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.

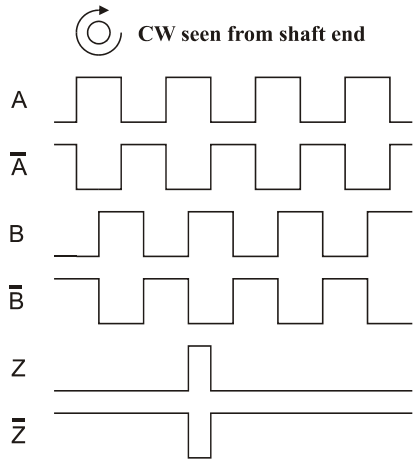
Environmental Specifications

Operating Temp.:	-40° to +85° C
Storage Temp.:	-40° to +85° 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:	M12 5-pin - Standard M12 8-pin - Differential M23 9-pin - Standard M23 12-pin - Differential

Output waveform



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

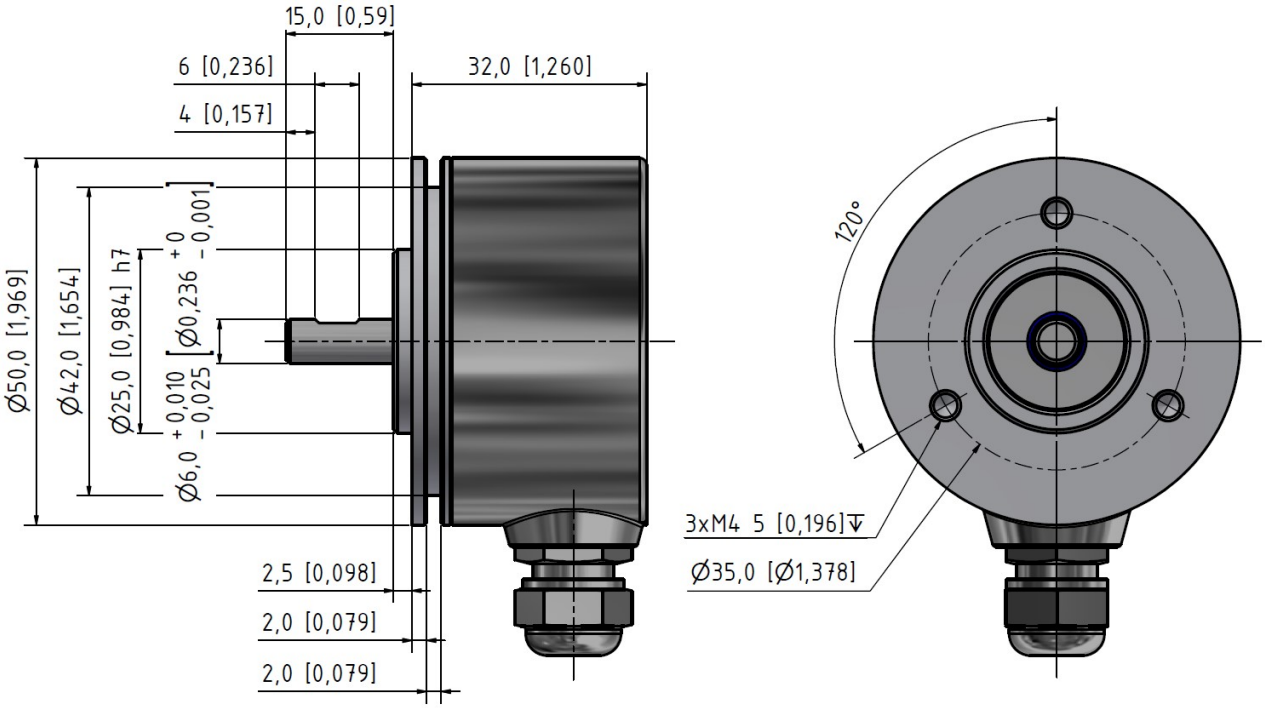
Disk Resolutions (Pulses per revolution)

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	

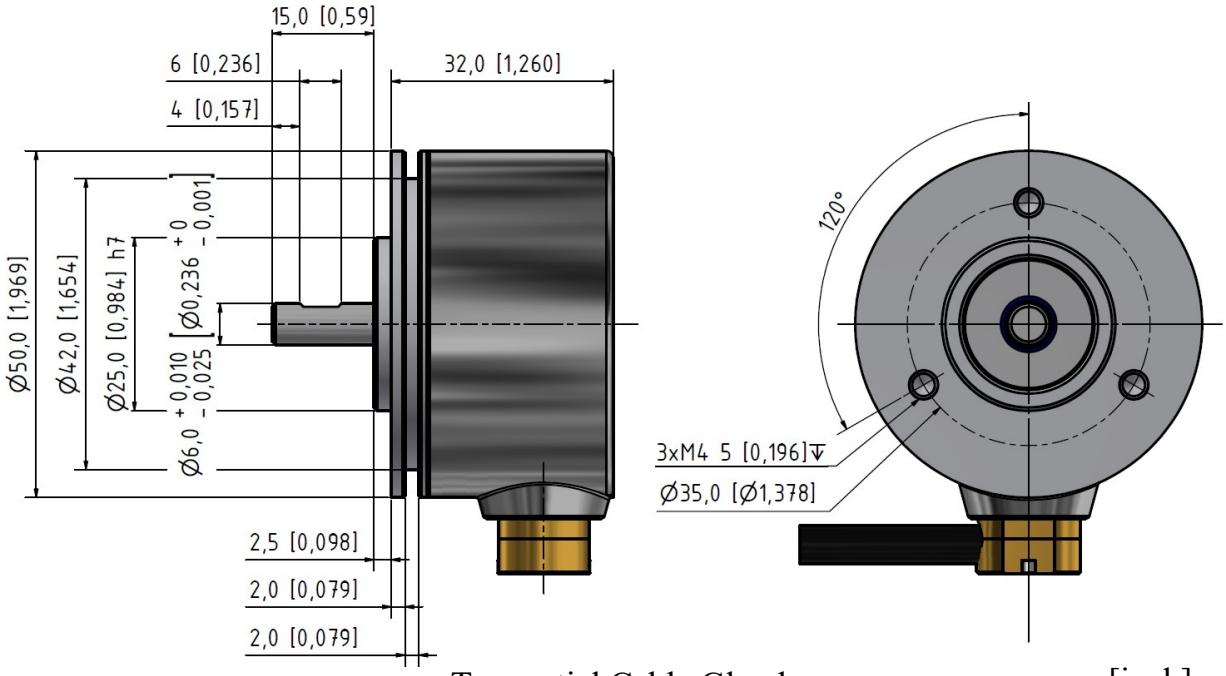
Other options on request
Pulses per revolution,
min. 1 – max. 12.500

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

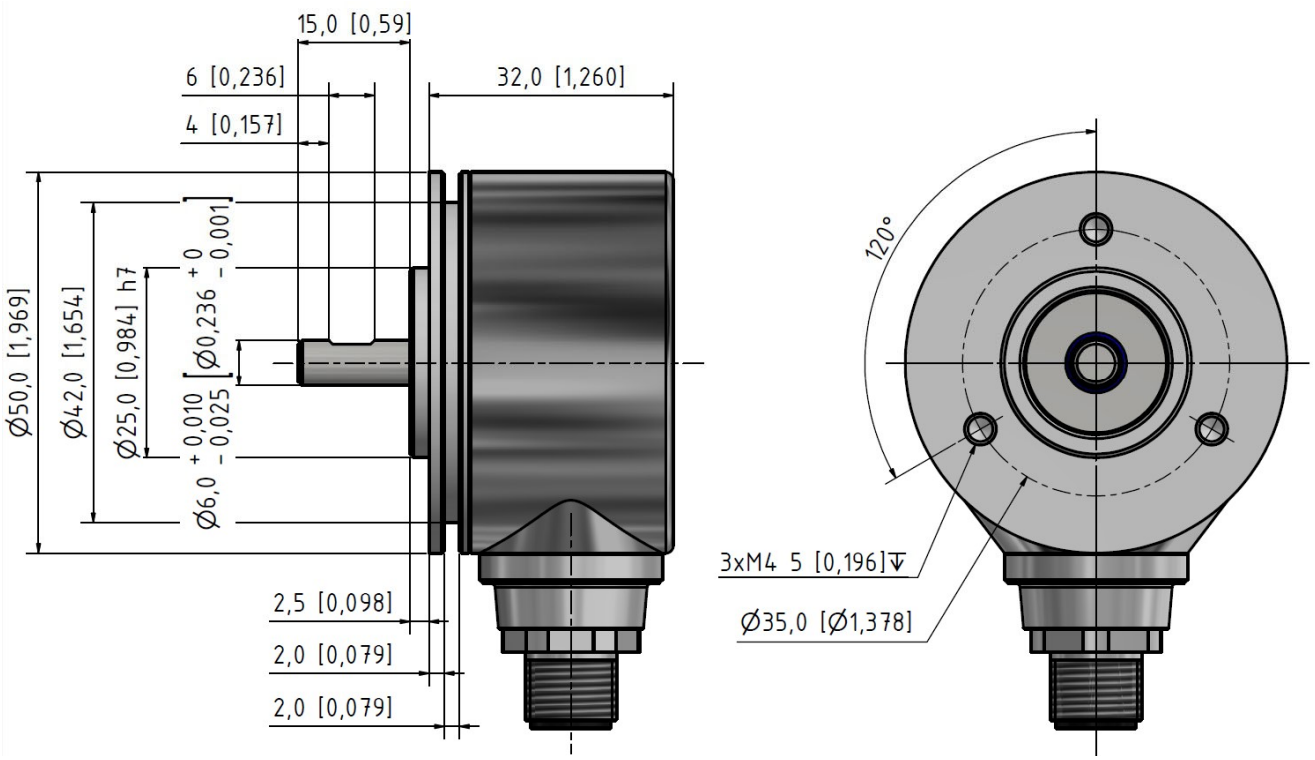
Mechanical Dimensions



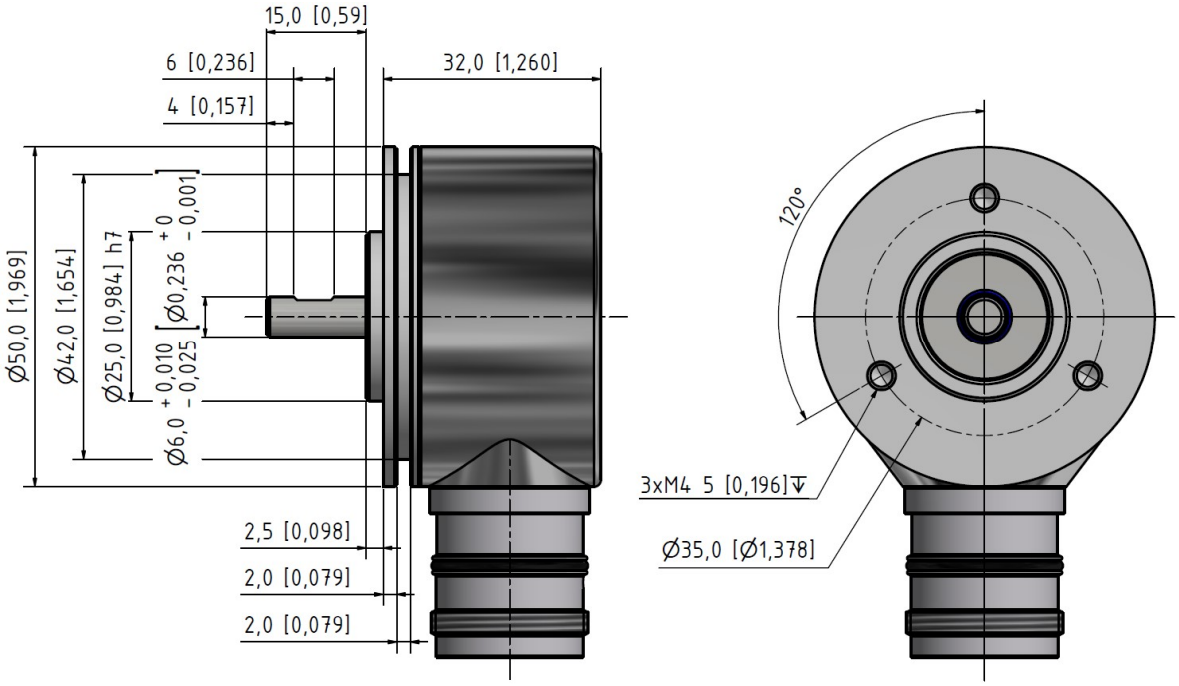
Standard Cable Gland (side or back outlet) mm [inch]



Tangential Cable Gland mm [inch]

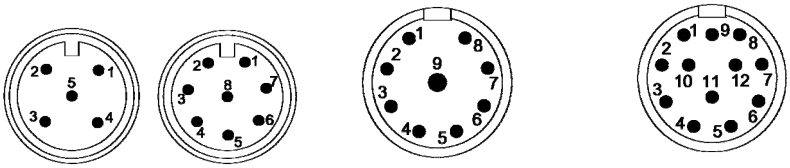


M12 Connector mm [inch]



M23 Connector mm [inch]

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	-		-		-		-		-		-		-	
		1		2		3		4		5		6		7		8

1. Pulses per revolution

See table on page 2

2. Output

Standard ..... **N**
Standard *(Open collector NPN)* ..... **NON**
Standard *(Open collector PNP)* ..... **NOP**
Differential ..... **D**
26C31 Line Driver *(5V IN/OUT)* **L**
26C31 Line Driver *(9-30V IN / 5V OUT)* **L**
OL 7272 Line Driver ..... **M**

3 & 4. Shaft diameter

	3.		4.
6 mm x 15 mm	**06**	**x**	**15**
6 mm x 30 mm	**06**	**x**	**30**
8 mm x 15 mm	**08**	**x**	**15**
10 mm x 15 mm	**10**	**x**	**15**
10 mm x 27 mm	**10**	**x**	**27**
10 mm x 40 mm	**10**	**x**	**40**
12 mm x 15 mm	**12**	**x**	**15**
1/4 in x 15 mm	**1/4**	**x**	**15**
3/8 in x 15 mm	**3/8**	**x**	**15**

5. IP Rating

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

6. Cable Length

Standard cable is 1m **01**
Specify length ..... **XX**
No cable **00**

7. Cable & Connector Takeout

Side radial ..... **S**
Back axial ..... **B***
Tangential ..... **T**
***Only encoders with cable**

8. Connector

M12 5-pin P**5**
M12 8-pin **P8**
M23 9-pin **C9**
M23 12-pin **C12**
No connector **00**
See Accessories for drawings