

# SERIES EN44

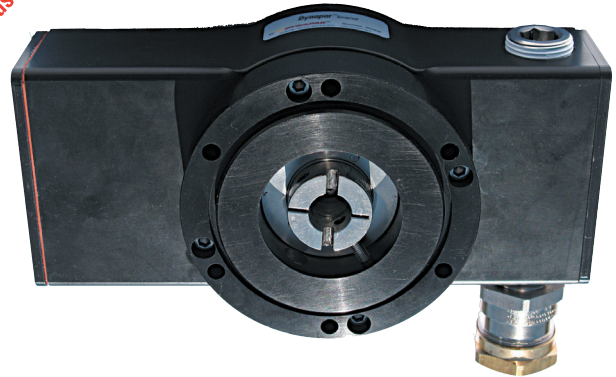
# NorthStar™ brand

## Zone 1 Hazardous Area Rated Encoder

### Key Features

- Triple Certified Encoder for Hazardous Locations
- Hubshaft Design with Isolated Coupling to Compensate for Shaft Endplay
- Encapsulated Electronics with Increased Safety Interface for Zone 1 Use Eliminates Need for I.S. Barrier
- High Current Line Driver for Long Cable Runs
- 50G Shock and 20G Vibration Tolerant

HAZ  
Hazardous Duty



II 2 G D  
Ex ia mb eb IIC T4 Gb  
EX tb IIIC T119°C Db

E116133

## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental

**Resolution:** 1024 and 2048 PPR (pulses/revolution)

**Format:** Two channel quadrature (AB) with optional Index (Z, ungated), and complementary outputs

**Index:** 180° ± 18° electrical, ungated

**Phase Sense:** A leads B for CCW shaft rotation viewing the shaft clamp end of the encoder

**Quadrature Phasing:** 90° ± 30° electrical

**Symmetry:** 180° ± 30° 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

**Input Current:** 100mA max., not including output loads

**Outputs:**

Input/Output Type	Line Driver Type
7-15V/7-15V DC	4428
7-26V/5V DC	4428
10-30V/10-30V DC	2707

**Output Current:** Refer to Ordering Information Table, Code 4: Output Format

Code 4 Option	Current per Channel (max)
0 or 2	125mA @ 80°C
1 or 3	15mA @ 80°C
4	60mA @ 80°C

**Frequency Response:** 125 kHz (data and index)

**Termination:** Terminal block - Ex screwless with 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

**Mechanical Interface:** Electrically isolated stainless steel shaft flex coupling

**Mounting:** 100mm IEC Flange

**Mating Shaft Length:** 0.47" to 0.83" (11.9mm to 28.1mm)

**Coupling:** 16mm, flexible

**Shaft Speed:** 6000 RPM, max.

**Bearings:** 6107

**Bearing life:** 5 x 108 revs at rated shaft Loading, 5 x 1011 revs at 10% of rated shaft loading. (manufacturers' specs)

**Housing Material:** Aluminum Alloy, Black Anodized and Powder coat

**Disc material:** Aluminum

**Weight:** 6 lb. 6 oz, 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%

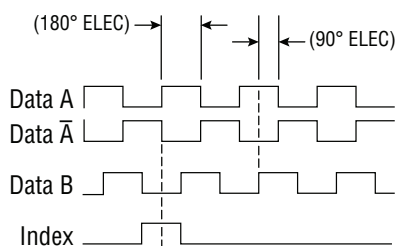
**Enclosure Rating:** IP67

### CERTIFICATIONS

IECEX UL 22.0040X  
UL 22 ATEX 2655X  
Ex eb ia mb IIC T4 Gb  
Ex tb IIIC T119°C Db  
Class I, Zone 1, AEx eb ia mb IIC T4 Gb  
Zone 21, AEx tb IIIC T119°C Db

### DATA AND INDEX

Not all complements shown  
A shown for reference



A leads B, CCW (from clamp end)

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## 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
<b>EN44</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EN44 Triple Certified ATEX Zone 1 Hollowshaft Encoder	<b>1024</b> <b>2048</b>	A 16mm	<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*	<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)

\* See Electrical Specifications for Details

## 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 +80°C	Ta = -25°C to +80°C
1 or 3	10mA max per channel	Ta = -50°C to +80°C	Ta = -25°C to +80°C
1 or 3	15mA max per channel	Ta = -50°C to +80°C	Ta = -25°C to +80°C
4	90mA max per channel	Ta = -50°C to +60°C	Ta = -25°C to +60°C
4	60mA max per channel	Ta = -50°C to +80°C	Ta = -25°C to +80°C

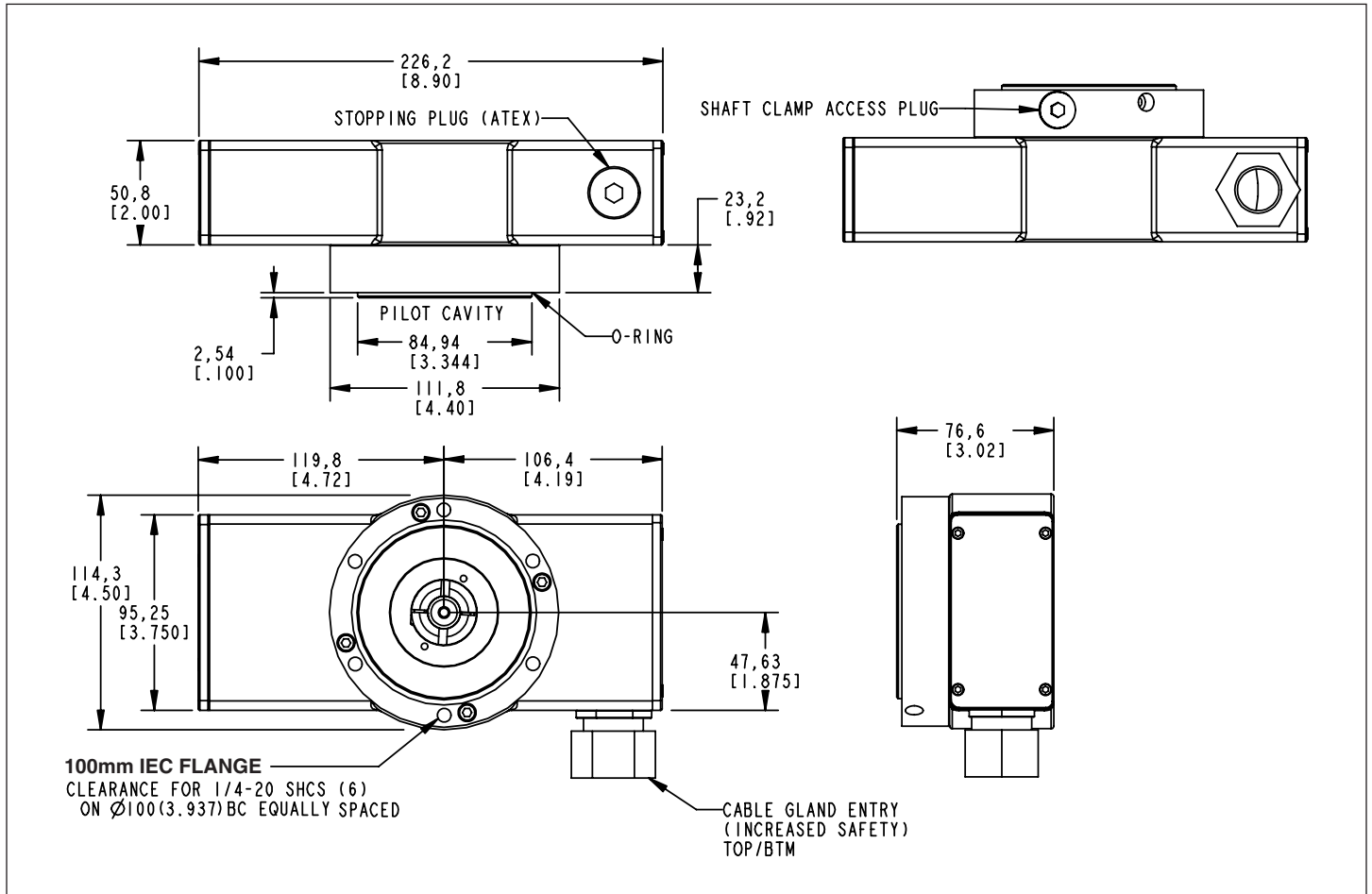
## ELECTRICAL CONNECTIONS

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

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**NorthStar™ brand**

Dimensions: inch (mm)



**Worldwide Brands:** NorthStar™ • Dynapar™ • Hengstler™ • Harowe™

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