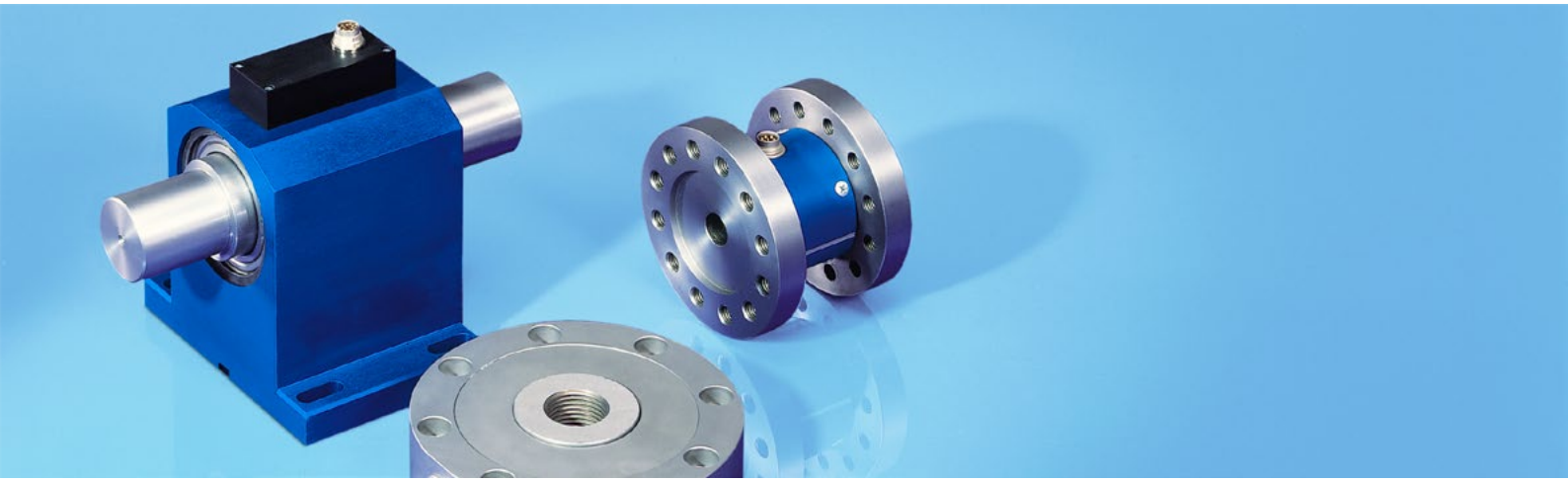


Torque Sensors
Force Sensors
Multi-Component Sensors

Sensor Interfaces
DIN Mounting Rail Devices
Built-In Measuring Devices
Portable Measuring Systems
Tabletop and Laboratory Measuring Devices

Lorenz® messtechnik gmbh

Highly precise sensors for torque and force measurement which are applied in research, development, production, quality assurance and series production are our primarily contribution to the measurement technology.

We make high demands on the quality of our products. By the good contact to our customers, our products are subject to continuous enhancement; thereby we break new ground to meet our customers requirements.

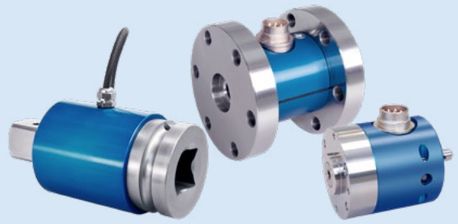
Index

Product Overview of Sensors

We offer rugged and reliable sensors in various versions and measurement ranges in accordance to the respective application requirement.

Additionally, our product range includes a wide choice of accessories, such as couplings, measuring cables, ...

Torque Sensors

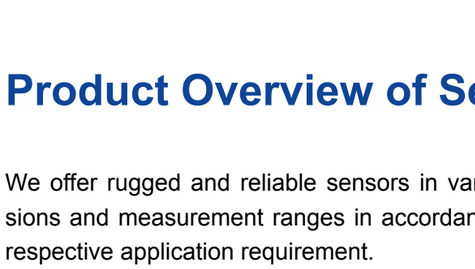


Reactive Torque Sensors, Non-Rotating

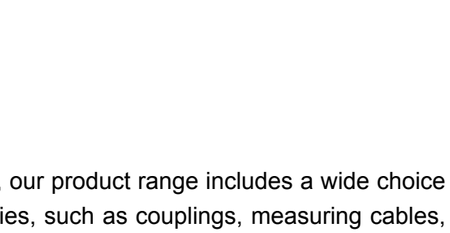
Rotating Torque Sensors with Slip Rings

Rotating Torque Sensors with Non Contact Transmission

Force Sensors



Tension Force Sensors

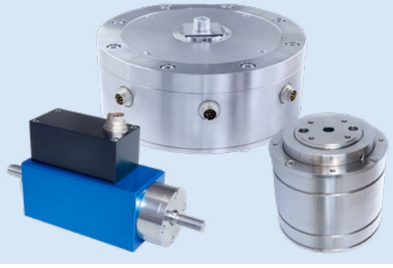


Compressive Force Sensors

Tension and Compression Force Sensors

Special Sensors

Multi-Component Sensors



Accessories

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Technical Specification of Torque Sensors

Reactive Torque Sensors, Non-Rotating						
Type	**D-2452 D-2452-P**	**DK-15**	**DV-14**	**D-2431**	**DH-15**	**DFW-25**
Mechanical Connection	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft with keyway	Male square drive / Female square drive	¼″ hexagon drive / Quick change chuck	Flange with spigot and female threads / Cylindrical shaft	Flange with center hole and mounting holes / Cylindrical shaft with keyway
Measuring Range [N·m]	0.005 ... 20000	1 ... 100	1 ... 5000	0.1 ... 20	0.005 ... 20	2 ... 2000
Accuracy Class	0.1 (0.05)	0.2	0.2 (0.1)	0.2	0.2 (0.1)	0.2 (0.1)
Output Signal [mV/V]	0.3 ... 1.5	1	0.5 1	1 2	0.3 ... 1	1
Excitation [V]	2 ... 12	2 ... 12	2 ... 12	2 ... 12	2 ... 12	2 ... 12
Range of Application	Reaction torque measurement, e.g. for extruders	Reaction torque measurement, e.g. test stands	Survey of assembly tools for screws and nuts	Survey of assembly tools for screws and nuts	For very small measuring ranges	Compact design

					
DFW-35	**D-2223**	**D-2209**	**D-2553**	**DF-30**	**D-2268**
Flange with center hole and mounting holes / Square	Flange with center hole and mounting holes / Square socket	Flange with spigot and mounting holes at both ends	Flange with large through hole and center counter bore at both ends	Flange with center hole and female threads at both ends	Flange with spigot and female threads / Flange with center and through hole, mounting holes
2 ... 2000	2 ... 5000	1 ... 5	10 ... 200	10 ... 20000	50 ... 10000
0.2 (0.1)	0.2 (0.1)	0.2	0.1	0.1 (0.05)	0.1 (0.05)
1	1	1	1	0.5 1	0.5 1
2 ... 12	2 ... 12	2 ... 12	2 ... 12	2 ... 12	2 ... 12
Survey of assembly tools for screws and nuts	Survey of assembly tools for screws and nuts	Compact design	Compact design	Compact design	Short design

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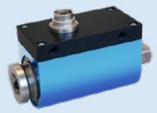
Rotating Torque Sensors with Slip Ring			***Rotating Torque Sensors with Slip Ring for Screw Driving Systems***				
Type	**DR-2**	**DR-20**	*Type*	**DR-1**	**DR-12**	**DR-2291**	**DR-2335**
Mechanical Connection	Cylindrical shaft with keyway	Cylindrical shaft with keyway	*Mechanical Connection*	Male square drive / Female square drive	Male square drive / Female square drive	¼″ hexagon drive / Quick change chuck	¼″ hexagon drive / Quick change chuck
Measuring Range [N·m]	1 ... 500	1 ... 500	*Measuring Range [N·m]*	1 ... 5000	1 ... 5000	1 ... 20	1 ... 20
Accuracy Class	0.1	0.1	*Accuracy Class*	0.1	0.1	0.1	0.1
Output Signal [mV/V]	0.5 1	0.5 1	*Output Signal [mV/V]*	0.5 1	0.5 1	0.5 1	0.5 1
Excitation [V]	2 ... 12	2 ... 12	*Excitation [V]*	2 ... 12	2 ... 12	2 ... 12	2 ... 12
Max. Speed [min^{-1}]	1000 ... 2000	1000 ... 2000	*Max. Speed [min^{-1}]*	500 ... 2000	500 ... 2000	2000	2000
Speed/Angle Measurement	-	Standard	*Speed/Angle Measurement*	-	Standard	-	Standard

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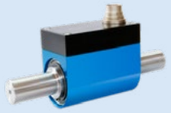
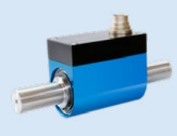
Non Contact Torque Sensors, Rotating					
Type	**DR-3000** **DR-3000-P**	**DR-2643** **DR-2643-P**	**DR-2112** **DR-2112-P**	**DR-2412** **DR-2412-P**	**DR-2112-R** **DR-2112-R-P**
Mechanical Connection	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway
Measuring Range [N·m]	0.1 ... 5000	0.1 ... 5000	0.1 ... 20000	0.1 ... 20000	0.1 ... 1000
Accuracy Class	0.1 (0.05)	0.1 (0.05)	0.1 (0.05)	0.1 (0.05)	0.2
Output Signal	± 25000 digits	± 5 V (± 10 V)	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)
Supply [V]	4 ... 6 from USB	12 ... 28	12 ... 28	12 ... 28	12 ... 28
Max. Speed [min^{-1}]	12000 ... 30000	12000 ... 30000	5000 ... 15000	5000 ... 15000	8000 ... 15000
Speed/Angle Measurement	Standard	Option	Option	Option	Option

					
DR-2412-R **DR-2412-R-P**	**DR-2212** **DR-2212-P**	**DR-2512** **DR-2512-P**	**DR-2212-R** **DR-2212-R-P**	**DR-2512-R** **DR-2512-R-P**	**DR-2500**
Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft, without bearings
0.1 ... 1000	0.1 ... 20000	0.1 ... 20000	0.1 ... 1000	0.1 ... 1000	0.005 ... 150
0.2	0.1 (0.05)	0.1 (0.05)	0.2	0.2	0.1
± 25000 digits	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)
12 ... 28	12 ... 28	12 ... 28	12 ... 28	12 ... 28	12 ... 28
8000 ... 15000	3500 ... 15000	3500 ... 15000	7000 ... 15000	7000 ... 15000	20000 ... 30000
Option	Option	Option	Option	Option	Option (only speed measurement)

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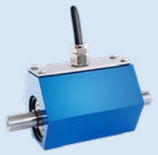
Non Contact Torque Sensors, Rotating					
Type	**DR-2600**	**DR-2477 DR-2477-P**	**DR-2554**	**DR-2800**	**MR-12**
Mechanical Connection	Cylindrical shaft, without bearings	Cylindrical shaft Cylindrical shaft with keyway	Disk hub, clamping ring hub, keyway hub, without bearings	Flange with spigot and female threads / Flange with center hole and mounting holes, without bearings	Center hole with keyway / Driving shaft with flange and mounting holes
Measuring Range [N·m]	0.005 ... 150	0.2 ... 200	50 ... 1000	50 ... 10000	20 ... 5000
Accuracy Class	0.1	0.25	0.1	0.1	0.1
Output Signal	± 25000 digits	± 5 V (± 10 V)	± 5 V (± 10 V)	± 5 V (± 10 V)	± 5 V (± 10 V)
Supply [V]	12 ... 28	12 ... 28	12 ... 28	12 ... 28	12 ... 28
Max. Speed [min^{-1}]	20000 ... 30000	8000 ... 10000	7300 ... 13600	8000 ... 15000	5000 ... 12000
Speed / Angle Measurement	Option (only speed measurement)	-	Option (only speed measurement)	Option (only speed measurement)	Option

	***Dual Range Torque Sensors***				
DR-2481	*Type*	**DR-2208 DR-2208-P**	**DR-2508 DR-2508-P**	**DR-2531 DR-2531-P**	**DR-2831 DR-2831-P**
External and internal spline drive	*Mechanical Connection*	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway	Cylindrical shaft Cylindrical shaft with keyway
260	*Measuring Range [N·m]*	0.5 / 5 ... 2000 / 20000	0.5 / 5 ... 2000 / 20000	0.5 / 5 ... 2000 / 20000	0.5 / 5 ... 2000 / 20000
0.5	*Accuracy Class*	0.1	0.1	0.1	0.1
± 10 V	*Output Signal*	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)	± 25000 digits
12 ... 28	*Supply [V]*	12 ... 28	12 ... 28	12 ... 28	12 ... 28
15000	*Max. Speed [min^{-1}]*	5000 ... 15000	5000 ... 15000	3500 ... 12000	3500 ... 12000
-	*Speed / Angle Measurement*	Option	Option	Option	Option

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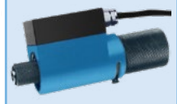
Non Contact Torque Sensors, Rotating for Screw Driving Systems						
Type	**DR-3001**	**DR-2113**	**DR-2413**	**DR-2493**	**DR-3003**	**DR-2153**
Mechanical Connection	Male square drive / Female square drive	Male square drive / Female square drive	Male square drive / Female square drive	Male square drive / Female square drive	¼″ hexagon drive / Quick change chuck	¼″ hexagon drive / Quick change chuck
Measuring Range [N·m]	0.1 ... 5000	0.1 ... 5000	0.1 ... 5000	0.1 ... 5000	0.1 ... 20	0.1 ... 20
Accuracy Class	0.1	0.1	0.1	0.25	0.1	0.1
Output Signal	± 25000 digits	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)
Supply [V]	4 ... 6 from USB	12 ... 28	12 ... 28	12 ... 28	4 ... 6 from USB	12 ... 28
Max. Speed [min^{-1}]	1000 ... 4000	1000 ... 4000	1000 ... 4000	1000 ... 4000	3000 ... 4000	3000 ... 4000
Speed/Angle Measurement	Standard	Option	Option	Option	Standard	Option

						
DR-2453	**DR-2494**	**DR-2114**	**DR-2414**	**DR-2124**	**DR-1986**	**DR-1987** **DR-1988**
¼″ hexagon drive / Quick change chuck	¼″ hexagon drive / Quick change chuck	¼″ hexagon drive / Quick change chuck	¼″ hexagon drive / Quick change chuck	External and internal spline drive	Male square drive / Female square drive	Male square drive / Female square drive
0.1 ... 20	0.1 ... 20	0.1 ... 20	0.1 ... 20	150 ... 500	1 ... 12	4 ... 80 60 ... 240
0.1	0.25	0.1	0.1	0.3	0.3	0.3
± 25000 digits	± 5 V (± 10 V)	± 5 V (± 10 V)	± 25000 digits	± 5 V (± 10 V)	± 5 V (± 10 V)	± 5 V (± 10 V)
12 ... 28	12 ... 28	12 ... 28	12 ... 28	12 ... 28	12 ... 28	12 ... 28
3000 ... 4000	3000 ... 4000	3000 ... 4000	3000 ... 4000	2000	2000	2000
Option	Option	Option	Option	Standard	Standard	Standard

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Technical Specification of Force Sensors

Tension Force Sensors				***Force Transmissions***	
Type	**K-1107**	**K-100**	**K-1368**	*Type*	**EF, EM, EF42, E2, ED7, E3**
Load Introduction / Mechanical Connection	External threading at both ends	External threading at both ends	Link plates at both ends	*Load Introduction / Mechanical Connection*	Diverse
Measuring Range [kN]	0.01 ... 0.2	1 ... 100	0.01 ... 0.2		
Accuracy Class	0.2	0.3	0.2		
Output Signal [mV/V]	0.5	1	1		
Excitation [V]	2 ... 6	2 ... 6 ... 2 ... 12	2 ... 6		
Range of Application	Miniature sensor, e.g. for survey of rope force or force determination of a bowden wire	Force sensor, e.g. for solar wing control or rope force measurement	Miniature sensor, e.g. for force determination of belt tensioners	*Range of Application*	Force transmissions, thrust pieces and mounting flanges

Compressive Force Sensors					
Type	**K-22**	**K-1613**	**K-13**	**K-13B**	**K-450**
Load Introduction / Mechanical Connection	Load button in rocker pin design / Bearing surface	Load button in rocker pin design / Mounting side with female threads	Load button in rocker pin design / Mounting side with female threads	Load button in rocker pin design / Mounting side with female threads	Load button in rocker pin design / Fixing hole, female threads on the mounting face
Measuring Range [kN]	0.05 ... 2	0.1 ... 50	0.01 ... 100	0.01 ... 100	1 ... 1000
Accuracy Class	0.5	0.5	0.5	0.5	0.1 ... 0.3
Output Signal [mV/V]	1	1	0.5 ... 1	0.5 ... 1	2
Excitation [V]	2 ... 6	2 ... 6 ... 2 ... 12	2 ... 6 ... 2 ... 12	2 ... 6 ... 2 ... 12	2 ... 12
Range of Application	Miniature sensor for shear force and press-in force measurement	Miniature sensor, e.g. for control of press-in force	E.g. for press-in force control, tablet presses	With overload protection e.g. for press-in force control, tablet presses	Universal compression sensor, e.g. for survey of surface pressure plates or press-in force

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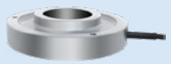
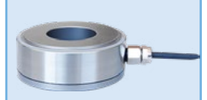
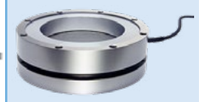
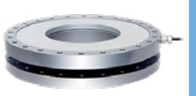
Compressive Force Sensors					
Type	**K-2071**	**K-2283**	**K-2528**	**K-2529**	**K-14**
Load Introduction / Mechanical Connection	Load button in rocker pin design / Mounting side with center hole	Plan surface at both ends	Plan surface with central through hole and mounting holes	Plan surface with central through hole and mounting holes	Plan surface with central through hole
Measuring Range [kN]	5 ... 15	50 ... 150	0.2 ... 10	0.5 ... 20	0.05 ... 100
Accuracy Class	0.3	1	1	1	0.5
Output Signal [mV/V]	1	1	1	1	1
Excitation [V]	2 ... 6	2 ... 12	2 ... 12	2 ... 12	2 ... 12
Range of Application	Miniature sensor, e.g. for industrial process control for press fitting, riveting, clinching, stamping	Miniature sensor, e.g. for pressing tools, impact measurements, crash testing, punch, stamping	E.g. for press-in force control	E.g. for press-in force control	E.g. for press-in force control

				**Force Transmissions**	
K-181	**K-18**	**K-1250**	**K-2698**	*Type*	**EF, EM, EF42, E2, ED7, E3**
Plan surface with central through hole	Plan surface with central through hole and spigot at both ends	External ring surface with spigot at the lower external ring	Plan surface with female threads at both ends	*Load Introduction / Mechanical Connection*	Diverse
15 ... 1500	5 ... 5000	2 ... 100	100 ... 600		
1 ... 3	0.5	0.5	0.5 ... 1.0		
1	1	1	1		
2 ... 6	2 ... 12	2 ... 12	2 ... 12		
E.g. for preload measurement of screws	Small measured displacement < 0.1 mm, e.g. for press-in force control	E.g. for press-in force control	E.g. for industrial process control for press fitting, riveting, clinching, stamping, drawing	*Range of Application*	Force transmissions, thrust pieces and mounting flanges

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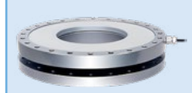
Tension and Compression Force Sensors					
Type	**K-1563**	**K-12**	**K-2145**	**K-1427**	**K-25**
Load Introduction / Mechanical Connection	External threading at both ends	External threading at both ends	External threading / Mounting face with female screw threads	External threading / Central internal screw thread	Internal threads at both ends
Measuring Range [kN]	0.1 ... 2	0.5 ... 1000	0.5 ... 200	0.5 ... 200	0.02 ... 50 (2 kg ... 5000 kg)
Accuracy Class	0.15 ... 0.3	0.1 ... 0.25	0.1 ... 0.25	0.1 ... 0.25	0.1 ... 0.2
Output Signal [mV/V]	1 ... 2	2	1 ... 2	1 ... 2	1 ... 2
Excitation [V]	2 ... 6 ... 2 ... 12	2 ... 12	2 ... 12	2 ... 12	2 ... 12
Range of Application	E.g. for material testing or rope force measuring	E.g. for tension / compressive testing machines or survey of actuating forces	E.g. for material testing or spring force measuring	E.g. for material testing machines or press-in force measurement	E.g. for tension / compressive testing machines

		**Dual Range Sensor**		**Force Transmissions**	
K-2698	**K-11**	*Type*	**K-1882**	*Type*	**EF, EM, EF42, E2, ED7, E3**
Plan surface with female threads at both ends	Plan surface with central internal thread, through holes for screws, fixing hole	*Load Introduction / Mechanical Connection*	Plan surface with spigot and female threads at both ends	*Load Introduction / Mechanical Connection*	Diverse
100 ... 600	0.5 ... 2000	*Measuring Range [kN]*	1 / 10 15 / 150		
0.5 ... 1.0	0.05 ... 1.0	*Accuracy Class*	0.2 ... 0.4		
1	2	*Output Signal [mV/V]*	1		
2 ... 12	2 ... 12	*Excitation [V]*	2 ... 12		
E.g. for industrial process control for press fitting, riveting, clinching, stamping, drawing	E.g. for material testing machines, press-in force measurement, roll force applications	*Range of Application*	E.g. for monitoring of assembly forces in the automobile industry	*Range of Application*	Force transmissions, thrust pieces and mounting flanges

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Extract from Special Sensors					
Type	**K-1661**	**K-2148**	**DZ-1**	**K-2565**	**K-1509**
Load Introduction / Mechanical Connection	Pin diameters	Spigot with mounting holes / Center hole with clamping	Link plate with holes at both ends	Ergonomically shaped handle	Plan surface with mounting holes
Measuring Range	20 ... 400 kN	1 ... 2 kN	300 µm/m	1500 N	2 ... 20 N
Accuracy Class	1	0.5	0.5	0.1	0.2
Output Signal [mV/V]	1	0.5 ... 1	ca. 0.5	1	1
Excitation [V]	2 ... 12	2 ... 12	2 ... 12	2 ... 12	2 ... 6
Range of Application	Load measuring pin, e.g. for load measurement in deflector rolls	Web tension sensor, e.g. for tension measurement of belt conveyors in the paper industry	Stress sensor, e.g. for survey of press-in force, material stress or liquid level monitoring	Force sensor for hand force measurement (medical load cell)	Force sensor with very compact dimensions, e.g. for measurement of ball bearing friction

	***Force Transmissions***	
K-2618	*Type*	**EF, EM, EF42, E2, ED7, E3**
Around the circumference 3x 120°	*Load Introduction / Mechanical Connection*	Diverse
30 ... 300 kN		
1		
1		
2 ... 12		
Force sensor, e.g. for measurement of tension forces in lathe chucks	*Range of Application*	Force transmissions, thrust pieces and mounting flanges

Lorenz Messtechnik GmbH • Obere Schloßstraße 127/129/131 • D - 73553 Alfdorf
Tel. +49 (7172) 93730-0 • Fax +49 (7172) 93730-22 • e-mail: info@lorenz-messtechnik.de

Technical Specification of Multi-Component Sensors

Reaction Torque/Force Sensors, Non-Rotating					
Type	**M-2416**	**M-1902**	**M-2230**	**M-1983**	**M-2396**
Load Introduction / Mechanical Connection	External thread / Spigot with female threads	Central female thread / Mounting surface at the major diameter with female threads	Central female thread / Mounting surface at the major diameter with female threads	Central female thread / Mounting surface at the major diameter with female threads	Flange with center hole and female threads at both ends
Measuring Range	0.1 N·m / 20 N 0.5 N·m / 50 N	100 N·m/ 100 N·m/ 100 kN	100 N·m/ 100 N·m/ 100 kN	60 N·m/ 60 N·m/ 40 kN	0.5 kN / 5 N·m 1 kN / 10 N·m 1 kN / 30 N·m 20 kN / 20 N·m 0.5 kN / 50 N·m 2 kN / 50 N·m
Accuracy Class	0.2 (F) 0.2 (Mt)	0.2	0.2	0.5	0.3 (F) 0.2 (Mt)
Output Signal [mV/V]	0.5	0.5	0.5	0.5	1
Excitation [V]	2 ... 8	2 ... 12	2 ... 12	2 ... 12	2 ... 12
Range of Application	E.g. the optimization of the granulation of abrasives	Screw testing: Thread and screw head friction torque, preload measurement	Screw testing: Thread and screw head friction torque, preload measurement	Screw testing: Thread and screw head friction torque, preload measurement	E.g. optimization of the cutting force of drills

		***Non Contact Torque/Force Sensors, Rotating***	
M-2025	**M-2354**	*Type*	**M-2371**
Spigot with female threads / Plan surface with female threads	Plan surface with center hole and female threads at both ends	*Load Introduction / Mechanical Connection*	Shaft end with keyway / external thread
10 kN / 10 N·m 20 kN / 20 N·m	10 kN / 10 N·m	*Measuring Range*	2 N·m / 100 N 5 N·m / 250 N 5 N·m / 500 N
0.2 (F) 0.2 (Mt)	0.2 (F) 0.2 (Mt)	*Accuracy Class*	0.4 (F) 0.2 (Mt)
1	1	*Output Signal*	± 5 V (± 10 V)
2 ... 12	2 ... 12	*Supply [V]*	12 ... 28
E.g. survey of the characteristics of elastomers	E.g. survey of the bearing friction of ball bearings	*Max. Speed [min^{-1}]*	3000
		Measurement of Speed / Angle	Option

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Product Overview of Amplifiers

For sensors, measurement technology and automation we manufacture the right measuring amplifier for every application.

Thus, you can measure your sensor signals reliably and with high precision and process the measured data evaluations with our configuration and evaluation software.

Sensor Interfaces

Tabletop and Laboratory Measuring Devices

DIN Mounting Rail Devices

Built-In Measuring Devices

Portable Measuring Systems

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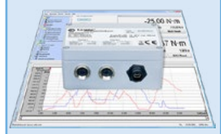
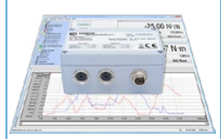
Sensor Interfaces

Analog	Type	Technical Details
	**LCV**	The strain gauge (SG) sensor interface serves for the conversion of SG-based sensor (e.g. force and torque sensors or load cells) output signals to normed voltage signals of ±5 V, ±10 V, 0/4 ... 20 mA, 10±10 mA or 12±8 mA for the direct connection to e.g. a PLC or production machine.
	**SI**	The strain gauge (SG) measuring amplifier is suitable for the conversion of SG-based sensor (e.g. force and torque sensors or load cells) output signals to normed voltage signals of ±5 V, ±10 V, 0/4 ... 20 mA, 10±10 mA or 12±8 mA for the direct connection to e.g. a PLC or production machine.

Digital	Typ	Technical Details
	**LCV-USB3**	USB sensor interface with freely available configuration and evaluation software VS3: The evaluation and excitation of the connected sensor occurs via the USB interface of the PC. Sensors with output signals of mV/V, ±5 V, ±10 V, 0/4 ... 20 mA, 10±10 mA or 12±8 mA are suitable for the connection.
	**SI-USB**	2 channel USB sensor interface with freely available configuration and evaluation software VS3: The evaluation and excitation of the connected sensor occurs via the USB interface of the PC. Sensors with output signals of mV/V, ±5 V, ±10 V or 0/4 ... 20 mA are suitable for the connection.
	**SI-RS485**	2 channel RS485 sensor interface with freely available configuration and evaluation software VS3: The evaluation and excitation of the connected sensor occurs via the RS485 interface. Sensors with output signals of mV/V, ±5 V, ±10 V or 0/4 ... 20 mA are suitable for the connection.

Digital	Type	Technical Details
	**SI-ETH**	2 channel Ethernet sensor interface with freely available configuration and evaluation software VS3: The evaluation and excitation of the connected sensor occurs via the Ethernet interface of the PC. Sensors with output signals of mV/V, ±5 V, ±10 V or 0/4 ... 20 mA are suitable for the connection.
	**SI-USB3**	4 channel sensor interface with freely available configuration and evaluation software VS3: The evaluation and excitation of the connected sensor occurs via the USB interface of the PC. Sensors with output signals of mV/V, ±5 V, ±10 V, 0/4 … 20 mA, 10±10 mA or 12±8 mA are suitable for the connection.

Tabletop and Laboratory Measuring Devices

	Type	Technical Details
	**GM 80-TG**	Measuring amplifier with data logger for up to 3000 measured values for active and passive sensors, with adressable RS232 bus, 3 control inputs for external control, 10 sensor parameter sets, fast measurement of up to 1000/s and with freely available configuration and evaluation software GM80-VS2
	**DD-2002**	2 channel digital display for torque / speed, torque / angle or force / displacement measurement

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DIN Mounting Rail Devices

	Type	Technical Details
	**GM 40**	Amplifier for strain gauge sensors for DIN mounting rails, voltage output or voltage and current output
	**GM 42-MAX**	Minimum and maximum value memory device for DIN mounting rails, with 0 ... ±10 V input universally applicable
	**GM 44-GW**	The limit value evaluation with 2 adjustable limit values, 0 ... ±10 V input, universally applicable
	**CPJ / CPJ2S**	Measuring amplifier for strain gauge sensors in 4- or 6-wire circuit for DIN mounting rails with voltage and current output, 4 parallel sensor connections, shunt calibration signal push button, low pass filter and 2 adjustable set points
	**GM 62**	Measuring amplifier for strain gauge sensors for DIN mounting rails with voltage output, 2 parallel sensor connections, external control, abatable clamps
	**IPE 50 DIN**	Digital weighing indicator with OIML-approval for DIN mounting rails, connection of up to 8 strain gauge sensors Output: RS485, RS232, PROFIBUS DP in option
	**GM 41-NT**	PSU (Power Supply Unit) for DIN mounting rail assembly with overload protection, output adjustable (23 ... 28.5 V). The GM41-NT is an efficient, primary switched mode power supply unit for use in switch cabinets, clip fastening TH 35-rail assembly in slim design. By its wide range input it is world-wide applicable. The GM41-NT complies with the EN 60335-1 standard.

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Built-In Measuring Devices

	Type	Technical Details
	**GM 80-PA**	Measuring amplifier with data logger for up to 3000 measured values for active and passive sensors, with adressable RS232 bus, 3 control inputs for external control, 10 sensor parameter sets, fast measurement of up to 1000/s and with freely available configuration and evaluation software GM80-VS2.
	**IPE 50 Panel**	Digital weighing indicator with OIML-approval, connection of up to 8 strain gauge sensors Output: RS485, RS232, PROFIBUS DP in option
	**PAX**	Programmable industry-digital built-in measuring devices
	**PAX-DP**	Programmable 2 channel industry built-in measuring devices

Portable Measuring Systems

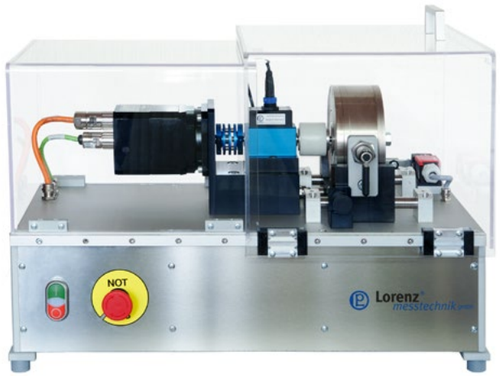
	Type	Technical Details
	**GM 77**	DC voltage measuring amplifier for strain gauge sensors, mains-independent, a 4½ digit LCD-display, calibration control switch and maximum value memory
	**GM 80**	Measuring amplifier with data logger for over 15000 measured values for active and passive sensors, USB interface, RS232 interface, 10 sensor parameter sets, fast measurement of up to 1000/s, mains-independent and with freely available configuration and evaluation software GM80-VS2
	**AL 202**	Measuring amplifier, latest generation V7 with data logger function for D7 sensors (passive sensors with mV/V output signal and D7 plug), sensor specific parameters in the digital measurement plug, fast measurements up to 1000/s, mains-independent

Further information can be found on the company website www.lorenz-messtechnik.de

Test Benches

We provide customized system solutions and test benches such as torgue test benches, electric motor test rigs, force test stands, automotive test rigs and characteristics detection, from development to finished product, everything from one source.

Torque Test Benches



Test Bench for Determination of the Torque Characteristics of Fixation Bearings:

- Measurement of the drag loss and the rotational speed
- Determination of the torque characteristics in response to the rotational speed

Electric Motor Test Rigs

DC-Low-Voltage Motor Test Bench:

- Measurement of torque, number of revolutions, voltage and current
- determination of the mechanical and electrical performance and the efficiency

Force Test Stands

Test Bench for Measuring Tension and Compression Forces:

- Electromechanical drive via recirculating ball screw
- Maximum measuring force: 100 kN
- Maximum height of useable space: 500 mm
- Maximum useable space between the pillars: 260 mm
- Maximum traverse path: 250 mm

Automotive Test Rigs

Friction Torque Test Rig
Testing Parameter:

- Torque
- Rotational Angle
- Temperature
- Speed

Do you have any questions about our test benches or products? Please write to us or give us a call. Our competent staff will be happy to help and answer your questions.

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Calibrations

Lorenz Messtechnik GmbH is a manufacturer of force and torque sensors, as well as a supplier of load cells and systems for sensor signal processing and has its own accredited calibration laboratory according to DIN EN ISO/IEC 17025.

For our products we offer DAkkS and proprietary calibrations. Proprietary calibrations are carried out with working standards which are subject to regular inspection equipment monitoring. Our calibration spectrum includes measured variables such as **force**, **torque**, **rotation angle** and **voltage ratio**.

DAkkS-Calibration Laboratory for Torque Sensors

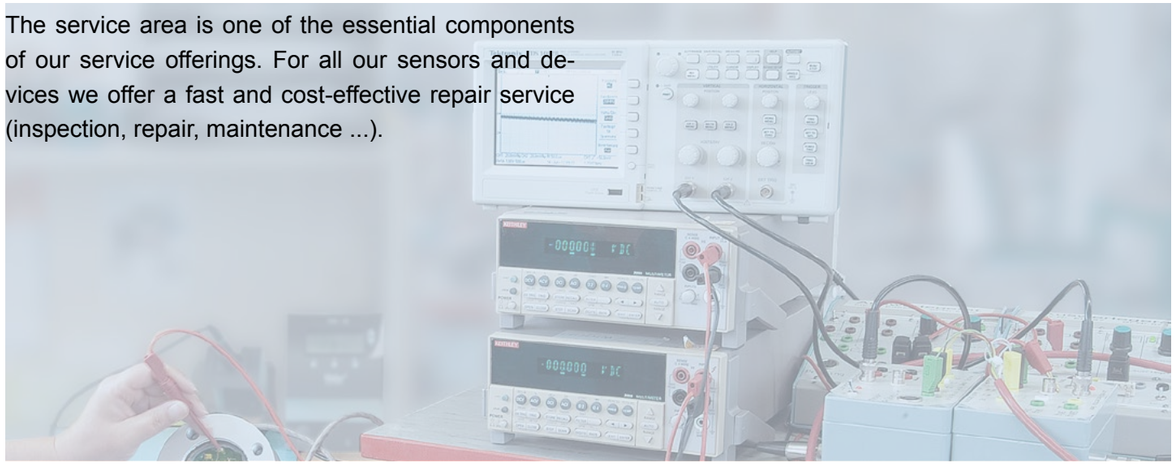
The torque standard of our accredited calibration laboratory is used as the reference standard for our torque calibration devices which are inserted within production.

- Torque Measuring Range 1 N·m - 200 N·m
- Uncertainty of Measurement $1 \cdot 10^{-4}$

ilac-MRA

DAkkS
Deutsche
Akkreditierungsstelle
D-K-17603-01-00

Repairs



The service area is one of the essential components of our service offerings. For all our sensors and devices we offer a fast and cost-effective repair service (inspection, repair, maintenance ...).

Strain Gauges (SG) Application

With the aid of a strain gauge, strains and stresses in material can be determined, which enable conclusions to be drawn about the stress of the component.
We conduct professional in-house SG applications on your components tailored to your specific needs.
Thanks to our employees' many years of experience in the field of SG application, we ensure the highest quality and a very long life of the measurement points.

Examples:

Strain Gauge Application on Clamp

Strain Gauge Application on Holding Bracket

Strain Gauge Application on Oil Line

Strain Gauge Application on Tie Rod

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Lorenz *sensors worldwide*

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at the highest level:

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73553 Alfdorf
Tel. +49 7172 - 93730-0
Fax +49 7172 - 93730-22
www.lorenz-messtechnik.de
e-mail: info@lorenz-messtechnik.de

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