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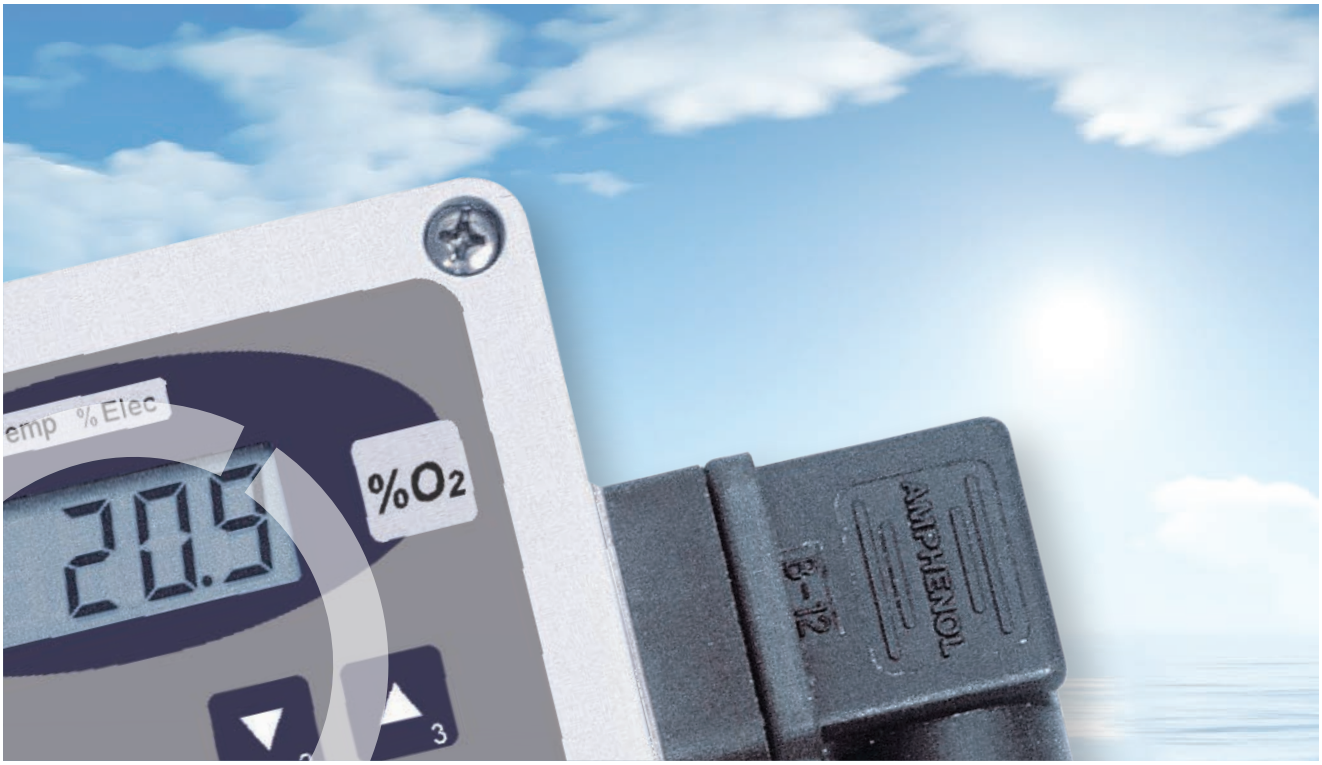



Product information

# Analysis $O_2$ / CO / $CO_2$

# Characteristics

## System

- Analysis oxygen, carbon monoxide and carbon dioxide

## Measurands

- $O_2$, CO, $CO_2$ in air / gases
- $O_2$ (dissolved $O_2$) in liquids

## Function

Oxygen ($O_2$), carbon monoxide (CO) and carbon dioxide ($CO_2$) measurements are mainly used for ambient air monitoring.

$CO_2$ and $O_2$ are important indicators for ambient air quality and therefore important for modern climate control.
The recommended $CO_2$ limit for indoor air is 1000 ppm. Concentrations considerable above this limit causes fatigue and poor concentration.
At values considerably lower than that limit there is a high energy saving potential at the climate control with optimized air change rates.

Air is composed of approximately 21% $O_2$ and 78% nitrogen, beyond that it contains approximately 0.04% $CO_2$ and other components. CO is a toxic gas that is produced by incomplete combustion of fossil fuels. This gar is normally measured in underground and parking garages and motor vehicle workshops.

The oxygen measurement in liquids serves the monitoring of spring and well water quality as well as checking the water quality for fish farming.

# Applications

## Air monitoring

- Underground and parking garages
- Factory and office rooms
- Storage rooms
- Garages
- Green houses

## Measurement in liquids

- Aquaristics
- Fish farming
- measurement of spring and well water

## Advantages

- Robust ABS housing
- Suitable for wall mounting
- On-site display and operating buttons
- Electric connection via elbow-type plug
- Transmitter incl. electrode, sensor or measuring cell
- Extensive range of accessories and spare parts

## Device overview

| Type | Measurand | Description | Measuring range | Page |
|---|---|---|---|---|
| **OXY 3690 MP** | $O_2$ | Air oxygen transmitter incl. sensor | Oxygen concentration:<br>0.0..100.0 % $O_2$ | 4 |
| **OXY 3610 MP** | $O_2$ | Transmitter incl. sensor for dissolved oxygen in liquids | Oxygen concentration:<br>0.00..25.00 mg/l (dissolved) | 5 |
| **GT10-CO2-1R** | $CO_2$ | $CO_2$-transmitter | Carbon dioxide:<br>0..2000 ppm $CO_2$ or 0..5000 ppm $CO_2$ | 6 |

# Air Oxygen Transmitter incl. Electrode OXY 3690 MP


- **$O_2$-sensor element exchangeable**
- **Appropriate to air with high $CO_2$-concentrations**
- **Input electrically isolated**

## Characteristics

The OXY 3690 MP measures the oxygen concentration in air. Depending on the selected design type the device is appropriate to either pure oxygen (i.e. low $CO_2$ concentration) or to air with very high $CO_2$ concentration.

## Technical data

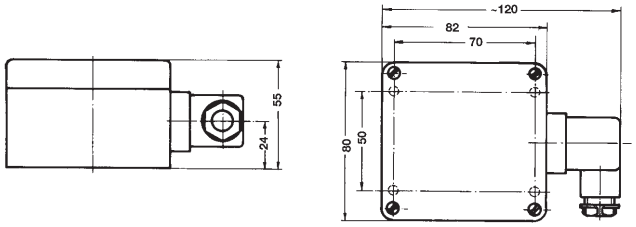
| | | |
|---|---|---|
| Measuring range | | |
| Oxygen concentration | : | 0.0..100.0 % $O_2$ |
| Temperature | : | -20.0..+50.0 °C |
| Accuracy (transmitter) | | at 20.9 % $O_2$, 1000 mbar abs. |
| Oxygen | : | ±0.1 % ± 1 digit |
| Temperature | : | ±0.1 °C ±1 digit |
| Output signal (only $O_2$) | : | 4..20 mA (2-wire)<br>0..10 V (3-wire) |
| Electrical isolation | : | input electrically isolated |
| Working temperature | : | 0..50 °C |
| Power supply | : | 12..30 V DC at 4..20 mA<br>18..30 V DC at 0..10 V |
| Permissible impedance | : | $R_A$ [Ω] = ($U_V$ [V] - 12 V) / 0.02 mA |
| Permissible load | : | $R_L$ > 3000 Ω |
| Reverse voltage protect. | : | 50 V permanent |
| Display | : | 10 mm high, 4-digit LCD display |
| Electric connection | : | elbow-type plug (EN 175301-803/A),<br>max. wire cross-section: 1.5 mm², wire diameter from 4.5..7.0 mm |
| Sensor connection | : | 5-pole screw-able diode socket |
| Calibration | : | 1-point-calibration at atmospheric air |
| Air pressure compensat. | : | 500..2000 hPa abs., manual input |
| Over- / under-pressure | : | max. 0.25 bar |
| Housing | : | ABS |

**$O_2$-sensor element**

| | |
|---|---|
| | GOEL 370 |
| Measuring range | 0.0..100.0 % $O_2$ |
| Response time $T_{90}$ | < 10 s |
| Application | for air or pure oxygen or for air or air with high $CO_2$-concentration |
| | GOEL 380 |
| Measuring range | 0.0..25.0 % $O_2$ |
| Response time $T_{90}$ | < 5 s |
| Application | for air with little $CO_2$-concentration, response time shoots |

| | | |
|---|---|---|
| Temp. compensation | : | integrated in oxygen sensor |
| Connection cable | : | 1.3 m with 5-pole screw-able diode plug |
| Working pressure | : | 500..2000 hPa (static)<br>for air or gas inflow option GOO (oxygen probe GOO … / MU) is needed |

## Dimensions




| | | |
|---|---|---|
| Measuring probe | : | Ø 40 x 103 mm<br>(153 mm incl. bend protection) |

## Ordering code

**OXY3690MP** - 1. - 2. - 3. - 4.

| | | |
|---|---|---|
| **1.** | **$O_2$-sensor element** | |
| | 0 | GOEL 370<br>for air and pure oxygen |
| | 1 | GOEL 380 |
| **2.** | **Sensor design** | |
| | GGO | closed sensor design<br>(suited for over- and under- pressure, used at gas-tight systems) |
| | GOO | open sensor design<br>(e.g. suitable for air or gas inflow, pressure cannot be built up) |
| **3.** | **Output signal** | |
| | A1 | 4..20 mA (2-wire) |
| | V2 | 0..10 V (3-wire) |
| **4.** | **Cable length** | |
| | L01 | 1.3 m cable |
| | L10 | 10 m cable |

Ordering example: OXY3690MP-0-GGO-A1-L01

## Accessories / Spare parts

**GOEL 370**

Spare sensor element

# Measuring transducer incl. electrode for dissolved oxygen in liquids OXY 3610 MP




- **Interchangeable $O_2$ electrode**
- **Electrode: active membrane type with integrated NTC resistance**
- **Galvanically isolated input**
- **Incl. galvanic oxygen sensor with temperature measurement**
- **Local display**

## Features

The OXY 3610 MP is designed for measurement of oxygen concentrations in liquids. Depending on the accuracy requirement of the measurement, the sensor can simply be calibrated in air (ideally, use a calibration bottle) at the push of a button, e.g. once per week.
The OXY 3610 MP is used in aquariums, fish husbandry and in measurement of spring water and well water.

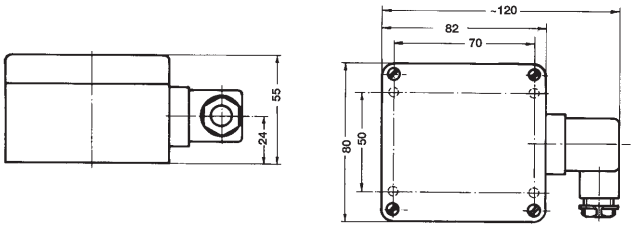
## Technical data

| | | |
|---|---|---|
| Measuring range | | |
| Oxygen concentration | : | 0.00..25.00 mg/l (dissolved) |
| Temperature | : | 0.0..50.0°C |
| Accuracy (measuring transducer) | | |
| Oxygen | : | ±1.5 % of measured value ±0.2 mg/l |
| Temperature | : | ±0.1 °C ±1 digit |
| Output signal (only $O_2$) | : | 4..20 mA, (2-wire)<br>0..10 V (3-wire option) |
| Galvanic Isolation | : | Galvanically isolated input |
| Working temperature | : | 0 – 50 °C |
| Auxiliary energy | : | 12..30 V DC at 4..20 mA<br>18..30 V DC at 0..10 V |
| Permissible resistance | : | $R_A$ [Ω] = ($U_V$ [V] - 12 V) / 0.02 mA |
| Permissible load | : | $R_L$ > 3000 Ω |
| Reverse polarity protection Display | : | 10 mm height, 4-digit display |
| Electrical connection | : | Angle connector acc. to EN 175301-803/A, maximum cable cross-section: 1.5 mm², cable diameter of 4.5..7.0 mm |
| Sensor connection | : | 5-pole diode socket, screw-fitting |
| Calibration | : | 1-point calibration in atmospheric air |
| Housing | : | ABS |

**$O_2$ electrode (GWO 3600 MU)**

| | | |
|---|---|---|
| Electrode | : | Active membrane type, with integrated NTC resistance |
| Response time | : | 95 % in 10 s, temperature-dependent |
| Operating pressure | : | max. 3 bar |
| Flow speed | : | min. 30 cm/s |
| Connection cable | : | 4 m with 5-pole diode plug, screw-fitting |

## Dimension




| | | |
|---|---|---|
| Oxygen probe | : | Diameter Ø: 12.0 ±0.2 mm<br>Installation length: 110 mm<br>Overall length: 220 mm incl. anti-kink protection |

## Ordering code

OXY3610MP - 1. - 2.

| | | |
|---|---|---|
| **1.** | **Output signal** | |
| | A1 | 4..20 mA, (2-wire) |
| | V2 | 0..10 V (3-wire) |
| **2.** | **Cable length** | |
| | L04 | 4 m cable |
| | L10 | 10 m cable |
| | L20 | 20 m cable |
| | L30 | 30 m cable |

Order example:
OXY3610MP-A1-L04

## Accessories / Spare parts

**GWO 3600-L04-MU (article no. 607198)**
Spare electrode with 4 m cable

**GWO 3600-L10-MU (article no. 610382)**
Spare electrode with 10 m cable

**GSKA 3600 (article no. 601414)**
PVC protective cap, sinking

**GAS 3600 (article no. 603497)**
Working set (comprising 3 spare membrane heads and 100 ml of KOH electrolyte)

**GWOK 01 (article no. 601411)**
Spare membrane head

**KOH 100 (article no. 603356)**
Spare electrolyte KOH, 100 ml bottle

**GCAL 3610 (article no. 611371)**
Calibration bottle

# $CO_2$ Transmitter GT10-CO2-1R


- **Excellent long term stability**
- **Auto-calibration procedure**
- **Output signal freely scalable**

## Characteristics

The high-quality and precise $CO_2$ transmitter works according to the infrared principle (NDIR). An auto-calibration procedure compensates aging effects. This ensures the the excellent long-term stability of this transmitter.

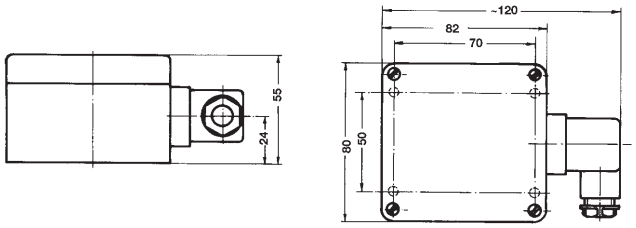
Due to the fact that $CO_2$ is an important indicator for air quality in rooms, it is very important for modern climate control to measures the $CO_2$ content.

Due to the freely adjustable output signal the transmitter can be used for nearly each existing controller input.
Additionally, there is an on-site display which shows beside the current $CO_2$ concentration the minimum and maximum values as well as an optical alarm.

## Technical data

| | | |
|---|---|---|
| Measuring range | | |
| MB1 | : | 0..2000 ppm $CO_2$ |
| MB2 | : | 0..5000 ppm $CO_2$ |
| Measuring principle | : | infrared principle (NDIR) |
| Accuracy | | |
| MB1 | : | ±50 ppm ± 2 % of meas. value |
| MB2 | : | ±50 ppm ± 3 % of meas. value |
| Output signal (only $O_2$) | : | 4..20 mA, 0..1 V, 0..10 V (3-wire) |
| Working temperature | : | -10..+50°C |
| Power supply | : | 12..30 V DC at 4..20 mA and 0..1 V<br>18..30 V DC at 0..10 V<br>max. 600 mA |
| Permissible burden | : | $R_A$ < 200 Ω |
| Permissible load | : | $R_L$ > 3000 Ω |
| Display | : | 10 mm high, 4-digit LCD-display |
| Electric connection | : | elbow-type plug (EN 175301-803/A), max. wire cross section: 1.5 mm², wire diameter from 4.5..7.0 mm |
| Housing | : | ABS |

## Dimensions




## Ordering code

GT10-CO2-1R - [1.] - [2.]

| | | |
|---|---|---|
| **1.** | **Measuring range** | |
| | MB1 | MB1: 0..2000 ppm $CO_2$ |
| | MB2 | MB2: 0..5000 ppm $CO_2$ |
| **2.** | **Output signal** | |
| | A1 | 4..20 mA (3-wire) |
| | V1 | 0..1 V (3-wire) |
| | V2 | 0..10 V (3-wire) |

Ordering example:
GT10-CO2-1R-MB1-A1

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