Model 2030 CEM

MultiGas™ FTIR Gas Analyzer

The MultiGas™ FTIR Analyzer, Model 2030 CEM is an FTIR-based gas analyzer designed for integration with complete continuous emissions monitoring systems (CEMS) to measure emissions from stationary sources such as waste incinerators, power plants and cement kilns. This analyzer is the core technology used in the TÜV and MCERTS certified MGS300 system.

The 2030 CEM instrument is capable of directly analyzing hot, wet effluent gas streams without the need for sample pre-treatment. Owing to its high resolution FTIR technology (0.5 cm^{-1}), the MultiGas™ Analyzer, Model 2030 CEM is capable of monitoring multiple gas components over a wide range of compositions with minimal cross-interference effects from either water (up to 40%) or other potentially interfering species. Furthermore, by using permanently stored internal reference calibration spectra, the need for costly calibration gas mixtures is all but eliminated.

Product Features

- Single FTIR analyzer measures main target emission species including: NO, NO_2, N_2O, SO_2, CO, CO_2, CH_4, HCl, HF, NH_3 and H_2O – no additional analyzers required for these components
- Permanent reference calibration spectra all but eliminates the need for costly calibration gas cylinders
- Patented, linearized detector response ensures all instruments maintain the same calibration and can use the same reference calibration spectra
- Heated gas cell with automatic temperature and pressure compensation maximizes accuracy performance and eliminates sample component condensation
- Continuous monitoring capability with rapid response to changes in the sample composition complies with t90 performance requirements
- Software with several communication protocol options for interfacing the MultiGas Analyzer with a CEMS control platform provides for flexible system integration

Key Benefits

- Minimal cross-interference when monitoring multiple gas components
- Frequency and resolution diagnostics ensure calibration is maintained resulting in maximum accuracy instrument response
- Easy to integrate, install and maintain, lowering total cost of ownership

Description

The 2030 analyzer is made up of a Process FTIR spectrometer, a patented, high-optical-throughput gas cell and a long wavelength, thermoelectrically (TE) cooled detector. Also included is the MG2000 software platform which offers several communication protocol options for interfacing to CEMS control systems.

The 2030 instrument is housed in a rugged 19-inch rack mount chassis for convenient integration with most CEMS enclosures. The analyzer is easy to maintain and has a low cost of ownership (COO).

Applications

The Model 2030 CEM is designed for integration with complete continuous emissions monitoring systems to measure gaseous emissions from stationary sources such as:

- Waste incinerators
- Large combustion plants
- Turbine engines
- Power plants
- Cement kilns

Certification

The MultiGas Analyzer, Model 2030 CEM, is the core technology used in the TÜV and MCERTS certified MGS300 system. MGS300 system certification was achieved in compliance with the DIN EN 15267-3 standard, which relates to automated measuring systems for the monitoring of emissions from stationary sources.

Performance

The TÜV and MCERTS certification and supplementary ranges achieved for the different gas components are shown in Table 1. Table 2 shows the same certification ranges, but this time in ppm, along with additional ranges and estimated detection limits calculated as three times the standard deviation in 25% water.

Gas Comp.	Cert. Range	Supp. Range 1	Supp. Range 2
CH_4	0 - 15	0 - 50	0 - 500
CO	0 - 75	0 - 300	0 - 1500
HCl	0 - 15	0 - 90	0 - 200
HF	0 - 3	0 - 10	—
N_2O	0 - 50	0 - 100	0 - 500
NH_3	0 - 10	0 - 75	—
NO	0 - 200	0 - 400	0 - 1500
NO_2	0 - 50	0 - 100	0 - 1000
SO_2	0 - 75	0 - 300	0 - 2000

Table 1 — Gas Components and Ranges in mg/m³ Addressed by the TÜV & MCERTS certified MGS300 system. For availability of additional gases and ranges, please contact MKS for more information.

Gas Comp.	Cert. Range	Supp. Range 1	Supp. Range 2	Add'l Ranges	Detection Limit
CH_4	0 - 21	0 - 70	0 - 700	Upon request	0.3
CO	0 - 60	0 - 240	0 - 1200	0-4500	0.5
HCl	0 - 9	0 - 55	0 - 123	Upon request	0.20
HF	0 - 3.4	0 - 11	—	0-20	0.25
N_2O	0 - 26	0 - 51	0 - 255	Upon request	0.1
NH_3	0 - 13	0 - 99	—	0-300	0.35
NO	0 - 149	0 - 299	0 - 1119	0-3000	0.5
NO_2	0 - 24	0 - 49	0 - 488	0-2000	0.4
SO_2	0 - 26	0 - 105	0 - 699	0-2500, 0-5000	0.6

Table 2 — Gas Components and Ranges in ppm

Specifications

Analyzer	
Measurement Technique	FTIR Spectrometry
Gases and Ranges	Refer to the Gas Components and Ranges Table
Spectral Resolution	0.5 cm^{-1}
Scan Time	60 seconds
Detector	Thermoelectrically (TE) cooled MCT (Hg Cd Te)
Purge Pressure	20 psig (1.5 bar) max.
Spectrometer Purge Flow	0.2 L/min of dry N_2 or CO_2 free clean, dry air with dewpoint below -70°C
Optics Purge Flow	0.2 L/min of dry N_2 or CO_2 free clean, dry air with dewpoint below -70°C
Purge Connection	¼'' Swagelok® quick connect
Pressure Transducer	MKS Baratron® capacitance manometer
Dimensions	444.5 W x 317.5 H x 647.7 D mm (17.5''W x 12.5''H x 25.5''D)
Enclosure	19" Rack mount chassis
Power	230VAC/50Hz or 115VAC/60Hz, 3 amps
Weight	50 kg (110 lbs.)
Compliance	CE
Laser Safety	Class 1 laser product contains a Class 3R laser with continuous wave output at 633 nm
Sampling Parameters	
Sample Temperature	191°C
Sample Flow	1 to 2 L/min
Sample Pressure	1 atm ±0.05

Specifications

Gas Cell	
Construction	Ni coated Al
Mirrors	Ni plated Al substrate with corrosion resistant MgF_2 coated gold surface
Path Length	5.11m
Fittings	¼'' Swagelok® male connector
Tubing	Heated ¼'' stainless steel
Windows	BaF_2
O-rings	Kalrez®
Computer Requirements and Communication Options	
Computer Requirements	Intel® Core i3, 1.60GHz, 2GB RAM, 1024x768, 32 bit color, 4GB of free hard disk space
Operating System	Windows® 10 (either 32 bit or 64 bit versions)
Computer/FTIR Communications	RJ-45 Crossover Ethernet
Communication Protocol Options	TOOLweb® (HTML based), OPC, Modbus TCP/IP

Ordering Information

Ordering Code	Code
MultiGas Analyzer, 2030 CEM	2030GACA9A5BK1XX

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