

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 3600PPR
- Special Housing and Seals for IP67 Rating
- Anodized Aluminum, Stainless Steel, or Nickel Plated Housing

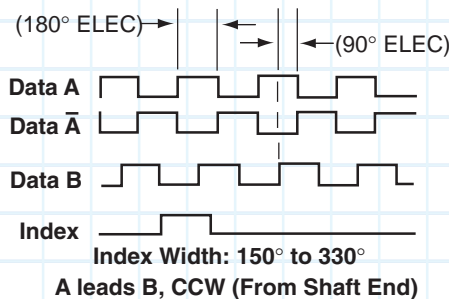


SPECIFICATIONS

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° ± 15° electrical; For resolutions over 625 PPR: 90° ± 30° electrical
Symmetry:
 For resolutions to 1024PPR: 180° ± 18° electrical
 For resolutions over 1024PPR: 180° ± 25° 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 A̅ shown for reference



ELECTRICAL

Input Power: 5-26VDC; 50 mA max., not including output loads.
Outputs: 2N2222, ET7272, ET7273
Frequency Response: 125 kHz (data & index)
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 Material: 303 stainless steel (passivated)
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 x 10⁸ revs at rated shaft Loading,
 5 x 10¹¹ 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: 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: 100%
Enclosure Rating: IP67

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- or 109209- (NEMA4) 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.

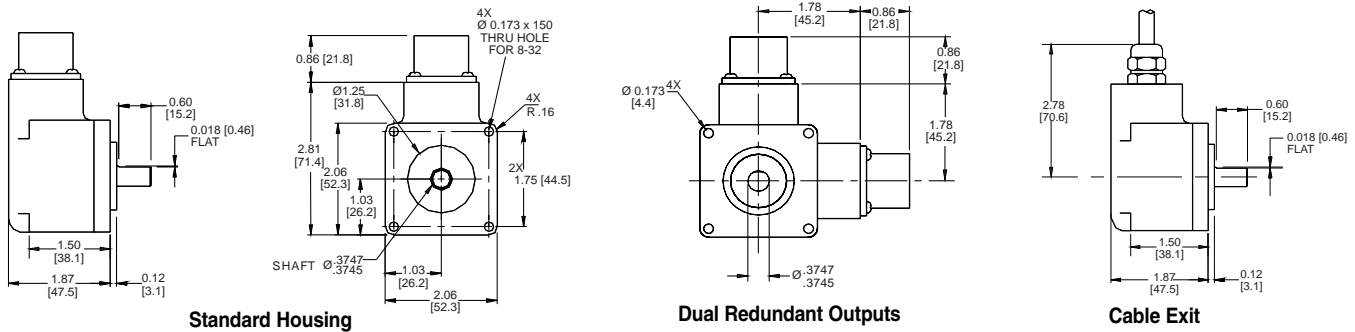
For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX.

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 0360 0010 0500 0024 0512 0025 0600 0035 0625 0040 0720 0060 1000 0100 1024 0120 1200 0192 1250 0200 1440 0240 2500 0250 2540 0256 2600 0300 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 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 Redundant Outputs.																						
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DIMENSIONS



Headquarters: 1675 Delany Road • Gurnee, IL 60031-1282 • USA

Customer Service:
 Tel.: +1.800.873.8731
 Fax: +1.847.662.4150
 custserv@dynapar.com

Technical Support
 Tel.: +1.800.234.8731
 Fax: +1.847.662.4150
 northstar.techsupport@dynapar.com

European Sales Representative
 Hengstler GmbH
 Uhlandstrasse 49, 78554 Aldingen
 Germany
www.hengstler.com