

Combination

Encoder with integrated centrifugal switch

Blind hollow shaft or cone shaft

300...5000 pulses per revolution

HOG 10 + FSL



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Features

- TTL output driver for cable length up to 550 m
- Mechanical speed monitoring based on centrifugal force
- Hybrid bearing for extended lifetime
- Terminal boxes, turn by 180°

Optional

- Function control with EMS (Enhanced Monitoring System)
- Redundant sensing with two terminal boxes
- With heating up to -50°C

Technical data - electrical ratings

Shaft insulation	2.8 kV
Transmission length	≤350 m at 100 kHz (HTL-P) ≤550 m at 100 kHz (TTL)
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE

Technical data - electrical ratings (encoder)

Voltage supply	9...30 VDC 5 VDC ±5 %
Consumption w/o load	≤100 mA
Pulses per revolution	300...5000
Phase shift	90° ±20°
Scan ratio	40...60 %
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

Technical data - electrical ratings (centrifugal switch)

Switching accuracy	±4 % ($\Delta n = 2$ rpm/s); ≤ +20 % ($\Delta n = 1500$ rpm/s)
Switching deviation cw-ccw rotation	≤3 %
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

Technical data - mechanical design

Size (flange)	ø105 mm
Shaft type	ø16...20 mm (blind hollow shaft) ø17 mm (cone shaft 1:10)
Shaft loading	≤450 N axial ≤600 N radial
Protection DIN EN 60529	IP 66
Speed (n)	≤1.25 · ns
Range of switching speed (ns)	850...4500 rpm ($\Delta n = 2$ rpm/s)
Operating torque typ.	6 Ncm
Rotor moment of inertia	400 gcm ²
Materials	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-40...+100 °C -25...+100 °C (>3072 pulses per revolution) -50...+100 °C (optional)
Resistance	IEC 60068-2-6 Vibration 5 g, 10-2000 Hz IEC 60068-2-27 Shock 50 g, 11 ms
Connection	2x terminal box 3x terminal box (with option M)
Weight approx.	2.2 kg, 2.4 kg (with option M)

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Part number

Incremental encoder with centrifugal force switch FSL

HOG10 [] [] [] [] [] **DN** [] [] [] [] [] [] [] [] [] **+ FSL** [] [] []

Switching speed (ns)

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

Shaft diameter

16H7	Blind hollow shaft $\varnothing 16 \text{ mm}$
20H7	Blind hollow shaft $\varnothing 20 \text{ mm}$
17K	Cone shaft $\varnothing 17 \text{ mm}$ (1:10)

Sealing system

LR	Dust protection
SR	Damp protection

Voltage supply / signals

I	9...30 VDC / output circuit HTL with inverted signals
TTL	5 VDC / output circuit TTL with inverted signals
R	9...30 VDC / output circuit 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.

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

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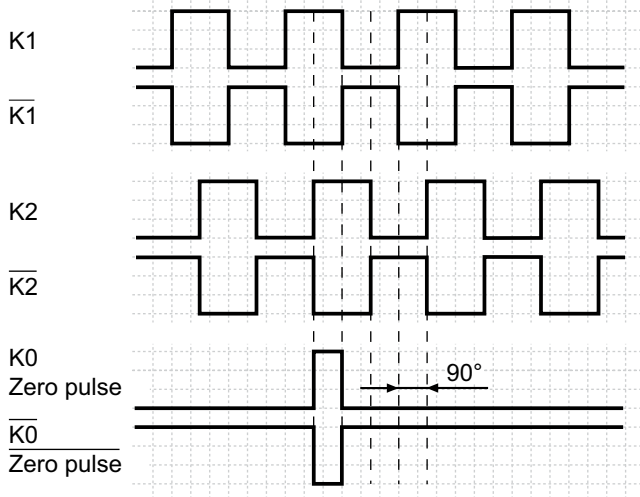
Blind hollow shaft or cone shaft

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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 (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

Accessories

Connectors and cables

HEK 8 Sensor cable for encoders

Mounting accessories

DMS 6 Torque arm size M6

11077197 Mounting kit for torque arm size M6 and earthing strap

11077087 Mounting and dismantling set

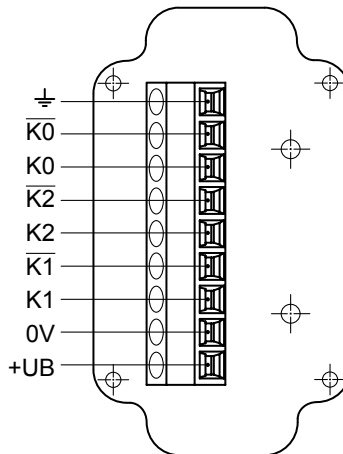
Diagnostic accessories

HENQ 1100 Analyzer for encoders

Terminal assignment

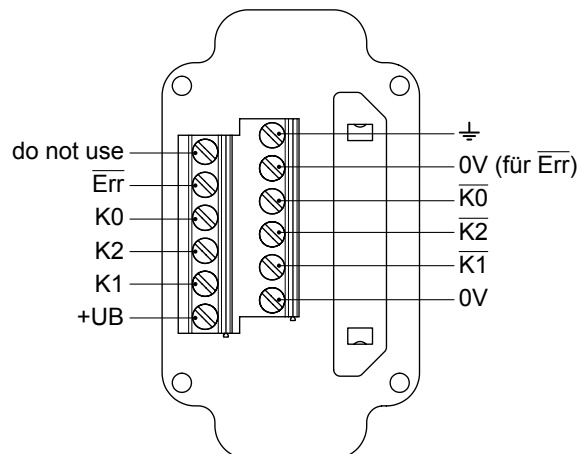
View A

Connecting terminal in terminal box HOG 10



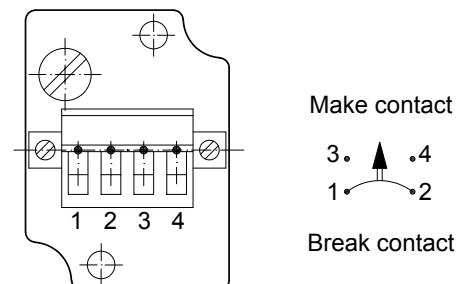
Option EMS: View A

Connecting terminal in terminal box HOG 10



View B

Connecting terminal mechanical centrifugal switch FSL



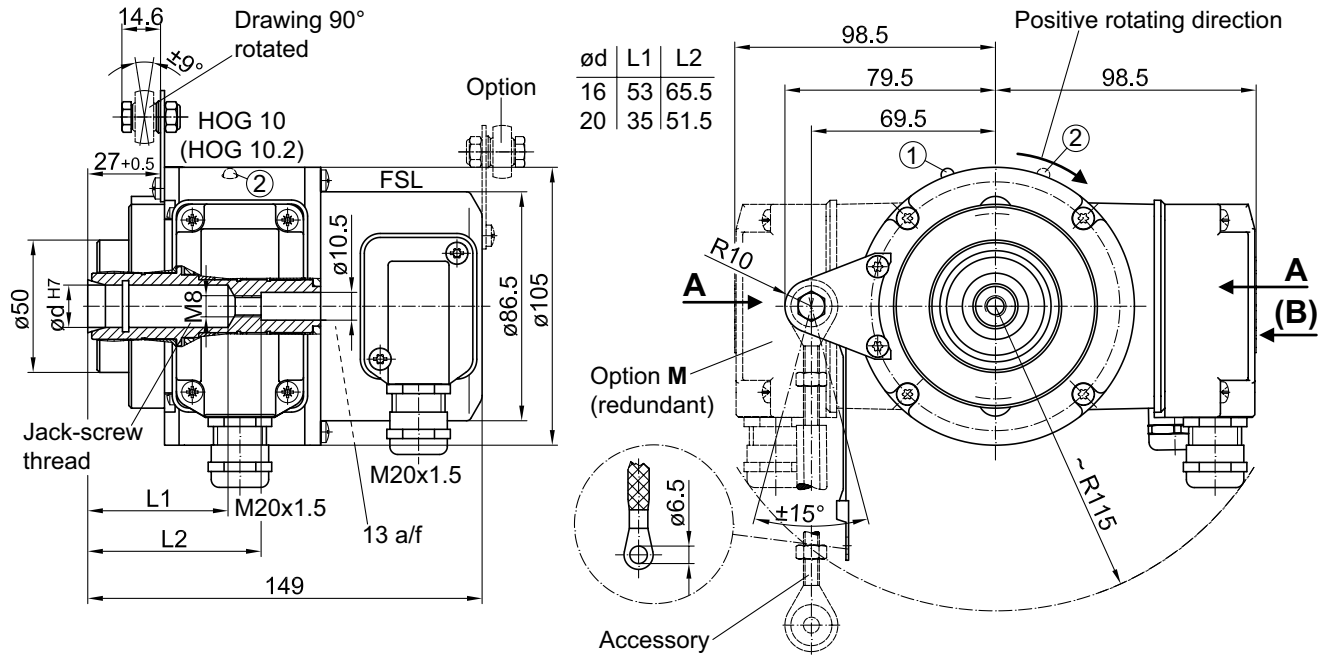
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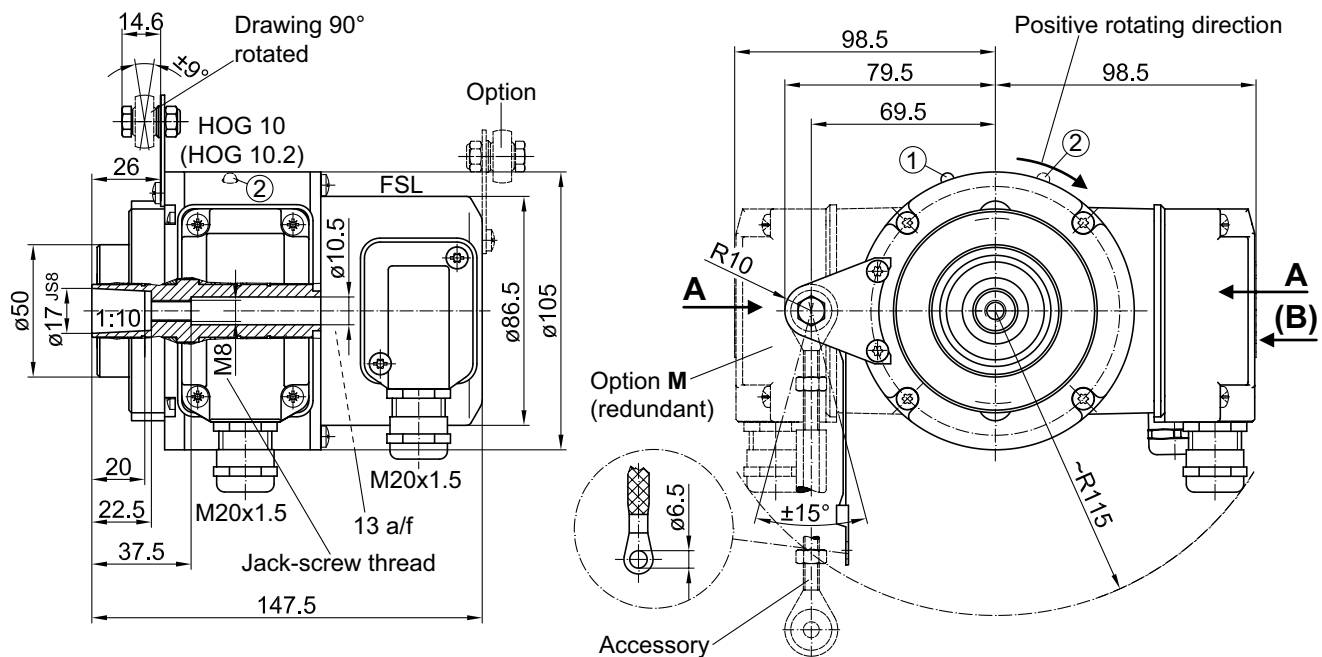
Dimensions

HOG 10 + FSL (HOG 10.2 + FSL, HOG 10 M + FSL, HOG 10.2 M + FSL) - Version with blind hollow shaft



- ① Status LED (option EMS)
- ② Status LED (option M (redundant) and EMS)

HOG 10 + FSL (HOG 10.2 + FSL, HOG 10 M + FSL, HOG 10.2 M + FSL) - Version with cone shaft



- ① Status LED (option EMS)
- ② Status LED (option M (redundant) and EMS)