

## PRODUCT DATA SHEET

# WDG-HPII Flue Gas Oxygen Analyzer

### Close-coupled convective design for high-particulate applications

The WDG-HPII offers a unique chimney-effect/convective sampling technology. It incorporates the advantages of insitu probe high-particulate sampling with the high-temperature and corrosion resistance of extractive analyzers. The HPII is ideal for combustibles and oxygen (O<sub>2</sub>) measurement on applications in cement and lime kilns, foundry and metals production furnaces, black liquor recovery boilers, coal, wood waste and heavy oil-fired boilers. Available with the Series 2000 Control Unit.

#### Excess fuel option

Extends the operating range of the analyzer from excess O<sub>2</sub> only to include sub-stoichiometric conditions (excess fuel). Allows two-point calibration in excess fuel range. Measure, display, and provide alarms and analog outputs as follows:

- Display options: Excess fuel, combustibles, combined excess O<sub>2</sub> /excess fuel (combustibles)
- Display range: 0-50% excess fuel  
Output range: 0-1% to 0-50% excess fuel  
Alarms: Standard alarms can be used for high or low excess fuel levels



### KEY BENEFITS

- High-particulate filter
- Completely field-serviceable
- Weatherproof, stainless steel sensor enclosure
- Four isolated current outputs
- Four alarms
- Catalytic combustibles detector for 0-2000 parts per million (ppm)
- Catalytic methane detector for 0-5%

### APPLICATIONS

- Combustion
- Pulp and paper
- Safety (carbon monoxide/combustibles)
- Suitable for flue gas temperature up to 1537°C (2800°F)

### KEY MARKETS

- Refineries
- Pulp and paper
- Cement kiln

## PERFORMANCE SPECIFICATIONS

## Sensor Specifications

<b>Principle of operation</b>	Zirconium oxide (ZrO <sub>2</sub> ) for net O <sub>2</sub> measurement
<b>Output range</b>	From 0-1% to 0-100%
<b>Accuracy</b>	±0.75% of measured value or ±0.05% O <sub>2</sub> , whichever is greater
<b>Response</b>	90% of a step change < 30 seconds with 24" probe
<b>Drift</b>	< 0.1% of cell output per month; < 0.005% O <sub>2</sub> per month with 2% O <sub>2</sub> applied
<b>Max. flue gas temperature</b>	704°C (1300°F)/316 SS; 1024°C (1875°F)/310 SS; 1537°C (2800°F)/Ceramic
<b>Probe lengths</b>	24", 36" & 48" (0.60 m, 0.91 m & 1.21 m)
<b>Max. sample dew point</b>	200°C (392°F) standard. High dewpoint sensors are available for sample dewpoints up to 371°C (700°F)
<b>Sample pressure</b>	±10 in. water gauge
<b>Environment</b>	Ambient temperature: -20 to 71°C (-5 to 160°F); -20 to 60°C (-5 to 140°F)
<b>Relative humidity</b>	10 to 90%, non-condensing
<b>Enclosure</b>	Lift-off NEMA 3R, weather-resistant, stainless steel. Optional hinged NEMA 4X (IP65), explosion-proof, purged, and floor mount versions available
<b>Power requirements</b>	115 VAC, ±10%, 47-63 Hz, 600 VA max.; (650 VA max. w/floor mount option) 230 VAC, ±10%, 47-63 Hz, 1850 VA max.; (1900 VA max. w/floor mount option)
<b>Calibration gas requirements</b>	Use calibration gases @ 10 psig, 1.5 scfh (0.70 kg/cm <sup>2</sup> , 0.7 L/min.) O <sub>2</sub> span gas: 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>

## Series 2000 Control Unit Specifications

<b>Display</b>	Four-line x 20-character vacuum fluorescent. Displays combinations of O <sub>2</sub> , time and date, cell temperature, user-programmable text, thermocouple mV or cell mV. Password protection, programmable pressure compensation and context sensitive help are also provided
<b>Analog output</b>	Two isolated linear current outputs. Select O <sub>2</sub> , cell temperature, thermocouple mV or cell mV. Each output can be 4-20 mA, 0-20 mA and is fully scalable. Hold or track during calibration and select degree of damping. Maximum load 1200 ohms
<b>Alarms</b>	Two independent O <sub>2</sub> alarms, each high or low selectable. One alarm can be assigned as O <sub>2</sub> , 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 two-way addressable
<b>Environment</b>	Ambient temperature: -10 to 50°C (14 to 122°F) Relative humidity: 10% to 80%, noncondensing
<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 65) wall/panel mount. All are UL Listed for NEC Class I, Division 2 areas. Purged and explosion-proof versions also available
<b>Calibration</b>	O <sub>2</sub> cell lifetime extender calibrate or verify calibration. Store last calibration and verification data. Selectable calibration gas run time and process recovery time. Timed automatic calibration with optional remote calibration unit
<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

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