PreSens
PRECISION SENSING

METERS

O₂ pH CO₂

VisiSens TD

VisiSens TD enables simultaneous 2D read-out of optical O_2, pH and CO_2 sensor foils within one set-up. Planar sensors for one or more analytes are placed on the sample area or in different cavities and the fluorescent sensor signals are read out pixel by pixel with a camera. Fields of view from mm^2 up to 30 cm x 25 cm are possible. VisiSens TD gives an overview over your sample area and allows to freely choose the region of interest for investigation of spatial and temporal gradients or simultaneous read-out of multiple sensor signals. The modular system can be customized according to the users' requirements.

- 3 analytes – 1 system
- Multiple sensor types combinable in one field of view
- Variable sensor and measurement geometry
- 12-bit detector
- Adaptable field of view, microscopic, 4 x 4 cm^2 or up to 30 x 25 cm^2
- Time-lapse slide shows of recordings

www.PreSens.de/product-finder/4000086-207

TECHNICAL

Specifications	Oxygen (blue)	pH (red)		CO$_2$ (green)	
	SF-RPSu4	SF-LV1R	SF-HP5R	SF-CD2R*	SF-CD1R
Measurement range	0 - 100 % air saturation (0 - 20.9 % O$_2$)	pH 2.5 - 4.5	pH 5.5 - 7.5	0 - 1 % pCO$_2$ at atmospheric pressure (1013.15 hPa)	1 - 25 % pCO$_2$ at atmospheric pressure (1013.15 hPa)
Response time (t$_{90}$)**	Gas phase: < 8 sec. Dissolved: < 30 sec.	< 30 sec.	< 30 sec.	< 3 min.	< 3 min.
Limit of detection***	0.03 % air saturation				
Precision (temporal)****	± 0.02 % air saturation at 0 % air saturation ± 0.1 % air saturation at 100 % air saturation	± 0.01 pH at pH = 4	± 0.01 pH at pH = 7	± 0.02 % CO$_2$ at 0.15 % CO$_2$ ± 0.02 % CO$_2$ at 0.8 % CO$_2$	± 0.02 % CO$_2$ at 2% CO$_2$ ± 0.1 % CO$_2$ at 25% CO$_2$
Precision (spatial)*****	± 1.5 % air saturation at 0% air saturation ± 3 % air saturation at 100 % air saturation	± 0.1 pH at pH = 4	± 0.1 pH at pH = 7	± 0.08 % CO$_2$ at 0.15 % CO$_2$ ± 0.08 % CO$_2$ at 0.8 % CO$_2$	± 0.2 % CO$_2$ at 2 % CO$_2$ ± 1.2 % CO$_2$ at 25 % CO$_2$
Properties					
Compatibility	Aqueous solutions, ethanol (max. 10 % v/v), methanol (max. 10 % v/v), pH 2 - 10	Aqueous solutions, pH 2 - 9		Aqueous solutions, pH 4 - 9	
General sensor temperature working range	from + 5 ℃ to + 45 ℃				

PreSens
PRECISION SENSING

System Components	Ratiometric Imaging		
Hardware	**O$_2$**	**pH**	**CO$_2$**
VisiSens TD Basic System*	x	x	x
Big Area Imaging kit*	x	x	x
TD MIC Configuration*	x		
Software			
VisiSens ScientifiCal*			
Imaging Modality O$_2$*	x		
Imaging Modality pH*		x	
Imaging Modality CO$_2$*			x
Mixed dual or triple modes*	x	x	x
Sensor			
SF-RPSu4	x		
SF-HP5R		x	
SF-LV1R		x	
SF-CD1R			x
SF-CD2R*			x
Accessories (optional)			
CaliPlate - pH Calibration Helper Plate			
Mounting Rack*			
Sensor Plate Tubus Adapter*			
Resolution Test Chart*			

* Prototype component; please contact our service team!

** Typical data which may strongly differ with adapting the imaging set-up to specific needs

*** Typical data of LOD of a defined ROI (> 6,000 pixels= over time in dark lab conditions at 20 °C, FoV 8 cm x 6 cm

**** Typical data of temporal variation in a defined ROI (> 6,000 pixels) over time in dark lab conditions at 20 °C, FoV 8 cm x 6 cm

***** Typical data of spatial standard deviation in defined ROI (> 6,000 pixels) in dark lab conditions at 20 °C, FoV 8 cm x 6 cm

System Components	Ratiometric Imaging

Plates with Integrated Sensor Foils*

* Prototype component; please contact our service team!

** Typical data which may strongly differ with adapting the imaging set-up to specific needs

*** Typical data of LOD of a defined ROI (> 6,000 pixels= over time in dark lab conditions at 20 °C, FoV 8 cm x 6 cm

**** Typical data of temporal variation in a defined ROI (> 6,000 pixels) over time in dark lab conditions at 20 °C, FoV 8 cm x 6 cm

***** Typical data of spatial standard deviation in defined ROI (> 6,000 pixels) in dark lab conditions at 20 °C, FoV 8 cm x 6 cm

SENSORS

O₂ Oxygen Sensor Foil SF-RPSu4
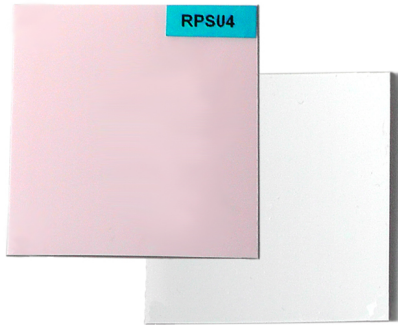
The SF-RPSu4 for measuring oxygen allows non-invasive mapping of metabolic activities as well as changes over time periods from seconds to months. The fluorescent sensor foil is attached on a living or dead sample surface or a transparent glass or disposable vessel. A sensor film on the foil translates the oxygen content into a light signal. The sensor foil is available in different sizes and can easily be cut in any desired shape. Read-out is done contactless with the imaging Detector Unit DU01 or the VisiSens TD.

• 2D read-out
• Contactless, direct sensing or through transparent walls
• Visualize spatial and temporal gradients
• Numerous measurement points in one image

PreSens
PRECISION SENSING

TECHNICAL

Specifications[#]	
Measurement range	$0 - 100\,\%$ air saturation $(0 - 20.9\,\%\,O_2)$
Response time* (t_{90})	Gas phase: < 8 sec. Dissolved: < 30 sec.
Specifications using VisiSens TD read-out	
Limit of detection**	0.03 % air saturation
Precision (temporal)***	± 0.02 % air saturation at 0 % air saturation ± 0.1 % air saturation at 100 % air saturation
Precision (spatial)****	± 1.5 % air saturation at 0 % air saturation ± 3.0 % air saturation at 100 % air saturation
Properties	
General sensor temperature working range	from + 5 to + 45 ℃
Compatibility	Aqueous solutions, ethanol (max. 10 % v/v), methanol (max. 10 % v/v), pH 2 - 10
Size of sensor foil	Standard 40 x 40 mm² Min. 5 x 5 mm²

*typical data which may strongly differ with adapting the imaging set-up to specific needs

**typical data of LOD of a defined ROI (> 6,000 pixels) over time at + 20 ℃, excluded ambient light, FoV 8 cm x 6 cm, VisiSens DUO1 strongly differs

***typical data of precision of a defined ROI (> 6,000 pixels) over time at + 20 ℃, excluded ambient light, FoV 8 cm x 6 cm, VisiSens DUO1 strongly differs

**** typical data of spatial standard deviation in defined ROI (> 6,000 pixels) at + 20 ℃, excluded ambient light, FoV 8 cm x 6 cm, VisiSens DUO1 strongly differs

[#]VisiSens™ is no approved medical device

www.PreSens.de/product-finder/4000086-207

PreSens
PRECISION SENSING

SENSORS

pH Sensor Foils SF-HP5R

The pH sensor foils allow non-invasive mapping of pH distributions in a low or normal pH measurement range. The fluorescent sensor foil is attached on the sample surface or a transparent vessel made of glass or plastic. For measurement, the sample surface is covered with a sensor film, which translates the spatial pH content into a light signal. The sensor foil is available in different sizes and can easily be cut in any desired shape. Read-out is done contactless with the imaging device unit DU02 or the VisiSens TD.

- 2D read-out
- Contactless, direct sensing or through transparent walls
- Visualize spatial and temporal gradients
- Numerous measurement points in one image

TECHNICAL

| Specifications*	
Measurement range	pH 5.5 - 7.5
Response time (t_{90})**	< 30 sec.
Specifications using VisiSens TD read-out	
Precision (temporal)***	± 0.01 pH at pH = 7
Precision (spatial)****	± 0.1 pH at pH = 7
Properties	
Compatibility	Aqueous solutions, pH 2- 9
General sensor temperature working range	from + 5 to + 45 °C
Size of sensor foil	5 x 5 mm^2 to 40 x 40 mm^2

* VisiSens™ is no approved medical device

** typical data which may strongly differ with adapting the imaging set-up to specific needs

*** typical data of precision of a defined ROI (> 6,000 pixels) over time at 20 °C, excluded ambient light, FoV 8 cm x 6 cm, measured with VisiSens TD, data with VisiSens DU02 may storngly differ

**** typical data of spatial standard deviation in defined ROI > 6,000 pixels at 20 °C, excluded ambient light, FoV 8 cm x 6 cm, measured with VisiSens TD, data with VisiSens DU02 may strongly differ

SENSORS
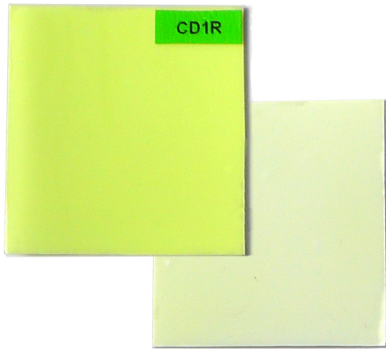
CO_2 Sensor Foil SF-CD1R

This chemical optical CO_2 sensor foil can be attached to any sample surface or to the inner surface of any transparent glass or plastic vessel. CO_2 distributions over whole surface areas are then visualized contactless and non-destructively with the VisiSens™ detector unit DUO3 or VisiSens TD. The SF-CD1R is used for measurements in liquids or samples with a constant relative humidity of 100 %, and has a measuring range of $1 - 25$ % CO_2.

- 2D read-out
- Contactless, direct sensing or through transparent walls
- Visualize spatial and temporal gradients
- Numerous measurement points in one image

TECHNICAL

| Specifications[#]	
Measurement range	0 - 25 % pCO_2 at atmospheric pressure (1013.15 hPa)
Response time (t_{90})*	< 3 min.
Specifications using VisiSens TD read-out	
Precision (temporal)**	± 0.02 % CO_2 at 2.0 % CO_2 ± 0.01 % CO_2 at 25.0 % CO_2
Precision (spatial)***	± 0.2 % CO2 at 2.0 % CO2 ± 1.2 % CO2 at 25.0 % CO2
Properties	
Compatibility	Aqueous solutions, pH 4 - 9
General sensor temperature working range	from +5 to + 45 °C
Size of sensor foil	Standard 40 x 40 mm^2 min. 5 x 5 mm^2

[#] VisiSens™ is no approved medical device

* typical data which may stronlgy differ with adapting the imaging set-up to specific needs

** typical data of precision of a defined ROI (> 6,000 pixels) over time at 20 °C, excluded ambient light, FoV 8 cm x 6 cm, DUO3 strongly differs

*** typical data of spatial standard deviation in defined ROI > 6,000 pixels at 20 °C, excluded ambient light, FoV 8 cm x 6 cm,   DUO3 strongly differs

PreSens
PRECISION SENSING
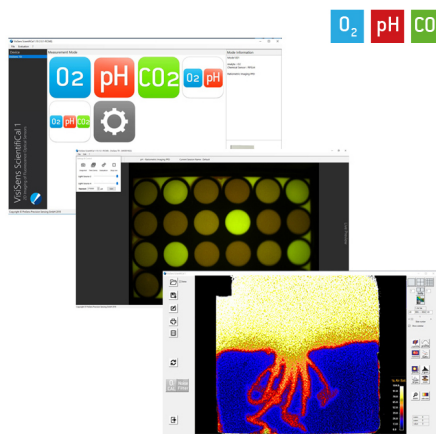
SOFTWARE

O₂ pH CO₂ **VisiSens™ ScientifiCal Software**

VisiSens TD includes a modular control and evaluation software. One can choose between different operation modes from single- to multi-analyte modes. Images can be recorded as snapshots or automatic time series. Furthermore, the software offers different evaluation functions for image analyses.

• Modular control and evaluation software
• Single- to multi-analyte modes
• Snapshot or time series recordings
• Image evaluation functions

TECHNICAL

	Minimum System Requirements	Suggested Configuration
Operating system	Microsoft® Windows® 7 (32 or 64 Bit) or higher	Microsoft® Windows® 10 (64 Bit)
Processor	2.4 GHz Pentium IV or adequate AMD Athlon Processor	Intel 'i ' series or adequate AMD Processor (or higher)
RAM	2 GB	8 GB or more
Memory capacity for graphic board	256 MB	1 GB or more
Hard disk	1 GB free memory	2 TB or more free memory
Ethernet	10/100, or Gigabit speed Ethernet adapters	Gigabit speed Ethernet adapters If not on-board: For desktop system: Use a PCI Express bus Ethernet adapter. For laptops: Use an expansion slot via an ExpressCard.
Screen resolution	1920 x 1080 (16 : 9) or 1366 x 768 (16 : 9) or 1280 x 800 (16 : 10) or 1280 x 1024 (5 : 4)	1680 x 1050 or higher (16:9 or 16:10)

www.PreSens.de/product-finder/4000086-207

PRODUCT FINDER

PreSens
PRECISION SENSING

GET IN CONTACT

> Request more info

> Request a quote

> Rent-a-meter

PreSens Precision Sensing GmbH
Am Biopark 11, D-93053 Regensburg
Phone +49 941 942 72 100
Fax +49 941 942 72 111
info@PreSens.de

> **www.PreSens.de/product-finder/4000086-207**