

# T4A, T4WA-S3\*

## Torque/Screw Torque Transducers



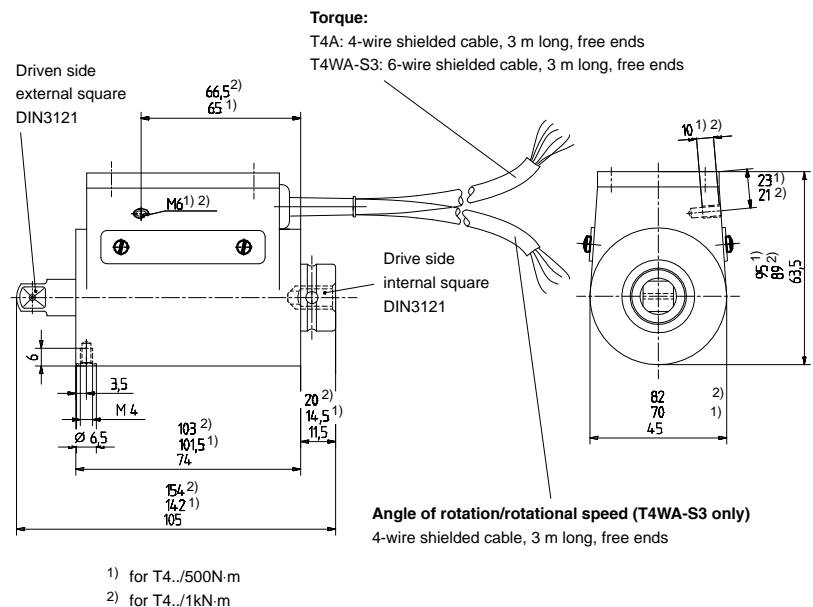
### Special Features

- Measurement of torque in any direction
- T4WA-S3: also angle of rotation/rotational speed measuring system\*
- Nominal (rated) torques 5 N·m, 10 N·m, 20 N·m, 50 N·m, 100 N·m, 200 N·m, 500 N·m and 1 kN·m
- Simple, square connection mounting
- Small and practical

\*) T4WA version no longer available

### Dimensions (in mm)

Type	Driven side	Drive side
T4A and T4WA-S3 5-50N·m	3/8" external square DIN 3121-F10	3/8" internal square DIN 3121-G10
T4A and T4WA-S3 100N·m T4A and T4WA-S3 200N·m	1/2" external square DIN 3121-F12.5	1/2" internal square DIN 3121-G12.5
T4A and T4WA-S3 500N·m	3/4" external square DIN 3121-F20	3/4" internal square DIN 3121-H20
T4A and T4WA-S3 1kN·m	1" external square DIN 3121-F25	1" internal square DIN 3121-H25



# Specifications

Type	T4A/T4WA-S3										
Accuracy class	0.2		0.1								
Torque measuring system											
Nominal (rated) torque $M_N$	N·m	5	10	20	50	100	200	500	1000		
Nominal (rated) sensitivity (nominal (rated) output signal at nominal (rated) torque)	mV/V	2									
Sensitivity tolerance	%	< ± 0.2									
Temperature effect per 10K in the nominal (rated) temperature range	%	< ± 0.1									
on the output signal (related to actual value)	%	< ± 0.1									
on the zero signal (related to nominal (rated) sensitivity)	%	< ± 0.1									
Non-linearity including hysteresis (related to nominal (rated) sensitivity)	%	0.2	0.1								
Relative standard deviation of reproducibility per DIN 1319 (related to variation of the output signal)	%	< ± 0.05									
Input resistance at reference temperature (T4A)	ohm	350 ± 1.8									
T4WA-S3 torque measuring system	ohm	420 ± 40									
Output resistance at reference temperature	ohm	350 ± 1.5									
Maximum permissible excitation voltage	V	20									
Nominal (rated) range of the excitation voltage	V	0.5 ... 12									
Reference temperature	°C	+23									
Nominal (rated) temperature range	°C	+10...+60									
Operating temperature range	°C	-10...+60									
Storage temperature range	°C	-50...+70									
Torsional stiffness approx.	kN·m/rad	0.29	0.61	1.08	2.42	5.57	7.53	27.3	65		
Torsion angle at nominal (rated) torque, approx.	degrees	1	0.9	1.1	1.1	1.0	1.5	1.0	0.9		
Mass moment of inertia	gm <sup>2</sup>	0.04	0.04	0.04	0.04	0.04	0.04	0.28	0.44		
Maximum permissible rotational speed	min <sup>-1</sup>	4000									
Brush service life, approx.	revs.	3 × 10 <sup>8</sup>						6 × 10 <sup>8</sup>			
Mechanical values (related to nominal (rated) torque)											
Static limit load	%	150					125		150		
Static breaking load	%	300					200		300		
Lateral limit force on shaft <sup>1)</sup>	N	5	10	20	50	80	125	235	370		
Longitudinal limit force on shaft <sup>1)</sup>	kN	0.35	0.7	2.0	3.5	5.5	8.8	16.4	25.9		
Limit bending moment on shaft <sup>1)</sup>	N·m	0.75	1.5	3	6	11	23	57	114		
Oscillation width per DIN 50100 (rel. to nominal (rated) torque)	%	70 (peak-to-peak)									
Upper and lower limits		+ $M_N$ and - $M_N$									
Impact resistance, test severity level per DIN IEC68, Part 2-27; IEC 68-2-27-1987											
Number		1000									
Duration	ms	3									
Acceleration (half sine)	m/s <sup>2</sup>	500									
Vibration in 3 directions according to DIN IEC 68; Part 26; IEC 682271987											
Frequency range	Hz	5...65									
Duration	h	1.5									
Acceleration (amplitude)	m/s <sup>2</sup>	50									
Weight, approx.	kg	0.4						1.8		2.4	
Degree of protection per DIN IEC 60529		IP50									
Rotational speed/angle of rotation measuring system (T4WA only, version no longer available)											
Angle of rotation transducer with two output signals		each 90 pulses per revolution, offset by 1/4 period									
Tolerance of the slot width	mm	± 0.05									
Average optical diameter											
T4WA-S3/5 N·m ... 200 N·m	mm	approx. 31									
T4WA-S3/500 N·m and 1 kN·m	mm	approx. 53									
Output voltage (square-wave)	V	5, TTL level									
Supply voltage	V <sub>DC</sub>	4.8...5.2									
Max. current consumption	mA	50									

<sup>1)</sup> Any irregular stress is only permissible up to the specified limit, provided none of the others can occur. If this condition is not met, the limit values must be reduced. If 30% of the limit bending moment and lateral limit force occur at the same time, only 40% of the longitudinal limit force is permissible and the nominal (rated) torque must not be exceeded. The permissible bending moments, longitudinal and lateral forces, and approx. 1% of the nominal (rated) torque can affect the measurement result.

Subject to modifications.  
All product descriptions are for general information only. They are not to be understood as a guarantee of quality or durability.

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