

# Incremental encoders

## Blind hollow shaft or cone shaft

### 300...5000 pulses per revolution

## HOG 11



HOG 11

### Technical data - electrical ratings

|                       |  |
|-----------------------|--|
| Voltage supply        | 9...30 VDC<br>5 VDC $\pm$ 5 %                                    |
| Consumption w/o load  | $\leq$ 100 mA  |
| Pulses per revolution | 300...5000   |
| Phase shift           | 90° $\pm$ 20°  |
| Duty cycle            | 40...60 %  |
| Reference signal      | Zero pulse, width 90°  |
| Sensing method        | Optical  |
| Output frequency      | $\leq$ 120 kHz<br>$\leq$ 300 kHz (on request)                    |
| Output signals        | K1, K2, K0 + inverted<br>Error output (option EMS)               |
| Output stages         | HTL-P (power linedriver)<br>TTL/RS422                            |
| Shaft insulation      | Suitable up to 2.8 kV  |
| Transmission length   | $\leq$ 350 m at 100 kHz (HTL-P)<br>$\leq$ 550 m at 100 kHz (TTL) |
| Interference immunity | EN 61000-6-2   |
| Emitted interference  | EN 61000-6-3   |
| Approvals             | CE, UL approval / E256710  |

### Features

- Offshore and salt water firm, high protection IP 67
- TTL output driver for cable length up to 550 m
- Very high resistance to shock and vibrations
- Hybrid bearing for extended service life
- Large terminal box, turn by 180° or axial terminal cover

### Optional

- Function control with EMS
- Redundant sensing with two terminal boxes

### Technical data - mechanical design

|                         |  |
|-------------------------|--|
| Size (flange)           | $\varnothing$ 105 mm   |
| Shaft type              | $\varnothing$ 12...20 mm (blind hollow shaft)<br>$\varnothing$ 17 mm (cone shaft 1:10)   |
| Admitted shaft load     | $\leq$ 450 N axial<br>$\leq$ 600 N radial  |
| Protection DIN EN 60529 | IP 67  |
| Operating speed         | $\leq$ 6000 rpm (mechanical)   |
| Operating torque typ.   | 6 Ncm  |
| Rotor moment of inertia | 340 gcm <sup>2</sup>   |
| Materials               | Housing: aluminium die-cast<br>Shaft: stainless steel                                    |
| Operating temperature   | -40...+100 °C<br>-25...+100 °C (>3072 pulses per revolution)<br>-50...+100 °C (optional) |
| Resistance              | IEC 60068-2-6<br>Vibration 20 g, 10-2000 Hz<br>IEC 60068-2-27<br>Shock 300 g, 6 ms       |
| Corrosion protection    | IEC 60068-2-52 Salt mist<br>for ambient conditions CX (C5-M)<br>according to ISO 12944-2 |
| Explosion protection    | II 3 G Ex nA IIC T4 Gc (gas)<br>II 3 D Ex tc IIIC T135°C Dc<br>(dust)                    |
| Connection              | Terminal box<br>Terminal cover<br>2x terminal box (with option M)                        |
| Weight approx.          | 1.6 kg, 1.8 kg (with option M)   |

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#### Part number

#### Incremental encoder

HOG11    **DN**     **SR**

Connection  
 KLK Terminal box, radial  
 KLK-AX Terminal cover, axial (not for option M redundant)

Shaft diameter  
 12H7 Blind hollow shaft ø12 mm  
 16H7 Blind hollow shaft ø16 mm  
 20H7 Blind hollow shaft ø20 mm  
 17K Cone shaft ø17 mm (1:10)

Voltage supply / signals  
 I 9...30 VDC / output stage HTL with inverted signals  
 TTL 5 VDC / output stage TTL with inverted signals  
 R 9...30 VDC / output stage TTL with inverted signals

Pulse number - see table

Output signals  
 DN K1, K2, K0

Redundant sensing  
 Without redundant sensing  
 M With redundant sensing

EMS - Enhanced Monitoring System  
 Without EMS  
 .2 With EMS

#### Pulse number

|     |      |      |      |
|-----|------|------|------|
| 300 | 1000 | 2048 | 4096 |
| 500 | 1024 | 2500 | 5000 |
| 512 | 1200 | 3072 |      |

Other pulse numbers on request.

# Incremental encoders

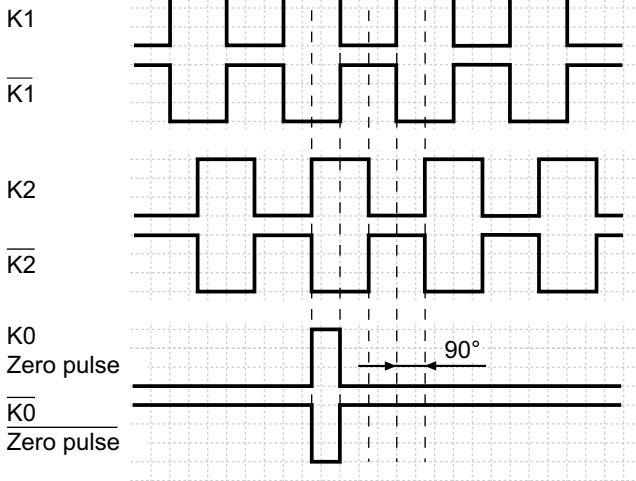
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### Output signals

At positive rotating direction



### Option EMS: LED status / Error output

|                   |   |
|-------------------|---|
| Flash light red*  | Error of signal sequence, zero pulse or pulses<br>(Error output = HIGH-LOW alternation) |
| Red               | Overload output driver<br>(Error output = LOW)  |
| Flash light green | Device o.k., rotating<br>(Error output = HIGH)  |
| Green             | Device o.k., stopped<br>(Error output = HIGH)   |
| No light          | No voltage supply connection or wrong connection (Error output = LOW)                   |

\* Only at rotating device

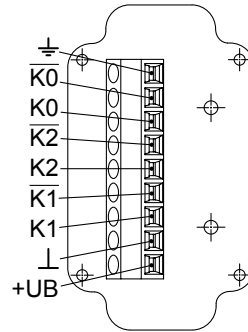
### Terminal significance

|   |   |
|---|---|
| +UB                                     | Voltage supply (for the device)                               |
| ⊥; ⚡; GND; 0 V                          | Ground (for the signals)                                      |
| ⊕; ⚡                                    | Earth ground (housing)  |
| K1; A; A+                               | Output signal channel 1                                       |
| $\bar{K}1$ ; $\bar{A}$ ; A-             | Output signal channel 1 inverted                              |
| K2; B; B+                               | Output signal channel 2 (offset by 90° to channel 1)          |
| $\bar{K}2$ ; $\bar{B}$ ; B-             | Output signal channel 2 (offset by 90° to channel 1) inverted |
| K0; C; R; R+                            | Zero pulse (reference signal)                                 |
| $\bar{K}0$ ; $\bar{C}$ ; $\bar{R}$ ; R- | Zero pulse (reference signal) inverted                        |
| $\bar{Err}$ ; Err-                      | Error output (option EMS)                                     |
| dnu                                     | Do not use  |

### Terminal assignment

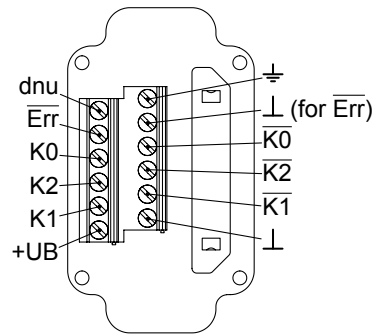
#### View A

Connecting terminal terminal box, radial



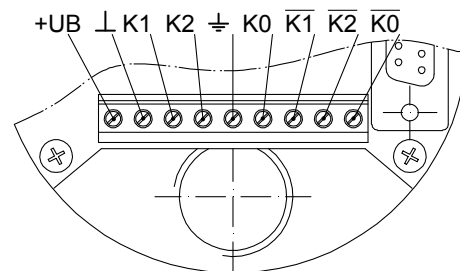
#### Option EMS: View A

Connecting terminal terminal box, radial



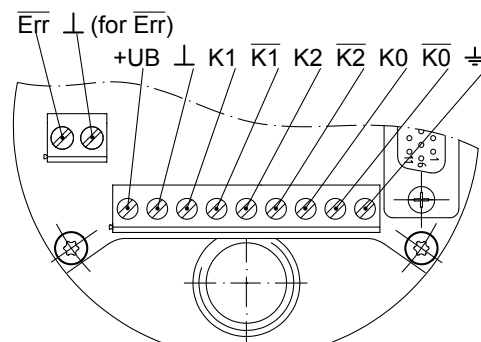
#### View B

Connecting terminal terminal cover, axial



#### Option EMS: View B

Connecting terminal terminal cover, axial



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#### Accessories

##### Connectors and cables

|       |                           |
|-------|---------------------------|
| HEK 8 | Sensor cable for encoders |
|-------|---------------------------|

##### Mounting accessories

|          |                                |
|----------|--------------------------------|
| 11043628 | Torque arm M6, length 67-70 mm |
|----------|--------------------------------|

|          |  |
|----------|--|
| 11004078 | Torque arm M6, length 120-130 mm<br>(shortenable $\geq 71$ mm) |
|----------|--|

|          |   |
|----------|---|
| 11002915 | Torque arm M6, length 425-460 mm<br>(shortenable $\geq 131$ mm) |
|----------|---|

|          |  |
|----------|--|
| 11054917 | Torque arm M6 insulated, length 67-70 mm |
|----------|--|

|          |  |
|----------|--|
| 11072795 | Torque arm M6 insulated, length 120-130 mm<br>(shortenable $\geq 71$ mm) |
|----------|--|

|          |   |
|----------|---|
| 11082677 | Torque arm M6 insulated, length 425-460 mm<br>(shortenable $\geq 131$ mm) |
|----------|---|

|          |   |
|----------|---|
| 11077197 | Mounting kit for torque arm size M6 and<br>earthing strap |
|----------|---|

|          |                              |
|----------|------------------------------|
| 11077087 | Mounting and dismounting set |
|----------|------------------------------|

##### Diagnostic accessories

|          |                                 |
|----------|---------------------------------|
| 11075858 | Analyzer for encoders HENQ 1100 |
|----------|---------------------------------|

|          |  |
|----------|--|
| 11075880 | Analyzer for encoders HENQ 1100 with a<br>power pack |
|----------|--|

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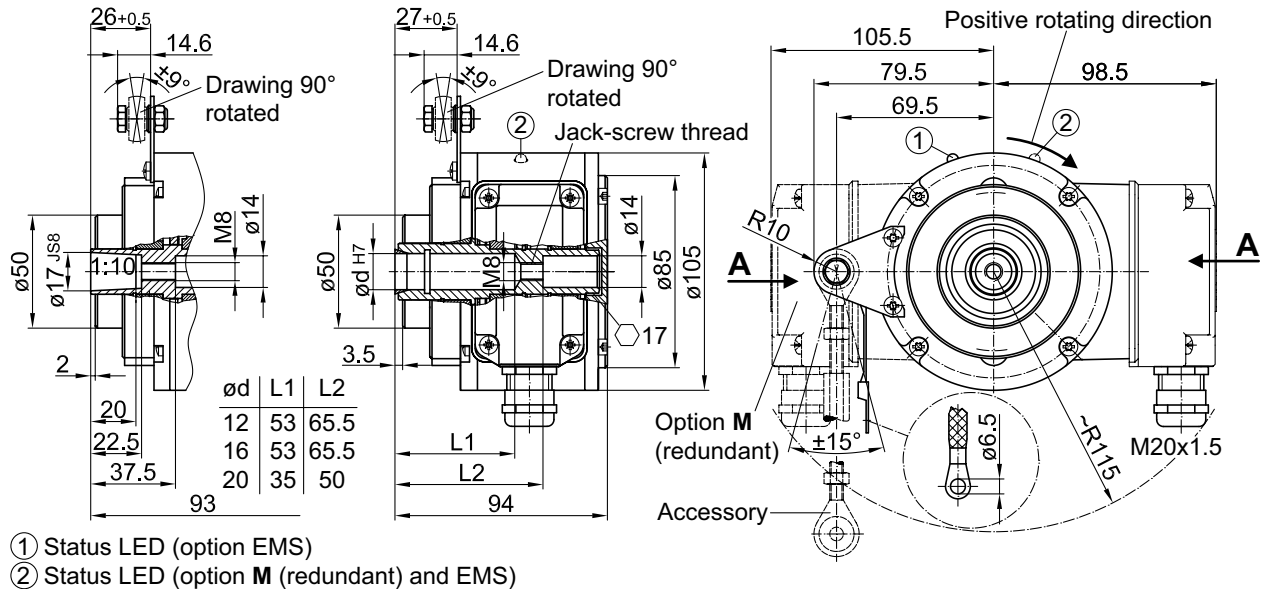
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### Dimensions

#### HOG 11 (HOG 11.2, HOG 11 M, HOG 11.2 M) - Version with radial terminal box



#### HOG 11 (HOG 11.2) - Version with axial terminal cover

