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Brief Operating Instructions
Memosens COS81E

Hygienic, optical sensor with Memosens 2.0 technology for the measurement of oxygen

These instructions are Brief Operating Instructions; they are not a substitute for the Operating Instructions pertaining to the device.

Detailed information on the device can be found in the Operating Instructions and in the other documentation available at:

- www.endress.com/device-viewer
- Smart phone/tablet: Endress+Hauser Operations App

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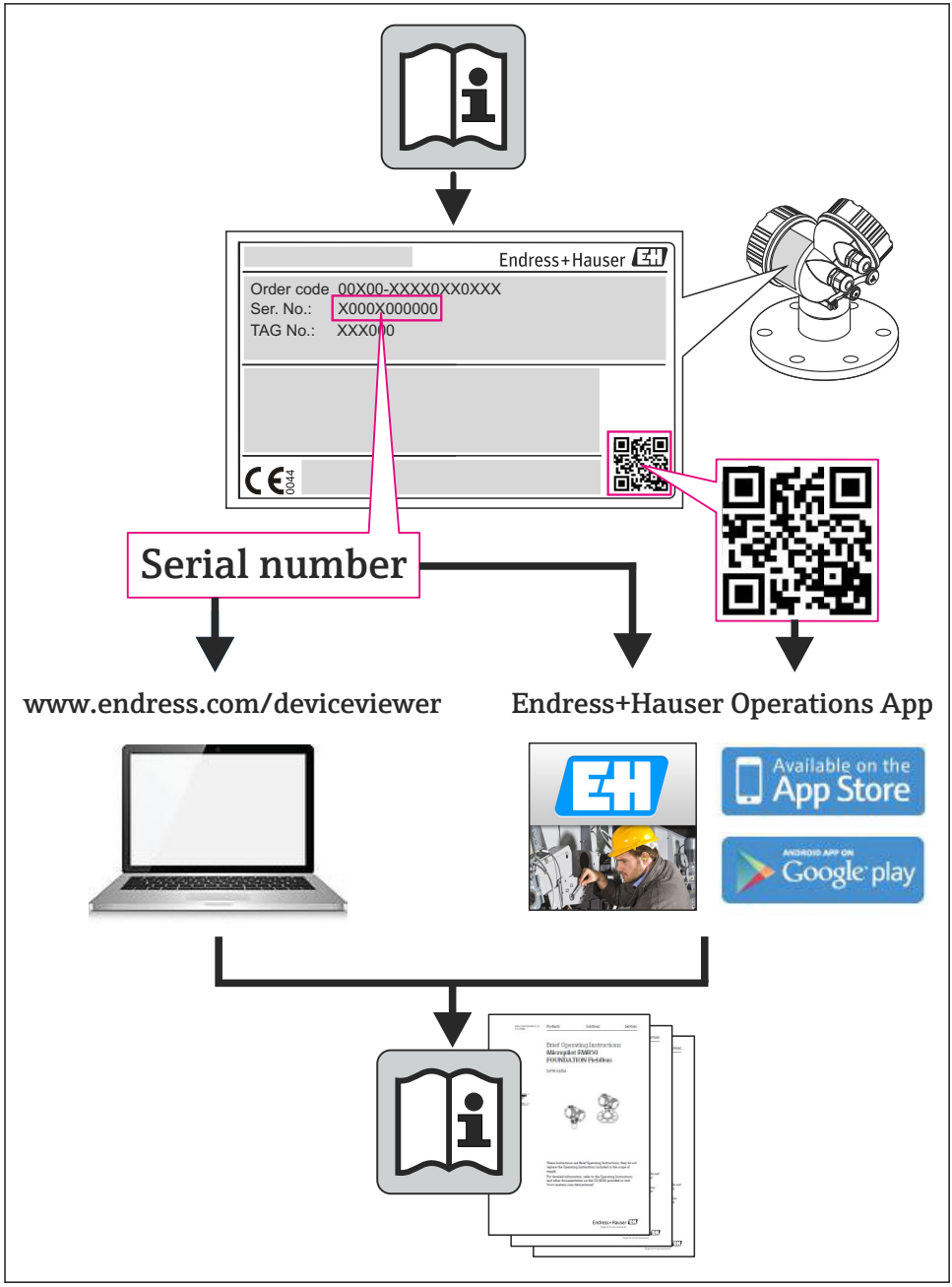
Endress+Hauser
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Ser. No.: X000X000000
TAG No.: XXX000
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Serial number
www.endress.com/deviceviewer
Endress+Hauser Operations App
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1 About this document

1.1 Safety information

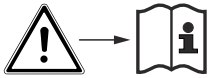
Structure of information	Meaning
DANGER **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **will** result in a fatal or serious injury.
WARNING **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **can** result in a fatal or serious injury.

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

1.2 Used 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

1.2.1 Symbols on the device

Symbol	Meaning
	Reference to device documentation
	Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

1.3 Supplementary documentation

The following manuals which complement these Operating Instructions can be found on the product pages on the Internet:
- Operating Instructions for the relevant sensor
- Technical Information for the relevant sensor
- Operating Instructions for the transmitter used
- Operating Instructions for the cable used

In addition to these Operating Instructions, an XA with "Safety instructions for electrical apparatus in the hazardous area" is also included with sensors for use in the hazardous area.

▶ Please follow instructions on use in the hazardous area carefully.

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

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.

The sensor is designed for continuous measurement of dissolved oxygen in water and aqueous solutions, and also for continuous measurement of oxygen in gases.

The sensor is particularly suitable for:
- Monitoring inertization equipment in the food industry
- Monitoring, measuring and regulating the oxygen content in chemical processes
- Monitoring of fermentation processes

NOTICE

Halogen-containing solvents, ketones and toluene
Halogen-containing solvents (dichloromethane, chloroform), ketones (e.g. acetone, pentanone) and toluene have a cross-sensitive effect and result in decreased measured values or, at worst, in the complete failure of the sensor!
► Use the sensor only in media that are free from halogens, ketones and toluene.

For non-contact digital data transmission, the sensor must be connected to the digital input of the transmitter for Memosens sensors using the CYK10 measuring cable.

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

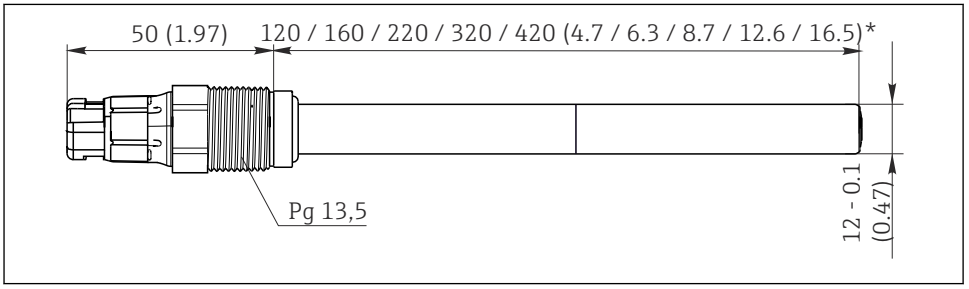
2.5.1 State of the art

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.

3 Installation

3.1 Installation requirements

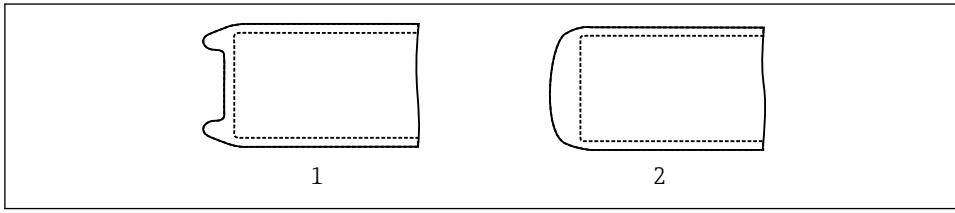
3.1.1 Dimensions



1 Dimensions in mm (inch)

3.1.2 Orientation

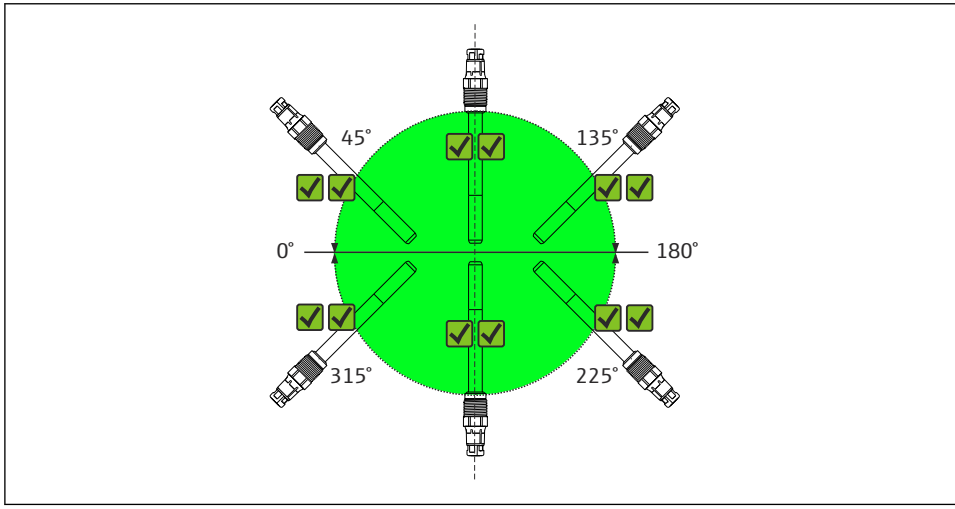
The sensor's spot cap can have either a u-shaped or c-shaped design.



2 Design of spot cap

1 u-shaped
2 c-shaped

COS81E-***C*** (c-shaped)**



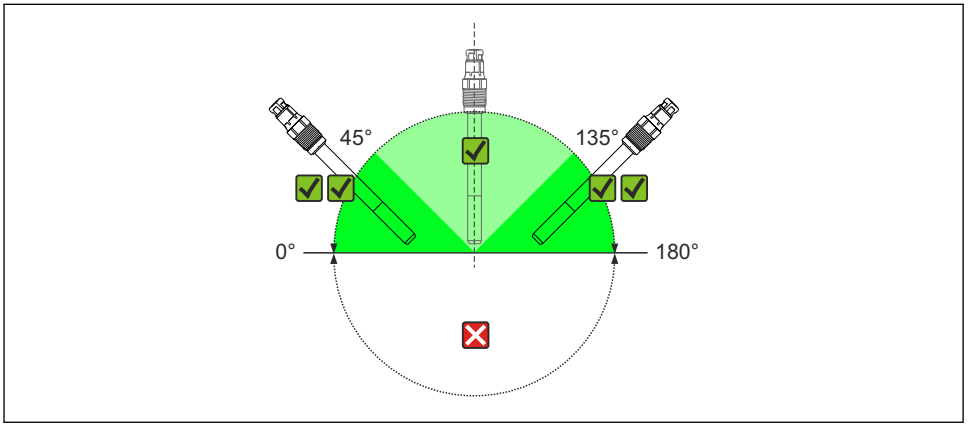
*3 Installation angle Memosens COS81E-*****C*** (c-shaped spot cap)*

The sensor can be installed at any installation angle (0 to 360 °).

✓✓ *Recommended installation angle*

The sensor with the c-shaped spot cap is self-draining in the recommended installation angles and can therefore be used for hygienic applications.

COS81E-*****U*** (u-shaped)



4 *Installation angle Memosens COS81E-*****U*** (u-shaped spot cap)*

✓✓ *Recommended installation angle*

✓ *Possible installation angle*

✗ *Inadmissible installation angle*

The sensor with the u-shaped spot cap must be installed at an inclination angle of 0 to 180° in an assembly, holder or an appropriate process connection. Recommended angle: 0 to 45° or 135 to 180° to prevent the attachment of air bubbles. At angles of inclination of 45 to 135°, air bubbles at the oxygen-sensitive membrane may result in higher readings than expected.

Inclination angles other than those mentioned are not permitted. In order to avoid buildup and condensation on the spot, do **not** install the COS81E-*****U *** sensor upside down.

Follow the instructions for installing sensors in the Operating Instructions for the assembly used.

3.1.3 Installation location

1. Choose a mounting location that is easy to access.
2. Ensure that upright posts and assemblies are fully secured and vibration-free.
3. Choose a mounting location with an oxygen concentration that is typical for the application.

3.2 Installing the sensor

3.2.1 Measuring system

A complete measuring system comprises:
- a Memosens COS81E oxygen sensor
- a measuring cable e.g. CYK10
- a transmitter, e.g. Liquiline CM42, Liquiline CM44x/R, Liquiline CM44P, Liquiline Compact CM72/82, Liquiline Mobile CML18
- Optional: an assembly, e.g. permanent installation assembly Unifit CPA842, flow assembly Flowfit CYA21 or retractable assembly Cleanfit CPA875
- Optional: connection to an analog fermenter controller via Memosens analog converter CYM17

3.2.2 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.

The Special Documentation for hygienic applications must be observed for hygienic operation.

Special Documentation for hygienic applications, SD02751C

3.2.3 Installing at a measuring point

Must be installed in a suitable assembly (depending on the application).

WARNING

Electrical voltage

In the event of a fault, non-grounded metallic assemblies may be live and as such are not safe to touch!

▶ When using metallic assemblies and installation equipment, national grounding provisions must be observed.

To fully install a measuring point proceed in accordance with the following steps:

1. Install the retractable or flow assembly (if used) in the process.
2. Connect the water supply to the rinsing nozzles provided (if using an assembly with cleaning function).
3. Connect the cable to the sensor and transmitter
4. Supply power to the transmitter
5. Install and connect the oxygen sensor in the assembly

NOTICE

Installation fault

Cable open circuit, loss of sensor due to cable separation, unscrewing of spot cap!

- ▶ Do not install the sensor freely suspended from the cable!
- ▶ Hold the sensor body steady during installation or removal. Turn **only the hexagonal nut** on the Pg coupling. Otherwise, the spot cap may become unscrewed and will then remain in the assembly or process.
- ▶ Avoid exerting excessive tensile force on the cable (e.g. through jerky pulling movements).
- ▶ Choose a mounting location that is easy to access for later calibrations.
- ▶ Follow the instructions for installing sensors in the Operating Instructions for the assembly used.

3.3 Post-installation check

1. Are the sensor and cable undamaged?
2. Is the orientation correct?
3. Is the sensor installed in an assembly and is not suspended from the cable?
4. Avoid the penetration of moisture.

4 Electrical connection

⚠ WARNING

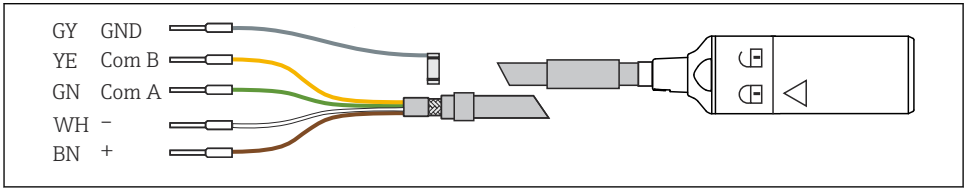
Device is live!

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.

4.1 Connecting the sensor

The electrical connection of the sensor to the transmitter is established using the measuring cable CYK10.



5 Measuring cable CYK10

4.2 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.

4.3 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. ► 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. ► 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. In the case of lateral cable entries: ► Point cable loops downward so that water can drip off.
Are all cable entries mounted on the side or pointing downwards?	

5 Commissioning

5.1 Installation and function check

Prior to initial commissioning, ensure that:
- Is the sensor correctly installed?
- Is the electrical connection correct?

If using an assembly with automatic cleaning function:

► Check that the cleaning medium (water or air, for example) is connected correctly.

⚠ 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.

1. At the transmitter, enter all the settings specific to the parameters and measuring point. These include the air pressure during calibration and measurement or the salinity, for instance.
2. Check whether a calibration/adjustment is necessary.

The oxygen measuring point is then ready to measure.

After commissioning, maintain the sensor at regular intervals to ensure reliable measurement. Further information on this can be found in the Operating Instructions for the sensor.

- Operating Instructions for Memosens COS81E, BA02066C
- Operating Instructions for the transmitter used, such as BA01245C if using the Liquiline CM44x or Liquiline CM44xR.

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