



## ***Precision Pressure Sensors in Thinfilm***

**Type: PDS**

### **Features:**

- Thinfilm strain gauges are placed on elastic membranes of steel, ceramic or silicon
- Deformation of the membranes creates a change of the electrical resistance
- 4 resistors with low TCR and high precision connected to a Wheatstone Bridge result in an accurate measuring signal
- Anorganic isolation systems minimize the influence of climatic disturbances to the strain gauges

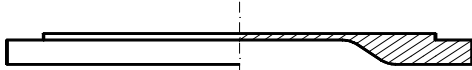


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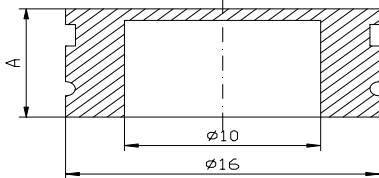
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**Standard dimensions:**

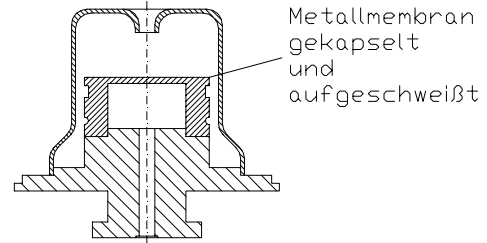
a) quasi-front-flush membran



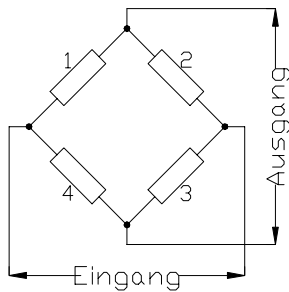
b) Cup-type membrane



Fitting example

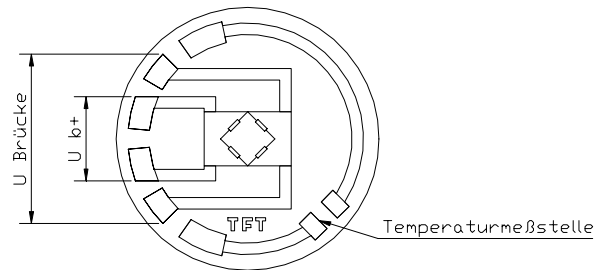


Electric block diagram



- Resistance range: 350  $\Omega$ , 5 k $\Omega$ , 10 k $\Omega$

Layout contact system on metal membrane (example)



- Outdoor connections pre-tinned, solderable

**Styles:**

- Dices of ceramic or metal alloy
- Polygons of ceramic or metal alloy
- Cylindrical elements with metal membrane

• Pressure sensors are supplied user-specific, in accordance with the measuring body specifications.

**Technical data:**

Feature	Unit	Cup-type membrane		Quasi-front-flush membrane
Membrane diameter	mm	5	10	10
Total diameter	mm	10	16	19
Measuring range up to	bar	50, 60, 100, 160, 200, 315, 400, 500, 600, 1000, 1600	10, 20, 50, 100, 200, 500, 1000, 2000	10, 20, 50, 100
Resistance of bridge	$\Omega$	350 $\pm$ 15%, 5k $\pm$ 15%, 10k $\pm$ 15%		5k $\pm$ 15%, 10k $\pm$ 15%
TCR	ppm/K	< $\pm$ 50	< $\pm$ 50	< $\pm$ 50
Zero-signal	mV/V	< $\pm$ 0,2	< $\pm$ 0,2	< $\pm$ 0,2
TCR of zero-signal	$\mu$ V/V/K	< $\pm$ 0,4	< $\pm$ 0,6	< $\pm$ 0,4
Resistance of isolation (100 V DC)	$\Omega$	> 10 <sup>9</sup>	> 10 <sup>9</sup>	> 10 <sup>9</sup>
Nominal value	mV/V	2	2	2
Range of nominal value	mV/V	1,6 ... 2,6	1,6 ... 2,4	1,6 ... 2,6
TCR of nominal value	%/K	0,01 ... 0,03	0,01 ... 0,03	0,01 ... 0,03
Failure of linearity	% FS			
10 bar	%	/	< 3	< 3
20 bar	%	/	< 1,5	< 1,5
50 ... 2000 bar	%	< 1,0	< 0,5	< 0,5
Hysteresis	%	< 0,1	< 0,1	< 0,1
Repeatability	%	< 0,1	< 0,05	< 0,05
Change of zero-signal after				
60 °C 120 h	$\mu$ V/V	< 1,0	< 1,0	< 1,0
20 °C, 50% r.F. $\rightarrow$ 95%	$\mu$ V/V	< 10	< 10	< 10
r.F. – 100% Overload	$\mu$ V/V	< 2	< 2	< 2
Range of nominal temperature	° C	- 20 ... + 70		
Temperature range	° C	- 40 ... + 140		
Source voltage range	(UB) V	0,5 ... 20 (350 $\Omega$ ) 0,5 ... 30 ( $\geq$ 5 k $\Omega$ )		
Overload		> 2 x nominal load (2000 bar 1,5x)		
Bursting load		> 5 x nominal load (2000 bar 2x)		
CMF-temperature resistance				
Value at 0 °	$\Omega$	5k $\pm$ 5%		
CTK-R (0°C... 100°C)	ppm/K	3850 $\pm$ 300		
Contact		To customer specification, e.g. approx. 100 mm ribbon cable or colour-coded flexible leads		

Other specifications on request.

### Required data for layout:

- Construction of the measuring element
- Number and position of connected resistors
- Value of resistors
- Tolerance of the bridge-Zero-signal
- Temperature coefficient
- Temperature range
- Stability requirements

Stand: 02/99