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Spectronic Helios



UV-Visible Spectrophotometer Series


Industrial QC


Environmental


Academic


Food & Beverage

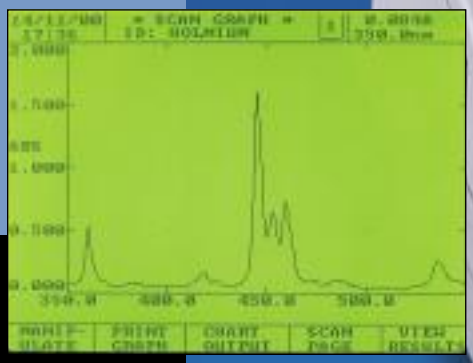

Life Sciences

Analyze • Detect • Measure • Control™

Thermo ELECTRON CORPORATION

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Spectronic Helios UV-Vis Spectrophotometer Series



The superior design of the Spectronic Helios UV-Vis instruments provides the precision, resolution and linearity typically found in advanced research grade systems

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Versatile, Productive Instruments to Meet Your Laboratory Challenges

When faced with a demanding and time critical workplace, you need total confidence in your laboratory equipment. At Thermo Electron Corporation, we are specialists in UV-Visible spectrophotometers that deliver the reliability, productivity and flexibility to handle any workload.



The Spectronic™ Helios™ range of UV-Vis instruments delivers the performance and expanded capabilities to meet your needs – yet remains low-priced while sacrificing nothing in optical performance compared with more expensive systems.

System Advantages

- A small footprint with a large sample compartment saves space and offers convenient sampling
- An extensive range of accessories to maximize sample throughput
- A choice of Local Control software or PC-based software to meet multiple lab needs
- Superb stability, linearity and precision for accurate results
- An optical design which optimizes the energy throughput for all sample types
- Built-in library for calibration curves and methods storage

SPECTRONIC HELIOS MODELS	α ALPHA	β BETA	γ GAMMA	δ DELTA
Double beam	•			
Single beam		•	•	•
2 nm 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)	•
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 software	•	•	•	•
MiniSipper option	•	•	• (requires 7-cell programmer)	•
SuperSipper option	•	•	•	•

Optional Enhancements

- Built-in printer saves space
- Low price MiniSipper for increased sample throughout
- VISION™ PC applications software for complete flexibility

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

- Application software provided as standard
- Built-in methods storage
- Automatic sample-introduction systems
- Choice of output options
- Intuitive operation

Whatever your laboratory needs, whatever the workload, the Spectronic Helios spectrophotometers work harder and will not let you down.



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

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Spectronic Helios Alpha and Beta
Bring Your Research to Life

The Spectronic Helios Alpha and Beta UV-Visible spectrophotometers are ideal for busy industrial and research laboratories that value productivity, durability and an abundance of features to perform virtually any UV-Visible analysis.

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

Software Productivity

- Local Control software applications to customize methods
- Variable-speed scanning up to 3800 nm/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

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

Method and Data Handling Versatility

- Integrated 1.44 Mb floppy disk drive and non-volatile memory provided as standard
- Unlimited storage of methods, data and calibration curves with instant recall
- Easy transfer to other Spectronic 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 PC software and other PC programs (in ASCII format)*
  - *export to LIMS via RS232C*
  - *print hard copies via built-in or external printer*

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
- On-board generation of results avoids 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

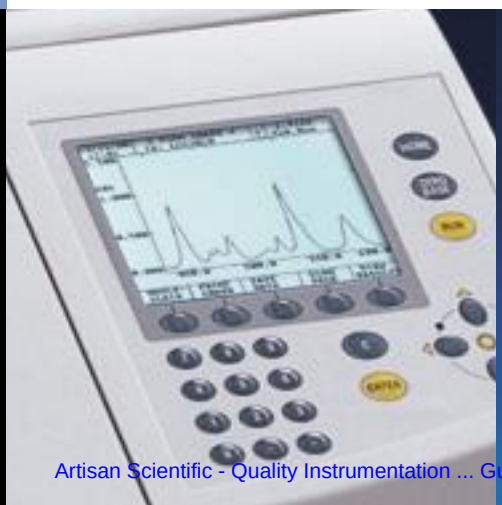


Optional MiniSipper and SuperSipper (shown here) accessories for increased sample throughput

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; displays entire methods, calibration curves, spectra and data





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Spectronic Helios Gamma and Delta
Reach For Your Analytical Goals

The Spectronic Helios Gamma and Delta spectrophotometers are synonymous with simplicity yet offer the versatility to meet more demanding applications.

Choose between a UV-Visible Spectronic Helios Gamma or a Visible-only Spectronic Helios Delta, both with a high energy, 2 nm 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

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 PC software 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*



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

Standard Applications

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



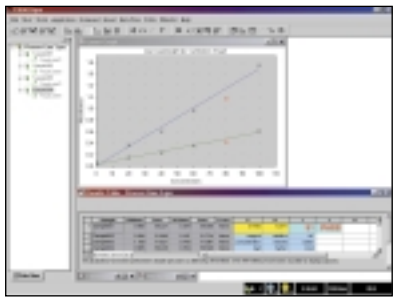


Simple menu-driven user interface with easily identifiable 'zero/baseline', 'run' and 'enter' keys

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VISION – Complete Suite of PC Software Options

Further enhance the productivity of your lab with the addition of powerful, easy-to-use VISION software to your Spectronic Helios UV-Vis spectrophotometer. Test setup, data collection, data manipulation, results presentation, regulatory compliance – all aspects of your analysis are easier with the VISION series software.





VISION*security*™

- A complete software package with advanced security options and VISION*pro* functionality
- Meets all security requirements of regulated and quality control laboratories
- Provides tools required to achieve 21 CFR Part 11 compliance
- Electronic Signatures for data and method traceability
- Audit trails for data and method manipulation history
- Requires either Microsoft® Windows® 2000/NT; or 98/2000/NT/XP with an NT or 2000 network

VISION*pro*™

- A comprehensive UV-Vis software package with scanning, single wavelength, multiple wavelength, quantification and multi-component analysis supplied as standard functions
- Advanced data manipulation for easy method development and results calculation
- Advanced spreadsheet results calculation
- Spectral overlay and manipulation for easy comparison
- Easy-to-use and customizable interface
- Complete report flexibility including methods, graphs, data, Microsoft® Word files, Excel spreadsheets and graphics
- Multiple languages
- Requires Microsoft Windows® 98, 2000, NT or XP

VISION*lite*™

- Wavelength scanning with peak/valley identification, scan overlays, scale manipulation
- Rate measurement with enzyme activity calculation, data rescale/recalculation
- Fixed wavelength measurements at 1-31 wavelengths, absorbance ratio/difference with reference wavelength
- Quant measurement with tabular/graphical standard curve, linear & non-linear curve fitting, up to 20 standards
- Automatic data storage/recall, and data exporting to .csv file

VISION*life*™

- Life science module for VISION*pro* and VISION*security*
- Kinetics for intensity change with time studies
- Parallel rate measurement for advanced enzyme system measurements
- Comprehensive manipulation and rate calculation options
- Enzyme kinetics and equation modeling

Additional software packages available for the Spectronic Helios systems include:

- VISION Auto™ for automated analysis of multiple samples
- VISION Chroma™ for color measurement
- Enzymatic Food Analysis software
- Wine Analysis software

Highlights of VISION Software Functions

- ***Single wavelength***
- ***Multiple wavelength***
- ***Quantification***
- ***Multi-component analysis***
- ***Scanning***
- ***Kinetics***
- ***Parallel rate***
- ***Advanced enzyme modeling***
- ***Report composer***
- ***Simple password protection***
- ***Multiple security levels***
- ***Permission setting for software areas***
- ***21 CFR Part 11 tools***
- ***Electronic Signatures***
- ***Color measurement***
- ***Autosampler control***



Calibration for Total Confidence

A comprehensive range of calibration materials supports Thermo Electron'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 Spectronic 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 220 nm and 340 nm), noise and stability
- Results can be saved and printed

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Accessories For Improved Productivity

Regardless of the level of automation, sample type or sample throughput, the Spectronic Helios range offers a wide variety of sample introduction systems 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 (a,b)
- 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 – 50 mm pathlength flowcells
- Software control of tubing calibration, programmable airgap, pumping mode and sample volume
- Exceptionally low cross contamination; < 0.5% at 0.5 ml

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

Peltier 1 (c)
- Peltier-controlled single-cell holder that accommodates 1 – 50 mm 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 (d)
- For cells with a 1 – 50 mm pathlength

Variable Pathlength Thermostatting Cell Holder (e)
- For cells with a 1 – 50 mm pathlength
- Uses fluid thermostatting

Thermostatting Kit (f)
- For recirculator temperature control

Peltier 178 (g)
- 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 100 mm pathlength

Long Pathlength Cylindrical Cell Holder (h)
- For cells with a 50 – 100 mm pathlength

Combination Test Tube and Cell Holder (i)
- For test tubes 75 – 100 mm high with a 10 – 16 mm diameter
- For cells with a 10 mm pathlength
- Ideal for water analysis in combination with reagent kits



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
- 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 Spectronic Helios Alpha and Beta specifically designed to follow the pharmaceutical industry's own qualification process for system validation
- Primary NIST Traceable Reference Materials (NTRMs), produced and calibrated by Thermo Electron, are available to assist with performance testing.

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Product Specifications

Model	Helios Alpha & Helios Beta	Helios Gamma & Helios Delta
Optics	**Helios Alpha:** Double beam, quartz coated **Helios Beta:** Single beam, quartz coated	Single beam, quartz coated
Bandwidth, nm	2	2
Scanning	Yes	Yes
Wavelength Range, nm	190 – 1100	**Helios Gamma:** 190 – 1100 **Helios Delta:** 325 – 1100
Wavelength Accuracy, nm	1	1
Wavelength Reproducibility, nm	± 0.2	± 0.2
Display Type	VGA Graphics, LCD	VGA Graphics, LCD
Display Parameters	87 x 115 mm Method parameters, spectra, calibration, rate and time drive curves, results	75 x 100 mm Method parameters, spectra, calibration, rate and time drive curves, results
Photometric Accuracy	± 0.005A at 1A	± 0.005A at 1A
Photometric Reproducibility	± 0.002A at 1A	± 0.002A at 1A
Stability	**Helios Alpha:** < 0.001A/hr **Helios Beta:** < 0.002A/hr	< 0.002A/hr
Noise (RMS)	< 0.0001A	< 0.0001A
Stray Light	< 0.05% at 220 nm & 340 nm	**Helios Gamma:** < 0.05% at 220 nm & 340 nm **Helios Delta:** < 0.05% at 340 nm
Maximum Pathlength, mm	100	100
Output		
Recorder	0 – 1V / -0.3 – 3A	0 – 1V / -0.3 – 3A
RS232C	Yes	Yes
Printer	Yes (Centronics) Built-in option	Yes (Centronics) Built-in option
MiniSipper	Yes	Yes*
SuperSipper Port	Yes	Yes
7-cell Programmer	Standard	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	Simple Local Control with Fixed, Ratio, Quant, Rate, Multi λ and simple scan functions
Disc Drive (3.25" floppy)	1.44 Mb	Not available
Methods Storage	Floppy disk and non-volatile memory	Non-volatile memory
Data Storage	Floppy disk and non-volatile memory	No
PC Software	VISION*pro* VISION*life* VISION*security* VISION*lite* VISION Auto VISION Chroma Enzymatic Food Analysis Wine Analysis	VISION*pro* VISION*life* VISION*security* VISION*lite* VISION Auto VISION Chroma Enzymatic Food Analysis Wine Analysis
Dimensions (w x d x h), mm	455 x 395 x 215	455 x 395 x 215
Dimensions (w x d x h), inches	18 x 15.5 x 8.5	18 x 15.5 x 8.5
Electrical Supply	100 – 240 V, 50 – 60 Hz	100 – 240 V, 50 – 60 Hz
Weight	10 Kg (22 lbs)	10 Kg (22 lbs)

** Available on instruments fitted with a 7-cell programmer*

In addition to these offices, Thermo Electron Corporation maintains a network of representative organizations throughout the world. Visit our web site to locate the representative nearest you – www.thermo.com

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FM 41499
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0521

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

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BR_S0435 *P/N 169-732900 10/03*

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