



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services

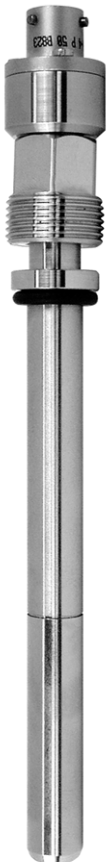


Solutions

Technical Information

Oxymax H COS21

Sensor with long-term stability for frequent sterilization and autoclaving



Application

- Process control in enzyme production
- Control of culture growth
- Biotechnological production
- Food industry
- General process applications

Your benefits

- Sensor version suitable for the pharmaceutical industry:
 - Stainless steel 1.4435 (AISI 316L)
 - Sterilizable and autoclavable
- Application-specific versions:
 - Sensor for standard applications
- Versatile usage:
 - Standard process connection Pg 13.5
 - Installation in standard pH assemblies possible
- Short response time: $t_{98} < 60$ s
- Integrated temperature sensor

Function and system design

Measuring principle

The oxygen molecules diffused through the membrane are reduced to hydroxide ions (OH⁻) at the cathode. Silver is oxidized to silver ions (Ag⁺) at the anode (this forms a silver halogenide layer). A current flows due to the electron donation at the cathode and the electron acceptance at the anode. Under constant conditions, this flow is proportional to the oxygen content of the medium. This current is converted in the transmitter and indicated on the display as an oxygen concentration in mg/l, as a saturation index in % SAT or as an oxygen partial pressure in hPa.

Measuring system

A complete measuring system comprises:

- Oxygen sensor COS21
- Transmitter, e.g. Liquisys M COM223/253 F
- Special measuring cable COK21
- Assembly, e.g. retractable assembly CPA475

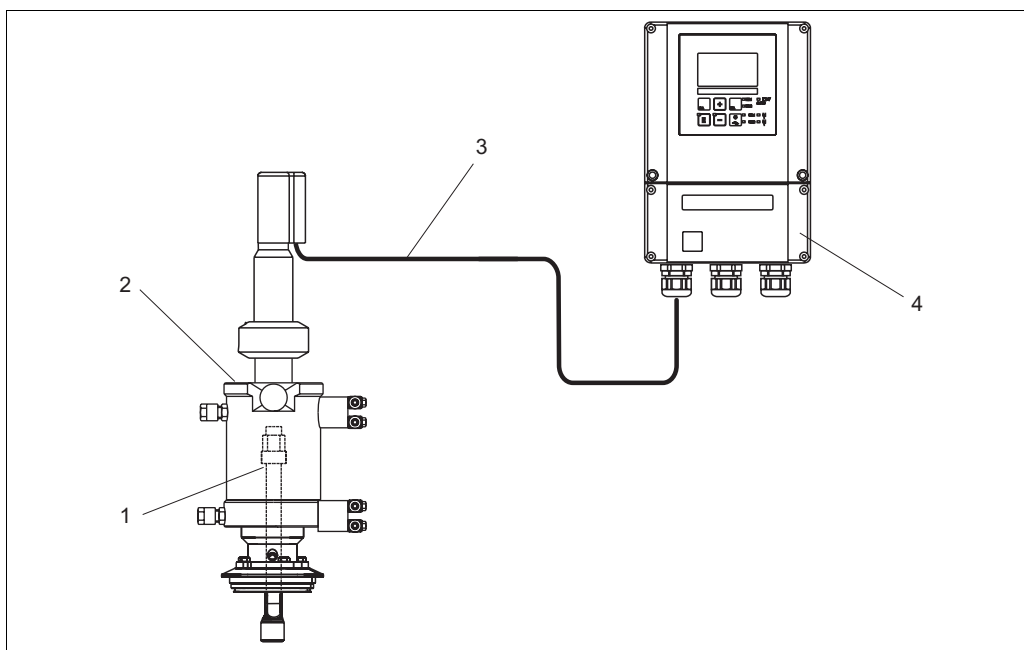


Fig. 1: Measuring system (example)

- 1 Oxygen sensor COS21
- 2 Retractable assembly CPA475
- 3 Special measuring cable COK21
- 4 Transmitter Liquisys M COM253 F

Input

Measured variable

dissolved oxygen [mg/l / % SAT / hPa]

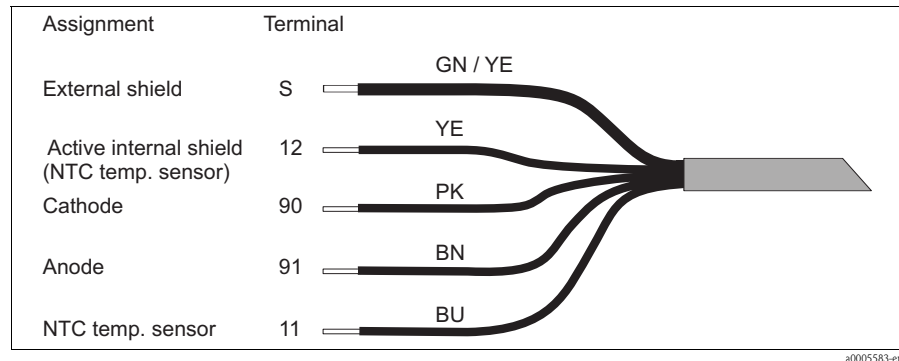
Measuring range

0,01 to 20 mg/l (ppm)
0 to 200% SAT

Wiring

Electrical connection

The electrical connection between the sensor and the transmitter uses the multi-core special measuring cable COK21.



Special measuring cable COK21

a0005583-en

Performance characteristics

Response time

From air to nitrogen at 25 °C (77 °F)

- t_{90} : < 30 s
- t_{98} : < 60 s

Reference operating conditions

Reference temperature: 25 °C (77 °F)
Reference pressure: 1013 hPa (15 psi)

Minimum flow rate

0.03 m/s (0.1 ft/s)

Zero current

< 0.1 % of the current at air

Maximum measured error

±1 % of measured value¹⁾

Repeatability

±0.1 % of measuring range end

Long-term drift

Zero-point drift: < 0.1 % per week at 30 °C (86 °F) and under constant conditions
Measuring range drift: < 0.1 % per week at 30 °C (86 °F) and under constant conditions

Influence of medium temperature

approx. 3.1% per K (compensated by transmitter)

Influence of medium pressure

Pressure compensation not necessary

Polarization time

< 60 minutes

Polarization voltage

-670 ± 50 mV

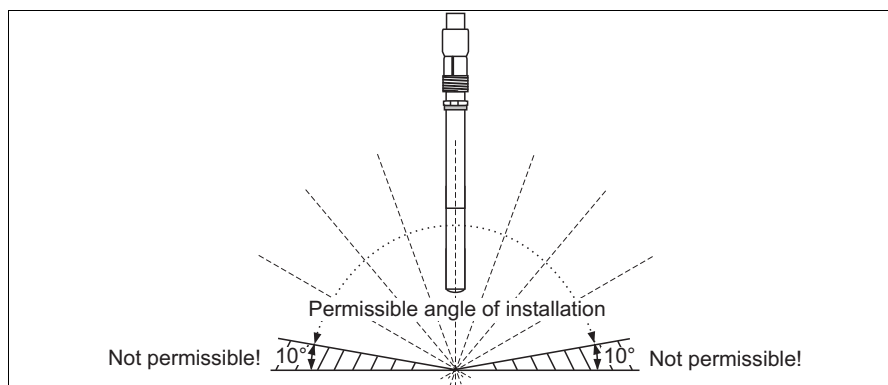
Oxygen intrinsic consumption

approx. 20 ng/h in air at 25 °C (77 °F)

1) In accordance with IEC 746-1 at nominal operating conditions

Installation

Angle of installation



Permitted installation angle

a0006654-en

Environment

Ambient temperature range 0 to +130 °C (32 to 270 °F)

Storage temperature

-10 to +60 °C (10 to 140 °F) at 95% relative air humidity, not condensing



Caution!

Danger of drying out

Only store the sensor with the electrode protection cap (filled with 0.02 n NaOH).

Process

Process temperature

0 to 130 °C (32 to 270 °F)



Note!

Please note the temperature compensation range of the transmitter used.

Process pressure

0 to 4 bar (0 to 58 psi)

Sterilization

When autoclaving, tightly place protection cap on plug-in head. No plug-in head protection is required when the device is sterilised in-situ.

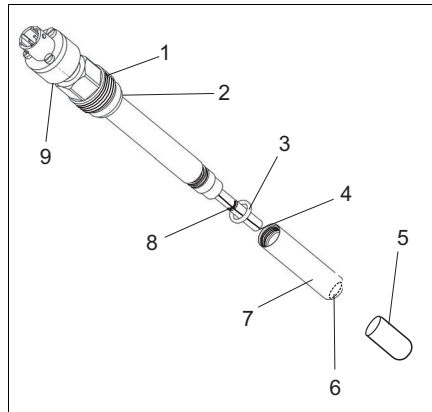


Note!

If water has penetrated the plug-in head, dry it with warm or compressed air. This will prevent corrosion or contact problems.

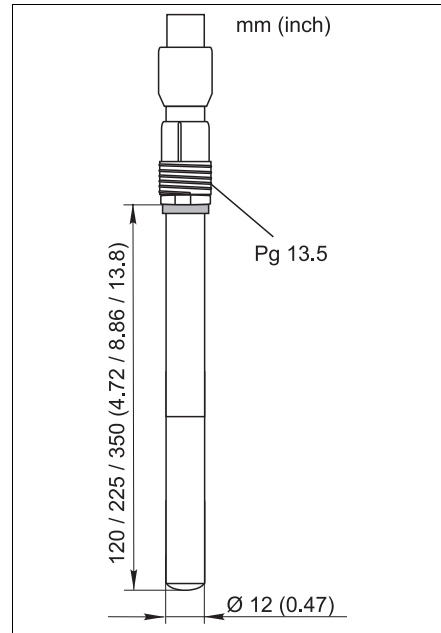
Mechanical construction

Design, dimensions



Exploded view

- 1 Threaded connection Pg 13.5
- 2, 3 Seals
- 4 Cathode
- 5 Protective cap
- 6 Membrane
- 7 Membrane cap
- 8 Anode
- 9 Plug-in head



Dimensions

Weight 0.2 kg (0.44 lbs)

Material

Sensor shaft:	Stainless steel 1.4435 (AISI 316L)
Membrane:	Optiflow®
Electrode combination:	Silver / Platinum
Sealing ring:	Viton®

Process connection Thread Pg 13.5

Temperature sensor NTC 22 k Ω

Electrolyte Alkaline electrolyte

Ordering information

Product structure

		Immersion depth
	1	120 mm (4.72 in)
	2	225 mm (8.86 in)
	3	350 mm (13.8 in)
	5	120 mm (4.72 in) + EN10204-3.1
	6	225 mm (8.86 in) + EN10204-3.1
	7	350 mm (13.8 in) + EN10204-3.1
		Head
	K	Process Pg 13.5, four-pole plug-in head
		Application
	0	Hygienic version
COS21-		Complete order code

Scope of delivery

The following items are included in the delivery:

- Oxygen sensor with transport protection cap for membrane protection
- Electrolyte, 1 bottle, 50 ml (1.7 fl.oz.)
- Pipette for filling with electrolyte

Accessories

Note!

In the following sections, you find the accessories available at the time of issue of this documentation. For information on accessories that are not listed here, please contact your responsible service.

Assemblies

Cleanfit H CPA475

- Retractable assembly for installation in tanks and pipework under sterile conditions
- Technical Information TI240/C/07/en

Unifit H CPA442

- Installation assembly for food, biotechnology and pharmaceuticals, with EHEDG and 3A certificate
- Technical Information TI306/C/07/en

Zero solution

- 3 units to produce 3 x 1 liter oxygen-free solution
- order no. 50001041

Electrolyte solutions and membrane cap kits**Electrolyte solutions**

- order no. 51505873

Membrane kits

- Membrane kit Standard, COS21/COS21D:
 - order no. 51505874
- Membrane kit Standard, COS21/COS21D, EN10204:
 - order no. 51516339
- Membrane kit CIP, COS21/COS21D:
 - order no. 51518699
- Membrane kit CIP, COS21/COS21D, EN10204:
 - order no. 71023225
- Membrane kit FDA, COS21/COS21D:
 - order no. 71003199
- Membrane kit FDA, COS21/COS21D, EN10204:
 - order no. 71023226

Scope of delivery (all kits):

- 3 Membrane caps
- 1 O-ring (process seal)
- 1 O-ring (sensor)

Measuring cable

Special measuring cable for COS21

- COK21; cable length 3 m (9.8 ft)
order no. 51505870
- COK21; cable length 10 m (33 ft)
order no. 51505868

Transmitter

Liquisys M COM 223/253 F

- Transmitter for oxygen, field or panel-mounted housing
- Hart® or PROFIBUS available,
- Ordering acc. to product structure, see Technical Information

Documentation

- Technical Information Liquisys M COM223/253 F, TI246C/07/en
- Technical Information Cleanfit CPA475, TI240C/07/en
- Technical Information Unifit CPA442, TI297C/07/en

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