

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. H₂O (25 mbar) up to 15,015 psi (1001 bar)
- Temperature compensation: 0 to 50°C
- 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. H₂O (25 mbar) to 15,015 psi (1001 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 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.

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 ¹⁾ | 0.008% IS-33 ²⁾ | 0.008% IS-50 ³⁾ | 0.008% Full Span |
|--|--|--|---|
| Measuring ranges | | | |
| Gauge pressure ⁴⁾ | 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) AND 0 ... > 6,000 to 0 ... 15,000 psig (0 ... > 400 to 0 ... 1,000 bar) |
| Bi-directional ⁴⁾⁵⁾ | -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) AND -15 ... > 6,000 to -15 ... 15,000 psi (-1 ... > 400 to -1 ... 1,000 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.) AND 0 ... > 6,015 to 0 ... 15,015 psi (0 ... > 401 to 0 ... 1,001 bar) |
| 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 ¹⁾ | 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 15,000 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



| | |
|---------------------------|--|
| Case | |
| Orientation effects | Negligible – completely 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 |
| Warm-up time | 15 min. |
| Connections | |
| Pressure Port | FSAE J514/JIC 4 or Autoclave® F250C (for pressure ranges > 400 bar (> 6,000 psi)) |
| Reference Port | Absolute and >1500 psi Gauge: Sealed Relief Valve ⁶⁾ <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 \leq 5 psi – clean, dry, non-corrosive gases Ranges $>$ 5 psi – media compatible with the listed wetted parts |
| Voltage supply | |
| Power supply | 9 to 18 VDC (12 VDC nominal) |
| Power consumption | $<$ 26 mA at 12 VDC \pm 5% (.40 W max) |
| 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 | \sim 40 cc |
| Communication | |
| Interface | 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

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) | |
| | Low voltage directive EN 61010-1 | |
| | RoHS directive EN 50581 | |
|  | RoHS directive China RoHS | China |

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

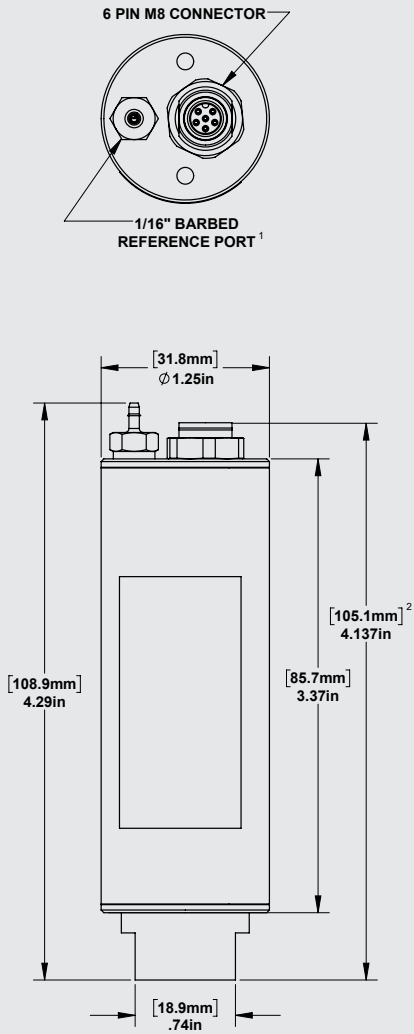
| Certificate | |
|---|--|
| Calibration | <ul style="list-style-type: none"> ■ A2LA calibration certificate (standard on factory) ■ DKD/DAkkS calibration certificate for an absolute pressure measuring range ■ DKD/DAkkS calibration certificate for a gauge pressure measuring range |
| Recommended recalibration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

Approvals and certificates, see website

Dimensions in mm [in]

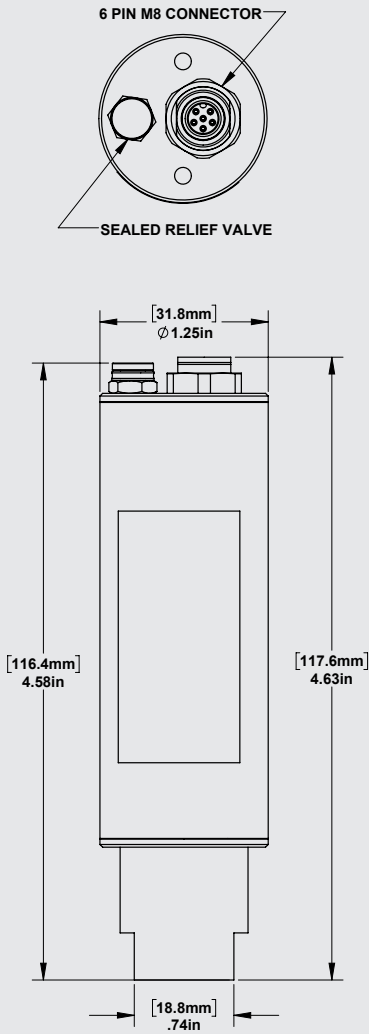
- 1 Shown is a gauge variant with 1/16" barbed reference port
- 2 Maximum dimension for absolute variant

Low Pressure Version (Pressure < 1500 psi)



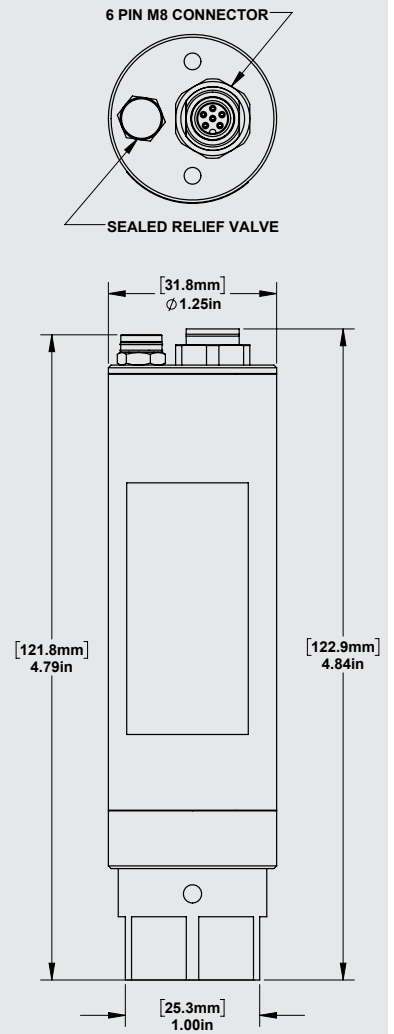
≤1500 psi

Medium Pressure Version (1500 to 6000 psi)

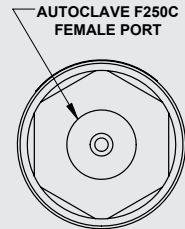
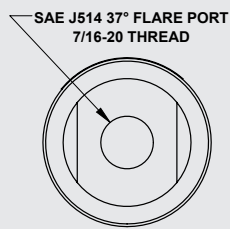
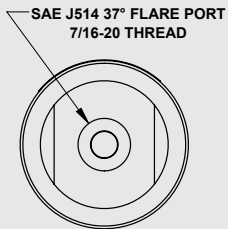


1500 to 6000 psi

High Pressure Version (6000 to 15,000 psi)



6000 to 15000 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"> ■ Semi-automated calibration with use of any Mensor controller | <ul style="list-style-type: none"> ■ Fully automatic calibration with use of any Mensor controller | <ul style="list-style-type: none"> ■ Live measurement recording for a certain period of time with selectable interval, duration and start time ■ Creation of logger protocols with graphic and/or tabular representation of the measurement results in PDF format ■ Export of measurement results as CSV file possible |
| <ul style="list-style-type: none"> ■ Creation of calibration certificates 3.1 per DIN EN 10204 ■ Export of calibration reports to Excel® template or XML file ■ Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa ■ Creation of calibration certificates with no limitations on measuring points | | |
| 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) 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 |
| Power supply with communications cable RS-232 communication cable | -1- |
| Power supply with communication cable RS-485 communications cable | -2- |
| Adapter cable USB to RS-232 | -5- |
| Adapter cable USB to RS-485 | -6- |
| Pressure adapter SAE J514/JIC 4 male to 1/4 BSP male; 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 male; 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 1/4" NPT male fitting; max. 400 bar [6,000 psi] | -F- |
| 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 Carrying 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
- 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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