

Heavy Duty

HD 20

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 

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

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.

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.

| | |
|--|-------------------------------|
| 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 |

NUMBER OF PULSES

GENERAL INFORMATION

APPLICATIONS

TECHNICAL DATA mechanical

| | | |
|-------------------------|---|-----------|
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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. |
| Starting torque typ. | < 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 |
| Current w/o load typ. | 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 |

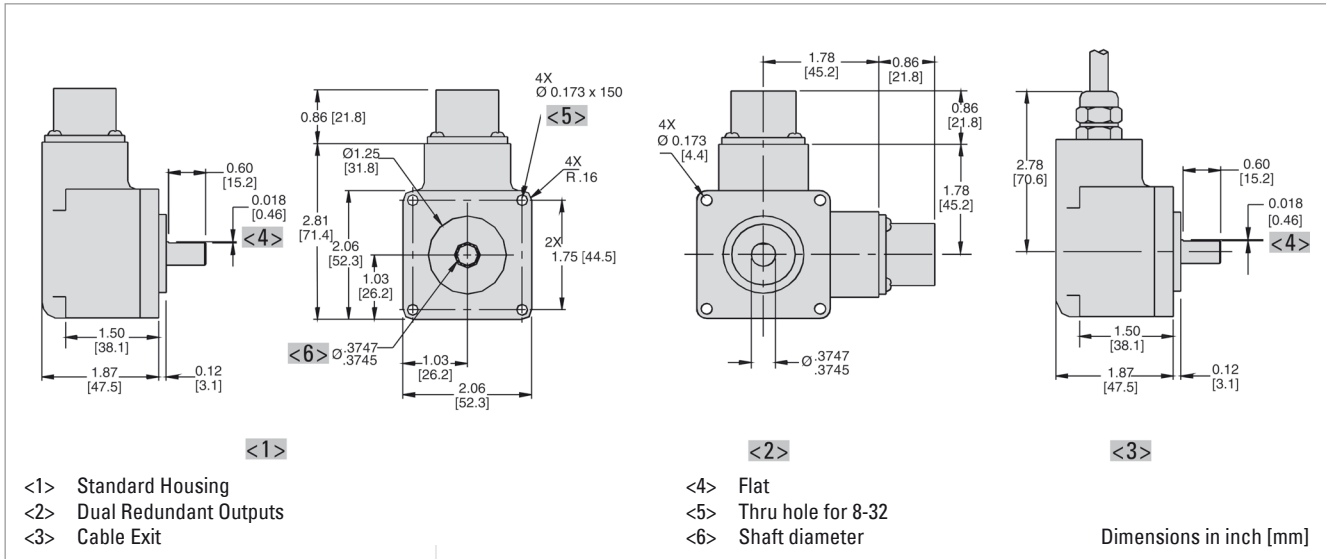
ELECTRICAL CONNECTIONS 6, 7 & 10 Pin MS connector / Cable

| 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 |

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DIMENSIONED DRAWINGS



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ORDERING INFORMATION

| Type | Format | Number of pulses | Shaft Ø | Output ⁶ | 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 | 3 Bidirectional with Index | 1 ... 3600 | 0 9.52 mm (3/8") Solid shaft, with flat 4 10 mm Solid shaft, no flat | 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) | 3 7 pin connector 5 10 pin connector D Sealed cable, 0.45 m E Sealed cable, 0.9 m F Sealed cable, 1.8 m G Sealed cable, 3.0 m H Sealed cable, 4.5 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 Connection Code "3" only available with Output Code "2"

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 "2" and "3"

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.

⁶ Open Collector Output on request