

The following page(s) are extracted from multi-page product catalogues or CDROMs and any page number shown is relevant to the original document. The PDF sheets here may have been combined to provide technical information about the specific product(s) you have selected.

Contact Details

The Encoder Company
H. Kuhnke Ltd
Unit 21, Abbey Enterprise Centre
Premier Way
Romsey
Hants.
SO51 9AQ
UK

T: +44 (0)1794 514445
F: +44 (0)1794 513514
Email: sales@theencodercompany.co.uk

Important Note

The information shown in these documents is for guidance only. No liability is accepted for any errors or omissions. The designer or user is solely responsible for the safe and proper application of the parts, assemblies or equipment described.

Incremental



- Single or Dual output
- ATEX Certification available for Intrinsically Safe application
- High Resolution Unbreakable Disk
- Industrial Duty Connector
- NEMA 4X / IP67 Rated
- Nickel or Stainless Steel Housing available

HEAVY DUTY

NorthStar 

NUMBER OF PULSES

0001 / 0024 / 0025 / 0035 / 0040 / 0060 / 0100 / 0120 / 0192 / 0200 / 0240 / 0250 / 0256 / 0300 / 0360 / 0500 / 0512 / 0600 / 0625 / 0720 / 1000 / 1024 / 1200 / 1250 / 1440 / 2000 / 2048 / 2500 / 2540 / 3600

GENERAL INFORMATION

HARSH-DUTY OPTICAL ENCODER

The HD20 Harsh-Duty Optical Encoder is a compact heavy-duty encoder designed to exceed IP66/IP67 and NEMA 6 enclosure requirements. It is also available in stainless steel that exceeds NEMA 4X and NEMA 6P requirements and is ideal for stringent wash down environments, including those where high pressure steam or caustic chemicals are needed to meet regulatory requirements.

The HD20 features max. 440N Axial and Radial Bearings, -40° to +100°C temperature range and unique labyrinth double-sealed housing, and optional dual "redundant" outputs and is covered by a two-year warranty (one year for bearings). NorthStar's traditional quality, reliability and value are built-in to every HD20 encoder.

Also available in this series, is an Intrinsically Safe version certified to ATEX EEx ia IIB T4 when used with the appropriate IS Barrier. Accessory barriers can be supplied with the encoder.

APPLICATIONS

The HD20 Harsh-Duty Optical Encoder is ideal for machine applications with corrosive environments that demand heavy washdown protection. This compact, special-duty encoder is designed to exceed IP66/IP67 and NEMA 6 enclosure requirements with a PPR range through 3600. ATEX certification is also available for intrinsically safe applications.

- Converting Machinery
- Material Handling
- Packaging Equipment
- Pickling Equipment
- Processing Equipment

Industries

Chemical, Food & Beverage, Oil & Gas, Paper, Steel and any other where a precise encoder is needed to operate in harsh environments.

TECHNICAL DATA mechanical

| | |
|--|-------------------------------|
| Housing diameter | 52.3 mm |
| Shaft diameter | 9.52 mm / 10 mm (Solid shaft) |
| Flange (Mounting of housing) | Square flange |
| Protection class shaft input (EN 60529) | NEMA 4X or IP67 |
| Protection class housing (EN 60529) | NEMA 4X or IP67 |

Incremental

TECHNICAL DATA mechanical (continued)

| | |
|--|--|
| Shaft load axial / radial | max.: 440 N / 440 N |
| Max. speed | max. 6000 rpm |
| Bearing life | max. 5 x 10 ¹¹ revs. |
| Torque | < 1.76 Ncm |
| Vibration resistance (DIN EN 60068-2-6) | 200 m/s ² (5 ... 2000 Hz) |
| Shock resistance (DIN EN 60068-2-27) | 500 m/s ² (11 ms) |
| Operating temperature | -40 °C ... +100 °C ATEX: -40 °C ... +80 °C |
| Material shaft | Stainless Steel |
| Material housing | Hard anodized Aluminum, Nickel |
| Weight | approx. 430 g |
| Connection | MS, radial M12-connector, radial Cable, radial |

TECHNICAL DATA electrical

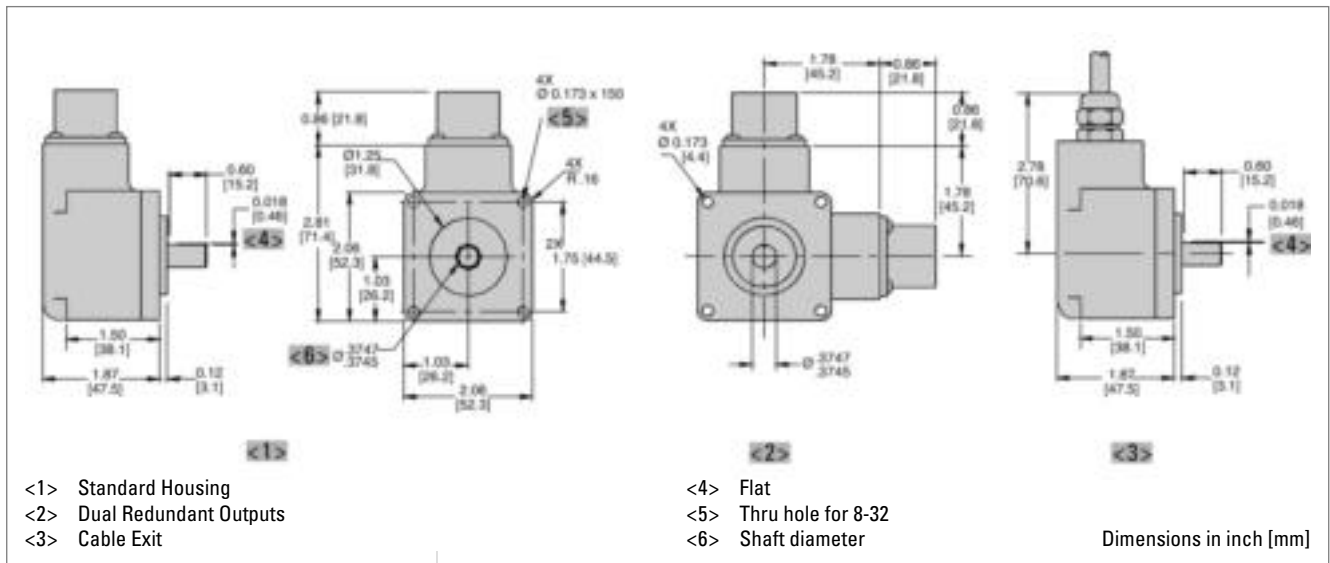
| | |
|-----------------------|---|
| Supply voltage | DC 5 - 26 V ATEX: DC 5 V ATEX: DC 7 - 26 V |
| Max. current w/o load | 50 mA |
| Code | Incremental, optical |
| Max. pulse frequency | 125 kHz |
| Phasing | Incremental signals (A leads B): A leads B by 90° for ccw shaft rotation viewing the shaft clamp end of the encoder |
| Pulse shape | Square wave |

ELECTRICAL CONNECTIONS 6, 7 & 10 Pin MS connector / Cable

| Encoder Function | Cable 6 Pin Single Ended | | Cable 7 Pin Single Ended | | Cable 7 Pin Dif Line Drv w/o Idx | | Cable 10 Pin Dif Line Drv w/ Idx | | Cable Exit with Seal |
|------------------|--------------------------|------------|--------------------------|------------|----------------------------------|--------------|----------------------------------|--------------|----------------------|
| | Pin | Wire Color | Pin | Wire Color | Pin | Wire Color | Pin | Wire Color | Wire Color |
| Sig. A | E | brown | A | brown | A | brown | A | brown | green |
| Sig. B | D | orange | B | orange | B | orange | B | orange | blue |
| Sig. Z | C | yellow | C | yellow | -- | -- | C | yellow | orange |
| Power +V | B | red | D | red | D | red | D | red | red |
| Com | A | black | F | black | F | black | F | black | black |
| Case | -- | -- | G | green | G | green | G | green | white |
| N/C | F | -- | E | -- | -- | -- | E | -- | -- |
| Sig. \bar{A} | -- | -- | -- | -- | C | brown/white | H | brown/white | violet |
| Sig. \bar{B} | -- | -- | -- | -- | E | orange/white | I | orange/white | brown |
| Sig. \bar{Z} | -- | -- | -- | -- | -- | -- | J | yellow/white | yellow |

Incremental

DIMENSIONED DRAWINGS



Incremental

ORDERING INFORMATION

| Type | Format | Number of pulses | Shaft Ø | Output | Connection ¹ | Housing, Tether, Options ^{2,3,4,5} |
|--------------------------|---|--------------------------|---|--|---|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| HD20 | 1 Uni-directional 2 Bi-directional 3 Bi-directional with Index | 1 ... 3600 | 0 9.52 mm (3/8") 4 10 mm | 0 5-26V in, 5-26V Open Collector out (7273) 2 5-26V in, 5-26V Push-Pull out 3 5-26V in, 5-26V Differential Line Driver out (7272) 4 5-26V in, 5V Differential Line Driver out (7272) F 5-26V in, 5-26V Open Collector out (2222) G 5-26V in, 5-26V Open Collector out with 2.2 kΩ Pul-lups (2222) | 1 6 pin connector 3 7 pin connector 5 10 pin connector D Sealed cable, 0.45 m F Sealed cable, 0.15 m G Sealed cable, 0.25 m H Sealed cable, 0.38 m | 0 No Options 1 Nickel Finish Housing 2 Stainless Steel Housing 3 Redundant Outputs (Dual Connector Housing) 4 Nickel Finish Housing with Redundant Outputs 5 Stainless Steel Housing with Redundant Outputs A Same as "0" with ATEX Typ 1 B Same as "1" with ATEX Typ 1 C Same as "2" with ATEX Typ 1 D Same as "3" with ATEX Typ 1 E Same as "4" with ATEX Typ 1 F Same as "5" with ATEX Typ 1 G Same as "0" with ATEX Typ 2 H Same as "1" with ATEX Typ 2 I Same as "2" with ATEX Typ 2 J Same as "3" with ATEX Typ 2 K Same as "4" with ATEX Typ 2 L Same as "5" with ATEX Typ 2 M Same as "0" with ATEX Typ 3 N Same as "1" with ATEX Typ 3 O Same as "2" with ATEX Typ 3 P Same as "3" with ATEX Typ 3 Q Same as "4" with ATEX Typ 3 R Same as "5" with ATEX Typ 3 |

¹ Output Code "3", "4" only available with Format Code "1", "2" and Connection Code "3" to "H" or with Format Code "3" and Connection Code "5" to "H"

² Available ATEX certified options:

ATEX Type 1: 5 V in, 5 V out

ATEX Type 2: 7-26V in, 7-26V out

ATEX Type 3: 7-26V in, 5V out

Note: When selecting ATEX models, ATEX voltages replace those shown in Output Code.

³ Housing/Tether/Options Code "G" to "L" only available with Output Code "0" to "3", "F" or "G"

⁴ Housing/Tether/Options Code "M" to "R" only available with Output Code "4"

⁵ Note for Housing with redundant outputs: Simultaneous use of redundant outputs may void ATEX certification. Consult us for details.