

PRODUCT DATA SHEET

WDG-V Flue Gas Oxygen Analyzer

Safe operation of the burner management system

The WDG-V provides an additional layer of safety when measuring excess oxygen (O₂) in the burner management system. It has a close-coupled extractive design for fast response in a wide range of flue gas applications up to 1648°C (3000°F).

Reliability

The WDG-V is designed with measurement redundancy and continual diagnostic functions that assess the health of the analyzer and validate the proper combustion measurements.

Safety

The WDG-V is SIL 2 compliant for excess O₂ and is capable for use in SIS combustion safety systems. 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 for the safety system.

Maintenance

This completely field-serviceable analyzer also has Ethernet connectivity which enables remote performance monitoring for maintenance LANs or asset management systems (AMS).



KEY BENEFITS

- SIL-2 capable for SIS implementation with predictive diagnostics and proactive alarms
- Ultra-accurate measurement of O₂ with industry-proven zirconium oxide sensor
- Integral flow sensor to verify sample system integrity
- Versatile flange mounting options
- Digital communications via Modbus and Ethernet TCP/IP
- Completely field-serviceable

APPLICATIONS

- Process heaters
- Steam boilers
- Thermal oxidizers

KEY MARKETS

- Refining and petrochemical
- Power and steam generation
- Furnace and boilers

PERFORMANCE SPECIFICATIONS

Sensor specifications

Principle of operation	Zirconium oxide for excess oxygen (O ₂) measurement
Output range	Oxygen: From 0-1% to 0-100%
Accuracy	Oxygen: ±0.75% of measured value or ±0.05%, whichever is greater
Response	Oxygen: 90% of a step change < 11 seconds with flame arrestors
Aspirator air requirements	3 SCFH typical at 3 to 6 psig, instrument air or nitrogen (N ₂)
Analog output	Three isolated linear current outputs for oxygen. 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 ohms
Alarms	Five independent, NO alarms. Set relays to energize or de-energize on alarm
Contact rating	0.5A, 30V max. non-inductive load, AC or DC, 10W max.
Digital communication	Two-wire Modbus RTU, 57.6 Kbaud
Configuration	Modbus RTU, AMETEK configuration software, or AMEvision HMI. HART® option available
Diagnostics	Low sample flow, cell and detector age tracking, cell resistance, calibration required, analog current verification
Calibration	Calibrate. Stored calibration data. Selectable calibration gas run time and process recovery time Timed automatic calibration with optional Remote Calibration Unit
Sample pressure	±10 in. water gauge
Max sample dew point	200°C (392°F)
Max flue gas temp / probe type / length	704°C (1300°F) / 316 SS / 910 to 2740 mm (36 to 108 in.); 1024°C (1875°F) / 310 SS / 910 to 2740 mm (36 to 108 in.); 1648°C (3000°F) / Hexoloy® / 600 to 1820 mm (24 to 72 in.)
Environment	Ambient temperature: -25 to 65°C (-13 to 149°F); -20 to 60°C (-4 to 140°F) for hazardous areas Relative humidity: 5 to 95%, non-condensing
Enclosure	Hinged IP65 (NEMA 4X), weather-resistant, stainless steel. Purged, remote mount, and floor mount versions available. UL Class I, Div II, Gp B, C, D or ATEX II 3 G Ex d pz IIB+H2 T3 Gc and II 3 G Ex pz IIC T3 Gc and IECEx Ex pz IIB+H2 T3 Gc and Ex pz IIC T3 Gc, versions available with purge
Power requirement	115 VAC, ±10%, 47 to 63 Hz, 740 VA max 230 VAC, ±10%, 47 to 63 Hz, 740 VA max
Calibration gas requirement	Use calibration gases @ 10 psig, 1.5 SCFH (0.7 L/min.), O ₂ span gas: air or from 1.0% to 100% O ₂ , balance N ₂ ; O ₂ zero gases: from 0.1 to 10% O ₂ , balance N ₂

AMEvision HMI specifications

Display	4.2" color 1/4W VGA with graphical user interface. Password-protected
Keypad	18-key membrane
Input	Two-wire Modbus RTU (19200 Baud rate, even parity, 1 stop bit) from analyzer. Host capable of up to eight analyzers
Digital outputs	Two or four-wire Modbus RTU, TCP/IP Ethernet with embedded web server (RJ45 connection), USB port for data collection or software update
Analog outputs	Optional, with pass through terminal strip
Environment	Ambient temperatures from -20 to 55°C (-4 to 131°F)
Power requirements	Nominal 115 to 230 VAC ±10%, 47 to 63 Hz, 75 VA max
Enclosure	IP65 (NEMA 4X)
System compliance	EMC Directive 2014/30/EU; Low Voltage Directive 2014/35/EU. Two hazardous area configurations: NEC/CEC Class 1, Div 2 and ATEX Zone 2

SALES, SERVICE & MANUFACTURING

USA - Pennsylvania

150 Freeport Road
Pittsburgh PA 15238
Tel: +1 412 828 9040
Fax: +1 412 826 0399

USA - Delaware

455 Corporate Blvd.
Newark DE 19702
Tel: +1 302 456 4400
Fax: +1 302 456 4444

Canada - Alberta

2876 Sunridge Way NE
Calgary AB T1Y 7H9
Tel: +1 403 235 8400
Fax: +1 403 248 3550

WORLDWIDE SALES AND SERVICE LOCATIONS

USA

Tel: +1 713 466 4900
Fax: +1 713 849 1924

Brazil

Tel: +55 19 2107 4100

Germany

Tel: +49 2159 9136 0
Fax: +49 2159 9136 39

India

Tel: +91 80 6782 3200
Fax: +91 80 6780 3232

Singapore

Tel: +65 6484 2388
Fax: +65 6481 6588

China

Beijing
Tel: +86 10 8526 2111
Fax: +86 10 8526 2141
Chengdu
Tel: +86 28 8675 8111
Fax: +86 28 8675 8141
Shanghai
Tel: +86 21 5868 5111
Fax: +86 21 5866 0969



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