

NorthStar™ brand

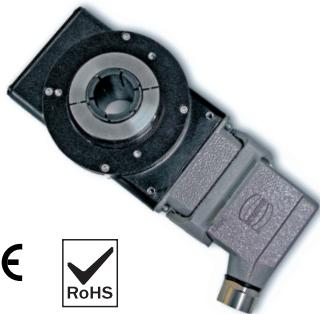
Series HSD35

Heavy Duty Optical Encoder

Bulletin Number: 702795-0001

Revision Level: B

Date: May 19, 2011



PRELIMINARY 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

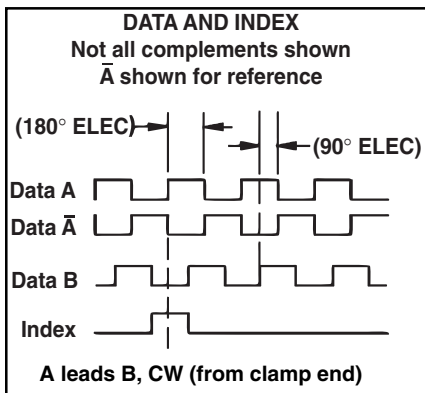
Quadrature Phasing:

For resolutions 200 to 300PPR and 1200PPR and above: $90^\circ \pm 30^\circ$ electrical; all other resolutions: $90^\circ \pm 15^\circ$

Symmetry:

For resolutions 200-300PPR and above: $180^\circ \pm 25^\circ$ electrical; all other resolutions: $180^\circ \pm 18^\circ$

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. 50 mA max., not including output loads.

Outputs: ET7272, ET7273, 4469

Frequency Response: 125 kHz (data & index)

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

Mating Connector: 10 pin style HA-10

MECHANICAL

Shaft Material: Stainless Steel

Bore Diameter: 6mm to 28mm, 1.4" to 1.25", 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 3

Housing and cover: Hard Anodized and Powder Coated Aluminum

Disc material: Plastic or metal (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: 100%

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

Connector Rating: IP65

IMPORTANT ENCODER INSTALLATION INFORMATION

Mounting the Encoder: The encoder should be mounted such that its center is in close as possible alignment with the axis of the driving machine or motor shaft.

CAUTION: The loads applied to the encoder shaft must be in accordance with the specifications of this device.

Important Wiring Instructions: Use of shielded cable is recommended for all encoder installations. The shield should be connected to signal-ground at the receiving device only. ***Connecting the shield at both ends can cause grounding problems that degrade system performance.***

If possible, run the encoder cable through a dedicated conduit (not shared with other wiring). Use of conduit will protect the cable from physical damage and provide a degree of electrical isolation. Do not run the cable in close proximity to other conductors that carry current to heavy loads such as motors, motor starters, contactors, solenoids, etc. This practice can induce electrical transients in the encoder cable, potentially interfering with reliable data transmission.

Refer to Electrical Connections table for wiring information. To avoid possible damage, do not connect or disconnect the encoder connector or wiring while power is applied to the system.

CAUTION: Unused encoder signal wires must be individually insulated and under no circumstances be in contact with ground, voltage sources, or other signal lines.

Ordering Information

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code3:Bore Size	Code 4: Fixing	Code5:Output Format	Code6: Options		
HSD35	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Ordering Information							
HSD35 Heavy-duty, hollowshaft encoder	0001 0512	0 6mm	Stamped Metal	Swivel Rod	Blank None		
	0003 0600	1 1/4"				0 None	
	0010 0900	2 5/16"				1 4.5" C-Face tether	A AC motor fan cover tether with T-bolt
	0012 1000	3 3/8"				2 8.5" C-Face tether	B 4.5" C-face tether with 3/8" bolt
	0015 1024	5 10mm				3 Slotted tether	C 8.5" C-face tether with 1/2" bolt
	0032 1200	6 12mm	4 Same as 1 w/cover	D Same as "A" w/ cover kit			
	0050 1500	7 1/2"	5 Same as 3 w/cover	E Same as "B" w/ cover kit			
	0060 2000	8 5/8"					
	0100 2048	9 15mm					
	0120 2400	A 16mm					
	0200 2500	C 19mm					
	0240 3072	D 3/4"					
	0250 4000	E 20mm					
	0300 4096	F 7/8"					
	0360 5000	G 24mm					
	0500	H 1"					
	J 1-1/8"						
	K 1-1/4"						
	M 14mm						
	N 18mm						
	P 25mm						
	R 28mm						
				0 Single Ended ABZ, 5-26VDC push-pull			
				1 Single Ended ABZ, 5-26VDC D/C			
				2 Single Ended ABZ, 5-26VDC D/C w2.2kOhm			
				4 Differential AB only, 5-26, 5-26 out (7272)			
				5 Differential AB only, 5-26 in, 5V out (7272)			
				A Differential AB, 5-26V in, 5V out (4469)			
				C Differential AB, 5-15V in, 5-15V out (4469)			
				6 Differential ABZ, 5-26 in, 5V out (7272)			
				7 Differential ABZ, 5-26 in, 5-26 out (4469)			
				8 Differential ABZ, 5-15 in, 5-15 out (4469)			
				9 Differential ABZ, 5-15 in, 5-15 out (4469)			
				D Dual isolated outputs, same as "6"			
				E Dual isolated outputs, same as "7"			
				F Dual isolated outputs, same as "8"			
				G Dual isolated outputs, same as "9"			
				H Same as "0" with Extended temp range			
				J Same as "1" with Extended temp range			
				K Same as "2" with Extended temp range			
				L Same as "4" with Extended temp range			
				M Same as "5" with Extended temp range			
				N Same as "6" with Extended temp range			
				P Same as "7" with Extended temp range			
				Q Same as "D" with Extended temp range			
				R Same as "E" with Extended temp range			

Accessory Kits:

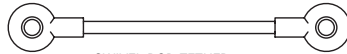
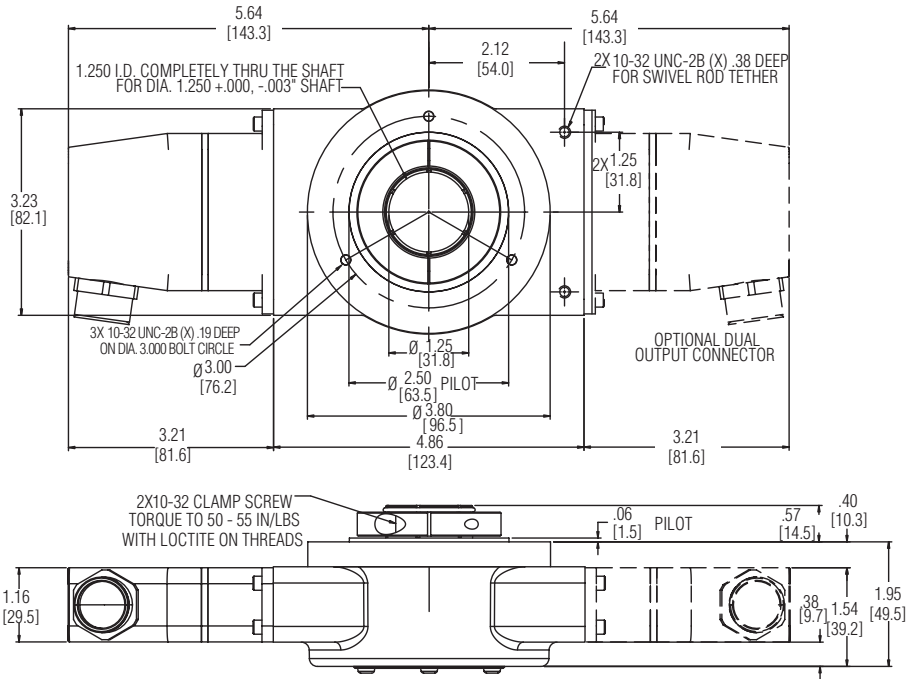
114573-0001	Tether Kit, 4.5" C-face single point with 3/8" bolt
114574-0001	Tether Kit for Standard AC motor fan covers with T-bolt
114575-0001	Tether Kit, 8.5" C-face single point with 1/2" bolt
756-042-01	Rod Tether, AC motor fan cover with T-bolts
756-043-01	Rod Tether Kit, 4.5" C Face with 3/8" bolt
756-044-01	Rod Tether Kit, 8.5" C Face with 1/2" bolt
114622-0001	Cover Kit, 56C face (single or dual output)
114623-0001	Cover Kit, Fan cover (single or dual output)

ELECTRICAL CONNECTIONS

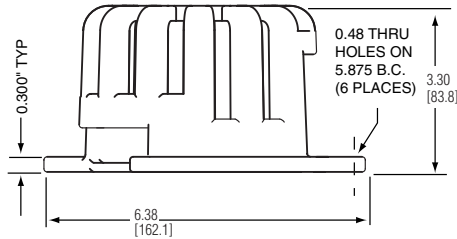
Signal	Connector Pin
Common	1
B	2
A	3
Z *	4
Case (optional)	5
Vcc 5-26 VDC	6
B̄	7
Ā	8
Z *	9
No Connection	10

* Index (Z) optional. See Ordering Information

DIMENSIONS inch [mm]



SWIVEL ROD TETHER



OPTIONAL SAFETY COVER(S)



Worldwide Brands: NorthStar™ • Acuro™ • Dynapar™ • Hengster™ • Harow™

DYNAPAR
INNOVATION - CUSTOMIZATION - DELIVERY

WWW.DYNAPAR.COM

Headquarters: 1675 Delany Road • Gurnee, IL 60031-1282 • USA

Customer Service:

Tel.: +1.800.873.8731
Fax: +1.847.662.4150
custserv@dynapar.com

Technical Support

Tel.: +1.800.234.8731
Fax: +1.847.662.4150
northstar.techsupport@dynapar.com

Application Assistance 1.800.234.8731 (847.662.6633)