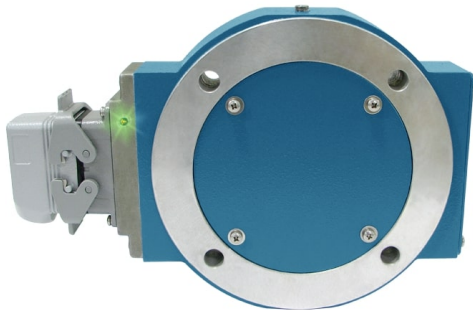




Avtron XR850 SMARTSafe™ Encoders



**Hazardous Duty Magnetic Encoder,
Heavy Duty 8.5" Modular**

Hazardous Duty No-Bearing Modular Encoder

Fits NEMA 8.5" Flanges
Fits Shafts up to 4 1/2" [115mm]
ATEX/IECEX Rated for Zone 1, 2, 21 & 22 Applications
Ideal for Oil and Gas Drilling
No Bearings to Wear Out
Up to 5000 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

XR850

XR850 SMARTSafe 8.5" modular incremental quadrature rotary encoders are a breakthrough in hazardous duty encoders. They are ATEX/IECEX, cULus approved and offer reliable no-bearing construction! SMARTSafe encoders can be used in UL gas and ATEX/IECEX gas and dust hazardous environments. Also available: hollow shaft models (XR45, XR685), shafted models (XR4F, XR485), no-bearing modular encoders to fit other flange sizes (XR56A, XR85A, XR115, XR125, 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 XR850 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 XR850 can also be used in UL Class I, DIV 1 and Zone 0 applications using the XRB3 Isolator.

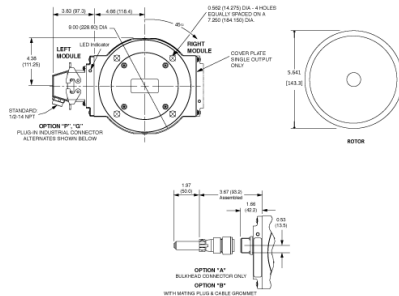
Unlike the competition, Avtron SMARTSafe encoder systems are protected against short circuits, power-to-output wiring, and output-to-ground faults.

Instead of mounting a tiny optical encoder with weak bearings on a wobbling stub shaft, mount XR850 directly on your main application shaft. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe XR850 encoders! Paint booths, draw works, coil tubing rigs...XR850 can keep them all working 24/7/365.

Eliminate the biggest cause of industrial encoder failure eliminate the bearings with XR850 hazardous duty encoders!

08/02/25

OUTLINE DRAWING



MORE XR850 ADVANTAGES

- Easy-swap XR5 electronic sensors
- Sensors can be directly machine-mounted
- Shrugs off dirt, oil, and water contamination
- No glass disks to break or optics to fail
- 4,500,000+ hour MTBF design

MORE XR850 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

PPR: 8-5000

Speed: 5400 RPM

Maximum Cable Length:

Division 1, Zone 1: Encoder 500' Isolator 1000'

Division 2, Zone 2 (5 to 15 VDC in): 500'

Division 2, Zone 2 (15 to 24 VDC in): 250'

Rotor Position: +/- 0.100" [+/- 2.54mm].

Sensor Rotor Gap: 0.045", +0.015"/-0.030" [1.14mm +0.38/-0.76mm]

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: 9lbs [4kg]

Certifications:

ATEX/IECEX Zone 1 & 21 Group IIC

cULus Class I Div 1 Group A,B,C,D*

cULus Class I Zone 0 Group IIC

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



Nidec Industrial Solutions
243 Tuxedo Avenue - Cleveland, Ohio 44131
encoderhelpdesk@nidec-industrial.com
+1 216-642-1230 - www.avtronencoders.com



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SELECTION GUIDE

☐	☐	☐	☐	☐	☐	☐	☐	☐
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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XR850	XX - No Rotor CB - 0.625 in. Thru-Shaft (Universal) Rotor CA - 0.750 in. Thru-Shaft Rotor CC - 0.875 in. Thru-Shaft Rotor CE - 1.000 in. Thru-Shaft Rotor KE - 1.000 in. Keyed Single Cam Rotor CF - 1.125 in. Thru-Shaft Rotor CH - 1.375 in. Thru-Shaft Rotor C8 - 1.500 in. Thru-Shaft Rotor C3 - 1.625 in. Thru-Shaft Rotor CK - 1.750 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 CS - 2.771 in. Thru-Shaft Rotor C2 - 2.875 in. Thru-Shaft Rotor CU - 3.000 in. Thru-Shaft Rotor CW - 3.250 in. Thru-Shaft Rotor CY - 3.375 in. Thru-Shaft Rotor CZ - 3.421 in. Thru-Shaft Rotor CV - 3.4375 in. Thru-Shaft Rotor C3 - 3.500 in. Thru-Shaft Rotor TD - 3.625 in. Thru-Shaft Rotor TG - 3.750 in. Thru-Shaft Rotor T4 - 3.875 in. Thru-Shaft Rotor T1 - 4.000 in. Thru-Shaft Rotor T7 - 4.250 in. Thru-Shaft Rotor T6 - 4.500 in. Thru-Shaft Rotor DB - 14mm Thru-Shaft Rotor MF - Obsolete, use DF for 30mm Thru-Shaft Rotor, Cam Screw Mount DF - 30mm Thru-Shaft Rotor MJ - Obsolete, use DJ for 42mm Thru-Shaft Rotor, Cam Screw Mount DJ - 42mm Thru-Shaft Rotor MP - Obsolete, use DP for 60mm Thru-Shaft Rotor, Cam Screw Mount DP - 60mm Thru-Shaft Rotor MT - Obsolete, use DT for 70mm Thru-Shaft Rotor, Cam Screw Mount DT - 70mm Thru-Shaft Rotor MS - Obsolete, use DS for 70mm ISO m6 Thru-Shaft Rotor, Cam Screw Mount DS - 70mm Thru-Shaft Rotor for ISO m6 MZ - Obsolete, use DZ for 80mm Thru-Shaft Rotor, Cam Screw Mount DZ - 80mm Thru-Shaft Rotor MY - Obsolete, use DY for 80mm ISO f6 Thru-Shaft Rotor, Cam Screw Mount DY - 80mm Thru-Shaft Rotor for ISO f6 M2 - Obsolete, use D2 for 90mm ISO g6 Thru-Shaft Rotor, Cam Screw Mount D2 - 90mm Thru-Shaft Rotor for ISO g6 M3 - Obsolete, use DS for 90mm ISO m6 Thru-Shaft Rotor, Cam Screw Mount D3 - 90mm Thru-Shaft Rotor for ISO m6 MD - 93mm Thru-Shaft Rotor for ISO g6 M4 - 95mm Thru-Shaft Rotor for ISO m6 M8 - 110mm Thru-Shaft Rotor for ISO g6 UF - GE CD180-320	X - No Cover Plates B - Both Inboard and Outboard Covers for Thru-Shaft F - Flat Outboard Cover N - Inboard Seal Plate w/V-Ring Seal, Flat Outboard Cover T - Outboard Seal Plate for Thru-Shaft	X - No Left Output 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 C - 64 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	X - No Right Output 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 Right Output F - 60 PPR C - 64 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 E - 7 pin MS style w/Plug (A Quad B Std. Phasing) F - 7 pin MS style w/Plug (A, /A, Std. Phasing) J - 7 pin MS style w/Plug (A, B, Z Std. Phasing) K - 7 pin MS style w/Plug (A, /A, B, /B Std. Phasing) S - 7 pin MS style w/Plug (A Quad B Dynapar Phasing) T - 7 pin MS style w/Plug (A, /A Dynapar Phasing) U - 7 pin MS style w/Plug (A, B, Z Dynapar Phasing) V - 7 pin MS style w/Plug (A, /A, B, /B Dynapar Phasing) P - Industrial EPIC Style w/LED and remote alarm contact G - Industrial EPIC Style w/LED, Northstar Pin Out & Plug R - Baldor 10 Pin Mini MS Twist Lock style w/Plug W - 36 in. Flexible Cable with Sealing Gland 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) X - No Connector - No Sensor	000 - None 004 - Super Magnetic Shielded Sensor(s) 018 - Include XRB3 Remote Level 1 Isolator for Cabinet Mount 401 - 1270 (Special) Output PPR, (Set PPR Code(s) = 0) 402 - 150 (Special) Output PPR, (Set PPR Code(s) = 0) 403 - 50 (Special) Output PPR, No Right Output (Set PPR Code(s) = 0) 404 - 16 PPR (Special) Right Output (Set Right PPR Code Only = 0) 405 - 16 (Special) Output PPR (Set PPR Code(s) = 0) 406 - 6000 (Special) Output PPR (Set PPR Code(s) = 0) 407 - 2800 (Special) Output PPR (Set PPR Code(s) = 0) 408 - 1400 (Special) Output PPR (Set PPR Code(s) = 0) 409 - 30 (Special) Output PPR (Set PPR Code(s) = 0) 704 - Add Super Magnetic Shielding. Also Add Large Frame Motor Flange Adapter, Adds 8.5 in. FC Face to Motor 901 - Special 1'0.3m cable length built into sensor 902 - Special 2'0.6m cable length built into sensor 905 - Special 5'1.5m cable length built into sensor 903 - Special 3'0.9m 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
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