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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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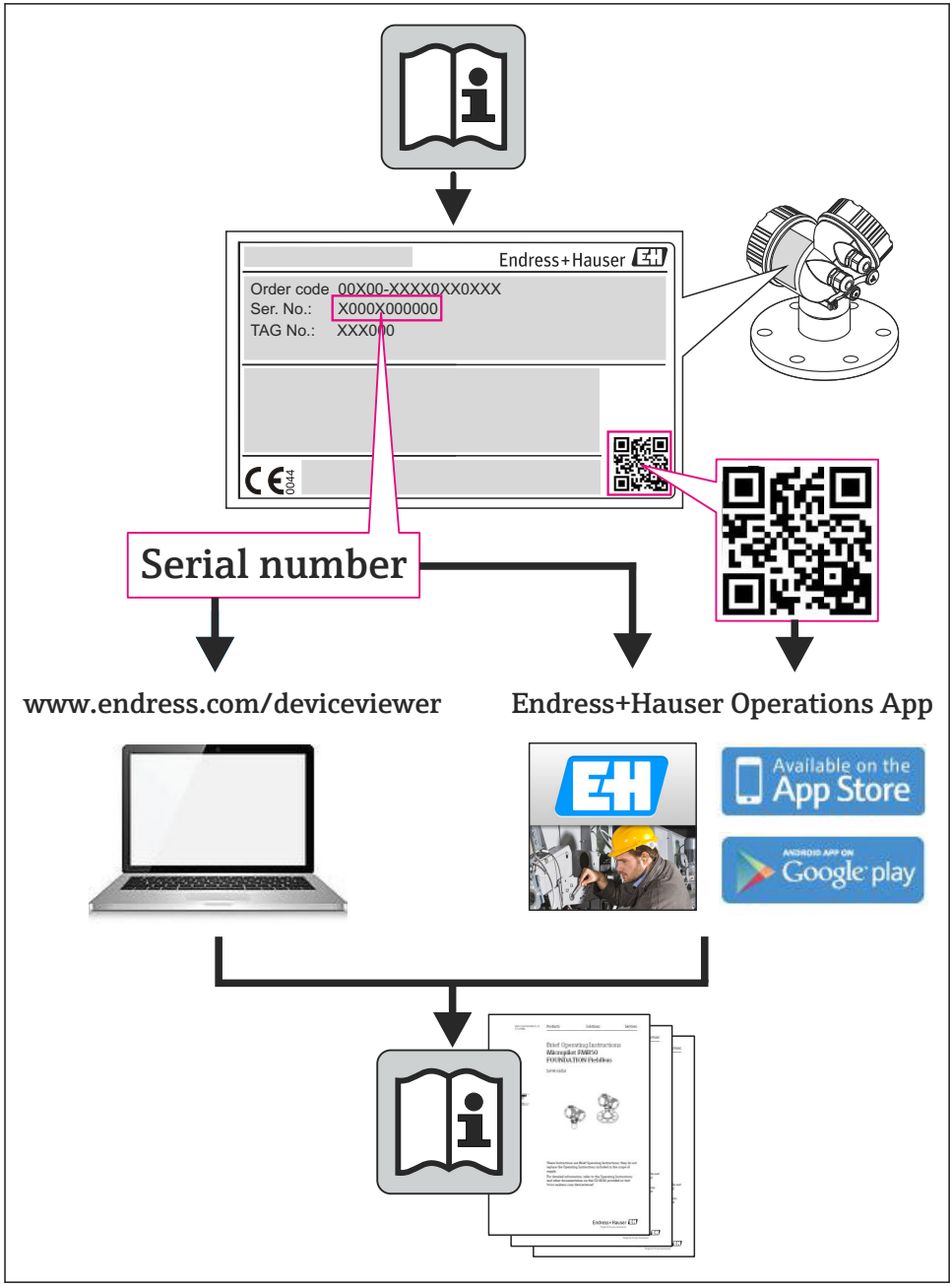
Endress+Hauser
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Ser. No.: X000X000000
TAG No.: XXX000
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Serial number
www.endress.com/deviceviewer
Endress+Hauser Operations App
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ANDROID APP ON Google play

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1 About this document

1.1 Safety information

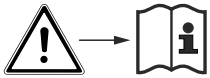
Structure of information	Meaning
⚠ DANGER **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **will** result in a fatal or serious injury.
⚠ WARNING **Causes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

Symbol	Meaning
	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

1.3 Additional 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.

Safety instructions for electrical equipment in hazardous areas, Memosens 2.0 optical oxygen:
- ATEX and IECEx: **XA02238C**
- INMETRO: **XA02475C**
- NEPSI: **XA02476C**
- JPN Ex: **XA02485C**
- CSA C/US: **XA02520C**

2 Basic safety instructions

2.1 Requirements for 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 Designated 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.

2.3 Occupational 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

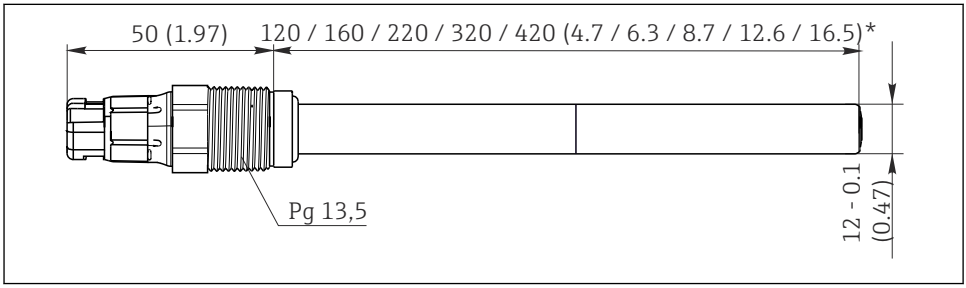
2.5.1 State-of-the-art technology

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.

3 Installation

3.1 Installation conditions

3.1.1 Dimensions

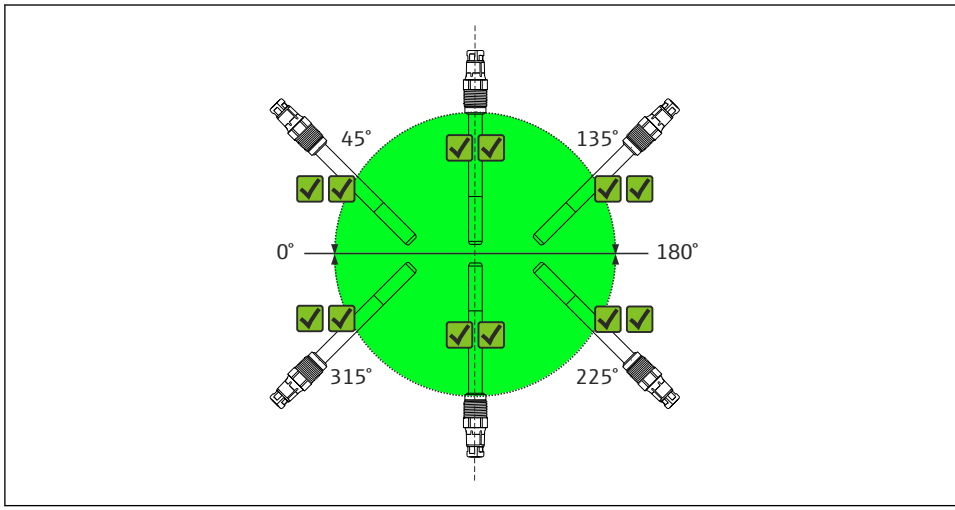


1 Dimensions in mm (inch)

3.1.2 Orientation

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

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

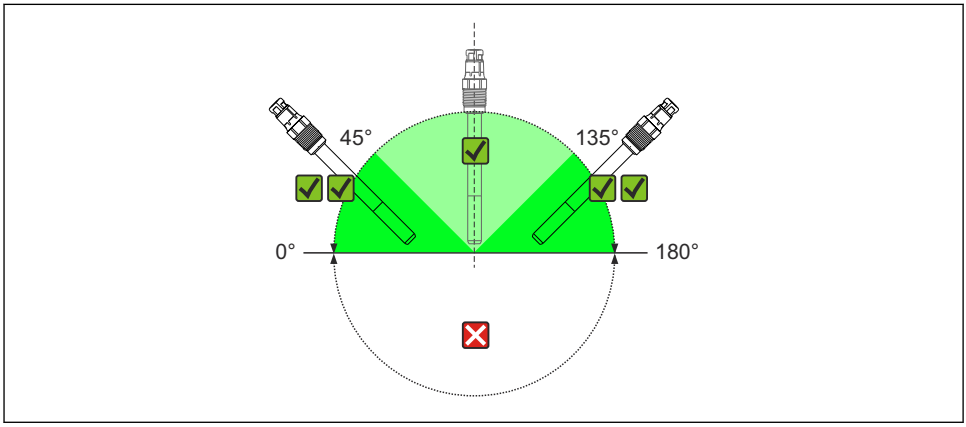


2 *Installation angle Memosens COS81E-****C*** (c-shaped spot cap)*

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

☑☑ *Recommended installation angle*

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



3 *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 a corresponding 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 Mounting 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 Mounting the sensor

3.2.1 Measuring system

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

3.2.2 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.

For complete installation of a measuring point, proceed as follows:

1. Install the retractable assembly or a flow assembly (if used) into the process.
2. Connect the water supply to the rinse connections (if you are using an assembly with a cleaning function).
3. Install and connect the oxygen sensor.

NOTICE

Installation error

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

▶ Do not install the sensor freely suspended from the cable!
▶ Screw the sensor into the assembly, ensuring that the cable is not twisted.
▶ Hold the sensor body steady during installation or removal. Turn **only at the hexagonal nut** of the armored coupling. Otherwise the spot cap might be 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 by fitting the protection cap on the immersion assembly.

4 Electrical connection

⚠ WARNING

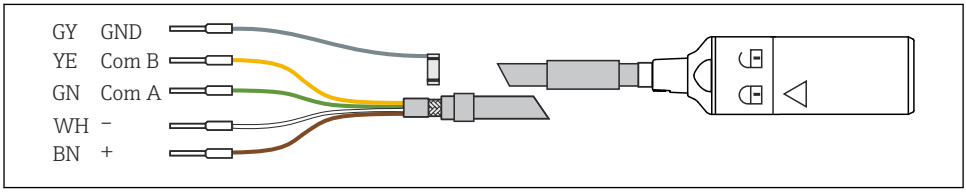
Device is live!

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 measuring cable CYK10.



4 *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 condition and specifications	Action
Are the sensor, assembly or cables free from damage on the outside?	▶ 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 the screw terminals properly tightened?	▶ Tighten the screw terminals.
Are all cable entries mounted, tightened and leak-tight?	In the case of lateral cable entries: ▶ Point cable loops downward so that water can drip off.
Are all cable entries installed downwards or mounted laterally?	

5 Commissioning

5.1 Function check

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

Following commissioning, the sensor must be serviced at regular intervals, as only then can reliable measurement be guaranteed. 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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