

## 2CEX-H

- Hollow Shaft Encoder - Ø 68 mm
- Hollow Shaft: Ø10 mm to Ø16 mm
- Resolutions up to 10,000 ppr
- Non-removable end cap - delivered with MIL Connector
- ATEX, EAC Ex certified

### Electrical Specifications

<b>Code:</b>	Incremental
<b>Resolution:</b>	1 to 10,000 ppr (pulses per revolution)
<b>Supply Voltage:</b>	4.5 Vdc min. to 30 Vdc max. (45 mA max. - no load) **
<b>Output Voltage:</b>	Low: 500 mV max. at 10 mA High: (V <sub>in</sub> - 0.6) at -10 mA (V <sub>in</sub> - 1.3) at -25 mA
<b>Output Current:</b>	30 mA max. load per output channel **
<b>Frequency Response:</b>	300 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>Outputs:</b>	ASIC Push-pull and Differential OL7272 Push-pull and Differential Line Driver 26C31 Differential Line Driver 5V output (with 5V input)
<b>Electrical Protection:</b>	Output short circuit protected Reverse polarity protected
<b>Noise Immunity:</b>	EN61000-6-2: 2005 (industrial environments) Electromagnetic compatibility (EMC) EN 61000-6-3: 2007 (residential, commercial, and light-industrial environments) for Electromagnetic compatibility (EMC)

\*\*= It is recommended user not to combine max. Value for all 3 parameters

### Mechanical Specifications

<b>Material:</b>	Housing: Aluminum Cap: Aluminum Hollow Shaft: Stainless Steel (AISI 303)
<b>Weight:</b>	Encoder: Approx. 540 gr (19 oz) Cable: 50 gr / meter (1.76 oz / meter)
<b>Bearing Life:</b>	> 1.9 x 10 <sup>10</sup> revolutions at rated load
<b>Hollow Shaft Speed:</b>	3,000 rpm continuous (max.) IP 67
<b>Starting Torque:</b>	< 0.1 Nm (14.16 oz-in) at 25° C IP 67
<b>Mass Moment of Inertia:</b>	50 gcm <sup>2</sup> (7.08 x 10 <sup>-4</sup> oz-in-sec <sup>2</sup> )
<b>Hollow Shaft Loads:</b>	Axial: 50 N (11.25 lbs) max. Radial: 100 N (22.50 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 G / 10-2000 Hz
<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 65 / Nema 4 (approx.) IP 66 / Nema 6 (approx.) IP 67 / Nema 6 (approx.) option

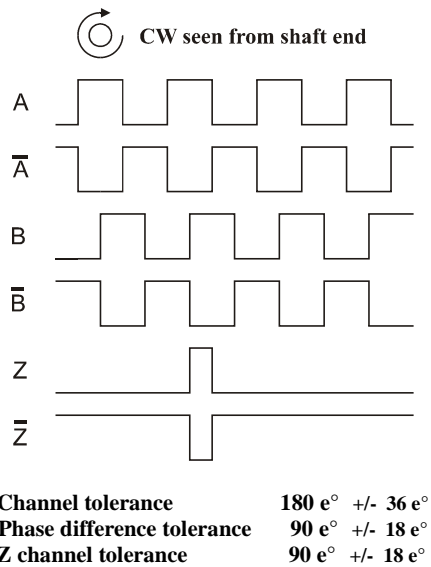
### Connection Options

<b>Connectors:</b>	6-pin Mil radial (optional cap) 7-pin Mil radial (optional cap) 10-pin Mil radial (optional cap) See Table 2.
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## Certifications

<b>ATEX:</b>	Certificate No.: ITS 09 ATEX 46134X II 3G Ex nA IIC T4 Gc, II 3D Ex tc IIIC T100°C Dc, -40°C<T.amb<+70°C
<b>EAC Ex:</b>	НАННО «ЦСВЭ» No. EAЭС RU C-DK.AA87.B.00266/19 2Ex nA IIC T4 Gc X, Ex tc IIIC T100°C Dc X -40°C<T.amb<+70°C

## Output waveform



## Table 1. Disk Resolutions (pulses per revolution)

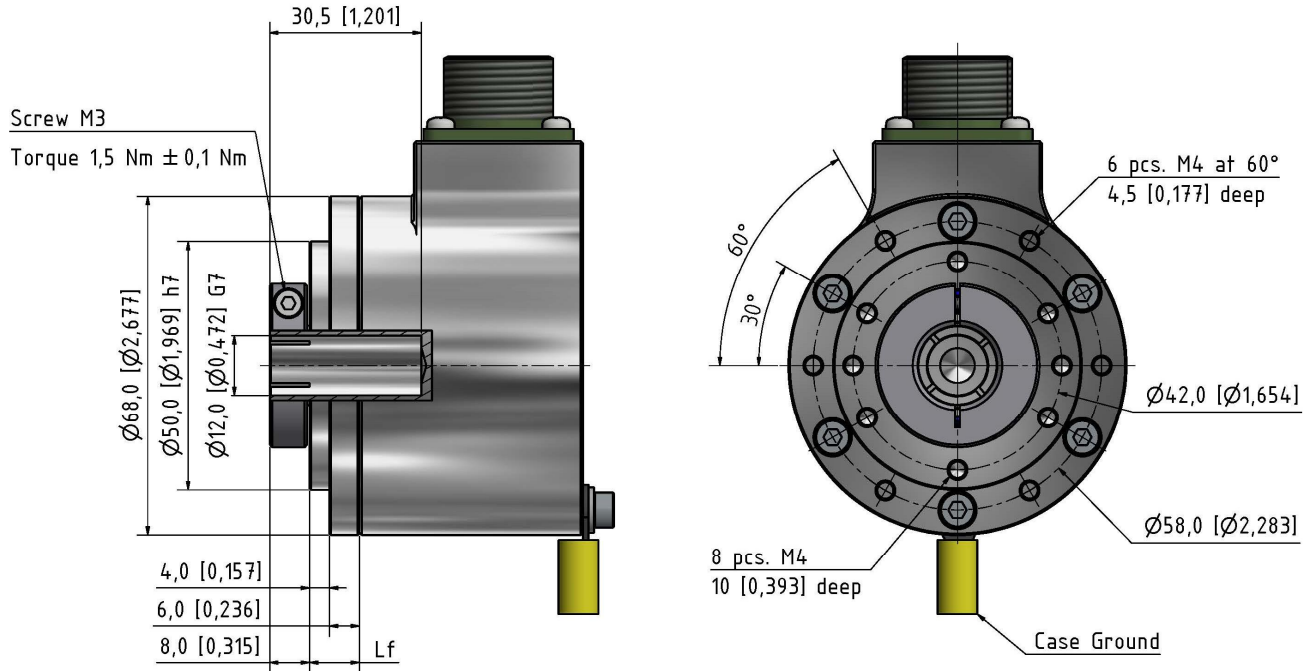
1	32	125	720	3000
2	36	150	800	3072
5	40	180	1000	3600
6	45	200	1000	4000
7	47	250	1024	4096
8	50	256	1131	5000
10	60	300	1200	8192
12	64	360	1250	9000*
15	70	400	1270	10000*
16	75	455	1500	
18	80	500	2000	
20	90	512	2048	
25	100	600	2400	
30	120	635	2500	

### Other options on request

Pulses per revolution,  
min. 1 – max. 10.000

\* Operating temperature: -20° C to 50° C

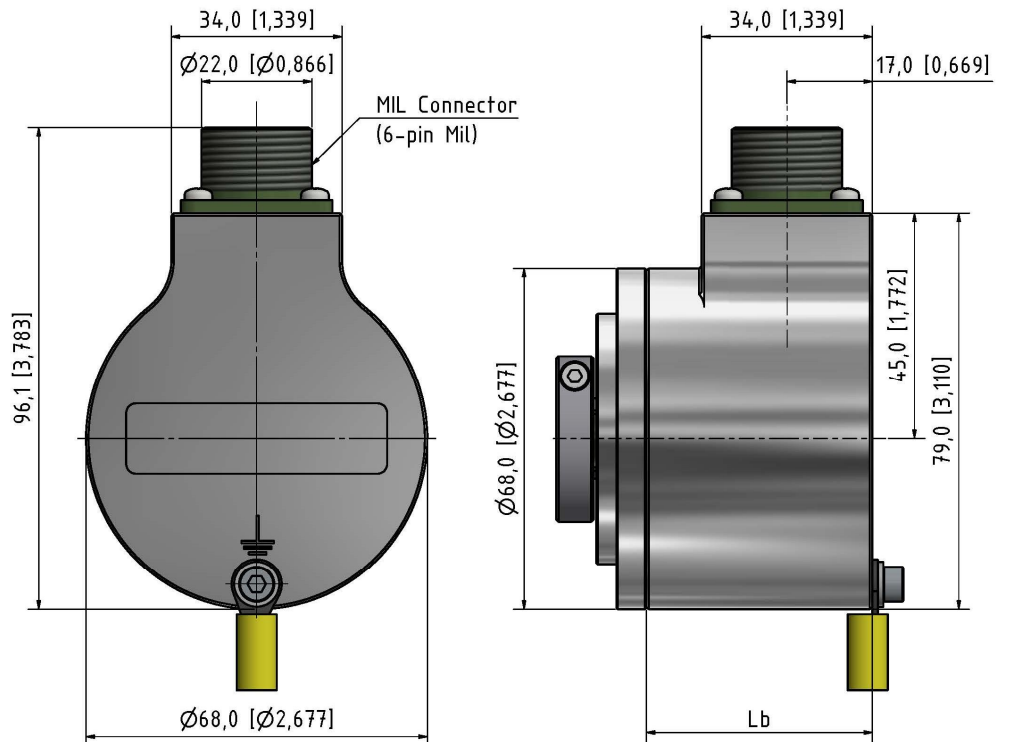
## Face Mounts



**Face Mount A**

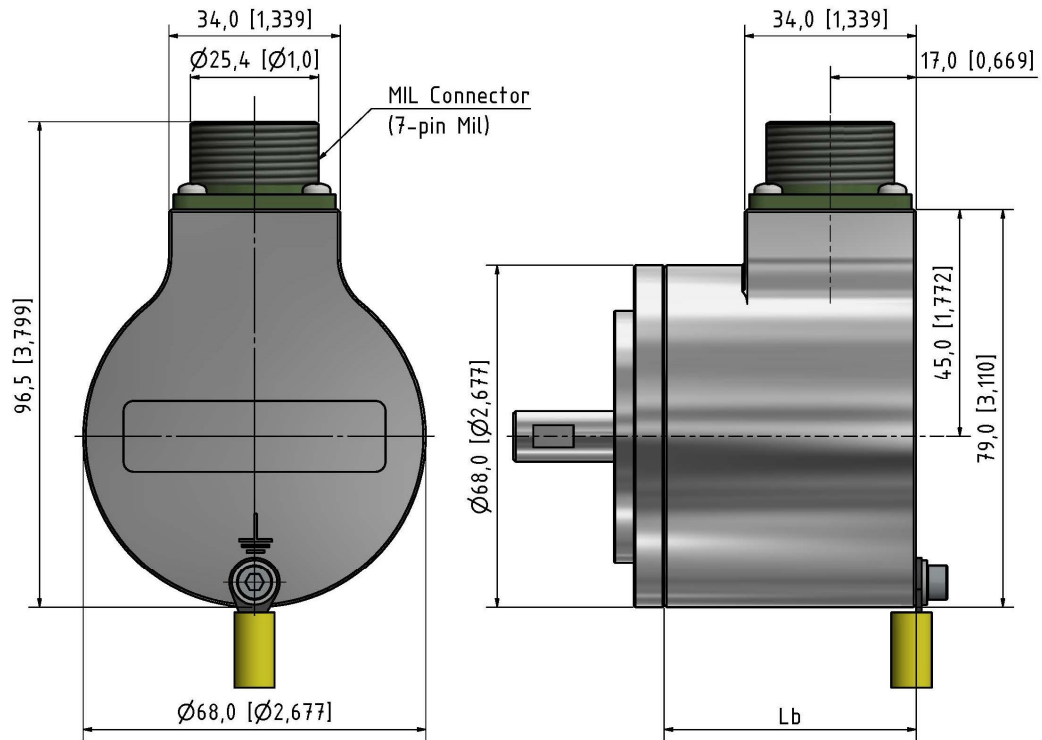
mm (inches)

## Caps with MIL Connector



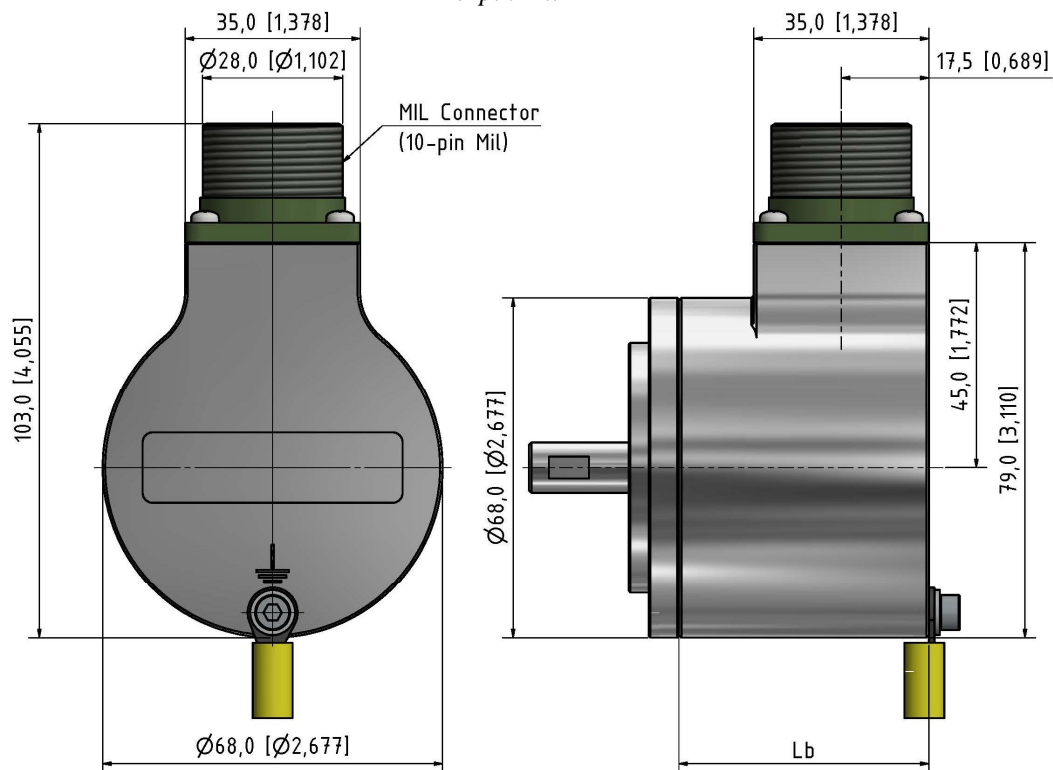
**MIL Connector Cap (C6)**  
6-pin Mil

mm (inches)



**MIL Connector Cap (C7)**  
7-pin Mil

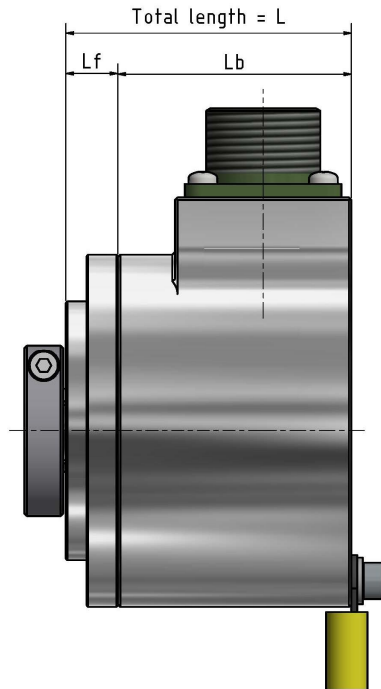
mm (inches)



**MIL Connector Cap (C10)**  
10-pin Mil

mm (inches)

## Encoder Length

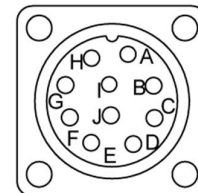
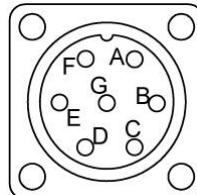
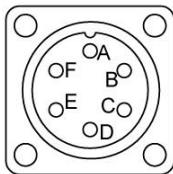


**Total Encoder Length  $L = L_b + L_f$**

Cap	Face mount A
C6	55,0 mm (2,17 in)
C7	60,0 mm (2,36 in)
C10	60,0 mm (2,36 in)

*Cap + Face Mount = Total Encoder Length*

### Table 2. Output Terminations – MIL Connectors



Pin	6-pin Mil		7-pin Mil		10-pin Mil	
	Standard Output	Standard Output	Optional Standard Output *	Optional Differential Output *	Differential Output	Optional Differential Output *
Pin	Channel	Channel	Channel	Channel	Channel	Channel
A	GND	A	A	A	A	A
B	Vsup	B	B	B	B	B
C	Z	Z	NC	A -	Z	A -
D	B	Vsup	Vsup	Vsup	Vsup	Vsup
E	A	NC	NC	B -	NC	B -
F	Shield	GND	GND	GND	GND	GND
G		Shield	Shield	Shield	Shield	Shield
H					A -	NC
I					B -	NC
J					Z -	NC

\* ID number required

*GND = Circuit Ground    Shield = Case Ground*

## Ordering Code

**Example: 2CEX-H – 1024 – AL – D – 10 – 30 – 65 – 00 – C7 – A – 00**

2CEX-H -   - AL -   -   - 30 -   - 00 -   - A - 00  
 1                      2                      3                      4                      5                      6                      7                      8                      9                      10

### 1. Pulse per revolutions

See Table 1.

### 2. Material

Aluminum..... **Al**

### 3. Output

Standard..... **N**  
 Inverted..... **I**  
 Differential..... **D**  
 26C31 Line Driver 5V only..... **L**  
 OL 7272 Line Driver..... **M**

### 4 & 5 Hollow Shaft dimensions

10 mm x 30.5 mm	<b>10</b>	<b>x</b>	<b>30</b>
12 mm x 30.5 mm	<b>12</b>	<b>x</b>	<b>30</b>
14 mm x 30.5 mm	<b>14</b>	<b>x</b>	<b>30</b>
15 mm x 30.5 mm	<b>15</b>	<b>x</b>	<b>30</b>
16 mm x 30.5 mm	<b>16</b>	<b>x</b>	<b>30</b>

### 6. IP Rating

IP 64..... **64**  
 IP 65..... **65**  
 IP 66..... **66**  
 IP 67..... **67**

### 7. Cable Length

No cable..... **00**

### 8. Connector

MIL - 6 pins..... **C6**  
 MIL - 7 pins..... **C7**  
 MIL - 10 pins..... **C10**

### 9. Flange

Flange A..... **A**

### 10. Spring Coupling

No spring coupling..... **00**  
 80147418..... **01**  
 80140159..... **02**  
 80141203..... **03**  
 80142932..... **04**  
 80142641..... **05**  
 80132983..... **06**  
 80230208..... **07**