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 inH₂O ... 15,015 psi]
- Temperature compensation: 0 ... 50 °C [32 ... 122 °F]
- RS-232 or RS-485 communication
- Temperature output

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 Mensor's 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.

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

**Model CPT9000**

#### Precision pressure sensor technology

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

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]
- **Wetted parts**: 316 stainless steel, silicon, glass filled resins, epoxy; for pressure ranges ≤ 350 mbar [≤ 5 psi]
  - 316 stainless steel; for pressure ranges > 350 mbar ... 100 bar [> 5 psi ... 1,500 psi]
  - 316 stainless steel, fluorocarbon rubber; for 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]
**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, 9600, 19200 and 115200 user selectable
- Measuring rate: 50 values/s; default - (factory adjustable)
- Command sets: Sensor default command set, Mensor legacy command set

**Approvals**

<table>
<thead>
<tr>
<th>Logo</th>
<th>Description</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️</td>
<td>EU declaration of conformity&lt;br&gt;- EMC directive ⁴&lt;br&gt;- EN 61326-1 emission (group 1, class A) and immunity (industrial application)&lt;br&gt;- RoHS directive</td>
<td>European Union</td>
</tr>
</tbody>
</table>

**Certificates**

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Calibration ⁵</td>
<td>Standard: A2LA calibration certificate (standard on factory)&lt;br&gt;Option: DKD/DAkkS calibration certificate</td>
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</tbody>
</table>

⁴ 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.

⁵ Calibration in a vertical position.

Approvals and certificates, see website
Dimensions in mm [in]

Interface and reference port 1)

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, 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 adapter / Further approvals / Additional order information