

# Data sheet

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Torque standard

Series Dm-TN

(1 N·m – 5000 N·m)



## Benefits/Application

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- Class VN (better class 0,05 acc. DIN 51309)
- For highest precision requirements
- Easy adaption
- For static moments
- Insensitive against parasitic forces and moments
- Standardised connection dimensions

## Options/Accessories

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- Bending moment circuits
- Temperature measurement with PT 100

# Technical data

## Class VN

	Rated Torque	$M_{nom}$	N·m	1 2 5 10	20 50 100	200	500	1000	2000	5000
Metrological Data	Torque measurement range		%	40 - 100						
	Interpolation error	$f_c$	%	± 0,025						
	Reversibility error	$v$	%	0,063						
	Reproducibility error in different mounting positions	$b, b_{rg}$	%	0,01						
	Repeatability error in unchanged mounting position	$b', b_{rv}$	%	0,005						
	Zero error	$f_0$	%	0,006						
	Creep		%	0,004						
	Temperature effect on characteristic value per 10 K	$TK_C$	%/10 K	0,01						
	Temperature effect on zero signal per 10 K	$TK_0$	%/10 K	0,008						
Electrical Data	Rated characteristic value	$C_{nom}$	mV/V	1)	2					
	Input resistance	$R_e$	Ω	> 350						
	Output resistance	$R_a$	Ω	> 300						
	Insulation resistance	$R_{is}$	Ω	> 10 <sup>9</sup>						
	Operating range of excitation voltage	$B_{U, G}$	V	5 - 12 V						
	Protection (DIN EN 60529)			54						
Limits	Mass	$m$	kg	0,3	0,4	1,2	4,6		15,8	
	Torque limit		%	110						
	Rated temperature range	$B_{T, nom}$	°C	17 - 27						
	Operating temperature range	$B_{T, G}$	°C	10 - 35						

1) Size 1... 5 N m : ca. 1,8 mV/V; nom. value is specified on the type label.  
Size 10 N m : 2 mV/V

# Technical data

## Class 0,05

Metrological Data	Rated Torque	$M_{nom}$	N·m	1 2 5 10	20 50 100	200	500	1000	2000	5000
	Torque measurement range		%	20 - 100						
	Interpolation error	$f_c$	%	± 0,025						
	Reversibility error	$v$	%	0,063						
	Reproducibility error in different mounting positions	$b, b_{rg}$	%	0,05						
	Repeatability error in unchanged mounting position	$b', b_{rv}$	%	0,025						
	Zero error	$f_0$	%	0,0125						
	Creep		%	0,008						
	Temperature effect on characteristic value per 10 K	$TK_C$	%/10 K	0,01						
	Temperature effect on zero signal per 10 K	$TK_0$	%/10 K	0,008						
Electrical Data	Rated characteristic value	$C_{nom}$	mV/V	1)	2					
	Input resistance	$R_e$	Ω	> 350						
	Output resistance	$R_a$	Ω	> 300						
	Insulation resistance	$R_{is}$	Ω	> 10 <sup>9</sup>						
	Operating range of excitation voltage	$B_{U, G}$	V	5 - 12 V						
	Protection (DIN EN 60529)			54						
Limits	Mass	$m$	kg	0,3	0,4	1,2	4,6	15,8		
	Torque limit		%	110						
	Rated temperature range	$B_{T, nom}$	°C	17 - 27						
	Operating temperature range	$B_{T, G}$	°C	10 - 35						

1) Size 1 ... 5 N·m: ca. 1,8 mV/V; nominal value is specified on the type label.  
Size 10 N·m: 2 mV/V

# Technical data

## Class 0,1

			1 2 5 10	20 50 100	200	500	1000	2000	5000
Metrological Data	Rated Torque	$M_{nom}$	N·m						
	Torque measurement range		%			20	-	100	
	Interpolation error	$f_c$	%				± 0,05		
	Reversibility error	$v$	%				0,125		
	Reproducibility error in different mounting positions	$b, b_{rg}$	%				0,1		
	Repeatability error in unchanged mounting position	$b', b_{rv}$	%				0,05		
	Zero error	$f_0$	%				0,025		
	Creep		%				0,01		
	Temperature effect on characteristic value per 10 K	$TK_C$	%/10 K				0,01		
	Temperature effect on zero signal per 10 K	$TK_0$	%/10 K				0,01		
Electrical Data	Rated characteristic value	$C_{nom}$	mV/V	1)			2		
	Input resistance	$R_e$	Ω				> 350		
	Output resistance	$R_a$	Ω				> 300		
	Insulation resistance	$R_{is}$	Ω				> 10 <sup>9</sup>		
	Operating range of excitation voltage	$B_{U,G}$	V				5 - 12 V		
	Protection (DIN EN 60529)						54		
Limits	Mass	$m$	kg	0,3	0,4	1,2	4,6		15,8
	Torque limit		%				110		
	Rated temperature range	$B_{T,nom}$	°C				17 - 27		
	Operating temperature range	$B_{T,G}$	°C				10 - 35		

1) Size 1 ... 5 N·m: ca. 1,8 mV/V; nominal value is specified on the type label.  
Size 10 N·m: 2 mV/V

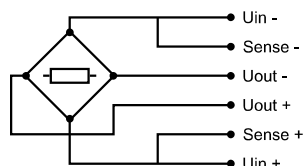
# Technical data

## Class 0,2

Rated Torque		$M_{nom}$	N·m	1 2 5 10	20 50 100	200	500	1000	2000	5000
Torque measurement range			%	20 - 100						
Interpolation error		$f_c$	%	± 0,1						
Reversibility error		$v$	%	0,25						
Reproducibility error in different mounting positions		$b, b_{rg}$	%	0,2						
Repeatability error in unchanged mounting position		$b', b_{rv}$	%	0,1						
Zero error		$f_0$	%	0,05						
Creep			%	0,02						
Temperature effect on characteristic value per 10 K		$TK_C$	%/10 K	0,02						
Temperature effect on zero signal per 10 K		$TK_0$	%/10 K	0,02						
Metrological Data	Rated characteristic value	$C_{nom}$	mV/V	1)	2					
	Input resistance	$R_e$	Ω	> 350						
	Output resistance	$R_a$	Ω	> 300						
	Insulation resistance	$R_{is}$	Ω	> 10 <sup>9</sup>						
	Operating range of excitation voltage	$B_{U, G}$	V	5 - 12 V						
	Protection (DIN EN 60529)			54						
	Mass	$m$	kg	0,3	0,4	1,2	4,6		15,8	
	Torque limit		%	110						
	Rated temperature range	$B_{T, nom}$	°C	17 - 27						
	Operating temperature range	$B_{T, G}$	°C	10 - 35						
Limits										

1) Size 1 ... 5 N·m: ca. 1,8 mV/V; nominal value is specified on the type label.  
Size 10 N·m: 2 mV/V

# Cable connection



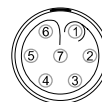
## Permanent connection end connected<sup>1)3)4)</sup>

7-pin LEMO Series 1  
Female<sup>3)</sup>



## Connection pluggable<sup>1)2)5)</sup>

7-pin LEMO Series 0  
Female: - Male:



Connection		Pin	Pin
Supply voltage (+)	$U_{in+}$	3	3
Supply voltage (-)	$U_{in-}$	2	2
Measurement signal (+)	$U_{out+}$	1	1
Measurement signal (-)	$U_{out-}$	4	4
Sense (+)	Sense+	5	5
Sense (-)	Sense-	6	6
Shielding		Housing	Housing

1) View to welding side

2) Female LEMO S.A. Typ: EGG.1B.307.CLL; Male: FGG.1B.307.CLA.D72

3) Starting from size 10 N · m

4) Cable length: 0.5 m

5) Starting from size 20 N · m available



*Permanent connection  
end connected  
(up to size 10 N·m)*



*Connection pluggable*

- Available types of connectors for the cable: D-Sub 9 pol ;D-Sub 15pol ; M-S 7pol ;LEMO Series1 7pol
- Configuration with customer defined connection is possible

## Option: Bending moment



Rated torque	$M_{nom}$	N·m	500 - 5000
Temperature effect on characteristic value per 10 K	$TK_C$	%/10 K	0,2
Temperature effect on zero signal per 10 K	$TK_0$	%/10 K	0,2

- The bending moment measuring circuits  $M_x$  and  $M_y$  can with use of a multi-channel measuring amplifier be used, to check the force transmission point.
- More information is available on request.

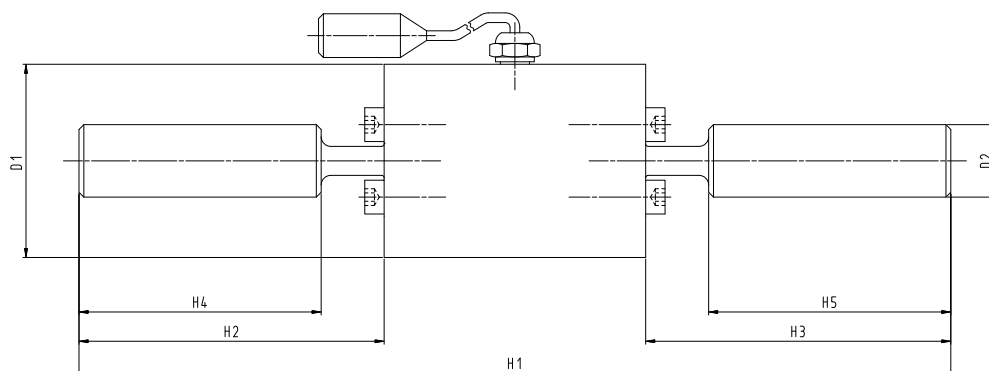
## Options: Temperature sensor

- Temperature sensors types: PT 100

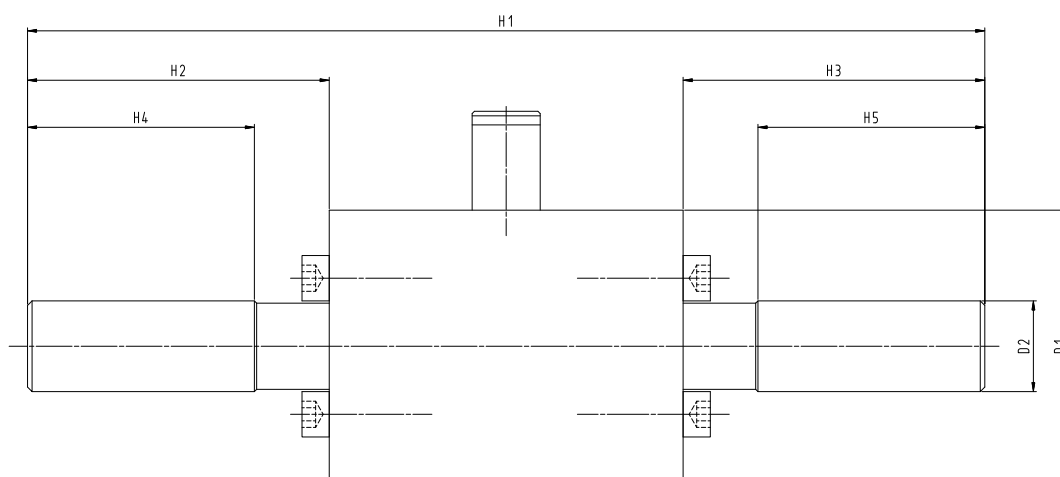
# Mating dimensions

up to 100 N·m

Typ: 1 N·m - 10 N·m



Typ: 20 N·m - 100 N·m



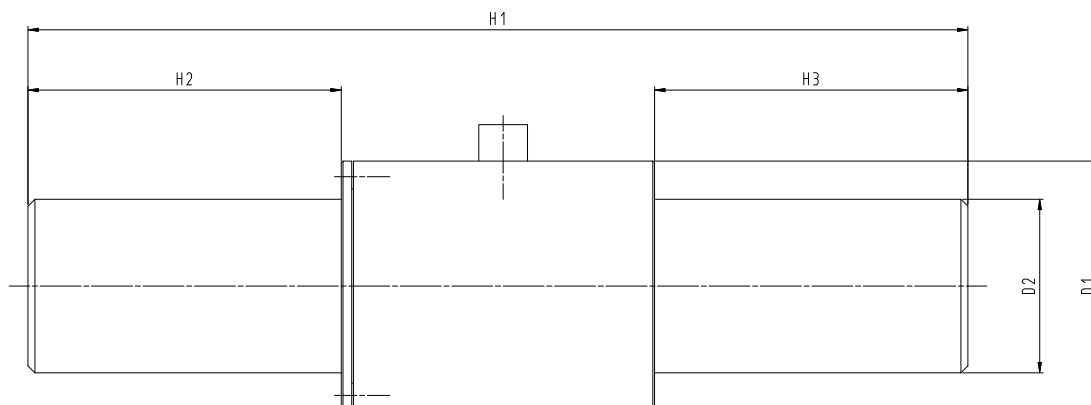
Rated Torque	$M_{nom}$	N·m	1 2 5 10	20 50 100
Diameter	$\varnothing D_1$	mm	40	60
Diameter	$\varnothing D_2$	mm	15 <sub>h7</sub>	20 <sub>h7</sub>
Height	$H_1$	mm	180	211
Height	$H_2$	mm	63	66,5
Height	$H_3$	mm	63	66,5
Height	$H_4$	mm	50	50
Height	$H_5$	mm	50	50



# Mating dimensions

up to 5000 N·m

Typ: 200 N·m - 5000 N·m



Rated Torque	$M_{nom}$	N·m	200	500 1000	2000 5000
Diameter	$\varnothing D_1$	mm	51	72	92
Diameter	$\varnothing D_2$	mm	30 <sub>h7</sub>	50 <sub>h7</sub>	70 <sub>h7</sub>
Height	$H_1$	mm	200	270	320
Height	$H_2$	mm	60	90	115
Height	$H_3$	mm	60	90	115

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



GTM Testing and Metrology GmbH  
 Philipp-Reis-Straße 4-6, 64404 Bickenbach, Germany  
[www.gtm-gmbh.com](http://www.gtm-gmbh.com)  
 Phone +49(0)6257-9720-0, Fax +49(0)6257-9720-77  
[contact@gtm-gmbh.com](mailto:contact@gtm-gmbh.com)