

3A120 ±5kN/VA



Description

The 3-axis force sensor K3D120 is suitable for measuring force in three mutually perpendicular axes.

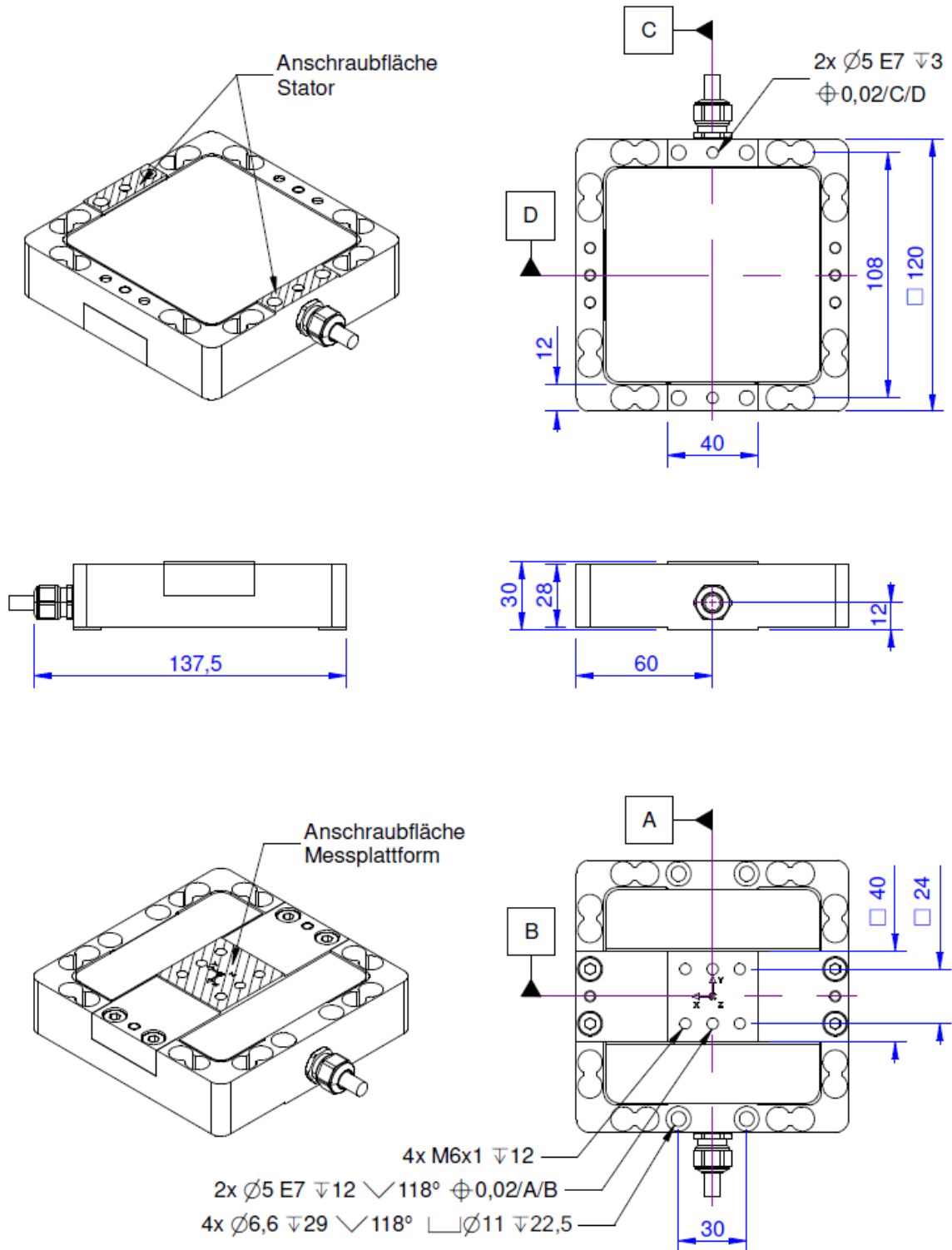
It is ready for 50N to 5kN in all three axes and can optionally be manufactured in other measurement ranges.

The force sensor is made of high-strength aluminium alloy up to the 1kN measurement range. From 1kN onwards, the force sensor is made from the material stainless steel 1.4542 (option "VA").

It stands out due to its particularly compact structure, with an area of 120mm x 120mm and a low total height of just 30mm.

Example application areas include force measurement in production processes, force control in handling machines, force measurement in assembly processes, and three-dimensional load measurement.

Dimensions



Technical Data

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	5 kN
Rated force Fy	5 kN
Rated force Fz	5 kN
Force introduction	Inner thread
Dimension 1	4xM6
Sensor Fastening	Through bore
Dimension 2	4xØ6,6
Operating force	150 %FS
Rated displacement	0.06 mm
Material	Stainless steel
Natural frequency	6 kHz
Height	30 mm
Length or Diameter	120 mm
Torque limit	300 Nm
Bending moment limit	300 Nm

Precision

Accuracy class	0,5%
Relative linearity error	0.2 %FS
Temperature effect on zero signal	0.02 %FS/K
Temperature effect on characteristic value	0.01 %RD/K
Relative creep	0.1 %FS

Connection Data

Connection type	12 conductor open
Name of the connection	Unitronic FD CP (TP) Plus 6 x 2 x 0,14
Cable length	3 m

Eccentricity and Crosstalk

Allowed torque according of eccentric load	100 Nm
Influence of eccentric load to FS	1 %FS / 100Nm
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

Temperature

Rated temperature range f	-10 ... 70 °C
Operating temperature range f	-10 ... 85 °C
Storage temperature range f	-10 ... 85 °C

Environmental protection

IP67

Electrical Data

Rated output x-axis	1 mV/V
Rated output y-axis	1 mV/V
Rated output z-axis	1 mV/V
Zero signal	0.05 mV/V
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 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	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	5 Ohm

Abbreviation: RD: „Reading“; FS: „Full Scale“;

1) 0,5mV/V bis 50N; 1mV/V ab 100N.

The exact nominal sensitivity is indicated in the test report;






Pin Configuration

Channel	Symbol	Description	Wire colour	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.

accessories

	Description	Description
	GSV-1A4 SubD37/2	4-channel strain gauge measuring amplifier for sensors with strain gauges. Adaptation of the sensor via Sub-D-37 connector . Output $\pm 10V$ and 4 ... 20mA via 15-pin SUB-D (female); Input sensitivity 2mV/V;
	Configuration SubD37/m	Assembling the connector to sensor cable; Connector Type SubD, 37 pin, male (male), with hood
	GSV-4USB SubD37	4-channel strain measurement amplifier with USB port with configurable input for strain gauges, temperature sensors, active sensors, displacement sensors and other sensors. Sensor connection via 1 piece Sub D37 connector
	High Accuracy Calibration/3D	
	Calibration Certificate kn/20/5/K3D	Factory calibration certificate for force to 20 kN in accordance with DIN EN ISO / IEC 17025 for test materials monitoring according to DIN ISO 9001: 2008 with 5 load levels and 3 series of measurements.