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ABB MEASUREMENT & ANALYTICS

## **MB3600**

The most reliable FT-NIR laboratory analyzer  
designed for QA/QC



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## Measurement made easy

**The MB3600 is the result of many years of experience in the space, academic, chemical, pharmaceutical and petrochemical industries.**

**Designed with the concerns of lab users in mind, the MB3600 is the ultimate in ease of use, reliability and consistency.**

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# MB3600 FT-NIR spectrometer for your industry

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01 The MB3600 laboratory analyzer with a powder sampler to measure chemical products.

## The optimum NIR analyzer solution

The MB3600 FT-NIR 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 provide consistent analytical results for years to come.

## Durability

Built with heavy-duty modules, a permanently aligned optical system and minimal mechanical components, the MB3600 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 MB3600 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. The MB3600 laboratory analyzer is the successor to the FTLA2000 spectrometer, also developed by Dr. Buijs and marketed since 1985 by Bomem Inc.

## 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 MB3600 optimizes laboratory workspace and facilitates access to internal components.

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First maintenance-free  
FT-NIR analyzer

## No consumables

The MB3600 contains fixed components that do not wear out with use, meaning no components to replace or adjust. With the MB3600, 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.



# MB3600 features

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

— 02 Swappable accessories can be used with the MB3600; Universal vial holder, powder sampler and liquid cell.

## Reliable, consistent results

Permanently aligned optical system. With permanently aligned optics using only fixed components along with a patented interferometer scan mechanism, the MB3600 delivers consistent precise and reproducible results year after year and from unit to unit.

### Heavy-duty, reliable components

The modular components of the MB3600 have been designed to provide the longest product life on the market. The MB3600's design is based on the following principles: No maintenance, no adjustments and a scan mechanism that has no wear. The reliability of the MB3600 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. The 100% line spectral repeatability permits reliable determination of small spectral features down to below 10 micro absorbance and below 2 micro absorbance for the optional high sensitivity InAs or InGaAs detectors. The MB3600 is provided with a highly accurate internal wavelength calibration standard.

## Versatility at a glance

### Standard open sample compartment

The arid-zone open sample compartment of the MB3600 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 a number of well thought-out accessories that are easily swappable. They do not require alignment. The temperature-controlled vial holder is a universal vial sampling accessory for the analysis of liquids in disposable glass vials with diameters of 5 mm, 8 mm and 12 mm OD. The rotating diffuse reflectance accessory measures a large sample area while the sample is moving, providing better averaging than a stationary integrating sphere. A fiber-optic coupled disposable temperature controlled vial accessory and temperature controlled liquid cell are also available.



# MB3600: Horizon MB software suite

— 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.

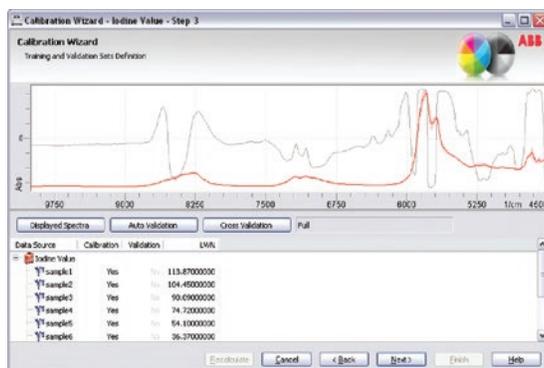
## Optional modules

### 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 library.



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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 FTIR Reaction Monitoring

The reaction monitoring module provides all functions to collect and analyze 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

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.

# Specification

## Spectroscopic performance

### (typical, at 25 °C)

- Spectral range with DTGS detector 3,700 to 15,000  $\text{cm}^{-1}$   
Spectral range with InAs detector 3,700 to 12,000  $\text{cm}^{-1}$   
Spectral range with InGaAs detector 3,900 to 11,000  $\text{cm}^{-1}$
- Resolution better than 0.7  $\text{cm}^{-1}$
- Apodized resolution adjustable 1  $\text{cm}^{-1}$  to 64  $\text{cm}^{-1}$ , in increments of 2
- Signal-to-noise ratio (RMS, 60 s, 16  $\text{cm}^{-1}$ , at peak response) with DTGS detector: > 100,000: 1
- Signal-to-noise ratio (RMS, 60 s, 16  $\text{cm}^{-1}$ , at peak response) with InAs detector: > 500,000: 1
- Signal-to-noise ratio (RMS, 60 s, 16  $\text{cm}^{-1}$ , at peak response) with InGaAs detector: > 600,000: 1
- Signal sampling: 24-bit ADC
- Short-term stability (@ 8,000  $\text{cm}^{-1}$ ): < 0.09 %
- Temperature stability (@ 8,000  $\text{cm}^{-1}$ ): < 1 % per °C
- Frequency repeatability (@ 7,300  $\text{cm}^{-1}$ ): < 0.006  $\text{cm}^{-1}$
- Frequency accuracy (@ 7300  $\text{cm}^{-1}$ ): < 0.06  $\text{cm}^{-1}$
- Absorbance reproducibility (toluene): < 0.002 AU

## 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, quartz halogen with electronic stabilization, expected half life, 10 years
- Metrology: solid-state laser (no scheduled maintenance required)

- Detector module: DTGS
- Optional detector modules, InAs and extended InGaAs both with integrated cooling
- 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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