



## Type 2RK

- Shaft Encoder -  $\varnothing$  58 mm
- Shaft:  $\varnothing$  1/4" to  $\varnothing$  10 mm
- Resolution up to 12.500 ppr
- Standard IP 65 (IP 67 options)

### Electrical Specifications

|                               |   |
|-------------------------------|---|
| <b>Code:</b>                  | Incremental   |
| <b>Resolution:</b>            | 1 to 12.500 ppr (pulses per revolution)   |
| <b>Supply Voltage:</b>        | 4,5 Vdc min. to 30 Vdc max. (35 mA max. - no load) **   |
| <b>Output Voltage:</b>        | Low: 500 mV max. at 10 mA<br>High: ( $V_{in} - 0,6$ ) at -10 mA<br>( $V_{in} - 1,3$ ) at -25 mA   |
| <b>Output Current:</b>        | 30 mA max. load per output channel **   |
| <b>Frequency Response:</b>    | 300 kHz max. **   |
| <b>Output Format:</b>         | Two channel (A, B) quadrature with Index (Z) and optional complementary (A-, B-, Z-) outputs  |
| <b>Phase Sense:</b>           | A leads B clockwise (CW) from the mounting end of the encoder   |
| <b>Index:</b>                 | Gated with Channels A and B high  |
| <b>Accuracy:</b>              | +/- 0,8 arc-min.  |
| <b>Outputs:</b>               | ASIC Push pull and Differential<br>OL7272 Push-pull and Differential<br>Line Driver<br>26C31 Differential Line Driver<br>5V output (with 5V input)  |
| <b>Electrical Protection:</b> | Reverse polarity and output short circuit protected   |
| <b>Noise Immunity:</b>        | Tested to EN61000-6-2 : 2005 (industrial environments)<br>Electromagnetic compatibility (EMC) and EN 61000-6-3 : 2007 (residential, commercial, and light-industrial environments) for<br>Electromagnetic compatibility (EMC) |

### Mechanical Specifications

|                                |  |
|--------------------------------|--|
| <b>Material:</b>               | Housing: Aluminum<br>Cap: Aluminum<br>Shaft: Stainless steel AISI 303        |
| <b>Weight:</b>                 | Encoder: ~ 190 gr (6,7 oz)<br>Cable: 60 gr / meter (2,12 oz / meter)         |
| <b>Bearing Life:</b>           | > $1,9 \times 10^{10}$ revolutions at rated load                             |
| <b>Shaft Speed:</b>            | 4.500 rpm (max. sustained) IP 65<br>3.000 rpm (max. sustained) IP 66 / IP 67 |
| <b>Starting Torque:</b>        | < 0,02 Nm (2,83 oz-in) at 25° C  |
| <b>Mass Moment of Inertia:</b> | 6,0 gcm <sup>2</sup> ( $8,5 \times 10^{-5}$ oz-in-sec <sup>2</sup> )         |
| <b>Shaft Loads:</b>            | Axial: 150 N (33,75 lbs) max.<br>Radial: 250 N (56 lbs) max.                 |

### Environmental Specifications

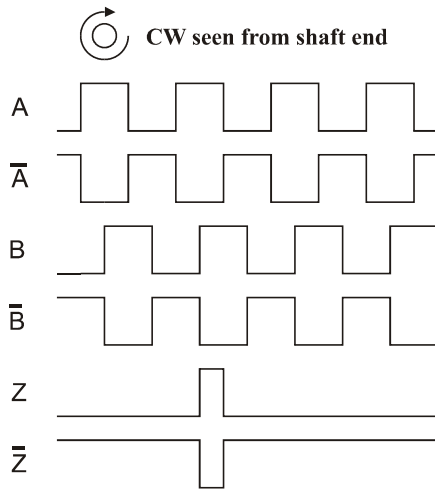
|                         |   |
|-------------------------|---|
| <b>Operating Temp.:</b> | -40° to +85° C  |
| <b>Storage Temp.:</b>   | -40° to +85° C  |
| <b>Shock:</b>           | 100 G / 11 ms   |
| <b>Vibration:</b>       | 10-2000 Hz / 10 G   |
| <b>Bump:</b>            | 10 G / 16 ms (1000 x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

### Connection Options

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

\*\* = It is recommended user not to combine max. values for all 3 parameter

## 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       $90\text{ e}^\circ \pm 18\text{ e}^\circ$

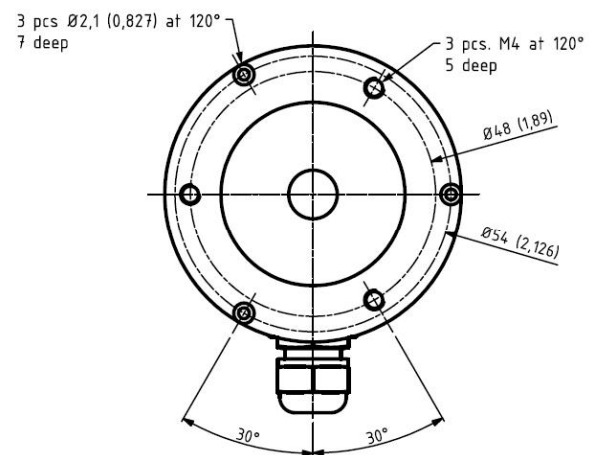
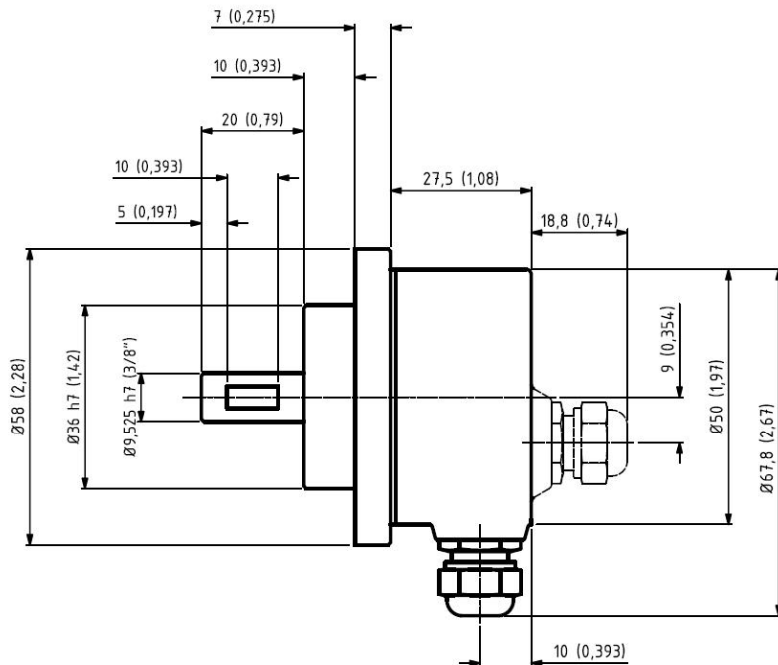
## Disk Resolutions (Pulses per revolution)

|    |     |     |      |        |
|----|-----|-----|------|--------|
| 1  | 32  | 125 | 720  | 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

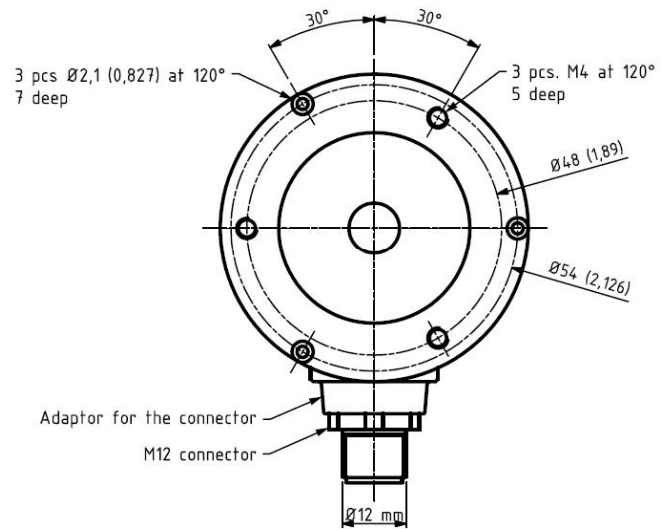
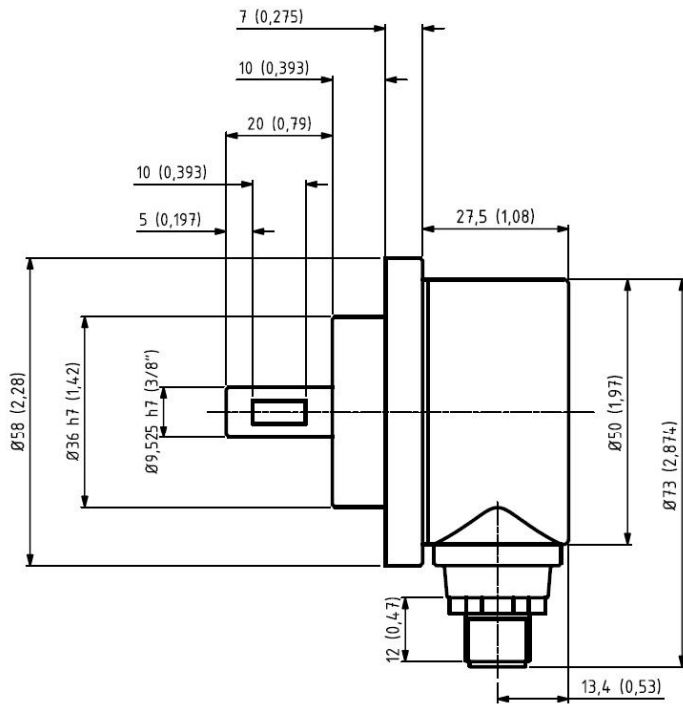
\* Operating temperature:  $-20^\circ\text{C}$  to  $50^\circ\text{C}$

## Mechanical Dimensions



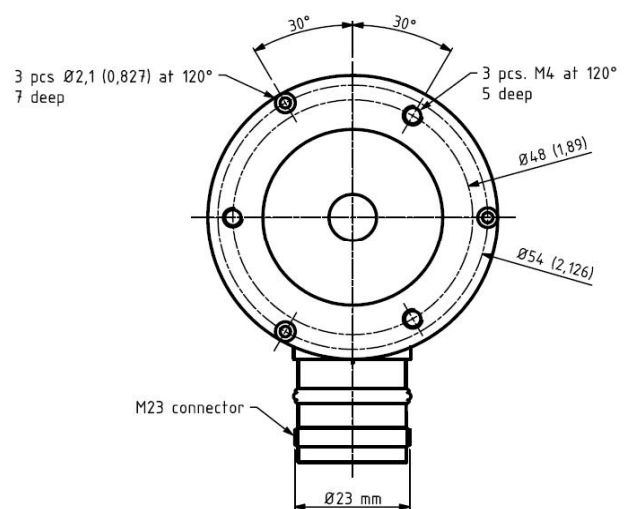
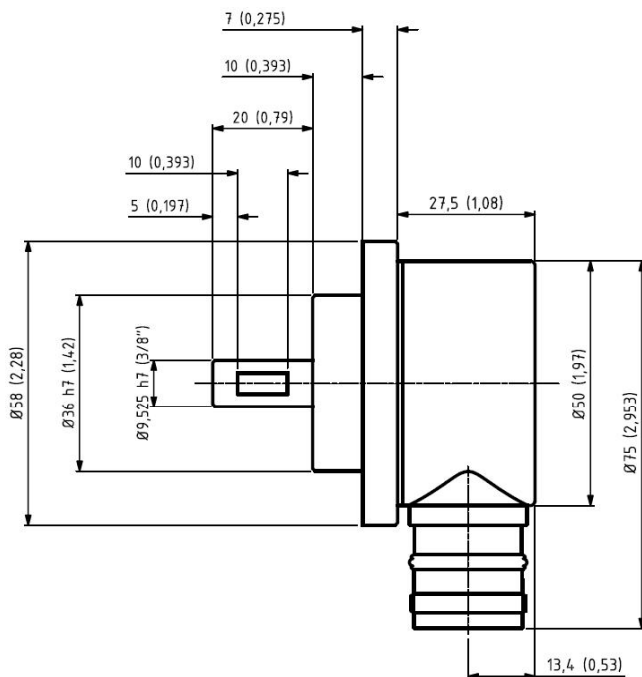
Standard Cable Gland  
 Side (S) or Back (B)

mm (inches)



M12 Connector

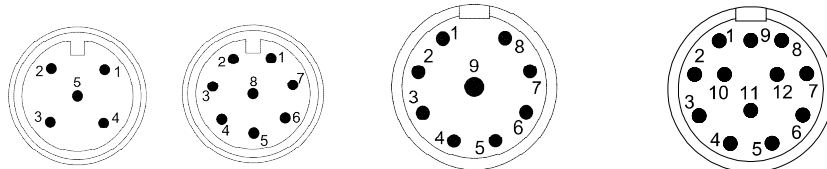
mm (inches)



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

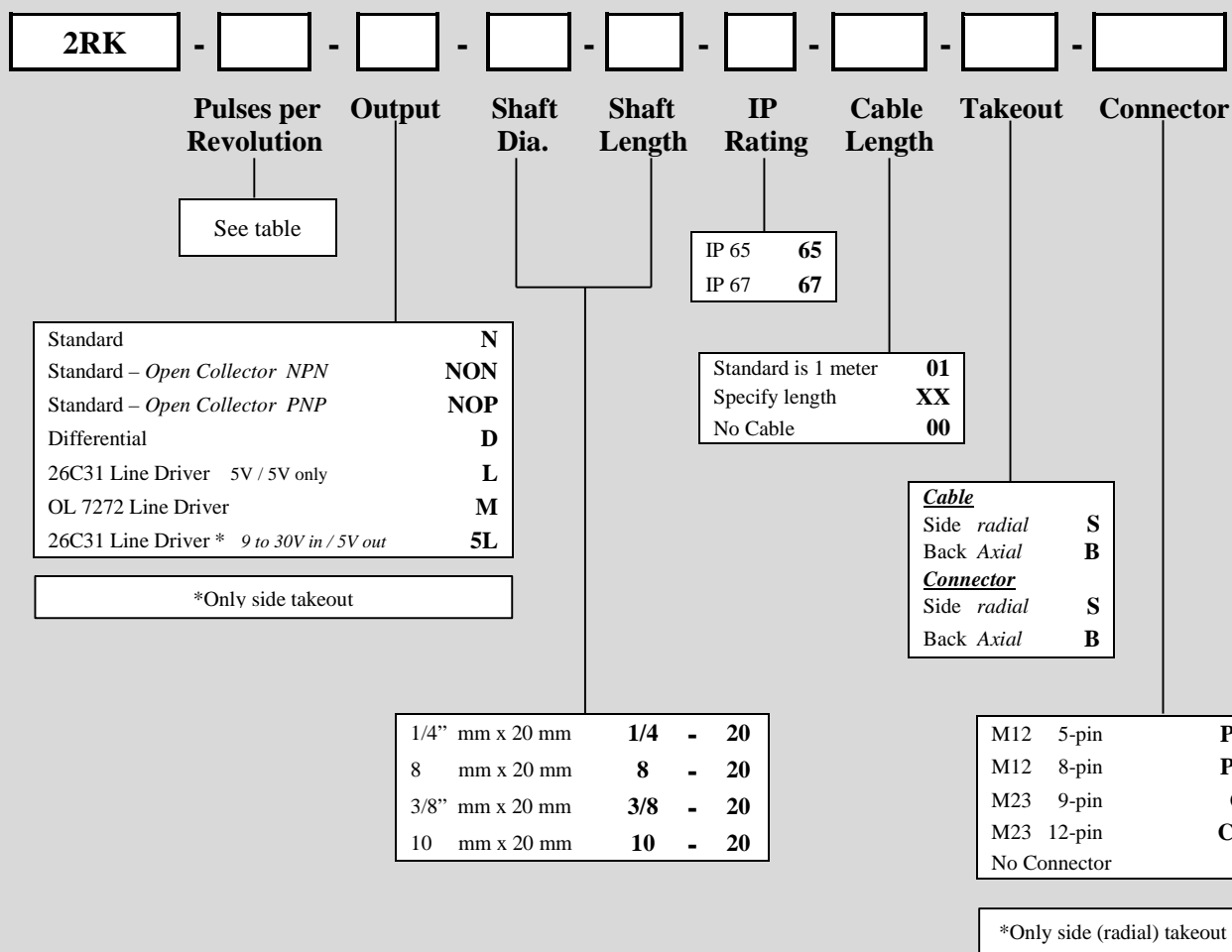
| Pin | M12 5 - pin     | M12 8 - pin         | M23 9 - pin     | M23 9 - pin         | M23 12 - pin    | M23 12 - pin        |
|-----|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|
|     | Standard Output | Differential Output | 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: 2RK- 1024 - D - 8 - 20 - 65 - 01 - S - 00



Other options on request:  
Please contact Scancon A/S

See Accessories for drawings