

Model 2030 CEM-Cert

MultiGas™ FTIR Gas Analyzer for Continuous Emissions Monitoring



The MultiGas™ 2030 CEM-Cert 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 produced by MKS Inc.

The MultiGas 2030 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 2030 CEM-Cert 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

- Integral component of the TÜV & MCERTS certified MGS300
 - Proven capability to meet the DIN EN 15267-3 standard
- Single FTIR analyzer measures main target emission species including: NO, NO₂, N₂O, SO₂, CO, CO₂, CH₄, HCl, HF, NH₃ and H₂O
 - No additional analyzers required for these components
- Direct analysis of effluent streams containing up to 40% water
 - No sample preparation required
- 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 2030 with a CEMS control platform
 - Flexible system integration



Key Benefits

- 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
- 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 (Cont'd)

The MultiGas 2030 analyzer is made up of a 2102 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 MultiGas 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 MultiGas 2030 CEM-Cert is designed for integration with complete continuous emissions monitoring systems to measure gaseous emissions from stationary sources such as:

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

Certification

The MultiGas 2030 CEM-Cert is the core technology used in the TÜV and MCERTS certified MGS300 system produced by MKS Inc. 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 the table below. Estimated detection limits are also provided and calculated as three times the standard deviation in 25% water.

Gas Comp.	Cert. Range	Supp. Range 1	Supp. Range 2	Detection Limit
NH ₃	0 - 10 mg/m ³	0 - 75 mg/m ³	—	0.35 ppm
CO	0 - 75 mg/m ³	0 - 300 mg/m ³	0 - 1500 mg/m ³	0.50 ppm
SO ₂	0 - 75 mg/m ³	0 - 300 mg/m ³	0 - 2000 mg/m ³	0.60 ppm
NO	0 - 200 mg/m ³	0 - 400 mg/m ³	0 - 1500 mg/m ³	0.50 ppm
NO ₂	0 - 50 mg/m ³	0 - 100 mg/m ³	0 - 1000 mg/m ³	0.40 ppm
HCl	0 - 15 mg/m ³	0 - 90 mg/m ³	0 - 200 mg/m ³	0.20 ppm
HF	0 - 3 mg/m ³	0 - 10 mg/m ³	—	0.25 ppm
CH ₄	0 - 15 mg/m ³	0 - 50 mg/m ³	0 - 500 mg/m ³	0.30 ppm
CO ₂	0-25%	—	—	0.025%
H ₂ O	0-40%	—	—	0.25%
N ₂ O	0 - 50 mg/m ³	0-100 mg/m ³	0 - 500 mg/m ³	0.10 ppm

Gas Components and Ranges in ppm — Addressed by the TÜV & MCERTS certified MGS300 system

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
Infrared Source	Silicon Carbide @ 1200°C
Reference	Helium Neon Laser (15798.2 cm ⁻¹)
Detector	Thermoelectrically (TE) cooled MCT (Hg Cd Te)
Certified Temperature Range	+5°C to +40°C
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	230 VAC/50 Hz or 115 VAC/60 Hz, 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	1.6 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	5.11 m
Fittings	¼" threaded Swagelok®
Tubing	Heated ¼" stainless steel
Windows	BaF ₂
O-rings	Viton®

Computer Requirements and Communication Options

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

Ordering Information

Ordering Code	Code
Model	
MultiGas Analyzer, 2030 CEM-Cert	2030D-29805
Spares and Accessories	
Gas Cell Window Kit (BaF ₂ /Viton®)	133525-G3
Filter Assembly	134838-G1
Replacement HeNe Laser	001-8446
Replacement IR Source Fan	001-8498