

SERIES HD20

NorthStar™ brand

Harsh Duty Optical Encoder

Key Features

- Size 20 Heavy-Duty Encoder with Single or Dual Isolated Outputs
- Unbreakable Code Disc up to 3600 PPR
- Special Housing and Seals for IP67 Rating
- Anodized Aluminum, Stainless Steel, or Nickel Plated Housing



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
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 625 PPR: $90^\circ \pm 15^\circ$ electrical; For resolutions over 625 PPR: $90^\circ \pm 30^\circ$ electrical
Symmetry:
 For resolutions to 1024 PPR: $180^\circ \pm 18^\circ$ electrical
 For resolutions over 1024 PPR: $180^\circ \pm 25^\circ$ electrical
Index: 150° to 330° A leads B, CCW (From Shaft End)
Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pF

ELECTRICAL

Input Power: 5-26VDC; 50 mA max., not including output loads.
Outputs:
 2N2222 Open Collector: 250mA, sink max
 7272 Push-Pull: 40mA, sink or source
 7272 Differential Line Driver: 40 mA, sink or source
 7273 Open Collector: 40mA, sink max
Frequency Response: 125 kHz (data & index)
Noise Immunity: Tested to EN61326-1
Electrical Immunity: Reverse polarity and short circuit protected
Termination: 6, 7, or 10 pin MS Connector; 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)
 10 pin, NEMA 4 style (MCN-N6N4)

MECHANICAL

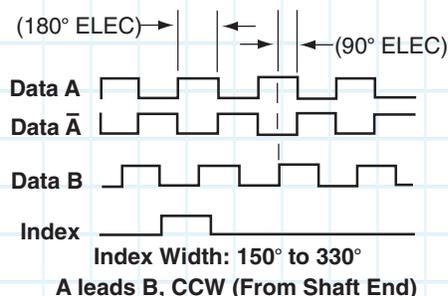
Shaft Size: 10mm, 3/8"
Shaft Speed: 6000 RPM, maximum
Shaft Loading: Up to 100 lbs axial and radial
Starting Torque: 2.5 in-oz. maximum (at 25°C)
Bearings: 5200 ZZ double row
Bearing life: 5×10^8 revs at rated shaft Loading, 5×10^{11} revs at 10% of rated shaft loading. (manufacturers' specs)
Housing and Cover: Hard Anodized Aluminum. Also available in Electroless Nickel finish and Stainless Steel.
Shaft Material: 303 stainless steel (passivated)
Disc Material: Plastic
Weight: 14 ounces, typical

ENVIRONMENTAL

Operating Temperature: -40 to 100°C
Storage Temperature: -40 to 100°C
Shock: 50G's for 11msec duration
Vibration: 5 to 2000Hz @ 20 G's
Humidity: Up to 98% (non-condensing)
Enclosure Rating: IP67

DATA AND INDEX

Not all complements shown
 A shown for reference



Ordering Information

To order, complete the model number with code numbers from the table below:

| Code 1: Model | Code 2: PPR | Code 3: Shaft | Code 4: Electrical | Code 5: Termination | Code 6: Options |
|--------------------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|
| HD20 <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Ordering Information | | | | | | |
|--------------------------------------|--|--|---|---------------------------|---|--|
| Size 20 Heavy Duty Encoder | 0001 0500 0010 0512 0024 0600 0025 0625 | 0 3/8" Dia. Shaft with flat | 0 5-26V in, 5-26V Open Collector out (7273) | 1 6 Pin Connector | 0 No Options | |
| 1 Unidirectional | 0035 0720 | 4 10mm Dia. Shaft, no flat | 2 5-26V in, 5-26V Push-Pull out (7272) | 3 7 Pin Connector | 1 Nickel Finish Housing | |
| 2 Bidirectional | 0040 1000 | | | 5 10 Pin Connector | 2 Stainless Steel Housing | |
| 3 Bidirectional with Index | 0060 1024 0100 1200 0120 1250 0192 1440 0200 2000 0240 2048 0250 2500 0256 2540 0300 2600 0360 3600 | | F 5-26V in, 5-26V Open Collector out (2222) | D 18" Sealed Cable | Available when: Code 4 is 0, 2 | |
| | | | G 5-26V in, 5-26V Open Collector out with 2.2 kΩ Pullups (2222) | E 3' Sealed Cable | 3 Redundant Outputs (Dual Connector Housing). | |
| | | | Available when: Code 1 is 1,2 and Code 5 is 3 through H, or Code 1 is 3 and Code 5 is 5 through H: | F 6' Sealed Cable | 4 Nickel Finish Housing with Redundant Outputs. | |
| | | | 3 5-26V in, 5-26V Differential Line Driver out (7272) | G 10' Sealed Cable | 5 Stainless Steel Housing with Redun- dant Outputs. | |
| | | | 4 5-26V in, 5V Differential Line Driver out (7272) | H 15' Sealed Cable | | |

Cable Assemblies with MS Connector

- 108594-XXXX** 6 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 108595-XXXX** 7 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 108596-XXXX** 7 Pin MS, Cable Assy. For Use with Differential Line Driver w/o Index Outputs
- 1400635XXXX** 10 Pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs
- 109209-XXXX** NEMA4 10 pin MS, Cable Assy. For use with Differential Line Driver with Index Outputs

Mating Connectors (no cable)

- 6 pin, style MS3106A-14S-6S (MCN-N4)
- 7 pin, style MS3106A-16S-1S (MCN-N5)
- 10 pin, style MS3106A-18-1S (MCN-N6)
- 10 pin, NEMA 4 style (MCN-N6N4)

***Note:** Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace XXXX with -0020.

