Type SCA50

- **Shaft Encoder - ø 50 mm**
- **Shaft: ø 6 mm to ø 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)

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

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 x 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 gcm² (2,83 x 10^{-5} oz-in-sec²)
Shaft Loads:	Axial: 20 N (4.5 lbs) max. Radial: 20 N (4.5 lbs) max.

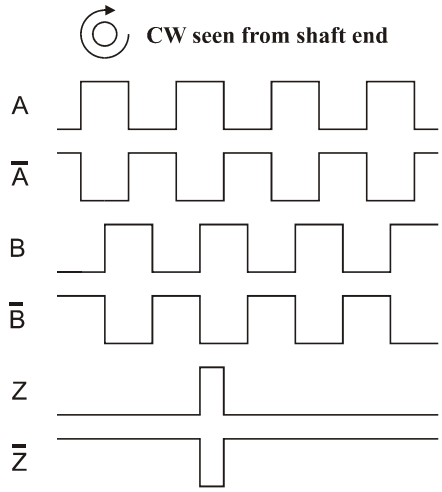
Environmental Specifications

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 mm², 26 AWG) - Differential 5 leads (0,14 mm², 26 AWG) - Standard twisted pairs; shielded
Connector:	5-pin M12 - Standard 8-pin M12 - Differential 9-pin M23 - Standard 12-pin M23 - Differential

Output waveform



Channel tolerance	**180 e°**	**+/- 36 e°**
Phase difference tolerance	**90 e°**	**+/- 18 e°**
Z channel tolerance	**90 e°**	**+/- 18 e°**

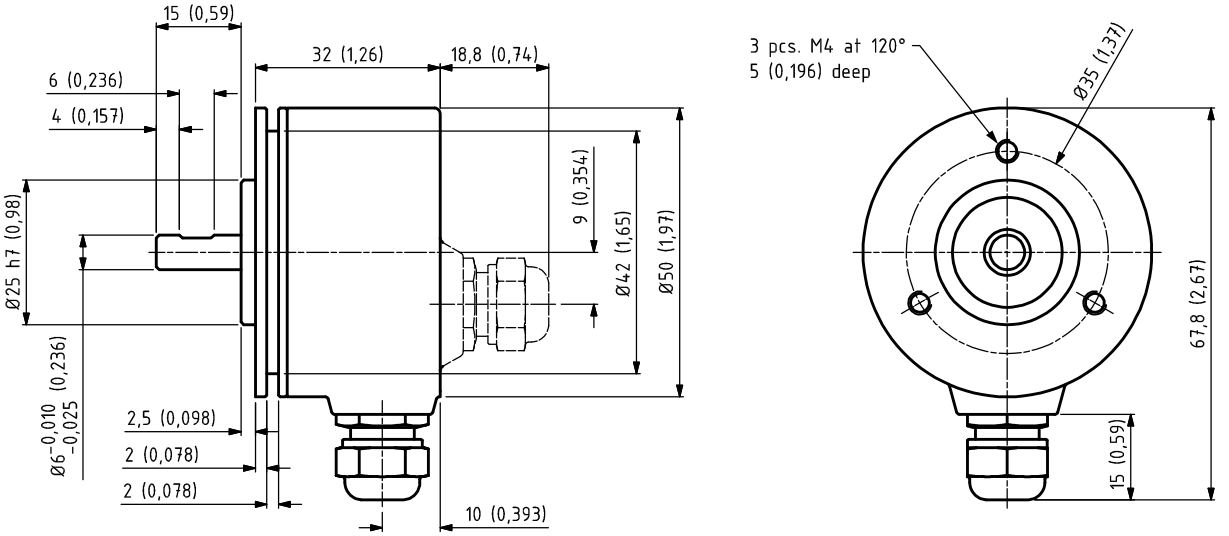
Disk Resolutions (Pulses per revolution)

1	32	125	720	3072
2	36	150	800	3600
5	40	180	1000	4000
6	45	200	1024	4096
7	47	250	1131	5000
8	50	256	1200	8192
10	60	300	1250	9000*
12	64	360	1270	10000*
15	70	400	1500	12500*
16	75	455	2000	
18	80	500	2048	
20	90	512	2400	
25	100	600	2500	
30	120	635	3000	

Other options on request
Pulses per revolution,
min. 1 – max. 12.500

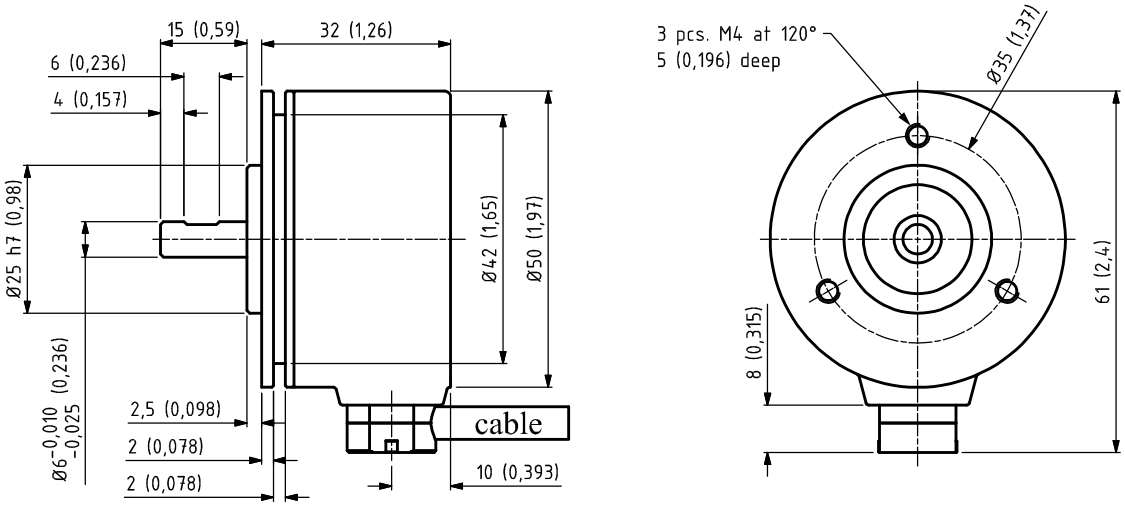
* ***Operating temperature: -20° C to 50° C***

Mechanical Dimensions

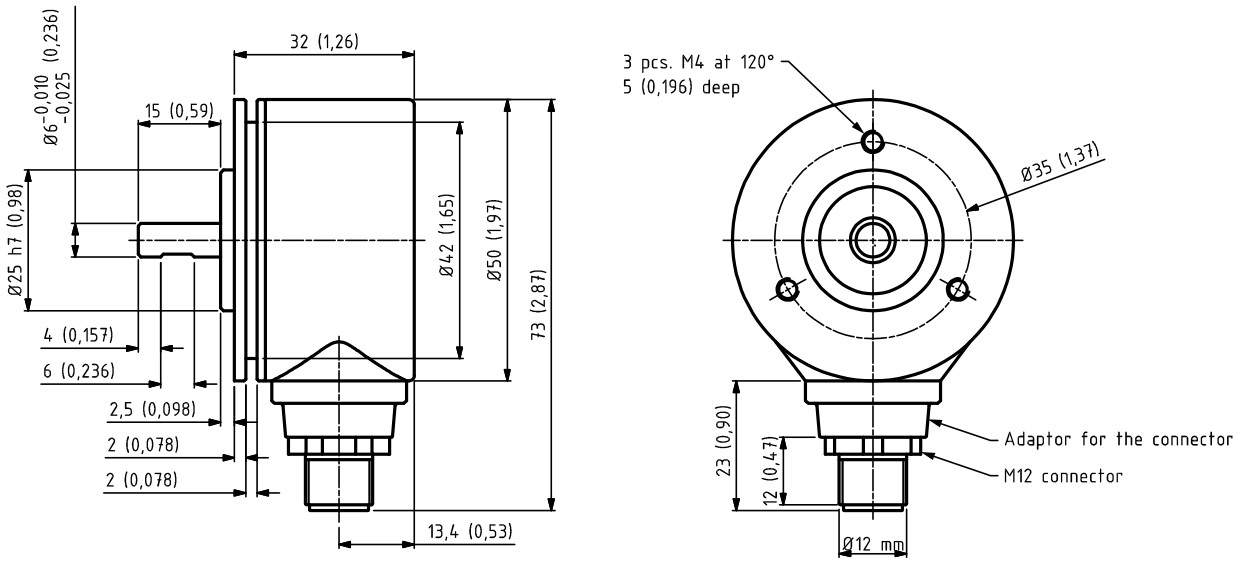


Standard Cable Gland
Side (S) or Back (B)

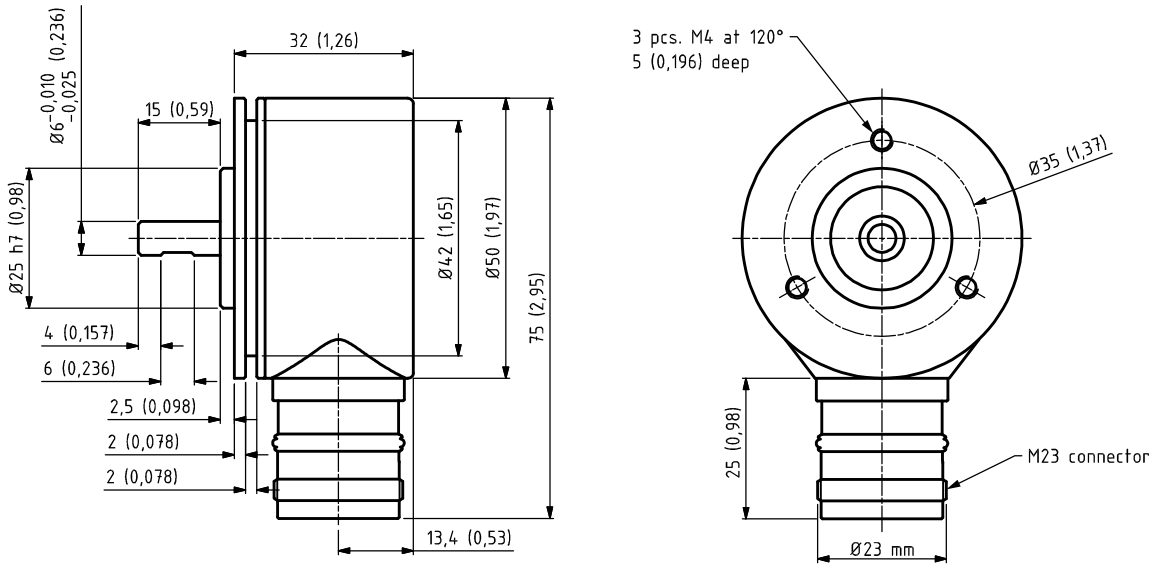
mm (inches)



Tangential Cable Gland mm (inches)

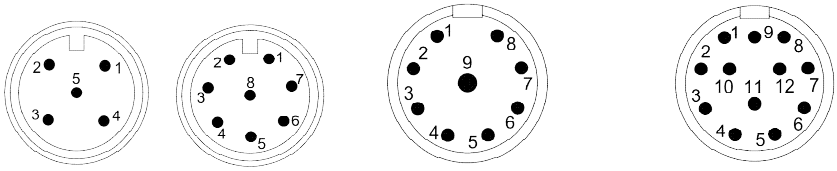


M12 Connector mm (inches)



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

SCA50 - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Pulses per Revolution

See table

Output

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**

Shaft Dia. / Shaft Length

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**

IP Rating

IP 65	**65**
IP 67	**67**

Cable Length

Standard is 1 meter	**01**
Specify length	**XX**
No cable (*connector option*)	**00**

Cable Takeout

Side (radial)	**S**
Back (axial)	**B**
Tangential	**T**

Connector

M12 5-pin	**P5**
M12 8-pin	**P8**
M23 9-pin	**C9**
M23 12-pin	**C12**
No connector	**00**

See Accessories for drawings

Other options on request:
Please contact Scancon A/S