

Data sheet

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		
Outer diameter of rotor #3	mm		15		
Lengths (Rotor, without centering)	mm		83		
Pitch circle diameter #4	mm		N/A		
Outputs	-		Frequency, Voltage		
Test signal	-		see test report		

Speeds and speed measuring systems

Speed detection (integrated)	-		optical		
Speed detection (optional)	-		without		
Maximum Speed without optional 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 / CAN	%		≤±0.10	≤±0.05	≤±0.05
Voltage output	%		≤±0.20	≤±0.10	≤±0.10
Current output	%		N/A		
Frequency output / CAN (option higher accuracy)	%		N/A		

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Rated torque (Md _n)	Nm		5	10	20

Linearity deviation including hysteresis related to Md_n #5

Frequency / CAN, 0%...30%	%		≤±0.015		
Frequency / CAN, 30%...60%	%		≤±0.030		
Frequency / CAN, 60%...100%	%		≤±0.050		
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 / CAN	%		≤±0.03		
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 / CAN	%		≤±0.10	≤±0.05	≤±0.05
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 / CAN	%		≤±0.10	≤±0.05	≤±0.05
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 (M _{d,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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Rated torque (Md _n)	Nm		5	10	20

Speed measuring system		Inductive (integrated 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) #6	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
Nominal radial displacement (rotor - stator)	mm				N/A
Tolerated radial displacement (rotor - stator) #6	mm				N/A
Nominal axial displacement (rotor - stator) #6	mm				N/A
Tolerance to nominal axial displacement (rotor - stator)	mm				N/A

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Rated torque (M_{d_n})	Nm		5	10	20

Temperature ranges

Nominal temperature range (<i>Rotor</i>)	°C		N/A		
Operating temperature range (<i>Rotor</i>) #7	°C		N/A		
Storage temperature range (<i>Rotor</i>)	°C		N/A		
Nominal temperature range (<i>Stator</i>)	°C		0...70		
Operating temperature range (<i>Stator</i>) #8	°C		-10...70		
Storage temperature range (<i>Stator</i>)	°C		-20...85		

Mechanical shock (EN 60068-2-27)

Quantity	-		1,000		
Duration	ms		3		
Acceleration	m/s ²		650		

Vibration load (EN 60068-2-6)

Frequency	Hz		10...2,000		
Duration	min.		150		
Acceleration	m/s ²		200		

Load limits #9

Limit torque, related to M_{d_n}	%		400	200	200
Breaking torque approx., related to M_{d_n}	%		600	300	300
Axial limit force	kN		N/A		
Lateral limit force	N		N/A	N/A	N/A
Bending limit torque	Nm		N/A	N/A	N/A

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Mechanical values					
Torsional stiffness	kNm/rad		1.95	1.95	3.69
Angle of twist at Md _n	°		0.150	0.290	0.310
Axial stiffness	kN/mm			N/A	
Radial stiffness	kN/mm			N/A	
Bending stiffness	kNm/°			N/A	
Deflection at axial limit force	mm			N/A	
Additional radial deviation at lateral limit force	mm			N/A	
Parallel deviation at bending limit torque	mm			N/A	
Inherent frequency	Hz			N/A	
Balance quality-level to DIN ISO 1949	-			G6.3	
Inertia of rotor	kgm ²			N/A	
Max. limits for relative shaft vibration (peak to peak) #10	μm			$S_{(p-p)} = \frac{9000}{\sqrt{n}}$	

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Rated torque (Md _n)	Nm		5	10	20
Weight approx.					
Rotor #11	kg		N/A		
Stator (without speed encoder) #11	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) #6	mm		N/A		
Tolerance to nominal axial displacement (rotor - stator)	mm		N/A		
Flatness and concentricity tolerances rotor					
Circular run-out-axial tolerance #12	mm		N/A		
Circular run-out-radial tolerance #12	mm		N/A		
Power supply					
Nominal supply	V (DC)		24		
Supply range #13	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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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 M_{d_n})	%		110		
Matching evaluation units	-		None		
Stator type	-		Integrated		
Sales information					
Article number	-		1000423 4	1000423 7	1000423 6

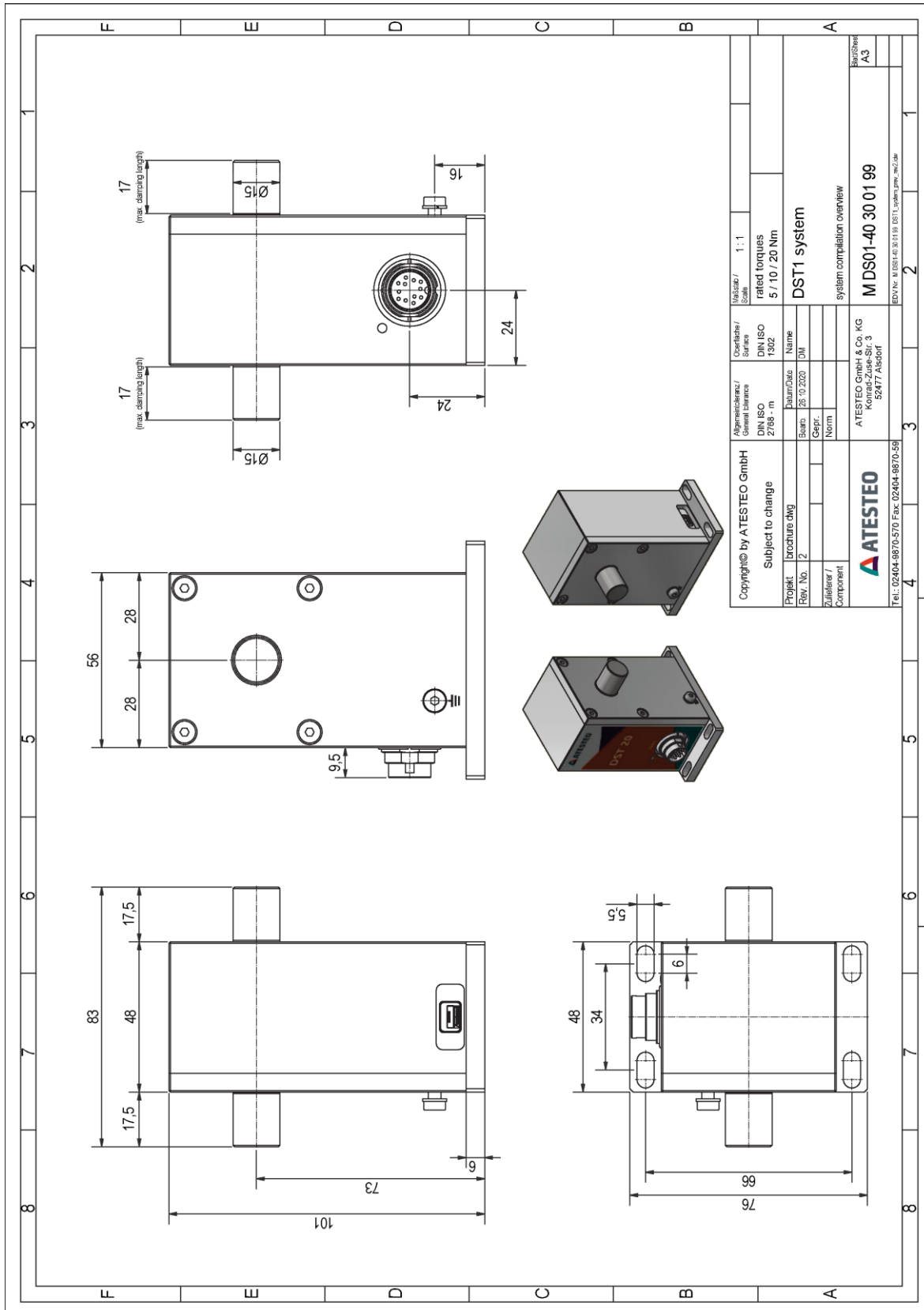
Remarks and information

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 ($M_{d_{ns}}$) 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	Detail in the drawings	Value can vary by optional components. Please find details to this attribute in the integrated drawings.
#4	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.
#5	Linearity	Values of Linearity deviation incl. Hysteresis can only be reached if positive and negative sensitivity values are used.
#6	Reference planes	Please check the drawings for information about the reference planes of this attribute.
#7	Temperature range (rotor)	No condensation allowed.
#8	Temperature range (stator)	No condensation allowed. Temperature related to housing ground point.
#9	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.
#10	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".

Remarks and information

Link no.	Topic	Remark
#11	Weights	Weights are related to components without speed detection system and based on calculations. Please contact us for exact weight information.
#12	Flatness and concentricity tolerances	The parameters of "Flatness and concentricity tolerances rotor" are manufacturing tolerances.
#13	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.

Drawing



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