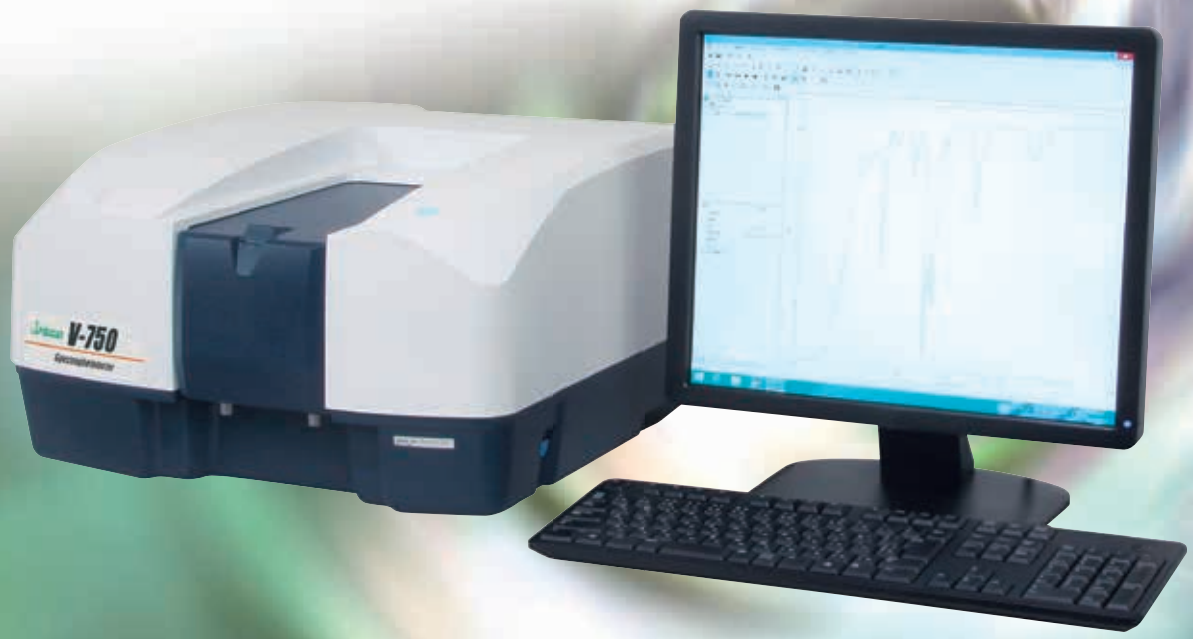
JASCO

V-700 series

UV-Visible/NIR Spectrophotometers

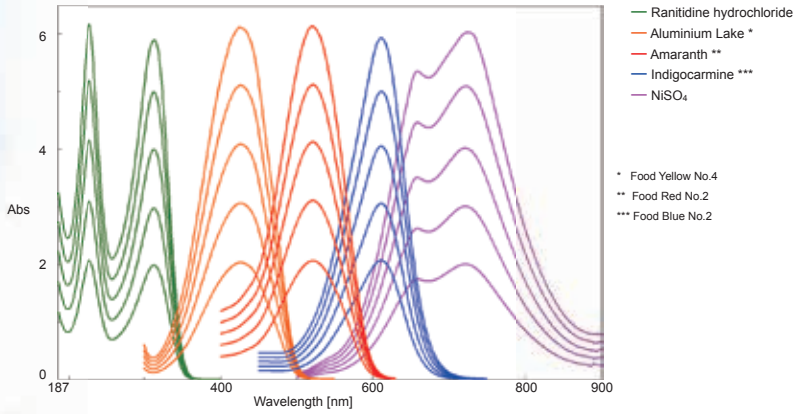


V-700 series

- **V-730 - Compact size, double beam, wide dynamic range**
- **V-750 - UV/VIS single monochromator, UV-Visible workhorse**
- **V-760 - UV/VIS double monochromator for higher absorbance applications**
- **V-770 - UV/VIS/NIR single monochromator, extended spectral range**
- **V-780 - High sensitivity NIR with InGaAs detector**

Highest throughput optics and widest dynamic range in their class

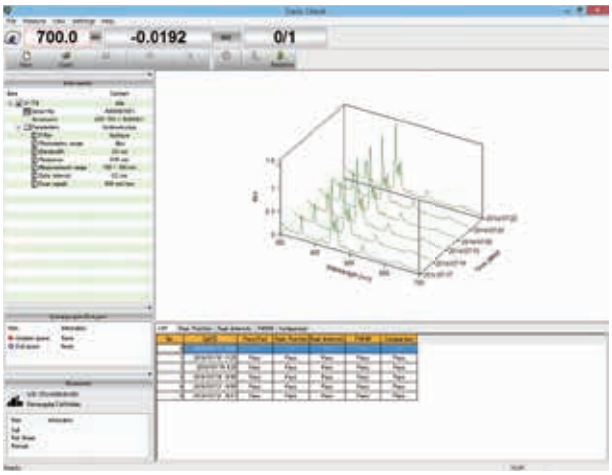
Optimized performance with improved high-order cut-off filters, ultra-high resolution ADC, aberration-free offset for Sample, Reference and Dark Current, enhancement of dynamic range in wide wavelength region for the V-700 Series.



Wide performance range includes 5 different models to meet all laboratory analysis requirements

Daily check program

For users who require a regular validation check; use a simple Holmium glass filter (or other standard) for daily measurement with automatic execution of procedures to easily record and track a comprehensive history of instrument performance



Daily check program

Energy and space-saving

- Green technology, best energy-saving in its class
- Switch off the light source from the measurement screen when not in use
- Save energy and lamp life
- All models have the most compact design requiring minimal bench space

IQ accessories

- IQ-Accessory: automated accessory recognition
- IQ-Start: automated loading of measurement application when the accessory is set to main unit.

Spectra bandwidth setting

- The V-750/760/770 and V-780 include two additional slit modes - L and M
- L-Mode for measuring high absorbance samples, reducing stray light by as much as 60%
- M-Mode for measuring small volume samples with micro cells

Alignment-free lamp replacement

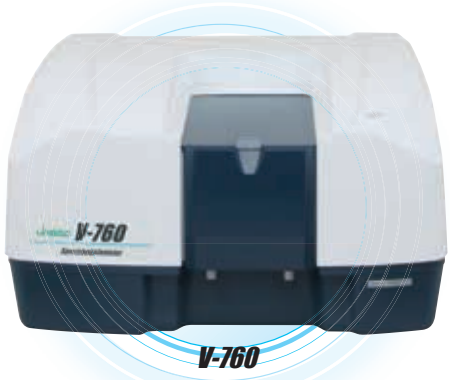
- The Halogen (WI) and Deuterium lamps can be re-installed in exactly the same position
- Realignment after lamp replacement is not required, designed for easy user maintainance

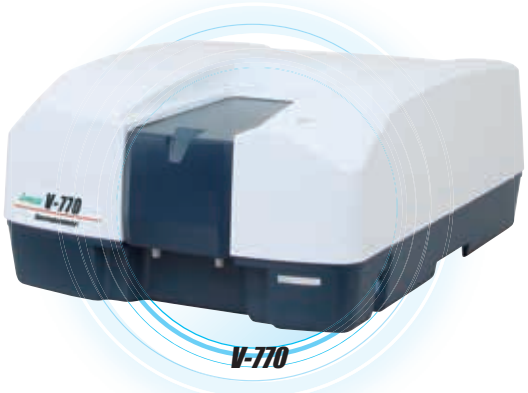
Dark Correction

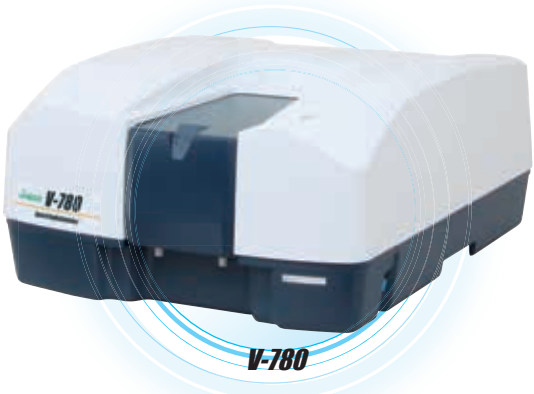
0 %T dark correction for improved measurement accuracy of samples with low transmittance

Expand the system for a wide range of sample types and measurements

More than 70 sampling accessories and 30 optional programs





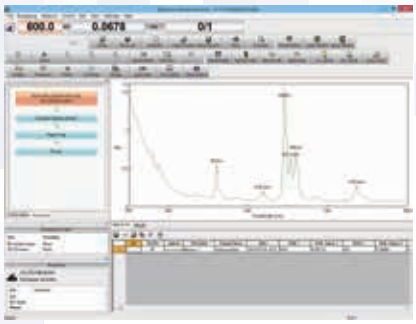


Spectra Manager II & Spectra Manager CFR

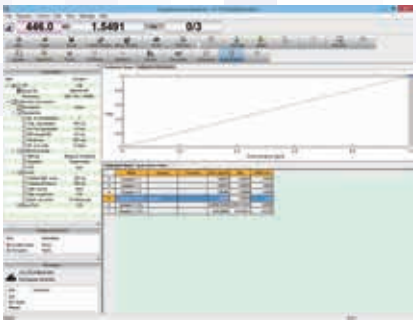
The cross-platform spectroscopy software for all JASCO spectrophotometers

Four Basic Measurement Applications:

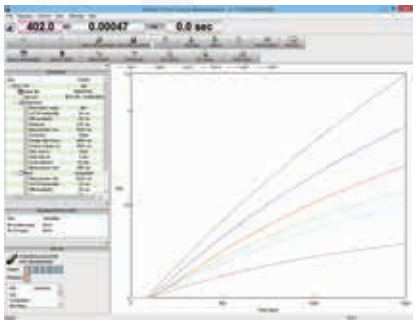
Spectra measurement, Quantitative measurement, Time course and Fixed-wavelength measurement



Spectra Measurement



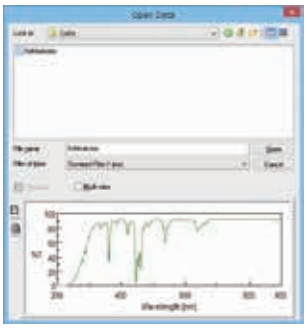
Quantitative Measurement



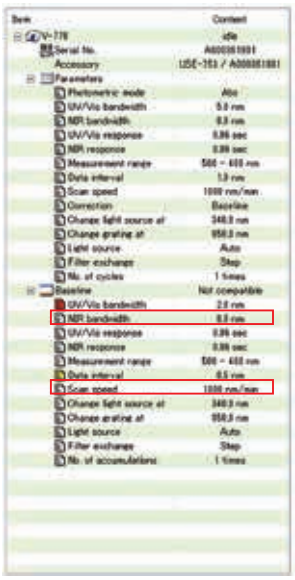
Time Course Measurement

Extensive measurement features

- Comprehensive display and analysis of performance indicators, accessory information, measurement parameters and measurement data
- Basic analysis such as peak picking, data smoothing, derivatives to complex application specific analysis such as enzyme activity calculation and film thickness are included as standard
- Convenient support functions including JASCO Canvas printing designer for custom reports, enhanced data searching with spectrum preview and many other flexible features



Spectrum Preview



Parameter Mismatch Protection

- Preset data processing, file saving and printing are automatically executed after measurement is complete
- Parameters for data processing can be selected from the followings: Peak detection, Peak height/area (ratio), basic quantitation (user formula) and film-thickness calculation
- Quantitative Measurement and Fixed-Wavelength Measurement: arithmetic formulas can be input into the parameter settings
- Quantitative Measurement, Spectra Measurement, and Fixed-Wavelength Measurement: the sample name and comments can be saved together in the measurement order as a sequence

Analysis Functions

- Film thickness or color analysis for measured spectra
- Enzyme activity calculation can be applied to any time-course measurement
- JASCO Canvas print layout designer

Color Calculation

Spectra Manager CFR for FDA 21 CFR Part 11 Compliance

Spectra Manager CFR offers full FDA 21 CFR Part 11 compliance and audit trails to guarantee the integrity of electric records, electric signatures and data.

**Some optional application programs are not compatible with Spectra Manager CFR version. Please contact us for more details.*

iRM Module

Compact 'tablet style' control interface for measurement parameters, data analysis, and accessory information

Color LCD touch panel for intuitive operation

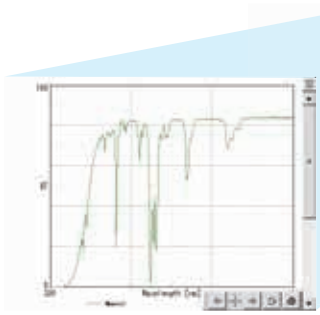
- High clarity color LCD display makes the display of complex data such as spectra or calibration curves easy to read
- Touch sensitive screen with stylus for easy user interaction

USB storage

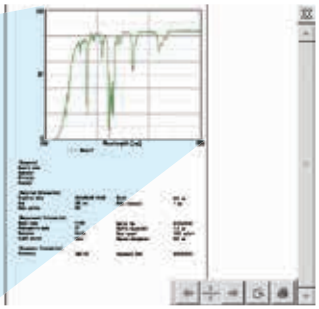
- Portable, high capacity storage and direct data saving with a standard USB storage for transfer to Spectra Manager software
- Data can be saved using the iRM in text format for easy transfer to spreadsheets and other post-processing software

Extensive printing functions

- An extensive range of print options can be used with the iRM from typical Letter and A4-size printers and thermal-paper printers for numerical output, spectra and calibration curves
- Use the print preview function to check the full or zoomed view prior to printing

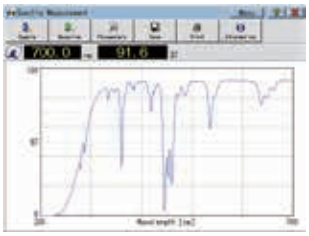


Print Preview of Spectrum

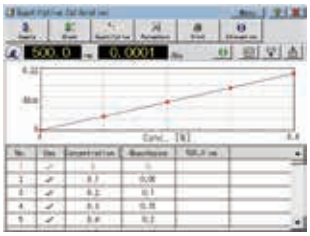


Print Preview

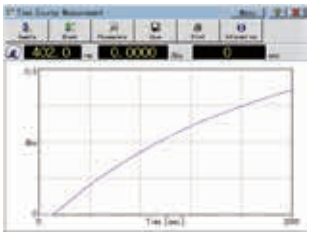
Measurement modes



Spectra Measurement



Quantitative Measurement

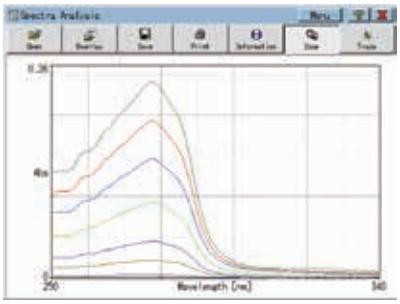


Time Course Measurement

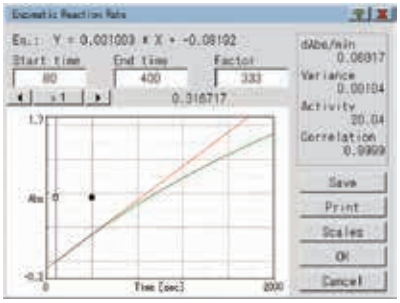
Fixed-Wavelength Measurement

Data Analysis

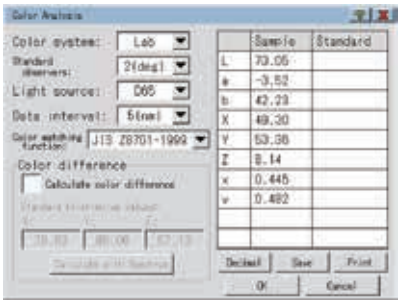
Standard data analysis applications for the iRM include peak detection, vertical/horizontal axis conversion, film thickness, color analysis and emzymatic reaction calculation.



Spectra Analysis



Enzymatic Reaction Rate Calculation



Color Analysis

Spectra Analysis software for PC included as standard

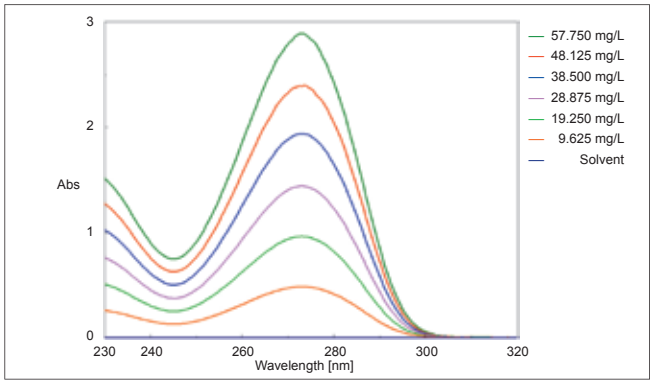
Data acquired using the iRM can be transferred and analyzed using Spectra Analysis on a PC. Functions in Spectra Analysis for PC include peak detection, vertical/horizontal axis conversion to print layout designer and data conversion to ASCII text format.

V-730

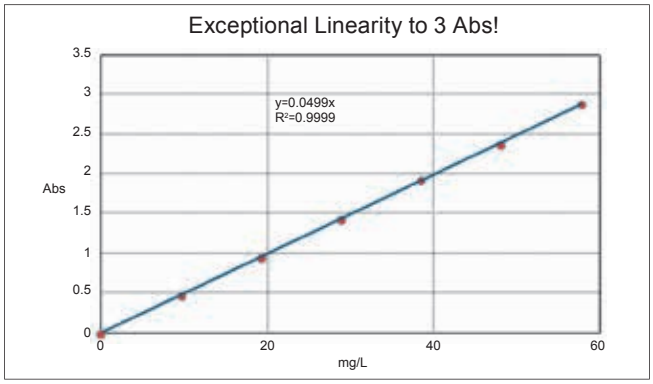
- Double beam
- Wavelength range 190 to 1100 nm
- Small footprint
- 1 nm SBW
- Wide dynamic range

Dynamic range

Optimal balance between light intensity, signal to noise and resolution supporting European Pharmacopoeia(EP). Faster instrument response and monochromator slew speed for enhanced Protein/DNA concentration measurements. The V-730 has a wide range of special accessories and optional programs for a broad range of analyses.



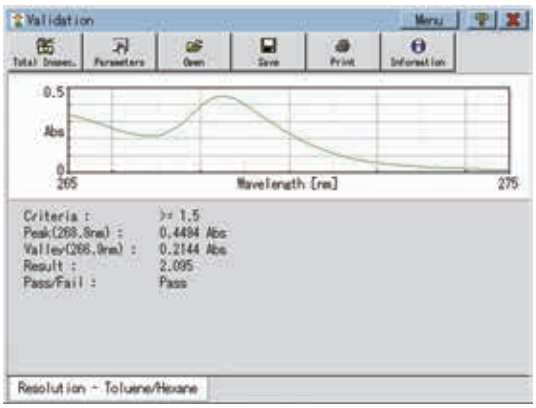
Spectra of Caffeine



Calibration Curve of Caffeine

Spectral bandwidth of 1 nm

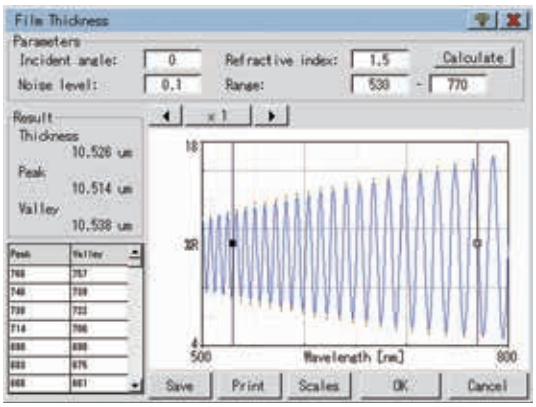
In the European Pharmacopeia, the standard resolution test for a mixture of Toluene/Hexane requires that the spectral ratio at 269 nm and 266 nm must exceed 1.5; with a 1 nm SBW, the V-730 passes this test with ease.



iRM Validation Result

Film thickness measurement

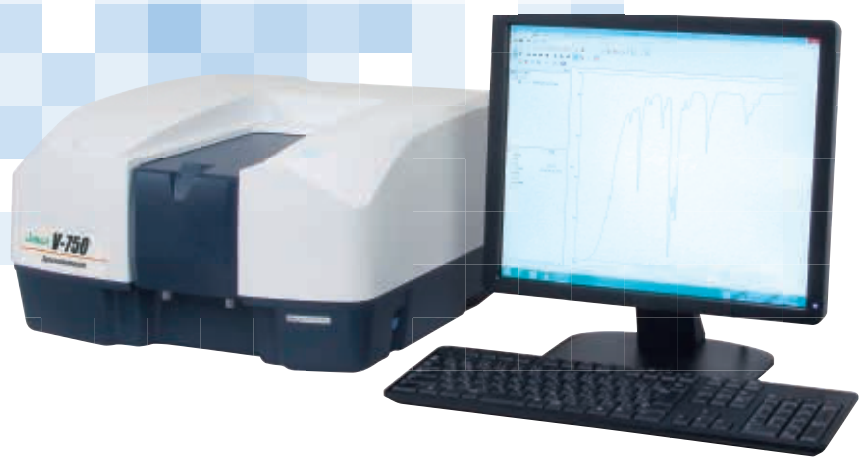
Film thickness measurements can be made using the SLM-907 specular reflectance accessory. The film thickness of a food packaging film using the SLM-907 single reflection accessory is shown below.

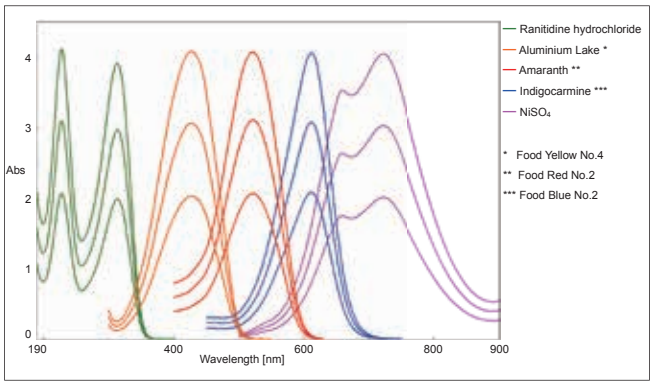


Film Thickness Calculation of Film Sample

V-750

- Double-beam, variable bandwidth with PMT detector
- Wavelength range 190 to 900 nm
- Widest dynamic range in its class
- Extensive range of accessories and software applications





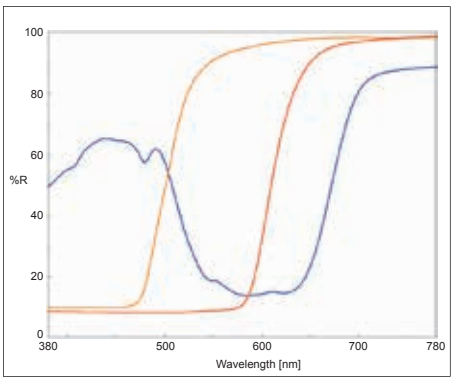
Spectra of Various Solutions

Absorbance linearity to 4 Abs across a wide wavelength range

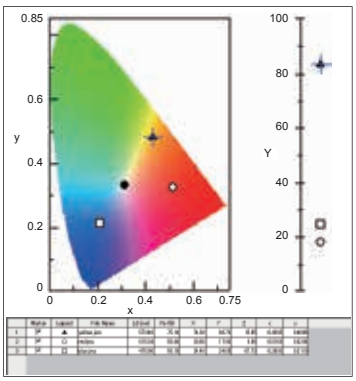
The photometric linearity range is up to 4 Abs in the UV-Visible region (and up to 5 Abs in the visible). The V-750 offers measurement with a wide dynamic range and high-absorbance by employing optimized high-order cut-off filters, ultra high-resolution A/D converter and simplified signal processing prior to the A/D conversion.

Diffuse Reflectance Measurement

Diffuse reflectance measurement using the ISV-922 Integrating sphere. The graphic is a plot of the XY chromaticity in the color diagnostic application program.The integrating sphere includes a light trap which can be used to include or exclude the specular component. For measurement of dark colored materials, the dark correction function is available for highest accuracy.



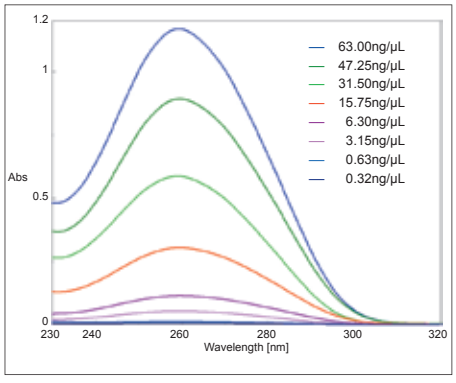
Reflectance Spectra of Powder Samples



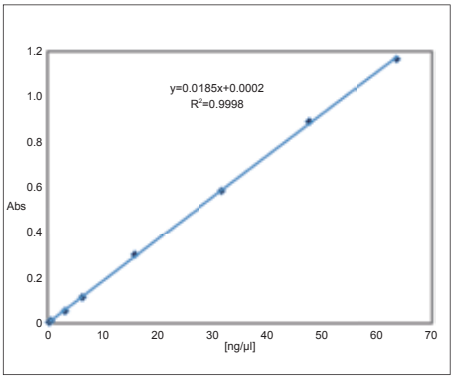
Plot View of Color Diagnosis

Micro Volume Measurement

Micro volume measurement can be made by using a cell with a 2 mm width and setting the spectral bandwidth to an M-mode slit; useful for measurement of volume limited liquid samples. JASCO's One Drop accessory also allows easy volume measurement as low as 600 nL.



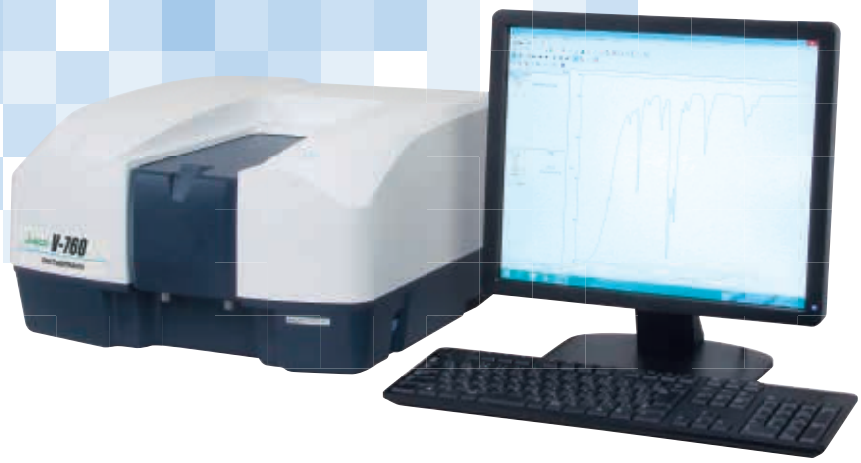
Spectra of DNA Solutions



Calibration Curve of DNA Solution

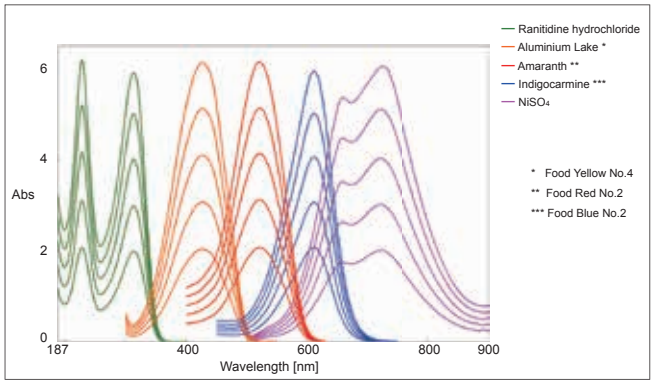
V-760

- Double-beam, double monochromator with PMT detector for high photometric linearity
- Wavelength range 187 to 900 nm

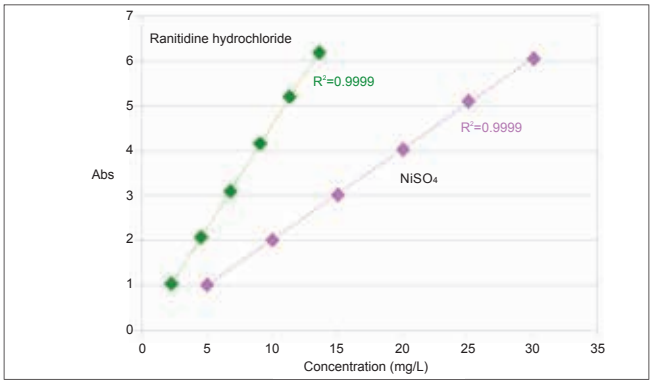


Double monochromator for photometric linearity across the wavelength range up to 6 Abs

The new V-760 series double beam, double monochromator optical design with lowest stray light offers a high absorbance linearity across the wide photometric range. The V-760 can measure up to 6 Abs across UV-Visible region. Variable slit widths provide spectral bandwidth settings down to 0.1 nm with special height slits to further reduce stray light.



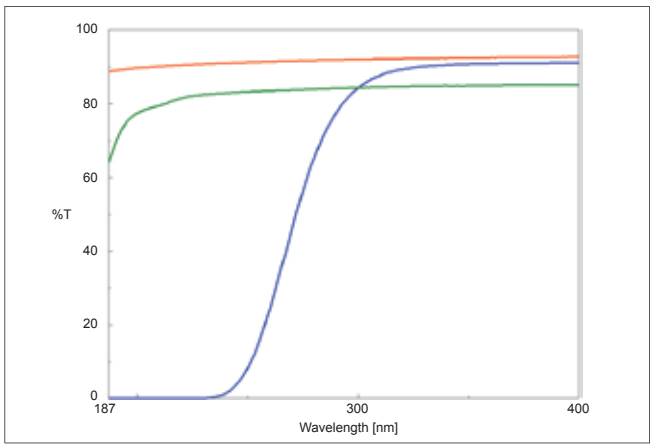
Spectra of Liquid Samples Measured in the UV-Visible Range



Calibration Curves of Ranitidine Hydrochloride and $NiSO_4$

Measurement down to 187 nm

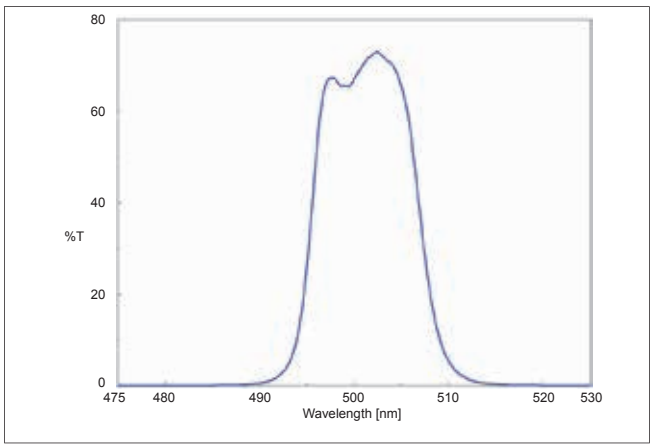
The lower stray light optical design enables measurement in the UV down to 187 nm without N_2 purging. The transmittance spectra of three optical materials - quartz, sapphire and BK-7 measured using the FLH-741 film holder are shown below.



Transmittance Spectra of Optical Materials

Step-scan measurement

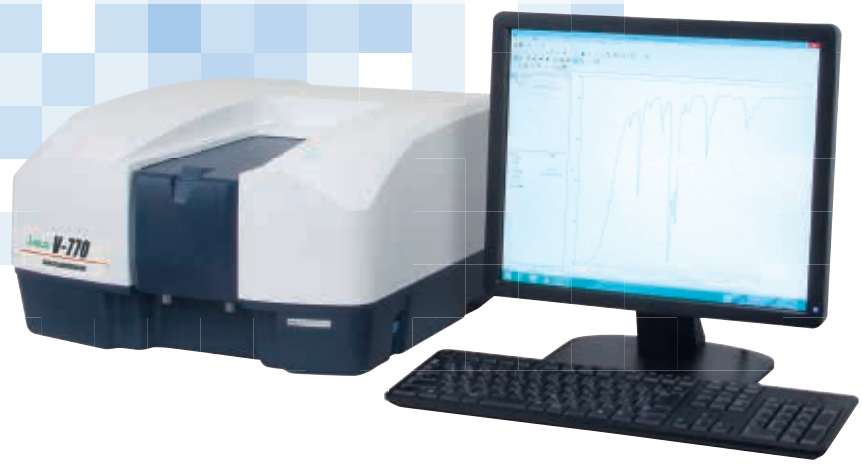
Step-scan is a very useful tool for accurate measurement of samples such as bandpass filters for which the transmittance changes significantly over a narrow wavelength range.



Transmittance Spectrum of Bandpass Filter

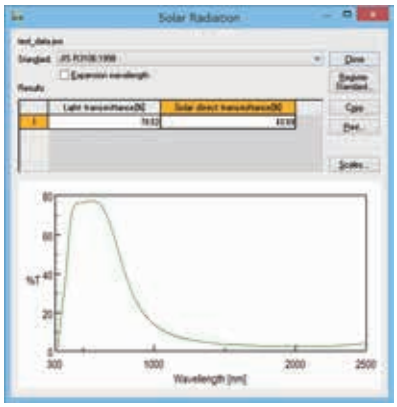
V-770

- Single monochromator UV-Visible/NIR spectrophotometer
- Wavelength range 190 to 3200 nm with PMT/PbS detectors
- Highly efficient optical design with separate UV-Visible and NIR optimized gratings for enhanced accuracy & linearity



Measurement of thermal insulating glass

The evaluation method for the properties of thermal insulating glass is defined by the measurement of its transmittance and reflectance. These parameters can be measured using an integrating sphere or an automated absolute reflectance accessory - requires values of transmittance or reflectance calculated with the VWST-774 Solar/Visible Light Measurement Calculation.



Transmittance Spectrum of Thermal insulating glass

Wavelength expansion (Option)

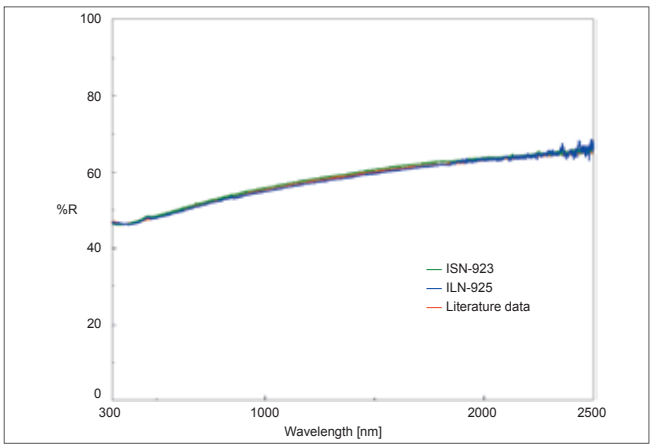
The optional wavelength expansion kit extends the measurement wavelength range to 3200 nm. This is useful for many compounds which bridge the NIR and Mid-IR and for some unusual applications like the transmittance spectrum of the water peak in quartz.

Multivariate analysis

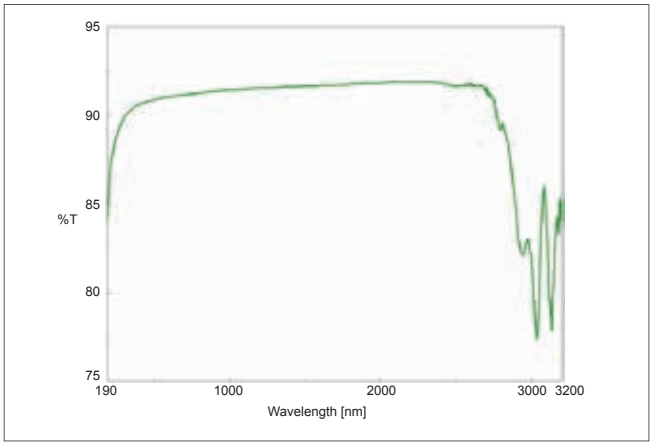
Multivariate analysis programs are included (PCR/PLS/CLS quantitative measurement and PCA) for quantitation of multi-component samples which do not have unique bands for each analyte.

Accurate diffuse reflectance measurement using an integrating sphere

The figure below shows the measurement of a diffuse gray standard reference material: the SRS-50-010 was measured using both the ISN-923 60 mm and ILN-925 150 mm integrating spheres. The gray standard was evaluated against a Spectralon reference plate. The reflectance values and measurement spectra demonstrate excellent agreement.



Reflectance Spectra of Diffuse Reflectance Standard



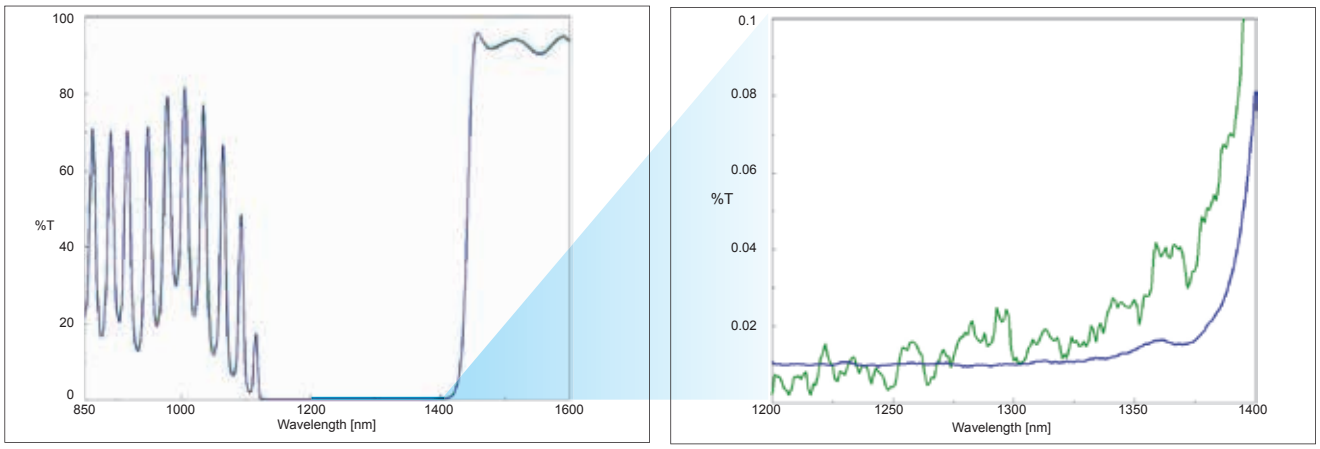
Transmittance Spectrum of Crystalline Quartz Sample

V-780

- Exceptional sensitivity and resolution in NIR with high efficiency InGaAs detector
- Light source luminance control using digital feedback enables NIR spectra measurement with high sensitivity and high accuracy even with wide variation in absorbance

High sensitivity in the NIR: Better data faster!

The figures below compare a 1.3 µm band cut-off filter for optical communication measured using the V-770 with a Peltier-cooled PbS photo-conductive detector and the V-780 with a Peltier-cooled InGaAs Photodiode detector. The InGaAs detector offers significant S/N enhancement over the PbS detector.

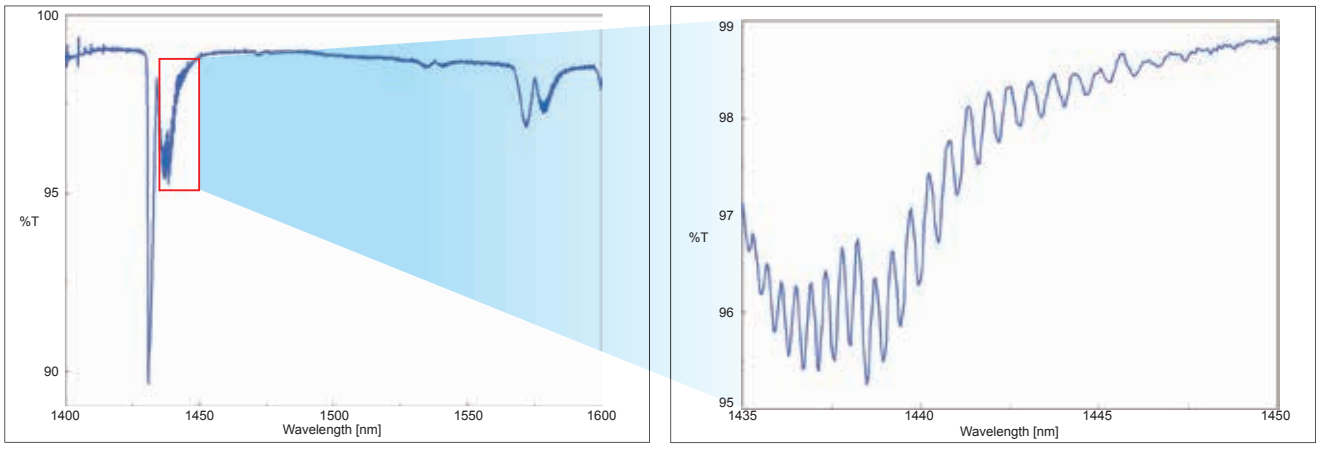


Transmittance Spectra of 1.3 µm Cut-Off Filter

Zoomed View

High resolution in the NIR

The figure below is the vibrational spectrum of CO_2 gas (path length: 100 mm) in the NIR, measured using the V-780. Overtones are seen near 1430 nm and also combination bands near 1770 nm. Zooming into the spectrum at around 1437 nm shows that the V-780 offers sufficient resolution to see the rotational peaks in the vibrational spectra.



Transmittance Spectrum of CO_2 Gas Sample (long term accumulation)

Zoomed View

Accessories

One-Drop Accessory - SAH-769

Micro volume sample measurement for Protein and DNA measurement

Specifications
MInimum volume:
0.6 µL (0.2 mm path length)
5.0 µL (1.0 mm path length)

Micro cell holder - EMC-709

Both 50µL and 5 µL micro cells can be used.

Specifications
MInimum volume: 5 µL
Selectable cells:
50 µL micro cell (10 mm path length)
5 µL micro cell (1 mm path length)

Peristaltic Sipper - NPF-782

Sample recycling sipper.
Can be combined with an autosampler as an automated analytical system.

Specifications
Path Length: 10 mm
Carry over: < 1%
Minimum volume:
0.7 mL (low viscosity sample)
Wavelength range:
220 - 900 nm (V-730, 750, 760)
220 - 2200 nm (V-770)
220 - 1600 nm (V-780)

Integrating Spheres ISV-922/ISN-923/ISN-901i

for V-750/760/770/780

Integrating spheres are designed to measure either the diffuse transmittance or reflectance of a sample. The integrating sphere is provided with a light trap so that the reflectance of samples can be measured with or without the specular reflectance component.

ISV-922

Specifications
Inside dia. of Integrating Sphere: 60mmφ
Incident Angle to reflection surface: 0°, approx. 5°
Min. sample size (reflection): 20(H)×20(W)×0.5(t)mm
Max. sample size (reflection): 65(H)×50(W)×25(t)mm
Wavelength range: 200 - 870 nm (V-750, 760)
200 - 2500 nm (V-770)
200 - 1600 nm (V-780)

150 mm Integrating Spheres ILV-924/ILN-925/ILN-902i

for V-750/760/770/780

150 mm dia. integrating sphere for Haze measurement and total light transmittance measurement.

ILV-924

Specifications
Inside dia. of Integrating Sphere:150mmφ
Incident Angle to reflection surface: approx. 5°
Min. sample size (reflection):
20(H)×20(W)×0.5(t)mm
Max. sample size (reflection):
100(H)×50(W)×30(t)mm
Wavelength range:
220 - 850 nm (V-750, 760)
220 - 2200 nm (V-770)
220 - 1600 nm (V-780)

Air-Cooled Peltier Cell Holder EHCS-760

The air-cooled Peltier does not need water circulation.

Specifications
Path length: 10 mm
Temp. control precision: ±0.1 °C
Temp. control range: 10 - 60 °C (at 25°C)
Heat radiating system: air-cooled
Temp. setting range: 5 - 70 °C
Stirrer system: Integrated variable speed magnetic stirrer
(not available for micro cell)
Temp. accuracy: ±0.5 °C (20 - 40 °C)
±1 °C (other temp. range)

Water-Cooled Peltier Cell Holder ETCS-761/ETCR-762

The ETCS-761 and ETCR-762 require a water-cooling system to control a wide temperature range (0 - 100 °C).

Specifications
Path length: 10 mm
Temp. control precision: ±0.1 °C
Temp. control range: 0 - 100 °C
(cooling water temperature at 20 °C)
Heat radiating system: Water-cooled
(requires water circulator)
Temp. setting range: −10 - 110 °C
Stirrer system: Integrated variable speed magnetic stirrer
(not available for micro cell)
Temp. accuracy: ±0.5 °C (20 - 40 °C)
±1 °C (other temp. range)

Water-Cooled Peltier Cell Changer PAC-743/PAC-743R

The PAC-743/743R allow measurements of the transmittance/absorbance of multiple samples by using dedicated cell blocks with temperature control.

Specifications
Temp. control precision: ±0.1 °C
Temp. control range: 0 - 100 °C
(cooling water temperature at 20 °C)
Heat radiating system: Water-cooled
(requires water circulator)
Temp. setting range: −10 - 110 °C
Stirrer system: Integrated variable speed magnetic stirrer
(not available for micro cell)
Temp. accuracy: ±0.5 °C (20 - 40 °C)
±1 °C (other temp. range)
Cell block (Options): 6-position cell block, 8-position cell block,
1 mm 8-position micro cell block,
10 mm 8-position micro cell block

Automated Absolute Reflectance Measurement ARMV-919/ARMN-920/ARMN-921i

for V-750/760/770/780

The angles of the sample stage and detector can be changed independently for the measurerment of absolute reflectance and transmittance for a sample with varied angles of incidence/collection.

ARMV-919

Specifications
Inside dia. of Integrating Sphere: 60mmφ
Incident angle: 5−60° (Absolute reflectance mode)
0−60° (Transmittance mode)
Angle setting: 0.1° step
Sample size (Absolute reflectance mode):
Min: 20(H)×20(W)×1(t)mm
Max: 70(H)×70(W)×10(t)mm
Polarizer: Standard

Specifications

	V-730	V-750	V-760	V-770	V-780
Optical system	Rowland off-circle arrangement Single monochromator Double beam type	Czerny-Turner mount Single monochromator Fully symmetrical double beam type	Czerny-Turner mount Double monochromator Fully symmetrical double beam type	Czerny-Turner mount Single monochromator Fully symmetrical double beam type	Czerny-Turner mount Single monochromator Fully symmetrical double beam type
Light source	Halogen lamp, Deuterium lamp (Light source exchange wavelength: Any wavelength between 330 and 350 nm can be selected)				
Detector	Silicon photodiode	Photomultiplier tube		Photomultiplier tube Peltier cooled PbS	Photomultiplier tube Peltier cooled InGaAs photodiode
Wavelength range	190 to 1100 nm	190 to 900 nm	187 to 900 nm	190 to 2700 nm (3200 nm, option)	190 to 1600 nm
Wavelength accuracy	±0.2 nm (at 656.1 nm)	±0.2 nm (at 656.1 nm)	±0.1 nm (at 656.1 nm)	±0.3 nm (at 656.1 nm) ±1.5 nm (at 1312.2 nm)	±0.3 nm (at 656.1 nm) ±1.0 nm (at 1312.2 nm)
Wavelength repeatability	±0.1 nm	±0.05 nm	±0.05 nm	±0.05 nm (UV-Vis) ±0.2 nm (NIR)	±0.05 nm (UV-Vis) ±0.1 nm (NIR)
Scanning speed	10 to 8000 nm/min	10 to 4000 nm/min (8000 nm/min in preview mode)			
Slew speed	24000 nm/min	12000 nm/min		UV-Vis: 12000 nm/min NIR: 48000 nm/min	UV-Vis: 12000 nm/min NIR: 24000 nm/min
Spectral bandwidth (SBW) L: low stray light mode M: micro cell mode	1.0 nm fixed	0.1, 0.2, 0.5, 1, 2, 5, 10 nm L2, L5, L10 nm M1, M2 nm		UV-Vis: 0.1, 0.2, 0.5, 1, 2, 5, 10 nm L2, L5, L10 nm M1, M2 nm NIR: 0.4, 0.8, 2, 4, 8, 20, 40 nm L8, L20, L40 nm M4, M8 nm	UV-Vis: 0.1, 0.2, 0.5, 1, 2, 5, 10 nm L2, L5, L10 nm M1, M2 nm NIR: 0.2, 0.4, 1, 2, 4, 10, 20 nm L4, L10, L20 nm M2, M4 nm
Photometric range	-3 to 3 Abs	-4 to 4 Abs	-4 to 6 Abs	UV-Vis: -4 to 4 Abs NIR: -3 to 3 Abs	UV-Vis: -4 to 4 Abs NIR: -3 to 3 Abs
Photometric accuracy	±0.0015 Abs (0 to 0.5 Abs) ±0.0025 Abs (0.5 to 1 Abs) ±0.3 %T Tested with NIST SRM 930				
RMS noise *1	0.00004 Abs	0.00003 Abs	0.00003 Abs	0.00003 Abs	0.00003 Abs
Baseline flatness	±0.0005 Abs *2	±0.0002 Abs *3	±0.0003 Abs *4	±0.0002 Abs *5	±0.0002 Abs *6
Baseline stability	±0.0004 Abs/hour *7	±0.0003 Abs/hour *8			
Stray light	1 % (198 nm KCl 12 g/L) 0.02 % (220 nm NaI 10 g/L) 0.02 % (340 nm $NaNO_2$ 50 g/L) 0.02 % (370 nm $NaNO_2$ 50 g/L) Aqueous solution, SBW: 1.0 nm	1 % (198 nm KCl 12 g/L) 0.005 % (220 nm NaI 10 g/L) 0.005 % (340 nm $NaNO_2$ 50 g/L) 0.005 % (370 nm $NaNO_2$ 50 g/L) Aqueous solution, SBW: L2 nm	1 % (198 nm KCl 12 g/L) 0.00008 % (220 nm NaI 10 g/L) 0.00008 % (340 nm $NaNO_2$ 50 g/L) 0.00008 % (370 nm $NaNO_2$ 50 g/L) Aqueous solution, SBW: L2 nm	1 % (198 nm KCl 12 g/L) 0.005 % (220 nm NaI 10 g/L) 0.005 % (340 nm $NaNO_2$ 50 g/L) 0.005 % (370 nm $NaNO_2$ 50 g/L) Aqueous solution, SBW: L2 nm 0.04 % (1420 nm: H_2O) 0.1 % (1690 nm: CH_2Br_2 50 mm cell) SBW: L8 nm	1 % (198 nm KCl 12 g/L) 0.005 % (220 nm NaI 10 g/L) 0.005 % (340 nm $NaNO_2$ 50 g/L) 0.005 % (370 nm $NaNO_2$ 50 g/L) Aqueous solution, SBW: L2 nm 0.04 % (1420 nm: H_2O) SBW: L4 nm
Dimensions and weight	486(W)x441(D)x216(H) mm 15 kg	460(W)x602(D)x268(H) mm 27 kg	460(W)x602(D)x268(H) mm 29 kg	460(W)x602(D)x268(H) mm 29 kg	460(W)x602(D)x268(H) mm 29 kg
Power requirements	120 VA	150 VA	150 VA	150 VA	150 VA

*1: 0 Abs, wavelength: 500 nm, measurement time: 60 sec, response: medium, SBW:1 nm (V-730), 2 nm (V-750,760,770,780)
*2: Value obtained more than two hours after turning on the light source, when the room temperature is stabilized, wavelength: 200 to 1000 nm, response: Slow and wavelength scanning speed: 400 nm/min with smoothing processing
*3: Value obtained more than an hour after turning on the light source, when the room temperature is stabilized, wavelength: 200 to 850 nm, response: Slow, SBW: 2 nm and wavelength scanning speed: 400 nm/min with smoothing processing
*4: Value obtained more than an hour after turning on the light source, when the room temperature is stabilized, wavelength: 200 to 800 nm, response: Slow, SBW:2nm, wavelength scanning speed: 400 nm/min with smoothing processing
*5: Value obtained more than an hour after turning on the light source, when the room temperature is stabilized, wavelength: 200 to 2500 nm (200 to 850nm: SBW 2 nm, 850 to 2500 nm: SBW8 nm), response: Slow, wavelength scanning speed: 400 nm/min with smoothing processing
*6: Value obtained more than an hour after turning on the light source, when the room temperature is stabilized, wavelength: 200 to 1600 nm (200 to 850nm: SBW 2 nm, 850 to 1600 nm: SBW4 nm), response: Slow, wavelength scanning speed: 400 nm/min with smoothing processing
*7: Value obtained more than two hours after turning on the light source, when the room temperature is stabilized, wavelength: 250 nm, response: slow
*8: Value obtained more than an hour after turning on the light source, when the room temperature is stabilized, wavelength: 250 nm, response: slow and SBW: 2nm

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

MADE IN TOKYO, JAPAN

V-700 series optional accessories

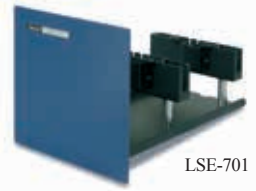
UV/Vis/NIR Spectrophotometers

Wide range of optional accessories

The V-700 Series can be integrated with a complement of more than 70 accessories to offer flexible configurations for a wide variety of analytical requirements. Experimental capabilities range from simple educational applications and routine daily use, to specific applications for advanced biochemical and semiconductor research. The range of accessories include various types of cell holders for liquid samples and options for a wide variety of solid samples.

Cell holders/cell changers used at ambient temperature

LSE-701 Long path cell holder



LSE-701

Specifications:
Compatible cell: Rectangular cell, pathlength 10, 20, 50 or 100 mm, 1 pc.
Reference: Rectangular cell, pathlength 10, 20, 50 or 100 mm, 1 pc.

FSE-702 4-position manual long path cell changer

FSE-702

Specifications:
Compatible cell: Rectangular cell, pathlength 10, 20, 50 or 100 mm, 4 pcs.
Reference: Rectangular cell, pathlength 10, 20, 50 or 100 mm, 1 pc.

SSE-704 6-position manual cell changer

SSE-704

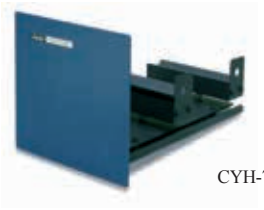
Specifications:
Compatible cell: Rectangular cell, pathlength 10 mm, 6 pcs.
Reference: Rectangular cell, pathlength 10 mm, 1 pc.

NCP-705 6-position automatic cell changer

NCP-705

Specifications:
Compatible cell: Rectangular cell, pathlength 10 mm, 6 pcs.
Reference: Rectangular cell, pathlength 10 mm, 1 pc.
Cell switching: Software controlled

CYH-708 Cylindrical cell holder



CYH-708

Specifications:
Compatible cell: Cylindrical cell, pathlength 10, 20, 50 or 100 mm, 1 pc.
Reference: Cylindrical cell, pathlength 10, 20, 50 or 100 mm, 1 pc.

Micro, Ultra-micro cell holders

UCB-710 Standard rectangular cell holder

Micro cell

UCB-710

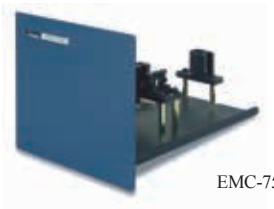
This is the standard cell holder for the V-730BIO. A cell height adjustment function provides the ability to use a 100 µL micro cell. A mask for a 100 µL micro cell is standard.

Specifications:
Compatible cell: Rectangular cell, pathlength 10 mm, 1 pc.

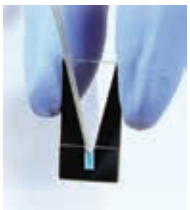
Option
50 µL micro cell mask

EMC-759 Ultra-micro cell holder

V-730/730BIO

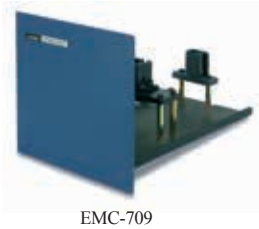


EMC-759



5 µL micro cell

EMC-709 Micro cell holder



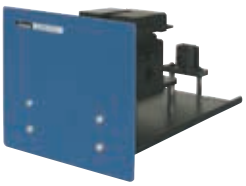
EMC-709

The EMC-709 is a cell holder for a 50 µL micro cell. A 5 µL micro cell can be used with an optional spacer.

50 µL micro cell

5 µL micro cell
5 µL micro cell spacer

SAH-769 One drop accessory



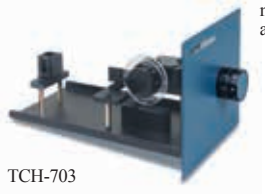
SAH-769

The SAH-769 One Drop accessory is a dedicated accessory for the V-700 Series to measure micro-volume samples of protein and nucleic acid.

Specifications:
1 mm pathlength minimum sample volume: 5 µL
0.2 mm pathlength minimum sample volume: 0.6 µL

TCH-703 8-position Micro turret cell holder

V-730/730BIO



TCH-703

This is a cell holder for an optional 8-position turret micro cell, containing eight cells with a volume of approximately 4 µL arranged in a circle.

8-position micro turret cell

Constant temperature cell holders/cell changers

The following cell holder accessories can be used with water circulators for maintaining samples at a uniform temperature. The circulators available separately.

STR-773 Water thermostatted cell holder with stirrer

Micro cell

STR-773

Specifications:
Compatible cell:
Rectangular cell,
10 x 10 or 4 x 10 mm, 1 pc.
Temperature control:
Thermostatted water circulation for sample and reference
Operating temperature:
10 to 90°C
Stirring system:
Integrated variable speed magnetic stirrer
2 mm path width micro cell cannot be used with the stirrer.

MHT-745 Manual 4-position water thermostatted turret cell holder

Micro cell

MHT-745

Specifications:
Compatible cell:
Rectangular cell,
10 x 10 or 4 x 10 mm, 4 pcs.
10 x 10 or 4 x 10 mm, 1 pc. (Reference)
Temperature control:
Thermostatted water circulation for sample and reference
Operating temperature:
10 to 90°C

CSP-909 Optional lid for sample compartment with syringe port

CSP-909

When monitoring a substrate-enzyme reaction, this accessory allows addition of an enzyme solution without opening the sample chamber lid. Can only be used with a 10 × 10 rectangular cell. Required needle length for the syringe is 2 inches (50 mm) .

Specifications:
Compatible cell holder:
STR-733, EHCS-760, ETCS-761, ETCR-762

HMC-711 Water thermostatted micro cell holder

Micro cell

HMC-711

Minimum sample volume is 50 µL by using a rectangular cell, 5 mm path length and 2 mm path width.

Specifications:
Compatible cell:
Rectangular cell,
10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm, 1 pc.
Temperature control:
Thermostatted water circulation for sample and reference
Operating temperature:
10 to 90°C
Cell masks (standard):
Mask for 100 µL cell (2 pcs.) for micro cell, 2 × 10
Mask for 200 µL cell (2 pcs.) for micro cell, 4 × 10

NCP-706 Water thermostatted 6-position automatic cell changer

Micro cell

NCP-706

Specifications:
Compatible cell:
Rectangular cell,
10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm, 6 pcs.
10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm, 1 pc. (Reference)
Temperature control:
Thermostatted water circulation for sample and reference
Operating temperature:
10 to 90°C
Cell switching:
Software control

Peltier thermostatted cell holders/cell changers

EHCS-760 Peltier thermostatted single cell holder (air-cooled)
ETCS-761 Peltier thermostatted single cell holder (water-cooled)
ETCR-762 Peltier thermostatted single cell holder (water-cooled, thermostatted reference)

Micro cell

EHCS-760

ETCS-761

ETCR-762

Specifications:

Model name	EHCS-760	ETCS-761	ETCR-762
Compatible cell	Rectangular cell, 10 x 10 or 4 x 10 mm, 1 pc.		
Temperature control system	Sample only	Sample only	Sample and Reference
	Heating/cooling system utilizing Peltier effect		
Heat radiating system	Air-cooled	Water-cooled	
Stirring system	Integrated variable speed magnetic stirrer		
Temperature setting range	5 to 70°C	-10 to 110°C	
Temperature control range	10 to 60°C (at 25°C)	0 to 100°C (for cooling water temperature at 20°C)	
Temperature control accuracy	±0.1°C (cell holder sensor)		
Temperature accuracy	With cell holder sensor: ±0.5°C (20°C to 40°C), ±1°C (other temp. range) With optional temp. sensor: ±0.2°C		

Options for EHCS-760/ETCS-761/ETCR-762

Cell mask kit
This kit includes sample masks and a cell-height adjustment stand to raise the cell height. Using the cell-height adjustment stand, a 2 mm path width micro cell can be used to measure sample with a minimum 100 µL volume.

OPS-515 In-cell sensor with holder (factory option)
This is an optional sensor which can be used to monitor the temperature inside of the sample cell.

Cell spacers
Spacers for cells with an optical path length of 1, 2 and 5 mm are available..

Capillary adapter (for V-730/V-730BIO only)
The capillary adapter is used for a capillary cell (minimum sample volume of 3 µL). The optional sensor (OPS-515) in the cell adapter is required for temperature monitoring.

Peltier thermostatted cell changers

PSC-763 Automatic 6-position Peltier cell changer (air-cooled)

Micro cell

PSC-763

Specifications:

Compatible cell:	Rectangular cell, 10 × 10, 2 or 4 × 10 mm, max. 6 pcs.
Reference:	Rectangular cell, 10 × 10, 2 or 4 × 10 mm, 1 pc.
Temperature control system:	Heating/cooling system utilizing Peltier effect (Sample side only)
Heat radiating system:	Air-cooled
Stirring system:	Integrated variable speed magnetic stirrer (not available for the 2 mm path width cell)
Temperature setting range:	10 to 70°C
Temperature control range:	15 to 60°C (for room temperature at 20°C)
Temperature setting precision:	±0.1°C (cell holder sensor)
Temperature accuracy:	With cell holder sensor: ±0.5°C (20°C to 40°C), ±1°C (other temp. range)

Option

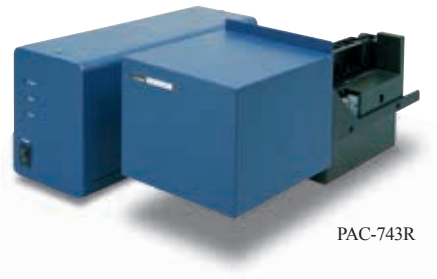
OPS-513 In-cell sensor with holder (factory option)

This is an optional sensor to monitor the temperature inside of a single sample cells

PAC-743 Automatic 6/8-position Peltier cell changer (water-cooled)

PAC-743R Automatic 6/8-position Peltier cell changer (water-cooled, thermostatted reference)

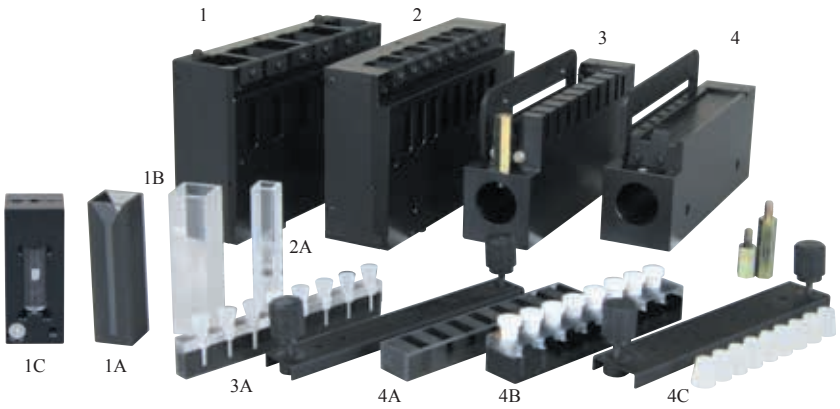
Micro cell



PAC-743R

Specifications:

Reference:	Rectangular cell 10 × 10, 4 × 10, or 2 × 10 mm, 1 pc.
Temperature control system:	Heating/cooling system utilizing Peltier effect (PAC-743: sample side only)
Heat radiating system:	Water-cooled
Temperature setting range:	-10 to 110°C
Temperature control range:	0 to 100°C (at 20°C)
Temperature setting precision:	±0.1°C
Temperature accuracy:	With cell holder sensor: ±0.5°C (20°C to 40°C), ±1°C (other temp. range)



Specifications:

Cell block (Cell and temp. sensor are optional)	#	Compatible cell	#	In-cell sensor (factory option)
6-position cell block (with integrated variable speed magnetic stirrer) for rectangular cell, 10 x 10 mm	1	Rectangular quartz cell, 2 x 10 mm, max. 6pcs.	1A	6916-H516A Sensor in cell, 1 pc. 6916-H517A Sensor in cell, 6 pcs/set
		Rectangular quartz cell, 4 x 10 mm, max. 6pcs.	-	
		Rectangular quartz cell, 10 x 10 mm, max. 6pcs.	1B	
		Capillary cell adaptor and Capillary cell, max. 6 pcs. (A sealing compound is required for using capillary cells.)	1C	
8-position cell block (with integrated variable speed magnetic stirrer) for rectangular cell, 5 x 5 mm	2	Rectangular quartz cell, 5 x 5 mm, max 8 pcs.	2A	6916-H516A Sensor in cell, 1 pc. 6916-H518A Sensor in cell, 8 pcs/set
1 mm 8-position micro cell block (Including Silicon cap x 8, Silicon cap with sensor hole x1, and cap fixture) *Stirrer function is not available.	3	8-position 1 mm micro cell, 1 mm path length, 10 µL for each position	3A	6916-H516A Sensor in cell, 1 pc. *The 8th cell position is used only to monitor cell block temperature.
10 mm 8-position micro cell block *Stirrer function is not available.	4	8-position 10 mm micro cell, 10 mm path length, 10 µL for each position, without capability for well caps	4A	N/A
		8-position 10 mm micro cell with Teflon caps, 10 mm path length, 100 µL for each position	4B	6916-H516A Sensor in cell, 1 pc. *The 8th cell position is used only to monitor cell block temperature.
		Silicon cap kit for 1103-1168, to prevent volatilization of samples at high temperatures, consisting of silicon cap x8 , Silicon cap with sensor hole x1, and cap fixture	4C	

Water circulation bath

MCB-100 Mini water circulation bath

Specifications:

Temperature control range:	10°C below ambient temperature to 40°C (IN and OUT connected)
Bath capacity:	Approx. 200 mL
Temperature sensor accuracy:	±0.2°C (at 20°C)
Cooling/heating capacity:	52 W
Dimensions:	160 (W) × 278 (H) × 225 (D) mm

MCB-100

Sippers, Autosampler, syringe pump and flow cell

NQF-781 Vacuum sipper
NQF-783 Vacuum sipper with long-path flow cell

NQF-781

A 10 mm rectangular cell holder is integrated in addition to the 10 mm flow cell, and can be easily switched.

Specifications:

	NQF-781	NQF-783
Light path length	10 mm	50 mm
Cell capacity	Approx. 50 µL	Approx. 1.4 mL
Cell material	Quartz	
Carryover	Less than 1%	
Min. sample requirement	0.7 mL with low-viscosity samples	2.4 mL with low-viscosity samples
Wavelength range	220 - 900 nm (V-730/750/760) 220 - 2200 nm (V-770) 220 - 1600 nm (V-780)	

NPF-782 Peristaltic sipper

NPF-782

A 10 mm rectangular cell holder is integrated in addition to the 10 mm flow cell, and can be easily switched. The sample can be recovered by reversing the 'drain' direction.

Specifications:

Light path length:	10 mm
Cell capacity:	Approx. 50 µL
Cell material:	Quartz
Carryover:	Less than 1%
Min. sample requirement:	0.7 mL with low-viscosity samples
Wavelength range:	220 - 900 nm (V-730/750/760) 220 - 2200 nm (V-770) 220 - 1600 nm (V-780)

SFC-712 Flow cell holder

Two different cell blocks are available as options, please specify.

5 mm path length flow cell block
(50 µL cell capacity)
10 mm path length flow cell block
(100 µL cell capacity)

SFC-712

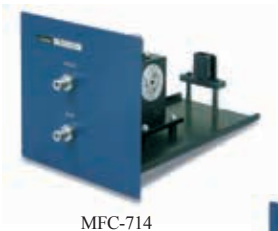
LFC-713 Long path flow cell holder

Three different cell blocks are available as options, please specify.

30 mm path length flow cell block
(approx. 0.6 mL cell capacity)
50 mm path length flow cell block
(approx. 1 mL cell capacity)
100 mm path length flow cell block
(approx. 2 mL cell capacity)

LFC-713

MFC-714/FIC-715 Micro flow cell holder



MFC-714

Specifications:

Tubing:	SUS (MFC-714) Teflon (FIC-715)
Light path length:	10 mm
Cell Capacity:	20 µL

FIC-715

ASU-800 Autosampler unit

ASU-800

The ASU-800 autosampler automates measurements of multiple liquid samples employing a sipper or syringe pump. Various racks are available to be used with test tubes and/or vials. The PC control software is included as standard.

Specifications:

Compatible pump:
- NQF-781 Vacuum sipper
- NQF-783 Vacuum sipper with long-path flow cell
- NPF-721 Peristaltic sipper
- ASP-849 Syringe pump

Option

	Rack	Sample	Max number of sample
SRA-811	15 mm O.D. test tube rack	10 mL	100
SRA-812	13 mm O.D. test tube rack	7 mL	100
SRA-813	12 mm O.D. test tube rack	5 mL	150
SRA-814	10 mm O.D. test tube rack	3 mL	150
SRA-816	Micro plate rack	1 mL	192
SRA-818	Vial rack	1.5 mL	120

Dust cover

This is a dust case that covers the rack part of ASU-800

Dust cover

AWU-820 Washing unit

This is a washing unit Specifically for the NQF-781, NQF-783 and NPF-782. The AWU-820 can automatically wash the ASU-800 autosampler system.

AWU-820

ASP-849 Syringe pump

ASP-849

The ASP-849 can be used in conjunction with the ASU-800 and SFC-712 flow cell holder. The syringe pump is suitable for drawing small quantities of sample.

Specifications:

Reproducibility of volume delivery:	Within ±1%
Syringe capacity:	2.5 mL (1, 5, 10 mL options)

Autosampler systems for multiple samples

ASU-800 with NPF-782 peristaltic sipper

ASU-800 with ASP-849 syringe pump and SFC-712 micro flow cell

ASU-800 with NQF-781 vacuum sipper

Integrating spheres

ISV-922/ISN-923/ISN-901i **Integrating sphere, 60 mm diam.**


ISV-922

Option

PSH-002 Powder sample holder
- For diffuse reflectance measurements of powder samples
- Size of sample area: 16 mm diameter
- Thickness: 0.5 - 6 mm

PSH-003 Powder sample holder
- For diffuse reflectance measurements of small amount of powder samples
- Size of sample area: 5 mm diameter
- Thickness: 0.5 - 4 mm

Specifications:

Model name	ISV-922	ISN-923	ISN-901i
Main unit	V-750/760	V-770	V-780
Inside diameter of integrating sphere	60 mm diam.		
Min. sample size (Reflectance)	20 (H) x 20 (W) x 0.5 (t) mm		
Max. sample size (Reflectance)	65 (H) x 50 (W) x 25 (t) mm		
Sample cell (Transmittance)	Rectangular cell 5, 10, 20, 30 and 50 mm path length		
Reference cell (Transmittance)	Rectangular cell 5, 10, 20 mm path length *Reference cell block is optional.		
Wavelength range	200 - 870 nm	200 - 2500 nm	200 - 1600 nm
Detector	PMT	PMT & PbS	PMT & InGaAs
Incident angle to reflection surface	0º, approx. 5º		

ILV-924/ILN-925/ILN-902i **Integrating sphere, 150 mm diam.**


ILN-925

Option

PSH-002 Powder sample holder
- For diffuse reflectance measurements of powder samples
- Size of sample area: 16 mm diameter
- Thickness: 0.5 - 6 mm

SSH-507 Solid sample holder
- For diffuse transmittance measurements of a solid sample
- Min. sample size: 20 (H) × 20 (W) × 0.5 (t) mm
- Max. sample size: 70 (H) × 30 (W) × 40 (t) mm

Specifications:

Model name	ILV-924	ILN-925	ILN-902i
Main unit	V-750/760	V-770	V-780
Inside diameter of integrating sphere	150 mm diam.		
Min. sample size (Reflectance)	20 (H) × 20 (W) × 0.5 (t) mm		
Max. sample size (Reflectance)	100 (H) × 50 (W) × 30 (t) mm		
Sample cell (Transmittance)	Rectangular cell 5, 10, 20 30, and 50 mm path length		
Reference cell (Transmittance)			
Wavelength range	220 - 850 nm	220 - 2200 nm	220 - 1600 nm
Detector	PMT	PMT & PbS	PMT & InGaAs
Incident angle to reflection surface	approx. 5º		

SIV-767/SIN-768 **Integrating sphere with stirrer**


SIN-768

Option

RLH-603 Reference-side rectangular cell holder
This cell holder is required for the reference side when performing diffuse transmittance measurements of turbid liquid samples. The 5, 10 and 20mm pathlength rectangular cells can be used with this cell holder.

Thermostatted Cell Holder
This cell holder allows measurements under temperature control by using a 10 × 10 mm rectangular cell with a temperature range of 10 to 90ºC. A thermostatted water circulator is required.

Specifications:

Model name	SIV-767	SIN-768
Main unit	V-750/760	V-770
Inside diameter of integrating sphere	60 mm diam.	
Sample cell (Transmittance)	Rectangular cell 5, 10, 20 30, and 50 mm path length	
Reference cell (Transmittance)	Rectangular cell 5, 10, 20 mm path length Reference cell block is optional.	
Wavelength range	250 - 800 nm	250 - 2500 nm
Detector	PMT	PMT & PbS
Incident angle to reflection surface	approx. 5º	

HISV-728/HISN-729 **Portable integrating sphere**


HISN-729

Option

Model neme	OFV-624	OFV-625	OFN-626	OFN-627
Portable integrating sphere	HISV-728		HISN-729	
Length	1 m	2 m	1 m	2 m
Wavelength range	250 - 800 nm		250 - 2000 nm	

Specifications:

Model name	SIV-767	SIN-768
Main unit	V-750/760	V-770
Inside diameter of integrating sphere	60 mm diam.	
Window size	25 mm diam.	
Wavelength range	250 - 800 nm	250 - 2000 nm

IJV-726/IJN-727/IJN-904i **Dedicated gemstone integrating sphere**

Specifications:

Model name	IJV-726	IJN-727	IJN-904i
Main unit	V-750/760	V-770	V-780
Inside diameter of integrating sphere	60 mm diam.		
Min. sample size	2 mm diam. (Transmittance/Reflectance)		
Max. sample size (Transmittance)	10 mm diam.		
Max. sample size (Reflectance)	30 mm diam.		
Wavelength range	220 - 850 nm	220 - 2000 nm	220 - 1600 nm


IJN-727

PIV-756/PIN-757/PIN-903i **Horizontal sampling integrating sphere**

Specifications:

Model name	IJV-726	IJN-727	IJN-904i
Main unit	V-750/760	V-770	V-780
Inside diameter of integrating sphere	60 mm diam.		
Max. sample size (Reflectance)	30 x 30 x 10 (t) mm		
Reflectance measurement adaptor	20 mm diam. x 2 mm (no window required)		
Min. sample size(Transmittance)	3 mm diam.x 0.5 (t) mm		
Max. sample size (Transmittance)	50 (H) x 50 (W) x 2 (t) mm		
Wavelength range	250 - 850 nm	250 - 2000 nm	250 - 1600 nm


PIN-575

Specular reflectance measurement accessories

SLM-907/SLM-908 Specular reflectance accessory

The SLM-907 and SLM-908 accessories are designed to measure the relative reflectance of a sample using the reflected light from an aluminum-deposited plane mirror as a reference.
These accessories allow measurement of the reflectance of metal-deposited films and/or metal Plating, as well as measurement of film thickness using a film thickness analysis program.
The SLM-908 accessory can measure larger samples such as 6 inch silicon wafers.


SLM-907


SLM-908

Specifications:

Model name	SLM-907	SLM-908
Incident angle	approx. 5°	
Min. sample size	10 x 10 mm	-
Max. sample size	100 x 120 mm	150 mm diam.
Beam Port Diameter	7 mm diam. (1 mm, 2 mm diam. Options)	7 x 7 mm
Reflection Reference	Aluminum-deposited plane mirror (Standard)	
Wavelength range	250 - 1000 nm (V-730)	-
	200 - 870 nm (V-750/760) 200 - 2500 nm (V-770) 200 - 1600 nm (V-780)	
Sample chamber lid	Standard	

Option

Model neme	MSK-001	MSK-002
Sample stage with mask	2 mm diam.	4 mm diam.
Min. sample size	3 x 3 mm	5 x 5 mm
Max. sample size	50 x 50 mm	50 x 50 mm

Film holder

FLH-740/FLH-741 Film holder

The FLH-740 and FLH-741 accessories are used to measure the transmittance of solid, transparent samples such as films, plate glass, and filters.


FL H-740


FL H-741

Specifications:

Model name	FLH-740	FLH-741
Min. sample size	15 (H) x 15 (W) x 0.5 (t) mm	5 (H) x 5 (W) x 0.5 (t) mm
Max. sample size	80 (H) x 100 (W) x 10 (t) mm	80 (H) x 100 (W) x 25 (t) mm

RSH-744 Rotary sample holder

The RSH-744 accessory can be used to measure a film type sample and rotating the sample manually. The sample can be rotated 360° around the optical axis and the inclination (tilt) of the sample versus the source beam can be varied within a range of ±50°.


RSH-744

Specifications:
Min. sample size:
10 (H) x 30 (W) x 1 (t) mm
Max. sample size:
18 (H) x 38 (W) x 2 (t) mm
Angle of rotation:
Optical axis: 360°
Perpendicular to the optical axis: ±50°

VTA-752 Film holder (variable incident angle)


VTA-752

The VTA-752 is a film holder to measure transmittance of a film type sample, changing the incident angle of the light beam. The incident angle of the source light beam can be set in 1° increments.

Specifications:
Minimum sample size: 15 (H) x 35 (W) x 1 (t) mm
Maximum sample size: 80 (H) x 70 (W) x 2 (t) mm
Range of rotation angle: ±90°

Optical fiber probe units

FAV-750/FAV-751 Optical fiber unit

The FAV-750/FAN-751 accessories, consisting of an optical fiber unit and external detector, enables the measurement of bulky samples that cannot be set in the sample compartment and/or samples that are in special environments. The light from the main instrument is introduced to the optical fiber. The light from a sample is introduced to the external detector via the optical fiber.

Specifications:

Model name	FAV-750	FAN-751
Wavelength range	250 - 800 nm	250 - 2000 nm

* Optical fiber, optical fiber ports, and external sample compartment are optional.

Option
Fiber connection port, Bundle type for FAV-750/FAN-751
Fiber connection port, Bundle type for FAP-754
Fiber connection port, FC connector type for FAV-750/FAN-751
Fiber connection port, FC connector type for FAP-754
Fiber connection port, SMA connector type for FAV-750/FAN-751
Fiber connection port, SMA connector type for FAP-754

FAP-754 Optical fiber unit


FAP-754

The FAP-754 accessory can be used for sample measurement using the internal detector of the spectrophotometer. The light from the main instrument is introduced to an optical fiber. The light from a sample is introduced to the detector of the spectrophotometer via a return optical fiber.

* Optical fiber and optical fiber ports are optional.

ELM-912 External light source interface


ELM-912

This interface is for introducing light from an external light source to the spectrophotometer, and measuring the spectrum of the external source. It can be used for the spectral/intensity evaluation of external light sources.

* For correction of the measured spectrum, a secondary reference source is also required.
* The optical fiber is optional.

Polarizer, Depolarization plate

GPH-506 Polarizer

The GPH-506 polarizer converts the source light from the instrument monochromator into linearly polarized light. The plane of polarization can be set at 0° (vertical linearly polarized light) and 90° (horizontal linearly polarized light). The applicable spectral range is from 215 to 2,300 nm.


GPH-506

DPL-515 Depolarization plate

The DPL-515 depolarizer converts incident light to non-polarized light. Non-polarized light is obtained when the rotation angle is set to 45°. The applicable spectral range is from 350 to 2,500 nm.


DPL-515

Absolute reflectance measurement accessory

ARV-913/ARN-914/ARN-915i — Absolute reflectance measurement accessory (Synchronous type)
ARSV-916/ARSN-917/ARSN-918i — Absolute reflectance measurement accessory (Asynchronous type)
ARMV-919/ARMN-920/ARMN-921i — Automated absolute reflectance measurement accessory

ARV-913

The ARV and ARN accessories provide absolute reflectance measurements of samples by the manual, synchronous movement of the sample stage and detector. Changing the incident angle of the sample by manually moving the detector position, the absolute reflectance of the sample can be measured at varied incident angles.
The ARSV and ARSN accessories provide an asynchronous movement of the sample stage and detector, thus, the positions of the sample stage and detector can be independently varied to obtain the absolute reflectance and transmittance spectra of the sample at varied incident and detection angles. Using the optional polarizers, the polarization properties of the sample can also be examined.

ARMV-919

The ARMV and ARMN automate the absolute reflectance measurements of specularly reflecting samples such as metal or glass samples. The detector is equipped with an integrating sphere and thus it also permits measurement of the relative reflectance of a diffusely reflecting sample. Since the angles of the sample stage and the detector can be changed independently, the absolute reflectance and transmittance of a sample can be measured with varied angles of incidence.
A software controlled polarizer is provided as standard for the examination of the polarization properties of a sample. In addition to S and P polarized lights, N polarized light that obtains the same measurement results as non-polarized light is available.

Specifications:

Model name		ARV-913	ARN-914	ARN-915i	ARSV-916	ARSN-917	ARSN-918i	ARMV-919	ARMN-920	ARMN-921i
Main unit		V-750/760	V-770	V-780	V-750/760	V-770	V-780	V-750/760	V-770	V-780
Wavelength range		250 - 850 nm	250 - 2000 nm	250 - 1600 nm	250 - 850 nm	250 - 2000 nm	250 - 1600 nm	250 - 850 nm	250 - 2000 nm	250 - 1600 nm
Movement of sample stage and detector		Synchronous			Asynchronous					
Control of sample stage and detector		Manual						Automated		
Measurement mode		Absolute reflectance Relative reflectance			Absolute reflectance Relative reflectance Transmittance					
Integrating sphere		60 mm diam.								
Incidence angle		Absolute reflectance mode: 5 ° to 60° Relative reflectance mode: Vertical incidence								
		-			Transmittance mode: 0 ° to 60°					
Angle setting		2.5° step (manual)			Sample stage: 0.1° step (manual) Detector stage: 1° step (manual)			0.1° step automatic		
Sample size	Absolute reflectance mode: Min.	20 (H) x 20 (W) x 1 (t) mm						20 (H) x 20 (W) x 1 (t) mm		
	Absolute reflectance mode: Max.	70 (H) x 100 (W) x 10 (t) mm						70 (H) x 70 (W) x 10 (t) mm		
	Relative reflectance mode: Min.	20 (H) x 20 (W) x 0.5 (t) mm						20 (H) x 20 (W) x 0.5 (t) mm		
	Relative reflectance mode: Max.	70 (H) x 100 (W) x 10 (t) mm						70 (H) x 70 (W) x 10 (t) mm		
Accuracy		±1.5% at incidence angle of 6 °								
100% line flatness		Within ±1%								
Polarizer		Option						Standard		
Standard software		N/A						Absolute reflectance spectral measurement, Interval analysis		

Option

SSH-508 Solid sample holder

The SSH-508 is set on the entrance to the detector for diffuse transmittance measurements of scattering samples at a vertical (0º) incidence.

Specifications:
Minimum sample size:
30 (H) x 30 (W) x 0.5 (t) mm
Maximum sample size:
70 (H) x 80 (W) x 10 (t) mm

Wide incident angle sample holder

This sample holder is attached to the sample stage to allow an angle of incidence up to a maximum of 85°.

Specifications:
Minimum sample size:
30 (H) x 60 (W) x 1 (t) mm
(ARV/ARN)
30 (H) x 30 (W) x 1 (t) mm
(ARSV/ARSN/ARMV/ARMN)
Maximum sample size:
70 (H) x 100 (W) x 10 (t) mm
Incidence angle: 0 - 85 °

PDU-755 Phase difference measurement unit

The PDU-755 option provides the measurement of the reflectance phase difference and the transmittance phase difference. It consists of an angle selective analyzer and the VWAP-794 phase difference measurement program.

Specifications:
Wavelength range:
250 - 850 nm
(ARV-913/ARSV-916/ARMV-919)
250 - 2000 nm
(ARN-914/ARSN-917/ARMN-920)
250 - 1600 nm
(ARN-915i/ARSN-918i/ARMN-921i)
Polarization rotation angle: 0 - 90°

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