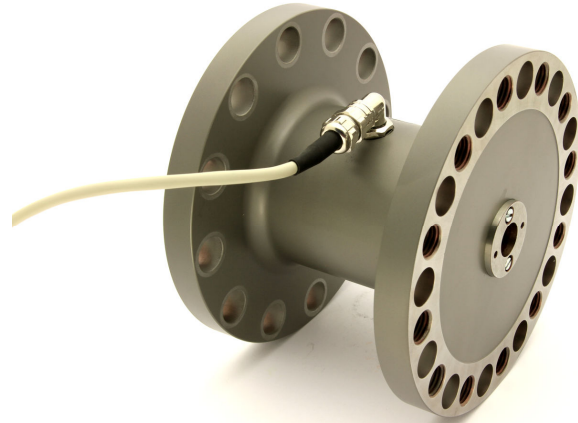


Data sheet

Torque Transducer

Series MF

(100 N·m – 100000 N·m)



Benefits/Application

- For static and dynamic moments
- Very high-cycle fatigue resistant up to 100 % of nominal load
- Easy assembling, lots of possibilities
- Non-rotational construction
- Extremely robust against side forces and bending moments

Options/Accessories

- Fixed cable connection either straight or angled
- Second redundant measuring circuit

Technical data

100 – 5000 N·m

	Rated Torque	M_{nom}	N·m	100 200	500	1000	2000	4000	5000
Metrological Data	Accuracy class			0,05					
	Torque measurement range		%	1 - 100					
	Linearity error	d_{lin}	%	0,05					
	Interpolation error	f_c	%	0,5					
	Hysteresis	h	%	0,05					
	Reversibility error	v	%	0,2					
	Repeatability (f.s.)		%	0,005					
	Creep		%	0,025					
	Temperature effect on characteristic value per 10 K	TK_C	%/10 K	0,04					
	Temperature effect on zero signal per 10 K	TK_0	%/10 K	0,025					
	Bending moment effect		%/N·m	$2 \cdot 10^{-4}$	$4 \cdot 10^{-5}$	$2 \cdot 10^{-5}$	$1 \cdot 10^{-5}$	$5 \cdot 10^{-6}$	$4 \cdot 10^{-6}$
	Lateral force effect		%/kN	$5 \cdot 10^{-2}$	$2 \cdot 10^{-2}$	$1 \cdot 10^{-2}$	$7 \cdot 10^{-3}$	$5 \cdot 10^{-3}$	$4 \cdot 10^{-3}$
	Electrical Data	Rated characteristic value	C_{nom}	mV/V	1,6				
Characteristic value tolerance		d_c	%	0,2					
Zero signal deviation		$d_{s,0}$	%	0,5					
Input resistance		R_e	Ω	560 - 650					
Output resistance		R_a	Ω	400 - 500					
Insulation resistance		R_{is}	Ω	$>10^9$					
Operating range of excitation voltage		$B_{U,G}$	V	5 - 12					
Protection (DIN EN 60529)				IP 64					

100 – 5000 N·m

			100 200	500	1000	2000	4000	5000
Mechanical Data	Rated Torque	M_{nom}	N·m					
	Rated torsion angle	j_{nom}	rad	0,0047	0,0046	0,0052	0,0028	0,0022
	Torsional rigidity	c_T	N·m/rad	2,0E+05	1,1E+05	2,0E+05	7,2E+05	1,8E+06
	Mass	m	kg		3		5	10
	Proportionate moving mass	m_{mess}	kg		1		1,7	3
	Permissible oscillation stress		%				100	
Limits	Torque limit					150		
	Breaking torque					>300		
	Rated temperature range	$B_{T, nom}$	°C			10 - 60		
	Operating temperature range	$B_{T, G}$	°C			-40 - 120		

Technical data

8 – 100 kN·m

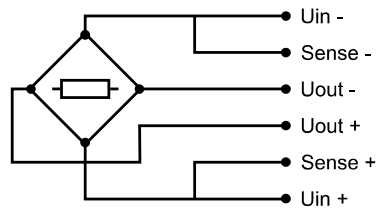
		N·m	8000	10000	16000 20000	25000 32000	50000	64000	100000	
Metrological Data	Rated Torque	M_{nom}								
	Accuracy class					0,05				
	Torque measurement range					1 - 100				
	Linearity error	d_{lin}	%			0,05				
	Interpolation error	f_c	%			0,5				
	Hysteresis	h	%			0,05				
	Reversibility error	v	%			0,2				
	Repeatability (f.s.)		%			0,05				
	Creep		%			0,25				
	Temperature effect on characteristic value per 10 K	TK_C	%/10 K				0,04			
	Temperature effect on zero signal per 10 K	TK_0	%/10 K				0,025			
	Bending moment effect		%/N·m	$2,5 \cdot 10^{-6}$	$2 \cdot 10^{-6}$	$1,25 \cdot 10^{-6}$	$6,25 \cdot 10^{-7}$	$4 \cdot 10^{-7}$		$3,125 \cdot 10^{-7}$
	Lateral force effect		%/kN	$3 \cdot 10^{-3}$	$2,5 \cdot 10^{-3}$	$2 \cdot 10^{-3}$	$1 \cdot 10^{-3}$	$8 \cdot 10^{-4}$		$7 \cdot 10^{-4}$
Electrical Data	Rated characteristic value	C_{nom}	mV/V				1,6			
	Characteristic value tolerance	d_c	%				0,2			
	Zero signal deviation	$d_{s,0}$	%				0,5			
	Input resistance	R_e	Ω				560 - 650			
	Output resistance	R_a	Ω				400 - 500			
	Insulation resistance	R_{is}	Ω				$>10^9$			
	Operating range of excitation voltage	$B_{U,G}$	V				5 - 12			
Protection (DIN EN 60529)						IP 64				

8 – 100 kN·m

			8000	10000	16000 20000	25000 32000	50000	64000	100000
Mechanical Data	Rated Torque	M_{nom}	N·m						
	Rated torsion angle	j_{nom}	rad	0,0025	0,0036		0,0045		1)
	Torsional rigidity	c_T	N·m/rad	3,1E+06	4,5E+06	8,8E+06	1,4E+07		1)
	Mass	m	kg	15	25	40	65		1)
	Proportionate moving mass	m_{mess}	kg	4	6	10	16		1)
	Permissible oscillation stress		%	100					1)
Limits	Torque limit		150					1)	
	Breaking torque		>300					1)	
	Rated temperature range	$B_{T,nom}$	°C	10 - 60					1)
	Operating temperature range	$B_{T,G}$	°C	-40 - 120					1)

1) Data on request

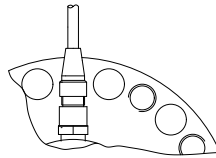
Cable connection



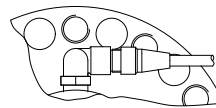
Permanent connection
end not connected

Grey cable
Ø 6,5 mm
3 x 2 x 0,25 mm²
Temperature range: -35 °C to +90 °C

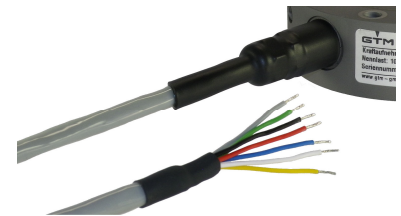
Connection		Color
Supply voltage (+)	U _{in+}	blue
Supply voltage (-)	U _{in-}	black
Measurement signal (+)	U _{out+}	white
Measurement signal (-)	U _{out-}	red
Sense (+)	Sense+	green
Sense (-)	Sense-	grey
Shielding		yellow



Straight cable connection



Angled cable connection (90°)



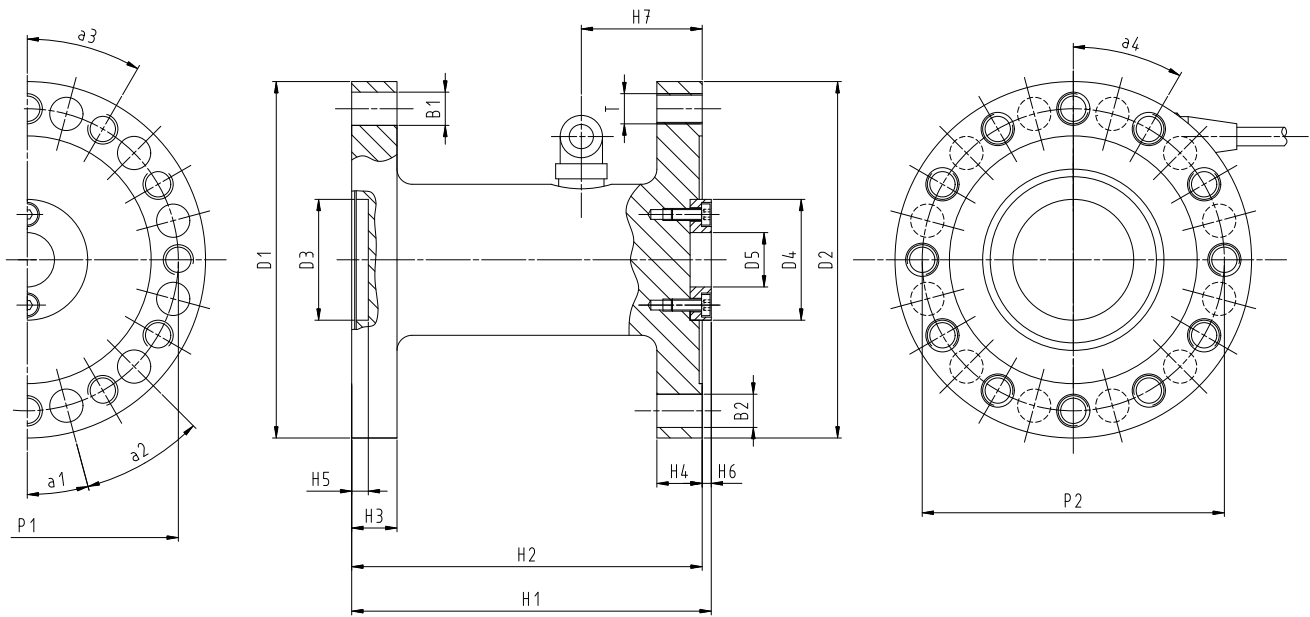
*Permanent connection
end not connected*

- More cable types and lengths on request
- Available types of connectors for the cable: D-Sub 9 pol ; D-Sub 15pol ; M-S 7 pol ; LEMO Series1 7 pol
- Configuration with customer defined connection is possible
- In case of two circuits the technical data are similarly valid for both circuits

Option: 2.Measuring circuit

- In case of two circuits the technical data are similarly valid for both circuits
- The location of the cable outlet can be chosen on request

Mating dimensions



Rated Torque	M_{nom}	N·m	100	500	2000	4000	8000	16000	25000	50000	100000
			200	1000		5000	10000	20000	32000	64000	
Bore	$\varnothing B_1$	mm	11	14	18	22		26	33		
Bore	$\varnothing B_2$	mm	11	14	18	22		26	33		
Diameter	$\varnothing D_1$	mm	118	146	186	235	286	360	460	520	
Diameter	$\varnothing D_2$	mm	118	146	186	235	286	360	460	520	
Diameter	$\varnothing D_3$	mm	40 _{H7}				70 _{H7}				
Diameter	$\varnothing D_4$	mm	40 _{H6}				70 _{H6}				
Diameter	$\varnothing D_5$	mm	18								
Pitch circle diameter	$\varnothing P_1$	mm	100 \pm 0,1	125 \pm 0,1	160 \pm 0,1	200 \pm 0,1	250 \pm 0,1	315 \pm 0,1	400 \pm 0,1	450 \pm 0,2	
Pitch circle diameter	$\varnothing P_2$	mm	100 \pm 0,1	125 \pm 0,1	160 \pm 0,1	200 \pm 0,1	250 \pm 0,1	315 \pm 0,1	400 \pm 0,1	450 \pm 0,2	
Thread	T		M10	M12	M16	M20		M24	M30	---	
Height	H_1	mm	119	129	143	173	203	243	290		
Height	H_2	mm	116	126	140	170	200	240	293		
Height	H_3	mm	15	14	18				30		
Height	H_4	mm	15	14	18				30		
Height	H_5	mm	5,5		4,5		7,5				
Height	H_6	mm	3								
Height	H_7	mm	40	61	73	58	74	108	98		
Angle	a_1		15°				11,25°				0°
Angle	a_2		30°				22,5°				
Angle	a_3		30°				22,5°				---
Angle	a_4		30°				22,5°				0°

Änderungen vorbehalten. Alle Angaben beschreiben unsere Produkte in allgemeiner Form. Sie stellen keine vereinbarte Beschaffenheit im Sinne des § 434 Abs. 1 BGB dar.



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