



Gas Analysis

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MultiGas™ 2030 CEM

GAS ANALYZER FOR CONTINUOUS EMISSIONS MONITORING

The MultiGas™ 2030 CEM is an FTIR-based gas analyzer designed for the continuous monitoring of emissions in effluent streams containing up to 40% of water. With permanently stored calibration spectra, the need for costly reference gas mixtures is reduced. Furthermore, the robust, MultiGas 2030 is easy to operate and maintain and has a low cost of ownership (COO).

The MultiGas 2030 analyzer is comprised of a 2102 Process FTIR Spectrometer, an MKS-patented, high-optical-throughput sampling cell, applications-specific analysis software, and an instrument-independent, quantitative spectral library. The MultiGas also incorporates a novel long wavelength thermoelectrically (TE) cooled detector. This analyzer configuration allows for a more accurate, highly sensitive measurement of most gases and vapors in high moisture streams (up to 40%) by producing high resolution spectra (0.5cm^{-1}) which enable the detection and measurement of components such as SO_2 , NO_2 and NO , without removal of the moisture.

Features & Benefits

- A single FTIR analyzer measures most target emissions, including NO_x (speciated NO and NO_2), SO_2 , N_2O , CO , HCl , HF , CH_4 , H_2O , CO_2 and NH_3 , with no additional analyzers required
- Continuous measurement for rapid detection of changes in effluent composition
- Direct analysis in effluent streams that contain up to 40% water, with no chillers or driers required
- Complete, integration ready system reduces complexity and ensures fast install time
- Permanent calibration spectra reduces the need for costly calibration gas cylinders
- Integrated gas cell heater maintains temperature of the gas sample, eliminating sample condensation and maximizing accuracy
- Patented, linearized detector response ensures all instruments maintain the same calibration
- Frequency and resolution diagnostics ensure calibration is maintained for improved accuracy
- Integrated, automatic temperature and pressure compensation ensures accurate analysis
- User-friendly, intuitive software enables simple operation with relatively little training
- Low cost of ownership, easy to install and maintain



Applications

- Cement Kilns
- Waste Incinerators
- Power Plants
- Large Combustion Plants
- Turbine Engines

Performance

The composition ranges covered by the MultiGas 2030 are given in Table 1 below.

TABLE 1		
Component	ppm	mg/m ³
CH ₄	0 - 21	0 - 15
CH ₄	0 - 70	0 - 50
CO	0 - 60	0 - 75
CO	0 - 120	0 - 150
CO	0 - 1200	0 - 1500
CO ₂	25%	25%
H ₂ O	40%	40%
HCl	0 - 9	0 - 15
HCl	0 - 55	0 - 90
HCl	0 - 123	0 - 200
HF	0 - 11	0 - 10
N ₂ O	0 - 26	0 - 50
N ₂ O	0 - 51	0 - 100
N ₂ O	0 - 255	0 - 500
NH ₃	0 - 13	0 - 10
NH ₃	0 - 99	0 - 75
NO	0 - 149	0 - 200
NO	0 - 299	0 - 400
NO	0 - 1119	0 - 1500
NO ₂	0 - 24	0 - 50
NO ₂	0 - 49	0 - 100
NO ₂	0 - 488	0 - 1000
SO ₂	0 - 26	0 - 75
SO ₂	0 - 105	0 - 300
SO ₂	0 - 699	0 - 2000

Certification

- TUV Certification for CEM monitoring in progress

Estimated detection limits are calculated as three times the standard deviation in 25% water, and are shown in Table 2.

TABLE 2	
Component	Detection Limit
CH ₄	0.3 ppm
CO	0.5 ppm
CO ₂	0.025%
H ₂ O	0.25%
HCl	0.20 ppm
HF	0.25 ppm
N ₂ O	0.1 ppm
NH ₃	0.35 ppm
NO	0.5 ppm
NO ₂	0.4 ppm
SO ₂	0.6 ppm



Specifications

Analyzer

Measurement Technique	FTIR Spectrometry
Gases and Ranges	See Table 1
Spectral Resolution	0.5 cm ⁻¹
Scan Time	60 seconds
Infrared Source	Silicon Carbide @ 1200°C
Reference	Laser Helium Neon (15798.2cm ⁻¹)
Detector	Thermoelectrically (TE) cooled MCT (HgCdTe)
Purge Pressure	20 psig (1.5 bar) max.
Spectrometer Purge Flow	0.2 L/min of dry nitrogen or CO ₂ free clean, dry air with dewpoint below -70°C
Optics Purge Flow	0.2 L/min of dry nitrogen or CO ₂ free clean, dry air with dewpoint below -70°C
Pressure Transducer	MKS Baratron® capacitance manometer
Purge Connection	¼" Swagelok® quick connect
Dimensions	17.5"W x 12.5"H x 25.5"D
Installation	19" Rack mount chassis
Power	120 or 240 VAC, 50/60 Hz, 3 amps
Weight	110 lbs. (50 kg)

Sampling Parameters

Sample Temperature	191°C
Sample Flow	1 L/min
Sample Pressure	1 atm ±0.05

Gas Cell

Construction	Nickel coated Al
Fittings	¼" threaded Swagelok®
Tubing	Heated ¼" stainless steel
Mirrors	Nickel plated aluminum substrate, with rugged gold coating
Windows	BaF ₂
O-rings	Viton®

Computer Requirements and Communication Options

Computer Requirements (Desktop or Notebook)	Intel Pentium® PC, Microsoft® Windows® XP or Windows® 7 operating systems, display (1024 x 768)
Recommended Minimum	Intel Pentium III, 850 MHz, Microsoft Windows XP, 256 MB
Computer/FTIR Communications	RJ-45 Crossover Ethernet
Communication Protocol	TOOLweb® (HTML based), OPC, Modbus TCP/IP



Ordering Information

Please contact your local MKS office for price and availability information.

Contact your national or area sales and service office

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