



Type SCA50

- Shaft Encoder - \varnothing 50 mm
- Shaft: \varnothing 6 mm to \varnothing 12 mm
- Resolution up to 12.500 ppr
- IP 65 (IP 67 option)
- Formerly named 2R or 2R-3L

Electrical Specifications

Code:	Incremental
Resolution:	1 to 12.500 ppr (pulses per revolution)
Supply Voltage:	4,5 Vdc min. to 30 Vdc max. (45 mA max. - no load) **
Output Voltage:	Low: 500 mV max. at 10 mA High: ($V_{in} - 0,6$) at -10 mA ($V_{in} - 1,3$) at -25 mA
Output Current:	30 mA max. load per output channel **
Frequency Response:	300 kHz max. **
Output Format:	Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs
Phase Sense:	A leads B clockwise (CW) from the mounting end of the encoder
Index:	Gated with Channels A and B high
Accuracy:	+/- 0,8 arc-min.
Outputs:	ASIC Push pull and Differential OL7272 Push-pull and Differential Line Driver 26C31 Differential Line Driver 5V output (with 5V input)
Electrical Protection:	Reverse polarity and output short circuit protected
Noise Immunity:	Tested to EN61000-6-2 : 2005 (industrial environments) Electromagnetic compatibility (EMC) and EN 61000-6-3 : 2007 (residential, commercial, and light-industrial environments) for Electromagnetic compatibility (EMC)

Mechanical Specifications

Material:	Housing: Aluminum Cap: Electroplated Aluminum Shaft: Stainless Steel
Weight:	Encoder: ~ 140 gr (4,94 oz) Cable: 60 gr / meter (2,12 oz / meter)
Bearing Life:	$> 1,9 \times 10^{10}$ revolutions at rated load
Shaft Speed:	12.000 rpm (max.)
Starting Torque:	$< 0,01$ Nm (1,42 oz-in) at 25° C
Mass Moment of Inertia:	2,0 gcm ² (2,83 x 10 ⁻⁵ oz-in-sec ²)
Shaft Loads:	Axial: 20 N (4.5 lbs) max. Radial: 20 N (4.5 lbs) max.

Environmental Specifications

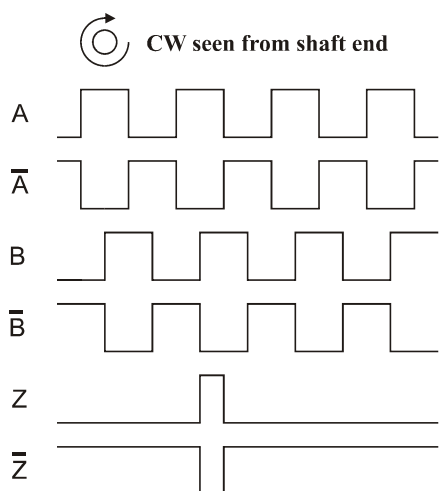
Operating Temp.:	-40° to +100° C
Storage Temp.:	-40° to +100° C
Shock:	100 G / 11 ms
Vibration:	10-2000 Hz / 10 G
Bump:	10 G / 16 ms (1000 x 3 axis)
Humidity:	98 % RH without condensation
Enclosure Rating:	IP 65 / Nema 4 (approx.) IP 67 / Nema 6 (approx.) option

Connection Options

Cable:	8 leads (0,14 mm ² , 26 AWG) - Differential 5 leads (0,14 mm ² , 26 AWG) - Standard twisted pairs; shielded
Connector:	5-pin M12 - Standard 8-pin M12 - Differential 9-pin M23 - Standard 12-pin M23 - Differential

**= It is recommended user not to combine max. Value for all 3 parameters

Output waveform



Channel tolerance $180^\circ \pm 36^\circ$
Phase difference tolerance $90^\circ \pm 18^\circ$
Z channel tolerance $90^\circ \pm 18^\circ$

Disk Resolutions (Pulses per revolution)

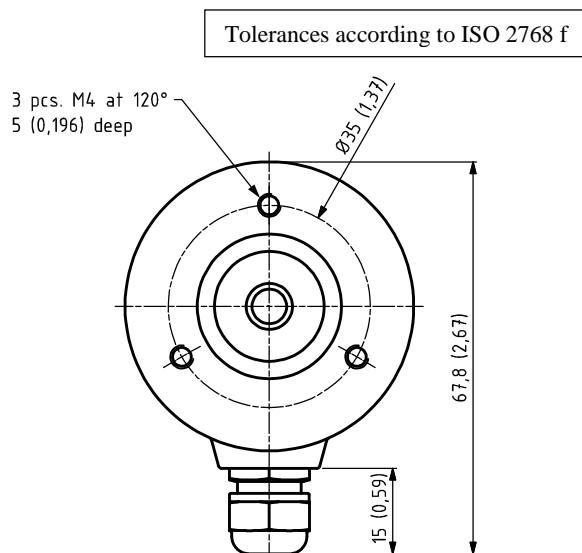
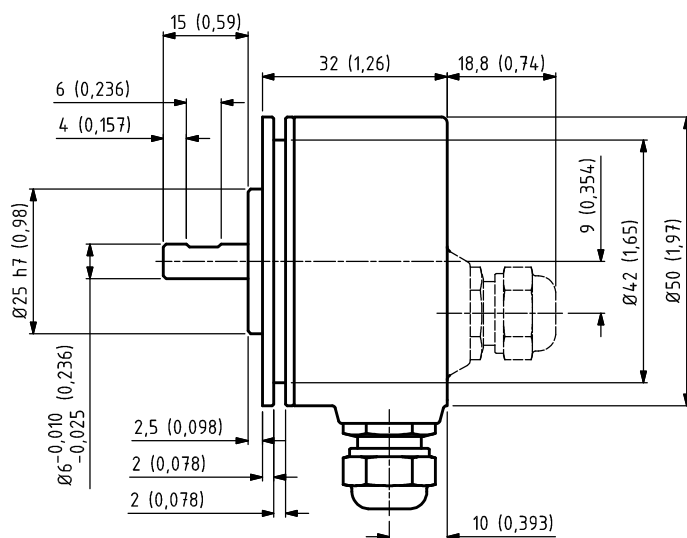
1	32	150	635	3000
2	36	180	720	3600
5	40	200	800	4000
6	47	250	1000	4096
8	50	256	1024	5000
10	60	300	1131	8192
15	64	360	1250	9000
16	75	400	1500	10000
18	80	455	2000	12500*
20	90	500	2048	
25	100	512	2400	
30	125	600	2500	

Other options on request

Pulses per revolution,
 min. 1 – max. 12.500

* Operating temperature: -20°C to 50°C

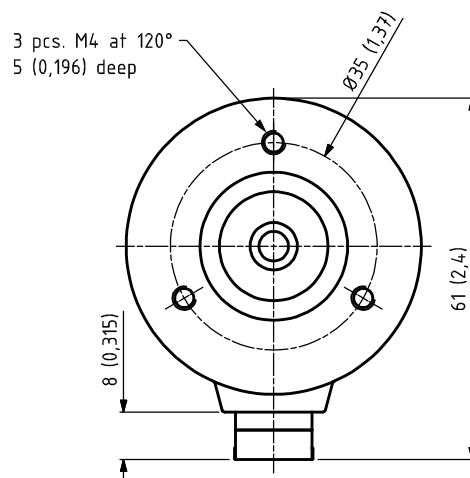
Mechanical Dimensions



Standard Cable Gland
 Side (S) or Back (B)

mm (inches)

Technical drawing of a cable gland (type 1) in cross-section. The drawing shows a cylindrical body with a cable entering from the bottom. Dimensions are given in mm (inch). Key dimensions include: outer diameter Ø25 h7 (0,98) for the main body, Ø42 (1,65) for the cable gland body, and Ø50 (1,97) for the mounting flange. The mounting flange has a thickness of 10 (0,393). The cable gland body has a length of 32 (1,26). The mounting flange has a central hole with a diameter of 15 (0,59). The cable gland body has a central hole with a diameter of 6 (0,236) and a smaller hole with a diameter of 4 (0,157). The cable gland body has a length of 2,5 (0,098) for the central hole section. The mounting flange has a length of 2 (0,078) for the central hole section. The cable gland body has a length of 2 (0,078) for the central hole section. The cable gland body has a length of 10 (0,393) for the mounting flange section.

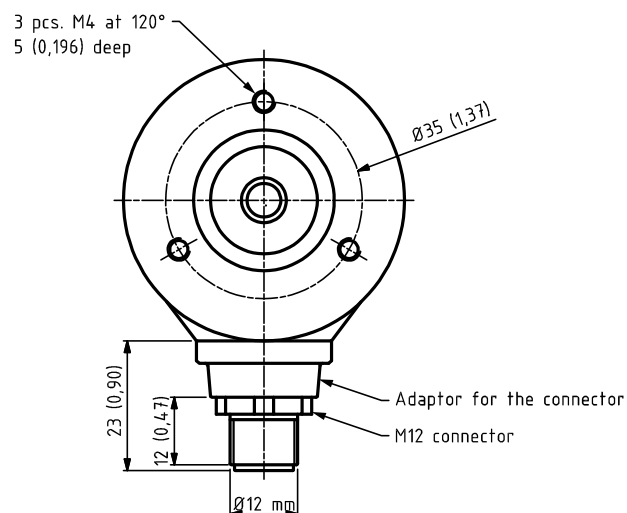


mm (inches)

Technical drawing of a mechanical part, showing a side view and a top view. The side view is on the left, showing a cylindrical part with a flange and a threaded section. The top view is on the right, showing a circular cross-section with a central hole and a flange. Dimensions are given in millimeters (mm) and inches (in).

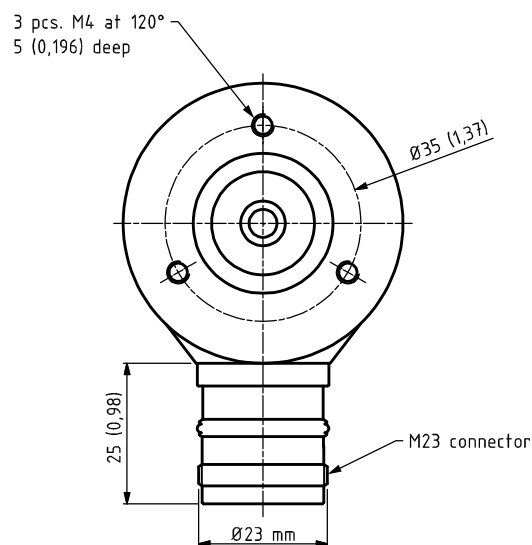
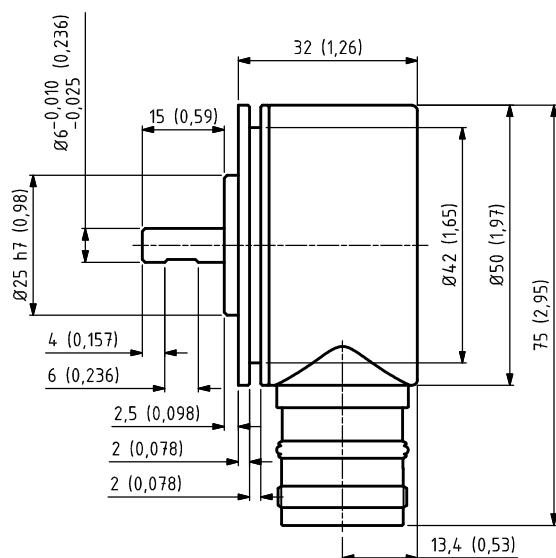
Dimensions (mm) and (inches):

- Overall length: 73 (2.87)
- Flange thickness: 15 (0.59)
- Flange outer diameter: $\varnothing 50$ (1.97)
- Flange inner diameter: $\varnothing 42$ (1.65)
- Threaded section length: 32 (1.26)
- Threaded section outer diameter: $\varnothing 6^{-0.010}_{-0.025}$ (0.236)
- Threaded section inner diameter: $\varnothing 25$ h7 (0.98)
- Threaded section thread: 4 (0.157)
- Threaded section thread: 6 (0.236)
- Threaded section thread: 2.5 (0.098)
- Threaded section thread: 2 (0.078)
- Threaded section thread: 2 (0.078)
- Threaded section thread: 13.4 (0.53)



mm (inches)

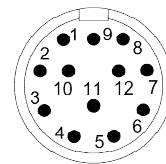
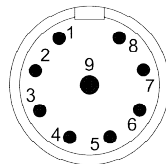
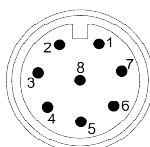
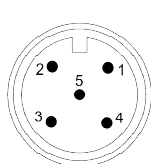
Tolerances according to ISO 2768 f



M23 Connector

mm (inches)

Output Terminations



	Standard Cable	
	Standard Output	Differential Output
Channel	Wire Color	
A	Pink	Pink
A -	Gray*	Gray
B	Green	Green
B -	Yellow*	Yellow
Z	White	White
Z -	Brown*	Brown
Vsup	Red	Red
GND	Blue	Blue

GND = Circuit Ground

* Internally connected as GND

	M12 5 - pin	M12 8 - pin	M23 9 - pin	M23 9 - pin	M23 12 - pin	M23 12 - pin
	Standard Output	Differential Output	Standard Output	Differential Output	Standard Output	Differential Output
Pin	Channel	Channel	Channel	Channel	Channel	Channel
1	Vsup	A	A	A	GND	B -
2	B	Vsup	B	B	NC	NC
3	GND	A -	Z	Z	Z	Z
4	A	B	GND	A -	GND	Z -
5	Z	B -	GND	B -	A	A
6		Z	GND	Z -	GND	A -
7		GND	Vsup	Vsup	NC	NC
8		Z -	GND	GND	B	B
9			Shield	Shield	Shield	Shield
10					GND	GND
11					NC	NC
12					Vsup	Vsup

GND = Circuit Ground

Shield = Case Ground

Ordering Code

Example: SCA50 – 1024 – D – 06 – 15 – 65 – 01 – S – 00

Type

SCA50	-		-		-		-		-		-		-		
		Pulses per Revolution		Output		Shaft Dia.		Shaft Length		IP Rating		Cable Length		Takeout	
		See table								IP 65 65 IP 67 67				Side (radial) S Back (axial) B Tangential T	
				Standard N Standard - Open Collector NPN NON Standard - Open Collector PNP NOP Differential D 26C31 Line Driver 5V input / 5V output L 26C31 Line Driver 9 to 30V input / 5V output 5L OL 7272 Line Driver M							Standard is 1 meter 01 Specify length XX No cable (connector option) 00				
														M12 5-pin P5 M12 8-pin P8 M23 9-pin C9 M23 12-pin C12 No connector 00	
														See Accessories for drawings	

6 mm x 15 mm	06 - 15
6 mm x 30 mm	06 - 30
8 mm x 15 mm	08 - 15
10 mm x 15 mm	10 - 15
10 mm x 27 mm	10 - 27
10 mm x 40 mm	10 - 40
12 mm x 15 mm	12 - 15
1/4 inch x 15 mm	1/4 - 15
3/8 inch x 15 mm	3/8 - 15

Other options on request:
Please contact Scancon A/S