



## Calibration

# Precision Pressure Transducer Premium version Model CPT9000



WIKA data sheet CT 25.12

## Applications

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

## Special features

- Accuracy: 0.008% IS-33
- Range: 0-10 in. H<sub>2</sub>O (25 mbar) up to 6,015 psi (401 bar)
- Temperature compensation: 0 to 50°C
- USB, RS-232, or RS-485 communication
- Compact rugged design
- Calculates measurement uncertainty
- Temperature output



Precision Pressure Transducer, Model CPT9000

## 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. H<sub>2</sub>O (25 mbar) to 6000 psi (400 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.

### 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 three 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.

# 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
<b>Measuring ranges</b>			
Gauge pressure <sup>4)</sup>	0 ... 15 to 0 ... 1500 psig (0 ... 1 to 0 ... 100 bar)	0...>1,500 to 0...6,000 psig (0 ... > 100 to 0 ... 400 bar)	0 ... 0.36 to 0 ... < 15 psig (0 ... 25 mbar to 0 ... < 1 bar)
Bi-directional <sup>4)5)</sup>	-15 ... 145 to -15 ... 1500 psi (-1 ... 10 to -1 ... 100 bar)	-15 ... >1,500 to -15 ... 6,000 psi (-1 ... >100 to -1 ... 400 bar)	-0.18 ... 0.18 to -15 ... < 145 psi (-12.5 ... 12.5 mbar to -1 ... < 10 bar)
Absolute pressure	0 ... 15 to 0 ... 1515 psia (0 ... 1 to 0 ... 101 bar abs.)	0 ... > 1,515 to 0 ... 6,015 psia (0 ... > 101 to 0 ... 401 bar abs.)	0 ... 5 to 0 ... <15 psia (0 ... 350 mbar abs. to 0 ... <1 bar abs.)
Calibration interval	365 days		
Pressure units	39 and 1 user defined		
<b>CPT9000 as barometric reference</b>			
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.
- 2) 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.
- 3) 0.008 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.008% of half of the full scale value and between 50 ... 100 % of the full scale, the accuracy is 0.008 % of reading.
- 4) Ranges from >1500 to 6,000 psig will be sealed gauge transducers.
- 5) The negative portion of a bidirectional range has the same accuracy as the equivalent positive range.

## General Specifications

<b>Case</b>	
Orientation effects	Removable with re-zeroing
Dimensions	See technical drawings
Weight	~250 g (depending on range)
<b>Ingress protection</b>	IP-67
<b>Display</b>	
Resolution	100 ppb or better
Boot-up time	750 ms (RS-232 and RS-485), 3.5s (USB)
Warm-up time	15 min.
<b>Connections</b>	
Pressure Port	FSAE J514/JIC 4
Reference Port	Absolute and >1500 psi Gauge: Sealed Relief Valve <sup>6)</sup> <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 Ranges >1500 psi – 316 SS, fluorocarbon rubber
Pressure media	Ranges ≤ 5 psi – clean, dry, non-corrosive gases Ranges > 5 psi – media compatible with the listed wetted parts
<b>Voltage supply</b>	
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)
<b>Permissible ambient conditions</b>	
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)
<b>General Specifications</b>	
<b>Internal volume</b>	
Measure port	<1 cc
Reference port internal volume	~ 40 cc
<b>Communication</b>	
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 fluoro-carbon rubber O-ring with a release pressure setting of 10-20 psig

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

## Certificates

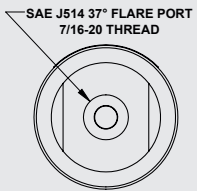
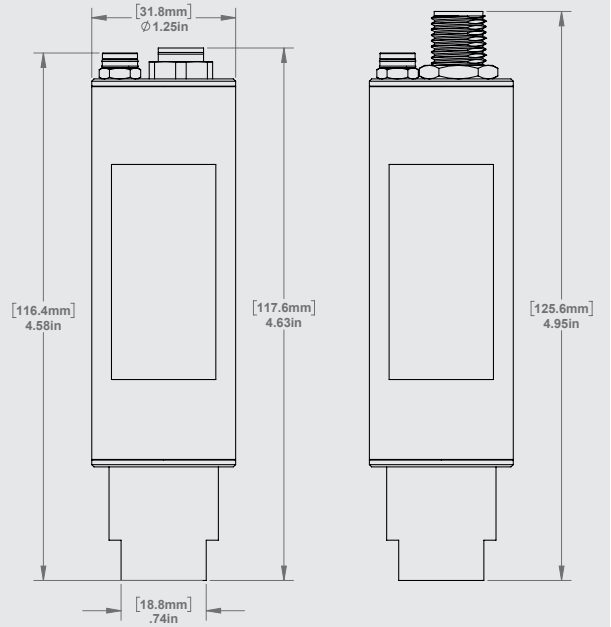
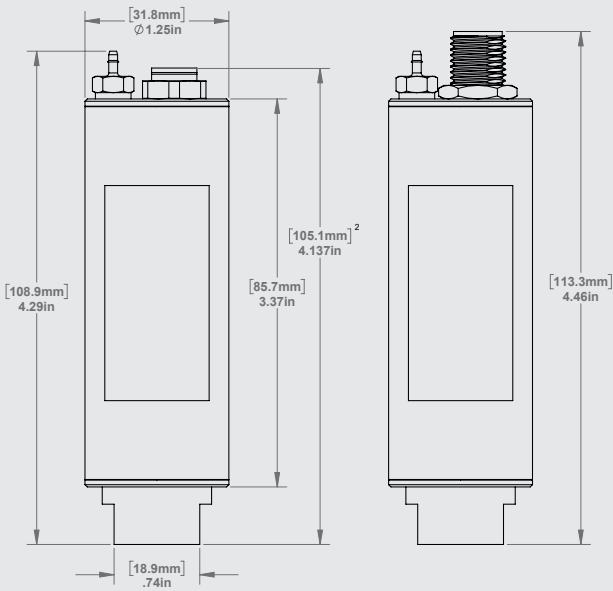
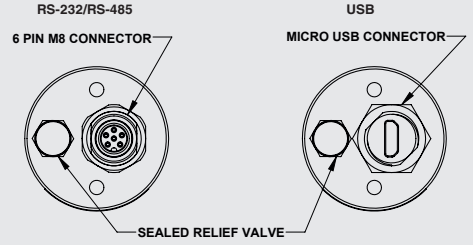
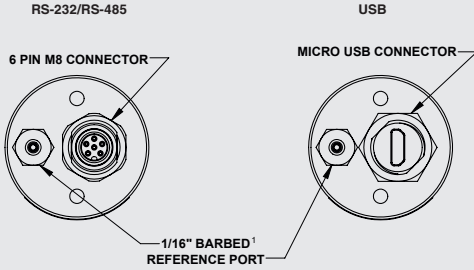
<b>Certificate</b>	
<b>Calibration</b>	<ul style="list-style-type: none"> <li>■ A2LA calibration certificate (standard on factory)</li> <li>■ DKD/DAkkS calibration certificate for an absolute pressure measuring range</li> <li>■ DKD/DAkkS calibration certificate for a gauge pressure measuring range</li> </ul>
<b>Recommended recalibration interval</b>	365 days (dependent on conditions of use)

# Dimensions in mm [in]

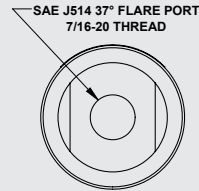
- 1 Shown is a gauge variant with 1/16" barbed reference port
- 2 Maximum dimension for absolute variant

## Low Pressure Version (Pressure < 1500 psi)

## Medium Pressure Version (1500 to 6000 psi)



≤1500 psi



1500 to 6000 psi

## 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.

Cal-Template (light version)	Cal-Template (full version)	Log-Template (full version)
<ul style="list-style-type: none"> <li>■ Semi-automated calibration with use of any Mensor controller</li> </ul>	<ul style="list-style-type: none"> <li>■ Fully automatic calibration with use of any Mensor controller</li> </ul>	<ul style="list-style-type: none"> <li>■ Live measurement recording for a certain period of time with selectable interval, duration and start time</li> <li>■ Creation of logger protocols with graphic and/or tabular representation of the measurement results in PDF format</li> <li>■ Export of measurement results as CSV file possible</li> </ul>
<ul style="list-style-type: none"> <li>■ Creation of calibration certificates 3.1 per DIN EN 10204</li> <li>■ Export of calibration reports to Excel® template or XML file</li> <li>■ Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa</li> <li>■ Creation of calibration certificates with no limitations on measuring points</li> </ul>		
<b>Ordering information for your enquiry for a single license:</b>		
WIKA-CAL-LZ-Z-Z	WIKA-CAL-CZ-Z-Z	WIKA-CAL-ZZ-L-Z
<b>Ordering information for your enquiry for the pair license:</b>		
Cal-Template (light version) together with Log-Template (full version)		WIKA-CAL-LZ-L-Z
Cal-Template (full version) together with Log-Template (full version)		WIKA-CAL-CZ-L-Z

## Accessories

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



## 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

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