



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

UC1/CT-30/CT-40

Customer-specific pressure transducer



Application

The customer-specific pressure transducers UC1, CT-30 and CT-40 are available for gauge pressure measuring ranges from 0 to 50 mbar to 0 to 70 bar and for absolute pressure measuring ranges from 0 to 100 mbar to 0 to 70 bar. Measuring ranges outside of this are available as special measuring ranges. The pressure transducers are widely used, particularly in the areas of process measurement technology, medical technology, laboratory-specific technology and industrial measurement technology. They are suitable for use in hazardous areas. Endress+Hauser has the expertise to provide solutions for the most diverse applications, adapting both the electrical and the structural aspects of the pressure transducer to your specific application.

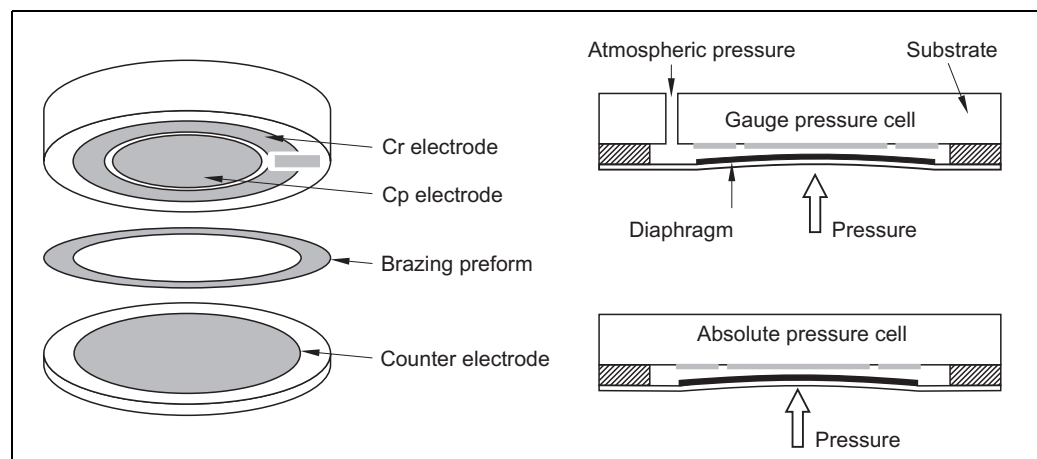
Your benefits

- Measuring ranges from 0 to 50 mbar to 0 to 70 bar
- Special measuring ranges available on request
- UCS2 pressure sensor element
- Customer-specific design
- Housing possible in various materials
- Output signal 0.5 to 4.5 V or 4 to 20 mA
- Ready for ATEX certificate transfer
- Guaranteed overload resistance up to 40 times the nominal pressure
- Process isolating diaphragm made from 99.9% ultrapure ceramic
- Vacuum-resistant

Function and system design





Measuring principle

The capacitive ceramic pressure sensor element UCS2 is at the core of the transducer. Its special features include high overload resistance, corrosion resistance and long-term stability. In the pressure sensor element, two cylindrical ceramic components (diaphragm and meter body) are linked by means of a brazing preform. In absolute pressure sensors, there is a reference vacuum of $<3 \times 10^{-6}$ mbar between the process isolating diaphragm and the meter body. This allows measurement relative to the vacuum. In gauge pressure sensors, the back of the sensor is ventilated through a small hole in the meter body. An ASIC is located directly on the back of the meter body. It contains a temperature sensor for the active compensation of the temperature error as well as further correction functions for setting the zero point and span and for compensation of the non-linearity error. These ensure the excellent technical specifications of the pressure transducers. The components of the transducer housing that are in contact with the media can consist of various materials. The usual materials are available for process sealing, e.g. Viton, EPDM, NBR etc. The applied pressure is recorded in the transducers and converted into a proportional output signal of 0.5 to 4.5 V by the sensor element. If necessary, additional electronics can be integrated in the housing to convert the voltage output signal into a current output signal of 4 to 20 mA. The electrical connection and the process connection can be defined in accordance with the application. Pressure transducers with a wide range of protection classes – up to IP68 – provided by the housing are possible.



P01-UC2xxxx-15-xx-xx-de-000

Examples for customer-specific solutions

Measurement of minimal pressure	Vacuum measurement	Gas pressure measurement	Hydrostatic measurement
 <p>P01-PMCS1xxx-16-xx-xx-xx-00</p>	 <p>P01-PMCS1xxx-16-xx-xx-xx-00</p>	 <p>P01-PMCS1xxx-16-xx-xx-xx-00</p>	 <p>P01-PMCS1xxx-16-xx-xx-xx-00</p>
<p>The UC1 capsule is the smallest module of the customer-specific pressure transducers and forms the basis of the pressure transmitter for measuring minimal measuring ranges.</p>	<p>Transducers can be supplied with the small flange connections which are common in vacuum measurement. The transducers have a dry measuring cell, which means that outgassing of the transfer medium is impossible.</p>	<p>The sensors deliver accurate results in gas pressure measurement applications, thanks to the good long-term stability, thermal behavior and minimal conformity error. In addition, a large selection of different sealing materials can be used which guarantees optimum adaptation to the medium in question.</p>	<p>Transducers based on the UCS2 are a highly attractive and frequently used measuring system for hydrostatic level measurement. This is primarily due to their long-term stability and the possibility to manufacture very low pressure ranges.</p>

Technical data

Measured variable Absolute pressure and gauge pressure

Measuring range

Gauge pressure (also available in psi measuring ranges)		
Nominal value	OPL [bar] ¹⁾	Vacuum resistance [bar _{abs}]
0 to 50 mbar ²⁾	4	0.3
0 to 100 mbar	4	0.3
0 to 200 mbar	6	Vacuum-resistant
0 to 400 mbar	6	Vacuum-resistant
0 to 1 bar	10	Vacuum-resistant
0 to 2 bar	18	Vacuum-resistant
0 to 4 bar	25	Vacuum-resistant
0 to 10 bar	40	Vacuum-resistant
0 to 20 bar	40	Vacuum-resistant
0 to 40 bar	60	Vacuum-resistant
0 to 70 bar	105	Vacuum-resistant

Absolute pressure (also available in psi measuring ranges)		
Nominal value	OPL [bar] ¹⁾	Vacuum resistance [bar _{abs}]
-	-	-
0 to 100 mbar ²⁾	4	Vacuum-resistant
0 to 200 mbar	6	Vacuum-resistant
0 to 400 mbar	6	Vacuum-resistant
0 to 1 bar	10	Vacuum-resistant
0 to 2 bar	18	Vacuum-resistant
0 to 4 bar	25	Vacuum-resistant
0 to 10 bar	40	Vacuum-resistant
0 to 20 bar	40	Vacuum-resistant
0 to 40 bar	60	Vacuum-resistant
0 to 70 bar	105	Vacuum-resistant

1) OPL: Over Pressure Limit (= overload limit)

2) See extended specifications (on request)

Special measuring ranges on request.

Output signal

UC1 / CT-30	CT-40 (4 to 20 mA)
0.5 to 4.5 V (ratiometric) or 4 to 20 mA	4 to 20 mA Intrinsically safe version in accordance with ATEX II 2 G EEx ia IIC T6 (others on request)

Supply voltage

UC1 / CT-30 (0.5 to 4.5 V)	UC1 / CT-30 (4 to 20 mA)	CT-40 (4 to 20 mA)
4.5 to 5.5 V (stabilized)	12 to 30 V	12 to 30 V

Performance characteristics

	UC1 / CT-30 (0.5 to 4.5 V)	UC1 / CT-30 (4 to 20 mA)	CT-40 (4 to 20 mA)
Zero point deviation	max. $\pm 1.25\%$	max. $\pm 0.2\%$	max. $\pm 0.2\%$
Span deviation	max. $\pm 1.25\%$	max. $\pm 1.25\%$	max. $\pm 0.2\%$
Conformity error (sum of non-linearity, hysteresis and repeatability)	max. $\pm 0.2\%$	max. $\pm 0.2\%$	max. $\pm 0.2\%$
Compensated temperature range	-20°C to $+80^{\circ}\text{C}$	-20°C to $+80^{\circ}\text{C}$	-20°C to $+70^{\circ}\text{C}$
Temperature effect on lower range value (within the compensated temperature range)	max. $\pm 0.75\%$	max. $\pm 0.75\%$	max. $\pm 1.0\%$
Temperature effect on the span	max. $\pm 0.3\%$ within the compensated temperature range for measuring ranges ≥ 0.4 bar For measuring ranges < 0.4 bar: $\pm 0.5\%$	max. $\pm 0.5\%$ within the compensated temperature range for measuring ranges ≥ 0.4 bar For measuring ranges < 0.4 bar: $\pm 0.7\%$	max. $\pm 1.0\%$ within the compensated temperature range
Long-term stability	max. 0.1% per year under reference operating conditions		

Operating conditions

	UC1 / CT-30 (0.5 to 4.5 V)	UC1 / CT-30 (4 to 20 mA)	CT-40 (4 to 20 mA)
Ambient temperature range	-40°C to $+125^{\circ}\text{C}$	-20°C to $+80^{\circ}\text{C}$	-20°C to $+70^{\circ}\text{C}$
Storage temperature range	-40°C to $+125^{\circ}\text{C}$	-40°C to $+80^{\circ}\text{C}$	-40°C to $+80^{\circ}\text{C}$
Degree of protection	Depends on housing (IP68 as per DIN VDE 0470 possible)		
Process temperature limits	-20°C to $+80^{\circ}\text{C}$	-20°C to $+80^{\circ}\text{C}$	-20°C to $+70^{\circ}\text{C}$

Ordering information

On request.

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