



Multi-Gas Infrared GFC Analyzer

MIR 9000

(with CLD option)



Offers excellent performance for multiple gas measurements, including HCl, NO, NO₂ (NO_x), SO₂, CO, CO₂, HC, CH₄ (TOC), HF, and O₂



MIR 9000 CLD rack 19" version



MIR 9000 CLD with the multiplexing system MVS

Compliance with LCPD and WID applications

TÜV certified to EN15267-3

MCERTS certified to EN15267-3

QAL1 as defined by EN14181

QAL3 compliance to EN14181

U.S. EPA 40 CFR 60 and 75 Compliant



QAL 1 QAL3
EN 14181 EN 14181



The MIR 9000 CLD uses the chemiluminescence detection principle which is the most selective method for the measurement of NO_x in the low to ultra-low concentration. It allows the MIR 9000 CLD to offer the lowest QAL1 certified range of the CEMS market.

MIR 9000 CLD offers high performance for NO_x measurements, including O₂ by paramagnetic sensor.

Unique : 20 mg/Nm³ QAL1 certified range.

SPECIFIC FEATURES:

- Available in 2 versions:
 - NO_x (CLD) and O₂ (Paramagnetic) in 19" Rack or Tight box
 - CO, CO₂, SO₂, HCl, HF, TOC, N₂O (IR) + NO_x (CLD) + O₂ (Paramagn) in Tight box
- Over 2500 installations worldwide, covering many applications and industries
- Designed to measure dry and corrosive sample
- Measures from 1 to 10 gases simultaneously
- Built-in data logger for 7 additional parameters (flow, pressure, temperature or any other analogue input)
- Real time graphic display
- Interactive menu-driven software allowing ease of operation
- Unheated sample line thanks to the permeation drying technology
- Concentrations measured and expressed on a dry sample
- On-board oxygen measure for environmental reporting
- Automatic cross interference correction
- Highly accurate, excellent stability with automatic optical stability check
- Intrinsic security with on-board residual H₂O measurement

APPLICATIONS:

- Cogeneration, Gas Turbines
- Industrial Boilers
- Furnaces
- Power & Combustion



Multi-Gas Infrared GFC Analyzer **MIR 9000 CLD**

TECHNICAL SPECIFICATIONS:

	Lowest / Highest available ranges
NO (CLD)	0-20 / 2 000
NO _x (CLD)	0-20 / 2 000
NO ₂ (CLD)	0-20 / 200
NO (IR)	0-80 / 500
NO _x (IR)	0-200 / 5 000
NO ₂ (IR)	0-200 / 5 000
CO	0-75 / 10 000
CO ₂	0-10 / 25 %
SO ₂	0-75 / 5 000
N ₂ O	0-20 / 1 000
HCl	0-15 / 5 000
HF	0-20 / 300
CH ₄	0-10 / 1 000
TOC	0-50 / 5 000
O ₂	0-10 / 25 %

- Repeatability: <2% of Full Scale (F.S.)
- Zero drift: <2% F.S. / 30 days
- Span drift: < 1% F.S. / 7 days
- Linearity: < 1% F.S.
- Power supply: 80 - 230V, 50-60 Hz
- Consumption: 300 VA
- Serial link: RS232, RS 422
- Operating temperature: +5 °C to +40 °C
- Version with CLD (tight box):
 - Dim.: 200x600x600 mm (DxWxH)
 - Weight: 32 Kg
- Version without CLD (tight box):
 - Dim.: 200x400x600 mm (DxWxH)
 - Weight: 24 Kg
- Version without IR (rack 19"):
 - Dim.: 490x483x177 mm (DxWxH)
 - Weight: 14 Kg
- Communication: TCP IP, USB

MAIN OPTIONS:

- Pressure, temperature & gas velocity measurements (DTP)
- SEC[®] sampling system (permeation based)
- Analog outputs : 0/10V - 0/4-20 mA programmable
- Rack cabinet, cubicle or shelter integration
- Dryer MDS
- O₂ measurement by built-in paramagnetic cell, full scale: 0-25%
- TIG calibration / back flush module
- Multiplexing system MVS
- CEMS software WEX[™]
- **Special option for the rack version :**
CO₂ measurement module (range 0 - 2000 mg/m³)

Model MIR 9000 is a multi-gas Non Dispersive Infra-Red analyzer, using the Gas Filter Correlation technique (GFC). Version CLD of Model MIR 9000 includes a built-in chemiluminescence module for the measurement of nitrogen oxides (NO_x).

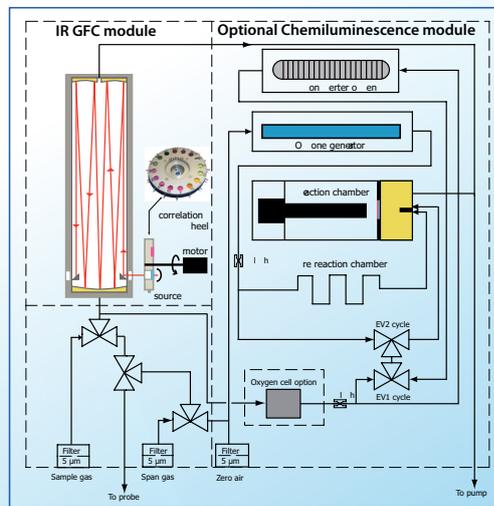
PRINCIPLE OF OPERATION:

IR GFC principle: an optical ray, emitted by the IR source, passes through the measurement chamber and is focused on an IR detector. Each gas present on the path of the optical ray, absorbs the latter at defined wavelengths that are specific to it. An interference filter that defines a specific wavelength area is positioned on the optical path above the measurement chamber.

A cell filled with highly concentrated gas that needs to be measured and a cell filled with nitrogen, which does not absorb any wavelength, are positioned on the optical path alternately. The highly concentrated gas, which is in the cell called the reference cell, absorbs all wavelengths that are specific to it. Some milliseconds later, the cell filled with nitrogen is positioned on the optical path. Absorption of the infrared energy is due to the gas in the measurement chamber, according to the Beer Lambert law.

Therefore, after absorption by the gas, the ratio between the reference energy and the "I" energy is known at any moment. Hence, the gas concentration can be deduced, using the following formula: $C=f(I/IR)$.

Chemiluminescence principle: applied to the monitoring of nitrogen oxides, the principle consists in detecting the photons emitted during the reaction between nitrogen oxide (NO) and ozone (O₃): $NO + O_3 \rightarrow NO_2 + O_2$. The energy (hv) generated is measured through a high-sensitivity photomultiplier, that delivers an electric signal which is proportional to the NO concentration in the sample.



Complete system would normally comprise of: • Sample extraction and conditioning probe (with integrated temperature, pressure and flow measurement) • Cold sample lines • Calibration module • Instrument air drying module • Acquisition and data management system (DAHS) may complement the system

Distribué par :

Environnement S.A. has a policy of continuous improvement of its products and we reserve the right to upgrade or change specifications without prior notice.

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