INCREMENTAL ENCODERS

SERIES HA26

Dynapar™ brand

Integral Coupling Encoder

IND Industrial Duty

Key Features

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

CE 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) ±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° ± 22.5° 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:
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)
10 pin, NEMA4 style (MCN-N6N4)
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 x 10^{-4} oz–in–sec^2
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)

by DYNAPAR™

SERIES HA26

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
HA526	□□□□	□	□	□	□	□□

Ordering Information

Code 1: Model	Code 2: PPR	Code 3: Mechanical	Code 4: Output	Code 5: Electrical	Code 6: Termination	Code 7: Options
HA526 Size 25 with Integral Coupling and Flange Adapter, Glass Code Disk	**0001 0600** **0005 0625** **0010 0635** **0012 0720** **0050 0800** **0060 0900** **0100 1000** **0120 1024** **0150 1200** **0180 1250** **0200 1270** **0240 1500** **0250 1600** **0256 1800** **0300 1968** **0360 2000** **0400 2048** **0500 2400** **0512 2500** **2540** For Resolutions above 2540, see Series HC526	**A** Flange Adapter with Pilot **B** Flange Adapter without Pilot **C** Flange Adapter for NEMA Size 42 Motors	**7 Pin Connector or Cable** **0** Single Ended, no Index, Format A, Table 1 **1** Single Ended, with Index, Format A, Table 1 **4** Single Ended, with Index, Format B, Table 1 **A** Single Ended, with Index, Format C, Table 1 **C** Single Ended, no Index, Format C, Table 1 **G** Single Ended, with Index, Format D, Table 1 **10 Pin Connector or Cable** **2** Differential, no Index, Format A, Table 2 **3** Differential, with Index, Format A, Table 2 **5** Differential, with Index, Format B, Table 2 **B** Differential, with Index Format C, Table 2 **D** Differential, no Index, Format C, Table 2 **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 Pullup out **1** 5-26V in; 5-26V Open Collector out **2** 5-26V in; 5V Totem Pole out **3** 5-26V in; 5V Differential Line Driver out (7272) **4** 5-26V in; 5-26V Differential Line Driver out (7272) **5** 5-26V in, 5 V Differential Line Driver out (4469) **6** 5-15V in, 5-15 V 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	**0** 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	Available when Code 4 is 0 thru G, and Code 6 is 0 or 1: **PS** LED Output Indicator

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 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.

Mating Connectors (no cable)

MCN-N5 7 pin, style MS3106A-16S-1S
MCN-N6 10 pin, style MS3106A-18-1S
MCN-N6N4 10 pin, NEMA 4 style

Flexible Couplings

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

INCREMENTAL ENCODERS

SERIES HA26

Dynapar™ brand

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 # 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 # 109209-XXXX or 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 $\overline{A}$	H	BRN/WHT	BRN/WHT
Signal $\overline{B}$	I	ORN/WHT	ORN/WHT
Signal $\overline{Z}$	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 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 $\overline{A}$	—	—	—	—	3	BRN/WHT
Signal $\overline{B}$	—	—	—	—	5	ORG/WHT
Signal $\overline{Z}$*	—	—	—	—	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 109209-XXXX.
7) “MS” Type mating connectors and pre-build cables are rated NEMA 12
8) “M12” Cable assemblies are rated IP67

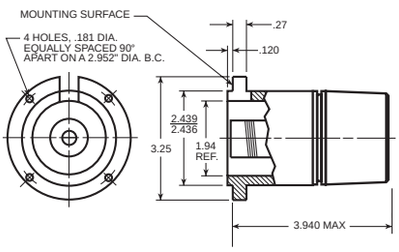
by DYNAPAR™

SERIES HA26

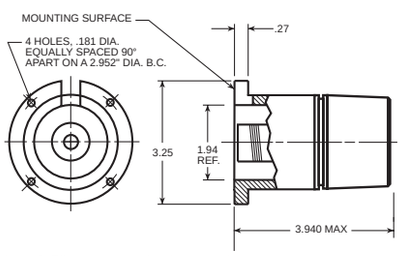
DIMENSIONS

Code 3: Mechanical

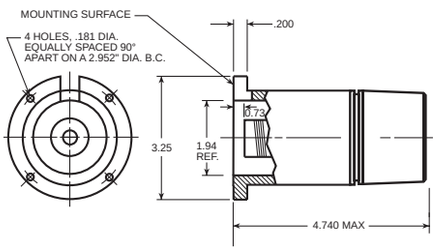
A: Flange with Pilot



B: Flange without Pilot



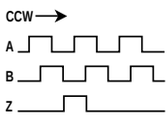
C: NEMA 42 Flange



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.

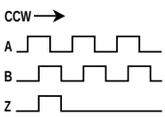
Code 4: Output

0 - 3: Format A



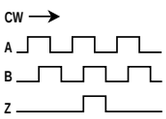
A Leads B CCW
Index Width (180°) Gated to $\bar{B}$

4 - 5: Format B



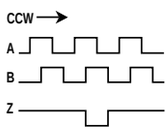
A Leads B CCW
Index Width (180°) Gated to B

6 - D: Format C



A Leads B CW
Index Width (180°) Gated to B

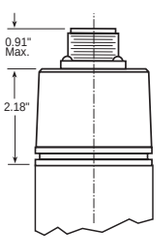
G: Format D



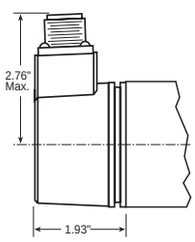
A Leads B CCW
Inverted Index (180°) Gated to B

Code 6: Termination

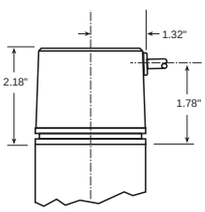
0: End MS Connector
When Code 5 is 0 to 5 or A to G



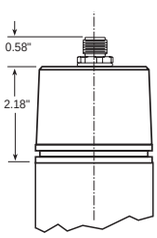
1: Side MS Connector
When Code 5 is 0 to 5 or A to G



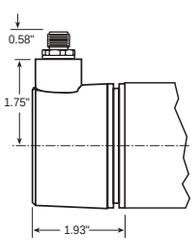
2 - 6: Side Cable



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



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



INCREMENTAL ENCODERS

SERIES HC26

Dynapar™ brand

Integral Coupling Encoder

IND Industrial Duty

Key Features

- **High 5000 PPR Resolution Available**
- **Integral Coupling and Flange Provide Thermal and Electrical Isolation**
- **Field Replaceable Coupling**

EN 61326-1 RoHS

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: 3000 to 5000 PPR (pulses/revolution)
Accuracy: (worst case any edge to any other edge) ±10.8°/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° ± 25° electrical
Symmetry: 180° ± 25° electrical
Index: 90° ± 25° 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: 40mA, sink max
7272 Push-Pull: 40mA, sink or source
7272 Differential Line Driver: 40 mA, sink or source
Frequency Response: 250 kHz min.
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

Shafts Coupling: accepts 1/4", 3/8" and 1/2" motor or machinery shafts
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.
Shafts Alignment: 0.002" max. TIR runout; 0.005" max. radial offset; 3° max. angular
Shaft Speed: 10,000 RPM max.
Starting Torque: (max at 25 °C) 1.0 oz-in
Moment of Inertia: 4.3 x 10^{-4} oz–in–sec^2
Housing and Cover: Aluminum
Shaft Material: Stainless Steel
Disc Material: Glass
Weight: 1.5 lbs

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: Up to 98% without condensation
Enclosure Rating: NEMA12/IP54 (dirt tight, splashproof)

by DYNAPAR™

SERIES HC26

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
HC526 □□□□	□	□	□	□	□	□□
Ordering Information						
HC526 Size 25 Enclosed with Integral Coupling and Flange Adapter	**3000** **3600** **4096** **5000**	**A** Flange Adapter with Pilot **B** Flange Adapter without Pilot **C** Flange Adapter for NEMA Size 42 Motors	**7 Pin Connector or Cable** **0** Single Ended, no Index, Format A, Table 1 **1** Single Ended, with Index, Format A, Table 1 **4** Single Ended, with Index, Format B, Table 1 **A** Single Ended, with Index, Format C, Table 1 **C** Single Ended, no Index, Format C, Table 1 **G** Single Ended, with Index, Format D, Table 1 **10 Pin Connector or Cable** **2** Differential, no Index, Format A, Table 2 **3** Differential, with Index, Format A, Table 2 **5** Differential, with Index, Format B, Table 2 **B** Differential, with Index Format C, Table 2 **D** Differential, no Index, Format C, Table 2 **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 Pullup out **1** 5-26V in; 5-26V Open Collector out **2** 5-26V in; 5V Totem Pole out **3** 5-26V in; 5V Differential Line Driver out (7272) **4** 5-26V in; 5-26V Differential Line Driver out (7272) **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 **2** 18" Cable, Side **3** 3' Cable, Side **4** 6' Cable, Side **5** 10' Cable, Side **6** 15' Cable, Side	Available when Code 4 is 0 thru G, and Code 6 is 0 or 1: **PS** LED Output Indicator

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
109209-XXXX NEMA4 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

***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.

Mating Connectors (no cable)

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

Flexible Couplings

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

INCREMENTAL ENCODERS

SERIES HC26

Dynapar™ brand

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 # 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 # 109209-XXXX or 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
N/C	E	—	—
Common	F	BLK	BLK
Case	G	GRN	GRN
Signal $\overline{A}$	H	BRN/WHT	BRN/WHT
Signal $\overline{B}$	I	ORN/WHT	ORN/WHT
Signal $\overline{Z}$	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 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 $\overline{A}$	—	—	—	—	3	BRN/WHT
Signal $\overline{B}$	—	—	—	—	5	ORG/WHT
Signal $\overline{Z}$*	—	—	—	—	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 109209-XXXX
7) “MS” Type mating connectors and pre-build cables are rated NEMA 12
8) “M12” Cable assemblies are rated IP67

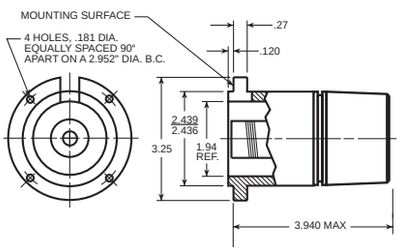
by DYNAPAR™

SERIES HC26

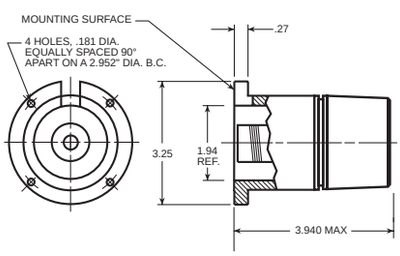
DIMENSIONS

Code 3: Mechanical

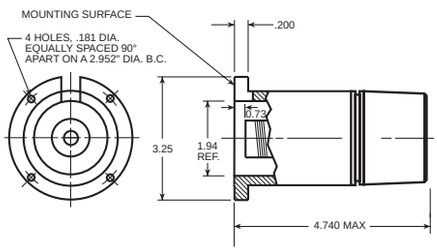
A: Flange with Pilot



B: Flange without Pilot



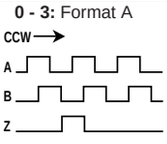
C: NEMA 42 Flange



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.

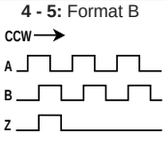
Code 4: Output

0 - 3: Format A



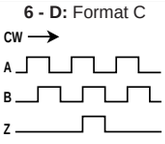
A Leads B CCW
Index Width (180°) Gated to $\bar{B}$

4 - 5: Format B



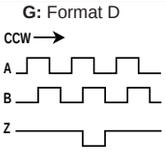
A Leads B CCW
Index Width (180°) Gated to B

6 - D: Format C



A Leads B CW
Index Width (180°) Gated to B

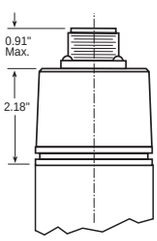
G: Format D



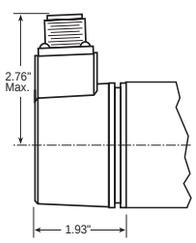
A Leads B CCW
Inverted Index (180°) Gated to B

Code 6: Termination

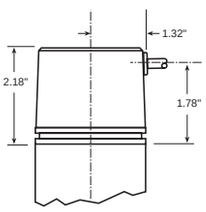
0: End MS Connector
When Code 5 is 0 to 5 or A to G



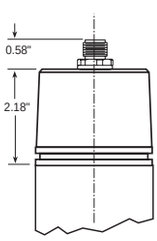
1: Side MS Connector
When Code 5 is 0 to 5 or A to G



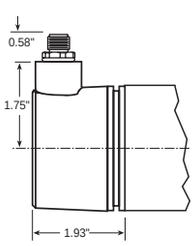
2 - A: Side Cable



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



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



INCREMENTAL ENCODERS

SERIES HR26

Dynapar™ brand

Integral Coupling Encoder

IND Industrial Duty

Key Features

- **Unbreakable Code Disc with Rugged Dual Row Bearings**
- **Integral Coupling and Flange Provide Thermal and Electrical Isolation**
- **Field Replaceable Coupling**

CE EN 61326-1 RoHS

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical
Resolution: 1 to 1024 PPR (pulses/revolution)
Accuracy: (worst case any edge to any other edge) ±7.5 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° ± 22.5° 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:
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 75kHz 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)
10 pin, NEMA4 style (MCN-N6N4)
Cable w/ 5 pin M12 Connector (112859-XXXX)
Cable w/ 8 pin M12 Connector (112860-XXXX)

MECHANICAL

Shaft Coupling: accepts 1/4", 3/8" and 1/2" motor or machinery shafts
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.
Shaft Speed: 10,000 RPM max.
Starting Torque: (max at 25 °C) 1.0 oz-in
Moment of Inertia: 4.3 x 10^{-4} oz–in–sec^2
Housing and Cover: Aluminum
Shaft Material: Stainless Steel
Disc Material: Mylar
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% without condensation
Enclosure Rating: NEMA12/IP54 (dirt tight, splashproof)

INCREMENTAL ENCODERS

by DYNAPAR™

SERIES HR26

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
HR526	□□□□	□	□	□	□	□□

Ordering Information

Code 1: Model	Code 2: PPR	Code 3: Mechanical	Code 4: Output	Code 5: Electrical	Code 6: Termination	Code 7: Options
HR526 Size 25 with Integral Coupling and Flange Adapter	**0001 0250** **0010 0300** **0012 0360** **0050 0400** **0060 0500** **0086 0600** **0100 0800** **0120 1000** **0200 1024** **0240**	**A** Flange Adapter with Pilot **B** Flange Adapter without Pilot **C** Flange Adapter for NEMA Size 42 Motors	**7 Pin Connector or Cable** **0** Single Ended, no Index, Format A, Table 1 **1** Single Ended, with Index, Format A, Table 1 **4** Single Ended, with Index, Format B, Table 1 **A** Single Ended, with Index, Format C, Table 1 **C** Single Ended, no Index, Format C, Table 1 **G** Single Ended, with Index, Format D, Table 1 **10 Pin Connector or Cable** **2** Differential, no Index, Format A, Table 2 **3** Differential, with Index, Format A, Table 2 **5** Differential, with Index, Format B, Table 2 **B** Differential, with Index Format C, Table 2 **D** Differential, no Index, Format C, Table 2 **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	**0** 5-26V in; 5-26V Open Collector with 2.2kΩ Pullup out **1** 5-26V in; 5-26V Open Collector out **2** 5-26V in; 5V Totem Pole out **3** 5-26V in; 5V Differential Line Driver out (7272) **4** 5-26V in; 5-26V Differential Line Driver out (7272) **5** 5-26V in, 5 V Differential Line Driver out (4469) **6** 5-15V in, 5-15 V 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	**0** 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	Available when Code 4 is 0 thru G, and Code 6 is 0 or 1: **PS** LED Output Indicator

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
109209-XXXX NEMA4 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

***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.

Mating Connectors (no cable)

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

Flexible Couplings

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

INCREMENTAL ENCODERS

SERIES HR26

Dynapar™ brand

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 # 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 # 109209-XXXX or 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
N/C	E	—	—
Common	F	BLK	BLK
Case	G	GRN	GRN
Signal $\overline{A}$	H	BRN/WHT	BRN/WHT
Signal $\overline{B}$	I	ORN/WHT	ORN/WHT
Signal $\overline{Z}$	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 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 $\overline{A}$	—	—	—	—	3	BRN/WHT
Signal $\overline{B}$	—	—	—	—	5	ORG/WHT
Signal $\overline{Z}$*	—	—	—	—	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 109209-XXXX
7) “MS” Type mating connectors and pre-build cables are rated NEMA 12
8) “M12” Cable assemblies are rated IP67

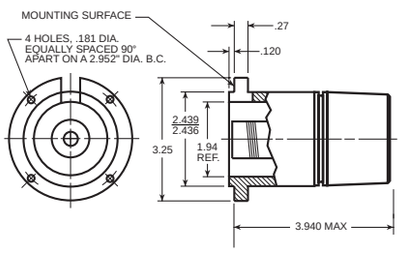
by DYNAPAR™

SERIES HR26

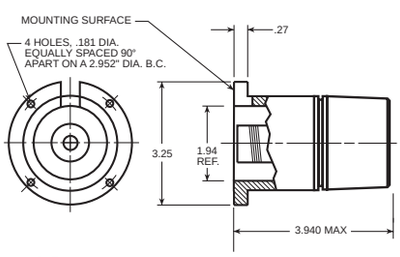
DIMENSIONS

Code 3: Mechanical

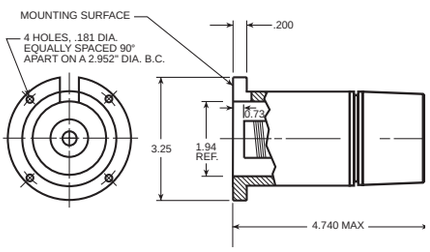
A: Flange with Pilot



B: Flange without Pilot



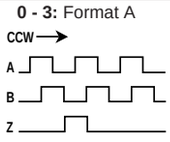
C: NEMA 42 Flange



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.

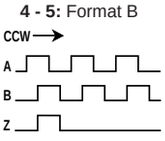
Code 4: Output

0 - 3: Format A



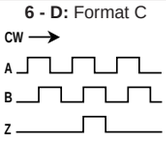
A Leads B CCW
Index Width (180°) Gated to $\overline{B}$

4 - 5: Format B



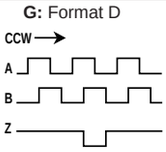
A Leads B CCW
Index Width (180°) Gated to B

6 - D: Format C



A Leads B CW
Index Width (180°) Gated to B

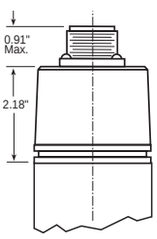
G: Format D



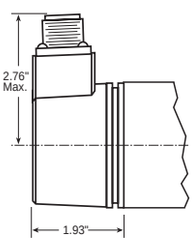
A Leads B CCW
Inverted Index (180°) Gated to B

Code 6: Termination

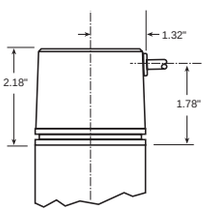
0: End MS Connector
When Code 5 is 0 to 5 or A to G



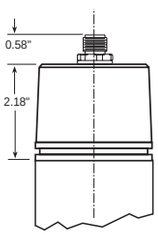
1: Side MS Connector
When Code 5 is 0 to 5 or A to G



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