



EN 60079



SCH86BEX Draw Works Removable End Cap

Scancon's SCH86BEX Encoder is designed for ATEX 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 (d) encoder of choice for rugged Oilfield applications.

- **Ex-proof (d) 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 Stainless Steel *option***
- **ATEX, IECEx, EAC, North American Class I Div. 2 and AEx Class 1 Zone 1 certifications**

Electrical Specifications

Code	Incremental
Resolution	See Table 1
Supply Voltage*	4.5 V min. to 30 V max.
Current	35 mA max. (no load)
Output Voltage	Low: 500 mV max. at 10 mA High: (V _{sup} - 0.6) at -10 mA (V _{sup} - 1.6) at -25 mA
Output Current*	35 mA max. load per output
Frequency Response*	300 kHz max. 150 kHz max. <i>for MW output</i>
Output Format	Two channels (A, B) in quadrature with Index (Z); and complementary outputs (A-, B-, Z-)
Output Phase Sense	A leads B clockwise (CW)
Index	Gated with Channels A and B high, 1/4 cycle
Outputs:	ASIC Push-pull and Differential OL7272 Push-pull and Differential Line Driver iC-DL Differential Line Driver
Electrical Protection:	Outputs short circuit protected Reverse polarity protected Miswiring protected - (MW output only)
Noise Immunity:	Tested to EN61000-6-2 : 2005 and EN 61000-6-3 : 2007

Mechanical Specifications

Material	Housing: Aluminum / AISI 316 <i>option</i> Cap: Aluminum / AISI 316 <i>option</i> Hollow Shaft: AISI 316
Weight	Aluminum: ~ 1250 gr. (2.76 lb.) AISI 316 SS: ~ 3750 gr. (8.27 lb.) Cable: 50 gr / meter (1.76 oz / meter)
Bearing Life	100 thousand hours @ rated load
Shaft Speed	3,000 rpm continuous (max.) IP 67
Starting Torque	< 0.1 Nm (14.16 oz-in) at 25° C
Mass Moment of Inertia	750 g-cm ² (10.6 x 10 ⁻³ oz-in-sec ²)

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 65 / Nema 4 (approx.) IP 66 / Nema 6 (approx.) <i>option</i> IP 67 / Nema 6 (approx.) <i>option</i>

Connection Options

Terminal Blocks (Removable End Cap)	See Table 2
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* It is recommended user not combine max. values for all 3 parameters

Certifications

ATEX	Certificate No.: ITS09ATEX16841X II 2 G Ex db IIC T5 Gb II 2 D Ex tb IIIC T100°C Db -40°C < Tamb < +70°C
IECEX	Certificate No.: ITS13.0025X Ex db IIC T5 Gb Ex tb IIIC T100°C Db -40°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 = -40 °C to +70 °C V= 4.5 – 30 Vdc; Imax= 100 mA
EAC Ex	НАНИО «ЦСВЭ» No. ЕАЭС RU C- DK.AA87.B.00266/19 1Ex db IIC T5 Gb X, Ex tb IIIC T100°C Db X OT МИНУС 40 ДО +70°

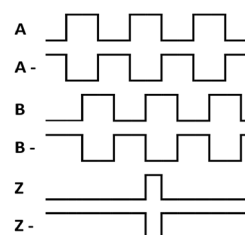
Table 1. Disk Resolutions (pulses per revolution)

25	32	40	100
400	800	1024	2000
2048	2500	3072	3600
4096			

Other resolutions may be requested

Output Waveform

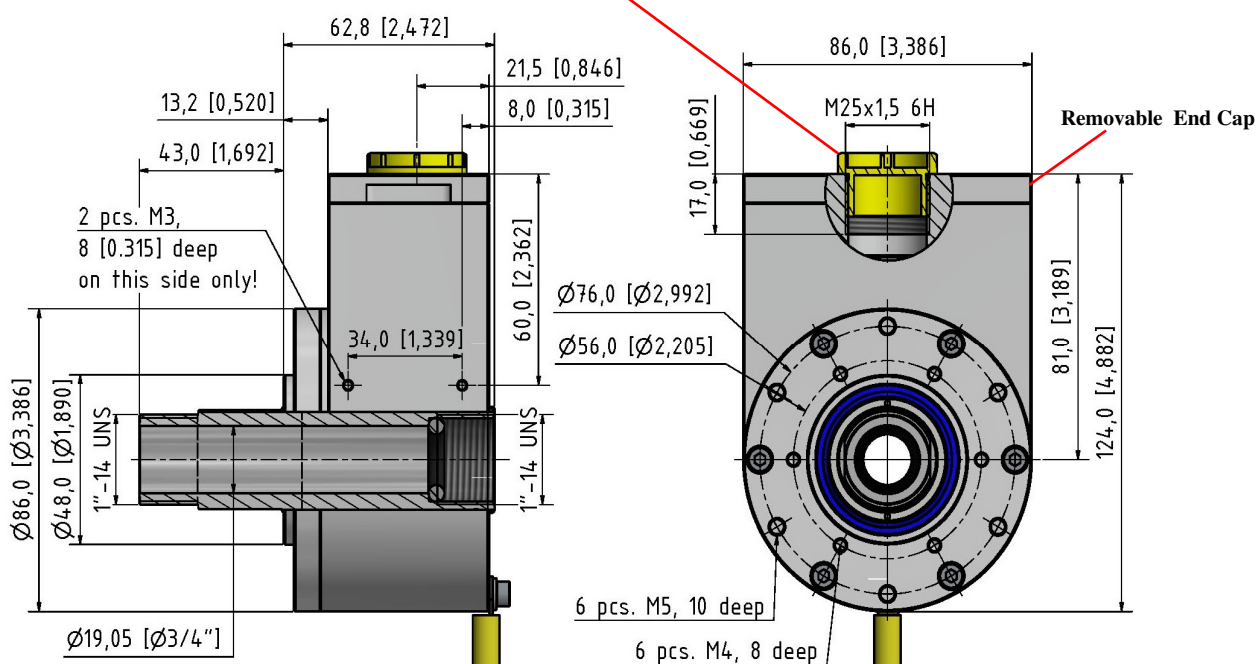
⌚ Clockwise seen from the front of the encoder looking away from the motor shaft



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 a suitably certified cable gland prior to use.**



Removable End Cap - EC08, EC09, EC10 and EC11

mm (inches)

See Table 2

Table 2 Terminal Block Outputs

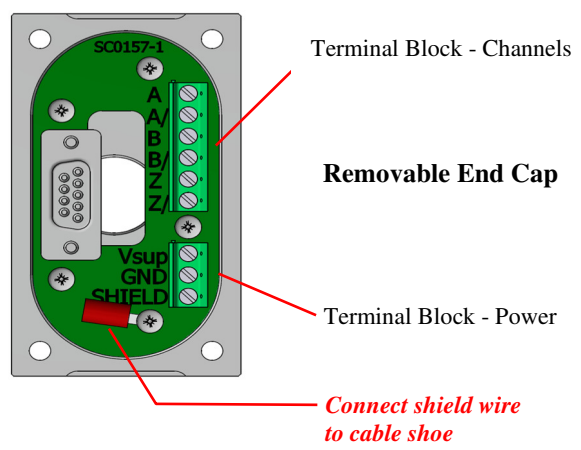
	Standard Output	Differential Output	Power
Position	Channel	Channel	
1	A	A	
2	NC	A -	
3	B	B	
4	NC	B -	
5	Z	Z	
6	NC	Z -	
7			Vsup
8			GND
9			Shield*

GND = Circuit Ground

Shield = Case Ground

*** Do not connect the shield wire to the terminal block
Connect shield wire to the cable shoe**

Wire conductor size: AWG 26 to 16
0.14 to 1.5 mm²



Mechanical Tolerances (mm)

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

Ordering Code

Example: SCH86BEX – 1024 – AL – D – 01 – DW – 67 – 00 – EC08 – A



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|---|--|--|---|
| <p>1. Resolutions</p> <p>See Table 1.</p> <p>Other resolutions may be requested</p> | <p>3. Output</p> <p>Standard 4.5V to 30V N</p> <p>Differential 4.5V to 30V D</p> <p>OL7272 4.5V to 30V M</p> <p>iC-DL 9.0V to 30V MW*</p> <p><i>* miswiring protected; and built-in transient suppression</i></p> | <p>5. IP Rating</p> <p>IP 65 65</p> <p>IP 66 66</p> <p>IP 67 67</p> | <p>7. End Cap</p> <p><i>End Cap**</i></p> <p>M20 threaded outlet EC09</p> <p>M25 threaded outlet EC08</p> <p>1/2 inch NPT outlet EC10</p> <p>3/4 inch NPT outlet EC11</p> <p><i>** suitably certified cable gland required</i></p> |
| <p>2. Composition</p> <p>Aluminum AL</p> <p>Stainless Steel* SA</p> <p><i>* AISI 316</i></p> | <p>4. Hollow Shaft</p> <p>1"-14UNS x 5/8" -18UNF01</p> <p>1"-14UNS x 1" -14UNS02</p> <p>1"-14UNS x 3/4" -10UNC04</p> | <p>6. Cable Length</p> <p>No Cable (End Cap) 00</p> | <p>8. Flange</p> <p>A A</p> |

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