# Precision pressure transducer Premium version Model CPT9000

## Applications

- Pressure calibration
- High accuracy pressure monitoring
- Pressure sensing in critical applications
- Aerospace

## **Special features**

- Accuracy: 0.008% IS-33
- Range: 0-10 in. H2O (25 mbar) up to 10,000 psi (700 bar)
- Temperature compensation: 0 to 50°C
- USB, RS-232, or RS-485 communication
- Compact rugged design
- Calculates measurement uncertainty
- Temperature output
- Honeywell PPT and PPT2 emulation
- Two year warranty

# Description

### Overview

The model CPT9000 Precision Pressure Transducer is designed to excel in performance and value. Advancements in pressure sensor technology, characterization and miniaturization are heavily leveraged to fulfill the needs of a demanding market. With an accuracy down to 0.008% IS-33, a temperature compensation range of 0 to 50°C, calibration interval of 365 days and selectable ranges from 10 in. H2O (25 mbar) to 10,000 psi (700 bar), the CPT9000 stands alone in performance and value in the high accuracy pressure transducer market. The CPT9000 is at the top of Mensor's high accuracy pressure transducer line.

### Application

The CPT9000 Precision Pressure Transducer is ideal for OEM instruments that require a high accuracy pressure transducer. Examples are: flow calibrators, humidity calibrators, pressure controllers, aerospace wind tunnel calibration, automotive sensor testing, hydrology, oceanography, in the aviation and space industries, or wherever high accuracy pressure measurement and longterm calibration stability are valued.

WIKA data sheet CT 25.12 · PN 0019659001M · 11/2024



### Functions

The model CPT9000 Precision Pressure Transducer has a USB, RS-232, or RS-485 interface. The RS-485 interface offers multi-drop capability with simple cabling and five different baud rates to choose from.

This high accuracy pressure transducer can be configured for gauge and absolute pressure for any measuring range within the specified limits. With a recalibration time 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.

#### Design

The 316L SS construction and wetted parts are an asset when utilizing in corrosive or wet environments. Its compact design offers an advantage in miniaturization of product design in many OEM applications. The pressure connection and housing can be customized to fit your application. Standard fittings are easily changed using the AN-4 female connection.

Data sheets showing similar products and accessories:

Precision pressure transducers, CPT9000, CPT6030, see datasheet CT25.12, CT25.14



Precision pressure transducer, model CPT9000

WIKA data sheet CT 25.12

## Specifications Model CPT9000

| Precision pressure sensor technology |  |  |  |
|--------------------------------------|--|--|--|
| Accuracy <sup>1)</sup>               | 0.008% IS-33 <sup>2)</sup>                       | 0.008% IS-50 <sup>3)</sup>                               | 0.008% Full Span   |
| Measuring ranges                     |  |  |  |
| Gauge pressure <sup>4)</sup>         | 0 15 to 0 1500 psig<br>(0 1 to 0 100 bar)        | 0>1,500 to 06,000 psig<br>(0 > 100 to 0 400 bar)         | 0 0.36 to 0 < 15 psig<br>(0 25 mbar to 0 < 1 bar)<br>0 >6000 to 0 10,000 psig<br>(0 >400 to 0 700 bar)                           |
| Bi-directional <sup>4)5)</sup>       | -15 145 to -15 1500 psi<br>(-1 10 to -1 100 bar) | -15 >1,500 to -15 6,000 psi<br>(-1 >100 to -1 400 bar)   | -0.18 0.18 to -15 < 145 psi<br>(-12.5 12.5 mbar to -1 <<br>10 bar)<br>-15 >6,000 to -15 10,000<br>psi<br>(-1 >400 to -1 700 bar) |
| Absolute pressure                    | 0 15 to 0 1515 psia<br>(0 1 to 0 101 bar abs.)   | 0 > 1,515 to 0 6,015 psia<br>(0 > 101 to 0 401 bar abs.) | 0 5 to 0 <15 psia<br>(0 350 mbar abs. to<br>0 <1 bar abs.)<br>0 > 6,015 to 0 10,015 psia<br>(0 > 401 bar to 0 701 bar<br>abs.)   |
| Calibration interval                 | 365 days   |  |  |
| Pressure units                       | 39 and 1 user defined                            |  |  |
| CPT9000 as barometric reference      |  |  |  |
| Measuring range                      | 8 17 psi abs. (552 1,172 mbar abs)               |  |  |
| Accuracy <sup>1)</sup>               | 0.008% of reading                                |  |  |

1) It is defined by the total measurement uncertainty, with the coverage factor (k = 2) and includes 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 with recommended zero point adjustment every 30 days. 0.008 % IS-33 accuracy: Between 0 ... 33 % of the full scale, the accuracy is 0.008% of one third of the full scale value and between 33 ... 100 % of the full scale, the accuracy is 0.008 % of reading.

2)

3) reading.

4) Ranges from >1500 to 6,000 psig will be sealed gauge transducers.

The negative portion of a bidirectional range has the same accuracy as the equivalent positive range. 5)

### **General Specifications**

| Case                |  |  |
|---------------------|--|--|
| Orientation effects | Removable with re-zeroing  |  |
| Dimensions          | See technical drawings   |  |
| Weight              | ~250 g (depending on range)  |  |
| Ingress protection  | IP-67  |  |
| Display             |  |  |
| Resolution          | 100 ppb or better  |  |
| Boot-up time        | 750 ms (RS-232 and RS-485), 3.5s (USB)   |  |
| Warm-up time        | 15 min.  |  |
| Connections         |  |  |
| Pressure Port       | FSAE J514/JIC 4  |  |
| Reference Port      | Absolute and >1500 psi Gauge: Sealed Relief Valve <sup>6)</sup><br><1500 psi Gauge: 1/16" Barb fitting |  |
| Overpressure limit  | 2X proof, 3X burst; static pressure < 50 psig  |  |

| Pressure port adapters         | Standard: without   |
|--------------------------------|---|
|                                | Option (only up to 6,000 psi): 1/8" female BSP fitting, 1/4" 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                   |
| Materials, wetted parts        | Ranges < 5 psi – Silicon, 316 SS, glass filled resins, epoxy  |
|                                | Ranges ≥ 5 to 1500 psi – 316 SS<br>Ranges >1500 psi – 316 SS fluorocarbon rubber                        |
| Pressure media                 | Banges $> 5$ nsi – clean dry non-corrosive dases  |
|                                | Ranges $\geq$ 5 psi – media compatible with the listed wetted parts                                     |
| Voltage supply                 |   |
| Power supply                   | RS-232/RS-485: 9 to 18 VDC (12 VDC nominal)   |
|                                | USB: 3.0 to 5.25 VDC (5 VDC nominal) Bus Powered  |
| Power consumption              | RS-232/RS-485: < 26 mA at 12 VDC +/-5% (0.40 Wmax)  |
|                                | USB: < 47 mA at 5 VDC +/-5% (0.25 Wmax)   |
| Permissible ambient conditions |   |
| Compensated temperature range  | 0 to 50 °C (32 to 122 °F)   |
| Operating temperature range    | -40 to 85 °C (-40 to 185 °F)  |
| Storage temperature range      | -40 to 85 °C (-40 to 185 °F)  |
| Humidity                       | 0 95% r.h. (non-condensing)   |
| Operating altitude             | <3000 meters (10,000 feet)  |
| General Specifications         |   |
| Internal volume                |   |
| Measure port                   | <1 cc   |
| Reference port internal volume | ~ 40 cc   |
| Communication                  |   |
| Interface                      | USB 2.0, RS-232 or RS-485   |
| Baud rate                      | Default 57,600 baud - 9600, 19200, 38400 and 115200 user selectable                                     |
| Measuring rate                 | 50 values/second, default - (factory adjustable)  |
| Command sets                   | See manual, Section 6 Operation   |
|                                |   |

6) Sealed Relief Valve has flurocarbon rubber O-ring with a release pressure setting of 10-20 psig

| Approvals and Certificates |  |                |
|----------------------------|--|----------------|
| Logo                       | Description  | Country        |
| CE                         | EU Declaration of Conformity<br>EU Importer: WIKA, 63911 Klingenberg, Germany  | European Union |
| UK<br>CA                   | UKCA Declaration of Conformity<br>Importer: WIKA Instruments Ltd, Unit 6 & 7 Goya Business Park, The Moor Road, Sevenoaks Kent, TN15 5GY | Great Britain  |

# Certificates

| Certificate                        |  |
|------------------------------------|--|
| Calibration                        | <ul> <li>A2LA calibration certificate (standard on factory)</li> <li>DKD/DAkkS calibration certificate for an absolute pressure measuring range</li> <li>DKD/DAkkS calibration certificate for a gauge pressure measuring range</li> </ul> |
| Recommended recalibration interval | 365 days (dependent on conditions of use)  |

# Dimensions in mm [in]

Shown is a gauge variant with 1/16" barbed reference port
 Maximum dimension for absolute variant



## WIKA-Cal calibration software

### Easy and fast creation of a high-quality calibration certificate

The WIKA-Cal calibration software is used for generating calibration certificates or logger protocols for pressure measuring instruments. A demo version is available for free download.

A template helps the user and guides him through the creation process of a document.

To switch from the demo version to a licensed version, a USB dongle with a valid licence must be purchased.

The pre-installed demo version changes automatically to the selected version when plugging in the USB dongle and remains available as long as the USB dongle is connected to the PC.

- The user is guided through the calibration or logger process
- Management of calibration data and instrument data
- Intelligent pre-selection via SQL database
- Menu languages: German, English, Italian, French, Dutch, Polish, Portuguese, Romanian, Spanish, Swedish, Russian, Greek, Japanese, Chinese More languages will be due with software updates
- Customer-specific complete solutions possible

The supported instruments are continuously expanded and even customer-specific adaptations are possible.

For further information see data sheet CT 95.10



The WIKA-Cal calibration software is available for online calibrations together with a PC. The scope of software functions depends on the selected licence. Several licences can be combined on one USB dongle.

| C | al-Template (light version)   | Cal-Template (full version)  | Log-Template (full version)  |  |  |
|---|---|--|--|--|--|
| • | Semi-automated calibration with use of any Mensor controller  | <ul> <li>Fully automatic calibration with use of any<br/>Mensor controller</li> </ul>  | Live measurement recording for a certain<br>period of time with selectable interval,<br>duration and start time  |  |  |
|   | Creation of calibration certificates 3.1 pe<br>Export of calibration reports to Excel <sup>®</sup> te<br>Calibration of gauge pressure measuring<br>and vice versa<br>Creation of calibration certificates with n | r DIN EN 10204<br>mplate or XML file<br>g instruments with absolute pressure references<br>o limitations on measuring points | <ul> <li>Creation of logger protocols with graphic<br/>and/or tabular representation of the<br/>measurement results in PDF format</li> <li>Export of measurement results as CSV file<br/>possible</li> </ul> |  |  |
|   | Ordering information for your enquiry for a single license:   |  |  |  |  |
|   | WIKA-CAL-LZ-Z-Z   | WIKA-CAL-CZ-Z-Z  | WIKA-CAL-ZZ-L-Z  |  |  |
|   | Ordering information for your enquiry for the pair license:   |  |  |  |  |
|   | Cal-Template (light version) toge   | ther with Log-Template (full version)  | WIKA-CAL-LZ-L-Z  |  |  |
|   | Cal-Template (full version) toge  | ther with Log-Template (full version)  | WIKA-CAL-CZ-L-Z  |  |  |

# Accessories

| Accessories for CPT9000  | Order code |
|--|------------|
| Description  | CPX-A-T4   |
| Power supply with communications cable<br>RS-232 communciation cable                       | -1-        |
| Power supply with communication cable<br>RS-485 communications cable                       | -2-        |
| Adapter cable<br>USB to RS-232   | -5-        |
| Adapter cable<br>USB to RS-485   | -6-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 1/4 BSP male; max. 400 bar [6,000 psi]          | -A-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 1/8 BSP female; max. 400 bar [6,000 psi]        | -B-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 6 mm tube fitting; max. 400 bar [6,000 psi]     | -C-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 7/16-20 SAE male; max. 400 bar [6,000 psi]      | -D-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 1/4" tube fitting; max. 400 bar [6,000 psi]     | -E-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 1/4" NPT male fitting; max. 400 bar [6,000 psi] | -F-        |
| Pressure adapter<br>SAE J514/JIC 4 male to 1/8" NPT female; max. 400 bar [6,000 psi]       | -S-        |
| Communication cable<br>Shielded with flying leads  | -G-        |
| Transport case<br>Carrying Case  | -T-        |
| Gasket-flare<br>50 pcs. gasket-flare 37 deg 1/4" for J514/JIC 4 pressure port option       | -V-        |
| Ordering information for your enquiry:   |            |
| 1. Order code: CPX-A-T4<br>2. Option:  | ↓<br>[]    |

# Scope of delivery

- Precision pressure sensor, premium version, model CPT9000
- Operating instructions
- Pressure adapter (as specified)
- RS-232/RS-485: 1.5 m [5 ft] connection cable with flying leads or USB: Cable for IP67
- A2LA calibration certificate (standard on factory)

## Options

- DKD/DAkkS calibration certificate
- Power supply & communication cable

### **Ordering information**

CPT9000 / Instrument version / Pressure application area / Pressure unit / Pressure type / Minimum pressure range / Maximum pressure range / Type of certificate / Orientation / Digital interface / Baud rate / Pressure port adapters / Carrying case / Further approvals / Additional order information / Electrical connection length

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

All standard Mensor products are provided with a calibration certificate traceable to NIST. The calibration program at Mensor is accredited to both ISO/IEC 17025:2017 and Z540-1-1994 by A2LA. Mensor is certified to ISO9001:2015.



© 2024 WIKA Alexander Wiegand SE & Co. KG, all rights reserved. The specifications given in this document represent the state of engineering at the time of publishing We reserve the right to make modifications to the specifications and materials.

WIKA data sheet CT 25.12 · PN 0019659001M · 11/2024



Imported to Europe by: WIKA 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 Imported to UK by: WIKA Instruments Ltd, Unit 6 & 7 Goya Business Park, The Moor Road, Sevenoaks Kent, TN15 5GY

Page 7 of 7

Mensor LP 201 Barnes Drive San Marcos, TX 78666 • USA Tel. (+1) 512 3964200

mensor

Fax (+1) 512 3964200 Fax (+1) 512 3961820 E-Mail sales@mensor.com www.mensor.com