AMETEK®
PROCESS INSTRUMENTS

MEASURES: O_2

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_2) 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_2 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_2 /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

Principle of operation	Zirconium oxide (ZrO_2) for net O_2 measurement
Output range	From 0-1% to 0-100%
Accuracy	±0.75% of measured value or ±0.05% O_2, whichever is greater
Response	90% of a step change < 30 seconds with 24" probe
Drift	< 0.1% of cell output per month; < 0.005% O_2 per month with 2% O_2 applied
Max. flue gas temperature	704°C (1300°F)/316 SS; 1024°C (1875°F)/310 SS; 1537°C (2800°F)/Ceramic
Probe lengths	24", 36" & 48" (0.60 m, 0.91 m & 1.21 m)
Max. sample dew point	200°C (392°F) standard. High dewpoint sensors are available for sample dewpoints up to 371°C (700°F)
Sample pressure	±10 in. water gauge
Environment	Ambient temperature: -20 to 71°C (-5 to 160°F); -20 to 60°C (-5 to 140°F)
Relative humidity	10 to 90%, non-condensing
Enclosure	Lift-off NEMA 3R, weather-resistant, stainless steel. Optional hinged NEMA 4X (IP65), explosion-proof, purged, and floor mount versions available
Power requirements	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)
Calibration gas requirements	Use calibration gases @ 10 psig, 1.5 scfh (0.70 kg/cm2, 0.7 L/min.) O_2 span gas: Air or from 1.0 to 100% O_2, balance nitrogen (N_2), O_2 zero gas: 2 or from 0.1 to 10% O_2, balance N_2

Series 2000 Control Unit Specifications

Display	Four-line x 20-character vacuum fluorescent. Displays combinations of O_2, 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
Analog output	Two isolated linear current outputs. Select O_2, 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
Alarms	Two independent O_2 alarms, each high or low selectable. One alarm can be assigned as O_2, calibrate or verify Set relays to energize or de-energize on alarm
Contact rating	0.5A, 30V, 10VA max. noninductive load, AC or DC
Diagnostics	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
Communications	RS-485 two-way addressable
Environment	Ambient temperature: -10 to 50°C (14 to 122°F) Relative humidity: 10% to 80%, noncondensing
Enclosure	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
Calibration	O_2 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
Power requirements	Nominal 115-230 VAC ±10%, 47-63 Hz, 75 VA max
System compliance	EMC Directive: 2004/108/EC Low Voltage Directive: 73/23/EEC

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