

Combination

Encoder with integrated centrifugal switch

Insulated blind hollow shaft $\varnothing 16$ mm, cone shaft $\varnothing 17$ mm

500...5000 pulses per revolution

HOG 86 + FSL



HOG 86 + FSL

Technical data - electrical ratings

Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3

Technical data - electrical ratings (encoder)

Voltage supply	9...30 VDC 5 VDC ± 5 %
Consumption w/o load	≤ 100 mA
Pulses per revolution	500...5000
Phase shift	$90^\circ \pm 20^\circ$
Scan ratio	45...55 % (40...60 % > 3072 pulses per revolution)
Reference signal	Zero pulse, width 90°
Output frequency	≤ 120 kHz ≤ 300 kHz (on request)
Output signals	K1, K2, K0 + inverted Error output (only EMS)
Output stages	HTL-P (power linedriver) TTL/RS422
Sensing method	Optical
Shaft insulation	2.8 kV
Transmission length	≤ 350 m at 100 kHz (HTL-P) ≤ 550 m at 100 kHz (TTL)

Technical data - electrical ratings (centrifugal switch)

Switching accuracy	± 4 % ($\Delta n = 2$ rpm/s); = $+20$ % ($\Delta n = 1500$ rpm/s)
Switching deviation	≤ 3 % (cw-ccw rotation)
Switching hysteresis	~ 40 % of switching speed
Switching outputs	1 output, speed control
Output switching capacity	≤ 6 A / 230 VAC; ≤ 1 A / 125 VDC
Minimum switching current	50 mA

Features

- Mechanical speed monitoring based on centrifugal force
- Robust, compact housing
- Two-sided bearing system with optimal bearing spacing
- Shaft load up to 450 N, shaft insulation up to 2.8 kV
- Terminal boxes, turn by 180°

Optional

- Hybrid bearings for 3 times longer lifetime
- Function control with EMS (Enhanced Monitoring System)
- Redundant sensing with two terminal boxes

Technical data - mechanical design

Size (flange)	$\varnothing 105$ mm
Shaft type	$\varnothing 16$ mm (blind hollow shaft) $\varnothing 17$ mm (cone shaft 1:10)
Admitted shaft load	≤ 350 N axial ≤ 450 N radial
Protection DIN EN 60529	IP 66
Speed (n)	$\leq 1.25 \cdot ns$
Range of switching speed (ns)	850...4500 rpm ($\Delta n = 2$ rpm/s)
Operating torque typ.	6 Ncm
Rotor moment of inertia	200 gcm ²
Materials	Housing: aluminium, coated Shaft: stainless steel
Operating temperature	$-40...+100$ °C $-25...+100$ °C (> 3072 pulses per revolution)
Resistance	IEC 60068-2-6 Vibration 5 g, 10-2000 Hz IEC 60068-2-27 Shock 50 g, 11 ms
Corrosion protection	IEC 60068-2-52 Salt mist Complies to ISO 12944-5:1998 Protective paint systems (C4)
Connection	2x terminal box 3x terminal box (with option M)
Weight approx.	1.9 kg, 2 kg (with option M)
Approval	CE

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Part number

Incremental encoder with centrifugal force switch FSL

HOG86

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- Switching speed (ns)
- 6 850...949 rpm ($\Delta n = 2$ rpm/s)*
 - 5 950...1099 rpm ($\Delta n = 2$ rpm/s)*
 - 4 1100...1299 rpm ($\Delta n = 2$ rpm/s)*
 - 3 1300...1799 rpm ($\Delta n = 2$ rpm/s)*
 - 2 1800...2499 rpm ($\Delta n = 2$ rpm/s)*
 - 1 2500...4500 rpm ($\Delta n = 2$ rpm/s)*

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

Pulse number - see table

- Output signals
- DN K1, K2, K0

- Shaft diameter
- 6 Blind hollow shaft $\varnothing 16$ mm, fit H7
 - 7 Cone shaft $\varnothing 17$ mm (1:10)

- Insulation
- H Hybrid bearing
 - P PA insulated (not possible at redundant sensing)

- Redundant sensing
- Without redundant sensing
 - M With redundant sensing

- EMS - Enhanced Monitoring System
- Without EMS
 - .2 With EMS

Pulse number

500	1000	1250	2500	4096
512	1024	2048	3072	5000

Other pulse numbers on request.

* Please specify the exact switching speed in addition to the part number (factory setted threshold).

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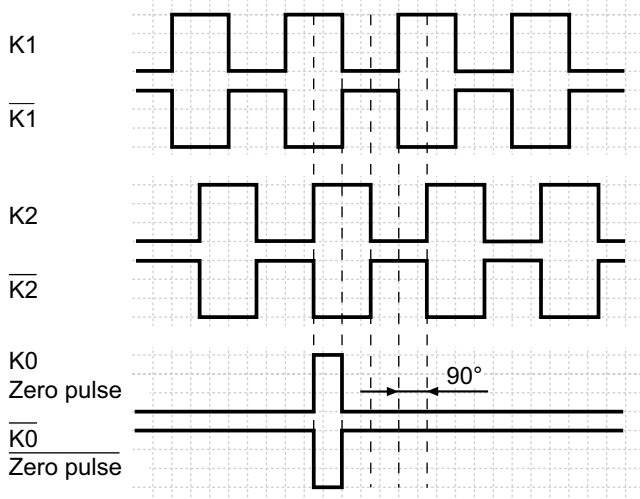
Insulated blind hollow shaft $\varnothing 16$ mm, cone shaft $\varnothing 17$ mm

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Output signals

At positive rotating direction



Accessories

Connectors and cables

HEK 8 Sensor cable for encoders

Mounting accessories

11077087	Mounting and dismounting set
11071906	Mounting kit earthing strap
DMS 6	Torque arm size M6
11071850	Support plate mounting kit R63 for torque arm size M6
11082676	Support plate mounting kit R69 for torque arm size M6
11072076	Screw mounting kit for torque arm size M6
11071904	Mounting kit for torque arm size M6

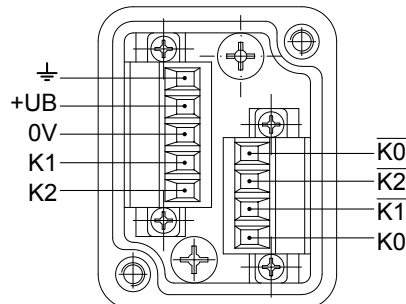
Diagnostic accessories

HENQ 1100 Analyzer for encoders

Terminal assignment

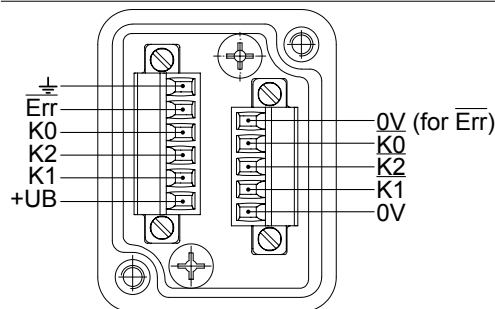
View A

Connecting terminal in terminal box HOG 86



Option EMS: View A

Connecting terminal in terminal box HOG 86.2



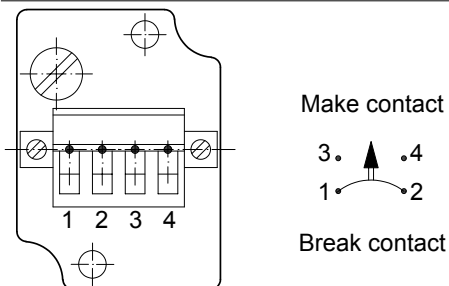
LED status / Error output

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

* Only at rotating encoder

View B

Connecting terminal mechanical centrifugal switch FSL



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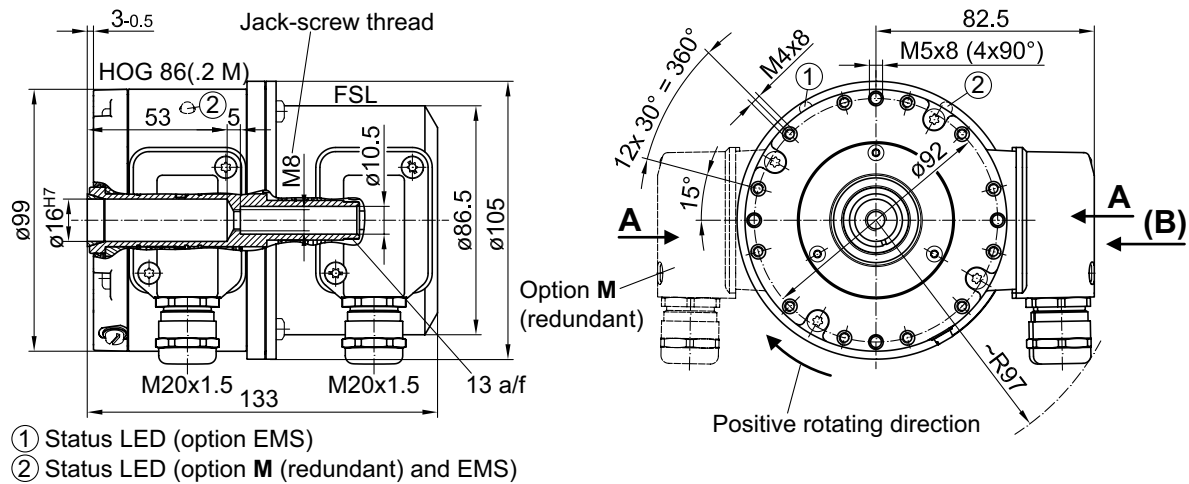
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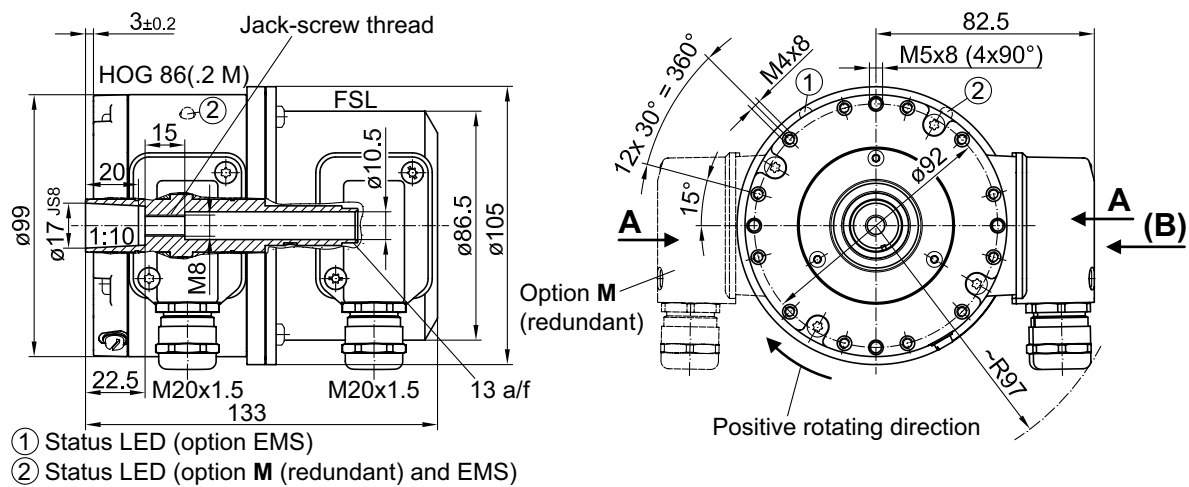
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Dimensions

Blind hollow shaft



Cone shaft



Mounting possibilities

