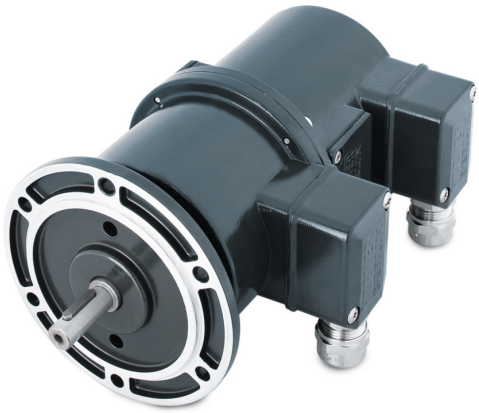
TDP 0,2 + OG 9, TDPZ 0,2 + OG 9

Tachogenerator/twin tachogenerator and encoder in combination

Solid shaft with EURO flange B10 or housing foot B3 / 25...5000 pulses per revolution

Overview

- Logic level HTL or TTL
- Low response time
- Open circuit voltage 10...150 mV per rpm
- Redundant tachogenerator output (TDPZ)
- EURO flange B10 or housing foot B3
- High signal quality due to patented LongLife technology
- Recognition of sense of rotation possible via control



Technical data

Technical data - electrical ratings (encoder)	
Voltage supply	9...30 VDC 5 VDC ±5 % 9...26 VDC
Consumption w/o load	≤100 mA
Pulses per revolution	25 … 5000
Phase shift	90 ° ±20°
Duty cycle	40…60 %
Reference signal	Zero pulse, width 90°
Output frequency	≤120 kHz (≤300 kHz on request)
Output signals	K1, K2, K0 + inverted
Output stages	HTL-P (power linedriver) TTL/RS422
Sensing method	Optical
Technical data - electrical ratings (tachogenerator)	
Reversal tolerance	≤0.1 %
Linearity tolerance	≤0.15 %
Temperature coefficient	± 0.05 %/K (open-circuit)
Isolation class	B
Calibration tolerance	±1 %
Climatic test	Humid heat, constant (IEC 60068-2-3, Ca)
Performance	TDP: 12 W (speed ≥3000 rpm) TDPZ: 2x 3 W (speed ≥3000 rpm)
Armature-circuit time-constant	<75 40 µs (TDPZ)
Open-circuit voltage	TDP: 10...150 mV per rpm TDPZ: 20...100 mV per rpm

Technical data - mechanical design	
Size (flange)	ø115 mm
Shaft type	ø11 mm solid shaft
Admitted shaft load	≤60 N axial ≤80 N radial
Flange	EURO flange B10 Housing foot B3
Protection EN 60529	IP 55
Operating speed	≤10000 rpm
Torque	1.5 Ncm
Rotor moment of inertia	1.4 kgcm² (TDP) 1.5 kgcm² (TDPZ)
Material	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-30...+100 °C -25...+100 °C (>3072 pulses)
Resistance	IEC 60068-2-6 Vibration 10 g, 10-2000 Hz IEC 60068-2-27 Shock 100 g, 6 ms
Connection	2x terminal box
Weight approx.	3.3 kg (TDP) 3.5 kg (TDPZ)
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE

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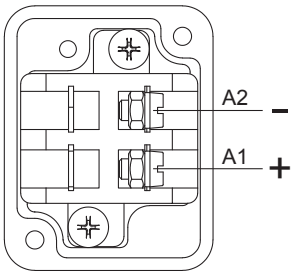
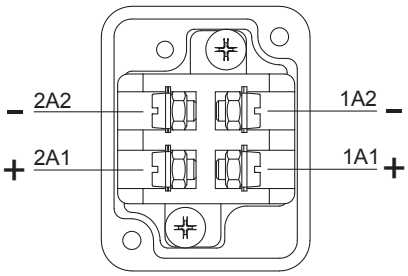
Terminal assignment

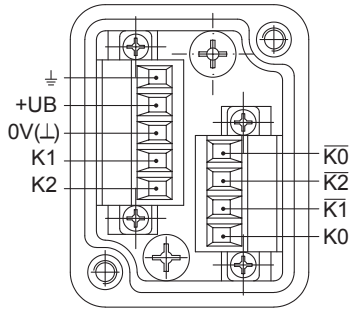
View A *(see dimension)*
Connecting terminal tachogenerator TDP
Polarity for positive rotating direction



View A *(see dimension)*
Connecting terminal twin tachogenerator TDPZ
Polarity for positive rotating direction



View B *(see dimension)*
Connecting terminal terminal box encoder



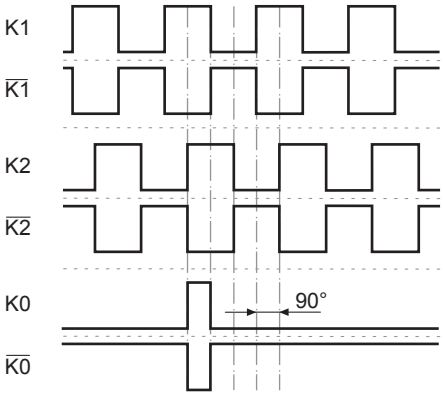
Terminal significance

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

Output signals incremental

HTL/TTL
At positive rotating direction *(see dimension)*



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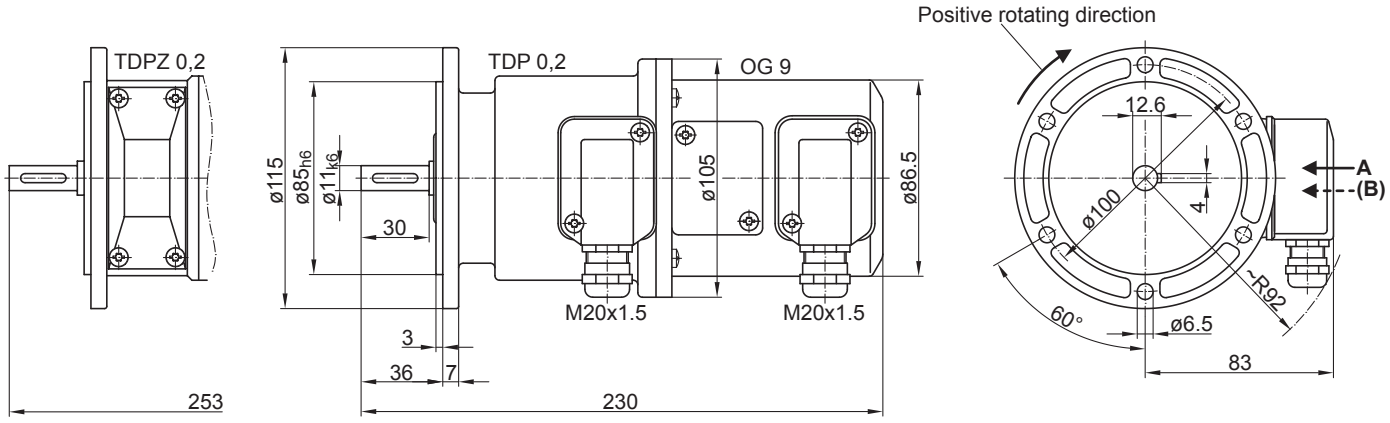
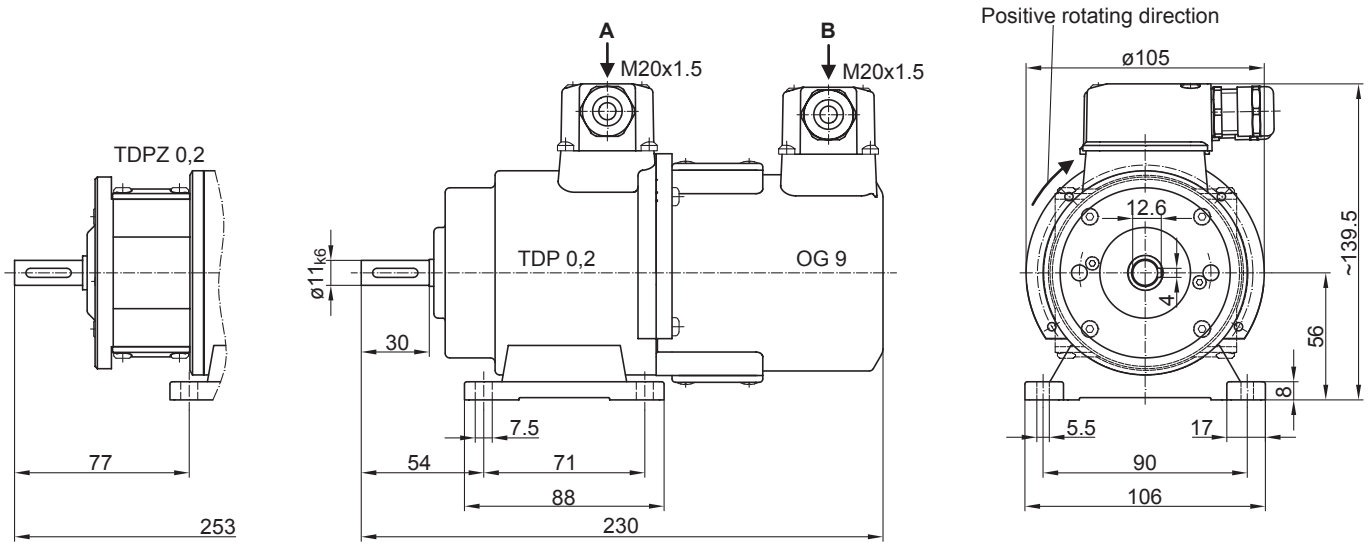
Dimensions



EURO flange B10



Housing foot B3

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Ordering reference

	TDP	#	########	######	55	+ OG 9	DN	####	###
Product									
Tachogenerator + encoder	TDP								
Design									
Tachogenerator									
Twin tachogenerator		Z							
Open-circuit voltage									
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						
Mounting type									
EURO flange B10				B10					
Housing foot B3				B3					
Protection									
IP 55					55				
Version encoder									
Incremental encoder OG 9						+ OG 9			
Output signals									
K1, K2, K0							DN		
Pulse number(1)									
25								25	
120								120	
128								128	
180								180	
256								256	
360								360	
500								500	
512								512	
720								720	
1000								1000	
1024								1024	
1250								1250	
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(2)									R

(1) Other pulse numbers on request.
(2) <95 pulses: 9 … 26 VDC / ≥95 pulses: 9 … 30 VDC

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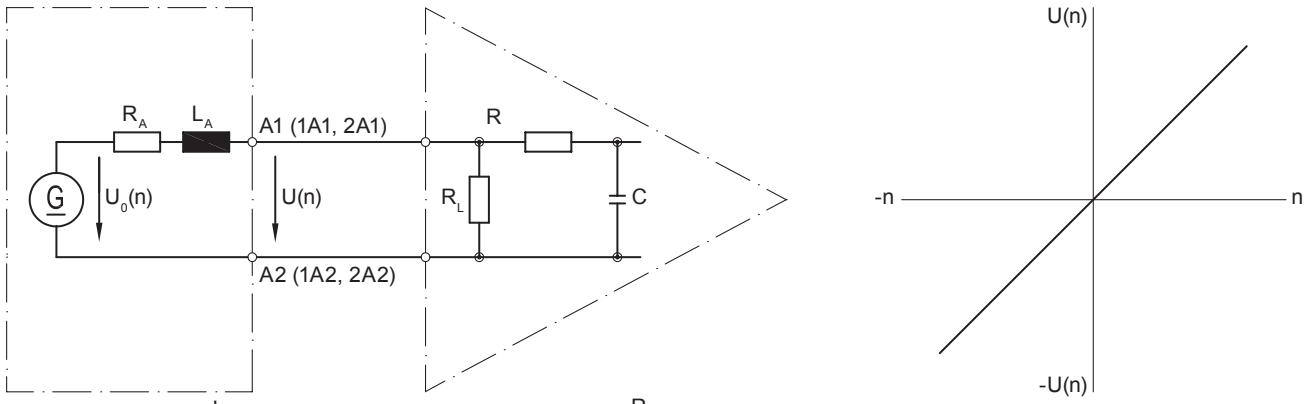
Data according to type

Type	Open-circuit voltage	Minimum load required depending on speed range [rpm]			Maximum operating speed	Armature resistance	Armature inductance
		0-3000	0-6000	0-n_{max}			
	U_0 [mV/rpm]	R_L [kΩ]	R_L [kΩ]	R_L [kΩ]	n_{max} [rpm]	R_A (20°C) [Ω]	L_A [mH]
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 τ_{RC} = 0.7 ms):		≤0.5% (peak-peak)		≤0.2% (rms)			

Equivalent circuit diagram

Tachogenerator



$\tau_{RC} \approx R \cdot C$ $\quad \tau_A \approx \frac{L_A}{R_L}$ $\quad U(n) = U_0(n) \frac{R_L}{R_A + R_L} \approx U_0(n)$ @ $R > R_L \gg R_A$

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

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)

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