• Specifications

Model name	VIR-9400
Measurement wavenumber range	7000 to 400 cm^{-1}
Resolution	4, 8, 16 cm^{-1}
Interferometer	Michelson type corner cube mirror used Auto alignment
Interferometer drive speed	0.5, 2, 4 mm/sec
Beam splitter	KBr
Detector	DLATGS (with temperature control) (standard) MCT (optional)
Signal-to-noise ratio	10000 : 1 or more (4 cm^{-1}, one minute accumulation, near 2200 cm^{-1})
Type of accessory	DR, fiber
Optical system exit light	Emitted from the interferometer (parallel beam) Incident on the detector (parallel beam)
Dimensions	Main unit : 320W× 265D× 346H (mm) Power supply box : 272W× 262D× 68H (mm)
Weight	Main unit : 18.7 kg Power supply box : 2.5 kg

Model name	VIR-9500
Measurement wavenumber range	7000 to 400 cm^{-1}
Resolution	0.5, 1, 2, 4, 8, 16 cm^{-1}
Interferometer	Michelson type corner cube mirror used Auto alignment
Interferometer drive speed	0.5, 2, 4 mm/sec Rapid scan measurement (optional)
Beam splitter	KBr
Detector	DLATGS (with temperature control) (standard) MCT (optional)
Signal-to-noise ratio	10000 : 1 or more (4 cm^{-1}, one minute accumulation, near 2200 cm^{-1})
Type of accessory	DR, fiber, gas cell
Optical system exit light	Emitted from the interferometer (parallel beam) Incident on the detector (parallel beam)
Dimensions	Main unit : 320W× 265D× 346H (mm) Power supply box : 272W× 262D × 68H (mm)
Weight	Main unit : 18.7 kg Power supply box : 2.5 kg

Model name	VIR-9600
Measurement wavenumber range	15000 to 2200 cm^{-1}
Resolution	0.5, 1, 2, 4, 8, 16 cm^{-1}
Interferometer	Michelson type corner cube mirror used Auto alignment
Interferometer drive speed	0.5, 2, 4 mm/sec Rapid scan measurement (optional)
Beam splitter	CaF_2
Detector	DLATGS (with temperature control) (standard) InGaAs (optional), InSb (optional)
Signal-to-noise ratio	2000 : 1 or more (4 cm^{-1}, one minute accumulation, near 6000 cm^{-1})
Type of accessory	DR, fiber, gas cell
Optical system exit light	Emitted from the interferometer (parallel beam) Incident on the detector (parallel beam)
Dimensions	Main unit : 320W× 265D× 346H (mm) Power supply box : 272W× 262D× 68H (mm)
Weight	Main unit : 18.7 kg Power supply box : 2.5 kg

ISO 9001 Certified

Products described herein are designed and manufactured by ISO-9001-certified JASCO Corporation.

● Specifications are subject to change without notice.

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JASCO®

VIR-9000 Series

Portable FTIR

Portable Fourier Transform Infrared Spectrometer

From the lab to the field

Rather than taking the samples from the field to the lab for analysis, the VIR-9000 Series allows you to take the lab to the field. The portable VIR-9000 Series gives you excellent performance in the lab or while analyzing samples in the field.

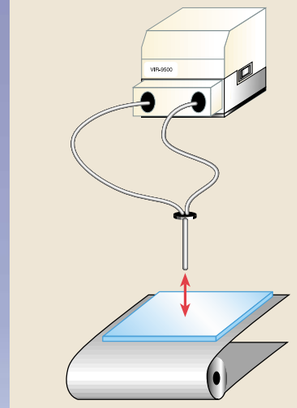
• PC is required.

The VIR-9000 Series is a compact, lightweight, flexible FTIR system. The collimated entrance and exit ports make it an ideal instrument to connect to any configuration. The standard instrument includes a hermetically sealed interferometer, DLATGS detector, high intensity source, and automatic alignment. Options can be added for increased sensitivity, optional spectral ranges including NIR, and battery operation. Accessories include the Smart-Tech, gas cells, microscopes, fiber optics, and open path analyzers. While incorporating a MPS sample compartment allows connection to any standard FTIR accessory.

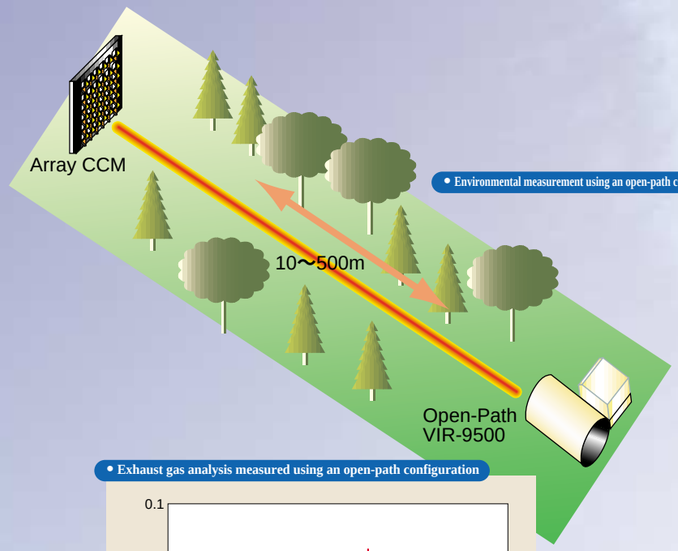
Flexibility

The VIR-9400, VIR-9500 and VIR-9600 offer flexibility and expandability to meet your demands. The system is designed to give high performance indoors or is equally suited for outdoors use as well. The VIR-9400 is the most economical general-purpose instrument and interfaces to all accessories. The VIR-9500 achieves a maximum resolution of 0.5cm^{-1} for a wide range of application on both solid and gaseous samples. The VIR-9600 covers the NIR spectral range from 15,000 to 2,200 cm^{-1}.
The VIR-9000 Series expandability supports a wide range of measurements including use as a special-purpose instrument with the additional accessories for use as a on-line monitoring system on in-field measurement.

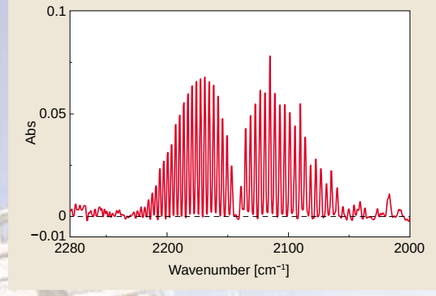
• On-line monitor using fiber optic interfacing



• Environmental measurement using an open-path configuration



• Exhaust gas analysis measured using an open-path configuration



Advanced programming

The VIR-9000 Series incorporates the highly acclaimed Spectra Manager software. The software incorporates instrument control, data processing and a high-speed interface to your desktop or laptop computer. Optional programs for quantitative analysis, multivariate analysis, film thickness analysis, data retrieval, and special optionally software is available. With Macro capability you can write you own special analysis or have Jasco's trained staff develop a special software compatible with your analysis needs.

• Measurement window

• Analysis window

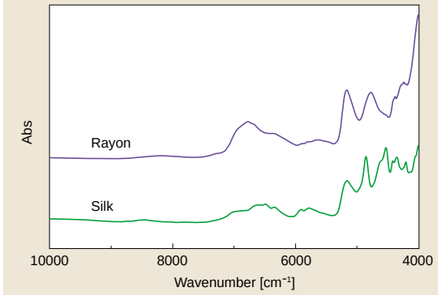
Accessories and multipurpose configurations

The VIR-9000 accessories allow quick interfacing between multiple FTIR techniques including the Smart-Tech accessory developed specifically for law enforcement. Choose your accessory below or use the MPS to interface to any traditional FTIR accessory.

Fiber-coupled measurement system

Fiber-coupled accessories allow in-line monitoring in reaction vessel or manufacturing lines. Using NIR techniques allow remote sampling from long distances up to 50 meters. Fiber-coupled accessories enable the non-destructive analysis of components in industrial products such as food, pharmaceuticals, and chemicals. A variety of fiber-coupled accessories include ATR, transmission, diffuse reflection or reflection probes.

• Fabric measurement using a near-infrared diffuse reflectance probe

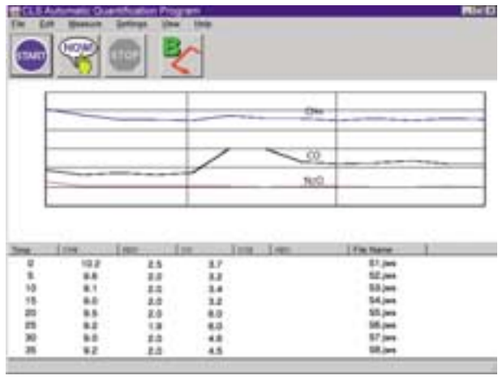


* Measured by the VIR-9600

Gas measurement system

The short optical path of the VIR-9000 Series makes it resistant to the effects of interfering atmospheric gases such as water vapor and carbon dioxide. This enables analysis trace amounts of impurities used in high purity gases such as those used in the semiconductor manufacturing process.

• Gas concentration using automatic CLS quantification software

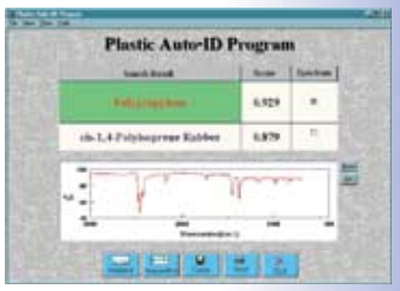


Powder measurement system

The patented Smart Tech enables simple easy analysis of powders or solids. Unskilled operators can get excellent results with little or no sample preparation. Coupling the VIR to the autosampler allows unattended operation for more than 45 samples. Auto-ID programs provide quick results for plastics, pharmaceuticals, or forensic drugs.

• VIR connected to auto-sampler

• Auto-ID software



Multipurpose sample chamber

The MPS-9100 multipurpose sample chamber allows easy interfacing to standard FTIR accessories such as ATR, DR, RF, and others. Incorporating the MPS adds the benefits of accessory recognition and Quick-Start functions incorporated in other Jasco FTIR's, these features aid in the ease of use expected in all Jasco FTIR's.

• Inside of sample compartment

• Sample compartment opened

Infrared Microscopy System

Connecting the VIR-9000 Series to the IRT-30 Infrared microscope creates a system that is high on performance while easy on laboratory bench space. Mapping measurement can also be supported by the addition of the IR Profile System. A precision, automated X-Y-Z sample stage in conjunction with advanced software facilitates of the IR Profile System either mapping or screen/mouse pre-selected, multi-point measurements. Autofocus is standard, avoiding tedious readjustment of the Z axis. ATR mapping is also available. An optional head featuring a pressure sensor allows for safe, unattended operation.

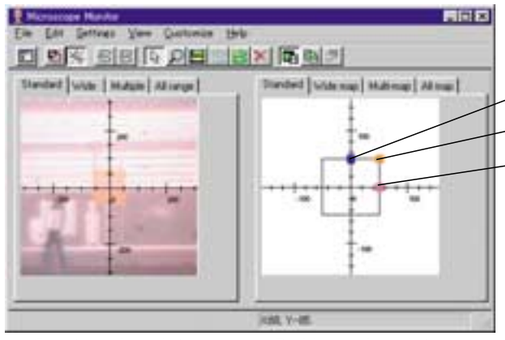
Features

- Non-destructive sampling
- No vacuum, no high temperature requirements
- Specimen as small as 5 to 10 µm can be measured.
- Informative about chemical structure, crystal structure, orientation, etc.

Automatic aperture control

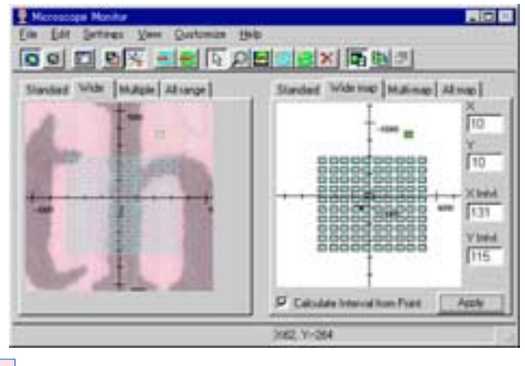
The Z-axis position of the lower Cassegrainian and the aperture are under computer control. Using the PC screen and our patented 'direct through method' monitoring of the whole sample, selection of the measurement area and compensation for sample thickness and refractive index are easy.

• Microscope image monitor

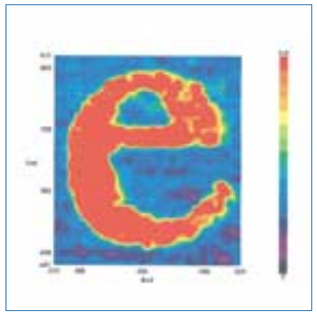


Sample setting window Position setting window

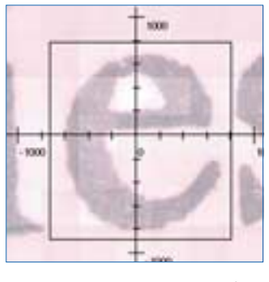
• Microscope image monitor using IR Profile System (setting of mapping to multiple windows)



• Printout measurement results for ATR mapping data by IR Profile System (color-coded display)



• Multi-image of sample



* The actual window seen differs, as the grid over the image was added later.

Accessories

A variety of measurement accessories are available for the VIR-9500 to make full use of the system's versatility. We also accept special orders according to specific needs, so please contact a JASCO sales representative for more information.

F-INT-VIR fiber interface

This interface with the main unit is required when using a fiber probe. We have mid-infrared fiber probes for ATR, reflection measurement, liquid transmission measurement, and so on. A diffuse reflectance probe for near infrared is also available.

* Fiber probes are sold separately. When performing measurements, please use a highly sensitive detector, which is also sold separately.

• Fiber probe ATR specifications

Measured wavenumber range: 5,000 to 900 cm^{-1}
Material: Chalcogenide
Fiber length
Light source cable: 1 m
Photodetector cable: 76 cm
ATR crystal material: ZnSe or Ge (selectable)

* Fiber ATR (option)

GAS-8M-VIR gas cell

The patented Smart Tech enables simple easy analysis of powders or solids. Accessory consists of sample holder and 5 reusable samples pads. Easily identify powders, solids and other materials that may not fit inside the instruments sample compartment.

• Specifications

Optical path length: 8 m
Capacity: 0.5 l
Mirror: Gold vapor deposition
Window: KBr

SMART-9100 Smart Tech

This attachment enables anyone to easily measure powders after simple preprocessing. For solid samples, use the included sampling holder to scrape off a portion of the surface. Powders can be measured simply by placing them in the sample cell as is.

• Configuration

5-sample holder: 1
Sampling holder: 1
Sample cells: 10

1. Sampling holder 2. 5-sample holder 3. Sample cells

SMART-AS9100 Smart Tech auto-sampler

This attachment is an auto-sampler for Smart Tech. Up to 49 samples can be placed in the sampler and then automatically measured.

* Sample holder

• Specifications

Number of samples: 49
Measurement technique: Special catoptric system
Software: Auto-sampler control program

MPS-9100 multipurpose test chamber

The multipurpose sample chamber allows easy interfacing to standard FTIR accessories such as ATR, DR, RF, and others. Incorporating the MPS adds the benefits of accessory recognition and Quick-Start functions incorporated in other Jasco FTIR's, these features aid in the ease of use expected in all Jasco FTIR's.

* Attachment recognition mechanism

* Start switch