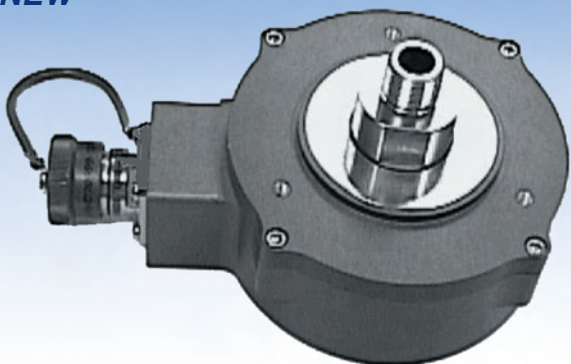


NEW



### Harsh- Duty Optical Encoder - DrawWorks

#### DESCRIPTION

The DWD38 Harsh-Duty Optical Encoder is an Industrial Hollow Shaft design that operates reliably from  $-40$  to  $+100^{\circ}\text{C}$ . Its Hard Anodized finish exceeds IP66/IP67 and NEMA 6 enclosure requirements.

The DWD38 is a preferred choice as a DrawWorks encoder by the Oil Field industry and is also commonly used in high shock and vibration environments such as Food Processing, Material Handling and Packaging Equipment applications.

Extremely robust, the DWD38 encoder is also available in Stainless Steel to meet NEMA 4x and 6P requirements. A unique labyrinth double-sealed housing allows operation when regulatory washdown and high pressure steam or caustic chemicals are required.

It is also available in an Intrinsically Safe version, certified to ATEX EEx ia IIB T4, when used with the appropriate IS Barrier.

## Series DWD38

- *Single or Dual output - NAMUR available*
- *Well suited for DrawWorks/oil field application*
- *ATEX Certification available for Intrinsically Safe application*
- *High Resolution Unbreakable Disk*
- *Industrial Duty Connector*
- *NEMA 4X / IP67 Rated*
- *Nickel or Stainless Steel Housing available*
- *Two Year Warranty*

#### APPLICATIONS:

The DWD38 Harsh-Duty Optical Encoder is ideal for DrawWorks application and corrosive environments that demand heavy washdown protection. This compact, special-duty encoder is designed to exceed IP66/IP67 and NEMA 6 enclosure requirements with a PPR range through 5000. ATEX certification is also available for intrinsically safe applications.

- DrawWorks and other Oilfield
- Converting Machinery
- Material Handling
- Packaging Equipment
- Pickling Equipment
- Processing Equipment

#### INDUSTRIES

Chemical, Food & Beverage, Oil & Gas, Paper, Steel and any other where a precise encoder is needed to operate in very harsh environments.

#### FEATURES/BENEFITS

Mechanical and Environmental

- Unbreakable code disk
- Flexible mounting
- Heavy duty shaft seals
- Sealed connector

Electrical

- Cast housing maximizes noise immunity and durability
- NAMUR outputs and ATEX certification available

## Harsh-Duty Optical Encoder... Ideal for DrawWorks Application

### 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 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

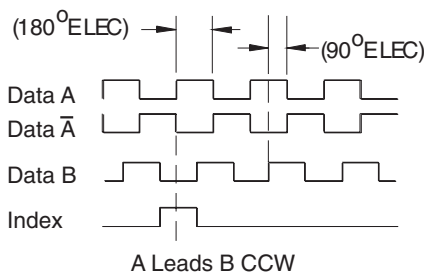
For resolutions over 1024PPR:  $180^\circ \pm 25^\circ$  electrical

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

#### DATA AND INDEX

Not all complements shown.

$\bar{A}$  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:** NEMA 4X, NEMA 6, IP66, IP67. NEMA 6P upon request

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12.

#### ELECTRICAL

**Input Power:** 5-26VDC; 50 mA max., not including output loads. ATEX: 5VDC, 5-26VDC

**Outputs:** 2N2222, 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)

#### MECHANICAL

**Shaft Material:** 300 series stainless steel

**Bore loading:** Up to 20 lbs axial and radial

**Bore runout:** 0.0005 TIR at midpoint

**Starting/Running torque:** 4.5/4.0 in.-oz. maximum (at 25°C)

**Bearings:** 61806-ZZ

**Bearing life:**  $5 \times 10^8$  revs at rated shaft Loading,  $5 \times 10^{11}$  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 mylar

**Weight:** 35 ounces, typical

\* Specifications are for base models with standard features only unless otherwise noted. Specifications subject to change without notice in accordance with our DBS policy of continuous improvement. All product and brand names are trademarks of their respective owners. All rights reserved.

#### 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. 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 Idx		Cable #1400635-10 Pin Dif Line Drv w/Idx		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Wire Color
Sig. A	E	BRN	A	BRN	A	BRN	A	BRN	GREEN
Sig. B	D	ORG	B	ORG	B	ORG	B	ORG	BLUE
Sig. Z	C	YEL	C	YEL	—	—	C	YEL	ORANGE
Power +V	B	RED	D	RED	D	RED	D	RED	RED
Com	A	BLK	F	BLK	F	BLK	F	BLK	BLACK
Case	—	—	G	GRN	G	GRN	G	GRN	WHITE
N/C	F	—	E	—	—	—	E	—	—
Sig. A	—	—	—	—	C	BRN/WHT	H	BRN/WHT	VIOLET
Sig. B	—	—	—	—	E	ORG/WHT	I	ORG/WHT	BROWN
Sig. Z	—	—	—	—	—	—	J	YEL/WHT	YELLOW

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12.



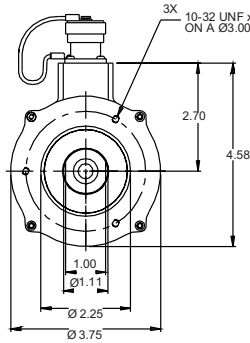
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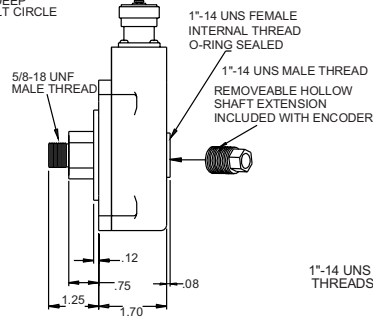
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**Harsh-Duty Optical Encoder... Ideal for DrawWorks Application**

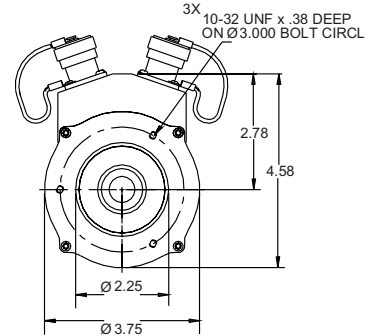
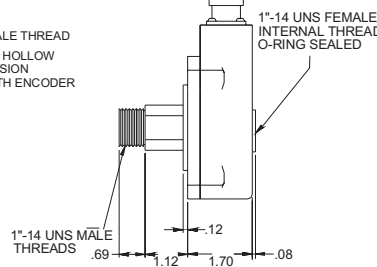
**DIMENSIONS** inches [mm]



**With Convertable Shaft**



**With Non-Convertible Shaft**



**Redundant Version**

**ORDERING INFORMATION**

Code 1: Model	Code 2: PPR	Code 3: Shaft	Code 4: Electrical	Code 5: Termination	Code 6: Options
<b>DWD38</b> <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					
Size 38 Harsh-Duty Optical Encoder - DrawWorks  1 Unidirectional 2 Bidirectional 3 Bidirectional with Index	0015 0032 0050 0060 0100 0200 0240 0250 0500 0512 0600 1000 1024 1200 2000 2048 4000 4096 5000	0 1"-14 UNS x 5/8" - 18 UNF Threaded Shaft  1 1"-14 UNS Threaded Shaft  2 1"-14 UNS x 5/8" - 18 UNF Field Replaceable Threaded Shaft	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 2 is 0015 N NAMUR 15 mA Maximum  available when: Code 1 is 1,2 and Code 5 is 3 through Z, or Code 1 is 3 and Code 5 is 5 through Z: 3 5-26V in, 5-26V Differential Line Driver out (7272) 4 5-26V in, 5V Differential Line Driver out (7272)	1 6 Pin Connector 3 7 Pin Connector 5 10 Pin Connector D 18" Sealed Cable E 3' Sealed Cable F 6' Sealed Cable G 10' Sealed Cable H 15' Sealed Cable Z 30m 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
			<p>*Note: Available ATEX Certified Options  <b>ATEX Type 1:</b> ATEX Certified; 5V in, 5V out only  <b>ATEX Type 2:</b> ATEX Certified; 7-26V in, 7-26V out  <b>ATEX Type 3:</b> ATEX Certified; 7-26V in, 5V out  <i>NOTE: When selecting ATEX models, ATEX voltages  replace those shown in Code 4.</i></p>		
			<p>† NOTE: Simultaneous use of  redundant outputs may void  ATEX certification. Consult  factory for details.</p>		



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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.

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