

Incremental encoders

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

100...5000 pulses per revolution

FOG 9



FOG 9

Features

- 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

Optional

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

Technical data - electrical ratings

Voltage supply	9...30 VDC 5 VDC ± 5 %
Consumption w/o load	≤ 100 mA
Pulses per revolution	100...5000
Phase shift	$90^\circ \pm 20^\circ$
Duty cycle	40...60 %
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	≤ 120 kHz ≤ 300 kHz (on request)
Output signals	K1, K2, K0 + inverted Error output (option EMS)
Output stages	HTL-P (power linedriver) TTL/RS422
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approvals	CE, UL approval / E256710

Technical data - mechanical design

Size (flange)	$\varnothing 115$ mm
Shaft type	$\varnothing 10...11$ mm solid shaft
Admitted shaft load	≤ 200 N axial ≤ 300 N radial
Flange	EURO flange B10
Protection DIN EN 60529	IP 66
Operating speed	≤ 10000 rpm (mechanical)
Starting torque	≤ 6 Ncm
Rotor moment of inertia	160 gcm ²
Materials	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-30...+100 °C -25...+100 °C (>3072 pulses per revolution)
Resistance	IEC 60068-2-6 Vibration 10 g, 10-2000 Hz IEC 60068-2-27 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 3 G Ex nA IIC T4 Gc (gas) II 3 D Ex tc IIIB T135°C Dc (dust)
Connection	Flange connector M23, 12-pin Mating connector
Weight approx.	700 g

Subject to modification in technic and design. Errors and omissions excepted.

Incremental encoders

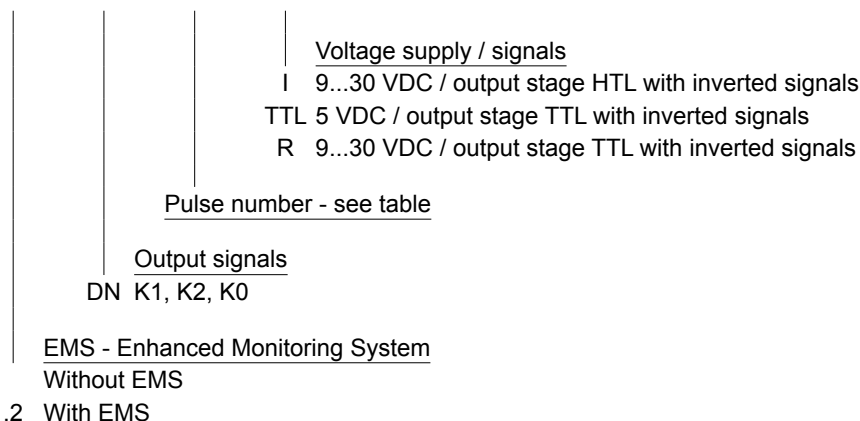
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Part number

Incremental encoder

FOG9 **DN**



Pulse number

100	200	400	900	2048
120	250	500	1000	2500
128	256	512	1024	3072
180	300	600	1200	4096
192	360	720	1250	5000

Other pulse numbers on request.

Accessories

Connectors and cables

HEK 8 Sensor cable for encoders

Mounting accessories

K 35 Spring washer coupling for solid shaft \varnothing 6...12 mm

K 50 Spring washer coupling for solid shaft \varnothing 11...16 mm

K 60 Spring washer coupling for solid shaft \varnothing 11...22 mm

Diagnostic accessories

11075858 Analyzer for encoders HENQ 1100

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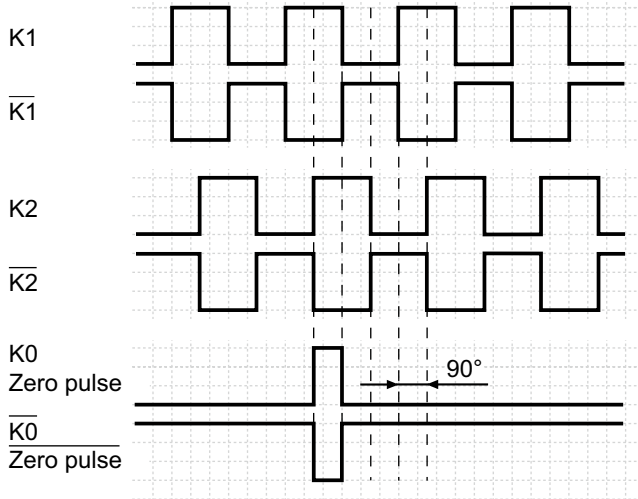
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Output signals

At positive rotating direction



Terminal significance

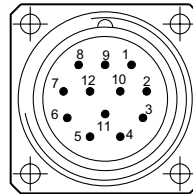
+UB	Voltage supply (for the device)
⊥; ↓; GND; 0 V	Ground (for the signals)
⊕; ↗	Earth ground (housing)
K1; A; A+	Output signal channel 1
$\overline{K1}$; \overline{A} ; A-	Output signal channel 1 inverted
K2; B; B+	Output signal channel 2 (offset by 90° to channel 1)
$\overline{K2}$; \overline{B} ; 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
\overline{Err} ; Err-	Error output (option EMS)
dnu	Do not use

Terminal assignment

View A

Flange connector M23, 12-pin, male, CW

Pin	Assignment
1	$\overline{K2}$
2	dnu
3	K0
4	$\overline{K0}$
5	K1
6	$\overline{K1}$
7	dnu (option EMS: \overline{Err})
8	K2
9	dnu (option EMS: \perp)
10	\perp
11	dnu
12	+UB



Option EMS: LED status / Error output

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

* Only at rotating device

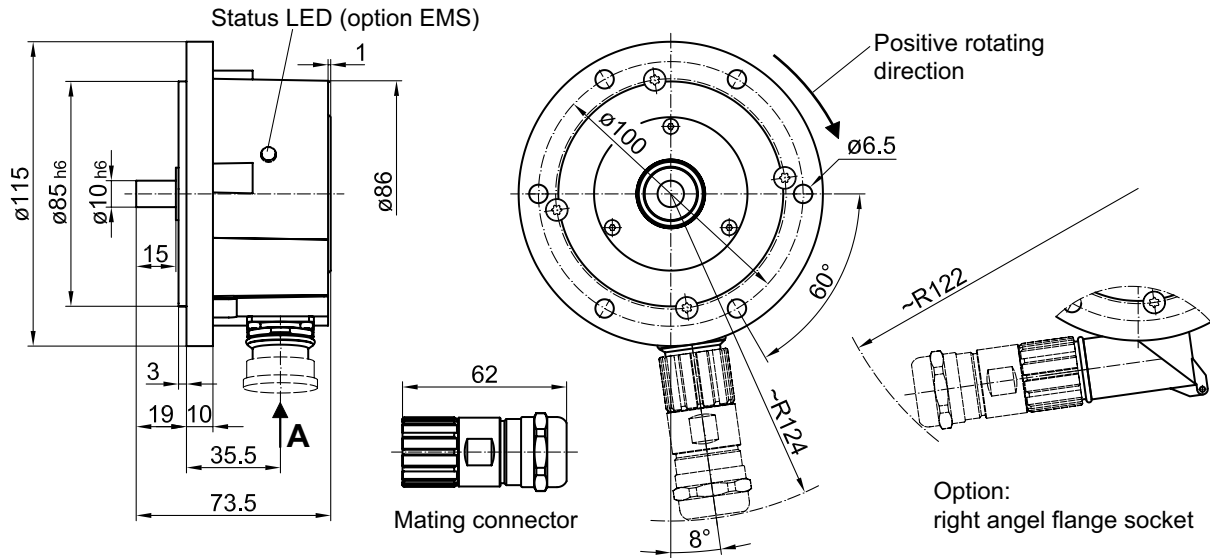
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Dimensions

Version with shaft $\varnothing 10$ mm



Version with shaft $\varnothing 11$ mm

