

SERIES HS20

Dynapar™ brand

Sealed Hollowshaft Encoder

Key Features

- Hollowshaft Design Eliminates Brackets and Couplings
- Electrically Isolated Shaft Design
- Compact Size for Tight Mounting Constraints

CE



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental

Resolution: 1 to 2540 PPR (pulses/revolution)

Accuracy: (worst case any edge to any other edge) ≤ 1024 PPR (metal disk): ± 7.5 arc-min.

> 1024 PPR (glass disk): ± 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 viewing the hub clamp end of the encoder

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

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

Index: $180^\circ + 18^\circ / -135^\circ$ 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:

4.5 min. to 26 VDC max. at 100 mA max., not including output loads

Outputs:

7273 Open Collector: 30 VDC max., 40 mA sink max.

7272 Push-Pull and Differential Line Driver: 40 mA sink or source

Frequency Response: 100 kHz min.

Electrical Protection: Overvoltage, reverse voltage and output short circuit protected

Noise Immunity: Tested to EN61326 (Industrial) for Electro Static Discharge, Radio Frequency Interference, Electrical Fast Transients, Conducted and Magnetic Interference

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);

5 pin, style M12: Cable with connector available

8 pin, style M12: Cable with connector available

MECHANICAL

Bearing Life: (at maximum tether loading)

Standard tether: 5×10^9 revolutions

Slotted tether: 8×10^9 revolutions

Shaft Speed: 6000 RPM max.

Shaft Bore Tolerance: Nominal $+0.0002$ " $+0.0008$ " ($+0.005/+0.020$ mm)

Mating Shaft Requirements:

Runout: ± 0.005 " (± 0.13 mm) radial, max.

Endplay: ± 0.050 " (± 1.27 mm) axial, max.

Length: 0.80 " (20 mm), minimum

Starting Torque: 3.0 oz-in max.

Moment of Inertia: 5.1×10^{-4} oz-in-sec²

Weight: 10 oz. max.

ENVIRONMENTAL

Operating Temperature:

Standard: 0 to $+70^\circ$ C

Extended: -40 to $+85^\circ$ C

Storage Temperature: -40 to $+85^\circ$ C

Shock: 50 G's for 11 milliseconds duration

Vibration: 5 to 2000 Hz at 2.5 G's

Humidity: to 98% without condensation

Enclosure Rating: NEMA4/IP65 (dust proof, washdown)



SERIES HS20

Ordering Information

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

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Fixing	Code 5: Format	Code 6: Output	Code 7: Termination	Code 8: Options	
HS20	<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"/>	<input type="checkbox"/> <input type="checkbox"/>	
Ordering Information								
HS20	Size 20 heavy-duty, sealed hollowshaft encoder	Metal Disk: 0001 0300 0005 0360 0010 0400 0012 0500 0050 0512 0060 0600 0100 0720 0120 0768 0180 0800 0200 0900 0240 1000 0250 1024 0256 Glass Disk: 1200 1968 1250 2000 1270 2048 1500 2400 1600 2500 1800 2540	0 6 mm 1 1/4" 2 5/16" 3 8 mm 4 3/8" 5 10 mm 6 12 mm 7 1/2" 8 5/8" 9 15 mm A 16 mm	0 None - customer supplied 1 Clearance hole for 3/8" bolt on 5.88" dia. bolt circle (to fit 4-1/2" NEMA C-face) 3 Slotted hole for bolt on 1.87" to 2.95" radius 4 Same as '1', w/ protective cover kit 5 Same as '3', w/ Protective cover kit	0 single ended, unidirectional (A) 1 single ended, bidirectional (AB) 2 single ended, bidirectional with index (ABZ) available when Code 6 is 3, 4, A or B: 3 differential, bidirectional (AĀ BB) available when Code 6 is 3, 4, A or B and code 7 is 2, or 7 thru G: 4 differential, bidirectional with index (AĀ BB ZZ)	0 5-26V in, 5-26V open collector out 1 5-26V in, 5-26V open collector out w/ 2.2kΩ pullups 2 5-26V in, 5-26V push-pull out available when Code 5 is 3 or 4: 3 5-26V in, 5V line driver out 4 5-26V in, 5-26V line driver out A same as '3' with extended temp. -40° to 85°C B same as '4' with extended temp. -40° to 85°C	0 6 pin connector 1 7 pin connector 2 10 pin connector 5 6 pin connector, plus mating connector 6 7 pin connector, plus mating connector 7 10 pin connector, plus mating connector A 18" (.5m) cable B 36" (1m) cable C 72" (2m) cable D 10' (3m) cable F 13' (.3m) cable with 10 pin connector plus mating connector G 13' (.3m) cable J 8 Pin M12 Connector available when Code 5 is 0 thru 2 H 5 Pin M12 Connector	available when Code 7 is 0 or 5 and Code 5 is 0-2, or Code 7 is 1, 2, 6, 7: PS LED Output Indicator
112096-0001	Tether Kit (clearance hole for 3/8" bolt on 5.88" diameter bolt-circle)							
112096-0002	Tether Kit (slotted hole for bolt on 1.87" to 2.75" radius)							
112105-0001	Protective Cover Accessory							

10 foot Cable Assemblies with MS Connector

- 108594-0010 6 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 108595-0010 7 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 108596-0010 7 Pin MS, Cable Assy. For Use with Differential Line Driver w/o Index Outputs
- 1400635-0010 10 Pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs

15 foot Cable Assemblies with M12 Connector

- 112859-0015 5 Pin M12, Cable Assy. For Use with Single Ended Outputs
- 112860-0015 8 Pin M12, Cable Assy. For Use with Single Ended Outputs
- 112860-0015 8 Pin M12, Cable Assy. For Use with Differential Line Driver 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)

ELECTRICAL CONNECTIONS

6, 7 & 10 Pin MS Connectors and Cables - Code 7= 0 to 7, A to G

Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. HS20 models with direct cable exit carry the same color coding as shown for each output configuration.

Encoder Function	Cable #108594-* 6 Pin Single Ended		Cable #112123-* 6 Pin Dif Line Drv w/o Idx		Cable #108596-* 7 Pin Dif Line Drv w/o Idx		Cable #108595-* 7 Pin (If Used)		Cable #1400635-* 10 Pin (If Used)	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	E	BRN	E	BRN	A	BRN	A	BRN	A	BRN
Sig. B	D	ORN	D	ORN	B	ORN	B	ORN	B	ORN
Sig. Z	C	YEL	—	—	—	—	C	YEL	C	YEL
Power +V	B	RED	B	RED	D	RED	D	RED	D	RED
N/C	F	—	—	—	—	—	E	—	E	—
Com	A	BLK	A	BLK	F	BLK	F	BLK	F	BLK
Case	—	—	—	—	G	GRN	G	GRN	G	GRN
Sig. \bar{A}	—	—	C	BRN/WHT	C	BRN/WHT	—	—	H	BRN/WHT
Sig. \bar{B}	—	—	F	ORN/WHT	E	ORN/WHT	—	—	I	ORN/WHT
Sig. \bar{Z}	—	—	—	—	—	—	—	—	J	YEL/WHT

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

5 & 8 Pin M12 Accessory Cables when Code 7= H or J

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

Encoder Function	Cable # 112859-* 5 Pin Single Ended		Cable # 112860-* 8 Pin Single Ended		Cable # 112860-* 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. \bar{A}	—	—	—	—	3	BRN/WHT
Sig. \bar{B}	—	—	—	—	5	ORG/WHT
†Sig. \bar{Z}	—	—	—	—	8	YEL/WHT

Cable Configuration: PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum

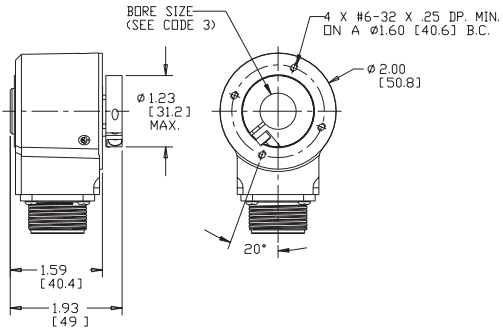
*Note: Standard cable length is 10 feet but may be ordered in any length in 5 foot increment. For example, -0020 is a 20 foot cable.

†Note: Index not provided on all models. See ordering information

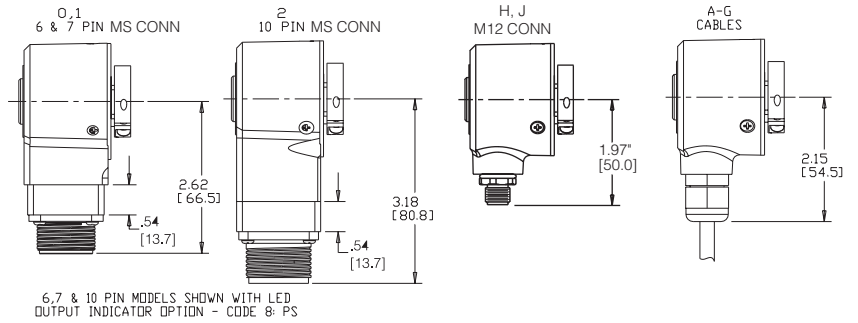
See "Accessories" Section for Connectors and Cable Assemblies Ordering Information

DIMENSIONS

DIMENSIONS



CODE 7: TERMINATION



CODE 4: FIXING

