

# High-speed pressure sensor Model CPT6140



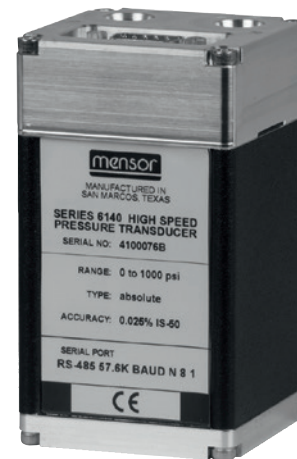
WIKA data sheet CT 25.11

## Applications

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

## Special features

- Accuracy up to 0.025 % IS-50
- 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



High-speed pressure sensor model CPT6140

## Description

The model CPT6140 high-speed pressure sensor 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 for 365 days makes the sensor suitable for a wide range of applications in precision measurement technology.

### Application

This precision pressure sensor 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 sensor 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 sensor 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 has an RS-232 interface as standard and an RS-485 interface as option. The sensor can be configured for gauge and absolute pressure for any measuring range within the specified limits. With a recalibration time 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 sensor 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

## Model CPT6140

High-speed pressure sensor technology		
Accuracy <sup>1)</sup>	0.025 % FS <sup>2)</sup>	0.025 % IS-50 <sup>3)</sup>
Measuring ranges		
Gauge pressure	0 ... ≥ 70 mbar up to 0 ... 400 bar (0 ... ≥ 1 up to 0 ... 6,000 psi)	0 ... 1 up to 0 ... 400 bar (0 ... 15 up to 0 ... 6,000 psi)
Bi-directional	-35 ... +35 mbar up to -1 ... +400 bar (-0.5 ... +0.5 up to -14.5 ... +6,000 psi)	-1 ... +10 up to 0 ... 400 bar (-15 ... +145 psi up to 0 ... 6,000 psi)
Absolute pressure	0 ... 500 mbar up to 0 ... 401 bar abs. (0 ... 7.5 psi up to 0 ... 6,015 psi abs.)	0 ... 1 up to 0 ... 401 bar abs. (0 ... 15 up to 0 ... 6,015 psi abs.)
Calibration interval	180 days	365 days
CPT6140 as barometric reference		
Measuring range	552 ... 1,172 mbar abs. (8 ... 17 psi abs.)	
Accuracy <sup>1)</sup>	0.025 % of reading	
Calibration interval	365 days	
Pressure units	psi, bar, mbar, Pa, kPa, hPa, MPa, tsi, atm, torr, Dynes/cm <sup>2</sup> , g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mSW, oz/in <sup>2</sup> , psf, tsf, mmH <sub>2</sub> O (4 °C), cmH <sub>2</sub> O (4 °C), mH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (20 °C), inH <sub>2</sub> O (60 °F), ftH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), ftH <sub>2</sub> O (60 °F), μmHg (0 °C), mmHg (0 °C), cmHg (0 °C), inHg (0 °C), inHg (60 °F), inSW (0 °C), ftSW (0 °C), mtorr (0 °C)	

- 1) The accuracy 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 adjustment.
- 2) FS: Full Span
- 3) 0.025 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.025 % of the half full scale and between 50 ... 100 % of the full scale, the accuracy is 0.025 % of reading.

High-speed pressure sensor	
Case	
Mounting position	< 1 bar negligible Can be adjusted through zero point adjustment (linear shift of the characteristic curve)
Dimensions	see technical drawings
Weight	505 g (1.11 lbs.)
Display	
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
Connections	
Pressure connections	Connection 7/16-20 SAE for pressure and reference port The reference port is sealed for absolute pressure sensors
Overpressure safety	10 % above the nominal pressure of the sensor
Material, wetted parts	Aluminium, brass, stainless steel 316, Buna-N, Viton®, silicone grease, silicone rubber, nylon, ceramic, glass, silicon
Voltage supply	
Power supply	DC 6 ... 20 V; 45 mA for DC 12 V
Permissible ambient conditions	
Storage temperature	0 ... 70 °C (32 ... 158 °F)
Humidity	0 ... 95 % r. h. (non-condensing)
Compensated temperature range	15 ... 45 °C (59 ... 113 °F)

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## High-speed pressure sensor

### Communication

Interface	Standard: RS-232 Option: RS-485
Baud rate	57,600 baud
Measuring rate	250 values/s
Response time	4 ms for a FS pressure pulse

## Certificates

### Certificate

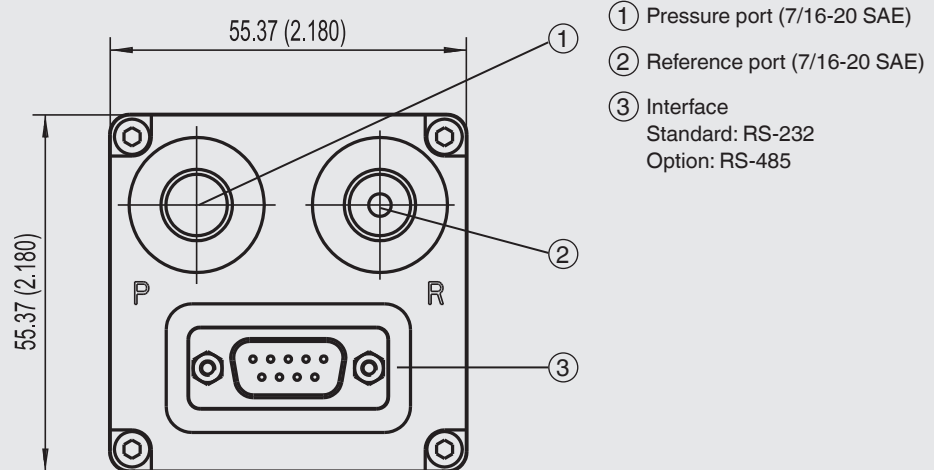
<b>Calibration</b> <sup>4)</sup>	Standard: A2LA calibration certificate Option: DKD/DAkkS calibration certificate
<b>Recommended recalibration interval</b>	1 year (dependent on conditions of use)

4) Calibrated in a horizontal position.

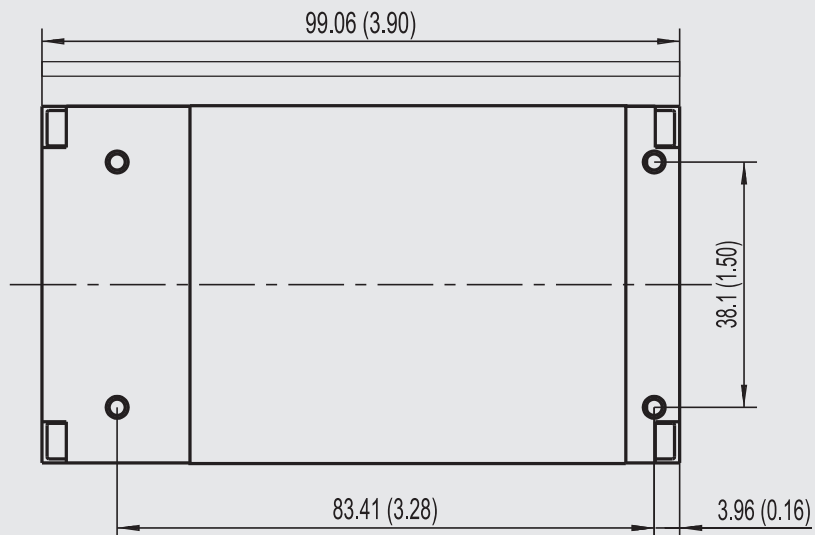
Approvals and certificates, see website

## Dimensions in mm (in)

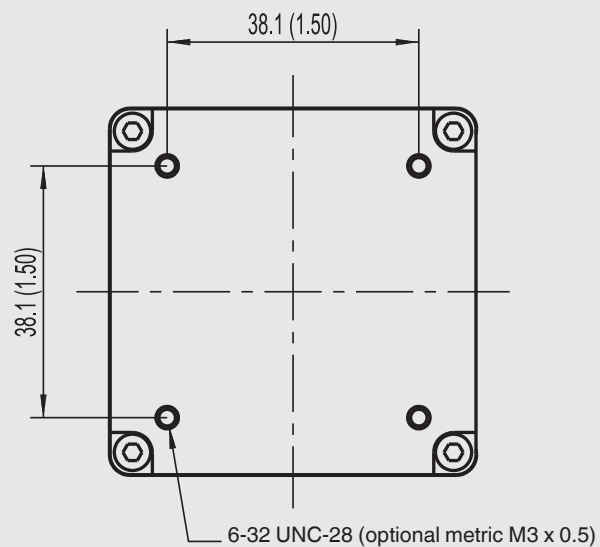
### Top view



### Side view



### Bottom view



## Scope of delivery

- High-speed pressure sensor model CPT6140
- Operating instructions
- A2LA calibration certificate

## Accessories

- Voltage supply over RS-232 or RS-485 interface cable
- External overpressure protection
- Pressure adapters

## Option

- DKD/DAkkS calibration certificate

## Ordering information

CPT6140 / Instrument version / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Accuracy / Type of certificate / Mounting position / Mounting thread / Pressure adapter / Additional order information

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