

# V-730Bio

**UV-Vis Double Beam Spectrophotometer**  
*for Bio-Analytical applications*





**JASCO Europe** is responsible for marketing, sales, service and support for all Jasco products throughout **Europe, Middle East and Africa**.



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- Operating Techniques



## UV-Vis Spectrophotometer JASCO V-730Bio

V-730Bio is a dedicated stand-alone instrument system for Life Science applications. It includes an intelligent Remote Module (iRM-1000) specifically designed for biochemical and clinical analysis and a micro cell holder.

Dedicated bio-analytical application programs such as protein/nucleic acid measurement, temperature ramping/DNA melting analysis, kinetics measurement and analysis, and a quantitative protein analysis program with six different calibration methods are included in the software as standard.

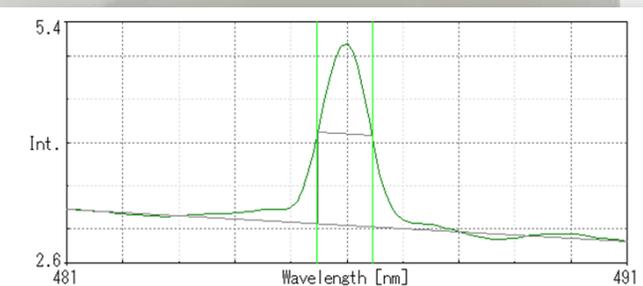
Features for simplicity and ease of use include the IQ Accessory function and IQ Start. Auto print and Auto save functions make daily analyses simple and fast.

### JASCO V-730Bio KEY FEATURES

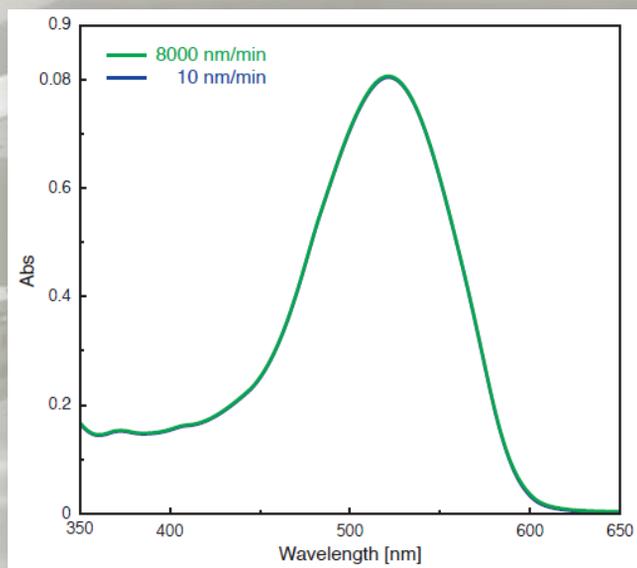
**1nm Spectral Bandwidth** - In the European Pharmacopoeia, the standard resolution test for a mixture of Toluene/Hexane requires that the spectral ratio at 269 nm and 266 nm must exceed 1.5; with a **1 nm SBW**, V-730Bio passes this test with ease.

**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-730Bio has a wide range of special accessories and optional programs for a broad range of analyses.

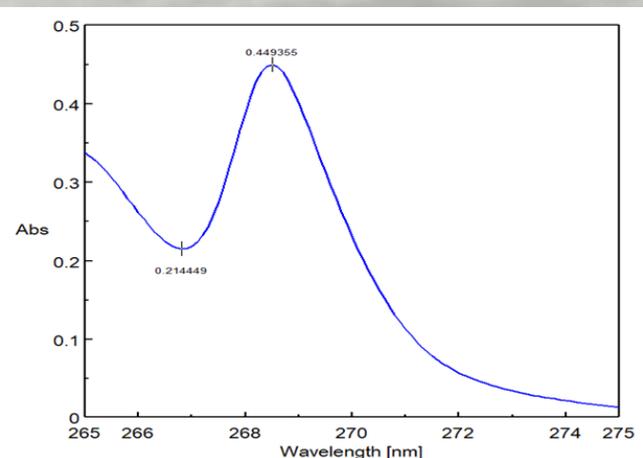
**High scan speed** - V-730Bio can perform spectral measurements at scanning speed up to **8,000 nm/min**. The figure below shows the comparison of spectra measured at scanning speeds of 8,000 nm/min and 10 nm/min. The two spectral shapes match very closely, and the shape does not vary even with high-speed scanning. For example measurement time for Protein/Nucleic acid quantitation program can be performed in just 8 seconds.



Spectral Bandwidth calculated : 0.974



Comparison of high-speed scan and normal scan

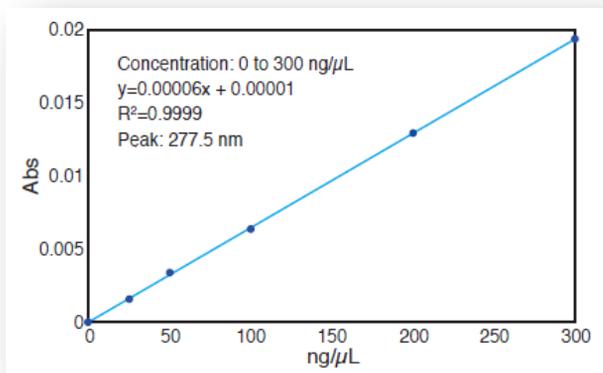


Resolution test of EP -Toluene/Hexane:  
Resolution=2.0954

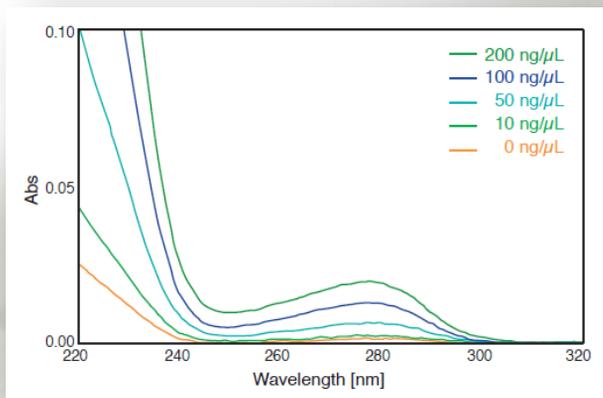
**IQ accessory and IQ Start** - The IQ Accessory function automatically recognizes an accessory when it is inserted into the sample compartment. When the IQ Accessory system recognizes the registered accessory, the assigned program automatically starts by using the IQ Start function.

**Start Button** - All models have a Start Button for immediate initiation of sample measurement. After placing a sample in the sample compartment, simply press the Start Button on the instrument to begin measurement.

**Micro Cells** - The standard cell holder of V-730Bio accepts micro cells (optical path length of 10 mm) with a minimum optical path width of 2 mm, which is useful for measurement of very small amounts of sample. Figures below illustrate highly accurate measurement of small amounts of albumen solution by using the EMC-759 Ultra-micro cell holder and a 5  $\mu\text{L}$  micro cell.



Calibration curve of albumen solutions



Spectra of albumen solutions

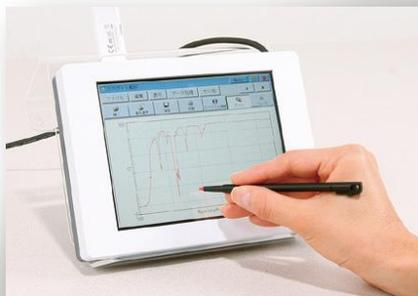
**Dark Correction** - A Dark Correction function is standard for all models of the V-700 Series, which provides photometrically accurate measurements of highly absorbing samples.

**Energy and space-saving system**

- 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.

**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.



**Spectra Analysis software for PC included as standard** - Data acquired using the iRM can be transferred and analyzed using Spectra Analysis on a PC.

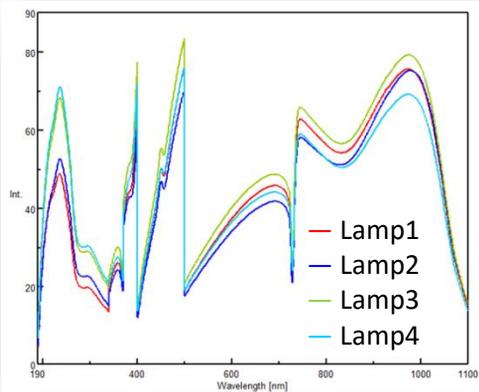
Functions in Spectra Analysis for PC include peak detection, vertical/horizontal axis conversion to print layout designer and data conversion to ASCII text format.

**Daily check program** - For users who requires 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.

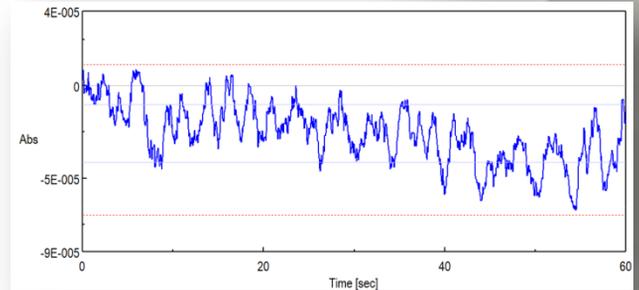
**Validation** - V-730Bio provides a standard validation program. This program supports USP, EP and JP instrument qualification requirements. The program automatically performs an analysis of the instrument results based on defined acceptance criteria. Results of the validation tests can be printed or saved electronically for further review.

**Alignment-free lamp replacement** - The design of the socket deuterium lamp and socket tungsten halogen lamp facilitates light source over replacement, simplifies maintenance and reduces operation error.

In the example below, single beam spectra and validation results of 4 different lamps mounted without any alignment tools.



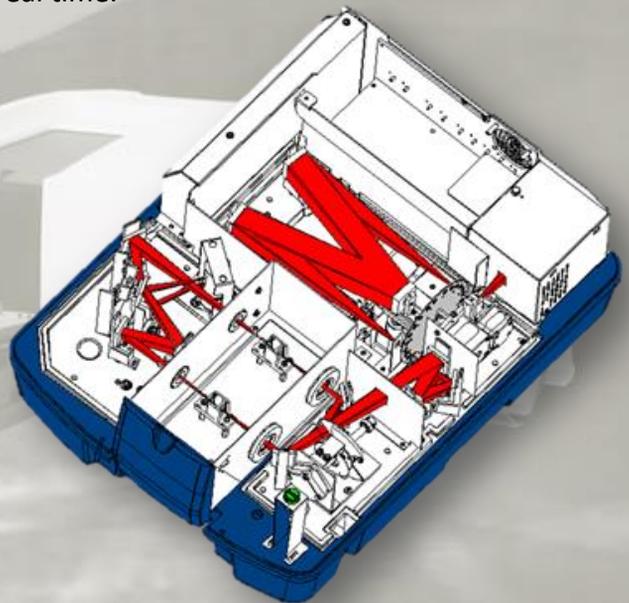
**Lowest RMS noise** – Using a new pre-amplifier, JASCO V-730Bio achieves the lowest RMS noise offering an outstanding sensitivity compared to similar UV-Vis spectrophotometers on the market.



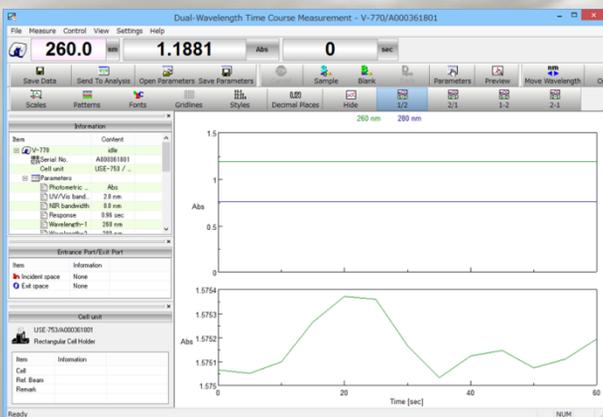
RMS Noise 0.00004 Abs

**True Double-Beam spectrophotometer** - All JASCO V-700 spectrophotometers are true double-beam systems, provide the best possible stability and allow reference to be measured and corrected in real time.

	Lamp 1	Lamp 2	Lamp 3	Lamp 4
<b>Wavelength Accuracy</b>	Pass	Pass	Pass	Pass
<b>Photometric Accuracy</b>	Pass	Pass	Pass	Pass
<b>Noise Level</b>	Pass	Pass	Pass	Pass
<b>Baseline Flatness</b>	Pass	Pass	Pass	Pass



**Dual wavelength time course measurement** - kinetics measurement can be performed by simultaneous dual wavelength, and the difference between dual photometric value and the ratio of dual photometric value can be plotted.



**Extensive Range of Accessories** - The V-700 Series can be integrated with more than 70 accessories and over 30 optional programs 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.



## JASCO V-730Bio Unique Features

- **Standard working range (190 to 1,100 nm)** and **spectral bandwidth (1nm)** enough to satisfy any Pharmacopoeia requirements.
- **Outstanding RMS noise (0.00004 Abs)** and **Stray Light (0.02%)** provide capabilities from education and routine analysis to high-end research applications.
- **High Scan Speed (8,000 nm/min)** assures a measurement time of Protein/Nucleic acid in 8 seconds keeping spectral shapes similar to what acquires at a slow scanning speed.
- **True Double-Beam** spectrophotometer provides the best possible stability and allows reference to be measured and correct on real time.
- **High clarity color Touch Screen LCD** makes the display of complex data such as spectra or calibration curves easy to read.
- **IQ Accessory function** for automatic recognition of any accessory inserted into the sample compartment.
- **Validation and Daily Check** programs help operator to keep the instrument always in perfect conditions assuring maximum accuracy of obtained results.
- The V-700 Series can be integrated with more than **70 accessories** and over **30 optional programs** to offer flexible configurations for a wide variety of analytical requirements.
- **Cross-platform integrated software package, SPECTRA MANAGER II** including dedicated softwares for Biochemical applications.

## Software JASCO SPECTRA MANAGER II

The SPECTRA MANAGER II 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 can be viewed in a single window, and processed using a full range of data manipulation functions.

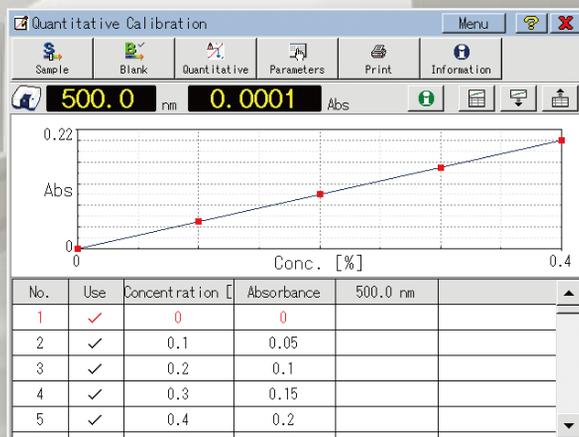
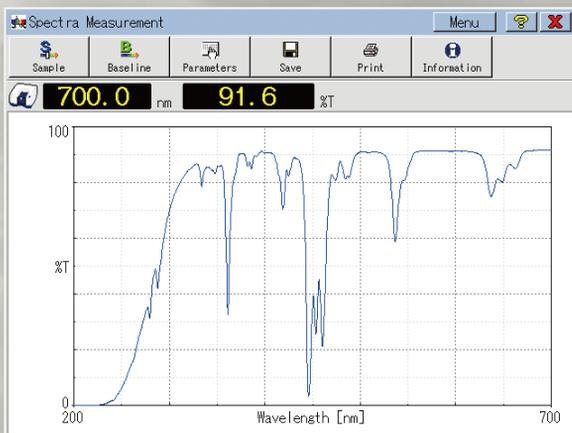
*The basic package includes:*

**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.

**SPECTRA MEASUREMENT PROGRAM** - The Spectra Measurement program measures photometric values of a sample in the selected wavelength range. Abs, %T or %R are available for the vertical axis while nm, cm<sup>-1</sup>, μm, and eV are available for the horizontal axis.

**VALIDATION PROGRAM** – The Validation program offers assistance for verifying instrument performance to meet regulatory requirements set by GxP. The test methods are compliant with USP, EP and JP procedures. The program includes validation tests for wavelength accuracy, wavelength repeatability, photometric accuracy, photometric repeatability, resolution, resolution power, stray light, noise level, baseline stability and baseline flatness. Optional standards and tools are required for some validation tests.

**QUANTITATIVE ANALYSIS PROGRAM** - The quantitative measurement package consists of two programs; a calibration curve creation program and a quantitative measurement program. The program provides three types of baseline correction methods and eight types of calibration curves. A function for providing a pass/fail judgement for the obtained values is included.

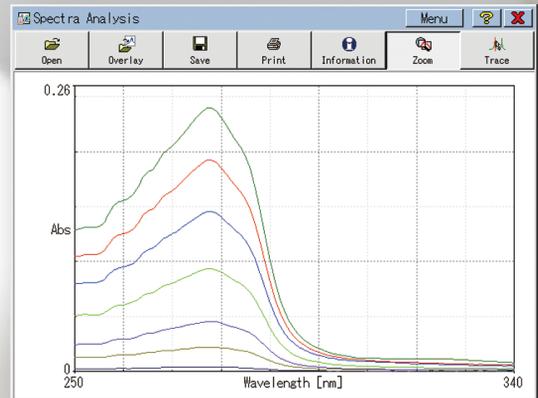


## Software JASCO SPECTRA MANAGER II

**FIXED WAVELENGTH PROGRAM** - The Fixed Wavelength measurement program measures the photometric values of up to eight multiple wavelengths. A 'cycle number' and 'wait time' are selectable, and the mean, standard deviation and C.V. value for each wavelength are displayed after completion of each cycle of sample measurements.

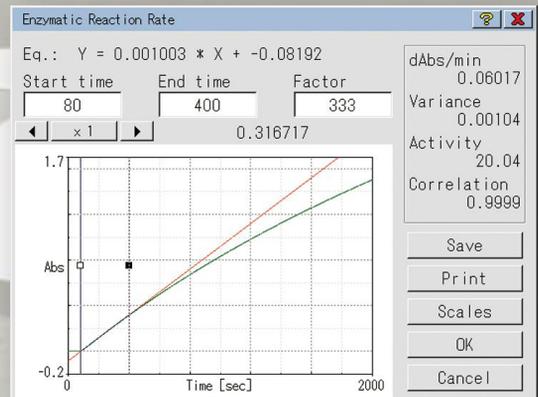
No.	Mode	500.0 nm	480.0 nm	460.0 nm	440.0 nm
1	Sample-1-1	0.0297	0.0271	0.0257	0.0244
2	Sample-1-2	0.0297	0.0273	0.0256	0.0240
3	Sample-1-3	0.0296	0.0271	0.0253	0.0242
4	Sample-1-Ave.	0.0296	0.0272	0.0255	0.0242
5	Sample-1-S.D.	0.0000	0.0001	0.0001	0.0002
6	Sample-1-C.V.	0.1558	0.3521	0.5196	0.6952

**SPECTRA ANALYSIS PROGRAM** - Standard data analysis applications for the iRM include peak detection, vertical/horizontal axis conversion and enzymatic reaction calculation.

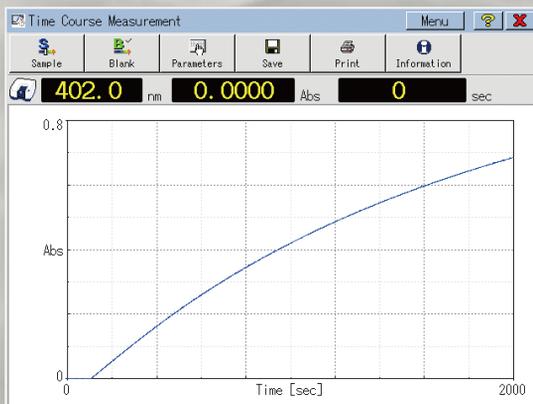


Spectra Analysis

**TIME COURSE PROGRAM** - The Time Course measurement program measures the changes of a sample's photometric value over time at a fixed wavelength and with a defined interval. For the time course measurement, the V-730Bio can obtain data at a minimum interval of 0.01 sec. Parallel time course measurements while controlling the cell positions of a cell changer are also possible.



Enzymatic Reaction Rate Calculation



## Software JASCO SPECTRA MANAGER II

**Protein nucleic acid quantitation** - This program measures the absorbance of a sample at the specified wavelengths and calculates concentrations of proteins and nucleic acids using a method selected from the following five choices.

- Ratio between Abs @ 260 and 280 nm
- Ratio between Abs @ 230 and 260 nm
- Warburg/Christian factor calculation method
- User-defined absorbance ratio calculation
- User-defined concentration calculation

It is also possible to specify the wavelength for background correction and to select whether background correction is to be performed. Generally, a baseline correction at 320 nm is performed for turbid samples.

**Quantitative analysis of proteins** - Six kinds of calibration curves for the quantitative analysis of proteins are included:

- UV Absorption
- BCA method
- Bradford method
- Lowry method
- WST method
- Biuret method

**Kinetics measurement/analysis** - Time course measurements of enzymatic reactions using multiple substrate solutions can be performed, then analyzed to obtain the kinetic constant  $K_m$  and the maximum velocity  $V_{max}$ .

Four graphic plots are available.

- Michaelis-Menten plot (\*)
- Lineweaver-Burk plot
- Hofstee plot
- Eadie plot

This program is compatible with automatic cell changers, thus data acquisition and analysis can be performed for multiple sample cells.

(\*) Michaelis-Menten is graphic plot only.

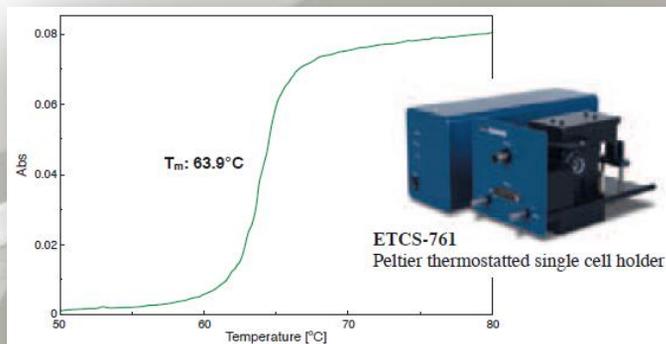
## Temperature measurement and melting analysis

This program performs DNA melting analysis.

A melting curve to calculate the melting point ( $T_m$ ) is measured by using an optional Peltier accessory.

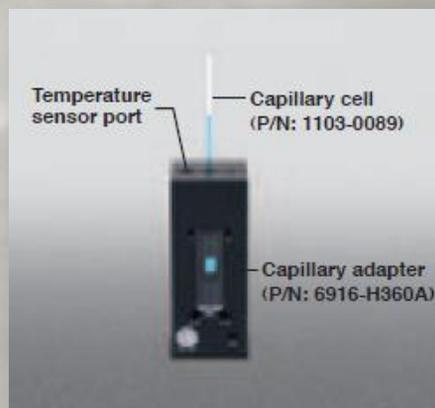
The program is compatible with automatic cell changers, thus data acquisition and analysis can be performed for multiple cells.

The figure below illustrates the DNA melting analysis of 3  $\mu$ L of a DNA sample by using a capillary cell with the ETCS-761 Peltier thermostatted single cell holder. The melting temperature calculated from the data was 63.9°C.



**Capillary adaptor** - The capillary adaptor enables a temperature measurement of trace amounts of sample using a quartz capillary cell (Pathlength: approx. 0.5 mm, minimum sample volume: 3  $\mu$ L). This adaptor can be used with a Peltier cell holder or cell changer for temperature measurements such as DNA melting analysis. The temperature sensor is optional.

\* Capillary sealing compound (P/N: 1107-0015) is required.



<b>Optical System</b>	<ul style="list-style-type: none"> <li>• Rowland off-circle arrangement</li> <li>• Single Monochromator</li> <li>• True Double-Beam (Sample &amp; Reference)</li> </ul>
<b>Light Source</b>	Deuterium & Halogen lamps with automatic switching
<b>Detector</b>	Silicon photodiode
<b>Wavelength Range</b>	190 – 1,100 nm
<b>Wavelength Accuracy</b>	± 0.2 at 656.1 nm
<b>Wavelength Repeatability</b>	± 0.1 nm
<b>Scanning Speed</b>	10 to 8,000 nm/min
<b>Slew Speed</b>	24,000 nm/min
<b>Spectral bandwidth</b>	1 nm (Fixed)
<b>Photometric Range</b> (guaranteed on the whole spectral range)	-3 + 3 Abs
<b>Maximum Photometric Range</b>	-3.5 + 3.5 Abs (KMnO <sub>4</sub> aqueous solution)
<b>Photometric Accuracy</b>	±0.0015 Abs (0 to 0.5 Abs) ±0.0025 Abs (0.5 to 1 Abs) ±0.3 %T Tested with NIST SRM 930
<b>Stray Light</b>	1 % (198 nm KCl 12 g/L) 0.02 % (220 nm NaI 10 g/L) 0.02 % (340 nm NaNO <sub>2</sub> 50 g/L) 0.02 % (370 nm NaNO <sub>2</sub> 50 g/L)
<b>Baseline stability</b>	±0.0004 Abs/hour
<b>Baseline flatness</b>	±0.0005 Abs
<b>RMS noise</b>	0.00004 Abs (0 Abs, 500 nm, 60 sec)
<b>Automatic Accessories Recognition</b>	YES
<b>Software</b>	Spectra Manager II including the following programs: <ul style="list-style-type: none"> <li>• Spectra Measurement</li> <li>• Quantitative analysis</li> <li>• Fixed Wavelength</li> <li>• Dual Wavelength Time Course Measurement</li> <li>• Quick Start Measurement</li> <li>• Validation &amp; Daily Check</li> <li>• Enzyme Activity Calculation</li> <li>• Dedicated Biochemical programs</li> </ul>
<b>iRM (Intelligent Remote Control)</b>	iRM-1000 intelligent remote module incorporates a color LCD touch screen (320 x 240 pixel)
<b>Printing Functions</b>	Compatible with all printers having ESC/P-R protocol
<b>Dimensions and weight</b>	486(W)x441(D)x216(H) mm - 15 kg
<b>Power requirements</b>	120VA

**Sampling Accessories**  
**V-730Bio UV-Vis Spectrophotometer**



Spectra Manager Ver.2



## Sampling Accessories

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.

### LSE-701 - Long path cell holder



#### Specifications

<b>Sample Cell</b>	Rectangular cell pathlength 10, 20, 50 or 100 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10, 20, 50 or 100 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature</b>	Ambient

### SSE-704 - 6-position manual cell changer



#### Specifications

<b>Sample Cell</b>	Rectangular cell pathlength 10 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10 mm
<b>Capacity</b>	6 sample and 1 reference cell
<b>Temperature</b>	Ambient

### NCP-705 - 6-position automatic cell changer



#### Specifications

<b>Sample Cell</b>	Rectangular cell pathlength 10 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10 mm
<b>Capacity</b>	6 sample and 1 reference cell
<b>Temperature</b>	Ambient
<b>Cell Switching</b>	Software Controlled

### FSE-702 - 4-position manual long path cell changer



#### Specifications

<b>Sample Cell</b>	Rectangular cell pathlength 10, 20, 50 or 100 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10, 20, 50 or 100 mm
<b>Capacity</b>	4 sample and 1 reference cell
<b>Temperature</b>	Ambient

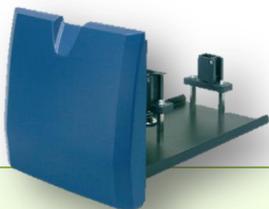
### CYH-708 - Cylindrical cell holder



#### Specifications

<b>Sample Cell</b>	Cylindrical cell pathlength 10, 20, 50 or 100 mm
<b>Reference Cell</b>	Cylindrical cell pathlength 10, 20, 50 or 100 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature</b>	Ambient

## UCB-710 – Bio rectangular cell holder



### Specifications

Standard Cell holder for V-730Bio package. A cell height adjustment function provides the ability to use a 100  $\mu$ L micro cell. A mask for a 100  $\mu$ L micro cell is standard, 50  $\mu$ L can be supplied as option.

<b>Sample Cell</b>	Rectangular cell pathlength 10 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature</b>	Ambient
<b>Minimum Cell Volume</b>	50 $\mu$ L

## EMC-709 – Micro cell holder



### Specifications

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

<b>Sample Cell</b>	Rectangular cell pathlength 10 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature</b>	Ambient
<b>Minimum Cell Volume</b>	5 $\mu$ L

## EMC-759 – Ultra-micro cell holder



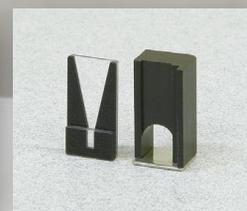
### Specifications

The EMC-759 is a cell holder for a 5  $\mu$ L micro cell

<b>Sample Cell</b>	Rectangular cell pathlength 10 mm
<b>Reference Cell</b>	Rectangular cell pathlength 10 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature</b>	Ambient
<b>Minimum Cell Volume</b>	5 $\mu$ L

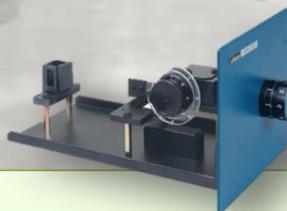


50  $\mu$ L micro cell



5  $\mu$ L micro cell and spacer

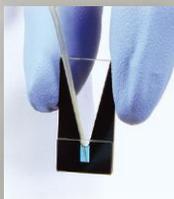
## TCH-703 – 8-position Micro turret cell holder



### Specifications

Cell holder for an optional 8-position turret micro cell, containing eight cells with a volume of approximately 4  $\mu$ L arranged in a circle.

<b>Sample Cell</b>	pathlength 1 mm
<b>Capacity</b>	8 sample cells
<b>Temperature</b>	Ambient
<b>Cell Volume</b>	4 $\mu$ L



5  $\mu$ L micro cell

8-position micro turret cell  
P/N: 6916-4822A



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



#### Specifications

<b>Sample Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature Control</b>	Thermostatted water circulation for sample and reference
<b>Operating Temperature</b>	10 to 90 degC
<b>Stirrer</b>	Integrated variable speed magnetic stirrer - 2 mm path width micro cell cannot be used with the stirrer

### HMC-711

#### Water thermostatted micro cell holder



#### Specifications

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

<b>Sample Cell</b>	Rectangular cell 10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature Control</b>	Thermostatted water circulation for sample and reference
<b>Operating Temperature</b>	10 to 90 degC
<b>Cell masks (standard)</b>	<ul style="list-style-type: none"> <li>Mask for 100 µL cell (2 pcs.) for micro cell, 2 x 10 mm</li> <li>Mask for 200 µL cell (2 pcs.) for micro cell, 4 x 10 mm</li> </ul>

### NCP-706

#### Water thermostatted 6-position automatic cell changer



#### Specifications

<b>Sample Cell</b>	Rectangular cell 10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10 or 5, 2 or 4 x 10, 2 x 5 mm
<b>Capacity</b>	6 sample and 1 reference cell
<b>Temperature Control</b>	Thermostatted water circulation for sample and reference
<b>Operating Temperature</b>	10 to 90 degC
<b>Cell Switching</b>	Software Controlled

### MHT-745

#### Manual 4-position water thermostatted turret cell holder



#### Specifications

<b>Sample Cell</b>	Rectangular cell 10 x 10, 4 x 10 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10, 4 x 10 mm
<b>Capacity</b>	4 sample and 1 reference cell
<b>Temperature Control</b>	Thermostatted water circulation for sample and reference
<b>Operating Temperature</b>	10 to 90 degC
<b>Cell Switching</b>	Manual

## EHCS-760

**Peltier thermostatted single cell holder  
(Air cooled)**



### Specifications

<b>Sample Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature Control</b>	<b>Sample only</b> - Heating/cooling system using <b>air cooled Peltier</b> effect
<b>Operating Temperature</b>	10 to 60 degC (at 25 degC)
<b>Temperature control accuracy</b>	±0.1 degC (cell holder sensor)
<b>Temperature Accuracy</b>	With cell holder sensor ±0.5 degC (20 to 40 degC) ±1 degC (other temp. range)  With optional temperature sensor ±0.2 degC
<b>Stirrer</b>	Integrated variable speed magnetic stirrer - 2 mm path width micro cell cannot be used with the stirrer

## ETCS-761 & ETCR-762

**Peltier thermostatted single cell holder  
(Water cooled)**



<b>Sample Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Capacity</b>	1 sample and 1 reference cell
<b>Temperature Control ETCS-761</b>	<b>Sample only</b> Heating/cooling system using <b>Water cooled Peltier</b> effect
<b>Temperature Control ETCR-762</b>	<b>Sample &amp; Reference</b> Heating/cooling system using <b>Water cooled Peltier</b> effect
<b>Operating Temperature</b>	0 to 100 degC for cooling water temperature at 25 degC
<b>Temperature control accuracy</b>	±0.1 degC (cell holder sensor)
<b>Temperature Accuracy</b>	With cell holder sensor ±0.5 degC (20 to 40 degC) ±1 degC (other temp. range)  With optional temperature sensor ±0.2 degC
<b>Stirrer</b>	Integrated variable speed magnetic stirrer - 2 mm path width micro cell cannot be used with the stirrer

## CSP-909

**Lid for sample compartment with syringe port**



### Specifications

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 x 10 mm rectangular cell. Required needle length for the syringe is 50 mm	
<b>Compatible Cell Holder</b>	STR-733 EHCS-760 - ETCS-761 - ETCR-762
<b>Syringe</b>	P/N 0507-0220 – Micro syringe 10µL P/N 0507-0223 – Micro syringe 100µL

### Options

**Cell Mask 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** - 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.

## PSC-763

Automatic 6-position Peltier cell changer  
(Air cooled)



### Specifications

<b>Sample Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Capacity</b>	6 sample and 1 reference cell
<b>Temperature Control</b>	<b>Sample only</b> - Heating/cooling system utilizing <b>air cooled Peltier</b> effect
<b>Operating Temperature</b>	10 to 70 degC (at 20 degC)
<b>Temperature control accuracy</b>	±0.1 degC (cell holder sensor)
<b>Temperature Accuracy</b>	<i>With cell holder sensor</i> ±0.5 degC (20 to 40 degC) ±1 degC (other temp. range)  <i>With optional temperature sensor</i> ±0.2 degC
<b>Stirrer</b>	Integrated variable speed magnetic stirrer - 2 mm path width micro cell cannot be used with the stirrer

## PAC-743 & PAC-743R

Automatic 6/8-position Peltier cell changer  
(Water cooled)



### Specifications

<b>Sample Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Reference Cell</b>	Rectangular cell 10 x 10, 4 x 10, 2 x 10 mm
<b>Capacity</b>	6/8 sample and 1 reference cell
<b>Temperature Control PAC-743</b>	<b>Sample only</b> Heating/cooling system utilizing <b>Water cooled Peltier</b> effect
<b>Temperature Control PAC-743R</b>	<b>Sample &amp; Reference</b> Heating/cooling system utilizing <b>Water cooled Peltier</b> effect
<b>Operating Temperature</b>	0 to 100 degC (at 20 degC)
<b>Temperature control accuracy</b>	±0.1 degC (cell holder sensor)
<b>Temperature Accuracy</b>	<i>With cell holder sensor</i> ±0.5 degC (20 to 40 degC) ±1 degC (other temp. range)
<b>Stirrer</b>	Integrated variable speed magnetic stirrer - 2 mm path width micro cell cannot be used with the stirrer

### Options

**OPS-513** - 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.

## MCB-100

Mini Water Circulation Bath



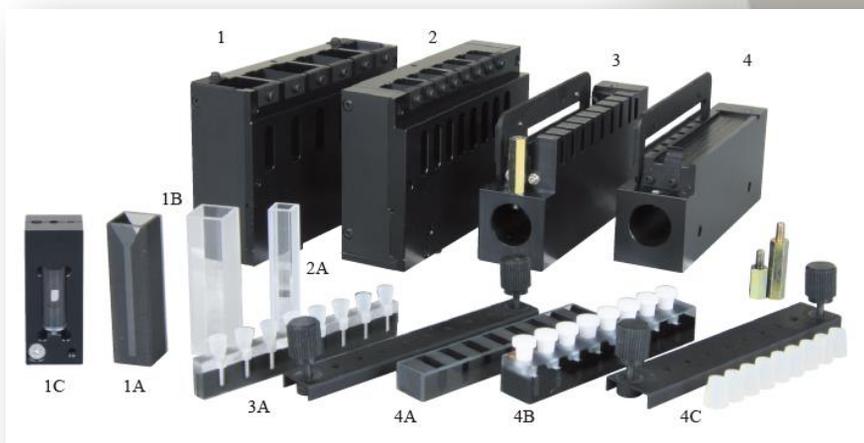
### Specifications

<b>Temperature control range</b>	10 degC below ambient temperature to 40 degC (IN and OUT connected)
<b>Bath capacity</b>	Approx. 200 mL
<b>Temperature sensor accuracy</b>	±0.2 degC (at 20 degC)
<b>Cooling/heating capacity</b>	52W
<b>Dimensions</b>	160 (W) \x 278 (H) x 225 (D) mm
<b>Suggested accessories</b>	ETCS-761 – ETCR-762 – PAC-743

## PAC-743 & PAC-743R

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

The PAC-743R provides temperature control of the reference cell in addition to temperature control of the sample cells.



### How to configure it

Cell block (Cell and temp. sensor are optional)	#	Compatible Cell	#	In-cell sensor (factory option)
<b>6916-H243A</b> - 6-position cell block (with variable speed magnetic stirrer) for rectangular cell, 10 x 10 mm	1	Rectangular quartz cell, 2 x 10 mm, max. 6pcs.	1A	<b>6916-H516A</b> Sensor in cell, 1 pc. <b>6916-H517A</b> 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	
		<b>6916-H360A</b> - Capillary cell adaptor and Capillary cell, max. 6 pcs. (A sealing compound is required for using capillary cells.)	1C	
<b>6916-H343A</b> - 8-position cell block (with variable speed magnetic stirrer) for rectangular cell, 5 x 5 mm	2	Rectangular quartz cell, 5 x 5 mm, max 8 pcs.	2A	<b>6916-H516A</b> Sensor in cell, 1 pc. <b>6916-H518A</b> Sensor in cell, 8 pcs/set
<b>6916-H643A</b> - 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	<b>1103-1171A</b> - 8-position 1 mm micro cell 1 mm path length, 10 µL for each position	3A	<b>6916-H516A</b> Sensor in cell, 1 pc. *The 8th cell position is used only to monitor cell block temperature.
<b>6916-H743A</b> - 10 mm 8-position micro cell block *Stirrer function is not available	4	<b>1103-0202A</b> - 8-position 10 mm micro cell 10 mm path length, 100 µL for each position without capability for well caps	4A	N/A
		<b>1103-1168</b> - 8-position 10 mm micro cell with Teflon caps 10 mm path length, 100 µL for each position	4B	<b>6916-H516A</b> Sensor in cell, 1 pc. *The 8th cell position is used only to monitor cell block temperature.
		<b>6916-H543A</b> - 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	

## SAH-769 One drop accessory



### Specifications

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. The 1mm and 0.2 mm cells are included as standard with accessory.

#### Minimum Sample Volume

1mm pathlength	5 $\mu$ L
0.2mm pathlength	0.6 $\mu$ L

### Precision of Quantitative Analysis

Solutions of Calf Thymus DNA (KH<sub>2</sub>PO<sub>4</sub> / NaOH buffer at pH7) at several concentrations were measured by using cells with 1-mm. The spectrum has shown at Figure 1 and LDL has shown at Table 1.

Table 1 Sample Conc. and Abs [OP: 1mm]

Legend	Conc. [ng/ $\mu$ L]	Abs
—	0	0.0005
—	13	0.0228
—	26	0.0417
—	52	0.0838
—	260	0.4500
—	520	0.8970
—	780	1.3443
—	1040	1.8137

Table 1

Sample Concentration and Abs  
[optical path: 1 mm]

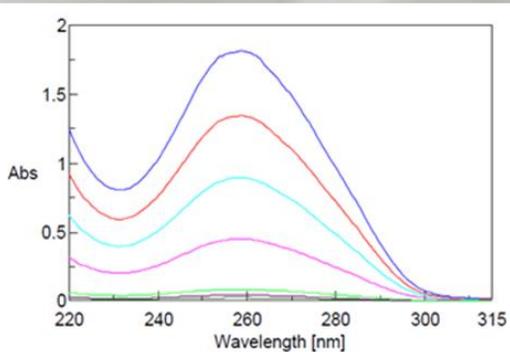


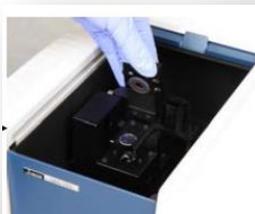
Figure 1

Absorbance spectra of DNA solution  
[optical path: 1 mm]

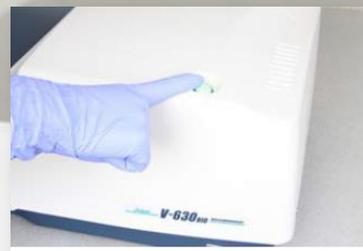
## Measurement Procedure



1) Drop sample on the cell



2) Close the cover glass and the lid of sample compartment



3) Start sample measurement



4) Cleaning the cell

less than  
20 seconds

### Measurement Parameters

Data interval: 0.5 nm  
Measurement range: 220 to 315 nm  
Band width: 1.5 nm  
Response: Medium  
Scan Speed: 200 nm/min



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