



Operation manual

## **OxyScan Transmitter DIN rail**

The OxyScan Transmitter is a measuring amplifier for UMS oxygen sensors to measure dissolved oxygen in liquids.

The liquid temperature and the atmospheric pressure are measured simultaneously and automatically compensated.

The measured value is output as a current signal via a 4-20 mA current loop. There is no need for additional electric power.

### **Handling of the O<sub>2</sub> sensor (electrochemical)**

Always store the sensor in its calibration chamber when not in use!

The membrane (thin, be careful) at the sensor tip can be cleaned carefully with a moistened cotton ball.

A constantly increasing display value indicates a damaged membrane. In this case, the sensor must be replaced or regenerated.

The sensor consumes minimal amounts of O<sub>2</sub> during the measurement. Therefore it requires a little liquid flow to achieve stable readings.

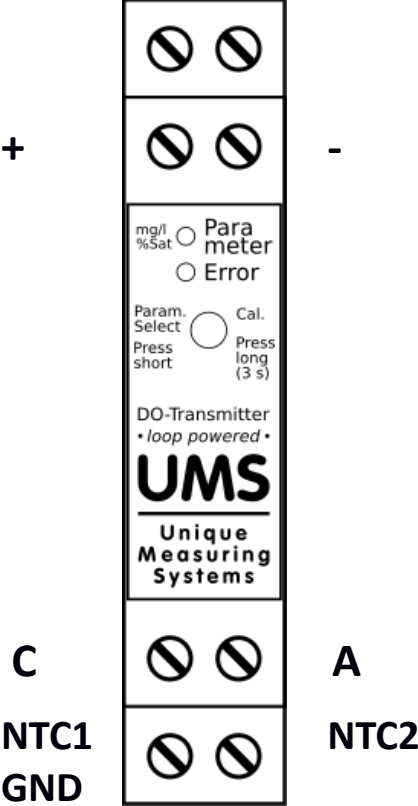
For measurements in standing liquids, the sensor should be moved slightly.

For permanent installation in piping systems:

The liquid flow rate should be at least 2 cm / sec.

The sensor may be mounted vertically to horizontally, but the sensor tip must not be higher than the sensor end!

Commissioning



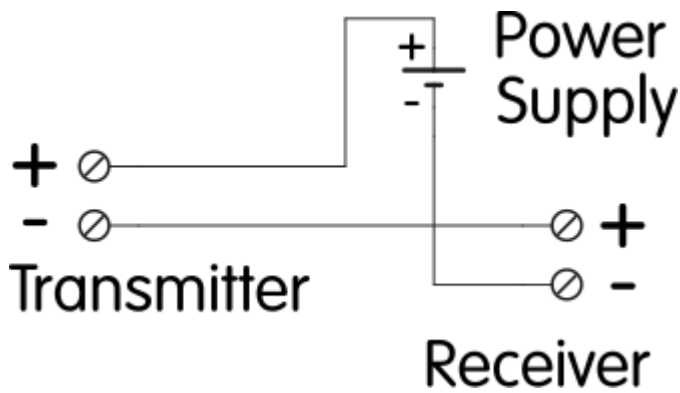
The UMS oxygen sensor is connected to the lower terminals:

- C: White
- A: Blue
- NTC1: Black + Yellow/Green
- NTC2: Brown

Power is supplied through the current loop at the upper terminals (+ / -).

In case the transmitter is connected to a 20 mA input with power supply, only the two lower terminals ("+" and "-") have to be connected:

UMS Transmitter	20 mA Input
RED	„Loop(+)“, respectively LOOP
BLUE	„Loop(-)“, respectively LOOP RET



The two middle clamps are connected together.

They can be used to connect the power supply to the receiver when both cables are merged in the transmitter.

During normal operation, the upper LED ("Parameter") on the transmitter lights with low brightness blue or green depending on the measuring parameter.

Green: relative value (% sat)

Red: absolute value (mg / l)

The output of the oxygen value can be either absolute (mg / l) or relative to the saturation concentration (% sat). To switch the output mode, press the button on the transmitter briefly (about 1 s).

Conversion of the measured values:

Absolute value:  $(I_{out} - 4 \text{ mA}) * 1.25$   
 $( * 1 \text{ mg/l} / 1 \text{ mA})$   
4 mA corresponds to 0 mg/l,  
20 mA corresponds to 20 mg/l.

Relative value:  $(I_{out} - 4 \text{ mA}) * 12.5$   
 $( * 1 \% \text{Sat} / 1 \text{ mA})$   
4 mA corresponds to 0 %sat,  
20 mA corresponds to 200 %sat

If an error occurs, a current of 24 mA is output, the type of error is signaled via the lower LED ("Error"):

Red:	DO value too high, sensor defective or incorrectly wired (short circuit)
Green:	DO value too low, sensor defective or incorrectly wired
Flashing red:	NTC fault, short circuit or not connected
Flashing blue:	NTC error, short circuit or not connected

## Calibration

During calibration, the sensor must be inserted in the supplied calibration chamber. In this there is a sponge, which should be kept moist.

The sensor should be powered for at least 5 minutes before calibration.

(in case of a new or recently regenerated sensor, or if the sensor has not been used for more than 2 weeks, 10-15 minutes are recommended)

**During this time and during calibration, the sensor must be in the supplied calibration chamber!**

After this waiting period, the calibration is started by pressing the button on the transmitter for at least 3 seconds.

If the calibration is successful, the upper LED flashes green 3 times.

If the lower LED is flashing green, the calibration was unsuccessful.

By briefly pressing the button this can be quitted. The transmitter then continues to use the previous valid calibration values.

After successful calibration, the loop current is approximately 12.3 mA when the sensor is in the calibration chamber and the relative value output has been selected.

## Technical specifications:

Input	UMS oxygen sensor
Output	Dissolved oxygen concentration, optionally mg/l or %saturation  Normal 4..20 mA  Alarm signal: 24 mA
Power supply	6-32 VDC, min. 24 mA
Storage and operating temperature of the sensor	0 .. 70 °C

## Measuring ranges:

Parameter	Measuring range	Accuracy
DO absolutely	0,00 .. 19.99 mg/l	0.02 mg/l
DO relatively	0,00 .. 199.9 %Sat	0.1 %Sat

## **Liability and warranty**

We reserve the right to make technical changes!

We assume no liability for damage caused by improper use and / or malfunction of the device.

We provide a 12-month legal guarantee on the entire measuring system.

In the guarantee case, please return the sensor or measuring instrument with the test certificate.

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# EG-DECLARATION OF CONFORMITY

as defined

1. by EG directive - EMC 2014/30/EU
2. by EG directive - RoHS 2011/65/EU

**Device : UMS Micro Sensor  
UMS Needle Sensor  
UMS Standard Sensor**

**Manufacturer : UMS Umwelt-, Membran- und Sensortechnik GmbH & Co. KG  
Oberdorfstrasse 19  
97647 Willmars, Germany**

The sample tested meets the essential safety requirements of the following harmonized standards:

1.) Noise emissions EN301489-17/-1:

- |                        |                                |
|------------------------|--------------------------------|
| 1.1. EN 55032:2012     | Interference voltage / current |
| 1.2. EN 55032:2012     | Radio waves < 1GHz             |
| 1.3. EN 301489-1       | Radio waves > 1GHz             |
| 1.4. EN 61000-3-2:2014 | Harmonics                      |
| 1.5. EN 61000-3-3:2013 | Flicker                        |

Noise immunity EN301489-17/-1 / EN61000-6-2:

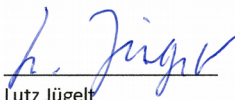
- |                               |                            |
|-------------------------------|----------------------------|
| 1.6. EN 61000-4-2:2009        | ESD                        |
| 1.7. EN 61000-4-3:2006+A1, A2 | Irradiating radio waves    |
| 1.8. EN 61000-4-4:2012        | Burst                      |
| 1.9. EN 61000-4-5:2014        | Surge                      |
| 1.10. EN 61000-4-6:2014       | Influx electric field      |
| 1.11. EN 61000-4-11:2004      | power supply interruptions |

2.) Restriction of Hazardous Substances

- |                     |  |
|---------------------|--|
| 2.1. EN 50581: 2012 | Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous substances |
|---------------------|--|

The subject of the declaration described above complies with the provisions of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Willmars, 31.07.2018

  
Lutz Jügelt

Production / F+E



Barbara Herda

Quality Management