



Description

The K3D60a three-axis sensor is suitable for measuring force on three mutually perpendicular axes.

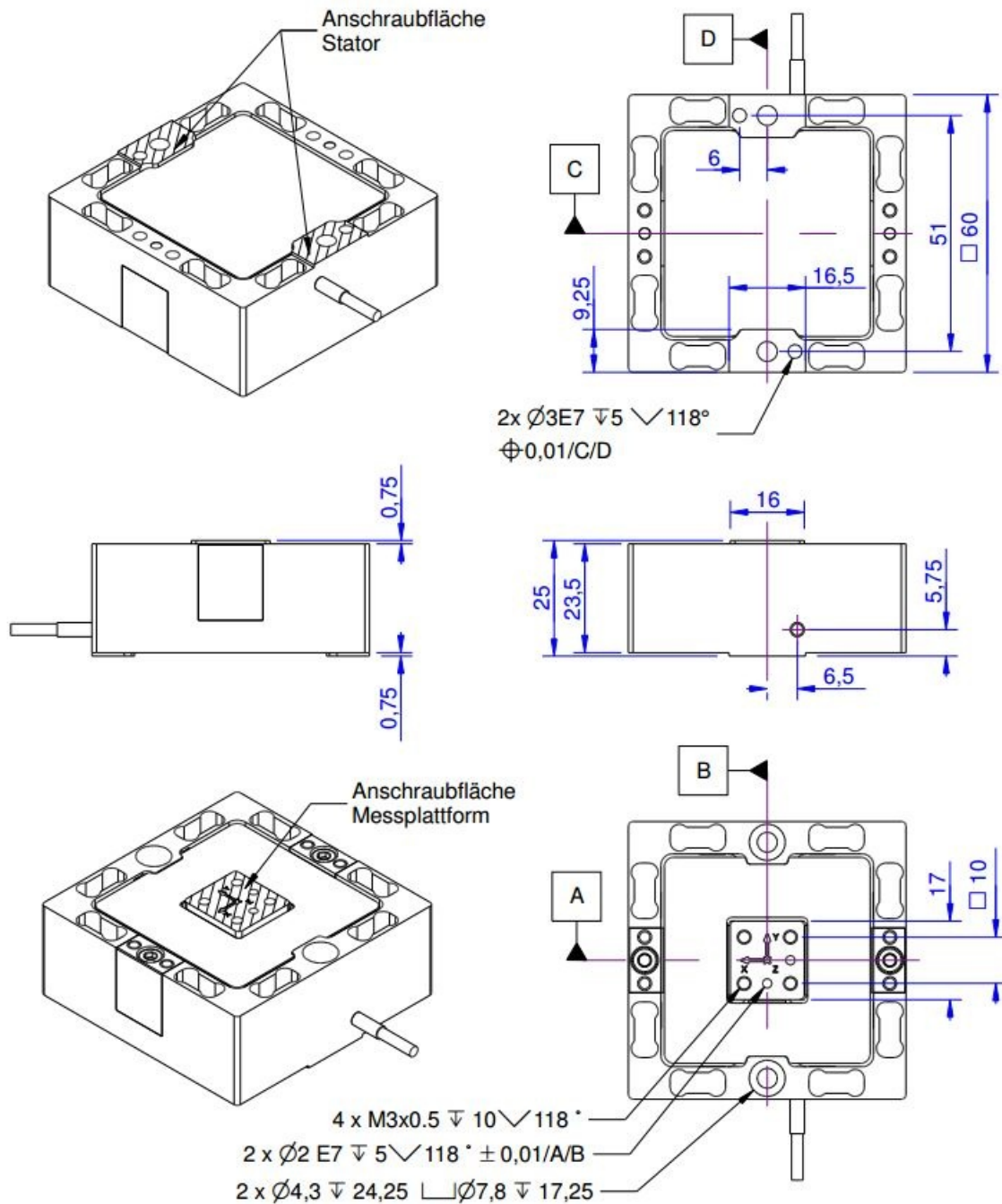
The new 3-axis sensor K3D60a is a further development of the series K3D60 and it is available in the measuring ranges $\pm 20\text{N}$ to $\pm 500\text{N}$. Up to a rated load of $\pm 100\text{N}$, these sensors are made of aluminum, from a rated load of $\pm 200\text{N}$ these force sensors are made of stainless steel.

The sensor K3D60 (11/2009 ... 02/2016) 2016 was replaced by the improved implementation K3D60a.

Technical characteristics

Modèles	K3D60a ($\pm 10\text{N}$)	K3D60a ($\pm 20\text{N}$)	K3D60a ($\pm 50\text{N}$)	K3D60a ($\pm 100\text{N}$)	K3D60a ($\pm 200\text{N}/\text{VA}$)	K3D60a ($\pm 500\text{N}/\text{VA}$)
Fx [N]	10	20	50	100	200	500
Fy [N]	10	20	50	100	200	500
Fz [N]	10	20	50	100	200	500
Connectique	12 conducteurs ouverts	12 conducteurs ouverts	12 conducteurs ouverts	12 conducteurs ouverts	12 conducteurs ouverts	12 conducteurs ouverts
Page	3-4	5-6	7-8	9-10	11-12	13-14

Dimensions



Specification : Model K3D60a - ±10N

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Force introduction	Inner thread
Dimension 1	4x M3x0,5
Sensor Fastening	Through bore
Dimension 2	2x Ø4,3
Operating force	200 %FS
Rated displacement	0.1 mm
Natural frequency	1 kHz
Dimensions	60 x 60 x 25 mm x mm x mm
Height	25 mm
Length or Diameter	60 mm
Torque limit	20 Nm
Bending moment limit	20 Nm

Precision

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

Connection Data

Connection type	12 conductor open
Name of the connection	STC-32T-12
Cable length	3 m

Eccentricity and Crosstalk

Influence of eccentric load to FS	1 %FS / 10Nm
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	2 %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	IP65

Electrical Data

Specification : Model K3D60a - $\pm 10\text{N}$

Rated output x-axis	0.5 mV/V / FS
Rated output y-axis	0.5 mV/V / FS
Rated output z-axis	0.5 mV/V / FS
Zero signal	0.1 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	395 Ohm
Output resistance x-axis	350 Ohm
Input resistance y-axis	395 Ohm
Output resistance y-axis	350 Ohm
Input resistance z-axis	395 Ohm
Output resistance z-axis	350 Ohm
Insulation resistance	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	10 Ohm

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

- 1) The exact rated output is reported in the test report .
- 2) K3D60a with 370 and 390 Ohm input impedance and 350 ohm output resistance

Specification : Model K3D60a - ±20N

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	20 N
Rated force Fy	20 N
Rated force Fz	20 N
Force introduction	Inner thread
Dimension 1	4x M3x0,5
Sensor Fastening	Through bore
Dimension 2	2x Ø4,3
Operating force	200 %FS
Rated displacement	0.1 mm
Material	Aluminium alloy
Natural frequency	1.5 kHz
Dimensions	60 x 60 x 25 mm x mm x mm
Height	25 mm
Length or Diameter	60 mm
Torque limit	20 Nm
Bending moment limit	20 Nm

Precision

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

Connection Data

Connection type	12 conductor open
Name of the connection	STC-32T-12
Cable length	3 m

Eccentricity and Crosstalk

Influence of eccentric load to FS	1 %FS / 10Nm
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	2 %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

Specification : Model K3D60a - $\pm 20\text{N}$

Environmental protection	IP65
Electrical Data	
Rated output x-axis	0.5 mV/V / FS
Rated output y-axis	0.5 mV/V / FS
Rated output z-axis	0.5 mV/V / FS
Zero signal	0.1 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	395 Ohm
Output resistance x-axis	350 Ohm
Input resistance y-axis	395 Ohm
Output resistance y-axis	350 Ohm
Input resistance z-axis	395 Ohm
Output resistance z-axis	350 Ohm
Insulation resistance	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	10 Ohm

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

- 1) The exact rated output is reported in the test report .
- 2) K3D60a with 370 and 390 Ohm input impedance and 350 ohm output resistance

Specification : Model K3D60a - ±50N

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	50 N
Rated force Fy	50 N
Rated force Fz	50 N
Force introduction	Inner thread
Dimension 1	4x M3x0,5
Sensor Fastening	Through bore
Dimension 2	2x Ø4,3
Operating force	200 %FS
Rated displacement	0.1 mm
Material	Aluminium alloy
Natural frequency	2 kHz
Dimensions	60 x 60 x 25 mm x mm x mm
Height	25 mm
Length or Diameter	60 mm
Torque limit	20 Nm
Bending moment limit	20 Nm

Precision

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

Connection Data

Connection type	12 conductor open
Name of the connection	STC-32T-12
Cable length	3 m

Eccentricity and Crosstalk

Influence of eccentric load to FS	1 %FS / 10Nm
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	2 %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

Specification : Model K3D60a - $\pm 50\text{N}$

Environmental protection	IP65
Electrical Data	
Rated output x-axis	0.5 mV/V / FS
Rated output y-axis	0.5 mV/V / FS
Rated output z-axis	0.5 mV/V / FS
Zero signal	0.1 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	395 Ohm
Output resistance x-axis	350 Ohm
Input resistance y-axis	395 Ohm
Output resistance y-axis	350 Ohm
Input resistance z-axis	395 Ohm
Output resistance z-axis	350 Ohm
Insulation resistance	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	10 Ohm

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

- 1) The exact rated output is reported in the test report .
- 2) K3D60a with 370 and 390 Ohm input impedance and 350 ohm output resistance

Specification : Model K3D60a - ±100N

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	100 N
Rated force Fy	100 N
Rated force Fz	100 N
Force introduction	Inner thread
Dimension 1	4x M3x0,5
Sensor Fastening	Through bore
Dimension 2	2x Ø4,3
Operating force	200 %FS
Rated displacement	0.1 mm
Material	Aluminium alloy
Natural frequency	3 kHz
Dimensions	60 x 60 x 25 mm x mm x mm
Height	25 mm
Length or Diameter	60 mm
Torque limit	20 Nm
Bending moment limit	20 Nm

Precision

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

Connection Data

Connection type	12 conductor open
Name of the connection	STC-32T-12
Cable length	3 m

Eccentricity and Crosstalk

Influence of eccentric load to FS	1 %FS / 10Nm
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	2 %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

Specification : Model K3D60a - $\pm 100\text{N}$

Environmental protection	IP65
Electrical Data	
Rated output x-axis	0.5 mV/V / FS
Rated output y-axis	0.5 mV/V / FS
Rated output z-axis	0.5 mV/V / FS
Zero signal	0.1 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	395 Ohm
Output resistance x-axis	350 Ohm
Input resistance y-axis	395 Ohm
Output resistance y-axis	350 Ohm
Input resistance z-axis	395 Ohm
Output resistance z-axis	350 Ohm
Insulation resistance	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	10 Ohm

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

- 1) The exact rated output is reported in the test report .
- 2) K3D60a with 370 and 390 Ohm input impedance and 350 ohm output resistance

Specification : Model K3D60a - $\pm 200\text{N/VA}$

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	200 N
Rated force Fy	200 N
Rated force Fz	200 N
Force introduction	Inner thread
Dimension 1	4x M3x0,5
Sensor Fastening	Through bore
Dimension 2	2x $\varnothing 4,3$
Operating force	200 %FS
Rated displacement	0.1 mm
Material	Stainless steel
Natural frequency	4 kHz
Dimensions	60 x 60 x 25 mm x mm x mm
Height	25 mm
Length or Diameter	60 mm
Torque limit	50 Nm
Bending moment limit	50 Nm

Precision

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

Connection Data

Connection type	12 conductor open
Name of the connection	STC-32T-12
Cable length	3 m

Eccentricity and Crosstalk

Influence of eccentric load to FS	1 %FS / 10Nm
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	2 %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

Specification : Model K3D60a - $\pm 200\text{N/VA}$

Environmental protection	IP65
Electrical Data	
Rated output x-axis	0.5 mV/V / FS
Rated output y-axis	0.5 mV/V / FS
Rated output z-axis	0.5 mV/V / FS
Zero signal	0.1 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	375 Ohm
Output resistance x-axis	350 Ohm
Input resistance y-axis	375 Ohm
Output resistance y-axis	350 Ohm
Input resistance z-axis	375 Ohm
Output resistance z-axis	350 Ohm
Insulation resistance	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	10 Ohm

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

- 1) The exact rated output is reported in the test report .
- 2) K3D60a with 370 and 390 Ohm input impedance and 350 ohm output resistance

Specification : Model K3D60a - ±500N/VA

Force sensor

Type	3-axis force sensor
Force direction	Tension / Compression
Rated force Fx	500 N
Rated force Fy	500 N
Rated force Fz	500 N
Force introduction	Inner thread
Dimension 1	4x M3x0,5
Sensor Fastening	Through bore
Dimension 2	2x Ø4,3
Operating force	200 %FS
Rated displacement	0.1 mm
Material	Stainless steel
Natural frequency	6 kHz
Dimensions	60 x 60 x 25 mm x mm x mm
Height	25 mm
Length or Diameter	60 mm
Torque limit	50 Nm
Bending moment limit	50 Nm

Precision

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

Connection Data

Connection type	12 conductor open
Name of the connection	STC-32T-12
Cable length	3 m

Eccentricity and Crosstalk

Influence of eccentric load to FS	1 %FS / 10Nm
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	2 %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

Specification : Model K3D60a - $\pm 500\text{N/VA}$

Environmental protection	IP65
Electrical Data	
Rated output x-axis	0.5 mV/V / FS
Rated output y-axis	0.5 mV/V / FS
Rated output z-axis	0.5 mV/V / FS
Zero signal	0.1 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	375 Ohm
Output resistance x-axis	350 Ohm
Input resistance y-axis	375 Ohm
Output resistance y-axis	350 Ohm
Input resistance z-axis	375 Ohm
Output resistance z-axis	350 Ohm
Insulation resistance	5 GOhm
Tolerance input resistance	10 Ohm
Tolerance output resistance	10 Ohm

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

- 1) The exact rated output is reported in the test report .
- 2) K3D60a with 370 and 390 Ohm input impedance and 350 ohm output resistance



Pin Configuration

Channel	Symbol	Description	Wire colour
1	+Us	positive bridge supply	brown
	-Us	negative bridge supply	white
	+Ud	positive bridge output	green
	-Ud	negative bridge output	yellow
2	+Us	positive bridge supply	pink
	-Us	negative bridge supply	grey
	+Ud	positive bridge output	blue
	-Ud	negative bridge output	red
3	+Us	positive bridge supply	purple
	-Us	negative bridge supply	black
	+Ud	positive bridge output	orange
	-Ud	negative bridge output	transparent

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;
	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