

# pH



## pH Microsensors

Measuring with high spatial resolution

Sensor tip below  $150\ \mu\text{m}$

- Insertion in plant and animal tissue
- Measuring in smallest volume
- Profiling of pH gradients



# pH Microsensors



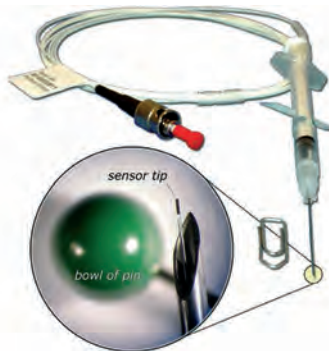
pH microsensors are miniaturized pH sensors designed for measuring in small volumes and high spatial resolution. The sensor tip is below  $150\ \mu\text{m}$ . The sensors are based on a  $140\ \mu\text{m}$  silica fiber which enables integration into a manifold of small scale environments. These sensors do not require reference electrodes and there is no leakage of electrolytes, a clear advantage over common electrodes.

## Features

- High spatial resolution
- No need for reference electrodes
- Integration into plant and animal tissue
- Optimized for culture media and physiological solutions
- Independent on electromagnetic fields

## Needle-Type pH Microsensor

Needle-type pH microsensors are the perfect tool for measuring in small volumes and for implementation into a variety of tissues. The protective housing enables a manifold of applications. The design is optimal for easy penetration of tissue, septum rubber or packaging materials. After penetration the sensor tip is extended for measurement.



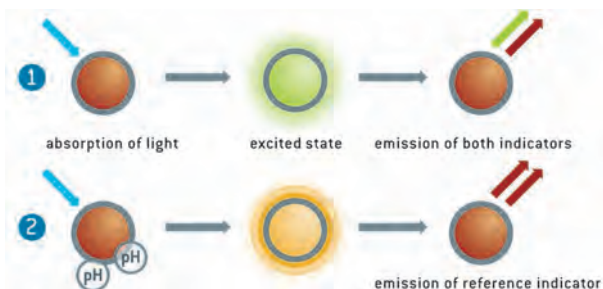
## Implantable pH Microsensor

Implantable probes are the miniaturized pH sensors designed for various customized applications. The tiny probe has a tip size of  $150\ \mu\text{m}$  while the outer diameter ranges from  $140\ \mu\text{m}$  to  $900\ \mu\text{m}$ . The microsensor tip is not mounted in any additional housing. The bare glass-fiber tip can be mounted to your own housings, steel tubes, catheters, etc. As the probe is free of metal, it can be used in the presence of high electromagnetic fields and even NMR environment.

## Measurement Principle

### The Patented Dual Lifetime Referenced (DLR) Method

The patented DLR method enables internally-referenced measurements. A combination of different fluorescent dyes detects intensity changes in the time domain. It is essential for the calibration-free measurements and the easy parallelisation of measurement through the identical calibration of large numbers of sensor spots.



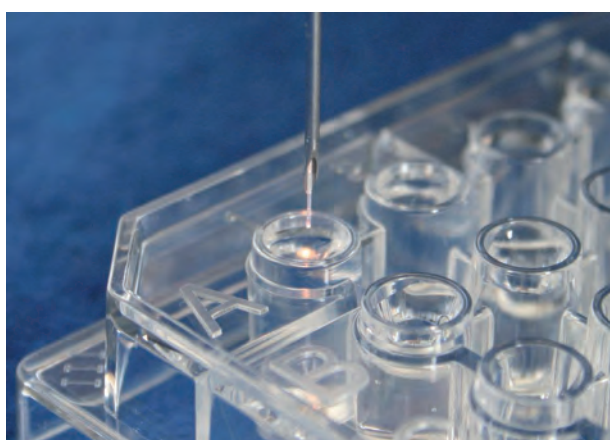
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## Examples for Applications

### pH Measurement in Plants and Animals

pH microsensors can be implanted even in small animals. New insights in the physiological aspects can be obtained. Due to the small size of the probes only a minimal disturbance will occur.



### pH Measurement in Small Volumes

Due to the small dimension of the probe, pH measurements can be done in very small volumes - even in microtiter plates of a higher format like 384 or 1536. No need for reference electrodes - a real step forward, especially in small volumes. Of course, the measurement is independent on electromagnetic fields - this even allows measuring in NMR spectrometers.



### Customized Microsensors

pH microsensors can be implemented in a broad variety of customized housings. "Catheter" as well as special cannulas or needles will turn the pH microsensor in the ideal tool for your special application.

A wide variety of sensors is offered.  
If your application is missing,  
please contact us!

Specifications*	
Measuring range	5.5 - 8.5 pH
Response time ( $t_{90}$ ) at 25 °C	30 sec
Resolution at pH = 7	± 0.01 pH
Accuracy at pH = 7	± 0.05 pH with sensor calibration
Drift at pH = 7	< 0.05 pH per day (sampling interval of 1 min.)
Temperature range	from 5 °C to 50 °C
Properties*	
Compatibility	aqueous solutions, ethanol, methanol (max. 10% V/V), pH 2 - 10
Cross-sensitivity	reduced to ionic strength (salinity); a high concentration of small fluorescent molecules in the visible range can interfere
Storage stability	24 months provided the sensor is stored in the dark
Calibration	pH sensors are pre-calibrated; re-calibration is possible

\*provided pH sensors are used without further handling in physiological solutions

## Transmitters



### pH-1 micro

Single-channel, temperature compensated pH meter for use with pH microsensors.



### pH-4 micro

4-channel pH meter for use with pH microsensors.

Technical data can change without prior notice.

Bring to light what's inside. Ask our experts:

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