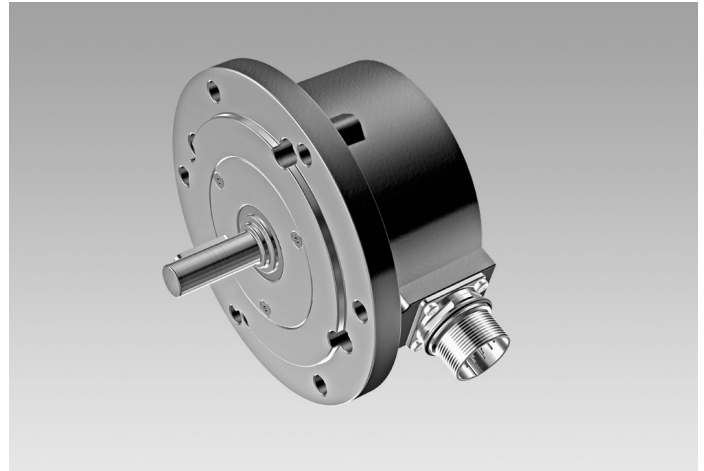


## FOG 9

Solid shaft  $\varnothing 10$  mm or  $\varnothing 11$  mm with EURO flange B10  
100...5000 pulses per revolution

### Overview

- Solid shaft  $\varnothing 10$  mm or  $\varnothing 11$  mm
- Compact, robust die-cast housing
- Flange connector with metal mating connector
- EURO flange B10
- Output stage TTL with regulator UB 9...30 VDC
- Output stage HTL with power linedriver



### Technical data

#### Technical data - electrical ratings

|                       |  |
|-----------------------|--|
| Voltage supply        | 9...30 VDC<br>5 VDC $\pm 5$ %                      |
| Consumption w/o load  | $\leq 100$ mA                                      |
| Pulses per revolution | 100 ... 5000                                       |
| Phase shift           | $90^\circ \pm 20^\circ$                            |
| Duty cycle            | 40...60 %  |
| Reference signal      | Zero pulse, width $90^\circ$                       |
| 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              |
| Interference immunity | EN 61000-6-2                                       |
| Emitted interference  | EN 61000-6-3                                       |
| Approval              | CE<br>UL   |

#### Technical data - mechanical design

|                     |   |
|---------------------|---|
| Size (flange)       | $\varnothing 115$ mm                      |
| Shaft type          | $\varnothing 10$ ...11 mm solid shaft     |
| Admitted shaft load | $\leq 200$ N axial<br>$\leq 300$ N radial |

#### Technical data - mechanical design

|                         |   |
|-------------------------|---|
| Flange                  | EURO flange B10   |
| Protection EN 60529     | IP 66   |
| Operating speed         | $\leq 10000$ rpm (mechanical)   |
| Starting torque         | $\leq 6$ Ncm  |
| Rotor moment of inertia | 160 gcm <sup>2</sup>  |
| Material                | Housing: aluminium die-cast<br>Shaft: stainless steel   |
| Operating temperature   | -30...+100 °C<br>-25...+100 °C (>3072 pulses)   |
| Resistance              | IEC 60068-2-6<br>Vibration 10 g, 10-2000 Hz<br>IEC 60068-2-27<br>Shock 100 g, 6 ms            |
| Corrosion protection    | IEC 60068-2-52 Salt mist<br>for ambient conditions C4 according to<br>ISO 12944-2             |
| Explosion protection    | II 3 G Ex nA IIC T4 Gc (gas)<br>II 3 D Ex tc IIIB T135°C Dc (dust)<br>(only with option ATEX) |
| Connection              | Flange connector M23, 12-pin<br>Mating connector  |
| Weight approx.          | 700 g   |

### Optional

- Function control with EMS (Enhanced Monitoring System)
- Angle flange-connector

# FOG 9

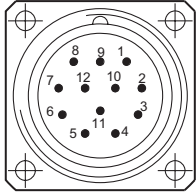
Solid shaft  $\varnothing 10$  mm or  $\varnothing 11$  mm with EURO flange B10

100...5000 pulses per revolution

## Terminal assignment

### View A (see dimension)

Assignment flange connector

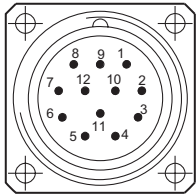


Flange connector M23, male, 12-pin, clockwise (CW)

| Pin | Assignment      |
|-----|-----------------|
| 1   | $\overline{K2}$ |
| 2   | dnu             |
| 3   | K0              |
| 4   | $\overline{K0}$ |
| 5   | K1              |
| 6   | $\overline{K1}$ |
| 7   | dnu             |
| 8   | K2              |
| 9   | dnu             |
| 10  | 0V ( $\perp$ )  |
| 11  | dnu             |
| 12  | +UB             |

### Option EMS: View A (see dimension)

Assignment flange connector



Flange connector M23, male, 12-pin, clockwise (CW)

| Pin | Assignment                        |
|-----|-----------------------------------|
| 1   | $\overline{K2}$                   |
| 2   | dnu                               |
| 3   | K0                                |
| 4   | $\overline{K0}$                   |
| 5   | K1                                |
| 6   | $\overline{K1}$                   |
| 7   | $\overline{Err}$                  |
| 8   | K2                                |
| 9   | 0V ( $\perp$ ) @ $\overline{Err}$ |
| 10  | 0V ( $\perp$ )                    |
| 11  | dnu                               |
| 12  | +UB                               |

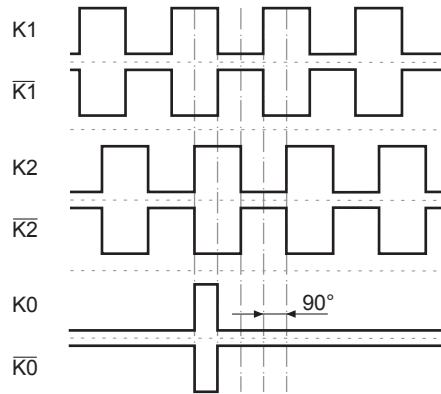
## Terminal significance

|                  |  |
|------------------|--|
| +UB              | Voltage supply                                       |
| 0V ( $\perp$ )   | Ground   |
| K1               | Output signal channel 1                              |
| $\overline{K1}$  | Output signal channel 1 inverted                     |
| K2               | Output signal channel 2 (offset by 90° to channel 1) |
| $\overline{K2}$  | Output signal channel 2 inverted                     |
| K0               | Zero pulse (reference signal)                        |
| $\overline{K0}$  | Zero pulse inverted                                  |
| $\overline{Err}$ | Error output (option EMS)                            |
| dnu              | Do not use   |

## Output signals

### HTL/TTL

At positive rotating direction (see dimension)



## Option EMS: Status LED / error output

|                   |   |
|-------------------|---|
| Flash light red*  | Error of signal sequence, zero pulse or pulses<br>(Error output = HIGH-LOW alternation) |
| Red               | Overload output transistors<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<br>(Error output = LOW)                |

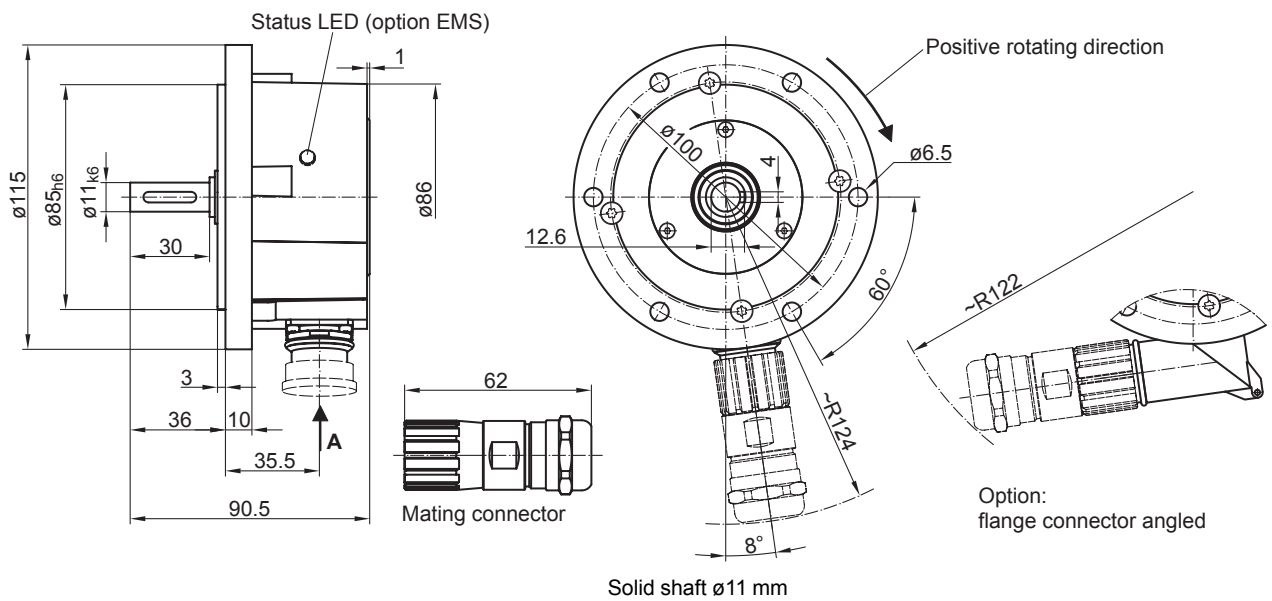
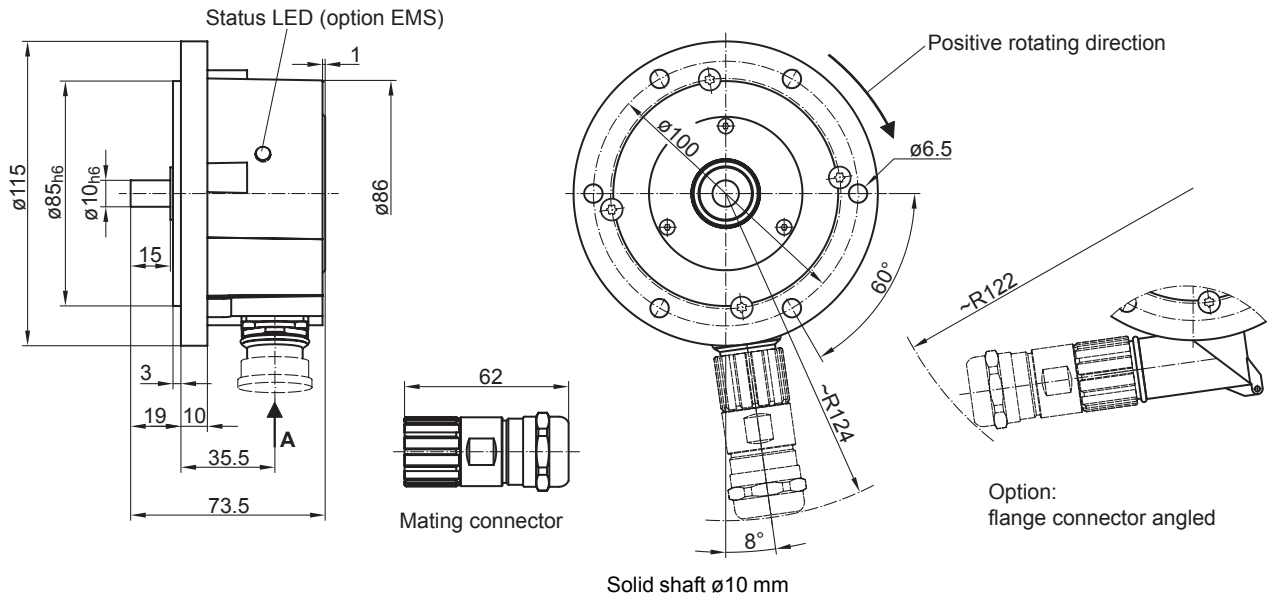
\* Only at rotating device

# FOG 9

Solid shaft  $\varnothing 10$  mm or  $\varnothing 11$  mm with EURO flange B10

100...5000 pulses per revolution

## Dimensions



# FOG 9

 Solid shaft  $\varnothing 10$  mm or  $\varnothing 11$  mm with EURO flange B10

100...5000 pulses per revolution

## Ordering reference

|   | FOG9 | ## | DN | #### | ###  |
|---|------|----|----|------|------|
| <b>Product</b>                                      |      |    |    |      |      |
| Incremental encoder                                 | FOG9 |    |    |      |      |
| <b>EMS - Enhanced Monitoring System</b>             |      |    |    |      |      |
| Without EMS   |      |    |    |      |      |
| With EMS  |      | .2 |    |      |      |
| <b>Output signals</b>                               |      |    |    |      |      |
| K1, K2, K0  |      |    | DN |      |      |
| <b>Pulse number<sup>(1)</sup></b>                   |      |    |    |      |      |
| 100   |      |    |    |      | 100  |
| 120   |      |    |    |      | 120  |
| 128   |      |    |    |      | 128  |
| 180   |      |    |    |      | 180  |
| 192   |      |    |    |      | 192  |
| 200   |      |    |    |      | 200  |
| 250   |      |    |    |      | 250  |
| 256   |      |    |    |      | 256  |
| 300   |      |    |    |      | 300  |
| 360   |      |    |    |      | 360  |
| 400   |      |    |    |      | 400  |
| 500   |      |    |    |      | 500  |
| 512   |      |    |    |      | 512  |
| 600   |      |    |    |      | 600  |
| 720   |      |    |    |      | 720  |
| 900   |      |    |    |      | 900  |
| 1000  |      |    |    |      | 1000 |
| 1024  |      |    |    |      | 1024 |
| 1200  |      |    |    |      | 1200 |
| 1250  |      |    |    |      | 1250 |
| 2048  |      |    |    |      | 2048 |
| 2500  |      |    |    |      | 2500 |
| 3072  |      |    |    |      | 3072 |
| 4096  |      |    |    |      | 4096 |
| 5000  |      |    |    |      | 5000 |
| <b>Voltage supply / output stage</b>                |      |    |    |      |      |
| 9...30 VDC / output stage HTL with inverted signals |      |    |    |      | I    |
| 5 VDC / output stage TTL with inverted signals      |      |    |    |      | TTL  |
| 9...30 VDC / output stage TTL with inverted signals |      |    |    |      | R    |

(1) Other pulse numbers on request.

## Accessories

### Mounting accessories

 Spring disk coupling K 35 (shaft  $\varnothing 6...12$  mm)

 Spring disk coupling K 50 (shaft  $\varnothing 11...16$  mm)

 Spring disk coupling K 60 (shaft  $\varnothing 11...22$  mm)

### Connectors and cables

Sensor cable for encoders HEK 8

## FOG 9

Solid shaft  $\varnothing$ 10 mm or  $\varnothing$ 11 mm with EURO flange B10  
100...5000 pulses per revolution

### Accessories

#### Diagnostic accessories

|          |                                   |
|----------|-----------------------------------|
| 11075858 | Analyzer for encoders HENQ 1100   |
| 11075880 | Analyzer for encoders HENQ 1100 B |