

# Precision pressure sensor Models CPT6100, CPT6180



WIKA data sheet CT 25.10



for further approvals  
see page 3

## Applications

- Testing technology
- Calibration technology
- Laboratories and maintenance shops
- Aviation

## Special features

- Accuracy up to 0.01 % IS-50
- Measuring range from -1 ... 400 bar (-15 ... 6,000 psi)
- RS-232 or RS-485 interface
- Compact design



Precision pressure sensor model CPT6100

## Description

The models CPT6180 and CPT6100 precision pressure sensors are compact, robust sensors with a serial output and a measuring range which is freely selectable between -1 ... 400 bar (-15 ... 6,000 psi). The high accuracy of up to 0.01 % IS-50 for 365 days makes the sensor one of the most accurate transducers in precision measurement technology. The standard output mode provides the pressure values via a query-response process.

### Application

These precision pressure sensors are built into OEM instruments, e.g. in pressure, flow or humidity calibrators, or in any instrument where high-accuracy measurement is needed. They are used as reference pressure sensors within the automated manufacturing of pressure measuring instruments or calibration stands. Through a high accuracy, speed of reading and long-term stability, these are particularly suited for applications in wind tunnels or in pressure chambers. These characteristics make it a valuable tool in metrology, hydrology, oceanography, and in the aviation and space industries.

### Functions

The models CPT6180 and CPT6100 have an RS-232 or RS-485 interface. The RS-485 interface offers the possibility of a genuine multidrop connection and simple cabling. There are four different baud rates to choose from.

The sensors can be configured for gauge and absolute pressure for any measuring range within the specified limits. They have a wide voltage supply range (DC 6 ... 20 V) and low power consumption (< 0.5 W). With a recalibration time of 180 or 365 days and a high resolution of 6 or 7 significant figures, CPT6180 and CPT6100 are flexible enough to be used in a wide variety of applications.

### Compact design

The pressure sensors are, due to their robust, compact design, easily integratable in a 19" rack without taking up much space. With the combination of male and female threads, a fast and secure fitting is always possible, negating the need for further sealing.

## Specifications

Precision pressure sensor technology			
Model	CPT6100		CPT6180
Accuracy <sup>1)</sup>	0.03 % FS <sup>2)</sup>	0.01 % FS <sup>2)</sup>	0.01 % IS-50 <sup>3)</sup>
<b>Measuring ranges</b>			
Gauge pressure	0 ... 25 to 0 ... 70 mbar (0 ... 0.36 to 0 ... 1 psi)	0 ... ≥ 70 mbar to 0 ... 400 bar (0 ... ≥ 1 up to 0 ... 6,000 psi)	0 ... 1 to 0 ... 400 bar (0 ... 15 to 0 ... 6,000 psi)
Bi-directional	-25 ... 25 to -35 ... 35 mbar (-0.36 ... 0.36 to -0.5 ... 0.5 psi)	-35 ... 35 mbar to -1 ... 400 bar (-0.5 ... 0.5 to -14.5 ... 6,000 psi)	-1 ... 10 to 0 ... 400 bar (-15 ... 145 psi to 0 ... 6,000 psi)
Absolute pressure	-	0 ... 500 mbar abs. to 0 ... 401 bar abs. (0 ... 7.5 psi abs. to 0 ... 6,015 psi abs.)	0 ... 1 to 0 ... 401 bar abs. (0 ... 15 to 0 ... 6,015 psi abs.)
Calibration interval	180 days	180 days	365 days
<b>CPT6100 as barometric reference</b>			
Measuring range	552 ... 1,172 mbar abs. (8 ... 17 psi abs.)		
Accuracy <sup>1)</sup>	0.01 % of reading		
Calibration interval	365 days		
Pressure units	psi, bar, mbar, Pa, kPa, hPa, MPa, tsi, atm, torr, Dynes/cm <sup>2</sup> , g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mSW, oz/in <sup>2</sup> , psf, tsf, mmH <sub>2</sub> O (4 °C), cmH <sub>2</sub> O (4 °C), mH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (20 °C), inH <sub>2</sub> O (60 °F), ftH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), ftH <sub>2</sub> O (60 °F), μmHg (0 °C), mmHg (0 °C), cmHg (0 °C), inHg (0 °C), inHg (60 °F), inSW (0 °C), ftSW (0 °C), mtorr (0 °C)		

1) The accuracy is defined by the total measurement uncertainty, which is expressed with the coverage factor (k = 2) and includes the following factors: the intrinsic performance of the instrument, the measurement uncertainty of the reference instrument, long-term stability, influence of ambient conditions, drift and temperature effects over the compensated range during a periodic zero point adjustment.

2) FS: Full Span



3) 0.01 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.01 % of half the full scale and between 50 ... 100 % of the full scale, the accuracy is 0.01 % of reading.

Precision pressure sensor	
<b>Case</b>	
Mounting position	< 1 bar (< 15 psi) negligible Can be adjusted through zero point adjustment (linear shift of the characteristic curve)
Dimensions	see technical drawings
Weight	505 g (1.11 lbs.)
<b>Display</b>	
Resolution	CPT6100: 6 significant figures CPT6180: 7 significant figures
Filter	Adjustable exponential filter from 0 ... 99 % The filter is only active within a defined range of 0.010 % FS.
Warm-up time	approx. 15 min up to the specified accuracy
<b>Connections</b>	
Pressure connections	Connection 7/16-20 SAE for pressure and reference port The reference port is sealed for absolute pressure sensors
Overpressure safety	10 % above the nominal pressure of the sensor
Material, wetted parts	Aluminium, brass, stainless steel 316, Buna-N, Viton <sup>®</sup> , silicone grease, silicone rubber, nylon, ceramic, glass, silicon
<b>Voltage supply</b>	
Power supply	DC 6 ... 20 V; 45 mA for DC 12 V
<b>Permissible ambient conditions</b>	
Storage temperature	-20 ... +70 °C (-4 ... 158 °F)
Humidity	0 ... 95 % r. h. (non-condensing)
Compensated temperature range	15 ... 45 °C (59 ... 113 °F)

Viton<sup>®</sup> fluorelastomer is a registered trademark of DuPont Performance Elastomers.

Precision pressure sensor	
<b>Communication</b>	
Interface	RS-232 or RS-485
Baud rate	9,600, 19,200, 38,400 or 57,600 baud
Signal output	Query and response
Measuring rate	Standard: 10 values/s Option: 50 values/s
Response time	Standard: 100 ms for a FS pressure pulse Option: 20 ms for a FS pressure pulse

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment Directive; PS &gt; 200 bar; Modul A, pressure accessory</li> </ul>	European Community
	<b>EAC</b> Electromagnetic compatibility	Eurasian Economic Community
	<b>MTSCHS</b> Commissioning approval	Kazakhstan

## Certificates

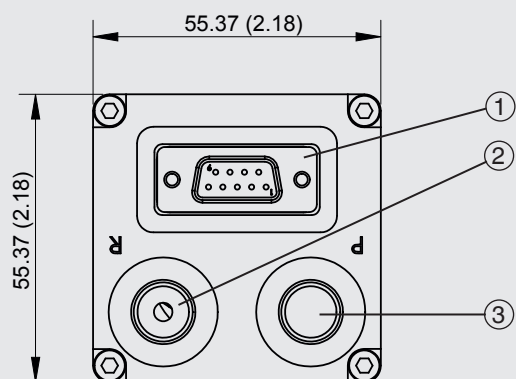
Certificate	
<b>Calibration <sup>4)</sup></b>	Standard: A2LA calibration certificate Option: DKD/DAkkS calibration certificate
<b>Recommended recalibration interval</b>	1 year (dependent on conditions of use)

4) Calibrated in a horizontal position.

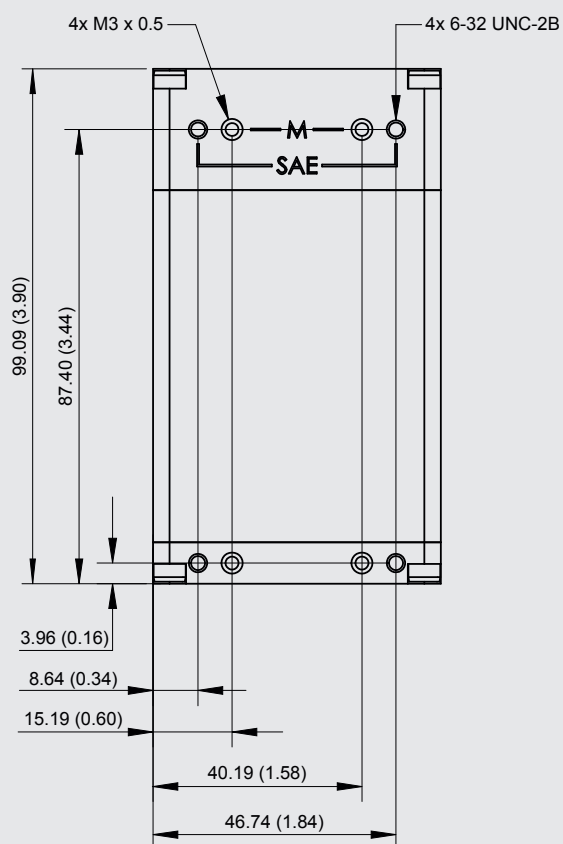
Approvals and certificates, see website

## Dimensions in mm (in)

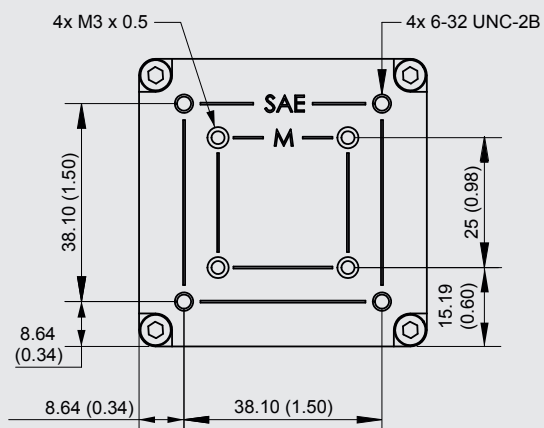
Top view



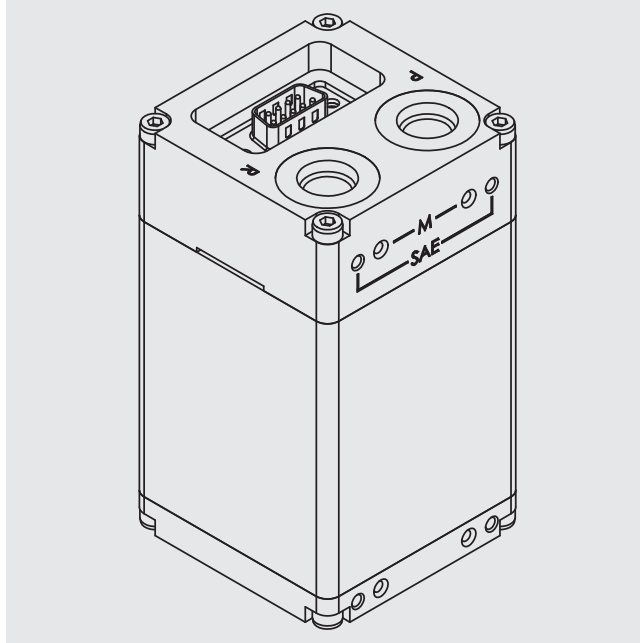
Front view



Bottom view



Isometric view



- ① Interface RS-232 or RS-485
- ② Reference port (7/16-20 SAE)
- ③ Pressure port (7/16-20 SAE)

## Scope of delivery

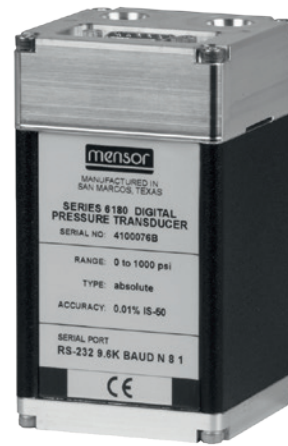
- Precision pressure sensor model CPT6180 or model CPT6100
- Operating instructions
- Standard: A2LA calibration certificate

## Options

- DKD/DAkkS calibration certificate

## Accessories

- Voltage supply over RS-232 or RS-485 interface cable
- External overpressure protection
- Pressure adapters



Precision pressure sensor model CPT6180

## Ordering information

CPT6100 / Instrument version / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Accuracy / Type of certificate / Mounting position / Interface / Baud rate / Output mode / Analogue output / Mounting thread / Pressure adapter / Additional order information

CPT6180 / Instrument version / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Accuracy / Type of certificate / Mounting position / Interface / Baud rate / Output mode / Mounting thread / Pressure adapter / Additional order information

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**WIKAL**  
**WIKAL Alexander Wiegand SE & Co. KG**  
Alexander-Wiegand-Straße 30  
63911 Klingenberg/Germany  
Tel. +49 9372 132-0  
Fax +49 9372 132-406  
info@wika.de  
www.wika.de