

SERIES HS35R

Dynapar™ brand

Heavy Duty Hollowshaft Encoder

Key Features

- Phased Array Sensor for Reliable Signal Output
- Rugged Design Withstands up to 400G Shock and 20G Vibration
- Unbreakable Code Disc up to 5000 PPR
- Heavy Duty Design Rated for IP67
- Customizable Mounting Options including Torque Arm with Optional Grounding Strap

IND
Industrial Duty



CE
EN 61326-1



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical

Resolution: 1 to 5000 PPR (pulses/revolution) See Ordering Information

Format: Two channel quadrature (AB) with optional Index (Z), and complementary outputs

Phase Sense: A leads B for CW shaft rotation viewing the shaft clamp end of the encoder

Quadrature Phasing:

For resolutions 200 to 300 PPR and 1200 PPR and above: 90° ±30° electrical; all other resolutions: 90° ±15°

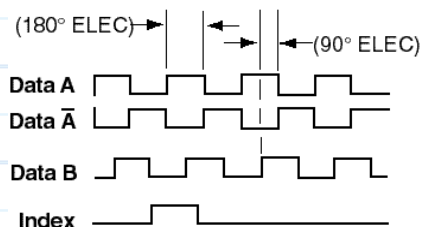
Symmetry:

For resolutions 200-300 PPR and above: 1024 PPR: 180° ±25° electrical; all other resolutions: 180° ±18°

Index: 150° to 330° A leads B, CW (from clamp end) (Reverse Phasing, A leads B for CCW also available: See Code 7 in Ordering Information)

Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

DATA AND INDEX Not all complements shown A shown for reference



Index Width: 150° to 330°

A leads B, CW (from clamp end)

(Reverse Phasing, A leads B for CCW also available: See Code 7 in Ordering Information)

ELECTRICAL

Input Power: 5-26VDC, 5-15VDC. 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
- 4469 Differential Line Driver: 100mA, sink or source
- High-Power Mosfet Line Driver

Frequency Response: 125 kHz (data & index)

Noise Immunity: Tested to EN61326-1

Electrical Immunity: Reverse polarity, short circuit protected with 7272 or 7273 line drivers only

Termination: MS Connector; M12 Connector; cable exit w/seal. See Ordering Information

Mating Connector:

- 6 pin MS, style MS3106A-14S-6S (MCN-N4)
- 7 pin MS, style MS3106A-16S-1S (MCN-N5)
- 10 pin MS, style MS3106A-18-1S (MCN-N6)
- 10 pin, NEMA4 style (MCN-N6N4)
- 10 pin Bayonet, MS3116-F12-10S (MCN-B1)
- 12 Pin CCW M23 Connector (MCN-C2)
- Cable w/ 5 pin M12 Connector (112859-XXXX)
- Cable w/ 8 pin M12 Connector (112860-XXXX)

Note: "MS" type mating connectors and pre-built cables are rated NEMA 12. "M12" Cable assemblies are rated IP67

MECHANICAL

Bore Diameter: 6mm to 28mm, 1/4" to 1-1/8", electrically isolated

Mating Shaft Length: 1.25", Minimum, 1.60", Recommended

Shaft Speed: 6000 RPM, Maximum (Enclosure Rating is IP64 at speed over 5000 RPM)

Starting Torque: 8.0 in-oz. maximum (at 25°C)

Running Torque: 5.0 in-oz. maximum (at ambient)

Bearings: ABEC 1

Housing and Cover: Powder Coated Aluminum

Shaft Material: 6061-T6 Aluminum

Disc Material: Mylar (unbreakable)

Weight: 1.76lb (28 Oz) Typical

ENVIRONMENTAL

Standard Operating Temperature: -40 to +85°C (0 to +70°C with 4469 line driver, see "Ordering Information"). At shaft speed above 3000 RPM, derate 10°C per 1000 RPM

Extended Temperature Range: -40 to +100°C

(See ordering information)

Storage temperature: -40 to +100°C

Shock: 400G, 6mSec

Vibration: 5 to 3000 Hz, 20G

Humidity: Up to 98% (non-condensing)

Enclosure Rating: IP67 (IP64 at shaft speed above 5000 RPM)

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: Output Format	Code 6: Termination	Code 7: Options
HS35R	□□□□	□	□	□	□	□□
Ordering Information						
HS35R Heavy-Duty Hollowshaft Encoder	0001	0500	0 6mm	0 None	0 ABZ, 5-26VDC push-pull (7272)	0 6 Pin Connector
	0003	0512	1 1/4"	1 4.5" C-face tether	1 ABZ, 5-26VDC O/C (7273)	1 7 Pin Connector
	0010	0600	2 5/16"	2 8.5" C-face tether	2 ABZ, 5-26VDC O/C w/2.2kOhm (7273)	2 10 Pin Connector
	0012	0900	3 8mm	3 Slotted tether (to fit standard AC motor fan cover)	H Same as "0" with Extended temp range	3 12 Pin Connector
	0015	1000	4 3/8"		J Same as "1" with Extended temp range	4 10 Pin Bayonet Connector
	0032	1024	5 10mm		K Same as "2" with Extended temp range	5 6 Pin+Mating Connector
	0050	1200	6 12mm			6 7 Pin+Mating Connector
	0060	1500	7 1/2"	Not available when Code 5 is D,E,F,G, Q, R	Not available when Code 6 is H	7 10 Pin+Mating Connector
	0100	2000	8 5/8"	4 Same as 1 w/cover	4 Differential AB only, 5-26VDC, 5-26VDC out (7272)	8 12 Pin+Mating Connector
	0120	2048	A 16mm	5 Same as 3 w/cover	5 Differential AB only, 5-26VDC in, 5VDC out (7272)	9 10 Pin Bayonet+Mating Connector
	0200	2400	C 19mm	C Same as A with 56C cover (Single Only)	A Differential AB only, 5-26VDC in, 5VDC out (4469)	A 0.5m (18") Cable
	0240	2500	D 3/4"		C Differential AB only, 5-15VDC in, 5-15VDC out (4469)	C 1m (36") Cable
	0250	3072	E 20mm	Available when Code 5 is D,E,F,G, Q, R	L Same as "4" with Extended temp range	D 2m (72") Cable
	0300	4000	F 7/8"	6 Same as 1 w/dual cover	M Same as "5" with Extended temp range	E 3m (120") Cable
	0360	4096	H 1"	7 Same as 3 w/dual cover		F 0.3m (13") Cable with 10-Pin Bulk-head Connector and Mate
	5000	J 1-1/8"	8 Same as 2 w/ 180 C-face cover (single or dual output)		G 0.3m (13") Cable	
		M 14mm	A Rod tether		H 5 Pin M12 Connector	
		N 18mm	B Rod tether with ground strap.		J 8 Pin M12 Connector	
		P 25mm	D Same as B with 56C cover (Single Output)			
		R 28mm				
		Not Electrically Isolated				
		K 1-1/4"				
		S 30mm				

Cable Assemblies with MS Connector*

- 108594-XXXX** 6 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 112123-XXXX** 6 Pin MS, Cable Assy. For Use with Differential Line Driver w/o Index Outputs
- 108595-XXXX** 7 Pin MS, Cable Assy. For Use with Single Ended Outputs
- 108596-XXXX** 7 Pin MS, Cable Assy. For Use with Differential Line Driver w/o Index Outputs
- 1400635-XXXX** 10 Pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs
- 114448-XXXX** 10 Bayonet, 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 M23 Connector*

- 108615-XXXX** 12 M23, Cable Assy. For Use with Differential Line Driver with Index Outputs, CCW

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)

- MCN-N4** 6 pin, style MS3106A-14S-6S
- MCN-N5** 7 pin, style MS3106A-16S-1S
- MCN-N6** 10 pin, style MS3106A-18-1S
- MCN-N6N4** 10 pin, NEMA4 style
- MCN-B1** 10 pin bayonet, style MS3116-F12-10S
- MCN-C2** 12 Pin CCW M23 Connector

Accessory Kits:

- 114573-0001** Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt
- 114574-0001** Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers
- 114575-0001** Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt
- 114591-0001** Cover Kit, Fan Cover
- 114592-0001** Cover Kit, Fan Cover
- 114593-0001** Dual Cover Kit, 56 C-Face
- 114928-0001** Dual Cover Kit, 180 C-Face
- 114594-0001** Dual Cover Kit, Fan Cover
- 116233-0001** Rod Tether Only
- 116233-0002** Rod Tether + 56 C-Face Cover (Single)
- 116233-0004** Rod Tether + Grounding Strap
- 116233-0005** Rod Tether + Grounding Strap + 56 C-Face Cover (Single)

*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.

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ELECTRICAL CONNECTIONS

6, 7 & 10 Pin MS Connectors and Cables - Code 6 = 0 to 9, A to G

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

Encoder Function	Cable #108594-XXXX 6 Pin Single Ended		Cable #112123-XXXX 6 Pin Dif Line Drv w/o Index		Cable #108596-XXXX 7 Pin Dif Line Drv w/o Index		Cable #108595-XXXX 7 Pin (If Used)		**Cable #109209-XXXX or 1400635XXXX 10 Pin Differential Line Driver w/ Index		Cable #114448-XXXX 10 Pin Bayonet		Cable #108615-XXXX 12 Pin CCW		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Wire Color
Sig. A	E	BRN	E	BRN	A	BRN	A	BRN	A	BRN	A	BRN	5	BRN	BRN
Sig. B	D	ORN	D	ORN	B	ORN	B	ORN	B	ORN	B	ORN	8	ORN	ORN
Sig. Z*	C	YEL	—	—	—	—	C	YEL	C	YEL	C	YEL	3	YEL	YEL
Power +V	B	RED	B	RED	D	RED	D	RED	D	RED	D	RED	12	RED	RED
N/C	F	—	—	—	—	—	E	—	E	—	E	—	7	—	—
Com	A	BLK	A	BLK	F	BLK	F	BLK	F	BLK	F	BLK	10	BLK	BLK
Case	—	—	—	—	G	GRN	G	GRN	G	GRN	G	GRN	9	—	GRN
Sig. \bar{A}	—	—	C	BRN/WHT	C	BRN/WHT	—	—	H	BRN/WHT	H	BRN/WHT	6	BRN/WHT	BRN/WHT
Sig. \bar{B}	—	—	F	ORN/WHT	E	ORN/WHT	—	—	I	ORN/WHT	J	ORN/WHT	1	ORN/WHT	ORN/WHT
Sig. \bar{Z}^*	—	—	—	—	—	—	—	—	J	YEL/WHT	K	YEL/WHT	4	YEL/WHT	YEL/WHT
0V Sense	—	—	—	—	—	—	—	—	—	—	—	—	2	BLK/WHT	—
+V Sense	—	—	—	—	—	—	—	—	—	—	—	—	11	GRN	—

5 & 8 Pin M12 Accessory Cables when Code 6 = H or J

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

Encoder Function	Cable # 112859-XXXX 5 Pin Single Ended		Cable # 112860-XXXX 8 Pin Single Ended		Cable # 112860-XXXX 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

1) Cable Configuration (Table 1): PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 24 AWG (output signals), plus 2 twisted pairs 22 AWG (input power)

2) Cable Configuration (Table 2): PVC jacket, 105°C rated, overall foil shield; 24 AWG conductors, minimum

3) 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

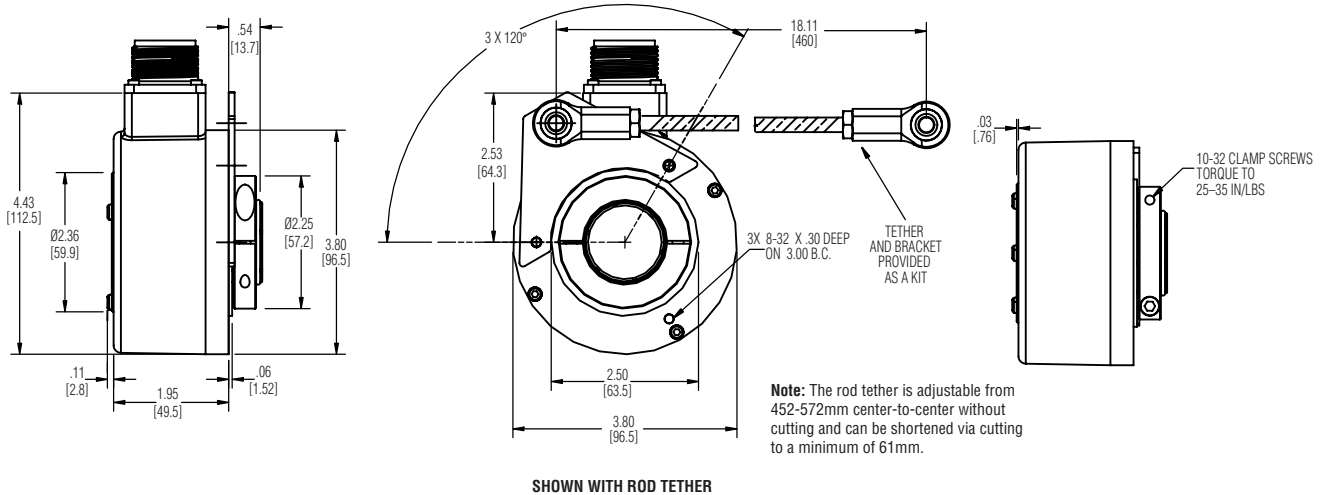
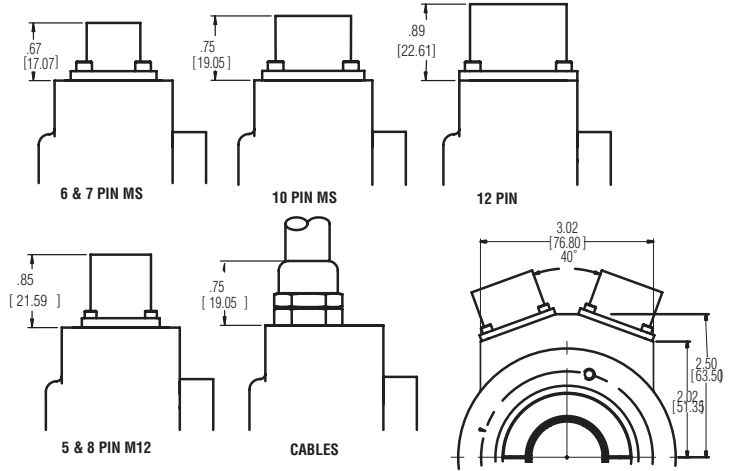
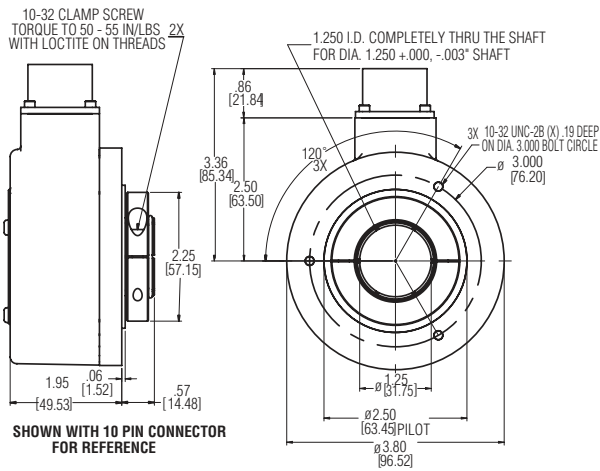
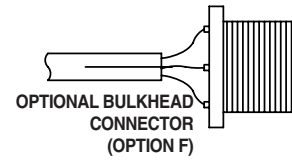
4) *Index not provided on all models. See ordering information.

5) **For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX.

6) "MS" Type mating connectors and pre-build cables are rated NEMA 12

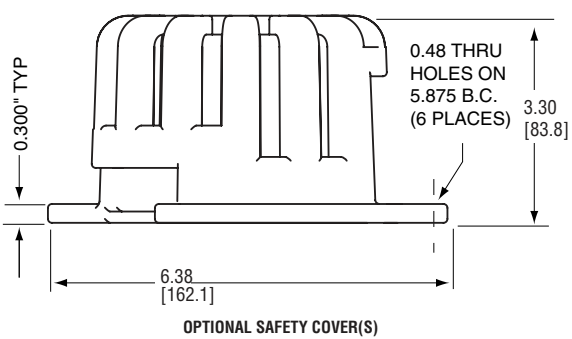
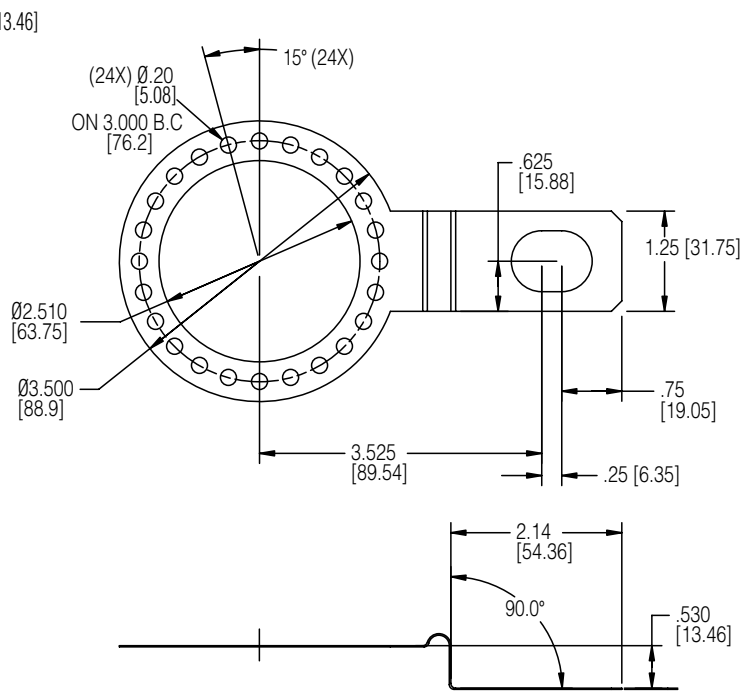
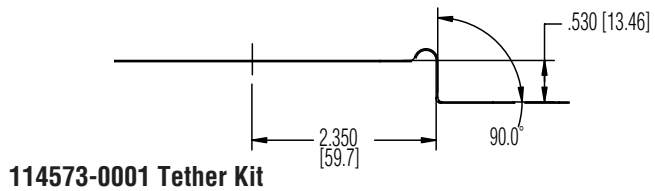
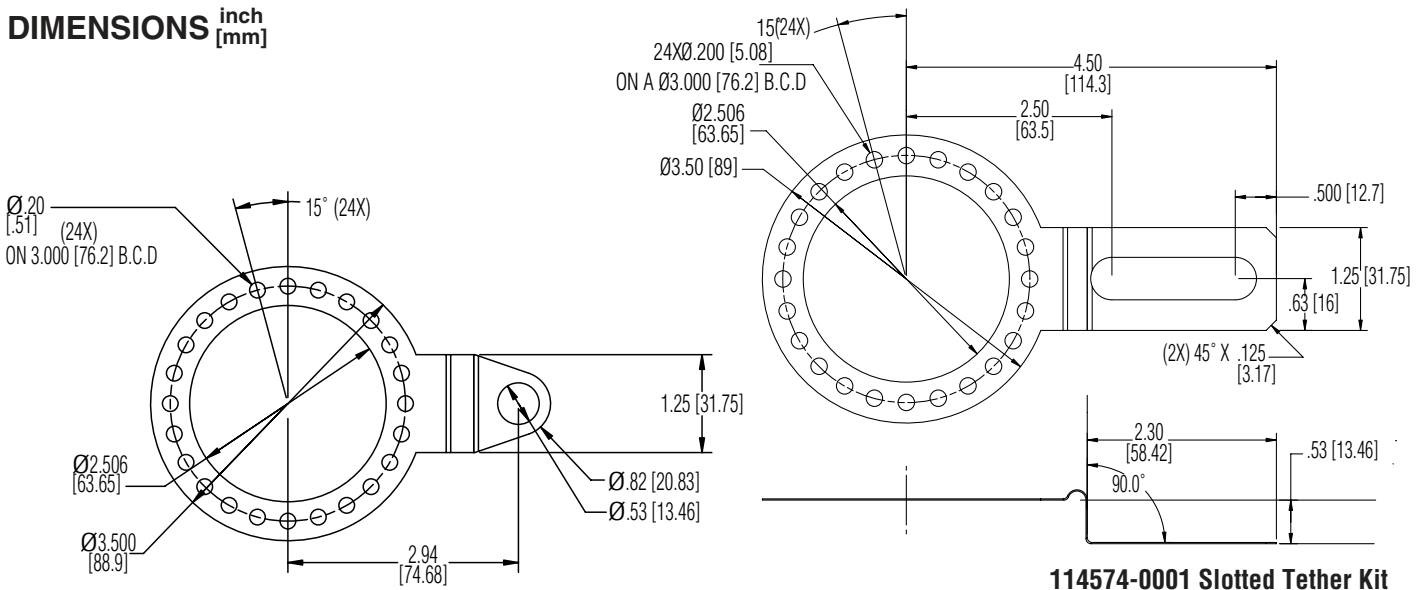
7) "M12" Cable assemblies are rated IP67

DIMENSIONS inch [mm]



SERIES HS35R

DIMENSIONS ^{inch}
[mm]



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