



Sable Systems International, Inc.

THE PA-10 PARAMAGNETIC OXYGEN ANALYZER

FEATURES: The PA-10 represents an improvement on our original and very popular PA-1 in several respects.

BAROMETRIC PRESSURE COMPENSATION eliminates drift caused by variations in the pressure of the sampled air stream.

DIGITAL SIGNAL PROCESSING using ultra-high-resolution proprietary circuitry and on-board microcomputers running proprietary algorithms.

MULTIPLE OUTPUT RANGES for maximum flexibility with voltage-based data acquisition systems.

MULTIPLE AVERAGING RANGES for tailoring analyzer response time and resolution to your requirements.

SERIAL DATA OUTPUT for data logging using any laptop or desktop computer and a terminal program.

PARTIAL PRESSURE OUTPUT for direct measurement of oxygen partial pressure.

HIGH RESOLUTION DUAL DISPLAY shows oxygen concentration to 0.0001% and barometric pressure to 0.0001 kPa.

STABILITY AND RESOLUTION of better than 0.01% of full scale.

The **PA-10** requires 10 - 20 VDC at less than 1A and is easily powered from batteries for field or portable use. It requires less than five minutes to warm up. The two-line, backlit LCD panel display shows oxygen concentration to **0.0001% over the range 0 - 100%**, while barometric pressure is displayed to 0.0001 kPa.



The **PA-10's extraordinary resolution is made possible by advanced, proprietary digital signal processing techniques combined with state-of-the-art electronics.** The paramagnetic feedback-correction signal, which is proportional to oxygen partial pressure, is digitized to a resolution of better than one part in four million, as is the barometric pressure. The measured oxygen concentration is continuously corrected for variations in barometric pressure, thus eliminating pressure noise and drift. Pressure correction takes place via proprietary floating-point mathematical algorithms implementing the appropriate corrective equations, rather than via noisy, drift- and error-prone analog computational circuitry. Meanwhile, error-checking and self-calibration routines operate continuously in the background, guaranteeing the reliability of the **PA-10's** data.

The PA-10 is easily interfaced to any data acquisition system or data-logger. Multiple ranges of voltage proportional to oxygen concentration or partial pressure are available at the front panel from a high-quality BNC connector. Depending on the range selected, this buffered 0 - 5V output can represent any of 5 ranges. This uniquely versatile output scheme eliminates the need for offsetting/amplifying by signal conditioners, and guarantees success in interfacing the **PA-10** to almost any data acquisition system.

THERE'S MORE! The **PA-10** transmits a stream of serial data from a standard DB-9 data socket on its back panel at a user-settable interval and baud rate. Using any computer and a terminal program, you can continuously log pressure-compensated oxygen concentration (to 0.0001%),

oxygen partial pressure (to 0.0001 kPa), internal temperature (to 0.01°C), and barometric pressure (to 0.0001 kPa or 0.1 Pa). Simultaneously, without needing any other data acquisition system. And with much higher resolution than many voltage-based data acquisition systems offer. Unlike heated zirconia sensors, the **PA-10's** paramagnetic sensor does not give misleading results in the presence of volatile byproducts of bacterial and animal metabolism. *Sable Systems* is delighted to offer this addition to our growing range of gas analysis instrumentation. The **PA-10** has been designed from the ground up to be as reliable, maintenance-free and versatile as possible.

PA-10 SPECIFICATIONS:

- ⊕ **Range:** <0% to 100% oxygen, <1 to 105+ kPa oxygen
- ⊕ **Gas Ports:** 1/8" barb fittings on front panel, input line filtered
- ⊕ **Flow Rates:** 10 - 175 ml/min recommended. Not to exceed 200 ml/min.
- ⊕ **Panel Display:** Digital 2-line backlit LCD, simultaneous display of oxygen (0.0001 % or 0.0001 kPa resolution) and barometric pressure at the fuel cell (0.0001 kPa resolution)
- ⊕ **Voltage Output:** 0 - 5 Volts for 0 - 25, 19 - 21.5 0-100, 80-105, 90-105, short circuit protected; 16 bit (up to 1 in 65535) resolution in each range
- ⊕ **Serial Output:** Percent oxygen, kPa oxygen (both to 0.0001%/kPa), barometric pressure (to 0.0001 kPa), and fuel cell temperature (to 0.001 deg C) with comma delimiters; resolution 1 part in 1,000,000 for concentration and pressure
- ⊕ **Power Requirement:** 8 - 20 VDC at approx. 2 W, reverse polarity protected (UL/CSE 120 or 220 VAC AC adapter supplied with unit)
- ⊕ **Accuracy and Resolution:** At constant temperature, accuracy better than 0.1%, 2 - 100% oxygen; Resolution 0.0001%;
- ⊕ **Noise and Drift:** At constant temperature, flow rate and *at atmospheric* oxygen concentration: Noise < 0.002% pk-pk over 20 minutes; Drift < 0.01% over 24 hours
- ⊕ **Size:** 13" x 10" x 4" (33 x 25 x 10 cm)
- ⊕ **Weight:** Less than 10 lb (4.5 kg)

OPTIONS: The Sable Systems **PA-10** is supplied with a 120VAC - 12VDC power source (220VAC to 12VDC upon request). A rack mount option is available at time of order.

VALUE ADDED: Like all of our instruments it is guaranteed for three (3) years and comes with *lifetime technical support*.

CONTACT US: Call us at **800-330-0465/ 702-269-4445**, FAX us at **702-269-4446**, or send EMAIL to mail@sablesys.com. For general information about Sable Systems or our other products, you can also visit our World Wide Web site, <http://www.sablesys.com>.

ORDERING INFORMATION: Sable Systems accepts purchase orders and credit cards from all recognized research institutions, or credit cards and cashier's checks from individuals. Orders may be placed by FAX or mail, or by voice or E-mail with FAX or mail confirmation. Terms are 30 days net from receipt of shipment. Foreign orders must pay in advance in U.S. funds drawn on a U.S. bank, or by a confirmed irrevocable letter of credit payable through a US bank in US dollars. All prices are f.o.b. Las Vegas, Nevada. Freight charges will vary with destination.

*Sable Systems is a company founded by scientists for scientists.
We are certain that you will enjoy doing business with us.*

