

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 5000PPR
- Heavy Duty Design Rated for IP67
- Customizable Mounting Options including Torque Arm with Optional Grounding Strap



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental

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

Symmetry:

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

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

ELECTRICAL

Input Power: 5-26VDC, 5-15VDC. 80 mA max., not including output loads.

Outputs: ET7272, ET7273, 4469, High-Power-Line-Driver

Frequency Response: 125 kHz (data & index)

Noise Immunity: Tested to EN61326-1 EMC

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 Bayonet, MS3116-F12-10S (607545-0001)

Cable w/ 5 pin M12 connector, p/n 112859-xxx

Cable w/ 8 pin M12 connector, p/n 112860-xxx

MECHANICAL

Shaft Material: 6061-T6 Aluminum

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

Disc material: Plastic

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

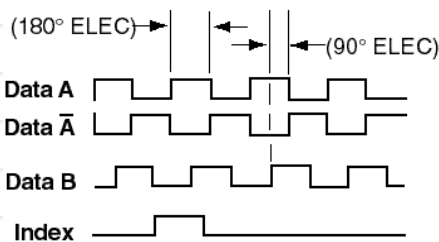
Vibration: 5 to 3000 Hz, 20g

Humidity: 100%

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

DATA AND INDEX

Not all complements shown
A̅ 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)

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

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	0 6 pin	Blank No Option
	0003 0512	1 1/4"	1 4.5" C-face tether	1 ABZ, 5-26VDC O/C	1 7 pin	
	0010 0600	2 5/16"	2 8.5" C-face tether	2 ABZ, 5-26VDC O/C w2.2kOhm	2 10 pin	01 Reverse Phasing (A leads B, CCW)
	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	
	0015 1000	4 3/8"		J Same as "1" with Extended temp range	4 10 pin bayonet	
	0032 1024	5 10mm		K Same as "2" with Extended temp range	5 6 pin+mating	
	0050 1200	6 12mm	Not available when Code 5 is D,E,F,G, Q, R	Not available when Code 6 is H	6 7 pin+mating	Available when Code 5 is 0-2, 6 and 7 and when Code 6 is 0-2 or 5-7
	0060 1500	7 1/2"			7 10 pin+mating	
	0100 2000	8 5/8"			8 12 pin+mating	
	0120 2048	A 16mm	9 10pin bayonet+mating	PS LED Output		
	0200 2400	C 19mm	A Differential AB only, 5-26VDC in, 5VDC out (4469)			
	0240 2500	D 3/4"	C Differential AB only, 5-15VDC in, 5-15VDC out (4469)			
	0250 3072	E 20mm	L Same as "4" with Extended temp range			
	0300 4000	F 7/8"	M Same as "5" with Extended temp range			
	0360 4096	G 24mm	Not available when Code 6 is 0, 1, 5, 6, or H		6 Differential ABZ, 5-26VDC in, 5VDC out (7272)	
	5000	H 1"		7 Differential ABZ, 5-26VDC in, 5-26VDC out (7272)		
		J 1-1/8"		8 Differential ABZ, 5-26VDC in, 5VDC out (4469)		
		M 14mm	9 Differential ABZ, 5-15VDC in, 5-15VDC out (4469)	D Dual isolated outputs, same as "6"		
		N 18mm	7 Same as 3 w/dual cover	E Dual isolated outputs, same as "7"		
		P 25mm	8 Same as 2 w/ 180 C-face cover (single or dual output)	F Dual isolated outputs, same as "8"		
		R 28mm	Not Electrically Isolated	A Rod tether	G Dual isolated outputs, same as "9"	
		B Rod tether with ground strap.		N Same as "6" with Extended temp range		
		D Same as B with 56C cover (Single Output)		P Same as "7" with Extended temp range		
				Q Same as "D" with Extended temp range		
				R Same as "E" with Extended temp range		
			W ABZ, 10-24VDC Line Driver for cable runs up to 500 ft/120m using the Dynapar cable assemblies listed below			

10 foot Cable Assemblies with MS Connector

108594-0010	6 Pin MS, Cable Assy. For Use with Single Ended Outputs
108595-0010	7 Pin MS, Cable Assy. For Use with Single Ended Outputs
108596-0010	7 Pin MS, Cable Assy. For Use with Differential Line Driver w/o Index Outputs
112123-0010	6 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
114448-0010	10 Bayonet, Cable Assy. For Use with Differential Line Driver with Index Outputs
109209-0010	NEMA4 10 pin MS, Cable Assy. For Use with Differential Line Driver with Index Outputs

10 foot Cable Assemblies with M23 Connector

108615-0010	12 M23, Cable Assy. For Use with Differential Line Driver with Index Outputs, CCW
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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)

MCN-N4	6 pin, style MS3106A-14S-6S
MCN-N5	7 pin, style MS3106A-16S-1S
MCN-N6	10 pin, style MS3106A-18-1S
607545-0001	10 pin bayonet, style MS3116-F12-10S

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, 56C face
114592-0001	Cover Kit, fan cover
114593-0001	Dual Cover Kit, 56C face
114928-0001	Dual Cover Kit, 180C-face
114594-0001	Dual Cover Kit, fan cover
116233-0001	Rod Tether only
116233-0002	Rod Tether + 56C face cover (single)
116233-0004	Rod Tether + grounding strap
116233-0005	Rod Tether + grounding strap +56C face cover (single)

SERIES HS35R



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-* 6 Pin Single Ended		Cable #112123-* 6 Pin Dif Line Drv w/o Id x		Cable #108596-* 7 Pin Dif Line Drv w/o Id x		Cable #108595-* 7 Pin (If Used)		Cable #1400635- or 109209- (NEMA4)10 Pin Dif Line Drv w/Id x (If Used)		Cable #108615-* 12 Pin CCW (If Used)		Cable #114448-* 10Pin Bayonet	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	E	BRN	E	BRN	A	BRN	A	BRN	A	BRN	5	BRN	A	BRN
Sig. B	D	ORN	D	ORN	B	ORN	B	ORN	B	ORN	8	ORN	B	ORN
Sig. Z	C	YEL	—	—	—	—	C	YEL	C	YEL	3	YEL	C	YEL
Power +V	B	RED	B	RED	D	RED	D	RED	D	RED	12	RED	D	RED
N/C	F	—	—	—	—	—	E	—	E	—	7	—	E	—
Com	A	BLK	A	BLK	F	BLK	F	BLK	F	BLK	10	BLK	F	BLK
Case	—	—	—	—	G	GRN	G	GRN	G	GRN	9	—	G	GRN
Sig. A	—	—	C	BRN/WHT	C	BRN/WHT	—	H	BRN/WHT	6	BRN/WHT	H	BRN/WHT	—
Sig. B	—	—	F	ORN/WHT	E	ORN/WHT	—	I	ORN/WHT	1	ORN/WHT	J	ORN/WHT	—
Sig. Z	—	—	—	—	—	—	—	J	YEL/WHT	4	YEL/WHT	K	YEL/WHT	—
OV Sense	—	—	—	—	—	—	—	—	—	2	BLK/WHT	—	—	—
5V Sense	—	—	—	—	—	—	—	—	—	11	GRN	—	—	—

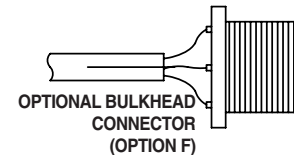
5 & 8 Pin M12 Accessory Cables when Code 6 = H or J

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

Encoder Function	Cable # 112859- 5 Pin Single Ended		Cable # 112860- 8 Pin Single Ended		Cable # 112860- 8Pin 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. A	—	—	—	—	3	BRN/WHT
Sig. B	—	—	—	—	5	ORG/WHT
†Sig. Z	—	—	—	—	8	YEL/WHT

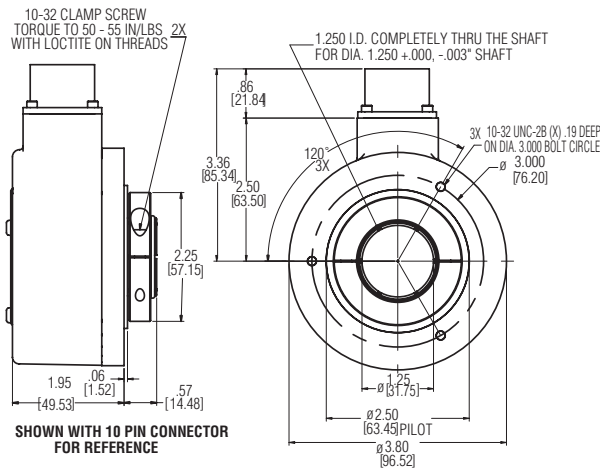
† Index not provided on all models. See ordering information

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

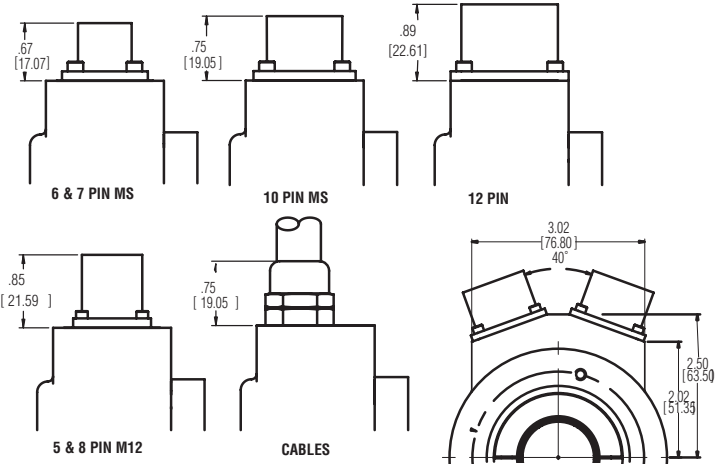


- * 1) Note: Standard cable length is 10 feet but may be ordered in any length in 5 foot increment. For example, -0020 is a 20 foot cable.
 2) "MS" type mating connectors and prebuilt cables are rated NEMA 12. "M12" Cable assemblies are rated IP67
 3) For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX.
 ‡ Only with cable option A thru G.

DIMENSIONS ^{inch} [mm]



SHOWN WITH 10 PIN CONNECTOR FOR REFERENCE

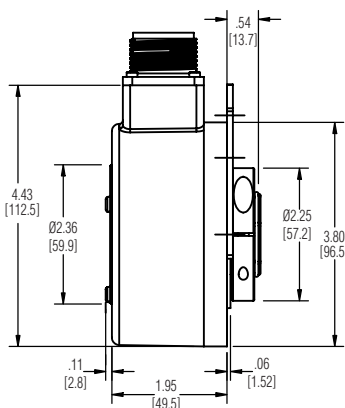


6 & 7 PIN MS

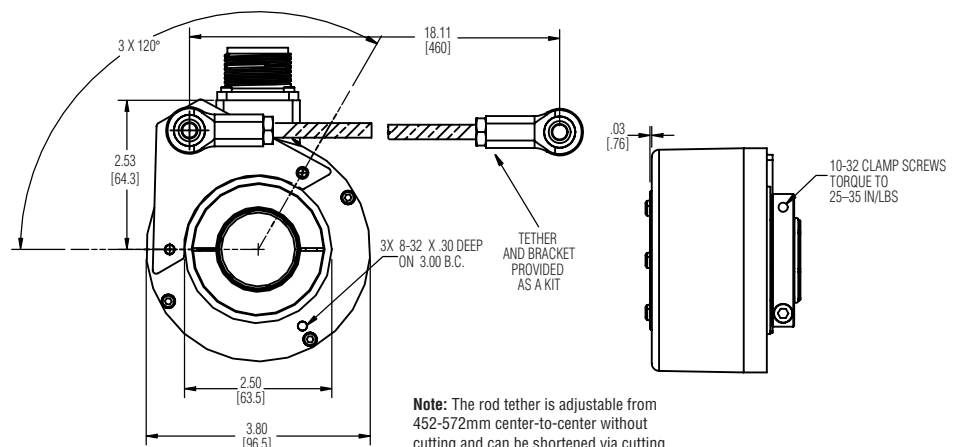
10 PIN MS

12 PIN

CABLES

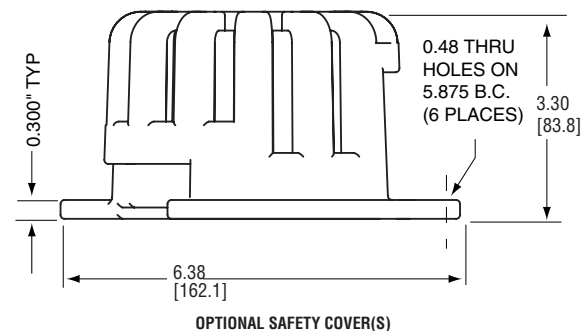
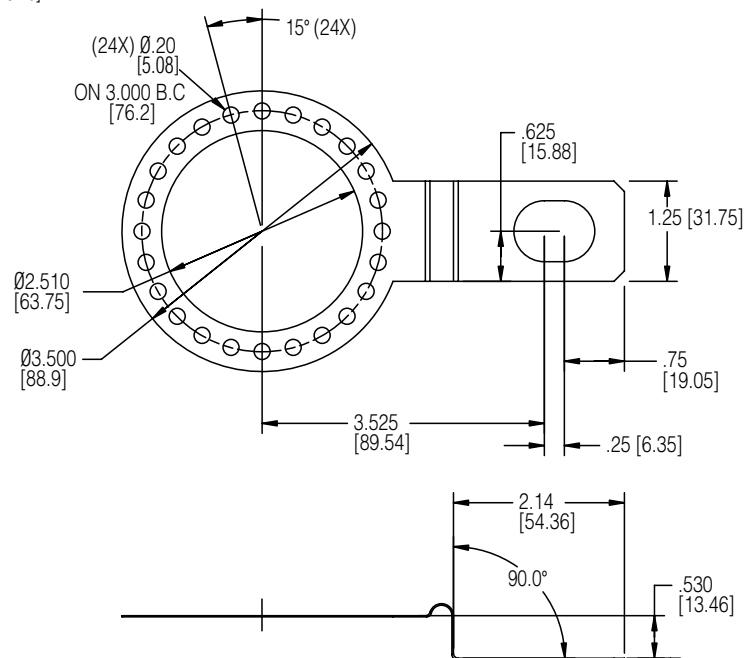
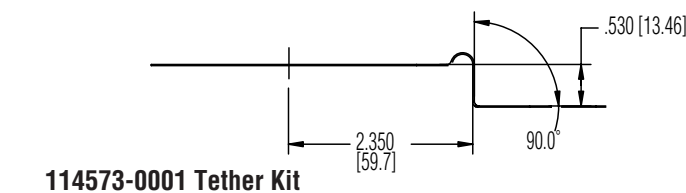
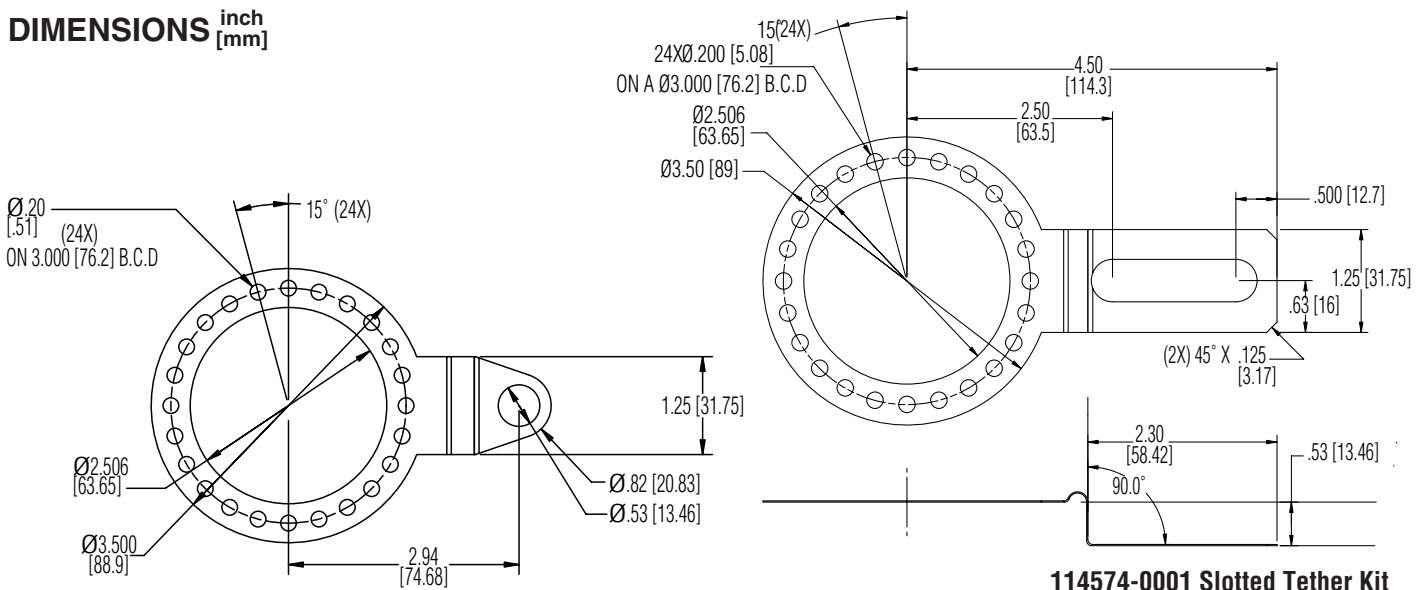


SHOWN WITH TORQUE ARM



Note: The rod tether is adjustable from 452-572mm center-to-center without cutting and can be shortened via cutting to a minimum of 61mm.

DIMENSIONS inch
[mm]



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