



Manual Meter + PC Software

## OxyScan 300

The OxyScan 300 is used to measure dissolved oxygen in liquids.

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

In addition, a pH or a redox sensor can be connected. *(does not apply to OxyScan 300 Outdoor)*

The pH measurement is temperature compensated. (increases accuracy)

The OxyScan 300 Lab has - in addition to the normal measuring range (up to 25 mg/l) - two extended ranges (up to 150 and 750 mg / l).

Switching is automatic.

From firmware version 2.16, digital UMS sensors can also be connected, such as the UMS TDG sensor for measuring the total gas content in liquids.

The sensor type is selected in the menu "Display-> Units".

### Handling the O2 sensor (electrochemical)

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

The membrane and the sensor housing are resistant to almost all solvents and weak acids / alkalis.

The membrane (attention, fragile) of the sensor tip can be carefully cleaned with a moistened cotton ball.

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

A new or longer unused sensor should be calibrated 2-3 times in the first working days, then about once a month.

The sensor consumes minimal amounts of O<sub>2</sub> during the measurement. Therefore, it requires a small inflow for stable measured values. For measurements in standing liquids, the sensor should be moved easily.

For fixed installation in tube systems:

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

The sensor may be installed vertically or horizontally, the sensor tip must never be higher than the sensor end!

## **Commissioning**

The UMS oxygen sensor is connected to the central socket of the measuring instrument.

The sensor comes in a calibration chamber that also serves to protect the sensor tip. This should only be removed for measurement.

If necessary, a pH or redox potential sensor (optional device) can be connected to the left socket on the measuring instrument.

After pressing the ON / OFF key for at least 1 second, the meter displays all measured parameters.

To turn the meter off, press the ON / OFF button for at least 1 second.

## **Calibrating of the oxygen sensor**

During calibration, the sensor must be installed in the supplied calibration chamber. Inside there is a sponge, which is to be kept moist. To do this, please add a few drops of tap water into the opening every second month.

Attention: The sponge is already moistened in delivery condition!

Under no circumstances should too much water be refilled. Only the sponge should be damp and no excess water should be in the calibration chamber, otherwise the calibration values will be falsified.

Overflowing water can be shaken out through the sensor opening.

To be sure, the plug on the bottom of the calibration chamber can be removed for inspection.

To start the calibration, press the "CAL." Key on the meter and the "DO 100%" option is selected.

## **Battery charging**

To recharge the battery, please connect the supplied USB cable to the right socket of the meter and the supplied charger.

Power supply: via charger or from the PC – using the USB cable.

## **Display**

The top line displays date, time, battery status and the following letters:

"C"	Charging, the battery indicator flashes
"U"	USB connection detected
"D"	Data logger enabled
"A"	Alarm / control function active
"P"	Print function active

Only for meters with optional GPS:

"g"	GPS is activated and searching for satellites.
"G"	GPS is ready to use. When storing single readings, the geographical position is also saved.

Current measured values are displayed simultaneously.  
Bottom line shows the function of the freely assignable keys F1 and F2.

## Menu

The menu is activated by pressing the "OK / MENU" button.

To exit the menu, press the "BACK" button.

To select a menu item, use the "^" and "v" and "OK / MENU" buttons.

Most menu items lead to a submenu, which can be left with the "BACK" key.

## Description of menu items

Display:	Display settings and others basic settings
Calibration:	Calibration functions, also directly via the "CAL." key
Radio switch:	Settings for the radio switch sockets for control functions and other radio signals for alarm functions
Set points:	Set points of the control functions, as well as limit values, where an alarm is triggered
Data logger:	Constant storage of all measured values - adjustable intervals
Data memory:	Saves all measured values to key data
Printer:	Direct print settings


## Submenu "Display"

Units:	Select the displayed parameters and sensor type, e.g. mmHg instead of %Sat or mV (redox) instead of pH
Auto Power Off:	The meter automatically turns off after an adjustable time when no key was pressed (0 to disable).



Contrast:	Display contrast
Motion sensor:	Auto power off for device and display backlight additionally controlled by the motion sensor
Set Time:	Set the current time and date
Backlight:	Display Backlight on / off or automatically
Device info:	Device information is displayed
F2 key:	Selects the function of the F2 key
Volume:	Volume of the buzzer
Pitch:	Pitch of buzzer

## Submenu "Calibrate"

	For 2-point calibration the 0% calibration must be done first.
DO 100%:	Calibrating the oxygen sensor in the calibration chamber before measurement - increases accuracy and should be done at least once per month
DO 0%:	Optional calibration of the oxygen sensor in 0% solution - recommended before measuring residual oxygen
pH: <i>(does not apply to OxyScan 300 Outdoor)</i>	Calibrate the pH sensor, at least two different buffer solutions are required: pH 7 + pH 4 if a measured value < pH 7 is expected pH 7 + pH 10 if a measured value > pH 7 is expected
Set temp. man.:	Manual entry of the temperature, if no sufficient immersion depth (at least 5 cm) of the sensor is possible
Salinity correction:	Enter the salinity for measurements in salt water, otherwise set to 0.0

## Submenu "Set points"

After selecting a socket alarm signal, please select the measured value to be monitored and the limit values.

Alarm ON:            Activate alarm and control functions

Alarm OFF:           Switch off all alarm and control functions

Sw. interval:        Sets how often the control function is executed while the meter is turned off. A longer interval extends the battery running time. When switched on and in mains operation, there is control every 10 seconds.

Alarm meter  
1/2:                  When a limit value is exceeded, an alarm will be sent to the meter. Input:

- Measured value (mg / l,% Sat, temperature ...) Value is minimum (= alarm on undercut) or maximum
- Limit
- One-time alarm or interval
- Audibly / visually / both or no alarm

Socket 1-4:        Control of parameter by a device connected to a radio controlled socket (e.g. a solenoid valve for O2 gassing or a heater for temperature regulation). Input:

Measured value (mg / l,% Sat, temperature ...)  
Select whether the RC socket switches when measured values are too high or too low.  
Input:

- Minimum value
- Maximum value
- enable or disable the control of chosen radio socket

RC - alarm 1/2:    See alarm device. The alarm is sent by RC to an alarm device ( e.g. RC door gong )

## Submenu "Radio switches"

Conventional RC sockets or alarm devices can be used.  
(433 MHz AM, no encryption)

### Socket 1-4:

Learning ON/OFF: learning the radio signal for switching  
a RC socket from it's remote control

ON / OFF: Switch the socket on or off (for testing)

Controlled: The socket will be switched automatically.

Learning ON: Learn the radio signal switching the socket  
ON from the remote control supplied with the socket

Learning OFF: Learning the radio signal switching the socket  
ON from the remote control supplied with the socket

### RC alarm 1/2:

Learning: Learning the radio signal - e.g. from a RC door gong

Trigger: Trigger the alarm signal

All sockets ON: All sockets are switched on once

All sockets OFF: All sockets are switched off once

## Submenu "Data logger"

Immediate Start: All measured values are automatically stored  
in a selectable interval.

Stop immed.: No further measured values are stored automatically.

Starting time: Starting time of storing the readings

End time: End time of storing the readings

Delete data: All measured values of the data logger are deleted.

## Submenu "Memory"

- Save values: All current measured values are stored (including corresponding time of measurement). For measuring devices with GPS the geographical position is also saved.
- Show values: Display the stored measured values
- Delete all: All measured values of the data memory are deleted.
- GPS: Activation of GPS function adjustable for a period of 1 to 8 hours. The power consumption increases even when the meter is switched off.  
(only meters with GPS)  
(Here battery life is about 30 hours, with the meter turned on 15 hours)  
When the battery level is very low, the GPS will be automatically deactivated prematurely.

## Submenu "Printer"

The UMS printer connection cable and an EPSON TM-T20II printer are required.

When the meter is connected to a PC via USB, the print function must be deactivated!

- Disable: Disable the print function
- Print current measured values: When storing measured values on key press, (see submenu "Memory") values are printed simultaneously
- Data logger: When the data logger is active, values are printed simultaneously

## Technical specifications:

Memory (data logger)	32768 readings
Measurement interval	5 seconds up to 10 minutes
Memory (individual readings)	1000
Parameters saved	date, time, mg/l (max 4x), %Sat (max 4x), Temperature (max 4x), pH or mV, air pressure, GPS data: GPS time, latitude, longitude, altitude above N.N.
Power supply	2x AA (Mignon) NiMH rechargeable batteries (2x Panasonic eneloop included)
Battery life	approx. 40 hours
Battery life with active data logger	up to 3 months
Battery charging	3.5 hours via USB
Housing dimensions	65 x 83 x 33.5 mm (L x B x H)
Weight	approx. 305 g

## Measurement ranges OxyScan 300 Lab

unit of measurement	measurement range	accuracy
DO absolute	0.00 .. 15.00 mg/l	0.01 mg/l
	15.00 .. 150.00 mg/l	0.02 mg/l
	150.00 .. 750.00 mg/l	0.1 mg/l
DO relative	0.00 .. 150.00 %Sat	0.1 %Sat
	150.00 .. 1500.00 %Sat	0.2 %Sat
	1500.00 .. 7500.00 %Sat	1.0 %Sat
Temperature	0.00 .. 60.00 °C 32.00 .. 140.00 °F	0.1 °C 0.5 °F
pH	-2.00 .. 16.00	0.01
Redox Potential	-500.00 .. +500.00 mV	0.3 mV
air pressure	50.00 .. 1150.00 mBar	0.5 mBar

## Measurement ranges OxyScan 300 Outdoor

unit of measurement	measurement range	accuracy
DO absolute	0.00 .. 25.00 mg/l	0.01 mg/l
DO relative	0.00 .. 250.00 %Sat	0.1 %Sat
Temperature	0.00 .. 60.00 °C 32.00 .. 140.00 °F	0.1 °C 0.5 °F
air pressure	50.00 .. 1150.00 mBar	0.5 mBar

# PC Software

Download: <http://www.ums-gmbh.de/Download/OxyScan300>

The software is used to configure and operate the measuring instrument via PC as well as for reading out stored data.

The software only works when the meter is connected to the PC by USB cable (included).

If the connection is successful, the device information is displayed.

This also checks whether the latest firmware is present on your meter.

If this is not the case, you are automatically asked if a software update should be done.

## **OxyScan 300 PC remote control**

Using a remote maintenance program, the measuring device can be remote-controlled in all functions, e.g. with

<https://www.teamviewer.com/en/>

The display content of the meter is displayed on the PC. The instrument can be operated by pressing the buttons with a mouse click (except ON / OFF) - exactly as on the meter.Jü



If a button is highlighted in green, the corresponding function is activated.

## Device information

Displays status information. Appears automatically after connection setup.


## Instrument Settings, Tab "Display"

Settings for display and other basic settings.

Units:	Selection of displayed parameters, e.g. mmHg instead of %Sat
Auto Power Off:	Time, after which the meter automatically turns off when no button was pressed (0 to disable)
Backlight:	On / off or automatic
Motion sensor:	auto power off for device and lighting is additionally controlled by motion sensor
F2 softkey:	Selects the function of the F2 key
Contrast:	Display contrast
Volume:	Volume of the buzzer
Pitch:	Pitch of the buzzer
Device clock:	Setting the time displayed on the meter (" Save" to Transfer)
"Set automatically":	When the PC software is started, the meter time is automatically set.



## Instrument Settings, tab „Calibration“

	For 2-point calibration the 0% calibration must be done first.
100% oxygen:	Calibration of the oxygen sensor in the calibration chamber before measurement increases the measuring accuracy and should be done at least once a month
0% oxygen:	Optional calibration of the oxygen sensor in a 0% solution - recommended before residual oxygen measurements
pH 7 calibration:	Calibrate the pH sensor, at least two different buffer solutions are required:
<i>(does not apply to OxyScan 300 Outdoor)</i>	<p>pH 7 + pH 4 if a measured value &lt; pH 7 is expected</p> <p>pH 7 + pH 10 if a measured value &gt; pH 7 is expected</p> <p>pH 7 must always be calibrated</p>
Set temperature manual:	If no sufficient immersion depth of the sensor is possible (at least 5 cm)
Salinity correction:	Input of salinity for measurements in salt water, otherwise set to 0.0

## Instrument Settings, tab „Alarm / Control“

For the functions "alarm radio" and "radio switch sockets", common radio plug sockets and alarms can be used. (433 MHz AM, no encryption)

Alarm functions disabled: All alarm functions are deactivated.

Switching Interval:	Sets how often the control function is executed when the meter is turned off. A larger interval extends battery life. When switched on and in mains operation, control takes place every 10 seconds.
Learn:	Learning of a function of the original remote control
Test:	A function - learned from the original remote control - is being tested.
Alarm device:	If an alarm value is exceeded, an alarm is generated on the meter. (Display and / or buzzer)
Alarm RC:	See "Alarm meter". The alarm is sent e.g. to a RC door gong or similar.
RC switch:	Parameter control by a device connected to the RC switch socket (e.g., a solenoid valve for O <sub>2</sub> gassing or a heater for temperature control).

## **Instrument Settings, Tab „Memory“**

Start immediately:	The storage of all measured values is started immediately.
Stop immediately:	No further measured values are stored.
Logging interval:	Time to store the next measured values
Start / End time:	Recording of measured values starts at an adjustable time.

Show logged data: All logged data are read and stored in diagrams.

If several series of measurements are available,  
They are previously displayed for selection.

The button "Export CSV" is used for saving  
the measured values in CSV format. The generated  
file can be opened e.g. by Microsoft Excel.

Erase logged data: All measured values of the data logger are deleted.

Save current readings: All current measured values are stored  
with corresponding time.

Show current readings: Displays all stored measured values

Delete all saved values: All measured values of the data memory are  
deleted.

## Instrument Settings, tab "Communication"

Up to 32 OxyScan 300 Meters can be connected simultaneously to the  
same Computer.

For each single Meter, the OxyScan 300 software must be started once.  
To allow a trouble-free assignment of the measuring devices, the active  
TCP port is stored in the meter.

An example program for MATLAB is available in our [download area](#).

ON / OFF: Turn on / off the TCP / IP server

Port: Active TCP port

IP address: Used IP address

When the server is activated, a green field "TCP" appears.

If there is an access from another program, this field flashes red.

## Read data logger

All logged data are read out and displayed in diagrams.

## Read out single value memory

All data from the single value memory is read out and displayed in a chart.

## Export CSV

This button only appears after successful readout of the data logger or single value memory.

Read out data can be saved here as a .csv file.  
This file can e.g. be opened with Excel.

## Export KML *(only for meters with GPS)*

This button appears after successful reading out the single value memory, if GPS data is available.

Read out data can be saved here as a .kml file.  
This file can e.g. be opened with Google Earth.

## Google Earth *(meters with GPS only)*

appears after saving a .kml file. This will open Google Earth (if installed) with the last saved .kml file

## **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:

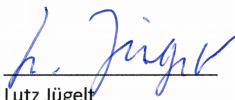
- |                               |                            |
|-------------------------------|----------------------------|
| 1.6. EN 61000-4-2:2009        | ESD                        |
| 1.7. EN 61000-4-3:2006+A1, A2 | Irradiating radio waves    |
| 1.8. EN 61000-4-4:2012        | Burst                      |
| 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

## EG-DECLARATION OF CONFORMITY

as defined

1. by EG directive - Low Voltage Directive 2014/35/EU
2. by EG directive - EMC 2014/30/EU
3. by EG directive - RoHS 2011/65/EU
4. by EG directive – Radio Equipment Directive 2014/53/EU

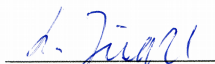
**Device : OxyScan 300 – Dissolved Oxygen Meter**

**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.) 1.1. EN 60950-1:2006 +A11+A1+A12+AC+A2 electric safety, ITE
  - 2.) Noise emissions EN301489-17/-1:
    - 2.1. EN 55032:2012 Interference voltage / current
    - 2.2. EN 55032:2012 Radio waves < 1GHz
    - 2.3. EN 301489-1 Radio waves > 1GHz
    - 2.4. EN 61000-3-2:2014 Harmonics
    - 2.5. EN 61000-3-3:2013 FlickerNoise immunity EN301489-17/-1 / EN61000-6-2:
    - 2.6. EN 61000-4-2:2009 ESD
    - 2.7. EN 61000-4-3:2006+A1, A2 Irradiating radio waves
    - 2.8. EN 61000-4-4:2012 Burst
    - 2.9. EN 61000-4-5:2014 Surge
    - 2.10. EN 61000-4-6:2014 Influx electric field
    - 2.11. EN 61000-4-11:2004 power supply interruptions
  - 3.) Restriction of Hazardous Substances
    - 3.1. 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.
- 4.) 4.1. EN 300328 V1.8.1 EMC and spectrum issues
  - 4.2. EN 62479 Safety of persons in electromagnetic fields.

Willmars, 05.07.2018



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Production / F+E



Barbara Herda

Quality Management