



## 2REX-H with cable or removable end cap

- Hollow Shaft Encoder - Ø68
- Hollow bore - Ø10 mm to Ø15 mm
- Resolution up to 10,000 ppr
- Delivered with cable or removable end cap option for on-site installation
- ATEX, IECEX, EAC Ex certified

### Electrical Specifications

|                               |   |
|-------------------------------|---|
| <b>Code:</b>                  | Incremental   |
| <b>Resolution:</b>            | 1 to 10,000 ppr (pulses per revolution)   |
| <b>Supply Voltage:</b>        | 4.5 Vdc min. to 30 Vdc max. **<br>(45 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 Line Driver<br>26C31 Differential Line Driver<br>5V output (with 5V input)   |
| <b>Electrical Protection:</b> | Output short circuit protected<br>Reverse polarity protected  |
| <b>Noise Immunity:</b>        | EN 61000-6-2: 2005 (industrial environments) Electromagnetic compatibility (EMC)<br>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: Aluminum<br>Cap: Aluminum<br>Hollow Shaft: Stainless steel (AISI 303) |
| <b>Weight:</b>                 | Encoder: Approx. 540 gr (19 oz)<br>Cable: 50 gr / meter (1.76 oz / meter)      |
| <b>Bearing Life:</b>           | > $1.9 \times 10^{10}$ revolutions at rated load                               |
| <b>Shaft Speed:</b>            | 3,000 rpm continuous (max.) IP 67 T4   |
| <b>Starting Torque:</b>        | < 0.1 Nm (14.16 oz-in) at 25° C IP 67  |
| <b>Mass Moment of Inertia:</b> | 50 gcm <sup>2</sup> ( $7.08 \times 10^{-4}$ oz-in-sec <sup>2</sup> )           |
| <b>Hollow Shaft Loads:</b>     | Axial 50 N (11.25 lbs) max.<br>Radial 100 N (22.50 lbs) max.                   |

### Environmental Specifications

|                          |   |
|--------------------------|---|
| <b>Operating Temp.:</b>  | -40° to +70° 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 64 / Nema 4 (approx.) option<br>IP 65 / Nema 4 (approx.) option<br>IP 66 / Nema 6 (approx.)<br>IP 67 / Nema 6 (approx.) option |

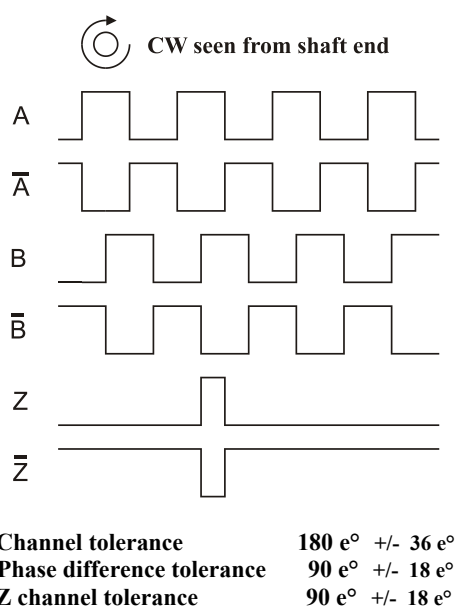
### Connection Options

|  |   |
|--|---|
| <b>Cable:</b>                                  | <b>MUD resistant (NEK 606) &amp; halogen free, shielded</b><br>4x2x0,14 mm <sup>2</sup> , 26 AWG, 4 twisted pairs;<br>See Table 2 |
| <b>Terminal Block:<br/>(Removable End Cap)</b> | See Table 3   |

## Certifications

|                |   |
|----------------|---|
| <b>ATEX:</b>   | Certificate No.: ITS09ATEX16847X<br>II 2 G Ex db IIC T5 II 2 D Ex tb IIIC T100°C Db -40°C < Tamb < +70°C      |
| <b>IECEX:</b>  | Certificate No.: IECEX ITS 10.0015X<br>Ex db IIC T5 Gb Ex tb IIIC T100°C Db -40°C < Tamb < +70°C              |
| <b>EAC Ex:</b> | НАННО «ЦСВЭ» No. ЕАЭС RU C-DK.AA87.B.00266/19<br>1Ex db IIC T5 Gb X, Ex tb IIIC T100°C Db X -40°C<T.amb<+70°C |

## Output waveform



## Table 1. Disk Resolutions (pluses per revolution)

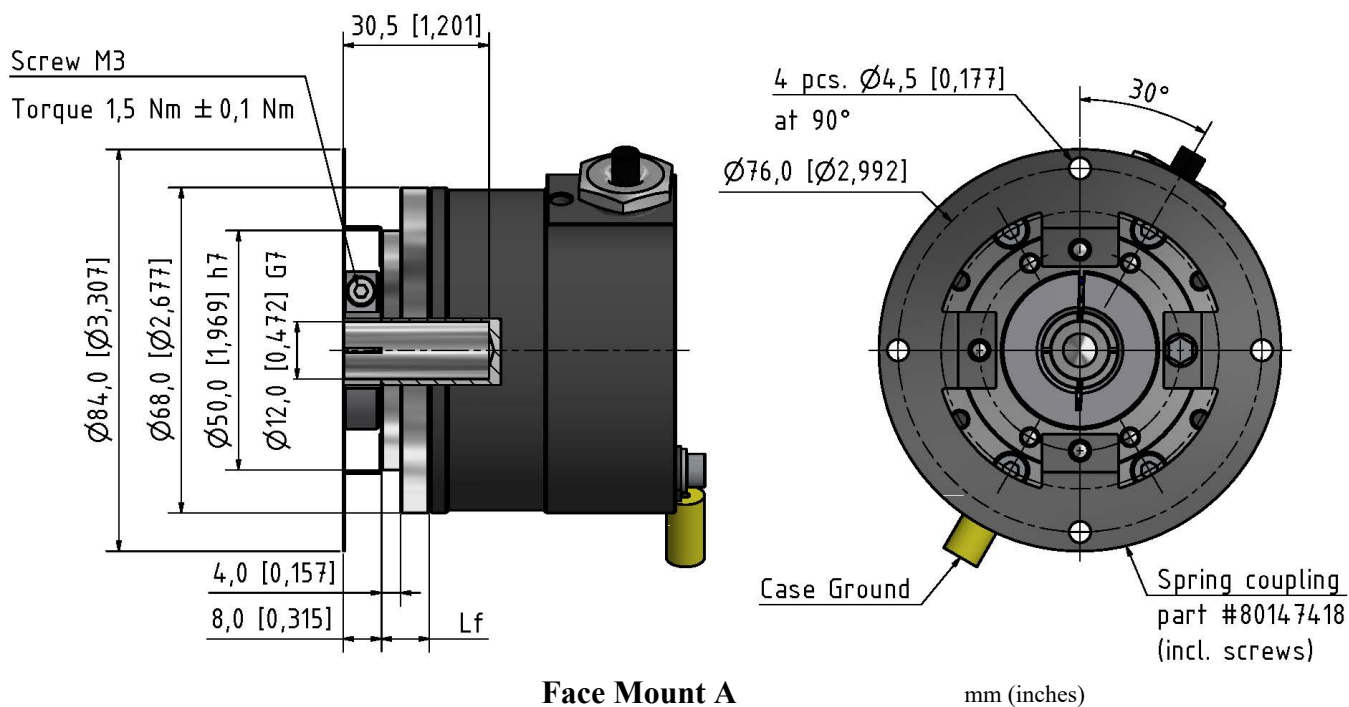
|    |     |     |      |        |
|----|-----|-----|------|--------|
| 1  | 32  | 125 | 720  | 3000   |
| 2  | 36  | 150 | 800  | 3072   |
| 5  | 40  | 180 | 1000 | 3600   |
| 6  | 45  | 200 | 1000 | 4000   |
| 7  | 47  | 250 | 1024 | 4096   |
| 8  | 50  | 256 | 1131 | 5000   |
| 10 | 60  | 300 | 1200 | 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

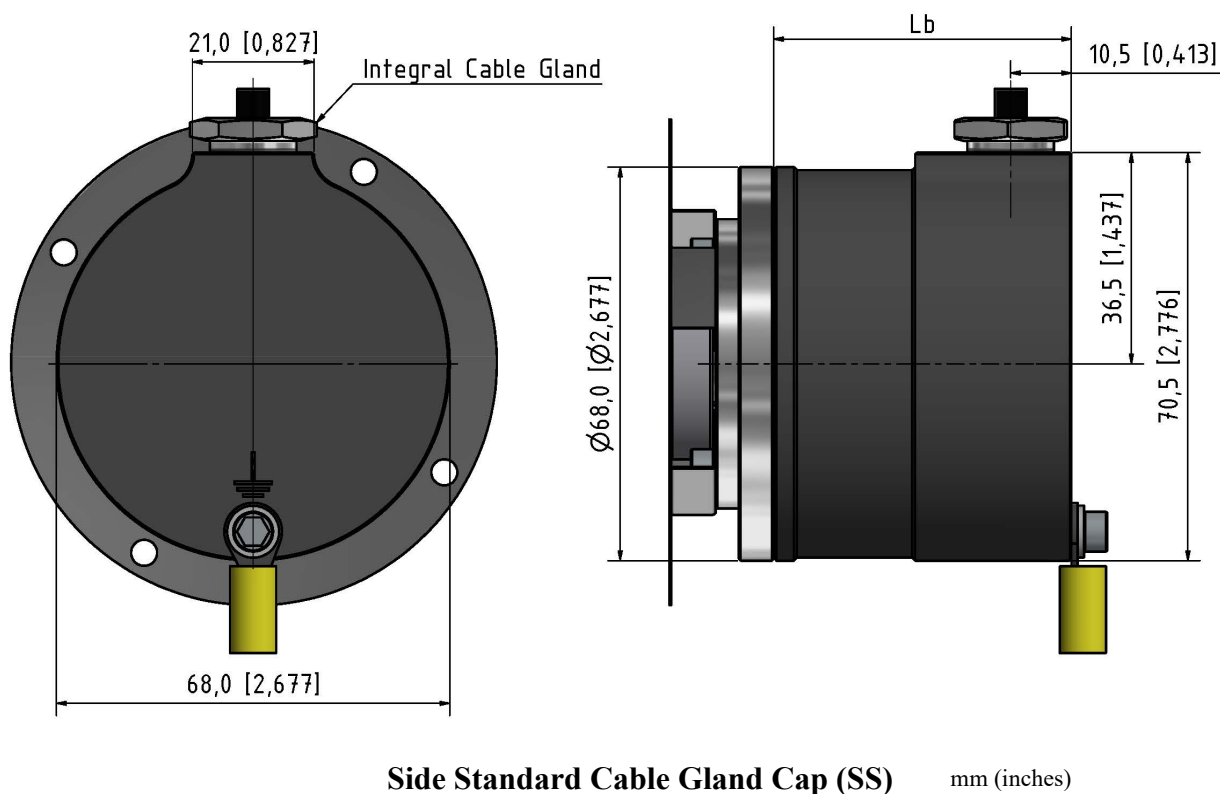
Pulses per revolution,  
Min. 1 – Max. 10.000

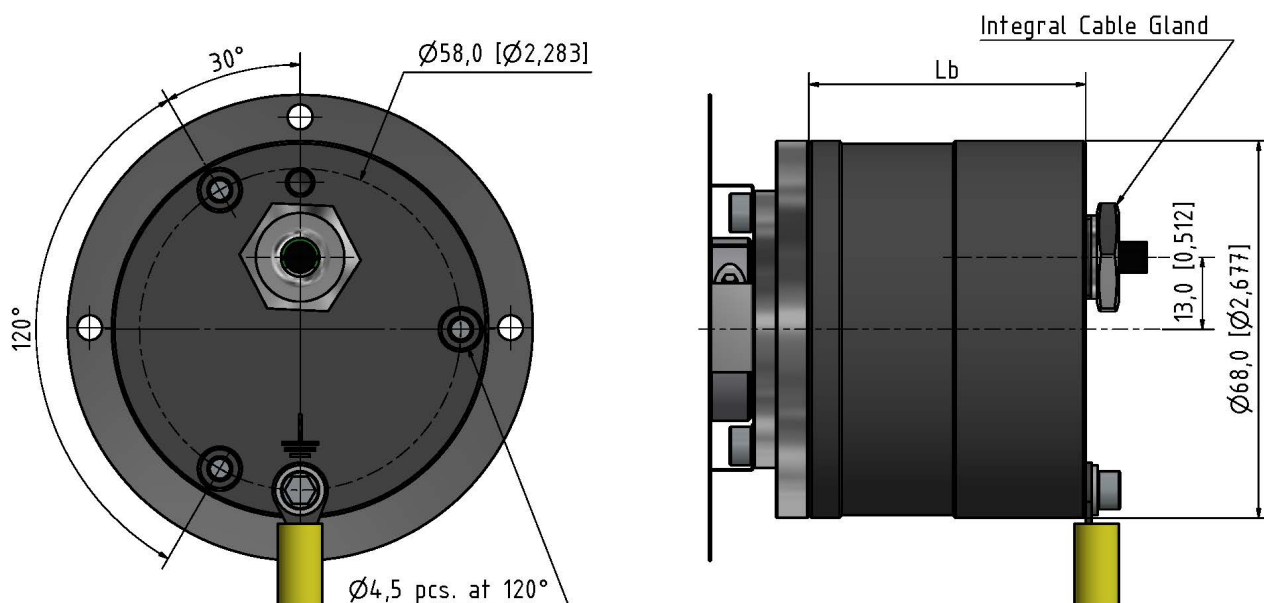
\* Operating temperature: -20° C to 50° C

## Face Mount



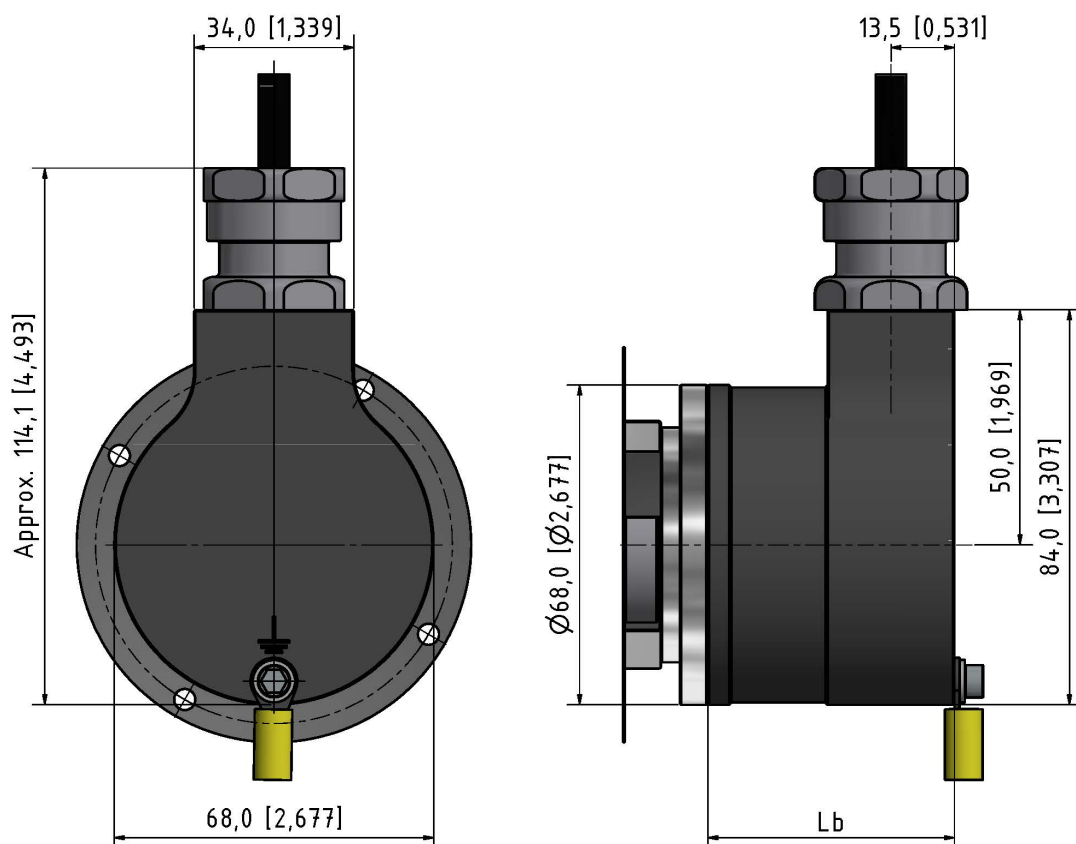
## Caps with Cable and Removable End Cap





**Back Standard Cable Gland Cap (BS)**

mm (inches)

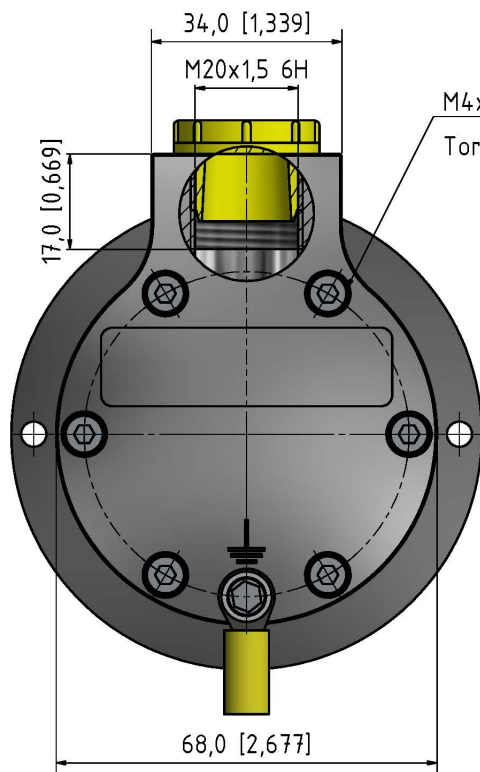


**Side Cable Takeout (SH01)**

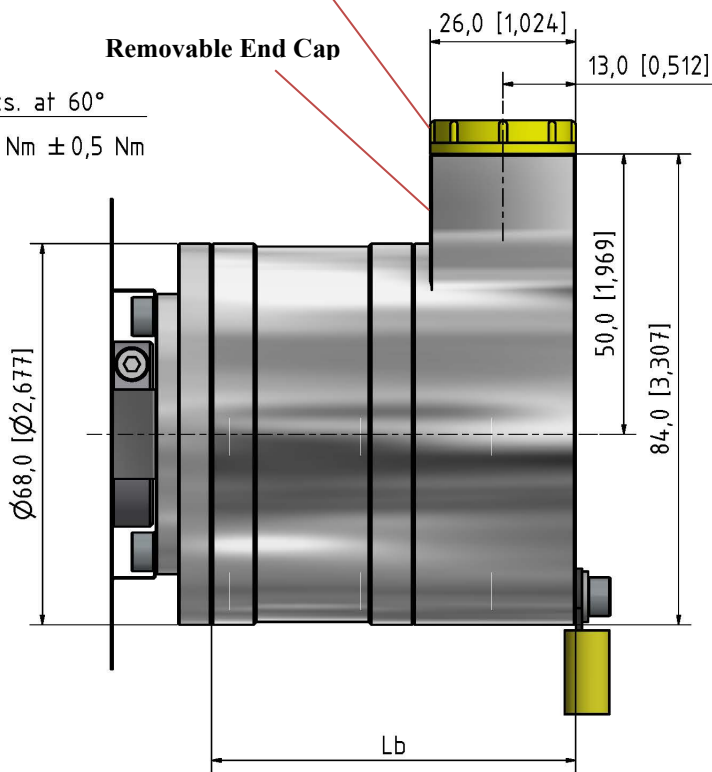
mm [inches]

*EX d certified cable gland Hawke 501/421 included  
 (Fixed cable installation)*

Plastic screw plug is for cable outlet protection during shipping and storage.  
 Plug must be replaced by a suitably certified cable gland prior to use.



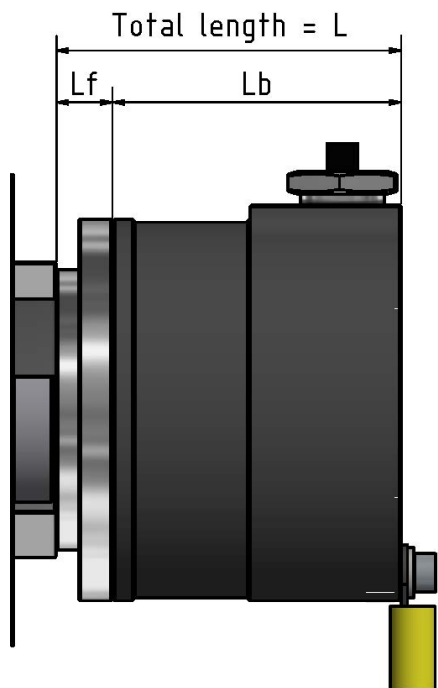
M4x35 6 pcs. at 60°  
 Torque 3,5 Nm ± 0,5 Nm



**Removable End Cap Side Standard (EC01)**

mm (inches)

## Encoder Length



**Total Encoder Length  $L = L_b + L_f$**

| Cap  | Face mount A      |
|------|-------------------|
| SS   | 61,5 mm (2,42 in) |
| BS   | 60,0 mm (2,36 in) |
| SH01 | 62,5 mm (2,46 in) |
| EC01 | 75,0 mm (2,95 in) |

*Cap + Face Mount = Total Encoder Length*

**Table 2. Cable Output**

| Channel | Standard Cable  |                     |
|---------|-----------------|---------------------|
|         | Standard Output | Differential Output |
| Channel | Wire Color      | 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                |

\* Gray, Yellow, and Brown are internally connected to Circuit Ground

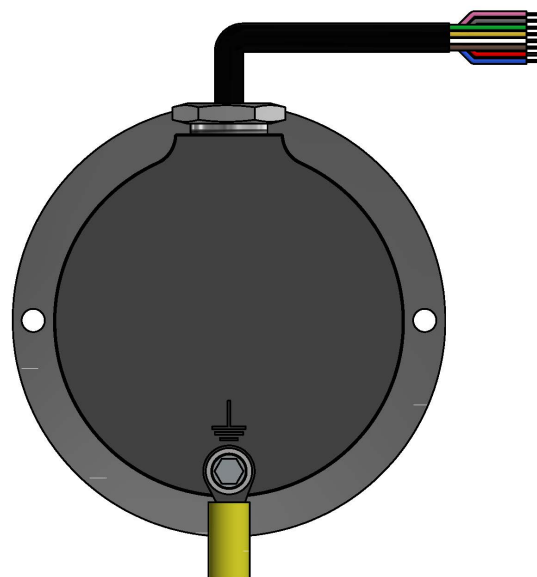
*GND = Circuit Ground*

*Shield connected to Case Ground*

Cable: **MUD resistant (NEK 606) & halogen free, shielded**

4x2x0,14 mm<sup>2</sup>, 26 AWG, 4 twisted pairs;

Yellow cable shoe: AWG 12-10


**Table 3. Terminal Block Outputs (Removable End Cap)**

| Position | Standard Output | Differential Output |
|----------|-----------------|---------------------|
|          | Channel         | Channel             |
| 1        | NC              | Z -                 |
| 2        | Z               | Z                   |
| 3        | NC              | B -                 |
| 4        | B               | B                   |
| 5        | NC              | A -                 |
| 6        | A               | A                   |
| 7        | Vsup            | Vsup                |
| 8        | GND             | GND                 |
| 9        | NC              | NC                  |

*GND = Circuit Ground*

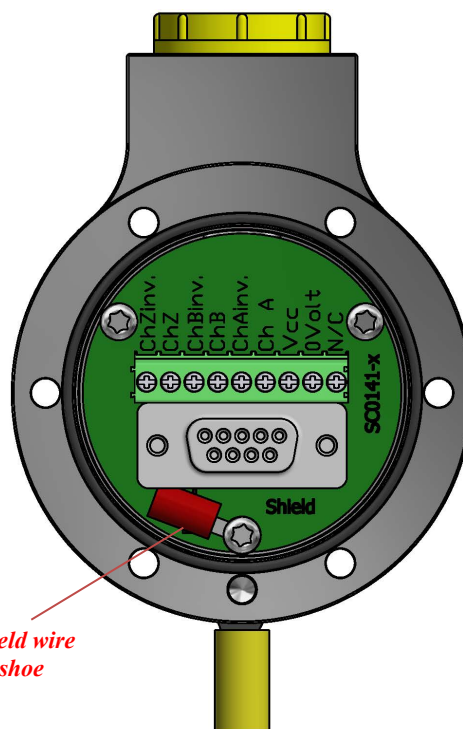
*Shield = Case Ground*

**Connect shield wire to the cable shoe**

Wire conductor size: AWG 26 to 16  
0.14 mm<sup>2</sup> to 1.5 mm<sup>2</sup>

Red cable shoe: AWG 22-16

Yellow cable shoe: AWG 12-10



**Connect shield wire to the cable shoe**

## Ordering Code

**Example: 2REX - H - 1024 - AL - D - 12 - 30 - 67 - 01 - SS - A - 01**

2REX-H - 
  - 
 AL - 
  - 
  - 
 30 - 
  - 
  - 
  - 
 A -

1                      2                      3                      4                      5                      6                      7                      8                      9                      10

### 1. Pulse per revolutions

See Table 1.

### 2. Material

Aluminium..... **AI**

### 3. Output

Standard..... **N**  
 Standard – open Collector NPN..... **NON**  
 Standard – open Collector PNP..... **NOP**  
 Differential..... **D**  
 26C31 Line Driver 5V only..... **L**  
 OL 7272 Line Driver..... **M**

### 4 & 5 Hollow shaft dimensions

10 mm x 30.5 mm  
 12 mm x 30.5 mm  
 14 mm x 30.5 mm  
 15 mm x 30.5 mm  
 16 mm x 30.5 mm

|           |   |           |
|-----------|---|-----------|
| <b>4.</b> |   | <b>5.</b> |
| <b>10</b> | x | <b>30</b> |
| <b>12</b> | x | <b>30</b> |
| <b>14</b> | x | <b>30</b> |
| <b>15</b> | x | <b>30</b> |
| <b>16</b> | x | <b>30</b> |

### 6. IP Rating

IP 64 ..... **64**  
 IP 65 ..... **65**  
 IP 66 ..... **66**  
 IP 67 ..... **67**

### 7. Cable Length

Standard cable is 1m..... **01**  
 Specify length..... **XX**  
 No cable (End Cap) ..... **00**

### 8. Cable Takeout

Side (Standard)..... **SS**  
 Back (Standard)..... **BS**  
 Side (*Ex gland included*)..... **SH01**  
 Side Removable End Cap..... **EC01**

### 9. Flange

Flange A ..... **A**

### 10. Spring Coupling

No spring coupling..... **00**  
 80147418..... **01**  
 80140159..... **02**  
 80141203..... **03**  
 80142932..... **04**  
 80142641..... **05**  
 80132983..... **06**  
 80230208..... **07**