

SERIES ISD37

NorthStar™ brand

Hazardous Duty Encoder

Key Features

- Unbreakable Code Disc up to 5000PPR
- ATEX and CSA Certified for Hazardous Duty Applications
- Dual Isolated Outputs Available for Redundancy
- Anodized Aluminum, Stainless Steel, or Nickel Plated Housing
- IP67 Sealing



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 CCW shaft rotation viewing the shaft clamp end of the encoder

Quadrature Phasing: For resolutions to 1200 PPR: $90^\circ \pm 15^\circ$ electrical; For resolutions over 1250 PPR: $90^\circ \pm 30^\circ$ electrical

Symmetry:

For resolutions to 1024PPR: $180^\circ \pm 18^\circ$ electrical

For resolutions over 1024PPR: $180^\circ \pm 25^\circ$ electrical

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

ELECTRICAL

Input Power: 5VDC, 7-26VDC

Outputs: ET7272, ET7273

Frequency Response: 125 kHz (data & index)

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)

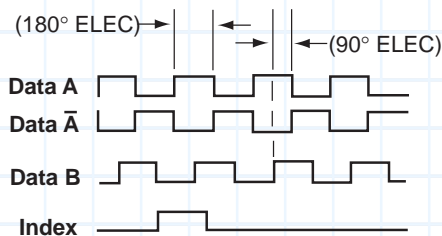
10 pin Bayonet, MS3116-F12-10S (MCN-B1)

10 pin, NEMA 4 style (MCN-N6N4)

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

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

DATA AND INDEX Not all complements shown A shown for reference



Index Width: 150° to 300°

A leads B, CCW (From Clamp End)

MECHANICAL

Shaft Material: Stainless Steel (Anodized 6061 aluminum for 1" isolated bore option)

Bore Diameter: 1.00", 0.875", 0.750", 0.625", 0.500", 16mm, 15mm, 12mm. Insulated inserts provided for bores under 1 inch (1" bore not electrically isolated for stainless shaft option)

Bore runout: ± 0.0005 TIR at midpoint

Min. Shaft Engagement: 1.60" (Recommended)

Starting torque: 4.5 in-oz. maximum (at 25°C)

Running torque: 4.0 in-oz. maximum (at ambient)

Bearings: 61806-ZZ

Bearing life: 5×10^8 revs at rated shaft Loading, 5×10^{11} revs at 10% of rated shaft loading.

(manufacturers' specs)

Housing and cover: Hard Anodized Aluminum.

Also available in Stainless Steel.

Disc material: Plastic

Weight: 35 ounces, typical

ENVIRONMENTAL

Operating Temperature: -40 to 80°C

Storage temperature: -40 to 100°C

Shock: 400g for 6msec duration

Vibration: 5 to 3000Hz @ 20g

Humidity: 100%

Enclosure Rating: IP67

Note: "MS" type mating connectors and prebuilt 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: Shaft	Code 4: Output Format	Code 5: Termination	Code 6: Options	Code 7: Special Option
ISD37	<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						
ISD37 Hazardous Duty Encoder	0015	0 6mm	A Single Ended ABZ, 7-26V in, 7-26V out push-pull (7272)	0 6 pin connector	0 No options	Blank None
	0032	1 1/4"	C Single Ended ABZ, 5V in, 5V out push-pull (7272)	1 7 pin connector	1 Slotted Tether	01 Nickel Plated
	0050	2 5/16"	D Single Ended ABZ, 7-26V in, 7-26 out push-pull (7272)	2 10 pin connector	2 Single point 4.5" C-face tether	02 Stainless Steel
	0060	3 8mm	E Single Ended ABZ, 7-26V in, 7-26V out Open Collector (2222)	4 10 pin Bayonet connector	3 Single point 8.5" C-face tether	
	0100	4 3/8"	F Single Ended ABZ, 7-26V in, 7-26V out Open Collector with 1kOhm (2222)	5 6 pin+mating connector	4 Dual Isolated Outputs, No tether	
	0200	5 10mm	<i>Options G, H & J not available when Code 5 is H</i>	6 7 pin+mating connector	5 Dual Isolated Outputs, Slotted Tether	
	0240	6 12mm		7 10 pin+mating connector	6 Dual Isolated Outputs, 4.5" C-face tether	
	0250	7 1/2"		8 12 CW pin+mating connector	7 Dual Isolated Outputs, 8.5" C-face tether	
	0500	8 5/8"	G Differential AB only, 5V in, 5V out (7272)	9 10 pin Bayonet+mating connector	A Swivel Rod tether	
	0512	9 15mm	H Differential AB only, 7-26 in, 7-26 out (7272)	A .5m (20") cable	C Metric Swivel Rod tether	
	0600	A 16mm	J Differential AB only, 7-26 in, 5V out (7272)	C 1m (39") cable	D Dual Isolated Outputs, Swivel Rod Tether	
	1000	C 19mm	<i>Options K, L, M not available when Code 5 is 0, 1, 5, 6, H</i>	D 2m (79") cable	E Dual Isolated Outputs, Metric Swivel Rod Tether	
	1024	D 3/4"		H 5 pin M12 connector		
	1200	E 20mm		J 8 pin M12 connector		
	2000	F 7/8"		K 1.5 ft (18") cable w/ in line 10pin connector		
	2048	G 24mm		M 5 ft (60") cable		
	3072	H 1" Non Isolated		N 10 ft (120") cable		
	4000	P 25mm Non Isolated		P 1.5 ft (18") Cable with 10-pin Bulkhead Connector		
	4096			<i>available when Code 6 is 0, 1, 2, 3, A, C</i>		
	5000			T Terminal box w/conduit entry		

Accessories

- 114573-0001** Tether Kit, 4.5" C-face single point with 3/8" bolt
114574-0001 Tether Kit for Standard AC motor fan covers with T-bolt
114575-0001 Tether Kit, 8.5" C-face single point with 1/2" bolt

The following Cover Kits are not compatible when Code 5 is T

- 114591-0001** Cover Kit, 56C face
114592-0001 Cover Kit, fan cover
114593-0001 Dual Cover Kit, 56C face
114594-0001 Dual Cover Kit, fan cover

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
1400635-0010 10 Pin MS, 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

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)

- 6 pin, style MS3106A-14S-6S (MCN-N4);
 7 pin, style MS3106A-16S-1S (MCN-N5);
 10 pin, style MS3106A-18-1S (MCN-N6)
 10 pin bayonet, style MS3116-F12-10S (MCN-B1)
 10 pin, NEMA 4 style (MCN-N6N4)

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ELECTRICAL CONNECTIONS

6, 7 & 10 Pin MS Connectors and Cables

Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. HSD37 models with direct cable exit carry the color coding as shown in the right hand column.

Encoder Function	Cable # 108594-6 Pin Single Ended		Cable # 108595-7 Pin Single Ended		Cable # 108596-7 Pin Dif Line Driver with Index		Cable # 1400635- or 109209- (NEMA4) 10 Pin Dif Line Drv w/idx		Cable # 114448-* 10 Pin Bayonet		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	
Sig. A	E	BRN	A	BRN	A	BRN	A	BRN	A	BRN	GRN
Sig. B	D	ORN	B	ORG	B	ORG	B	ORG	B	ORG	BLU
Sig. Z	C	YEL	C	YEL	—	—	C	YEL	C	YEL	ORG
Power +V	B	RED	D	RED	D	RED	D	RED	D	RED	RED
Com	A	BLK	F	BLK	F	BLK	F	BLK	E	—	BLK
Case	—	—	G	GRN	G	GRN	G	GRN	F	BLK	WHT
N/C-Shield	F	—	E	—	—	—	E	—	G	GRN	—
Sig. \bar{A}	—	—	—	—	C	BRN/WHT	H	BRN/WHT	H	BRN/WHT	VIO
Sig. \bar{B}	—	—	—	—	E	ORG/WHT	I	ORG/WHT	J	ORG/WHT	BRN
Sig. \bar{Z}	—	—	—	—	—	—	J	YEL/WHT	K	YEL/WHT	YEL

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

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

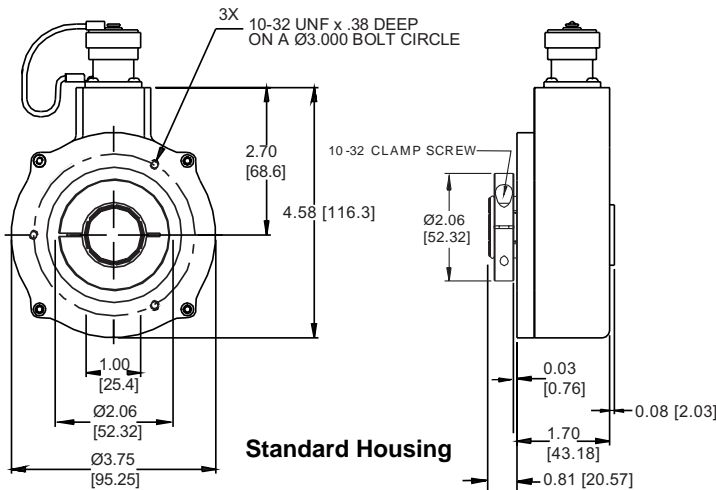
Connector pin numbers and cable assembly wire color information is provided here for reference.

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

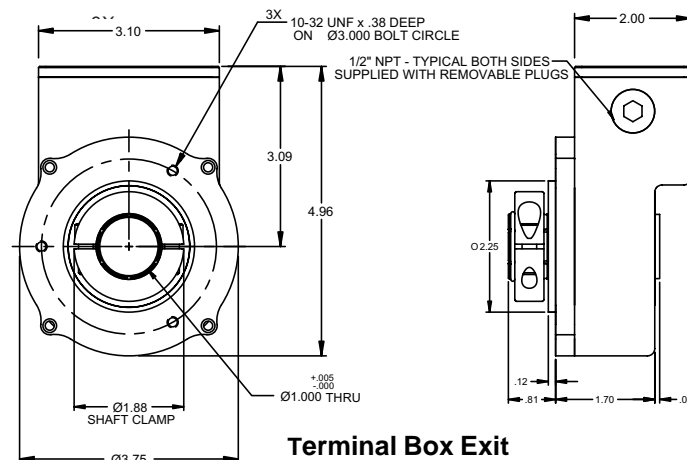
* Index not provided on all models. See ordering information

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

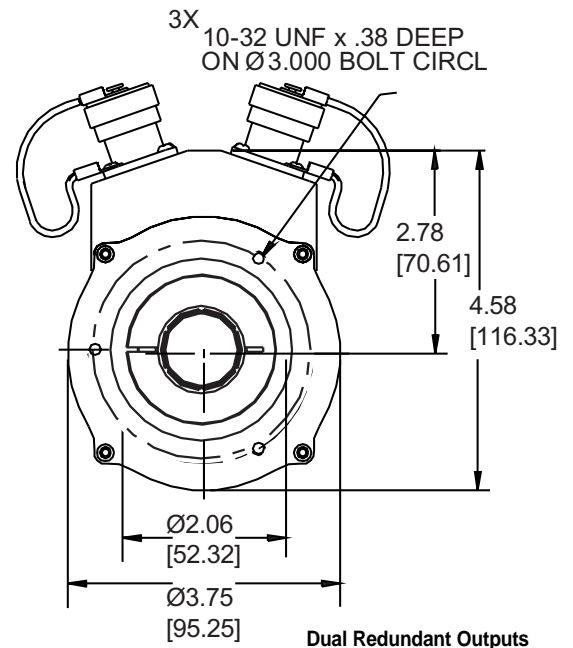
DIMENSIONS (inches [mm])



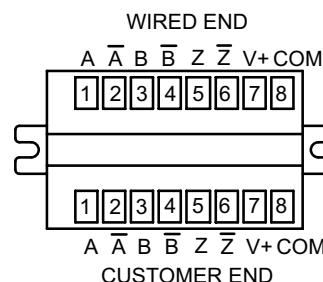
Standard Housing



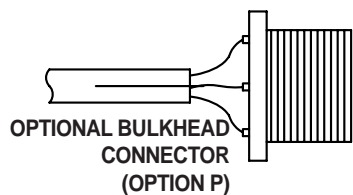
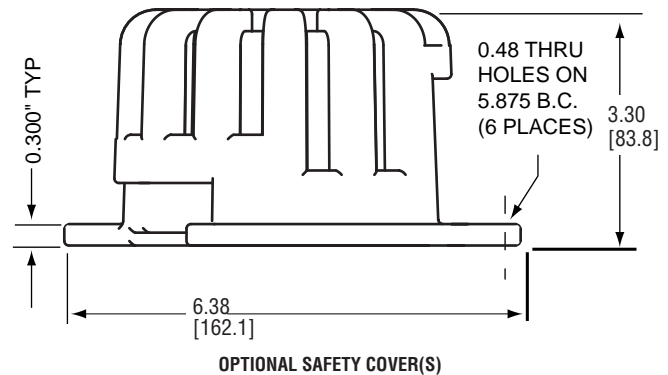
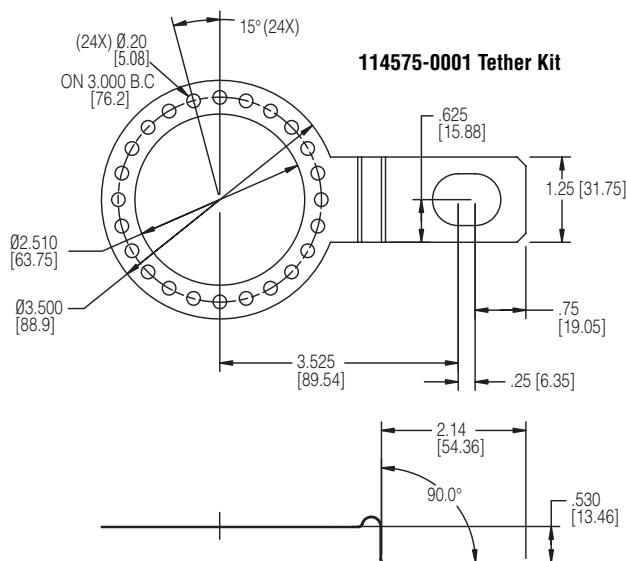
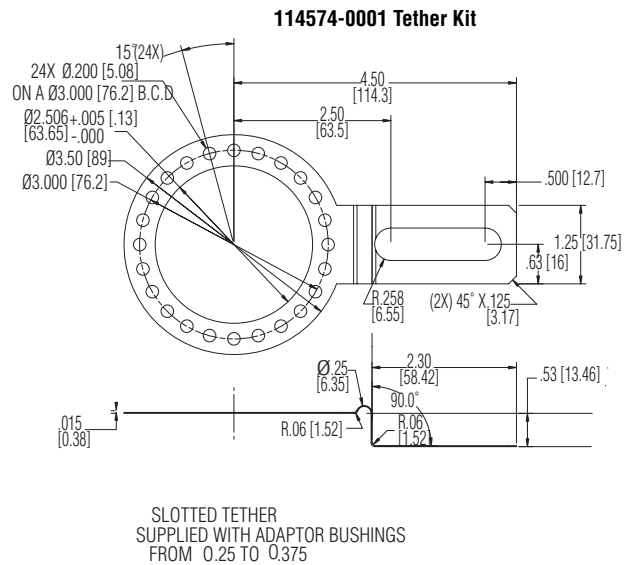
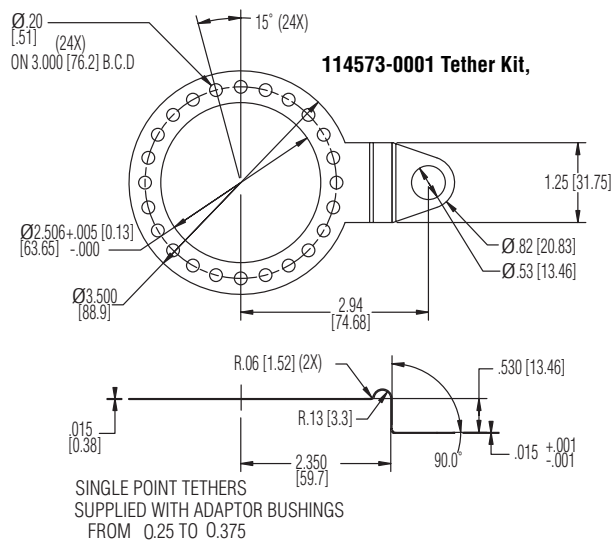
Terminal Box Exit



Dual Redundant Outputs



A - GREEN
 \bar{A} - VIOLET
 B - BLUE
 \bar{B} - BROWN
 Z - ORANGE
 \bar{Z} - YELLOW
 V+ - RED
 COM - BLACK

DIMENSIONS (inches [mm])

Worldwide Brands: NorthStar™ • Acuro™ • Dynapar™ • Hengstler™ • Harowe™

DYNAPAR™
 INNOVATION - CUSTOMIZATION - DELIVERY