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biotech

SENSOLUX®

The intelligent shaker tray for determination of pH and DO

Cell Culture



Fisher Scientific

Introduction

The SENSOLUX® stand-alone version is an intelligent shaker tray with an integrated sensor system. It is applied for monitoring the pH value and the dissolved oxygen (DO) saturation during the cultivation of animal and human cells.

Used in combination with the new single-use SENSOLUX® Erlenmeyer Flasks, it facilitates the easy, safe and highly informative online measurement of these crucial process parameters in incubation shakers.

This first member of the SENSOLUX® family is an attractive tool for significant results in the early process development phase, e. g. for the advanced clone screening & media optimization.

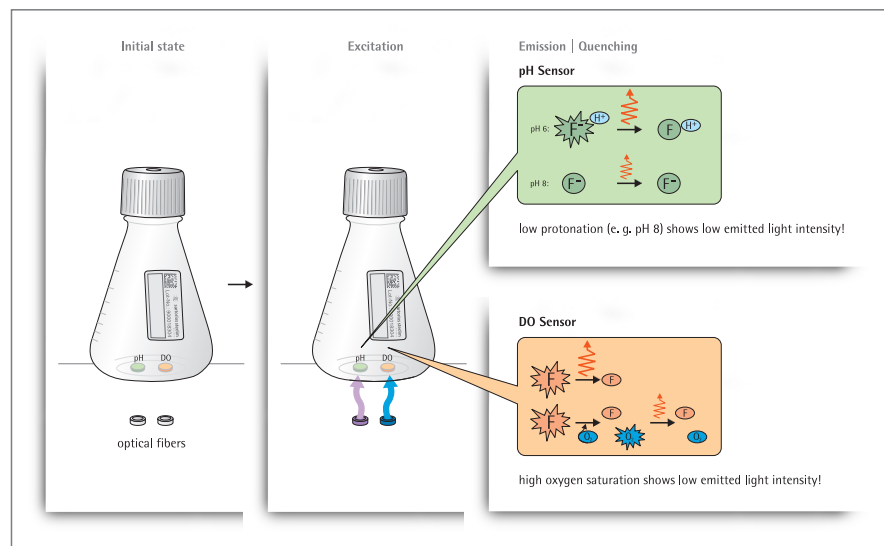
SENSOLUX® technology

The determination of pH and dissolved oxygen (DO) with the SENSOLUX® stand-alone shaker tray and the SENSOLUX® EF Erlenmeyer-Flasks, respectively, is based upon the principle of fluorescence. Each single SENSOLUX® EF contains two pre-calibrated sensor patches for pH and DO, respectively. The SENSOLUX® shaker tray features nine independent optical sensors. The actual measurement is performed optically and non-invasively from outside of the SENSOLUX® EF.

The sensor patches contain fluorescent dyes, which can be excited with light of a given wavelength. Optical fibres integrated in the shaker tray transmit light of a particular wavelength to the sensor patches; in turn they also transmit the luminescence response from the patches to a measuring amplifier. The characteristics and intensity of the light emitted is influenced by changes in the concentration of the parameters pH or DO, respectively.

Features & Benefits

- Non-invasive & optical measurement
- Online detection
- fast
- reproducible
- ready-to-use



Product description

SENSOLUX® tray

Nine measurement points for both pH and DO are integrated in the shaker tray. The tray has a size of 420 mm × 420 mm and is compatible with a broad range of standard incubation shakers including the CERTOMAT® shaker family by Sartorius Stedim Biotech.

SENSOLUX® EF

The single-use SENSOLUX® EF Erlenmeyer-Flasks are equipped with two pre-calibrated sensor patches – sensitive to pH and DO, respectively. The Flasks are delivered sterile, single-packed and ready-to-use.

The SENSOLUX® EF are available in four different sizes: 125 ml, 250 ml, 500 ml and 1000 ml. Special clamps ensure an exact positioning of the flask on the shaker tray and thus a precise measurement.

Calibration of the SENSOLUX® sensors

Both the pH and the DO sensor patches are calibrated by Sartorius Stedim Biotech. The calibration data are provided with each delivery of the SENSOLUX® EF Erlenmeyer-Flask and can be transferred either manually by hand to the software or automatically by a Barcode Scanner.

SENSOLUX® control

The SENSOLUX® tray comes with a dedicated software which enables the monitoring and visualization of the measured parameters in each flask. The operator will be guided through the workflow step by step. The flasks can be monitored individually or altogether as a group, which serves for greatest flexibility when setting up the experiment. An export function allows the data transfer for further analysis. SENSOLUX® control also provides the pH re-calibration function.

Technical Specification

SENSOLUX® tray

Dimensions	420 × 420 mm
weight	10 kg
Interface	USB RS232
Measurement points	9
Shaking speed	maximum 250 rpm (50 mm orbit)
Ambient temperature	+5°C to + 45°C
Humidity	0 to 99 %

SENSOLUX® sensor patches

	DO	pH
Measurement range	0 – 220 µmol/l * ±0.05% at 1% air saturation ±0.2% at 100% air saturation	6.0 – 8.5
Response time (t90)	30 sec	3 min
Resolution	±0.05% at 1% air saturation ±0.2% at 100% air saturation	±0.01 at pH=7
Accuracy	±0.2% at 1% air saturation ±1.0% at 100% air saturation	±0.1 with one-point calibration
Drift	<0.02% air saturation day (1 min. interval) at 50% air saturation	<0.01 pH day (1 min interval, pH 7)
Temperature range	+5°C to +45°C	+5°C to +45°C
Compatibility	pH 3 – 9, aqueous solutions or ethanol up to 10%	
Cross-sensitivity	Cl ₂ , SO ₂	Slightly to ionic strength – severe to small fluorescent molecules
Storage stability	18 month (stored at ambient temperature and in the dark)	
Calibration	SENSOLUX® EF are pre-calibrated	
Sterilization	SENSOLUX® EF are delivered irradiated	

*= max. 110% air saturation at 37°C in H₂O

Accessories

SENSOLUX® EF

The single-use SENSOLUX® Erlenmeyer-Flask are equipped with two pre-calibrated sensor patches – sensitive to the pH value and the dissolved oxygen saturation, respectively. The Flasks are delivered sterile, single-packed and ready-to-use. For different sizes are available: 125 ml, 250 ml, 500 ml and 1000 ml. Special shaker clamps ensure an exact positioning of the flasks on the shaker tray and thus a precise measurement of the parameters.

SENSOLUX® Barcode Scanner

The SENSOLUX® Barcode Scanner provides an easy, fast and save transfer of the existing calibration codes from the different SENSOLUX® EF to the software SENSOLUX® control. It is a convenient & attractive alternative to the manual transfer method.

SENSOLUX® shaker clamps

The SENSOLUX® shaker clamps ensure an exact positioning of the SENSOLUX® EF und thus the right orientation for a precise measurement. According to the E-Flask size the clamps are available in 4 different sizes: 125 ml, 250 ml, 500 ml and 1000 ml.

Ordering Information

	Product description	Sartorius Stedim Order No.	Fisher Scientific Order No.
SENSOLUX® stand-alone version	SENSOLUX® stand-alone version – shaker tray with a sensor system (9 measurement points) for optical pH- and DO determination in shake flasks. Cables, data collector unit & the software SENSOLUX® control are included	DCS09	14-559-215
SENSOLUX® EF 125	SENSOLUX® EF 125 – single use 125 ml Erlenmeyer Flasks with a vented cap. The SENSOLUX® EF 125 are patched with the single-use and pre-calibrated pH and DO sensors, sterile packed and ready-to-use. 9 pcs/case.	DCS--F1	14-559-221
SENSOLUX® EF 250	SENSOLUX® EF 250 – single use 250 ml Erlenmeyer Flasks with a vented cap. The SENSOLUX® EF 250 are patched with the single-use and pre-calibrated pH and DO sensors, sterile packed and ready-to-use. 9 pcs/case.	DCS--F2	14-559-222
SENSOLUX® EF 500	SENSOLUX® EF 500 – single use 500 ml Erlenmeyer Flasks with a vented cap. The SENSOLUX® EF 500 are patched with the single-use and pre-calibrated pH and DO sensors, sterile packed and ready-to-use. 9 pcs/case.	DCS--F3	14-559-223
SENSOLUX® EF 1000	SENSOLUX® EF 1000 – single use 1000 ml Erlenmeyer Flasks with a vented cap. The SENSOLUX® EF 1000 are patched with the single-use and pre-calibrated pH and DO sensors, sterile packed and ready-to-use. 9 pcs/case.	DCS--F4	14-559-224
SENSOLUX® C 125	SENSOLUX® C 125 – stainless steel clamps for SENSOLUX® Erlenmeyer Flasks 125 ml, 9 pcs/case.	DCS--C1	14-559-217
SENSOLUX® C 250	SENSOLUX® C 250 – stainless steel clamps for SENSOLUX® Erlenmeyer Flasks 250 ml, 9 pcs/case.	DCS--C2	14-559-218
SENSOLUX® C 500	SENSOLUX® C 500 – stainless steel clamps for SENSOLUX® Erlenmeyer Flasks 500 ml, 9 pcs/case.	DCS--C3	14-559-219
SENSOLUX® C 1000	SENSOLUX® C 1000 – stainless steel clamps for SENSOLUX® Erlenmeyer Flasks 1000 ml, 9 pcs/case.	DCS--C4	14-559-220
SENSOLUX® BCS	SENSOLUX® BCS – Barcode Scanner for the easy and save transfer of the sensor calibration data of the different SENSOLUX® Erlenmeyer flasks.	DCS--B1	14-559-216

Patent No.:

US 6,673,532 B2; US 7,041,493 B2; CA 2,419,474 A; EP 1 309 719 A1; AU 2001/282908 A8



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