

# Sensor elements and assemblies, piezo

## Model SPR-2, sensor element

## Model TPR-2, sensor assembly

WIKA data sheet PE 81.62

### Applications

- Applications with limited mounting space
- Design-in solutions

### Special features

- Measuring ranges from 0 ... 0.4 to 0 ... 16 bar (gauge and absolute pressure)
- Measuring cell from stainless steel
- High measuring sensitivity
- High stability



Examples for models SPR-2 and TPR-2

### Description

#### Design

The heart of the measuring cell is a silicon chip, which is pressurised via a pressure transmission medium. As pressure transmission medium, a suitable filling liquid for the respective application is used.

A diaphragm and a case from stainless steel make the transducer highly resistant to a wide variety of media.

#### Individual solutions

The pressure transducers are manufactured on a flexible production line and can be individually adapted to suit customer requirements.

#### Special features

The pressure transducer can be delivered either with or without linear temperature compensation. Alternatively, a test certificate for the sensor cell can be supplied with it, for active temperature compensation by the customers themselves.

The assembly and connection concept guarantees a very high overload and burst pressure safety.

The silicon chip provides a high measuring sensitivity, which enables measurement of even the lowest pressures.

## Measuring ranges

Gauge pressure and absolute pressure (bar)				
0 ... 0.4	0 ... 1	0 ... 1.6	0 ... 2.5	0 ... 4
0 ... 6	0 ... 10	0 ... 16		

Other measuring ranges on request.

### Overload safety

3 times

### Burst pressure safety

5 times

### Vacuum tightness

Yes

## Output signals

### Without temperature compensation

12 ... 50 mV/V (depending on measuring range)

### With temperature compensation

4.5 ... 23.5 mV/V (depending on measuring range)

## Voltage supply

### Power supply

Max. DC 10 V

## Reference conditions (per IEC 61298-1)

### Temperature

15 ... 25 °C [59 ... 77 °F]

### Atmospheric pressure

860 ... 1,060 mbar [12.5 ... 15.4 psi]

### Air humidity

45 ... 75 % r. h.

### Power supply

DC 10 V

### Mounting position

As required

## Time response

### Settling time (10 ... 90 %)

< 1 ms

## Accuracy specifications

### Zero point offset

Without temperature compensation:  $\leq \pm 10$  mV/V

With temperature compensation:  $\leq \pm 2$  mV/V

### Bridge resistance

Bridge resistance		
	UB+/0V	S+/S-
With temperature compensation	8 ... 16.5 k $\Omega$	4 ... 18 k $\Omega$
Without temperature compensation	4 ... 6.5 k $\Omega$	

### Legend

UB+ Positive power supply terminal  
0V Negative power supply terminal  
OUT+ Positive terminal for analogue output  
OUT- Negative terminal for analogue output

### Compensated temperature range

Compensated temperature range	
Standard	without temperature compensation
Option	-20 ... +85 °C [-4 ... +185 °F]

### Temperature error

Without temperature compensation	
	Max. temperature coefficient
Zero point	-1.5 ... +2.5 % of span/10 K (depending on measuring range)
Span	-2.4 ... -1.4 % of span/10 K

With temperature compensation		
	Measuring range	Max. temperature error
Zero point	0 ... 0.4 bar	$\leq \pm 2.5$ % of span
	0 ... 1 to 0 ... 2.5 bar	$\leq \pm 1.5$ % of span
	0 ... 4 to 0 ... 25 bar	$\leq \pm 0.75$ % of span
Span	0 ... 0.4 bar	$\leq \pm 1$ % of span
	0 ... 1 to 0 ... 25 bar	$\leq \pm 0.75$ % of span

### Non-linearity (BFSL)

$\leq \pm 0.3$  % of span

$\leq \pm 0.4$  % for 0...0.4 bar version

### Hysteresis

$\leq \pm 0.03$  % of span

### Non-repeatability

$\leq \pm 0.03$  % of span

### Long-term stability

$\leq \pm 0.2$  % of span/year

## Operating conditions

### Permissible temperature ranges

Medium: -40 ... +125 °C [-40 ... +257 °F]

Ambient: -40 ... +125 °C [-40 ... +257 °F]

Storage: -40 ... +125 °C [-40 ... +257 °F]

Valid for standard filling liquid (synthetic oil).

Other filling liquids on request.

### Service life

> 100 million load cycles

## Process connections

On request

## Electrical connections

On request

## Electrical protective measures

### High-voltage strength

DC 500 V

### Insulation resistance

> 1 GΩ

## Materials

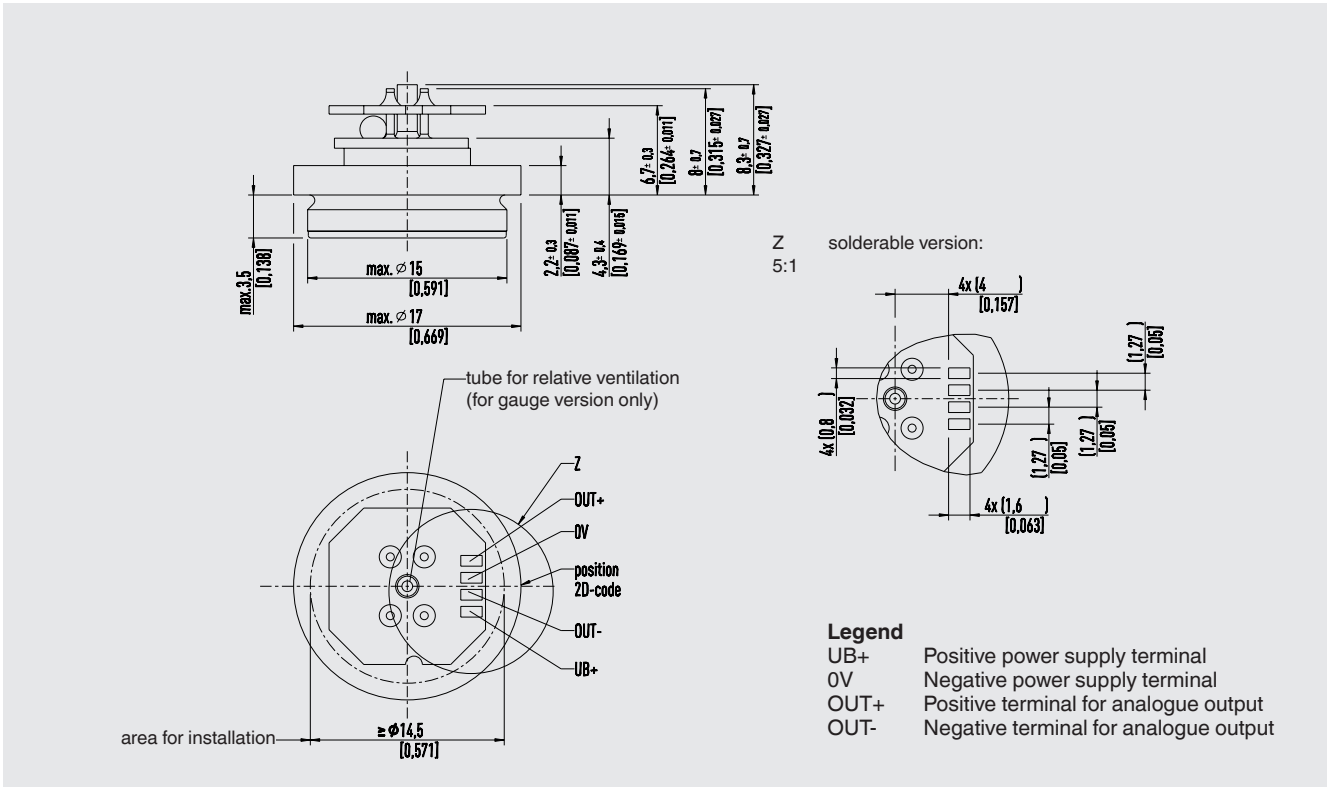
### Wetted parts

Stainless steel

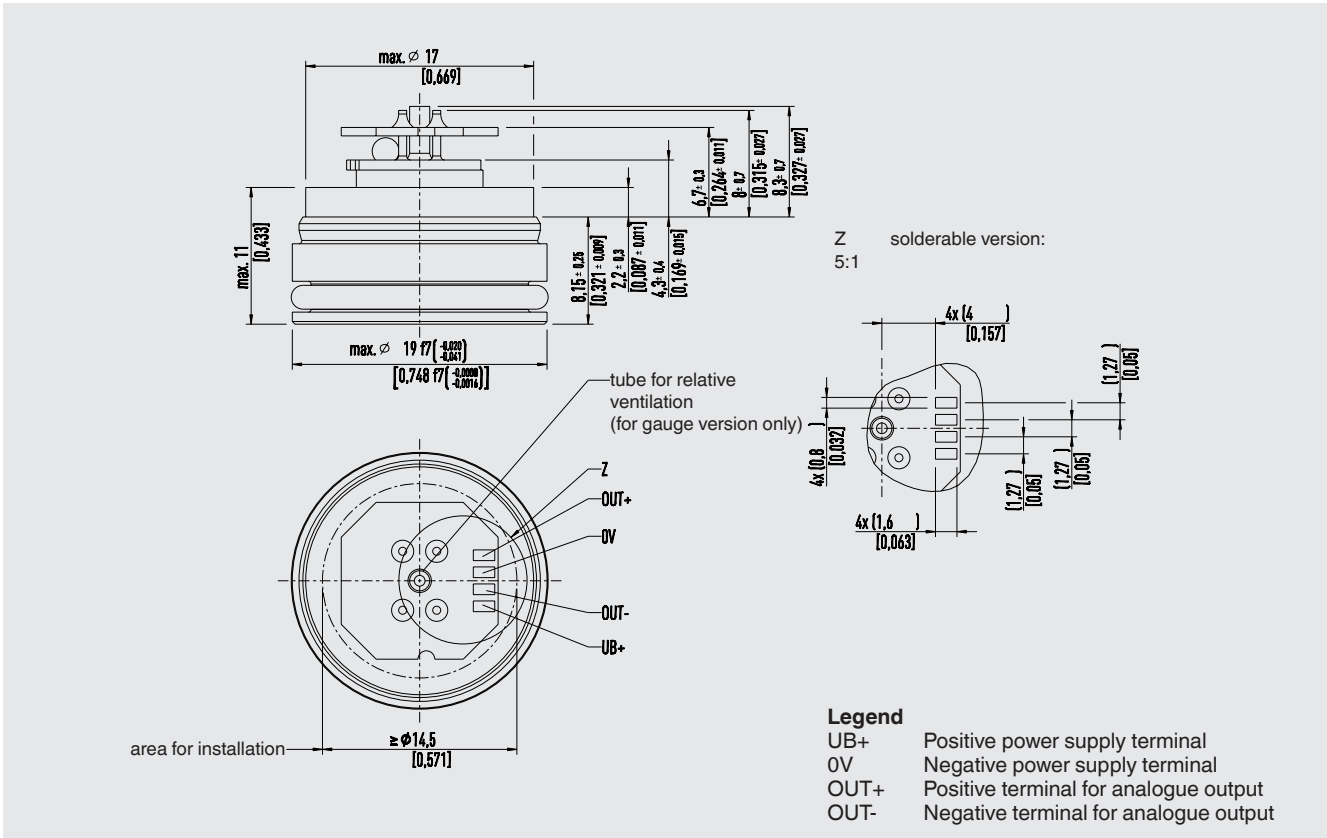
Other materials on request.

# Dimensions in mm

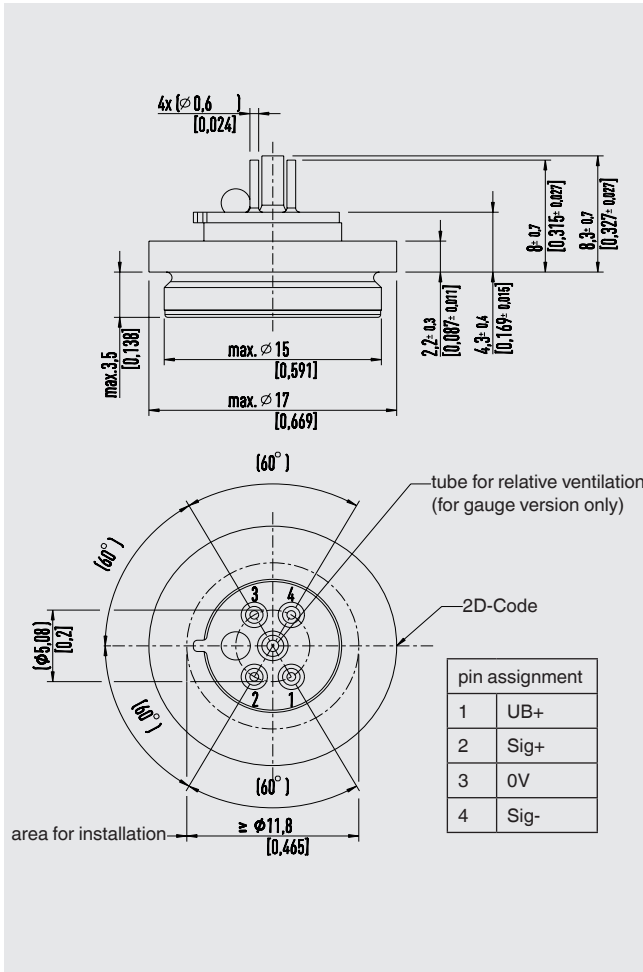
## Model SPR-2 with temperature compensation



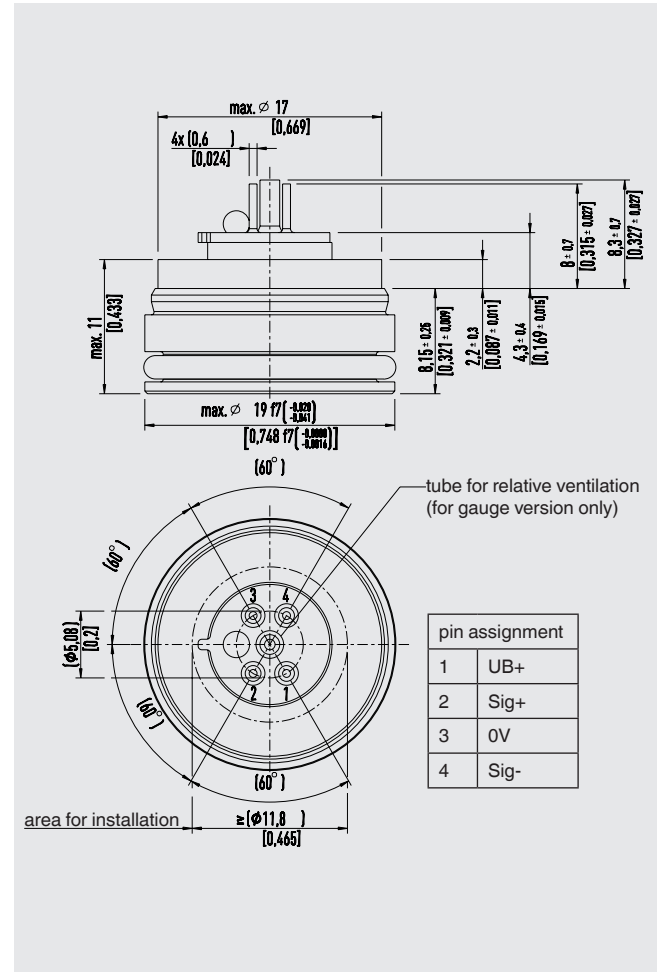
## Model TPR-2 with temperature compensation, with O-ring sealing contour



### Model SPR-2 without temperature compensation



### Model TPR-2 without temperature compensation, with O-ring sealing contour



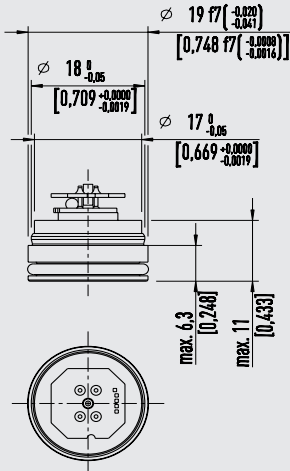
#### Legend

- UB+ Positive power supply terminal
- 0V Negative power supply terminal
- OUT+ Positive terminal for analogue output
- OUT- Negative terminal for analogue output

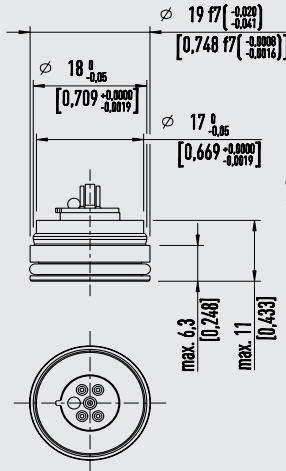
## Installation recommendation for TPR-2 with O-ring sealing contour

The maximum dimensions and thermal expansion coefficients of the materials used must be observed for the installation. In all operating states, the mounted sensor element must have sufficient play in the axial direction.

Version with temperature compensation



Version without temperature compensation

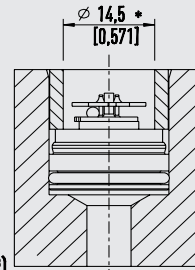


O-ring

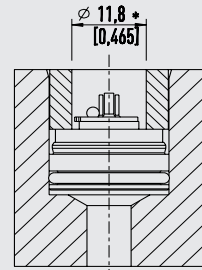
Size: D15.6 x 1.78 ISO 3601

Material: Is to be defined by the user, depending on the medium and the temperature. For mounting, adequate sliding properties of the O-ring must be ensured.

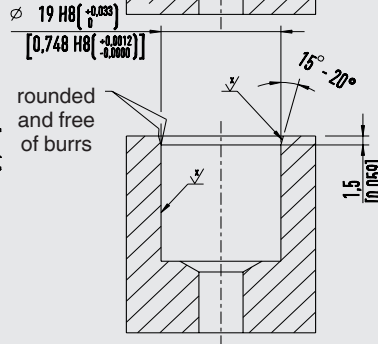
Mounting geometry for version with temperature compensation



Mounting geometry for version without temperature compensation



\* Value must not be less than stated



$$\sqrt{x} = \sqrt{Ra 1.6}$$

## Ordering information

Measuring range / Temperature compensation / Process connection / Electrical connection

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