

Spectrophotometers

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Introduction

**WPA
Lightwave**



Jenway 6300



Jenway Genova



Cecil 3000 series



Camspec M330BT



Hitachi U-2800



Spectrophotometer Selection Page

Jencons-PLS offers a wide range of spectrophotometers, from simple filter-based models for education and environmental analysis, to sophisticated polarised Zeeman atomic absorption spectrophotometers.

Filter-based photometers are generally less expensive than true spectrophotometers. They are less accurate due to the large bandwidth of the filters used, and are also less versatile as a limited number of filters can be used at one time. Single beam spectrophotometers use a grating to split white light into its component parts, which gives a full spectrum of light that can be used for different applications, (diode array spectrophotometers use the whole spectrum of white light and split it into its component parts after it has passed through the sample).

Split (or ratio) beam spectrophotometers are the same as single beam except that they split a certain amount of light from the main beam to use as a reference. This ensures that the instrument drifts less during the course of the working day.

Double beam spectrophotometers also split the main beam, but they include a reference sample holder. The reference beam passes through the reference sample (or "blank") ensuring that the instrument compensates for both lamp and sample drift throughout the day.

To help you to select the correct model for your requirements we have listed the models available from Jencons-PLS, categorised by wavelength range and features. We have not listed the features of the scanning spectrophotometers as space is limited here. For full details refer to the pages specified.

For assistance in selecting the best model for your needs contact our Technical Office on 01342 826836.

Page	Model	Description
Visible spectrophotometers		
946	Jenway 6300	320 to 1000nm, A/%T/C
946	Jenway 6310	320 to 1000nm, A/%T/C, kinetics
947	Jenway 6400	320 to 1100nm, scanning/A/%T/C
947	Jenway 6500	320 to 1100nm, scanning/A/%T/C, kinetics
953	Cecil CE2011 and 2031	325 to 1000nm, A/%T/C (scanning/kinetics options)
943	WPA S1200	330 to 830nm, (Diode Array), rapid-scan/A/%T/C/kinetics
Single Beam UV/Visible non-scanning spectrophotometers		
946	Jenway 6305	198 to 1000nm, A/%T/C
949	Camspec M302	190 to 900nm, A/%T/C
953	Cecil CE2021 and 2041	190 to 1000nm, A/%T/C (scanning/kinetics options)
Single Beam UV/Visible scanning spectrophotometers		
949	Camspec M330BT	
949	Camspec M330BW	
947	Jenway 6405	
Split and Double Beam UV/Visible scanning spectrophotometers		
957	Hitachi U-1800	
958	Hitachi U-2800	
954	Cecil 3000 Series	
950	Camspec M350 Series	
947	Jenway 6505	
High Performance UV/Visible scanning spectrophotometers		
959	Hitachi U-3010/3310	
959	Hitachi U-4100 (UV/VIS/NIR)	
955	Cecil Aquarius	
Specialised photometers/spectrophotometers		
944	WPA Biowave CO8000	Cell density measurement (600nm)
944	WPA Biowave S2100	200 to 825nm, digital display, A/260:280 ratio/advanced biotech functions
953	Cecil DietQuest	Food and beverage analysis
948	Jenway Genova	DNA and protein analysis, advanced molecular biology measurements
952	Cecil GeneQuest	Molecular biology measurements
951	Cecil BioQuest	Bio-analysis and molecular biology
951	Cecil BioAquarius	High specification bio-analysis and molecular biology
943	WPA Lightwave	200 to 825nm, digital display, A/260:280 ratio/biotech
Functions (Diode Array)		
5	Hitachi Z5000	Tandem flame/furnace atomic absorption
4	Varian Spectra 50/55	Single beam (Spectra 50), double beam (Spectra 55) flame atomic absorption
Fluorescence spectrophotometers		
380	Hitachi F-2500	
380	Hitachi F-4500	



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S1200 Spectrawave Scanning Visible Spectrophotometer

The S1200 Spectrawave visible diode array spectrophotometer has been designed to meet the routine spectroscopy needs of customers requiring a small, light weight instrument that is easy to use.

The S1200 measures absorbance, % transmission, absorbance ratio and concentration. The large backlit graphical display enables wavelength scans, kinetic assays (including slope calculation) and standard curves to be viewed. The instrument is supplied with PC software allowing data to be downloaded to Excel™. Graphics may be printed (printer optional) or kinetics results may be output to chart recorder. The S1200 accepts standard 10mm pathlength glass or plastic cuvettes (12 and 16mm with accessory adaptor set). The S1200T has an electrically heated cell holder for thermostatted measurements at 37°C.

Specification

Wavelength range, nm	330–830
Absorbance range, A	-0.3 to 2.500
Bandwidth, nm	7
Stray light	<1%T at 340nm
Stored methods	99
Wavelength accuracy, nm	±2
Photometric reproducibility, A	±0.002 @0–0.5A, 546nm
Photometric accuracy, A	±0.01 @1A
Outputs	RS232 digital & adaptor available for analogue use (1V per 1A, ±10%)
Dimensions (wxdxh), mm	215x270x120

Cat. No.	Description	Price
613-190	S1200 Spectrawave VIS spectrophotometer supplied with PC software, serial lead, cover, mains lead, starter pack of cuvettes and manual	POA
613-189	S1200T Spectrawave VIS spectrophotometer with electrically heated cell holder. Supplied as above.	POA

For information on accessories including: test tube adaptors (10, 12, 16mm), chart recorder interface cable, S1000P printer, Seiko DPU-414 printer and serial lead, Speccas calibration filter set and spare lamp, please contact our Technical Office on 01342 826836

Lightwave UV/Vis Scanning Spectrophotometer

The Lightwave is easy to use, robust and scans from 200–825nm in less than 4 seconds. It has an impressive specification and a small footprint - vital in today's crowded laboratories.

The Lightwave incorporates the latest diode array technology, which means that a lid is not required on the cuvette chamber and this makes it easier to keep clean, as well as quicker to load samples. The Lightwave has a multi purpose cuvette holder that will accommodate anything up to a 40mm pathlength cuvette without any adaptors. 50µl cuvettes can also be used.

It has "handles" on the sides and is light enough to be carried easily to different locations. The Lightwave is suitable for all routine measurements. Data download to PC is very simple with the spreadsheet interface software. Hard copy printouts of results can be produced using the mini printer. Calibration curves can be programmed and stored for future use.

The Deuterium lamp and the instrument have a 2 year warranty.

Specification

Wavelength, nm	200–825 (scanning)
Digital display of:	Absorbance (-0.3 to 1.999A), Transmission (0 to 199.9%T), concentration/factor, kinetics, multi-wavelength, ratio
Bandwidth, nm	5
Photometric accuracy, A	<0.01 @1A
Photometric repeatability, A	<0.001 @0A 500nm
Stray light	<0.1%T @220/340nm
Wavelength accuracy, nm	<1.5
Wavelength repeatability, nm	Better than <±0.6
Pathlength (p/l), mm	Up to 40
Output	Bi-directional RS232
Dimensions (lxdxw), mm	380x275x140
Weight, kg	4.5

Cat. No.	Description	Price
613-039	Lightwave UV/Vis spectrophotometer supplied with cover, mains lead, starter pack of cuvettes and manual	POA
Accessories		
613-086	40 Column serial printer	POA
613-182	Cable to connect Lightwave to PC	POA
613-193	Spreadsheet interface software	POA

613-190

New



613-039



613-039



613-039



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WPA

New

613-185

Biowave S2100 UV/VIS Life Sciences Scanning Spectrophotometer

The Biowave spectrophotometer is designed specifically for life science and biotechnology applications. It is easy to use and its small footprint means it takes up little bench space.

The Biowave incorporates the latest diode array technology, which means that a lid is not required on the cuvette chamber making it easier to keep clean, as well as quicker to get samples in and out. A full scan can be performed and displayed within 4 seconds.

Bi-directional control allows results to be imported into an Excel™ spreadsheet for further manipulation or storage. Alternatively, hard copy printouts of results can be produced using the serial printer (accessory).

It has "handles" on the sides and is light enough to be carried easily to different locations. The deuterium lamp and the instrument have a 2 year warranty.

Specification

Wavelength, nm	200–820 (scanning)
Digital display of:	Absorbance (-0.3 to 1.999 A), transmission (0-199.9%T)
Output	Bi-directional RS232
Bandwidth, nm	5
Light sources	Pulsed deuterium, giving greatly extended life (>15000hrs). Pulsed tungsten
Photometric accuracy, A	<0.01 @ 1
Photometric repeatability, A	<0.002Abs @ 0 to 0.5Abs
Stray light, %T	<0.1@ 220/340nm (ASTM method)
Wavelength accuracy, nm	<1.5
Wavelength repeatability	Better than <±0.6
Cuvettes	10x10mm, semi-micro, micro and ultra-micro cuvettes (70µl min volume) and 40mm cuvettes
Pathlength, mm	Up to 40
Dims. (hwxwd), mm/Weight, kg	140x275x380/4.5
Electrics	90-250V, 50/60Hz, Max 100VA
Pre-programmed methods	ds DNA, ss DNA, RNA, Oligonucleotides, Protein Bradford, Lowry, BCA, Biuret & UV, Cell density measurement
Modes of operation	Scanning, Single wavelength, Ratio, Multi-wavelength, Absorbance, % Transmission, Concentration (linear or curved calibration), Kinetics, Programmable - up to 99 user methods



220-096



613-086



220-096

Cat. No.	Description	Price
613-185	Biowave UV/VIS spectrophotometer supplied with cover, mains lead, starter pack of cuvettes, Excel™ add-in disc and manual	POA
Accessories		
613-086	40 Column serial printer	POA
613-182	Cable to connect Biowave to PC	POA

Biowave Colorimeter/Cell Density Meter

The Biowave CO8000 is an easy to use instrument dedicated to measuring the density of cells in suspension. Small and portable, the Biowave can be taken to the cell cultures and even used in a laminar flow cabinet.

The instrument provides light at 600nm (no warm up time required) and displays results in Absorbance units.

The Biowave can store up to 99 readings in memory which can be downloaded to a PC or printer (613-086) via the built in RS232. It is powered via a rechargeable battery or mains adaptor (included).

Specification

Wavelength range, nm	600 using LED source
Bandwidth, nm	40
Range, A	-0.3 to 1.99
Cuvette holder	10mm cuvettes or 16mm diameter tubes (10 or 12mm with adaptors)
Precision	<±0.05A @ 1A
Repeatability	±0.02A @ 1A
Output	RS232
Power	110/240V via mains transformer or internal rechargeable NiMH battery
Dims. (wxdxh), mm/Weight, kg	180x150x60/0.6
Display	Custom LCD

Cat. No.	Description	Price
220-096	Biowave cell density meter, supplied with mains adaptor, rechargeable battery, starter pack of cuvettes and manual	POA
Accessories		
613-086	40 Column serial printer	POA
220-094	Tube adaptors for 10 and 12mm test tubes	POA

Measuring up

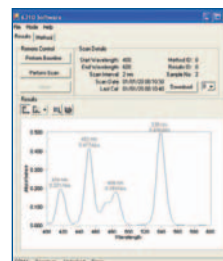


Bringing together advanced features, sophisticated software and novel accessories, the new Jenway 6310 spectrophotometer offers unrivalled versatility and performance.

The new system is simple to operate and control and easily customised to accommodate existing laboratory protocols and reagents. With modes for Photometrics, Concentration,

Quantitation, Kinetics and Spectrum Scanning plus a secure 200-method memory and a fully open operating system, the 6310 has the flexibility to suit many applications.

Superior technical capabilities are enhanced by dedicated PC software that remotely controls all instrument functions, exports results, downloads methods and allows off-line tasks.



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Jenway

613-061



613-164



613-239



63 Series Spectrophotometers

Models 6300 Visible and 6305 UV/VIS Spectrophotometers

The 63 series sets high standards in performance, in ease of use and in reliability. Incorporating the latest technological advances, the 6300 is designed to provide the user with a high quality, low cost measurement system for a wide range of routine analyses. Dual display of wavelength and photometric result, GLP compliance and 8nm bandpass are all included.

The unique xenon lamp in the 6305 has the advantage of offering a broad spectral source and extended life. This enables the running costs for the 6305 to be minimised over the lifetime of the spectrophotometer, since there are no deuterium and tungsten lamps to replace. The key feature of the xenon lamp is that 40% of the energy of the lamp is emitted below 400nm, with a maximum intensity at 260nm. This means an extra 5-10 times more energy in the UV region compared to deuterium lamps for protein peptide or DNA study work.

- 1200 lines/mm interference grating
- % Transmittance, Absorbance, Concentration and Factor
- RS232 interface
- Wavelength selectable by push button control
- Utilises cells from 10mm to 100mm

Model 6310 Visible Spectrophotometer

The 6310 is a general purpose visible range spectrophotometer suited to a wide variety of applications in education, quality control, environmental and clinical analysis. Using novel customisable menus the 6310 spectrophotometer will always meet your growing requirements, adapting to the analytical and photometric demands of most laboratories.

The fully open operating system ensures compatibility with reagent kits from most manufacturers, as well as enabling full customisation to the operator's choice of chemistries and operating procedures. The programmable sipper pump option makes sample handling simple and safe.

- Photometric measurements in Absorbance and Transmittance
- Concentration measurement by direct factor entry or against blank and standard
- Spectrum scan range – 320 to 1000nm
- Quantitation using up to 6 standards - with curve correction and correlation coefficient
- Kinetics with real time graphical display of sample and standard runs
- Store up to 50 methods in each mode

GLP features include: Real time clock and calendar; operator ID; supervisor security (locks all set up parameters); method display lock.

Specifications for Models 6300, 6305 and 6310

Wavelength, nm	320–1000 (6300/6310) 198–1000 (6305)
Resolution, nm	1nm
Accuracy, nm	±2
Bandwidth, nm	8 (6305–6nm in UV region)
Absorbance (resolution), A	-0.300–1.999 (0.001 A)
Transmittance (resolution)	0–199.9% (0.1%)
Stray light @ 340nm	<0.5%
Photometric accuracy	±1%
Concentration (resolution)	-300 to +1999 (0.1/1) (6300/6305) -300 to +1999 (1/0.1/0.01/0.001) (6310)
Outputs	Analogue and RS232
Dimensions (dxwxh), mm	365x272x160
Weight, kg	6

Specifications for Model 6310 only

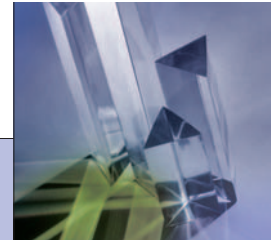
Concentration calibration	Blank with a single standard or factor
Concentration memory	50 methods
Quantitation (resolution)	-300 to 1999 (1/0.1/0.01/0.001)
Quantitation calibration	Blank with up to 6 standards
Quantitation curve correction	Linear regression, interpolation or linear regression through zero
Quantitation memory	50 methods including calibration curve
Kinetics display	Graphical and calculated concentration value
Kinetics calibration	Against standard and factor
Kinetics correlation factor	r squared value displayed with result
Kinetics memory	50 methods and 5 graphed results
Spectrum scan range	320–1000nm
Spectrum scan data internal	1, 2 or 5nm selectable
Spectrum analysis	Absorbance and wavelength of peaks and valleys
Spectrum memory	50 methods and 5 scans

Cat. No.	Description	Price
613-061	6300 Visible spectrophotometer	POA
613-164	6305 UV/Visible spectrophotometer	POA
613-239	6310 Visible spectrophotometer	POA

All models are supplied with PC software, mains lead, starter pack of 100 plastic cuvettes and instructions.

Accessories

Cat. No.	Description	Price	Cat. No.	Description	Price
613-176	4 Position cell holder	POA	613-244	Heated cuvette system	POA
469-099	40 Column printer	POA	613-243	Adjustable pathlength cuvette holder	POA
472-133	Paper roll for printer	POA	613-240	Test tube holder (12.5 to 13.5mm)	POA
472-134	Printer ribbon	POA	613-241	Test tube holder (24 to 25.5mm)	POA
613-183	Sipper pump	POA	613-242	Test tube holder (15.5 to 16.5mm)	POA



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64 and 65 Series Spectrophotometers

Models 6400 Visible and 6405 UV/Visible Scanning Spectrophotometers

The 64 series scanning units are ideal for all routine teaching, laboratory and research environments. Two fully featured but economically priced spectrophotometers both feature, in addition to Absorbance, Concentration and % Transmittance readings, comprehensive kinetics capability with display of rate change and kinetic activity value. The user can define lag time, kinetic factor and run time. Scanning capability is included as standard.

- % Transmittance and Absorbance
- Multi-Wavelength measurement giving Absorbance difference and ratio
- Concentration by Factor or Standard
- Scanning up to 1200nm/min

The 6400 Visible spectrophotometer can be used between 320 and 1100nm, whilst the 6405 UV/Visible spectrophotometer extends this range to between 190 and 1100nm. Both the 6400 and the 6405 have a scanning mode, offering three scanning speeds; (166, 400 and 1200nm/min.), and three scanning intervals; (0.2, 1 and 5nm/ increment). They also offer selectable wavelength range; autoscaling; peak and valley labelling; direct measurement from scan and scan repeat facility.

Model 6500 Visible and 6505 UV/Visible Scanning Spectrophotometers

The 6505 is a fully specified UV/Visible spectrophotometer offering superior optical performance and enhanced software features, all at an affordable price to the research or quality control operator. The split beam optical system, with a 1.8nm bandpass, reduces stray light and enhances overall reliability by minimising the number of optical elements employed. The versatile programming capability is enhanced by a mouse based operating system, allowing flexibility of use for SOP or customer applications. The 6500 Visible spectrophotometer can be used from 320 to 1100nm. The 6505 range extends down to 190nm. On both units scan range, speed and resolution can be user adjusted and the resultant scan can be auto scaled to give enhanced visibility.

- High performance scanning
- Method and results storage
- Mouse operation
- Superior split beam optics
- Kinetics/Multiple wavelength operation
- Up to 20 point calibration curve
- Flexible software
- Multi cell changer as standard

Specifications

Model	6400	6405	6500	6505
Wavelength (resolution), nm	320–1100 (0.1)	190–1100 (0.1)	320–1100 (0.1)	190–1100 (0.1)
Accuracy, nm	±1	±1	±1	±1
Bandwidth, nm	5	5	1.8	1.8
Absorbance (resolution), A	-0.300–3.000 (0.001) (all models)			
Transmittance (resolution)	0–199.9% (0.1%) (all models)			
Stray light @ 340nm	<0.05%	<0.05%	<0.05%	<0.05%
Photometric accuracy, A	0.005@1.0A	0.005@1.0A	0.005@1.0A	0.005@1.0A
Concentration (resolution)	-300 to +9999 (0.001/0.01/0.1) (all models)			
Outputs	Analogue and bi-directional RS232			
Dimensions (dxwxh), mm	520x330x180	520x330x180	520x330x180	520x330x180
Weight, kg	15	15	15	15
Cat. No.	613-062	613-063	613-238	613-108
Price	POA	POA	POA	POA

All models are supplied with mains lead, starter pack of 100 plastic cuvettes and instructions. Models 6500 and 6505 are supplied with a mouse.

Accessories for Models 6400, 6405, 6500 and 6505

Cat. No.	Description	Price
613-064	Printer	POA
472-133	Paper roll for printer	POA
472-134	Printer ribbon	POA
613-065	Peltier heated cell system, comprising heated cell block and external power supply module*	POA
613-066	Eight position motorised multi-cell changer* supplied as standard with 6500/6505. Optional with 6400/6405	POA

* Fitted if system ordered with spectrophotometer. If ordered separately, requires engineer to install.



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Jenway

613-175



Genova Life Science Analyser

The Genova has been designed specifically for the scientist whose primary interest is the study of DNA and proteins. The onboard software allows all protein methodologies to be run with a minimum of set up time. Calibrations can be stored for rapid recall and analysis at a future time.

All routinely used DNA calculations are pre-programmed into the unit. It will automatically calculate ratios at 260/280 or 260/230 with an optional subtraction of a third wavelength (typically 320nm). Alternatively, the Genova has pre-programmed factors to allow direct reading on the large display of ssDNA, dsDNA, RNA and Oligonucleotides. In addition, a rapid 100nm purity scan facility is incorporated. Although the Genova is pre-programmed for molecular biology users, it can be used in direct photometric mode, where the user is able to set concentration (with a choice of units), absorbance or transmittance as well as selecting wavelengths between 198 and 1000nm. Two year warranty.

- Immediate answers to DNA purity
- Pre-programmed and user selectable absorbance ratios
- Simple one key operation for all modes
- Direct readout of ssDNA, dsDNA, RNA and Oligo purity
- Purity scan mode
- Standard pre-programmed parameters for B.C.A., Bradford, Biuret, Lowry and direct measurement
- Large, easy-to-read display
- Calibration curve storage
- Large sample compartment with choice of accessories

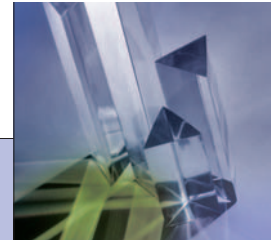
Specification

Wavelength	
Range, nm	198–1000
Resolution, nm	1
Accuracy, nm	±2
Bandwidth, nm	5
Transmittance	
Range, %	0 to 199.9
Resolution, %	0.1
Stray light, %T	<0.5 @340 & 220nm
Accuracy, %	±1
Absorbance	
Range, A	-0.300 to 1.999
Resolution, A	0.001
Concentration	
Range	-3 to 1999
Resolution	0.1/1
Units	ppm, mg/L, g/L, M, blank, %, µg/L, µg/mL, mg/mL, ng/mL, mM
Factor	0 to 199.9, 1000 to 9999
Photometric noise	<0.001A @0A at 400nm
Photometric stability	<0.002Ahr
Scan	100nm over a user definable mid-point
Readout	Custom LCD graphics
Outputs	Analogue (0 to 1.999V d.c.) RS232 serial port
Light source	Xenon flash lamp module
Input Voltage	115/230V a.c. -20% +10%
Dimensions (wxdxh), mm	365x272x160
Weight, kg	6.0

Cat. No.	Description	Price
613-175	Genova Life Science Analyser, supplied with mains lead, 8 x semi-micro UV plastic cuvettes and manual	POA

Accessories

Cat. No.	Description	Price
613-181	Pack of 100 micro capillaries	POA
613-180	Pack of 100 semi-micro plastic cuvettes	POA
613-183	Sipper pump	POA
613-176	4-position cell holder	POA
613-184	Calibration set	POA



Single Beam UV/Vis Spectrophotometers

All Camspec single beam spectrophotometers feature high quality optics and a narrow 4nm bandpass, with 2nm offered as a factory-fitted option. A unique feature of all Camspec 300 series spectrophotometers is that all motor driven movements are independently monitored. This ensures reliability between instrument validation and sample measurement.

M302, Basic Spectrophotometer

The M302 is a robust, accurate and reliable spectrophotometer ideally suited for teaching and quality control measurements. For budget-conscious users, this instrument will give years of service with minimal service costs, and is an inexpensive instrument offering the full UV wavelength range.

M330BT, Spectrophotometer with Touchscreen control

The M330BT is the first spectrophotometer to introduce touch screen technology to the UV market, resulting in a single beam instrument which is simple to use. The comprehensive software includes wavelength scanning, kinetics, quantitation, DNA ratios and multi-wavelength measurements. Results are displayed on the clear LCD screen (VGA resolution) and the ability to store up to 50 methods and 50 sets of data is of special appeal to the quality control laboratory.

M330BW, Spectrophotometer with Windows® software

The M330BW is a PC-driven single-beam UV/Vis spectrophotometer with all functions being controlled by a PC or laptop computer (not supplied). Camspec Windows® software is used to control the instrument and display results from wavelength scanning, 260/280 DNA ratios, derivative spectroscopy, quantitation and simple kinetics.

Specifications

Model	M302	M330BT	M330BW
Wavelength range, nm	190–900	190–900	190–900
Bandpass, nm	4 (2 or 1.8 option)	4 (2 or 1.8 option)	4 (2 or 1.8 option)
Wavelength accuracy, nm	±1	±1	±1
Wavelength reproducibility, nm	0.5	0.5	0.5
Photometric readout	Digital display of A, %T and C (M302 and M330BT)		
Stray light	<0.1%T @ 220 & 340nm	<0.1%T @ 220 & 340nm	<0.1%T @ 220 & 340nm
Photometric noise	<0.0005A @ 500nm (all models)		
Dimensions (wxhxd), mm	550x370x190	520x340x290	520x340x190
Weight, kg	18	21	18

Cat. No.	Description	Price
613-103	M302 Basic UV/VIS single beam spectrophotometer	POA
613-104	M330BT Microprocessor controlled single beam UV/VIS spectrophotometer with touch screen	POA
613-110	M330BW PC-controlled single beam UV/VIS spectrophotometer with Camspec Windows® software (PC not supplied)	POA

Note: 613-103, 613-104 and 613-110 are all supplied with single cell holder, user manual, dust cover and mains lead.

Accessories

Cat. No.	Description	Price
613-210	2nm option (factory fitted) for M302, M330, M330BT*	POA
613-211	Holder for rectangular cells 10–50mm pathlength	POA
613-212	Holder for 1x100mm pathlength cylindrical cell	POA
613-213	Holder for test tube for any diameter up to 25mm, maximum height 110mm	POA
613-214	Thermostatted single cell holder (requires water bath)	POA
613-215	Electrothermal cell holder (fixed at 37°C) factory fitted*	POA
613-217	4-position manual cell changer, 5-50mm pathlength	POA
613-218	7-position manual cell changer, 5-50mm pathlength	POA
613-219	7-position automatic cell changer, 5-50mm pathlength, excluding M302 (factory fitted)*	POA
613-220	7-position automatic thermostatted cell changer (10mm cells) (requires water bath) factory fitted*	POA
613-221	Tungsten-Halogen lamp assembly, pre-aligned	POA
613-222	Deuterium lamp assembly, pre-aligned	POA

Cell stirrers available for all 10mm cell holders, please enquire for details.

* must be ordered at same time as spectrophotometer.



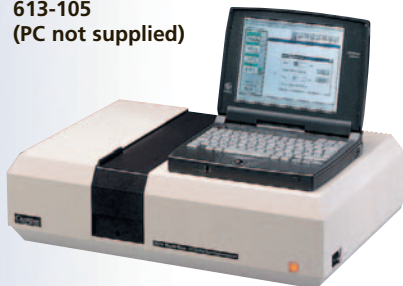
613-104

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Camspec

613-105
(PC not supplied)



613-107



Double Beam UV/Vis Spectrophotometers

The Camspec M350 range offers a high standard of optical performance, fixed 2nm bandpass, and low noise. Special versions with 1.5nm bandpass are available for those who need an instrument to EP specifications. The wide range of accessories developed by Camspec over the years for their highly successful M330 range is also compatible with the double beam instruments, as well as some more specialised accessories such as an integrating sphere.

M350, Double Beam Spectrophotometer with Camspec Software

The M350 was the first Camspec instrument to be launched with a Windows® software program to control the instrument. The software is simple to use, yet comprehensive in its functionality, including scanning, derivative spectroscopy, quantitation and kinetics.

M350L, Double Beam Spectrophotometer with Spectacle Software

This version is especially appealing to the more computer orientated user, and includes sophistication not normally required by the average user. Advanced kinetics, CIE tristimulus values, PLS analysis of mixtures are all included as standard. A built-in basic programming language makes automation simple, and allows complex calculations on data. A spectral library is created using stored data, and search facilities are included. This software is upgradable to conform to FDA 21 CFR part II.

M350T, Double Beam Spectrophotometer with Touch Screen

This instrument brings touch screen technology for the first time into the double beam market. The intuitive software is extremely easy to use and the ability to store 50 sets of data as well as 50 methods makes it a serious alternative to the PC driven version. The software includes methods for scanning, quantitation and kinetics and features a validating procedure.

Specifications

Model	M350	M350L	M350T
Wavelength range, nm		190–1100	
Bandpass, nm		2	
Wavelength accuracy, nm		±0.5	
Wavelength reproducibility, nm		<±0.1	
Photometric readout		Digital display of A, %T and C	
Stray light		<0.05%T @ 220 & 340nm	
Photometric noise		<0.0005A @ 500nm	
Dimensions (wx dxh), mm	660x450x190	660x450x190	660x450x290
Weight, kg	28	28	31

Cat. No.	Description	Price
613-105	M350 Double beam spectrophotometer, computer-controlled. Supplied with Camspec Windows® software for scanning, quantitation and kinetics (PC not supplied)	POA
613-106	M350L Double beam spectrophotometer, computer-controlled, with Spectacle Windows® software for scanning, quantitation and kinetics or CIE (PC not supplied)	POA
613-107	M350T Double beam spectrophotometer with touch screen includes software for scanning, quantitation and kinetics	POA

Accessories

Cat. No.	Description	Price
613-211	Holder for rectangular cells 10–50mm pathlength	POA
613-212	Holder for 1x100mm pathlength cylindrical cell	POA
613-213	Holder for test tube for any diameter up to 25mm, maximum height 110mm	POA
613-214	Thermostatted single cell holder (requires water bath)	POA
613-215	Electrothermal cell holder (fixed at 37°C), factory fitted*	POA
613-217	4-position manual cell changer, 5–50mm pathlength	POA
613-218	7-position manual cell changer, 5–50mm pathlength	POA
613-219	7-position automatic cell changer, 5–50mm pathlength, excluding M302, factory fitted*	POA
613-220	7-position automatic thermostatted cell changer (10mm cells) (requires water bath), factory fitted*	POA
613-223	Integrating sphere, (M350 and M330 only)	POA
613-224	Black and white standards, used with M350L for CIE calculations, with certificate and traceability	POA
613-225	Wavelength calibration set with certificate and traceability	POA
613-226	Absorbance calibration set with certificate and traceability	POA
613-221	Tungsten-Halogen lamp assembly, pre-aligned	POA
613-222	Deuterium lamp assembly, prealigned	POA

Cell stirrers available for all 10mm cell holders, please enquire for details.

* must be ordered at same time as spectrophotometer.



BioQuest and BioAquarius UV/Vis Spectrophotometers

Specially pre-programmed for bioanalysis and molecular biology, the BioQuest and BioAquarius also have all the normal functions of the UV/Vis spectrophotometers they were developed from.

BioQuest is microprocessor-controlled high specification, high stability UV spectrophotometer for bioanalysis routine and research applications.

- High resolution backlit LCD
- Fully programmable
- Storage for 30 curves and methods
- Password protected
- Auto 'peak seek' and automatic self test and calibration
- Full validation for absorbance, bandwidth, wavelength and stray light

The BioAquarius is a fully-featured double-beam spectrophotometer. In addition to the pre-programmed BioAssays, the BioAquarius can fulfill all the normal requirements of the CE7200 it was developed from. See page 955 for details and specifications.

Amongst the pre-programmed BioAssays are methods for determining ssDNA, dsDNA and RNA using a variety of ratio techniques including Warburg, Christian and simple 260:280 readings. Other methods include thermal melt, molecular concentration multi-wavelength assays, protein determination utilising Lowry, Badford and many more. All user specific assays may be stored as protected methods.

Specifications

Models	BioQuest	BioAquarius
Wavelength range	190–1000nm	190–900nm
Wavelength accuracy, nm	<1.0	<0.5
Wavelength reproducibility, nm	Better than 0.1	Better than 0.1
Bandwidth, nm	4 (single beam)	1.8 (double beam)
Photometric range	-0.3 to 3.0A, 0–200 % T and C	-0.3 to 3.0A, 0–200 % T and C
Scan speed	1–4000nm/min	1–4000nm/min
Method storage	30 methods security code protected (both models)	
Stray light	<0.01% at 220nm and 340nm	<0.01% at 220nm and 340nm
Photometric accuracy	-0.3 to 3.0A, 0–200 % T	±0.004A at 1A
Photometric noise	<±0.0002A at 500nm	<±0.0001A @550nm
Stability	Better than ±0.001A per hour at 500nm (both models)	
Monochromator	Littrow holographic grating and coated optics	Modified Czerny-Turner design holographic diffraction grating
Filter/Lamp selection	Automatic – coupled to wavelength (both models)	
Computer interface	Bi-directional RS232C and parallel ports (both models)	
Overall dimensions (wxhxd), mm	480x340x205	635x410x210
Weights, kg	18.6 (19.5 CE2502)	33 (CE7250)

Cat. No.	Description	Price
613-230	CE2501 BioQuest Spectrophotometer	POA
613-231	CE2502 BioQuest Spectrophotometer with integral printer	POA
613-232	CE7250 BioAquarius (double beam) Spectrophotometer	POA

Accessories

Cat. No.	Description	Price
Accessories for BioQuest		
613-024	Automatic 4 cell changer, requires holder, see below	POA
613-025	4x10mm holder for autochanger	POA
613-014	Water flow holder for autochanger	POA
613-026	6-cell automatic changer and holder	POA
613-027	Return micro-sipette system, requires holder, see below	POA
613-028	Holder for 10mm sipette cell for micro-sipette system	POA
613-235	Deuterium lamp with hours indicator	POA
613-236	Tungsten halide lamp, pack of two	POA
613-029	Peltier controller and 10mm cell holder	POA
Accessories for BioAquarius		
613-071	Automatic cell changer for 4 cells, requires holder, see below	POA
613-072	4 position cell holder for 10mm cells for autochanger	POA
613-073	Automatic cell changer for 6 cells, requires holder, see below	POA
613-074	6 position cell holder for 10mm cells for autochanger	POA
613-076	Return micro-sipette system with Viton tubing, requires holder, see below	POA
613-075	Adjustable holder for 10mm sipette cells for micro-sipette system	POA
613-077	Peltier controller with 10mm cell holder	POA
613-237	Set of 2 certified wavelength filters in holders	POA



Spectrophotometers

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Cecil Instruments



GeneQuest UV/Vis Spectrophotometer

The GeneQuest Analyser is a spectrophotometer dedicated to the requirements of the molecular biology laboratory. Fully programmed methods include those for RNA, dsDNA, ssDNA, oligonucleotide primer, proteins, bacterial growth, cell culture measurements and molecular calculations, including theoretical thermal melt.

All the fully programmed methods are selected from a menu and displayed with headers, prompts and details on the large screen on which information may be scrolled for viewing.

All wavelengths for any given assay are automatically selected and measured. Results are displayed on the screen and a printout, timed and dated, is available on an external printer, or an internal printer in the case of the CE2302.

Operators may create and store up to 30 of their own methods with the method storage option.

Measurements are possible for a wide range of sample volumes, from 2ml to 5µl using an appropriately selected cell in the ultra microcell holder - fitted as standard in the GeneQuest.

To fulfil legislative requirements and GLP, onboard software allows for performance validation using filter sets calibrated by Cecil Instruments and supplied with calibration certificates traceable to NPL standards.

Built-in Methods

- 260/280
- 260/280 ratio with background correction at 320nm
- Direct UV method for protein at 280nm
- 230/260 ratio
- 230/260 with background correction 320nm
- ssDNA concentration
- dsDNA concentration
- RNA concentration

Each GeneQuest analyser is supplied complete with an ultra-microcell holder, power cable, operator's manual and short form operating instructions.

Specification

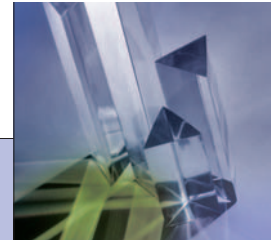
Wavelength range	190–370nm, 595 and 600nm
Wavelength accuracy, nm	±1
Wavelength reproducibility, nm	±0.1
Wavelength calibration	Automatic at switch on
Wavelength selection	Automatic for assay selected
Stray light	Less than 0.02% at 280nm
Optical bandwidth, nm	4
Photometric range	0-3 Absorbance
Photometric linearity	±1% or ±0.005A, whichever is greater
Stability	Better than 0.001A/hr. at 340nm
Light source	Deuterium lamp with life indicator
Printer output	Centronics parallel port
Monochromator	Littrow 1200 l/mm holographic grating
Electrical supply	100–240V, 50/60Hz, 100W
Overall dimensions (wxdxh), mm	450x340x205
Weights, kg	18 (18.9 printer version)

Cat. No.	Description	Price
613-233	CE 2301 GeneQuest Analyser	POA
613-234	CE 2302 GeneQuest Analyser with integral printer	POA

Optional Software which is E-SEF (Encoded Software Enhancement Facility) enabled, is available on request. Please contact our Technical Office on 01342 826836 for details.

Accessories

Cat. No.	Description	Price
613-024	Automatic 4 cell changer, requires holder, see below	POA
613-025	4x10mm holder for autochanger	POA
613-014	Water flow holder for autochanger	POA
613-026	6-cell automatic changer and holder	POA
613-027	Return micro-sipette system, requires holder, see below	POA
613-028	Holder for 10mm sipette cell for micro-sipette system	POA
613-235	Deuterium lamp with hours indicator	POA
613-236	Tungsten halide lamp, pack of two	POA
613-029	Peltier controller and 10mm cell holder	POA



Series 2000 Visible and UV/Vis Spectrophotometers

Microprocessor-controlled high specification, high stability, visible and UV spectrophotometers for both routine and research applications.

Choice of models:

1. CE2011: 325–1000nm, Visible. With single cell holder for a 10mm cell, instruction manual and operating instructions. 110–250V.
 2. CE2031: 325–1000nm, Visible. As CE2011 but with integral printer.
 3. CE2021: 190–1000nm, UV/Visible. With single cell holder for a 10mm cell, instruction manual and operating instructions. 110–250V.
 4. CE2041: 190–1000nm, UV/Visible. As CE2021 but with integral printer
- High resolution backlit LCD
 - Fully programmed
 - Storage for 30 curves and methods
 - Password protected
 - Auto 'peak seek' and automatic self test and calibration
 - Full validation for absorbance, bandwidth, wavelength and straylight

Specifications

Wavelength range	325–1000nm (Models CE2011/2031). 190–1000nm (Models CE2021/2041)
Wavelength accuracy, nm	Within 1
Wavelength reproducibility, nm	Better than ± 0.1
Stray Light	<0.01% at 220nm and 340nm
Bandwidth, nm	4
Photometric ranges/accuracy	-0.3 to 3.0A, 0–200 % T/0–9999C. 1% of value or 0.005A whichever is greater
Photometric noise	Less than $\pm 0.00004A$ at 500nm
Absorbance zero stability	Better than $\pm 0.001A$ per hour at 500nm
Autozero	0 A and 100% T set automatically by press button
Monochromator	Littrow holographic grating and coated optics
Detector	Silicon photodiode
Filter/Lamp selection	Automatic – coupled to wavelength
Computer interface	Bi-directional RS232C and parallel ports
Absorbance ratioing, nm	260/280 or user selectable
Cell compartment, nm	196x96x107
Overall dimensions (wxdxh), mm	480x340x205
Weights	16.8kg (CE2011), 17.7kg (CE2031), 18.6kg (CE2021), 19.5kg (CE2041)

Cat. No.	Description	Price
613-018	CE2011 Visible Spectrophotometer	POA
613-019	CE2031 Visible Spectrophotometer with integral printer	POA
613-020	CE2021 UV/Vis Spectrophotometer	POA
613-021	CE2041 UV/Vis Spectrophotometer with integral printer and clock	POA

For accessories please see page 954.

Software Modules for Series 2000

Can be ordered at any time after purchase.

Quant-M module: Quantitative method selection providing a range of assays at either 2 or 3 wavelengths, including Warburg and Christian.

Kinetics module: Kinetic measurements with or without a reaction plot displayed on the screen.

Scan module: Wavelength scans up to 4000 nm/min labelled with wavelength and absorption values at peaks, along with tabulation of all peaks and troughs. Scans can also be reprocessed to any required format. Includes dynamic scan recall which ensures the last 8 scans are stored in the memory for further processing.

Validation module: Absorbance and wavelength validation using certified, fully traceable standards.

Assay Program: Construction and entry of mathematical formulae (up to 20 with 76 characters each), involving measurements at multiple wavelengths with automatic computation of assay results.

Cat. No.	Description	Price
613-078	Quant-M module	POA
613-022	Kinetics module	POA
613-079	Scan module	POA
613-080	Validation module	POA
613-109	Assay program	POA

Additional software is available; please contact our Technical Office on 01342 826836.

Cecil DietQuest

Cecil Instruments have introduced the DietQuest spectrophotometer for food and beverage analysis. Tests for bitterness in beer, citric acid in cheese and glycerol in fruit juice are just three of the 50+ methods that are pre-programmed. Methods may be modified and new tests programmed and stored.

Three DietQuest spectrophotometers are available, all fully pre-programmed for both food and beverage analysis. The model you choose will be governed by the analysis you require and, as all original functions of the spectrophotometer are retained, by any other requirements you have for the spectrophotometer.

For full details of the models available and help in choosing the model that is right for your application call our Technical Office on 01342 826836.



Spectrophotometers

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Cecil Instruments

613-031



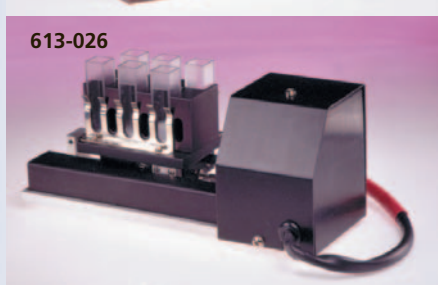
613-024 shown with 613-025



613-014



613-026



613-028



Series 3000 Scanning UV/Vis Spectrophotometers

Very high performance scanning spectrophotometer, coupled with powerful quantitation and requiring remarkably little bench space. With an optical bandwidth of 1.8 nm, straylight of less than 0.01%, wavelength precision of 0.1 nm and baseline stability better than $\pm 0.001\%$ A/h, the most demanding of analytical work may be undertaken.

Given the high specifications, the Series 3000 Models are extremely simple and fast to operate, with a large high-resolution backlit LCD with contrast control. This displays menus and prompts for every application. Scans are displayed on the screen with peaks and troughs fully labelled and tabulated. Reprocessing may be carried out before plotting. Curves and time-course plots are also displayed, fully documented, and may be reprocessed.

Both models feature E-SEF, Encoded Software Enhancement Facility, whereby additional software modules can be enabled by entering correctly allocated code numbers.

The CE3041 is the same as the CE3021, but with an integral printer, to provide hard copy of spectra, curves and time-course plots, as well as timed and dated reports of all experiments.

Specifications

Wavelength range/accuracy, nm	190–1000/Better than ± 1 nm
Wavelength reproducibility, nm	± 0.1
Stray Light	Less than 0.01% at 220nm and 340nm
Bandwidth, nm	1.8
Photometric ranges/accuracy	-0.3 to 3.0A, 0–200 % T/0–9999C. 1% of value or $\pm 0.005A$ whichever is greater
Photometric noise, A	Less than ± 0.00004
Absorbance zero stability, A per hr	Better than ± 0.001
Autozero	0 A and 100% T set automatically by press button
Monochromator	Littrow holographic grating and coated optics
Detector	Silicon photodiode
Filter/Lamp selection	Automatic – coupled to wavelength
Computer interface	Bi-directional RS232C and parallel ports
Absorbance ratioing, nm	260/280 or user selectable wavelengths
Cell compartment, mm	196x96x107
Overall dimensions (wxdxh), mm/ Weight, kg	480x340x205/ 18.6 (CE3021), 19.5 (CE3041)

Cat. No.	Description	Price
613-030	CE3021 UV/Vis Scanning Spectrophotometer	POA
613-031	CE3041 UV/Vis Scanning Spectrophotometer with integral printer	POA

Accessories for Series 2000, 3000, GeneQuest and BioQuest

Cat. No.	Description	Price
613-024	Automatic 4 cell changer, requires holder, see below	POA
613-025	4x10mm holder for autochanger	POA
613-014	Water flow holder for autochanger	POA
613-026	6-cell automatic changer and holder	POA
613-027	Return micro-sipette system, requires holder, see below	POA
613-028	Holder for 10mm sipette cell for micro-sipette system	POA
613-235	Deuterium lamp with hours indicator	POA
613-236	Tungsten halide lamp, pack of two	POA
613-029	Peltier controller and 10mm cell holder	POA

Software Modules for Series 3000 Models

Can be ordered at anytime after purchase via E-SEF, Encoded Software Enhancement Facility. Pre-programmed, encrypted software extensions can be released using an issued keycode.

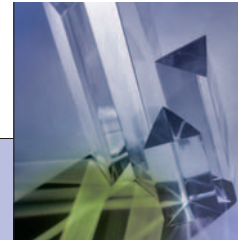
Quant-M module: Quantitative method selection providing a range of assays at either 2 or 3 wavelengths, including Warburg and Christian.

Kinetics module: Kinetic measurements with or without a reaction plot displayed on the screen.

Validation module: Absorbance and wavelength validation using certified, fully traceable standards.

Cat. No.	Description	Price
613-081	Quant-M module	POA
613-082	Kinetic Module	POA
613-083	Validation Module	POA

Additional software is available, please contact our Technical Office on 01342 826836.



Aquarius Double-Beam UV/VIS Spectrophotometer

The fully symmetrical double-beam system of the Aquarius provides for the highest accuracy of measurement coupled with a very high level of stability with time.

Both sample and reference beams are provided with the same sampling space and facilities, thus catering for the widest possible range of experimental requirements and not limited to just a simple cell in reference beam.

By scrolling information across the display screen, the effective width of the screen is increased to 550mm. Long scans, plots and other data may be viewed in detail as viewing is not limited to one screen width of information. The large back-lit high resolution LCD displays menus for all applications, with clear prompts for all entries and procedures. Scans, plots, curves and data are all displayed on the screen and may be reprocessed or manipulated before storing or producing a printout.

The built-in memory allows up to 100 scans, curves, plots, kinetic curves and methods to be stored, protected by tamper-proof personal security codes. Any scans, plots or data may be recalled from memory for reprocessing, manipulation and printing as required. The Aquarius automatically stores the last 8 scans or plots without the need to carry out a scan storage procedure. The scans or plots are automatically stored as they are made, and may be recalled simply by selecting them from a list displayed.

All scans are fully documented on screen and in hard copy if connected to a printer. Tables of all peaks and valleys are produced together with instrument, sample and operator details. Scans recalled from the instrument's integral memory or by dynamic scan recall are also fully documented.

With E-SEF, Encoded Software Enhancement Facility, additional software modules can be enabled by entering correctly allocated code numbers.

Specification

Wavelength range, nm	190–1100	Straylight	<0.01% at 220 and 340nm
Wavelength accuracy, nm	±0.5	Bandwidth, nm	1.8
Wavelength reproducibility, nm	±0.1	Scan speed, nm	1–4000/min
Photometric readout	Digital display of A, %T, and C	Autozero	Automatically by press button
Photometric accuracy	±0.004A at 1A	Detectors	Dual silicone photodiode
Photometric noise	<±0.0001A @550nm	Computer interface	Bi-directional RS232C
Baseline flatness, A	±0.001		±0.001
Baseline stability, A per hr	Better than ±0.0001, 500nm (all models)		
Monochromator	Modified Czerny-Turner design using 1200 lines/mm holographic diffraction grating (all models)		
Overall dimensions (wxdxh), mm	635x410x210	635x410x210	635x410x210
Weight, kg	33	33	33

Cat. No.	Description	Price
613-067	Aquarius CE7200 Double-Beam Spectrophotometer*	POA
Accessories		
613-071	Automatic cell changer for 4 cells, requires holder, see below	POA
613-072	4 position cell holder for 10mm cells for autochanger	POA
613-073	Automatic cell changer for 6 cells, requires holder, see below	POA
613-074	6 position cell holder for 10mm cells for autochanger	POA
613-076	Return micro-sipette system with Viton tubing, requires holder, see below	POA
613-075	Adjustable holder for 10mm sipette cells for micro-sipette system	POA
613-077	Peltier controller with 10mm cell holder	POA
613-237	Set of 2 certified wavelength filters in holders	POA

* Other models are available, CE7400 and CE7500. Please contact our Technical Office on 01342 826836 for details.

Software modules for Aquarius

Can be ordered at any time after purchase via SEF, Encoded Software Enhancement Facility. Pre-programmed, encrypted software extensions can be released using an issued keycode.

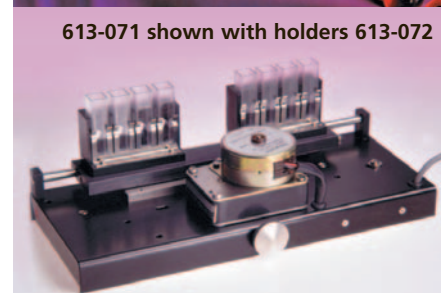
Quant-M module: Quantitative method selection providing a range of assays at either 2 or 3 wavelengths, including Warburg and Christian.

Kinetics module: Kinetic measurements with or without a reaction plot displayed on the screen.

Validation module: Absorbance and wavelength validation using certified, fully traceable standards.

Cat. No.	Description	Price
613-069	Quant-M module	POA
613-068	Kinetics module	POA
613-070	Validation module	POA

Additional software is available, please contact our Technical Office on 01342 826836.



High Quality Results

What else would you expect from Hitachi ?

UV/Visible Spectrophotometers



A comprehensive range of single beam, double beam and even double monochromator spectrophotometers. Used for routine analysis, quality control, teaching and research work in chemistry, biochemistry, toxicology, environmental and clinical chemistry, as well as pharmaceuticals, water, food, educational and semiconductor industry sectors. A wide range of applications software is available with an emphasis on quality control requirements such as GLP and the European Pharmacopoeia.

Fluorescence Spectrophotometers

Easy to use software, rapid scanning and outstanding sensitivity are the key elements of these impressive PC-controlled fluorescence spectrophotometers. Horizontal beam optics give excellent results from sample volumes as small as 0.6 ml.

Application-specific software packages and a host of sampling accessories complete the line up.



Atomic Absorption

Elemental instrumentation offering detection limits down to the parts per billion level. Available in flame, furnace and tandem flame/furnace versions, these atomic absorption spectrophotometers offer exceptional sensitivity, stability and simplicity of operation. They all utilise the proven polarised

Zeeman correction method for outstanding analytical results. Fully automatic sequential multi-element analysis couldn't be simpler using the autosampler and 8-lamp turret. And there's no adjustment of the optical axis required when switching from flame to furnace in the tandem version - a simple click of the mouse is all that is needed.



Find out why more people are choosing Hitachi

With more than 35 years experience in the design and manufacture of analytical instrumentation, Hitachi High-Technologies has built an enviable reputation for performance, quality and reliability. The products are complemented by comprehensive technical support, after-sales service, applications advice and training courses to give the ultimate in user confidence.



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U-1800 UV/Visible Spectrophotometer

The U-1800 is packaged in a unit covering an area no bigger than an A3 piece of paper, yet produces analytical results of outstanding quality. With an easy-to-use keyboard and clear, backlit LCD display, it is ideally suited to a host of routine analysis and teaching applications.

The ratio beam design brings exceptional long-term measurement stability, making the U-1800 a natural choice for time dependent measurements of absorption such as enzyme kinetics. The U-1800 is packed with a variety of useful facilities such as a GLP routine for QC applications and a validation function. A scanning mode allows multiple wavelength measurements to be made. DNA/RNA measurements are also made easy since the instrument can automatically make measurements at two different wavelengths and calculate their ratio.

A wide range of high quality accessories is available for the U-1800, including a 4 cell changer for rapid sample selection, and an RS-232 interface and optional PC Solutions™ software, compatible with Windows® 95, 98, XP or NT V4.0. This easy-to-use package provides photometry, wavelength and time scan functions, allowing enzyme kinetic data to be acquired. Data can also be readily exported to a spreadsheet such as Excel™ for further processing.

- Compact size with built-in LCD screen
- Scanning mode included as standard
- Full UV capabilities down to 190nm
- Ratio-beam for excellent stability
- Built-in DNA/RNA measurement program
- Built-in GLP program for QC applications
- Built-in validation function

Specification

Monochromator	Seya/Namioka mount, ratio-beam system
Bandwidth, nm	4
Wavelength range, nm	190-1100
Wavelength accuracy, nm	±0.55
Wavelength precision, nm	±0.3
Photometric range	-0.500 to 3.000A, 0 to 300%T, 0.000 to 9999C
Photometric accuracy	±0.002A at 0 to 0.5A, ±0.004A at 0.5 to 1.0A, ±0.3%T
Photometric noise	0.0005A at 500nm
Baseline stability	0.001A/hr after warm-up
Display	Large backlit LCD
Stray light	<0.05% at 220nm and 340nm
Interface/Output	Bi-directional RS-232C
Power	100/115/220/230/240V, 50/60Hz
Dimensions (wxdxh), mm	346x190x110
Weight, kg	18.0

Cat. No.	Description	Price
613-200	U-1800 UV/Vis spectrophotometer	POA
Accessories		
613-521	Sample sipper, ambient	POA
613-522	Water circulated cell holder (requires water circulator)	POA
613-523	Test tube holder for test tubes with O.D. 12, 15, 16.5, 18mm	POA
613-525	Rectangular long path cell holder for 10, 20, 30, 40, 50, 100mm cells	POA
613-526	Cell holder for 30, 40mm cell	POA
613-527	Cell holder for 50mm	POA
613-528	Cell holder for 100mm	POA
613-524	Micro cell holder (Micro cell not included)	POA
613-529	5µl Micro cell	POA
613-530	50µl Micro cell	POA
613-531	25µl Micro cell	POA
Programs for U-1800 and U-2800		
613-532	Option package program	POA
613-533	Report generator program	POA
613-534	UV Solutions program (requires 613-535 communications cable)	POA
613-535	Communications cable to PC	POA
Spares for U-1800 and U-2800		
613-536	Deuterium lamp for UV region	POA
613-537	Halogen lamp for visible region	POA



613-200



LCD screen

Spectrophotometers

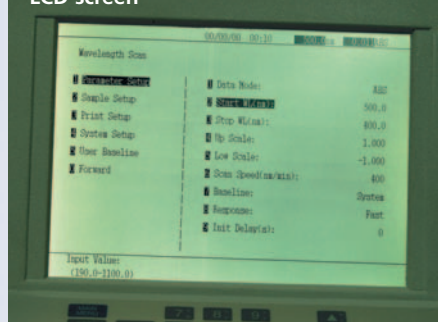
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Hitachi

613-517



LCD screen



U-2800 UV/Visible Spectrophotometer

The U-2800 is a self-contained double beam instrument featuring high quality optics to ensure high accuracy measurements. With photometry, wavelength and time scanning modes, the U-2800 is ideally suited to both quality control and research applications. Applications such as GLP/GMP, DNA and protein concentration measurements and enzyme kinetics are included within the standard package. Control is via the built-in keyboard and screen or via the optional Windows® UV Solutions™ software.

A unique on board data storage port facility allows the U-2800 to be used as a stand-alone unit in the laboratory and the final data transferred via a convenient Memory Stick to a PC for further processing.

Built-in software provides quantitative analysis, and wavelength programming. To meet the exacting demands of European Pharmacopoeia applications a 1.5nm bandpass is a standard feature.

UV Solutions software, compatible with Windows® 95, 98, XP or NT V4.0 is an easy-to-use package providing photometry, wavelength and time scan functions, allowing enzyme kinetic data to be acquired. Data can be readily exported to a spreadsheet such as Excel™ for further processing. UV Solutions also features GLP software that carries out 11 instrument performance checks in accordance with GLP/GMP and ISO 9000 requirements.

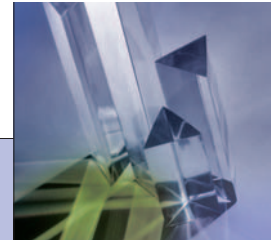
- Double beam spectrophotometer for high accuracy analysis
- Versatile - can run as stand-alone or under PC control
- 1.5nm bandpass as standard to meet European Pharmacopoeia requirements
- Photometry, wavelength and time scanning
- Sample volumes as small as 15µl
- Unique "Memory Stick" for portability of data

Specification

Monochromator	Seya/Namioka mount
Bandwidth, nm	1.5 (meets European Pharmacopoeia standard)
Wavelength range, nm	190-1100
Wavelength accuracy, nm	±0.3
Wavelength precision, nm	±0.1
Photometric range	-2 to 3A, 0 to 300%T
Photometric accuracy	±0.002A at 0 to 0.5A, ±0.004A at 0.5 to 1.0A
Photometric noise	0.0003A or less at 0A, 500nm
Baseline stability	Within 0.0003A/hr at 500nm, 2hrs after power-up
Display	Backlit LCD
Stray light	0.05% or less
Communication	Standard RS-232C
Power	100/115/220/230/240V, 50/60Hz
Dimensions (wxdxh) mm	500x560x250
Weight, kg	28.0

Cat. No.	Description	Price
613-517	U-2800 Double beam UV/Vis spectrophotometer	POA
Accessories		
613-538	Auto sipper, ambient	POA
613-539	Auto sipper with electronic temperature control (20-40°C)	POA
613-540	6-cell positioner with electronic temperature control (20-40°C)	POA
613-541	Electronic thermostatted cell holder (20-50°C)	POA
613-542	5-position cell holder for 10mm cell	POA
613-543	Water circulated cell holder (requires water circulator)	POA
613-544	Micro flow cell unit, 70µl	POA
613-545	LC Flow cell unit, 8µl	POA
613-546	Flow cell unit, 600µl	POA
613-547	Micro cell holder (Micro cell not included)	POA
613-529	5µl Micro cell (requires Micro cell holder 613-547)	POA
613-530	50µl Micro cell (requires Micro cell holder 613-547)	POA
613-531	25µl Micro cell (requires Micro cell holder 613-547)	POA
613-548	4-place rectangular cell holder for 10, 20, 30, 40, 50, 100mm cells	POA
613-549	Rectangular cell holder for 10, 20, 30, 40, 50, 100mm cells	POA
613-550	Cylindrical cell holder for 10, 20, 30, 40, 50, 100mm cells	POA

A range specialised accessories including optical fibre interfaces are available, e.g. dip probes, remote sample access etc. Please contact our Technical Office on 01342 826836. See previous page for spares and programs.



Hitachi

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U-3010/U-3310 UV/Vis Scanning Spectrophotometers

U-3010 Variable Bandpass Double-Beam UV/Vis Scanning Spectrophotometer

High performance single monochromator optics for research applications. With variable bandpass, versatile spectral display and manipulation facilities and linear response to greater than 3.0 absorbance, the U-3010 is used extensively in research applications. A comprehensive range of accessories for automated analysis, specular and diffuse reflectance, thin film and continuous flow-through monitoring brings unparalleled capabilities.

- UV Solutions control software
- Sample volumes as small as 5µl
- Customised report generation
- 0.015% stray light
- Variable bandpass

U-3310 Double-Beam, Double Monochromator Spectrophotometer

Double monochromator optics for high absorbance measurements. Double beam, double monochromator optics give the U-3310 exceptional performance. The ultra low stray light and high sensitivity of the U-3310 allows it to be used both for high absorbance measurement and for comparing small absorbance differences between samples.

- Photometric range: -2.0 to 4.0A
- 0.0003% stray light
- Excellent signal-to-noise ratio
- Variable bandpass

Specifications

Model	U-3010	U-3310
Monochromator	Grating single monochromator, Seya/Namioka mount	Grating-grating double monochromator Seya/Namioka mount
Bandwidth, nm	0.1, 0.5, 1, 2, 4, 5	
Wavelength range, nm	190-900	
Wavelength accuracy, nm	±0.3 (with automatic wavelength calibration function)	
Wavelength setting repeatability, nm	±0.3	
Wavelength scan speed	0.3, 3, 15, 30, 60, 120, 300, 600, 1200, 1800 nm Automatic control scan, Go to: 4,500nm/min	
Photometric modes	Abs, %T, %R, E(S), E(R)	
Photometric range	-2.0 to 3.000 Abs, 0 to 300%T	-2.0 to 4.00 Abs
Photometric accuracy	±0.002 A at 0 to 0.5 A, ±0.004 A at 0.5 to 1.0 A, ±0.3%T	
(Qualified according to NISTSRM930)		
Photometric repeatability	±0.002 Abs (0-0.5 Abs), ±0.004 Abs (0.5-1.0 Abs), ±0.1%T	
(Qualified according to NISTSRM930)		
Baseline flatness	Within +0.001 Abs	
Baseline stability	Within +0.0004 Abs/hr (at 340nm)	
Response	High resolution standard	
Stray light	<0.015% (NaI 220nm and NaNO ₂ 340nm)	
Light source	Adjustment free deuterium lamp, adjustment free tungsten iodide lamp (50W)	
Light source switching	Automatic change over selectable within 325-370nm	
Sample compartment (wxdxh), mm	120x300x130. Beam interval: 100nm	
Detector	Photomultiplier	
Power	100/115/220/230/240V, 50/60Hz, 400VA	
Dimensions (wxdxh), mm	690x680x330	
Weight, kg	50.0 (spectrophotometer main unit)	

Cat. No.	Description	Price
613-518	U-3010 Variable bandpass UV/Vis scanning spectrophotometer	POA
613-519	U-3310 Double-beam, double monochromator spectrophotometer	POA

Please contact our Technical Office on 01342 826836 for details of accessories available.

Hitachi U-4100 UV/Vis/NIR Spectrophotometer

Supreme performance and versatility for UV/Vis/NIR applications.

The U-4100 UV/Vis/NIR spectrophotometer is available in three different variants to offer enormous flexibility for the evaluation and quality control of a wide variety of optical components. All three instruments in the U-4100 range benefit from the renowned UV Solutions control software and the use of an integrating sphere. The U-4100 is available in standard sample compartment and large sample compartment formats with a prism/grating monochromator and standard integrating sphere. The large sample compartment can accommodate samples up to 430x430mm to allow evaluation of a wider range of lenses, filters, mirrors and other optical components. An extended UV version is also available, which features a high sensitivity integrating sphere and a grating/grating double monochromator. This outstanding optical arrangement significantly reduces the noise in the detected signal to extend the high accuracy transmittance and reflectance measurement capability for solid samples from 240nm down to 175nm.

For further details contact our Technical Office on 01342 826836

