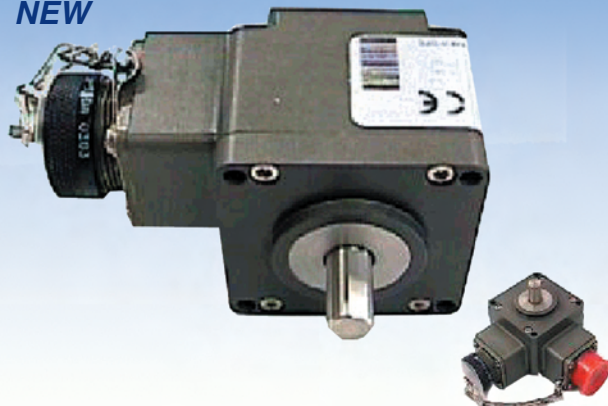


**NEW**



## Series HD20

- *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*
- *Two Year Warranty*

### Harsh-Duty Optical Encoder

#### DESCRIPTION

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 100 lb 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.

#### FEATURES/BENEFITS

Mechanical and Environmental

- Unbreakable code disk
- Flexible mounting
- Heavy duty shaft seals
- Sealed connector

Electrical

- Cast housing maximizes noise immunity and durability



## Harsh-Duty Optical Encoder

# Series HD20

## Harsh-Duty Optical Encoder... Meets Stringent Washdown Requirements

### SPECIFICATIONS\*

#### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental

**Resolution:** 1 to 3600 PPR (pulses/revolution)

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

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

**Quadrature Phasing:** For resolutions to 625PPR:  $90^\circ \pm 15^\circ$  electrical; For resolutions over 625 PPR:  $90^\circ \pm 30^\circ$  electrical of 1000 pf

**Symmetry:**

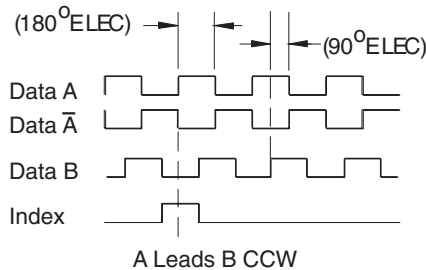
For resolutions to 1024PPR:  $180^\circ \pm 18^\circ$  electrical  
For resolutions over 1024PPR:  $180^\circ \pm 25^\circ$  electrical

**Waveforms:** Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

#### DATA AND INDEX

Not all complements shown.

A shown for reference



#### ENVIRONMENTAL

**Operating Temperature:** -40 to 100°C

**Operating Temperature ATEX:** -40 to 80°C

**Storage temperature:** -40 to 100°C

**Shock:** 50G's for 11msec duration

**Vibration:** 5 to 2000Hz @ 20 G's

**Humidity:** 100%

**Enclosure Rating:** Enclosure Rating: NEMA 4X, NEMA 6, IP66, IP67 (NEMA 6P upon request)

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12. "M12" Cable assemblies are rated IP67

#### ELECTRICAL

**Input Power:** 5-26VDC; 50 mA max., not including output loads. ATEX: 5VDC, 7-26VDC

**Outputs:** 2N2222, ET7272, ET7273

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

**Termination:** 6, 7, or 10 pin MS Connector; 18" cable exit w/seal

**Mating Connector:**

6 pin, style MS3106A-14S-6S (MCN-N4);

7 pin, style MS3106A-16S-1S (MCN-N5);

10 pin, style MS3106A-18-1S (MCN-N6)

#### MECHANICAL

**Shaft Material:** 303 stainless steel (passivated)

**Shaft speed:** 6000 RPM, maximum

**Shaft loading:** Up to 100 lbs axial and radial

**Shaft runout:** 0.0005 TIR at midpoint

**Starting torque:** 2.5 in.-oz. maximum (at 25°C)

**Bearings:** 5200 ZZ double row

**Bearing life:**  $5 \times 10^8$  revs at rated shaft loading,  $5 \times 10^{11}$  revs at 10% of rated shaft loading. (manufacturers' specs)

**Housing and cover:** Hard Anodized Aluminum.

Also available in Electroless Nickel finish and Stainless Steel.

**Disc material:** Metal or mylar

**Weight:** 14 ounces, typical

\* Specifications are for base models with standard features only unless otherwise noted. Specifications subject to change without notice in accordance with our DBS policy of continuous improvement. All product and brand names are trademarks of their respective owners. All rights reserved.

#### ELECTRICAL CONNECTIONS

### 6, 7 & 10 Pin MS Connectors and Cables

Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. Models with direct cable exit carry the color coding as shown in the right hand column.

Encoder Function	Cable #108594-6 Pin Single Ended		Cable # 108595-7 Pin Single Ended		Cable #108596-7 Pin Dif Line Drv w/o Idx		Cable #1400635-10 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	BRN	A	BRN	A	BRN	A	BRN	GREEN
Sig. B	D	ORG	B	ORG	B	ORG	B	ORG	BLUE
Sig. Z	C	YEL	C	YEL	—	—	C	YEL	ORANGE
Power +V	B	RED	D	RED	D	RED	D	RED	RED
Com	A	BLK	F	BLK	F	BLK	F	BLK	BLACK
Case	—	—	G	GRN	G	GRN	G	GRN	WHITE
N/C	F	—	E	—	—	—	E	—	—
Sig. A	—	—	—	—	C	BRN/WHT	H	BRN/WHT	VIOLET
Sig. B	—	—	—	—	E	ORG/WHT	I	ORG/WHT	BROWN
Sig. Z	—	—	—	—	—	—	J	YEL/WHT	YELLOW

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12.



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**More Reliable.** Our experience with more than 25,000 customers has taught us to design controllers that are reliable and durable, with quality standards that meet six sigma requirements.

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HD20 Data Sheet (08/09) ©2009 Dynapar

### Satellite Locations:

North America: North Carolina, South Carolina, Connecticut, Massachusetts, New York, Canada, British Virgin Islands • Europe: United Kingdom, Italy, France, Germany, Spain, Slovakia • Latin America: Brazil • Asia: China, Japan, Korea, Singapore

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