

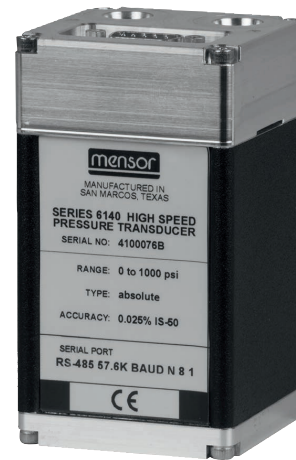
Precision pressure transducer High-speed version Model CPT6140

Applications

- Testing technology
- Calibration technology
- Laboratories and maintenance shops
- Leak and burst tests

Special features

- Accuracy down to 0.025 % IS-50 (IntelliScale)
- Precision down to 0.009 % FS
- Measuring range from -1 ... 400 bar [-15 ... 6,000 psi]
- Output mode 250 Hz (4 ms) response time
- Streaming output mode in IEEE-754 format



**Precision pressure transducer, high-speed version,
model CPT6140**

Description

The model CPT6140 high-speed pressure transducer is a compact, robust sensor with an output mode of 250 Hz (4 ms) response time and a measuring range which is freely selectable between -1 ... 400 bar [-15 ... 6,000 psi]. The accuracy of up to 0.025 % IS-50 makes the sensor suitable for a wide range of applications in precision measurement technology.

Application

This precision pressure transducer is built into OEM instruments, e.g. in pressure, flow or humidity calibrators, or in any instrument where high-speed measurement is needed. This pressure transducer is set up with streaming output mode in IEEE-754 format, and does not allow the user to send commands or queries in its native mode. It is used as a reference pressure transducer within the automated manufacturing of pressure measuring instruments or calibration stands.

Through a high accuracy, speed of reading and long-term stability, the CPT6140 is particularly suited for applications in wind tunnels, in pressure chambers or for leak and burst tests. These characteristics make it a valuable tool in metrology, hydrology, oceanography, and in the aviation and space industries.

Functions

The model CPT6140 is available with RS-232 or RS-485 interface. In both cases, only one device can be connected to a host because the transducer continuously outputs data. The transducer can be configured for gauge and absolute pressure for any measuring range within the specified limits. With a calibration interval of 180 or 365 days (depending on accuracy selected) and a high resolution of 6 digits, the CPT6140 is flexible enough to be used in a wide variety of applications.

Compact design

With its robust and compact design, the pressure transducer can be easily integrated in a 19" rack. With the combination of male and female threads, a fast and secure fitting is always possible, negating the need for further sealing.

Specifications

Measuring range precision pressure transducer		
Accuracy ¹⁾	0.025 % FS ²⁾	0.025 % IS-50 ³⁾
Measuring ranges ⁴⁾		
Gauge pressure	0 ... ≥ 70 mbar to 0 ... 400 bar [0 ... ≥ 1 to 0 ... 6,000 psi]	0 ... 1 to 0 ... 400 bar [0 ... 15 to 0 ... 6,000 psi]
Bidirectional pressure	-35 ... +35 mbar to -1 ... +400 bar [-0.5 ... +0.5 to -14.5 ... +6,000 psi]	-1 ... 10 to 0 ... 400 bar [-15 ... 145 to 0 ... 6,000 psi]
Absolute pressure ⁵⁾	0 ... 0.5 to 0 ... 401 bar abs. [0 ... 7.5 to 0 ... 6,015 psi abs.]	0 ... 1 to 0 ... 401 bar abs. [0 ... 15 to 0 ... 6,015 psi abs.]
Precision ⁶⁾	0.009 % FS	0.009 % FS
Calibration interval	180 days	365 days

- 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) FS = Full span = end of measuring range - start of measuring range
- 3) 0.01 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.01 % of half of the full scale value and between 50 ... 100 % of the full scale, the accuracy is 0.01 % of reading.
- 4) For pressure ranges from ≥ 100 ... ≤ 138 bar [≥ 1,500 ... ≤ 2,000 psi] gauge will be sealed gauge sensors.
- 5) The minimum calibrated range of absolute sensor(s) is 600mTorr
- 6) It is defined as the combined effects of linearity, repeatability and hysteresis throughout the stated compensated temperature range

As barometric reference	
Measuring range	■ 552 ... 1,172 mbar abs. ■ 8 ... 17 psi abs.
Accuracy ¹⁾	0.025 % of reading
Precision ²⁾	0.009 % FS
Calibration interval	365 days

- 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) It is defined as the combined effects of linearity, repeatability and hysteresis throughout the stated compensated temperature range

Basic information precision pressure transducer	
Resolution	> 6 significant digits
Filter	Adjustable exponential filter from 0 ... 99 % The filter is only active within a defined range of 0.010 % FS.
Warm-up time	Approx. 15 min up to the specified accuracy
Pressure units	36
Voltage supply	
Power supply	DC 12 V ± 10 %, 55 mA max.
Case	
Mounting position	< 1 bar [< 15 psi] negligible Can be adjusted through zero point adjustment (linear shift of the characteristic curve)
Dimensions	→ See technical drawings
Weight	505 g [1.11 lb]

Communication	
Interface	<ul style="list-style-type: none"> ■ RS-232 ■ RS-485
Baud rate	■ 57600 baud
Command sets	<ul style="list-style-type: none"> ■ Mensor default command set ■ Mensor legacy command set
Response time	4 ms for a FS pressure pulse
Measuring rate	250 values/s

Pressure connection			
Connection	7/16-20 SAE, tube fitting For pressure and reference port The reference port is sealed for absolute pressure transducers		
Pressure adapters	<ul style="list-style-type: none"> ■ 6 mm tube fitting ■ ¼" tube fitting ■ ¼ NPT, female thread ■ ⅜ NPT, female thread ■ ½ BSP, female thread ■ ¼ NPT, female thread incl. safety relief valve for pressure range ≤ 70 bar [$\leq 1,000$ psi] ■ ⅜ NPT, female thread incl. safety relief valve for pressure range < 70 bar [$< 1,000$ psi] 		
Wetted parts	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ■ Aluminium ■ Brass ■ Stainless steel 316 ■ Buna-N ■ Viton® ■ Silicone grease </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ■ Silicone rubber ■ Nylon ■ Ceramic ■ Glass ■ Silicon </td> </tr> </table>	<ul style="list-style-type: none"> ■ Aluminium ■ Brass ■ Stainless steel 316 ■ Buna-N ■ Viton® ■ Silicone grease 	<ul style="list-style-type: none"> ■ Silicone rubber ■ Nylon ■ Ceramic ■ Glass ■ Silicon
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Permissible pressure media	Pressure ranges ≤ 1 bar [≤ 15 psi]	Clean, dry, non-corrosive gases	
	Pressure ranges > 1 bar [> 15 psi]	Media compatible with the listed wetted parts All other ranges compatible with aluminum, Stainless steel 316, brass, Buna-N, Viton®, sealant, and silicone grease.	
	Not designed for oxygen use		
Overpressure safety	150 % FS or greater, depending on range		

1) Sealed relief valve has fluoro-carbon rubber O-ring with a release pressure setting of 0.69 ... 1.38 bar [10 ... 20 psi]

Operating conditions	
Altitude	< 3,048 m [< 10,000 ft]
Place of use	Indoor
Operating temperature	0 ... 50 °C [2 ... 122 °F]
Compensated temperature range	15 ... 45 °C [59 ... 113 °F]
Storage temperature range	0 ... 70 °C [32 ... 158 °F]
Relative humidity, condensation	0 ... 95 % r. h. (non-condensing)
Mounting position	<ul style="list-style-type: none"> ■ Horizontal ■ Vertical ■ Customised

Approvals

Logo	Description	Region
CE	EU declaration of conformity	European Union
	EMC directive EN 61326-1 emission (group 1, class B) and immunity (industrial application)	
	Pressure Equipment Directive PS > 200 bar; module A, pressure accessory	
	RoHS directive	
UK CA	UKCA	United Kingdom
	Electromagnetic compatibility regulations	
	Pressure equipment (safety) regulations	
	Restriction of hazardous substances (RoHS) regulations	

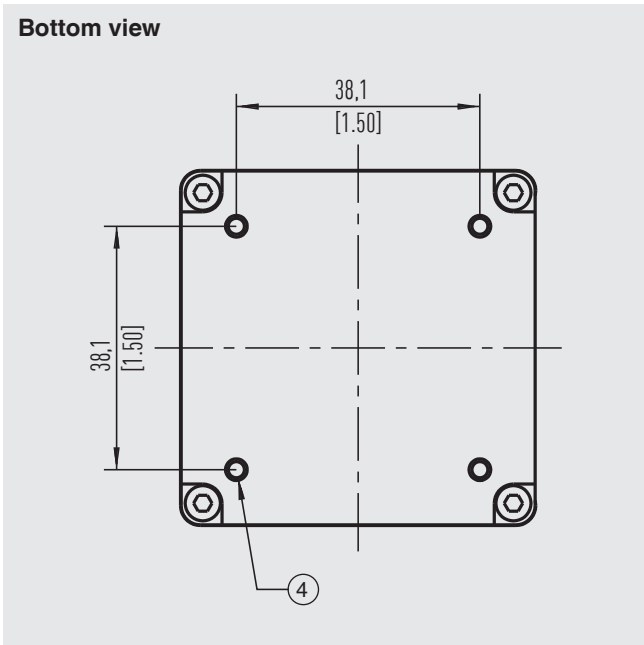
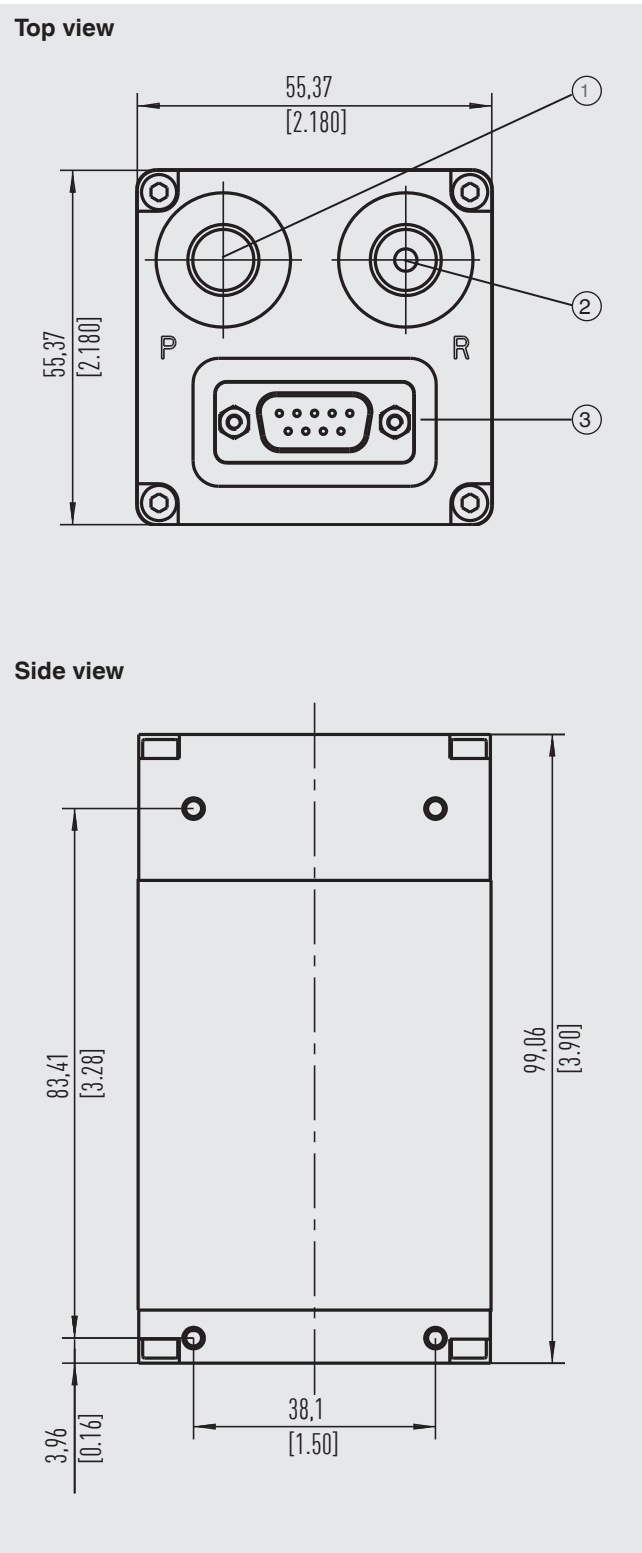
Certificates

Certificate	
Calibration ¹⁾	<ul style="list-style-type: none"> ■ A2LA calibration certificate (traceable and accredited in accordance with ISO/IEC 17025) ■ DAkkS calibration certificate - absolute pressure (traceable and accredited in accordance with ISO/IEC 17025) ■ DAkkS calibration certificate - gauge pressure (traceable and accredited in accordance with ISO/IEC 17025)
Recommended calibration interval	6 months (dependent on conditions of use)

1) Calibration in a vertical position.

→ Approvals and certificates, see website

Dimensions in mm [in]



- ① Pressure port (7/16-20 SAE)
- ② Reference port (7/16-20 SAE)
- ③ RS-232 or RS-485 interface
- ④ 6-32 UNC-28 or metric M3 x 0.5

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 and is available as a demo version for a cost-free download.

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

The preinstalled 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 preselection via SQL database
- Menu languages: German, English, Italian, French, Dutch, Polish, Portuguese, Romanian, Spanish, Swedish, Russian, Greek, Japanese, Chinese
More languages are due with software updates
- Customer-specific complete solutions possible
- Maximum level of automation in connection with our CPx series

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

→ For further information, see data sheet CT 95.10

Three WIKA-Cal licences are available together with one CPx series precision pressure measuring instrument. 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 (demo version)	Cal-Template (light version)	Cal-Template (full version)	Log-Template (full version)
Fully automatic calibration	Semi-automatic calibration	Fully automatic calibration	<ul style="list-style-type: none"> ■ Live measured value 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 measuring results in PDF format ■ Possibility of exporting measuring results as CSV file
Limitation to two measuring points	No limitation of the measuring points approached		
<ul style="list-style-type: none"> ■ Creation of 3.1 inspection certificates per DIN EN 10204 ■ Calibration data can be exported to Excel® template or XML file ■ Calibration of pressure measuring instruments 			
Ordering information for a single licence			
Is available for a cost-free download	WIKA-CAL-LZ-Z-Z	WIKA-CAL-CZ-Z-Z	WIKA-CAL-ZZ-L-Z
Ordering information for a pair licence			
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 and spare parts

Description ¹⁾		Order code
		CPX-A-T3
-	Power supply With RS-232 interface cable	-1-
-	Power supply With RS-485 interface cable	-2-
-	Adapter cable RS-232 to USB	-5-
-	Adapter cable RS-485 to USB	-6-
-	Adapter set 1/8" NPT female thread incl. safety relief valve For pressure ranges ≤ 70 bar [≤ 1,000 psi]	-3-
-	Adapter set 1/8" NPT female thread incl. safety relief valve For pressure ranges > 70 bar [> 1,000 psi]	-4-
	Adapter set 6 mm Swagelok® male thread (2 adapters) P _{max.} 137 bar [2,000 psi] Material: brass	-M-
	Adapter set 6 mm Swagelok® male thread (2 adapters) P _{max.} 400 bar [6,000 psi] Material: stainless steel	-C-
	Adapter set 1/4" tube fitting (2 adapters) P _{max.} 137 bar [2,000 psi] Material: brass	-I-
	Adapter set 1/4" tube fitting (2 adapters) P _{max.} 400 bar [6,000 psi] Material: stainless steel	-E-
	Adapter set 1/8" BSPG female thread (2 adapters) P _{max.} 137 bar [2,000 psi] Material.: brass	-B-
	Adapter set 1/4" NPT female thread (2 adapters) P _{max.} 137 bar [2,000 psi] Material: brass	-N-
	Adapter set 1/4" NPT female thread (2 adapters) P _{max.} 400 bar [6,000 psi] Material.: stainless steel	-A-
	Adapter set 1/8" NPT female thread (2 adapters) P _{max.} 137 bar [2,000 psi] Material.: brass	-S-
	Adapter set 1/8" NPT female thread (2 adapters) P _{max.} 400 bar [6,000 psi] Material: stainless steel	-F-
-	Transport case	-T-
Ordering information for your enquiry:		
1. Order code: CPX-A-T3		↓
2. Option:		[]

1) The figures are an example and may change depending on the state of the art in design, material composition and representation

Scope of delivery

- Precision pressure sensor model CPT6140, high-speed version
- Operating instructions
- Calibration certificate

Ordering information

Model / Instrument version / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Accuracy / Type of certificate / Mounting thread / Interface / Pressure adapter / Transport case / Further approvals / Additional ordering information

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