Technical
Information
TI 082C/07/en
No. 50059349

Conductivity Sensors for High-Temperature Applications *ConduMax W CLS 12*

Two-electrode sensors with cell constant k = 0.01/cm or k = 0.1/cm

Areas of application

The conductivity sensor ConduMax W CLS 12 is designed for industrial and power plant applications (e.g. condensate measurement) where low conductivities must be measured under high pressures
and temperatures.
The measuring range of the sensors depends on the cell constant *k*.
- k = 0.01/cm: 0.04 ... 20 µS/cm
- k = 0.1/cm: 0.1 ... 200 µS/cm

Sensors with a Pt 100 temperature sensor are used together with conductivity measuring instruments equipped with automatic temperature compensation:
- Mycom CLM 152
- Liquisys M CLM 223/253
- MyPro CLM 431 / CLD 431

For measurement of specific resistance, MΩ measuring ranges are available in the measuring transmitters of the Mycom, Liquisys and MyPro series.

Benefits at a glance
- Optimum adaptation to process conditions or mounting place due to different designs
- Mounting in pipes or flow chambers
- Application with temperatures of up to 160 °C and pressures of up to 40 bar
- Simple measuring cable connection due to large connection compartment

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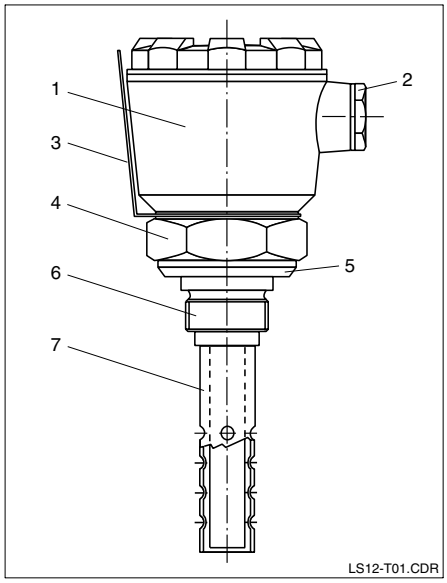
Operating principle

The two-electrode sensor ConduMax W CLS 12 has especially large coaxial measuring electrodes. These allow high flow rates and high accuracy.
In addition, a Pt 100 temperature sensor is installed in the inside electrode to measure the medium temperature. The high thermal conductivity allows fast adjustment of the sensor to the medium temperature, thereby guaranteeing precise automatic temperature compensation in the connected measuring transmitter.
The measuring cable connection is located on the connection head, which is made of die-cast aluminium. For optimum installation, nameplate and connection head can be turned after loosening the screws in the connection head. The electrodes are isolated from each other by a PEEK isolator.



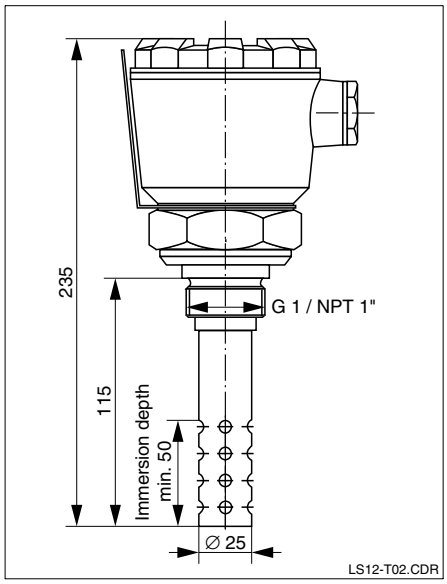
Conductivity sensor CLS 12:
1 Connection head made of die-cast aluminium
2 Measuring cable connection Pg 16 / NPT ½"
3 Nameplate
4 Body made of cast aluminium
5 Sealing surface acc. to DIN 3852 Bl 2 Form A
6 Internal thread
7 Coaxially arranged electrodes made of 1.4571 (SS 316Ti)

The sensors are distinguished by high thermal, chemical and mechanical resistances. The maximum operating pressure is 40 bar (20 °C), the maximum operating temperature is 160 °C.

Special sealing materials are available for use in superheated steam or ultrapure water at high temperatures. There can be appointed no nominal durability for these applications.

Sensors equipped with a G 1 or NPT 1" thread can be mounted e.g. in a flow chamber or directly in a pipe.
When mounting the sensor, make sure that the measuring surfaces are completely wetted by the medium during operation. When working in ultrapure water, ingress of air must be avoided since dissolved air, particularly CO_2, may increase conductivity by up to 3 µS/cm.

Dimensions

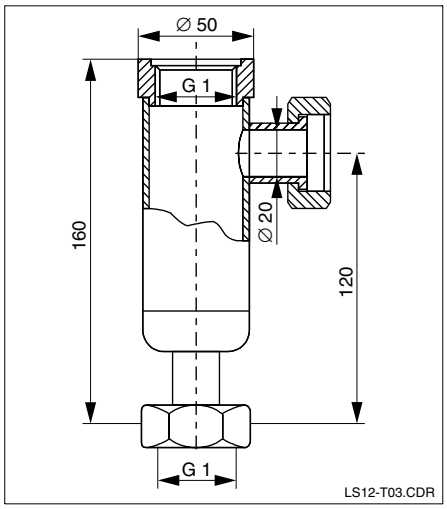


Dimensions of CLS 12

Electrical connection

	Terminal	Connection of CYK 71 measuring cable for sensors with temperature sensor
		Connect outer screen to PE on instrument only
Inner electrode	2	Inner conductor
Outer electrode	1	Inner screen
Temperature sensor	3	Green
	4	White and yellow

Accessories



Flow chamber CLA 751

Flow chamber CLA 751
For installation of conductivity sensors with G 1 thread.
Inlet (bottom) and outlet (lateral)
DN 20 with union nuts G 1.

Material: stainless steel 1.4571 (SS 316 Ti)
Max. temperature: 160 °C
Max. pressure: 12 bar (20 °C)
Order no.: 50004201

Technical data

General data

Manufacturer	Endress+Hauser
Product designation	ConduMax W CLS 12

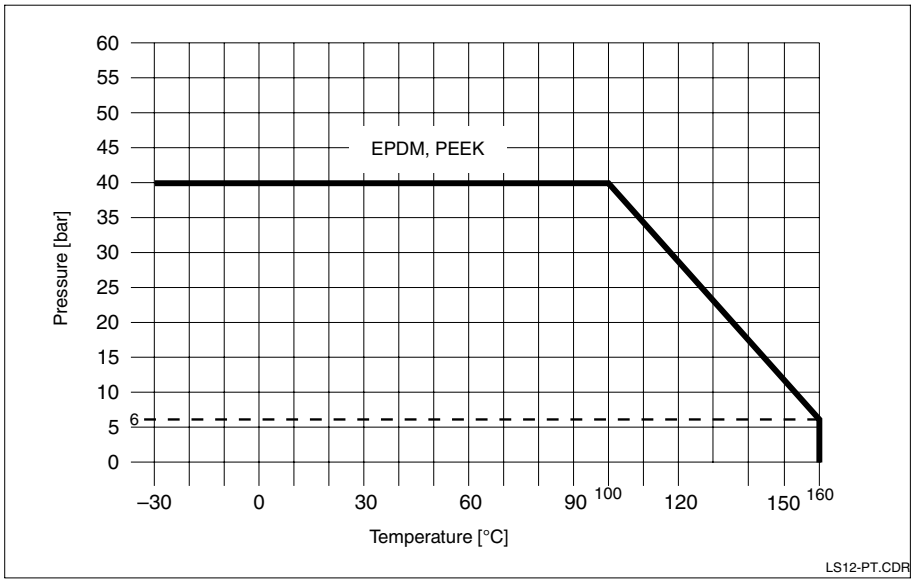
Conductivity sensor CLS 12

Electrodes	stainless steel 1.4571 (SS 316Ti)
Connection head	die-cast aluminium
Sealing of electrodes	EPDM, PEEK
Quality certificate	with statement of individual cell constant
Cell constant *k*	0.01/cm or 0.1/cm
Measuring range for *k* = 0.01/cm	0.04 µS/cm ... 20 µS/cm
Measuring range for *k* = 0.1/cm	0.1 µS/cm ... 200 µS/cm
Max. temperature	160 °C
Max. pressure	40 bar (100 °C)
Temperature sensor	Pt 100
Measuring cable connection	cable gland Pg 16 / cable entry NPT ½"
Ingress protection	IP 67
Weight	3 kg

Flow chamber CLA 751

Material	stainless steel 1.4571 (SS 316Ti)
Max. temperature	160 °C
Max. pressure	12 bar (20 °C)
Connection	2 × DN 20, G 1

Pressure/temperature load curve



Pressure/temperature load curve

Product structure

Conductivity sensor ConduMax W CLS 12

Sensor and cell constant

A 0.04 ... 20 µS/cm (*k* = 0.01)
B 0.1 ... 200 µS/cm (*k* = 0.1)

Process connection / material

1D Thread G 1 / stainless steel 1.4571 (SS 316Ti)
1K Thread NPT 1" / stainless steel 1.4571 (SS 316Ti)

Measuring cable connection

1 Cable gland Pg 16
5 Cable entry NPT ½"

Temperature sensor

A Integrated Pt 100 temperature sensor

CLS 12- [ ][ ][ ][ ] **complete order code**

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TI 082C/07/en/05.00
Printed in Germany / DT / CV5 (50059349)