

## Force Sensor KR110a 50N

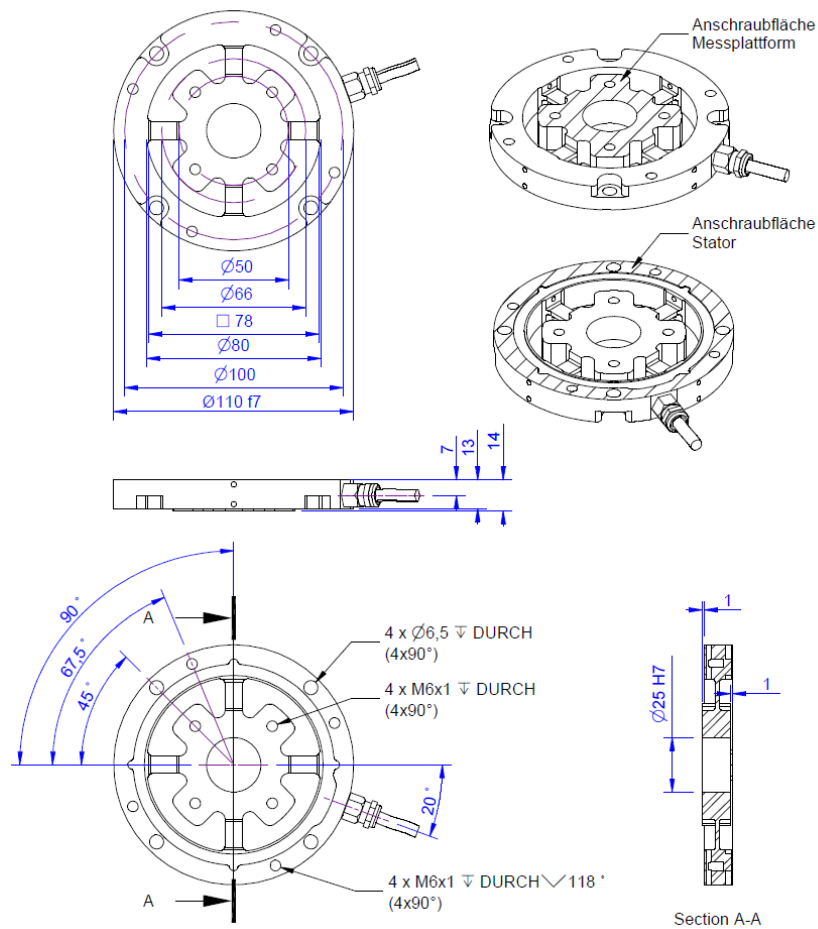
Item number: 6505



The force sensor KR110a is suitable for testing in the quality assurance and materials testing due to its compact form.

This precision force sensor is characterized by flat construction of only 14 mm or 20 mm thickness.

## Technical Drawing



## Technical Data

| Basic Data                       |                                 | Unit |
|----------------------------------|---------------------------------|------|
| Type                             | Kraftsensor                     |      |
| Force direction                  | Tension/Compression             |      |
| Rated force F <sub>x</sub>       | 50                              | N    |
| Force introduction               | Internal thread                 |      |
| Dimension 1                      | 4xM6x1                          |      |
| Sensor Fastening                 | Internal thread                 |      |
| Dimension 2                      | 4xM6x1                          |      |
| Operating force                  | 200                             | %FS  |
| Rated displacement               | 0.2                             | mm   |
| Lateral force limit              | 100                             | %FS  |
| Material                         | aluminum-alloy                  |      |
| Natural frequency f <sub>x</sub> | 2                               | kHz  |
| Dimensions                       | Ø 110mm x 14mm / Ø 110mm x 20mm |      |
| Height                           | 14                              | mm   |
| Length or Diameter               | 110                             | mm   |
| Bending moment limit             | 2                               | Nm   |
| Variants                         | 50N... 5kN                      |      |

| Electrical Data                            |                   | Unit      |
|--------------------------------------------|-------------------|-----------|
| Input resistance                           | 390               | Ohm       |
| Tolerance input resistance                 | 40                | ±         |
| Output resistance                          | 350               | Ohm       |
| Insulation resistance                      | 2x10 <sup>9</sup> | Ohm       |
| 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         |
| Zero signal                                | 0.05              | mV/V      |
| Rated output                               | 1                 | mV/V / FS |

| Accuracy Data                              |      | Unit  |
|--------------------------------------------|------|-------|
| Accuracy class                             | 0,1  |       |
| Relative linearity error                   | 0.02 | %FS   |
| Relative zero signal hysteresis            | 0.02 | %FS   |
| Temperature effect on zero signal          | 0.01 | %FS/K |
| Temperature effect on characteristic value | 0.01 | %RD/K |
| Relative creep                             | 0.05 | %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         | IP66 |      |

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

Pin Assignment

| Channel | Symbol | Description            | Wire color | PIN |
|---------|--------|------------------------|------------|-----|
|         | +Us    | positive bridge supply | brown      |     |
|         | -Us    | negative bridge supply | white      |     |
|         | +Ud    | positive bridge output | green      |     |
|         | -Ud    | negative bridge output | yellow     |     |

Pressure load: positive output signal.  
Shield- transparent.

Mounting

Force and torque measurement

The force sensor is excellent suitable for the combination with the torque sensor TD110a or TS110a.

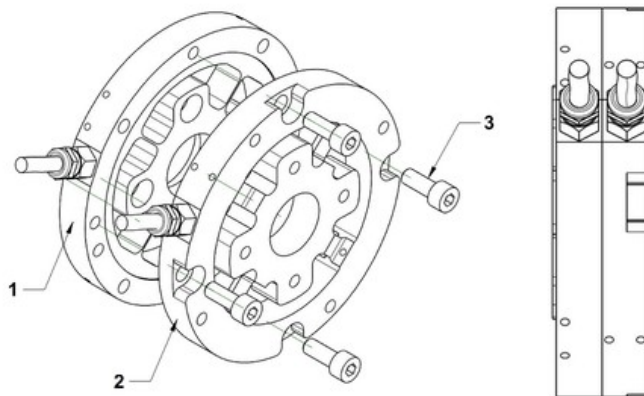
In this case force and torque are applied via an inner ring.



To guarantee the accuracy of measurement the following combination of the force sensor KR110a and of the torque sensor TD110a or TS110a is recommended.

|                    |        |        |        |        |        |        |
|--------------------|--------|--------|--------|--------|--------|--------|
| Sensor combination | TD110a | TD110a | TD110a | TD110a | TS110a | TS110a |
|--------------------|--------|--------|--------|--------|--------|--------|

|        |        |    | 5 Nm AL | 10 Nm<br>VA | 20 Nm<br>VA | /<br>TS110a<br>50 Nm<br>VA | 100 Nm<br>VA | 200 Nm<br>VA |
|--------|--------|----|---------|-------------|-------------|----------------------------|--------------|--------------|
| KR110a | 200 N  | VA | X       |             |             |                            |              |              |
| KR110a | 500 N  | VA |         | X           | X           |                            |              |              |
| KR110a | 1000 N | VA |         |             | X           | X                          |              |              |
| KR110a | 2000 N | VA |         |             |             | X                          | X            |              |
| KR110a | 5000 N | VA |         |             |             |                            |              | X            |



| Position | Quantity | Description             |
|----------|----------|-------------------------|
| 1        | 1        | TD110a / TS110a         |
| 2        | 1        | KR110a                  |
| 3        | 4        | Screw ISO 4762 M6x16 A2 |