

PRODUCT DATA SHEET

WDG-VC Blowback Flue Gas Oxygen and Combustibles Analyzer

Close-coupled extractive design with integrated blowback automation for high particulate applications

The WDG-VC Blowback is a direct-mounted combustion analyzer providing continuous measurement of oxygen (O₂) and combustibles (CO+H₂) in flue gas applications with high levels of particulate. The close-coupled extractive design allows for fast response times, and the Blowback option efficiently cleans the sample probe and filter from an integrated enclosure. The WDG-VC Blowback is ideal for combustion optimization in power and steam boilers (coal, wood waste and heavy oil-fired) and supports particulate loadings of up to 30 mg/m³.

Reliability

The WDG-VC is designed with measurement redundancy and continual diagnostic functions that assess the health of the analyzer and validate the proper combustion measurements. The Blowback option prevents enclosure condensation via a self-regulated heater and provides a low-temperature contact alarm output. It also includes a heated accumulator to preheat the air and prevent condensation within the sample line during blow back.

Safety

Onboard diagnostics provide low probability of undetected analyzer faults. Communication through Modbus RTU or Fast Ethernet allows remote communication for diagnostics, calibration, verification, and error notification.

Serviceability

Maintenance can be performed on the analyzer without removing it from the process flange. The Ethernet connection allows remote performance monitoring for maintenance LANs or asset management systems (AMS).



KEY BENEFITS

- Durable design for high-particulate processes
- Integrated package reduces footprint and eliminates heated sample line
- Single air and power connections minimize installation cost and time
- Heated accumulator prevents condensation within sample line during blowback
- Configurable blowback automation for regular time intervals, low flow levels, or both
- Predictive diagnostics with proactive alarms, data management and digital communications
- Completely field-serviceable analyzer

APPLICATIONS

- Power boilers
- Biofuel-fired boilers
- General purpose, high particulate processes

KEY MARKETS

- Coal fired power
- Industrial processes

PERFORMANCE SPECIFICATIONS

Principle of operation	Zirconium oxide for net oxygen (O ₂) measurement and catalytic detector for combustibles
Output range	Oxygen: From 0-1% to 0-100% Combustibles: From 0-2,000 ppm to 0-10,000 ppm or from 0-1% to 0-5%
Accuracy	Oxygen: ±0.75% of measured value or ±0.05%, whichever is greater Combustibles: ±2% of full-scale output range
Response	Oxygen: 90% of a step change in <6 secs Combustibles: 90% of a step change in <20 secs
Drift	<0.1% of cell output per month; <0.005% O ₂ per month with 2% O ₂ applied
Aspirator air requirements	≈ 3 scfh (1.4 L/min) at 80 to 100 psig (5.63 to 7.04 kg/cm ²)
Max. flue gas temperature/ probe type/lengths	704°C (1300°F) / 316 SS / 910 to 2440 mm (36 to 96 in.) 1024°C (1875°F) / 310 SS / 910 to 2440 mm (36 to 96 in.)
Max. sample dewpoint	150°C (300°F) standard
Alarms	Five dry contact alarms. One service alarm, one data valid alarm. Remaining alarms can be set to oxygen and combustibles
Contact rating	0.5 A, 30V max., non-inductive load, DC or AC 10W max
Diagnostics	Watchdog timer and service alarm (trouble alarm). Cell resistance measurement. Individual I/O control. Cell/detector end-of-life warning
Communications	RS485, 2 wire Modbus RTU Interface (57.6 Kbaud)
Analog output	Three isolated linear current outputs for O ₂ , combustibles, cell mV. Each output can be 4-20 mA, 0-20 mA, 20-4 mA or 20-0 mA and is fully scalable. NAMUR configurable. Hold or track during calibration. Max. load 1200 Ω
Sample pressure	±10-inch water gauge
Flow sensor	Blocked flow sensor for measuring flow in the sample loop. Alarm set to 45% of nominal flow
Sensor enclosure	Hinged IP65 (NEMA 4X), weather-resistant, stainless steel. Floor-mount versions also available
Environment	Ambient temperature: -25 to 65°C (-13 to 149°F) Relative humidity: 10 to 90%, non-condensing
Power requirements	115 VAC, ±10%, 47 to 63 Hz, 950 VA max 230 VAC, ±10%, 47 to 63 Hz, 950 VA max
Calibration	Calibrate or verify calibration. Store last 10 calibration data. Selectable calibration gas run time and process recovery time Timed automatic calibration with optional remote calibration unit
Calibration gas requirements	Use calibration gases @ 10 psig, 3.0 SCFH. Use certified mixtures only <i>O₂ span gas:</i> Instrument air or from 1.0 to 100% O ₂ , balance N ₂ (typically, 2% O ₂ , balance N ₂) <i>O₂ and combustibles zero gas:</i> 2% O ₂ or from 0.1 to 10% O ₂ , balance N ₂ <i>Combustibles span gas (WDG-VC and WDG-VCM only):</i> 60 to 80% of the selected combustibles recorder output range in equal mixtures of CO + H ₂ , 3 to 4% O ₂ , balance N ₂ <i>CH₄ span gas (WDG-VM, WDG-VCM only):</i> 2% CH ₄ , 8 to 10% O ₂ , balance N ₂ For example, using a 2000 ppm combustibles range, span with a mix of 800 ppm CO, 800 ppm H ₂ , 3 to 4% O ₂ , balance N ₂
Remote calibration unit (RCU)	Requires a separate air line for Blowback
Probe	Max probe length of 6 to 8 ft
Filter	Filter options are dependent upon probe length and particulate loading of application
System compliance	EMC compliance: 2014/30/EU Safety compliance (LVD): 2014/35/EU Designed for General Purpose

NOTES

1. All static performance characteristics are with operating variables constant.
2. System accuracy referenced to 0.1 to 10% calibrated range.
3. Response is to calibration gas.
4. Specifications for combustibles apply only to those versions equipped for measuring these gases.

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