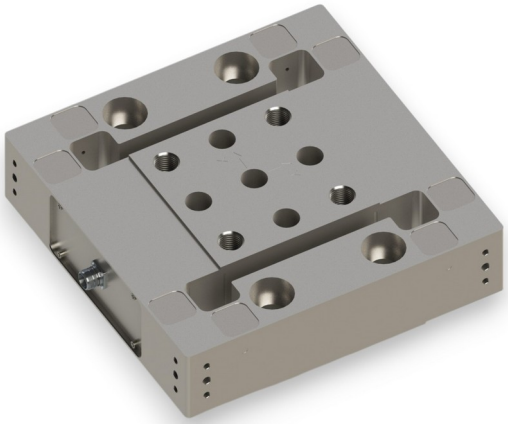
3-Axis Force Sensor K3D400 500kN

Item number: 5532



Highlights

- Compensation matrix "s" for minimized crosstalk

The 3-axis sensor K3D400 is suitable for measuring force in three perpendicular axes. Force is applied onto the 200mm x 200mm platform. A test-specimen can be installed on this surface with four M30 screws. The bottom of the sensor is fixed to the bottom with four M30 screws. The screw-mounting surfaces must end flush with the sensor.

Calibration of 3-Axis Force Sensors – From Standard (cv) to High Precision (s)

A key characteristic of 3D force sensors is crosstalk: applying a force also triggers a measurement in the two unloaded axes. Thanks to several compensation mechanisms (mechanical and electrical), crosstalk is typically less than 3% of the nominal load. Crosstalk is reproducible and proportional to the amplitude of the applied force. By applying an additional compensation matrix, crosstalk in all axes can be reduced to a maximum of less than 1%.

By default, you receive two factory calibrations, each with two measurement points:

one **without a compensation matrix (“cv”)** and one **with extended matrix compensation (“s”)**.

For detailed proof of the sensor's linearity, you can optionally **extend the calibration to 4 or 6 measurement points:**

- Factory calibration certificate HL/4 (4 measurement points)
- Factory calibration certificate SL/6 (6 measurement points)

This ensures your sensor is optimally calibrated to your application from the very first measurement.

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Stand: 06.11.2026

Optional special version

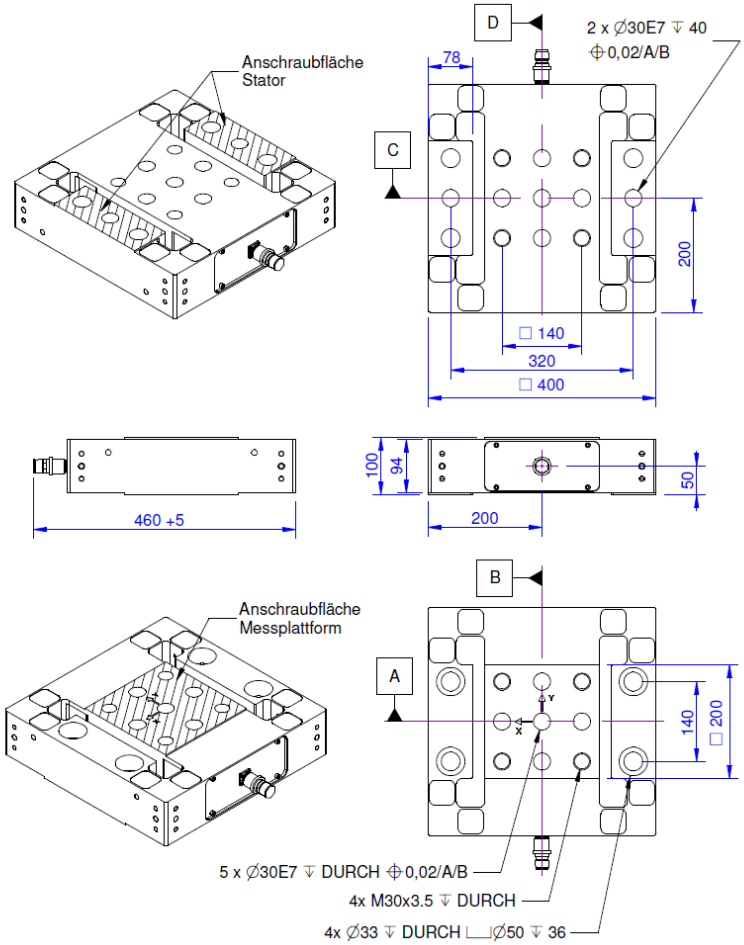
- Protection class IP68: from rated force 200 N
- Pressure range up to 8 bar
- Suitable for cleanrooms

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Technical Drawing



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Technical Data

Basic Data		Unit
Type	3-axis force sensor	
Force direction	Tension/Compression	
Rated force Fx	500	kN
Rated force Fy	500	kN
Rated force Fz	500	kN
Force introduction	Internal thread	
Dimension 1	4xM30x3,5	
Sensor Fastening	Through-hole	
Dimension 2	4xØ33	
Operating force	150	%FS
Rated displacement	0.3	mm
Material	tool steel	
Surface	Galvanisch verzinkt	
Natural frequency fx	10	kHz
Dimensions	400 x 400 x 100	mm³
Height	100	mm
Length or Diameter	400	mm
Torque limit	15	kNm
Bending moment limit	15	kNm
Variants	500 kN	

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Electrical Data		Unit
Zero signal	0.05	mV/V
Rated range of excitation voltage from	2.5	V
Rated range of excitation voltage to	5	V
Operating range of excitation voltage from	1	V
Operating range of excitation voltage to	10	V
Input resistance x-axis	740	Ohm
Output resistance x-axis	700	Ohm
Input resistance y-axis	740	Ohm
Output resistance y-axis	700	Ohm
Input resistance z-axis	740	Ohm
Output resistance z-axis	700	Ohm
Insulation resistance	5x10^9	Ohm
Tolerance input resistance	5	Ohm
Tolerance output resistance	5	Ohm

Eccentricity and Crosstalk		Unit
Influence of eccentric load to FS	1	%FS / 500Nm
Crosstalk from x to y at rated load	1	%FS
Crosstalk from y to x at rated load	1	%FS
Crosstalk from z to x/y at rated load	1	%FS
Crosstalk from x/y to z at rated load	2	%FS

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Accuracy Data		Unit
Accuracy class	0,5	
Relative linearity error	0.2	%FS
Relative zero signal hysteresis	0.02	%FS
Temperature effect on zero signal	0.02	%FS/K
Temperature effect on characteristic value	0.02	%RD/K
Relative creep	0.1	%FS

Environmental Data		Unit
Rated temperature range from	-10	°C
Rated temperature range to	70	°C
Operating temperature range from	-10	°C
Operating temperature range to	85	°C
Storage temperature range from	-10	°C
Storage temperature range to	85	°C
Environmental protection	IP67	

Abbreviation : RD: „Reading"; FS: „Full Scale"The exact sensitivity is indicated in the test reportCrosstalk is less than 2% when using the compensation matrix (type s).
Without using the compensation matrix, crosstalk is less than 3% (matrix type cv).

Pin Assignment

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Channel	Symbol	Description	Wire color	PIN
X-Axis	+Us	sensor supply	brown	2
	-Us	sensor supply	white	1
	+Ud	bridge output	green	3
	-Ud	bridge output	yellow	4
Y-Axis	+Us	sensor supply	pink	6
	-Us	sensor supply	grey	5
	+Ud	bridge output	blue	7
	-Ud	bridge output	red	8
Z-Axis	+Us	sensor supply	purple	10
	-Us	sensor supply	black	9
	+Ud	bridge output	grey / pink	11
	-Ud	bridge output	red / blue	12

Pressure load: positive output signal.Shield- transparent.

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