

Speed switches

Electronic speed switch

1 or 3 adjustable switching speeds

ES 90, ES 93, ES 100



ES 93

Technical data - electrical ratings

Switching hysteresis	≤30 %
Switching delay time	≤40 ms
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4

ES 90

Switching accuracy	±4 % (≤1500 rpm) ±2 % (>1500 rpm)
Switching outputs	1 output, speed control
Output switching capacity	0.1...6 A / 250 VAC 0.1...1 A / 48 VDC

ES 93

Voltage supply	12 VDC ±10 %
Consumption w/o load	≤5 mA
Switching accuracy	±4 % (≤1500 rpm) ±2 % (>1500 rpm)
Switching outputs	3 outputs, speed control
Output switching capacity	40 mA (DC)

ES 100

Switching accuracy	±4 %
Switching outputs	1 output, speed control
Output switching capacity	0.1...6 A / 250 VAC 0.1...1 A / 48 VDC

Features

- Electronic speed monitoring
- The switch action is instantaneous in either direction
- ES 90, ES 100: Relay output with isolated changeover contact
- ES 93: Three independent transistor outputs, adjusting ±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 - mechanical design

Shaft	ø11 mm
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...+85 °C
Connection	Terminal box

ES 90

Dimensions (flange)	ø103/105 mm
Speed (n)	≤6000 rpm
Range of switching speed (ns)	650...6000 rpm
Rotor moment of inertia	0.125 kgcm ²
Weight approx.	1.3 kg

ES 93

Dimensions (flange)	ø103/105 mm
Speed (n)	≤5000 rpm
Range of switching speed (ns)	200...5000 rpm
Rotor moment of inertia	0.125 kgcm ²
Weight approx.	1.3 kg

ES 100

Dimensions (flange)	ø105 mm
Speed (n)	≤500 rpm
Range of switching speed (ns)	110...500 rpm
Rotor moment of inertia	0.116 kgcm ²
Weight approx.	2.9 kg

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Part number

ES 90

Switching speed (ns)
... 650...6000 rpm

ES 93

Switching speed (ns)
... 200...5000 rpm

ES 100

Switching speed (ns)
... 110...500 rpm

Accessories

Mounting accessories

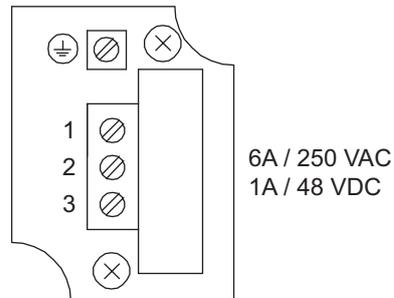
K 35	Spring disk coupling for shaft $\varnothing 6...12$ mm
K 50	Spring disk coupling for shaft $\varnothing 11...16$ mm
K 60	Spring disk coupling for shaft $\varnothing 11...22$ mm

Relay module for ES 93

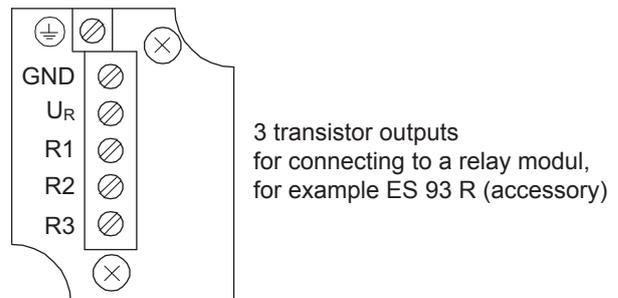
ES 93 R	Relay modul
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Terminal assignment

View A - Connecting terminal ES 90 and ES 100



View A - Connecting terminal ES 93



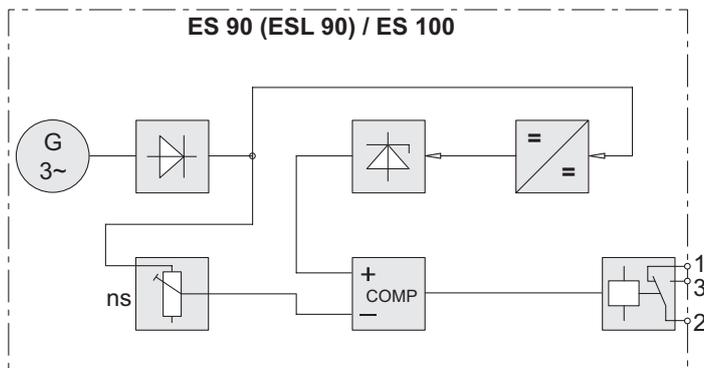
Speed switches

Electronic speed switch

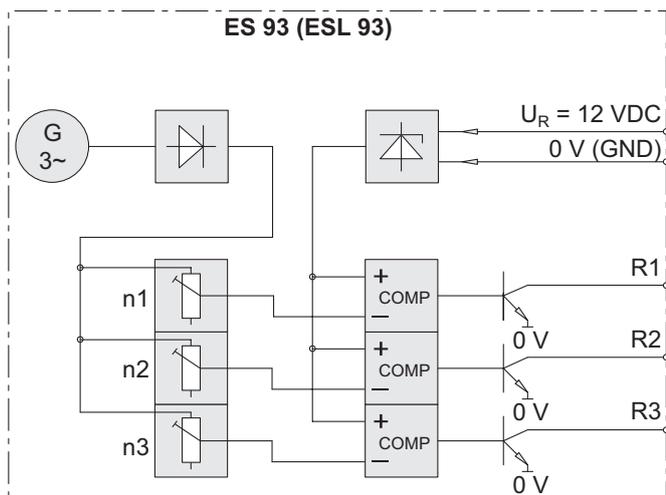
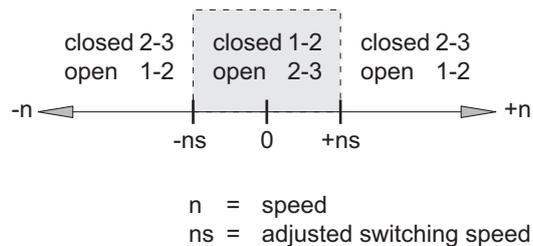
1 or 3 adjustable switching speeds

ES 90, ES 93, ES 100

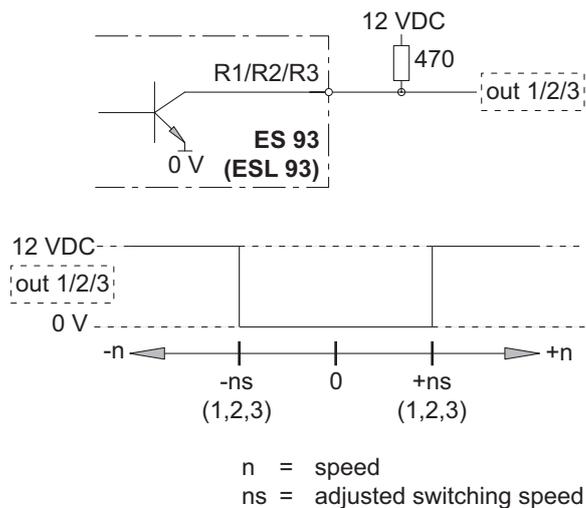
Block circuit diagram



Manner of output circuit



Manner of output circuit



Speed switches

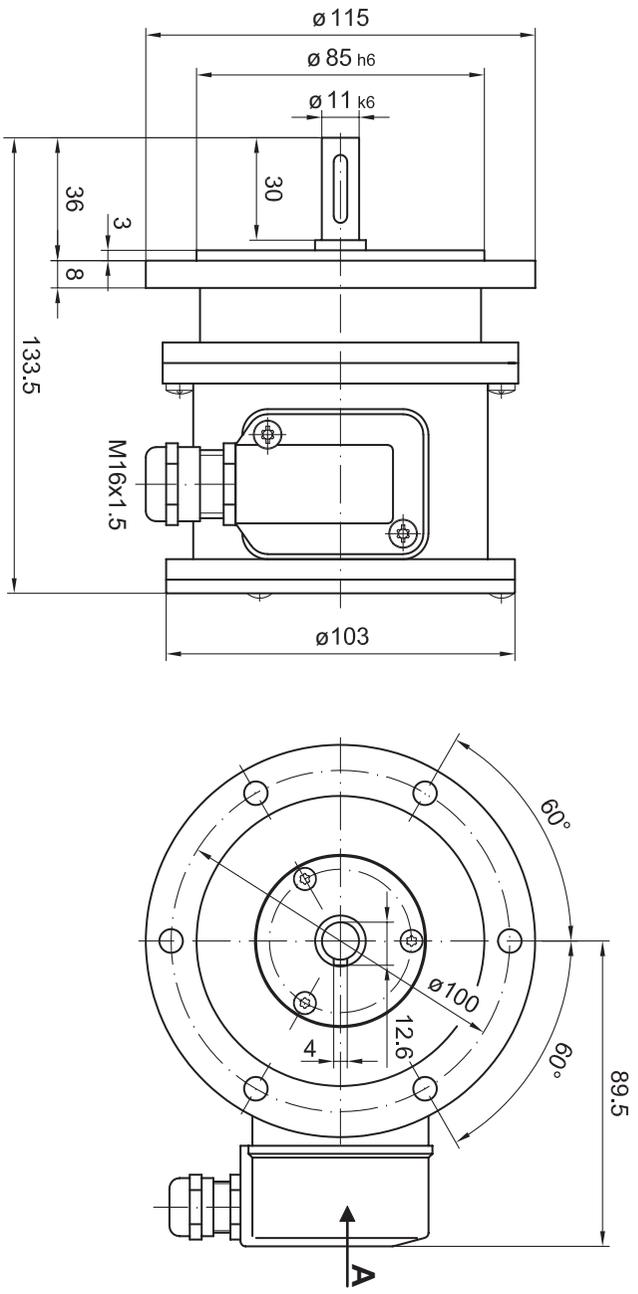
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Dimensions

ES 90, ES 93



ES 100

