



Description

The K3A 3-axis sensor is designed for measuring force in three mutually perpendicular axes. This product group has a wide measurement ranges for the forces.

The K3A S3-Axis Force Sensors are developed for the following applications:

1. Robotics,
2. Medical technology,
3. Measurements in automation technology,
4. Mounting and Assembling of Parts in Production Lines,
5. 6-Axis Force/Torque Platforms consisting of 4x K3A Sensors,
6. Research and Testing.

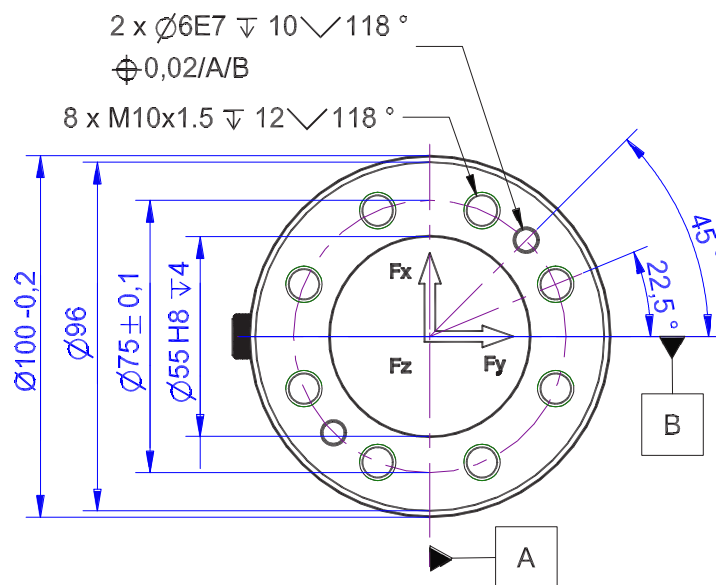
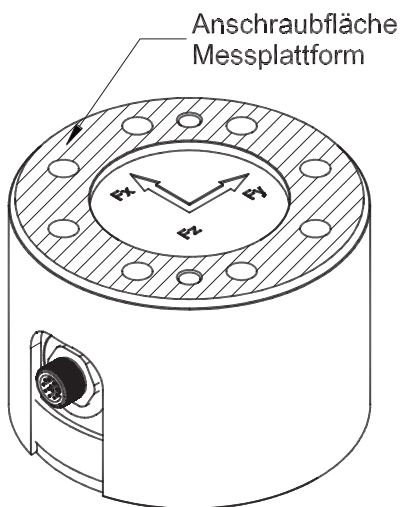
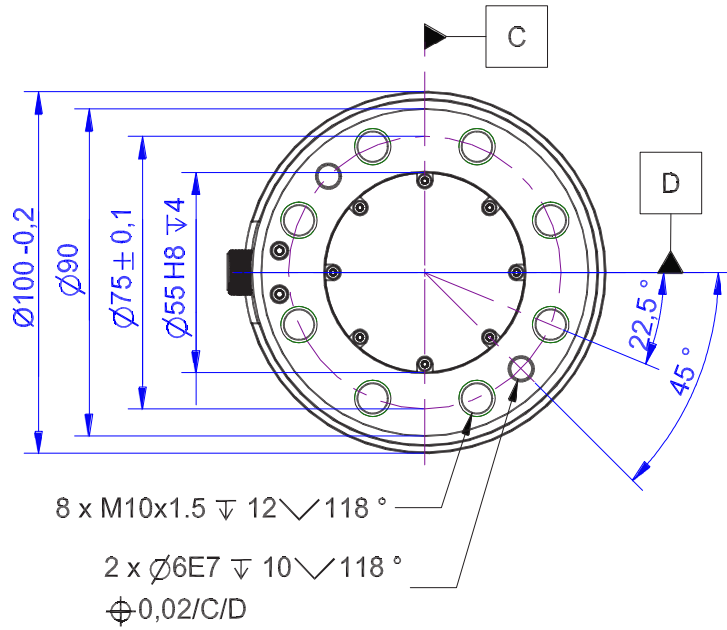
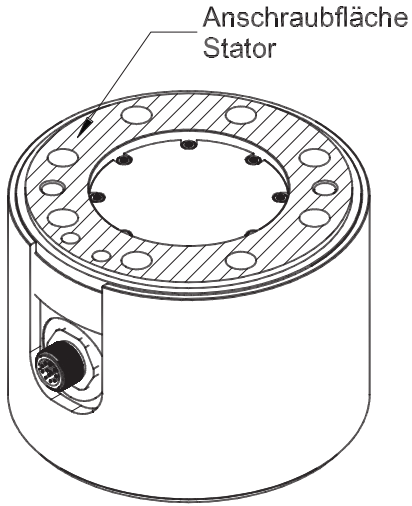
The calibration document contains the individual calibration factors and crosstalk data of the sensor. The crosstalk optionally can be minimized by application of an additional error compensation matrix. The K3A sensors can be operated without additional compensation matrix.

During the application, please take care to ensure that the maximum bending moments are not exceeded. The lever arms are calculated from the sensor origin, which is in the center of the mounting surface (on the top surface).

Technical characteristics

Modèles	K3A100 ($\pm 10\text{kN}$)	K3A100 ($\pm 25\text{kN}$)
Fx [kN]	10	25
Fy [kN]	10	25
Fz [kN]	20	60
Connectique	Connecteur	Connecteur
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Dimensions



Specification : Model K3A100 - 10kN

Force sensor	
Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	10 kN
Rated force Fy	10 kN
Rated force Fz	20 kN
Force introduction	Inner thread
Dimension 1	8xM10x1.5
Sensor Fastening	Inner thread
Dimension 2	8xM10x1.5
Operating force	150 %FS
Material	Stainless steel
Height	72 mm
Length or Diameter	100 mm
Torque limit	1.5 kNm
Bending moment limit	0.5 kNm

Precision

Accuracy class	0,2%
Relative linearity error	0.2 %FS
Temperature effect on zero signal	0.01 %FS/K
Temperature effect on characteristic value	0.01 %RD/K
Relative creep	0.01 %FS

Connection Data

Connection type	Connector
Name of the connection	integrated round plug connector MP11, 24-pole, male

Eccentricity and Crosstalk

Crosstalk from x to y at rated load	2 %FS
Crosstalk from y to x at rated load	2 %FS
Crosstalk from z to x/y at rated load	1 %FS
Crosstalk from x/y to z at rated load	1

Temperature

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

Electrical Data

Rated output x-axis	1.5 mV/V / FS
Rated output y-axis	1.5 mV/V / FS
Rated output z-axis	0.8 mV/V / FS
Zero signal	0.05 mV/V

Specification : Model K3A100 - 10kN

Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Input resistance x-axis	700 Ohm
Output resistance x-axis	700 Ohm
Input resistance y-axis	700 Ohm
Output resistance y-axis	700 Ohm
Input resistance z-axis	1400 Ohm
Output resistance z-axis	1400 Ohm
Insulation resistance	5 GOhm

Abbreviation: RD: „Reading“; FS: „Full Scale“;
The exact nominal sensitivity is indicated in the test report;

Specification : Model K3A100 - 25kN

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	25 kN
Rated force Fy	25 kN
Rated force Fz	60 kN
Force introduction	Inner thread
Dimension 1	8xM10x1.5
Sensor Fastening	Inner thread
Dimension 2	8xM10x1.5
Operating force	150 %FS
Material	Stainless steel
Height	72 mm
Length or Diameter	100 mm
Torque limit	4 kNm
Bending moment limit	1 kNm

Precision

Accuracy class	0,2%
Relative linearity error	0.2 %FS
Temperature effect on zero signal	0.01 %FS/K
Temperature effect on characteristic value	0.01 %RD/K
Relative creep	0.01 %FS

Connection Data

Connection type	Connector
Name of the connection	integrated round plug connector MP11, 24-pole, male

Eccentricity and Crosstalk

Crosstalk from x to y at rated load	2 %FS
Crosstalk from y to x at rated load	2 %FS
Crosstalk from z to x/y at rated load	1 %FS
Crosstalk from x/y to z at rated load	1

Temperature

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

Electrical Data

Rated output x-axis	1.5 mV/V / FS
Rated output y-axis	1.5 mV/V / FS
Rated output z-axis	0.8 mV/V / FS
Zero signal	0.05 mV/V

Specification : Model K3A100 - 25kN

Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Input resistance x-axis	700 Ohm
Output resistance x-axis	700 Ohm
Input resistance y-axis	700 Ohm
Output resistance y-axis	700 Ohm
Input resistance z-axis	1400 Ohm
Output resistance z-axis	1400 Ohm
Insulation resistance	5 GOhm






Abbreviation: RD: „Reading“; FS: „Full Scale“;
The exact nominal sensitivity is indicated in the test report;

Pin Configuration

Channel	Symbol	Description	Wire colour	PIN
x-axis	+Us	positive bridge supply	blue	2
	-Us	negative bridge supply	brown	1
	+Ud	positive bridge output	white	3
	-Ud	negative bridge output	green	4
y-axis	+Us	positive bridge supply	yellow	6
	-Us	negative bridge supply	pink	5
	+Ud	positive bridge output	black	7
	-Ud	negative bridge output	grey	8
z-axis	+Us	positive bridge supply	purple	10
	-Us	negative bridge supply	red	9
	+Ud	positive bridge output	grey / pink	11
	-Ud	negative bridge output	red / blue	12

Compressive load: positive output signal. Shield- transparent.

Accessories

Description	Description
 GSV-8DS	8-channel amplifier with USB port, analog output, UART interface. Other versions GSV-8AS CAN with Canbus and GSV-8AS EC with EtherCAT fieldbus.
 Connection cable MP11/f-D-Sub44HD/m/straight	Straight connection cable for connecting the K6D sensor to an 8-channel measuring amplifier GSV-8DS SubD44HD
 Connection cable MP11/f-D-Sub44HD/m/angled	Angled connection cable for connecting the K6D sensor to an 8-channel measuring amplifier GSV-8DS SubD44HD
 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.
 Calibration Certificate kn/200/5/K3D	Factory calibration certificate for force from 21 kN to 200 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.



