

## Type SCH50IF-SR



- Hollow Shaft Encoder -  $\varnothing$  50 mm
- Hollow Bore:  $\varnothing$  8 mm to  $\varnothing$  16 mm
- Stainless Steel - AISI 303
- Resolution up to 9000 ppr
- IP 67 Environmental Protection
- Formerly named 2RHIF-SR

### Electrical Specifications

|                               |  |
|-------------------------------|--|
| <b>Code:</b>                  | Incremental  |
| <b>Resolution:</b>            | 1 to 9000 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 Electromagnetic compatibility (EMC) |

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

### Mechanical Specifications

|                                |  |
|--------------------------------|--|
| <b>Material:</b>               | Housing: Stainless Steel - AISI 303<br>Cap: Stainless Steel - AISI 303<br>Hollow Shaft: Stainless Steel - AISI 303 |
| <b>Weight:</b>                 | Encoder: ~ 245 gr (8,64 oz)<br>Cable: 60 gr / meter (2,12 oz / meter)  |
| <b>Bearing Life:</b>           | > 1,9 x 10 <sup>10</sup> revolutions at rated load   |
| <b>Shaft Speed:</b>            | 6.000 rpm (max.)   |
| <b>Starting Torque:</b>        | < 0,01 Nm (1,42 oz-in) at 25° C  |
| <b>Mass Moment of Inertia:</b> | 2,0 gcm <sup>2</sup> (2,83 x 10 <sup>-5</sup> oz-in-sec <sup>2</sup> )   |
| <b>Hollow Shaft Loads:</b>     | Axial: 20 N (4,5 lbs) max.<br>Radial: 20 N (4,5 lbs) max.  |

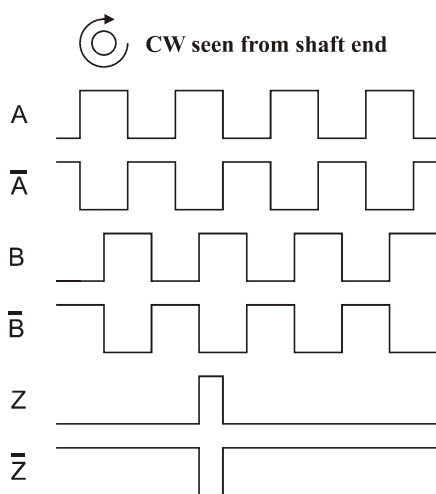
### Environmental Specifications

|                          |                              |
|--------------------------|------------------------------|
| <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>Enclosure Rating:</b> | IP 67 / Nema 6 (approx.)     |

### Connection Options

|                   |   |
|-------------------|---|
| <b>Cable:</b>     | 8 leads (0,14 mm <sup>2</sup> , 26 AWG) twisted pairs; shielded                   |
| <b>Connector:</b> | 9-pin M23 - <i>not stainless steel</i><br>12-pin M23 - <i>not stainless steel</i> |

## Output waveform



|   |                            |                  |
|---|----------------------------|------------------|
| S | 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)

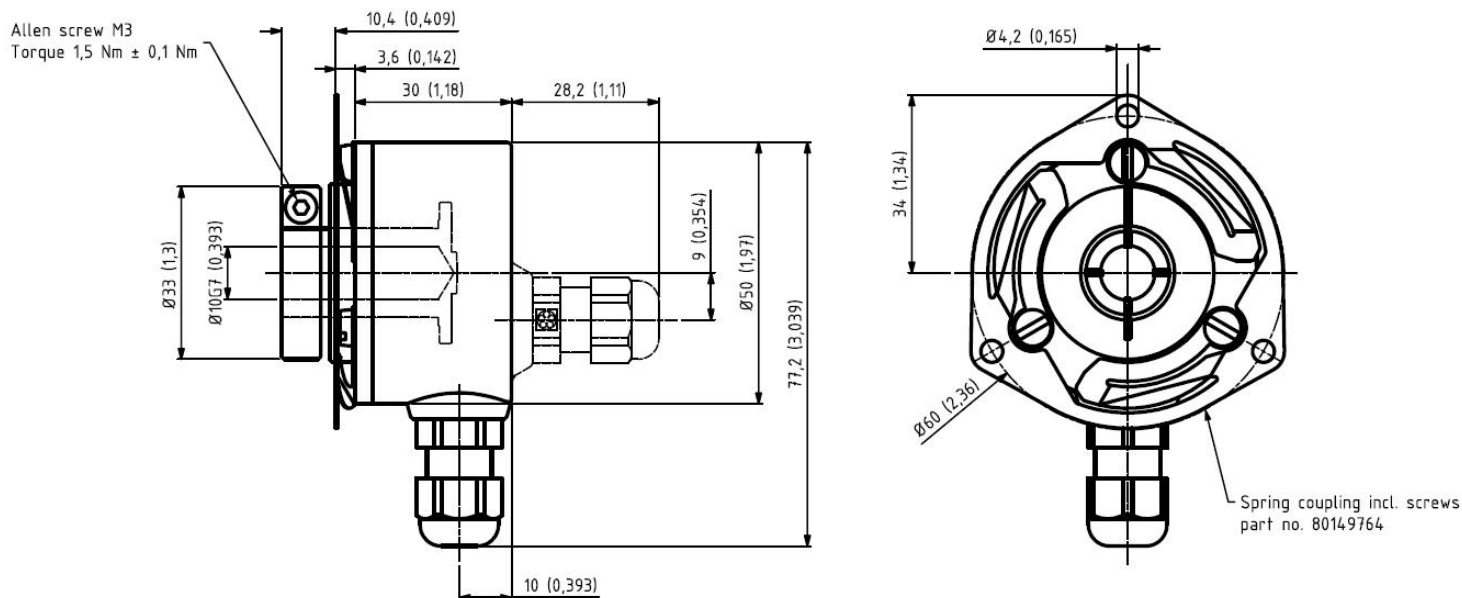
|    |     |     |      |       |
|----|-----|-----|------|-------|
| 1  | 32  | 125 | 720  | 3000  |
| 2  | 36  | 150 | 800  | 3072  |
| 5  | 40  | 180 | 1000 | 3600  |
| 6  | 45  | 200 | 1000 | 4000  |
| 7  | 47  | 250 | 1024 | 4096  |
| 8  | 50  | 256 | 1131 | 5000  |
| 10 | 60  | 300 | 1200 | 8192  |
| 12 | 64  | 360 | 1250 | 9000* |
| 15 | 70  | 400 | 1270 |       |
| 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. 9000

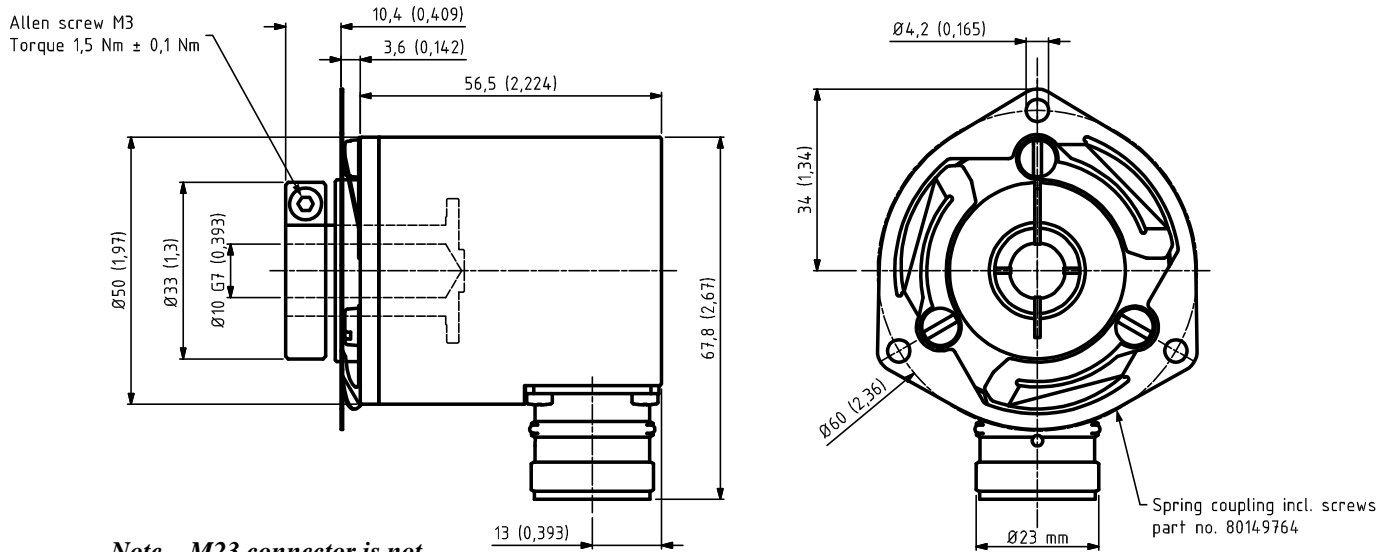
\* Operating temperature: -20° C to 50° C

## Mechanical Dimensions



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

mm (inches)



**Note – M23 connector is not composed of stainless steel**

M23 Connector  
Side (S)

mm (inches)

## Output Termination



| Channel | 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 | M23 9 - pin     | M23 9 - pin         | M23 12 - pin    | M23 12 - pin        |
|-----|-----------------|---------------------|-----------------|---------------------|
|     | Standard Output | Differential Output | Standard Output | Differential Output |
| Pin | Channel         | Channel             | Channel         | Channel             |
| 1   | A               | A                   | GND             | B -                 |
| 2   | B               | B                   | NC              | NC                  |
| 3   | Z               | Z                   | Z               | Z                   |
| 4   | GND             | A -                 | GND             | Z -                 |
| 5   | GND             | B -                 | A               | A                   |
| 6   | GND             | Z -                 | GND             | A -                 |
| 7   | Vsup            | Vsup                | NC              | NC                  |
| 8   | 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: SCH50IF – SR – 1024 – D – 12 – 30 – 67 – 01 – S – 00 – S1

### Type

SCH50IF-SR - [ ] - [ ] - [ ] - 30 - 67 - [ ] - [ ] - [ ] - [ ]

Pulses per Revolution

See table

Output

|                                |     |
|--------------------------------|-----|
| 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   |

Hollow Shaft Dia.

Hollow Shaft Length

|                 |         |
|-----------------|---------|
| 8.0 mm x 30 mm  | 08 - 30 |
| 10.0 mm x 30 mm | 10 - 30 |
| 12.0 mm x 30 mm | 12 - 30 |
| 14.0 mm x 30 mm | 14 - 30 |
| 15.0 mm x 30 mm | 15 - 30 |
| 16.0 mm x 30 mm | 16 - 30 |

IP Rating

IP 67 67

|                     |    |
|---------------------|----|
| Standard is 1 meter | 01 |
| Specify length      | XX |
| No cable            | 00 |

Cable Length

Takeout

Cable

|               |   |
|---------------|---|
| Side (radial) | S |
| Back (axial)  | B |

Connector

|               |   |
|---------------|---|
| Side (radial) | S |
|---------------|---|

|              |     |
|--------------|-----|
| M23 9-pin    | C9  |
| M23 12-pin   | C12 |
| No connector | 00  |

|                      |    |
|----------------------|----|
| 1 hole p/n 80147042  | S1 |
| 1 hole p/n 80131035  | S2 |
| 1 hole p/n 80130621  | S3 |
| 2 holes p/n 80149823 | S4 |
| 3 holes p/n 80149764 | S5 |
| 4 holes p/n 80131333 | S6 |
| 2 holes p/n 80149662 | S7 |
| No spring coupling   | 00 |

See Accessories for drawings

Other options on request:  
Please contact Scancon A/S