ATESTEO

Excellence in drivetrain testing

Data sheet

DST

DST

Technical data

Type		DST		
Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20
Torque measuring system				
Technology	-		Rotating	
Rated torque (Md_n) #1	Nm	5	10	20
Rated torque short measurement range (optional, minimum) (Md_{ns}) #2	Nm		N/A	
Accuracy class (extended for Md_n)	%		N/A	
Outputs	-		Frequency, Voltage	
Test signal	-		see test report	
Mechanical dimensions #3				
Outer diameter of rotor #4	mm		15	
Lengths (Rotor, without centering)	mm		83	
Pitch circle diameter #5	mm		N/A	
Speeds and speed measuring systems				
Speed detection (integrated)	-		optical	
Speed detection (optional)	-		without	
Maximum Speed without speed detection system	rpm		20,000	
Optional increased speed	rpm		N/A	
Maximum speed with magnetic speed encoder	rpm		N/A	
Maximum speed with optical speed encoder	rpm		20,000	
Maximum speed with inductive speed encoder	rpm		N/A	
Torque accuracy class per output type (related to Md_n)				
Frequency output	%	≤±0.10	≤±0.05	≤±0.05
CAN output	%		N/A	
Voltage output	%	≤±0.20	≤±0.10	≤±0.10
Current output	%		N/A	
Frequency output (option higher accuracy)	%		N/A	
CAN (option higher accuracy)	%		N/A	

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Type		DST		
Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20
Linearity deviation including hysteresis related to Md_n #6				
Frequency, 0%...30%	%		≤±0.015	
Frequency, 30%...60%	%		≤±0.030	
Frequency, 60%...100%	%		≤±0.050	
CAN, 0%...30%	%		N/A	
CAN, 30%...60%	%		N/A	
CAN, 60%...100%	%		N/A	
Voltage output	%		≤±0.05	
Current output	%		N/A	
Rel. standard deviation of the reproducibility according to DIN 1319, by reference to variation of the output signal (rel. to Md_n)				
Frequency output	%		≤±0.03	
CAN output	%		N/A	
Voltage output	%		≤±0.03	
Current output	%		N/A	
Temperature influence per 10K in the nominal temperature range on the output signal related to the actual value of signal span (rel. to Md_n)				
Frequency output	%	≤±0.10	≤±0.05	≤±0.05
CAN output	%		N/A	
Voltage output	%	≤±0.20	≤±0.10	≤±0.10
Current output	%		N/A	
Temperature influence per 10K in the nominal temperature range on the zero signal (rel. to Md_n)				
Frequency output	%	≤±0.10	≤±0.05	≤±0.05
CAN output	%		N/A	
Voltage output	%	≤±0.20	≤±0.10	≤±0.10
Current output	%		N/A	
Long-term drift over 48h at reference temperature				
Voltage output	mV		N/A	
Current output	µA		N/A	

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Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20
Nominal sensitivity (range between zero torque and rated torque)				
Frequency output	kHz	20		
Voltage output	V	3.0 / 5.0 / 10.0 / 1.5 / 2.5 / 5.0		
Current output	mA	N/A		
Output signal at zero torque				
Frequency output	kHz	60		
Voltage output	V	0.0 / 0.0 / 0.0 / 1.5 / 2.5 / 5.0		
Current output	mA	N/A		
Nominal output signal				
Frequency output at positive nominal value	kHz	80		
Frequency output at negative nominal value	kHz	40		
Voltage output at positive nominal value	V	3 / 5 / 10 / 3 / 5 / 10		
Voltage output at negative nominal value	V	-3 / -5 / -10 / 0 / 0 / 0		
Current output at positive nominal value	mA	N/A		
Current output at negative nominal value	mA	N/A		
Max. modulation range				
Frequency output	kHz	35...85		
Voltage output	V	-15.0...15.0		
Current output	mA	N/A		
Group delay time				
Frequency output	µs	60		
Voltage output	µs	125		
CAN	µs	N/A		

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Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20

Speed measuring system	Inductive (track at rotor)	
Pulse per rev (PPR)	ppr.	N/A
Maximum speeds (related to PPR)	rpm	N/A
Max. output frequency (RS422)	kHz	N/A
Minimum speed for sufficient pulse stability	rpm	N/A
Speed measuring system	**Magneto resistive (2 tracks approx. 90 degree phase shifted)**	
Pulses per rev (PPR)	ppr.	N/A
Maximum speeds (related to PPR)	rpm	N/A
Max. output frequency (RS422)	kHz	N/A
Minimum speed for sufficient pulse stability	rpm	N/A
Nominal clearance (sensor - pole ring)	mm	N/A
Working airgap (sensor - pole ring)	mm	N/A
Nominal axial displacement (rotor - stator) #7	mm	N/A
Tolerance to nominal axial displacement (rotor - stator)	mm	N/A
Speed measuring system	**Optical**	
Pulses per rev (PPR)	ppr.	60
Maximum speeds (related to PPR)	rpm	20,000
Max. output frequency (RS422)	kHz	20
Minimum speed for sufficient pulse stability	rpm	>1.0
Nominal radial displacement (rotor - stator)	mm	N/A
Tolerated radial displacement (rotor - stator) #7	mm	N/A
Nominal axial displacement (rotor - stator) #7	mm	N/A
Tolerance to nominal axial displacement (rotor - stator)	mm	N/A

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Type		DST		
Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20
Temperature ranges				
Nominal temperature range *(Rotor)*	°C		N/A	
Operating temperature range *(Rotor)* #8	°C		N/A	
Storage temperature range *(Rotor)*	°C		N/A	
Nominal temperature range *(Stator)*	°C		0...70	
Operating temperature range *(Stator)* #9	°C		-10...70	
Storage temperature range *(Stator)*	°C		-20...85	
Nominal temperature range *(TCU)*	°C		N/A	
Operating temperature range *(TCU)*	°C		N/A	
Storage temperature range *(TCU)*	°C		N/A	
Mechanical shock (EN 60068-2-27)				
Quantity	-		1,000	
Duration	ms		3	
Acceleration	m/s²		650	
Vibration load (EN 60068-2-6)				
Frequency	Hz		10...2,000	
Duration	min.		150	
Acceleration	m/s²		200	
Load limits #10				
Limit torque, related to Md_n	%	500	250	250
Breaking torque approx., related to Md_n	%	1,000	500	500
Axial limit force	kN	5.40	5.40	8.00
Lateral limit force	N	81.00	81.00	192.00
Bending limit torque	Nm	1.80	1.80	4.00

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Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20

Mechanical values				
Torsional stiffness	kNm/rad	2.30	2.30	4.80
Angle of twist at Md_n	°	0.124	0.248	0.239
Axial stiffness	kN/mm	549	549	808
Radial stiffness	kN/mm	5.80	5.80	13.70
Bending stiffness	kNm/°	0.05	0.05	0.12
Deflection at axial limit force	mm		<0.015	
Additional radial deviation at lateral limit force	mm		<0.02	
Parallel deviation at bending limit torque	mm		N/A	
Inherent frequency	Hz	2,100	2,100	2,800
Balance quality-level to DIN ISO 1949	-		G6.3	
Inertia of rotor	kgm²	0.0000039	0.0000039	0.0000040
Max. limits for relative shaft vibration (peak to peak) #11	µm		$S_{(p-p)} = \frac{9000}{\sqrt{n}}$	

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Type		DST		
Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20
Weight approx.				
Rotor #12	kg	0.1		
Stator (without speed encoder) #12	kg	N/A		
Mounting distances (without optional speed detection system)				
Nominal radial displacement (rotor - stator)	mm	N/A		
Tolerance to nominal radial displacement (rotor - stator)	mm	N/A		
Nominal axial displacement (rotor - stator) #7	mm	N/A		
Tolerance to nominal axial displacement (rotor - stator)	mm	N/A		
Flatness and concentricity tolerances rotor				
Circular run-out-axial tolerance #13	mm	N/A		
Circular run-out-radial tolerance #13	mm	N/A		
Power supply				
Nominal supply	V (DC)	24		
Supply range #14	V (DC)	12...26		
Max. current consumption in measuring mode	A	<0.5		
Max. current consumption in start-up mode	A	<1		
Nominal power consumption	W	<12		
Load resistance				
Frequency output	-	RS422		
Voltage output	kOhm	0.05		
Dynamic				
Frequency output	kHz	≤5.80		
Voltage output	kHz	≤5.50		
Current output	kHz	N/A		
CAN output conversation rate	1/s	N/A		

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Accuracy class	%	≤±0.10	≤±0.05	≤±0.05
Rated torque (Md_n)	Nm	5	10	20

Miscellaneous				
Protection class (rotor)	-	IP42		
Protection class (stator)	-	IP42		
Protection class (rotor, extended)	-	N/A		
Protection class (stator, extended)	-	N/A		
Pitch circle screw information	-	N/A		
CAN	-	N/A		
Configuration interface	-	USB (UART)		
Central hole	mm	N/A		
Material	-	Steel		
Measuring range (related to Md_n)	%	110		
Matching evaluation units	-	Integrated		
Stator type	-	Unit with bearing		
Sales information				
Article number	-	10004234	10004237	10004236
U.S. FCC certificate		Not required		

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Remarks and information

Link no.	Topic	Remark
#1	Nominal torque	Based on customer requests, the measurement systems can optionally be optimized for not listed nominal torque values (intermediate ranges possible).
#2	Second torque range	The written second nominal torque value (Md_{ns}) is the smallest possible. Greater second torque ranges can be chosen on demand. Mechanical values and load limits vary between single and dual range torque meters. A data sheet for dual range torque meters with specific values can be requested.
#3	Dimensions	Mechanical dimensions are without engagement. Use the drawings and step files as master for your constructions.
#4	Detail in the drawings	Value can vary by optional components. Please find details to this attribute in the integrated drawings.
#5	Pitch circle diameter	The pitch circle diameter is identically at input and output side for most systems. More information is given in the drawings of a product.
#6	Linearity	Values of Linearity deviation incl. Hysteresis can only be reached if positive and negative sensitivity values are used.
#7	Reference planes	Please check the drawings for information about the reference planes of this attribute.
#8	Temperature range (rotor)	No condensation allowed.
#9	Temperature range (stator)	No condensation allowed. Temperature related to housing ground point.
#10	Load limits	The given values are only valid if no other load occurs at the same time. If the loads in sum are 100%, the max. error will be 0.3% of the nominal torque.

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Remarks and information

Link no.	Topic	Remark
#11	Vibration limits	Vibration limits are not an influence to the machine. They reflect the allowed effect onto the rotor (ISO 7919-3). Parameter "n" is given in "r/min.".
#12	Weights	Weights are related to components without options like speed detection system. Please contact us for exact weight information of options.
#13	Flatness and concentricity tolerances	The parameters of "Flatness and concentricity tolerances rotor" are manufacturing tolerances.
#14	Supply voltage	The supply voltage range must be given at measurement system side. Long wires can reduce the voltage level from power supply to measurement system.

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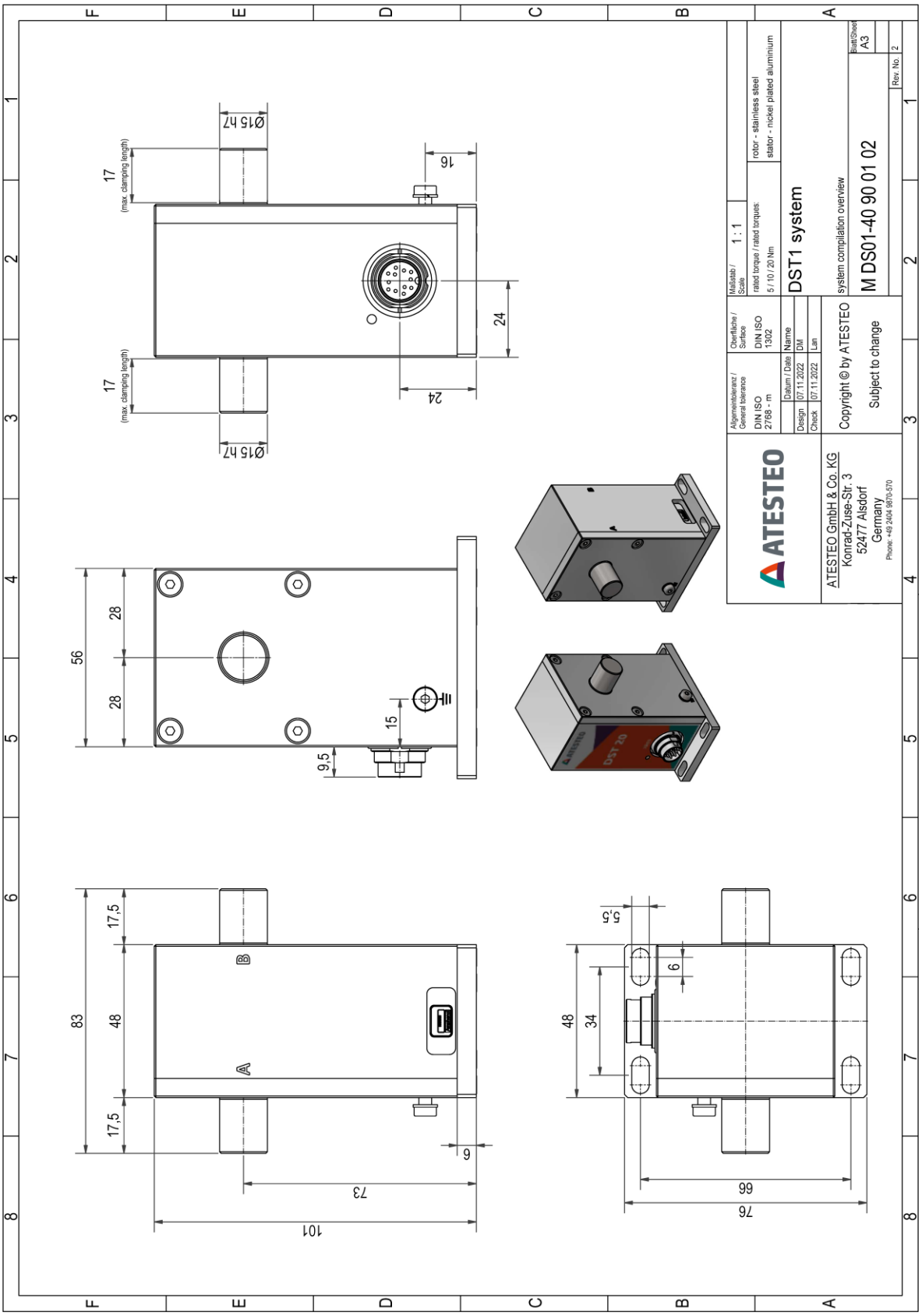
Drawing



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V12_2022-10