



Measurement & Analytics | Measurement made easy

MB3000

Versatile FT-IR analyzer designed for your industry
The most reliable FT-IR, the lowest cost of ownership

MB3000 FT-IR analyzer designed for research and development



“Our industry needs versatility and reliability at low cost. Our research and development covers a wide range of areas.”

“With analysis optimization using ABB’s MB3000 FT-IR, we can cover many applications.”

“The results need to be reliable for many different types of samples including liquids, solids and gases with a variety of accessories.”

The optimum IR analyzer solution.

The MB3000 FT-IR with Horizon MB™ FTIR software from ABB Analytical Measurements provides an optimum combination of reliability, low cost of ownership, consistency of results over a long time and spectroscopic performance. Easy to use and maintenance free, it will deliver consistent analytical results year after year.

Durability.

Built with heavy-duty modules, a permanently aligned optical system and minimal mechanical components, the MB3000 does not require maintenance or adjustments for years to come. The result: a reliable spectrometer that produces the most consistent results.

Designed by Dr. Henry Buijs.

The MB3000 was developed by Dr. Henry Buijs, one of the founders of Bomem Inc. and a world-renowned expert recognized for his applied research in spectroscopy.

Patented.

The double-pivot interferometer’s innovative design ensures increased robustness. The optics are permanently aligned, enabling more repeatable, reproducible spectroscopy and eliminating the need for dynamic alignment. The scanning mechanism has a lifetime guarantee.

Smallest footprint.

With a vertical, space-efficient design, the MB3000 optimizes laboratory workspace and facilitates access to internal components.

MB3000.

The MB3000 is the result of over 40 years of experience in the aerospace, academic, chemical, pharmaceutical and petrochemical industries. It is the successor to the FTLA2000 spectrometer, also developed by Dr. Buijs and marketed by Bomem Inc. since 1985. Designed with the concerns of lab users in mind, the MB3000 is the ultimate in ease of use, reliability and consistency.

MB3000 features

ABB's world-class laboratory FT-IR analyzers deliver maximum reliability for consistent results and minimal maintenance

Reliable, consistent results

Permanently aligned optical system.

With permanently aligned optics using only fixed components along with a patented interferometer scan mechanism, the MB3000 delivers consistent precise and reproducible results year after year and from unit to unit.

Heavy-duty reliable, components.

The modular components of the MB3000 have been designed to provide the longest product life on the market. The MB3000's design is based on the following principles: No maintenance, no adjustments and a scan mechanism that has no wear. The reliability of the MB3000 comes from dependable components and their integration in a system requiring minimal moving parts.

Unprecedented spectral performance.

Permanently aligned optics with a Jacquinot stop in the interferometer output beam ensures an accurate and stable line shape as well as wavelength and resolution stability.

"ABB's FT-IR analyzer has had a big impact on our research results."

Laboratory chemist

First maintenance-free FT-IR analyzer

No consumables.

The MB3000 contains fixed components that do not wear out with use, meaning no components to replace or adjust. With the MB3000, the HeNe LASER is replaced by a solid state laser. All optics are non-hygroscopic. Purging is not required for protection of optics.

Long-life source.

To maximize reliability, the source is operated so as to provide a 10-year expected lifetime.

Versatility at a glance

Standard open sample compartment.

The arid-zone open sample compartment of the MB3000 addresses all the needs of the modern analytical laboratory. It can hold a wide variety of easily swappable ABB or third-party accessories that do not require alignment. The instrument can also be purged if needed.

Multiple sampling options.

ABB offers the MIRacle™, a universal ATR sampling kit to analyze solids, liquids, pastes, gels and intractable materials addressing the most common sampling needs. Other sampling options offered by ABB include a horizontal ATR kit, demountable liquid cells, a diffuse reflectance DRIFT accessory, gas cells, specular reflectance accessories with fixed and variable angles, and micro-sampling with a beam condenser or microscope. The simple in-sample-compartment microscope permits convenient viewing of the sample. The microscope uses the uncooled detector of the MB3000 and is suitable for analysis of sample areas as small as 100 micrometers.



MB3000: Horizon MB™ software suite

Horizon MB™ FTIR (Standard Package)

Intuitive software for daily operation

The HORIZON MB™ FTIR module facilitates the acquisition, processing and analysis of samples. With Horizon MB FTIR, managing analytical results has never been easier.

Flexible Modules

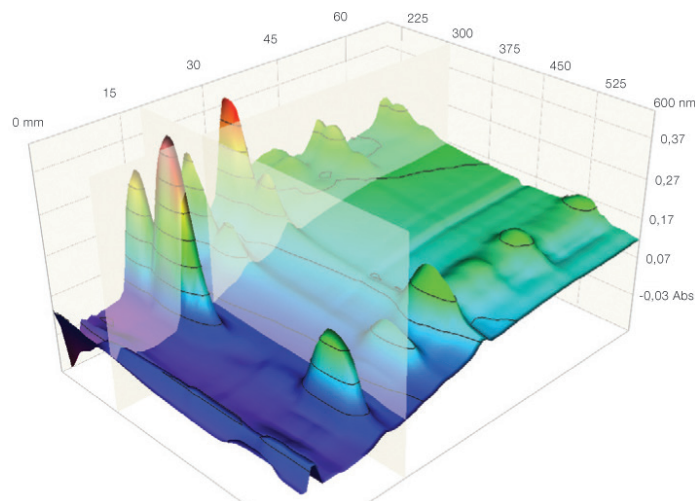
All the available functions are packaged in modules, so you only pay for what you need.

Optional Modules:

Horizon MB™ Professional

Advanced features for demanding users.

The HORIZON MB™ Professional module includes enhanced mathematical functions, 3-D capabilities and extended import/export functions. It also includes a regulatory module for automated execution and reporting of the instrument verification tests described in the pharmacopoeia guidelines.



Horizon MB™ Library

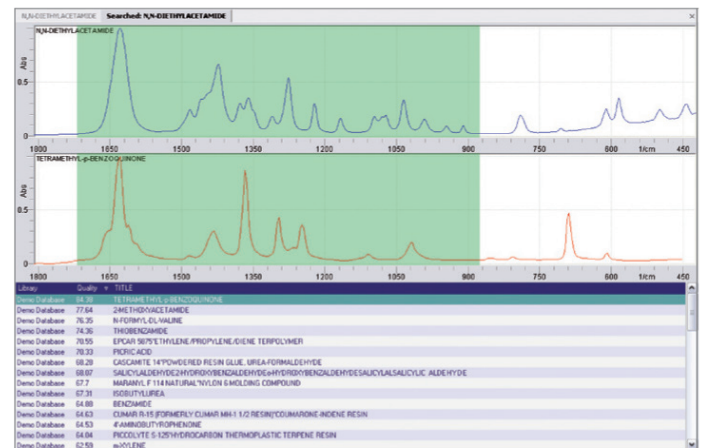
A powerful search engine.

The Horizon MB™ Library module is designed for efficient multiple library searches. It offers spectrum and full-text search capabilities with custom and commercial libraries.

Horizon MB™ IR Interpretation

Easy identification of functional groups.

The Horizon MB™ IR Interpretation module is used to analyze IR spectra in fully-automated, semi-automated or manual modes. Easily identify functional groups using the IR interpretation rule database.



MB3000: Horizon MB™ software suite

Horizon MB™ Reaction Monitoring

A comprehensive and intuitive package

The reaction monitoring module provides all functions to collect and analyse real-time spectra generated during chemical experiments. The user is taken through the different steps of the experiment setup thanks to a reaction configuration wizard. The system can generate multiple real-time trends of spectral features or chemical properties.

Horizon MB™ Quantify

The modern chemometric toolbox.

The Horizon MB™ Quantify module incorporates univariate and multivariate algorithms like PLS and MLR for data analysis and quantification. It also includes the Horizon MB™ Professional module.

Horizon MB™ Security

Enabling 21 CFR Part 11 compliance.

The HORIZON MB™ Security module offers 2 selectable security levels. It provides distinctive access control to software functions based on permission schemes, hierarchical access control based on data access roles, electronic signatures, activity logging and traceability of all data manipulations.

Horizon MB™ Scripting

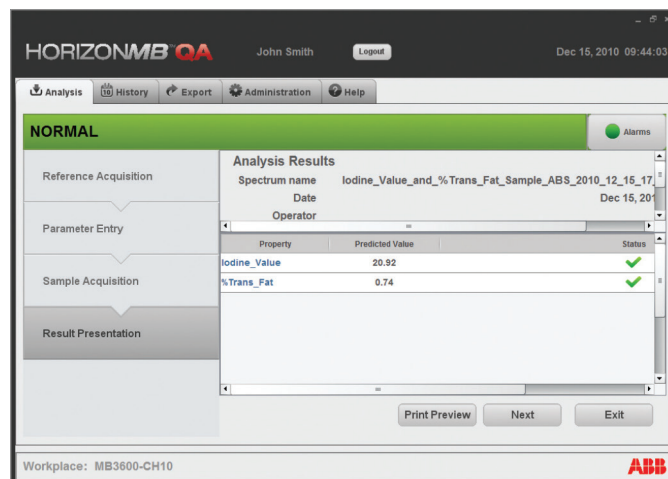
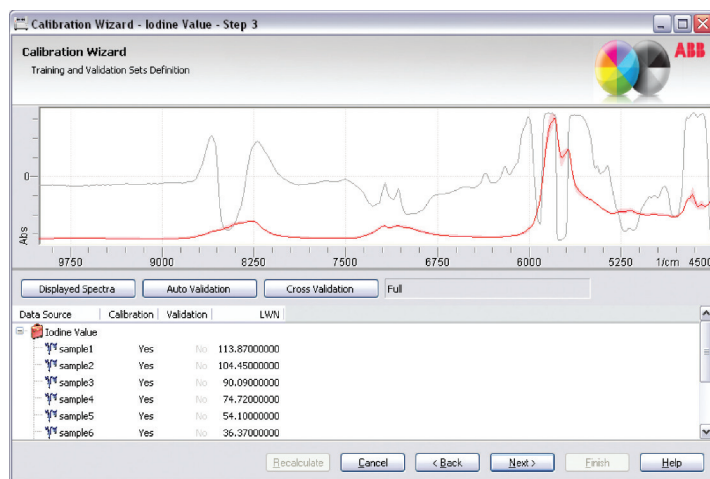
Create your own functions.

The Horizon MB™ Scripting module enables users to develop their own routines and functions using the script recorder or writing code directly for the SAX basic scripting engine.

Horizon MB QA

Advanced FTIR Software for quality assurance and quality control.

The HORIZON MB™ QA module is designed to facilitate routine analysis for lab and at-line quality assurance and quality control. Includes extensive reporting capabilities.



MB3000 technical specifications

Spectroscopic performance

(typical at 25°C with DTGS detector)

- Spectral range 485 to 8,500 cm^{-1}
- Resolution better than 0.7 cm^{-1}
- Apodized resolution adjustable 1 to 64 cm^{-1} , in increments of 2
- Maximum signal-to-noise ratio (root-mean-square, 60s, 4 cm^{-1} , at peak response): 50,000: 1
- Signal sampling: 24-bit ADC
- Short-term stability: <0.09 % @ 4000 cm^{-1}
- Temperature stability: <1% per °C @ 4000 cm^{-1}
- Frequency repeatability (@ 1918 cm^{-1}): < 0.001 cm^{-1}
- Frequency accuracy (@ 1918 cm^{-1}): < 0.06 cm^{-1}

Application software (computer not included)

- Operating system compatibility Win 7
- Standard software: HORIZON MB™ FTIR
- Optional modules : Horizon MB Professional, Quantify, Library IR Interpretation, Reaction Monitoring, Security (21CFR part 11 compliance), Scripting, QA

Optical bench

- Beamsplitter material ZnSe (non-hygroscopic)
- Patented double pivot interferometer mechanism. High throughput Michelson interferometer with protective cover
- Optical path fully purgeable
- Source, ceramic Globar with electronic stabilization, expected half life, 10 years
- Metrology: Solid-state laser (no scheduled maintenance required)
- Detector module: DTGS
- Open sample compartment configuration: Arid-Zone, center focus
- Sample compartment dimensions: 20 cm x 14 cm plate, 8.7 cm beam height
- Sample compartment mounting: 3-point positioning guide or 3 point kinematic adjustable

Accessory information interface

- USB Connection between PC and accessory
- Temperature reading (when applicable)
- Temperature adjust (when applicable)
- ID serial number
- Factory acceptance test with data
- Instruction manual

Data communication

- Hardware port: Ethernet, 10/100 Mbps

Instrument enclosure

- Casting: rugged all-metal with integral handles
- Size: 43.5 cm (W) x 28 cm (D) x 37 cm (H)
- Weight: 24 kg

Environmental

- Universal power supply: 100-240, 50/60 Hz
- Power consumption: 65 W
- Operating temperature: 10 °C to 35 °C
- Operating relative humidity: 5% to 80%, non-condensing
- Regulatory certification and compliance: TUV and CE

Documentation

- cGMP IQ-OQ protocol templates (optional)
- User manual
- Quick-start guide



ABB Analytical

ABB Analytical is one of the major ABB manufacturing centers for laboratory and process analytical systems with more than 35 years of experience in developing FT-IR and FT-NIR spectrometers for industrial, military and space applications.

As part of our portfolio of products and services for process optimization, we are able to offer a full range of custom calibration modeling services and application support for industrial applications.

ABB also provides extensive, globally distributed after-sales support and engineering services, as well as a full customer training program.

IR & NIR Spectroscopy Knowledge Management

- Application support and spectroscopy training
- Calibration and chemometrics development training
- On-site services including hardware and calibration maintenance

Up-Time Insurance Program

- Preventive maintenance
- Extended warranty services
- Tailor-made service contracts
- Chemometrics services

Installations / Start-ups & Analyzer Life Cycle Program

- Process spectrometer start-ups
- Laboratory spectrometer installations
- Spectrometer and laboratory / process software exchanges / upgrades
- Extended process and lab spectrometer warranties

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