

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

HD
Heavy Duty



CE
EN 61326-1



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; 80 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, NEMA4 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 ☐	☐ ☐ ☐ ☐	☐	☐	☐	☐
Ordering Information					
Size 20 Heavy Duty Encoder	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)	1 6 Pin Connector 3 7 Pin Connector 5 10 Pin Connector D 18" Sealed Cable E 3' Sealed Cable F 6' Sealed Cable G 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 Redun- dant 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
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)

MCN-N4	6 pin, style MS3106A-14S-6S
MCN-N5	7 pin, style MS3106A-16S-1S
MCN-N6	10 pin, style MS3106A-18-1S
MCN-N6N4	10 pin, NEMA4 style

***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.

