

# Avtron XR4F SMARTSafe™ Encoders



## Hazardous Duty Shafted Encoder, 85mm B5 & B10-Flange or Foot Mount

### Heavy Duty Euro-Flange Encoder for Hazardous Applications

- ATEX Rated: Zones 1 & 2, 21 & 22
- IECEx Rated: Zones 1 & 2, 21 & 22
- 10mm, 11mm & 18mm Shaft Sizes
  - EURO B5 & B10 Flange Mount
  - Up to 5000 PPR
- Self-Diagnostic LED & Remote Alarm
- Magnetic Sensors: No Glass Disks
  - -40°C to +80°C Operation
  - 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

## XR4F

XR4F solid shaft encoders are a unique industry first. By combining Avtron durable magnetic encoder technology with SMARTSafe™ systems, Avtron has created a truly durable solid shaft encoder which can be used in hazardous environments and applications. It is ATEX, IECEx & cULus certified. SMARTSafe encoders can be used in gas and ATEX dust hazard environments. Also available: hollow shaft models (XR47, XR45, XR685), NEMA style shafted model (XR485), and no-bearing modular encoders (XR56, XR67, XR85, XR115, XR125, XR850).

For Level 2 applications requiring ATEX or IECEx Zone 2 or 22 or UL Class I, Division 2 use the XR4F directly with no barrier, isolator, special connector or cable gland required.

For Level 1 applications requiring ATEX or IECEx Zone 1 or 21, we offer protection using the [XRB1](#) or [XRB2](#) isolator in your control cabinet to permit intrinsic safety wiring rather than explosion proof conduit or glands. For Level 1 applications requiring NEC 500 UL Class I, Division 1, or NEC 505 (c)UL Class I, Zone 0, use the [XRB2](#) isolator remotely and intrinsic safety wiring.

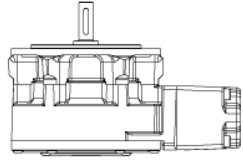
Unlike the competition, the Avtron SMARTSafe encoder systems are protected against short circuits, power-to-output wiring, and output-to-ground faults. Wiring errors won't harm this system.

Instead of relying on a tiny optical encoder with weak bearings, install the most rugged encoders available. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe encoders! Mud pumps, paint booths, hazardous duty IEC motors...XR4F can keep them all working 24-7-365.

Select the Avtron XR4F SMARTSafe encoder to eliminate encoder problems in your hazardous duty application!

# OUTLINE DRAWING

# MORE XR4F ADVANTAGES



- Directly replaces Hubner OG9, FOG9, POG9, POG 9G, POG90, POG10 G, POG 11, POG 11G models
- Directly replaces Johannes Hubner FG4, FG40 models
- Bearings up to 4X larger than competitors models
- Foot, B5 or B10 Euro Flange Mount
- Fully Potted Electronics Withstand Liquids & Dusts
- Protected Against Surges and Wiring Problems

# XR4F SPECIFICATIONS

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

Level 1 (XRB1): 12-24VDC In, 10.6V Out, 150 mA

Level 1 (XRB2): 12-24VDC In/Out, 150 mA

Level 2 Protection: 5-24VDC In/Out, 150mA

**Output Format:** A Quad B with marker (A,A1; B,B1; Z,Z1)

**Frequency Range:** 0 to 165 KHz

**Maximum Cable Length:**

Level 1: Encoder 500' Isolator 1000'

Level 2 (5 to 12 VDC in) 500'

Level 2 (15 to 24 VDC in) 250'

**Temperature:** -40°C to 80°C (storage -40°C to 100°C)

**Environmental:** 1P54 (see manual for details)

**Vibration:** 5-2000Hz, 20G, 100G Shock

**Weight:** 10-12lbs [4.5-5.5kg]

**Certifications:**

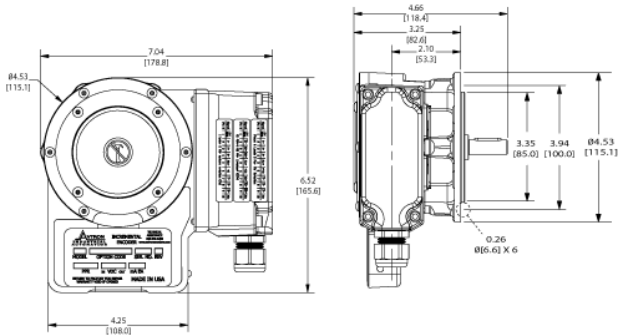
Level 1: ATEX/IECEX Zone 1 & 21 Group IIC

Level 1: cULus Class I Div 1 and Zone 0 Group A,B,C,D\*

Level 2: ATEX/IECEX Zone 2 & 22 Group IIC

Level 2: 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

XR4F PART NUMBERS AND AVAILABLE OPTIONS													
Model	Shaft Size	Left Output PPR	Right Output PPR	Line Driver (blank = not available)		Connector Options	Foot Mount Bracket	Channels	Modifications				
				Level 1	Level 2								
XR4F	N- 10mm H- 11mm, Std T- 18mm	XX- None AF- 60 AG- 100 AH- 120 AA- 128 AL- 240 AN- 256 AP- 300 AE- 360 AB- 480 AQ- 500 AR- 512 AS- 600 AV- 900 AJ- 960 AW- 1000 AY- 1024 AZ- 1200 CX- 1500 A3- 2000 A4- 2048 A5- 2500 AD- 4096 A8- 4800 A9- 5000 A0- Special	XX- None AF- 60 AG- 100 AH- 120 AA- 128 AL- 240 AN- 256 AP- 300 AE- 360 AB- 480 AQ- 500 AR- 512 AS- 600 AV- 900 AJ- 960 AW- 1000 AY- 1024 AZ- 1200 CX- 1500 A3- 2000 A4- 2048 A5- 2500 AD- 4096 A8- 4800 A9- 5000 A0- Special	Class I Div 1	Zone 1, 21	H- Terminal Box 1/2" US conduit L- Terminal Box 1/2" US w/cord grip M- Terminal Box 3/4" US conduit N- Terminal Box 1" US conduit 8- Terminal Box 25mm conduit G- (small) Ind'l w/plug T- M12 w/o plug, global pinout U- M12 w/o plug, US pinout W- 0.45m Cable or spcl 2- M23 w/o plug, L&L pinout 3- M23 w/o plug, Hubner pinout	X- None (for B10 flange mount) 1- Toshiba TS2113N bolt pattern (recommend "T" 18mm shaft) (B35529 bracket) 2- POGxx, OGxx Hubner (Baumer) bolt pattern (B35555 bracket) 3- FG4 Johannes Hubner bolt pattern (B35338 bracket)	A- A,Ä, B,Ë, Z,Z E- A,B,Z (Single ended)	000- None 004- Super magnetic shielding 4xx- Special PPR (see chart) 018- w/ XRB1 or XRB2 isolator for cabinet mount 9xx- Special cable length xx=length x 0.3m (use w/ Connector Option "W")				
				F	G								
				F	5					7			
				F	G								
				F	G								
				F	5					7			
				F	5					7			
				F	5					7			
				F	5					7			
				F	5					7			
				F	5					7			
				F	5					7			
				XRB2	XRB2					None	None	Isolator required: order separately or use modification code 018	

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



Nidec-Avtron Makes the Most Reliable Encoders in the World  
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All dimensions are in inches [millimeters].  
 Specifications and features are subject to change without notice.  
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