Spectronic Camspec Ltd

The M501 UV-Visible Single Beam Scanning Spectrophotometer

OPERATING FEATURES:

- Local Control Software - All methods are included
- Basic Mode - Measures Absorbance, %T and Concentration.
- Quantitative - Upto 10 standard solutions maybe used for a calibration
- Wavelength Scanning
- Kinetics - For time course scanning or reaction rates
- DNA/Protein - Concentration & DNA purity are calculated
- Multi-wavelength - up to 10 wavelengths
- Performance Validation - for the GLP compliant laboratory

The M501 now has a data USB socket which can be used with a free version of the UV Analyst software.

Display	1/4 VGA 320x240pixels backlit LCD
Light sources	Tungsten-Halogen and Deuterium
Monochromator	Littrow type with 1200 lines/mm grating
Detector	Silicon Photodiode
Wavelength Range	190 - 1100nm
Wavelength Accuracy	± 1nm
Wavelength Resolution	0.1nm
Wavelength Repeatability	± 0.05nm
Baseline Flatness	± 0.005 (After 1 Hr warm up 1100 – 200nm)
Zero Drift	< 0.003A per hour after warm-up
Baseline Stability	± 0.001A
Bandpass	4nm (2nm option)
Stray Light (A.S.T.M.)	<0.05%T @ 220nm and 340nm
Photometric Repeatability	± 0.002 Abs
Photometric Accuracy	Better than 1% @ 0.5A, 1A, 2A
Photometric Range	-0.7 to 3A, 0 to 200%T, 0 to 9999 Conc
Printer Interface	Centronic parallel for A4 inkjet printers
Computer Interface	USB Port
Power Requirements	110/120V, 220/230V, 50/60 Hz, 110VA
Dimensions	550 x 420 x 270 packed size 645 x 535 x 370
Weight	18kg Nett 24Kg Packed weight

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User Interface

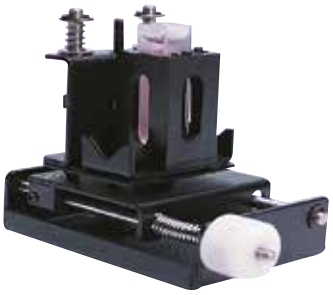
The user interface of the M501 Single Beam Spectrophotometer includes Basic Mode (Abs, %T, Conc), Quantitative (concentration calibration curves), Wavelength Scanning, Kinetics (including timedrive), DNA/Protein, Multi-wavelength and Performance Validation. In Basic Mode, the result is continuously displayed (no need to "press to read")

PC Control

The M501 has a 2 x USB2 outputs. One for the download of data to a USB Memory stick to be analysed offline and one for the control of the spectrophotometer when the UV/VIS Analyst software is purchased. Comprehensive Camspec Application Software is available, together with small PC programs, dedicated to specialist tasks.

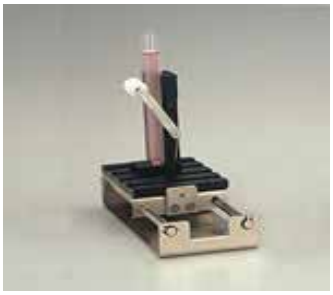
A selection of the many Cell compartment Accessories available

Micro cell holder

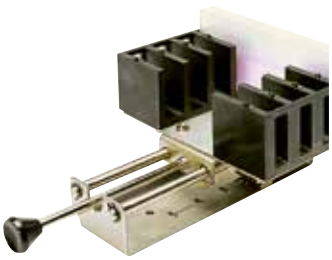


0-50 mm 4 x cell Manual changer

Test tube adaptor



0-100 mm 4 x cell Manual changer



Peltier / sipper

6 cell auto changer

8 cell auto changer

Thermostatted Single Cell holder

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The M508 Basic Programmable UV-Vis Spectrophotometer

MAIN FEATURES

- Stepper motors for wavelength and filters
- Stores up to 200 methods/results
- Concentration calibration: up to 8 standards and up to 3 replicates, linear or linear through zero
- Selectable wavelength calibration and dark current measurement
- 200 - 1000nm wavelength range
- 5nm bandwidth
- Low stray light (0.1%T at 220nm and 340nm)
- Large sample compartment (up to 100mm pathlength cells)
- 2 x 10mm UV cells and 4 x 10mm glass cells included
- Large selection of accessories
- Manual 4-cell changer
- PC Application Software option for concentration curves, timescan and wavelength scanning
- USB socket for PC Control and RS232 serial output for printer
- Data output includes method number and name, wavelength, date and time, %T, Abs, concentration,
- Test Tube holder
- And many more accessories

Technical Specifications

Display	4 lines x 20 character LCD LCD
Light sources	Tungsten-Halogen and Deuterium
Monochromator	1200 lines/mm grating
Detectors	Silicon Photodiode
Wavelength Range	200 - 1000nm
Wavelength Accuracy	± 2 nm
Wavelength Resolution	
Wavelength Repeatability	± 1 nm
Noise	< 0.001A @ 500nm 0A
Zero Drift	< 0.003A per hour after warm-up
Baseline Flatness	
Bandpass	5 nm
Stray Light	<0.1%T @ 220nm and 340 nm
Photometric Accuracy	+/- 1% 0-2 A
Photometric Range	-1 to 2.5A, 0-125%T and -9999C and +9999C
Printer Interface	RS 232 for printer
Computer Interface	USB for PC control
Power Requirements	110/120V, 220/230V, 50/60 Hz, 135VA
Dimensions	510 x 420 x 210 packed 645 x 535 x 370
Weight	14Kg packed 17Kg

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User Interface

The user interface of the M508 Single Beam Spectrophotometer includes Basic Mode (Abs, %T, Conc), Quantitative (concentration calibration curves), Wavelength Scanning, Kinetics (including timedrive), DNA/Protein, Multi-wavelength, and Performance Validation. In Basic Mode, the result is continuously displayed (no need to "press to read")

PC Control

The M508 has an RS232C output for the transfer of results to a PC and for PC control of the M508. Comprehensive Camspec Application Software is available, together with small PC programs, dedicated to specialist tasks.

A selection of the many Cell compartment Accessories available

Test-tube holder (100mm) P/N 501-101

Adjustable micro-cell holder P/N 501-102 (illustration)

4 x 10mm manual cell changer P/N 501-114

4-cell holder for 5-50mm cells P/N 501-104 (illustration)

4-cell holder for 100mm cells P/N 501-103 (illustration)

100mm cylindrical cell holder P/N 501-106

Thermostatted single cell holder (requires water bath) P/N 508-105 (illustration)

Sipper, processor controlled P/N 508-121

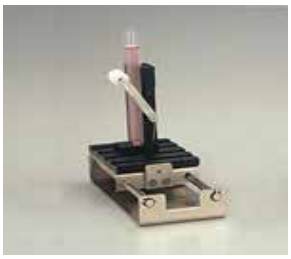
Peltier system for 10mm cells, 15-40°C P/N 508-123

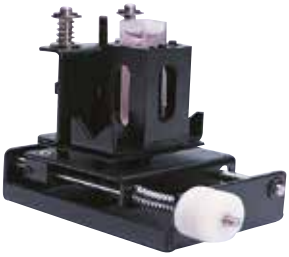
Peltier/Sipper system combined P/N 508-124 (illustration)

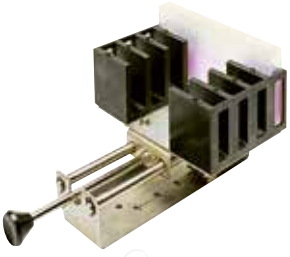
Calibration standards for wavelength, absorbance, stray light (traceable to NPL)

Optional Built-in 40 character thermal printer P/N 508-101

M508/M108 PC application system software (including PC cable) P/N 108-110







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The M550 UV-Vis True Double Beam Scanning Spectrophotometer

This is a true double beam instrument with parallel sample and reference beams. The specification is as expected from a top-of-the-range instrument designed for research as well as routine use. The M550 conforms to all current US & European Pharmacopoeia guidelines and can be used with Camspec 21 CFR Part 11 compliant Panorama PC software to meet the exacting requirements of the pharmaceutical industry.

Two silicon photodiodes are used for measuring the two beams simultaneously for optimising measurement accuracy and stability. The reference beam is especially useful for measuring samples where the reference changes with time.The M550 uses a very easy-to-replace tungsten-halogen lamp, and a pre-aligned long-life deuterium lamp.

The M550 now comes with a USB socket for downloading data which can be used with a free version of the UV Analyst software.

Display	1/4 VGA 320x240pixels backlit LCD
Light sources	Tungsten-Halogen and Deuterium
Monochromator	Littrow type with 1200 lines/mm grating
Scan Speed	Up to 2500nm/min (Return 3000nm/min)
Detectors	Silicon Photodiodes
Wavelength Range	190 - 1100nm
Wavelength Accuracy	± 0.3nm
Wavelength Resolution	0.1nm
Wavelength Repeatability	± 0.05nm
Noise	< 0.0001A @ 500nm 0A
Zero Drift	< 0.001A per hour after warm-up
Baseline Flatness	± 0.002A
Bandpass	1.5nm
Stray Light (A.S.T.M.)	KCl >2A at 198nm & <0.05%T @ 220nm and 340nm
Photometric Accuracy	± 0.5% at 0.5A, 1.0A and 2.0A
Photometric Range	0.3 to 3A, 0 to 200%T, 0 to 9999 Conc
Printer Interface	Parallel for A4 HP and Epson printers
Computer Interface	USB
Power Requirements	110/120V, 220/230V, 50/60 Hz, 110VA
Dimensions	630 x 410 x 280mm packed 770 x 560 x 410
Weight	24kg packed 28Kg

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User Interface

The user interface is almost the same as that of the popular M501 Single Beam Spectrophotometer and includes Basic Mode (Abs, %T, Conc), Quantitative (concentration calibration curves), Wavelength Scanning, Kinetics (including timedrive), DNA/Protein, Mult-wavelength, and Performance Validation. The M550 stores up to 50 methods/results.
In Basic Mode, the result is continuously displayed (no need to "press to read")

PC Control

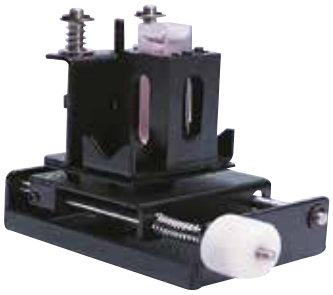
The M550 has an USB output for the transfer of results to a PC and for PC controls of the M550. Comprehensive Camspec Application Software is available, together with small PC programs, dedicated to specialist tasks.

Pharmaceutical Analysis

The M550 is European Pharmacopoeia compliant. It passes the Potassium Chloride stray light test, the Toluene in Hexane resolution test, the Holmium Perchlorate solution wavelength test and the Potassium Dichromate absorbance test.
The M550 may be controlled by Camspec Panorama software which is 21 CFR Part 11 compliant. This means that it can be used for pharmaceutical analysis requiring FDA (Food and Drug Administration) approval.

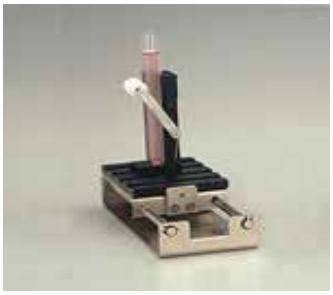
A selection of the many Cell compartment Accessories available

Micro cell holder

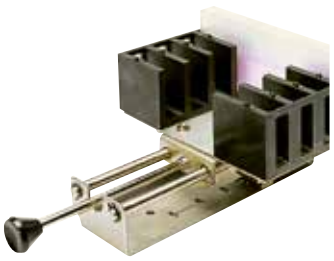


0-50 mm 4 x cell Manual changer

Test tube adaptor



0-100 mm 4 x cell Manual changer



Peltier / sipper

6 cell auto changer

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Sun / UV Penetration and Protection Measurement System

The system comprises a Camspec M550 double beam scanning spectrophotometer controlled by a PC with comprehensive Windows software with an integrating sphere accessory installed.

The Sun / UV Penetration System for fabrics has been designed specifically for analysts working in the fabric industry who need an accurate and reliable method of determining the sun blocking properties of fabrics for the important UV-A and UV-B wavelengths.

The system is for measuring the sun blocking properties of fabrics and fully conforms to European Standard EN 13758-1, American (AATCC Test Method 183.1998), British (BS 7914: 1998) and Australian and New Zealand (AS/NZS 4399:1996) test methods. The appropriate method should be read in full by those intending to make formal measurements.

- Highly efficient integrating sphere
- Sample-effect compensation
- Low noise, high accuracy
- User friendly operation
- Automatic calculations
- Report generation
- Vaildation
- Removable integrating sphere

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- Opening area 3% of total surface area
- Fully baffled
- Zero specimen recess
- Coating material : Opdima, which has >96% reflectance in region 290 to 400nm
- Reference port allows substitution to correct for effect of sample reflectance on sphere efficiency
- UG11 filter in front of detector to eliminate effects of sample fluorescence in the visible region

Sample-effect compensation

The reflectivity of the samples will affect the efficiency of the sphere. The program includes a procedure to directly measure this effect, and to compensate for it in the calculations.

Low noise, high accuracy

The inherently low noise of the M550 contributes to the optical stability of the measurements system, resulting in accurate, reproducible results.

User friendly operation

The sphere may be simply removed and stood above the sample compartment for convenient sampling before being scanned over the UV-R region 290 to 400nm. The advanced software package includes screen prompts to guide the user through the measurement procedures.

Automatic calculations

The scan data is stored to disk and the erythemically weighed UV-R irradiation transmitted by the sample is calculated automatically.

Report generation

The software generates a report, in a convenient A4 format, which includes all the necessary sample information and results according to the Testing Method used. The report can be sent to any PC printer.

Validation

Standards, traceable to the UK National Physical Laboratory are available to check the wavelength and photometric accuracy of the system.

Removable integrating sphere

In just a few seconds, the sphere can be disconnected and optically removed. The M550 can then be used as a conventional UV/Vis spectrometer with a wavelength range of 190 to 1100nm, and a fixed 1.8nm bandpass. Refer to the separate section for the M550 for a full list of he features, available from the powerful Windows software.

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Sun Protection Measurement System

Standards

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Explanation (h = lambda)

The human skin is sensitive to ultraviolet (UV) radiation wavelengths up to 400nm. The Sun's radiation normally reaches the Earth comprising of wavelengths down to 290nm. Measurements are therefore made from 290nm to 400nm in order to determine the effects of the Sun's radiation to the human skin.

The type 1 skin's sensitivity has been measured and averaged over many subjects to produce the CIE Erythemal Effectiveness tables which give the relative spectral effectiveness Eh at 5nm intervals from 290 to 400nm. High values mean that the skin is affected by light of that wavelength.

The Sun's spectral irradiance Sh has been measured at noon midsummer for the most intense radiation to be expected. This has been done at noon 17 January 1990 in Melbourne (38degrees south) and noon 3 July in Albuquerque, New Mexico.

The product EhSh summed at 5nm intervals from 290 to 400nm is a measure of the erythemally effective solar UVR irradiance E' (W.m-2).

Fabric covering the skin reduces the Sun's rays by a proportion T? the transmittance of the fabric. The product EhShTh measured at 5nm intervals from 290 to 400nm is a measure of the erythemally effective solar irradiance with the fabric present E.

The penetration factor P = E/E', is a measurement of the proportion of erythemally effective radiation penetrating the fabric.

The UV protection factor UPF = E'/E is a measurement of the protection given to the skin by the fabric.

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