Rotating Torque Sensor (contactless)

Model LRM

Performance Features

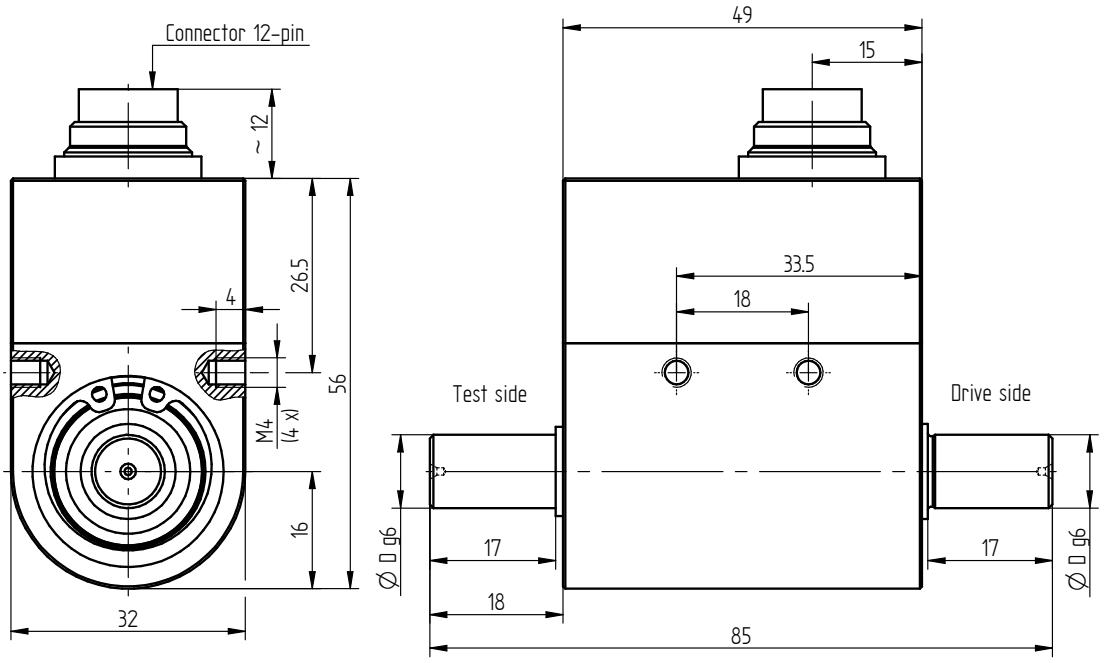
- Torque sensor for e.g. test bench applications
- Accuracy class 0.05%, optional
- Active output ±5V (optional ±10V)
- Integrated speed/angle measurement, optional
- Speed up to 15000 min^{-1}
- Very short axial length
- High torsional stiffness
- Simple handling and assembly
- Special versions on request

Specifications

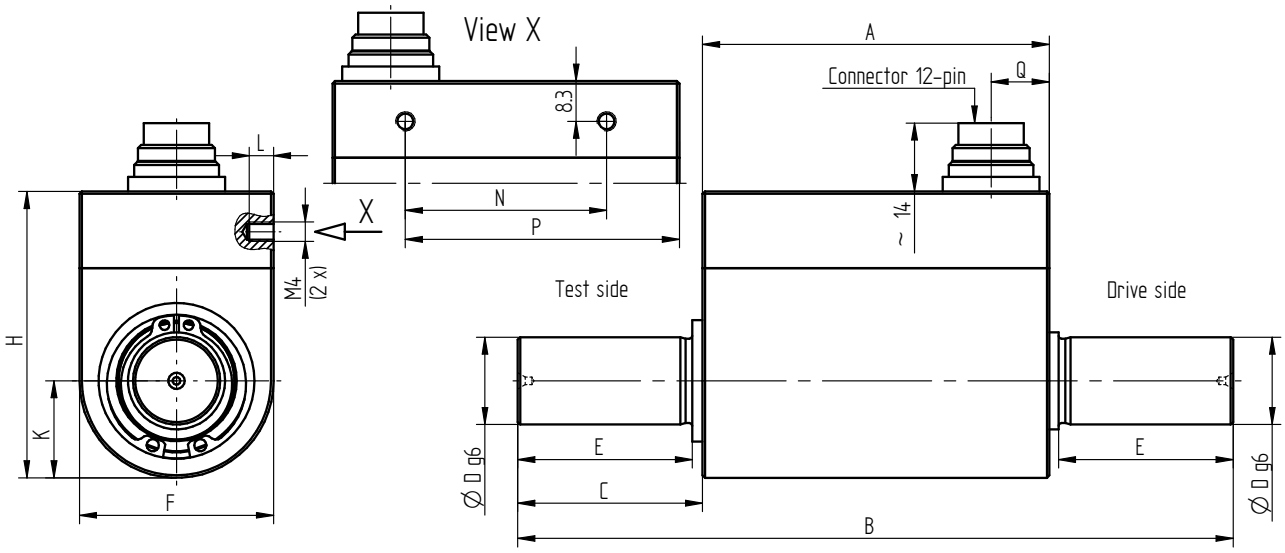
Torque Sensor		LRM1	LRM2
Nominal torque $\mathbf{M_{nom}}$	N·m	0.1 ... 20000	0.1 ... 1000
Accuracy class	% M_{nom}	0.1 (optional 0.05)	0.2
Relative repeatability error in unchanged mounting position **b'**	% M_{nom}	±0.02	±0.04
Rated range of supply voltage	VDC	12 ... 28	
Current consumption	mA	≤60	
Output signal	V	±5	
Control signal excitation	V	L <2.0; H >3.5	
Sample rate	kSample/s	10	
Electrical connection		12-pin series 581	
Reference temperature $\mathbf{T_{ref}}$	°C	23	
Rated temperature range	°C	5 ... 45	
Operating temperature range	°C	0 ... 60	
Storage temperature range	°C	-10 ... 70	
Temperature effect on zero signal $\mathbf{TK_0}$	% M_{nom}/10 K	±0.2	±0.3
Temperature effect on characteristic value $\mathbf{TK_C}$	% M_{nom}/10 K	±0.1	±0.15
Maximum operating torque $\mathbf{M_G}$ (static)	% M_{nom}	150	
Torque limit $\mathbf{M_{max}}$ (static)	% M_{nom}	200	
Breaking torque $\mathbf{M_B}$ (static)	% M_{nom}	>300	
Permissible oscillation stress when subjected to torque $\mathbf{M_{df}}$	% M_{nom}	70 (peak-to-peak)	
Level of protection		IP50	

LANRIN Lanrin Measurement Instrument
Website:http://www.lanrin.com Tel:800-881101 Fax:800-881102 Email:Sale@lanrin.com

Dimensions in mm

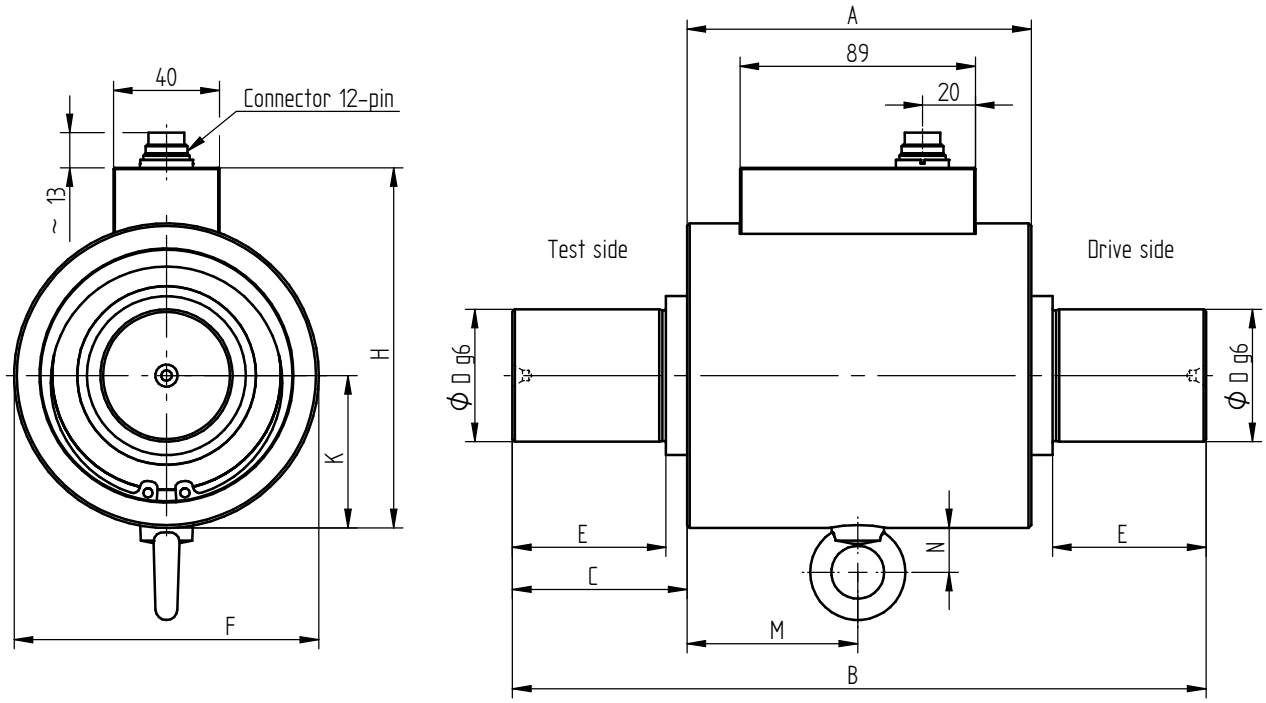


Nominal Torque [N·m]	Dimensions [mm]	Weight [kg]
	ØD	
0.1/0.2/0.5/1/2/5	8	0.2
10	10	0.2



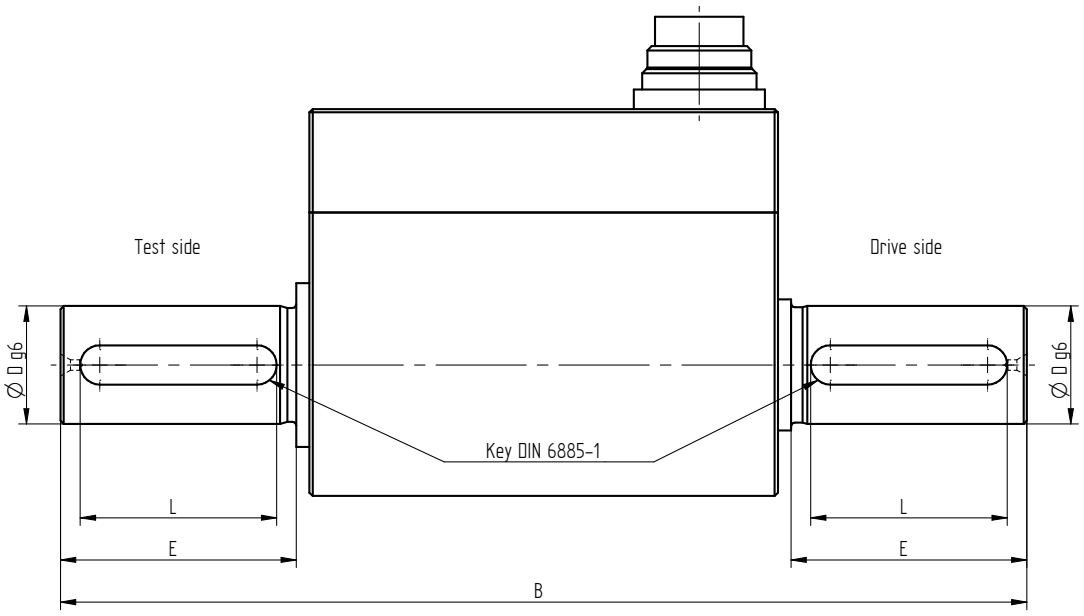
Nominal Torque [N·m]	Dimensions [mm]												Weight [kg]
	A	B	C	ØD	E	F	H	K	L	N	P	Q	
20/30	71.5	111.5	20	18	18	40	59	20	5	41.5	56.5	12	0.5
50/100	71.5	147.5	38	18	36	40	59	20	5	41.5	56.5	12	0.6
200/500	72.5	159.5	43.5	32	38	58	76	29	6	29.5	51.5	15	1.5

Dimensions in mm



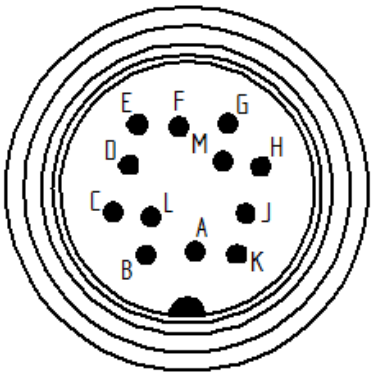
Nominal Torque [N·m]	Dimensions [mm]										Weight [kg]
	A	B	C	ØD	E	ØF	H	K	M	N	
1000	130	262	66	50	58	115	136	57.5	64.5	~17	7.2
2000/5000	135	377	121	70	110	139	161	69.5	67.5	~17	15.5
10000/20000	190	470	140	110	120	210	233	105	95	~17	47.5

Dimensions of Version with Feather Keys in mm



Nominal Torque [N·m]	Dimensions [mm]					Weight [kg]
	B	ØD	E	L	Feather Key[1]	
0.1/0.2/0.5/1/2/5	85	8	17	14	2 x 2 x 14	0.2
10	85	10	17	14	3 x 3 x 14	0.2
20/30	111.5	18	18	14	6 x 6 x 14	0.5
50/100	147.5	18	36	30	6 x 6 x 30	0.6
200/500	159.5	32	38	36	10 x 8 x 36	1.5
1000	262	50	58	50	14 x 9 x 50	7.2
2000/5000	377	70	110	100	20 x 12 x 100	15.5
10000 / 20000	570	110	170	160	28 x 16 x 160	47.5

Connection Assignment

12-pin	LRM		Series 581
Pin A	NC	-	
Pin B	Signal angle B (option)	5V TTL	
Pin C	Signal (+)	±5V (±10V)	
Pin D	Signal (GND)	0V	
Pin E	Supply (GND)	0V	
Pin F	Supply (+)	12 ... 28VDC	
Pin G	Signal angle A (option)	5V TTL	
Pin H	NC	-	
Pin J	NC	-	
Pin K	Control signal	L <2.0V; H >3.5V	
Pin L	NC	-	
Pin M	Shield		

[1] Calculated load type for feather key: single side light shocks

Nominal Torque [N·m]	Limit Speed [min^{-1}]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m²][2]		Axial Force Limit [N][3]	Lateral Force Limit [N][3]
			Drive Side	Test Side		
0.1	15000	1.8E+01	1.9E-06	2.8E-07	42	0.9
0.2	15000	1.8E+01	1.9E-06	2.8E-07	58	1.2
0.5	15000	1.2E+02	1.9E-06	2.8E-07	172	1.9
1	15000	1.2E+02	1.9E-06	2.8E-07	227	2.9
2	15000	3.6E+02	1.9E-06	2.9E-07	348	5.5
5	15000	4.0E+02	1.9E-06	2.9E-07	650	14
10	15000	9.3E+02	2.1E-06	3.8E-07	1000	26
20	15000	4.5E+03	1.2E-05	9.9E-06	1680	43
30	15000	4.5E+03	1.2E-05	9.9E-06	2200	65
50	15000	8.5E+03	1.3E-05	1.2E-05	3100	80
100	12000	8.5E+03	1.3E-05	1.2E-05	4800	160
200	10000	6.7E+04	1.0E-04	9.0E-05	8000	290
500	10000	7.1E+04	1.0E-04	9.0E-05	14000	700
1000	8000	3.1E+05	1.6E-03	1.1E-03	23000	900
2000	5500	7.2E+05	5.3E-03	4.3E-03	33000	1200
5000	5500	8.0E+05	5.4E-03	4.3E-03	57000	2800
10000	5000	3.1E+06	4.0E-02	3.7E-02	90000	4400
20000	5000	3.7E+06	4.0E-02	3.8E-02	130000	8200

Options

Article-No.	Description	
A	Accuracy class	0.05 % M_{nom}
B	Output signal	±10V
C	Speed / angle measurement, 2 x 360 impulses, 90° displaced	5V TTL, CW-turn 
D[4]	Speed measurement, 1x60 impulses	5V TTL

[2] Without option speed/angle measurement
[3] Unsupported shaft
[4] Nominal torque ≥2000 N·m