

# SERIES H20

**Dynapar™ brand**

## Shafted Encoder

### Key Features

- Reliable Dual-Row Bearing Design
- IP66 Sealing Option
- Optional Unbreakable Code Disc

IND  
Industrial Duty



CE  
EN 61326-1



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental, Optical

**Resolution:** 1 to 2540 PPR (pulses/revolution)

**Accuracy:** (worst case any edge to any other edge)  
<1024 PPR (metal disk):  $\pm 7.5$  arc-min.  
 $\geq 1024$  PPR (glass disk):  $\pm 2.5$  arc-min.

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

**Phase Sense:** A leads B for CCW shaft rotation as viewed from the shaft end of the encoder

**Quadrature Phasing:**  $90^\circ \pm 22.5^\circ$  electrical

**Symmetry:**  $180^\circ \pm 18^\circ$  electrical

**Index:**  $180^\circ \pm 18^\circ$  electrical (gated with B low)

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

### ELECTRICAL

#### Input Power:

5 to 26 VDC at 80 mA max., not including output loads

#### Outputs:

7273 Open Collector: 40mA, sink max

7272 Push-Pull: 40mA, sink or source

7272 Differential Line Driver: 40 mA, sink or source

4469 Differential Line Driver: 100mA, sink or source

**Frequency Response:** 100 kHz min. (index 75 kHz min. for extended temperature range)

**Noise Immunity:** Tested to EN61326-1

**Electrical Immunity:** Reverse polarity and short circuit protected

**Termination:** MS Connector, M12 Connector, Cable Exit

#### 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)

Cable w/ 5 pin M12 Connector (112859-xxxx)

Cable w/ 8 pin M12 Connector (112860-xxxx)

### MECHANICAL

**Shaft Sizes:** 10mm, 1/4" or 3/8"

**Shaft Loading:** (at 0.25" from encoder face)  
Resolutions  $\leq 1024$  PPR: 80 lbs. radial, axial  
Resolutions  $> 1024$  PPR: 40 lbs. radial, axial

#### Shaft Speed:

Resolutions  $\leq 1024$  PPR: 10,000 RPM max.  
Resolutions  $> 1024$  PPR: 5,000 RPM max.

#### Starting Torque:

(max at 25 °C)  
without shaft seal: 1.0 oz-in;  
with shaft seal: 2.0 oz-in

**Moment of Inertia:**  $3.0 \times 10^{-4}$  oz-in-sec<sup>2</sup>

**Housing and Cover:** Aluminum

**Shaft Material:** Stainless Steel

**Disk Material:** Glass or plastic (PPR Dependant)

**Weight:** 10 oz. max.

### ENVIRONMENTAL

#### Operating Temperature:

**Standard:** 0 to +70 °C;

**Extended:** 0 to +85 °C

**Storage Temperature:** -40 to +90 °C

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

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

**Humidity:** Up to 98% (non-condensing)

**Enclosure Rating:** NEMA12/IP54 (dirt tight, splashproof); NEMA4/IP66 (dust proof, wash-down) when ordered with shaft seal and either M12 connector or watertight cable exit



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## CONNECTIONS

### 6, 7 & 10 Pin MS Connectors and Cables - Code 8= 0 to 9, A to M

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 w/o Index		**Cable # 109209-XXXX or 1400635XXXX 10 Pin Dif Line Driver w/ Index		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	BRN
Sig. B	D	ORN	B	ORG	B	ORG	B	ORG	ORG
Sig. Z*	C	YEL	C	YEL	—	—	C	YEL	YEL
Power +V	B	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	GRN
N/C	F	—	E	—	—	—	E	—	—
Sig. A	—	—	—	—	C	BRN/WHT	H	BRN/WHT	BRN/WHT
Sig. B	—	—	—	—	E	ORG/WHT	I	ORG/WHT	ORG/WHT
Sig. Z*	—	—	—	—	—	—	J	YEL/WHT	YEL/WHT

### 5 & 8 Pin M12 Accessory Cables when Code 8= N to R

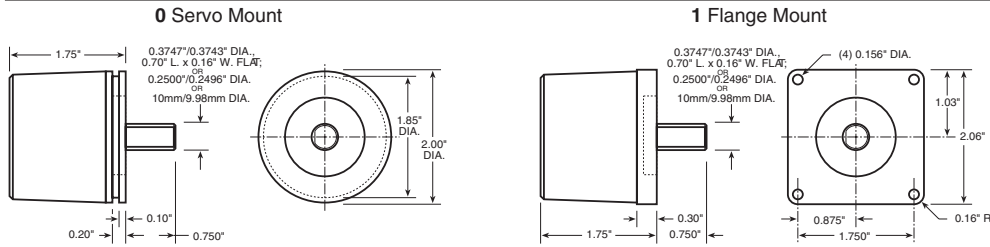
Connector pin numbers and cable assembly wire color information is provided here for reference.

Table 2						
Encoder Function	Cable # 112859-XXXX 5 Pin Single Ended		Cable # 112860-XXXX 8 Pin Single Ended		Cable # 112860-XXXX 8 Pin Differential	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	4	BLK	1	BRN	1	BRN
Sig. B	2	WHT	4	ORG	4	ORG
Sig. Z*	5	GRY	6	YEL	6	YEL
Power +V	1	BRN	2	RED	2	RED
Com	3	BLU	7	BLK	7	BLK
Sig. A	—	—	—	—	3	BRN/WHT
Sig. B	—	—	—	—	5	ORG/WHT
Sig. Z*	—	—	—	—	8	YEL/WHT

- 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) Cable Configuration (**Table 2**): PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum
- 3) 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
- 4) \*Index not provided on all models. See ordering information.
- 5) \*\*For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX
- 6) "MS" Type mating connectors and pre-build cables are rated NEMA 12
- 7) "M12" Cable assemblies are rated IP67

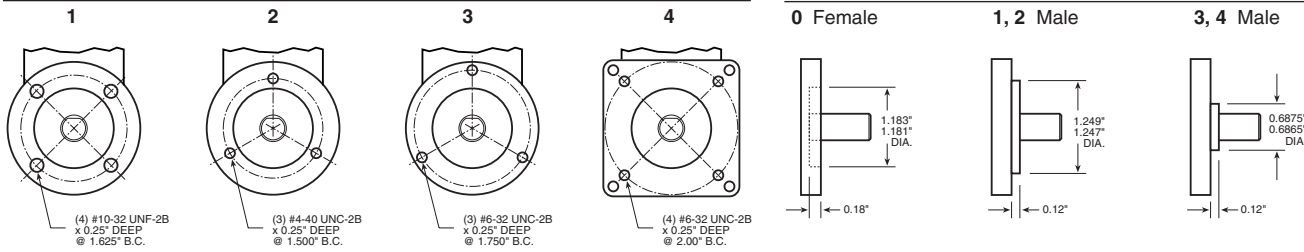
**DIMENSIONS**

**Code 3: Housings**

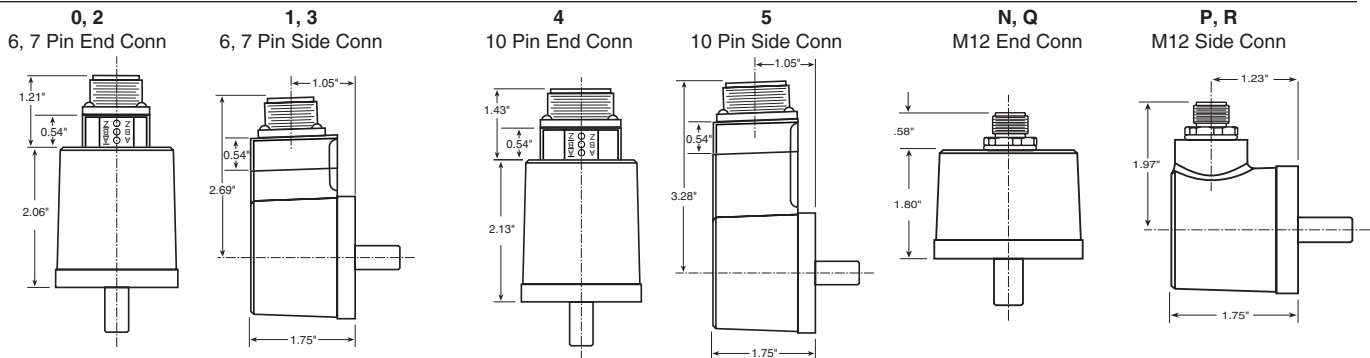


**Code 5: Face Mounts**

**Code 6: Pilots**



**Code 8: Terminations**



Code 8: 0-5 dimensions shown with LED Output Indicator Option (Code 9: PS)

**6, 8, A, C, E, G, L  
End Exit Cable**

**7, 9, B, D, F, H, M  
Side Exit Cable**

