Dynapar[™] brand

Shafted Encoder

Key Features

- Industry Standard Size 25 (2.5")
- Wide Range of Resolutions Available
- **Optional Extended Temperature Range of** -40° to +85°C







SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental

Resolution: 1 to 2540 PPR (pulses/revolution) Accuracy: (Worst case any edge to any other

edge) ±2.5 arc-min.

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: $90^{\circ} \pm 22.5^{\circ}$ electrical

Symmetry: 180° ± 18° electrical

Index: 180° ± 18° 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:

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

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

4469 Differential Line Driver: 100 mA, sink or

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

CONNECTIONS

Mating Connector:

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

Shaft Loading: (at 0.25" from encoder face) 35 lbs. radial, 40 lbs. axial

Shaft Speed: 5,000 RPM max. Starting Torque: (max at 25 °C)

HA525: 1.0 oz-in; HA625: 2.5 oz.-in

Moment of Inertia: 3.0 x 10⁻⁴ oz-in-sec²

ENVIRONMENTAL

Operating Temperature:

Standard: 0 to +70 °C; Extended: -40 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:** to 98% without condensation

Enclosure Rating:

HA525: NEMA12/IP54 (dirt tight, splashproof); HA625: 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: PF	PR Code 3: Mechanical	Code 4: Output	Code 5: Electrical	Code 6: Termination	Code 7: Options
HA □25						
			Ordering Information			
HA525 Size 25 Enclosed, Shielded Bearings, Glass Disk HA625 Size 25 Enclosed, with Shaft Seal, Glass Disk	0001 0600 0005 0625 0010 0635 0012 0720 0050 0800 0060 0900 0100 1000 0120 1250 0200 1270 0240 1500 0250 1600 0360 2000 0400 2048 0500 2400 0512 2500	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 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 Shaft 5 2.50" Servo Mount, 3/8" Shaft 5 2.50" Servo Mount, 3/8" Shaft	7 Pin MS 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 MS Connector or Cable 2 Differential, no Index, Format A, Table 1 3 Differential, with Index, Format B, Table 1 5 Differential, with Index, Format C, Table 1 D Differential, with Index, Format C, Table 1 D Differential, no Index, Format C, Table 1 D Differential, no Index, Format C, Table 1 Single ended, no index, Format A, Table 4 J Single ended, with index, Format A, Table 4 K Single ended, with index, Format C, Table 4 M Single ended, with index, Format C, Table 4 M Single ended, with index, Format D, Table 4 8 Pin M12 Connector P Single ended, with index, Format A, Table 5 Q Single ended, with index, Format A, Table 5 S Single ended, with index, Format C, Table 5 T Single ended, with index, Format C, Table 5 U Single ended, with index, Format C, Table 5 U Single ended, with index, Format C, Table 5 U Single ended, with index, Format C, Table 5 U Single ended, with index, Format C, Table 5 U Single ended, with index, Format A, Table 6 U Differential, with index, Format A, Table 6 U Differential, with index, Format C, Table 6 U Differential, with index, Format C, Table 6 U Differential, with index, Format C, Table 6	 5-26V in; 5-26V Open Collector with 2.2kΩ Pullup out 5-26V in; 5-26V Open Collector out 5-26V in; 5-26V Open Collector out 5-26V in; 5-26V Totem Pole out 5-26V in; 5V Line Driver out (7272) 5-26V in; 5-26V Line Driver out (7272) 5-26V in; 5-26V Line Driver out (4469) 6-15V Differential Line Driver out (4469) 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 E Same as "4" with extend. temp range 	O End Mount Connector 1 Side Mount Connector 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 M 10' Cable, End available when Code 1 is HA625: A 18" Watertight, Side B 3' Watertight, Side C 6' Watertight, Side F 15' Watertight, Side F 15' Watertight, End G 3' Watertight, End G 'Watertight, End T 15' Watertight, End T 15' Watertight, End T 15' Watertight, End T 15' Watertight, End	available when Code 4 is 0 thru G, and Code 6 is 0 or 1: PS LED Output Indicator

10 foot Cable Assemblies with MS Connector

1400431-0010 7 Pin MS, Cable Assy. For Use with Single Ended w/Index 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)

7 pin, style MS3106A-16S-1S (MCN-N5) 10 pin, style MS3106A-18-1S (MCN-N6)

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

Table 1 – Differential					
Pin	Function (If Used)	Wire Color Code	Cable* Accessory Color Code		
Α	Signal A	BRN	BRN		
В	Signal B	ORN	ORN		
С	Signal Z	YEL	YEL		
D	Power Source	RED	RED		
Е	No Connection	_	_		
F	Common	BLK	BLK		
G	Case	GRN	GRN		
Н	Signal Ā	BRN/WH	BRN/WH		
- 1	Signal B	ORN/WH	ORN/WH		
J	Signal Z	YEL/WH	YEL/WH		
*Cable Accessory: P/N 14006350010					

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 2 – Single Ended					
Pin	Function (If Used)	Wire Color Code	Cable* Accessory Color Code		
Α	Signal A	BRN	RED		
В	Signal B	ORN	BLUE		
С	Signal Z	YEL	YEL		
D	Power Source	RED	WHT		
Е	No Connection	_	GRN		
F	Common	BLK	BLK		
G	Case	GRN	SHIELD		
*Cable Accessory: P/N 14004310010					

Table 3 – Differential					
Pin	Function (If Used)	Cable Accessory Color Code			
Α	Signal A	BRN			
В	Signal B	ORN			
С	Signal A	BRN/WHT			
D	Power Source	RED			
Е	Signal B	ORN/WHT			
F	Common	BLK			
G	Case	GRN			
*Cable Accessory: P/N 108596					

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 4= H to Z

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

	Table 4 5 Pin Single Ended		Table 5 8 Pin Single Ended		Table 6 8 Pin Differential	
Encoder Function	Cable # 112859-		Cable # 112860-		Cable # 112860-	
	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. Ā	_	_	-	_	3	BRN/WHT
Sig. B	_	_	-	_	5	ORG/WHT
*Sig. Z	_	_	_	_	8	YEL/WHT

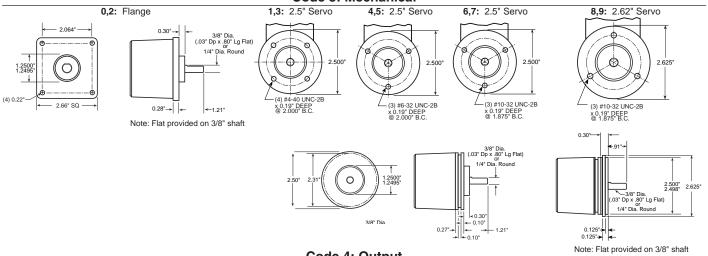
^{*} Index not provided on all models. See ordering information Cable Configuration: PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum

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

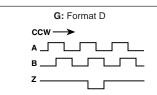


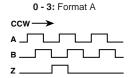
DIMENSIONS

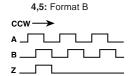
Code 3: Mechanical



Code 4: Output



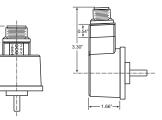




6 - D: Format C cw →

Code 6: Termination

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



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

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

