2CEX-H SSI

- **Hollow Shaft Encoder - Ø 68 mm**
- **Hollow Shaft: Ø 10 mm to Ø 16 mm**
- **SSI Interface**
- **Singleturn or Multiturn**
- **Non-removable end cap -delivered with 10-pin MIL Connector**
- **ATEX, EAC Ex certified**

Electrical Specifications

Encoder Type:	Absolute Multiturn
Singleturn Resolution:	13 bits (8192) steps per revolution
Number of Revolutions:	12 bits (4096) revolutions 16 bits (65536) revolutions 20 bits (1048576) revolutions 24 bits (16777216) revolutions
Supply Voltage:	5 VDC ±5% or 9-30 VDC
Typical Current Consumption:	30 mA @ Vsup = 5V 25 mA @ Vsup = 10V 15 mA @ Vsup = 24V
Accuracy:	± 0,35^{O}
Interface:	SSI (Synchronous Serial Interface)
Output Code:	Binary or Gray
Electrical Interface:	Differential (RS422)
Clock Frequency:	100 kHz to 2 MHz
Counting Direction:	Increasing clockwise or increasing counter clockwise seen from shaft end of encoder
Electrical Protection:	Reverse polarity and output short circuit protected
Noise Immunity:	EN61000-6-2: 2005 (industrial environments) Electromagnetic compatibility (EMC) EN 61000-6-3: 2007 (residential, commercial, and light-industrial environments) for Electromagnetic compatibility (EMC)

Mechanical Specifications

Material:	Housing: Aluminum Cap: Aluminum Hollow Shaft: Stainless Steel (AISI 303)
Weight:	Encoder: Approx. 540 gr (19 oz) Cable: 50 gr / meter (1.76 oz / meter)
Bearing Life:	> 1.9 x 10^{10} revolutions at rated load
Hollow Shaft Speed:	3,000 rpm continuous (max.) IP 67
Starting Torque:	< 0.1 Nm (14.16 oz-in) at 25° C IP 67
Mass Moment of Inertia:	50 gcm² (7.08 x 10^{-4} oz-in-sec²)
Hollow Shaft Loads:	Axial: 50 N (11.25 lbs) max. Radial: 100 N (22.50 lbs) max.

Environmental Specifications

Operating Temp.:	-40° to +70° C
Storage Temp.:	-40° to +85° C
Shock:	100 G / 11 ms
Vibration:	10 G /10-2000 Hz
Bump:	10 G / 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
Enclosure Rating:	IP 64 / Nema 4 (approx.) IP 65 / Nema 4 (approx.) IP 66 / Nema 6 (approx.) IP 67 / Nema 6 (approx.) option

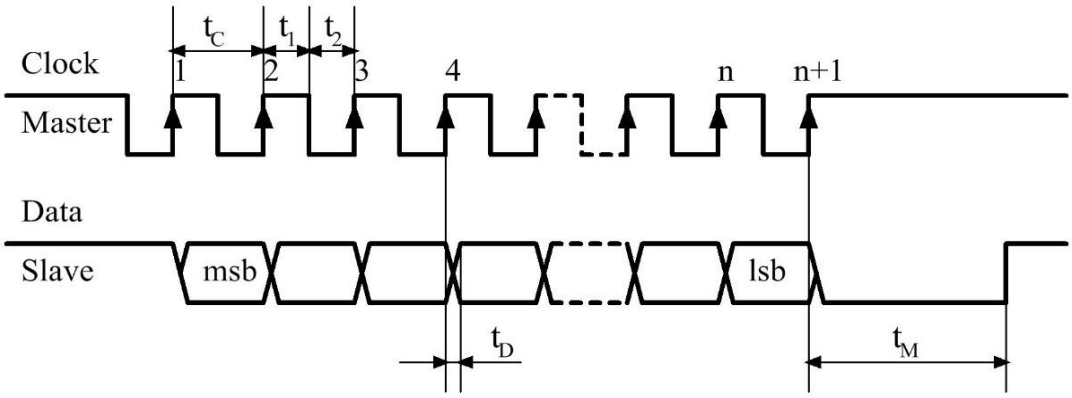
Connection Options

Connectors:	10-pin Mil radial *See Table 1*

Certifications

ATEX:	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
EAC Ex:	НАНИО «ЦСВЭ» No. ЕАЭС 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

SSI Interface Timing



msb = Most Significant Bit
lsb = Least Significant Bit
n = Total Number of Bits
t_C = Clock Period = 0.5 to 10 µSec (100kHz to 2 MHz)
t_1 = Clock High = 50% ±15% of Clock Period
t_2 = Clock Low = 50% ±15% of Clock Period
t_D = Clock to Data Valid = Max. 100 nSec
t_M = Monoflop Time = 20 ±3 µSec

Implementation

During the initial set-up and installation of the encoder, it is possible to set the direction of rotation and preset the encoder to zero.

Setting of Direction.

The connection designated “Direction” is used to set the direction of rotation. Notice, that the encoder must not be powered when the direction of rotation is set/changed. Notice also, that the encoder will change its position value when the direction of rotation is changed. Direction of rotation is viewed on the shaft end of the encoder.

Voltage Level on Input	Function
High: Vsup or Vsup/2 ≤ Vin ≤ Vsup	Encoder Increasing on Counter Clockwise Rotation
Low: Input not connected or 0V ≤ Vin ≤ Vsup/2	Encoder Increasing on Clockwise Rotation

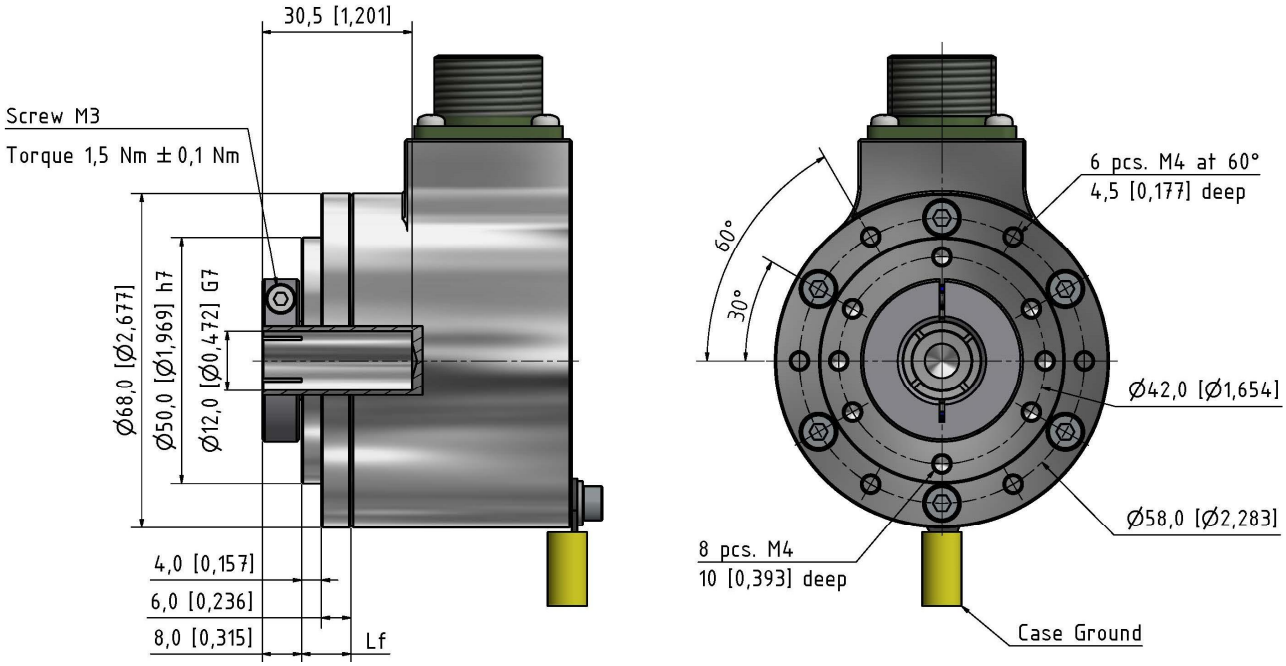
Preset to Zero

The connection designated “Preset” is used to preset the encoder to zero. Notice, that the encoder must be powered when it is preset to zero.

Voltage Level on Input	Function
High: Vsup or Vsup/2 ≤ Vin ≤ Vsup	Encoder Value is set to Zero
Low: Input not connected or 0V ≤ Vin ≤ Vsup/2	Inactive

The encoder will be held at zero as long as the line is high, even though the shaft is turned. The line must be high for at least 100 mSec. for the preset to take effect. The new zero point will be stored permanently in the encoder.

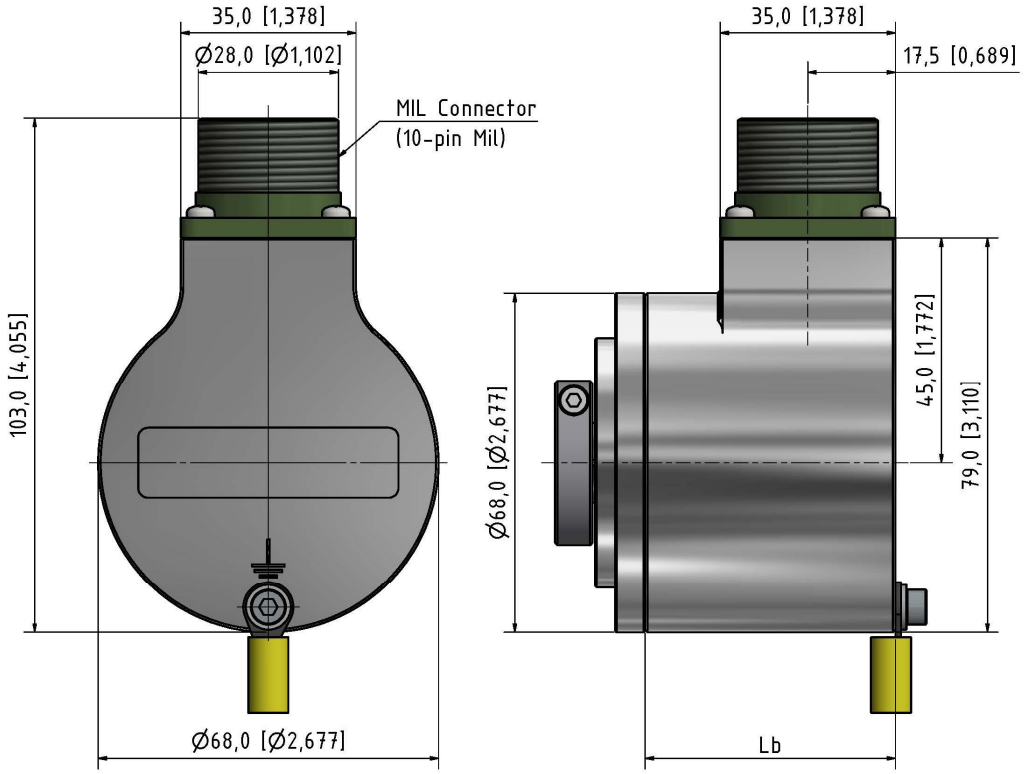
Face Mount



Face Mount A

mm (inches)

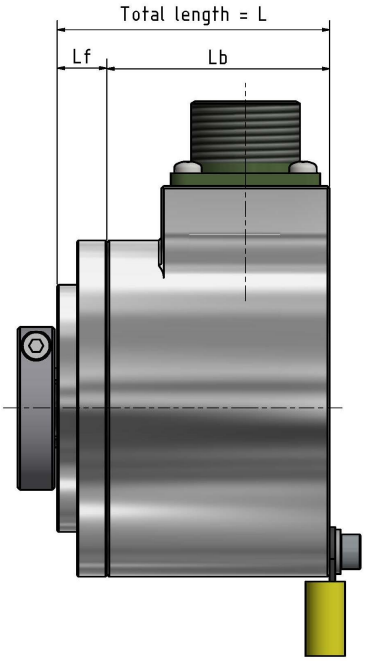
Caps with MIL Connector



MIL Connector Cap (C10)
10-pin Mil

mm (inches)

Encoder Length



Total Encoder Length L= Lb+Lf

Cap	Face mount A
C10	60,0 mm (2,36 in)

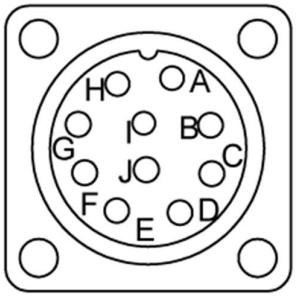
Cap + Face Mount = Total Encoder Length

Table 1. Output Terminations – MIL Connector

Table 1	
	10-pin MIL Connector
	Differential Input/Output
Pin	Signal
A	CLK +
B	CLK –
C	D0 +
D	D0 –
E	Direction
F	Preset
G	Vsup
H	GND (0 Volt)
I	*NC*
J	*NC*

GND = Circuit Ground

Shield Connected to Case Ground



Ordering Code

Example: 2CEX-H-01S – 1613 – AL – 9 – B – D – 10 – 30 – 67 – 00 – C10 – A – 00

2CEX-H	-	01S	-		-	Al	-		-		-	D	-		-		-		-	00	-		-	00
		1		2		3		4		5		6		7		8		9		10		11		12		13

1. Interface

SSI……..... **01S**

2. Resolution

Singleturn
Resolution 13 bits ……..... **0013**
Multiturn
Revolutions 12 bits …… **1213**
Revolutions 16 bits …… **1613**
Revolutions 20 bits …… **2013**
Revolutions 24 bits …… **2413**

3. Material

Aluminium…..…… **Al**

4. Supply Voltage

5 VDC…….. **5**
9-30 VDC……..... **9**

5. Code

Binary ……..... **B**
Gray ……..... **G**

6. Electrical Interface

Differential (RS422)……. **D**

7 & 8 Hollow Shaft dimensions

	7.		8.
10 mm x 30.5 mm	**10**	**x**	**30**
12 mm x 30.5 mm	**12**	**x**	**30**
14 mm x 30.5 mm	**14**	**x**	**30**
15 mm x 30.5 mm	**15**	**x**	**30**
16 mm x 30.5 mm	**16**	**x**	**30**

9. IP Rating

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

10. Cable Length

No cable…….. **00**

11. Connector

MIL - 10 pins…… **C10**

12. Flange

Flange A ……..... **A**

12. Spring Coupling

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