

## CMFA-P2000 PORTABLE PREMIX GAS/FLUE GAS ANALYZER

Versatile precombustion or flue gas analyzer commonly used for spot sampling glass melting tanks, mix station tuning on forehearth, furnace atmosphere control, and for flame treating applications.

### FEATURES/BENEFITS

- II Two analyzers in one. Acts as a flue gas oxygen analyzer or a premix gas analyzer.
- II Built-in compressor for pulling flue gas samples into the analyzer.
- II Works in either excess fuel or excess air environments.
- II In premix mode, measures air/fuel ratio in open-flame applications where flue gas measurements are impractical.
- II Provides much better accuracy than directly measuring oxygen or combustibles in the premix gas.



### SPECIFICATIONS

**Enclosure:** Both the sensor and control unit are housed in a luggage-style, aluminum carrying case

**Operating Range:** 100% to 0.1% excess oxygen and 0.1% to 50% excess fuel

**Display:** Four-line x 20-character vacuum fluorescent display. Displays combinations of excess oxygen, excess fuel, combined excess oxygen to excess fuel, fuels/oxides, oxides to fuels, combustibles, time and date, cell temperature, user programmable text, thermocouple mV, or cell mV. Password protection and context-sensitive help are also provided.

**Diagnostics:** System test for A/D, RAM, EEPROM and keypad. Display line 4 reserved for full text error and diagnostic messages. Twenty-entry event log.

**Analog Output:** Isolated, linear current output, fully scalable. Select excess oxygen, excess fuel, combined excess oxygen to excess fuel range, combustibles, fuels/oxides, oxides/fuels, cell

temperature, thermocouple mV and cell mV. Hold or track during calibration and select degree of damping. Maximum load 1200 ohms.

**Calibration:** Calibrate or verify calibration. Store last calibration and verification data.

**Built-in Compressor:** Draws gas from up to 6 inches of water vacuum.

**Power Requirements:** 115 VAC  $\pm 10\%$ , 50-60 Hz, 747 VA max.; 230 VAC  $\pm 10\%$ , 50-60 Hz, 2222 VA max.

**Environment:**  
Ambient Temperature:  
Control Section: 14°F to 116°F (-10°C to 47°C)  
Sensor Section: -5°F to 100°F (-20°C to 37.8°C) (See Note)  
Relative Humidity: 10% to 90%, non-condensing

**Sample Temperature:**  
Flue Gas Inlet: 0°F to 2000°F (-18°C to 1100°C)  
Premix Inlet: 32°F to 122°F (0°C to 50°C)

**Accuracy:**  $\pm 2\%$  of measured value or  $\pm 0.1\%$  O<sub>2</sub>, whichever is greater.  $\pm 5\%$  of measured value or  $\pm 0.25\%$  excess fuel, whichever is greater (specifications based on 0-15% range, natural gas).

**Response Time:**  
Percent Oxygen: 63% < 18 seconds;  
90% < 22 seconds  
Percent Excess Fuel: 63% < 17 seconds; 90% < 63 seconds

**Drift:** Less than 0.1% of the cell output per month

**Repeatability:**  $\pm 0.2\%$  of measured value

**Sample / Calibration Gas Flow Rate:** 2 SCFH (1 liter/min.)

**Maximum Sample Pressure:** 10 PSIG (68.95 kPa)

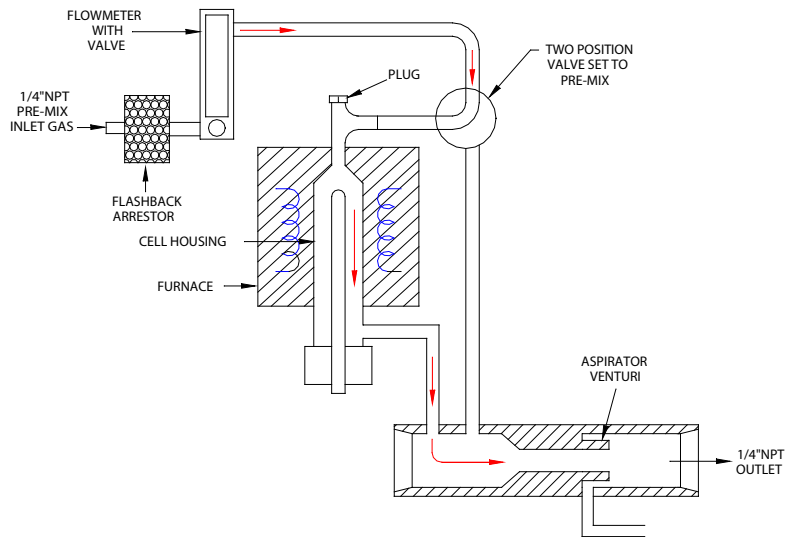
**Dimensions (H x W x D):**  
10.75" x 18" x 16"  
(27.3 cm x 45.7 cm x 40.7 cm)

**Weight:** 44 lb (19.9 kg)

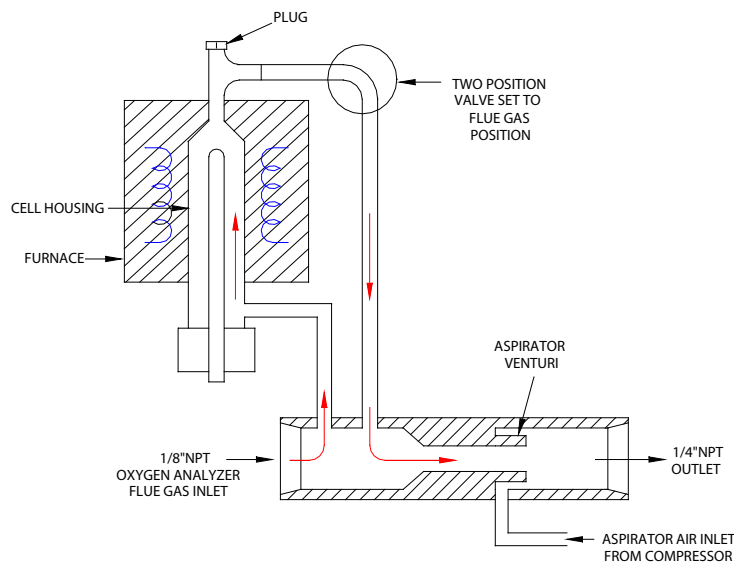
**System Compliance:**  
EMC Directive: 2004/108/EC  
Low Voltage Directive: UL 3101-1

# CMFA-P2000 ANALYZER

## PRE-MIX MODE FLOW DIAGRAM



## FLUE GAS MODE FLOW DIAGRAM



**NOTE:** The sensor is also suitable for longer term testing of several days or weeks (sensor temperature max. 100°F (38.7°C)). It can also be used for spot checking up to a maximum sensor temperature of 122°F (50°C). For applications where the analyzer will be used for continuous duty in ambient conditions above 100°F (38.7°C), the pump should be placed in a cooler location or an external air supply should be used.

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Specifications subject to change without notice.

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