Precision pressure sensor
Premium version
Model CPT9000

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 inH_2O ... 15,015 psi]
- Temperature compensation: -20 ... +75 °C [-4 ... +167 °F]
- RS-232 or RS-485 communication
- Temperature output

Precision pressure sensor, model CPT9000

Description

The model CPT9000 precision pressure sensor is designed to excel in performance and value. With an accuracy of 0.008 % IS-33, a temperature compensation range of -20 ... +75 °C [-4 ... +167 °F], calibration interval of one year and selectable ranges from 25 mbar ... 1,001 bar [10 inH_2O ... 15,015 psi], the CPT9000 stands alone in performance and value. The CPT9000 is at the top of Mensor's digital pressure sensor line.

Application
The model CPT9000 precision pressure sensor is ideal for OEM instruments that require high accuracy in pressure measurement. 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 sensors can be configured for gauge and absolute pressure for any measuring range within the specified limits. With a recalibration interval of 365 days and a high resolution of 8 significant figures, the CPT9000 is flexible enough to be used in a wide variety of applications.

Data sheets showing similar products and accessories:
Precision pressure sensor, basic version; model CPT6020; see data sheet CT 25.13

Design

The 316L stainless steel construction and IP67 rating 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 case 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 % FS
Measuring ranges		
Gauge pressure	0 ... 1 bar to 0 ... 100 bar	0 ... 25 mbar to 0 ... < 1 bar
	0 ... 15 psi to 0 ... 1,500 psi	0 ... 0.36 psi to 0 ... < 15 psi
Bi-directional	-1 ... 10 bar to -1 ... 100 bar	-12.5 ... 12.5 mbar to -1 ... < 10 bar
	-15 ... 145 psi to -15 ... 1,500 psi	-0.18 ... 0.18 psi to -15 ... < 145 psi
Absolute pressure	0 ... > 1 bar abs. to 0 ... 101 bar abs.	0 ... 350 mbar abs. to 0 ... < 1 bar abs.
	--	0 ... > 101 bar abs. to 0 ... 1,001 bar abs.
	0 ... > 15 psi abs. to 0 ... 1,515 psi abs.	0 ... 5 psi abs. to 0 ... < 15 psi abs.
	--	0 ... > 1,515 psi abs. to 0 ... 15,015 psi abs.
Calibration interval	365 days	
Optional barometric reference		
Measuring range	552 ... 1,172 mbar abs. [8 ... 17 psi abs.]	
Accuracy [1]	0.008 % of reading	
Pressure units	39 and 1 user-defined	

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.

Precision pressure sensor	
Case	
Orientation effects	Negligible – completely removable with a zero point correction
Case material	316L stainless steel
Dimensions	see technical drawings
Weight	approx. 280 g [0.6 lbs]
Connections	
Pressure connections	FSAE J514/JIC 4 or Autoclave® F250C (or pressure ranges > 400 bar [> 6,000 psi])
Overpressure safety	2x proof, 3x burst, static pressure < 3.45 bar [< 50 psi]
Wetted parts	Silicon, 316 stainless steel, glass filled resins, epoxy on pressure ranges ≤ 350 mbar [≤ 5 psi] 316 stainless steel on pressure ranges > 350 mbar ... 100 bar [> 5 psi ... 1,500 psi] 316 stainless steel, fluorocarbon rubber on pressure ranges > 100 bar [1,500 psi]
Permissible media	Clean, dry, non-corrosive gases for pressure ranges ≤ 350 mbar [≤ 5 psi] Media compatible with the listed wetted parts for pressure ranges > 350 mbar [> 5 psi]
Ingress protection	IP67

Precision pressure sensor	
Display	
Resolution	100 ppb or better
Warm-up time	approx. 15 min. up to the specified accuracy
Internal volume	
Measure port	< 1 ml
Reference port	< 40 ml
Voltage supply	
Power supply	DC 9 ... 18 V (DC 12 V nominal)
Current supply	< 26 mA at DC 12 V ±5 %
Permissible ambient conditions	
Compensated temperature range	-20 ... +75 °C [-4 ... +167 °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
Communication	
Interface	RS-232 or RS-485 (multi-drop capability)
Baud rate	57,600 baud; default 9600, 19200 and 115200 user selectable
Measuring rate	50 values/s; default - (factory adjustable)

Approvals

Logo	Description	Country
CE	**EU declaration of conformity** ■ EMC directive [3] EN 61326-1 emission (group 1, class A) and immunity (industrial application) ■ RoHS directive	European Union

Certificates

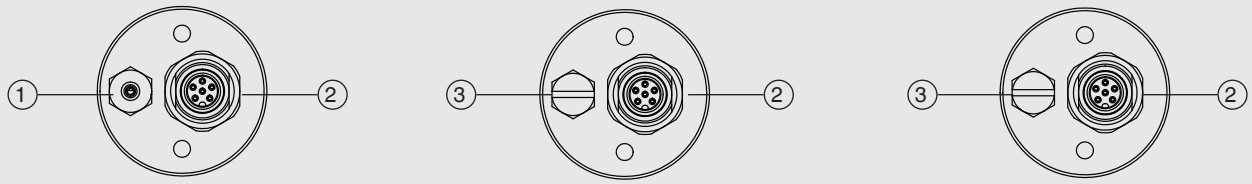
Certificate	
Calibration [4]	Standard: A2LA calibration certificate (standard on factory) Option: DKD/DAkkS calibration certificate

3) **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.
4) Calibration in a vertical position.

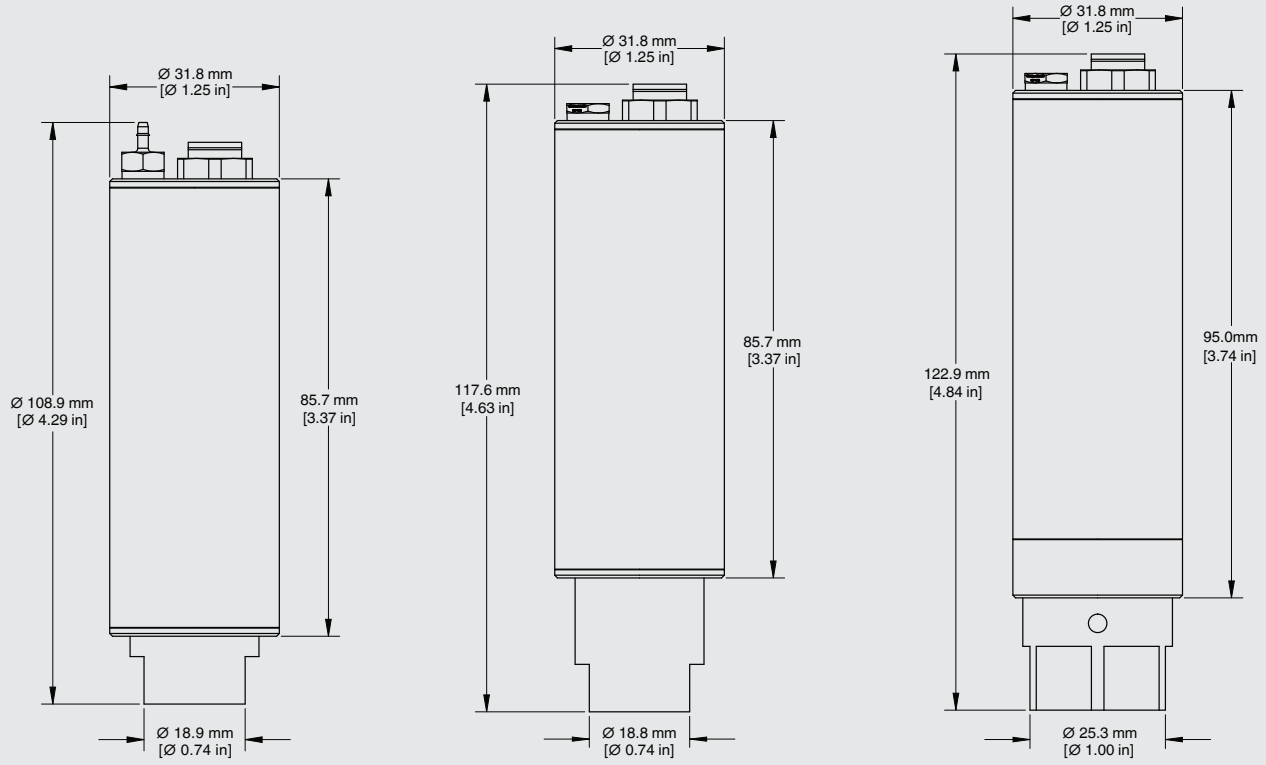
Approvals and certificates, see website

Dimensions in mm [in]

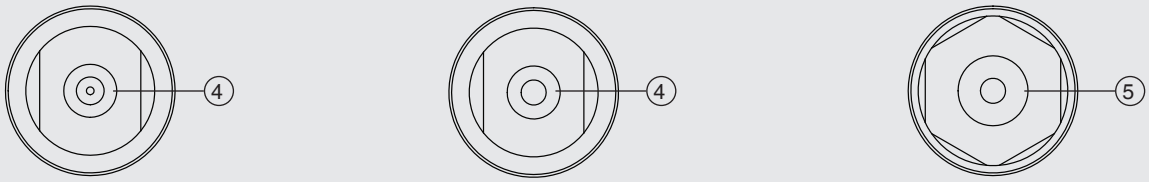
Interface and reference port [1)]



Case



Pressure connection



≤ 100 bar
[≤ 1,500 psi]

100 ... 400 bar
[1,500 ... 6,000 psi]

400 ... 1,000 bar
[6,000 ... 15,000 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

Scope of delivery

- Precision pressure sensor 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

Accessories

- Interface cable incl. voltage supply
- Pressure adapters

Ordering information
CPT9000 / 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 / Pressure adapter / Additional order information

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