HEAVY DUTY

SERIES HD20

Harsh Duty Optical Encoder

Key Features

10 pin, style MS3106A-18-1S (MCN-N6) 10 pin, NEMA 4 style (MCN-N6N4)

- 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

NorthStar[™] brand







SPECIFICATIONS STANDARD OPERATING CHARACTERISTICS **ENVIRONMENTAL** MECHANICAL Code: Incremental, Optical Operating Temperature: -40 to 100°C Shaft Size: 10mm, 3/8" Resolution: 1 to 3600 PPR (pulses/revolution) Storage Temperature: -40 to 100°C Shaft Speed: 6000 RPM, maximum Format: Two channel guadrature (AB) with Shaft Loading: Up to 100 lbs axial and radial Shock: 50G's for 11msec duration optional Index (Z), and complementary outputs **Phase Sense:** A leads B for CCW shaft rotation Starting Torque: 2.5 in-oz. maximum (at 25°C) Bearings: 5200 ZZ double row Vibration: 5 to 2000Hz @ 20 G's Humidity: Up to 98% (non-condensing) viewing the shaft clamp end of the encoder Bearing life: 5 x 10⁸ revs at rated shaft Loading, Enclosure Rating: IP67 Quadrature Phasing: For resolutions to 625 PPR: 5 x 10¹¹ revs at 10% of rated shaft loading. $90^{\circ} \pm 15^{\circ}$ electrical; For resolutions over 625 PPR: $90^{\circ} \pm 30^{\circ}$ electrical (manufacturers' specs) Housing and Cover: Hard Anodized Aluminum. Symmetry: Also available in Electroless Nickel finish and For resolutions to 1024 PPR: 180° ±18° electrical Stainless Steel For resolutions over 1024 PPR: 180° ±25° electrical Shaft Material: 303 stainless steel (passivated) Index: 150° to 330° A leads B, CCW (From Shaft Disc Material: Plastic End) Weight: 14 ounces, typical Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf ELECTRICAL DATA AND INDEX Not all complements shown Input Power: 5-26VDC; 50 mA max., not includ-Ā shown for reference ing output loads. Outputs: 2N2222 Open Collector: 250mA, sink max (180° ELEC) → (90° ELEC) 7272 Push-Pull: 40mA, sink or source 7272 Differential Line Driver: 40 mA, sink or Data A source 7273 Open Collector: 40mA, sink max Data Ā L Frequency Response: 125 kHz (data & index) Noise Immunity: Tested to EN61326-1 Data B Electrical Immunity: Reverse polarity and short circuit protected Index Termination: 6, 7, or 10 pin MS Connector; Cable Index Width: 150° to 330° exit w/seal A leads B, CCW (From Shaft End) Mating Connector: 6 pin. style MS3106A-14S-6S (MCN-N4): 7 pin, style MS3106A-16S-1S (MCN-N5);

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

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

 $\label{eq:constraint} \textbf{1400635XXXX} \quad \textbf{10 Pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs}$

109209-XXXX NEMA4 10 pin MS, Cable Assy. For use with Differential Line Driver with Index Outputs

*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.

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)

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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.

| Table 1 | | | | | | | | | | | | |
|---------------------|-----|---|-----|---|-----|---|-----|--|--------------------|--|--|--|
| Encoder Function | | Cable # 108594-XXXX 6 Pin Single Ended | | Cable # 108595-XXXX 7 Pin Single Ended | | Cable # 108596-XXXX 7 Pin Dif Line Driver without Index | | ** Cable # 1400635XXXX ** Cable # 109209-XXXX 10 Pin Dif Line Driver with Index | | | | |
| | Pin | Wire Color Code | Pin | Wire Color Code | Pin | Wire Color Code | Pin | Wire Color Code | Wire Color Code | | | |
| Signal A | E | BRN | А | BRN | А | BRN | А | BRN | GRN | | | |
| Signal B | D | ORN | В | ORG | В | ORG | В | ORG | BLU | | | |
| Signal Z* | C | YEL | С | YEL | — | — | С | YEL | ORG | | | |
| Power +V | В | RED | D | RED | D | RED | D | RED | RED | | | |
| Com | A | BLK | F | BLK | F | BLK | F | BLK | BLK | | | |
| Case | — | — | G | GRN | G | GRN | G | GRN | WHT | | | |
| N/C | F | — | E | — | _ | — | E | — | — | | | |
| Signal A | — | — | _ | — | С | BRN/WHT | Н | BRN/WHT | VIO | | | |
| Signal B | — | — | — | — | E | ORG/WHT | I | ORG/WHT | BRN | | | |
| Signal Z* | — | — | — | — | — | — | J | YEL/WHT | YEL | | | |

1) Cable Configuration (Table 1): PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)

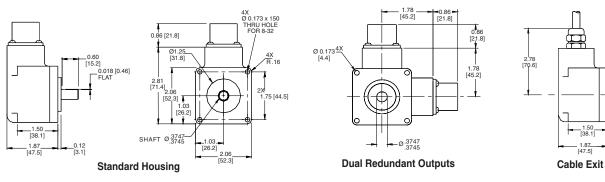
2) Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace -XXXX with -0020

3) *Index not provided on all models. See ordering information.

4) **For watertight applications, use NEMA4 10 pin cable & connector 1400635XXXX.

5) "MS" Type mating connectors and pre-build cables are rated NEMA 12

DIMENSIONS



🗤 Worldwide Brands: NorthStar™ • Dynapar™ • Hengstler™ • Harowe™



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