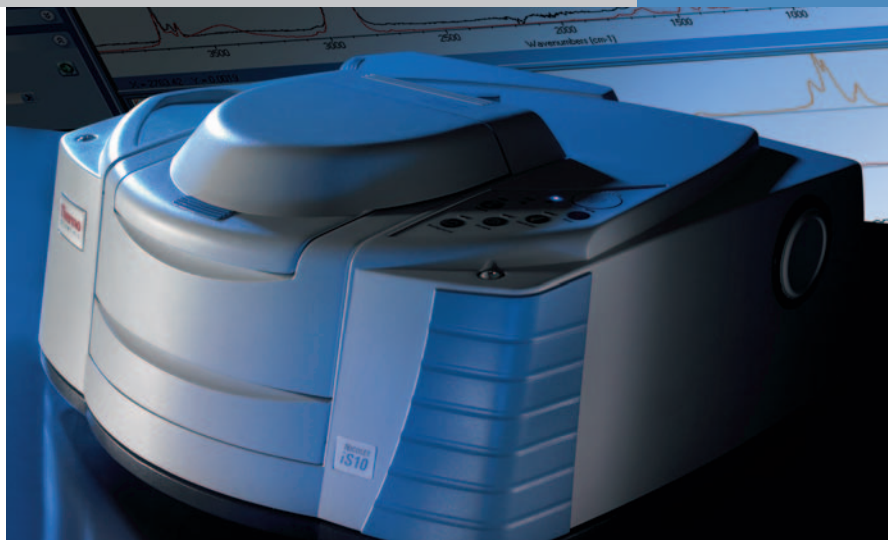
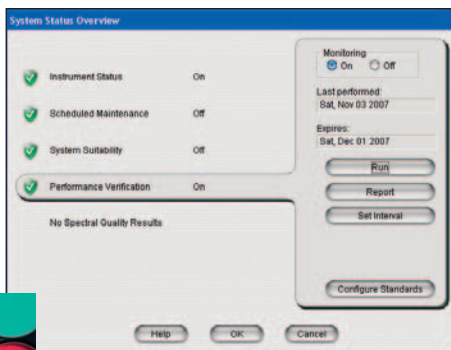


## Thermo Scientific Nicolet iS10 FT-IR Spectrometer

Infrared spectroscopy with confidence

Designed for laboratories with quality control, analytical services or forensic duties, the Nicolet iS10 FT-IR spectrometer delivers the highest confidence in the verification and identification of materials. The Nicolet iS10 spectrometer is designed for maximum assurance in its ability to sample and solve challenging problems with a minimal investment in time.



The Thermo Scientific Nicolet iS10 FT-IR spectrometer includes features that validate the instrumental performance, verify the quality of materials, create SOPs and suitability tests, identify unknowns or mixtures, and quantify mixture ingredients. The Nicolet™ iS™10 has been developed especially for the material characterization process, from loading sample information to final report. The Nicolet iS10 is designed for use by any skill level, with many tasks capable of being completed in one click.

### Designed for Instrument Qualification

System Performance Verification (SPV) is a powerful tool to ensure that the spectrometer is performing as expected, day after day. SPV includes hardware and software to test the instrument against the ASTM E1421 method by using Shott NG-11 and NIST traceable standards, contained in a built-in motorized wheel. The Nicolet iS10 system verification is programmable and can be set for:

- Daily performance verification
- System suitability
- Validation standards expiration date
- Scheduling preventative maintenance visits



### Designed for Ease of Use

The Nicolet iS10 FT-IR spectrometer has been designed for the ease of use and reliability required by laboratories with heavy workloads.

- Easy to access, rechargeable desiccants and built-in humidity indicator
- Integrated scan button and SOP builder, for simple user interface, consistency and productivity
- Thermo Scientific Nicolet Smart Accessory technology for simple accessory exchange and experimental conditions setup
- Material verification package with standard and high sensitivity correlation algorithm, to fit variability of tested materials
- Innovative multi-component analysis allows identification of principal ingredients of mixtures, enabling every laboratory to troubleshoot contamination problems with confidence

The Nicolet iS10 enables anyone to conduct material testing and identification, consistently and reliably.

### Optical System

The sealed and desiccated optical unit protects the instrument from humidity and solvent vapors. A self-compensating, dynamically aligned interferometer removes any tilt and shear scanning error, automatically tunes the instrument for best throughput and provides analysis speed for real time survey or screening. Diamond turned, pinned-in-place alignment-free optics guarantee long life system performance with minimum maintenance.

### Detectors

- Fast recovery deuterated triglycine sulfate (DTGS) detector
- Liquid-nitrogen-cooled mercury cadmium telluride (MCT) detector

### Source

- Mid-infrared Ever-Glo; user replaceable from sample compartment
- Tungsten/halogen user replaceable from sample compartment

### Beamsplitter

- KBr/Ge mid infrared optimized
- XT-KBr/Ge extended range mid infrared

### Humidity and Vapor Protection

- Sealed and desiccated optical bench with protective coating on KBr windows
- Rechargeable desiccant cartridges
- Humidity indicator
- Multi-zone pressure system for optional purge

### Frequency Calibration

- HeNe laser tube
- Does not require software optimization or calibration

### Spectrometer Performance Validation

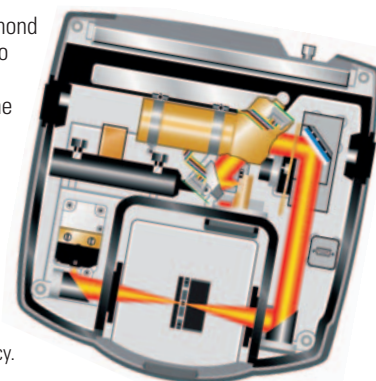
- Integrated validation wheel with NG-11 and NIST traceable polystyrene film standards, serialized
- System Performance Verification (SPV) software and programmable tasks interface

### External Beam Options

- Optional external beam for infrared microscopes or external Thermo Scientific Nicolet iZ10 FT-IR module
- The Nicolet iZ™10 FT-IR module can be used with the NIR integrating sphere (InGaAs detector), TGA interface or any other mid-infrared accessories, and can be equipped with a DTGS or MCT detector

### Quality and Low Cost of Ownership – Guaranteed

- Fully protected optics, to ensure maximum resistance from chemical vapors and humidity
- Five-year warranty on diamond HATR crystal of the Thermo Scientific Smart iTR ATR accessory, optimized for the Nicolet iS10 spectrometer



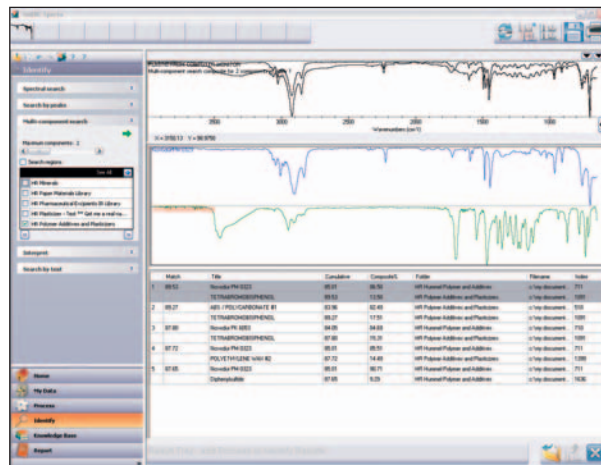
The optical efficiency, diamond turned mirrors and dynamically aligned interferometer of the Nicolet iS10 provide speed, sensitivity, precision and accuracy.



Optional tungsten halogen source and desiccant compartment are easily accessible.



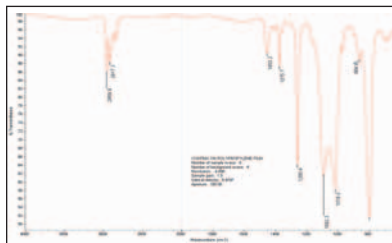
The Nicolet iS10 source is mounted in the sample compartment allowing quick and easy optimization of data collection in the mid-near or infrared region.



The Nicolet iS10 provides efficient tools to identify pure compounds and mixtures with confidence and ease of use. OMNIC™ Spectra™ includes innovative ways to manage your results and provide answers with the confidence you need.

## Speed and Consistency of Data by Performance

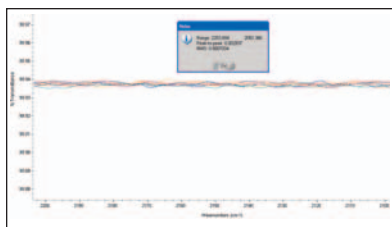
Collect spectra of exceptional quality in only a few seconds, saving your time for other tasks. Take advantage of the ease of use of the Smart iTR™ accessory – the simplest and most efficient way to measure solids, pastes and liquids. Assure the quality of your materials with consistency in your laboratory through our exclusive SOP builder and with system suitability tests.



5-second collection time spectrum of a silicone-based oil on a polypropylene film.

## Enhanced Analytical Power and Productivity

- Measure samples directly through vials, with the integrating sphere conveniently mounted in the Nicolet iZ10 FT-IR module
- Characterize materials quickly and easily by switching to TGA/IR interface installed in the Nicolet iZ10 FT-IR module
- Achieve high throughput screening by powder and liquid auto samplers
- Identify unknowns with the power of OMNIC Spectra, which includes a 9,000 spectra database and innovative multi-component search routines



The Nicolet iS10 delivers exceptional signal to noise in just a few seconds, up to 10,000:1 (or better) peak to peak in 5 seconds. With the Smart iTR ATR accessory most material characterization data collection can be accomplished in just five seconds.



Nicolet iS10 FT-IR spectrometer equipped with Smart iTR ATR accessory and integrating sphere mounted in the Nicolet iZ10 external module

## Electronics

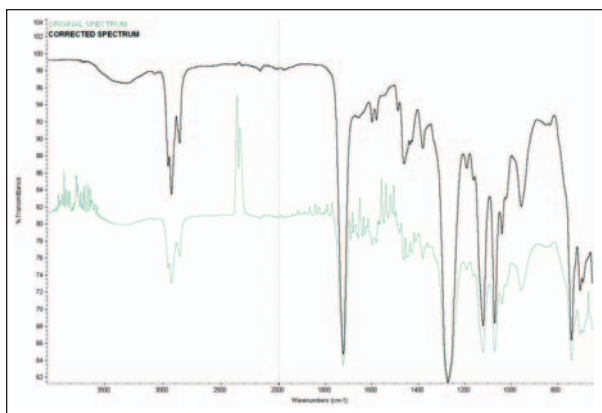
- 24-bit analog to digital converter; digital signal processor for spectrometer monitoring and software integrated controls
- Integrated scan button panel including LED control status for source, laser and interferometer
- USB 2.0 high-speed bidirectional communication
- Smart Accessory™ automatic recognition, parameter setting and spectral quality monitoring
- Enhanced synchronization protocol continuously monitors power supply, laser, source and detector

## Software Options

- **OMNIC Spectra** – a revolutionary spectral identification package for pure compounds and mixtures, backed with over 9,000 spectra
- **TQ Analyst™ Professional edition** – adds PLS, PCR and discriminant analysis calibration to prediction capabilities
- **OMNIC Series** – for kinetic studies, TGA-IR and rapid scan
- **Array Automation** – Perfect match for micro well-plate sampling, ideal for cluster analysis and high throughput screening

## Nicolet iS10 FT-IR Spectrometer OMNIC Software Suite

- Windows® XP and Windows Vista® compatible
- Collect, set-up parameters and spectral preview, customizable toolbar and menu options
- Display capabilities: Zoom, roll, stack, overlay, offset and interactive display mode tools
- Data processing: Baseline correction (automatic and manual), smooth, blank and straight line, first and second derivative, curve fitting, spectral math, subtract (manual and automatic)
- Data conversion and corrections: Kubelka Munk, Kramers Kronig, Photoacoustic, ATR correction including settings for crystal material, reflections, angle and sample refractive index
- Spectral Search: High-resolution library generation, customizable information fields, single or multi-region search, library management, standard libraries (1400 spectra)
- Spectral peak picking, audit trails history log, multi-format converters for J-camp DX other vendors' spectral files and user libraries
- Spectral groups statistical analysis: Variance, average, and range
- Peak analysis tools: Peak area, peak height, cursor, peak text annotation
- Automatic atmospheric suppression (no standards needed) to remove H<sub>2</sub>O and CO<sub>2</sub> interferences
- SOP builder (task-driven compiler) to execute through Integrated Scan Button panel (OMNIC Macros\Basic™ compiler and reader)
- QCheck for spectrum-to-spectrum or spectrum-to-multiple spectra QC/QA verification; includes correlation, high sensitivity compare, customizable pass/fail threshold
- Quantitative and discriminant analysis package including:
  - Beer-Lambert calibration and prediction (peak height or area integration)
  - Classical Least Squares calibration and prediction
  - Discriminant analysis, Partial Least Squares (PLS) and Principal Component Analysis (PCR) prediction
- Infrared spectral interpretation tool and online guide



5-second collection time polymer film spectra with and without automatic atmospheric suppression (expanded region)



## Smart Accessory Compatibility

The Nicolet iS10 is compatible with our extensive line of Smart Accessories specialized for quantitative analysis, reaction studies, surface and thin film measurements.

- Simple accessory exchange and experiment setup
- Maintain proper experimental conditions and pre-set parameters
- Automatic performance verification

## Performance Specifications

- 7800-350  $\text{cm}^{-1}$  optimized, mid-infrared KBr beamsplitter
- 11000-375  $\text{cm}^{-1}$  XT KBr extended range mid-infrared optics
- Signal-to-noise:
  - 10000:1 peak to peak in five seconds
  - 35000:1 peak to peak in one minute
- Room temperature, KBr optics, DTGS detector, 4  $\text{cm}^{-1}$  spectral resolution
- Wavelength precision: better than 0.01  $\text{cm}^{-1}$  at 2000  $\text{cm}^{-1}$
- Collection speed: variable from 0.16  $\text{cm}/\text{sec}$  to 2.5  $\text{cm}/\text{sec}$ ; suitable to slow responsivity (PAS) and high-sensitivity (MCT) detectors
- Maximum speed: 40 spectra per second at 16  $\text{cm}^{-1}$  resolution, individually collected and stored
- Spectral resolution: better than 0.4  $\text{cm}^{-1}$ , non-apodized
- Ordinate linearity (ASTM E1421): <0.1%T deviation from 0.0%T, measured at 4  $\text{cm}^{-1}$  resolution



## Validation Options for FDA, EP or JP Regulated Industries

- ValPro™ System Qualification specifically addresses DQ/IQ/OQ (Design, Installation, and Operational Qualification). Provides “objective evidence” to regulators and ISO auditors, showing that their Thermo Scientific system has been properly selected, implemented, and verified for use in their process.
- Digital and electronic signature, 21 CFR Part 11 compliance package

## Other Specifications

Size: 550 mm x 570 mm x 250 mm (W x D x H)

Weight: 39 Kg

Regulatory Approvals: CE, ETL  

Warranty: 1 year on complete system; 5 years on Smart iTR (optional) diamond HATR crystal



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