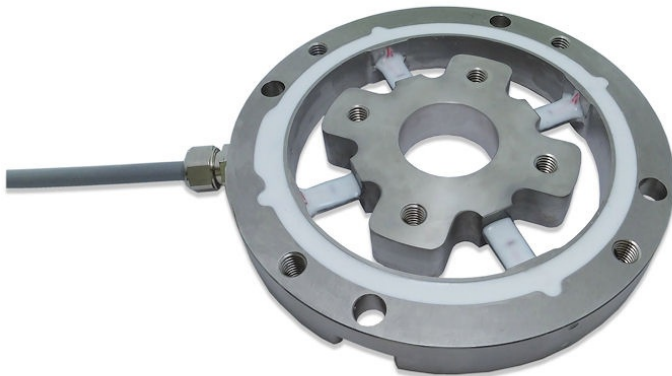


## KR110a $\pm 50\text{N}$ ; $\pm 100\text{N}$ , $\pm 200\text{N}$ ; $\pm 500\text{N}$ , $\pm \text{kN}$ , $\pm 2\text{kN}$ , $\pm 5\text{kN}$

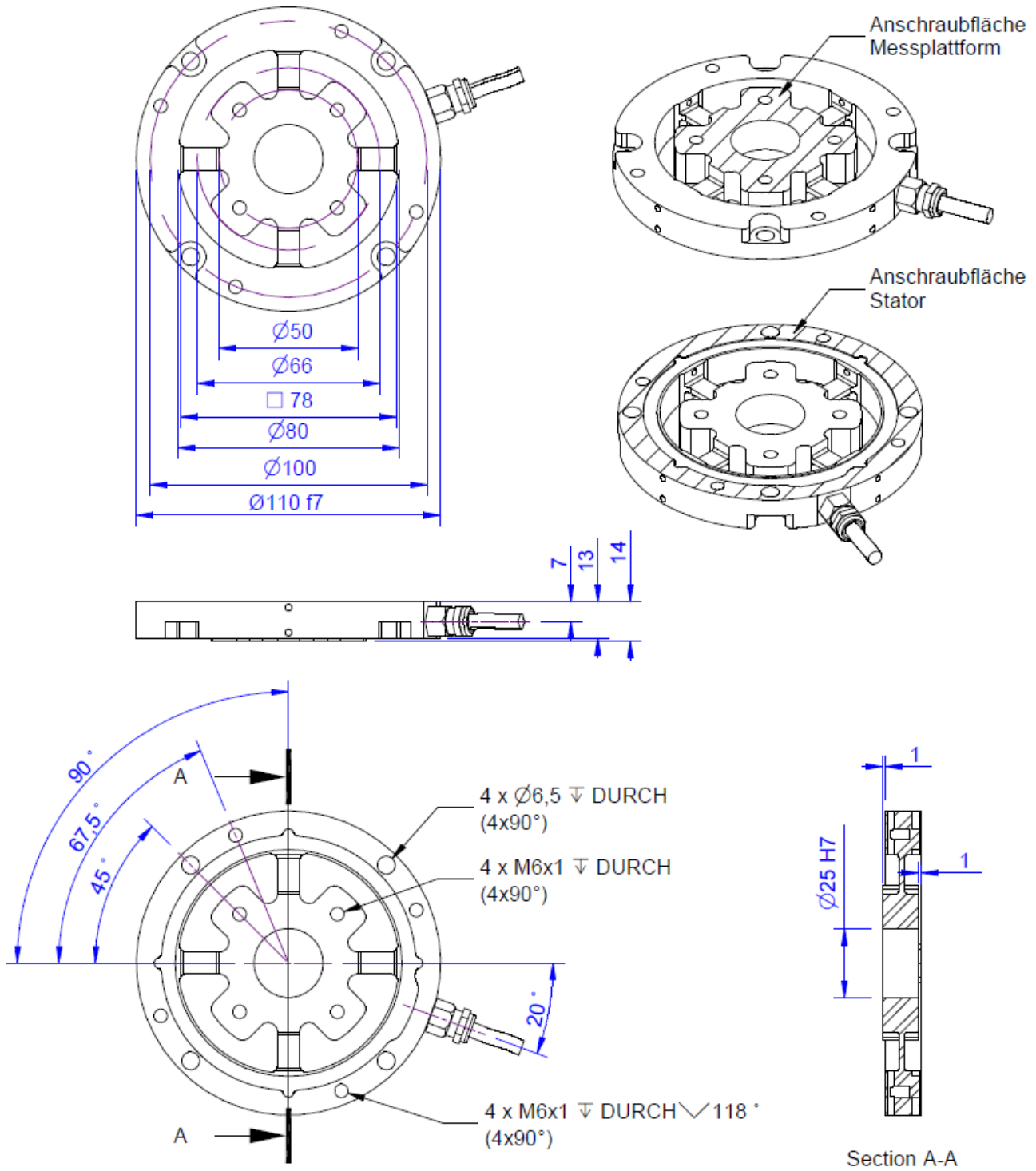


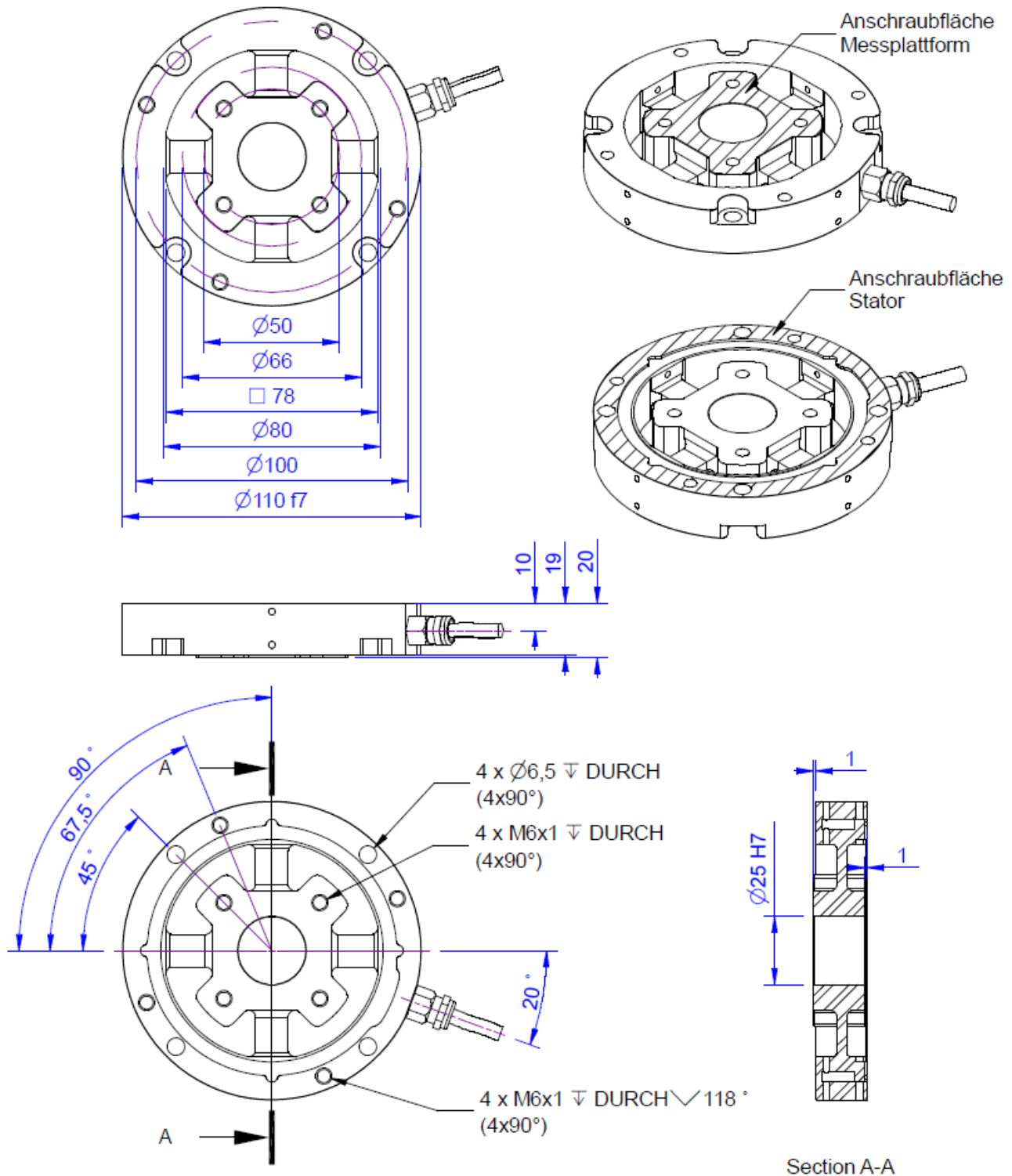
### Description

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.

Dimensions





## Technical Data

### Force sensor

Type	Force sensor
Force direction	Tension / Compression
Force introduction	Inner thread
Dimension 1	4xM6x1
Sensor Fastening	Inner thread
Dimension 2	4xM6x1
Operating force	200 %FS
Rated displacement	0.2 mm
Lateral force limit	100 %FS
Natural frequency	2 kHz
Length or Diameter	110 mm

### Electrical Data

Input resistance	390 Ohm
Tolerance input resistance	40 ±
Output resistance	350 Ohm
Insulation resistance	2x10 <sup>9</sup> 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	1 mV/V / FS

### Precision

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

### Connection Data

Connection type	4 conductor open
Name of the connection	Unitronic FD CP Plus / 4x0,14
Cable length	3 m

### Temperature

Rated temperature range f	-10 ... 70 °C
Operating temperature range f	-10 ... 85 °C
Storage temperature range f	-10 ... 85 °C
Environmental protection	IP66

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

1) The exact nominal sensitivity is indicated in the test report;



## Pin Configuration

Symbol	Description	Wire colour
+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

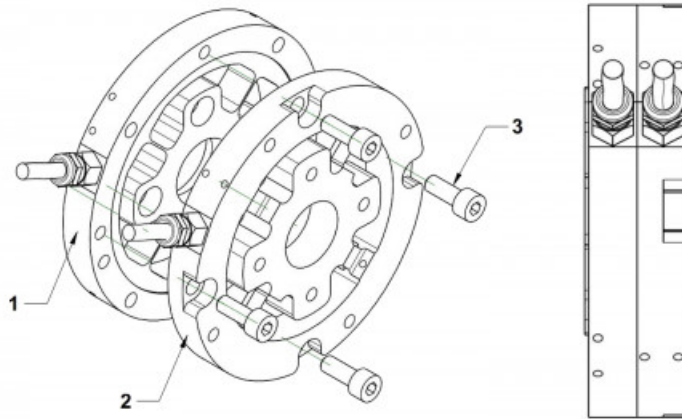
The force sensor is excellent suitable for the combination with the torque sensor TD110a or TS110a.

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 5 Nm AL	TD110a 10 Nm VA	TD110a 20 Nm VA	TD110a / TS110a 50 Nm VA	TS110a 100 Nm VA	TS110a 200 Nm 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

accessories

	Description	Description
	TD110a	Torque sensor, 5 Nm ... 50 Nm, accuracy class 0,1%; Ø 110mm x 13mm, 3m cable;
	TS110a	Torque sensor, 20 Nm ... 200 Nm, accuracy class 0,1%; Ø 110mm x 14mm, 3m cable
	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 straingages. Analogue output -10V...+10V, limiting frequency 250Hz, 4 input sensitivities from 2.0mV/V.
	GSV-2TSD-DI	Measuring amplifier in desktop-housing for sensors with straingages. Serial port RS232, USB port, analogue output -5V...+5V, limiting frequency 260Hz, input sensitivity 3.5mV/V.
	GSV-3USB	Measuring amplifier in aluminum housing (IP54) for sensors with straingages. Limiting frequency 1250Hz, input sensitivity 2 / 3,5 / 10 mV/V.
	GSV-6K	Analogue measuring amplifier in plug housing for sensors with strain gauges. Analogue output configurable, TEDS, sampling frequency 10Hz ... 25kHz, input sensitivity configurable 0.1mV/V ... 8mV/V