

Thermo Scientific Nicolet iS20 FTIR Spectrometer

Advanced FTIR spectroscopy for busy analytical labs

Designed for laboratories with analytical services, quality control, or forensic applications, the Thermo Scientific™ Nicolet™ iS20 FTIR Spectrometer delivers the highest confidence in material verification and identification. With its redesigned Thermo Scientific™ LightDrive™ Optical Engine and integrated touch panel, the Nicolet iS20 spectrometer provides next generation performance with a standard 10-year warranty on all critical optical components.

The Nicolet iS20 FTIR spectrometer includes features that allow the user to validate the instrument performance, quickly verify the quality of materials, create and run workflows, identify unknowns or mixtures, and quantify mixture ingredients. Users of any skill level can operate the system with many tasks completed in one step.

Specifications you can trust

The Nicolet iS20 FTIR spectrometer is built to inspire a high level of customer confidence. Instrument specifications are factory verified to ensure each unit meets our rigorous quality standards. Our specifications are:

- Certified on each instrument before leaving the manufacturing floor
- Representative of actual instrument performance, not typical or achievable results



Designed for maximum productivity

The Nicolet iS20 FTIR spectrometer delivers maximum ease of use and reliability.

- A 10-year warranty on the interferometer, laser, and IR source ensures peace of mind – for a decade to come.
- Integrated touch panel, workflow software, and multi-colored LED scan bar provide consistency and productivity
- Multi-component analysis software identifies principal ingredients in mixtures, allowing laboratories to troubleshoot contamination problems or conduct failure analysis
- Simplified validation software equips users with an Audit Manager and streamlined pharmacopeia compliant methods (Ph. Eur., USP, JP, and CP)
- Cloud-based Thermo Scientific™ OMNIC™ Anywhere Software gives students and scientists the ability to analyze their data anywhere, anytime, on any device
- Thermo Scientific™ Nicolet™ Smart™ Accessory technology provides simple accessory exchange, automatic experimental conditions setup, and convenient accessory purge





Optical system

The sealed and desiccated optical unit protects the instrument from humidity and solvent vapors. A self-compensating, dynamically aligned interferometer automatically tunes the instrument for best throughput while providing fast analytical speed for real-time screening. Diamond turned, alignment-free optics guarantee long-life performance with minimal maintenance.

Detectors

- Standard – Thermoelectrically cooled (TEC) fast-recovery deuterated triglycine sulfate (DTGS) detector provides response linearity and maximum data reproducibility
- Optional – High-speed and ultra-sensitive mercury cadmium telluride (MCT) detector; includes fast scan capabilities for kinetics studies

Source

- Standard – Non-migrating hotspot, single-point source with a 10-year warranty provides unmatched lifetime and data reproducibility
- Optional – Tungsten/halogen near-infrared source easily replaceable by the user from the sample compartment



Optional tungsten halogen source and desiccant compartment are easily accessible



The Nicolet iS20 source is mounted in the sample compartment, allowing quick and easy optimization of data collection

Beamsplitter

- Standard – KBr/Ge mid-infrared beamsplitter optimized for the highest spectral throughput
- Optional – XT-KBr/Ge beamsplitter with an extended range for mid- to near-infrared measurements

Laser

- Solid-state, temperature-controlled diode laser with long lifetime
- 10-year warranty included

Humidity and vapor protection

- Sealed and desiccated optical bench with protective coating on KBr windows
- Rechargeable desiccant cartridges and integrated humidity indicator
- Multi-zone pressure system with optional purge; Smart accessories purge around sample compartment windows

Spectrometer self-performance verification

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

External beam port – optional

- External beam for infrared microscopes or Nicolet iZ10 FTIR module
- Nicolet iZ10 module can be used with the Smart NIR integrating sphere (integrated InGaAs detector), TGA interface, or other third party accessories, and can be equipped with a DTGS or MCT detector

Quality and low-cost of ownership – guaranteed

- 10-year warranty on the interferometer, laser, and IR source
- 5-year warranty on diamond crystal of the Smart iTX ATR accessory

Electronics

- Integrated touch panel includes multi-colored LED indicator lighting and capacitive touch technology
- USB 2.0 high-speed bidirectional communication; compatible with USB 3.0
- Smart accessory automatic recognition, parameter setting, and spectral quality monitoring
- Synchronization protocol continuously monitors power supply, laser, source, and detector

Enhanced analytical power

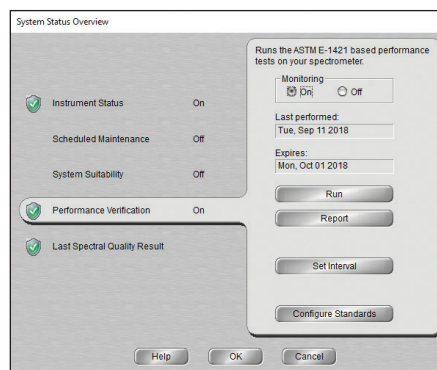
- Capture the smallest details by integrating the Nicolet iS20 FTIR spectrometer with the Thermo Scientific™ Nicolet™ iN5 FTIR Microscope or the Thermo Scientific™ Nicolet™ Continuum™ FTIR Microscope; easily measure small particles and defects down to 10 microns
- Characterize materials quickly and easily by switching to the TGA/IR interface installed in the Nicolet iZ10 spectrometer module
- Identify unknowns with the power of Thermo Scientific™ OMNIC™ Specta™ Analysis Software and compare your spectrum in minutes to a database of over 9,000 chemical spectra using innovative multi-component search routines

Designed for instrument qualification

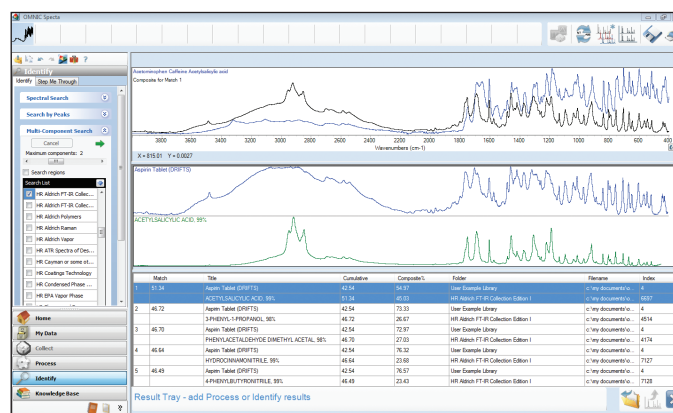
System Performance Verification (SPV) is a powerful tool to ensure the spectrometer is performing as expected, day after day. SPV includes hardware and software to test the instrument against the ASTM E1421 method using Schott NG-11 and NIST traceable standards, all contained in a built-in motorized wheel. The Nicolet iS20 SPV is user programmable and can be used for:

- Daily performance verification
- Assessing system suitability for specific customer applications
- Monitoring validation standards' expiration dates
- Scheduling preventative maintenance visits

Nicolet iS20 FTIR spectrometer equipped with the Nicolet iN5 FTIR microscope



The Nicolet iS20 provides efficient tools to identify pure compounds and mixtures. The OMNIC Specta software includes innovative ways to manage your results and provide answers with the confidence you need.



Nicolet iS20 FTIR spectrometer OMNIC software suite

- System status and diagnostic information displayed on multi-colored LED touch panel
- OMNIC Anywhere cloud-based spectroscopy software allows users to upload, share, and analyze their data anytime, anywhere, on any device
- OMNIC Specta software includes multi-component search capabilities and 9,000 library spectra
- New Thermo Scientific™ ValPro™ System Qualification methods updated with the latest pharmacopeia methodology, including European Pharmacopeia (Ph. Eur.), United States Pharmacopeia (USP), Japanese Pharmacopeia (JP), and China Pharmacopeia (CP)
- New Audit Manager software includes easy QA audit trail review and displays file change logging, even when OMNIC software is not running
- Data conversion and corrections: Kubelka Munk, Kramers Kronig, Photoacoustic, ATR correction including settings for crystal material, reflections, angle, and sample refractive index
- Automatic atmospheric suppression (no standards needed) to remove H₂O and CO₂ interferences
- Customized workflows can be executed through integrated touch panel
- Thermo Scientific™ QCheck™ Algorithm performs spectrum-to-spectrum or spectrum-to-multiple spectra QC/QA verification; includes correlation, high-sensitivity compare, and customizable pass/fail threshold
- Quantitative and discriminant analysis package includes:
 - 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

Performance specifications

Factory verified – These specifications are certified on each instrument before it leaves the manufacturing facility.

Specifications represent actual performance data, not typical or achievable results.

Signal-to-noise	50,000:1 (peak to peak, 1 minute measurement)
Spectral resolution	Better than 0.25 cm ⁻¹
Wavenumber precision	0.0008 cm ⁻¹ at 2000 cm ⁻¹
Wavenumber accuracy	0.02 cm ⁻¹ at 2000 cm ⁻¹

Validation options for FDA, Ph. Eur., JP, CP, or USP regulated industries

- Includes test routines for IQ/OQ (installation and operational qualification)
- Fully automated test routines for European Pharmacopeia (Ph. Eur.), United States Pharmacopeia (USP), Japanese Pharmacopeia (JP), and China Pharmacopeia (CP)
- Digital and electronic signature 21 CFR Part 11 compliance package

Other specifications

- Spectral range: 7,800-350 cm⁻¹ optimized, mid-infrared KBr beamsplitter; 11,000-375 cm⁻¹ XT-KBr extended mid-infrared optics
- Collection speed: Selectable from 0.16 cm/sec to 3.1 cm/sec; suitable to slow responsivity (PAS) and high-sensitivity (MCT) detectors
- Maximum speed: 40 spectra per second at 16 cm⁻¹ resolution, individually collected and stored
- Dimensions (W x D x H): 550 x 570 x 250 mm; 21.6 x 22.4 x 9.8 inches
- Weight: 32 Kg (70 lbs)
- Regulatory Approvals: CE, ETL, ISO/IEC
- Warranty:
 - 1 year on complete system
 - 10 years on interferometer
 - 10 years on laser
 - 10 years on IR source
 - 5 years on Smart iTX diamond ATR



Learn more at thermofisher.com/iS20

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