

Multi-gas Infra Red Fourier Transform (FTIR) Analyzer

PROCESS & EMISSIONS MONITORING SYSTEMS

One single analyzer for the measurement of:
 HCl, NO, NO₂ (NOx), N₂O, SO₂,
 CO, CO₂, HC, CH₄ (TOC), HF,
 N₂O, O₂, H₂O, NH₃...



SPECIFIC FEATURES:

- Based on a leading edge technology for simultaneous, multi-gas measurement of: HCl, NO, NO₂ (NOx), SO₂, CO, CO₂, HC, CH₄ (TOC), NH₃, HF, H₂O...
- Especially designed to measure wet and corrosive sample gases, including trace concentrations
- Perfectly suited for hot/wet measurement of soluble gases such as HCl, HF, NH₃
- Excellent calibration stability
- Automatic correction of spectral interferences
- Unmatched accuracy and reliability
- Rugged & insensitive to vibrations
- Low maintenance requirement
- 180°C heated sample line / measurement cell (in association with HOFI sampling system according to the application), ensuring no sample loss or alteration of sample matrix
- Fanless touchscreen panel PC with Windows based eSAM FT software for on-board data acquisition and processing
- TOC measurement by FID possible, using the complementary Graphite 52M analyzer

MAIN APPLICATIONS:

- > Municipal, Industrial, Hospital waste incinerators
- > Biomass, Cement Kilns, Pulp & Paper, Glass Plants
- > DeNOx (SNCR, SCR) applications
- > Power & Combustion

COMPLIANCE WITH:

EU Regulation IED (WID / LCPD / MCPD directives)
 and US EPA (40 CFR 60 & 75)



MIR FT rack cabinet



Multi-gas Fourier Transform Infra Red Analyzer **MIR FT**

QAL 1 certified ranges

CO	0-75 / 300 / 1 500
CO₂	0-25 %
SO₂	0-75 / 300 / 1 500
N₂O	0-100 / 500
HCl	0-15 / 90
HF	0-3 / 10
CH₄	0-15 / 50 / 150
TOC^(*)	0-15 / 500
NH₃	0-15 / 50
NO	0-150 / 600 / 2 000
NO₂	0-200 / 500
H₂O	0-30 / 40%
O₂	0-25 %
CH₂O	0-20 / 30 / 90

(*) by FID measurement

Expressed in mg/m³ or % when indicated.
Other ranges available upon request

PRINCIPLE OF OPERATION:

Fourier Transform Infra Red (FTIR) spectroscopy is based on the absorption of an infra-red beam by the sample gas molecules, which induces vibrational state changes for each molecule at specific frequencies.

An IR source emits a polychromatic radiation in the medium infrared, which is sent to a Michelson interferometer. This interferometer consists of a beam splitter and two mirrors placed in nearly orthogonal planes (one being static, the other oscillating).

The beam splitter is used to separate the incident beam into two identical rays, to send them be reflected on each mirror and to recombine the rays in order to obtain an interference image, which depends on the difference of the optical path induced by the mirror oscillation.

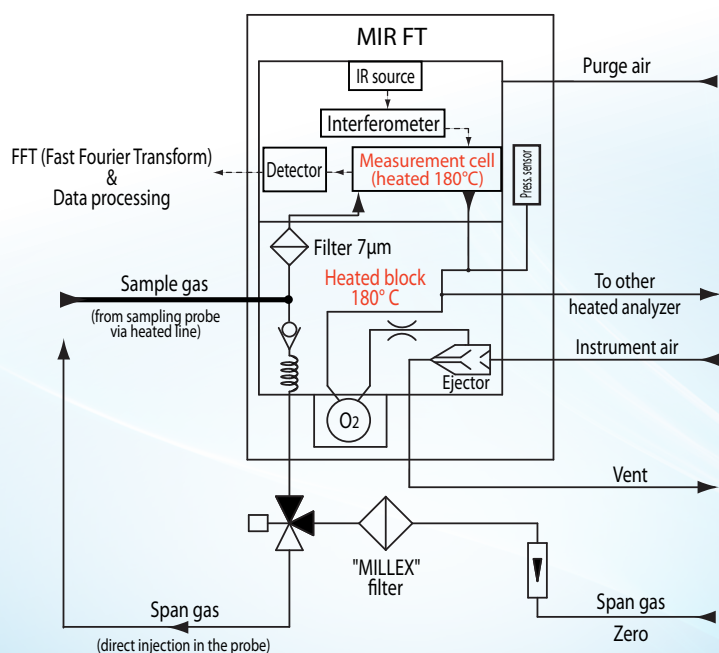
The obtained interference image or «interferogram» corresponds to an energy variation as a function of each wavelength time, with maximum when waves are in phase, and minimum when waves are in phase opposition.

Therefore, the interferogram corresponds to an energy variation as a function of time, and the optical spectrum corresponding to an energy variation as a function of frequency is obtained by Fourier Transform signal processing.

TECHNICAL SPECIFICATIONS

Repeatability	± 2% of Full Scale (F.S.)
Zero drift	± 1% of F.S. / 30 days
Span drift	± 1% of F.S. / 30 days
Lower detectable limit	2% of F.S.
Response time	< 120s depending on the gaz
Interferometer resolution	8 cm ⁻¹
Measurement cell	multi-reflexion, 5 m
Power supply	220 V, ± 15%, 50-60 Hz, 200 VA
Communication port	Ethernet
Dimensions	rack 19", 616 x 483 x 220 mm (DxWxH)
Weight	20 Kg approximative
Operating temperature	+ 10°C to + 35°C

FLUID DIAGRAM



MAIN OPTIONS:

- Heated gas sampling system HOFI
- O₂ measurement (heated zirconia cell)
- Outputs: 0/10V - 0/4-20mA programmable
- Solenoid valves for dynamic calibration

Complete system would normally comprise of:

- Sample extraction and conditioning probe (with integrated temperature, pressure & flow measurement)
- Heated sample line
- Automatic calibration unit
- Instrument Air drying system
- Data acquisition and processing software (eSAM FT)



eSAM FT
software for on-board
data acquisition and
processing

