

Firesting O₂

Fiber-Optic Oxygen Meter



The future in oxygen sensing with
unique REDFLASH technology

One Device – Many Applications

- Compact USB-powered multipurpose fiber-optic oxygen meter
- New REDFLASH oxygen indicators for
 - better signal/noise
 - faster response
 - less problems with auto-fluorescence and ambient light
 - reduced stress in biological systems due to red light excitation
- 1, 2 or 4 oxygen and 1 temperature channel
- Works with microsensors, minisensors, miniprobes and contactless sensors (sensor spots, sensor cuvettes, flow-through cells)
- Works in gases and liquids
- Works with normal and trace sensors
- Versatile logging software included
- OEM solutions available

pyroscience 
sensor technology

high performance & fair prices

The future in oxygen sensing with unique REDFLASH technology

Oxygen sensing at high precision and resolution

The compact Firesting O₂ is a high precision, PC-controlled (USB) fiber-optic oxygen meter with 1, 2 or 4 channels for fiber-optic oxygen sensors from Pyro Science.



The Firesting O₂ unifies several innovative technological improvements, making it the new standard of high precision oxygen sensing.

This versatile oxygen meter is compatible with oxygen microsensors, minisensors, miniprbes and contactless sensors (sensor spots, sensor curvettes, flow-through cells).

Further, the Firesting O₂ can be combined with sensors for different concentration ranges (normal and trace range). Optimized production processes ensure fair prices for high performance technology.

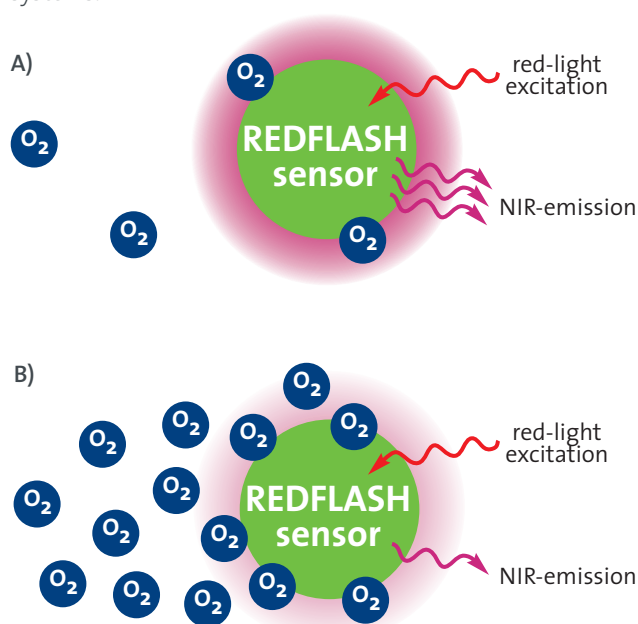
Specifications

Weight	350 g
Dimensions (w x l x h)	68 x 120 x 30 mm
Computer Interface	USB
O ₂ Sensors	microsensors, minisensors, miniprbes, sensor spots, sensor curvettes and flow-through cells
Temperature Sensor	PT100 temperature sensors
Measuring Channels	<ul style="list-style-type: none"> • 1, 2 or 4 oxygen sensors • 1 temperature sensor
Measuring Principle	lifetime detection of REDFLASH indicators
Measuring Range	<ul style="list-style-type: none"> • 0 -100% O₂ (normal sensor) • 0-21% O₂ (trace sensor) • -10-50°C
Resolution	<ul style="list-style-type: none"> • <0.05% (at 20% oxygen), • <0.01% (at 1% oxygen)
Accuracy 2-point calibrated	<ul style="list-style-type: none"> • 0.2% (at 20% oxygen) • 0.05% (at 1% oxygen)
Response time (t ₉₀) gas/water	<ul style="list-style-type: none"> • microsensor down to 0.2/0.2 sec • minisensor down to 0.2/5 sec • sensor spot down to 0.2/5 sec
Software Firesting O ₂	Windows XP, Vista, 7
Power Supply	via USB
Operating Conditions (instrument)	<ul style="list-style-type: none"> • -10-50°C • non-condensing conditions
OPTIONS (on request)	• OEM

Innovative REDFLASH technology

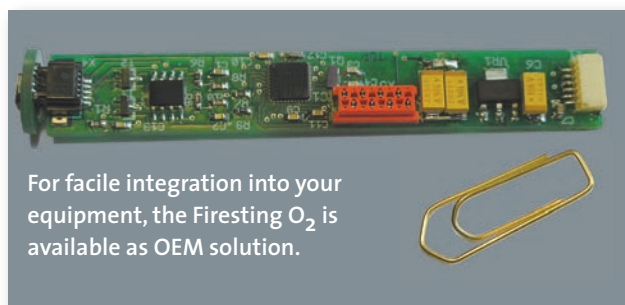
REDFLASH
sensor technology

The new REDFLASH technology is based on the unique oxygen-sensitive REDFLASH indicators showing excellent brightness. The REDFLASH indicators are excitable with red light ($\lambda=620$ nm) and show an oxygen-dependent luminescence in the near infrared (NIR). The REDFLASH technology impresses by its high precision, high reliability, low power consumption, low cross-sensitivity, and fast response times. The red light excitation significantly reduces interferences caused by autofluorescence and reduces stress in biological systems.



Principle: red light excited REDFLASH indicators show luminescence in the near infrared (NIR), which decreases with increasing oxygen (quenching effect).

A) high NIR emission at low oxygen and B) low NIR at high oxygen

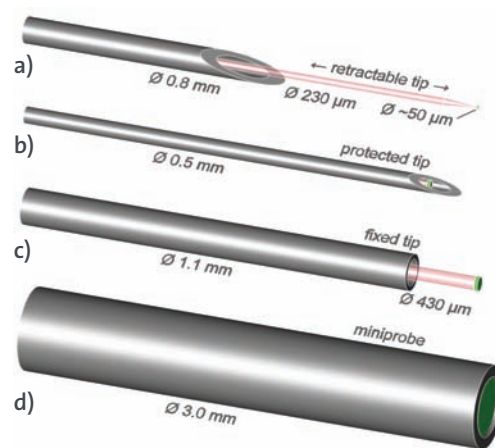


For facile integration into your equipment, the Firesting O₂ is available as OEM solution.

One Device – Many Applications with different fiber-optic oxygen sensors

Needle-type Oxygen Sensors and Miniprobes

- **Tip Diameters:** from 50 μm to 3 mm (microsensors, minisensors, robust miniprobes).
- **Concentration Range:** normal sensor 0-100% oxygen (0-40 mg/L dissolved oxygen), trace sensor 0-21% oxygen (0-8 mg/L dissolved oxygen)
- **Options:** protected tip, optical isolation, fast response time
- **Calibration:** 1-point or 2-point calibration
- **Measurement:** with novel oxygen-sensitive REDFLASH indicators immobilized in a resin at the sensor tip
- **Examples:**
 - Needle-type oxygen sensor with retractable microsensor tip



– Available fiber-optic sensor tips:

- a) retractable needle-type microsensor, b) needle-type minisensor with protected tip or c) fixed tip and d) robust miniprobe

Oxygen Sensor Spots

- **Standard Spot Diameters:** sensing surface of 5 mm or 8 mm diameter on PET foil or glass
- **Concentration Range:** normal sensor 0-100% oxygen (0-40 mg/L dissolved oxygen), trace sensor 0-21% oxygen (0-8 mg/L dissolved oxygen)
- **Placement of spots:** on transparent inner container wall enclosing a liquid or gas (wall thickness of 0-6 mm)
- **Measurement:** with 1 mm spot fiber connected to a spot adapter which has to be fixed at the outer container wall at the spot position
- **Options:** optical isolation, custom spot material/dimensions, fast response time



Vials with integrated sensor spots

Standard glass or plastic vials containing an oxygen sensor spot to measure oxygen in its content (using a spot adapter and a spot fiber).



Flow-through Cells with integrated oxygen sensor

Online monitoring of oxygen concentration in a liquid or gas pumped through a miniaturized flow-through cell with an integrated oxygen sensor.



Application Areas

- biotechnology
- tissue-engineering
- biogeochemistry
- (eco)physiology
- aquatic-, atmospheric-, chemical-, environmental-, life-, marine-, pharmaceutical- and soil sciences
- respirometry
- photosynthesis
- microprofiling
- water processing
- bioreactors
- gas analysis
- culture technology
- customized geometries

Contact and Service

Our **consulting service** is available to inform you about

- the new and outstanding Firesting O₂,
- the different sophisticated sensors,
- set-ups available from Pyro Science,
- their applicability and
- integration in existent devices as OEM solution.

We would be pleased to serve you concerning all needs for sensing O₂ at high precision and resolution with state-of-the-art technology.

Profit from our innovation, scientific expert knowledge and flexibility to develop customized solutions for high performance sensing technology.

In cooperation with leading international academic research groups and universities:

Sensor development

Graz University of Technology (Austria)
Institute of Analytical Chemistry and Food Chemistry



Application development for research

Max-Planck-Institute for Marine Microbiology (Germany)
University of Copenhagen (Denmark)
University of Southern Denmark (Denmark)



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