

# ENABLING MICROSCALE RESEARCH

O<sub>2</sub>

N<sub>2</sub>O

H<sub>2</sub>S

pH

H<sub>2</sub>

Redox

NO

Temp

Opto



# Unisense

*Unisense provides high performance microsensors and complete measuring systems for a full range of applications in environmental and biomedical research.*

## A world of possibilities

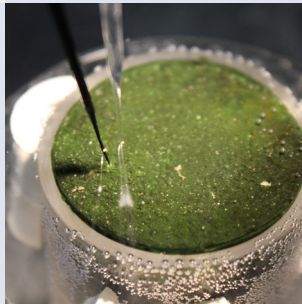
- Biomedical, microbiology, biogeochemistry and more – endless possibilities on a  $\mu\text{m}$  scale
- Microenvironment - Measure real-time changes on a  $\mu\text{m}$  scale
- Microsensors for non-destructive and rapid response measurement of a range of analytes
- Microprofiling, manual or automated, of biological matrices
- Oxygen consumption rate (OCR), microrespiration, and metabolism
- In situ equipment for field, underwater, deep sea, and shallow water research



Established in 1998 by a team of university scientists, we have more than 20 years of experience in developing, constructing, and applying microsensors



Unisense is a world leading manufacturer of microsensors and instrumentation for microscale measurement



We are dedicated to provide researchers with excellent support and complete solutions in the laboratory as well as in the field

## Quality and Support

*Unisense A/S is a ISO9001:2015 certified company. This is reflected by a defined quality management of production, development, customer support as well as internal procedures.*

We strive to meet, interact with and learn from our customers. Meet us at conferences or join one of our free workshops. Visit [www.unisense.com](http://www.unisense.com) to find the next available workshop and complete list of upcoming conferences we attend.



# Amplifiers

Unisense provides a full set of solutions for data acquisition and handling. Whether you want to measure one or more analytes, or whether you work in the lab, field, or even under water, Unisense has the meter that fits your needs.

## UniAmp MultiChannel Systems

Range of innovative amplifier solutions providing new unique features and a full new level of user friendliness and performance. The fx-6, fx-3 and x-5 systems come with open channel configuration and provide you our most flexible solutions and meet your needs today and for future applications.



fx-6 UniAmp

Unique features:

- Temperature compensation of sensor data
- E<sup>2</sup>PROM recognition of unique sensor data
- USB powered
- fx-6 UniAmp with support for ALL Unisense Microsensors
- Ease-of-use, Simple and Smart!

## UniAmp SingleChannel Systems

The O<sub>2</sub>, pH/mV, H<sub>2</sub>, N<sub>2</sub>O and H<sub>2</sub>S systems come with dedicated channel configuration and provide you our most cost-effective solutions. All systems come with the benefits of temperature compensation of sensor data, E<sup>2</sup>PROM recognition of unique sensor data, and are USB powered.



O<sub>2</sub> UniAmp

## Opto UniAmp Systems

High performance oxygen MicroOptode technology with full integration into our software solutions and use in combination with our systems for Clark-type sensors. Unique E<sup>2</sup>PROM recognition and best in class temperature compensation.



Opto-F4 UniAmp

## Field Opto UniAmp Systems

Take MicroOptode technology under water! Fully submersible housing and fiber connector for shallow water or deep sea. Temperature compensation, bleach control, ambient light filtering – our Field Opto UniAmp Systems give you the best solution for using oxygen optodes in field conditions! Operated via our field meters and dataloggers.



Field MicroOptode Meter

## Field Microsensor Multimeter

8-channel plug'N'play splash proof meter and logger for field and lab use of all Unisense microsensors. Get all the benefits known from our lab microsensors with easy sensor connection and handling, but now as a water resistant meter ready for outdoor use. Further benefits include built-in datalogger, motor control, long battery life and robust design.



Field Microsensor Multimeter

## In Situ Amplifier System

The In Situ Amplifier and Connector System is an integrated part of our Field System portfolio for high quality and robust sensor signal amplification during field work.

# Software

SensorTrace Suite – one software suite for all your microsensor applications.



### Logger

Freeware for sensor calibration and data logging



### Profiling

Software for Micro-Profiling setup and analysis



### Rate

Software for respiration and metabolism studies



### Photo

Software for photosynthesis studies using light-dark shift method



### Programming Tool

Software for advanced programming of our field and underwater systems

# Field & Underwater Systems

*The Winning Formula: Learn in the laboratory - explore and confirm in the field!  
Take advantage of our excellent in situ solutions and measure right where the action takes place.*

## Field MicroProfiling System

One solution for field and laboratory use!

Collect cores and samples for laboratory studies, or take the meter and motor outdoor to measure right where the action takes place.

With waterproof motor and sensors, splash proof meter and 5 m of sensor cable length, you now have the option to study in the field and at shallow water without worrying about protecting your setup against water and weather.

## Field DataLogger Mini

Cost effective system for applying all our sensors in situ.

With deepsea rating to 6000 m and long battery life, you can now deploy our sensors in applications that earlier were impossible.

The system comes as a 2-ch or 4-ch version, and provides support for our STOX sensor for ultra-low oxygen measurements plus integration to ADV's, CTD's, and other platforms.

## MiniProfiler MP4/8 System

Complete system for autonomous shallow water microprofiling studies.

The MiniProfiler MP4/8 is a portable 4 or 8-channel system for shallow water microprofiling. It comes with the powerful Field DataLogger for synchronization of data from multiple external devices including optodes, CTD's, light sensor and more.

The system can be adapted to 2D profiling, deep sea applications, ROV operation, and full ocean benthic lander.

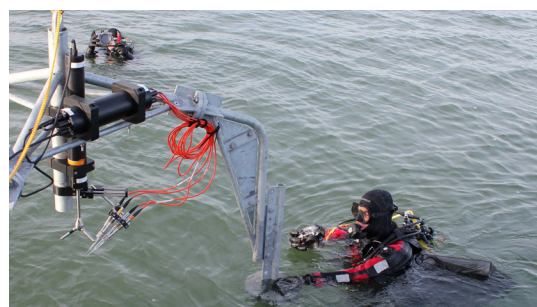
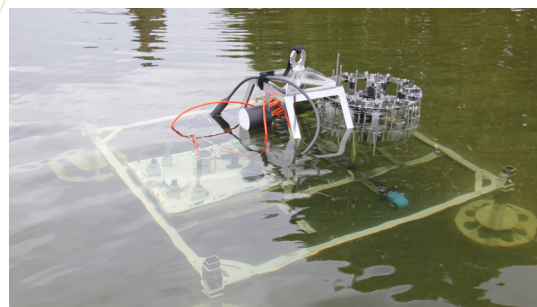
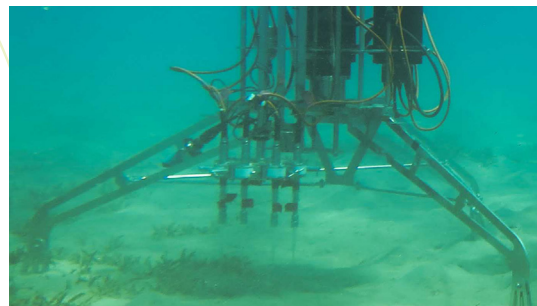
## MiniChamber Lander System

Shallow water benthic chamber measurements of multiple parameter fluxes. Comes with the latest microsensor and signal handling technology ensuring you high quality data.

## Eddy Covariance System

Complete Plug'N'Deploy Eddy Covariance System to study benthic fluxes in aquatic environments using the eddy covariance technology. The system gives you superior signal and data handling with a true signal path and exceptionally low noise. The system includes Berg EddyFlux data analysis software.

Unisense offers a solution with both ultra-fast MicroOptodes or clark-type microsensors - or even both at the same time.



# Sensors

*O<sub>2</sub>, H<sub>2</sub>, H<sub>2</sub>S, N<sub>2</sub>O, NO, pH, Redox, Temperature and more - microsensors are the foundation of our business.*

We offer a wide selection of microsensors designed for high quality measurements based on non-destructive and real time measurements of analytes on a micro scale.

## Microsensor Advantages

- High spatial resolution
- Fast response
- Non-destructive measurements
- High pressure resistance

Unisense provides several options for customization of e.g. tip size, response time, stirring sensitivity, and other custom adaptations to ensure accurate measurements for your application.



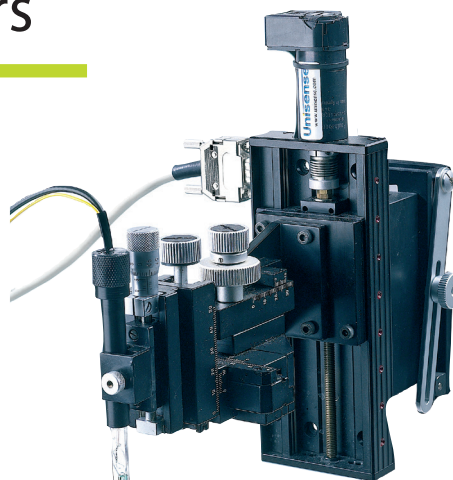
| SENSOR           | TIP SIZES  |
|------------------|------------|
| O <sub>2</sub>   | 10-500 µm  |
| STOX             | 100 µm     |
| Optode           | 50-3000 µm |
| H <sub>2</sub> S | 10-500 µm  |
| H <sub>2</sub>   | 10-500 µm  |
| N <sub>2</sub> O | 25-500 µm  |
| NO               | 15-500 µm  |
| pH               | 10-500 µm  |
| Redox            | 10-500 µm  |
| Reference        | 10-5000 µm |
| Reference-RM     | 8000 µm    |
| Temperature      | 200 µm     |
| Temp-UniAmp      | 2000 µm    |

# Micromanipulators and Motors

*Stability, precision, and excellent spatial resolution.*

With our micromanipulator systems you gain complete control of the positioning of your microsensors, enabling you to study precision microprofiles in a variety of biological matrices.

- Stable positioning of microsensors
- Accurate positioning down to 0.5 µm
- Manual and automatic positioning in up to three dimensions
- Waterproof Field Motor for outdoor use available



Micromanipulator

# Calibration Kits

## µSensor Calibration Kits

We offer a broad range of calibration standards and complete kits for accurate, fast and easy microsensor calibration – both in laboratory and in the field. The range includes kits for O<sub>2</sub>, H<sub>2</sub>S, N<sub>2</sub>O, pH and Redox.

The calibration kit is a cost-effective solution reducing labor requirements and eliminating the need to buy specialized and toxic chemicals and gases.



Calibration Kit

SMALL, FAST & NON-DESTRUCTIVE

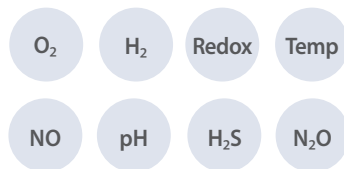
# MicroProfiling Systems

*Discover the details in your sample – your choice in biomedical, microbiology and biogeochemical research!*

The Unisense MicroProfiling and Field MicroProfiling Systems allow for precise positioning and movement of all Unisense microsensors enabling you to perform microprofiles in an infinite number of different applications.

## Measure changes and gradients on a $\mu\text{m}$ scale

- Human physiology and neurobiology
- Microbiology and biofilms
- Photosynthesis
- Biogeochemistry
- Plant physiology
- Respiration
- And much more

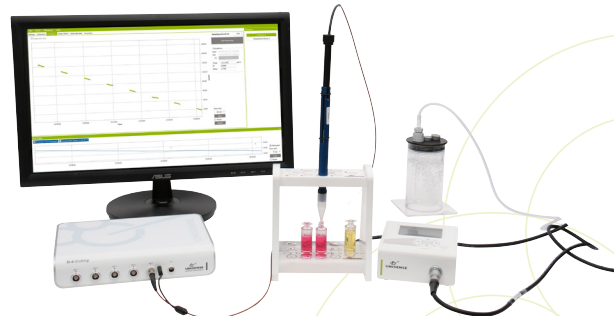


Field MicroProfiling System

# MicroRespiration System

*Measure  $\text{O}_2$ ,  $\text{H}_2$ ,  $\text{H}_2\text{S}$ ,  $\text{N}_2\text{O}$ ,  $\text{NO}$ ,  $\text{pH}$ ,  $\text{Redox}$  and temperature metabolism in sealed systems.*

This complete system includes chambers that prevent oxygen diffusion, rack, magnetic stirring, sensor, amplifier, and software. SensorTrace Rate software facilitates real-time, online inspection of data, and creates graphs of respiration or metabolism rates from multiple samples.



MicroRespiration System

# MicroOptode Portfolio

*Cutting-edge optode technology*

Our Opto portfolio delivers unparalleled performance within our core application segments with unique features like Zero-Noise Temperature Compensation, Ambient Light Filtering Technology and Bleach-protection.

The portfolio includes sensors and meters for both lab, field and underwater use.



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BIOMEDICAL RESEARCH