

## PRODUCT DATA SHEET

# PreMix 2000 Air/Fuel Ratio Analyzer for Premix Burners

Permanent installation sensor for control of fiberizing lines and other pre-combustion applications

The PreMix 2000 analyzer accurately and continuously measures the proportions of oxygen (O<sub>2</sub>), and fuel in pre-mix gases, operating in either excess fuel or excess air conditions. The analyzer is fed a small sample of the air/fuel mixture, burns it and then measures the net O<sub>2</sub> or net excess fuel content of the mixture.

### Operation

Most of the sample gas entering the analyzer passes through the bypass flow meter, which ensures a fast response and keeps the sample inlet purged of dead volume. A small portion of the sample flows through the sample flow meter and flashback arrestor to the furnace. An igniter at the inlet of the furnace enables the fuel mixture to burn. The products of combustion then flow past the zirconium oxide cell, where they are measured.

### Control unit

The PreMix 2000 uses the Series 2000 control unit. This state-of-the-art microprocessor control unit provides software-selectable calibration options, and extensive analog and digital I/O capabilities, including a bi-directional RS-485 communications port. It also employs a modular design that makes adding future upgrades or servicing easy.



### KEY BENEFITS

- Measure air/fuel ration in open-flame application where flue gas measures are not practical
- Measurement and display options include excess O<sub>2</sub>, excess fuel, air/fuel ratio and combustibles
- Operates under either excess air (lean) or excess fuel (rich) conditions
- Calculates calibration gas mixture concentration for excess fuel ranges

### APPLICATIONS

- Glass forehearth
- Air/fuel mixtures
- Glass fiber apparatus
- Open flame brazing and soldering
- Temperature furnaces
- Gas generators
- Metals and metal forming

### KEY MARKETS

- Glass fiber manufacturer
- Glass melting tanks

## PERFORMANCE SPECIFICATIONS

### Sensor Specifications

<b>Range</b>	All or selected portions of the range from 100% to 0.1% excess O <sub>2</sub> and 0.1% to 50% excess fuel
<b>Accuracy</b>	± 2% of measured value or ± 0.1% O <sub>2</sub> , whichever is greater; ± 5% of measured value or 0.25% excess fuel, whichever is greater
<b>Repeatability</b>	± 0.2% of measured value
<b>Ambient temperature</b>	-5 to 158°F (-20 to 70°C)
<b>Sample flow rate</b>	0.5 L/min. (1 scfh)
<b>Bypass flow rate</b>	- 50 L/min. max. (106 scfh)
<b>Max sample pressure</b>	10 psig
<b>Power</b>	115 VAC ± 10%, 50/60 Hz., 1200 VA max.; 230 VAC ± 10%, 50/60 Hz., 2400 VA max
<b>Excess oxygen calibration gases</b>	O <sub>2</sub> span gas: 20.9% (air) or from 1.0 to 100% O <sub>2</sub> , balance nitrogen (N <sub>2</sub> ); O <sub>2</sub> zero gas: 2% or from 0.1% to 10% O <sub>2</sub> , balance N <sub>2</sub>
<b>Excess fuel calibration gases</b>	Methane (CH <sub>4</sub> )/O <sub>2</sub> /N <sub>2</sub> Span: 40 to 60% of recorder output span; CH <sub>4</sub> /O <sub>2</sub> /N <sub>2</sub> Zero: 5 to 10% of recorder output span
<b>Enclosure</b>	UL Type 3R (IP14)

### Control Unit Specifications

<b>Display</b>	Four-line x 20-character vacuum fluorescent; Displays combinations of excess O <sub>2</sub> , excess fuel, combined O <sub>2</sub> to excess fuel range, air/fuel ratio, combustibles, time and date, cell temperature, user programmable text, thermocouple mV, or cell mV; Password protection and context sensitive help are provided
<b>Analog output</b>	Two isolated linear current outputs. Select excess O <sub>2</sub> , excess fuel, combined excess O <sub>2</sub> to excess fuel range, combustibles, air/fuel ratio, cell temperature, thermocouple mV or cell mV. Each output can be 4-20 mA, 0-20 mA, 20-4 mA or 20-0 mA and is fully scalable. Hold or track during calibration and select degree of damping; Maximum load 1200 ohms
<b>Alarms</b>	Two independent alarms, each high or low selectable. One alarm can be allocated to sensor readings, calibrate or verify Set relays to energize or de-energize on alarm
<b>Contact rating</b>	0.5A, 30V, 10VA max. noninductive load, AC or DC
<b>Diagnostics</b>	Watchdog timer and service alarms. System test for A/D, RAM, EEPROM, and keypad. Display line four reserved for full text error and diagnostic messages. 20 entry event log
<b>Communications</b>	RS-485, 2-way addressable
<b>Ambient temperature</b>	14°F to 122°F (-10°C to 50°C)
<b>Relative humidity</b>	10% to 90%, non-condensing
<b>Enclosure</b>	Standard weatherproof NEMA 4 (IP 56) wall/panel mount. Optional GP (General Purpose) wall mount, GP 19" rack mount, GP panel mount, or stainless steel weatherproof NEMA 4X (IP 56) wall/panel mount. All are UL Listed for NEC Class I, Division 2 areas. Purged and explosion-proof versions also available
<b>Power requirements</b>	Nominal 115-230 VAC ± 10%, 47-63 Hz, 75 VA max
<b>System compliance</b>	EMC Directive 2004/108/EC; Low Voltage Directive 73/23/EEC

### SALES, SERVICE & MANUFACTURING

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