



Type SCA80

- Shaft Encoder - Ø 80 mm
- Shaft: Ø 10 mm
- Resolution up to 10.000 ppr
- Terminal Shut down at 155 °C
- Standard IP 65
- Formerly named 2RP

Electrical Specifications

| | |
|-------------------------------|--|
| Code: | Incremental |
| Resolution: | 1 to 10.000 ppr (pulses per revolution) |
| Supply Voltage: | 4,5 Vdc min. to 30 Vdc max. (35 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: Aluminum Shaft: Brass |
| Weight: | Encoder: ~ 190 gr (6,7 oz) Cable: 60 gr / meter (2,12 oz / meter) |
| Bearing Life: | > 1,9 x 10 ¹⁰ revolutions at rated load |
| Shaft Speed: | 4.500 rpm (max. sustained) IP 65 3.000 rpm (max. sustained) IP 66 / IP 67 |
| Starting Torque: | < 0,02 Nm (2,83 oz-in) at 25° C |
| Mass Moment of Inertia: | 6,0 gcm ² (8,5 x 10 ⁻⁵ oz-in-sec ²) |
| Hollow Shaft Loads: | Axial: 50 N (11,24 lbs) max. Radial: 50 N (11,24 lbs) max. |

Environmental Specifications

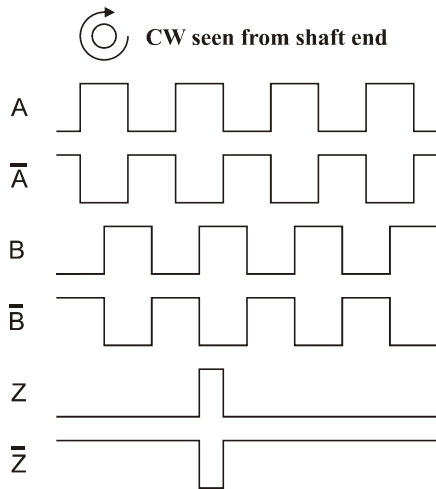
| | |
|-------------------------|---|
| Operating Temp.: | -40° to +85° C |
| Storage Temp.: | -40° to +85° C |
| Shock: | 100 G / 11 ms |
| Vibration: | 10-2000 Hz / 10 G |
| Bump: | 10 G / 16 ms (1000 x 3 axis) |
| Humidity: | 98 % RH without condensation |
| IP Rating: | IP 65 / Nema 5 (approx.) IP 67 / Nema 6 (approx.) option |

Connection Options

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

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

Output waveform



Channel tolerance $180\text{ e}^\circ \pm 36\text{ e}^\circ$
 Phase difference tolerance $90\text{ e}^\circ \pm 18\text{ e}^\circ$
 Z channel tolerance $90\text{ e}^\circ \pm 18\text{ e}^\circ$

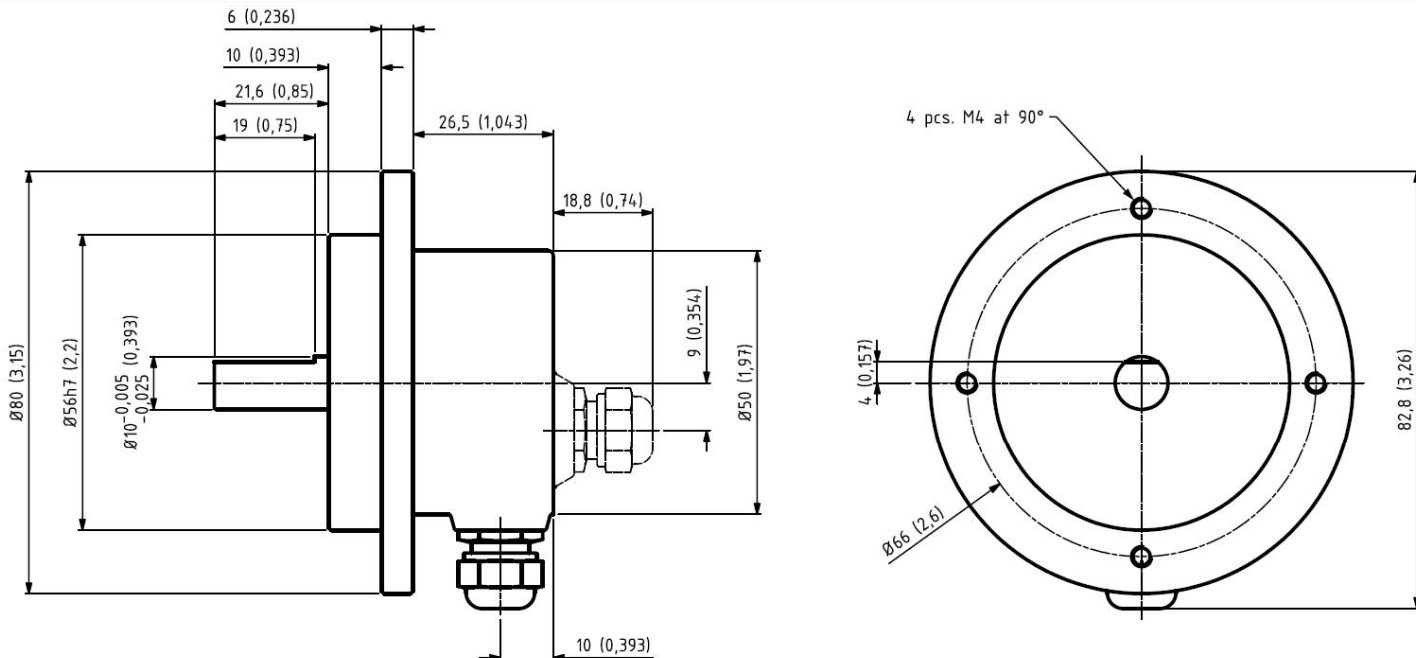
Disk Resolutions (Pulses per revolution)

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

Other options on request
 Pulses per revolution,
 min. 1 – max. 10.000

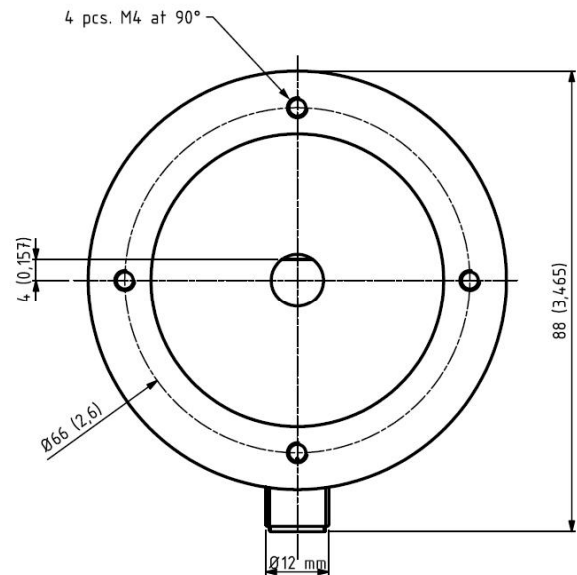
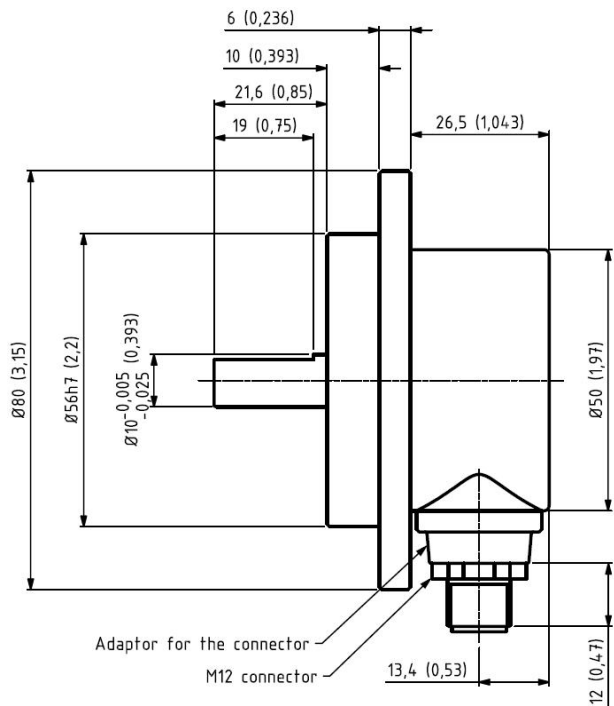
* Operating temperature: -20°C to 50°C

Mechanical Dimensions



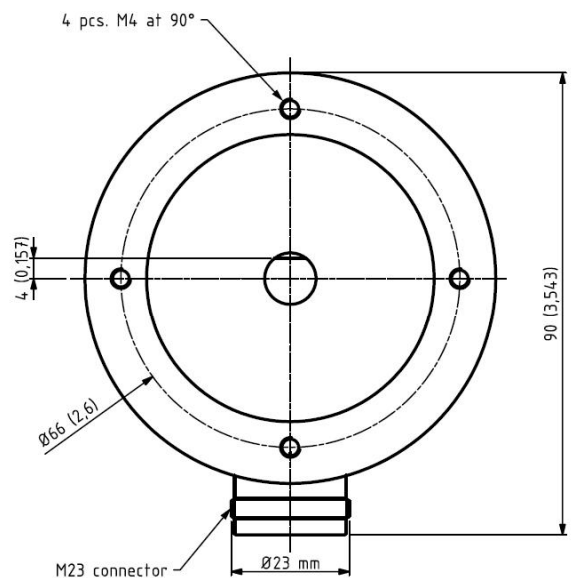
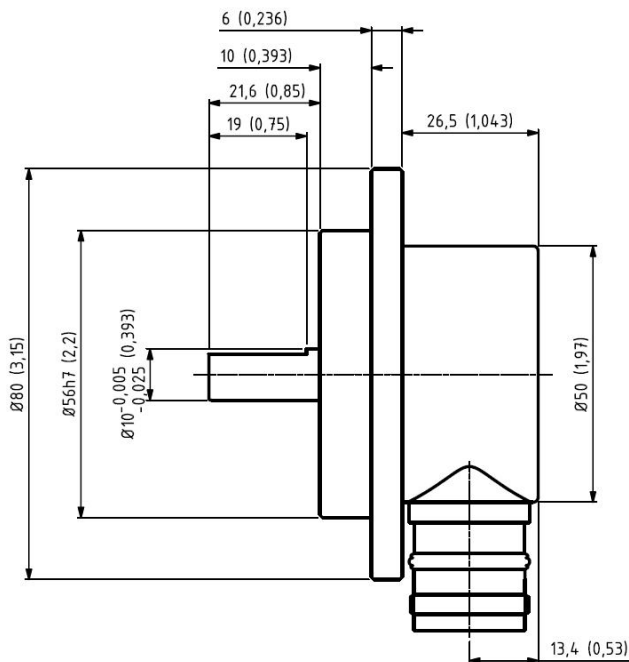
Standard Cable Gland
 Side (S) or Back (B)

mm (inches)



M12 Connector

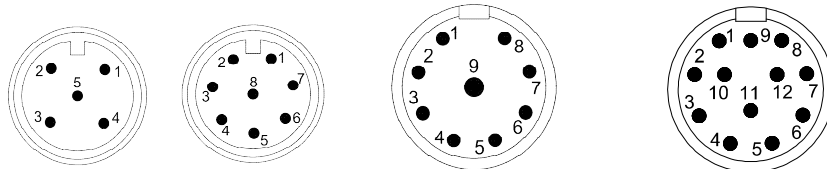
mm (inches)



M23 Connector

mm (inches)

Output Terminations



| Channel | Standard Cable | |
|---------|-----------------|---------------------|
| | Standard Output | Differential Output |
| | 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

| Pin | 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 |
| | 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: SCA80- 1024 - D - 10 - 20 - 65 - 01 - S - 00

SCA80 - - - - - - - - -

Pulses per Revolution

Output

Shaft Diameter

Shaft Length

IP Rating

Cable Length

Takeout

Connector

See table

| | |
|--------------------------------|-----|
| Standard | N |
| Standard - Open Collector NPN | NON |
| Standard - Open Collector PNP | NOP |
| Differential | D |
| 26C31 Line Driver 5V / 5V only | L |
| OL 7272 Line Driver | M |

IP 65 65

Standard is 1 meter 01
Specify length XX
No Cable 00

| | |
|------------------|---|
| <u>Cable</u> | |
| Side radial | S |
| Back Axial | B |
| <u>Connector</u> | |
| Side radial | S |
| Back Axial | B |

10 mm x 23 mm 10 - 20

| | |
|--------------|-----|
| M12 5-pin | P5 |
| M12 8-pin | P8 |
| M23 9-pin | C9 |
| M23 12-pin | C12 |
| No Connector | 00 |

Other options on request