

SDR

SensorDish® Reader

Online Culture
Monitoring

pH / Oxygen Sensing in 24-Well Dishes

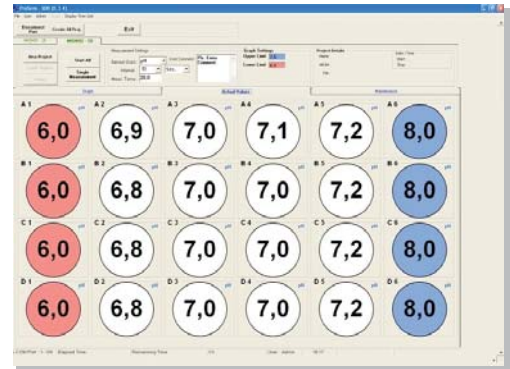


PreSens
Precision Sensing GmbH

Application fields

SDR Online Culture Monitoring SensorDish® Reader

PreSens' SensorDish® Reader is the first non-invasive instrument for online detection of pH value and oxygen concentration in cell and tissue cultures. The optical principle enables the simple and non-invasive detection of the two important culture parameters for continuous process monitoring without the addition of reagents. With advanced fluorescence technology the SensorDish® Reader sets the benchmark in chemical online analytics of pH and oxygen.



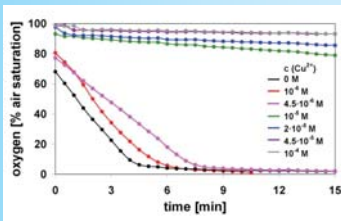
24-channel SensorDish® Reader monitoring software

Real-time monitoring

pH and dissolved oxygen



Cell and tissue culture, e.g. autologous cell therapy, tissue engineering, stem cell culture



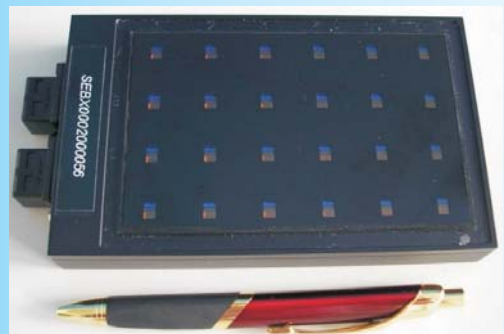
Drug screening, enzymatic and toxicological tests, assay development



Microbiological respirometry (BOD5)

The SensorDish® Reader set-up includes:

- The 24-channel SensorDish® Reader
- Disposable, sterile 24-well culture plates with integrated pH or oxygen sensors
- Splitter, software
- Notebook (optional)



24-channel SensorDish® Reader



24-well OxoDish®



24-well HydroDish®

Product advantages



24-channel SensorDish® Reader with OxoDish®

Features

- Rapid, parallel monitoring in sterile 24-well SensorDishes®
- HydroDish® for detection of pH with ± 0.05 pH resolution in the physiological range (pH 6.0-8.5)
- OxoDish® for detection of dissolved oxygen (DO) with $\pm 2\%$ air saturation resolution
- Non-invasive online-monitoring
- Calibration-FREE measurements
- Hydro- and OxoDishes® compatible to adherent cell growth
- Water-proof: Suited for high humidity conditions in incubators or shakers
- Small size, robust construction, easy transport
- Optional monitoring of up to 240 samples simultaneously by combination of 10 SensorDish® Readers with one PC



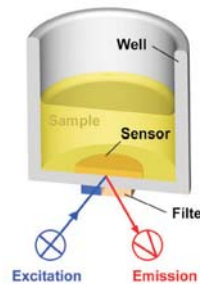
Fluorescence signal measurement with the SensorDish® Reader

SensorDish® principle



Sensor spots at the bottom of a SensorDish®

- > Online pH/oxygen
- > Non-invasive
- > Sterile
- > Compatible to incubators and shakers



The 24-well SensorDishes® have calibration-free sensor spots at the bottom of each well for detection of dissolved oxygen (OxoDish®) or pH (HydroDish®) in the physiological range. The SensorDishes® are read out from the bottom via fluorescence lifetime detection with the SensorDish® Reader.

Benefits

- Improved process monitoring and security
- Systematic optimisation of culture parameters
- Enhanced culture quality and efficiency
- Real-time data acquisition indicates necessary changes of culture medium instantly
- Convenient electronic data documentation for pH and oxygen
- Comfortable, safe and robust handling
- Maintains sterile culture requirements
- Space-saving monitoring device
- Easy scale-up for parallel processing of maximum 240 samples with one PC

Technical data

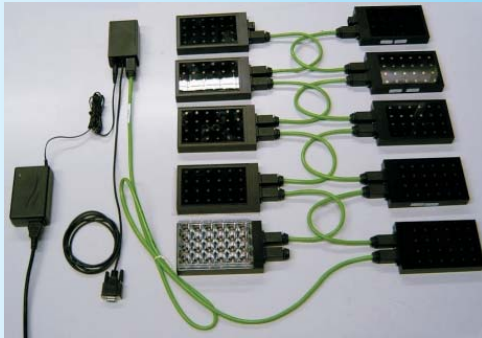


Online Culture
Monitoring

Options

Multi-instrument set-up

Up to 240 samples can be monitored simultaneously with one PC by combination of 10 SensorDish® Readers. Due to their small size, even a large number of SensorDish® Readers can be conveniently used in an incubator or placed on a shaker.



Multi-instrument
set-up with
10 SensorDish®
Readers



SensorDish® Readers
in CO₂ incubator



SensorDish® Readers
on shaker

Specifications

Parameter	pH	DO
Range	6.0-8.5 (a)	0-250% air saturation
Resolution	± 0.05 pH (a)	± 2% air saturation (d)
Accuracy	± 0.2 pH (a)	± 5% air saturation (d)
Drift / 1000 measuring points	< 0.1 pH (b)	< 5% air saturation (b), (d)
Spot – spot deviation	± 0.1 pH (c)	± 5% air saturation (d)
Response time (t ₉₀)	< 30 sec	< 30 sec
Temp. range	15 – 45 °C	15 – 45 °C
Calibration	Calibration-free	Calibration-free

(a) In case of 23°C or 37°C, physiological ionic strength and non-fluorescent media; data were recorded with PBS Buffer, 140 mM ionic strength, containing 10 mg/l phenol red.

(b) At pH 7.2 or lower, without ambient light.

(c) In case of constant temperature and pH 7.2.

(d) At 100 % air saturation in case of no temperature shift or gradient (better than 0.2° C required).

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