



Scancon SCH 93 **CE**

Introduction

This encoder is designed for use in harsh environments with specific application to the wind power and energy industry.

MECHANICAL SPECIFICATIONS

Material	the encoder housing and cap are made of marine grade aluminum which is anodized to 22 microns for ocean environment corrosion protection. The encoder hollow shaft is made of stainless steel.
Ball Bearings	the SCH93 is constructed with steel preloaded ball bearings. Both ball bearings are made with a two-sided seal (IP 65) to protect against dust and jets of water. Lifetime of the ball bearings is $> 2 \times 10^{10}$ revolutions. Assuming an operating time of 20 years and a 4-pole generator operating at 60 Hz, the ball bearings would have lifetime of: $1800 \text{ rpms} \times 60 \text{ min/hr} \times 24 \text{ hrs/day} \times 365 \text{ days/yr} \times 20 \text{ yrs} = 1.89 \times 10^{10}$ revolutions
Metal disk Plastic disk or Glass disk	1~600 PPR = Metal disk 635~1024 PPR = Plastic disk 635~12500 PPR = Glass disk
Starting Torque	$< 0.1 \text{ Nm}$ ($< 0.074 \text{ ft-lb}$) at 25° C
Mass Moment of Inertia	8 g/cm^2
Shock	maximum 100G / 11 ms
Vibration	(10-2000Hz)/ 10G
Environmental Protection	IP 67 inside the encoder cap are two Viton O-rings which act as a static seal along the contact between the cap and the housing. The SCH93 is also equipped with a rotary seal.
Current Transmission Along the Hollow Shaft	the encoder is provided with a non-conductive ceramic insert. The motor shaft has no metallic contact to the encoder body. This will prevent current transmission into the encoder.
Transient Surge Protection	the encoder is protected against electrical disturbances coming back through the encoder cable by a built-in Transition Suppressing Module (TSM).

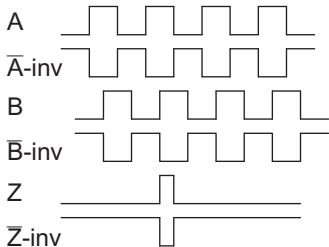
Shaft Loads	axial maximum = 250 N (56 lb _f) radial maximum = 250 N (56 lb _f)
Max speed	IP 64 to 65 = 6000 RPM IP 66 to 67 = 3000 RPM

ELECTRICAL SPECIFICATIONS

Output Waveform	incremental (A, A-, B, B-, Z, Z-); waveform displacement is 90°e +/- 18°e; Z pulse is gated with A and B channels
Output Signals	Differential (RS-422A compatible @ 5V)
EMC	complies with the following standards: EN 50081-1 , EN 50082-2
Current No Load	45 mA
Maximum Load per Output	30 mA (short circuit protected)
Supply Voltage	minimum 4.5 V to maximum 30 V
V _{out low}	maximum 500 mV @ I = 10 mA
V _{out high}	minimum (Vin -0.6) @ I = -10 mA minimum (Vin -1.3) @ I = -24 mA
Operating Temperature	- 40°C to +85°C
Storage Temperature	- 40°C to +85°C
Electrical Shaft isolation	up to 5 kVolt

OUTPUT WAVEFORM

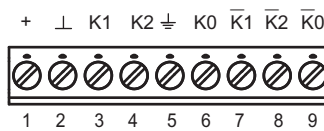
CW seen from the open hollow shaft end



CONNECTIONS

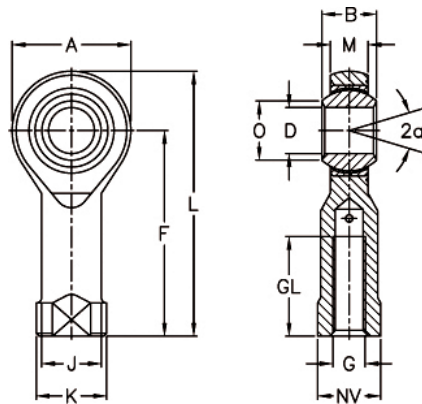


PCB



Differential PIN NR:

- 1 + VDD
- 2 ⊥ O_volt
- 3 K1 Channel A
- 4 K2 Channel B
- 5 ⊥ Case Ground
- 6 K0 Channel Z
- 7 K1-bar Channel A not
- 8 K2-bar Channel B not
- 9 K0-bar Channel Z not



Anti rotation device

D = 8
B = 12
M = 9.00
A = 24
F = 36
L = 48
K = 16.0
J = 12.5
O = 10.4
NV = 13
g = M8
GL = 16
Static load C0 (kN) = 14.1
Dynamic load C (kN) = 16.7
Max.rpm = 420
a (grader) = 14
Weight (g) = 46

Mounting Instructions

- (1) take off back cover.
- (2) put the encoder hollow shaft onto the driving shaft (keep clean).
- (3) fasten the M6 Allen screw through the encoder shaft into the driving shaft.
- (4) loosen the cable gland and make the electronic connections (see diagram).
- (5) reassemble back cover (make sure O-ring is in place).
- (6) use flexible spring coupling or ball joint rod (see mounting options).
- (7) to disassemble the encoder from the driving shaft, use M8 bolt.

Warranty

Scancon A/S warrants against manufacturing defects for a period of 24 months from the date of manufacture. Product dimensions, weights and all product illustrations are approximate and may be modified without prior notice.

This warranty does not cover problems or consequences due to common usage (wear and tear) for which the product was designed. Nor does it cover product failures caused by improper installation or use, overloading, incorrect maintenance, or operation outside the product's specifications.

Detailed warranty information can be found in Scancon's Terms & Conditions

ORDERING CODES

**Ordering Codes System
Incremental Hollow Shaft Encoder — SCH 93**

Ordering Codes: SCH 93 XXXXX — XX — X — XX — XX — XXX — X

Pulses pr. rev:	No. of pulses	XXXXX					
	1 32 150 600 635	3000 635					
	2 36 180 720	3600 720					
	5 40 200 800	4000 800					
	6 50 250 1000	4096 1000					
	8 60 256 1024	5000 1024					
	10 64 300 1131	9000					
	15 75 360 1250	10000					
	16 80 400 1500	12500					
	20 90 455 2000						
	25 100 500 2048						
	30 125 512 2500						
Disk type:	Metal disk	MD					
	Glass disk	GD					
	Plastic disk...	PD					
Output signal:	Normal, Standard, A, B, Z (3 channels)	N					
	Differential: A, B, Z and A-inv, B-inv, Z-inv (6 channels)	D					
	Line driver OL 7272 for extra long cable, up to 100 meters (Differential)	M					
	Line driver chip 26C31 (V out low <0,4 V) (RS-422A compatible @ 5V) Only 5 Volt (Differential)	L					
Hollow Shaft dimensions:	Ø 17 × 22,5 deep - cone 1:10	17					
	Ø 16 × 32 deep	16					
	Ø 12 × 30 deep	12					
IP-rating:	IP65	65					
	IP66	66					
	IP67	67					
Connection:	PCB					PCB	
Cable Gland take out:	Side M20x1,5 Cable dia.Ø11-14,5 Short thread 1 = Connector , radial 12 pin 2 = Connector , radial 12 pin						S