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# Operating Instructions
# **Memosens CLS82D**

Hygienic conductivity sensors
Digital with Memosens technology
Cell constant k = 0.57 $cm^{-1}$




Endress+Hauser
People for Process Automation

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# 1 About this document

## 1.1 Warnings

| Structure of information | Meaning |
|---|---|
| **DANGER**<br>**Causes (/consequences)**<br>If necessary, Consequences of non-compliance (if applicable)<br>▶ Corrective action | This symbol alerts you to a dangerous situation.<br>Failure to avoid the dangerous situation **will** result in a fatal or serious injury. |
| **WARNING**<br>**Causes (/consequences)**<br>If necessary, Consequences of non-compliance (if applicable)<br>▶ Corrective action | This symbol alerts you to a dangerous situation.<br>Failure to avoid the dangerous situation **can** result in a fatal or serious injury. |
| **CAUTION**<br>**Causes (/consequences)**<br>If necessary, Consequences of non-compliance (if applicable)<br>▶ Corrective action | This symbol alerts you to a dangerous situation.<br>Failure to avoid this situation can result in minor or more serious injuries. |
| **NOTICE**<br>**Cause/situation**<br>If necessary, Consequences of non-compliance (if applicable)<br>▶ Action/note | This symbol alerts you to situations which may result in damage to property. |

## 1.2 Symbols

- Additional information, tips
- Permitted or recommended
- Not permitted or not recommended
- Reference to device documentation
- Reference to page
- Reference to graphic
- Result of a step

## 1.3 Documentation

The following manuals, which complement these Operating Instructions, can be found on the product pages on the Internet:

Technical Information Memosens CLS82D, TI01188C

# 2 Basic safety instructions

## 2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

## 2.2 Intended use

The Memosens CLS82D conductivity sensor is used to measure low to high conductivity of liquids in applications with hygienic requirements.

**The broad measuring range means the device can be used in a large number of applications, e.g. :**

- Phase separation of water/product mixtures
- Phase separation of product/product mixtures
- Monitoring of rinsing processes
- Fermentations
- Monitoring of water bodies
- Concentration measurement of bases and acids (consider the material resistance properties!)
- Monitoring product quality

The digital sensor is used with the Liquiline CM44x or Liquiline CM42.

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted.

The manufacturer is not liable for damage caused by improper or non-designated use.

## 2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

**Electromagnetic compatibility**

- The product has been tested for electromagnetic compatibility in accordance with the applicable international standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

## 2.4 Operational safety

**Before commissioning the entire measuring point:**

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.
4. Label damaged products as defective.

**During operation:**

- If faults cannot be rectified:
  products must be taken out of service and protected against unintentional operation.

## 2.5 Product safety

### 2.5.1 State-of-the-art technology

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and international standards have been observed.

## 2.6 Electrical equipment in hazardous areas

**Sensors with ATEX and IECEX approval (CLS82D-BA***, CLS82D-IA***) Sensors with EAC EX approval (CLS82D-GC***)**

- Sensor CLS82D is suitable for use in potentially explosive atmospheres in accordance with EC Type Examination Certificate BVS 04 ATEX E 121. The corresponding EC Declaration of Conformity is part of this document.
- The Memosens inductive sensor-cable connector system, comprising a CLS82D-GC*** conductivity sensor and CYK10-G*** measuring cable, is suitable for use in hazardous areas in accordance with certificate number TC RU C-DE.AA87.B.00088. Applied standards: TR CU 012/2011.
- The sensor may be used in an environment specified as Ex Zone 0 (1G).
- The sensor must be connected and operated in accordance with the accompanying Technical Information and Operating Instructions for the transmitter to be connected. All sensor operating data must be observed. Ensure correct installation to maintain housing protection type (IP68). Use original seal. Fit cable entry properly.
- Compliance with the specified ambient and medium temperature ranges is a prerequisite for safe use of the device!
- The conductivity sensor CLS82D may only be connected via measuring cable CYK10-G to the certified intrinsically safe digital Memosens sensor output module FSDG1 of the Liquiline M CM42 transmitter in accordance with EC Type Examination Certificate TÜV 13 ATEX 7459 X and IECEx TUR 11.0007X.
- The CLS82D conductivity sensor, in conjunction with the CYK10-G measuring cable, may be connected only to the certified, intrinsically safe, digital Memosens sensor output module FSDG1 of the Liquiline M CM42-KK********* transmitter.
- The electrical connection must be made according to the wiring diagram of the transmitter.

- Metallic process connection parts must be mounted at the mounting location electrostatically conductive (< 1 MΩ).
- Non-metallic process connections must be protected against electrostatic charging (also when used in Ex Zone 1 (2G)).
- Measuring cable CYK10-G and its terminal head must be protected against electrostatic charging if it is run through Zone 0.
- The maximum permitted cable length is 100 m.
- Ex versions of digital sensors with Memosens technology are indicated by an orange-red ring.
- Full compliance with regulations for electrical systems in hazardous locations (EN/IEC 60079-14) is mandatory when using the devices and sensors.

### Sensors with FM and CSA approval (CLS82D-FB***, CLS82D-C2***)

▶ Pay attention to the documentation and control drawings for the transmitter.

### Sensors with NEPSI approval (CLS82D-NA***)

▶ Pay attention to the information on the NEPSI certificates.
↳ You can download these certificates from the product page: www.endress.com/cls82d.

### Sensors with TIIS approval (CLS82D-TA***)

▶ Use sensors with TIIS approval only in Zone 1 (2G) environment.

## 2.6.1 Temperature classes

Sensor CLS82D is suitable for use in the following ambient temperature and process temperature ranges:

*ATEX II 1G Ex ia IIC T3/T4/T6 Ga*

| Type | | | | Medium temp. $T_a$ for temperature class (Tn) |
|---|---|---|---|---|
| CLS82D | - | BA | *** | -20 °C ≤ Ta ≤ +140 °C (T3)<br>-20 °C ≤ Ta ≤ +115 °C (T4)<br>-20 °C ≤ Ta ≤ +65 °C (T6) |

*NEPSI Ex ia IIC T3/T4/T6 Ga*

| Type | | | | Medium temp. $T_a$ for temperature class (Tn) |
|---|---|---|---|---|
| CLS82D | - | NA | *** | -20 °C ≤ Ta ≤ +140 °C (T3)<br>-20 °C ≤ Ta ≤ +115 °C (T4)<br>-20 °C ≤ Ta ≤ +65 °C (T6) |

*IECEx Ex ia IIC T3/T4/T6 Ga EAC Ex, 0Ex ia IIC T6/T4/T3 Ga X*

| Type | | | | Medium temp. $T_a$ for temperature class (Tn) |
|---|---|---|---|---|
| CLS82D | - | IA | *** | -20 °C ≤ Ta ≤ +140 °C (T3)<br>-20 °C ≤ Ta ≤ +115 °C (T4)<br>-20 °C ≤ Ta ≤ +65 °C (T6) |

*CSA IS/NI Cl.1 Div.1&2 Grp.:A-D*

| Type | | | | Medium temp. $T_a$ for temperature class (Tn) |
|---|---|---|---|---|
| CLS82D | - | C2 | *** | -20 °C ≤ Ta ≤ +140 °C (T3)<br>-20 °C ≤ Ta ≤ +115 °C (T4)<br>-20 °C ≤ Ta ≤ +65 °C (T6) |

*FM IS/NI Cl.1 Div.1&2 Grp.:A-D*

| Type | | | | Medium temp. $T_a$ for temperature class (Tn) |
|---|---|---|---|---|
| CLS82D | - | FB | *** | -20 °C ≤ Ta ≤ +140 °C (T3)<br>-20 °C ≤ Ta ≤ +115 °C (T4)<br>-20 °C ≤ Ta ≤ +65 °C (T6) |

The plant operator must take appropriate installation measures to ensure compliance with these temperature values. If the specified medium temperatures are complied with, temperatures that are not permitted for the respective temperature class will not occur on the equipment.

# 3 Incoming acceptance and product identification

## 3.1 Incoming acceptance

1. Verify that the packaging is undamaged.
   ↳ Notify the supplier of any damage to the packaging.
   Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
   ↳ Notify the supplier of any damage to the delivery contents.
   Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
   ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
   ↳ The original packaging offers the best protection.
   Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

## 3.2 Product identification

### 3.2.1 Type code for versions with explosion protection

*ATEX II 1G Ex ia IIC T3/T4/T6 Ga*

| Type | | Approval | Version |
|---|---|---|---|
| CLS82D | - | BA | *** |
| | | ATEX | Process connections, materials not Ex-relevant |

*NEPSI Ex ia IIC T3/T4/T6 Ga*

| Type | | Approval | Version |
|---|---|---|---|
| CLS82D | - | NA | *** |
| | | NEPSI | Process connections, materials not Ex-relevant |

*IECEx Ex ia IIC T3/T4/T6 Ga*

| Type | | Approval | Version |
|---|---|---|---|
| CLS82D | - | IA | *** |
| | | IECEx | Process connections, materials not Ex-relevant |

*CSA IS/NI Cl.1 Div.1&2 Grp.:A-D*

| Type | | Approval | Version |
|---|---|---|---|
| CLS82D | - | C2 | *** |
| | | CSA | Process connections, materials not Ex-relevant |

*FM IS/NI Cl.1 Div.1&2 Grp.:A-D*

| Type | | Approval | Version |
|---|---|---|---|
| CLS82D | - | FB | *** |
| | | FM | Process connections, materials not Ex-relevant |

*TIIS Ex ib T4*

| Type | | Approval | Version |
|---|---|---|---|
| CLS82D | - | TA | *** |
| | | TIIS | Process connections, materials not Ex-relevant |

### 3.2.2 Nameplate

The nameplate provides you with the following information on your device:
- Manufacturer identification
- Extended order code
- Serial number
- Safety information and warnings

► Compare the information on the nameplate with the order.

### 3.2.3 Product identification

#### Product page

www.endress.com/cls82d

#### Interpreting the order code

The order code and serial number of your product can be found in the following locations:
- On the nameplate
- In the delivery papers

#### Obtaining information on the product

1. Go to www.endress.com.
2. Page search (magnifying glass symbol): Enter valid serial number.
3. Search (magnifying glass).
   ↳ The product structure is displayed in a popup window.
4. Click the product overview.
   ↳ A new window opens. Here you fill information pertaining to your device, including the product documentation.

#### Manufacturer address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
D-70839 Gerlingen

## 3.3 Scope of delivery

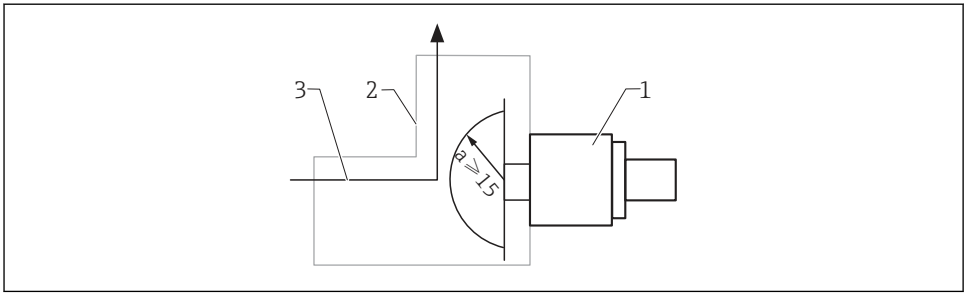
The scope of delivery includes:
- Sensor in the version ordered
- Operating Instructions

# 4 Mounting

## 4.1 Mounting requirements

▶ Prior to installation:
Remove the black protective cap from the sensor element.

Symmetrical installation is recommended in order to guarantee linearity. The distance to the side walls and opposite walls must be at least 15 mm.



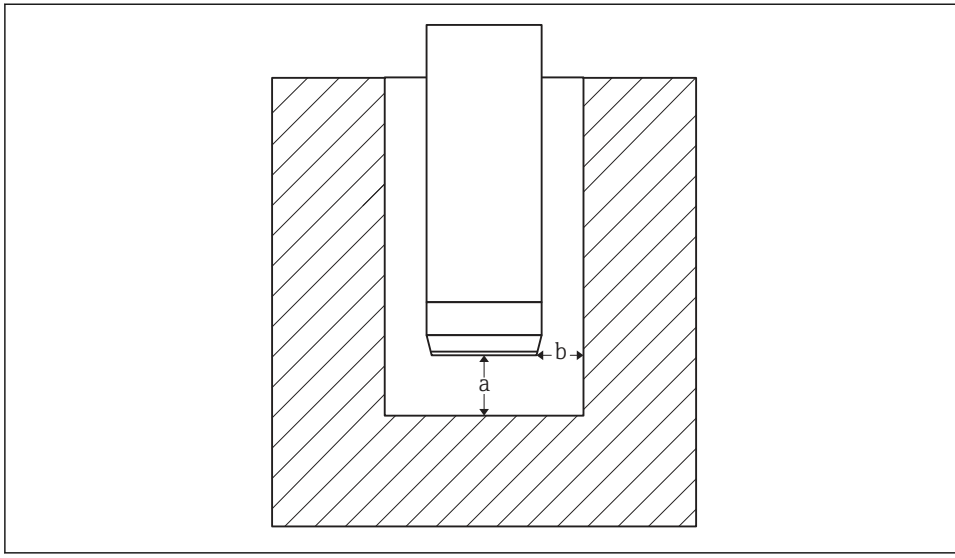

*1 Minimum distance between pipe and end of the measuring cell*

*1 Sensor*
*2 Pipe*
*3 Direction of flow*

The ionic current in the liquid is affected by the walls in confined installation conditions. This effect is compensated by what is referred to as the installation factor. The installation factor can be entered in the transmitter for the measurement or the cell constant is corrected by multiplying by the installation factor.

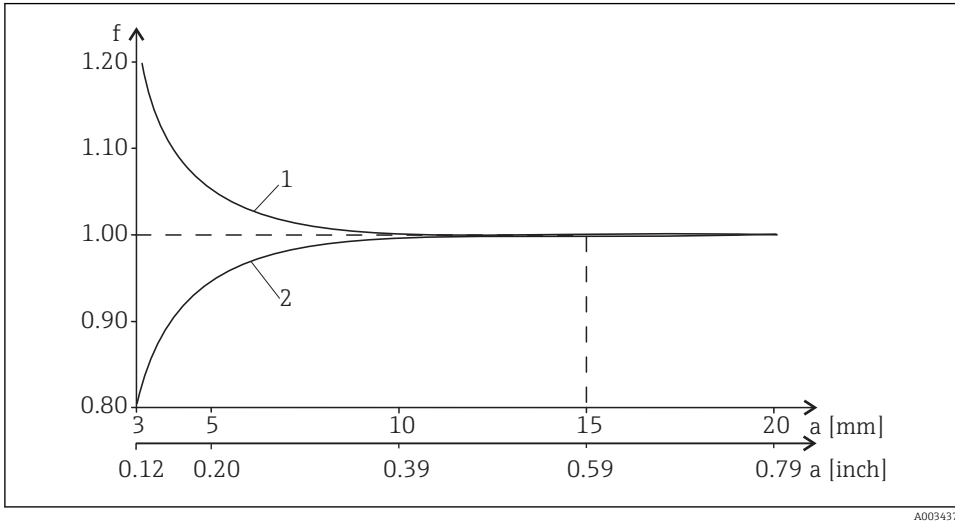
The value of the installation factor depends on the diameter and the conductivity of the pipe nozzle as well as the sensor's distance to the wall. The installation factor can be disregarded (f = 1.00) if the distance to the wall is sufficient (a > 15 mm). If the distance to the wall is smaller, the installation factor increases for electrically insulating pipes (f > 1) and decreases for electrically conductive pipes (f < 1). The installation factor can be determined using calibration solutions.

▶ Ensure that the electrodes are fully immersed in the medium during measurement. Ideally, medium should flow to the measuring cell from the front.
↳ Any other installation position can cause air pockets to occur or the buildup of solid impurities.



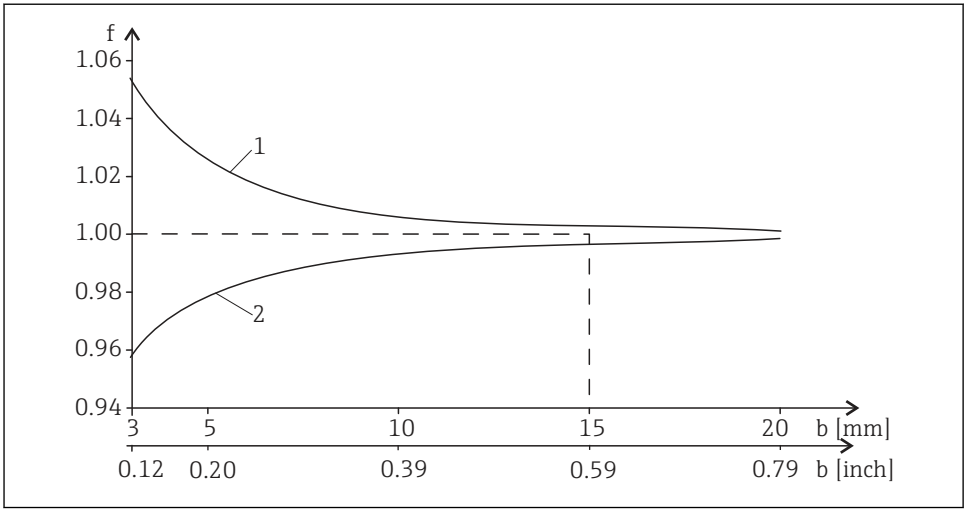

2 *Schematic drawing of the sensor in confined installation conditions*

*a Wall distance*
*b Gap width*




3 *Relationship between installation factor f and wall distance a*

*1 Electrically insulating pipe wall*
*2 Electrically conductive pipe wall*




4 *Relationship between installation factor f and gap width b*

*1 Electrically insulating pipe wall*
*2 Electrically conductive pipe wall*

### 4.1.1 Hygienic requirements

- The use of an EHEDG-certified assembly is a prerequisite for the easy-to-clean installation of a 12-mm sensor in accordance with EHEDG requirements.
- Furthermore, the instructions regarding the hygienic installation and operation of the assembly in the relevant Operating Instructions must be adhered to.

For 3-A-compliant installation, please observe the following:
- After the device has been mounted, hygienic integrity must be guaranteed.
- 3-A-compliant process connections must be used.

### 4.1.2 Installation factors for assemblies

For flow assemblies or assemblies with a basket protector where it is not possible to maintain a distance a >15 mm (→ 1, 10) to the sensor element, it is advisable to determine the installation factor by calibrating in the assembly used in order to guarantee the specified sensor measured error.

## 4.2 Post-mounting check

1. Are the sensor and cable undamaged?
2. Is the sensor installed in the process connection and is not suspended from the cable?

# 5 Electrical connection

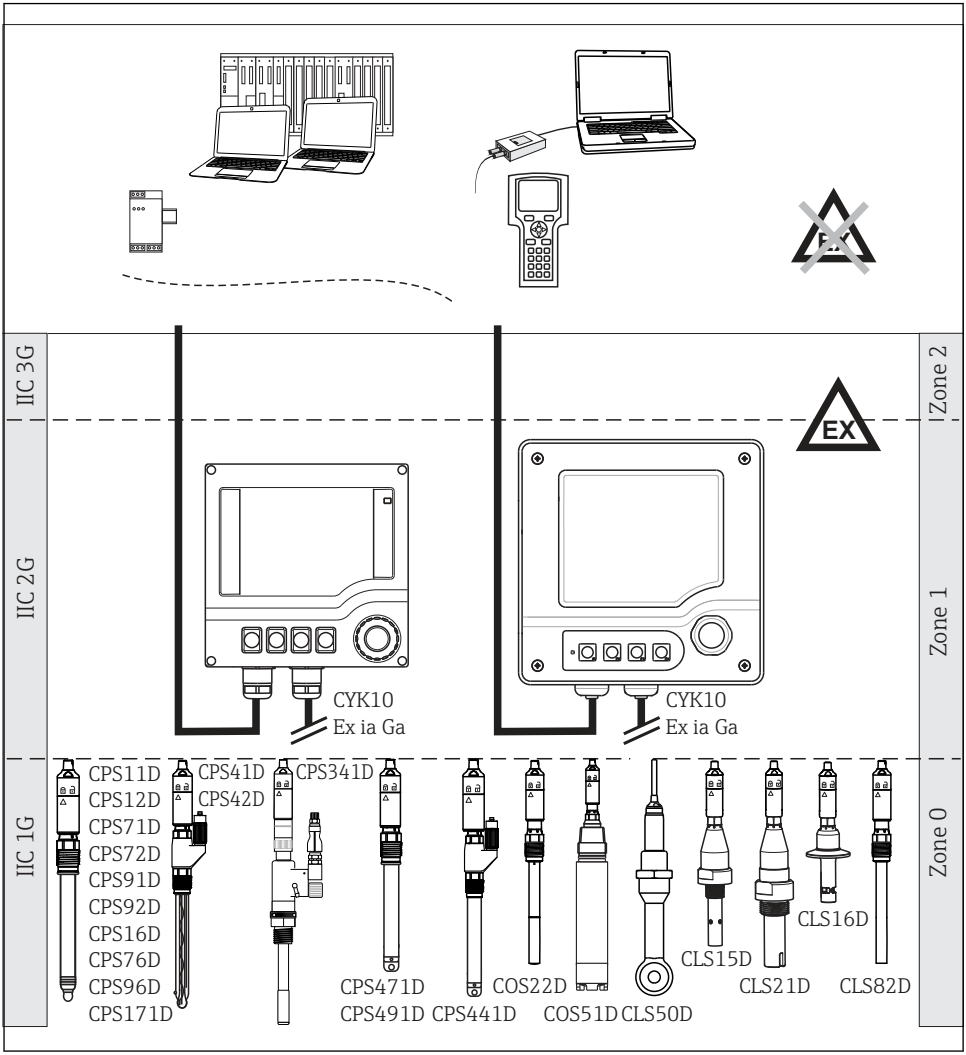
**⚠ WARNING**

**Device is live!**

Incorrect connection may result in injury or death!

- The electrical connection may be performed only by an electrical technician.
- The electrical technician must have read and understood these Operating Instructions and must follow the instructions contained therein.
- **Prior** to commencing connection work, ensure that no voltage is present on any cable.

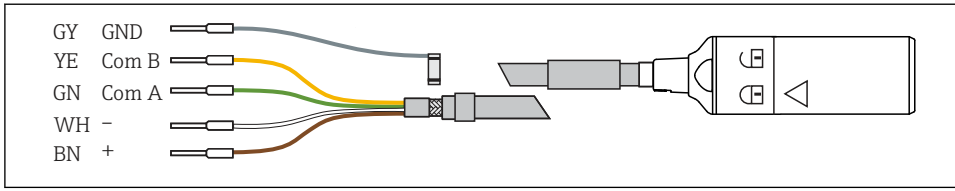
## 5.1 Quick wiring guide




*5 Electrical connection in hazardous environment*

## 5.2 Connecting the sensor

The sensor is connected to the transmitter via the Memosens data cable CYK10.




6 *Memosens data cable CYK10*

## 5.3 Ensuring the degree of protection

Only the mechanical and electrical connections which are described in these instructions and which are necessary for the required, designated use, may be carried out on the device delivered.

► Exercise care when carrying out the work.

Otherwise, the individual types of protection (Ingress Protection (IP), electrical safety, EMC interference immunity) agreed for this product can no longer be guaranteed due, for example to covers being left off or cable (ends) that are loose or insufficiently secured.

## 5.4 Post-connection check

| **Device health and specifications** | **Action** |
|---|---|
| Is the outside of the sensor, assembly or cable free from damage? | ► Perform a visual inspection. |
| **Electrical connection** | **Action** |
| Are the mounted cables strain-relieved and not twisted? | ► Perform a visual inspection.<br>► Untwist the cables. |
| Is a sufficient length of the cable cores stripped, and are the cores positioned in the terminal correctly? | ► Perform a visual inspection.<br>► Pull gently to check they are seated correctly. |
| Are all screw terminals tightened? | ► Tighten the screw terminals. |
| Are all cable entries mounted, firmly tightened and leak-tight? | ► Perform a visual inspection.<br>In the case of lateral cable entries: |
| Are all cable entries mounted on the side or pointing downwards? | ► Point cable loops downward so that water can drip off. |

# 6 Commissioning

Prior to initial commissioning, ensure that:
- The sensor is correctly installed
- The electrical connection is correct

1. Check the temperature compensation and damping settings on the transmitter.

Operating Instructions of the transmitter being used, e.g. BA01245C if using Liquiline CM44x or CM44xR.

**⚠ WARNING**

**Escaping process medium**

Risk of injury from high pressure, high temperatures or chemical hazards!

- ▶ Before applying pressure to an assembly with cleaning system, ensure that the system has been connected correctly.
- ▶ If you cannot reliably establish the correct connection, do not install the assembly in the process.

If using an assembly with automatic cleaning function:

2. Check that the cleaning medium (water or air, for example) is connected correctly.
3. Following commissioning:
   Maintain the sensor at regular intervals.
   ↳ This is the only way to ensure reliable measurements.

# 7 Maintenance

## 7.1 Cleaning the sensor

**⚠ WARNING**

**Thiocarbamide**

Harmful if swallowed! Limited evidence of carcinogenicity! Possible risk of harm to the unborn child! Dangerous for the environment with long-term effects!

- ▶ Wear protective goggles, protective gloves and appropriate protective clothing.
- ▶ Avoid all contact with the eyes, mouth and skin.
- ▶ Avoid discharge into the environment.

**⚠ CAUTION**

**Corrosive chemicals**

Risk of chemical burns to the eyes and skin and risk of damage to clothing and equipment!

- ▶ It is absolutely essential to protect the eyes and hands properly when working with acids, alkalis and organic solvents!
- ▶ Wear protective goggles and safety gloves.
- ▶ Clean away splashes on clothes and other objects to prevent any damage.
- ▶ Comply with instructions in the safety data sheets for the chemicals used.

Clean away fouling on the sensor as follows depending on the type of fouling:

1. Oily and greasy films:
   Clean with a grease remover, e.g. alcohol, or hot water and a surfactant-containing (basic) agent (e.g. washing-up liquid).
2. Lime and metal hydroxide buildup and low solubility (lyophobic) organic buildup:
   Dissolve buildup with diluted hydrochloric acid (3 %) and then rinse thoroughly with plenty of clear water.
3. Sulfidic buildup (from flue gas desulfurization or wastewater treatment plants):
   Use a mixture of hydrochloric acid (3 %) and thiocarbamide (commercially available) and then rinse thoroughly with plenty of clear water.
4. Buildup containing protein (e.g. in the food industry):
   Use a mixture of hydrochloric acid (0.5 %) and pepsin (commercially available) and then rinse thoroughly with plenty of clear water.
5. Readily soluble biological buildup:
   Rinse with pressurized water.

After cleaning, rinse the sensor thoroughly with plenty of water.

## 7.2 Sensor calibration

- Wall distance:
  When calibrating, ensure that there is a minimum distance of 15 mm to the base and walls of the calibration vessel.

# 8 Repair

## 8.1 General notes

The repair and conversion concept provides for the following:
- The product has a modular design
- Spare parts are grouped into kits which include the associated kit instructions
- Only use original spare parts from the manufacturer
- Repairs are carried out by the manufacturer's Service Department or by trained users
- Certified devices can only be converted to other certified device versions by the manufacturer's Service Department or at the factory
- Observe applicable standards, national regulations, Ex documentation (XA) and certificates

1. Carry out the repair according to the kit instructions.
2. Document the repair and conversion and enter, or have entered, in the Life Cycle Management tool (W@M).

## 8.2 Spare parts

Device spare parts that are currently available for delivery can be found on the website:

www.endress.com/device-viewer

- Quote the serial number of the device when ordering spare parts.

## 8.3 Return

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered. As an ISO-certified company and also due to legal regulations, Endress+Hauser is obliged to follow certain procedures when handling any returned products that have been in contact with medium.

To ensure the swift, safe and professional return of the device:

- Refer to the website www.endress.com/support/return-material for information on the procedure and conditions for returning devices.

## 8.4 Disposal

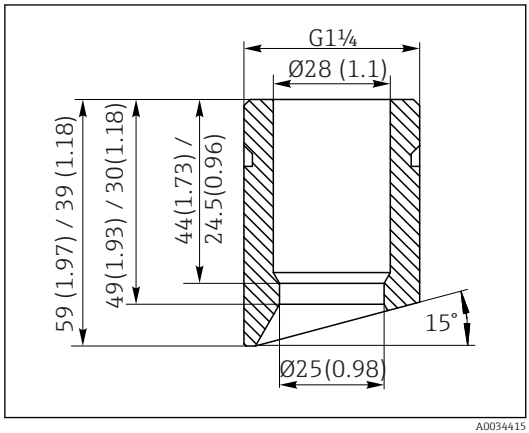


If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

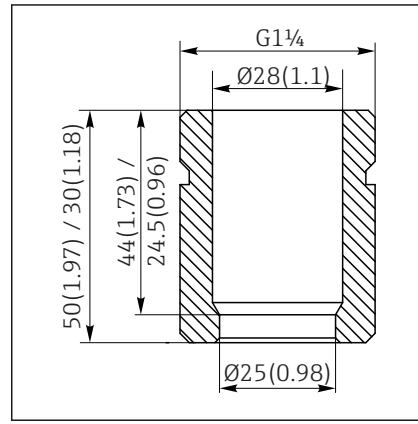
# 9 Accessories

## 9.1 Device-specific accessories

### 9.1.1 Welding socket




A0034415




A0034416

**Only for CLS82D-**NA***

- Safety welding socket DN25, straight, stainless steel 1.4435, L=30; Order No. 51508051
- Safety welding socket DN25, angled, stainless steel 1.4435, L=30/40; Order No. 51508052

**Only for CLS82D-**NB***

- Safety welding socket DN25, straight, stainless steel 1.4435, L=50; Order No. 51508049
- Safety welding socket DN25, angled, stainless steel 1.4435, L=50/60; Order No. 51508050

Standard welding sockets already available (for CPA440 / CPA441 / CPA460) with order nos. 50005192 and 50028446 are also suitable for the CLS82D sensor.

### 9.1.2 Connection

**Memosens data cable CYK10**

- For digital sensors with Memosens technology
- Product Configurator on the product page: www.endress.com/cyk10

Technical Information TI00118C

**Memosens data cable CYK11**

- Extension cable for digital sensors with Memosens protocol
- Product Configurator on the product page: www.endress.com/cyk11

Technical Information TI00118C

## 9.2 Service-specific accessories

### 9.2.1 Seals

**Only for CLS82D-**NA* [1] and CLS82D-**NB* [2]:**
- EPDM seals for CLS82D (x 2; FDA USP Class VI); Order No. 71307106
- FKM (VITON) seals for CLS82D (x 2; FDA USP Class VI); order no. 71307105
- Silicone seals for CLS82D (x 2, FDA USP Class VI); Order No. 71307107

### 9.2.2 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
- CLY11-C, 1.406 mS/cm (reference temperature 25 °C (77 °F)), 500 ml (16.9 fl.oz) Order No. 50081904
- CLY11-D, 12.64 mS/cm (reference temperature 25 °C (77 °F)), 500 ml (16.9 fl.oz) Order No. 50081905
- CLY11-E, 107.00 mS/cm (reference temperature 25 °C (77 °F)), 500 ml (16.9 fl.oz) Order No. 50081906

Technical Information TI00162C

### 9.2.3 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

Technical Information TI00496C/07/EN

Recalibration
- The conductivity calibration set must be calibrated regularly onsite at the manufacturer's depending on the frequency of use and operating conditions.
- Recommended period: 1 year

1) Process connection: DN25 standard
2) Process connection: DN25 B. Braun

# 10 Technical data

## 10.1 Input

### 10.1.1 Measured variables

- Conductivity
- Temperature

### 10.1.2 Measuring ranges

**Conductivity**

1 µS/cm to 500 mS/cm

**Temperature**

-5 to 120 °C (23 to 248 °F)

### 10.1.3 Cell constant

$k = 0.57\ cm^{-1}$

### 10.1.4 Temperature compensation

Pt1000 (Class A according to IEC 60751)

## 10.2 Performance characteristics

### 10.2.1 Measuring uncertainty

Each individual sensor is factory-measured in a solution of approx. 50 µS/cm using a reference measuring system traceable to NIST or PTB. The exact cell constant is entered into the quality certificate supplied. The uncertainty of measurement in determining the cell constant is 1.0 %.

### 10.2.2 Conductivity response time

$t_{90} \leq 3$ s

### 10.2.3 Temperature response time

$t_{90} \leq 25$ s

### 10.2.4 Maximum measured error

≤ 4 % of reading

### 10.2.5 Repeatability

0.2% of reading

## 10.3 Environment

### 10.3.1 Ambient temperature

–20 to 60 °C (–4 to 140 °F)

### 10.3.2 Storage temperature

-25 to +80 °C (-10 to +180 °F)

### 10.3.3 Relative humidity

5 to 95 %

### 10.3.4 Degree of protection

IP 68 / NEMA type 6P (1 m water column, 25 °C, 168 h)

## 10.4 Process

### 10.4.1 Process temperature

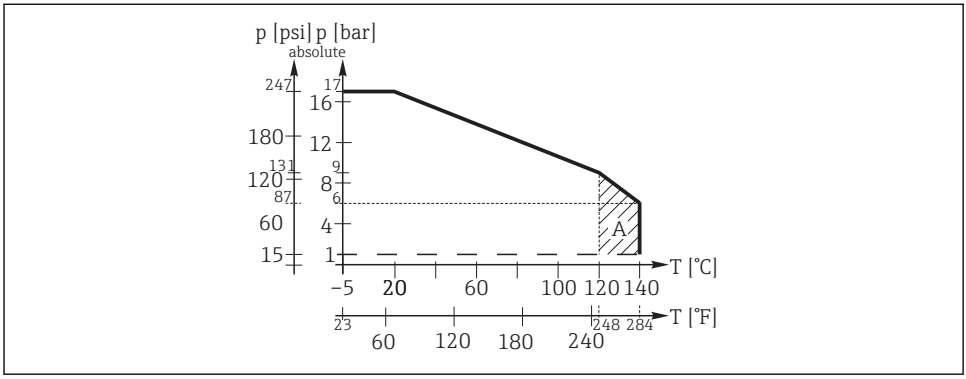
| | |
|---|---|
| Normal operation: | -5 to 120 °C (23 to 248 °F) |
| Sterilization (max. 45 min.): | Max. 140 °C (284 °F) at 6 bar (87 psi) |

### 10.4.2 Process pressure

17 bar (247 psi) at 20 °C (68 °F)

9 bar (131 psi) at 120 °C (248 °F)

### 10.4.3 Temperature/pressure ratings




A0034375-EN

*7 Pressure-temperature ratings*

*A Can be sterilized for a short time (45 min.)*

## 10.5 Mechanical construction

### 10.5.1 Weight

Approx. 0.06 to 0.950 kg (0.13 to 2.09 lbs) depending on the version

### 10.5.2 Materials in contact with medium

Sensor element: Platinum and ceramic (zirconium oxide)
Process connection: Stainless steel 1.4435 (AISI 316L)

*Only for CLS82D-**NA* [1] and CLS82D-**NB* [2]:*

Seal: EPDM

1) 1. Connection: DN25 standard
2) 2. Connection: DN25 brown

### 10.5.3 Surface roughness

$R_a$ < 0.38 µm

# 11 EU Declaration of Conformity

## EU-Konformitätserklärung
## EU-Declaration of Conformity
## Déclaration UE de Conformité

Endress+Hauser
People for Process Automation

CE

**Company** **Endress+Hauser Conducta GmbH+Co. KG**
**Dieselstraße 24, 70839 Gerlingen, Germany**
erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt
declares as manufacturer under sole responsibility, that the product
déclare sous sa seule responsabilité en qualité de fabricant que le produit

**Product** **Memosens**
CLS82D-BA**A

**Regulations** den folgenden Europäischen Richtlinien entspricht:
conforms to following European Directives:
est conforme aux prescription des Directives Européennes suivantes :

EMC 2014/30/EU (L96/79)
ATEX 2014/34/EU (L96/309)

**Standards** angewandte harmonisierte Normen oder normative Dokumente:
applied harmonized standards or normative documents:
normes harmonisées ou documents normatifs appliqués :

| | | | | |
|---|---|---|---|---|
| EN 61326-1 | (2013) | EN 60079-0 | (2012) | +A11:2013 |
| EN 61326-2-3 | (2013) | EN 60079-11 | (2012) | |
| EN 61326-2-5 | (2013) | EN 60079-26 | (2015) | |

**Certification** EG-Baumusterprüfbescheinigung Nr. / EC-Type Examination Certificate No. / Numéro de l'attestation d'examen CE de type: BVS 04 ATEX E 121 X

Ausgestellt von/issued by/délivré par: DEKRA EXAM GmbH (0158)
Qualitätssicherung/Quality assurance/Système d'assurance qualité: DEKRA EXAM GmbH (0158)

Gerlingen, 20. April 2016
Endress+Hauser Conducta GmbH+Co. KG

i. V. Jörg-Martin Müller
Technology

i. V. Sven-Matthias Scheibe
Technology Certifications and Approvals

EC_00383_01.16

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