

# SERIES HA26

**Dynapar™ brand**

## Integral Coupling Encoder

### Key Features

- Industry Standard 2.5" Rugged Encoder Size
- Integral Coupling and Flange Provide Thermal and Electrical Isolation
- Field Replaceable Coupling



EN 61326-1

RoHS

## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental, Optical

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

**Accuracy:** (worst case any edge to any other edge)  $\pm 2.5$  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:**  $180^\circ \pm 18^\circ$  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:

7 pin, style MS3106A-16S-1S (MCN-N5);

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

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

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

### MECHANICAL

**Shafts Coupling:** accepts 1/4", 3/8" and 1/2" motor or machinery shafts

**Shaft Speed:** 5,000 RPM max.

**Shafts Alignment:** 0.002" max. TIR runout; 0.005" max. radial offset; 3° max. angular

**Mating Shaft Lengths:** Typically: 0.5" max. available into the coupling as measured from the A/B mounting surface. 1.3" max available into the coupling as measured from the C mounting surface.

**Starting Torque:** (max at 25 °C) 1.0 oz-in;

**Moment of Inertia:**  $4.3 \times 10^{-4}$  oz-in-sec<sup>2</sup>

**Housing and Cover:** Aluminum

**Shaft Material:** Stainless Steel

**Disc Material:** Glass

**Weight:** 1.5 lbs

### ENVIRONMENTAL

#### Operating Temperature:

**Standard:** 0 to +70 °C;

**Extended:** 0 to +85 °C (consult factory for low temperature operation to -40 °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)

**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
<b>HA526</b>	<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**

<b>HA526</b> Size 25 with Integral Coupling and Flange Adapter, Glass Code Disk	<b>0001 0600</b> <b>0005 0625</b> <b>0010 0635</b> <b>0012 0720</b> <b>0050 0800</b> <b>0060 0900</b> <b>0100 1000</b> <b>0120 1024</b> <b>0150 1200</b> <b>0180 1250</b> <b>0200 1270</b> <b>0240 1500</b> <b>0250 1600</b> <b>0256 1800</b> <b>0300 1968</b> <b>0360 2000</b> <b>0400 2048</b> <b>0500 2400</b> <b>0512 2500</b> <b>2540</b>	<b>A</b> Flange Adapter with Pilot <b>B</b> Flange Adapter without Pilot <b>C</b> Flange Adapter for NEMA Size 42 Motors	<b>7 Pin Connector or Cable</b> <b>0</b> Single Ended, no Index, Format A, Table 1 <b>1</b> Single Ended, with Index, Format A, Table 1 <b>4</b> Single Ended, with Index, Format B, Table 1 <b>A</b> Single Ended, with Index, Format C, Table 1 <b>C</b> Single Ended, no Index, Format C, Table 1 <b>G</b> Single Ended, with Index, Format D, Table 1	<b>0</b> 5-26V in; 5-26V Open Collector with 2.2kΩ Pullup out <b>1</b> 5-26V in; 5-26V Open Collector out <b>2</b> 5-26V in; 5V Totem Pole out <b>3</b> 5-26V in; 5V Differential Line Driver out (7272) <b>4</b> 5-26V in; 5-26V Dif-ferential Line Driver out (7272) <b>5</b> 5-26V in, 5 V Differential Line Driver out (4469) <b>6</b> 5-15V in, 5-15 V Differential Line Driver out (4469)	<b>0</b> End Mount Connector <b>1</b> Side Mount Connector <b>2</b> 18" Cable, Side <b>3</b> 3' Cable, Side <b>4</b> 6' Cable, Side <b>5</b> 10' Cable, Side <b>6</b> 15' Cable, Side	Available when Code 4 is 0 thru G, and Code 6 is 0 or 1:  <b>PS</b> LED Output Indicator
			<b>10 Pin Connector or Cable</b> <b>2</b> Differential, no Index, Format A, Table 2 <b>3</b> Differential, with Index, Format A, Table 2 <b>5</b> Differential, with Index, Format B, Table 2 <b>B</b> Differential, with Index Format C, Table 2 <b>D</b> Differential, no Index, Format C, Table 2			
			<b>5 Pin M12 Connector</b> <b>H</b> Single ended, no index, Format A, Table 4 <b>J</b> Single ended, with index, Format A, Table 4 <b>K</b> Single ended, with index, Format B, Table 4 <b>L</b> Single ended, with index, Format C, Table 4 <b>M</b> Single ended, no index, Format C, Table 4 <b>N</b> Single ended, with index, Format D, Table 4			
			<b>8 Pin M12 Connector</b> <b>P</b> Single ended, no index, Format A, Table 5 <b>Q</b> Single ended, with index, Format A, Table 5 <b>R</b> Single ended, with index, Format B, Table 5 <b>S</b> Single ended, with index, Format C, Table 5 <b>T</b> Single ended, no index, Format C, Table 5 <b>U</b> Single ended, with index, Format D, Table 5 <b>V</b> Differential, no index, Format A, Table 6 <b>W</b> Differential, with index, Format A, Table 6 <b>X</b> Differential, with index, Format B, Table 6 <b>Y</b> Differential, with index, Format C, Table 6 <b>Z</b> Differential, no index, Format C, Table 6			
			See page 3 for electrical tables and page 4 for formats.			

**Cable Assemblies with MS Connector**

- 1400431XXXX** 7 Pin MS, Cable Assy. For Use with Single Ended w/Index Outputs
- 1400635XXXX** 10 Pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs

**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

**Mating Connectors (no cable)**

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

**Flexible Couplings**

- CPLX1250375 Flexible Coupling 3/8"; 1/4", 3/8", 1/2"

\*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 HA26



## ELECTRICAL CONNECTIONS

### Prewired Cable or Accessory Cables with 7 or 10 Pin MS Connector - when Code 4= 0 to 5, 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 – Single Ended			
Encoder Function	Cable Accessory P/N 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 2 – Differential			
Encoder Function	** Cable Accessory: P/N 1400635XXXX 10 Pin Differential 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
No Connection	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

### 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.

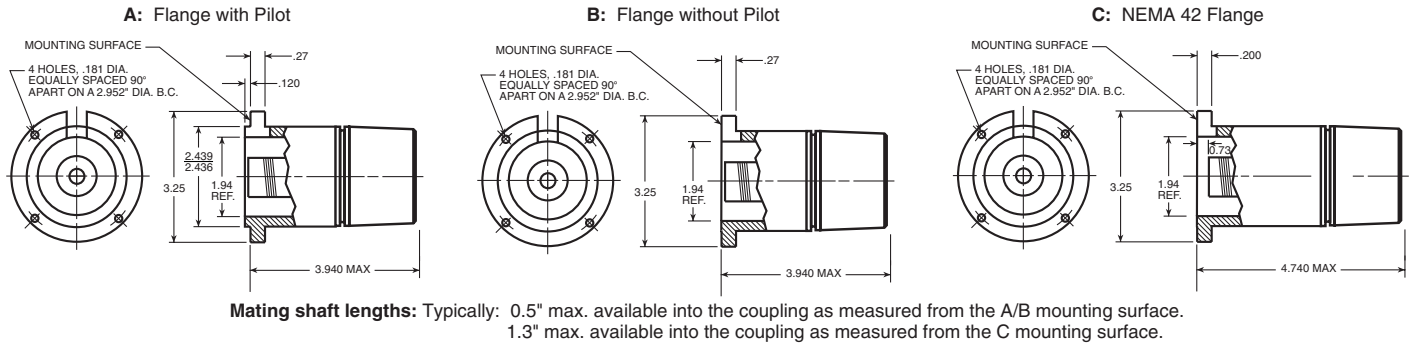
Encoder Function	Table 4		Table 5		Table 6	
	Cable # 112859-XXXX 5 Pin Single Ended		Cable # 112860-XXXX 8 Pin Single Ended		Cable # 112860-XXXX 8 Pin Differential	
	Pin	Wire Color Code	Pin	Wire Color Code	Pin	Wire Color Code
Signal A	4	BLK	1	BRN	1	BRN
Signal B	2	WHT	4	ORG	4	ORG
Signal Z*	5	GRY	6	YEL	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:

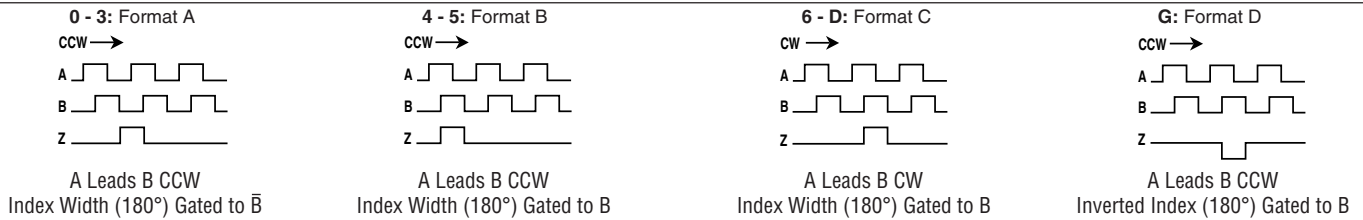
- 1) Cable Configuration (**Table 1**): Cable Configuration: PVC jacket, 105°C rated, overall foil shield; 22 AWG conductors, minimum
- 2) Cable Configuration (**Table 2**): PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)
- 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 1400635XXXX.
- 7) "MS" Type mating connectors and pre-build cables are rated NEMA 12
- 8) "M12" Cable assemblies are rated IP67

**DIMENSIONS**

**Code 3: Mechanical**

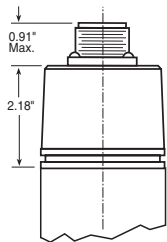


**Code 4: Output**

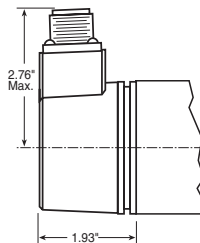


**Code 6: Termination**

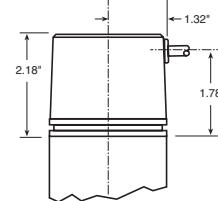
**0: End MS Connector**  
 When Code 5 is 0 to 5 or A to G



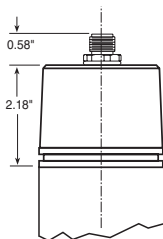
**1: Side MS Connector**  
 When Code 5 is 0 to 5 or A to G



**2 - A: Side Cable**



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



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

