

HELIOS

Range of UV-Visible
Spectrophotometers



HELIOS

The latest version of our world-renowned spectrophotometer range is now more versatile and productive

When faced with a demanding and time critical workplace, we all need to have total confidence in our laboratory equipment. At Thermo Spectronic we are specialists in UV-Visible spectrophotometers that deliver the reliability, productivity and flexibility to cope with any workload.

New enhancements include:

- Optional built-in printer
- Optional low price MiniSipper
- Larger graphics Liquid Crystal Display (LCD)
- Simple menu-driven interface
- More Local Control software features
- 32-bit Microsoft® Windows® PC applications software
- Built-in library for calibration curves and methods storage



Following extensive market research, Helios now delivers even more benefits...

- **More versatility**
- **More productivity**
- **More functionality**
- **More built-in storage capacity**
- **More intuitive to use**

and yet it remains low price and sacrifices nothing in optical performance compared with more expensive systems.

For further details of each instrument please refer to the technical specifications.

All models have:

- A small footprint with a large sample compartment
- A vast range of accessories to maximize sample throughput
- A choice of Local Control software or PC-driven software
- Superb stability, linearity and precision
- An optical design which optimizes the energy throughput for all sample types



A 2nm-bandwidth stepping monochromator and Thermo Spectronic's unique Master Interferometric Grating provide the precision, resolution and linearity normally found in expensive research grade systems

Built to last

- Precision die-cast aluminum chassis for robustness and stability
- Quartz-coated, sealed optics maintain performance throughout the instrument's lifetime
- Fewer moving parts improve reliability, reduce maintenance and running costs
- Sealed and chemically-resistant keypad withstands harsh laboratory environments
- External design discourages sample spillage

Built for speed

- All applications software provided as standard
- Built-in methods storage
- Automatic sample-introduction systems
- Choice of output options
- Easy to use

Helios range

"At a glance" table

	α Alpha	β Beta	γ Gamma	δ Delta
Double beam	•			
Single beam		•	•	•
2nm bandwidth	•	•	•	•
UV-Visible	•	•	•	
Visible only				•
Advanced scanning	•	•		
Basic scanning			•	•
Methods & data storage on built-in floppy disk drive	•	•		
Methods & data storage in non-volatile memory	•	•	(methods only)	(methods only)
7-cell programmer as standard	•	•		
7-cell programmer as option			•	•
Instrument calibration with NPL or NIST traceable reference materials	•	•	•	•
Automatic calibration using Calibration Validation Carousel (CVC)	•	•		
Optional uv calc results calculator	•	•		
Validator system qualification plan	•	•		
Operate with VISION 32 software	•	•	•	
MiniSipper option	•	•	•	•
SuperSipper option	•	•	•	•

Whatever your laboratory needs, whatever the workload, Helios works harder and will not let you down

Connectors for all output and sample handling accessories are supplied as standard to meet every scientist's reporting requirements and workload



Helios Alpha and Beta

REACH FOR YOUR ANALYTICAL GOALS

The Helios Alpha and Beta UV-Visible spectrophotometers are ideal for busy quality control laboratories that value productivity, durability and an abundance of features to solve virtually any UV-Visible problem.

Choose between a high energy, double-beam Helios Alpha for ultimate stability in the UV region or the single-beam Helios Beta for a more cost-effective purchase.

More software productivity

- Local Control software applications to customize methods
- Variable-speed scanning up to 3800nm/min with a range of peak-picking options for easy identification purposes
- Auto-save and auto-print for faster results processing
- Alphanumeric sample identification with automatic increments for enhanced sample batch processing
- Comprehensive data manipulation prior to printing and saving

More sample handling productivity

- A large and accessible sample compartment which accommodates a wide variety of accessories
- A 7-position, thermostat-ready cell programmer provided as standard

More method and data handling versatility

- Integrated 1.44Mb floppy disk drive and non-volatile memory provided as standard
- Unlimited storage of methods, data and curves with instant recall
- Easy transfer to other Helios instruments or PCs for off-line data manipulation
- A multitude of data handling options:
 - save to built-in library or integral floppy disk drive
 - transfer to VISION 32 PC software and other PC programs (in ASCII format)
 - export to LIMS via RS232C
 - print hard copies via built-in or external printer

Standard Applications

- Scanning
- Fixed
- Quantification
- Concentration Factor
- Ratio and Corrected Ratio
- Serial Wavelength
- Multiple Wavelengths (up to 20)
- Multi-Component Analysis (MCA) up to 20 components
- Kinetics



Large backlit VGA-quality graphics LCD display; displays entire methods, calibration curves, spectra and data

α
β

HELIOS

*Optional MiniSipper
and SuperSipper
(shown here)
accessories for
increased sample
throughput*



More software features to improve efficiency

- Password-protected user log-on with administrator defined user privileges
- Optional **uvcalc** software enables user-defined calculations to be built into methods
- Faster results generation avoids unnecessary use of an external PC program or calculator
- Built-in electronic maintenance log stores over 400 user or service engineer events, such as lamp changes and preventative maintenance visits

For further information on VISION 32 PC software and our range of accessories refer to pages 8 and 10 respectively.

Helios Gamma and Delta

BRING YOUR RESEARCH TO LIFE

The Helios Gamma and Delta spectrophotometers are synonymous with simplicity and yet offer the versatility to meet more demanding applications. Choose between a UV-Visible Helios Gamma or a Visible-only Helios Delta, both with a high energy, 2nm bandwidth optical system.

Ideal for busy teaching laboratories

- Student-friendly and abuse resistant with fast results generation to allow higher student throughput

Ideal for infrequent users and those requiring simplicity with versatility

- Nothing could be easier than pre-stored methods for immediate recall and instant results

Ideal for life sciences

- Bioscience-ready with Ratio and Corrected Ratio methodologies. Measures sample volumes down to 5µl and uses an optional thermostat-ready, 7-cell programmer for serial or parallel kinetic experiments

Synonymous with simplicity

- 'Active display' with instant read-out in absorbance, %transmission or concentration
- On-screen viewing of results, calibration curves and spectra
- Large VGA-quality graphics LCD ideal for teaching purposes
- Storage of up to 30 customized methods with password protection

Standard Applications

- **Basic Scanning**
- **Fixed**
- **Quantification**
- **Rate**
- **Concentration Factor**
- **Ratio and Corrected Ratio**
- **Multiple Wavelengths** (up to 20)
- **Kinetics**



Simple menu-driven user interface with easily identifiable 'zero/baseline', 'run' and 'enter' keys

γ
δ

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*Optional MiniSipper
(shown here) and
SuperSipper accessories
for increased sample
throughput*



Versatility on-demand

- Basic scanning with peak-picking facility for easy identification of all component peaks
- On-screen data manipulation including rescale, zoom, track, baseline-corrected peak height, Ratio and Corrected Ratio measurements
- 20-standard calibration curves with editing facility and a choice of curve-fitting algorithms
- Compatible with VISION 32 PC software (Gamma only) for extensive data manipulation prior to printing and saving
- A variety of output options including PC, built-in printer, desktop printer, or scanning to a recorder
- A full size sample compartment to accommodate a variety of accessories. Choose between:
 - A single position, variable pathlength cell holder
 - A 7-position thermostat-ready, automatic cell programmer for increased sample throughput and parallel kinetics
 - A MiniSipper or SuperSipper for semi-automatic or automatic sample introduction

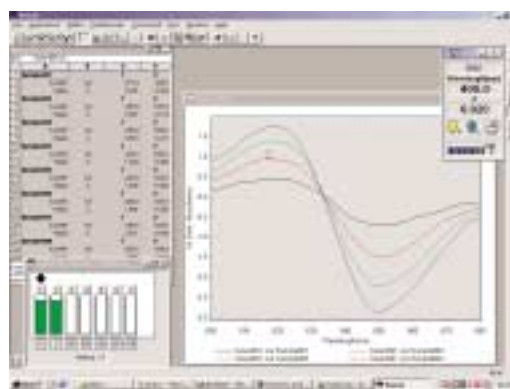
VISION 32 software

PROVIDES POWER AND FLEXIBILITY

VISION 32 is an advanced instrument control and data manipulation software package with a graphical user interface designed for scientists by scientists.

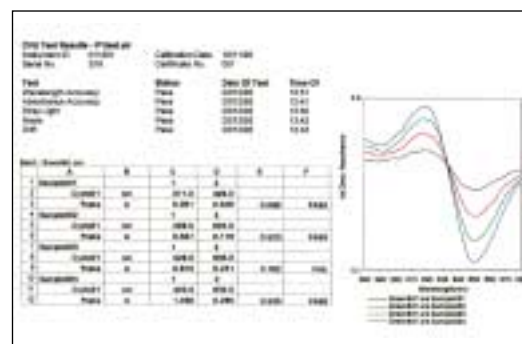
- A 32-bit application that operates under Microsoft® Windows® 95, 98, 2000 and NT
- Offers Scanning, Fixed and Quantitation applications as standard
- Easy and intuitive to use
- 256-character file naming for fast file identification
- A vast range of data manipulation routines allows for fast results calculations
- Displays a number of spectral overlays for comparison purposes, only limited by the PC's memory and screen size/resolution
- Software available in English, German and French and supplied with a language-specific user guide and on-line help

When used in conjunction with the built-in report composer and **uvcalc** software, VISION 32 provides a powerful, but controlled 'sample in, result out' environment, designed to eliminate mistakes and improve productivity



UVcalc software

- A built-in spreadsheet that enables customized calculations of final results as part of the user method
- Offers password protection of spreadsheet formulae
- Eliminates transcription errors and misinterpretation of data
- Enables faster final results generation
- Avoids cross-application validation



Report composer

- A built-in WYSIWYG report composer
- Enables customized report templates to be saved as part of the user method
- Allows reports to include a combination of VISION 32 objects, such as calibration curves and spectra, as well as utilizing Microsoft's OLE 2 standard to embed graphs, logos and data from other Microsoft Windows applications

Optional software add-ons

VISION 32 RATE

- For single-cell or multi-cell kinetics analysis up to 100 hours duration
- Includes comprehensive manipulation and rate calculation options

VISION 32 MCA

- For Multi-Component Analysis (MCA) using the Kalman-filter algorithm
- Accurately analyzes up to 20 different components in complex mixtures in under a minute
- Simplifies routine analysis and improves sample throughput

Calibration

FOR TOTAL CONFIDENCE

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A comprehensive range of calibration materials supports Thermo Spectronic's engineering excellence to improve the performance of your spectrophotometer, and provides you with total confidence in the quality of your data.

If your regulatory body or Quality Assurance (QA) department demands regular verification of your UV-Visible spectrophotometer, then we have the tools to suit your requirements.

Calibration Validation Carousel (CVC) for Helios Alpha and Beta

- For automatic unattended instrument calibration
- Located in place of the 7-cell programmer
- Verifies UV and Visible wavelength accuracy, UV and Visible absorbance accuracy, resolution, stray light (at 220nm and 340nm), noise and stability
- Results can be saved and printed

The unique calibration process, used to calibrate the solid wavelength and absorbance filters, is accredited to ISO 17025. This provides the evidence of traceability to primary Certified Reference Materials (CRMs) from the National Institute of Standards and Technology (NIST) and the National Physical Laboratory (NPL).



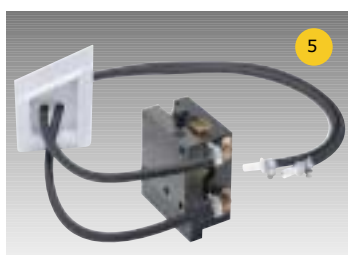
Other calibration and validation tools include:

- Wavelength accuracy and absorbance filter sets which are ISO 17025 accredited. These are used to check the accuracy and reliability of any well-designed UV-Visible spectrophotometer
- A recalibration service for CVCs and filter sets that ensures compliance with your in-house standard operating procedures, QA department and regulatory body requirements
 - A Validator Log Book for the Helios Alpha and Beta specifically designed to follow the pharmaceutical industry's own qualification process for system validation



Accessories

FOR IMPROVED PRODUCTIVITY



Regardless of the level of automation, sample type or sample throughput, the Helios range has a wide variety of sample introduction systems in order to improve productivity and prolong the instrument's lifetime. Whatever your future analytical requirements or workload, the choice of accessories will enable you to meet your analytical goals and make your job easier.

SuperSipper and MiniSipper (1,2)

- Fast and reliable peristaltic pump-based sample-introduction systems
- Provide high sample throughput
- Suitable for large sample batch processing or simply for convenience
- Operate with 1 – 50mm pathlength flowcells
- Software control of tubing calibration, programmable airgap, pumping mode and sample volume
- Exceptionally low cross contamination; <0.5% at 0.5ml

The SuperSipper: works with Viton® tubing so it can operate with a wider range of solvents and acids

Peltier 1 (3)

- Peltier-controlled single-cell holder that accommodates 10 – 50mm pathlength cells
- Temperature range 0 – 100°C, accuracy ±(0.1°C)
- Fast heating and cooling

- User selectable high/low alarms
- Includes stirrer

Variable Pathlength Cell Holder (4)

- For cells with a 1 – 50mm pathlength

Variable Pathlength Thermostatting Cell Holder (5)

- For cells with a 1 – 50mm pathlength
- Uses fluid thermostatting

Cell Programmer Thermostatting Kit (6)

Peltier 178 (7)

- Peltier temperature controlled closed-system fluid circulator for use with a variable pathlength cell holder or 7-cell programmer
- Temperature range 20 – 60°C
- Accuracy ±(0.1°C)

Long Pathlength Rectangular Cell Holder

- For cells with a 100mm pathlength

Long Pathlength Cylindrical Cell Holder (8)

- For cells with a 50 – 100mm pathlength

Combination Test Tube and Cell Holder (9)

- For test tubes 75 – 100mm high with a 10 – 16mm diameter
- For cells with a 10mm pathlength
- Ideal for water analysis in combination with reagent kits



Model	Helios Alpha	Helios Beta	Helios Gamma	Helios Delta
Optics	Double beam, quartz coated	Single beam, quartz coated	Single beam, quartz coated	Single beam, quartz coated
Monochromator	Master Interferometric Grating (MIG)	Master Interferometric Grating (MIG)	Master Interferometric Grating (MIG)	Master Interferometric Grating (MIG)
Bandwidth, nm	2	2	2	2
Scanning	Yes	Yes	Yes	Yes
Wavelength range, nm	190-1100	190-1100	190-1100	325-1100
Wavelength accuracy, nm	1	1	1	1
Wavelength reproducibility, nm	±0.2	±0.2	±0.2	±0.2
Display type	VGA Graphics, LCD	VGA Graphics, LCD	VGA Graphics, LCD	VGA Graphics, LCD
Display parameters	87 x 115mm Method parameters, spectra, calibration, rate and time drive curves, results	87 x 115mm Method parameters, spectra, calibration, rate and time drive curves, results	75 x 100mm Method parameters, spectra, calibration, rate and time drive curves, results	75 x 100mm Method parameters, spectra, calibration, rate and time drive curves, results
Photometric accuracy	±0.005A at 1A	±0.005A at 1A	±0.005A at 1A	±0.005A at 1A
Photometric reproducibility	±0.002A at 1A	±0.002A at 1A	±0.002A at 1A	±0.002A at 1A
Stability	<0.001A/hr	<0.002A/hr	<0.002A/hr	<0.002A/hr
Noise (RMS)	<0.0001A	<0.0001A	<0.0001A	<0.0001A
Stray light	<0.05% at 220nm & 340nm	<0.05% at 220nm & 340nm	<0.05% at 220nm & 340nm	<0.05% at 340nm
Maximum pathlength, mm	100	100	100	100
Output				
Recorder	0-1V / -0.3-3A	0-1V / -0.3-3A	0-1V / -0.3-3A	0-1V / -0.3-3A
RS232C	Yes	Yes	Yes	Yes
Printer	Yes (Centronics) Built-in option	Yes (Centronics) Built-in option	Yes (Centronics) Built-in option	Yes (Centronics) Built-in option
MiniSipper	Yes	Yes	Yes*	Yes*
SuperSipper port	Yes	Yes	Yes	Yes
7-cell programmer	Standard	Standard	Optional	Optional
Integral software available in multiple languages	Advanced Local Control with Scan, Fixed, Quant, Rate, Serial λ , Multi λ and Multi Component Analysis (MCA) functions	Advanced Local Control with Scan, Fixed, Quant, Rate, Serial λ , Multi λ and Multi Component Analysis (MCA) functions	Simple Local Control with Fixed, Ratio, Quant, Rate, Multi λ and simple scan functions	Simple Local Control with Fixed, Ratio, Quant, Rate, Multi λ and simple scan functions
Disc drive (3.25" floppy)	1.44Mb	1.44Mb	Not available	Not available
Methods storage	Floppy disk and non-volatile memory	Floppy disk and non-volatile memory	Non-volatile memory	Non-volatile memory
Data storage	Floppy disk and non-volatile memory	Floppy disk and non-volatile memory	No	No
PC Software	VISION 32 VISION 32 Rate VISION 32 MCA VISION 32 Auto	VISION 32 VISION 32 Rate VISION 32 MCA VISION 32 Auto	VISION 32 VISION 32 Rate VISION 32 MCA VISION 32 Auto	VISION 32 Auto
Dimensions (w x d x h), mm inches	455 x 395 x 215 18 x 15.5 x 8.5	455 x 395 x 215 18 x 15.5 x 8.5	455 x 395 x 215 18 x 15.5 x 8.5	455 x 395 x 215 18 x 15.5 x 8.5
Electrical supply	100-240V, 50-60Hz	100-240V, 50-60Hz	100-240V, 50-60Hz	100-240V, 50-60Hz
Weight	10Kg or 22lbs	10Kg or 22lbs	10Kg or 22lbs	10Kg or 22lbs

* Available on instruments fitted with a 7-cell programmer

Thermo Spectronic, a Thermo Electron business, is a company dedicated to the manufacture, sale and support of Visible and UV-Visible spectrophotometers. Our objective is to provide you with user-friendly, reliable and versatile solutions in order to ease your workload and improve the efficiency of your laboratory. Over 50 years of in-house expertise gives you access to premium quality technical support and knowledgeable applications advice. By choosing Thermo Spectronic, you can be confident of selecting a spectrophotometer that exactly matches your requirements.

Thermo Electron Corporation is a global leader in providing technology-based instruments, components and systems that offer total solutions for markets ranging from life sciences to telecommunications to food and beverage production.

Thermo Spectronic formerly Spectronic Unicam

The apparatus described in this document has been designed as far as possible to meet high international safety standards when installed and operated in accordance with accepted procedure and with the safety precautions detailed in the User Manual. We reserve the right to alter the specification of the equipment described in the document without prior notice. Microsoft and Windows are registered trademarks of the Microsoft Corporation. Viton is a registered trademark of E.I. du Pont de Nemours and Company.



FM 41499
ISO9001



0521

Calibration
No. 0521.
Accreditation
applies to
wavelength and
Absorbance
filters.

Our quality management system is registered to the ISO 9001 standard.

Designed by The Art Department. Printed in Great Britain **Part No 9498 909 00001.**

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