



## Type 2MCEX-H

- Smallest Ex-Proof encoder available
- 24 mm (0.945") Servo mount
- Hollow Shaft  $\varnothing$  2 mm to  $\varnothing$ 1/8 inch
- Resolution up to 5,000 ppr
- IP 64 (IP 67 option)
- "Seawater-proof" 22 micron Anodization
- ATEX certified EX II 2 G/D EEx d IIC T6

### Electrical Specifications

<b>Code:</b>	Incremental
<b>Resolution:</b>	1 to 5,000 ppr (pulses per revolution)
<b>Supply Voltage:</b>	4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load)
<b>Output Voltage:</b>	Low: 500 mV max. at 10 mA High: (Vin - 0.6) at -10 mA (Vin - 1.3) at -25 mA
<b>Output Current:</b>	20 mA max. load per output channel
<b>Frequency Response:</b>	200 kHz max.
<b>Output Format:</b>	Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs
<b>Phase Sense:</b>	A leads B clockwise (CW) from the mounting end of the encoder
<b>Index:</b>	Gated with Channels A and B high
<b>Accuracy:</b>	+/- 0.8 arc-min.
<b>Output:</b>	ASIC Push-pull and Differential
<b>Electrical Protection:</b>	Reverse polarity and output short circuit protected
<b>Noise Immunity:</b>	Tested to EN61000-6-2 : 2005 (industrial environments) Electromagnetic compatibility (EMC) and EN 61000-6-3 : 2007 (residential, commercial, and light- industrial environments) for Electromagnetic compatibility (EMC)

### Mechanical Specifications

<b>Material:</b>	Housing: Aluminum / Brass Cap: Aluminum Hollow Shaft: Brass
<b>Weight:</b>	Encoder: Approx. 80 gr (44.1 oz) Cable: 50 gr / meter (1.76 oz / meter)
<b>Bearing Life:</b>	$> 1.9 \times 10^{10}$ revolutions at rated load
<b>Shaft Speed:</b>	12,000 rpm continuous (max.) IP 64 3,000 rpm continuous (max.) IP 67
<b>Starting Torque:</b>	$< 0.001$ Nm (0.14 oz-in) at 25° C
<b>Mass Moment of Inertia:</b>	0.2 gcm <sup>2</sup> (2.8 x 10 <sup>-6</sup> oz-in-sec <sup>2</sup> )
<b>Shaft Loads:</b>	Axial 10 N (2.25 lbs) max. Radial 10 N (2.25 lbs) max.

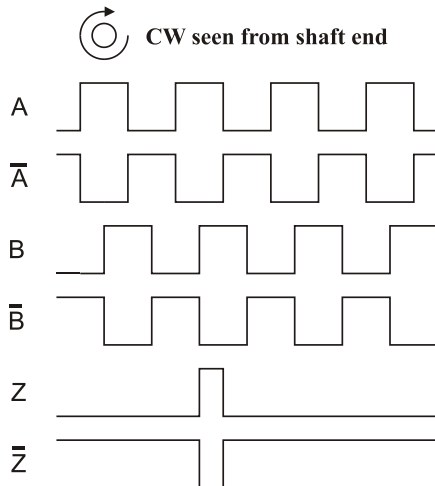
### Environmental Specifications

<b>Operating Temp.:</b>	-40° to +70° C
<b>Storage Temp.:</b>	-40° to +85° C
<b>Shock:</b>	100 G @ 11 ms
<b>Vibration:</b>	10-2000 Hz @ 10 G
<b>Bump:</b>	10 G @ 16 ms (1000 x 3 axis)
<b>Humidity:</b>	98 % RH without condensation
<b>Enclosure Rating:</b>	IP 64 / Nema 4 (approx.) IP 67 / Nema 6 (approx.) option
<b>Certification</b>	ATEX EX II 2 G/D EEx d IIC T6 North America Class I Div. 1 (See website for Certifications)

### Connection Options

<b>Cable:</b>	8 leads (0.05 mm <sup>2</sup> , 30 AWG) twisted pairs; shielded; halogen free
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## Output waveform



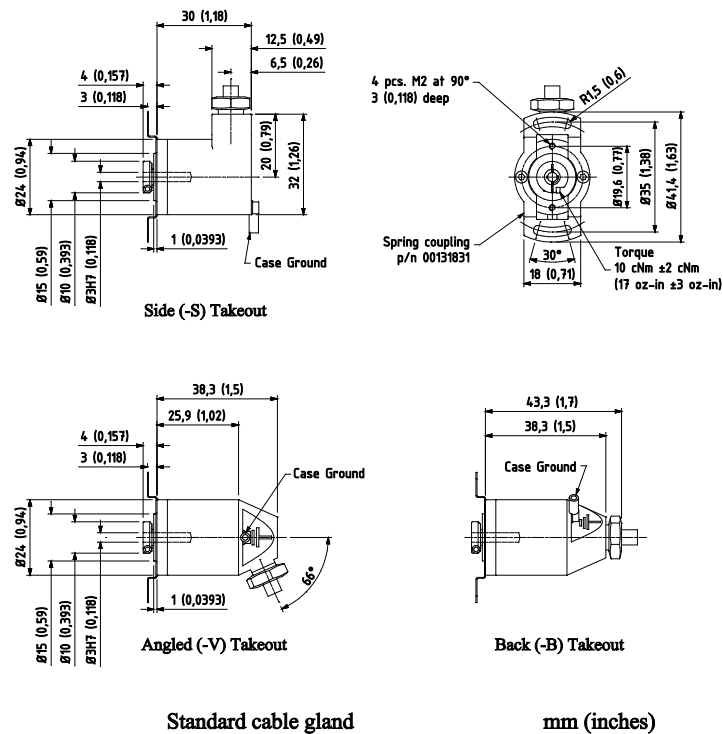
Channel tolerance       $180^\circ \pm 36^\circ$   
 Phase difference tolerance     $90^\circ \pm 18^\circ$   
 Z channel tolerance       $90^\circ \pm 18^\circ$

## Disk Resolutions (pulses per revolution)

1	32	<b>125</b>	600	<b>2500</b>
2	36	<b>160</b>	635	3000
5	40	180	720	<b>3600</b>
6	50	200	800	4000
8	60	<b>256</b>	<b>1000</b>	4096
10	64	<b>300</b>	<b>1024</b>	<b>5000</b>
15	75	<b>360</b>	1131	
16	80	400	1250	
20	90	455	1500	
25	<b>100</b>	<b>500</b>	<b>2000</b>	
30	120	512	2048	

**Bold – currently available;** all others are under construction

## Mechanical Dimensions



## Output Terminations

Standard Cable		
	Standard Output	Differential Output
Channel	Wire Color	Wire Color
A	Pink	Pink
A -	Gray*	Gray
B	Green	Green
B -	Yellow*	Yellow
Z	White	White
Z -	Brown*	Brown
Vcc	Red	Red
Ground	Blue	Blue

\* Gray, Yellow, and Brown are internally connected as Ground

## Ordering Code

Example: 2MCEX - H - 1024 - AL - D - 3 - 15 - 67 - 01 - S - A

### Type

