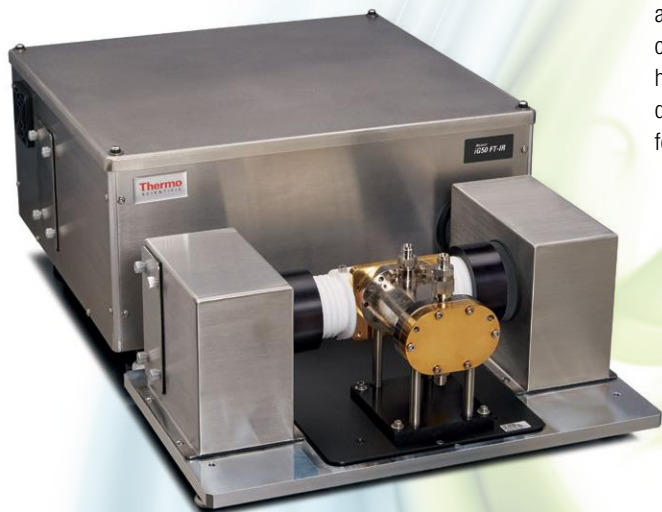


Thermo Scientific Nicolet iG50 FT-IR Spectrometer

FT-IR spectroscopy for industrial applications

The Thermo Scientific™ Nicolet™ iG™50 FT-IR spectrometer offers a modular FT-IR platform designed for industrial applications. The system extends the power and premium performance of the Thermo Scientific™ Nicolet™ iS™50, our industry-leading R&D spectrometer, to a rugged platform for optimal reliability. With configurable optical and sampling interface modules, the Nicolet iG50 spectrometer layout can be customized to fit the unique requirements of industrial process monitoring applications.



The Shortest Path from Development to Deployment

Power and Sensitivity of a Research System

For demanding applications, the Nicolet iG50 FT-IR spectrometer provides the high spectral resolution needed to isolate sharp gas sample spectral bands from interfering species. Excellent signal-to-noise (S/N) performance allows minimum detectable limits (MDL) of part-per-million or lower, while simultaneously measuring high-concentration components at percent level concentrations. Rapid scan capabilities allow characterization of high-speed transient events. Support for dual-detector collection provides flexibility for multi-channel monitoring.

Robustness and Reliability of an Industrial Analyzer

For stable performance in manufacturing settings, the Nicolet iG50 optics are housed in a compact, stainless steel enclosure which fits into a standard 19" 6U industrial rack. Our "dynamic alignment" optical controls maintain bench stability against external vibrations and temperature swings. Built-in performance verification and on-board diagnostics provide bench performance status, both visually and digitally to external digital control systems. Users can perform their own service and maintenance using pre-aligned replacement parts, keeping downtime to an absolute minimum. Finally, our worldwide network of scientists and technical support staff are available to support method development, calibration transfer, and warranty service plans.

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Research Grade Performance... Industrial Grade Reliability

Why FT-IR?

Key benefits of Fourier Transform Infrared (FT-IR) spectrometers for industrial monitoring:

- Measure multiple chemical compounds with one analyzer
- Flexible dynamic range from parts-per-billion to percent levels
- Continuous on-line monitoring with little or no sample handling
- Stable calibrations, no need to re-zero and re-span on daily basis
- Able to identify contaminants or incorrect formulations

Interchangeable Source and Beamsplitter

Easy exchange of white light source and quartz beamsplitter aids alignment of optical path and detectors.

Compact Layout

Compact layout for compatibility with standard 19" industrial racks. Sealed and desiccated with purge connections standard.

Thermo Scientific™ Polaris™ Source

Long-lifetime, high-output, mid-IR source.

High-Performance Interferometer

Developed from optical technology used by the award-winning Nicolet iS50 research FT-IR spectrometer.

Fast Optics

Fast-focus optics provide exceptional energy throughput and optical efficiency for excellent sensitivity.

Dynamically Aligned Interferometer

Continuous "dynamic alignment" control of interferometer maintains optimal energy throughput, signal integrity, and long-term stability in industrial environments (temperature swings, external vibration).

Advantages of Nicolet iG50 FT-IR Spectrometer

- Highest performance capabilities for demanding applications
 - High resolution, high sensitivity, rapid scan mode for dynamic measurements
 - Shares common components with Nicolet iS50, the world's premiere research FT-IR system
 - Dynamic alignment of internal optics guarantees stability
- Modular components for customized applications
- Comprehensive diagnostics available to digital control systems (DCS)
- User-replaceable service parts to minimize downtime and service costs
- Worldwide network for applications development, field service, and technical support

Proven Electronics

High-speed USB interface provides spectrometer control with user-programmable high-pass and low-pass filtering.

HeNe Laser

Pre-aligned HeNe gas laser for highest-precision spectral wavenumber alignment and stability.

Mirror for Beam Paths

Configurable mirror placement directs modulated beam forward or to the side for sampling flexibility.

Internal Validation/Attenuation Wheel

Validation wheel verifies system performance. Includes:

- NIST traceable, 1.5 mil polystyrene
- NIST traceable NG-11 glass
- Two selectable energy screens



Signal	Status	Current	Acceptable Range
Laser current	✓	0.68 A	0.20 A to 1.30 A
Laser frequency	✓	15798.260	

For more information about any failure, run the Bench Diagnostics program.

Comprehensive Diagnostics

Continuous diagnostic monitoring provides immediate feedback of system performance. Available for graphical user display and output to external control systems.

Modular Design... Easy Integration

The Nicolet iG50 FT-IR optical system provides a collimated output beam to interface with optional baseplates for standard accessories or customized sampling interfaces.

Standard Sample Compartment

Connecting a sample baseplate to the Nicolet iG50 optical system adds a standard-sized sample compartment and detector module, to complete a turn-key system. Accessories can be permanently aligned on removable accessory plates for optimal alignment and energy throughput.

- Includes desiccant
- Purgeable, sealed with KBr/CaF₂ or ZnSe windows
- Available with TE-cooled DTGS detector



Standard sample compartment with liquid transmission cell



Extended sample compartment with 10 meter gas cell

Extended Sample Compartment

The Extended Sample Compartment supports use of liquid-nitrogen (LN₂) cooled MCT detectors, enabling rapid-scanning to analyze high-speed transient events. Detector mount supports pre-aligned interchangeable detectors for experimental flexibility, including all detectors supported by the Nicolet iG50 FT-IR spectrometer.

External Detector Module

The External Detector Module (EDM) supports a variety of detectors (Thermo Scientific or user-supplied), including DTGS, MCT, or TE-cooled MCT options. The detector is pre-aligned on a baseplate with a focusing mirror (select either collimated or focused input beam), to simplify alignment and optimize energy throughput. The Nicolet iG50 spectrometer supports synchronous sampling from dual detectors from 2 × EDM modules or from customer-supplied detector assemblies.



External Detector Module



Standard sample compartment with a 2 meter gas cell in an industrial rack

Confidence – From Development to Deployment

A Trusted Partner for FT-IR integration

Building on a foundation set by Nicolet FT-IR instruments more than 35 years ago, Thermo Scientific is the leading brand for FT-IR spectroscopy. Backed by the strength and stability of a company with 50,000 employees in more than 50 countries, world class manufacturing facilities, and the industry's leading services organization, our team is well equipped to provide more than just an instrument.

For process engineers focused on analyzing materials used in the research, design, and manufacture of chemicals, compounds and other goods, our best-in-class highly configurable FT-IR instruments can greatly enhance your analytical capabilities. And, through our Technology Partner Program we can help you solve instrument integration challenges by combining our FT-IR experience with your applications and process expertise. Whether you deploy analytical systems within your own company or resell value-added solutions to others, we are here to help.

Technology Partner Program

Our dedicated team of engineers, project planners, and instrumentation experts can help ensure successful implementation of our technologies in ways that add value to your processes or systems. Fully focused on driving customer value, the team will work with your organization to understand your requirements, determine the appropriate technologies needed, and recommend a clear path to enhancing value for your internal or external customers.

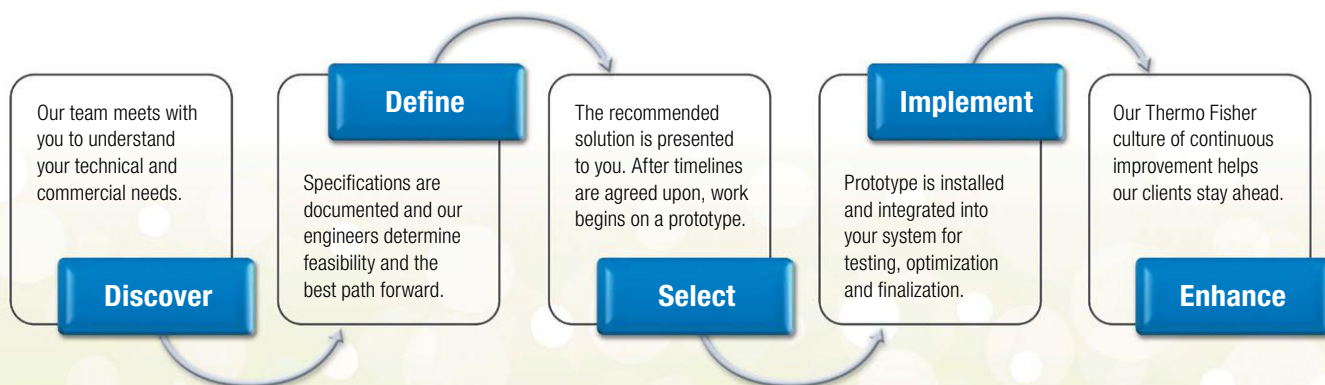
Analytical Capabilities

We are not only focused on building spectrometers and analytical equipment, but also have a depth of experience in how they are used and applied to analyze materials across a diverse range of industries; including CEMS, polymers, oil and gas, semiconductors, food and beverage, and more.



Rely on Thermo Fisher Scientific to lend analytical expertise to your integrated systems and mitigate risks in your processes.

Our Value Integration Process



To learn more about our Technology Partner Program and capabilities, visit www.thermoscientific.com/oempartners

Specifications

Configuration Options

Nicolet iG50 Spectrometer	Base spectrometer, front collimated beam output, no sampling interface. Options include Ge/KBr or ZnSe beamsplitter and CaF ₂ coated KBr or ZnSe windows. Right side beam output optional.
Nicolet iG50 Sampling Interface	Front-mounted Standard or Extended width. Purgeable and accommodates full-size accessories. Standard plate supports TE-DTGS detectors. Compatible with rack mount enclosures. Extended Sample Plate compatible with LN ₂ -cooled MCT and other Nicolet iS50 compatible detectors.
Nicolet iG50 External Detector Module	Purgeable stand-alone module including detector focusing mirror. No sampling interface. Must select collimated or focused beam input.

Spectrometer – Standard Features

90° Michelson Dynamically Aligned Interferometer
Polaris High Stability, Long Lifetime Mid-IR
1.5" (38 mm) Collimated Front Output Beam
Continuously Variable Iris Aperture
Aluminum Coated Mirrors
Validation/Attenuation Wheel
24 bit A/D Converter
USB 2.0 Interface
Helium Neon (HeNe) Reference Laser
Configurable Front or Side Collimated Beam Output
Continuous On-Board Hardware Monitoring
User Replaceable Components: Source, Laser, Detector, Power Supply, Electronics Module
Automated Performance Verification Testing
Thermo Scientific™ OMNIC™ Software

Optical Components

Beam Output Options	Front or Right Side
Beamsplitter Options	Ge/KBr 7800–350 cm ⁻¹ ZnSe 7800–550 cm ⁻¹ (non-hygroscopic)
Detectors Options	TE-cooled DLaTGS (KBr window) 12,500–350 cm ⁻¹ TE-cooled DLaTGS (BaF ₂ window) 12,500–800 cm ⁻¹ (non-hygroscopic, for industrial environments) MCT-High D* 11,700–800 cm ⁻¹ MCT-A 11,700–600 cm ⁻¹ MCT-B 11,700–400 cm ⁻¹ Customer Supplied Detector Interface

Performance Specifications

Spectral Range	7800–350 cm ⁻¹ KBr Beamsplitter 6000–650 cm ⁻¹ ZnSe Beamsplitter
Spectral Resolution	0.5 cm ⁻¹
Ordinate Linearity	0.07%T
Wavenumber Precision	Better than 0.01 cm ⁻¹
Scan Velocity (15 Values)	0.158–6.28 cm/sec

Physical Characteristics

Base Spectrometer Weight	29 kg (63 lbs)
Base Spectrometer Dimensions (W × D × H)	45 × 42 × 25 cm 17.75 × 16.5 × 9.75 in.
Cover	304 Stainless Steel
Baseplate	Aluminum Alloy

Other

Spectrometer Warranty	1 year
Mid-IR Source/Interferometer/Laser Warranty	5 years
Power Requirements	100–240 VAC, 2.5 A, 50–60 Hz
Regulatory Approvals (base spectrometer)	 

www.thermoscientific.com/iG50

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