

POG 11 + ESL 93

Encoder with integrated electronic speed switch

Solid shaft with EURO flange B10 300...5000 pulses per revolution

Overview

- 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
- EURO flange B10 / solid shaft $\varnothing 11$ mm
- Terminal boxes, turn by 180°



Technical data

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	$90^\circ \pm 20^\circ$
Duty cycle	40...60 %
Reference signal	Zero pulse, width 90°
Output frequency	≤ 120 kHz ≤ 300 kHz (on request)
Output signals	K1, K2, K0 + inverted Error output (option EMS)
Output stages	HTL-P (power linedriver) TTL/RS422
Sensing method	Optical

Technical data - electrical ratings (speed switch)

Voltage supply	12 VDC ± 10 %
Consumption w/o load	≤ 5 mA
Switching accuracy	± 4 % (≤ 1500 rpm) ± 2 % (> 1500 rpm)
Switching hysteresis	= 30 % of switching speed
Switching outputs	3 outputs, speed control
Current each output	40 mA (DC)
Switching delay time	≤ 40 ms

Technical data - mechanical design

Size (flange)	$\varnothing 115$ mm
Shaft type	$\varnothing 11$ mm solid shaft

Technical data - mechanical design

Admitted shaft load	≤ 300 N axial ≤ 450 N radial
Flange	EURO flange B10
Protection EN 60529	IP 67
Operating speed	≤ 5000 rpm
Range of switching speed (ns)	3x 200...5000 rpm
Operating torque typ.	3 Ncm
Rotor moment of inertia	220 gcm^2
Material	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	$-20...+85^\circ\text{C}$
Resistance	IEC 60068-2-6 Vibration 10 g, 10-2000 Hz IEC 60068-2-27 Shock 100 g, 11 ms
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) according to ISO 12944-2
Connection	2x terminal box 3x terminal box (with option M)
Weight approx.	2.7 kg 2.9 kg (with option M)
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE

Optional

- Function control with EMS (Enhanced Monitoring System)
- Redundant sensing with two terminal boxes
- Housing foot (B3)

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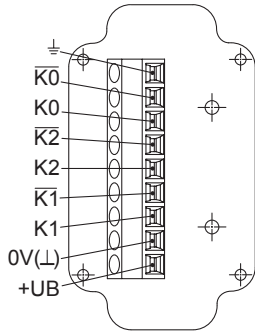
Encoder with integrated electronic speed switch

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Terminal assignment

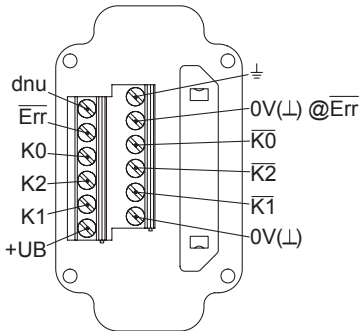
View A (see dimension)

Connecting terminal terminal box encoder



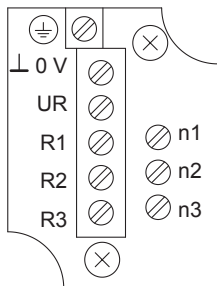
Option EMS: View A (see dimension)

Connecting terminal terminal box encoder



View B (see dimension)

Connecting terminal speed switch ESL 93



Terminal significance

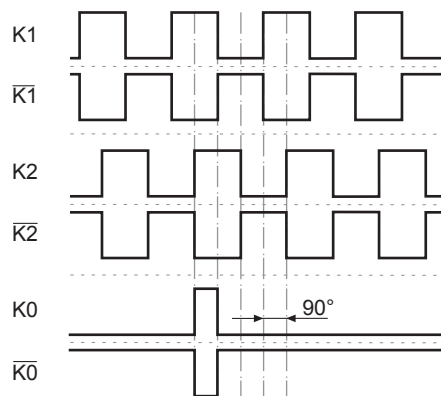
Encoder incremental

+UB	Voltage supply
0V (⊥)	Ground
⊥	Earth ground (housing)
K1	Output signal channel 1
$\overline{K1}$	Output signal channel 1 inverted
K2	Output signal channel 2 (offset by 90° to channel 1)
$\overline{K2}$	Output signal channel 2 inverted
K0	Zero pulse (reference signal)
$\overline{K0}$	Zero pulse inverted
\overline{Err}	Error output (option EMS)
dnu	Do not use

Output signals

HTL/TTL

At positive rotating direction (see dimension)



Option EMS: Status LED / error output

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

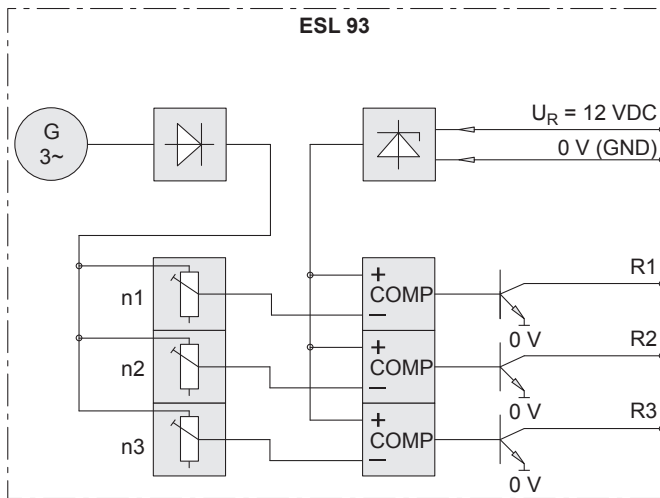
* Only at rotating device

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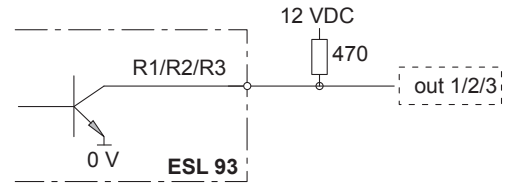
Encoder with integrated electronic speed switch

Solid shaft with EURO flange B10 300...5000 pulses per revolution

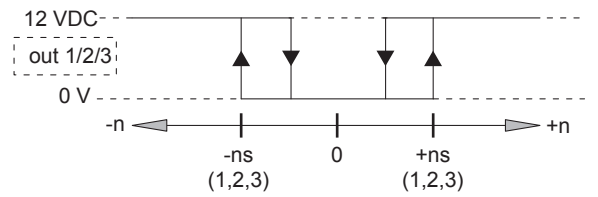
Block circuit diagram



Recommended output circuit



Switching characteristics



n = speed
ns = adjusted switching speed

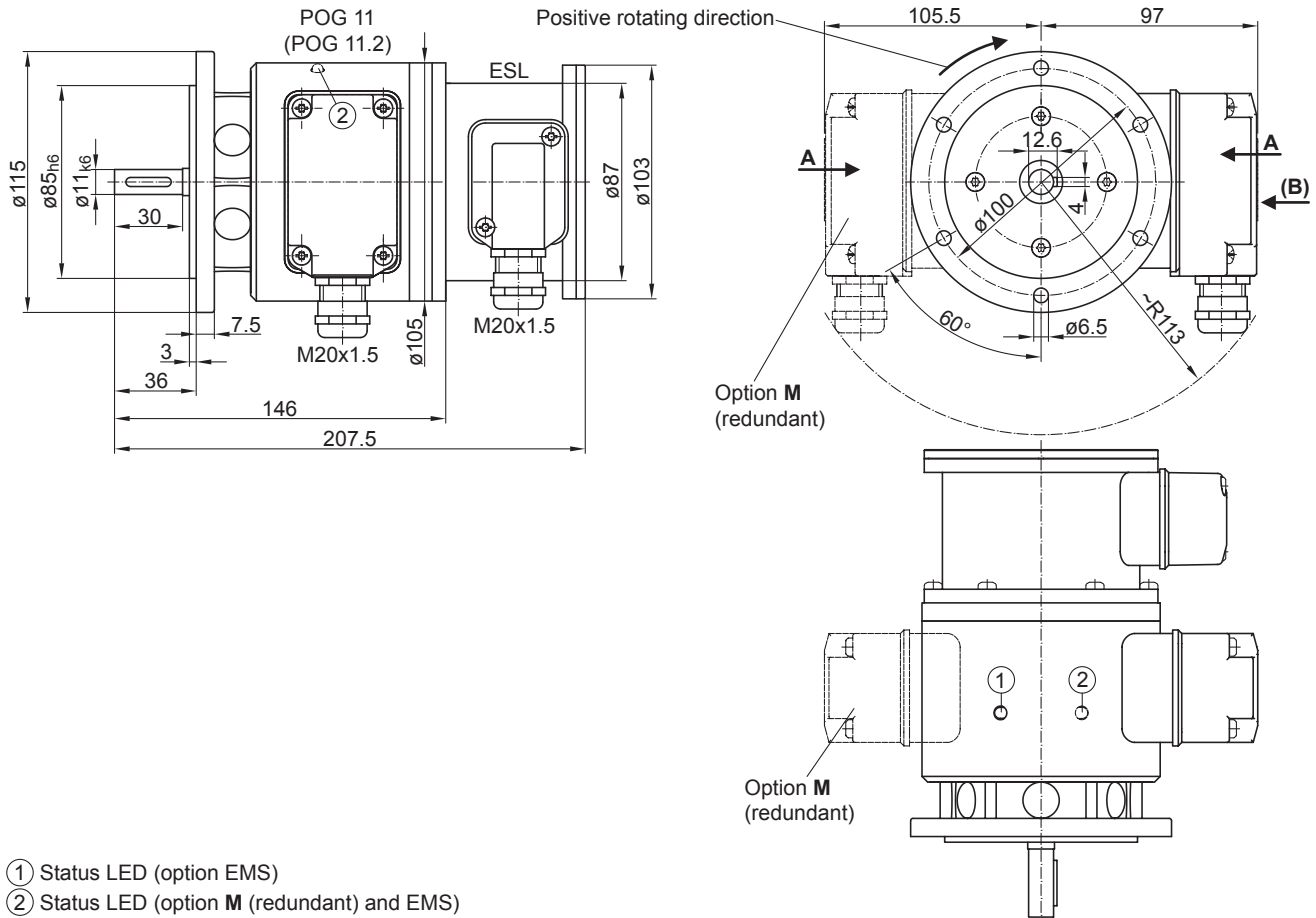
Speed switch ESL 93

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Encoder with integrated electronic speed switch

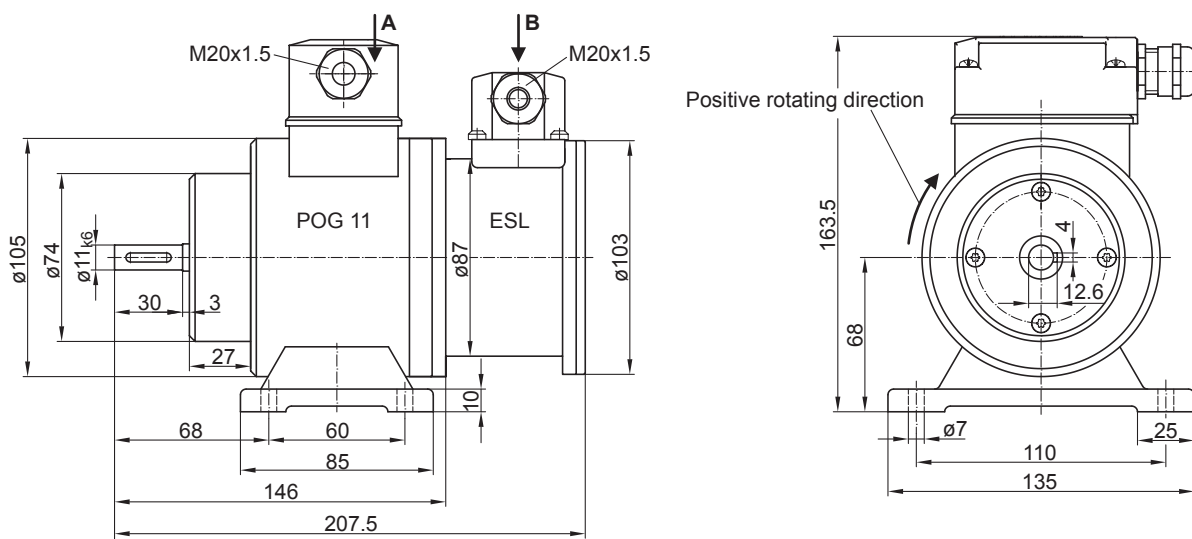
Solid shaft with EURO flange B10 300...5000 pulses per revolution

Dimensions



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

EURO flange B10



Housing foot B3

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Solid shaft with EURO flange B10 300...5000 pulses per revolution

Ordering reference

	POG11	##	#	DN	####	###	#####	+ ESL93
Product											
Incremental encoder + Speed switch	POG11										
EMS - Enhanced Monitoring System											
Without EMS											
With EMS		.2									
Redundant sensing											
Without redundant sensing											
With redundant sensing			M								
Output signals											
K1, K2, K0				DN							
Pulse number⁽¹⁾											
300					300						
500					500						
512					512						
1000					1000						
1024					1024						
1200					1200						
2048					2048						
2500					2500						
3072					3072						
4096					4096						
5000					5000						
Voltage supply / output stage											
9...30 VDC / output stage HTL with inverted signals							I				
5 VDC / output stage TTL with inverted signals							TTL				
9...30 VDC / output stage TTL with inverted signals							R				
Mounting type											
EURO flange B10											
Housing foot B3									B3		
Version speed switch											
Electronic speed switch, 3 outputs, speed control									+ ESL93		
Switching speed 1 (ns1)											
200...5000 rpm ⁽²⁾										...	
Switching speed 2 (ns2)											
200...5000 rpm ⁽²⁾										...	
Switching speed 3 (ns3)											
200...5000 rpm ⁽²⁾											...

(1) Other pulse numbers on request.

(2) Please specify the exact switching speed in addition to the part number (factory setting).

Accessories
Mounting accessories

Spring disk coupling K 35 (shaft ø6...12 mm)

Spring disk coupling K 50 (shaft ø11...16 mm)

Spring disk coupling K 60 (shaft ø11...22 mm)

Relay moduls

11054943 Relay modul ES 93 R