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ABB MEASUREMENT & ANALYTICS

## **MB3000**

The most reliable FT-IR laboratory analyzer



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## Measurement made easy

**The MB3000 FT-IR laboratory analyzer with Horizon MB™ FTIR software 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.**

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# MB3000 FT-IR analyzer designed for research and development

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01 MB3000 showing results of the Horizon MB software.

## The optimum IR analyzer solution

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. Henry Buijs, a world renowned expert recognized for his applied research in spectroscopy. Marketed by Bomem Inc. since 1985, and designed with the concerns of lab users in mind, the MB3000 is the ultimate in ease of use, reliability and consistency.

## 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.

## 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.

## 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.



# MB3000 features

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

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02 Multiple accessories can be used with the MB3000 to address several analysis needs.

## 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.

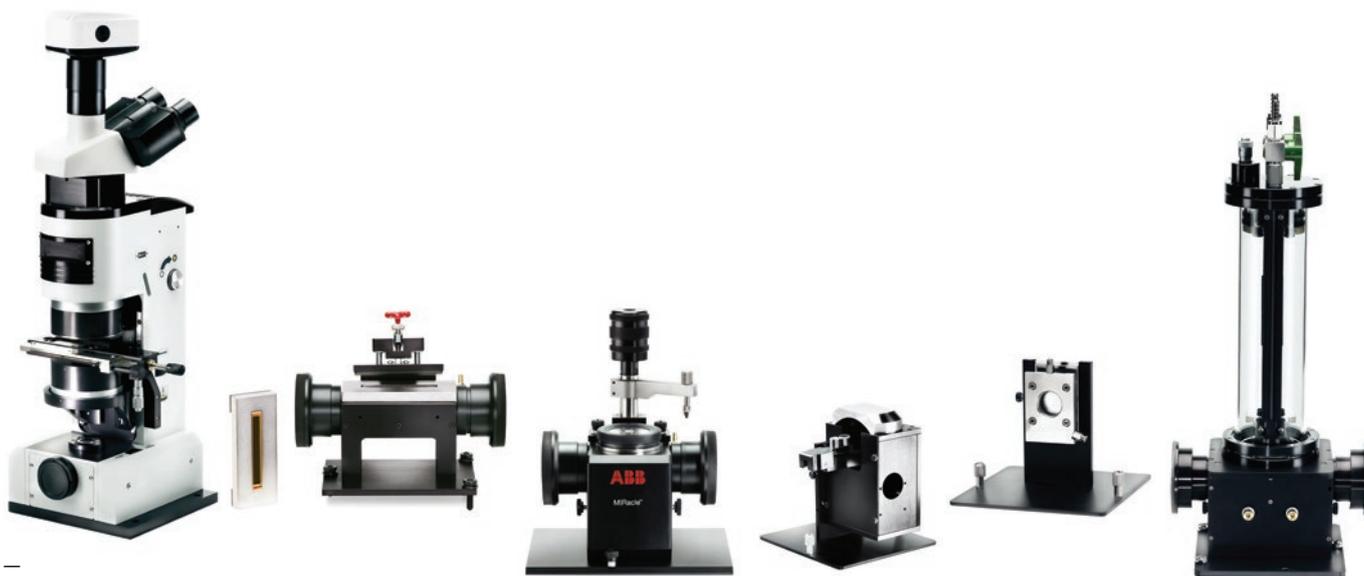
## Versatility at a glance

### 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

Managing analytical results has never been easier.

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01 The Horizon MB FTIR software package offers multiple modules to address specific needs.

## Horizon MB FTIR (standard package)

The Horizon MB FTIR module facilitates the acquisition, processing and analysis of samples.

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

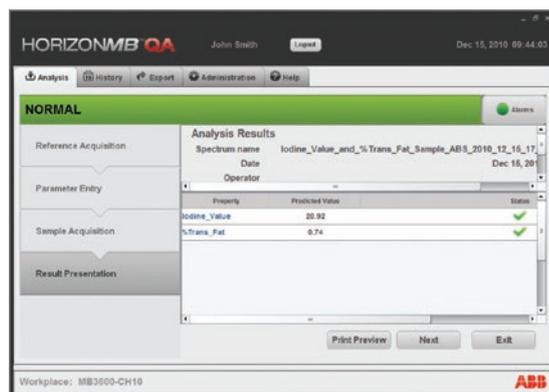
## Optional modules

### Horizon MB Professional

The Horizon MB Professional module includes enhanced mathematical functions, 3D 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

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.



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### Horizon MB IR Interpretation

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.

### Horizon MB Reaction Monitoring

The reaction monitoring module provide 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 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

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

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

QA module is designed to facilitates routine analysis for lab and at-line quality assurance and quality control. Includes extensive reporting capabilities.

# Specification

## Spectroscopic performance

### (typical at 25°C with DTGS detector)

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

## Application software (computer not included)

- 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 x 14 cm (7.8 x 5.5 in) plate, 8.7 cm (3.1 in) 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
- Dimensions (H x W x D): 37 x 43.5 x 28 cm (14.5 x 16.9 x 11 in)
- Weight: 24 kg (52.9 lbs)

## Environmental

- Universal power supply: 100 to 240 VAC, 50/60 Hz
- Power consumption: 65 W
- Operating temperature: 10 °C to 35 °C (50 °F to 95 °F)
- 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

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