

# Combination

Encoder with integrated electronic speed switch

Blind hollow shaft or cone shaft

300...5000 pulses per revolution

HOG 10 + ESL



HOG 10 + ESL

## Features

- TTL output driver for cable length up to 550 m
- Electronic speed monitoring
- Circuit breaker with up to three selectable threshold speeds
- Hybrid bearing for extended lifetime
- Shaft insulation up to 2.8 kV
- Terminal boxes, turn by 180°

## Optional

- Function control with EMS (Enhanced Monitoring System)
- Redundant sensing with two terminal boxes

## Technical data - electrical ratings

Interference immunity

## Technical data - electrical ratings (encoder)

Voltage supply	9...30 VDC; 5 VDC $\pm$ 5 %
Consumption w/o load	$\leq$ 100 mA
Pulses per revolution	300...5000
Phase shift	90° $\pm$ 20°
Scan ratio	40...60 %
Reference signal	Zero pulse, width 90°
Output frequency	$\leq$ 120 kHz $\leq$ 300 kHz (on request)
Output signals	K1, K2, K0 + inverted Error output (only EMS)
Output stages	HTL-P (power linedriver) TTL/RS422

## Technical data - electrical ratings (speed switches)

Switching accuracy	$\pm$ 4 % ( $\leq$ 1500 rpm) $\pm$ 2 % ( $>$ 1500 rpm)
Switching hysteresis	$\leq$ 30 % of switching speed
Switching delay time	$\leq$ 40 ms

### HOG 10 + ESL 90

Switching outputs	1 output, speed control
Output switching capacity	$\leq$ 6 A / 250 VAC; $\leq$ 1 A / 48 VDC
Minimum switching current	100 mA

### HOG 10 + ESL 93

Voltage supply	12 VDC $\pm$ 10 %
Consumption w/o load	$\leq$ 5 mA
Switching outputs	3 outputs, speed control
Current each output	40 mA (DC)

## Technical data - mechanical design

Size (flange)	$\varnothing$ 105 mm
Shaft type	$\varnothing$ 16...20 mm (blind hollow shaft) $\varnothing$ 17 mm (cone shaft 1:10)
Shaft loading	$\leq$ 450 N axial $\leq$ 600 N radial
Protection DIN EN 60529	IP 66
Operating torque typ.	6 Ncm
Rotor moment of inertia	680 gcm <sup>2</sup>
Materials	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-20...+85 °C
Resistance	IEC 60068-2-6 Vibration 5 g, 10-2000 Hz IEC 60068-2-27 Shock 50 g, 6 ms
Shaft insulation	2.8 kV
Transmission length	$\leq$ 350 m at 100 kHz (HTL-P) $\leq$ 550 m at 100 kHz (TTL)
Connection	2x terminal box 3x terminal box (with option M)
Weight approx.	2.3 kg, 2.5 kg (with option M)
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE
<b>HOG 10 + ESL 90</b>	
Operating speed	$\leq$ 6000 rpm
Range of switching speed (ns)	650...6000 rpm
<b>HOG 10 + ESL 93</b>	
Operating speed	$\leq$ 5000 rpm
Range of switching speed (ns)	3x 200...5000 rpm





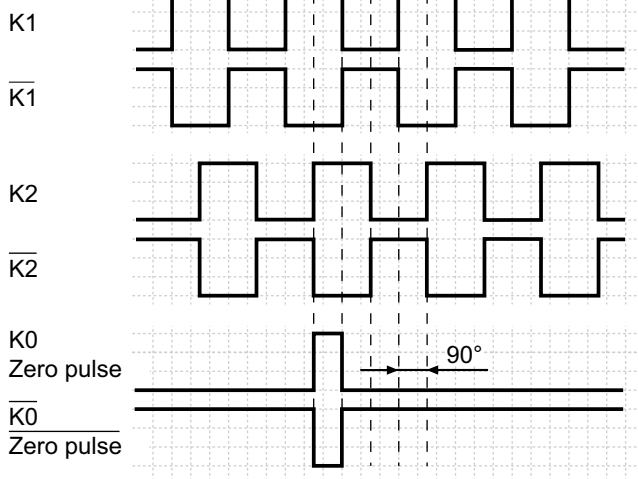
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## Output signals

At positive rotating direction



## Option EMS: LED status / Error output

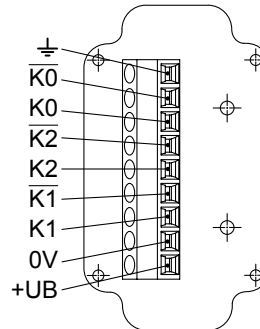
Flash light red*	Error of signal sequence, zero pulse or pulses (Error output = HIGH-LOW alternation)
Red	Overload output driver (Error output = LOW)
Flash light green	Encoder o.k., rotating (Error output = HIGH)
Green	Encoder o.k., stopped (Error output = HIGH)
No light	No output voltage connection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

\* Only at rotating encoder

## Terminal assignment

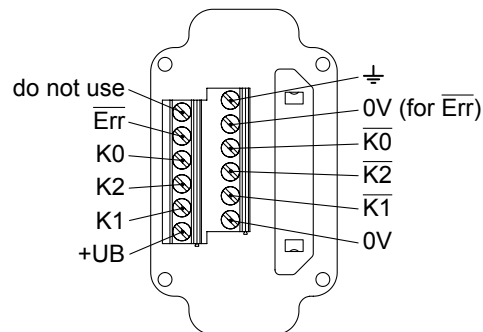
### View A

Connecting terminal in terminal box HOG 10



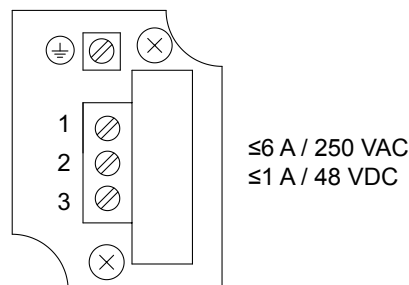
### Option EMS: View A

Connecting terminal in terminal box HOG 10.2



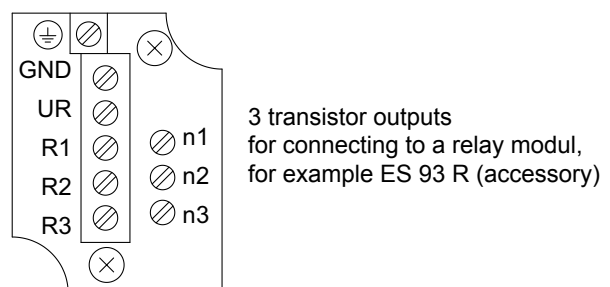
### View B

Connecting terminal electronic speed switch ESL 90



### View B

Connecting terminal electronic speed switch ESL 93



# Combination

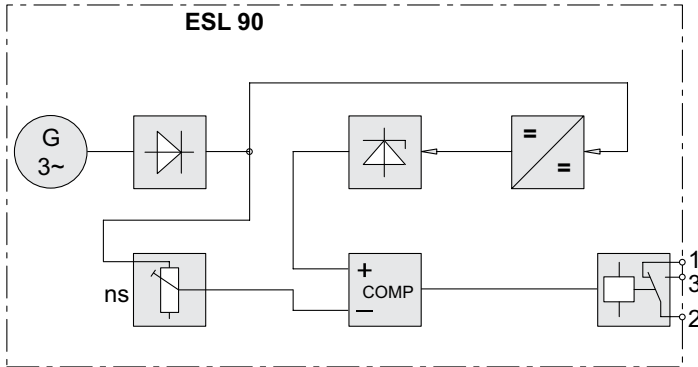
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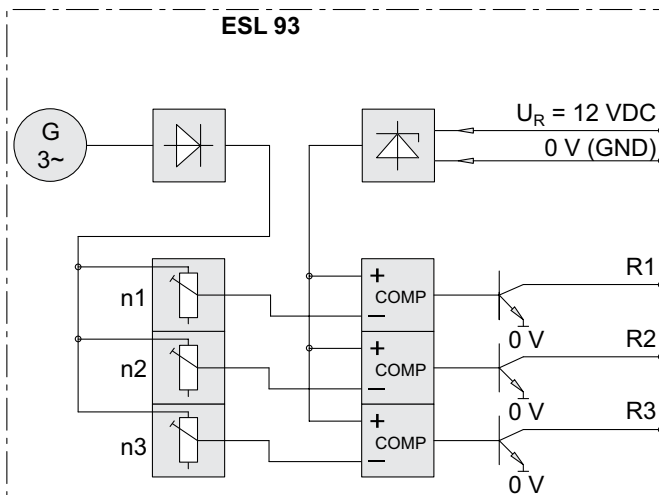
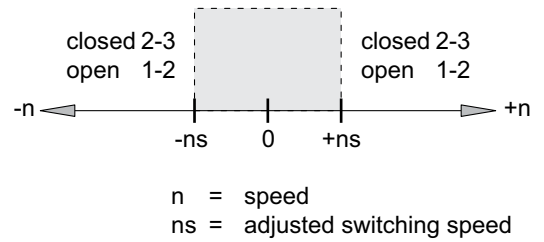
300...5000 pulses per revolution

## HOG 10 + ESL

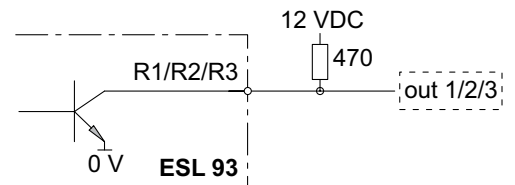
### Block circuit diagram



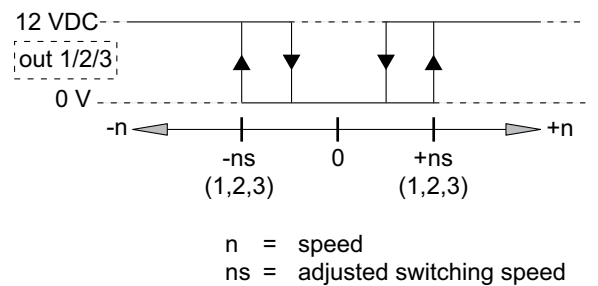
### Switching characteristics



### Recommended output circuit



### Switching characteristics



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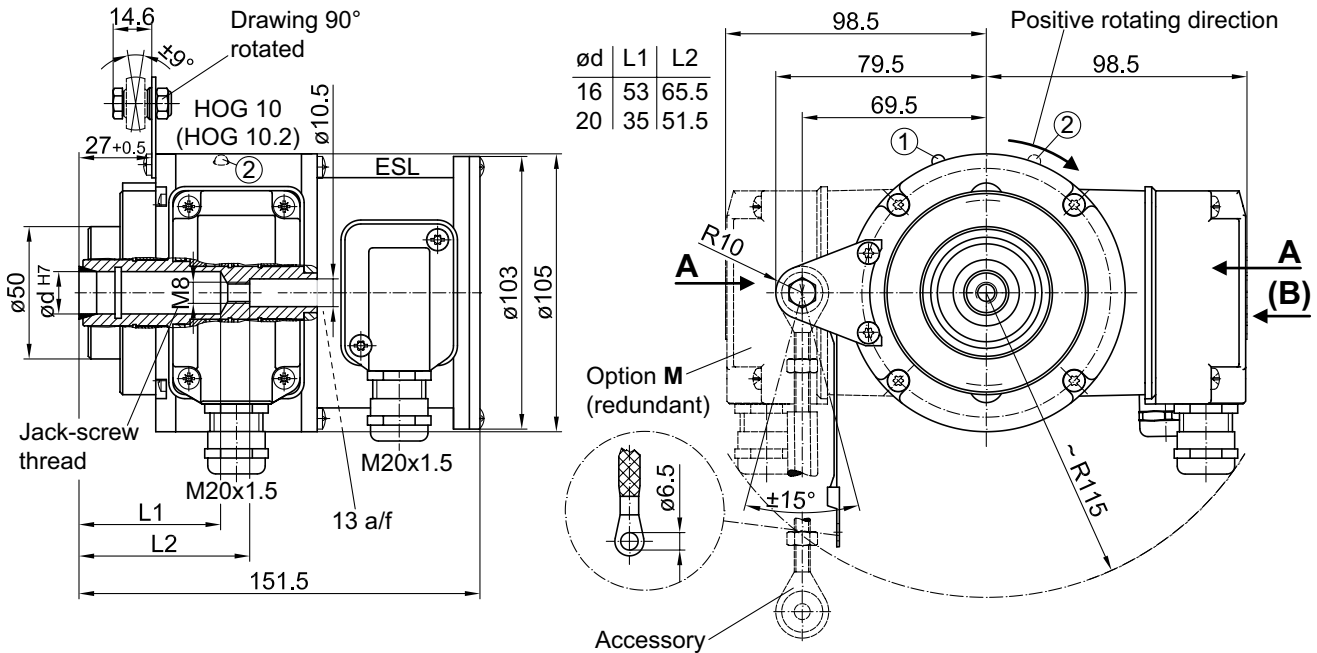
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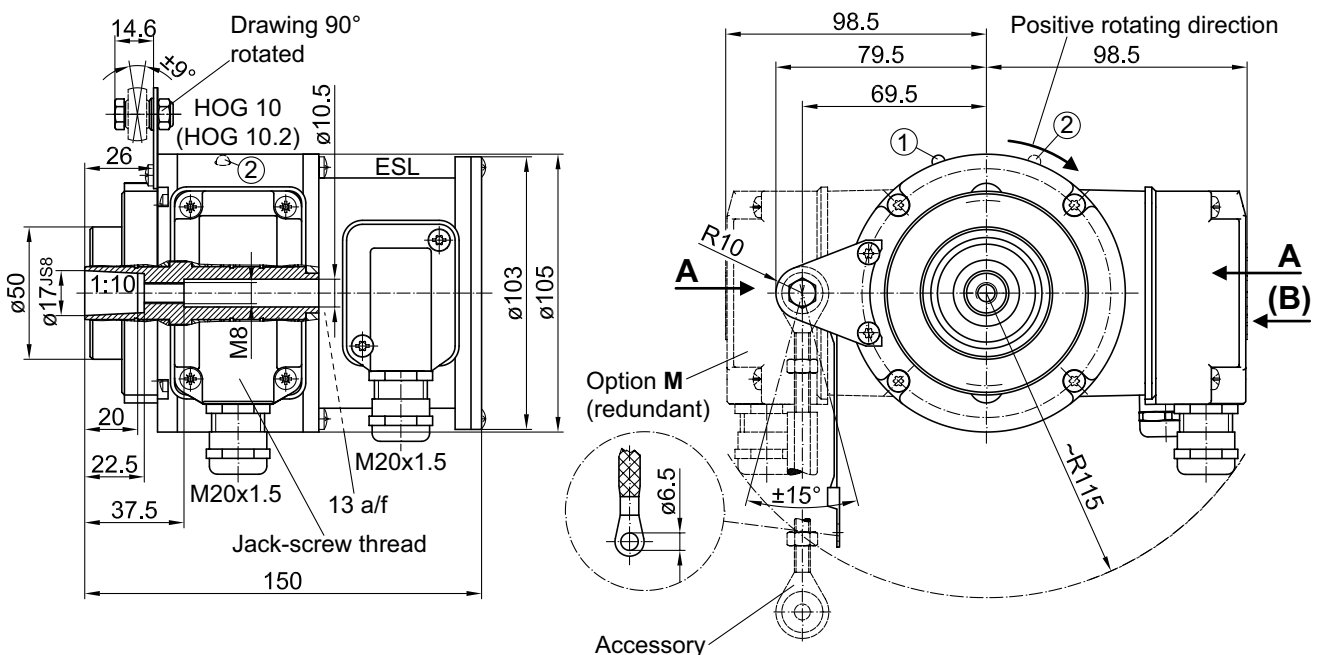
## Dimensions

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



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

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



- ① Status LED (option EMS)
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