



- **ALPHA II** Compact FTIR Spectrometer

Specifications

The ALPHA II is a very compact FTIR spectrometer for quick, easy and reliable IR-analysis. The design of its hard- and software are highly integrated for an intuitive and convenient operation.

All spectrometer components are built for continuous availability and a long life time. Bruker's permanently aligned RockSolid™ interferometer and the reliable diode laser guarantee an accurate and precise data acquisition. Thanks to the CenterGlow™ IR-source technology and a temperature controlled detector the ALPHA II provides a constantly provides a high performance. The need for maintenance is minimized and running costs are kept very low due to the long life time of the relevant components like interferometer, IR-source and laser.

A wide range of QuickSnap™ sampling modules is available for the ALPHA II, providing a perfectly matching measurement setup for a large variety of samples and applications.

OPUS provides the right software user interface for the most efficient FTIR-analysis. From the measurement via evaluation to the final analysis report the user is guided in few steps through the analytical workflow. Therefore, ALPHA II is easily operated even by spectroscopic inexperienced personnel. Powerful but easy to use functions for verifying and identifying IR-spectra and performing quantitative analysis are included in the software.

The option to use the ALPHA II with the OPUS-TOUCH software on an integrated touch panel computer makes your daily routine analysis even simpler. Moreover, the footprint of the complete system is reduced to the one of a laptop.

<ul style="list-style-type: none"> ▪ Spectrometer housing: Rigid and durable metal housing ▪ Interferometer: Permanent aligned RockSolid™ cube corner interferometer for highest stability; insensitive to mirror tilt, mechanical vibrations and temperature variation; life time >10 years ▪ Optics: <ul style="list-style-type: none"> • Sealed and desiccated • Mirrors: Gold coated for highest efficiency in the Mid-IR spectral range • KBr windows and beamsplitter; option "High Humidity" optics with ZnSe beamsplitter and ZnSe windows ▪ Calibration laser: Diode laser with high wavenumber accuracy and precision, long life time (>10 years) and low power consumption. ▪ IR source: CenterGlow™ technology for continuously optimized light flux, long life time (>5 years) ▪ Detector: High sensitivity temperature-controlled DLaTGS-detector, high stability against external temperature changes ▪ Spectral range: <ul style="list-style-type: none"> • 350 – 8,000 cm⁻¹, with standard KBr beamsplitter • 500 – 6,000 cm⁻¹, option: „High Humidity“ ZnSe optics ▪ Signal-to-noise ratio: Typically >55,000:1 (1 min measurement time, spectral resolution 4 cm⁻¹) ▪ Spectral resolution: Better than 2 cm⁻¹, optional better than 0.75 cm⁻¹, free adjustable resolution from 0.75 cm⁻¹ to 256 cm⁻¹ ▪ Wavenumber accuracy: <0.05 cm⁻¹ @ 2,000 cm⁻¹ ▪ Wavenumber precision: Repeatability <0.0005 cm⁻¹ @ 2,000 cm⁻¹ (standard deviation of 10 repeated measurements) ▪ Photometric accuracy: Better than 0.1% T ▪ A/D converter: 24 bit dynamic range ▪ QuickSnap™ sampling modules: Full coverage of all typical M-IR sampling and measurement techniques, easy exchange with reliable one-button fixing mechanism <ul style="list-style-type: none"> • Platinum-ATR: Single reflection ATR with monolithic diamond, soldered in tungsten carbide hard metal for highest mechanical and chemical robustness; optional heating function; life time >10 years • Eco-ATR: Single reflection ATR with ZnSe and Ge crystals • Multi-ATR: Multi reflection ATR with ZnSe crystal • Transmission: KBr pellet holder, variety of liquid and gas cells, heatable gas cells with 7 cm and 4.8 m path length • Reflection: Variety of diffuse and specular reflection modules providing the optimal interface for any sample; reflection with integrated video-option ▪ PermaSure™ performance assurance: <ul style="list-style-type: none"> • Automatic recognition and individual calibration of QuickSnap™ modules and ATR-crystal plates • Automatic performance test and load of appropriate measurement parameters when changing the configuration ▪ PerformanceGuard™ system diagnostics: <ul style="list-style-type: none"> • Continuous electronic monitoring of all spectrometer components, performance, humidity and temperature • Automated customer alert if any threshold is passed ▪ Reference materials for instrument qualification: <ul style="list-style-type: none"> • Reference materials are integrated in the Internal Validation Unit (IVU). They allow performing test routines for operational and performance qualification 	<ul style="list-style-type: none"> • Fully automated test routines for operational and performance qualification (OQ, PQ) • Fully automated test routines for instrument qualification according to PhEur 2.2.24, PhJP 2.25 and USP <854> using an integrated certified reference standard (option) • Validation manual and validation service for comprehensive system qualification according to GMP available
<ul style="list-style-type: none"> ▪ Instrument qualification: <ul style="list-style-type: none"> • Fully automated test routines for operational and performance qualification (OQ, PQ) • Fully automated test routines for instrument qualification according to PhEur 2.2.24, PhJP 2.25 and USP <854> using an integrated certified reference standard (option) • Validation manual and validation service for comprehensive system qualification according to GMP available ▪ Regulatory compliance: ALPHA II complies with Good Laboratory Practice (GLP) requirements. Further validation options are available allowing operation of the ALPHA II in full compliance to cGMP/GMP, US, European and Japanese Pharmacopeia and 21 CFR Part11 ▪ Computer interface: Integrated touch panel pc (option), remote control via WLAN (option, e.g. for use in glove box) ▪ Operating system: Windows 7, Windows 10 ▪ Spectrometer power: 100 - 240 VAC, 50 - 60 Hz, 20 W (low energy consumption) ▪ Mobility: Transport case and trolley, rechargeable battery pack, car and truck battery connectors, tripod mounting ▪ Dimensions: ALPHA-P (ATR): approx. 208 x 330 x 260 mm ALPHA-T (Transmission): approx. 208 x 310 x 140 mm ALPHA with panel PC: approx. 267 x 340 x 340 mm ▪ Weight: approx. 7 kg (without panel pc) approx. 10 kg (with panel pc) ▪ Software: Data acquisition, control, evaluation and reporting with ALPHA II is performed using the validated all-in-one OPUS software Features: <ul style="list-style-type: none"> • Step-by-step analysis wizard for quality control applications • Spectra comparison method for material verification • Library search for material identification • Mixture analysis, information search, peak search (OPUS/SEARCH required) • Free starter library with more than 350 spectra • User specific library set-up • Peak labelling • Quantification method (Lambert-Beer's Law) • Peak integration function (area, height) • Automated water vapor compensation • Data pre-processing routines, such as baseline correction • Multimedia FT-IR tutorial • Spectra interpretation tool • Automation capabilities • Macro functionality • Lab journal • Analytical report generation with predefined print layouts, customizable • Easy export of spectral data and evaluation results to other programs • Option to store spectral data and evaluation results either in an internal or a user-defined database 	

- Multi level user management
 - Customizable work spaces
 - Online help
 - Permanent display of instrument status (PerformanceGuard™)
 - GMP/GLP compliance, Audit trail
 - CFR 21p11 compliance (OPUS/VALIDATION required)
- Software option: Operation of ALPHA II with validated OPUS-TOUCH software for intuitive and convenient IR-analysis.
- Highlights:
- ALPHA II controlled by integrated touch panel PC
 - Highest level of software and hardware integration
 - State-of-the art touch controlled user interface
 - Analysis assistant for most efficient material verification and identification
 - Spectrum viewer with data evaluation and data processing functions for in-depth IR-analysis
 - Self-adapting analysis report generator
 - Multiple language support
 - File-archive with smart data filter option
 - Adaptable user rights management
 - Comprehensive spectrometer status control
- Databases: Wide range of spectral libraries for all kinds of materials, e.g. chemicals, pharmaceuticals, polymers and plastics
- Service options:
- Installation by a qualified service engineer
 - Various service and maintenance contracts including re-validation services
 - Training courses and customer specific application trainings



The ALPHA II makes FTIR analysis simpler than it has ever been before. The easy and intuitive user interface guides you through all steps of IR-analysis.

Bruker Optics is ISO 9001 and ISO 13485 certified.

Laser class 1

Technologies used are protected by one or more of the following patents:
DE 102004025448; DE 19940981; US 5923422

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