

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 ± 5 %
Consumption w/o load	≤ 100 mA
Pulses per revolution	300...5000
Phase shift	$90^\circ \pm 20^\circ$
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

Technical data - electrical ratings (speed switches)

Switching accuracy	± 4 % (≤ 1500 rpm) ± 2 % (> 1500 rpm)
Switching hysteresis	≤ 30 % of switching speed
Switching delay time	≤ 40 ms

HOG 10 + ESL 90

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

HOG 10 + ESL 93

Voltage supply	12 VDC ± 10 %
Consumption w/o load	≤ 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	≤ 450 N axial ≤ 600 N radial
Protection DIN EN 60529	IP 66
Operating torque typ.	6 Ncm
Rotor moment of inertia	680 gcm ²
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	≤ 350 m at 100 kHz (HTL-P) ≤ 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
HOG 10 + ESL 90	
Operating speed	≤ 6000 rpm
Range of switching speed (ns)	650...6000 rpm
HOG 10 + ESL 93	
Operating speed	≤ 5000 rpm
Range of switching speed (ns)	3x 200...5000 rpm

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Part number

Encoder with speed switch ESL 93

HOG10

		DN				+ESL93
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Switching speed 3 (ns3)
... 200...5000 rpm

Switching speed 2 (ns2)
... 200...5000 rpm

Switching speed 1 (ns1)
... 200...5000 rpm

Shaft diameter

16H7 Blind hollow shaft ø16 mm
20H7 Blind hollow shaft ø20 mm
17K Cone shaft ø17 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 indicate the exact switching rotation speeds
(permanent parameter defined at works).

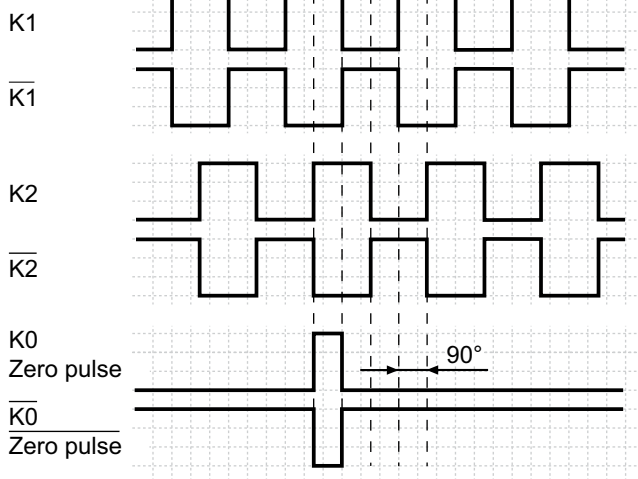
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Output signals

At positive rotating direction



Option EMS: LED status / Error output

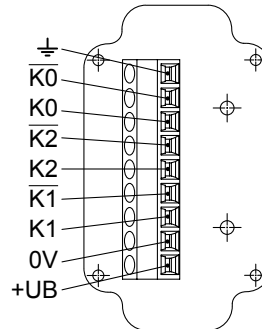
Flash light red*	Error of signal sequence, zero pulse or pulses (Error output = HIGH-LOW alternation)
Red	Overload output driver (Error output = LOW)
Flash light green	Encoder o.k., rotating (Error output = HIGH)
Green	Encoder o.k., stopped (Error output = HIGH)
No light	No output voltage connection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

* Only at rotating encoder

Terminal assignment

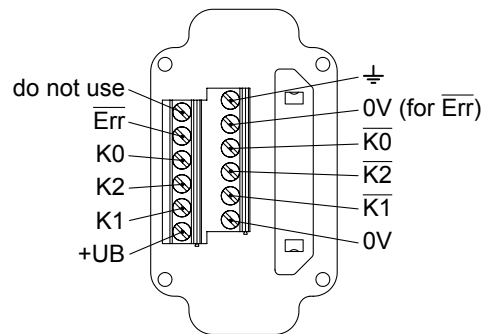
View A

Connecting terminal in terminal box HOG 10



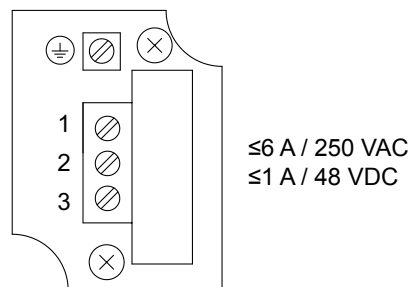
Option EMS: View A

Connecting terminal in terminal box HOG 10.2



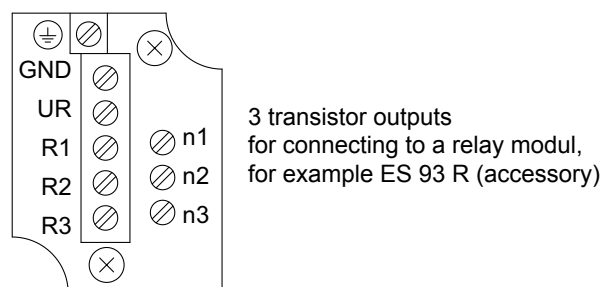
View B

Connecting terminal electronic speed switch ESL 90



View B

Connecting terminal electronic speed switch ESL 93



Combination

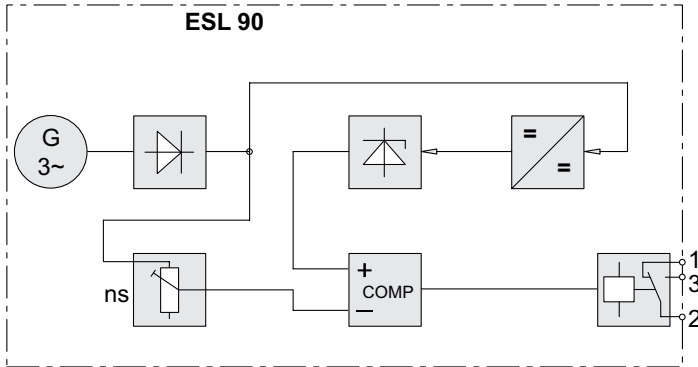
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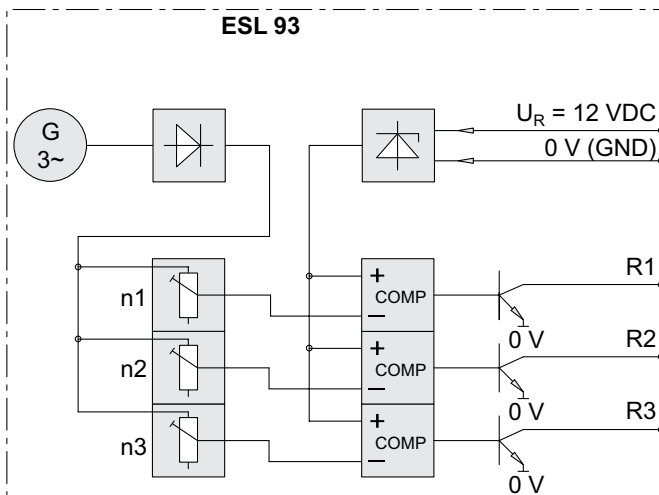
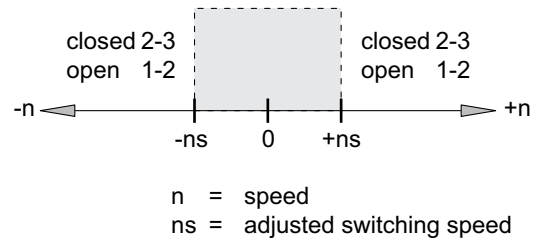
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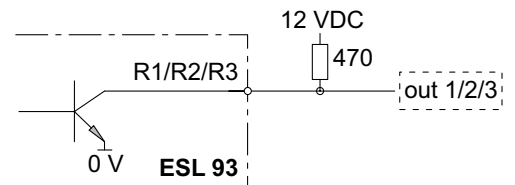
Block circuit diagram



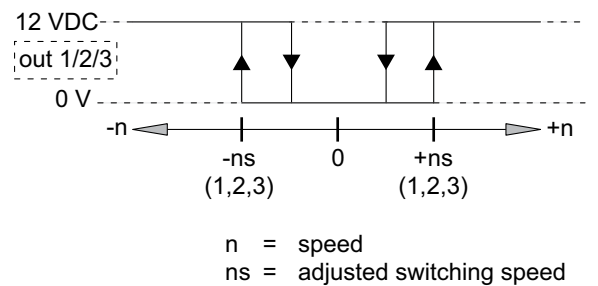
Switching characteristics



Recommended output circuit



Switching characteristics



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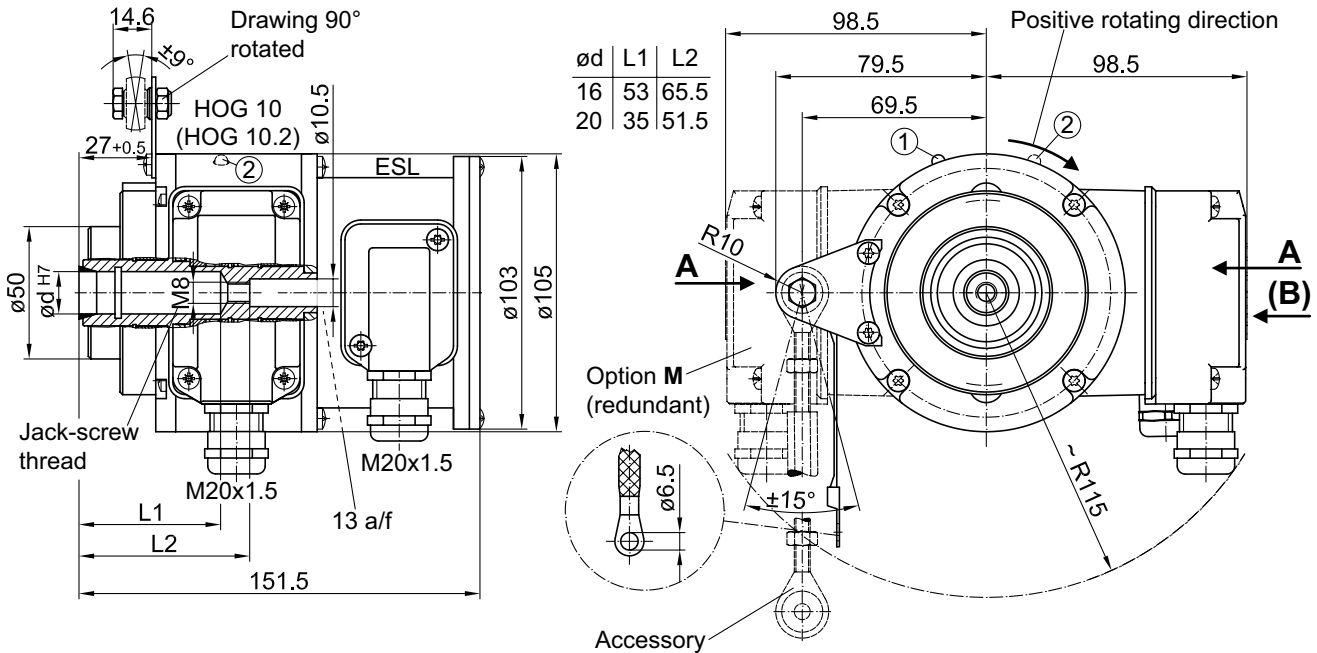
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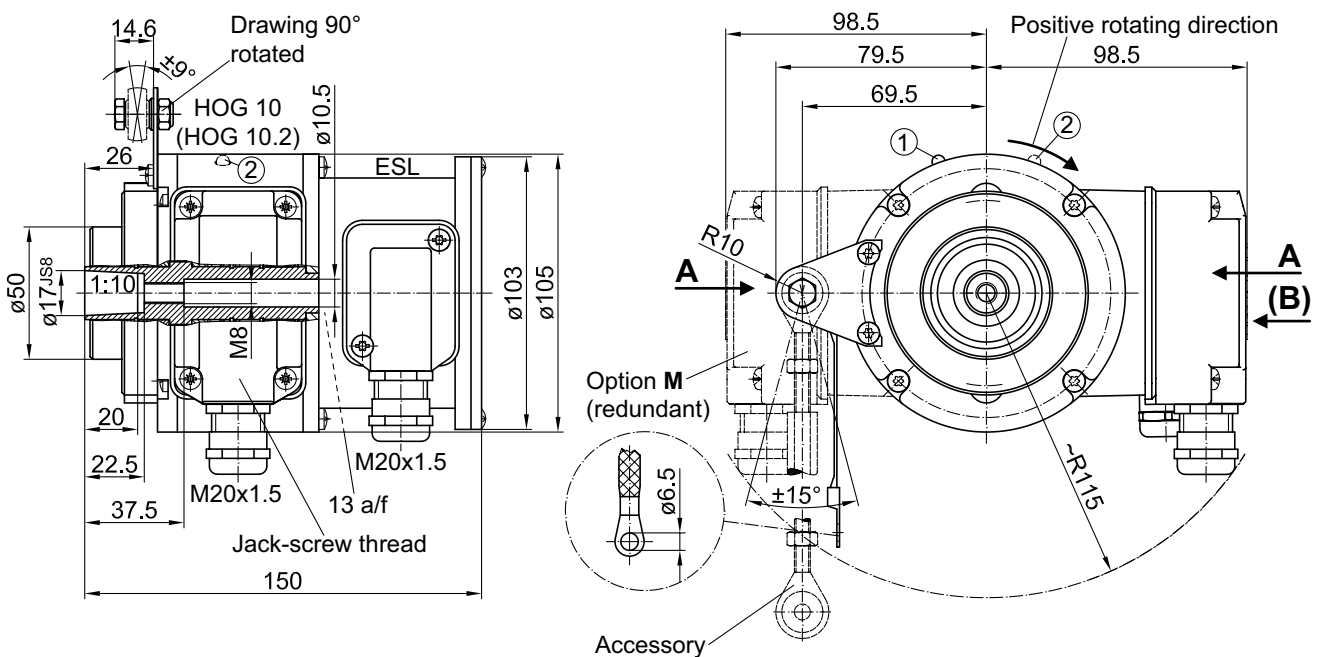
Dimensions

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