

SERIES HC25

Dynapar™ brand

Shafted Encoder

Key Features

- Optional Extended Temperature Range of -40° to $+85^{\circ}\text{C}$
- High 5000 PPR Resolution Available
- Industry Standard Size 25 (2.5")

IND
Industrial Duty



CE
EN 61326-1



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: 3000 to 5000 PPR (pulses/revolution)
Accuracy: (Worst case any edge to any other edge) $\pm 10.8^{\circ}/\text{PPR}$
Format: Two channel quadrature (AB) with optional Index (Z) and complementary outputs
Phase Sense: A leads B for CW or CCW shaft rotation as viewed from the shaft end of the encoder; see Ordering Information
Quadrature Phasing: $90^{\circ} \pm 25^{\circ}$ electrical
Symmetry: $180^{\circ} \pm 25^{\circ}$ electrical
Index: $90^{\circ} \pm 25^{\circ}$ 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 80 mA max., not including output loads
Outputs:
 7272 Push-Pull: 40mA, sink or source
 7272 Differential Line Driver: 40 mA, sink or source
 7273 Open Collector: 40mA, sink max
Frequency Response: 250 kHz
Noise Immunity: Tested to EN61326-1
Electrical Immunity: Reverse polarity and short circuit protected
Termination: MS Connector, M12 Connector, Cable Exit
Mating Connector:
 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: 1/4" or 3/8"
Shaft Loading: 40 lbs. radial, 30 lbs. axial
Shaft Speed: 10,000 RPM max. (See Frequency Response)
Starting Torque: (max at 25 °C)
 HC525: 1.0 oz-in;
 HC625: 2.5 oz.-in
Moment of Inertia: 2.83×10^{-4} oz-in-sec²
Housing and Cover: Aluminum
Shaft Material: Stainless Steel
Disc Material: Glass
Weight: 1.5 lbs

ENVIRONMENTAL

Operating Temperature:
Standard: 0 to $+70^{\circ}\text{C}$;
Extended: -40 to $+85^{\circ}\text{C}$
Storage Temperature: -40 to $+90^{\circ}\text{C}$
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:
 HC525: NEMA12/IP54 (dirt tight, splashproof);
 HC625: NEMA4/IP66 (dust proof, washdown)

Ordering Information

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

Code 1: Model	Code 2: PPR	Code 3: Mechanical	Code 4: Output	Code 5: Electrical	Code 6: Termination	Code 7: Options
HC <input type="checkbox"/> 25	<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

HC525 Size 25 Enclosed, Shielded Bearings HC625 Size 25 Enclosed, with Shaft Seal	3000 3,000 3600 3,600 4096 4,096 5000 5,000	0 Flange Mount, 3/8" Shaft 1 2.50" Servo Mount/ 4 Hole, 2.00" BC Face Mount, 3/8" Shaft 2 Flange Mount, 1/4" Shaft 3 2.50" Servo Mount/ 4 Hole 2.00" BC Face Mount, 1/4" Shaft 4 2.50" Servo Mount/ 3 Hole, 2.00" BC Face Mount, 3/8" Shaft 5 2.50" Servo Mount/ 3 Hole, 2.00" BC Face Mount, 1/4" Shaft 6 2.50" Servo Mount/ 3 Hole, 1.88" BC Face Mount, 3/8" Shaft 7 2.50" Servo Mount/ 3 Hole, 1.88" BC Face Mount, 1/4" Shaft 8 2.62" Servo Mount/ 3 Hole, 1.88" BC Face Mount, 3/8" Shaft 9 2.62" Servo Mount/ 3 Hole, 1.88" BC Face Mount, 1/4" Shaft	7 Pin Connector or Cable 0 Single Ended, no Index, Format A, Table 2 1 Single Ended, with Index, Format A, Table 2 4 Single Ended, with Index, Format B, Table 2 6 Differential, no Index, Format C, Table 3 A Single Ended, with Index, Format C, Table 2 C Single Ended, no Index, Format C, Table 2 G Single Ended, with Index, Format D, Table 2 10 Pin Connector or Cable 2 Differential, no Index, Format A, Table 1 3 Differential, with Index, Format A, Table 1 5 Differential, with Index, Format B, Table 1 B Differential, with Index Format C, Table 1 D Differential, no Index, Format C, Table 1 5 Pin M12 Connector H Single ended, no index, Format A, Table 4 J Single ended, with index, Format A, Table 4 K Single ended, with index, Format B, Table 4 L Single ended, with index, Format C, Table 4 M Single ended, no index, Format C, Table 4 N Single ended, with index, Format D, Table 4 8 Pin M12 Connector P Single ended, no index, Format A, Table 5 Q Single ended, with index, Format A, Table 5 R Single ended, with index, Format B, Table 5 S Single ended, with index, Format C, Table 5 T Single ended, no index, Format C, Table 5 U Single ended, with index, Format D, Table 5 V Differential, no index, Format A, Table 6 W Differential, with index, Format A, Table 6 X Differential, with index, Format B, Table 6 Y Differential, with index, Format C, Table 6 Z Differential, no index, Format C, Table 6 See page 3 for electrical tables and page 4 for formats.	0 5-26V in; 5-26V Open Collector with 2.2kΩ Pull-up out 1 5-26V in; 5-26V Open Collector out 2 5-26V in; 5V Totem Pole out 3 5-26V in; 5V Line Driver out 4 5-26V in; 5-26V Line Driver out A Same as "0" with extend. temp range B Same as "1" with extend. temp range C Same as "2" with extend. temp range D Same as "3" with extend. temp range E Same as "4" with extend. temp range	0 End Mount Connector 1 Side Mount Connector Available when Code 1 is HC525: 2 18" Cable, Side 3 3' Cable, Side 4 6' Cable, Side 5 10' Cable, Side 6 15' Cable, Side J 18" Cable, End K 3' Cable, End L 6' Cable, End M 10' Cable, End N 15' Cable, End Available when Code 1 is HC625: A 18" Watertight, Side B 3' Watertight, Side C 6' Watertight, Side D 10' Watertight, Side F 15' Watertight, Side P 18" Watertight, End Q 3' Watertight, End R 6' Watertight, End S 10' Watertight, End T 15' Watertight, End	Blank None Available when Code 4 is 0 thru G, and Code 6 is 0 or 1: PS LED Output Indicator
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Cable Assemblies with MS Connector*

- 1400431XXXX** 7 Pin MS, Cable Assy. For Use with Single Ended w/Index 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

Cable Assemblies with MS Connector*

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

Cable Assemblies with M12 Connector*

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

SERIES HC25



ELECTRICAL CONNECTIONS

Prewired Cable or Accessory Cables with 7 or 10 Pin MS Connector - when Code 4= 0 to 6, or A, B, C, D or G

Note: Wire color codes are referenced here for models that are specified with pre-wired cable. Connector/cables are described in the Encoder Accessories section of this catalog and color-coding information is provided here for reference.

Table 1 – Differential			
Encoder Function	**Cable # 109209-XXXX or 1400635XXXX 10 Pin Dif Line Driver w/ Index		
	Pin	Wire Color Code	Cable Accessory Color Code
Signal A	A	BRN	BRN
Signal B	B	ORN	ORG
Signal Z*	C	YEL	YEL
Power Source	D	RED	RED
N/C	E	—	—
Common	F	BLK	BLK
Case	G	GRN	GRN
Signal \bar{A}	H	BRN/WHT	BRN/WHT
Signal \bar{B}	I	ORN/WHT	ORN/WHT
Signal \bar{Z}	J	YEL/WHT	YEL/WHT

Table 2 – Single Ended			
Encoder Function	Cable # 1400431XXXX 7 Pin Single Ended w/ Index Outputs		
	Pin	Wire Color Code	Cable Accessory Color Code
Signal A	A	BRN	RED
Signal B	B	ORN	BLUE
Signal Z*	C	YEL	YEL
Power Source	D	RED	WHT
No Connection	E	—	GRN
Common	F	BLK	BLK
Case	G	GRN	SHIELD

Table 3 – Differential		
Encoder Function	Cable # 108596-XXXX 7 Pin Dif Line Driver w/o Index	
	Pin	Cable Accessory Color Code
Signal A	A	RED
Signal B	B	BLUE
Signal \bar{A}	C	YEL
Power Source	D	WHT
Signal \bar{B}	E	GRN
Common	F	BLK
Case	G	SHIELD

5 & 8 Pin M12 Accessory Cables - when Code 4= H to Z

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

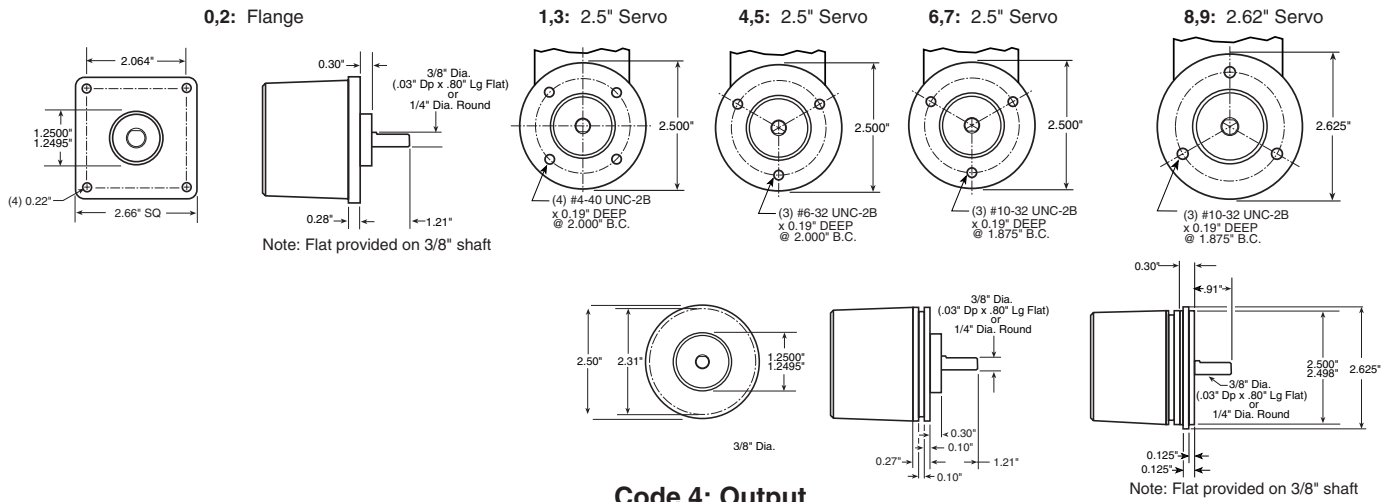
Encoder Function	Table 4 Cable # 112859-XXXX 5 Pin Single Ended		Table 5 Cable # 112860-XXXX 8 Pin Single Ended		Table 6 Cable # 112860-XXXX 8 Pin Differential	
	Pin	Wire Color Code	Pin	Wire Color Code	Pin	Wire Color Code
Signal A	4	BLK	1	BRN	1	BRN
Signal B	2	WHT	4	ORG	4	ORG
Signal Z*	5	GRY	6	YEL	6	YEL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

NOTES:

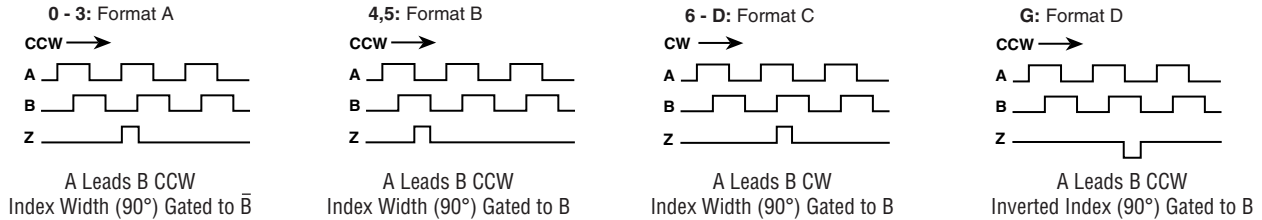
- 1) Cable Configuration (Tables 1 and 3): PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)
- 2) Cable Configuration (Table 2): PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)
- 3) Cable Configuration (Tables 4, 5 and 6): PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum
- 4) 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
- 5) * Index not provided on all models. See ordering information.
- 6) **For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX
- 7) "MS" Type mating connectors and pre-build cables are rated NEMA 12
- 8) "M12" Cable assemblies are rated IP67

DIMENSIONS

Code 3: Mechanical



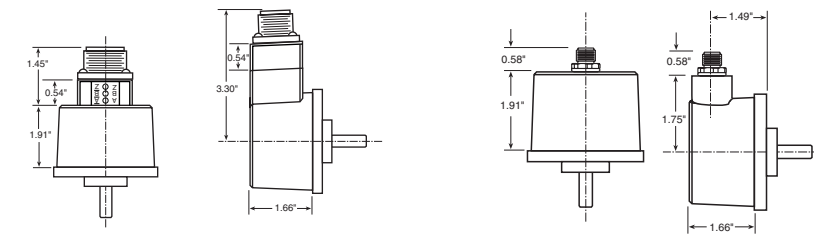
Code 4: Output



Code 6: Termination

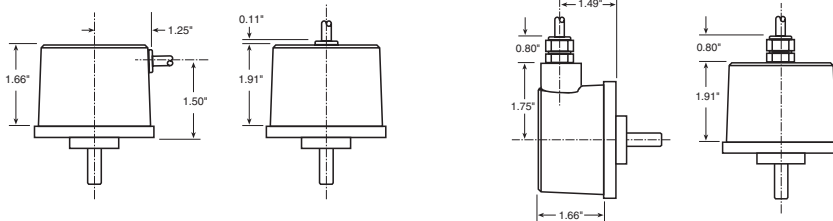
0: End MS Connector **1:** Side MS Connector
When Code 5 is 0 to 6 or A to G

0: End M12 Connector **1:** Side M12 Connector
When Code 5 is H to Z



Code 6: 0 & 1 dimensions shown with LED Output Indicator Option (Code 7: PS)

2 - 6: Side Cable **J - N:** End Cable **A - F:** Side W.T. Cable **P - T:** End W.T. Cable



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