



SCH68BEX

- Hollow Shaft Encoder – Ø68 mm
- Hollow Shaft: Ø 3/4 inch, Ø 1 inch
- Resolutions up to 10.000 ppr
- Delivered with cable or MIL connector
- ATEX, IECEx

Electrical Specifications	
Code:	Incremental
Resolution:	1 to 10,000 ppr (pulses per revolution)
Supply Voltage:	4.5 Vdc min. to 30 Vdc max. ** (at 45 mA max. - no load)
Output Voltage:	Low: 500 mV max. at 10 mA High: (Vsup - 0.6) at -10 mA (Vsup - 1.3) at -25 mA
Output Current:	30 mA max. load per output channel **
Frequency Response:	300 kHz max. **
Output Format:	Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs
Phase Sense:	A leads B counterclockwise (CCW) from the shaft end of the encoder
Index:	Gated with Channel B low
Accuracy:	+/- 0.8 arc-min.
Outputs:	ASIC Push-pull and Differential OL7272 Push-pull and Differential Line Driver 26C31 Differential Line Driver 5V output (with 5V input)
Electrical Protection:	Output short circuit protected. Reverse polarity protected for ASIC outputs only. (not for OL7272 or 26C31 outputs)
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)

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

Mechanical Specifications	
Material:	Housing: Aluminum Cap: Aluminum Shaft: Stainless Steel (AISI 316)
Weight:	Encoder: Approx. 380 gr (13.4 oz)
Bearing Life:	> 1.9 x 10 ¹⁰ revolutions at rated load
Shaft Speed:	max. 2000 rpm
Starting Torque:	< 0.01 Nm (1.4 oz-in) at 25° C
Mass Moment of Inertia:	440 gcm ² (6.23 x 10 ⁻³ oz-in-sec ²)
Shaft Loads:	Axial: 100 N (22,5 lbs) max. Radial: 100 N (22,5 lbs) max.

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

Connection Options	
Cable:	MUD resistant (NEK 606) & halogen free, shielded, OD Ø6.6 +/- 0.2 mm 4x2x0,14 mm ² , 26 AWG, 4 twisted pairs; shielded - Table 2
Connectors:	10-pin MIL radial 10-pin MIL Bayonet radial Table 3

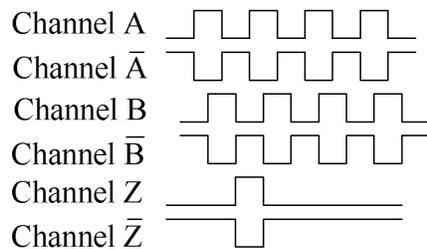
Certifications

ATEX:	Certificate No.: ITS I24 ATEX39692X II 3 G Ex ec IIC T4 Gc -40°C ≤ Tamb ≤ +65°C*
IECEX:	Certificate No.: IECEX ITS 24.0001X Ex ec IIC T4 Gc -40°C ≤ Tamb ≤ +65°C*
EAC Ex:	N/A

* Upper ambient can be any value between +20°C and +65°C to meet customer requirements.

Output waveform

↺ CCW Seen from shaft end



Channel tolerance 180 e° +/- 36 e°
Phase difference tolerance 90 e° +/- 18 e°
Z channel tolerance 180 e° +/- 18 e°

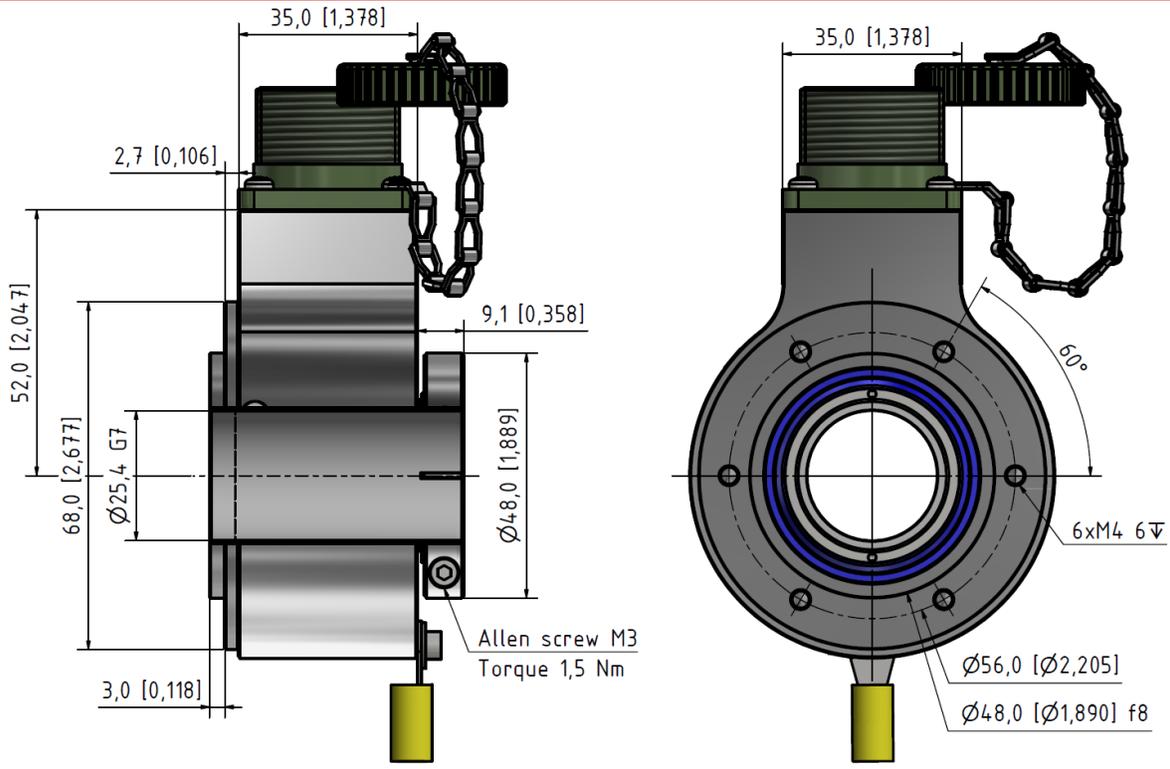
Table 1. Disk Resolutions (pulses per revolution)

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

Other options on request
Pulses per revolution,
min. 1 – max. 10.000

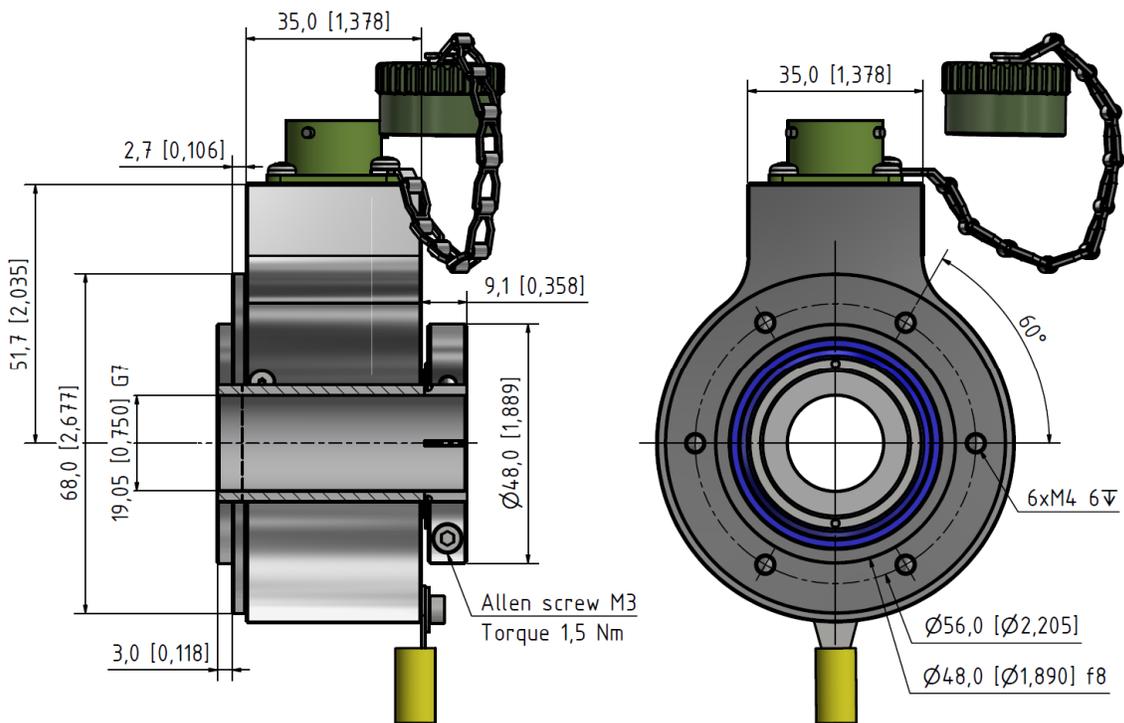
* Operating temperature: -20° C to 50° C

Mechanical dimensions



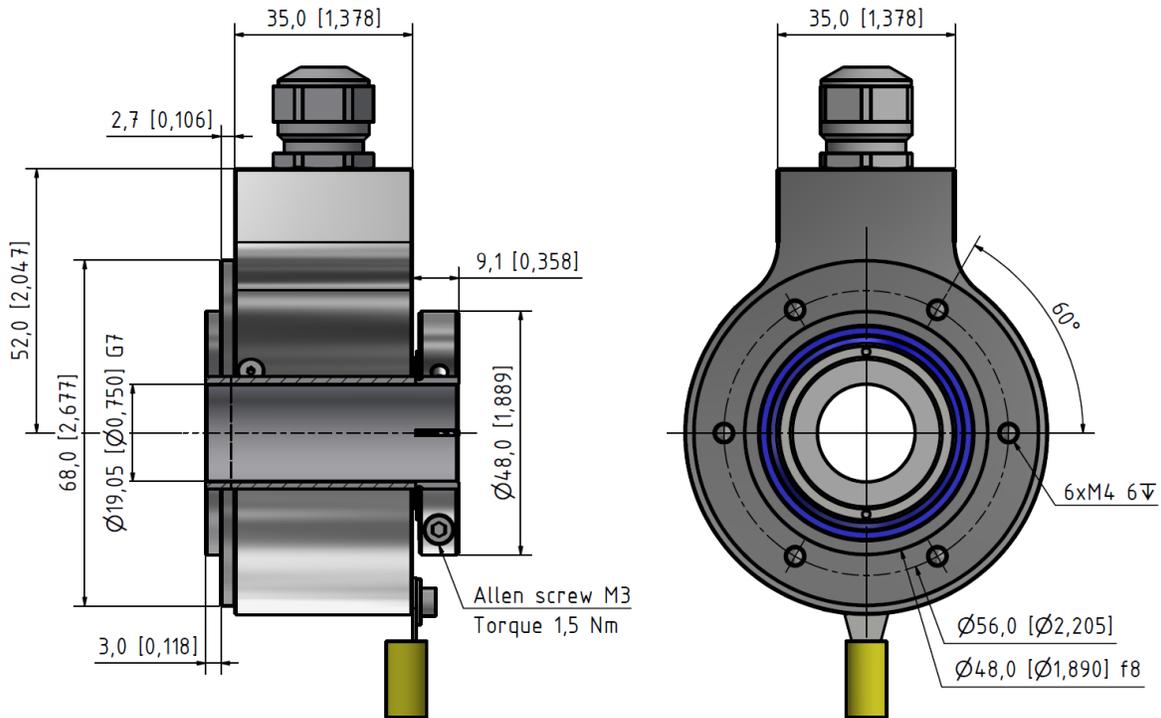
MIL connector

mm (inches)



MIL Bayonet connector

mm (inches)



Standard Cable gland

mm (inches)

Table 2. Cable Output

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
Vsup	Red	Red
GND	Blue	Blue

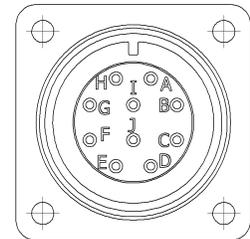
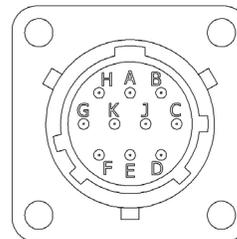
* Gray, Yellow, and Brown are internally connected as Circuit Ground

GND = Circuit Ground

Shield connected to Case Ground

Cable: Shielded, 4x2x0,14 mm², 26 AWG, 4 twisted pairs;
 Yellow cable shoe: AWG 12-10

Table 3. Output Terminations – MIL Connectors



10-pin MIL Bayonet

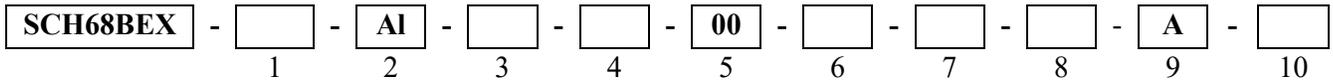
10-pin Mil

Pin	Channel	Differential Output	Optional Differential Output *	Differential Output	Optional Differential Output *
		Channel	Channel	Channel	Channel
A	A	A	A	A	A
B	B	B	B	B	B
C	Z	A -	Z	A -	A -
D	Vsup	Vsup	Vsup	Vsup	Vsup
E	NC	B -	NC	B -	B -
F	GND	GND	GND	GND	GND
G	Shield	Shield	Shield	Shield	Shield
H	A -	NC	A -	NC	NC
I	-	-	B -	NC	NC
J	B -	NC	Z -	NC	NC
K	Z -	NC	-	-	-

GND = Circuit Ground Shield = Case Ground

Ordering Code

Example: SCH68BEX – 1024 – AL – D – 3/4 – 00 – 67 – 00 – B10 – A – S1



1. Pulse per revolutions

See Table 1 on page 2

2. Material

Aluminum **Al**

3. Output

Standard **N**
 Standard – open Collector NPN **NON**
 Standard – open Collector PNP **NOP**
 Differential **D**
 26C31 Line Driver 5V only **L**
 OL 7272 Line Driver **M**

4 & 5 Shaft dimensions

3/4 inch x 50 mm

1 inch x 50 mm

4. 5.

3/4 x 00

1/1 x 00

6. IP Rating

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

7. Cable Length

Standard cable is 1m..... **01**
 Specify length..... **XX**
 No cable..... **00**

8. Cable & Connector Takeout

Side *Standard*..... **SS**
 MIL – 10-pin..... **M10***
 MIL Bayonet – 10-pin..... **B10****

9. Flange

Flange A **A**

**part # MIL MS3102E-18-10 pin*
*** part # Bayonet MIL MS3112E-12-10P*

10. Accessories

80131017 **S1**
 80131067 **S2**
 80132464 **S3**
 80131062 **S4**
 00232525 **S5***

*Only for encoder with MIL Bayonet conn.