

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

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical

Resolution: 15 to 5000 PPR (pulses/revolution) See Ordering Information

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

Index: 180 degrees ± 25 degrees (electrical), ungated, A leads B, CCW (from clamp end)

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

Quadrature Phasing:

For resolutions 200 to 300 PPR and 1200 PPR and above: 90° ± 30 ° electrical; all other resolutions: 90° ± 15 °

Symmetry:

For resolutions 200-300 PPR and above 1024 PPR: 180° ± 25 ° electrical; all other resolutions: 180° ± 18 °

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 @ 60°C;

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

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

Housing and Cover: Hard Anodized Aluminum

Shaft Material: Stainless steel or anodized aluminum (See ordering information)

Disc Material: Metal or Plastic

Accessory Fasteners, 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 (see page 2)

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 |
|---|---|--|--|--|--|---|
| EN42 | □□□□ | □ | □ | □ | □ | □ |
| Ordering Information | | | | | | |
| EN42 Triple Certified ATEX Zone 1 Hollowshaft Encoder | 0015 1000 0032 1024 0100 1200 0200 2000 0240 2048 0250 2500 0500 4000 0512 5000 0600 | Stainless Steel Hub 8 5/8" 9 15 mm A 16mm D 3/4" F 7/8" H 1" Non-Isolated Anodized Aluminum Hub R 1" Isolated | 0 Differential AB, 7-15V in, 7-15V out* 1 Differential AB, 7-26V in, 5V out* 2 Differential ABZ, 7-15V in, 7-15V out* 3 Differential ABZ, 7-26V in, 5V out* 4 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> | 0 No Gland 1 Ex Gland for non-armored cables (8.5 - 13.5mm OD) 2 Ex Gland for armored cables (12.5 - 20.5mm OD) See †Note | 0 Slotted Tether 1 Heavy Duty Swivel Rod Tether | 0 Covers, Standard Flat and Extended |

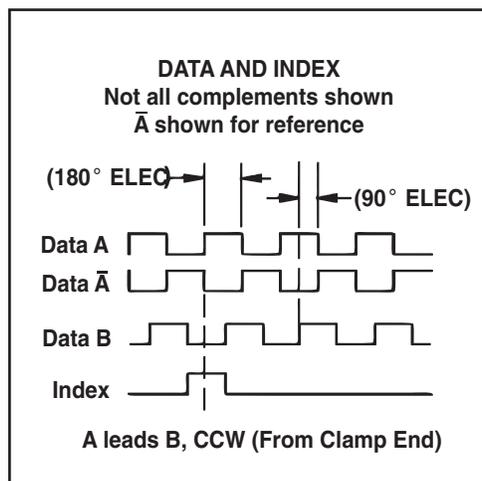
† Note: Armored Gland high-temperature specification limited to +80°C.

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])

