



TECHNICAL SPECIFICATIONS

Compact transmittance FT-IR spectrometer with universal sampling module

1. System specifications:

- 1.1. Compact FT-IR spectrometer with universal sampling compartment capable of performing FTIR analysis of solids, liquids and gases in transmittance.
- 1.2. Robust metal housing
- 1.3. Small footprint: Less than 30 x 30 cm (including sampling module)
- 1.4. Weight: approx. 10 kg.
- 1.5. Spectral range: 350-8,000 cm^{-1}
- 1.6. Spectral resolution: better than 2cm^{-1}
- 1.7. Interferometer: gold mirrors, high throughput, permanent alignment, long life time >10 years
- 1.8. Diode laser, high wavenumber accuracy and precision, long life time >10 years
- 1.9. IR-Source: Continuously optimized light flux, long life-time > 5 years.
- 1.10. Detector: DTGS, temperature-controlled, high stability against external temperature changes
- 1.11. Sealed and desiccated optics
- 1.12. Internal validation unit with reference standards for automated instrument tests of every setup and every measurement mode. Automated instrument tests for operational and performance qualification.
- 1.13. Automatic recognition and individual calibration of sample modules and ATR-crystal plates, automatic performance test and load of appropriate measurement parameters when changing the configuration
- 1.14. Continuous monitoring of all spectrometer components, performance and humidity.
- 1.15. Validated software, prepared to work fully compliant to GLP and GMP regulations
- 1.16. Software-wizard for IR-spectroscopic quality control.
- 1.17. Universal sampling module with sample compartment
- 1.18. 2 x 3" standard sample mount
- 1.19. 2 x 3" holder for 13mm pellets
- 1.20. Sample compartment cover Included:
- 1.21. ATR Polymer Spectra Library, spectra recorded with diamond and germanium-ATR technique.
- 1.22. Desiccant
- 1.23. Set of tools

2. Extension of the base spectrometer

- 2.1. Extension of the base spectrometer for operation in regions with high humidity. Use of ZnSe for all IR light-transmissive optical components including the beam splitter.
- 2.2. Usable spectral range to $6,000\text{-}500\text{cm}^{-1}$



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3. Single reflection ATR sampling module

A single reflection ATR sampling module is required that allows to analyse solids and liquids without any sample preparation. It should be equipped with a versatile high throughput ZnSe ATR crystal for solids and liquids, pH ranges from pH 4 to pH 8.

3.1. Specifications:

- 3.1.1. One reflection ZnSe crystal
- 3.1.2. Spectral range: 500-7,500 cm^{-1}
- 3.1.3. Working distance (max. sample height): >20mm - appr. 350° free working area around crystal
- 3.1.4. Exchangeable ATR crystal plate with electronic recognition
- 3.1.5. Easy exchange of sampling modules with automatic recognition, performance test and automatic load of measurement parameters.

4. Stainless steel gas cell with 7cm path length for the transmittance spectrometer

Allows the measurement of gases and gaseous mixtures by transmission IR- spectroscopy. It can be applied for studies under flow or static conditions at ambient temperature.

4.1. Specifications:

- 4.1.1. Transmission gas cell
- 4.1.2. 7 cm path length
- 4.1.3. Body and inlet from improved corrosion resistant chrome-nickel steel alloy AISI 316Ti
- 4.1.4. Viton O-rings sealing
- 4.1.5. Flow through or static operation
- 4.1.6. Swagelok-connectors 1/8" at in and outlet port - Maximum pressure 25 psi (2 bar)

5. IR sampling kit for transmission analysis

A standard IR sample preparation kit is required which contains tools and materials for the preparation of liquids and solids for transmission measurement. A demountable transmission cell should be provided for measurements of liquid samples and mulls. A mortar with pestle and Nujol should be provided for mull making of solid samples. Sample holders allowing placement of films, pellets and mulls in the spectrometer sample compartment should be provided.

6. Liquids sampling:

- 6.1. Demountable transmission cell - KBr windows (pair), rectangular, for liquid cell - CaF₂ windows (pair), rectangular for liquid cell - KBr windows (pair), circular 25mm diameter for mull cell
- 6.2. Teflon spacer set with ten rectangular spacers/thickness: 0.05mm; 0.1mm; 0.2mm; 0.5mm; 1mm
- 6.3. Luer syringe, 2ml



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7. Solid sampling:

- 7.1. Teflon spacers (5 pcs), circular, thickness 0.1mm for mull cell
- 7.2. KBr Powder, 50g
- 7.3. Nujol, 25ml
- 7.4. Magnetic film holder
- 7.5. Stainless steel micro spatula
- 7.6. Mortar (diameter 40mm) and pestle
- 7.7. Sample cards for films and pellets (10pcs)

8. Warranty: Standard warranty of 12 months from the date of installation