

# Combination

Encoder with integrated centrifugal switch

Blind hollow shaft or cone shaft

300...5000 pulses per revolution

HOG 10 + FSL



HOG 10 + FSL

## 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	≤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

## Technical data - mechanical design

Size (flange)	ø105 mm
Shaft type	ø16...20 mm (blind hollow shaft) ø17 mm (cone shaft 1:10)
Admitted shaft load	≤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 <sup>2</sup>
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
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.	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**

													<u>Switching speed (ns)</u>
													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)*
													<u>Shaft diameter</u>
													16H7 Blind hollow shaft $\varnothing$ 16 mm
													20H7 Blind hollow shaft $\varnothing$ 20 mm
													17K Cone shaft $\varnothing$ 17 mm (1:10)
													<u>Sealing system</u>
													LR Dust protection
													SR Damp protection
													<u>Voltage supply / signals</u>
													I 9...30 VDC / output stage HTL with inverted signals
													TTL 5 VDC / output stage TTL with inverted signals
													R 9...30 VDC / output stage TTL with inverted signals
													<u>Pulse number - see table</u>
													<u>Output signals</u>
													DN K1, K2, K0
													<u>Redundant sensing</u>
													Without redundant sensing
													M With redundant sensing
													<u>EMS - Enhanced Monitoring System</u>
													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).

# Combination

Encoder with integrated centrifugal switch

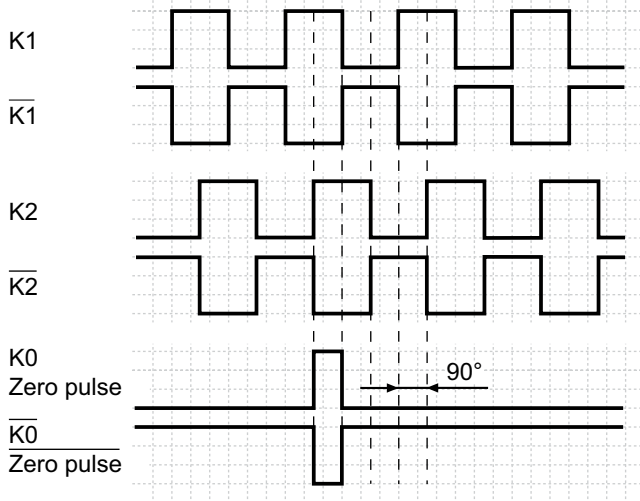
Blind hollow shaft or cone shaft

300...5000 pulses per revolution

## HOG 10 + FSL

### 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

Torque arm size M6

11077197 Mounting kit for torque arm size M6 and earthing strap

11077087 Mounting and dismantling set

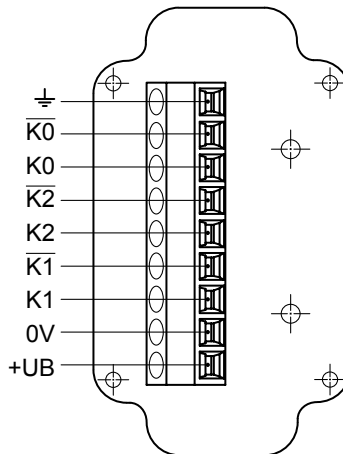
#### Diagnostic accessories

11075858 Analyzer for encoders HENQ 1100

### Terminal assignment

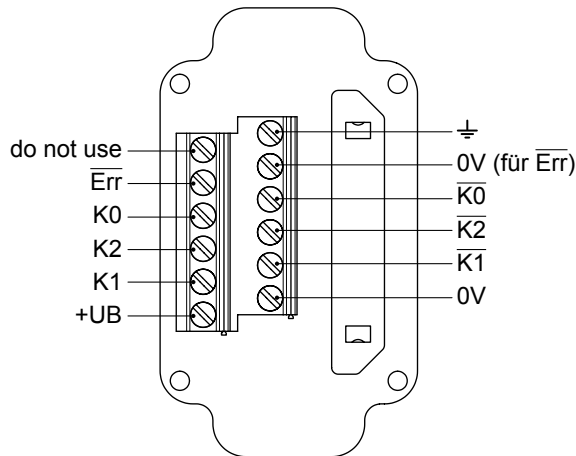
#### View A

Connecting terminal in terminal box HOG 10



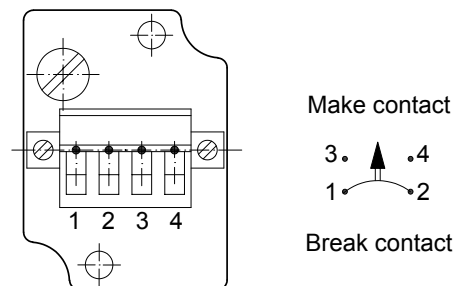
#### Option EMS: View A

Connecting terminal in terminal box HOG 10



#### View B

Connecting terminal mechanical centrifugal switch FSL



# Combination

## Encoder with integrated centrifugal switch

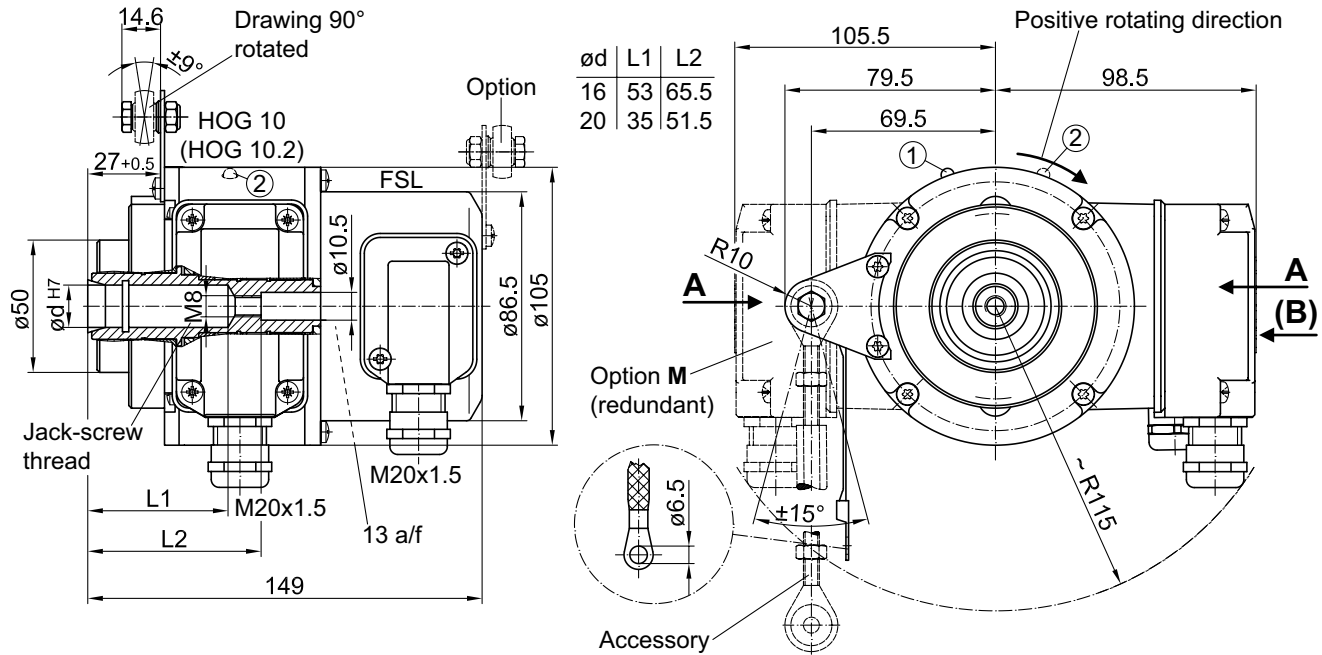
### Blind hollow shaft or cone shaft

### 300...5000 pulses per revolution

HOG 10 + FSL

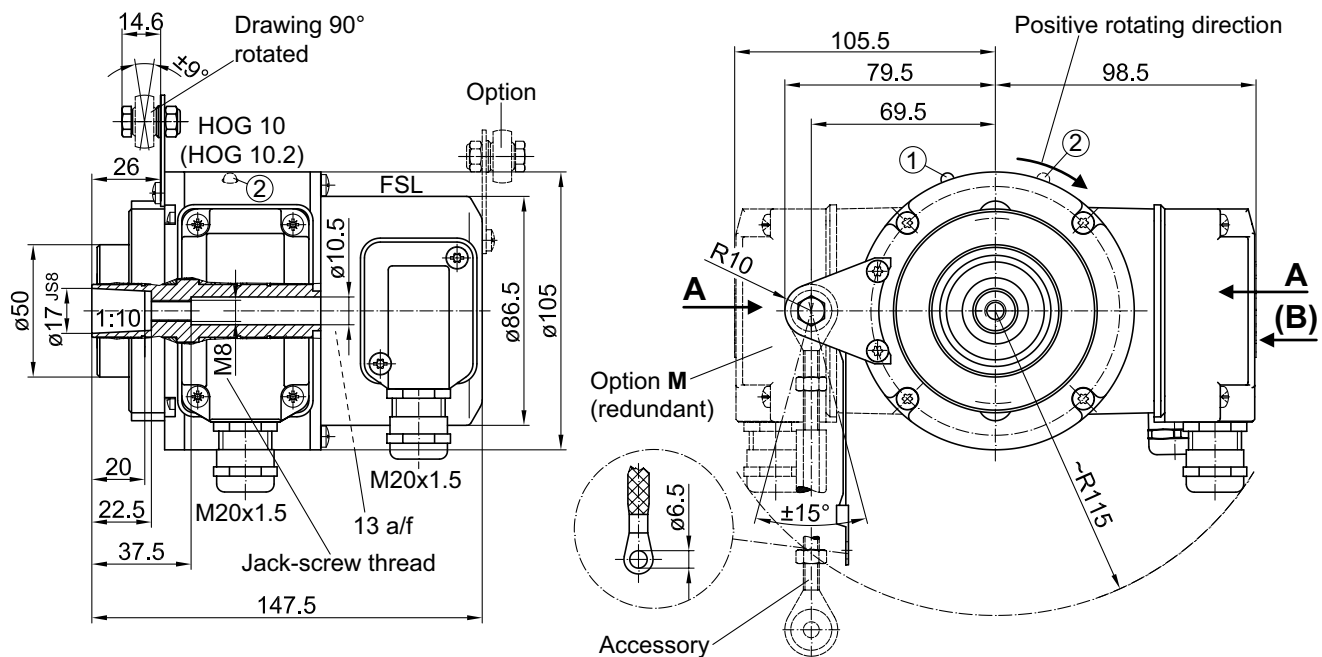
#### Dimensions

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)