

# Analogue pressure transducer

## Basic version

### Model CPT6030



WIKA data sheet CT 25.14

#### Applications

- Pressure calibration
- High-accuracy pressure monitoring
- Pressure sensing in critical applications
- Process instrumentation

#### Special features

- Metrological accuracy: 0.025 % FS on the 4 ... 20 mA output
- Measuring range: 25 mbar ... 1,001 bar [10 inH<sub>2</sub>O ... 15,015 psi]
- Voltage supply from DC 15 ... 28 V
- Temperature compensation: -20 ... +75 °C [-4 ... +167 °F]
- NAMUR NE43-compliant



Analogue pressure transducer, basic version, model CPT6030

#### Description

The CPT6030 analogue pressure transducer is a self-contained pressure sensing instrument that provides high-accuracy pressure measurements with a 2-wire, 4 ... 20 mA output. This transducer incorporates a low-hysteresis silicon sensor with electronically compensated pressure linearity over the compensated temperature range. The CPT6030 is characterised over the full pressure and compensated temperature range to achieve 0.025 % FS accuracy. The metrological grade accuracy of 0.025 % FS includes linearity, hysteresis, repeatability drift and reference uncertainty over the temperature range. Also featured is an output which is updated at a rate of 21 readings per second (47 ms).

#### Application

The analogue pressure transducer can be used to verify and adjust industrial and process pressure transmitters as a compact calibration solution.

The CPT6030 can also be used for OEM applications. Examples are:

- Flow calibrators, humidity calibrators, pressure controllers
- For aerospace wind tunnel calibration and also for the automotive sensor testing
- In the aviation and space industries in general, hydrology and oceanography

Or also for applications where high-accuracy pressure measurements and long-term calibration stability are required. It can also be used as a transfer standard or in pressure calibration and testing areas of production facilities.

#### Functions

The CPT6030 is a smart pressure transducer with calibration and compensation data stored on-board the sensor at all times. It can be configured with a digital interface using RS-232 to set and adjust zero and span.

Each transducer can be configured for gauge, absolute or bidirectional pressure types with pressure ranges as low as 25 mbar ... 1,001 bar [10 inH<sub>2</sub>O ... 15,015 psi] and a calibration interval of 365 days. This analogue pressure sensor accepts a voltage supply from DC 15 ... 28 V making it flexible enough to be used in a wide variety of applications.

Its compact design offers an advantage in miniaturisation of product design in many OEM applications.

The pressure connection and case can be specified individually and according to customer requirements. Standard fittings are easily changed using the SAE J514/JIC connection or the Autoclave® F250C connection.

### Design

The 316L stainless steel construction and IP67 rating are an asset when utilising the transducer in corrosive or wet environments.

## Specifications

Measuring range analogue pressure transducer	
Accuracy <sup>1)</sup>	0.025 % FS <sup>2)</sup>
Precision <sup>3)</sup>	0.015 % FS
<b>Measuring ranges</b>	
Gauge pressure <sup>4)</sup>	0 ... 25 mbar to 0 ... 1,000 bar [0 ... 0.36 to 0 ... 15,000 psi]
Bidirectional pressure <sup>4) 5)</sup>	-12.5 ... +12.5 mbar to -1 ... 1,000 bar [-0.18 ... +0.18 to -15 ... 15,000 psi]
Absolute pressure	0 ... 350 mbar abs. to 0 ... 1,001 bar abs. [0 ... 5 to 0 ... 15,015 psi abs.]
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) FS = Full Span

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

4) For pressure ranges from  $\geq 100 \dots \leq 1,000$  bar [ $\geq 1,500 \dots \leq 15,000$  psi] gauge will be sealed gauge sensor.

5) The negative portion of a bidirectional range has the same accuracy as the equivalent positive range.

CPT6030 as barometric reference	
Measuring range	■ 552 ... 1,172 mbar abs. ■ 8 ... 17 psi abs.
Accuracy <sup>1) 2)</sup>	0.025 % of reading
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) The digital output is available when used in combination with the calibration adapter providing a 0.025 % of reading output.

Basic information analogue pressure transducer	
Warm-up time	Approx. 15 min
Pressure units	39
<b>Voltage supply</b>	
Power supply	DC 15 ... 28 V (DC 24 V nominal)
Power consumption	4 ... 20 mA depending on pressure input (23 mA, 0.65 W <sub>max</sub> )
<b>Internal volume</b>	
Measure port	< 1 ml [1 cc]
Reference port	Approx. 45 ml [45 cc]
<b>Case</b>	
Orientation effects	Negligible – completely removable with a zero point correction
Dimensions	→ See technical drawings
Weight	Approx. 250 g [0.55 lb] (depending on range)
Ingress protection	IP67



Communication	
<b>Output signal</b>	
Current (2-wire)	4 ... 20 mA
Interface	RS-232
Baud rate	57600 baud
Command sets	<ul style="list-style-type: none"> <li>■ Mensor default command set</li> <li>■ Mensor legacy command set</li> </ul>
Measuring rate	21 values/s

Pressure connection		
<b>Connection</b>	FSAE J514/JIC 4	≤ 400 bar [≤ 6,000 psi]
	Autoclave® F250C	> 400 ... 1,000 bar [> 6,000 ... 15,000 psi]
<b>Pressure adapters</b>	<ul style="list-style-type: none"> <li>■ 6 mm tube fitting</li> <li>■ ¼" tube fitting</li> <li>■ ¼ NPT, male thread</li> <li>■ ½ NPT, female thread</li> <li>■ ¼ BSP, male thread</li> <li>■ ½ BSP, female thread</li> <li>■ 7/16-20 SAE, male thread</li> </ul>	Only up to 400 bar [6,000 psi]
<b>Reference port</b>	1/16" barb fitting	≤ 100 bar [≤ 1,500 psi]
	Sealed relief valve <sup>1)</sup>	<ul style="list-style-type: none"> <li>■ &gt; 100 bar [&gt; 1,500 psi]</li> <li>■ &gt; 100 bar abs. [&gt; 1,500 psi abs.]</li> </ul>
<b>Wetted parts</b>	Pressure ranges ≤ 350 mbar [≤ 5 psi]	<ul style="list-style-type: none"> <li>■ Stainless steel 316</li> <li>■ Silicon</li> <li>■ Glass-filled resins</li> <li>■ Epoxy</li> </ul>
	Pressure ranges > 350 mbar ... ≤ 100 bar [> 5 ... ≤ 1,500 psi]	Stainless steel 316
	Pressure ranges > 100 bar [> 1,500 psi]	<ul style="list-style-type: none"> <li>■ Stainless steel 316</li> <li>■ Fluorocarbon rubber</li> </ul>
<b>Permissible pressure media</b>	Pressure ranges ≤ 350 mbar [≤ 5 psi]	Clean, dry, non-corrosive gases
	Pressure ranges > 350 mbar [> 5 psi]	Media compatible with the listed wetted parts
<b>Overpressure limit</b>	2 x proof, 3 x burst, static pressure < 3.45 bar [< 50 psi]	

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	-40 ... +85 °C [-40 ... +185 °F]
Compensated temperature range	-20 ... +75 °C [-4 ... +167 °F]
Storage temperature range	-40 ... +85 °C [-40 ... +185 °F]
Relative humidity, condensation	0 ... 95 % r. h. (non-condensing)
Mounting position	<ul style="list-style-type: none"> <li>■ Horizontal</li> <li>■ Vertical</li> <li>■ Customised</li> </ul>
Pollution degree	2 per EN 61010-1
EMC (HF field)	EN 61326-1 emission (group 1, class A) and immunity (industrial application)

## Approvals

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

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	
<b>Calibration <sup>1)</sup></b>	<ul style="list-style-type: none"> <li>■ 3.1 inspection certificate per DIN EN 10204 or NIST (factory calibration)</li> <li>■ A2LA calibration certificate (traceable and accredited in accordance with ISO/IEC 17025)</li> <li>■ DAkkS calibration certificate - absolute pressure (traceable and accredited in accordance with ISO/IEC 17025)</li> <li>■ DAkkS calibration certificate - gauge pressure (traceable and accredited in accordance with ISO/IEC 17025)</li> </ul>
<b>Recommended calibration interval</b>	365 days (dependent on conditions of use)

1) Calibration in a vertical position.

→ Approvals and certificates, see website

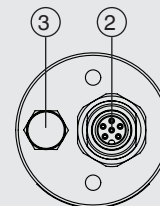
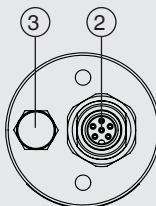
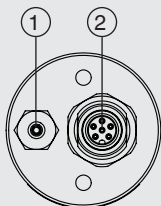
## Dimensions in mm [in]

**Low-pressure version**  
 < 100 bar [< 1,500 psi]

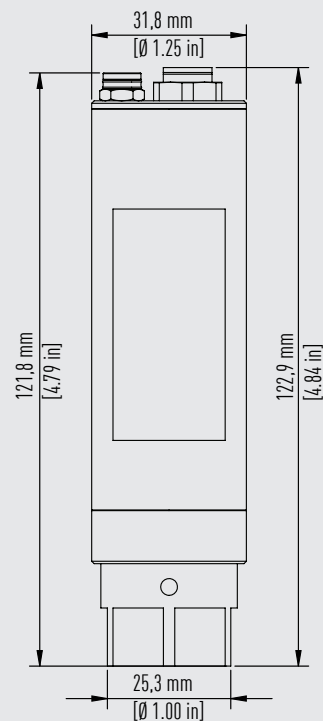
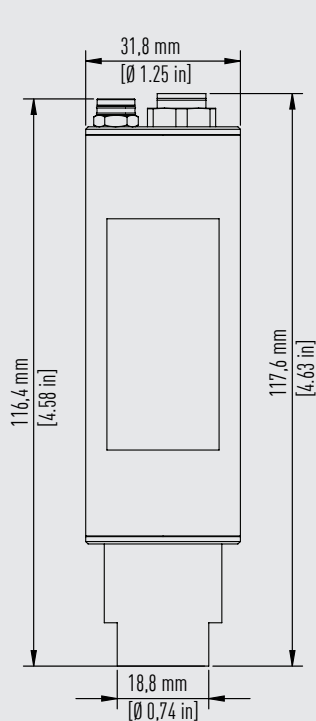
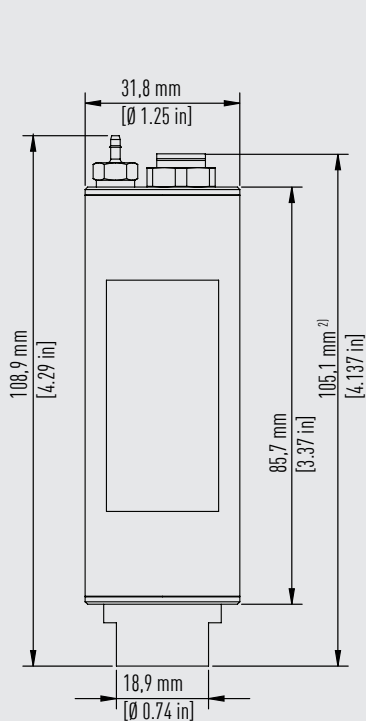
**Medium-pressure version**  
 100 ... 400 bar [1,500 ... 6,000 psi]

**High-pressure version**  
 > 400 ... 1,000 bar  
 [> 6,000 ... 15,000 psi]

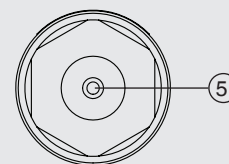
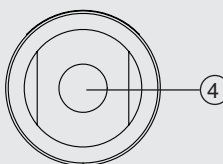
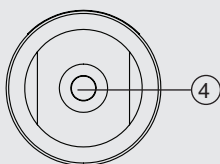
### Interface and reference port <sup>1)</sup>



### Case



### Pressure connection



- ① Reference port for hose connection 1/16" barb
- ② 6-pin M8 connector
- ③ Sealed relief valve

- ④ SAE J514 37° flare port 7/16-20 thread
- ⑤ Autoclave® F250 C female port

1) Reference port only for gauge pressure range; the port is plugged at absolute pressure range and sealed gauge ranges.

## 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"> <li>■ Live measured value 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 measuring results in PDF format</li> <li>■ Possibility of exporting measuring results as CSV file</li> </ul>
Limitation to two measuring points	No limitation of the measuring points approached		
<ul style="list-style-type: none"> <li>■ Creation of 3.1 inspection certificates per DIN EN 10204</li> <li>■ Calibration data can be exported to Excel® template or XML file</li> <li>■ Calibration of pressure measuring instruments</li> </ul>			
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 <sup>1)</sup>	Order code	
 <p><b>Calibration adapter</b> For reference pressure transducers and current supply</p>	CPX-A-T5 -1-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to ¼ BSP, male thread P<sub>max</sub>: 400 bar [6,000 psi]</p>	-A-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to ⅜ BSP, female thread P<sub>max</sub>: 400 bar [6,000 psi]</p>	-B-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to 6 mm tube fitting P<sub>max</sub>: 400 bar [6,000 psi]</p>	-C-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to 7/16-20 SAE, male thread P<sub>max</sub>: 400 bar [6,000 psi]</p>	-D-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to ¼" tube fitting P<sub>max</sub>: 400 bar [6,000 psi]</p>	-E-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to ¼ NPT, male thread P<sub>max</sub>: 400 bar [6,000 psi]</p>	-F-	
 <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to ⅜ NPT, female thread P<sub>max</sub>: 400 bar [6,000 psi]</p>	-G-	
<p>-</p> <p><b>Pressure adapter</b> SAE J514/JIC 4, male thread to G ½ BSP, male thread P<sub>max</sub>: 400 bar [6,000 psi]</p>	-H-	
<p>-</p> <p><b>Gasket flare</b> 50 gasket flare 37° ¼" for J514/JIC 44 pressure port</p>	-V-	
 <p><b>Communication cable</b> Shielded with flying leads Cable length: 1.5 m [4.9 ft]</p>	-2-	
<p>Shielded with flying leads Cable length: 3.0 m [9.8 ft]</p>	-3-	
<p>Shielded with flying leads Cable length: 5.0 m [16.4 ft]</p>	-4-	
<p>-</p> <p><b>Transport case</b></p>	-T-	
<b>Ordering information for your enquiry:</b>		
	<p>1. Order code: CPX-A-T5 2. Option:</p>	<p>↓ [ ]</p>

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

- Analogue pressure sensor, model CPT6030
- Operating instructions
- Pressure adapter (as specified)
- 1.5 m [5 ft] connection cable with flying leads
- Calibration certificate

## Ordering information

Model / Instrument version / Operating pressure range / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Type of certificate / Mounting position / Electrical connection length / Pressure adapter / Transport case / Further approvals / Additional ordering information

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