DATASHEET
ABSOLUTE MAGNETIC ROTARY ENCODER SSI

Robust rotary sensor based on reliable magnetic technology. Stainless steel housing capable to withstand extreme environmental conditions. Ideal suited for outdoor applications. Sturdy ball bearings for highest shaft loads up to 300N. ROHS compatible maintenance free design,

Main Features

-Heavy Duty Design
-Interface: SSI (Synchronous-serial Interface)
-Housing: 38.2 mm∅
-Solid Shaft: 10 mm∅
-Max. revolution not limited (typical 13 bit)
-Preset input
-Code: Gray or Binary
-EMC: EN 61000-6-2, EN 61000-6-4

Applications

-Construction Machinery
-Cranes
-Trucks
-Elevators
-Offshore and Marine Equipment

Mechanical Structure

-Stainless Steel flange
-Stainless Steel housing
-Stainless steel shaft
-Sturdy ball bearings

Electrical Features

-Polarity inversion protection
-Over-voltage-peak protection

SCANDINAVIAN CONSTRUCTION COMPANY A/S
Tranevang 1, DK-3450 Alleroed , Denmark,Tel: + 45 48172702 Fax: + 45 48172284
www.scancon.dk , info@scancon.dk

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Technical data

Electrical data

Clock input	Via opto-coupler
Data output	Line-driver according to RS 422
Clock frequency	100 kHz - 2 MHz
Supply voltage	SCM-S1XXX- 10 - 30 V DC (absolute maximum ratings) * SCM-SMXXX- 4.5 – 5.5V DC (absolute maximum ratings) *
Turn on time	< 1 s
Power consumption	about 0.25 W
Electrical lifetime	> 10^5 h
EMC	Emitted interference: EN 61000-6-4 Noise immunity: EN 61000-6-2

* Supply voltage according to EN 50 178 (safety extra-low voltage)

Sensor data

Singleturn technology	magnetic 2 axis Hall sensor
Singleturn resolution	up to 16384 steps / revolution (14 Bit)
Singleturn accuracy	± 0.35°
Internal cycle time Singleturn	< 600 µs
Multiturn technology	self supplied magnetic pulse counter (Wiegand Sensor)
Multiturn range	can measure up to 200 Billion revolutions, limited by memory

Environmental Conditions

Operating temperature sensor	- 30 ... + 85 °C (-22 …+185 °F)
Storage temperature	- 30 ... + 85 °C (-22 …+185 °F)
Humidity	98 % (without liquid state)
Protection Class (EN 60529)	IP 69 K

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Mechanical data

Housing	Stainless Steel
Flange	stainless steel
Shaft	Stainless Steel
Lifetime	Dependent on shaft version and shaft loading – refer to table
Max. shaft loading	axial 300 N, radial 300 N
Friction torque at + 25°C	≤ 3 Ncm
RPM (continuous operation)	max. 12.000 RPM
Shock (EN 60068-2-27)	≤ 300 g (half sine, 6 ms)
Permanent shock (EN 60028-2-29)	≤ 30 g (half sine, 16 ms)
Vibration (EN 60068-2-6)	≤ 30 g (10 Hz ... 1,000 Hz)
Weight (standard version)	≈ 350 g (0.77 lbs)

Minimum (mechanical) lifetime

Flange	Lifetime in 10^8 revolutions with (F_a/F_r)		
S10 Synchro flange (SCM-…-S10G-…)	7.6 (300N/300N)	10 (270N/270N)	200 (100N/100N)

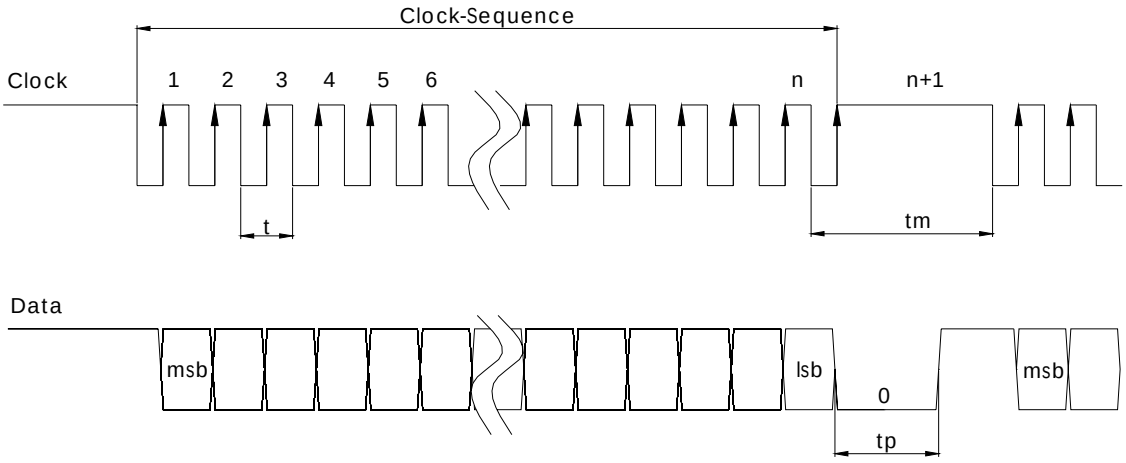
Interface

Synchronous Serial Interface (SSI)

Driver	Driver meets EIA standard RS 422; transmission rates up to 10 MBit/s
Transfer	Transfer distance up to 1.200 m
Transmission	Balanced transmission provides high noise immunity, shielded and twisted pair lines are essential to attain extremely high noise immunity

Protocol SSI

Detailed SSI-Interface description



Electrical connection

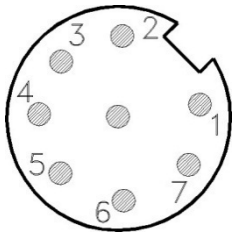
Connection plan

Function	Connector Pin-No.
GND	1
Supply Voltage +U_b	2
SSI Clk+	3
SSI Clk-	4
SSI Data+	5
SSI Data-	6
Preset	7
Complement	8

Connector (front view)

M12 Connector

SCM-XXXX-XXXX-XXXX-P8M



8 pin M12 connector male

Presetfunction

Voltage Level	Function
0 (Input = N.C. or GND)	inactive
1 (Input ≥ 10V / Input ≤ UB)	Preset is activated (*). The Encoder value will be set to 0 in the moment the Preset Level will change to inactive again (falling flange)
Input Resistance	10 kOhm

(*) The Preset needs to be activated for at least 1 second before the falling Edge will be detected

Complementfunction

Voltage Level	Encoder counting direction for clockwise rotation (view on shaft)
0 (Input = N.C. or GND)	Up
1 (Input ≥ 10V / Input ≤ UB)	Down
Input Resistance	10 kOhm

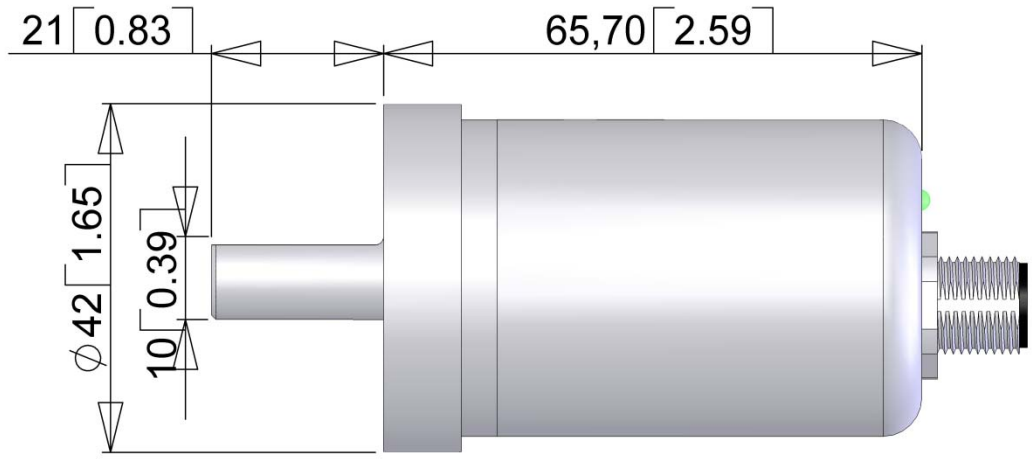
It takes 1 sec before the change take effect. The Encoder value is inverted after the Complement.

Mechanical Models

For detailed drawings please refer our website as drawing, IGES Drawing and STEP 3D Model contact us

Synchro Flange

SCM-XXXX-XXXX-S10G-XXX



all dimensions mm [inch]

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Models / Ordering Description

Description	Type key										
Magnetocode	**SCM-**	_ _	00	_ -	_ _	_ _ -	_	S	10	**G** -	P8M
Interface / Voltage	**SSI – 30Vdc**	**S1**									
	SSI – 5Vdc	SM									
Version			**00**								
Code	Gray			**G**							
	Binary			B							
Bits for Revolutions	Single turn				00						
	Multi turn (4.096 turns)				12						
	Multi turn (8.192 turns)				**13**						
Steps per revolution (Bits)	4096 (0.09°)					**12**					
Flange	Synchro flange (10 mm shaft diameter)						**S**				
Shaft diameter									**10**		
Mechanical options	Heavy duty / stainless steel									**G**	
Connection	Connector 8pol M12										P8M

Standard = bold, further models on request

Ordering example:

SCM-S100G-1312-S10G-P8M

Accessories

Article No	Article	Description
34500800	P8F	Counter Connector for SCM-…-P8M
34500801	P8F-STK8.2	Counter Connector for SCM-…-P8M with 2m PUR cable
34500802	P8F-STK8.5	Counter Connector for SCM-…-P8M with 5m PUR cable

Disclaimer

APPENDIX

Same Encoder Series also available …

⋯ with CANopen Interface.

⋯ or combined with a draw wire adapter to perform linear measurements