



# Oxigraf Model O2Bio/O2Bio-B Oxygen and CO2 Gas Analyzers

## Fast Gas Analyzer for BioPhysical Applications and Bioreactors

Based on the Oxigraf Model O2Cap Oxygen and CO2 analyzer, the O2Bio is specifically designed to provide gas monitoring of Bioreactor headspace and off-gas streams. The unit will measure continuously from an off-gas vent or periodically via a gas sample valve to take small 10-15ml samples from the bioreactor headspace via keypad or digital interface control.



### O2Bio - Bioreactor Off-Gas Monitoring of O2 and CO2

The O2Bio integrates an Oxigraf tunable diode laser (TDL) oxygen sensor and a non-dispersive infrared (NDIR) CO2 sensor with a pump regulated gas sampling system. The analyzer features a bright vacuum fluorescent alphanumeric display (VFD), touch panel keypad, a rear 0-1VDC analog BNC output for O2 readings, rear terminal strip with limit detection relays and 4 – 20 mA analog outputs of O2 and CO2 reading, and a RS232 digital interface.

All inputs and outputs are CPC quick connect fittings with O-ring seals. Gas Inlet and Outlet with Swagelok or Luer fittings can be provided optionally.

Oxigraf, Inc.; 238 E. Caribbean Dr.; Sunnyvale, CA 94089

Tel: 650-237-0155 Fax: 650-237-0159

E-mail: [sales@Oxigraf.com](mailto:sales@Oxigraf.com) Web-site: <http://www.oxigraf.com>



The Oxigraf sensor uses laser diode absorption technology to measure oxygen concentration in the gas sample. A laser diode produces light in the visible spectrum at 760 nanometers. Light at this wavelength is absorbed by oxygen. To analyze oxygen the laser beam is focused through the sample gas onto a detector. Oxygen concentration is inversely proportional to the amount of light reaching the detector. An analysis is made every 10 ms.

The analyzer automatically zeroes at each measurement interval by electronically tuning the laser to oxygen non-absorption wavelength. CO<sub>2</sub> is measured using a NDIR based accessory sensor and integrated into our hardware.

Oxygen measurements are made independent of sample pressure, gas temperature, and (in XC mode) other gases including Ar, He, H<sub>2</sub>, CO<sub>2</sub> and H<sub>2</sub>O. Gases other than oxygen will not affect the measurement except for their dilution effect on the gas mixture.

### **APPLICATIONS:**

- **Fast Gas Analysis of: Oxygen and CO<sub>2</sub>**
- **Overlay and Sparge Gas Controller for Bioreactors**
- **Microbial Systems & Biofuel Development**
- **Biomass Growth Rate and Substrate Consumption Monitoring**
- **Anaerobic Fermentation**
- **Stem Cell & Mammalian Cell Cultures**

### **Gas Sampling and Valve Control:**

The O<sub>2</sub>Bio/O<sub>2</sub>Bio-B Analyzers are specifically designed to provide gas monitoring of Bioreactor headspace and off-gas streams. The unit will measure continuously from an off-gas vent or periodically via a gas sample valve to take small 10-15ml samples from the bioreactor headspace via keypad or digital interface control.

This Oxigraf analyzer is equipped with a solenoid sampling valve with 1 ms response time enabling sampling of very small sample volumes.

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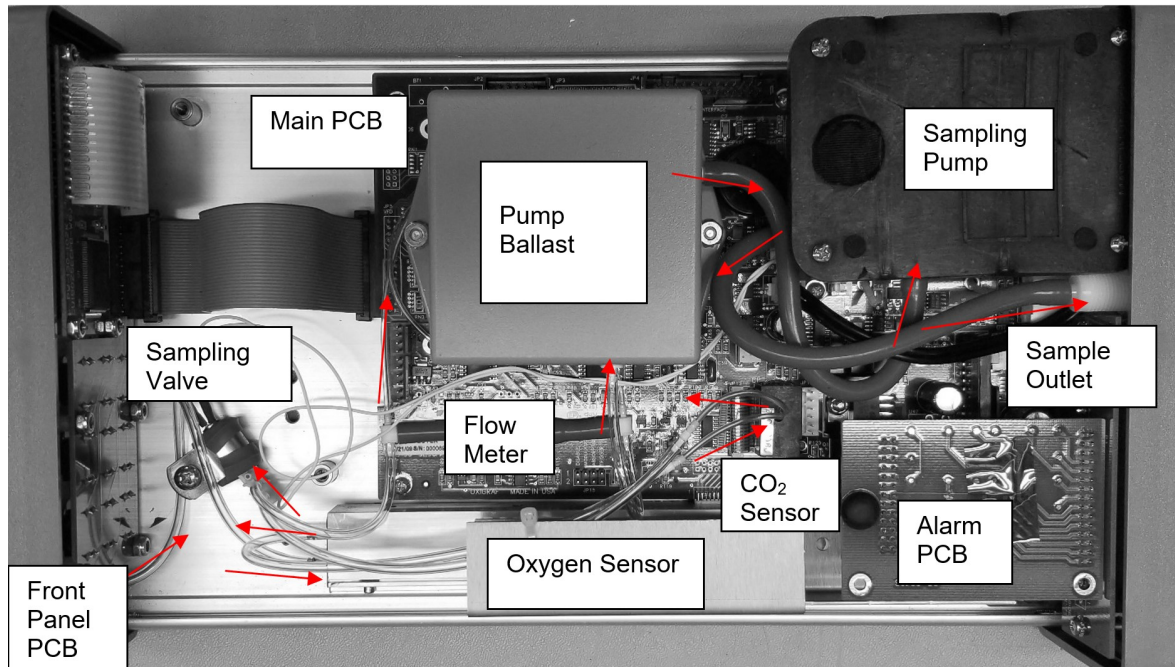
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## O2Bio/O2Bio-B Schematic Diagram:



## PERFORMANCE SPECIFICATIONS:

Range:	0 to 10% CO <sub>2</sub> 5 to 100% Oxygen
Resolution:	0.1% in 0 to 100% O <sub>2</sub> range, 0.01% in 0 to 10% CO <sub>2</sub> range
Response Time:	Approximately 150 ms @ 250 ml/min flow (depending on electronic filter setting).
Response Time:	1 ms for Solenoid sampling valve
Stability (4hrs):	±0.2% after 5 minutes warm up (in LN mode)
Dimensions:	7.5 x 3.0 x 11.0 inches (190 x 76 x 280 mm) WxHxD
Weight:	5 pounds (2.25 kg)
Warranty:	One year repair or replace - limited warranty.

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## **Back Panel Interface:**

### **Back Panel O2Bio with rear terminal strip with limit detection relays**



The power on/off switch (Press “I” for on, “O” for off), 12 VDC power input jack, service interface, terminal block interface, and a gas outlet port are located on the instrument back panel. Power is supplied by an external 12 Volt, 2 Amp CSA Level 3 power supply. The RS – 232 port is provided to interface with a computer.



## **Calibration Kit:**

Calibration Kit includes certified concentration gas cylinders, preset flow regulators, and tubing with connectors which mate with the analyzer and gas cylinder. The tubing assembly includes a fine flow needle valve. Instrumentation grade, certified calibration gas meets FDA standards for USP oxygen analyzers. Each cylinder provides approximately 3 months of daily calibrations. Calibration gas is shipped directly from the gas supplier.

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