

# Incremental encoders

Ex approval ATEX II 2 G Ex db eb IIC T5/T6 Gb and IECEx Ex db eb IIC T5/T6 Gb  
120...5000 pulses per revolution

## EExOG 9 - incremental



EExOG 9

### Technical data - electrical ratings

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| Voltage supply        | 9...30 VDC<br>5 VDC $\pm 5\%$<br>9...26 VDC                               |
| Consumption w/o load  | $\leq 100$ mA                                                             |
| Pulses per revolution | 120...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 (pulses $\leq 1250$ )<br>$\leq 250$ kHz (pulses $> 1250$ ) |
| Output signals        | K1, K2, K0 + inverted                                                     |
| Output stages         | HTL<br>TTL/RS422                                                          |
| Interference immunity | EN 61000-6-2                                                              |
| Emitted interference  | EN 61000-6-3                                                              |
| Approvals             | CE, ATEX, IECEx                                                           |

### Features

- Encoder incremental / ATEX / IECEx
- Optical sensing method
- ATEX II 2 G Ex db eb IIC T5/T6 Gb
- IECEx Ex db eb IIC T5/T6 Gb
- Robust light-metal housing
- Output stage HTL or TTL
- Output stage TTL with regulator UB 9...26 VDC
- Large terminal box, turn by  $90^\circ$

### Optional

- Cable gland M20x1.5 or M25x1.5

### Technical data - mechanical design

|                         |                                                                                                                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Size (flange)           | $\varnothing 115$ mm                                                                                                                                                                         |
| Shaft type              | $\varnothing 11$ mm solid shaft                                                                                                                                                              |
| Admitted shaft load     | $\leq 200$ N axial<br>$\leq 350$ N radial                                                                                                                                                    |
| Flange                  | EURO flange B10                                                                                                                                                                              |
| Protection DIN EN 60529 | IP 56                                                                                                                                                                                        |
| Operating speed         | $\leq 6000$ rpm (T5, mechanical)<br>$\leq 4500$ rpm (T6, mechanical)                                                                                                                         |
| Operating torque typ.   | 4 Ncm                                                                                                                                                                                        |
| Rotor moment of inertia | $290 \text{ gcm}^2$                                                                                                                                                                          |
| Materials               | Housing: aluminium die-cast<br>Shaft: stainless steel                                                                                                                                        |
| Ambient temperature     | -20...+55 °C<br>Option: -40...+55 °C (25...360 pulses per revolution)<br>Option: -50...+55 °C (500...2500 pulses per revolution)<br>Option: -25...+55 °C (3072...5000 pulses per revolution) |
| Resistance              | IEC 60068-2-6<br>Vibration 10 g, 50-2000 Hz<br>IEC 60068-2-27<br>Shock 100 g, 6 ms                                                                                                           |
| Corrosion protection    | IEC 60068-2-52 Salt mist for ambient conditions C4 according to ISO 12944-2                                                                                                                  |
| Explosion protection    | II 2 G Ex db eb IIC T5/T6 Gb<br>Ex db eb IIC T5/T6 Gb                                                                                                                                        |
| Connection              | Terminal box                                                                                                                                                                                 |
| Weight approx.          | 3.5 kg                                                                                                                                                                                       |

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### Part number

#### Incremental encoder

EEXOG9 **DN**

|  
 |  
 | Voltage supply / signals  
 | I 9...30 VDC / output stage HTL with inverted signals  
 | TTL 5 VDC / output stage TTL with inverted signals  
 | R 9...26 VDC / output stage TTL with inverted signals  
 |  
 | Pulse number - see table  
 |  
 | Output signals  
 DN K1, K2, K0

### Pulse number

|     |      |      |      |
|-----|------|------|------|
| 120 | 360  | 1024 | 3072 |
| 128 | 500  | 1250 | 3600 |
| 180 | 512  | 2048 | 4096 |
| 256 | 1000 | 2500 | 5000 |

### Accessories

#### Connectors and cables

|          |                                  |
|----------|----------------------------------|
| HEK 8    | Sensor cable for encoders        |
| 11106863 | Extension cable gland M16 to M20 |

#### Mounting accessories

|      |                                                       |
|------|-------------------------------------------------------|
| K 35 | Spring washer coupling<br>for solid shaft ø6...12 mm  |
| K 50 | Spring washer coupling<br>for solid shaft ø11...16 mm |
| K 60 | Spring washer coupling<br>for solid shaft ø11...22 mm |

#### Diagnostic accessories

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

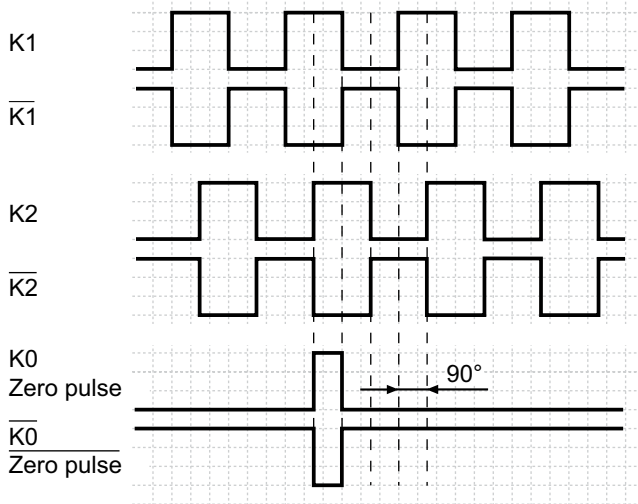
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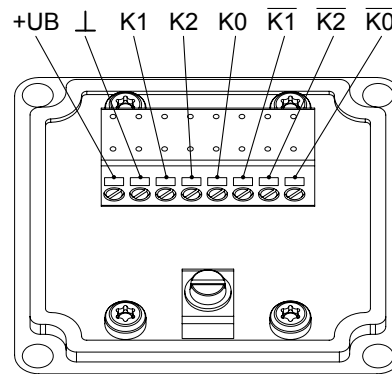
### Output signals

At positive rotating direction



### Terminal assignment

View A - Connecting terminal



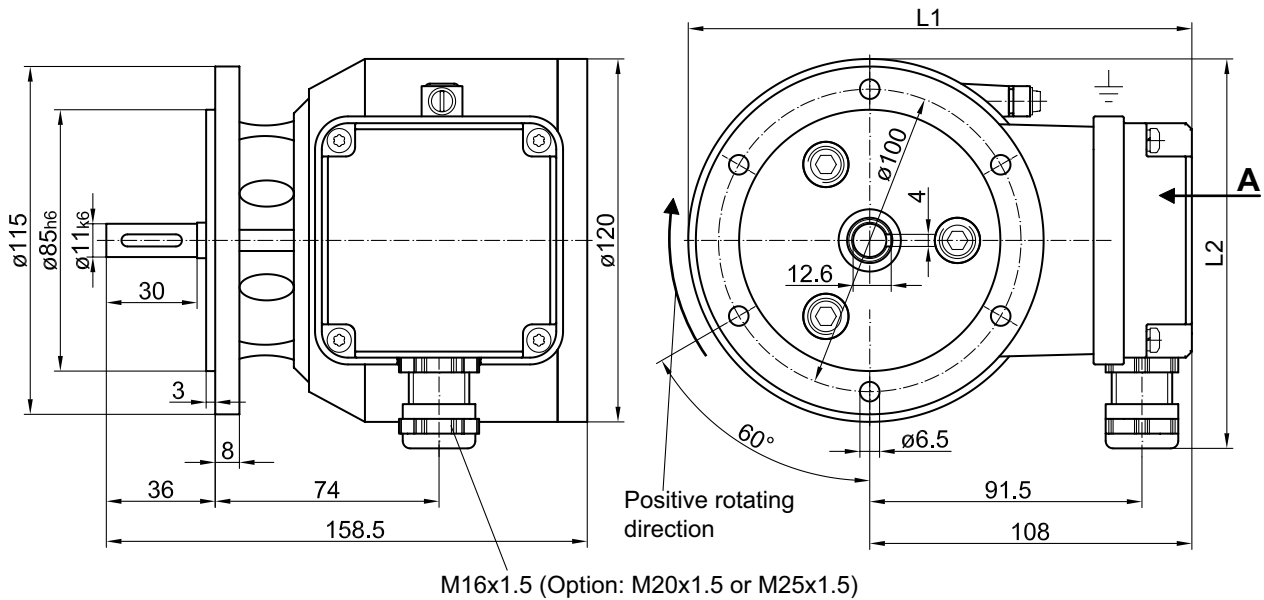
### Terminal significance

|                                                        |                                                               |
|--------------------------------------------------------|---------------------------------------------------------------|
| +UB                                                    | Voltage supply (for the device)                               |
| $\perp$ ; $\downarrow$ ; GND; 0 V                      | Ground (for the signals)                                      |
| $\perp$ ; $\nearrow$                                   | Earth ground (housing)                                        |
| K1; A; A+                                              | Output signal channel 1                                       |
| $\overline{K1}$ ; $\overline{A}$ ; A-                  | Output signal channel 1 inverted                              |
| K2; B; B+                                              | Output signal channel 2 (offset by 90° to channel 1)          |
| $\overline{K2}$ ; $\overline{B}$ ; B-                  | Output signal channel 2 (offset by 90° to channel 1) inverted |
| K0; C; R; R+                                           | Zero pulse (reference signal)                                 |
| $\overline{K0}$ ; $\overline{C}$ ; $\overline{R}$ ; R- | Zero pulse (reference signal) inverted                        |
| dnu                                                    | Do not use                                                    |

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## Dimensions



| L1  | L2   | Cable gland                       |
|-----|------|-----------------------------------|
| 168 | ~125 | M16x1.5                           |
| 168 | ~145 | M16x1.5 with extension to M20x1.5 |
| 168 | ~129 | M20x1.5                           |
| 177 | ~129 | M25x1.5                           |