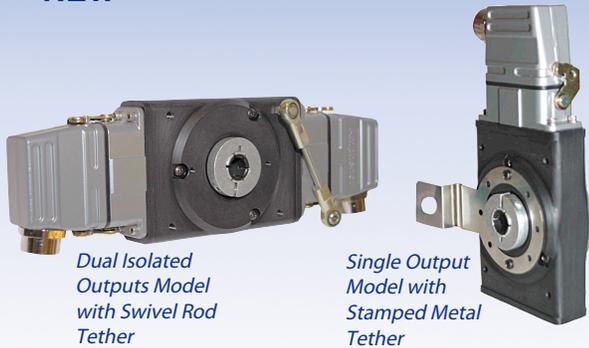


NEW



Dual Isolated Outputs Model with Swivel Rod Tether

Single Output Model with Stamped Metal Tether

Sealed Hollowshaft Encoder

DESCRIPTION

The NorthStar brand Series HSD35 Sealed Hollowshaft encoder is designed for easy installation on motor or machine shafts. Its hollowshaft design eliminates the need for a flexible shaft coupling, mounting bracket, flower pot, or flange adapter. This not only reduces the installation depth, but also lowers total cost.

The Series HSD35 Sealed Hollowshaft is equipped with an unbreakable disk that resists contamination and meets the demands of the most severe shock and vibration generating processes. Its floating shaft mount and spring tether eliminate bearing loads and flexible shaft couplings to eliminate wear and maintenance.

Series HSD35 has complete electrical protection from overvoltage, reverse voltage, and output short circuits. In addition, the Series HSD35 is not only electrically & thermally isolated, but also environmentally sealed with shaft seals at both ends.

Series HSD35™

- Hollow Shaft design eliminates mounting bracket, flexible shaft coupling, and installation labor
- Bore is electrically and thermally insulated
- Single or Dual output– Optional high current line driver
- Choice of Stamped Metal or Swivel Rod Tether
- High Resolution Unbreakable Disk
- Industrial Duty Latching Connector
- NEMA 4 / IP66 Rated
- Two Year Warranty

APPLICATIONS:

The HSD35 sealed hollow shaft encoder is ideal for motor and machine applications at resolutions to 2500 PPR. Choice of stamped metal or swivel rod tether provide flexible mounting for a wide variety of installations

- Vector Motor and Drive Feedback
- Converting Machinery
- Packaging Equipment
- Paper Processing

INDUSTRIES

Manufacturing, Assembly, Material Handling and any other where a precise, reliable feedback signal is required.

FEATURES/BENEFITS

Mechanical and Environmental

- Unbreakable code disk
- Flexible mounting
- Minimizes bearing loads
- Heavy duty shaft seals. Optional extra heavy duty rugged shaft seals.
- Sealed connector – No soldering
- Insulated from motor housing/shaft temperatures at or above 125°C
- Direct shaft size minimizes wobble caused by universal inserts

Electrical

- Overvoltage, reverse voltage, & output short circuit protection
- Noise immunity to EN50082-2
- Bore is electrically isolated from shaft currents
- Cast housing maximizes noise immunity and durability

Sealed Hollowshaft Encoder

Series HSD35™

Sealed Hollowshaft for Motor Mount... Lowers Total Installation Cost

SPECIFICATIONS*

STANDARD OPERATING CHARACTERISTICS

Code: Incremental
Resolution: 1 to 2500 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 shaft rotation viewing the shaft clamp end of the encoder
Quadrature Phasing: $90^\circ \pm 22.5^\circ$ electrical
Symmetry: $180^\circ \pm 18^\circ$ electrical
Index: $180^\circ \pm 18^\circ$ 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: (each output)
 4.5 min. to 26 VDC max. at 100 mA max., not including output loads
Outputs:
 7273 Open Collector: 30 VDC max., 40 mA sink max.
 7272 Push-Pull and Differential Line Driver: 40 mA sink or source
 4469 Differential Line Driver: 100 mA sink or source
Frequency Response: 100 kHz min.
Electrical Protection: Overvoltage, reverse voltage and output short circuit protected
Noise Immunity: Tested to EN50082-2 (Heavy Industrial) for Electro Static Discharge, Radio Frequency Interference, Electrical Fast Transients, Conducted and Magnetic Interference
Mating Connector:
 10 pin-style HA-10

ELECTRICAL CONNECTIONS

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

* Index (Z) optional. See Ordering Information

MECHANICAL

Bearing Life: 80,000 hours at 3600 RPM; 128,000 hours at 1800 RPM
Shaft Loading: 40 lbs. radial, 30 lbs. axial
Shaft Speed: 3600 RPM max. (*Important: see Operating Temperature derating for >1800 RPM*)
Shaft Bore Tolerance: Nominal $+0.0003^*/+0.0005^*$ ($+0.008/+0.013$ mm)
Mating Shaft Requirements:
 Runout: $\pm 0.025^*$ (± 0.63 mm) radial typical
 Endplay: $\pm 0.050^*$ (± 1.27 mm) axial typical
 Minimum Length: 1.25" (32 mm) recommended
 Maximum Length: 2.0" (51 mm) to fit inside cover
 Solid shaft recommended; keyway allowed; flatted shaft should not be used
Starting Torque: 5.0 oz-in max.
Running Torque: 4.5 oz.-in max.
Moment of Inertia:
 $\leq 5/8"$ bore: 7.9×10^{-4} oz-in-sec²
 $> 5/8"$ bore: 25.6×10^{-4} oz-in-sec²
Weight: 28 oz. max.Environmental

ENVIRONMENTAL

Operating Temperature:
 Standard: -40 to $+70^\circ\text{C}$
 Extended: 0 to $+100^\circ\text{C}$
 $\leq 5/8"$ bore: Derate 5°C per 1000 RPM above 1800 RPM
 $> 5/8"$ bore: Derate 10°C per 1000 RPM above 1800 RPM.
Storage Temperature: -40 to $+90^\circ\text{C}$
Shock: 50 G's for 11 milliseconds duration
Vibration: 5 to 2000 Hz at 20 G's
Humidity: to 98% without condensation
Enclosure Rating: NEMA4/IP66 (dust proof, washdown)

Replaces the Magcoder HS35M (shown below)



Contact Customer Service for appropriate replacement model. +1.800.873.8731

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NorthStar Brand HSD35 Data Sheet (9/05)

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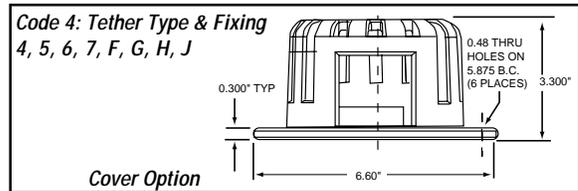
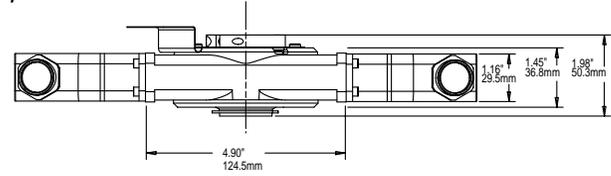
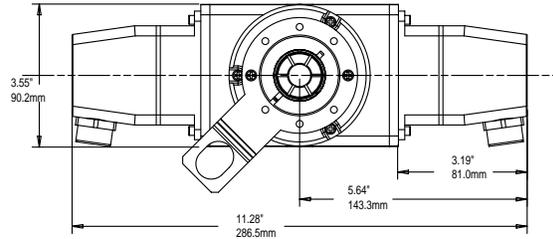
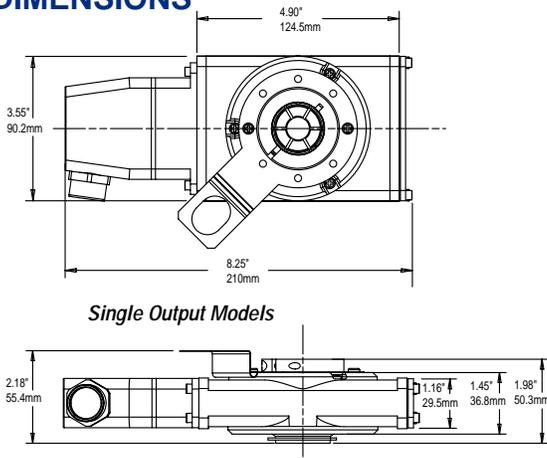


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Sealed Hollowshaft for Motor Mount... Lowers Total Installation Cost

DIMENSIONS



ORDERING INFORMATION

Code 1: Model	Code 2: PPR	Code 3: Bore	Code 4: Tether Type & Fixing	Code 5: Format	Code 6: Output	Code 7: Seal	Code 8: Options
HSD35	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ordering Information									
HSD35 Size 35 heavy-duty, sealed hollowshaft encoder with industrial latching connector (1/2" NPT)	0001	0300	0 6 mm	Stamped Metal	Swivel Rod	0 single ended, unidirectional (A)	0 5-26V in, 5-26V open collector out	0 Standard Shaft Seals	D LED Output Indicator
	0002	0360	1 1/4"	0 None - customer supplied	A Standard Tether	1 single ended, bidirectional (AB)	1 5-26V in, 5-26V open collector out w/ 2.2kΩ pullups	1 Rugged Shaft Seals	
	0003	0400	2 5/16"	1 Clearance hole for 3/8" bolt on 5.88" dia. bolt circle (to fit 4-1/2" NEMA C face)	B 56C Tether	2 single ended, bidirectional with index (ABZ)	2 5-26V in, 5-26V push-pull out		
	0005	0500	3 8 mm	2 Clearance hole for 1/2" bolt on 7.25" dia. bolt circle (to fit 8-1/2" NEMA C-face)	C 180C Tether	available when Code 6 is 3, 4, 5, 6, A or B:	available when Code 5 is 3, 4 or 5:		
	0006	0512	4 3/8"	3 Slotted hole for bolt on 2.5" to 4.0" radius (to fit standard AC motor fan cover slots)	D 56C Tether with protective guard	3 differential, bidirectional (A \bar{A} B \bar{B})	3 5-26V in, 5V line driver out (7272)		
	0007	0600	5 10 mm	Available when Code 5 is 0-4:	E 180C Tether with protective guard	available when Code 6 is 3, 4, 5, 6, A or B:	4 5-26V in, 5-26V line driver out (7272)		
	0010	0720	6 12 mm	4 Same as '1', w/ cover kit	Available when Code 5 is 5:	4 differential, bidirectional with index (A \bar{A} B \bar{B} Z \bar{Z})	5 5-26V in, 5 V Differential Line Driver out (4469)		
	0012	0800	7 1/2"	5 Same as '3', w/ cover kit	H Same as 'A' w/ dual cover kit	available when Code 6 is 3, 4, 5, 6, A or B:	6 5-15V in, 5-15 V Differential Line Driver out (4469)		
	0025	0900	8 5/8"	6 Same as '1' w/ dual cover kit	J Same as 'B' w/ dual cover kit	5 Dual isolated differential, bi- directional w/index (A \bar{A} B \bar{B} Z \bar{Z})	A same as '3' with high temp. to 100°C		
	0050	1000	9 15 mm	7 Same as '3' w/ dual cover kit			B same as '4' with high temp. to 100°C		

109473-0001	Stamped Tether kit (clearance hole for 3/8" bolt on 5.88" dia. bolt circle)					110533-0001 Cover Kit, 56C face		
109473-0002	Stamped Tether kit (clearance hole for 1/2" bolt on 7.25" dia. bolt circle)					110533-0002 Cover Kit, fan cover		
109473-0003	Stamped Tether kit (slotted hole for bolt on 2.5" to 4.0" radius)					110533-0003 Dual Cover Kit, 56C face		
112121-0001	Spare Hub Clamp (Bore size Code 3: 0 - 9)					110533-0004 Dual Cover Kit, fan cover		
112121-0002	Spare Hub Clamp (Bore size Code 3: A - H)					106-764 Spare Mating Connector		
756-042-01	Rod tether kit, standard							
756-043-01	Rod tether kit, 56C							
756-044-01	Rod tether kit, 180C							

Worldwide Brands:

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Harowe™

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More Reliable. Our experience with more than 25,000 customers has taught us to design controllers that are reliable and durable, with quality standards that meet six sigma requirements.

For additional information or a full-line catalog, contact DICG Customer Service or visit our web site.

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