

## 3-Axis Force Sensor K3D60a 500N/VA

Item number: 8017



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 20 N to 500 N.

Up to a rated load of 100 N, these sensors are made of aluminum, from a rated load of 200 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 Data

| Basic Data           |                     | Unit            |
|----------------------|---------------------|-----------------|
| 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   | Internal thread     |                 |
| Dimension 1          | 4x M3x0,5           |                 |
| Sensor Fastening     | Through-hole        |                 |
| Dimension 2          | 2x Ø4,3             |                 |
| Operating force      | 200                 | %FS             |
| Rated displacement   | 0.1                 | mm              |
| Material             | Stainless steel     |                 |
| Natural frequency fx | 6                   | kHz             |
| Dimensions           | 60 x 60 x 25        | mm <sup>3</sup> |
| Height               | 25                  | mm              |
| Length or Diameter   | 60                  | mm              |
| Torque limit         | 50                  | Nm              |
| Bending moment limit | 50                  | Nm              |
| Variants             | 10N... 500N         |                 |

| Electrical Data                            | Unit |           |
|--------------------------------------------|------|-----------|
| 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 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                    | 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       |

| Eccentricity and Crosstalk            | Unit |            |
|---------------------------------------|------|------------|
| 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    | %FS        |

| 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         | IP65 |      |

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 Assignment

| Channel | Symbol | Description            | Wire color  | PIN |
|---------|--------|------------------------|-------------|-----|
| 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 |     |