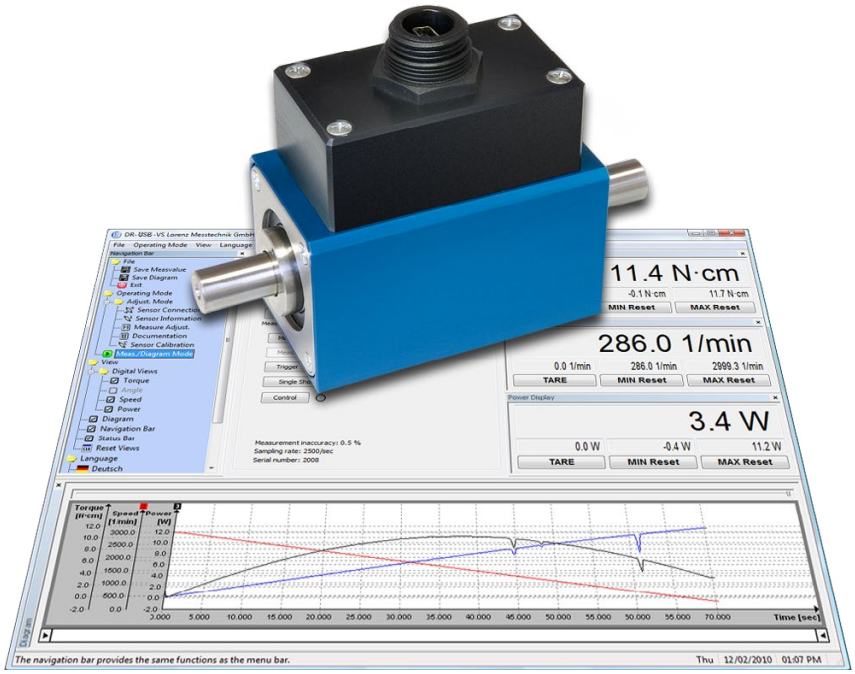
Lorenz® messtechnik gmbh

Data sheet

USB-Torque Sensor DR-3000 / DR-3000-P (contactless) with Rated Torque from 0.1 to 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.

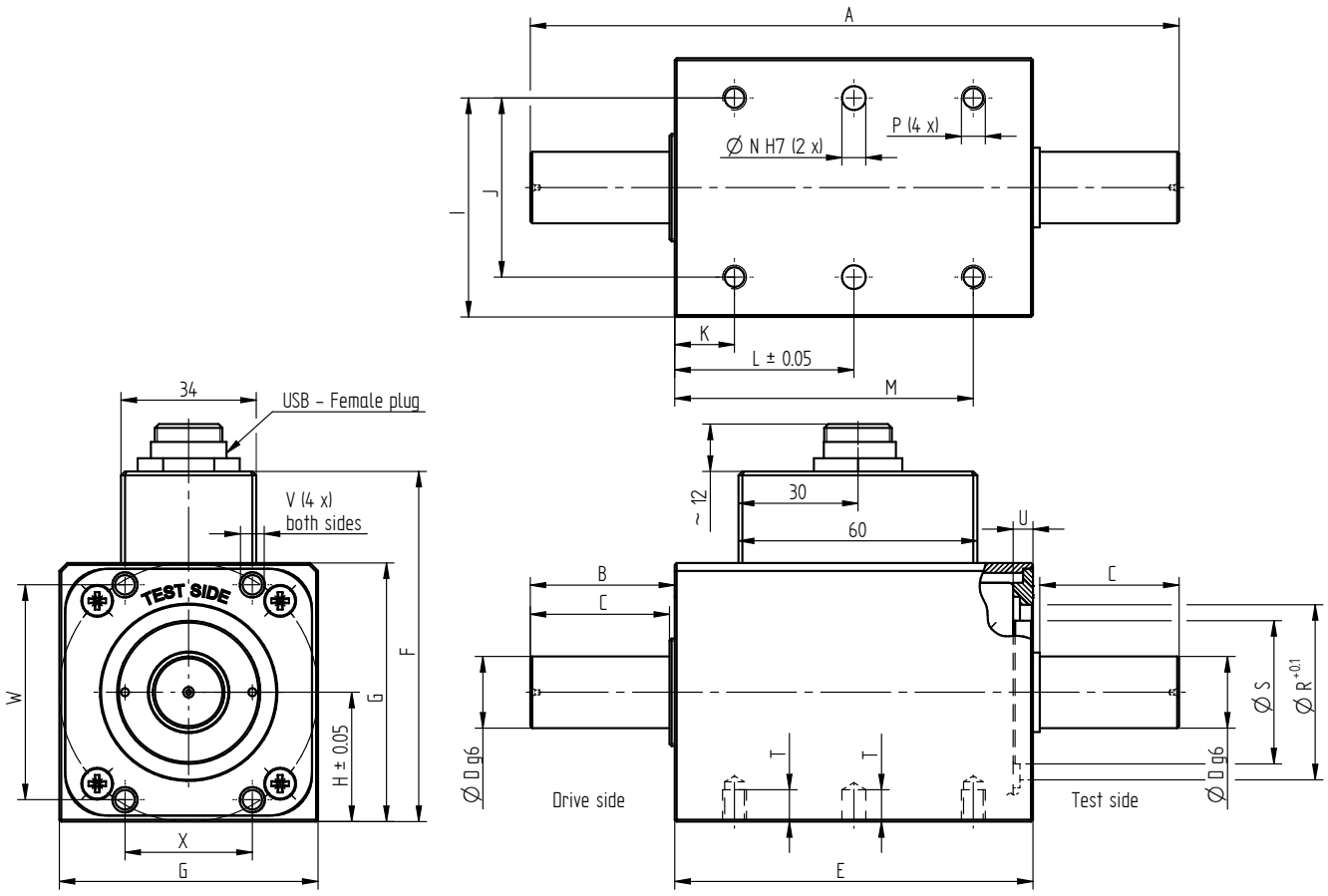
Performance Features

- 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^{-1}
- 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

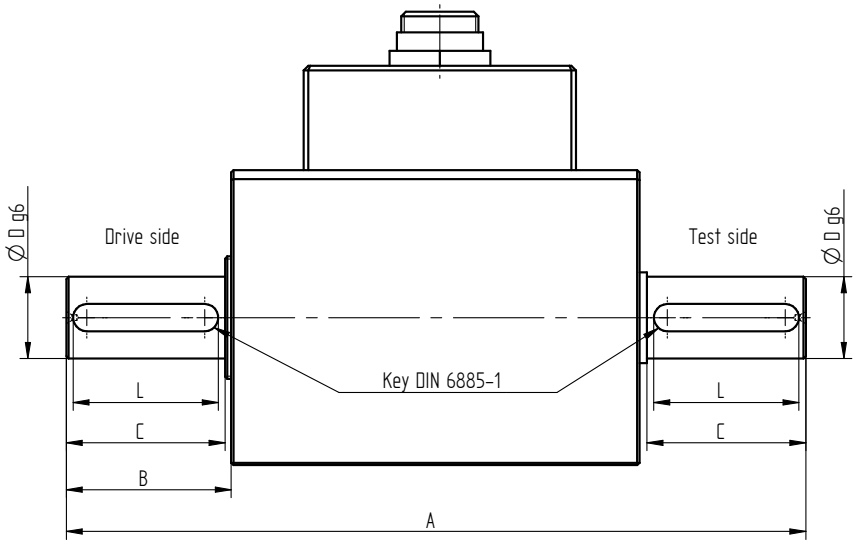
Dimensions in mm



Rated Torque [N·m]	Dimensions [mm]											
	A	B	C	Ø D	E	F	G	H	I	J	K	L
0.1/0.2/0.5/1/2/5	110	19	16.5	8	71	63	40	20	35	30	12	35.5
10	110	19	16.5	10	71	63	40	20	35	30	12	35.5
20/30/50/100	163	36.5	35	18	90	88	65	32.5	55	45	15	45
200/500	234	56.5	55	32	120	118	95	47.5	82.5	70	20	60
1000	234	56.5	55	42	120	118	95	47.5	82.5	70	20	60
2000/5000	372	114	110	70	144	163	140	70	120	100	25	72

Rated Torque [N·m]	Dimensions [mm]											Weight [kg]
	M	Ø N	P	Ø R	Ø S	T	U	V	depth	W	X	
0.1/0.2/0.5/1/2/5	59	4	M4	28	20	8	~ 1,5	M4	7.5	32	18	0.5
10	59	4	M4	28	20	8	~ 1,5	M4	7.5	32	18	0.6
20/30/50/100	75	6	M6	44	36	8	~ 5	M6	12.5	54	32	1.6
200/500	100	8	M8	70	65	14	~ 6	M8	16.5	76	50	4.8
1000	100	8	M8	70	65	14	~ 6	M8	16.5	76	50	5.6
2000/5000	119	12	M12	108	98	20	~ 7	M12	25	112	72	19.0

Dimensions of Version with Feather Key in mm



Rated Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	Ø D	L	Feather Key[1]	
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[2]	Rated Torque [N·m]	Limit Speed [min^{-1}]	Spring Rate [N·m/rad]	Mass Moment of Inertia [kg·m²]		Axial Force Limit [N][3]	Lateral Force Limit [N][3]
					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

[1] Calculated load type for feather key: single side light shocks
[2] Version „-P“ feather key
[3] Unsupported shaft

All data sheets can be found at www.lorenz-messtechnik.de
Technical modification to reserve.

ISI sa-nv Instrumentation for Science and Industry (INTERCONTINENTAL SERVICES INC)
Rue du Doyenné 3 Dekenijstraat 1180 Brussels – Belgium - Tel 02/ 343 30 81 Fax 343 12 05 mail : sales@isi-be.eu web : www.isi-be.eu

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^{-1}	1
Speed accuracy		1 % full scale ±1 digit
Angle of rotation resolution	degree	0.25
Relative repeatability error in unchanged mounting position **b'**	% M_{nom}	±0.02
Feed-in from USB	VDC	4 ... 6
Current consumption	mA	≤250
Output signal torque	digits	±25000
Output signal speed / angle of rotation	digits	±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	±0.2
Temperature effect on characteristic value **TK_C**	% M_{nom}/10 K	±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}

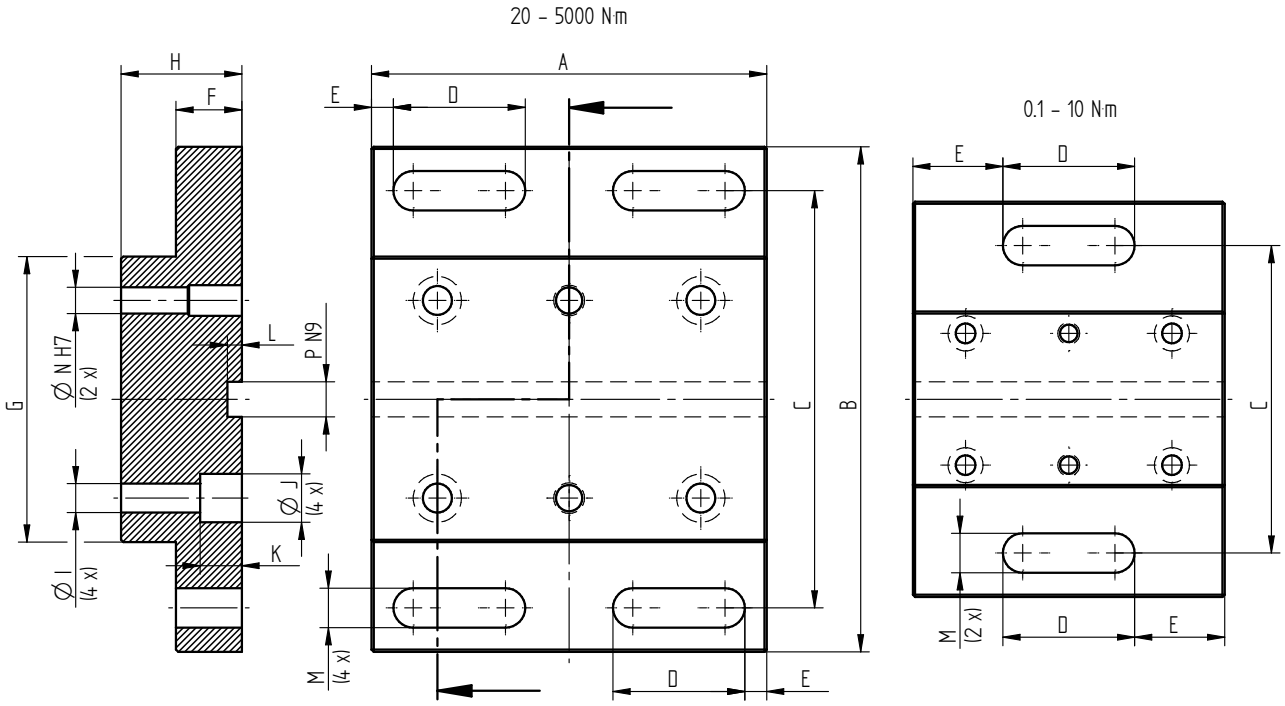
Calibrations

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	
	DAkkS-Calibration / Standard on request	

ISI sa-nv Instrumentation for Science and Industry (INTERCONTINENTAL SERVICES INC)
Rue du Doyenné 3 Dekenijstraat 1180 Brussels – Belgium - Tel 02/ 343 30 81 Fax 343 12 05 mail : sales@isi-be.eu web : www.isi-be.eu

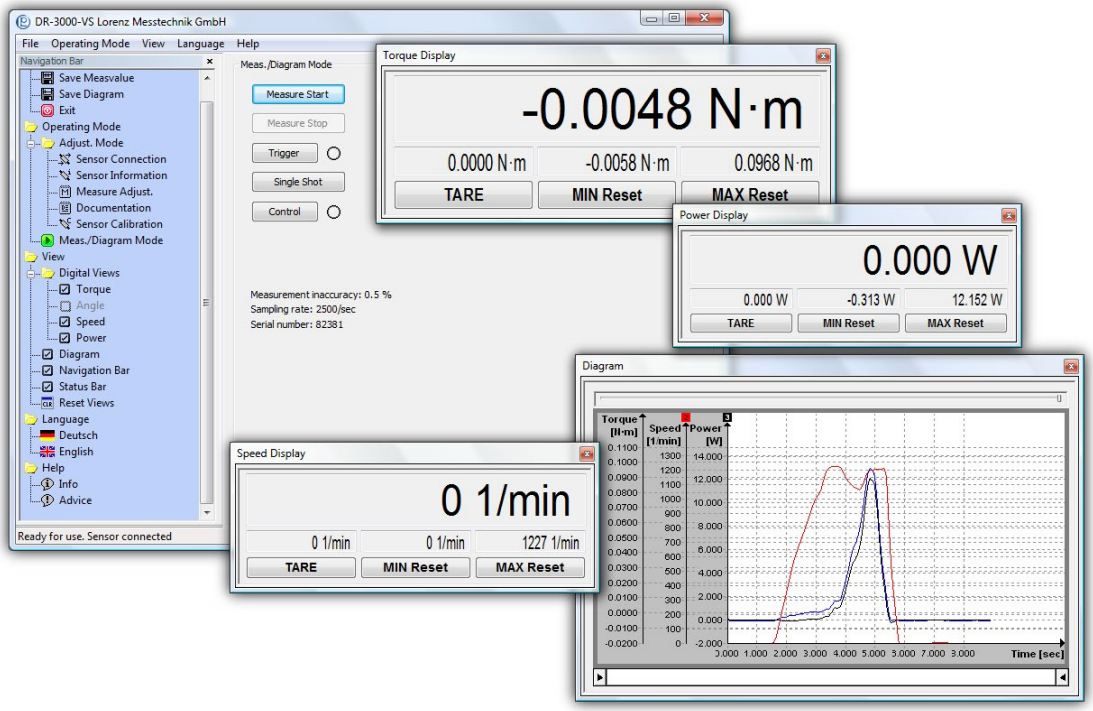
Accessories

Base Plates



Rated Torque [N·m]	Article-No.	Dimensions [mm]															Weight [kg]
		A	B	C	D	E	F	G	H	Ø I	Ø J	K	L	M	Ø N	P	
0.1/0.2/0.5/1/2/5/10	118547	71	90	70	30	20.5	15	40	25	4.5	8	7	3.3	9	4	8	0.3
20/30/50/100	118548	90	115	95	30	5	15	65	27.5	6.6	11	9.5	3.3	9	6	8	0.6
200/500/1000	118549	120	155	125	30	5	20	95	37.5	9	15	10.5	4.1	11	8	10	1.4
2000/5000	118550	144	210	176	36	5	25	140	45	13.5	20	14	4.1	13	12	10	2.9

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[4] 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	✓

[4] Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.
All trademarks or brands used in this document refer only to the respective product or the holder of the trademark or brand.
Lorenz Messtechnik GmbH does not raise claims to other than their own trademarks or brands.