DX4040 FTIR Gas Analyzer

The Portable FTIR Gas Analyzer

The Gasmet DX4040 analyzer combines Fourier transform infrared (FTIR) spectrometer, rhodium-gold coated sample cell, built-in sample gas pump and signal processing electronics in a compact unit.

In battery use, operating time is 2.5 hours with one charge. AC power supply is also included. There is a filter for particulates inside the probe and no sample preparation is needed. The lightweight analyzer can be used with or without the durable Teflon coated backpack.

The Gasmet DX4040 is designed for on-site measurements of different compounds (both organic & inorganic) at low concentrations in ambient air. Typical usage areas include industrial hygiene and emergency response situations. The communication between the analyzer module and the PDA is wireless (with Bluetooth protocol).

In the standard configuration, concentrations of 25 gases of interest can be simultaneously monitored.

Furthermore, with the optional Calcmet 4040 Professional software the analyzer can be connected to a laptop PC for extended analysis capability (e.g. identification of unknown compounds with library spectra).

There are no consumable parts that would need replacing on regular basis. In addition, due to FTIR technology, the calibrations remain very stable. Hence no span calibrations are needed. Also, cross-interferences (i.e. interference from other gases) are automatically compensated in the analysis algorithm during the calculation of the results.

To sum up, the Gasmet DX4040 provides a very cost-effective, easy-to-use solution for multi-component gas analysis in ambient air.

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General parameters

Measuring principle:	Fourier transform infrared, FTIR
Performance:	Simultaneous analysis of up to 25 gas compounds (PDA), 50 gas compounds with optional Calcmet software
Response time, T_{90}:	Typically < 120 s, depending on the gas flow and measurement time
Operating temperature:	Ambient temperature Short term 0 – 40 °C Long term 5 – 30 °C Non-condensing
Storage temperature:	10 – 35 °C, non-condensing
Shipping temperature:	-20 – 45 °C during 12 hours, non condensing
Power supply:	115 / 230 VAC
Battery functioning time:	Approximately 2.5 hour operation time with Bluetooth ON (depending of ambient temperature).

Spectrometer

Resolution:	8 cm^{-1}
Scan frequency:	10 scans / s
Detector:	Peltier cooled MCT
Source:	SiC, 1550 K
Beamsplitter:	ZnSe
Window material:	ZnSe
Wave number range:	900 - 4 200 cm^{-1}

Sample cell

Structure:	Multi-pass, fixed path length 9.8 m
Material:	100 % rhodium coated aluminum
Mirrors:	Fixed, protected gold coating
Volume:	0.4 liters
Temperature:	Ambient

Measuring parameters

Zero-point calibration:	24 hours
Zero-point drift:	< 2 % of measuring range per zero-point calibration interval
Sensitivity drift:	None
Linearity deviation:	< 2 % of measuring range
Temperature drifts:	< 2 % of measuring range per 10 K temperature change
Pressure influence:	1 % change of measuring value for 1 % sample pressure change. Ambient pressure changes measured and compensated.

Electrical connectors:

Digital Interface:	Bluetooth protocol & RS-232 The analyzer is connected to a PDA with Bluetooth connection (RS-232 optional). The PDA provides the analysis results. Option: sample spectra transfer to laptop (PC) for additional analytical capabilities

Gas inlet and outlet conditions

Gas temperature:	Ambient temperature (0 – 50 °C), non-condensing
Gas filtration:	Filtration of particulates included in the sample probe
Sample gas pressure:	Ambient
Sample pump:	Flow ~1.5 l/min, for ambient air only

Electronics

A/D converter:	Dynamic range 95 dB
Signal processor:	32-bit floating point DSP

Analysis software (PDA)

Operating system:	Windows Mobile 6.1 Professional
Analysis software:	Calcmet Lite

Options

Software:	Calcmet software with DX40XX Pro key. Laptop PC + Windows 7 (32-bit) required. For more information read Calcmet Technical data.

Additional information

Enclosure:	161 x 390 x 406 mm (HxWxD), polyurethane
Weight:	13.8 kg (with battery) 12.4 kg (without battery)
CE label:	According to EMI guideline 89/336/EC

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