

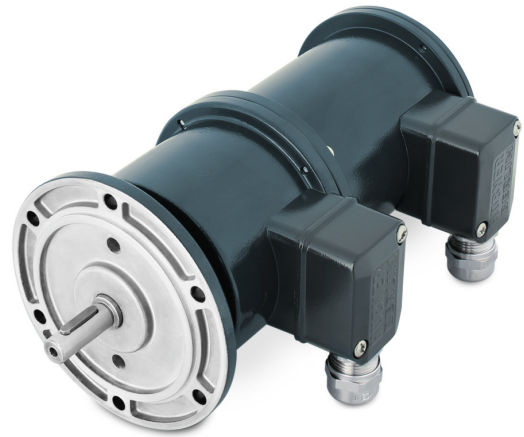
# TDP 0,2 + ESL 93, TDPZ 0,2 + ESL 93

Tachogenerator/twin tachogenerator with integrated electronic speed switch

Solid shaft with EURO flange B10 or housing foot B3

## Overview

- Low response time
- Open circuit voltage 20...100 mV per rpm
- EURO flange B10 or housing foot B3
- Redundant tachogenerator output (TDPZ)
- High signal quality due to patented LongLife technology
- Recognition of sense of rotation possible via control
- Electronic speed monitoring
- Circuit breaker with up to three selectable threshold speeds



## Technical data

### Technical data - electrical ratings

Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3

### Technical data - electrical ratings (speed switch)

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

### Technical data - electrical ratings (tachogenerator)

Reversal tolerance	$\leq 0.1\%$
Linearity tolerance	$\leq 0.15\%$
Temperature coefficient	$\pm 0.05\%$ /K (open-circuit)
Isolation class	B
Calibration tolerance	$\pm 1\%$
Climatic test	Humid heat, constant (IEC 60068-2-3, Ca)
Performance	TDP: 12 W (speed $\geq 3000$ rpm) TDPZ: 2x 3 W (speed $\geq 3000$ rpm)
Armature-circuit time-constant	$< 75$ $\mu$ s (TDP) $< 40$ $\mu$ s (TDPZ)
Open-circuit voltage	TDP: 10...150 mV per rpm TDPZ: 20...100 mV per rpm

### Technical data - mechanical design

Size (flange)	$\varnothing 115$ mm
Shaft type	$\varnothing 11$ mm solid shaft
Admitted shaft load	$\leq 60$ N axial $\leq N$ radial
Flange	EURO flange B10 Housing foot B3
Protection EN 60529	IP 55
Speed (n)	$\leq 5000$ rpm
Range of switching speed (ns)	200...5000 rpm
Torque	1.5 Ncm
Rotor moment of inertia	1.4 kgcm <sup>2</sup> (TDP) 1.5 kgcm <sup>2</sup> (TDPZ)
Material	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 150 g, 1 ms
Connection	2x terminal box
Weight approx.	3.2 kg (TDP) 3.4 kg (TDPZ)
Approval	CE

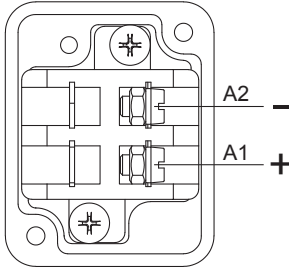
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## Terminal assignment

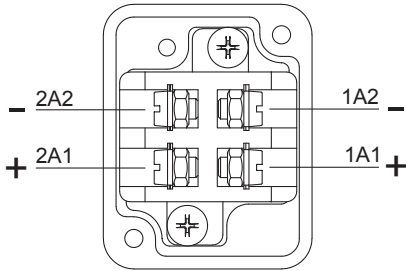
### View A (see dimension)

Connecting terminal tachogenerator TDP  
Polarity for positive rotating direction



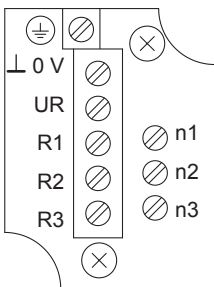
### View A (see dimension)

Connecting terminal twin tachogenerator TDPZ  
Polarity for positive rotating direction



### View B (see dimension)

Connecting terminal speed switch ESL 93

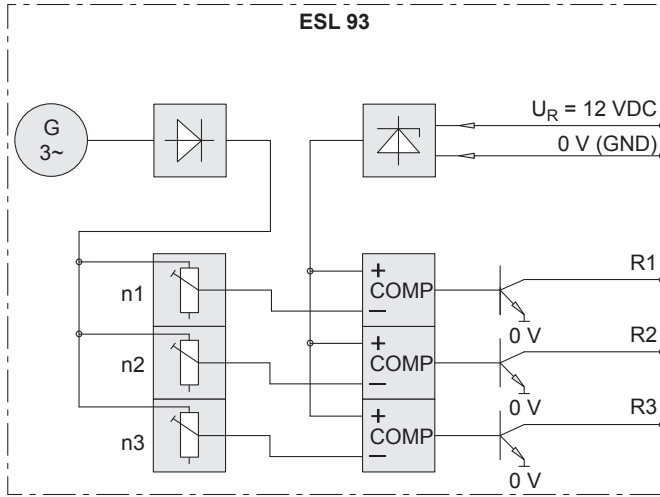


# TDP 0,2 + ESL 93, TDPZ 0,2 + ESL 93

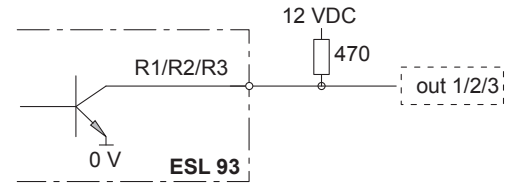
Tachogenerator/twin tachogenerator with integrated electronic speed switch

Solid shaft with EURO flange B10 or housing foot B3

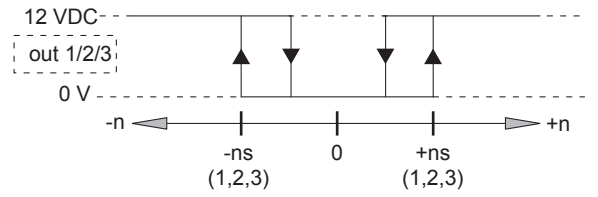
## Block circuit diagram



## Recommended output circuit



## Switching characteristics



n = speed  
ns = adjusted switching speed

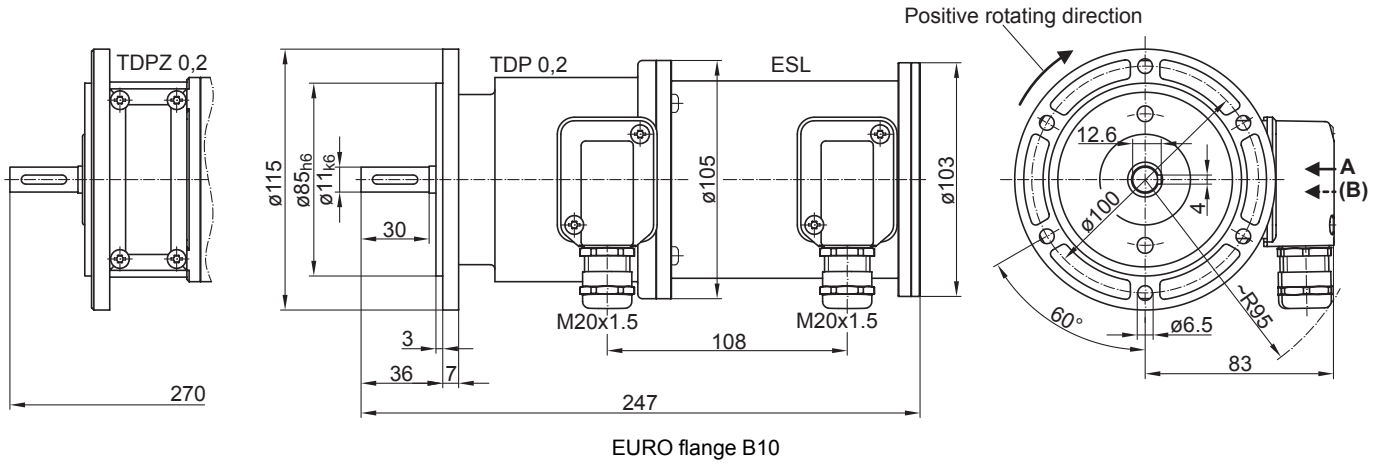
Speed switch ESL 93

# TDP 0,2 + ESL 93, TDPZ 0,2 + ESL 93

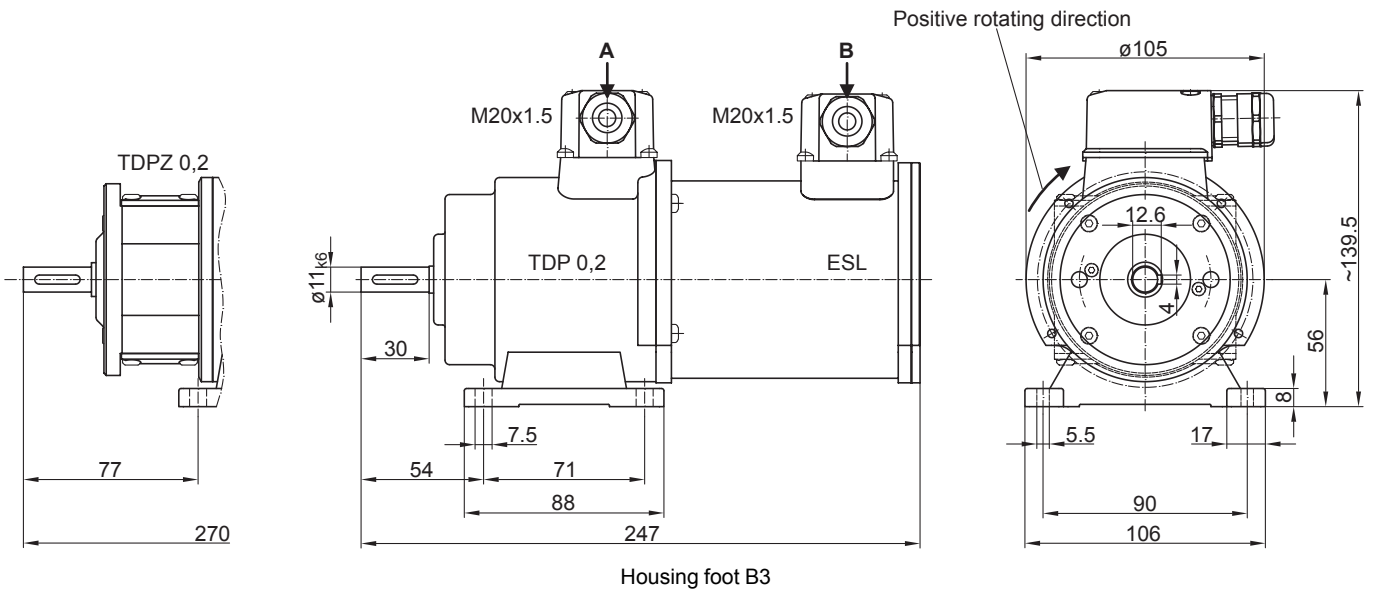
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## Dimensions



EURO flange B10



Housing foot B3

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**Ordering reference**

	<b>TDP</b>	<b>#</b>	<b>#####</b>	<b>#####</b>	<b>+ ESL93</b>	<b>...</b>	<b>...</b>	<b>...</b>
<b>Product</b>	Tachogenerator + speed switch	TDP						
<b>Design</b>	Tachogenerator							
	Twin tachogenerator	Z						
<b>Open-circuit voltage</b>	10 mV per rpm (not available for TDPZ)		0,2LT-6					
	20 mV per rpm		0,2LT-7					
	30 mV per rpm		0,2LT-10					
	40 mV per rpm		0,2LT-5					
	60 mV per rpm		0,2LT-4					
	100 mV per rpm		0,2LT-3					
	150 mV per rpm (not available for TDPZ)		0,2LT-1					
<b>Mounting type</b>	EURO flange B10				B10			
	Housing foot B3				B3			
<b>Version speed switch</b>	Electronic speed switch, 3 outputs, speed control					+ ESL93		
<b>Switching speed 1 (ns1)</b>	200...5000 rpm						...	
<b>Switching speed 2 (ns2)</b>	200...5000 rpm							...
<b>Switching speed 3 (ns3)</b>	200...5000 rpm							...

**Data according to type**

Type	Open-circuit voltage $U_0$ [mV/rpm]	Minimum load required depending on speed range [rpm]			Maximum operating speed $n_{max}$ [rpm]	Armature resistance $R_A$ (20°C) [Ω]	Armature inductance $L_A$ [mH]
		0-3000 $R_L$ [kΩ]	0-6000 $R_L$ [kΩ]	0- $n_{max}$ $R_L$ [kΩ]			
TDP0,2 LT-6	10	≥0.1	≥0.3	≥0.9	10000	3	6
TDP0,2 LT-7	20	≥0.3	≥1.2	≥3.3	10000	11	23
TDP0,2 LT-10	30	≥0.7	≥2.7	≥7.5	10000	26	50
TDP0,2 LT-5	40	≥1.2	≥5	≥13.5	10000	47	90
TDP0,2 LT-4	60	≥2.7	≥11	≥30	10000	99	200
TDP0,2 LT-3	100	≥7.5	≥30	≥30	6000	271	550
TDP0,2 LT-1	150	≥16	---	≥30	4000	630	1260

Twin tachogenerator with redundant output  
(The data refer to each of the two tachogenerator outputs)

TDPZ0,2 LT-7	20	≥1.2	≥4.8	≥14	10000	19	45
TDPZ0,2 LT-10	30	≥2.7	≥11	≥30	10000	42	103
TDPZ0,2 LT-5	40	≥4.8	≥20	≥54	10000	70	170
TDPZ0,2 LT-4	60	≥11	≥44	≥120	10000	160	390
TDPZ0,2 LT-3	100	≥30	≥120	---	6000	445	1080

Superimposed ripple (for  $\tau_{RC} = 0.7$  ms):      ≤0.5% (peak-peak)      ≤0.2% (rms)

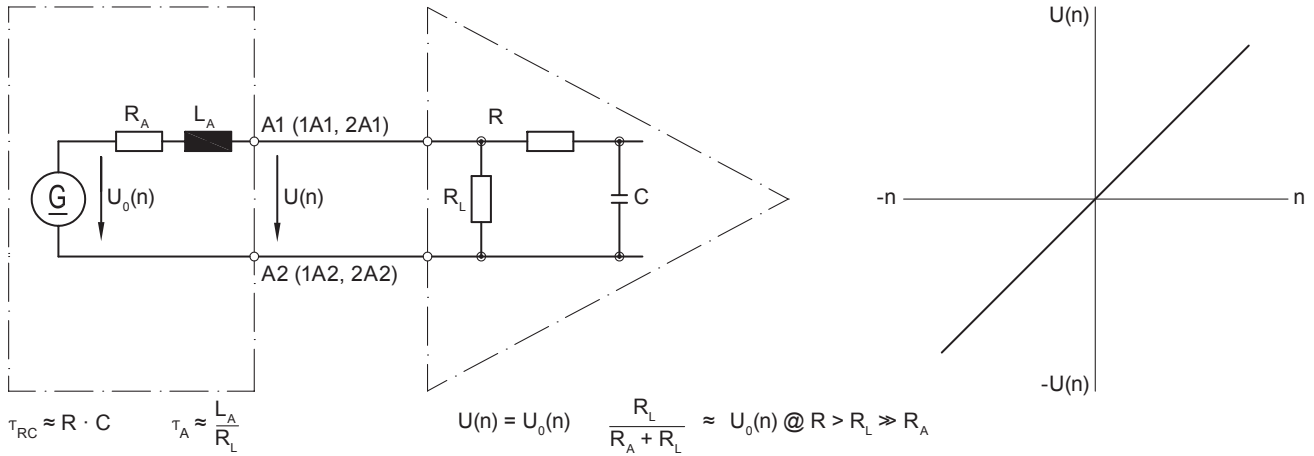
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### Equivalent circuit diagram

Tachogenerator



Polarity for positive rotating direction (see dimension) / A1 (1A1, 2A1): + (VDE) / A2 (1A2, 2A2): - (VDE)

### Accessories

#### Mounting accessories

- Spring disk coupling K 35 (shaft  $\varnothing 6 \dots 12$  mm)
- Spring disk coupling K 50 (shaft  $\varnothing 11 \dots 16$  mm)
- Spring disk coupling K 60 (shaft  $\varnothing 11 \dots 22$  mm)