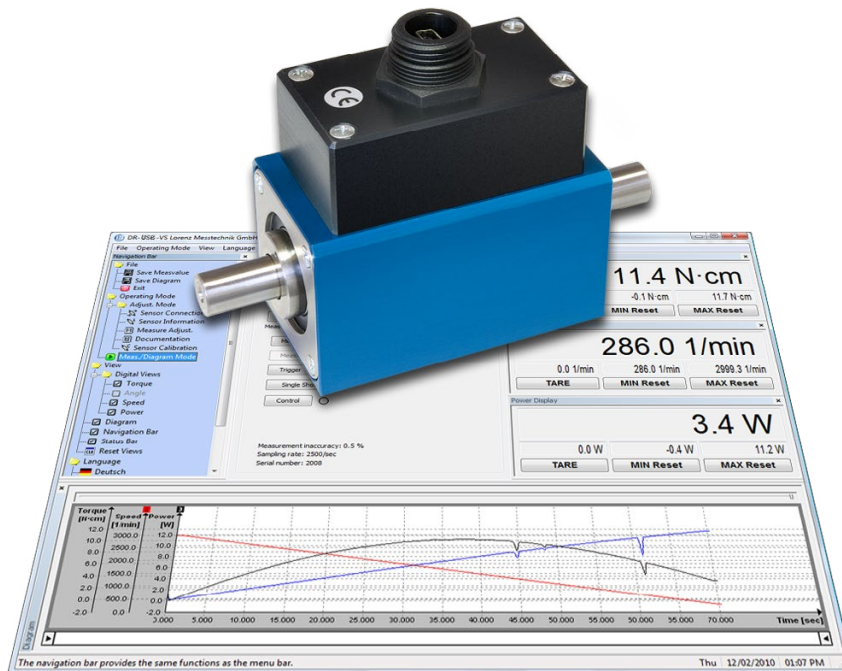


## USB-Torque Sensor DR-3000/DR-3000-P (contactless) with Rated Torque from 0.1 ... 5000 N·m



*This sensor has a contactless and digital signal transmission from rotor to stator without signal falsification of the measurement data. It is therefore highly accurate and maintenance-free.*

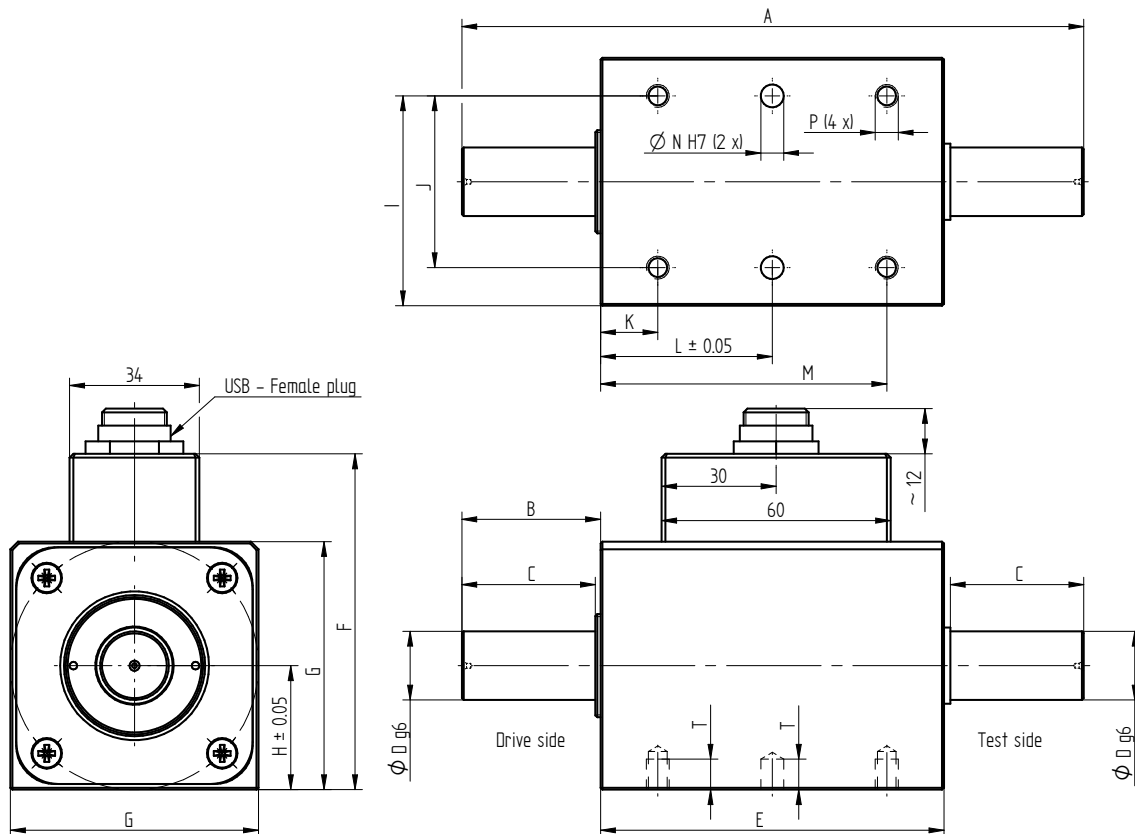
### Performance Features

- USB-Torque sensor with configuration and evaluation software
- High accuracy
- Integrated speed/angle measurement
- Up to 2500 measurements/s per measuring channel
- Speed up to 30000 min<sup>-1</sup>
- Very short axial length
- Feed-in from USB, without external power supply
- Calibration parameter lodged in sensor
- Performance calculation via software
- Simple handling and assembly
- Special versions on request

### Application

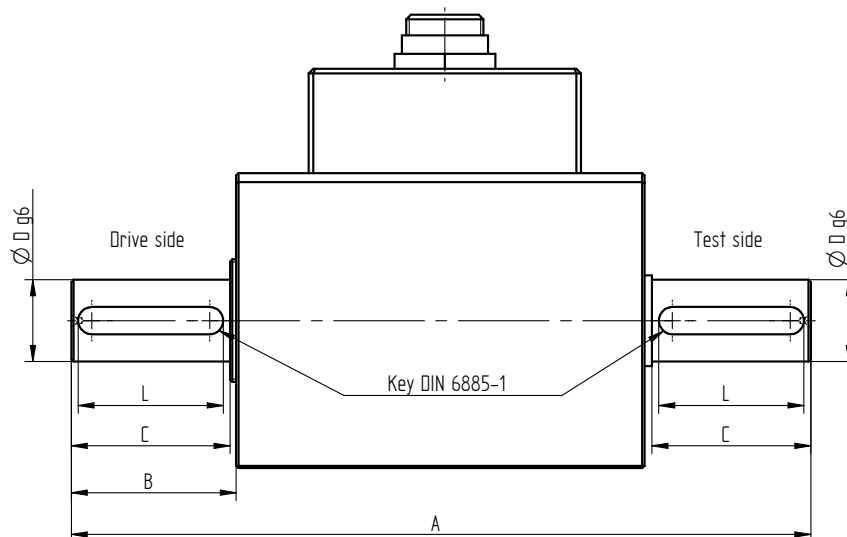
- Research and development
- Process measuring and control technology
- Fully automated machining centres
- Measuring and control devices
- Tool engineering
- Special mechanical engineering

## Dimensions of DR-3000/DR-3000-P in mm



Rated Torque [N·m]	Dimensions [mm]																Weight [kg]
	A	B	C	ØD	E	F	G	H	I	J	K	L	M	ØN	P	T	
0.1/0.2/0.5/1/2/5	110	19	16.5	8	71	63	40	20	35	30	12	35.5	59	4	M4	8	0.5
10	110	19	16.5	10	71	63	40	20	35	30	12	35.5	59	4	M4	8	0.6
20/30/50/100	163	36.5	35	18	90	88	65	32.5	55	45	15	45	75	6	M6	8	1.6
200/500	234	56.5	55	32	120	118	95	47.5	82.5	70	20	60	100	8	M8	14	4.8
1000	234	56.5	55	42	120	118	95	47.5	82.5	70	20	60	100	8	M8	14	5.6
2000/5000	372	114	110	70	144	163	140	70	120	100	25	72	119	12	M12	20	19.0

## Dimensions of Version with Feather Keys in mm



Rated Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	ØD	L	Feather Key <sup>1</sup>	
0.1/0.2/0.5/1/2/5	110	19	16.5	8	14	2 x 2 x 14	0.5
10	110	19	16.5	10	14	3 x 3 x 14	0.6
20/30/50/100	163	36.5	35	18	32	6 x 6 x 32	1.6
200/500	234	56.5	55	32	50	10 x 8 x 50	4.8
1000	234	56.5	55	42	50	12 x 8 x 50	5.6
2000/5000	372	114	110	70	100	20 x 12 x 100	19.0

## Technical Data acc. to VDI/VDE/DKD 2639

Article-No. DR-3000	Article-No. DR-3000-P <sup>2</sup>	Rated Torque [N·m]	Limit Speed [min <sup>-1</sup> ]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m <sup>2</sup> ]		Axial Force Limit [N] <sup>3</sup>	Lateral Force Limit [N] <sup>3</sup>
					Drive Side	Test Side		
114357	115665	0.1	30000	1.8E+01	9.2E-06	2.5E-07	43	1.5
114358	115664	0.2	30000	1.8E+01	9.2E-06	2.5E-07	58	2
111231	115663	0.5	30000	9.4E+01	9.2E-06	2.5E-07	240	3
111177	115662	1	30000	9.4E+01	9.2E-06	2.5E-07	240	3
111232	115661	2	30000	3.7E+02	9.2E-06	2.5E-07	480	7
111233	112617	5	30000	7.7E+02	9.2E-06	2.6E-07	900	16.5
111234	113190	10	30000	8.8E+02	9.3E-06	3.4E-07	1050	21
111235	112618	20	20000	5.1E+03	1.2E-04	6.8E-06	2300	44
111236	112093	30	20000	5.1E+03	1.2E-04	6.8E-06	2300	44
111114	113191	50	20000	9.6E+03	1.2E-04	7.4E-06	5000	142
111237	112619	100	20000	9.6E+03	1.2E-04	7.4E-06	5000	142
111238	112620	200	15000	8.9E+04	5.4E-04	4.4E-04	10000	275
110554	112621	500	15000	1.3E+05	5.4E-04	4.4E-04	13000	400
111240	112622	1000	15000	1.7E+05	6.4E-04	5.3E-04	20000	920
112801	115791	2000	12000	6.3E+05	5.7E-03	5.1E-03	34000	1250
112803	115660	5000	12000	9.6E+05	5.8E-03	5.2E-03	64000	2900

<sup>1</sup> Calculated load type for feather key: single side light shocks

<sup>2</sup> Version „-P“ feather key

<sup>3</sup> Unsupported shaft

## Technical Data acc. to VDI/VDE/DKD 2639 (continued)

### USB-Torque Sensor DR-3000/DR-3000-P

Rated torque $M_{nom}$	N·m	0.1 ... 5000
Accuracy class	% $M_{nom}$	0.1 (optional 0.05)
Speed resolution	min <sup>-1</sup>	1
Speed accuracy		1 % full scale $\pm 1$ digit
Angle of rotation resolution	degree	0.25
Relative repeatability error in unchanged mounting position $b'$	% $M_{nom}$	$\pm 0.02$
Feed-in from USB	VDC	4 ... 6
Current consumption	mA	$\leq 250$
Output signal torque	digits	$\pm 25000$
Output signal speed / angle of rotation	digits	$\pm 32511$
Control signal excitation		per software
Sample rate	kSample/s	2.5
Electrical connection		Mini-USB-B-Socket IP68, incl. 3 m connection cable to PC
Reference temperature $T_{ref}$	°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 $TK_0$	% $M_{nom}/10$ K	$\pm 0.2$
Temperature effect on characteristic value $TK_C$	% $M_{nom}/10$ K	$\pm 0.1$
Maximum operating torque $M_G$ (static)	% $M_{nom}$	150
Torque limit $M_{max}$ (static)	% $M_{nom}$	200
Breaking torque $M_B$ (static)	% $M_{nom}$	>300
Permissible oscillation stress when subjected to torque $M_{df}$	% $M_{nom}$	70 (peak-to-peak)
Level of protection		IP50

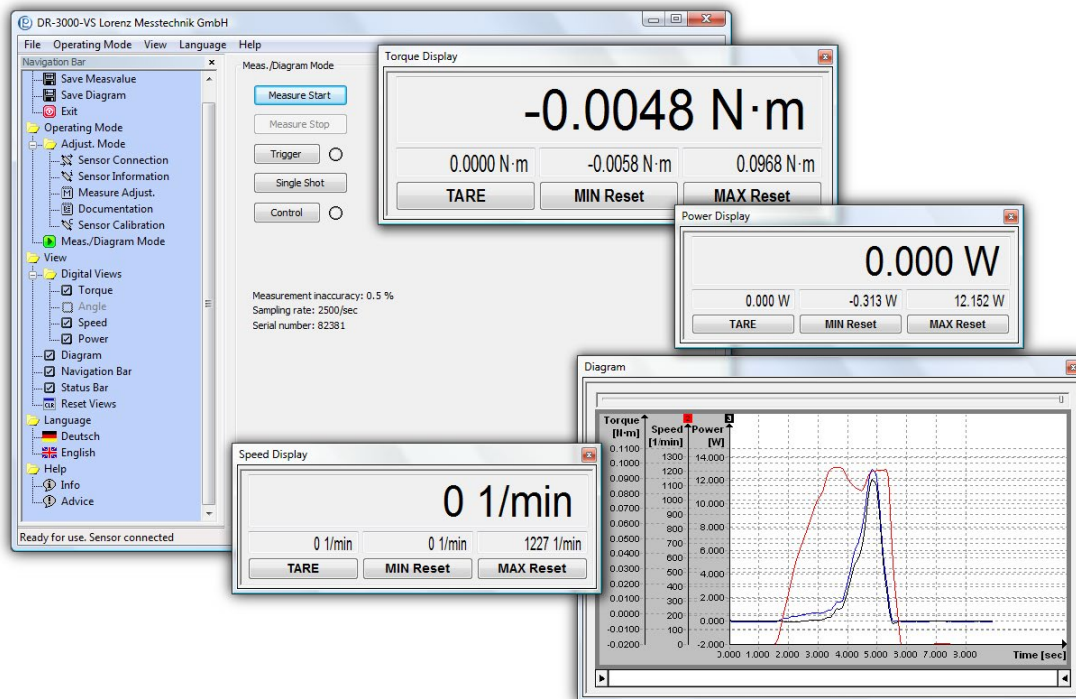
## Options

Article-No.	Description	
101695	Accuracy class	0.05 % $M_{nom}$

## Calibrations

Article-No.	Description	
400676	Linearity diagram in accordance to factory standard	25 % steps
400664	Linearity diagram in accordance to factory standard	10% steps
400961	Proprietary calibration acc. to VDI/VDE 2646	3 steps
400700	Proprietary calibration acc. to VDI/VDE 2646	5 steps
400688	Proprietary calibration acc. to VDI/VDE 2646	8 steps
401023	Proprietary calibration for the angle of rotation acc. to VDI/VDE 2648-1	
	DAkS-Calibration/Standard on request	

## Configuration and Evaluation Software DR-USB-VS



The configuration and evaluation software serves for easy evaluation and graphical visualisation of torque/speed/power or torque/angle of rotation on PC.

The software allows direct read in of measured data into a text file in CSV-format through the USB-port of a PC. This enables further analyses with a commercially available spreadsheet program at any time.

### Technical data

Type	DR-USB-VS
Interface	USB
Protocol	Lorenz Standard Protocol
System Requirements	Windows® 7 - 10 32/64 Bit <sup>4</sup> Dual-Core from 1.8 GHz (with diagram)

### Highlights at a glance

Conversion in physical values	✓
Simultaneous storage of up to 3 physical values	✓
Simultaneous measuring	1 Sensor
Automatic scaling of y-axis	✓
Graphical visualisation of a physical value	✓
Automatic or manual storage in a CSV and BMP file	✓
Mathematical computation of the mechanical power	✓
Calibration function	✓
Resettable minimum value memory for each measured value	✓
Resettable maximum value memory for each measured value	✓
Variable average determination	✓
Tare for each measured value	✓

<sup>4</sup>Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

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