TI00110C/07/EN/13.21-00
71558496
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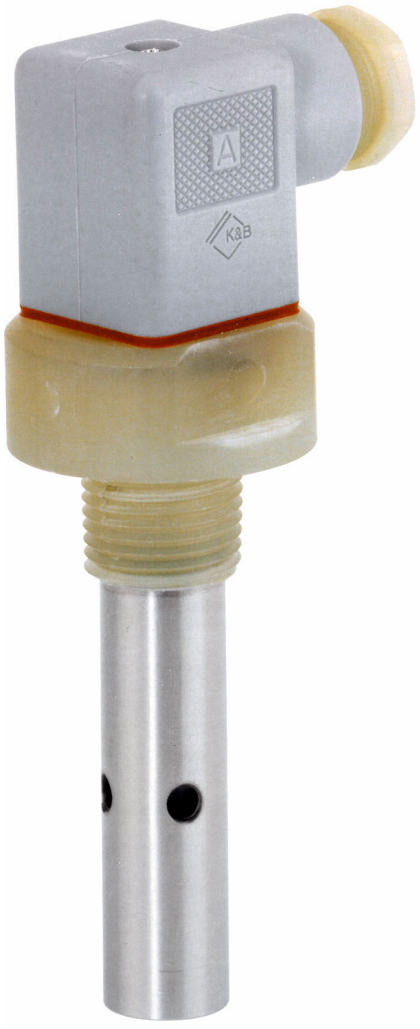
Technical Information
Condumax CLS19

Conductivity sensor



2-electrode sensors with cell constant k = 0.01 cm^{-1} or k = 0.1 cm^{-1}

Application

The sensor measures conductivity in pure and ultrapure applications for the monitoring and control of:
- Ion exchangers
- Reverse osmosis
- Cooling water
- Distillations
- Chip cleaning

Your benefits

- Reliable and accurate measured values at low conductivities
- Best value for money
- Easy installation with thread
- Robust design for maximum durability
- Large measuring range thanks to variety of cell constants

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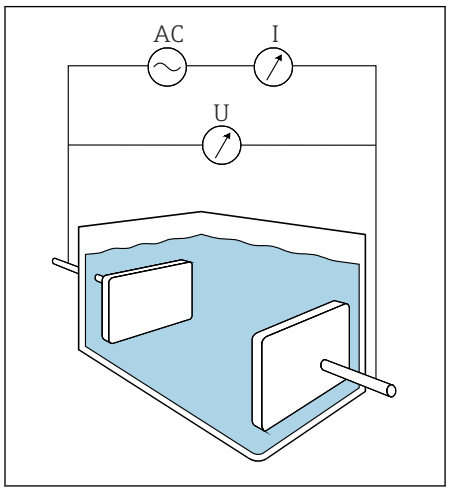
Function and system design

Measuring principle



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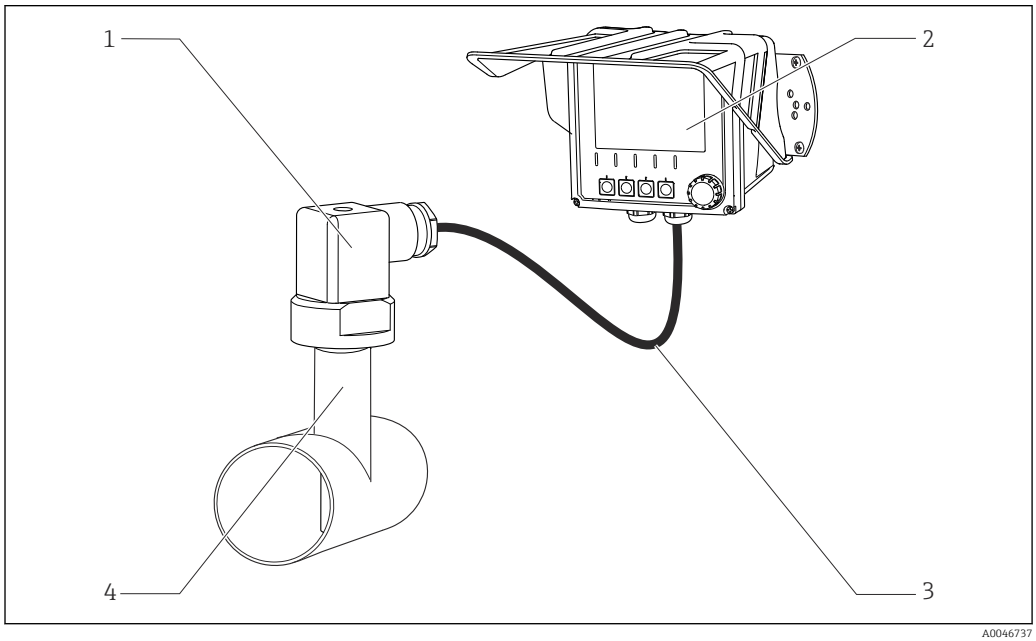
1 *Conductive measurement of conductivity*

AC Alternating voltage source
I Current intensity measurement
U Voltage measurement

Conductivity of liquids is determined with a measuring arrangement where two electrodes are located in the medium. An alternating voltage that causes a current to flow through the medium is applied at these electrodes. The electrical resistance, or its reciprocal value - conductance G - is calculated based on Ohm's law. The specific conductance κ is determined from the conductance value using the cell constant k, which depends on the sensor geometry.

Measuring system

A complete measuring system consists of the following components at least:
- The contacting conductivity sensor CLS19
- A transmitter, e.g. Liquiline M CM42
- A measuring cable, e.g. CYK71 for analog sensors



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2 *Example of a measuring system*

1 Sensor CLS19
2 Transmitter CM42
3 Sensor cable
4 Pipe nozzle, process connection

Input

Measured variables

- Conductivity
- Temperature

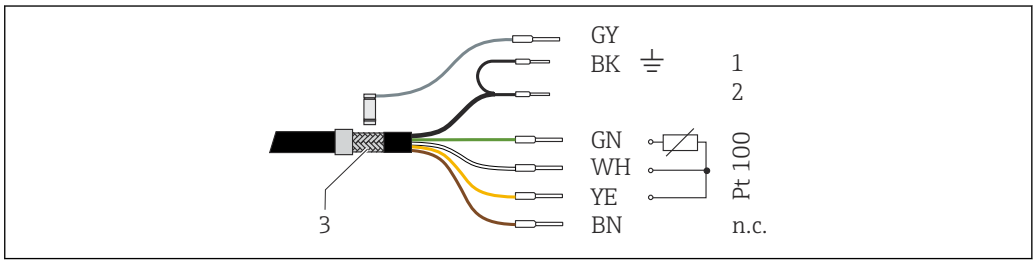
Measuring ranges

Conductivity	(in relation to water at 25 °C (77 °F))
CLS19 -A	0.04 to 20 µS/cm
CLS19 -B	0.10 to 200 µS/cm
Temperature	

Power supply

Electrical connection

The sensor is connected via the fixed cable or via the measuring cable CYK71 with a shield. The wiring diagram is provided in the Operating Instructions of the transmitter used.

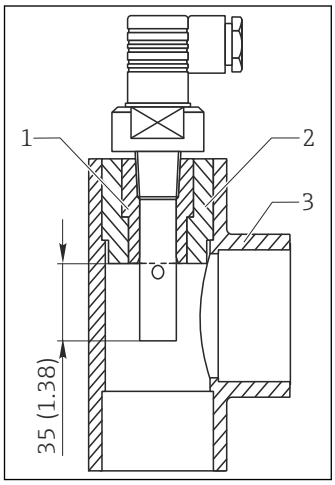


3 Measuring cable CYK71
1 Coax BK, shield (outer electrode)
2 Coax, inner, conductivity (inner electrode)
Pt100 Temperature
3 Outer shield, pay attention to the wiring diagram of the transmitter
n.c. Do not connect

A VMB junction box and another CYK71 cable are required for the cable extension.

Mounting

Installation instructions

1. 

4 *Installation in T-piece or cross fitting*

Mount the sensor directly via the NPT ½" process connection thread or alternatively install via a T-piece or cross fitting.

2. Ensure that the electrodes are fully immersed in the medium during measurement.
3. If using the sensor in the ultrapure water range:
   Work under air-evacuated conditions.
   ↳ This prevents CO_2 in the air from dissolving in the water and increasing the conductivity by up to 3 µS/cm as a result of (weak) dissociation.

Environment

Degree of protection

IP65

Process

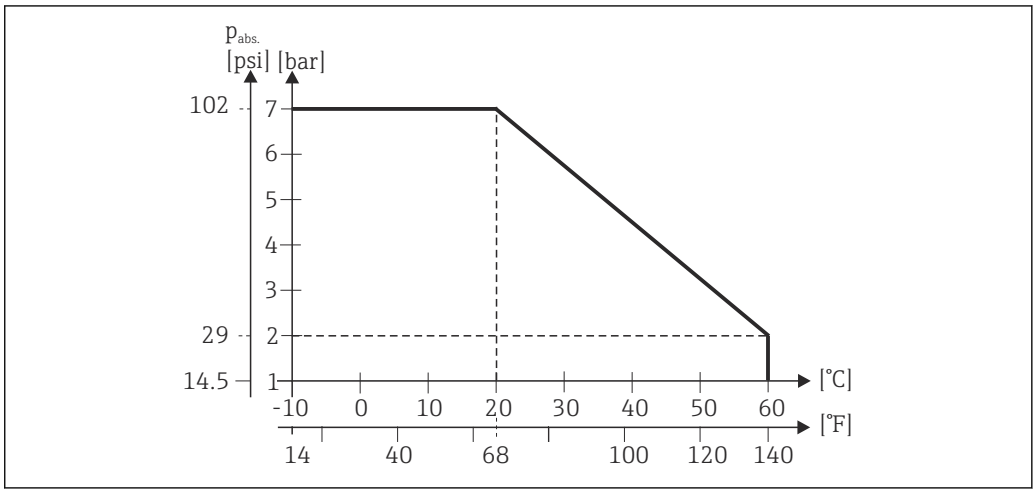
Process temperature

-10 to +60 °C (+10 to +140 °F)

Process pressure

max. 7 bar (102 psi), absolute, at 20 °C (68 °F)

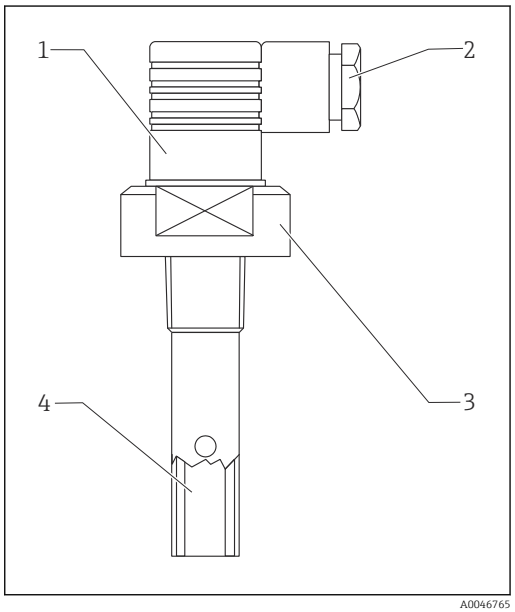
Temperature/pressure ratings



5 Mechanical pressure-temperature resistance

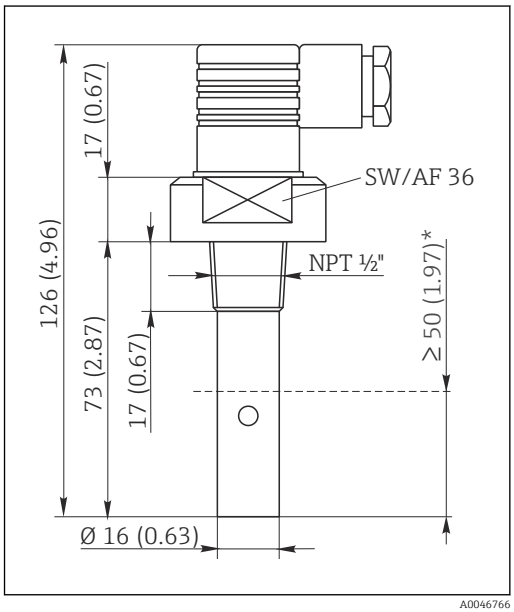
Mechanical construction

Design, dimensions



6 Design

1 Terminal head
2 Cable connection
3 Threaded shaft
4 Electrodes (coaxially arranged)



7 Dimensions in mm (in)

* *Minimum immersion depth*

Weight

0.1 kg (0.2 lbs)

Materials (in contact with medium)

Electrodes	Stainless steel 1.4571 (AISI 316Ti)
Sensor shaft	Polyethersulfone (PES-GF20)
Seal	EPDM

Process connections

Thread NPT ½"

Cell constant

CLS19 -A	k = 0.01 cm^{-1}
CLS19 -B	k = 0.1 cm^{-1}

Temperature sensor	Pt100

Ordering information

Product page	www.endress.com/cls19

Product Configurator

1. **Configure**: Click this button on the product page.
2. Select **Extended selection**.
   ↳ The Configurator opens in a separate window.
3. Configure the device according to your requirements by selecting the desired option for each feature.
   ↳ In this way, you receive a valid and complete order code for the device.
4. **Apply**: Add the configured product to the shopping cart.

For many products, you also have the option of downloading CAD or 2D drawings of the selected product version.

5. **Show details**: Open this tab for the product in the shopping cart.
   ↳ The link to the CAD drawing is displayed. If selected, the 3D display format is displayed along with the option to download various formats.

Scope of delivery

The scope of delivery includes:
- Sensor in the version ordered
- Mounted plug-in jack, Pg 9
- Operating Instructions

Accessory

The following are the most important accessories available at the time this documentation was issued.

► For accessories not listed here, please contact your Service or Sales Center.

Device-specific accessories

Assemblies

Flowfit CYA21
- Universal assembly for analysis systems in industrial utilities
- Product Configurator on the product page: www.endress.com/CYA21

Technical Information TI01441C

Threaded and adapter couplings

For sensors with NPT ½" process connection /

PVC threaded coupling
- For gluing into commercially available PVC cross fittings or T-pieces with DN 20
- With G½ internal thread, self-sealing with NPT ½" sensor thread
- Order No. 50066536

PVDF threaded coupling
- With G½ internal thread and G1 external thread
- Explosion-proof up to 12 bar at 20 °C (174 psi at 68 °F), max. 120 °C at 1 bar (248 °F at 14.5 psi), including O-ring
- Self-sealing internal thread with NPT ½" sensor thread
- Order No. 50004381

PVC adapter couplings AM
- For adapting the PVC threaded coupling to larger nominal diameters
- Diameter, order numbers:
  - AM 32: for cross-fittings or T-pieces DN 32, Order No. 50004738
  - AM 40: for cross-fittings or T-pieces DN 40, Order No. 50004739
  - AM 50: for cross-fittings or T-pieces DN 50, Order No. 50004740

Measuring cable

Measuring cable CYK71
- Unterminated cable for connecting analog sensors and for extending sensor cables
- Sold by the meter, order numbers:
  - Non-Ex version, black: 50085333
  - Ex-version, blue: 50085673

Junction boxes

VBM
- Junction box for cable extension
- 10 terminal strips
- Cable entries: 2 x Pg 13.5 or 2 x NPT ½"
- Material: aluminum
- Degree of protection: IP 65
- Order numbers
  - Cable entries Pg 13.5 : 50003987
  - Cable entries NPT ½": 51500177

Service-specific accessories

Calibration solutions

Conductivity calibration solutions CLY11
Precision solutions referenced to SRM (Standard Reference Material) by NIST for qualified calibration of conductivity measuring systems in accordance with ISO 9000
- CLY11-A, 74 µS/cm (reference temperature 25 °C (77 °F)), 500 ml (16.9 fl.oz)
  Order No. 50081902
- CLY11-B, 149.6 µS/cm (reference temperature 25 °C (77 °F)), 500 ml (16.9 fl.oz)
  Order No. 50081903

Technical Information TI00162C

Calibration set

Conducal CLY421
- Conductivity calibration set (case) for ultrapure water applications
- Complete, factory-calibrated measuring system with certificate, traceable to SRM by NIST and PTB, for comparison measurement in ultrapure water up to max. 20 µS/cm
- Product Configurator on the product page: www.endress.com/cly421

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www.addresses.endress.com

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