

SERIES HD25

NorthStar™ brand

Harsh Duty Optical Encoder

Key Features

- Size 25 Heavy-Duty Encoder with Single or Dual Isolated Outputs
- ATEX Certification Available for Intrinsically Safe Applications
- Unbreakable Code Disc up to 5000PPR
- Special Housing and Seals for IP67 Rating
- Anodized Aluminum, Stainless Steel, or Nickel Plated Housing



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental

Resolution: 1 to 5000 PPR (pulses/revolution)

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 625PPR: $90^\circ \pm 15^\circ$ electrical; For resolutions over 625 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: 5-26VDC, 5-15VDC dependant on output type. 50 mA max., not including output loads. ATEX: 5VDC, 7-26VDC

Outputs: 2N2222, 4469. ET7272, ET7273

Frequency Response: 125 kHz (data & index)

Termination: 6, 7, or 10 pin MS Connector; 18" cable exit w/seal

Mating Connector:

6 pin, style MS3106A-14S-6S (MCN-N4);

7 pin, style MS3106A-16S-1S (MCN-N5);

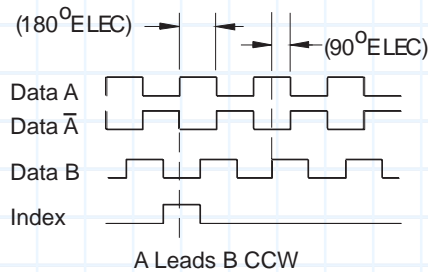
10 pin, style MS3106A-18-1S (MCN-N6)

10 pin, NEMA 4 style (604505 & 604506)

DATA AND INDEX

Not all complements shown.

A shown for reference



ENVIRONMENTAL

Operating Temperature: -40 to 100°C

Operating Temperature ATEX: -40 to 80°C

Storage temperature: -40 to 100°C

Shock: 50G's for 11msec duration

Vibration: 5 to 2000Hz @ 20 G's

Humidity: 100%

Enclosure Rating: IP67

MECHANICAL

Shaft Material: 303 stainless steel (passivated)

Shaft Speed: 6,000 RPM, maximum

Shaft loading: Up to 100 lbs axial and radial

Starting torque: 2.5 in-oz. maximum (at 25°C)

Bearings: 5200 ZZ double row

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 Electroless Nickel finish and Stainless Steel.

Disc material: Metal or plastic

Weight: 14 ounces, typical

ELECTRICAL CONNECTIONS

6, 7 & 10 Pin MS, 5 & 8 Pin M12, Connectors and Cables

Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. 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 Drv w/o ldx		Cable # 1400635- or 109209- (NEMA4) 10 Pin Dif Line Drv w/ldx		Cable # 112859-M12, 5 Pin Single Ended		Cable # 112860-M12, 8 Pin Dif		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Wire Color
Sig. A	E	BRN	A	BRN	A	BRN	A	BRN	4	BLK	1	BRN	GREEN
Sig. B	D	ORG	B	ORG	B	ORG	B	ORG	2	WHT	4	ORG	BLUE
Sig. Z	C	YEL	C	YEL	—	—	C	YEL	5	GRY	6	YEL	ORANGE
Power +V	B	RED	D	RED	D	RED	D	RED	1	BRN	2	RED	RED
Com	A	BLK	F	BLK	F	BLK	F	BLK	3	BLU	7	BLK	BLACK
Case	—	—	G	GRN	G	GRN	G	GRN	—	—	—	—	WHITE
N/C	F	—	E	—	—	—	E	—	—	—	—	—	—
Sig. A	—	—	—	—	C	BRN/WHT	H	BRN/WHT	—	—	3	BRN/WHT	VIOLET
Sig. B	—	—	—	—	E	ORG/WHT	I	ORG/WHT	—	—	5	ORG/WHT	BROWN
Sig. Z	—	—	—	—	—	—	J	YEL/WHT	—	—	8	YEL/WHT	YELLOW

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12. For watertight applications, use NEMA4 10 pin cable & connector 109209-XXXX.

Ordering Information

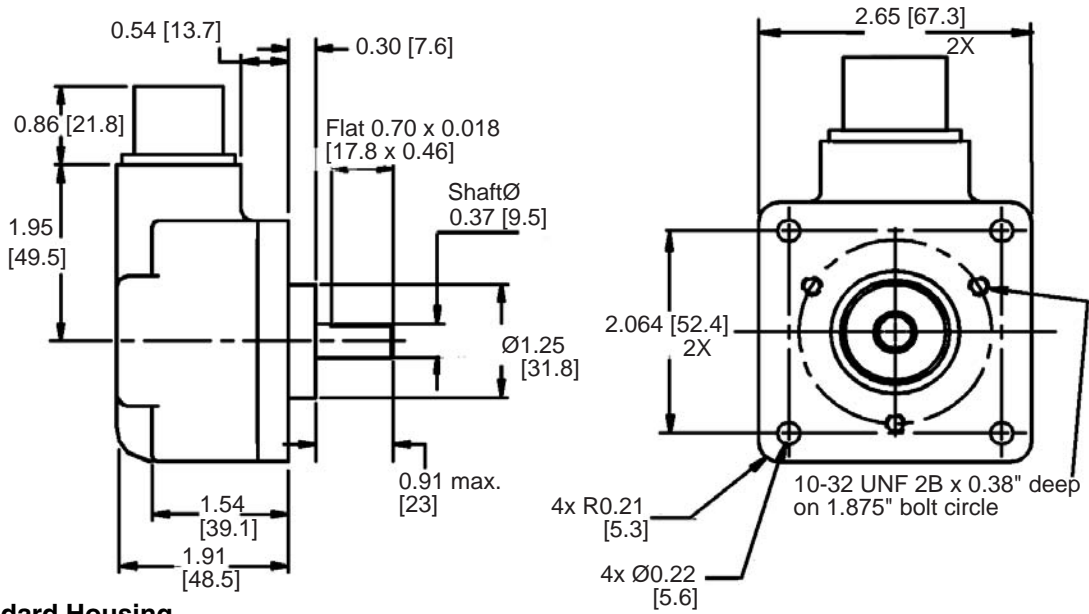
To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Shaft	Code 4: Electrical	Code 5: Termination	Code 6: Options
HD25 □	□□□□	□	□	□	□
Ordering Information					
Size 25 Extreme Heavy Duty Encoder 1 Unidirectional 2 Bidirectional 3 Bidirectional with Index	0001 0625 0024 0720 0025 0900 0035 1000 0040 1024 0050 1200 0060 1250 0100 1440 0120 1524 0192 1600 0200 1800 0240 2000 0250 2048 0256 2500 0300 2540 0360 2600 0500 3600 0512 4096 0600 5000	0 3/8" Dia. Shaft with flat 4 10mm Dia. Shaft, with flat 6 12mm Dia. Shaft 7 Same as option 0 with 4 hole 2.00" B.C.	0 5-26V in, 5-26V Open Collector out (7273) 2 5-26V in, 5-26V Push-Pull out F 5-26V in, 5-26V Open Collector out (2222) G 5-26V in, 5-26V Open Collector out with 2.2 kΩ Pullups (2222) Available when: Code 1 is 1, 2 and Code 5 is 3,5 or D through P, or Code 1 is 3 and code 5 is 5 or D through P: 3 5-26V in, 5-26V Differential Line Driver out (7272) 4 5-26V in, 5V Differential Line Driver out (7272) 6 5-15V in, 5-15V Differential Line Driver out (4469)	1 6 Pin Connector 3 7 Pin Connector 5 10 Pin Connector 9 5 Pin M12 Connector A 8 Pin M12 Connector D 18" Sealed Cable E 3' Sealed Cable F 6' Sealed Cable G 10' Sealed Cable H 15' Sealed Cable P 5m Sealed Cable	0 No Options 1 Nickel Finish Housing 2 Stainless Steel Housing 3 Redundant Outputs (Dual Connector Housing). See † NOTE 4 Nickel Finish Housing with Redundant Outputs. See † NOTE 5 Stainless Steel Housing with Redundant Outputs. See † NOTE A Same as "0" w/ ATEX Type 1 B Same as "1" w/ ATEX Type 1 C Same as "2" w/ ATEX Type 1 D Same as "3" w/ ATEX Type 1. See †NOTE E Same as "4" w/ ATEX Type 1. See †NOTE F Same as "5" w/ ATEX Type 1. See †NOTE Available when Code 4 is 0-3, F or G G Same as "0" w/ ATEX Type 2 H Same as "1" w/ ATEX Type 2 I Same as "2" w/ ATEX Type 2 J Same as "3" w/ ATEX Type 2. See †NOTE K Same as "4" w/ ATEX Type 2. See †NOTE L Same as "5" w/ ATEX Type 2. See †NOTE Available when Code 4 is 4 M Same as "0" w/ ATEX Type 3 N Same as "1" w/ ATEX Type 3 O Same as "2" w/ ATEX Type 3 P Same as "3" w/ ATEX Type 3. See †NOTE Q Same as "4" w/ ATEX Type 3. See †NOTE R Same as "5" w/ ATEX Type 3. See †NOTE Available when Code 4 is 6: S Same as 0, w/ATEX Type 4 T Same as 1, w/ATEX Type 4 U Same as 2, w/ATEX Type 4 V Same as 3, w/ATEX Type 4. See †NOTE W Same as 4, w/ATEX Type 4. See †NOTE Y Same as 5, w/ATEX Type 4. See †NOTE
<p>Note: 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</p> <p>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, NEMA 4 style (604505 & 604506)</p>					
<p>*Note: Available ATEX Certified Options ATEX Type 1: ATEX Certified; 5V in, 5V out only ATEX Type 2: ATEX Certified; 7-26V in, 7-26V out ATEX Type 3: ATEX Certified; 7-26V in, 5V out ATEX Type 4: ATEX Certified; 5-15V in, 5-15V out NOTE: ATEX voltages replace those shown in Code 4.</p> <p>† NOTE: Simultaneous use of redundant outputs may void ATEX certification. Consult factory for details.</p>					

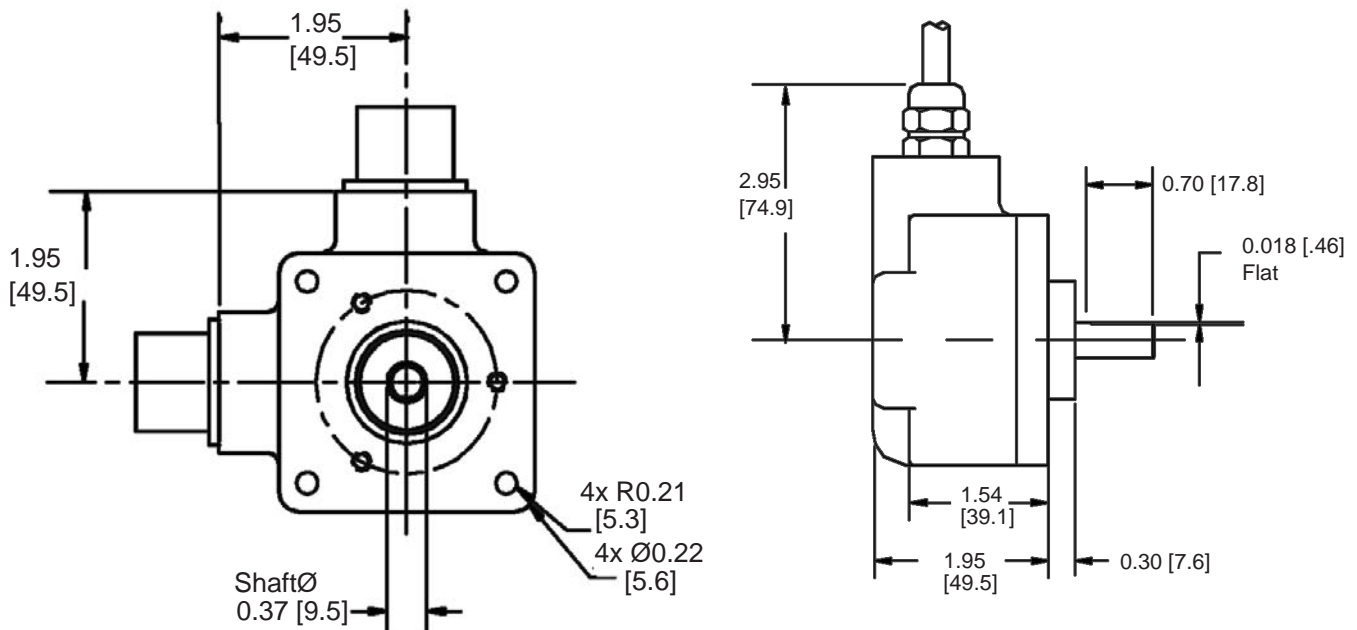
SERIES HD25



DIMENSIONS inches [mm]

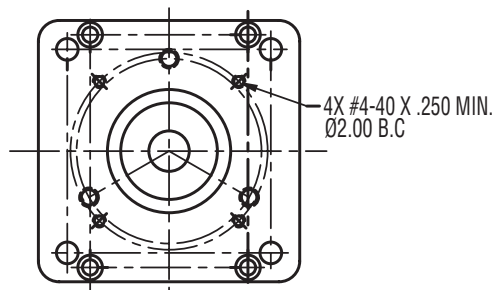


Standard Housing



Dual Redundant Outputs

Cable Exit



With 4 hole 2.00" B.C.

HEAVY DUTY

NorthStar™ brand



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