

ENABLING  
MICROSCALE  
RESEARCH



## Oxygen Consumption Rate & Live-cell Metabolism

Complete system to study  $O_2$ ,  $H_2$ ,  $H_2S$ ,  $N_2O$ ,  $NO$ , pH, Redox & temperature in live cells



With the Unisense MicroRespiration System you can measure oxygen consumption rates (OCR) and metabolic rates of cell cultures, tissues, eggs, small animals etc. real-time. Two analytes can be measured simultaneously in one sample, and you can inject substrates, inhibitors, enzymes, and drugs and monitor the immediate cellular response.

View real-time metabolic rates

Protected stirring of fragile samples

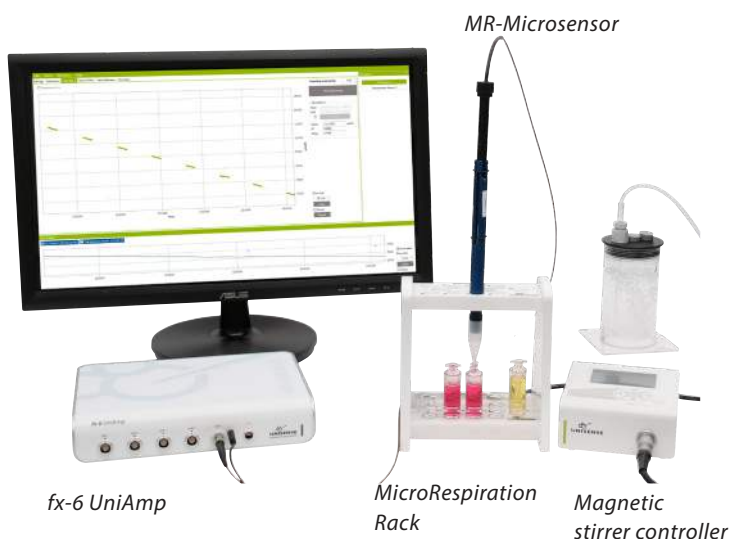
Inject drugs while measuring

Software for data acquisition and processing

Measure several samples during one experiment

All MicroRespiration chambers are autoclavable

The design of the MicroRespiration chambers gives you a closed system to study production or consumption of a broad range of analytes. Correct insertion of the sensor into chambers is secured by the sensor guide and the rack, making the MicroRespiration system easy to use. Included in the MR2-Rack is stirring of each sample and even very fragile samples can be studied due to separation of sample and magnet by a small metal net. Our amplifier portfolio guarantee that you can find an amplifier that meets your choice of microsensor and study requirements. The matching software, SensorTrace Rate, provides real-time PC inspection of data and enables measurement and calculation of the respiration or metabolic rates in several samples simultaneously.



### Microsensors for the MicroRespiration System

OX-MR

Opto-MR

$H_2$ -MR

SULF-MR

$N_2O$ -MR

NO-MR

pH-MR

RD-MR

TP-MR



### MicroRespiration Microsensors

- Fast responding Clark-type and optical microsensors
- Low detection limits
- Available for measurement of O<sub>2</sub>, H<sub>2</sub>S, H<sub>2</sub>, NO, N<sub>2</sub>O, pH, Redox and temperature
- Correct positioning of the sensor tip facilitated by the aluminium sensor guide



### MicroRespiration Chambers

- Autoclaveable glass chambers
- Chambers made of glass prevent gas exchange with the environment
- Available from 400 µL-400 mL. Larger sizes available upon request
- Double chambers available for continuous measurement of two different analytes in one solution
- Injection lids allowing for injection of substance during measurement



### MicroRespiration Rack

- Holds up to 8 chambers and facilitates easy and correct positioning of the sensor into chambers
- Integrated and individual stirring of each chamber
- Fragile samples are separated from stirring magnet by metal net
- Can be submerged in water bath for temperature control



### Amplifier portfolio

- Opto-F1 or Opto-F4 UniAmp for optical oxygen sensor
- Multi Channel UniAmp for maximal flexibility and measurement of up to four parameters
- Single Channel UniAmp measures one analyte in combination with temperature
- All Unisense amplifiers have built-in analog-to-digital converter and online PC data acquisition is obtained via a USB communication
- All UniAmp amplifiers have automatic temperature compensation



### SensorTrace Rate Software

- View production and consumption real-time
- Calculates metabolic rates based on linear interpolation
- Keeps track of measurements obtained in different chambers
- Data is continuously saved for later data interpretation



FOR MORE INFORMATION  
[WWW.UNISENSE.COM](http://WWW.UNISENSE.COM)  
[SALES@UNISENSE.COM](mailto:SALES@UNISENSE.COM)