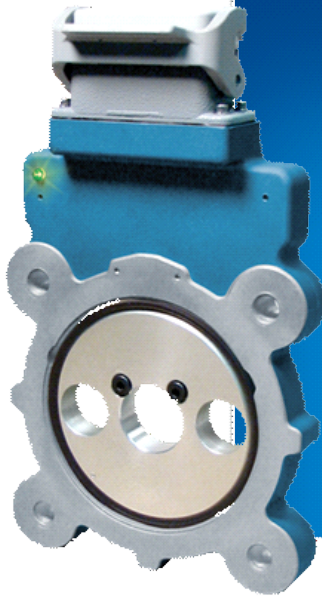


# Avtron XR56 SMARTSafe™ Encoders



## Hazardous Duty Magnetic Encoder, Heavy Duty 4.5" Modular

### Revolutionary No Bearing Design

- | Fits NEMA 4.5" Flanges for Marathon Blue & Black Max, Reliance & Reuland Motors
- | 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 5000 PPR
- | Wide Sensor-Rotor Gap: No Shimming or Scraping
  - | Protected Against Wiring Errors
- | 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

### XR56

XR56 SMARTSafe 4.5" modular incremental quadrature rotary encoders are a breakthrough in hazardous duty encoders. They are ATEX and UL approved and offer incredibly reliable no-bearing construction! SMARTSafe encoders can be used in gas and ATEX dust hazardous environments. Also available: hollow shaft models (XR45, XR685), shafted models (XR4F, XR485), and no-bearing modular encoders to fit other flange sizes (XR85, XR115, XR125, XR850).

For applications requiring ATEX/IECEx Zone 2 or 22 or UL Class I, Division 2, (gas) Groups A,B,C,D use the XR56 directly in your application with no barrier, isolator or cable gland required.

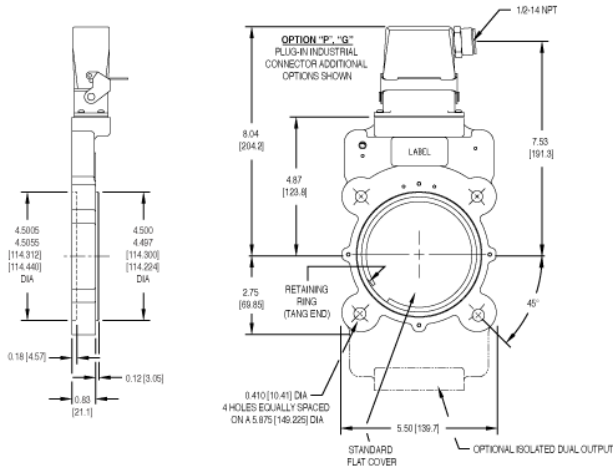
For applications requiring UL Division 1, ATEX/IECEx Zone 1 or 21 protection use the XRB3 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion-proof conduit or glands. The XR56 can also be used in UL Class I Div 1 & Zone 0 applications using the XRB3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

Unlike the competition, Avtron SMARTSafe encoder systems are protected against short circuits, power-to-output wiring, and output-to-ground faults.

Instead of relying on a tiny optical encoder with weak bearings, install the most rugged encoders available for your drilling or industrial applications. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe encoders! Paint booths, draw works, coil tubing rigs...XR56 can keep them all working 24/7/365.

Eliminate the biggest cause of industrial encoder failure--eliminate the bearings with XR56 hazardous duty encoders.

# OUTLINE DRAWING



# MORE XR56 ADVANTAGES

- Replaces BEI H38 and Dynapar X25 explosion-proof encoders
- Eliminates large & costly flange adapters & flowerpots
- Fits shafts 0.500" - 3.188" [10 - 85 mm]
- Thin profile reduces overall motor depth
- 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

# XR56 SPECIFICATIONS

**Operating Power:** (add load and 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, 150mA

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

**Frequency Range:** 0 to 165 KHz

**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'

**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:** 2-3lbs [.9-1.4kg]

**Certifications:**

- ATEX/IECEX Zone 1 & 21 Group IIC
- cULus Class I Div 1 and Zone 0 Group A,B,C,D\*
- ATEX/IECEX Zone 2 & 22 Group IIC
- 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

XR56 PART NUMBERS AND AVAILABLE OPTIONS

Model	Housing Type	Shaft Size (Thru-Shaft Rotor)	Cover Style	Line Driver	Single/Left Output (PPR)	Right Output (PPR)	Connector	Modifications
XR56A	1- Single Output 2- Double Output	<b>C0-</b> None-std. Shaft Size <b>XX-</b> None <b>Thru-Shaft Rotor (Metric)</b> <b>US Metric</b> <b>CA-</b> 0.500 <b>D2-</b> 10mm <b>CB-</b> 0.625 <b>D3-</b> 12mm <b>CC-</b> 0.875 <b>DB-</b> 14mm <b>CD-</b> 0.938 <b>DC-</b> 15mm <b>CE-</b> 1.000 <b>DD-</b> 16mm <b>CF-</b> 1.125 <b>DA-</b> 18mm <b>CG-</b> 1.250 <b>DE-</b> 19mm <b>CH-</b> 1.375 <b>DF-</b> 24mm <b>CT-</b> 1.500 <b>DG-</b> 28mm <b>CJ-</b> 1.625 <b>DH-</b> 30mm <b>CK-</b> 1.750 <b>DI-</b> 32mm <b>CL-</b> 1.875 <b>DJ-</b> 36mm <b>CM-</b> 2.000 <b>DK-</b> 38mm <b>CN-</b> 2.125 <b>DL-</b> 42mm <b>CO-</b> 2.250 <b>DM-</b> 45mm <b>CP-</b> 2.375 <b>DN-</b> 48mm <b>CR-</b> 2.500 <b>DP-</b> 52mm <b>TS-</b> 2.625* <b>DR-</b> 55mm <b>TU-</b> 2.875* <b>DS-</b> 60mm <b>TV-</b> 3.000* <b>MU-</b> 65mm* <b>T4-</b> 3.125* <b>MV-</b> 70mm* <b>T7-</b> 3.188* <b>MW-</b> 75mm* <b>NY-</b> 80mm* <b>MZ-</b> 85mm*	<b>E-</b> Extended Shaft Cover <b>F-</b> Flat Cover <b>T-</b> Flat Thru-Hole Cover with Shaft Seal	<b>See chart at right</b>	<b>F-</b> 60 <b>Y-</b> 1024 <b>G-</b> 100 <b>Z-</b> 1200 <b>H-</b> 120 <b>3-</b> 2000 <b>A-</b> 128 <b>4-</b> 2048 <b>L-</b> 240 <b>5-</b> 2500 <b>N-</b> 256 <b>D-</b> 4096 <b>P-</b> 300 <b>8-</b> 4800 <b>E-</b> 360 <b>9-</b> 5000 <b>R-</b> 512 <b>S-</b> 600 <b>V-</b> 900 <b>J-</b> 960	<b>X-</b> None <b>Y-</b> 1024 <b>F-</b> 60 <b>Z-</b> 1200 <b>G-</b> 100 <b>3-</b> 2000 <b>H-</b> 120 <b>4-</b> 2048 <b>A-</b> 128 <b>5-</b> 2500 <b>L-</b> 240 <b>D-</b> 4096 <b>N-</b> 256 <b>8-</b> 4800 <b>P-</b> 300 <b>9-</b> 5000 <b>E-</b> 360 <b>0-</b> Non-std. <b>B-</b> 480 <b>Std.</b> <b>R-</b> 512 <b>S-</b> 600 <b>V-</b> 900 <b>J-</b> 960	<b>See chart at right</b>	<b>000-</b> No Modification <b>005-</b> Super Magnetic Shielding <b>018-w/ Isolator XRB3</b> for cabinet mount <b>4xx-</b> Special PPR Code, consult factory <b>9xx-</b> Special Cable Length, xxx=length in feet

\* Set Screw Rotor Only

Line Driver Code				Connector Options
Level 1		Level 2		
Class 1 Div 1	Zone 1 & 21 (a)	Class 1 Div 2	Zone 2 & 22	
F	H	n/a	7	C- 10 pin M5 (Avtron)
F	H	n/a	7	D- 10 pin M5 (Dynapar)
F	H	n/a	7	*- 7 Pin MS
F	H	n/a	7	R- 10 Pin mini twist lock
F	H	n/a	7	W- Flexible cable with Gland
F	H	n/a	7	G- 10 Pin Industrial with Plug
F		G		H- Conduit Box, Terminal Block 1/2" NPT
F		G		M- Conduit Box, Terminal Block 3/4" NPT
F		G		N- Conduit Box, Terminal Block 1" NPT
F		G		B- Conduit Box, Terminal Block 25mm PT
XRB3	XRB3	None	None	Required Isolator; order separately or with option code 018

\*= E, F, J, K, S, T, U, V.

Units with connector options H, M, N or 8 are dual labeled for for both cULus Class / Div and ATEX / IECEX Zones



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