

Combination

Encoder with integrated electronic speed switch

Blind hollow shaft or cone shaft

300...5000 pulses per revolution

HOG 11 + ESL



HOG 11 + ESL

Features

- Offshore and salt water firm, high protection IP 67
- 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
- Terminal boxes, turn by 180°

Optional

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

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 (speed switches)

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

HOG 11 + 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 11 + ESL 93

| | |
|----------------------|--------------------------|
| Voltage supply | 12 VDC ±10 % |
| Consumption w/o load | ≤5 mA |
| Switching outputs | 3 outputs, speed control |
| Current each output | 40 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 67 |
| 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 11 + ESL 90 | |
| Operating speed | ≤6000 rpm |
| Range of switching speed (ns) | 650...6000 rpm |
| HOG 11 + 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 90

HOG11

| | | | | | | | | | |
|--|--|----|--|--|----|--|--------|--|-----|
| | | DN | | | SR | | +ESL90 | | ... |
|--|--|----|--|--|----|--|--------|--|-----|

| | | | | | | | |
|--|--|--|--|--|------|--|---|
| | | | | | | | |
| | | | | | | | <u>Switching speed (ns)</u> |
| | | | | | | | ... 650...6000 rpm |
| | | | | | | | <u>Shaft diameter</u> |
| | | | | | 16H7 | | Blind hollow shaft ø16 mm |
| | | | | | 20H7 | | Blind hollow shaft ø20 mm |
| | | | | | 17K | | Cone shaft ø17 mm (1:10) |
| | | | | | | | <u>Voltage supply / signals</u> |
| | | | | | 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 |
| | | | | | | | <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).

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 dismounting set |
| Diagnostic accessories | |
| HENQ 1100 | Analyzer for encoders |
| Relay module for HOG 11 + ESL 93 | |
| ES 93 R | Relay modul |

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Part number

Encoder with speed switch ESL 93

HOG11 DN SR +ESL93

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)

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).

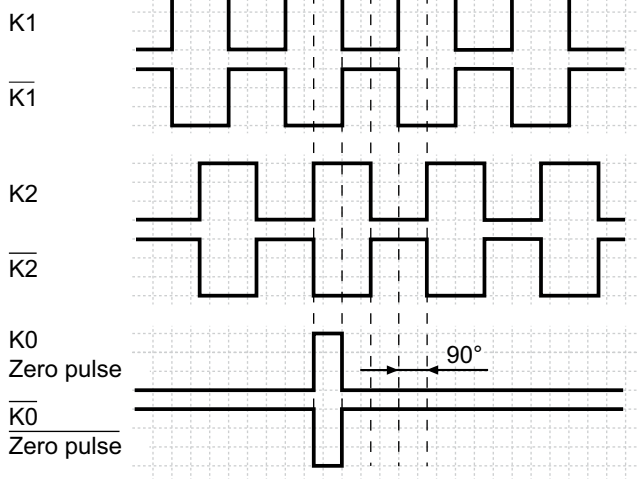
Combination

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HOG 11 + ESL

Output signals

At positive rotating direction



Option EMS: LED status / Error output

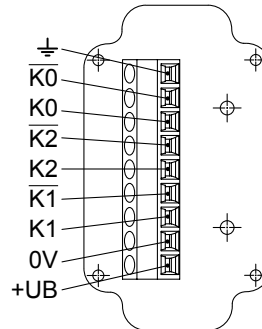
| | |
|-------------------|---|
| Flash light red* | Error of signal sequence, zero pulse or pulses (Error output = HIGH-LOW alternation) |
| Red | Overload output driver (Error output = LOW) |
| Flash light green | Encoder o.k., rotating (Error output = HIGH) |
| Green | Encoder o.k., stopped (Error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

* Only at rotating encoder

Terminal assignment

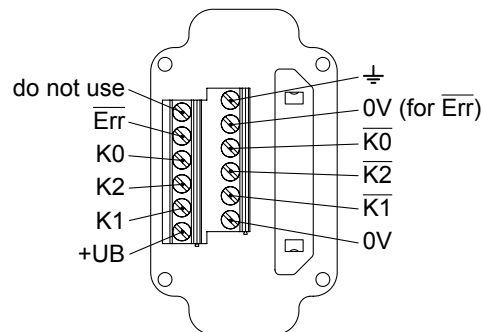
View A

Connecting terminal in terminal box HOG 11



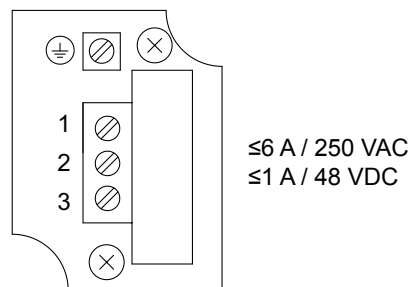
Option EMS: View A

Connecting terminal in terminal box HOG 11.2



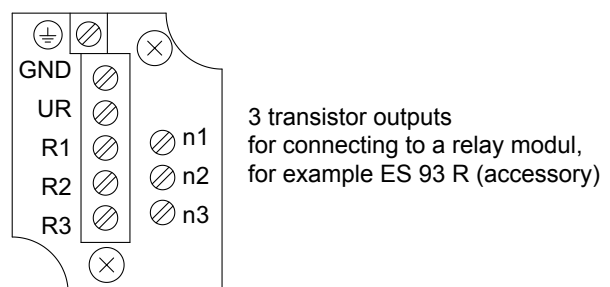
View B

Connecting terminal electronic speed switch ESL 90



View B

Connecting terminal electronic speed switch ESL 93



Combination

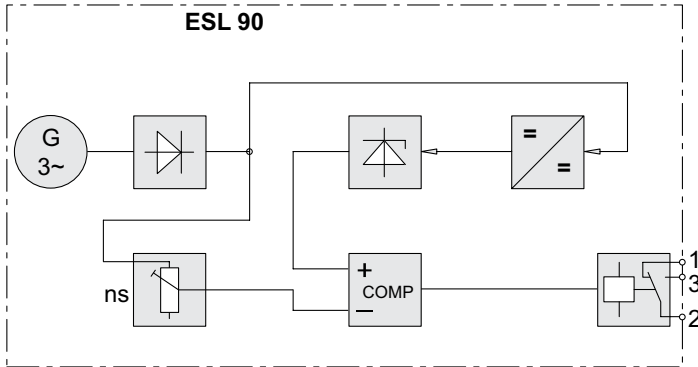
Encoder with integrated electronic speed switch

Blind hollow shaft or cone shaft

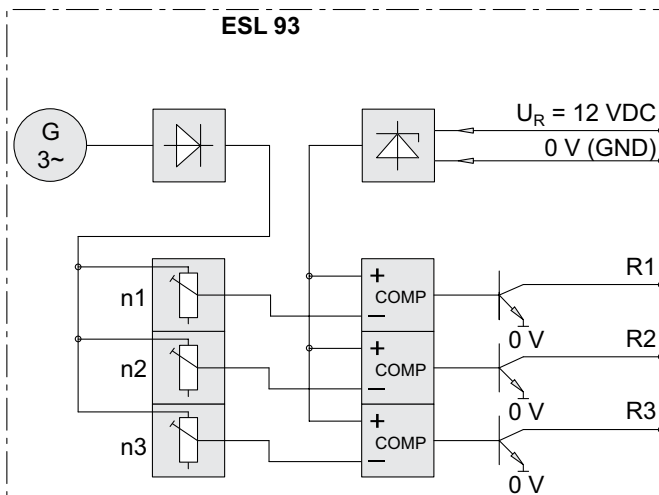
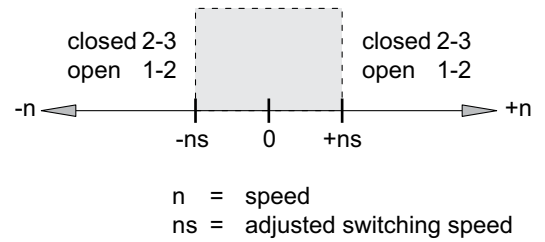
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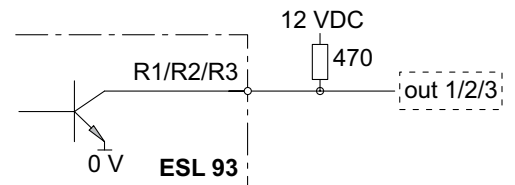
Block circuit diagram



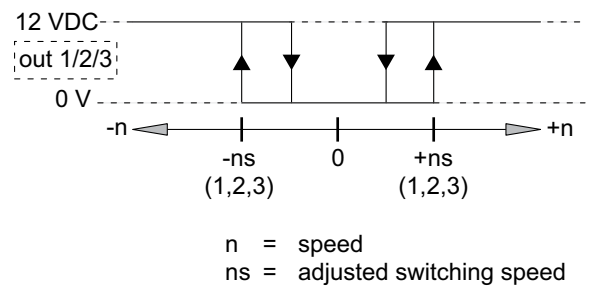
Switching characteristics



Recommended output circuit



Switching characteristics



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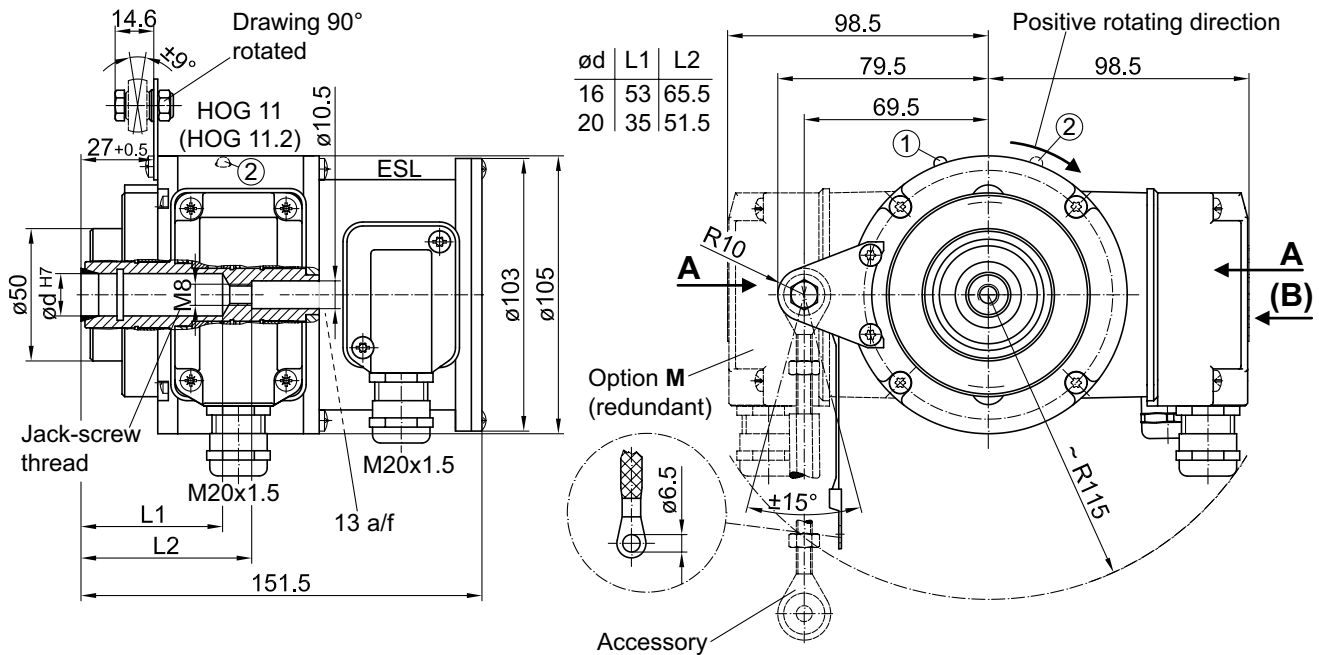
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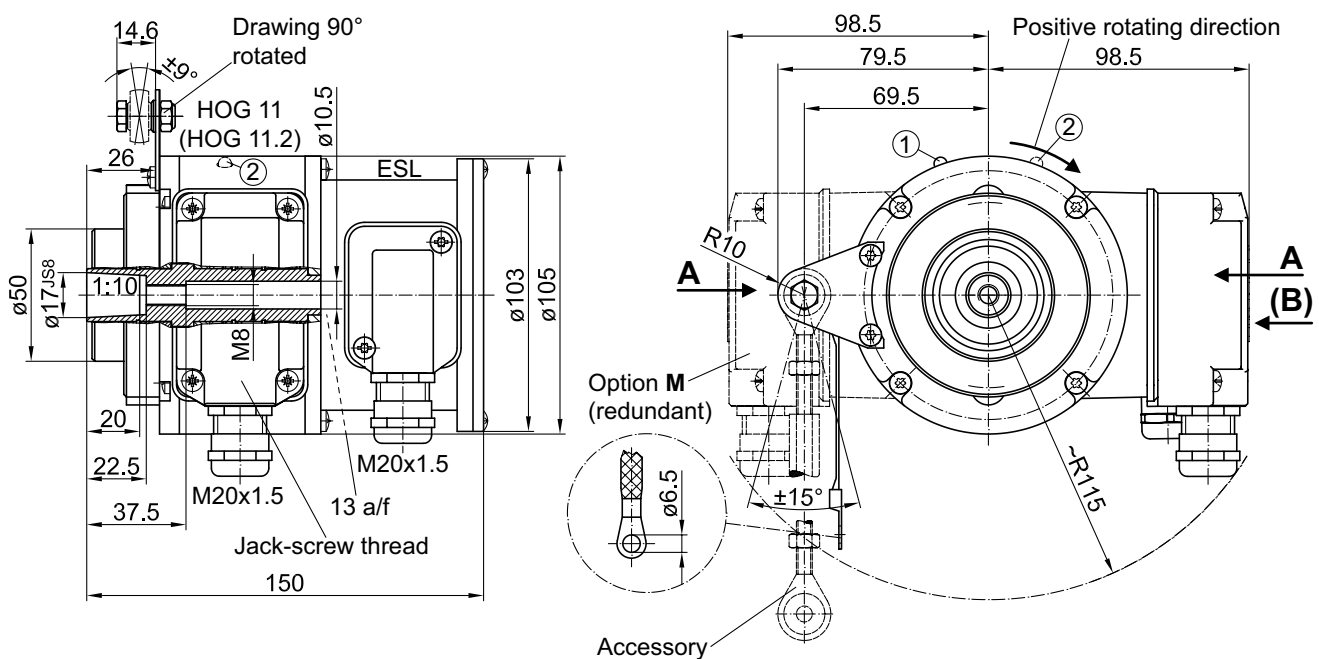
Dimensions

HOG 11 + ESL (HOG 11.2 + ESL, HOG 11 M + ESL, HOG 11.2 M + ESL) - Version with blind hollow shaft



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

HOG 11 + ESL (HOG 11.2 + ESL, HOG 11 M + ESL, HOG 11.2 M + ESL) - Version with cone shaft



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