



DO Meters

Oxygen Meters

Dissolved Oxygen

Some oxygen is dissolved in practically every liquid. For example, at a temperature of 68 °F (20 °C) and an atmospheric pressure of 1013 mbar saturated water contains about 9 mg/l oxygen. Ethanol can contain up to 40 mg/l whereas glycerol only has about 2 mg/l.

Each liquid takes up oxygen until the partial pressure of oxygen in the liquid is in equilibrium with the air or gas phase in contact with it. The actual oxygen concentration depends on a number of factors, such as temperature, air pressure, oxygen consumption by microorganisms in a biodegradation process or oxygen production by algae, etc.

The oxygen concentration is important for the:

- Living conditions for fish and microorganisms in waters
- Degradation processes in wastewater treatment
- Corrosion processes in pipelines
- Shelf life of beverages, etc.

The determination of the oxygen concentration was formerly carried out by the WINKLER titration method. Today electrochemical measurement is a recognized method in numerous standard procedures.

In its simplest form an oxygen sensor contains a working electrode and a counter-electrode. Both electrodes are located in an electrolyte system which is separated from the sample by a gas-permeable membrane. The working electrode reduces the oxygen molecules to hydroxide ions. In this electrochemical reaction a current flows from the counterelectrode to the working electrode. The more oxygen present in the sample, the larger the current signal. The oxygen meter calculates the oxygen concentration in the sample from this signal.

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ADVANCED APPLIED TECHNOLOGIES

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● recommended by WTW ○ conditionally applicable – not recommended

Oxygen Meters

Application Range	inoLab®			Profi-Line	Handheld Meters		
	Oxi 730	Oxi 740	BSB/BOD 740	Oxi 197i	Oxi 315i	Oxi 330i	Oxi 340i
Routine measurement	–	–	–	–	●	●	–
Routine measurement with documentation	●	●	●	●	–	–	●
AQA with documentation	●	●	●	●	–	–	●
R&D high precision	●	●	●	●	–	●	●
Control measurements	●	●	●	●	○	●	●
LIMS connection	●	●	●	●	–	–	○
Quality assurance	●	●	●	●	–	●	●
Training	●	●	●	○	●	●	○
Service	–	–	–	●	●	●	●
Laboratory measurements	●	●	●	●	–	–	○
Field measurements	–	–	–	●	●	●	●
Depth measurements	–	–	–	●	–	–	–
External control/PC connection/ PC control	●/●/–	●/●/●	●/●/●	●/●/–	–	–	●/●/–
BOD measurements with self-stirring sensor	●	●	●	●	–	–	○ with adaptor
BOD measurements with assessment program	–	–	●	–	–	–	–
see page	32	33	64	34	36	36	36

For oxygen measurement with multi-parameter instruments see page 50 ff

Application Range Sensors	ConOx	DurOx®	CelOx® 325	StirrOx® G	TA 197 Oxi
BOD measurements	–	–	○	●	–
Fish farming	●	●	○	–	–
Surface waters	●	○	●	–	–
Ground water	○	–	○	–	●
Control measurements	●	●	●	○	–
Depth measurements	–	–	–	–	●
Laboratory measurements	○	–	●	○	–
Pharmaceutics	○	○	●	–	–
Biotechnology (non-autoclavable)	○	○	●	–	–
Wastewater treatment plant: aeration basin	○	●	○	–	–

applicable instruments:

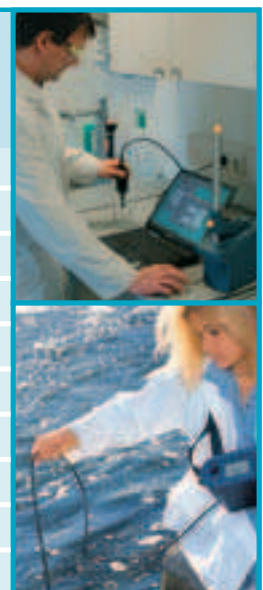
Multi 350i

Oxi 3xxi
Multi 350i

all

inoLab®, 197i

197i



DO Meters

Laboratory Oxygen Meters

Laboratory Oxygen Meters

Oxygen is one of the most frequently measured parameters in the laboratory. It plays a large role in the degradation of substances and the growth of microorganisms, both in environmental technology and in biotechnology.

The inoLab® Oxi 740 instrument is particularly suitable for monitoring such processes. For routine measurements the inoLab® Oxi 730 is equipped with all the necessary functions which are required for documentation according to GLP.

inoLab® Oxi 730

compact and communicative

Standard laboratory oxygen meter with large multifunctional display for routine use in the laboratory. Automated functions such as air pressure correction, temperature compensation and OxiCal® rapid calibration make work easier. Datalogger, analog and digital output RS 232 as well as the optional built-in printer guarantee QA-conform documentation.

Features

- Simplified operator convenience
- Easy-to-clean touch-sensitive keypad
- Optional built-in printer



IP 43



cETLus

3 Year Warranty

The StirrOx® G can be operated by the inoLab® Oxi 730 for BOD₅ determination according to DIN EN 1899-1 resp. DIN EN 1899-2 with manual start/stop functions.

- GLP documentation
- Comprehensive datalogging (800 data sets)
- Interface for self-stirring oxygen sensor StirrOx® G

Laboratory Oxygen Meters

inoLab® Oxi 740

**inoLab® Oxi 740 with Terminal or PC Software:
flexible and powerful**

High-performance oxygen meter with graphic display and digital recorder function for oxygen measurement in the laboratory. Automated functions such as air pressure correction, temperature compensation by the IMT method and OxiCal® rapid calibration make work easier. The built-in measurement store, the digital output RS 232 and the optional built-in printer (paper width 4.4" resp. 112 mm) guarantee QA-conform documentation.

Features

- Built-in digital recorder
- Graphic evaluation possible
- Connection of bar-code reader or PC keyboard
- Automatic memory function if bar-code reader is used
- User Selectable Languages
- Multi-Level GLP Functions (password-protected operator levels)
- Limit input with acoustic alarm
- Free-of-charge software downloads for MultiLab® pilot or terminal

- Precision instrument
- Firmware/Softwareupdate
- External control (MultiLab® pilot)



IP 43 CE cETLus 3 Year Warranty

Technical Data

Model	Oxi 730	Oxi 740
Range/ Resolution	O ₂ concentration: 0.00 ... 19.99 mg/l, 0.0 ... 90.0 mg/l* O ₂ saturation: 0.0 ... 199.9 %, 0 ... 600 %* O ₂ part. pressure: 0.0 ... 199.9 mbar, 0 ... 1250 mbar Temperature: 23 ... 122 °F (-5.0 ... +50.0 °C) * = depends on oxygen sensor and medium	O ₂ concentration: 0.00 ... 20.00 mg/l, 0.0 ... 90.0 mg/l* O ₂ saturation: 0.0 ... 200.0 %, 0 ... 600 %* O ₂ part. pressure: 0.0 ... 200.0 mbar, 0 ... 1250 mbar Temperature: 23 ... 122 °F (-5.0 ... +50.0 °C) * = depends on oxygen sensor and medium
Accuracy (± 1 digit)	O ₂ concentration: ±0.5% of value O ₂ saturation: ±0.5% of value Temperature: ±0.1 K	
Temperature compensation	32 ... 122 °F (0 ... +50 °C) automatic via IMT compensation	
Salinity correction	Automatic from 0.0 ... 70.0 adjustable via display	
Calibration	OxiCal® rapid calibration in OxiCal®-SL	

Ordering Information

inoLab® Laboratory Oxygen Meter SETs – with wide-range power supply 100-240 VAC (50/60 Hz) included		Order No.
inoLab® Oxi 730P	With built-in printer, including CellOx® 325, passive multifunction box and accessories	1B21-0111
inoLab® Oxi 740	Including terminal, PC software, CellOx® 325 and accessories	1B30-0111

For information visit www.WTW.com for a customer care center near you or inside US: call WTW 800 645 5999.

DO Meters

Portable Oxygen Meters

ProfiLine Oxi 197i



The WTW oxygen meter of the ProfiLine Oxi 197i series is both hose-proof (IP 66) and submersible (IP 67). This easy to use meter conforms to GLP and has an 800 data point datalogger and accurate recorder output.

External control via PC with MultiLab® pilot.

They are equipped with a carrying/support handle and carrying strap as standard. The Oxi 197i is suitable for depth measurements down to 330 ft (100 m) in combination with the TA 197 Oxi depth armature.

New: Powerful NiMH rechargeable batteries.

- High-precision, indestructible, waterproof
- Recorder output corresponding to display
- Depths measurement down to 330 ft (100 m)

IP 66
IP 67



CETLUS

3 Year Warranty

Oxygen depth armature **TA 197 Oxi** with built-in temperature sensor, up to 100 m cable with waterproof plug (IP 67), pressure-resistant steel armoring with screw-off protective hood, fits into small boreholes (2" dia.).

Battery-powered stirrer **BR 325** for profile and depth measurements.

Technical Data

Model	ProfiLine Oxi 197i
Range/Resolution	O ₂ conc.: 0.00 ... 19.99 mg/l (19.9 mg/l*), 0.0 ... 90.0 mg/l (90 mg/l*) O ₂ saturation: 0.0 ... 199.9 % (199 %*), 0 ... 600 % *depends on oxygen sensor and medium
Accuracy (± 1 digit)	O ₂ conc.: ±0.5 % of value O ₂ saturation: ±0.5 % of value Temperature: ±0.1 K
Air pressure compen.	Automatic with built-in pressure sensor (500 ... 1100 hPa)
Temperature compen.	<2 % at 32 ... 104 °F (0 ... +40 °C)
Salinity correction	Automatic from 0.0 ... 70.0, adjustable via display
Calibration	OxiCal® rapid calibration in OxiCal®-SL or OxiCal®-D

Ordering Information

Portable Oxygen Meters		Order No.
ProfiLine Oxi 197i	Robust, waterproof, submersible oxygen meter	3B30-010
Depth armatures for measurements down to depths of 330 ft (100 m) see brochure "Product Details"		



TA 197 Oxi



BR 325

DO Meters

Handheld Oxygen Meters

Oxi 315i, Oxi 330i, Oxi 340i



Oxi 340i with field armoring
FM 325 (optional)

Oxi 330i with protective armoring
SM 325 (optional)

WTW handheld oxygen meters are suitable for checking both oxygen values in the field and for laboratory measurements. In combination with galvanic oxygen sensors DurOx® 325 or CelloX® 325 (no polarization time required) the measuring system is ready for immediate use anywhere.

- Robust, shockproof, waterproof
- Keypad with large, easy-to-operate silicone keys
- Extremely Long Battery Life



complete as SET



D.O. measurement with Oxi 315i and DurOx® incl. protection cap in fish farming

IP 66
IP 67

CE

cETLus

3 Year
Warranty

DO Meters

Handheld Oxygen Meters



Oxi 315i

WTW handheld oxygen meters are available in three versions:

Oxi 315i

Simple, robust handheld meter with simplified keypad, without memory function and with no manual input facilities; in combination with DurOx® 325 with its protective hood it is particularly suitable for measurements in the fish-farming sector.

Oxi 330i

Proven robust battery-operated handheld meter with manual input functions, built-in datalogger (800 data records), GLP-supporting functions, automatic temperature and air pressure compensation and salinity correction...

Oxi 340i

As Oxi 330i, but with additional analog and digital RS 232 output and optional line adaptor. External control via MultiLab® pilot software.

Technical Data

Technical Data

Model		Oxi 315i	Oxi 330i	Oxi 340i
Range/ Resolution	O ₂ concentration:	0.00 ... 19.99 mg/l (19.9 mg/l*), 0.0 ... 90.0 mg/l (90 mg/l*)		
	O ₂ saturation:	0.0 ... 199.9 % (199 %*), 0 ... 600 %		
	O ₂ part. pressure:	0.0 ... 199.9 mbar (199 mbar*), 0 ... 1250 mbar		
	Temperature:	23 ... 122 °F (-5.0 ... +50.0 °C) <i>*if DurOx® oxygen sensor is used</i>	23 ... 122 °F (-5.0 ... +50.0 °C)	
Accuracy (±1 digit)	O ₂ concentration:	±0.5 % of value		
	O ₂ saturation:	±0.5 % of value		
	O ₂ part. pressure:	±0.5 % of value		
	Temperature:	±0.1 K		
Temperature compensation		2 % at 32 ... 104 (0 ... +40 °C)		
Air pressure compensation		Automatic with built-in pressure sensor (500 ... 1100 hPa)		
Salinity correction		0 or 30 solid SAL	Automatic from 0.0 ... 70.0, adjustable via display	
Calibration		OxiCal® rapid calibration in OxiCal®-SL or OxiCal®-D		

Ordering Information

Handheld Oxygen Meter SETs		Order No.
Oxi 315i	Handheld oxygen meter, including DurOx® 325-3, professional case and accessories	2B10-0017
Oxi 330i	Handheld oxygen meter, including CellOx® 325, professional case and accessories	2B20-0011
Oxi 340i	Handheld oxygen meter, including CellOx® 325, professional case and accessories	2B30-0011
Universal wide-range power supply 100 V - 240 V 50-60 Hz; for 340i series		902 867
Other sensors in SET see brochure "Product Details"		

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DO Meters

Oxygen Sensors and Accessories

Oxygen Meters



CelloX® 325

Membrane covered galvanic oxygen sensor

- Temperature compensation
- Up to 6 months usage of membrane
- High signal resolution
- Rapid response
- Waterproof sensor (IP 68 – 2 bar)
- Incl. calibration vessel OxiCal®-SL
- Membrane leakage monitoring

Galvanic sensors: immediately ready for measurement

Equipped with protective hood for rough conditions

Simple air calibration using calibration vessel



DurOx® 325

only for handheld and field meters Oxi 3xxi/Oxi 197i and Multi 350i

Membrane covered galvanic oxygen sensor

- Temperature compensation
- Long working life – up to 6 months with one electrolyte filling
- Low approach flow
- Waterproof sensor (IP 68 – 2 bar)
- Incl. calibration vessel OxiCal®-D
- With protective hood SK-D as standard

StirrOx® G

for inoLab® Oxi 730, inoLab® Oxi 740 and ProfilLine Oxi 197i

Self-stirring oxygen sensor – simultaneous stirring and measurement

- Single-handed operation for rapid series measurements
- Constant approach flow for high reproducibility
- Extremely low self-consumption of oxygen – only 0.008 µg h⁻¹ (mg/l)⁻¹
- Incl. calibration vessel OxiCal®-ST
- Temperature compensation
- Membrane leakage monitoring

Calibration and storage vessels

Various calibration and storage vessels are available for oxygen sensors – see brochure "Product Details".

Other sensors and accessories see brochure "Product Details".

Ordering Information

Oxygen sensors	(The sensor prices include the corresponding accessory case with spare parts and maintenance supplies)	Order No.
StirrOx® G	Self-stirring oxygen sensor for oxygen determination in Karlsruhe bottles and Winkler bottles, with OxiCal®-ST calibration and storage vessel	201 425
CelloX® 325	Galvanic oxygen sensor with OxiCal®-SL calibration and storage vessel, waterproof plug, , cable length 1.5 m	201 533
DurOx® 325-3	Galvanic oxygen sensor with OxiCal®-D calibration vessel, water proof plug, cable length 3 m	201 570

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