

**Encoder Technology's HD2.0 Heavy Duty Industrial Encoder** is a compact version of the rugged HD2.5. This robust unit incorporates all the features of the HD2.5 including cast aluminum housing, stainless steel shaft, 100# load rated industrial ball bearings, mil spec sealed connector, all metal code disk, single monolithic phased array opto IC with integrated commutation signals, reverse voltage, ESD and EMI protection, single IR light source, and no internal electrical bias or mechanical adjustments. The HD2.0 is ideally suited for machine tool, process control, robotics, textile, pulp and paper factory automation, elevator control, and many other industrial applications. Covered by a three year warranty (one year for bearings) the HD2.0 provides quality, reliability and value available only through Encoder Technology's proprietary design and manufacturing capabilities.

## HD2.0 Heavy Duty Optical Encoder

for Harsh Industrial Environments with Space Limitations



### Technical Specifications

#### Mechanical

Shaft diameter	As specified
Flat on shaft	0.60 long x 0.018 deep
Shaft loading	Up to 100 lbs axial and radial
Shaft runout	0.0005 TIR at midpoint
Shaft	303 stainless steel (passivated)
Starting torque at 25°C	Without shaft seal: 1.0 in-oz. maximum With optional shaft seal: 2.5 in-oz. maximum
Bearings	5200 ZZ double row
Bearing life	5 x 10 <sup>8</sup> revs at rated shaft Loading, 5 x 10 <sup>11</sup> revs at 10% of rated shaft loading. (manufacturers' specs)
Housing and cover	Die Cast Aluminum
Disc material	Metal or mylar
Moment of inertia	1.5 x 10 <sup>-4</sup> oz-in-sec <sup>2</sup>
Weight	11 ounces, typical

#### Electrical

Code	Incremental
Cycles per Revolution	See "Current Resolutions" list
Supply voltage	See ordering information
Current requirements	50M (no load condition)
Output format	Channels A and B In quadrature ± 15° electrical
Output format options	Index, complementary outputs, and commutation signals on ET7272, ET7273 only 2N2222, ET7272, ET7273
Output IC's	LED
Illumination	125 kHz (data and index)
Frequency response	See Table 1
Output termination	Reverse over voltage and output short circuit
Circuit Protection	

#### Environmental

Operating temp	-40 to 100°C
Operating temp <b>ATEX</b>	-40 to 80°C
Storage temperature	-40 to 100°C
Shock	50G's for 11msec duration
Vibration	5 to 2000Hz @ 20 G's
Humidity	98%RH without condensation
NEMA 4 and 13	When ordered with shaft seal

The above specifications are subject to change without notice.  
Dimensions shown in inches.

### Ordering Information - This model series is available in an intrinsically safe version Certified to ATEX EEx ia IIB T4

Example part number:

HD2.0	D	B	-	37F		-	SS	-	2000	ABZ	C	-	72	-	S18	-	28
	1.	2.		3.	4.		5.		6.	7.	8.		9.		10.		11.

#### 1. Housing Configuration

Square Flange (standard)	D
Servo Mount (ø2.00)	E

#### 2. Pilot Configuration

1.181 in. female (shaft seal not available)	A
1.25 in. (standard)	B

#### 3. Shaft Diameter

0.2497/0.2495	25
0.3747/0.3745 (standard)	37F
0.3935/0.3942 (10mm)	39
"F" = flat on shaft	i.e. 37F

#### 4. Face Mount

If not required	(blank)
Or specify	F5, F12, or F28

#### 5. Shaft Seal/Sealed Bearing

Shaft seal (standard)	SS
Sealed bearing	SB
If not required (shielded)	(blank)

#### 6. Standard Resolutions

Many resolutions from 1 to 16384. See "Current Resolutions" list. Others by special order. Consult the factory.

#### 7. Output Channels

Single	A
Dual quadrature	AB
Dual with index (standard)	ABZ
Commutation signals available.	
Contact the factory.	

#### 8. Complements

With Complements	C
(available on Outputs 72 and 73 only)	
Without complements	(blank)

#### 9. Output ICs

2N2222 open collector (5 to 28V)	220C
2N2222 with pull-ups	221K or 222K

#### Differential line drivers

ET7272 (5 to 28V)	72
ET7273 open collector (5 to 28V)	73

#### 10. Output Termination

MS3102R14S-6P (6 pin)	S14
MS3102R16S-1P (7pin)	S16
MS3102E18-1P (10 pin)	S18
Side Cable with seal (18" stdnd)	SCS18

#### 11. Voltage - standard

5 to 28Vdc	28
5 to 28Vdc in, 5Vdc out (ET7272 only)	28/5

#### 12. Voltage - ATEX

5Vdc	5
7 to 28Vdc	28
5 to 28Vdc in, 5Vdc out (ET7272 only)	28/5



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#### Customer Service:

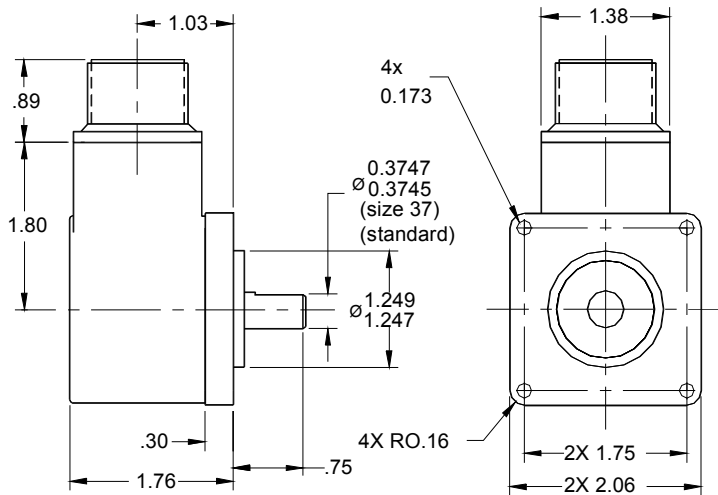
Tel.: +1.800.873.8731  
Fax: +1.847.662.4150  
custserv@dynapar.com

#### Technical Support

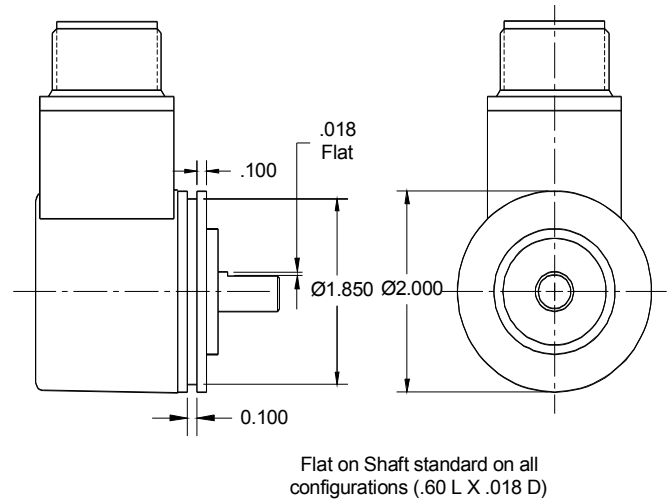
Tel.: +1.800.234.8731  
Fax: +1.847.782.5277  
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### Outline Dimensions Standard 'D' Housing

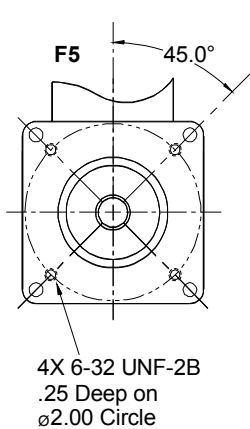


### Servo Mount "E" Housing

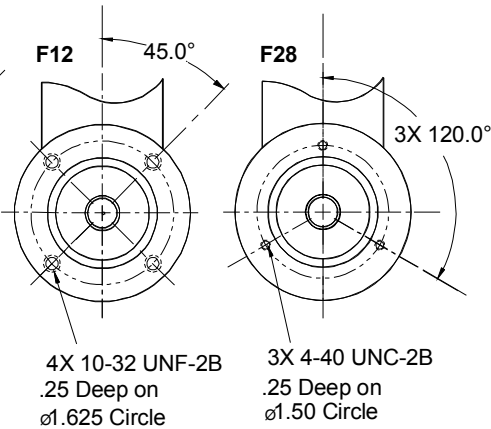


### Optional Face Mounts

#### D Flange only

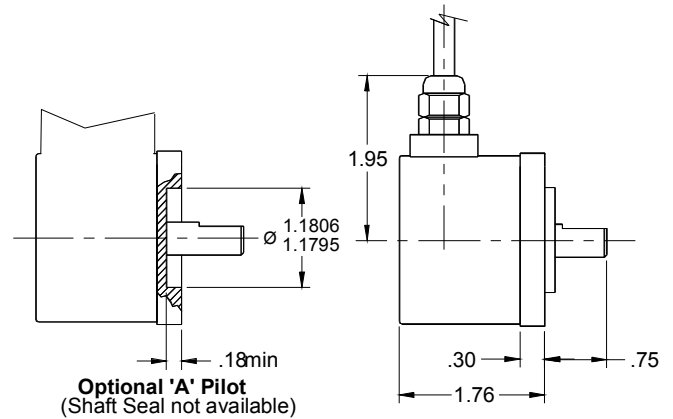


#### D or E Flanges



### Optional Pilot, Termination Cable with Seal, & Shaft Sizes

#### See Shaft Diameter Options



### Table 1: Output Terminations (Pinout)

Connector Pins			Output Channels			Cable Termination	
M14	M16	M18	ABZ	ABC	ABZC	Wire Color	Function
E	A	A	A	A	A	Green	A
D	B	B	B	B	B	Blue	B
C	C	C	Z	A <sup>Bar</sup>	Z	Orange	Z
B	D	D	+V	+V	+V	Red	+Vdc
F	E	E	N/C	B <sup>Bar</sup>	N/C	Black	Ground
A	F	F	Circuit	Ground		Violet	A <sup>Bar</sup>
	G	G	Case	Ground		Brown	B <sup>Bar</sup>
	H	H	N/C	N/C	A <sup>Bar</sup>	Yellow	Z <sup>Bar</sup>
	I	I	N/C	N/C	B <sup>Bar</sup>	White	Case Gnd
	J	J	N/C	N/C	Z <sup>Bar</sup>		

Case Ground not available on ATEX Certified Units

### Output Format

