

## SCH86BEX-Magnetic Removable End Cap



Scancon's **SCH86BEX-Magnetic** Encoder is designed for Zone 1 applications where reliability and size are critical. Smaller than the competition, and with a 1" hollow bore and removable end cap, it is the EX-proof encoder of choice for rugged Oilfield applications.

- **Hollow Shaft Encoder -  $\varnothing 86$  mm**
- **Through Hollow Bore:  $\varnothing 5/8$  to  $\varnothing 1$  inch**
- **IP 67 (~ Nema 6) Environmental Protection**
- **Aluminium Chromital TCP or 316 Stainless Steel**
- **ATEX, IECEx, EAC, North American Class I Div. 2 and AEx Class 1 Zone 1 certified**



Electrical Specifications	
<b>Code</b>	Incremental
<b>Resolution</b>	See Table 1
<b>Supply Voltage*</b>	9.0 V min. to 30.0 V max.
<b>Current</b>	40 mA max. (no load)
<b>Output Voltage</b>	Low: 800 mV max. at 10 mA High: ( $V_{sup} - 0.8$ ) at -10 mA ( $V_{sup} - 1.6$ ) at -25 mA
<b>Output Current*</b>	40 mA max. load per output
<b>Frequency Response*</b>	300 kHz max. 150 kHz max. for MS output
<b>Output Format</b>	Two channels (A, B) in quadrature with Index (Z); and complementary outputs (A-, B-, Z-)
<b>Output Phase Sense</b>	A leads B clockwise (CW)
<b>Index</b>	Gated with Channels A and B high, 1/4 cycle
<b>Outputs:</b>	iC-DL Differential Line Driver
<b>Electrical Protection:</b>	Outputs short circuit protected Outputs miswiring protected Reverse polarity protected Electrical transient protection TSM (MW output only)
<b>Noise Immunity:</b>	Tested to EN61000-6-2 : 2005 and EN 61000-6-3 : 2007

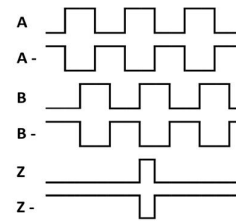
\* It is recommended user not combine max. values for all 3 parameters

Mechanical Specifications	
<b>Material</b>	Housing: Aluminum or Stainless Steel Cap: Aluminum or Stainless Steel Hollow Shaft: Stainless Steel
<b>Weight</b>	Aluminum: ~ 1250 gr. (2.76 lb.) AISI 316: ~ 3750 gr. (8.27 lb.) Cable: 50 gr / meter (1.76 oz / meter)
<b>Bearing Life</b>	100 thousand hours @ rated load
<b>Shaft Speed</b>	3,000 rpm continuous (max.) IP 67
<b>Starting Torque</b>	< 0.1 Nm (14.16 oz-in) at 25°C
<b>Mass Moment of Inertia</b>	750 g-cm <sup>2</sup> (10.6 x 10 <sup>-3</sup> oz-in-sec <sup>2</sup> )
Environmental Specifications	
<b>Operating Temp.</b>	-50° to +70° C
<b>Storage Temp.</b>	-50° 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 65 / Nema 4 (approx.) IP 66 / Nema 6 (approx.) option IP 67 / Nema 6 (approx.) option
Connection Options	
<b>Terminal Blocks (Removable End Cap)</b>	See Table 2

Certifications		Table 1. Resolutions (pulses per revolution)			
ATEX	Certificate No.: ITS09ATEX16841X II 2 G Ex db IIC T5 Gb II 2 D Ex tb IIIC T100°C Db -50°C < Tamb < +70°C	64	128	256	320
		512	640	800	1024
		1280	1600	2048	3200
		4096	6400	8192	
IECEX	Certificate No.: IECEX ITS 13.0025X Ex db IIC T5 Gb Ex tb IIIC T100°C Db -50°C < Tamb < +70°C				
North America	Certificate No: LR1192 Class I, Division 2, Groups ABCD T5 Class II, Division 2, Groups FG Ex db IIC T5 Gb Class I, Zone 1, AEx db IIC T5 Gb Tamb = -50 °C to +70 °C V= 4.5 – 30 Vdc; Imax= 100 mA				
EAC	НАНИО «ЦСВЭ» No. ЕАЭС RU C- DK.AA87.B.00266/19 1Ex db IIC T5 Gb X, Ex tb IIIC T100°C Db X МИНУС 50 ДО ПЛЮС 70°				

### Output Waveform

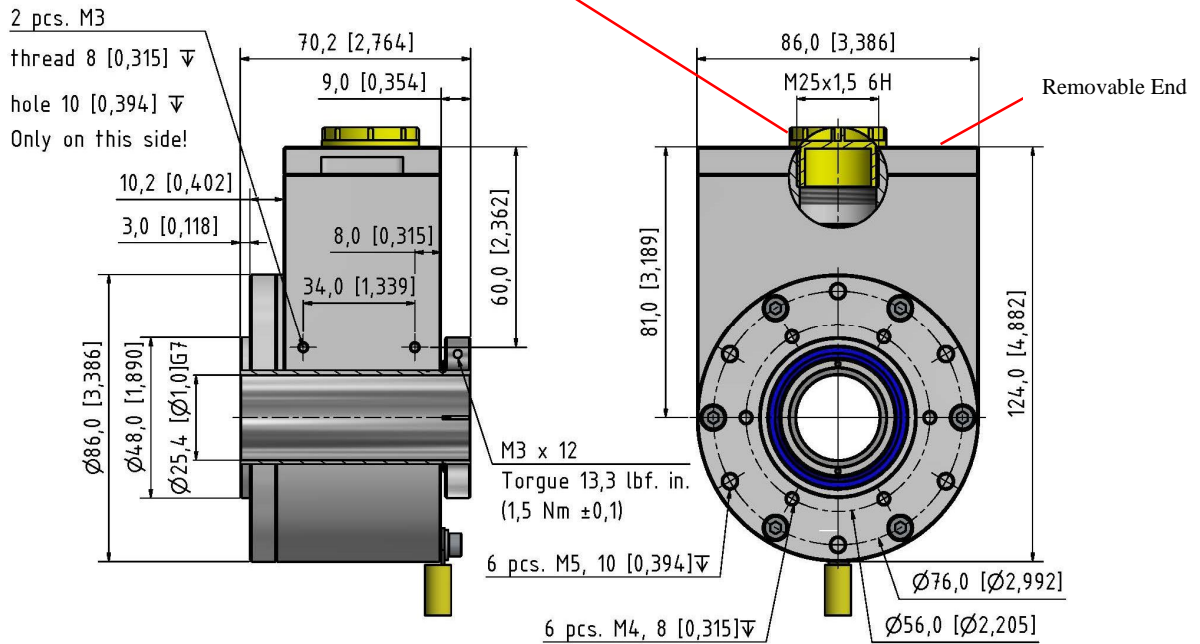
⌚ Clockwise seen from the front of the encoder looking away from the motor shaft



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

### Mechanical Dimensions

Plastic screw plug is for cable outlet protection during shipping and storage.  
Plug must be replaced by an appropriately certified cable gland prior to use.



Removable End Cap - EC08, EC09, EC10, EC11 mm (inches)

**Table 2 Terminal Block Outputs**

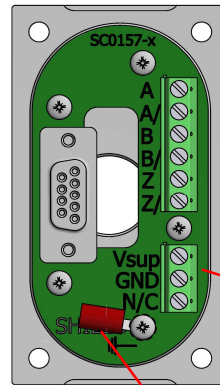
Position	Differential Output	Power
	Channel	
1	A	
2	A -	
3	B	
4	B -	
5	Z	
6	Z -	
7		Vsup
8		GND
9		N/C

GND = Circuit Ground

Shield = Case Ground

Connect shield wire to the cable shoe

Wire conductor size: AWG 26 to 16  
0.14 to 1.5 mm<sup>2</sup>



Terminal Block - Channels

Removable End Cap

Terminal Block - Power

Connect shield wire to cable shoe

**Mechanical Tolerances (mm)**

<b>Hollow Shaft (ISO tolerance):</b>	ISO 286-2 ANSI B4.2
Hollow bore $\phi > 10$ mm to $\leq 18$ mm	G7 (+0.006 / +0.024)
Hollow bore $\phi > 18$ mm to $\leq 30$ mm	G7 (+0.007 / +0.028)
<b>Shaft (recommended ISO tolerance):</b>	ISO 286-2 ANSI B4.2
Shaft $\phi > 10$ mm to $\leq 18$ mm	h6 (-0 / -.011)
Shaft $\phi > 18$ mm to $\leq 30$ mm	h6 (-0 / -.013)
<b>Shaft Runout (recommended TIR):</b>	NEMA Std. MG1, 4.9.7 + / - 0.05 (0.002 in.)

**Ordering Code**

Example: SCH86BEX-01M - 1024 - AL - MW - 01 - 00 - 66 - 00 - EC08 - A

SCH86BEX-01M -  -  - MW -  - 00 -  - 00 -  -  - A

1                      2                      3                      4                      5                      6                      7                      8

**1. Resolution**

See Table 1.

**2. Composition**

Aluminum ..... AL  
Stainless Steel\* ..... SA

\* AISI 316

**3. Output**

iC-DL 9.0V to 30V.....MW\*\*

\*\* miswiring protected and built-in transient suppression

**4. Hollow Shaft (diameter)**

5/8 inch ..... 01  
16 mm ..... 02  
20 mm ..... 03  
25 mm ..... 04  
1 inch ..... 05

**5. IP Rating**

IP 65 ..... 65  
IP 66 ..... 66  
IP 67 ..... 67  
IP 68\* ..... 68

\*1 meter/1 hour

**6. Cable Length**

No Cable ..... 00

**7. End Cap**

End Cap\*\*  
M20 threaded outlet ..... EC09  
M25 threaded outlet ..... EC08  
1/2 inch NPT outlet ..... EC10  
3/4 inch NPT outlet ..... EC11

\*\* suitably certified cable gland required

**8. Flange**

A ..... A

See Accessories data sheet for Anti-rotation Springs/Torque Arm options