

# 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 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-485 interface which offers the possibility of a genuine multidrop connection and simple cabling. 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, 316SS, Buna-N, Viton <sup>®</sup> , 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)

Viton<sup>®</sup> fluorelastomer is a registered trademark of DuPont Performance Elastomers.

## High-speed pressure sensor

### Communication

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

### Certificates

#### Certificate

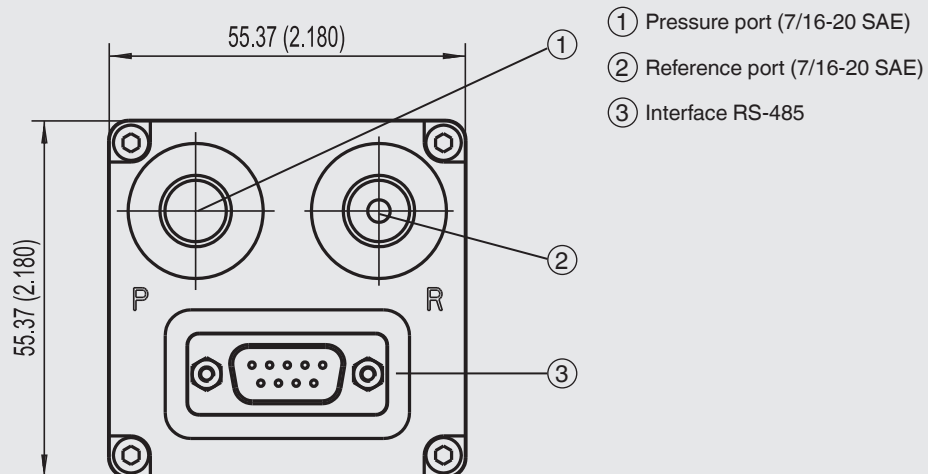
<b>Calibration</b> 4)	Standard: A2LA calibration certificate Option: DKD/DAkkS calibration certificate
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4) Calibrated in a horizontal position.

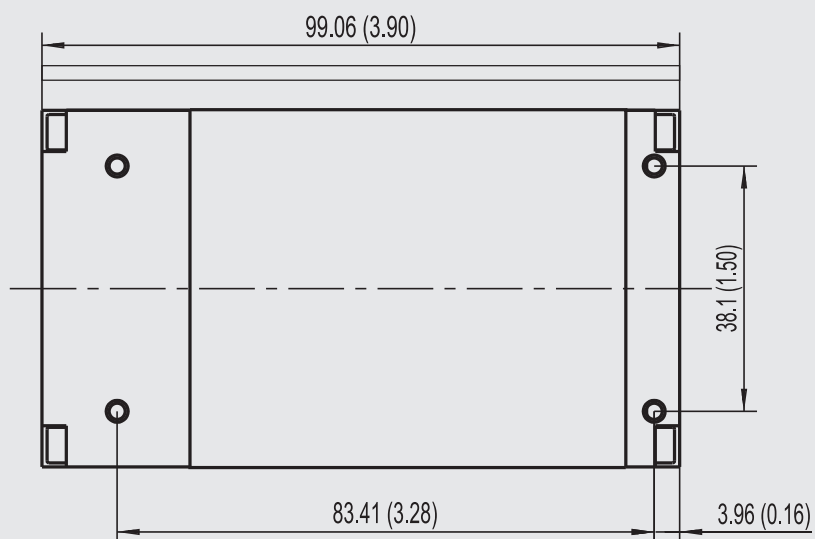
Approvals and certificates, see website

## Dimensions in mm (in)

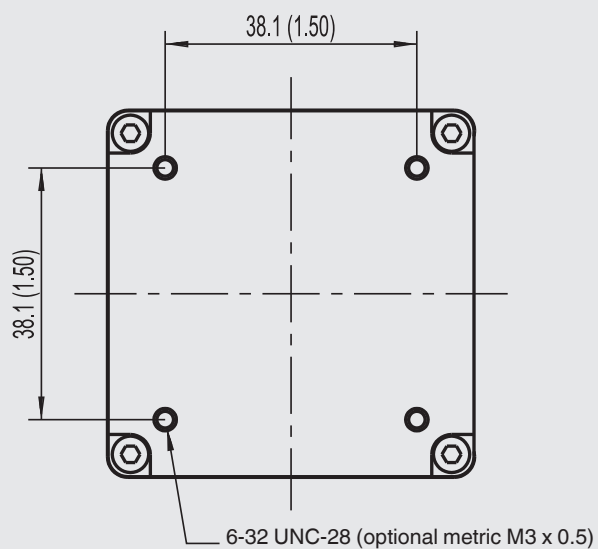
### Top view



### Side view



### Bottom view



## Scope of delivery

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

## Accessories

- Voltage supply over RS-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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