

Precision pressure sensor Premium version Model CPT9000



WIKA data sheet CT 25.12

Applications

- Calibration technology
- High-accuracy pressure monitoring
- Pressure sensing in critical applications
- Aerospace

Special features

- Accuracy: 0.008 % IS-33
- Measuring range: 25 mbar ... 1,001 bar
[10 inH₂O ... 15,015 psi]
- Temperature compensation: 0 ... 50 °C [32 ... 122 °F]
- RS-232 or RS-485 communication
- Rugged and compact design



Precision pressure sensor, model CPT9000

Description

The model CPT9000 precision pressure sensor is designed to excel in performance and value. With an accuracy down to 0.008 % IS-33, a temperature compensation range of 0 ... 50 °C [32 ... 122 °F], calibration interval of 365 days and selectable ranges from 25 mbar ... 1,001 bar [10 inH₂O ... 15,015 psi], the CPT9000 stands alone in performance and value. The CPT9000 is at the top of Mensors high-accuracy pressure sensor line.

Application

The model CPT9000 precision pressure sensor is ideal for OEM instruments that require high-accuracy pressure sensor.

Examples are:

- Flow calibrators, humidity calibrators, pressure controllers
- For aerospace wind tunnel calibration and also for the automotive sensor testing
- In the aviation and space industries in general, hydrology and oceanography

Or also for applications where high-accuracy pressure measurements and long-term calibration stability are required.

Functions

The model CPT9000 has an RS-232 or RS-485 interface. The RS-485 interface offers multi-drop capability with simple cabling and three different baud rates to choose from.

The high-accuracy pressure sensor can be configured for gauge and absolute pressure for any measuring range within the specified limits. With a calibration interval of 365 days and a high resolution of 8 significant digits, the CPT9000 is flexible enough to be used in a wide variety of applications.

Design

The 316L stainless steel construction and wetted parts are an asset when utilising in corrosive or wet environments. Its compact design offers an advantage in miniaturisation of product design in many OEM applications.

The pressure connection and housing can be customised to fit your application. Standard fittings are easily changed using the AN-4 female connection or the Autoclave® F250C connection.

Specifications Model CPT9000

Precision pressure sensor technology		
Accuracy ¹⁾	0.008 % IS-33 ²⁾	0.008 % Full Span
Measuring ranges		
Gauge pressure	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1,500 psi	0 ... 25 mbar to 0 ... < 1 bar 0 ... 0.36 to 0 ... < 15 psi
Bidirectional ³⁾	-1 ... 10 to -1 ... 100 bar -15 ... 145 to -15 ... 1,500 psi	-12.5 ... +12.5 mbar to -1 ... < 10 bar -0.18 ... +0.18 to -15 ... < 145 psi
Absolute pressure	0 ... 1 to 0 ... 101 bar abs. 0 ... 15 to 0 ... 1,515 psi abs.	0 ... 350 mbar abs. to 0 ... < 1 bar abs. 0 ... 5 to 0 ... < 15 psi abs.
	-	0 ... > 101 to 0 ... 1,001 bar abs. 0 ... > 1,515 to 0 ... 15,015 psi abs.
Calibration interval	365 days	
Pressure units	39 and 1 user-defined	
Optional as barometric reference		
Measuring range	552 ... 1,172 mbar abs. [8 ... 17 psi abs.]	
Accuracy ¹⁾	0.008 % of reading	

- 1) It 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 correction every 30 days.
- 2) 0.008 % IS-33 accuracy: Between 0 ... 33 % of the full scale, the accuracy is 0.008 % of the lower third of the full scale and between 33 ... 100 % of the full scale, the accuracy is 0.008 % of reading.
- 3) The negative portion of a bidirectional range has the same accuracy as the equivalent positive range.

Precision pressure sensor	
Case	
Orientation effects	Negligible – completely removable with a zero point correction
Dimensions	See technical drawings
Weight	Approx. 250 g [0.55 lbs] (depending on range)
Ingress protection	IP67
Display	
Resolution	100 ppb or better
Warm-up time	Approx. 15 min
Connections	
Pressure connections	SAE J514/JIC 4 or Autoclave® F250C: for pressure ranges > 400 bar [> 6,000 psi]
Overpressure safety	2 x proof, 3 x burst, static pressure < 3.45 bar [< 50 psi]
Pressure port adapters	<ul style="list-style-type: none"> ■ Without ■ Only up to pressure ranges 400 bar [6,000 psi]: 1/8" female BSP fitting, 1/4" male BSP fitting, 1/8" female NPT fitting, 1/4" male NPT fitting, 6 mm tube fitting, 1/4" tube fitting and female 7/16-20 SAE fitting
Wetted parts	Pressure ranges ≤ 350 mbar [≤ 5 psi]: 316 stainless steel, silicon, glass-filled resins, epoxy Pressure ranges > 350 mbar ... 100 bar [> 5 ... 1,500 psi]: 316 stainless steel Pressure ranges > 100 bar [1,500 psi]: 316 stainless steel, fluorocarbon rubber
Permissible media	Pressure ranges ≤ 350 mbar [≤ 5 psi]: clean, dry, non-corrosive gases Pressure ranges > 350 mbar [> 5 psi]: media compatible with the listed wetted parts

Precision pressure sensor	
Voltage supply	
Supply voltage	DC 9 ... 18 V (DC 12 V nominal)
Current/power consumption	< 26 mA at DC 12 V ±5 % (40 W max.)
Permissible ambient conditions	
Compensated temperature range	0 ... 50 °C [32 ... 122 °F]
Operating temperature range	-40 ... +85 °C [-40 ... +185 °F]
Storage temperature range	-40 ... +85 °C [-40 ... +185 °F]
Humidity	0 ... 95 % r. h. (non-condensing)
Operating altitude	< 3,000 m or 10,000 ft
Internal volume	
Measure port	< 1 ml [1 cc]
Reference port	Approx. 40 ml [40 cc]
Communication	
Interface	RS-232 or RS-485
Baud rate	57,600 baud: default 9,600, 19,200 and 115,200 user selectable
Measuring rate	50 values/s: default - (factory adjustable)
Command sets	
	Mensor default command set Mensor legacy command set

Approvals

Approvals included in the scope of delivery

Logo	Description	Country
	EU declaration of conformity	European Union
	EMC directive ¹⁾	
	EN 61326-1 emission (group 1, class A) and immunity (industrial application)	
	RoHS directive	

1) **Warning!** This is class A equipment for emissions and is intended for use in industrial environments. In other environments, e.g. residential or commercial installations, it can interfere with other equipment under certain conditions. In such circumstances the operator is expected to take the appropriate measures.

Certificates

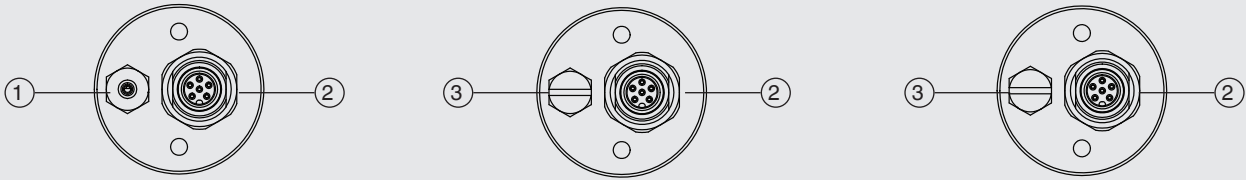
Certificate	
Calibration ²⁾	<ul style="list-style-type: none"> ■ A2LA calibration certificate (standard on factory) (traceable and accredited in accordance with ISO/IEC 17025) ■ DKD/DAkkS calibration certificate for absolute pressure measuring ranges (traceable and accredited in accordance with ISO/IEC 17025) ■ DKD/DAkkS calibration certificate for gauge pressure measuring ranges (traceable and accredited in accordance with ISO/IEC 17025)
Recommended recalibration interval	1 year (dependent on conditions of use)

2) Calibration in a vertical position.

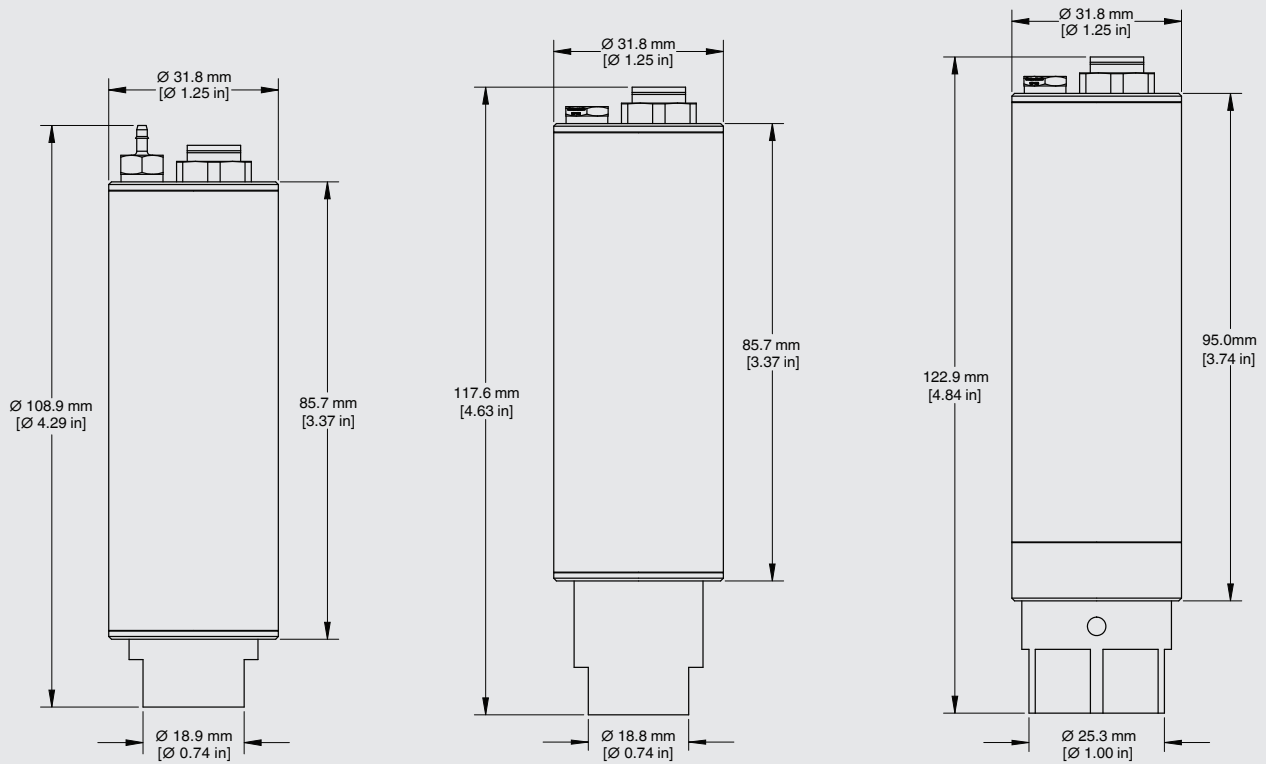
Approvals and certificates, see website

Dimensions in mm [in]

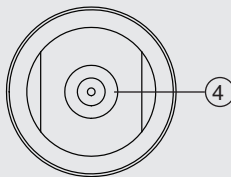
Interface and reference port 1)



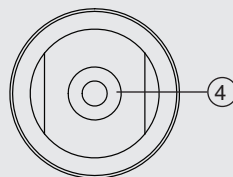
Case



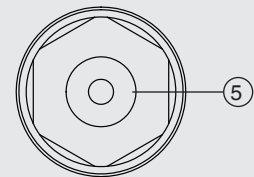
Pressure connection



$\leq 100 \text{ bar}$
 $[\leq 1,500 \text{ psi}]$



$100 \dots 400 \text{ bar}$
 $[1,500 \dots 6,000 \text{ psi}]$



$400 \dots 1,000 \text{ bar}$
 $[6,000 \dots 15,000 \text{ psi}]$

- ① Reference port for hose connection 1/16" barb
- ② 6-pin M8 connector
- ③ Seal screw

- ④ SAE J514 37° flare port 7/16-20 thread
- ⑤ Autoclave® F250 C female port

1) Reference port only for gauge pressure range; the port is plugged at absolute pressure range and sealed gauge ranges

Accessories for CPT9000	Order code
Description	CPX-A-T4
Power supply Via RS-232 interface cable	-1-
Power supply Via RS-485 interface cable	-2-
Adapter cable RS-232 to USB	-5-
Adapter cable RS-485 to USB	-6-
Pressure adapter SAE J514/JIC 4 male to 1/4 BSP female; max. 400 bar [6,000 psi]	-A-
Pressure adapter SAE J514/JIC 4 male to 1/8 BSP female; max. 400 bar [6,000 psi]	-B-
Pressure adapter SAE J514/JIC 4 male to 6 mm tube fitting; max. 400 bar [6,000 psi]	-C-
Pressure adapter SAE J514/JIC 4 male to 7/16-20 SAE female; max. 400 bar [6,000 psi]	-D-
Pressure adapter SAE J514/JIC 4 male to 1/4" tube fitting; max. 400 bar [6,000 psi]	-E-
Pressure adapter SAE J514/JIC 4 male to 1/8 NPT female; max. 400 bar [6,000 psi]	-S-
Communication cable Shielded with flying leads	-G-
Transport case	-T-
Ordering information for your enquiry:	
1. Order code: CPX-A-T4 2. Option:	↓ []

Scope of delivery

- Precision pressure sensor, premium version, model CPT9000
- Operating instructions
- Pressure adapter (as specified)
- 1.5 m [5 ft] connection cable with flying leads
- A2LA calibration certificate (standard on factory)

Options

- DKD/DAkkS calibration certificate

Ordering information

CPT9000 / Instrument version / Operating pressure range / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Type of certificate / Mounting position / Interface / Baud rate / Pressure connection adapter / Transport case / Further approvals / Additional ordering information

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