

## Scancon SCH 93



### Introduction

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

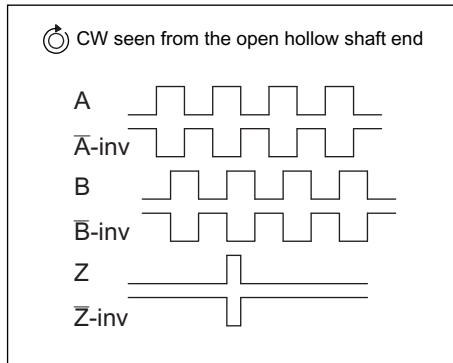
### MECHANICAL SPECIFICATIONS

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 $25^\circ \text{ C}$
Mass Moment of Inertia	$8 \text{ g/cm}^2$
Shock	maximum 100G / 11 ms
Vibration	(10 – 2000 Hz) / 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.) radial maximum = 250 N (56 lb.)

## 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 <sub>out</sub> low	maximum 500 mV @ I = 10 mA
V <sub>out</sub> 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



## CONNECTIONS

**PCB**

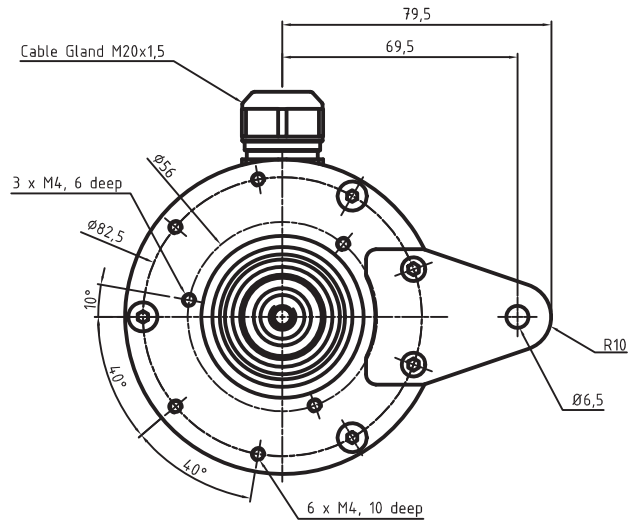
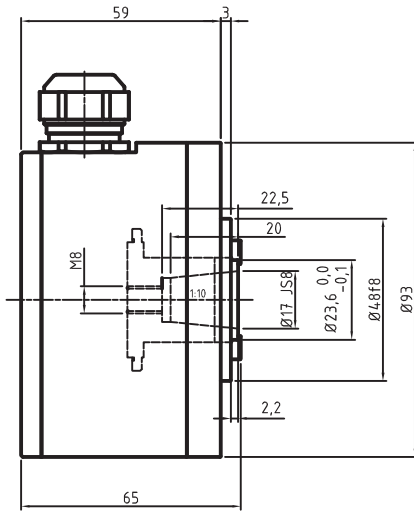
+ ⊥ K1 K2 ⊥ K0  $\bar{K}1$   $\bar{K}2$   $\bar{K}0$

1 2 3 4 5 6 7 8 9

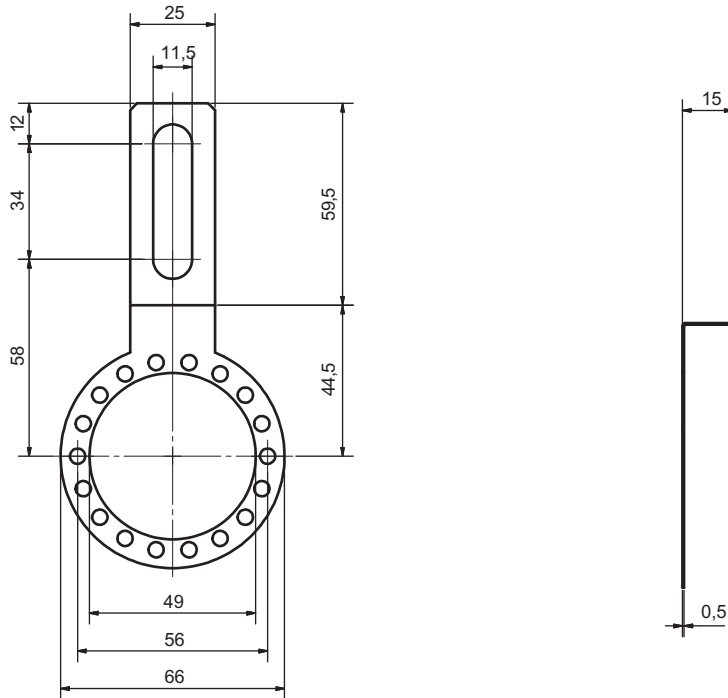
Differential PIN NR:

- 1 + VDD
- 2 ⊥ O\_volt
- 3 K1 Channel A
- 4 K2 Channel B
- 5 ⊥ Case Ground
- 6 K0 Channel Z
- 7  $\bar{K}1$  Channel A not
- 8  $\bar{K}2$  Channel B not
- 9  $\bar{K}0$  Channel Z not

## MECHANICAL DIMENSIONS



## MOUNTING OPTIONS



## ORDERING CODES

### Ordering Codes System Incremental 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 2048							
	2 36 180 635 2500							
	5 40 200 720 3000							
	6 50 250 800 3600							
	8 60 256 1000 4000							
	10 64 300 1024 4096							
	15 75 360 1131 5000							
	16 80 400 1250 9000							
	20 90 455 1500 10000							
	25 100 500 2000 12500							
	30 125 512							
Disk type:	Metal disk (1~600 PPR)		MD					
	Plastic disk (635~1024 PPR)		PD					
	Glass disk (635~12500 PPR)		GD					
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:	Ø17 × 22,5 deep				17			
	- cone 1:10							
	Ø12 × 30 deep				12			
IP-rating:	IP65					65		
	IP66					66		
	IP67					67		
Connection:	PCB						PCB	
Cable Gland take out:	Side							S
	M20x1,5							
	Cable dia. Ø11-14,5							
	Short thread							

## 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