

Specifications

Model:		FT/IR-4100	FT/IR-4200	FT/IR-6100	FT/IR-6200	FT/IR-6300
Standard wavenumber measurement range:		7,800 to 350 cm ⁻¹				
Optional extended wavenumber range:		15,000 to 2,200 cm ⁻¹ , 5,000 to 220 cm ⁻¹		25,000 to 10 cm ⁻¹		
Display wavenumber range:		15,000 to 0 cm ⁻¹ (standard)		15,000 to 0 cm ⁻¹ (standard), 25,000 to 0 cm ⁻¹ (optional)		
Wavenumber accuracy:		Within ± 0.01 cm ⁻¹ (theoretical value)				
Maximum resolution:		0.9 cm ⁻¹	0.5 cm ⁻¹	0.5 cm ⁻¹ 0.07 cm ⁻¹ (optional)	0.25 cm ⁻¹ 0.07 cm ⁻¹ (optional)	0.07 cm ⁻¹
Optical system:		Single beam				
Sample chamber:		Size: 200 mm (W) × 260 mm (D) × 185 mm Optical path: Center focus, light axis 70 mm high				
Interferometer:	Configuration:	45° Michelson interferometer Corner cube mirror interferometer, with auto-alignment mechanism, sealed structure, DSP control		28° Michelson interferometer Corner cube mirror interferometer, with auto-alignment mechanism, sealed structure, DSP control		
	Vacuum instrument:	—		Options available		
	Mirror coating:	Aluminum				Gold
	Drive method:	Mechanical bearing, electromagnetic drive				
	Drive speed:	AUTO, 1, 2, 3, 4 mm/sec AUTO DLATGS 2.0 mm/sec. MCT (optional) 4.0 mm/sec.		0.5, 1, 2, 3, 4, 5, 6, 7, 8 mm/sec AUTO DLATGS 2.0 mm/sec. MCT (optional) 4.0 mm/sec.	0.5, 1, 2, 3, 4, 5, 6, 7, 8 mm/sec AUTO DLATGS 2.0 mm/sec. MCT (optional) 4.0 mm/sec.	0.125, 0.25, 0.5, 1, 2, 3, 4, 5, 6, 7, 8 mm/sec AUTO DLATGS 2.0 mm/sec. MCT (optional) 4.0 mm/sec.
	Rapid scan:	10 Hz (optional)		20 Hz (optional)		20 Hz (standard)
Beam splitter:	Substrate material:	Standard: Ge/KBr Option: Si/CaF ₂ , Ge/CsI (not interchangeable)		Standard: Ge/KBr Option: Si/CaF ₂ , Ge/CsI, Mylar (interchangeable)		
	Replacement method:	—		Secure-lock beamsplitter catch system		
Light source:		Standard: High-intensity ceramic source Option: Halogen lamp (factory option only)		Standard: High-intensity ceramic source Option: Halogen lamp, water-cooled mercury light source Up to three light sources may be installed simultaneously including external light sources.		
Detector:	DLATGS (with Peltier temperature control) (standard)					
	W-MCT, M-MCT, N-MCT, Si, InSb, InGaAs (optional) Two detectors may be mounted simultaneously within the instrument.		W-MCT, M-MCT, N-MCT, Si, InSb, InGaAs, PAS, Si bolometer (optional) Two detectors may be mounted simultaneously within the instrument. Up to two external detectors may be installed.			
Purging:		Interferometer, Sample compartment/Detector				
Signal-to-noise ratio: (4 cm ⁻¹ , 1 min, near 2,200 cm ⁻¹)		22,000:1	30,000:1	42,000:1	45,000:1	50,000:1
Gain switching:		AUTO, 1, 2, 4, 8, 16, 32, 64, 128				
100%T line flatness:		Within 100 ± 1.0%T (4,000 to 700 cm ⁻¹ , continuous repetitive measurement)				
Communication:		USB2.0				
FTIR main unit:		Dimensions: 460 (W) × 645 (D) × 290 (H) mm Weight:33 kg		Dimensions: 600 (W) × 670 (D) × 315 (H) mm Weight:56 kg		
Power supply unit:		Dimensions:200 (W) × 285 (D) × 90 (H) mm Weight:4.7 kg This unit can be placed on its base or on its side.				

Standard Composition

Parts name	Number	Remarks
Power supply	1	
Connecting cable	1	Cable for connecting the main unit to the power supply
AC cable	1	AC cable for the power supply
USB cable	1	Cable connecting the main unit to the PC
Sample holder	1	
Standard sample	1	Polystyrene film
Stepped pin	2	Used when installing optional accessories into the sample compartment.
Instruction manual	1	
Back-up installation disk	1	
Fuse	2	

Minimum recommended PC capabilities

OS	Windows XP Professional, Windows Vista Business, Windows 7 Professional
CPU	Intel Core 2 Duo processor 3.0 GHz or higher
Display resolution	1680 × 1050 pixels or higher
Display	17 inch TFT (Recommend 20.1 inch or greater)
RAM	2 GB or greater
Hard disk drive	80 GB or greater
Optical drive	DVD-ROM
USB port	USB 2.0, 4 port



● Specifications are subject to change without notice.

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For more information, please contact:

JASCO
Advanced FT-IR Solutions

FT/IR-4000/6000 Series
Fourier Transform Infrared Spectrometers



Design the perfect system
for your application and
expand as required



Advanced FT-IR instruments and sampling accessories

FT/IR-4000 and FT/IR-6000 Series

Fourier Transform Infrared Spectrometers

Based on over fifty years of experience in infrared spectroscopy and the most advanced technology, JASCO offers the best solutions for FT-IR analyses with a complete range of application-focused FT-IR spectrometers and sampling accessories as well as a dedicated instrument control and data analysis interface. The FT/IR-4000 and 6000 Series FT-IR Spectrometers provide capabilities from education and routine analysis to high-end research applications, featuring high quality, performance and reliability. They are also designed with flexibility and expandability in mind to meet with a wide range of expanding application requirements.

Compact size

Easy to use

Maintenance free optics

High performance

Flexibility

Expandability



FT/IR-4000 Series

- FT/IR-4100
- FT/IR-4200



FT/IR-6000 Series

- FT/IR-6100
- FT/IR-6200
- FT/IR-6300

Start Button

The Start Button on the instrument allows immediate start of measurements with a single push of the button.

IQ Start

The IQ Start function automatically performs a sequence of procedures pre-registered by the Quick start measurement program, after pushing the Start Button.

IQ Accessory Recognition

Automatic recognition of the sampling accessory inserted into the sample compartment.

Rapid Scan

The Rapid Scan function is optional for the FT/IR-4100, FT/IR-4200, FT/IR-6100, and FT/IR-6200 and provided as a standard feature for the FT/IR-6300.

Step Scan

The Step Scan function is optional for the FT/IR-6000 Series. Using the Step Scan technique it is possible to monitor the progress of very fast and reproducible events.

Spectral Search Program

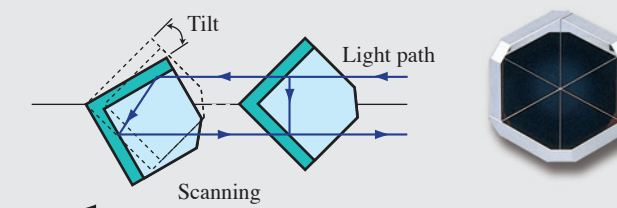
Sadtler search software package, "KnowItAll™ Informatics System, JASCO Edition" with a library of 10,000 spectra is standard.

Full Vacuum

The FT/IR-6000 Series can be upgraded to a full vacuum system.

Corner cube mirrors

Corner cube mirrors automatically correct for any light path deviation, providing excellent optical stability at all times.



Excellent S/N ratio

Featuring a highly stable interferometer and DSP technology enabling rapid and accurate tracking of mirror position and velocity for optimum signal-to-noise performance.

Highly sensitive detector

A highly sensitive and stable DLATGS detector is standard for all instrument models. The DLATGS detector element is temperature-controlled using the Peltier effect.

Wavenumber extension

The working range can be extended to cover visible to Far-IR applications by switching various optical components.

Vibration-free scanning

A specially designed vibration-proof mounting of the optical bench completely eliminates interference from external vibrations.

GxP support

For laboratories compliant with GxP regulations, an instrument validation routine is provided as standard to verify instrument performance compliant with ASTM, EP, and JP procedures.

Purgeable optics

All models include a fully purgeable optical system as standard.

Microscope/IR Imaging

JASCO offers several different infrared microscope models which can be easily interfaced to any FT/IR-4000 or FT/IR-6000 instrument.

Designed to provide operational features and sensitivity levels found only in more expensive instruments

FT/IR-4000 Series Fourier transform infrared spectrometers

*The most complete selection of FT-IR capability
from education and routine analysis to high performance research systems*



The FT/IR-4100 and FT/IR-4200 offer the highest performance in this instrument class and has expandability for a wide variety of analytical requirements. The compact optical bench is equipped with an easy access and large-size sample compartment to accept a wide range of sampling accessories. An optional MCT detector (or other options) can also be added within the standard instrument for high-sensitivity measurements, complementing the standard DLATGS detector. Expandable capabilities include FT-IR microscopy, IR imaging and rapid scan measurement. The near-IR or far-IR models are available as a factory option.

- Excellent signal-to-noise ratio
- IQ accessory
- Large sample compartment
- Auto-alignment
- Purgeable optics
- Highly sensitive detector
- Applicable to FT-IR microscopy and IR Imaging
- Rapid scan option
- Wavenumber extension option

FT/IR-4100

The most cost effective choice for a variety of IR applications

- Wavenumber range: 7,800 to 350 cm^{-1}
- Wavenumber extension option: 15,000 to 2,200 cm^{-1} or 5,000 to 220 cm^{-1}
- Maximum resolution: 0.9 cm^{-1}
- S/N ratio: 22,000 : 1



FT/IR-4200

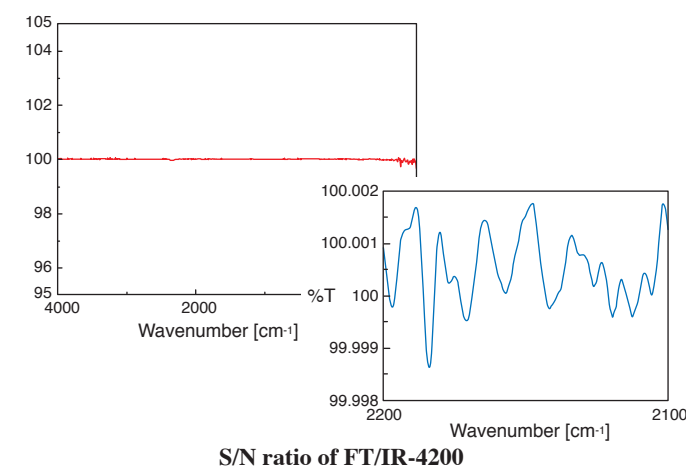
Excellent resolution and sensitivity levels for a variety of complex IR demands

- Wavenumber range: 7,800 to 350 cm^{-1}
- Wavenumber extension option: 15,000 to 2,200 cm^{-1} or 5,000 to 220 cm^{-1}
- Maximum resolution: 0.5 cm^{-1}
- S/N ratio: 30,000 : 1



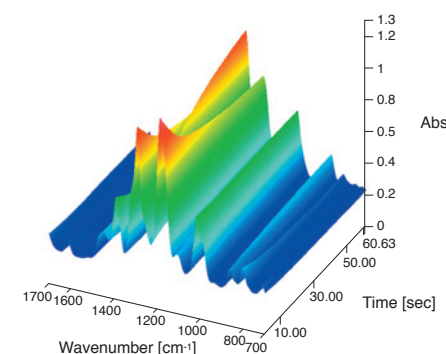
Excellent signal-to-noise ratio

Featuring a highly stable interferometer and the AccuTrac™ DSP technology providing consistent and accurate tracking of mirror position and velocity for optimum signal-to-noise performance.



Rapid scan option

Rapid-scan measurement enables spectral measurement at a temporal resolution of up to 10 Hz (at a resolution of 16 cm^{-1}). The detector used in this case is an MCT detector (optional) that features a fast response time. The rapid-scan measurement function includes an interval analysis program.



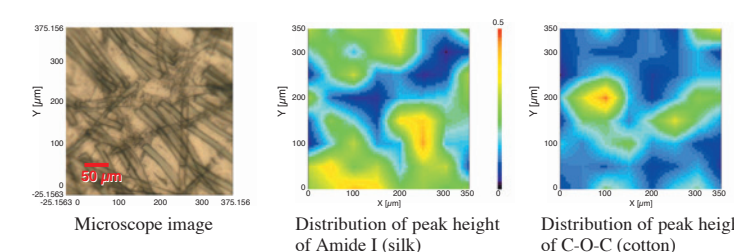
Polymerization of Cyanoacrylate adhesive

Microscope/IR Imaging

JASCO's FT-IR Microscopes, the IRT-5000, 7000S and 7000 can be easily interfaced with the FT/IR-4000 Series spectrometers to provide microscopy and imaging systems. JASCO's FT-IR microscope systems feature an innovative capability for sample analysis called "IQ Mapping". This function enables automated multi-point mapping, line mapping and IR Imaging analyses of a microscopic area with a manual sample stage and a single element detector. The microscope system automatically scans the specified points or area, rapidly collecting a full spectrum of each point without moving the sample stage.



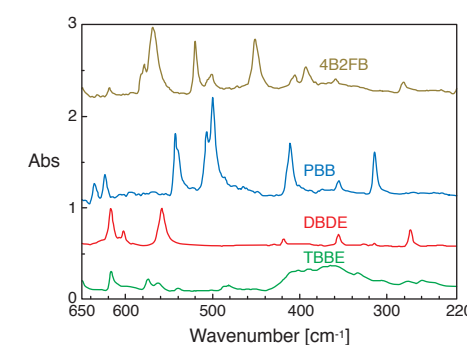
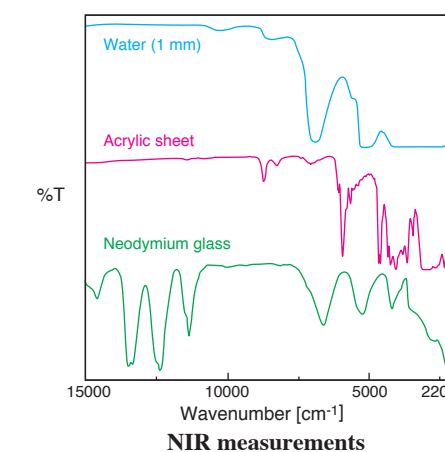
IRT-5000 with the FT/IR-4100



Component separation of mixed fiber sample by IQ mapping

Wavenumber extension

The FT/IR-4000 Series can mount two detectors inside of the main unit and then switch between them using software control. The standard working range, 7,800 to 350 cm^{-1} (mid-infrared) can be modified to cover the NIR (15,000 to 2,200 cm^{-1}) or Far-IR (5,000 to 220 cm^{-1}).



Offering the absolute highest level of performance in the industry

FT/IR-6000 Series Fourier transform infrared spectrometers

Designed for a wide range of critical research and development applications



The FT/IR-6100, FT/IR-6200, and FT/IR-6300 offer the absolute highest level of performance in the industry with the highest signal-to-noise specifications. Designed for a wide range of critical research and development applications, each model is capable of measuring from the visible ($25,000\text{ cm}^{-1}$) to the Far IR (10 cm^{-1}). The FT/IR-6300 is equipped with gold optical surfaces for more efficient FT-Raman analysis and rapid scan capability as standard. Step scan, and full vacuum options are available for all models.

- Excellent signal-to-noise ratio
- High resolution
- Rapid scan (Standard for FT/IR-6300)
- Step scan option
- Wavenumber extension option from $25,000$ to 10 cm^{-1}
- Applicable to FT-IR microscopy and IR Imaging
- FT-Raman option
- VCD option
- Full vacuum option

FT/IR-6100

A high level of functionality and high accuracy measurement capability

- Wavenumber range: $7,800$ to 350 cm^{-1}
- Wavenumber extension option: $25,000$ to 10 cm^{-1}
- Max resolution: 0.5 cm^{-1}
- S/N ratio: $42,000 : 1$



FT/IR-6200

An excellent choice for gas analysis and other critical applications

- Wavenumber range: $7,800$ to 350 cm^{-1}
- Wavenumber extension option: $25,000$ to 10 cm^{-1}
- Max resolution: 0.25 cm^{-1}
- S/N ratio: $45,000 : 1$



FT/IR-6300

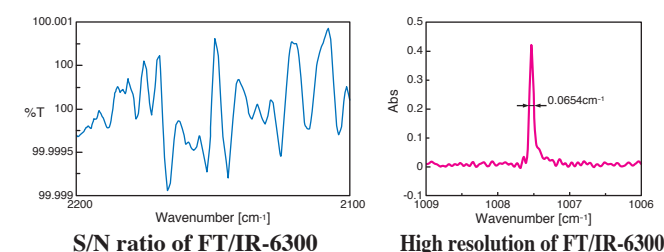
The highest resolution and signal-to-noise ratio in the industry

- Wavenumber range: $7,800$ to 350 cm^{-1}
- Wavenumber extension option: $25,000$ to 10 cm^{-1}
- Max resolution: 0.07 cm^{-1}
- S/N ratio: $50,000 : 1$



Excellent S/N ratio and resolution

The FT/IR-6000 series achieves a high SN ratio ($50,000:1$ with the FT/IR-6300) by using highly precise optical elements. In addition, the use of a long-stroke interferometer offers a high resolution capability of 0.07 cm^{-1} (standard with the FT/IR-6300).

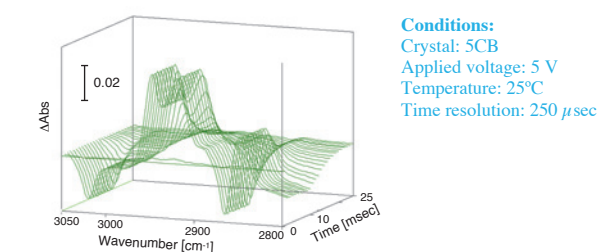


Multi-range capability

While the standard range of all the FT/IR-6000 Series instruments is from $7,800$ to 350 cm^{-1} , the range can be easily expanded from the visible ($25,000\text{ cm}^{-1}$) to the Far IR (10 cm^{-1}) region. Up to three different light sources and four different detectors can be installed to optimize performance in any region. Switchover between light sources and detectors is automated and requires no optical alignment.

Rapid-scan and step-scan measurement

A rapid scanning option enables measurement at a maximum of 20 Hz . The step scanning option offers a maximum $5\text{ }\mu\text{sec}$ time resolution (a 10 nsec option is also available), and is effective for tracking chemical transients such as the electric field orientation in liquid crystals. And as an expanded function, depth profiling measurements are possible using a PAS accessory with phase modulation.

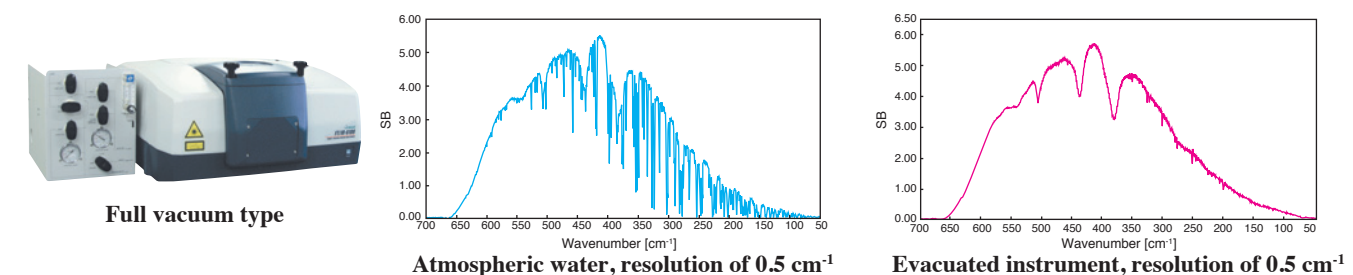


Dynamic response of liquid crystal

Vacuum option

The FT/IR-6000 Series includes a fully purgeable optical system as standard. A durable, pressure resistant casing for the interferometer allows an upgrade to an evacuable interferometer or even fully evacuable system including sample and detector chambers as a factory option. When measuring in the Far-IR range, eliminating the effects of water vapor in the air is extremely important for obtaining high-precision data. Although purging with dry air and nitrogen gas is the conventional solution to this problem, a vacuum is a more efficient method to improve performance significantly in the far-IR through mid-IR region.

* The evacuated sample compartment and detector area are also available as a factory option.



RFT-6000 FT-Raman attachment

The FT/IR-6300 can be expanded into a Raman measurement system by combining with the RFT-6000 FT-Raman attachment as a factory option. FT-Raman is suited to samples such as polymers and biological samples because it is less affected by fluorescence as compared with dispersive Raman using visible light excitation.



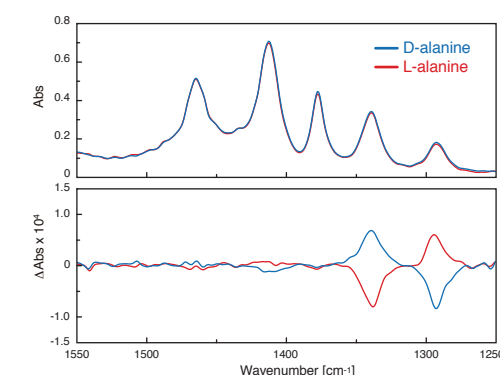
RFT-6000 with the FT/IR-6300

VFT-4000 VCD attachment

The VFT-4000 is a VCD attachment for the FT/IR-4000/6000 Series spectrometers, developed for measuring vibrational circular dichroism in the infrared region. The VFT-4000 can be used to obtain very useful information for the optical activity of carbohydrates and provide tertiary structure identification of chiral molecules.



VFT-4000 with the FT/IR-6300

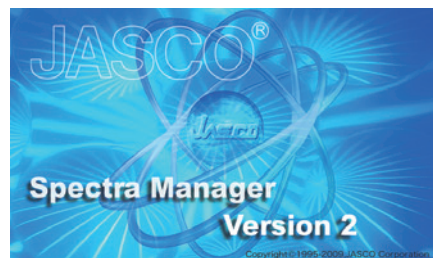


IR and VCD spectra of amino acid

Unique approach of having a single platform to control all JASCO instruments and perform powerful data analysis

Spectra Manager™ II Cross-platform spectroscopy software package

JASCO is the first manufacturer to develop a powerful, cross-platform software package, “Spectra Manager”, for controlling a wide range of spectroscopic instrumentation. The Spectra Manager program is a comprehensive package for capturing and processing data, eliminating the need to learn multiple software packages and offering the user a shallower learning curve. Several types of measurement data files (FT-IR, UV-Vis/NIR, Fluorescence, etc.) can be viewed in a single window, and processed using a full range of data manipulation functions.

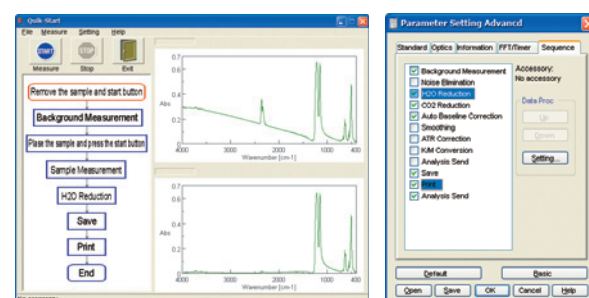


The package includes ;

- Quick Start Measurement Program
- Spectra Measurement Program
- Spectra Analysis Program
- Quantitative Analysis Program
- Sadtler KnowItAll™ Informatics System, JASCO Edition
- JASCO Canvas Program
- Validation Program

Quick Start Measurement Program

The Quick Start Measurement Program can automatically perform a series of operations as specified by a user, from measuring samples and processing data to saving and printing results, with a single click of the start button. The procedure is stored in memory for repeated use. The data processing functions include comparison of an obtained spectrum with spectra specified by a user.

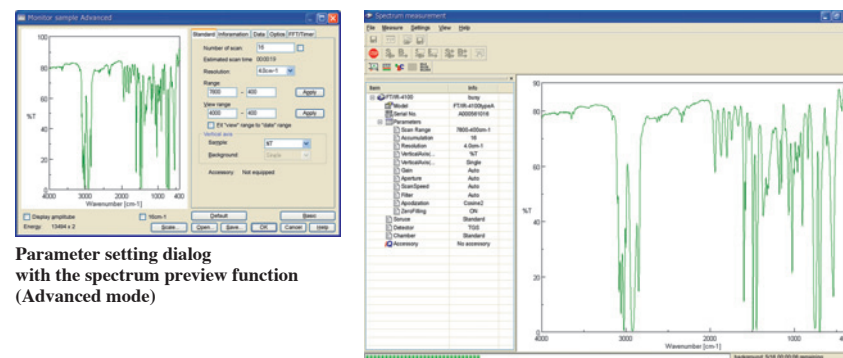


Quick Start Measurement Program dialog

Sequence procedure declaration dialog

Spectra Measurement Program

The Spectra Measurement program features the advanced mode and the basic mode. In the basic mode, measurements can be simply carried out by setting basic parameters. The advanced mode allows the user to establish detailed measurement conditions such as settings for the optional optics and Fourier transform protocols. In the parameters dialog, the spectrum preview function enables the user to optimize instrument parameters before actual measurement.

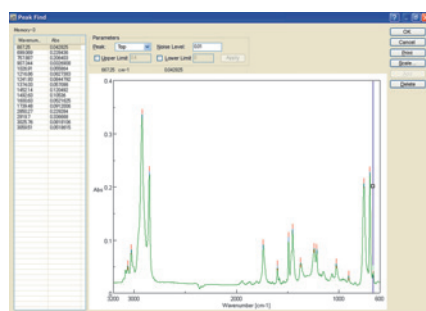


Parameter setting dialog with the spectrum preview function (Advanced mode)

Measurement window

Analysis Program

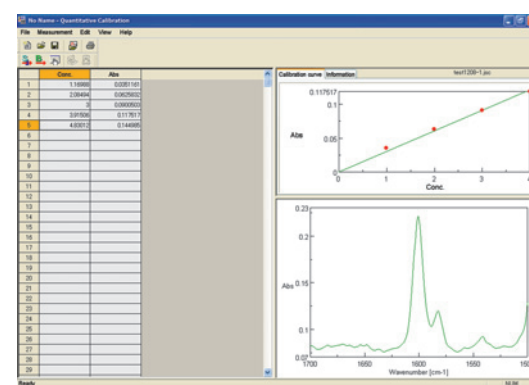
The analysis program includes a wide range of data processing functions including peak detection, smoothing, derivatives, various correction programs (baseline correction and ATR correction), among others. Spectral data can be saved in JASCO's standard file format, as well as JCAMP-DX format, and even ASCII text or CSV format.



Peak find dialog

Quantitative Analysis Program

Samples can be quantified by using peak height, peak height ratio, peak area or peak area ratio. Several types of calibration curves are offered including linear, quadratic or cubic fitting functions.



Dialog for creation of a calibration curve

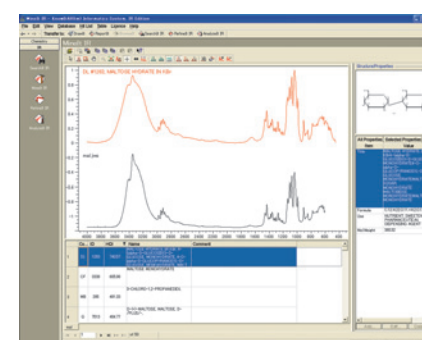
Sadtler KnowItAll™ Informatics System, JASCO Edition



The FT/IR-4000 and 6000 Series include the Sadtler search software package, “KnowItAll™ Informatics System, JASCO Edition” as standard. This package provides the best solutions for spectral databases, spectral search, mixture analysis, functional group analysis, and powerful tools for chemical drawing and reporting.

The package includes ;

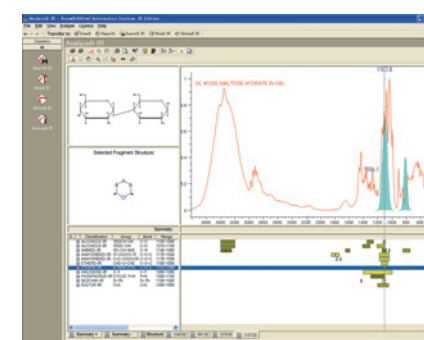
- JASCO's own data library including about 400 spectra of organic and inorganic compounds
- Sadtler data library including 10,000 spectra of reagents and polymers for permanent access
- Free use of the Sadtler databases including 220,000 IR spectra for 90 days after setup of the software package
- Import laboratory specific data and search against reference databases as well as user libraries (SearchIt™)
- Interpret the bands in an infrared spectrum for functional group analysis (AnalyzeIt™)
- Draw a chemical structure and create reports, design papers or presentations (DrawIt™ and ReportIt™)
- Determine the components of mixture spectra (Mixture Analysis)



Spectral search

SearchIt™

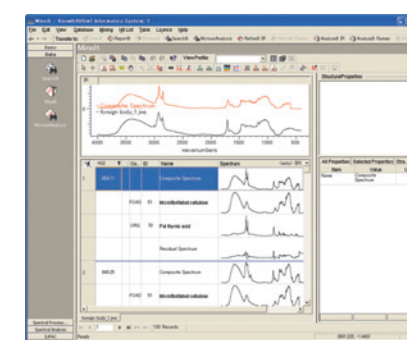
SearchIt™ allows you to import your own data and search against reference databases as well as your own databases. Searches are customizable and are driven by powerful algorithms. Search by fields such as name, structure, substructure, properties, and analytical data, such as spectra and peaks.



Functional group analysis

AnalyzeIt™

AnalyzeIt™ can be used to help interpret the bands in an infrared spectrum. Simply load a spectrum and click on a peak of interest to generate a list of all functional groups possible at that position. AnalyzeIt™ features over 200 functional groups and hundreds of interpretation frequencies.



Mixture analysis

Mixture Analysis

Mixture Analysis assists researchers in the determination of the components of a mixture spectrum. With this software, researchers import the digital spectrum to be analyzed, and the software then searches and compares the sample to reference databases of known compounds. The results outline possible components in the mixture extracted from the reference databases.

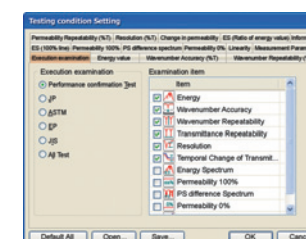
Validation Program

The Validation Program offers assistance for verifying instrument performance to meet regulatory requirements set by GxP and standards established by ISO. The test methods are compliant with ASTM, EP and JP procedures. Six different validation tests are available. The optional VMS-4000/A Automatic Validation Measurement Unit equipped with a polystyrene film and glass plate allows automated measurement of the six tests.

Performance test items

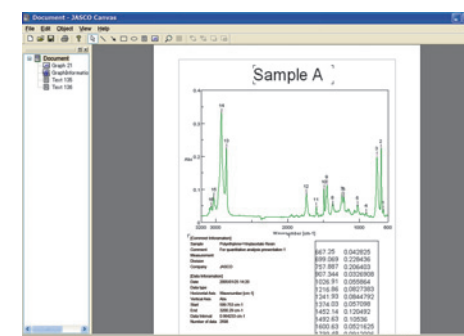
- Resolution
- Wavenumber accuracy
- Wavenumber repeatability
- Transmittance repeatability
- Energy values
- Transmittance variation

* Optional glass plate is required for the transmittance variation test.



JASCO Canvas Program

JASCO Canvas Program allows the user to prepare publication quality layouts of spectra, measurement parameters, text, images (BMP and WMF formats) to meet the user's own report requirements. The program also includes a set of drawing tools for professional documentation. Newly created documents can be stored as templates for routine data presentation.



Management of security information for systems, users, data and records

Spectra Manager™ CFR

Expandability for a wide range of application requirements

Optional software programs



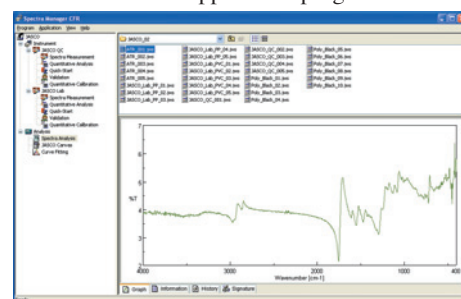
Spectra Manager CFR provides features to support laboratories for compliance with 21 CFR Part 11. A choice of complete pull-down task menus, user-friendly icons, and easily accessible pop-up menus enables new users to manage security information, control user access, and record audit trails.

The package features ;

- Access control for secure systems by user ID and password
- Audit trail function with time-stamp for records tracking
- Three levels of electronic signatures for record integrity

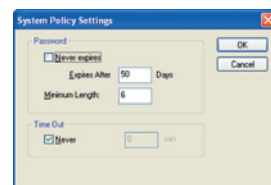
Easy-to-use

Startup window lists available resources, such as instruments, measurement and application programs.



Spectra Manager CFR main window

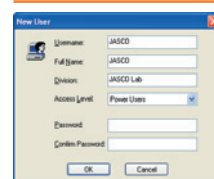
System policy



System policy dialog

Password expiration, the minimum number of characters and timeout for password entry can be set by authorized managers.

User registration

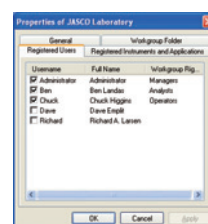


User registration dialog

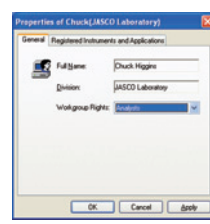
All users who use Spectra Manager CFR must be registered. When registered, the user must be assigned specific access levels for administrative rights and access to control and analysis programs.

Workgroup registration

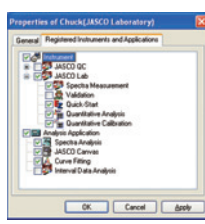
Users who perform measurements and analyses must be registered in a workgroup. Within a workgroup, users are granted access as either a “Manager”, “Analyst”, or “Operator”, with authorities to modify instrument and analysis settings. Individual users are only able to execute procedures that are allowed by their assigned access level.



Workgroup properties dialog



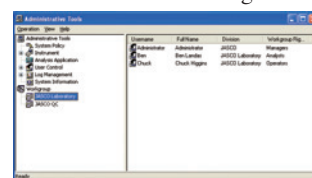
User properties dialog (Setting of user rights)



User properties dialog (Setting of access rights)

Security management

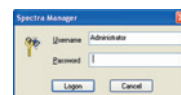
All of the security management functions of Spectra Manager CFR are accessed through the Administrative Tools interface.



Administrative Tools main window

Access rights control

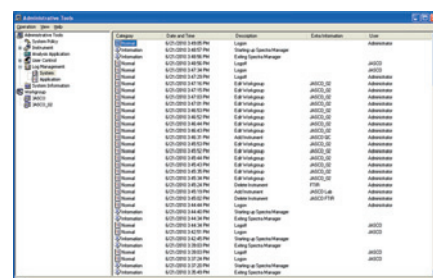
User access to the Spectra Manager CFR requires a Username and Password.



User Log-on dialog

Audit trails

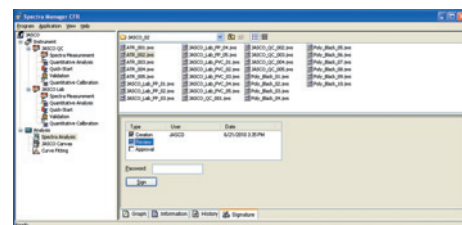
The system and application history are automatically recorded. Audit trails are assigned to every data file, recording data manipulations on the spectral data. Audit trails are also applied to instrument parameters, Canvas templates or documents and analysis methods.



System log window

Electronic signatures

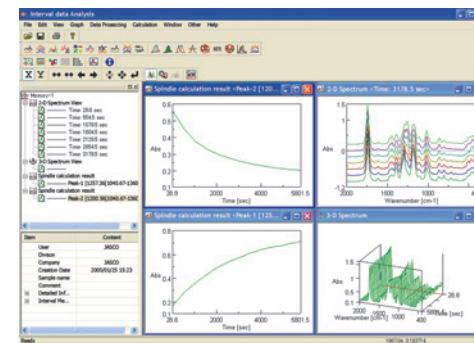
Three levels of electronic signatures, “Creation”, “Review” and “Approval” are available. Electronic signatures are applied to spectral data files, Canvas templates or documents, instrument parameters and analysis methods.



Electronic signature window

ITM-4000 Interval Scan Program

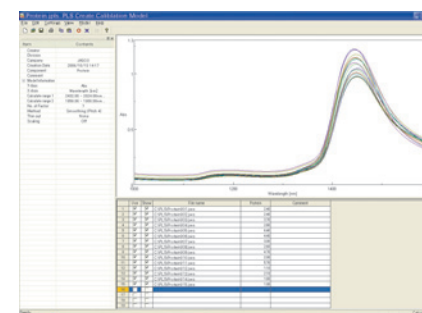
The ITM-4000 allows the long-term observation of slow reactions. During a measurement, the change at a specified wavenumber can be monitored. The obtained data can be displayed as a 2-D spectral display at a specified time, a 3-D spectral display, contour map, color-image, etc. The time course data based on peak height, peak area or peak shift at a specified wavenumber can be calculated and displayed as a 2-D trace.



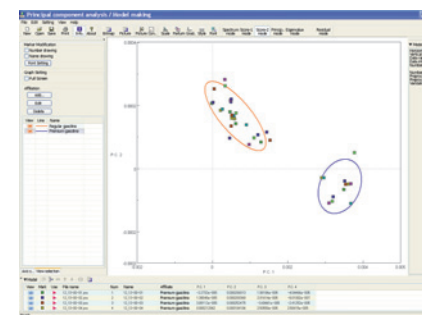
Multivariate Analysis Program

Multivariate analysis techniques are widely used for multicomponent mixtures. Four types of multivariate analysis program are available. The classical least squares (CLS), the principal components regression (PCR), and the partial least squares (PLS) methods are generally used for quantitative analysis of multi-component samples. The principal component analysis (PCA) is suitable for classification of multi-component samples.

- **PCR-4000** PCR Quantitative measurement program
- **PLS-4000** PLS Quantitative measurement program
- **CLS-4000** CLS Quantitative measurement program
- **PCA-4000** PCA Prediction program



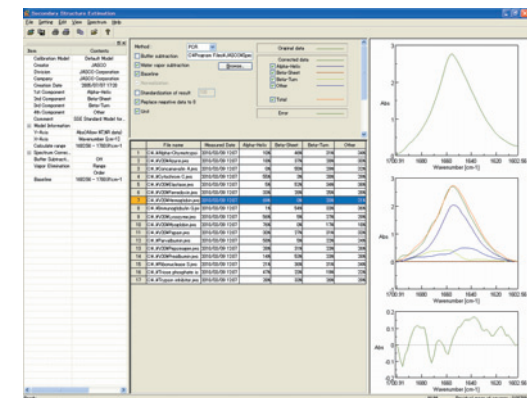
PLS/Creating calibration model



PCA/Editing model

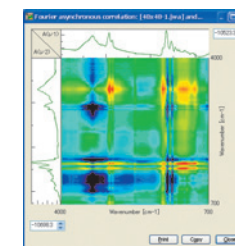
SSE-4000 Secondary Structure Estimation Program

The amide peak in the IR spectrum of a protein changes slightly according to changes in protein secondary structure. To analyze such changes, the SSE-4000 estimates protein secondary structure using a PCR or PLS method based on the JASCO protein library and/or user input data. The FT-IR can measure either liquid or solid (crystal and amorphous) samples, which is difficult for structural analysis using X-ray and CD.



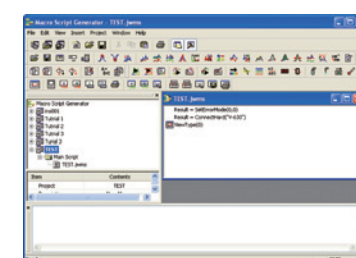
2-D Correlation Analysis Program

2-dimensional correlation performs a time domain Fourier transform of time resolved spectra obtained by, for example, interval scan measurements, and then plots correlation intensities of the real part (synchronous correlation) and imaginary part (asynchronous correlation) as separate contour maps. Analyzing the correlation spectra of each plot enables the estimation of chemical and/or structural changes of samples. By combining the results of other spectral analysis techniques (including near-IR, Raman, UV-Vis or CD) and infrared analysis, 2-D correlation provides analysis of peak assignments, lattice vibrations, the relationship between intramolecular vibrations and color/chiral information.



MCR-4000 Macro Command Program

The MCR-4000 automates a series of tasks, from various types of measurements to analysis and printing. The MCR-4000 includes the Macro Script Generator to edit macro scripts. Its user-friendly tool buttons allows users to easily create macro scripts without any special programming knowledge.



FT-IR Sampling accessories

Single reflection ATR measurement

ATR PRO450-S Single reflection ATR accessory

ATR PRO470-H Single reflection ATR accessory, high-pressure

Various types of single reflection ATR accessories and ATR crystals are available to obtain data for different types of samples to reduce the cost and time for infrared sample analysis. A 'torque-limiter' pressure applicator provides significant improvement in sample pressure contact and a standard purge capability can be utilized to obtain quality spectra without atmospheric interferences. Since the active sample contact area is extremely small, trace samples and minute contaminants can be easily measured. The ATR PRO450-S is a multi-purpose ATR accessory, available with the optional ZnSe, Ge or Diamond crystal kit(s), depending upon the desired applications. The ATR PRO470-H provides extremely high-pressure contact and is available with an optional Diamond ATR crystal only.

Specifications:

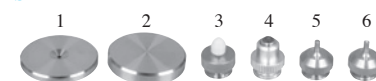
	ATR PRO450-S	ATR PRO470-H
ATR crystal:	Diamond, ZnSe, Ge (ATR crystal ordered separately)	Diamond
ATR/sample contact area:	1.5 mm in diameter	1.5 mm in diameter
Angle of incidence:	45°	45°
Pressure:	400 kg/cm ²	1,700 kg/cm ²

Crystal kit (options):

	PKS-ZnSe ZnSe crystal kit	PKS-GE Ge crystal kit	PKS-D470 Diamond crystal kit
Prism:	ZnSe	Ge	Diamond
Refractive index:	2.4	4.0	2.4
Useful ATR range: *1	6,000 to 550 cm ⁻¹	5,500 to 700 cm ⁻¹	6,000 to 2,500 cm ⁻¹ 1,700 to 300 cm ⁻¹

*1 Useful ATR range is dependent upon application requirements, instrument and general optical limitations, and different from the transmission range of crystals.

Standard accessories:



1. Well plate for powdered samples
2. Volatiles cover for liquid sample
3. Pressure tip (Resin)
4. Pressure tip (Metal)
5. Pressure tip (Flat)
6. Pressure tip (Concave)

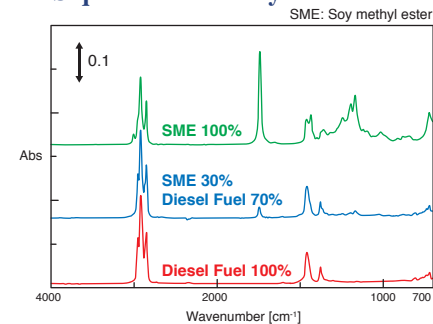
PHE-600 Heating attachment (option):

The PHE-600 is an optional heating attachment for the ATR PRO450-S and ATR PRO470-H. The maximum achievable temperature for sample analysis is 80°C.

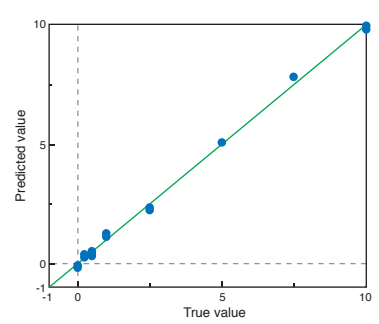


PHE-600

PLS quantitative analysis of biodiesel



IR spectrum of bio diesel fuel
(ATR method: ZnSe crystal)



Calibration model of SME (PLS)
Calculation area (1,800 - 1,692, 1,327 - 940 cm⁻¹)

Biodiesel fuel was measured by using the ATR PRO450-S with a ZnSe ATR crystal. Without any complicated sample preparation, the determination of the content of fatty acid methyl esters (FAME) in diesel fuel oils is possible according to the test method of ASTM D7371-07.

ATR PRO610P-S Polarized single reflection ATR accessory

ATR PRO630P-H Polarized single reflection ATR accessory, high-pressure

The ATR PRO610P-S, available with an optional ZnSe, Ge or Diamond crystal kit, allows ATR polarization measurements. The ATR PRO630P-H with an optional Diamond crystal provides extremely high-pressure contact for high quality, reproducible polarized IR spectra.

Specifications:

	ATR PRO610P-S	ATR PRO630P-H
ATR crystal:	Diamond, ZnSe, Ge (ATR crystal ordered separately)	Diamond
ATR/sample contact area:	1.5 mm in diameter	1.5 mm in diameter
Angle of incidence:	45°	45°
Pressure:	400 kg/cm ²	1,700 kg/cm ²
Polarizer:	Wire-grid polarizer, KRS-5	
Polarization angle:	0 to 180°	

Standard accessories:

- Pressure tip (Metal)
- Pressure tip (Flat)
- Pressure tip (Concave)
- Polarizer and analyzer

*Crystal kit, well plate for powdered samples and volatiles cover for liquid samples are optional.

Crystal kit (option):

- PKS-Z610P ZnSe crystal kit
- PKS-G610P Ge crystal kit
- PKS-D610P Diamond crystal kit



ATR PRO610P-S

ATR PRO670H-S Heating single reflection ATR accessory

ATR PRO690H-H Heating single reflection ATR accessory, high-pressure

The ATR PRO670H-S, available with the optional Diamond, ZnSe or Ge crystal kit, allows ATR measurements for heated samples. The ATR PRO690H-H including a diamond crystal as standard provides extremely high-pressure contact for heated samples, with heating capabilities up to 180°C.

Specifications:

	ATR PRO670H-S	ATR PRO690H-H
ATR crystal:	Diamond, ZnSe, Ge (ATR crystal ordered separately)	Diamond (Standard)
ATR/sample contact area:	1.5 mm in diameter	1.5 mm in diameter
Angle of incidence:	45°	45°
Pressure:	400 kg/cm ²	1,700 kg/cm ²

Crystal kits for ATR PRO670H-S (option)

- PKS-Z670H ZnSe crystal kit
- PKS-G670H Ge crystal kit
- PKS-D670H Diamond crystal kit

Standard accessories:

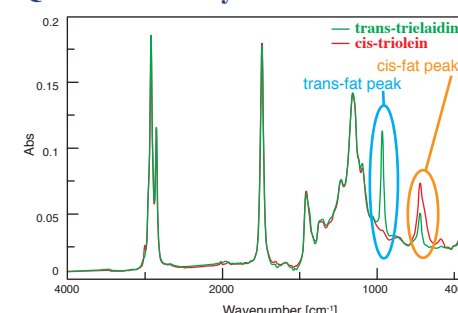
- Pressure tip (Metal)
- Pressure tip (Flat)
- Pressure tip (Concave)
- Temperature controller

* Well plate for powdered samples and volatiles cover for liquid sample are optional.
* Diamond crystal kit for ATR PRO690H-H is standard.
* Crystal kits for ATR PRO670H-S are optional.

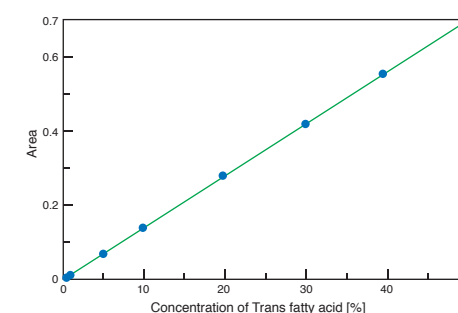


ATR PRO670H-S

Quantitative analysis of trans-fats in food



Mid-IR spectra of cis-fats and trans-fats



Calibration curve for trans-fat content

Sample	Trans-fat content [%]
Margarine	3.1
Cooking oil	1.9
Sesame oil	0.7
Olive oil	0.8
Chili oil	1.2

Trans-fat content of commercial food oils

The figures above illustrate the quantitative analysis of trans-fats in several kinds of oil with a calibration made according to the official AOAC (The American Organization of Analytical Chemists) ATR method, by using the ATR PRO670H-S with the diamond ATR crystal at 65°C. By using the ATR methods, the quantity of trans-fats in various kinds of food oils can be determined simply and quickly without complicated procedures.

ATR PRO650-G Single reflection ATR accessory, 65° incident angle

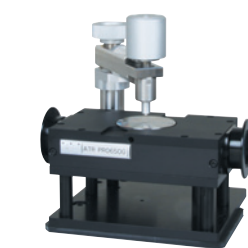
The ATR PRO650-G is a single reflection ATR accessory whose angle of incidence is 65°. The Ge ATR crystal is included as standard. It enables highly sensitive measurements of high-refractive index samples such as Si wafers and/or thin films on a sample surface.

Specifications:

ATR crystal:	Ge
Wavelength range:	5,200 to 700 cm ⁻¹ (instrument dependent)
ATR/sample contact area:	3 mm in diameter
Angle of incidence:	65°
Pressure:	400 kg/cm ²

Standard accessories:

- Ge crystal kit
- Pressure tip (Metal)
- Pressure tip (Flat, large type)
- * Well plate for powdered samples and volatiles cover for liquid sample are optional.



ATR PRO650-G

Multiple reflection ATR measurement

ATR PRO410-M Multiple reflection ATR accessory

Specifications:

Crystal material:	ZnSe or Ge (An optional crystal kit is required.)
Refractive index:	2.4 (ZnSe), 4.0 (Ge)
Contact area with sample:	5 × 20 mm for solid samples 10 × 25 mm for liquid samples
Number of reflections:	5
Angle of incidence:	45°

Crystal kits for ATR PRO410-M (option):

- PKM-ZESE-S ZnSe crystal kit for solid samples
- PKM-GE-S Ge crystal kit for solid samples
- PKM-ZESE-L ZnSe crystal kit for liquid samples
- PKM-GE-L Ge crystal kit for liquid samples



ATR PRO410-M

ATR-500/Mi Multiple reflection ATR accessory

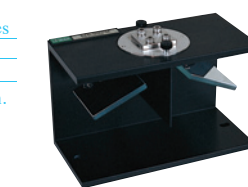
Specifications:

Crystal material:	KRS-5 for solid samples (standard) ZnSe and Ge (option)
Refractive index:	2.37 (KRS-5), 2.4 (ZnSe), 4.0 (Ge)
Contact area with sample:	10 × 30 mm for solid and liquid samples
Number of reflections:	5
Angle of incidence:	45°

* The liquid sample holder is available as an option.

Optional crystal and liquid sample holder:

- ZnSe crystal for solid samples
- Ge crystal for solid samples
- Liquid sample holder without crystal
- ZnSe crystal for liquid samples
- Ge crystal for liquid samples



ATR-500/Mi

FT-IR Sampling accessories

Grazing-angle reflection measurement

RAS PRO410-H Grazing-angle reflectance accessory

85° incident angle with no mirror

The most common angle of incidence for grazing angle accessories is eighty degrees because the accessory throughput is limited and it is difficult for a standard FT-IR instrument to utilize an incidence angle of more than eighty degrees. The enhanced throughput of the FT/IR-4000/6000 series allows the use of the RAS-PRO410-H with an incident angle of 85 degrees due to the high S/N ratio of these instruments.

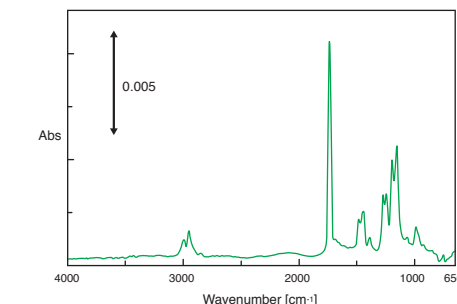


Specifications:

Optical system:	Refractive optics
Incident angle:	85°
Polarizer:	Wire-grid, KRS-5
Polarizing direction:	Fixed at 0° to the plane of incidence (P polarization)
Sample placement:	Horizontal
Sample masks:	20 × 10 mm, 10 × 10 mm (standard), 10 × 5 mm (option)

* An optional MCT detector is required when the sample masks of 10 × 10 mm and 10 × 5 mm are used.

RAS spectrum of PMMA (polymethyl methacrylate) thin layer on a metal substrate



PMMA thin layer on a metal surface was measured by using the RAS PRO410-H under vacuum condition. The very small peaks can be detected without any effects of water vapor interference.

RAS PRO410-B Grazing-angle reflectance accessory

80° incident angle



Specifications:

Incident angle:	80°
Polarizer:	PL-82 is required
Sample masks:	10 × 10 mm, 10 × 20 mm
Sample placement:	Horizontal

RAS-300/Hi Grazing-angle reflectance accessory

75° incident angle



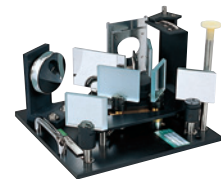
Specifications:

Incident angle:	75°
Polarizer:	Polarizing mirror (parallel polarization only)
Sample masks:	10 × 10 mm, 10 × 20 mm
Sample placement:	Horizontal

PR-510i Variable-angle reflectance accessory

Variable incidence angle, 55~85°

The PR-510i is designed for the measurement of ultra thin layers on reflective surfaces using variable incidence angles selectable from 55-85°

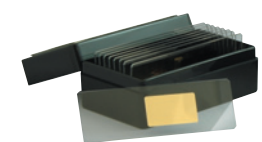


Specifications:

Incident angle:	55~85°
Polarizer:	Wire-grid polarizer, KRS-5
Sample masks:	30 × 40 mm
Sample placement:	Vertical

Gold-coated reference mirror

The gold-coated reference mirrors are used as the reference reflection plate for infrared reflection measurements and can be used for the all the reflection accessories outlined above.



P/N: 2000-0049 Gold-coated reference mirrors

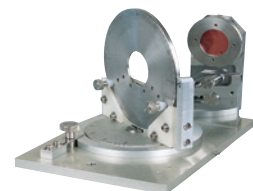
Specifications:

Composition:	10 pcs./set
Size:	25 × 65 mm (entire body), 25 × 15 mm (mirror)

Film sample measurement

VAT-500i Variable angle transmission accessory

The VAT-500i enables transmittance measurements of film-type samples at different angles of incidence. The polarizer is standard to enhance IR measurements. The VAT-500i can be used for the analysis of polymer films and coating layers, and dichroism measurements of oriented films.



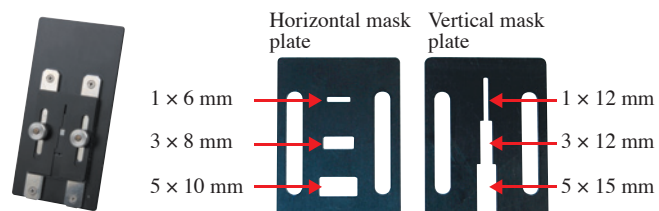
Specifications:

Measurement mode:	Transmission
Sample size:	Maximum ø5 inch Minimum ø34 mm (or 22 × 22 mm) Maximum thickness 4 mm
Angle of incidence:	0 ~ 90°
Polarizer:	Wire-grid polarizer, KRS-5

Universal sample holder

The universal sample holder (P/N: 2000-0045) is used to measure small film-type samples using the transmission method. Changing the combination of slits on two mask plates, the aperture size can be optimized for maximum light intensity corresponding to the size and shape of a sample.

P/N: 2000-0045 Universal sample holder



Diffuse reflection measurement

DR PRO410-M Diffuse reflectance accessory



The DR PRO410-M can hold up to 14 samples including a background, or reference, sample on the sample holder at the same time. Multiple samples can be analyzed while maintaining the sample purge conditions.

Composition:

- Main unit
- 7-position sample holder × 2

SMART-400i Smart Tech Diffuse reflectance accessory



The Smart Tech provides simple sample preparation and easy measurement procedures. To measure a solid sample, the included sampling holder is used to scrape the sample surface. Powder samples can be placed directly onto the sampling holder without further preparation.

Composition:

- Main unit
- 5-position sample holder
- Sample window, 10 pcs.
- Sampling holder
- Standard spectra: 30 each of polymer and drug spectra

NRF PRO410-N DR measurement in the NIR region

Samples such as powders or pellets can be measured while keeping the samples in a sample bottle or test tube. The non-destructive analysis of tablets can be done simply by placing the sample onto the accessory.



Optional holders



Specifications:

Wavenumber range:	15,000 ~ 4,000 cm ⁻¹
Incident angle:	11.2°
Spot diameter:	10 mm dia.
Reference material:	Diffusion plate for reference
Option:	test tube holder, pellet holder, powder sample holder

* InSb or InGaAs high-sensitivity detector is required for the diffuse reflectance measurement.

* This accessory is used with a near-infrared model of the FT/IR-4000 and FT/IR-6000 series.

DR-81 Diffuse reflectance accessory



The DR-81 employs a 5-position sample holder.

Composition:

- Main unit
- 5-position sample holder (2 pcs.)

DR-600Ai, Bi, Ci Vacuum heated DR measurement

The DR-600 is used for the characterization of the adsorption state of powder samples such as catalysts, featuring heating and evacuation functions.



Specifications:

Cell temperature:	1000°C (Ai), 800°C (Bi), 600°C (Ci)
Vacuum level:	0.13 Pa
Sample size:	8 mm dia.
Window material:	KBr
Gas flow:	capable
Heater:	Kanthal heater
Cell cooling method:	water-cooled

* Temperature controller and temperature control software are optional.

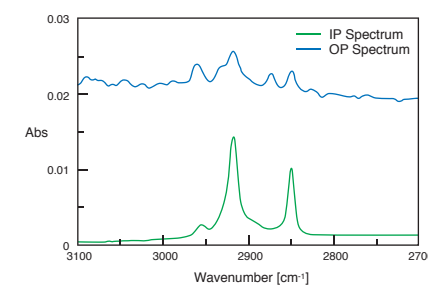
IR MAIRS measurement

AM-4000 Automated MAIRS measurement unit



The AM-4000 automates transmission measurements of a thin film on an IR transparent substrate at variable angles of incidence to obtain the in-plane (IP) and out-of-plane (OP) spectra. The enclosed software calculates the molecular orientation angle of the sample.

* MAIRS: Multiple-angle incidence resolution spectrometry



IP and OP spectra of cadmium stearate

Specular reflection measurement

RF-81S Specular reflectance accessory

The RF-81S can measure the relative reflectance of samples with respect to the reference sample.

Specifications:

Incident angle:	10°
Number of reflections:	Single
Sample mask size:	1, 3 and 5 mm dia.



IR photo-acoustic measurement

PAS-500 Infrared photo-acoustic measurement accessory

The PAS-500 allows photoacoustic detection of infrared absorbance by samples via an acoustic signal that is evolved from the thermal expansion of a purge gas as a result of infrared absorption by the sample. The depth profile information can be obtained by changing the interferometer scan speed or phase modulation using a step-scanning interferometer.



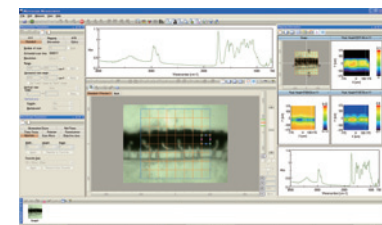
FT-IR Sampling accessories

FT-IR Microscope accessories

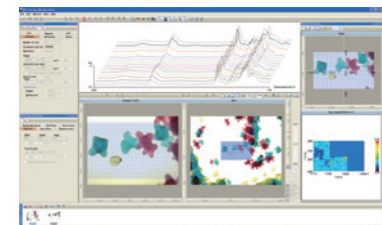
Micro FT-IR spectroscopy has become one of the most important analysis tools in various fields requiring precise, highly sensitive measurements of a variety of micro samples. Three innovative FT-IR Microscopes, the IRT-5000, IRT-7000S and IRT-7000 provide several unique functions that dramatically improve infrared micro-spectroscopy analyses. These microscope systems can be easily interfaced with either the FT/IR-4000 or FT/IR-6000 spectrometer, offering the most advanced microscopy and imaging systems available in the market today.



IRT-5000 with the FT/IR-4100



Measurement program window (IRT-5000 with a single element detector)



Measurement program window (IRT-7000 with a linear array detector)



IRT-7000VC with the FT/IR-6100FV (Full vacuum type FT-IR microscopy system)

IRT-5000

Infrared microscope

Manual sample stage

Mid-band MCT detector

The IRT-5000 employs a mid-band MCT detector and a manual X-Y-Z sample stage as standard. The standard "IQ Mapping" function allows mapping experiments without moving the sample stage.

IRT-7000S

Automated IR microscope

Automatic sample stage

Mid-band MCT detector

The IRT-7000S is a fully automated microscope employing a mid-band MCT detector as standard. The standard automatic sample stage provides wide area mapping experiments.

IRT-7000

Multi-channel IR microscope

Automatic sample stage

Mid-band MCT detector and linear array detector

The IRT-7000 employs a linear array detector and a single-point MCT detector as standard. The "IQ Mapping" function allows IR imaging with extremely high spatial resolution and excellent sensitivity in a short time.

IRT-5000VC/IRT-7000VC

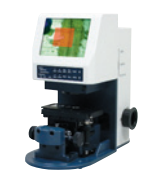
FT-IR Full vacuum type microscopes

JASCO supplies vacuum type FT-IR microscopes to be used with the FT/IR-6000V (vacuum interferometer) and FT/IR-6000FV (full vacuum) models of the FT/IR-6000 series as a factory option. This option provides micro analysis capabilities with a vacuum environment.

IRT-1000 (Irron μ)

Sample compartment microscope

The IRT-1000 (Irron μ) offers unprecedented convenience and ease of use in conjunction with the FT/IR-4000 and 6000 Series instruments. The microscope accessory installs into the spectrometer sample compartment in seconds without tedious optical alignment.



Liquid cells

MagHoldIR Magnetic demountable liquid cell

Quick and easy sampling with disposable windows

Ideal for liquid samples with a volume as small as 1 μ L

The MagHoldIR is a sample holder using disposable windows suitable for micro-volume samples such as liquids, paints or adhesives. This holder can allow measurement of samples with a volume as small as 1 μ L. A sample is placed between the disposable KBr windows and secured by the magnetic cover. CaF₂ and BaF₂ windows are available as options.

Composition:

- Base plate (1 pc.)
- Cover plate (1 pc.)
- Micro KBr window (5 × 5 × 1 mm, 10 pcs.)
- Micro pipette (1 pc.)
- Pipette tip (5 pcs.)

Ordering information:

- 2000-0100 MagHold IR Magnetic demountable liquid cell (KBr window)
- 2000-0104 MagCA7 CaF₂ window, 2pcs/set
- 2000-0105 MagBA7 BaF₂ window, 2pcs/set



MagCELL Magnetic demountable liquid cell

Excellent reproducibility with the magnetic cover plate

Ideal for liquid samples with a volume of 10 μ L

The MagCELL is a demountable cell holder that utilizes a magnetic cover plate to fix the windows of the cell, providing excellent reproducibility and minimizing variations in peak intensity. Changing spacers, the infrared peak intensity can be optimized for precise analysis. Four kinds of window materials, KBr, CaF₂, BaF₂, and KRS-5 are available.

Composition:

- Base plate with o-ring (1 pc.)
- Cover plate with packing (1 pc.)
- Window (19.8 dia. × 2mm thickness, 2 pcs.)
- Spacer (5 each of 0.012, 0.025, 0.05, 0.1 and 0.2 mm thickness)
- Tweezers (made of anti-static steel, 1 pc.)

Ordering information:

- 2000-0109 MagCELL Magnetic demountable liquid cell (KBr kit)
- 2000-0110 MagCELL Magnetic demountable liquid cell (CaF₂ kit)
- 2000-0111 MagCELL Magnetic demountable liquid cell (BaF₂ kit)
- 2000-0112 MagCELL Magnetic demountable liquid cell (KRS-5 kit)



Gas cells

Long-path gas cell

The sub-ppm analysis of trace components in high purity gases can be very important for many industries, including semiconductor manufacturing. Several types of long-path gas cells are available to comply with these requirements. The materials of the cell body can be selected from glass or stainless upon user requirements. A long-path gas cell exclusively for the FT-IR full vacuum model instruments is also available.

	LPC-8M-G	LPC-12M-G	LPC-12M-S	LPC-12M-FV
Light pathlength:	8 m	12 m	12 m	12 m
Cell volume:	0.5 L	2.3 L	2.3 L	2.3 L
Cell body:	glass	glass	SUS316	SUS316
Inner coating:	-	-	Electropolishing	Electropolishing
Window material:	KBr (ϕ 25 mm × 5 mm), ZnSe, CaF ₂ , BaF ₂ as option			
O-ring:	Viton (Kalrez [®] as option)			
Transmission efficiency:	7% *1		15% *2	
Heating:	N/A	N/A	Option	Option

*1. Using FT/IR-6000 Series, aperture 3.5 mm.

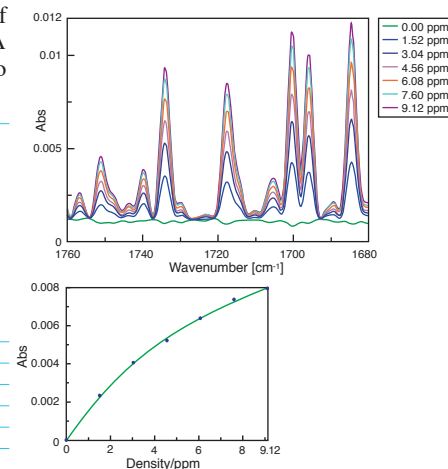
*2. Using FT/IR-6000 Series, aperture 5 mm.

* Kalrez[®] is a registered trademark of DuPont Dow Elastomers.

* The LPC-12M-FV is for FT/IR-6000FV Full vacuum spectrometers.

* 8 m gas cell with SUS316 body is available as an option.

Quantitative analysis of water vapor with a 12 m gas cell and FT/IR-6000 Full Vacuum system



The full vacuum gas analysis system consisting of the LPC-12M-FV long-path gas cell and the FT/IR-6000 full vacuum model enables precise quantitative analysis of trace amounts of water vapor in a semiconductor manufacturing process.

Traditional liquid cells

	Sealed liquid cell	Micro sealed liquid cell	Demountable liquid cell	Demountable cell
Window materials:	NaCl, KCl, KBr, KRS-5, CsI, CaF ₂ , Quartz and ZnSe	NaCl, KCl, KBr and KRS-5	NaCl, KCl, KBr, KRS-5, CsI, CaF ₂ and Quartz	NaCl, KCl, KBr, KRS-5, CsI, CaF ₂ , Quartz and Polyethylene (for Far-IR)
Pathlength:	0.025 ~ 100 mm (16 sizes)	Pathlength: 0.025 ~ 0.5 mm (6 sizes)	Pathlength: 0.025 ~ 100 mm (16 sizes)	0.025 ~ 100 mm (16 sizes)
Optional spacers:	-	-	0.025 ~ 100 mm in thickness (16 sizes)	0.025 ~ 100 mm in thickness (16 sizes)

Traditional gas cells

	Sealed gas cell	Demountable gas cell	Small capacity gas cell
Optical pathlength:	50 mm and 100 mm	50 mm and 100 mm	75 mm
Cell body:	Glass	Glass	Glass or metal
Windows:	Fixed	Removable	Glass body: Fixed, Metal body: Removable
Window materials:	NaCl, KCl, KBr, KRS-5 and CaF ₂	NaCl, KCl, KBr and KRS-5	NaCl, KCl, KBr and KRS-5

FT-IR Sampling accessories

KBr sampling kit

Sampling kit A for KBr pellet method

Composition:

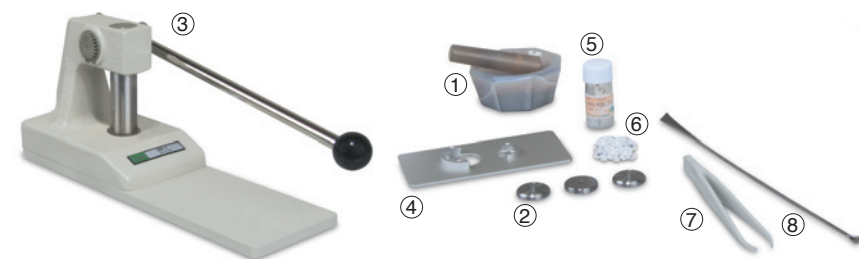
- | | |
|-----------------------------------|---------------------|
| ① Agate mortar and pestle | ④ Pellet holder |
| ② Micro KBr pellet die, 3 mm dia. | ⑥ KBr powder, 100 g |
| ③ Mini press | ⑧ Spatula |

Ordering information:

- JID3-1031 Sampling kit A for KBr pellet method

KBr pellet method

The KBr pellet method is a traditional sampling method, most commonly used on powders and other solid samples. The technique involves grinding the sample and diluting it in KBr, then pressing the mixture to produce a pellet.



Sampling kit B for KBr plate method

Composition:

- | | |
|-----------------------------------|----------------------------|
| ② Micro KBr pellet die, 5 mm dia. | ⑤ Mini KBr plate, 100 pcs. |
| ③ Mini press | ⑦ Tweezers for KBr plate |
| ④ Pellet holder | |

Ordering information:

- JID3-1032 Sampling kit B for KBr plate method

KBr plate method

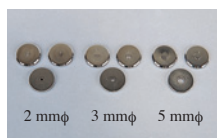
The KBr plate method allows a sample to be placed between disposable KBr plates and pressed into a thin disk, decreasing the effects of contamination and moisture absorption. This method can be widely used for macro/micro FT-IR measurements.

Sampling preparation tools

Micro KBr pellet die

Three types of die kits are available to form micro pellets of 2, 3 and 5 mm in diameter. The average quantity of sample required is 10 µg for the 2 mm pellet die, 50 µg for the 3 mm pellet die, and 100 µg for the 5 mm pellet die.

* A mini-press or hydraulic press is required when forming pellets.



KBr pellet die with pellet holder

Three types of die kits are available to form pellets of 7, 10 and 20 mm in diameter. The average quantity of sample required is 0.5 mg for the 7 mm pellet die, 1 mg for the 10 mm pellet die and 3 mg for the 20 mm pellet die. The pellet holder is included as standard.

* A hydraulic press is required when forming pellets.



Pellet holder

Two types are available. The Type III is for a 10 mm diameter pellet and a Micro KBr pellet, and the type IV is for 13 and 20 mm diameter pellets.



Mini-press

The Mini-press is used when forming micro pellets of 2 and 3 mm in diameter. The micro pellets can be easily made by applying pressure by hand.



Disposable salt plates



Disposable salt plates can be used for the KBr plate method, liquid film method and thin film method.

Ordering information:

- 2000-0047 Micro KBr plate (5 × 5 × 1 mm), 100 pcs/set
- 2000-0060 Mini KBr plate (3 × 3 × 0.5 mm), 200 pcs/set
- 2000-0066 Mini KCl plate (3 × 3 × 0.5 mm), 100 pcs/set

Other options

PL-82 Polarizer

The PL-82 converts light in the IR region to linearly polarized light to allow infrared polarization measurements of polymer films, coatings and oriented film samples.



Specifications:

Polarizer:	Wire-grid polarizer, KRS-5
Angle setting display:	0°~180°

AVC-600 Control panel

The AVC-600 for the FT/IR-6000 vacuum type provides automatic switching of valves for evacuation and/or purge.



GLD-201B Vacuum pump

The GLD-201B is used to evacuate the interferometer, sample compartment and detector block of the FT/IR-6000 vacuum type.



Specifications:

Effective exhaust speed:	200 L/min (50 Hz), 240 L/min (60 Hz)
Ultimate pressure:	6.7 × 10 ⁻² Pa (G.V.closed)
Electric motor:	Single phase, 550 W AC100~120 V
All load currents:	AC100 V 9 A (50 Hz), 8.4 A (60 Hz)

MCT Detector

The MCT detector features high sensitivity and high-speed response. Three types of MCT detectors are available for different spectral ranges. (Mandatory for rapid-scan measurements)

Specifications:

Measurable wavenumber range:	5,000 to 750 cm ⁻¹ (MCT-N) 12,000 to 650 cm ⁻¹ (MCT-M) 12,000 to 450 cm ⁻¹ (MCT-W)
Cooling:	Liquid nitrogen cooling
Vessel:	Aluminum Dewar
Capacity:	About 100 mL
Liquid nitrogen retention time:	8 hours or more



MCT-M

InSb Detector

The InSb detector allows highly sensitive and high-speed measurement in the near-IR region. (Mandatory for rapid-scan measurements in the near-IR region.)

Specifications:

Measurable wavenumber range:	11,500 to 1850 cm ⁻¹
Cooling:	Liquid nitrogen cooling
Vessel:	Aluminum Dewar
Capacity:	About 100 mL
Liquid nitrogen retention time:	8 hours or more



Specifications:

Measurable wavenumber range:	650 to 10 cm ⁻¹
Cooling:	Liquid helium cooling



Si Bolometer

The Si bolometer enables highly sensitive measurement in the far IR region.

Wavelength ranges covered by the various optical elements

