

KD45 $\pm 2\text{N}$ à $\pm 50\text{N}$



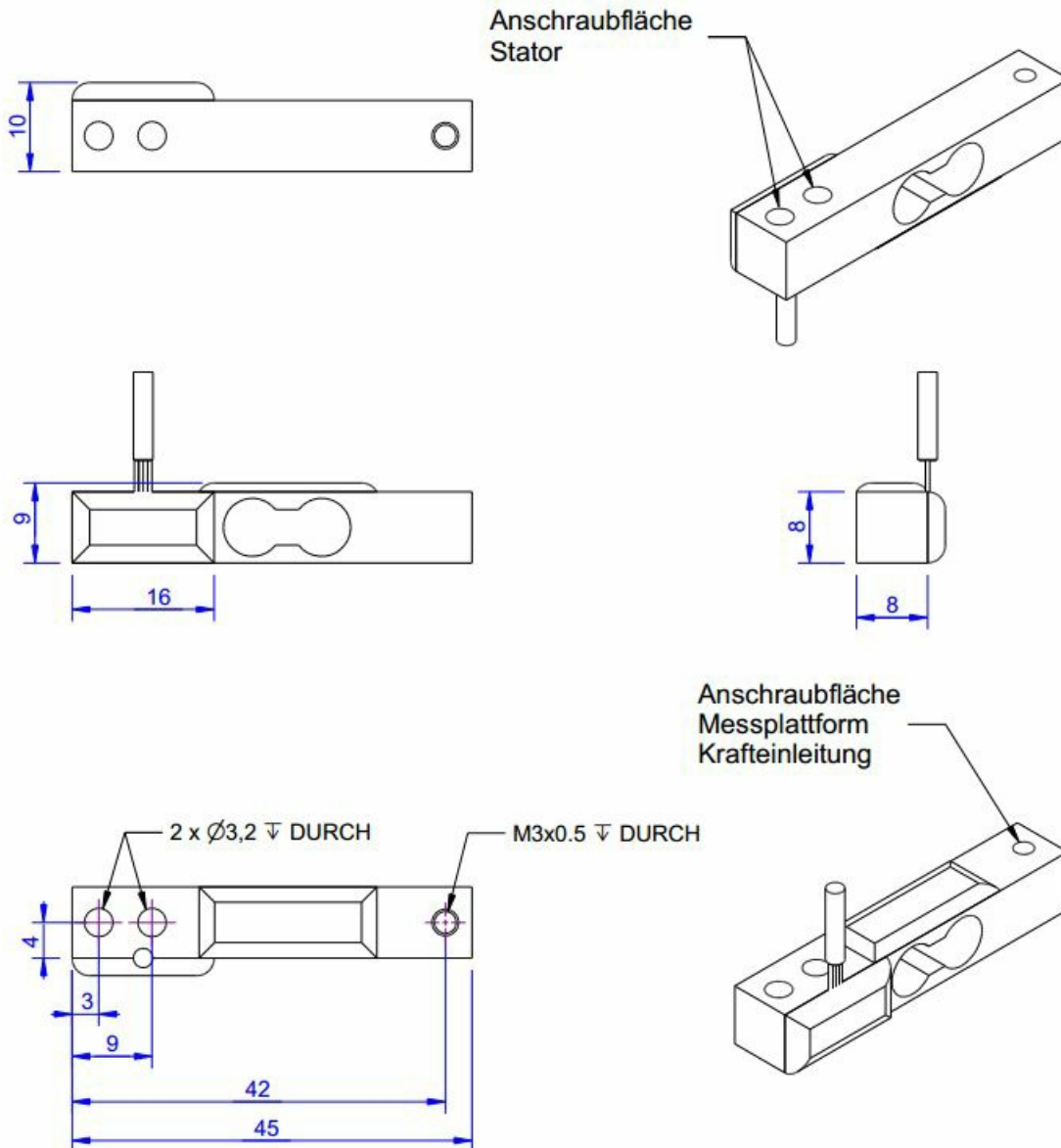
Description

The force sensor KD45 has the geometry of a miniature load cell. It is fastened on one side using the through holes $\varnothing 3.2$. There is a thread M3 for force transmission.

Force transmission is displaced parallel under loading. The force sensor tolerates displacements of force transmission and lateral forces due to its design as a double beam.

The force sensor KD45 is designed as a multi-range sensor. The accuracy of 0.1% is already reached at a nominal output of 0.5mV/V. This means that the zero point stability is 4 times higher than in a sensor with nominal output of 2mV/V. The KD45 force sensor can be used up to an output signal of 2mV/V or up to four times the specified nominal force.

Dimensions



Technical Data - Version 2N - Aluminium

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	2 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Aluminium alloy
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

Temperature

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

Technical Data - Version 5N - Aluminium

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	5 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Aluminium alloy
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

Temperature

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

Technical Data - Version 10N - Aluminium

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	10 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Aluminium alloy
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

Temperature

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

Technical Data - Version 20N - Aluminium

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	20 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2x \varnothing 3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Aluminium alloy
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

Temperature

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

Technical Data - Version 10N - Acier inoxydable

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	10 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2x $\varnothing 3,2$
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Stainless steel
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
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Temperature effect on characteristic value	0.01 %RD/K
Relative creep	0.1 %FS

Connection Data

Connection type	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

Temperature

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

Technical Data - Version 20N - Acier inoxydable

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	20 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Stainless steel
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

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Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

Temperature

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

Technical Data - Version 50N - Acier inoxydable

Force sensor	
Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	50 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Stainless steel
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data	
Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision	
Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	4 conductor open
Name of the connection	STC-31V-4
Cable length	1 m

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

Technical Data - Version 10N - Acier inoxydable - Haute température

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	10 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Stainless steel
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	6 conductor open
Name of the connection	STC-32T-6
Cable length	1 m

Temperature

Rated temperature range f	-20 ... 150 °C
Operating temperature range f	-40 ... 180 °C

Technical Data - Version 20N - Acier inoxydable - Haute température

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	20 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Stainless steel
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	6 conductor open
Name of the connection	STC-32T-6
Cable length	1 m

Temperature

Rated temperature range f	-20 ... 150 °C
Operating temperature range f	-40 ... 180 °C

Technical Data - Version 50N - Acier inoxydable - Haute température

Force sensor

Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	50 N
Force introduction	Inner thread
Dimension 1	1xM3x0,5
Sensor Fastening	Through bore
Dimension 2	2xØ3,2
Operating force	400 %FS
Rated displacement	0.1 mm
Lateral force limit	500 %FS
Material	Stainless steel
Natural frequency	2 kHz
Height	8 mm
Length or Diameter	45 mm

Electrical Data

Input resistance	420 Ohm
Tolerance input resistance	30 Ohm
Output resistance	350 Ohm
Tolerance output resistance	3 Ohm
Insulation resistance	5x10 ⁹ Ohm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal	0.05 mV/V
Rated output	0.5 mV/V / FS
relative error of characteristic value	0.1 %

Precision

Accuracy class	0,1%
Relative linearity error	0.1 %FS
Relative zero signal hysteresis	0.1 %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	6 conductor open
Name of the connection	STC-32T-6
Cable length	1 m

Temperature

Rated temperature range f	-20 ... 150 °C
Operating temperature range f	-40 ... 180 °C

Storage temperature range f	-20 ... 85 °C
Environmental protection	IP65

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

Pin Configuration - Version haute température

Symbol	Description	Wire colour
+Us	positive bridge supply	red
-Us	negative bridge supply	black
+Ud	positive bridge output	green
-Ud	negative bridge output	yellow
+Uf	positive sense lead	blue
-Uf	negative sense lead	white

Pressure load : positive output signal.
Shield - transparent.

Pin Configuration

Symbol	Description	Wire colour
+Us	positive bridge supply	red
-Us	negative bridge supply	black
+Ud	positive bridge output	green
-Ud	negative bridge output	white

Pressure load: positive output signal.
Shield- transparent.

accessories

	Description	Description
	Calibration Certificate kn/20/5	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.
	GSV-1H	Measuring amplifier in top-hat rail housing for sensors with strain gauges. Analogue output -10V...+10V, limiting frequency 250Hz, 4 input sensitivities from 2.0mV/V.
	GSV-1A	Measuring amplifier in aluminum housing (IP66) for sensors with strain gauges. two round plugs M12, analogue output -10V...+10V, limiting frequency 250Hz, 4 input sensitivities from 2.0 mV/V.
	GSV-6K	Analogue measuring amplifier in plug housing for sensors with strain gauges. Analogue output configurable, TEDS, sampling frequency 1Hz ... 25kHz, input sensitivity configurable 0.1mV/V ... 8mV/V

Order options

Type	Description
KD45	aluminium, temperature range -10 ... +70 °C (standard type)
KD45 VA	stainless steel, temperature range -10 ... +70 °C
KD45 VA/HT	stainless steel, temperature range -20 ... +150 °C