

# SERIES EN42

# NorthStar™ brand

## Zone 1 Hazardous Area Rated Encoder

### Key Features

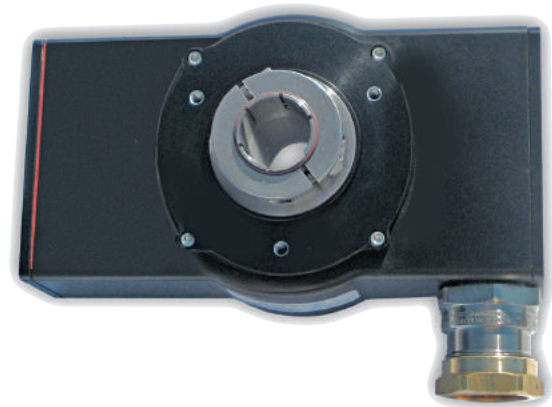
- Triple Certified Encoder for Hazardous Locations
- Encapsulated Electronics with Increased Safety Interface for Zone 1 Use Eliminates Need for I.S. Barrier
- Industry Leading -50 to +100°C Temperature Range
- High Current Line Driver for Long Cable Runs
- 50g Shock and 20G Vibration Tolerant
- 2 Year Warranty



II 2 G D  
Ex ia mb e IIC T4 Gb  
EX tb IIIC T119°C Db  
Sira 09ATEX5172X



C US  
Ex e ia mb IIC T4 Gb  
Certification No.  
CSA 14.2676947x



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental  
**Resolution:** to 5000 PPR (pulses/revolution) See Ordering Information  
**Format:** Two channel quadrature (AB) with optional Index (Z, ungated), and complementary outputs  
**Index:** 180 degrees  $\pm$  25 degrees (electrical), ungated  
**Phase Sense:** A leads B for CCW shaft rotation viewing the shaft clamp end of the encoder  
**Quadrature Phasing:** For resolutions to 1200 PPR: 90°  $\pm$  15° electrical; For resolutions over 1250 PPR: 90°  $\pm$  30° electrical  
**Symmetry:** 180°  $\pm$  18° electrical  
**Waveforms:** Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

### ELECTRICAL

**Input Voltage:** 7-15VDC, 7-26VDC, 10-30VDC (see ordering information)  
**Input Current:** 65mA max., not including output loads  
**Outputs:** 4428 (7-15VDC), 7272 (7-26VDC) and High Powered Mosfet Line Drivers (10-30VDC)  
**Output Current:** (Refer to Ordering Information Table, Code 4: Output Format)  
 Code 4, Option 0 or 2: 125mA max. per channel  
 Code 4, Option 1 or 3: 10mA max. per channel @ 100°C; 15mA max. per channel @ 90°C  
 Code 4, Option 4: 90mA max per channel @ 60C; 60mA max per channel at 95°C  
**Frequency Response:** 125 kHz (data & index)  
**Termination:** Terminal block - Ex screwless w/spring cage-clamp  
**Interface:** HAWKE type "E" increased safety rated gland for armored and non-armored cables.  
**HAWKE Part Numbers:**  
 Non-Armored Gland: HAWKE 501/421 A 3/4" NPT S (accepts 8.5 - 13mm cable, OD)  
 Armored Gland: HAWKE 501/453 UNIV A 3/4" NPT (accepts 12.5 - 20.5mm cable, OD)

### MECHANICAL

**Shaft Material:** Stainless steel or anodized aluminum (See ordering information)  
**Bore Diameter:** 1.00", 0.875, 0.750", 0.625", 16mm, 15mm. Insulated inserts provided for bores under 1 inch  
**Mating Shaft length:** 2.00", Minimum; 2.50", Recommended  
**Shaft Speed:** 3600RPM Maximum continuous; 6000RPM Peak  
**Starting torque:** 8.0 in-oz. maximum (at 25°C)  
**Running Torque:** 5.0 in-oz. maximum (at ambient)  
**Bearings:** 61806-ZZ  
**Bearing Life:** 5 x 10<sup>8</sup> revs at rated shaft Loading, 5 x 10<sup>11</sup> revs at 10% of rated shaft loading. (manufacturers' specs)  
**Housing and Cover:** Hard Anodized Aluminum.  
**Disc Material:** Metal or Plastic  
**Accessory Fastners, Provided With:**  
 Tether Bracket: (3) #10-32 x 3/8" SHCS Socket Head Cap Screws  
 Threaded Rod: (2) 5/16-24 x .70" Mounting Bolts  
 Rear Cover: (4) #6-32 x 3/8" SHCS Socket Head Cap Screws  
 Terminal Box: (4) #6-32 x 3/8" SHCS Socket Head Cap Screws  
**Weight:** 6.5 lb, typical

### ENVIRONMENTAL

**Operating Temperature:** Refer to Temperature Range Table (below)  
**Storage temperature:** -50 to 100°C. Armored Gland high-temperature specification limited to +80°C.  
**Shock:** 50G's for 11msec duration  
**Vibration:** 5 to 2000Hz @ 20 G's  
**Humidity:** 100%  
**Enclosure Rating:** IP67

### CERTIFICATIONS

IECEX SIR 15.0051X  
 Sira 09ATEX5172X  
 Ex ia mb e IIC T4 Gb  
 Ex tb IIIC T119°C Db  
 CSA 14.2676947X  
 Ex e ia mb IIC T4 Gb  
 Ex tb IIIC T119°C Db IP64  
 Ex m IIC T4 Gb and Class III, Div 1; Class II, Div 1, Groups E, F and G  
 Class I, Zone 1, AEx e ia mb IIC T4 Gb  
 Zone 21, AEx tb IIIC T119°C Db IP64

### Ordering Information

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Output Format	Code 5: Termination	Code 6: Tether	Code 7: Cover
<b>EN42</b>	□□□□	□	□	□	□	□
Ordering Information						
<b>EN42</b> Triple Certified ATEX Zone 1 Hollowshaft Encoder	<b>0015 1000</b> <b>0032 1024</b> <b>0100 1200</b> <b>0200 2000</b> <b>0240 2048</b> <b>0250 2500</b> <b>0500 4000</b> <b>0512 5000</b> <b>0600</b>	<b>Stainless Steel Hub</b> <b>8</b> 5/8" <b>9</b> 15 mm <b>A</b> 16mm <b>D</b> 3/4" <b>F</b> 7/8" <b>H</b> 1" Non-Isolated <b>Anodized Aluminum Hub</b> <b>R</b> 1" Isolated	<b>0</b> Differential AB, 7-15V in, 7-15V out* <b>1</b> Differential AB, 7-26V in, 5V out* <b>2</b> Differential ABZ, 7-15V in, 7-15V out* <b>3</b> Differential ABZ, 7-26V in, 5V out* <b>4</b> Differential ABZ, 10-30V in, 10-30V out* <div style="border: 1px solid black; padding: 2px; width: fit-content;">* See Electrical Specifications for Details</div>	<b>0</b> No Gland <b>1</b> Ex Gland for non-armored cables (8.5 - 13.5mm OD) <b>2</b> Ex Gland for armored cables (12.5 - 20.5mm OD) <b>See †Note</b>	<b>0</b> Slotted Tether <b>1</b> Heavy Duty Swivel Rod Tether	<b>0</b> Covers, Standard Flat and Extended

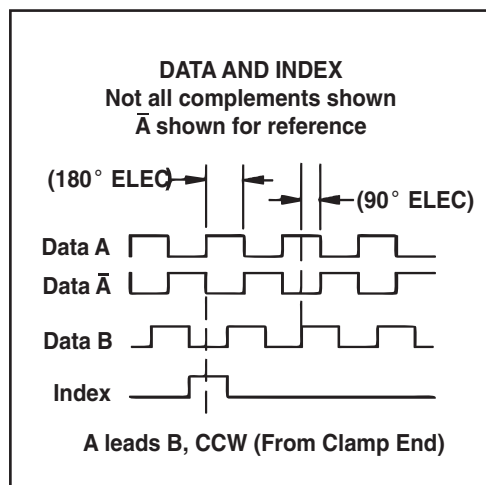
† Note: Armored Gland high-temperature specification limited to +80°C.

### TEMPERATURE RANGE

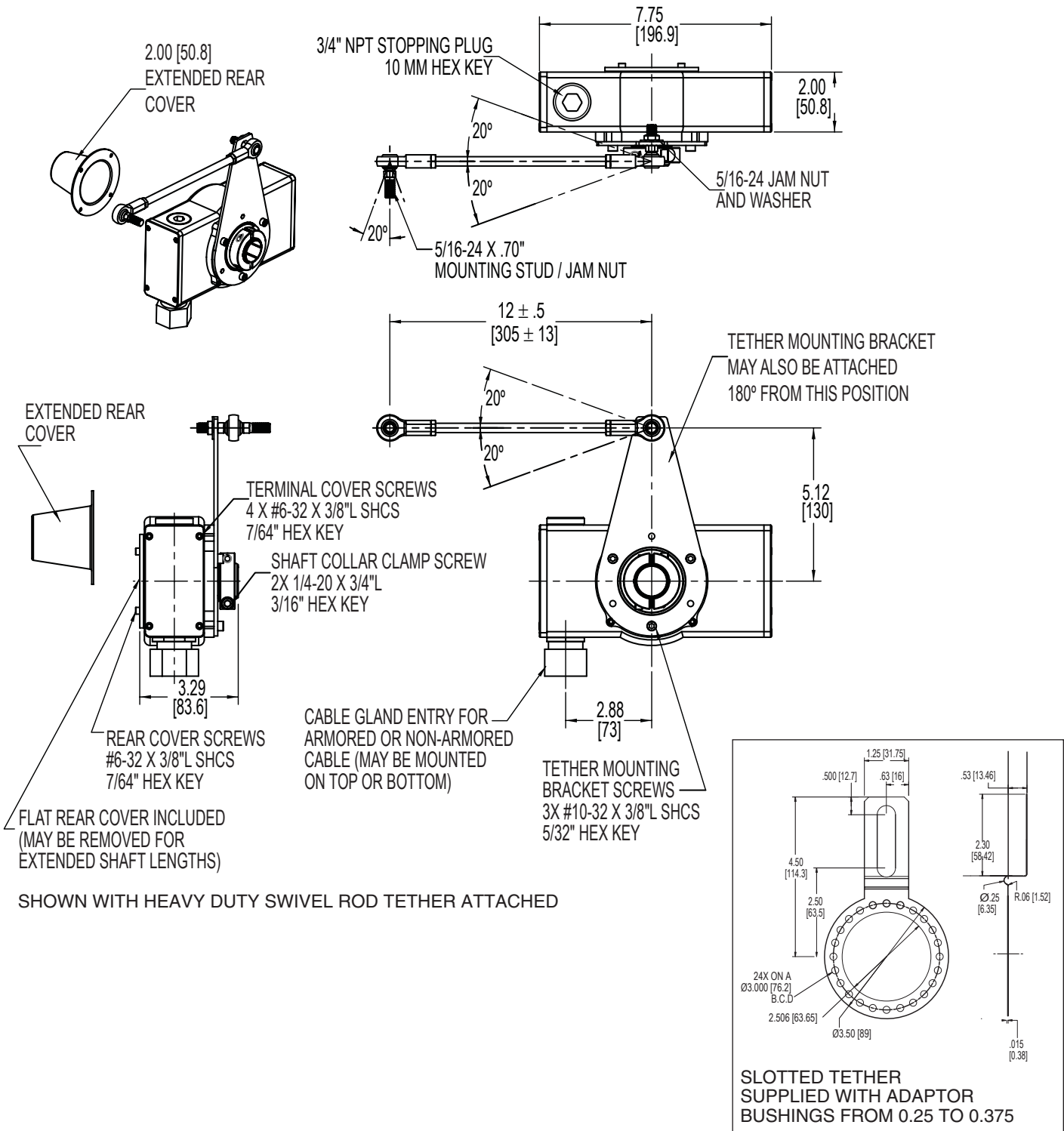
Code 4 Option	Output Current	Group II Ambient Temperature Range	Group III Ambient Temperature Range
0 or 2	125mA max per channel	Ta = -50°C to +100°C	Ta = -50°C to +100°C
1 or 3	10mA max per channel	Ta = -50°C to +100°C	Ta = -50°C to +100°C
1 or 3	15mA max per channel	Ta = -50°C to +90°C	Ta = -50°C to +90°C
4	90mA max per channel	Ta = -50°C to +60°C	Ta = -50°C to +60°C
4	60mA max per channel	Ta = -50°C to +95°C	Ta = -50°C to +95°C

### ELECTRICAL CONNECTIONS

Encoder Function	Terminal Box Connection
Sig. A	1
Sig. $\bar{A}$	2
Sig. B	3
Sig. $\bar{B}$	4
Sig. Z	5
Sig. $\bar{Z}$	6
Power +V	7
Com	8



## DIMENSIONS (Inch [metric])



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