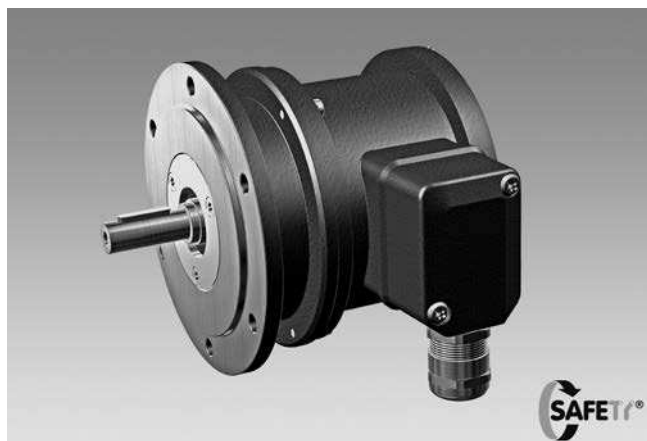


Speed switches

Electronic speed switch

1 or 3 adjustable switching speeds

ES 90, ES 93, ES 100



ES 93

Features

- Electronic speed monitoring
- Circuit breaker with up to three selectable threshold speeds
- ES 90, ES 100: Relay output with isolated changeover contact
- ES 93: Three independent transistor outputs, adjusting $\pm 10\%$ above 1000 rpm

Optional

- ES 90, ES 93: As integrated speed switch type ESL for combination with encoders and/or tachogenerators
- ES 93: Relay module ES 93 R with three relay outputs with isolated changeover contacts

Technical data - electrical ratings

Switching hysteresis	$\leq 30\%$ of switching speed
Switching delay time	≤ 40 ms
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE

ES 100

Switching accuracy	$\pm 4\%$
Switching outputs	1 output, speed control
Output switching capacity	≤ 6 A / 250 VAC ≤ 1 A / 48 VDC
Current each output	100 mA (DC)

ES 90

Switching accuracy	$\pm 4\%$ (≤ 1500 rpm) $\pm 2\%$ (> 1500 rpm)
Switching outputs	1 output, speed control
Output switching capacity	≤ 6 A / 250 VAC ≤ 1 A / 48 VDC
Minimum switching current	100 mA

ES 93

Voltage supply	12 VDC $\pm 10\%$
Consumption w/o load	≤ 5 mA
Switching accuracy	$\pm 4\%$ (≤ 1500 rpm) $\pm 2\%$ (> 1500 rpm)
Switching outputs	3 outputs, speed control
Current each output	40 mA (DC)

Technical data - mechanical design

Flange	EURO flange B10
Protection DIN EN 60529	IP 55
Operating torque	≤ 2 Ncm
Shaft loading	≤ 150 N axial ≤ 250 N radial
Materials	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	$-20 \dots +85$ °C
Connection	Terminal box
Shaft type	$\varnothing 11$ mm solid shaft

ES 100

Size (flange)	$\varnothing 105$ mm
Range of switching speed (ns)	110...500 rpm
Rotor moment of inertia	0.116 kgcm ²
Weight approx.	2.9 kg
Speed (n)	≤ 500 rpm

ES 90

Size (flange)	$\varnothing 103/105$ mm
Range of switching speed (ns)	650...6000 rpm
Rotor moment of inertia	0.125 kgcm ²
Weight approx.	1.3 kg
Speed (n)	≤ 6000 rpm

ES 93

Size (flange)	$\varnothing 103/105$ mm
Range of switching speed (ns)	200...5000 rpm
Rotor moment of inertia	0.125 kgcm ²
Weight approx.	1.3 kg
Speed (n)	≤ 5000 rpm

Speed switches

Electronic speed switch

1 or 3 adjustable switching speeds

ES 90, ES 93, ES 100

Accessories

Mounting accessories

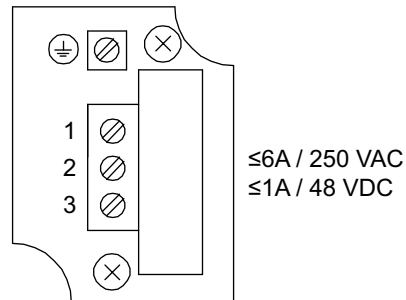
K 35	Spring washer coupling for solid shaft $\varnothing 6...12$ mm
K 50	Spring washer coupling for solid shaft $\varnothing 11...16$ mm
K 60	Spring washer coupling for solid shaft $\varnothing 11...22$ mm

Relay module for ES 93

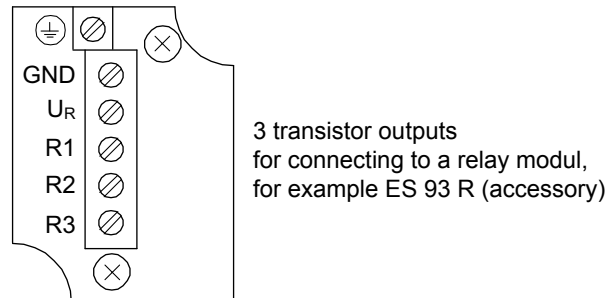
ES 93 R	Relay modul
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Terminal assignment

View A - Connecting terminal ES 90 and ES 100



View A - Connecting terminal ES 93



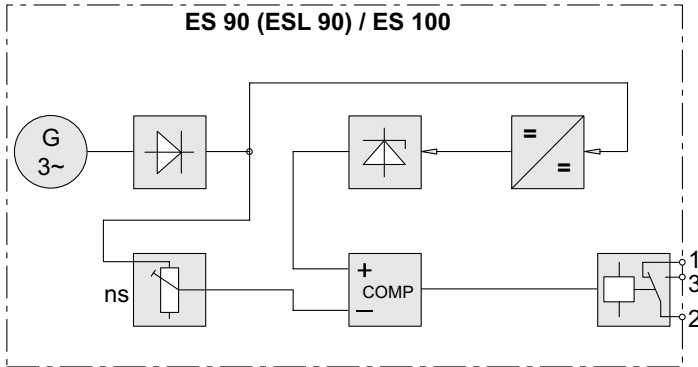
Speed switches

Electronic speed switch

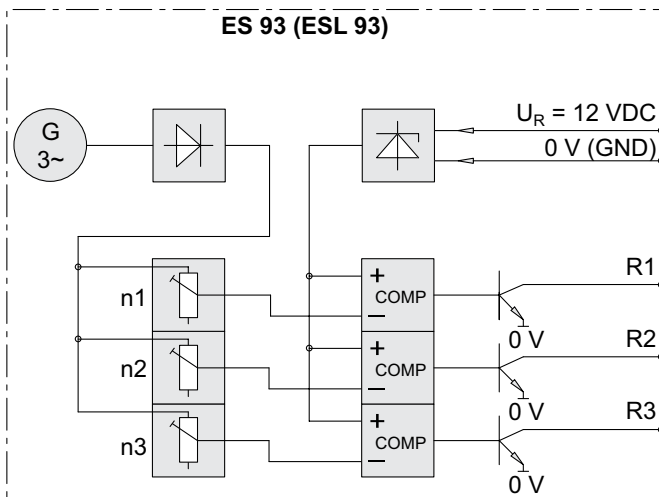
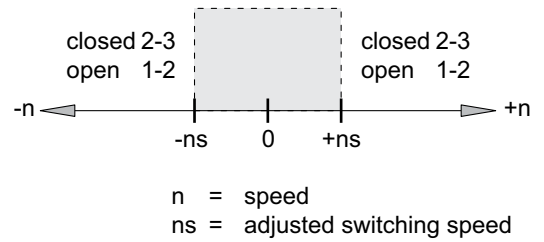
1 or 3 adjustable switching speeds

ES 90, ES 93, ES 100

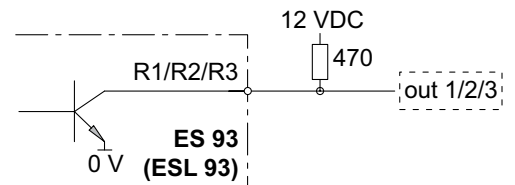
Block circuit diagram



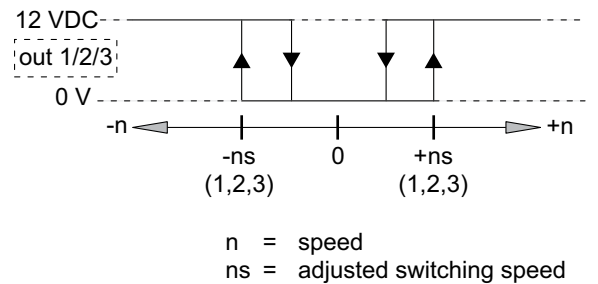
Switching characteristics



Recommended output circuit



Switching characteristics



Speed switches

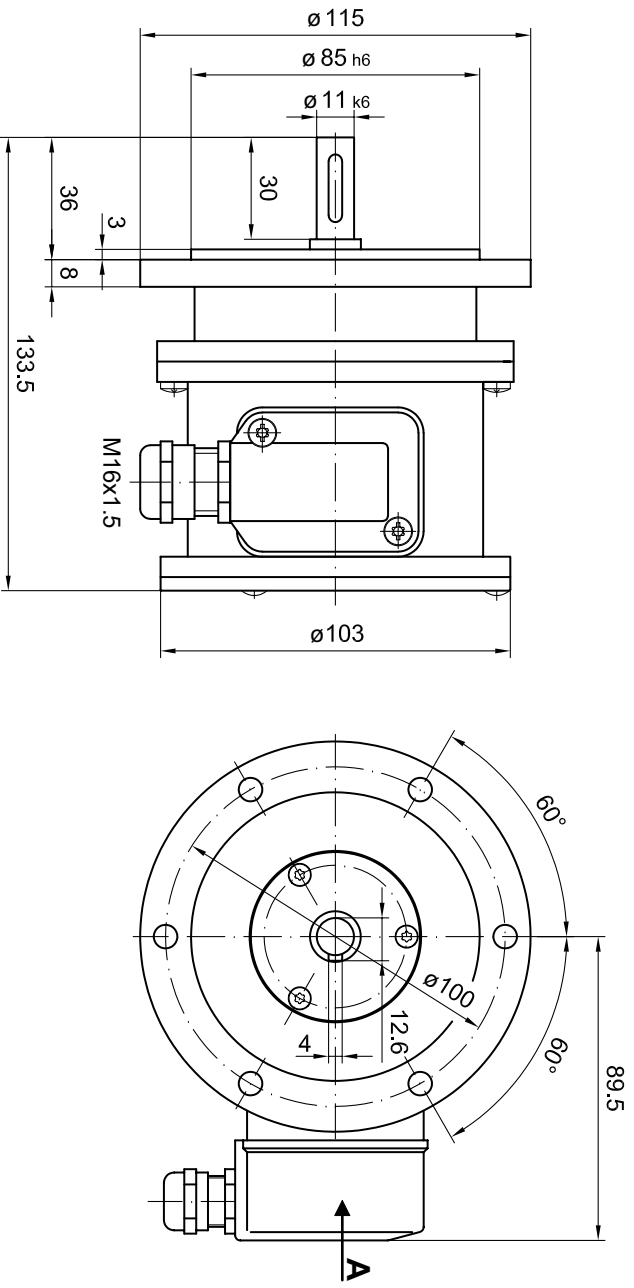
Electronic speed switch

1 or 3 adjustable switching speeds

ES 90, ES 93, ES 100

Dimensions

ES 90, ES 93



ES 100

