

# Thermo Scientific Evolution 260 Bio UV-Visible Spectrophotometer



## *UV-Vis Transformed for the Life Science Lab*

- Innovative
- Flexible
- Accurate

# Innovation for Tomorrow's Lab Challenges

PERFORMANCE AND VERSATILITY TO ADVANCE YOUR RESEARCH

In the complex and quickly changing field of life science, it is critically important that your instrument and software keep up with new laboratory demands. With the choice of integrated or computer software control, the new Thermo Scientific Evolution 260 Bio UV-Visible spectrophotometer is always up-to-date and ready for the next challenge. Powerful software, a high-performance spectrophotometer, and an extensive line of accessories combine for a complete solution that helps to move you from samples to answers faster.

*Keep your life science laboratory moving forward with the Evolution™ 260 Bio UV-Visible spectrophotometer. Designed for the needs of research, routine analysis, and core laboratory facilities, the Evolution 260 Bio instrument is at home in a multi-user laboratory or as a dedicated analyzer for research-level analysis. It is the one instrument that can satisfy all the requirements of your routine to research life science lab.*



## Work Smarter, Not Harder

Accessories should help you measure samples, not get in the way. With Thermo Scientific INSIGHT software, accessory setup is integrated right into the workbook making configuring and using your accessories easy. Peltier and circulating water temperature control accessories can be controlled directly using INSIGHT™ software. A full line of cell changers and fiber optic probes are also available to increase your productivity.

## Empower Your Measurements

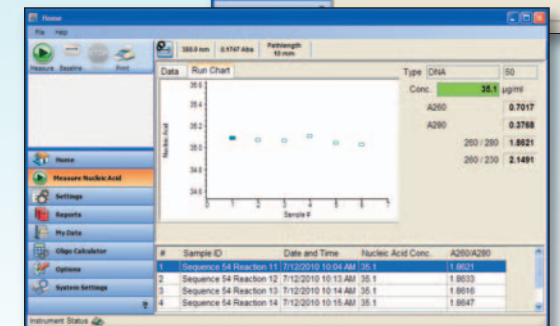
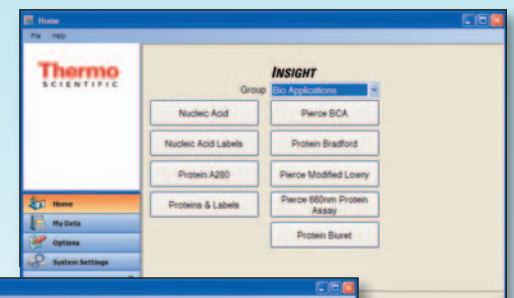
Our unique **Application Focused Beam Geometry (AFBG)** technology for microcells provides extremely high throughput for small volume sample analysis. AFBG technology ensures that your application has the perfect optical platform for measurement. Standard 1.0 and 2.0 nm slits are available for your routine testing needs. In addition to the microcell AFBG technology, the Evolution 260 Bio spectrophotometer delivers dedicated optical platforms for highly scattered transmittance and fiber optic probe measurements.



## Personalize Your Experience

### Software that Simplifies

The INSIGHT software home screen puts your methods front and center, providing easy access and a customizable experience. The bright, touch-screen interface allows you to quickly navigate between assays and obtain a clear, concise picture of your data and results. For added security, you can set the software to automatically save your data either internally or to a USB device. You can also automatically export the data in popular formats such as CSV.



## Our History of Innovation

Thermo Scientific UV-Visible and fluorescence instruments have a long history of innovation and quality. Our legacy includes familiar products from the SPECTRONIC, Unicam, and NanoDrop companies.

Unicam Inc. introduces its first commercial UV-Visible spectrophotometer – Unicam SP-500 instrument

1940



SPECTRONIC 20 spectrophotometer introduced – first mass produced, low-cost spectrophotometer

1953

Spectronic 2000 spectrophotometer introduced – first microprocessor controlled double-beam UV-Visible spectrophotometer

1980

Pye Unicam Corp. introduces the PU-8700 spectrophotometer – first mouse-driven graphical interface UV-Visible spectrophotometer

1987

Helios instrument series introduced – compact, double-beam UV-Visible spectrophotometer

1997

GENESYS 10 instruments introduced – patented out-of-plane optics for superior performance in a small footprint

2000



Evolution 300 spectrophotometer introduced – first double-beam xenon lamp based instrument

2003

Thermo Fisher Scientific acquires NanoDrop Technologies, Inc. to become world leader in UV-Visible spectroscopy

2007



Evolution Array spectrophotometer introduced with photodiode array technology

2010



Evolution 200 Series spectrophotometer introduced offering unique Application Focused Beam Geometry and Customized User Environment software.

2010

# Best-in-Class Performance

OPTIMIZED ENGINEERING FOR HIGH-QUALITY RESULTS

Engineered to perform, the Evolution 260 Bio spectrophotometer delivers high-performance, reliable data, and features that enhance the user experience.

## Quick Release Lid

Unique sample compartment lid uses a push-button release to slide the lid open for easy access to the sample compartment. Have your hands full? Use your elbow to open the sample compartment. Just one of the ways the Evolution 260 Bio spectrophotometer enhances your UV-Vis experience.

## Application Focused Beam Geometry (AFBG)

AFBG technology optimizes the optics of the instrument to your application. The Evolution 260 Bio spectrophotometer features AFBG options for microcell, fiber optics, and solids and materials applications.

Customized to match your cells and accessories, the Micro and Fiber Optics selections provide maximum performance with small volume cells and fiber optic probes.



## Double-beam Geometry

Ideal for kinetics or any sample that might change over time during a measurement. Use the reference detector to monitor a control sample during data acquisition. Double-beam geometry is very stable and reliable for your long-term measurements.

## Trigger Connections

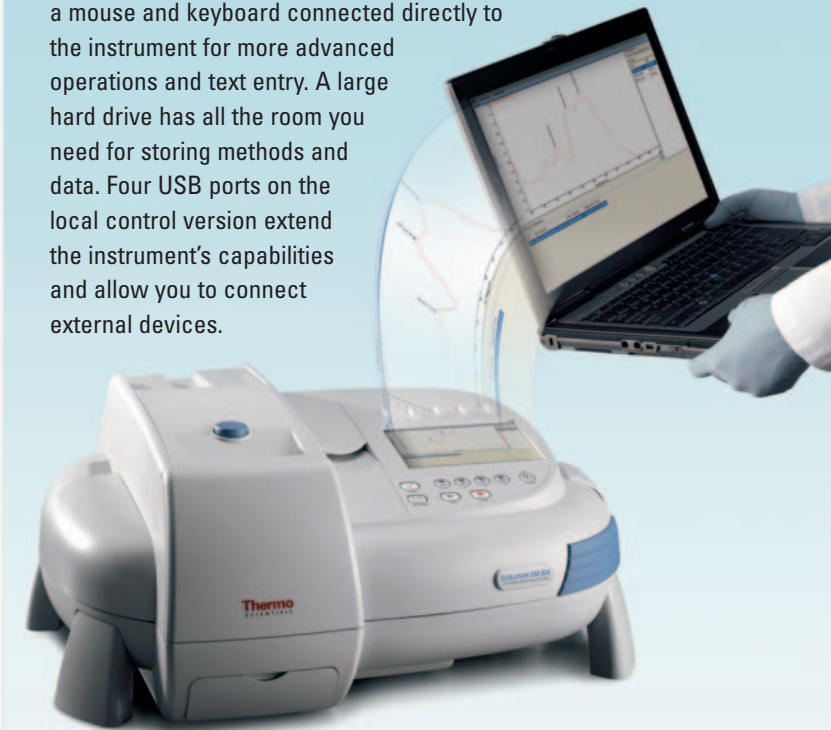
Accurate kinetics measurements rely on precisely known zero-time data. Electronic triggering provides the highest level of accuracy for rapid-mixing kinetics measurements.

## USB Interface

Connect to an external computer for INSIGHT software control, data analysis, and storage. Use a USB memory device to store methods and data, connect a mouse and keyboard, or print hard copy data reports directly to an external printer.

## Powerful, Convenient Local Control

A built-in computer running the Microsoft® Windows® XP embedded operating system provides the convenience of a local control system with the flexibility and performance of a remote computer. Routine operations can be accessed with fingertip control. Use a stylus pen or a mouse and keyboard connected directly to the instrument for more advanced operations and text entry. A large hard drive has all the room you need for storing methods and data. Four USB ports on the local control version extend the instrument's capabilities and allow you to connect external devices.



## Removable Sample Beam Detector

Provides extensive versatility for a wide array of accessories with their own integrated detectors and unique detector configurations for your customized analysis.

## Cell Holder

Our innovative cell holder includes horizontal and vertical positioning adjustments to maximize energy throughput. A stable support system ensures accurate positioning of the cell in the beam every time. A cell lifter makes removing cells easy. An optional cell holder with temperature control is also available.

## Sample Compartment

Room light immunity allows the sample compartment to remain open during measurements for maximum versatility. Connections for purge gas, and re-circulating liquid simplify experiments.

## Mono Drive

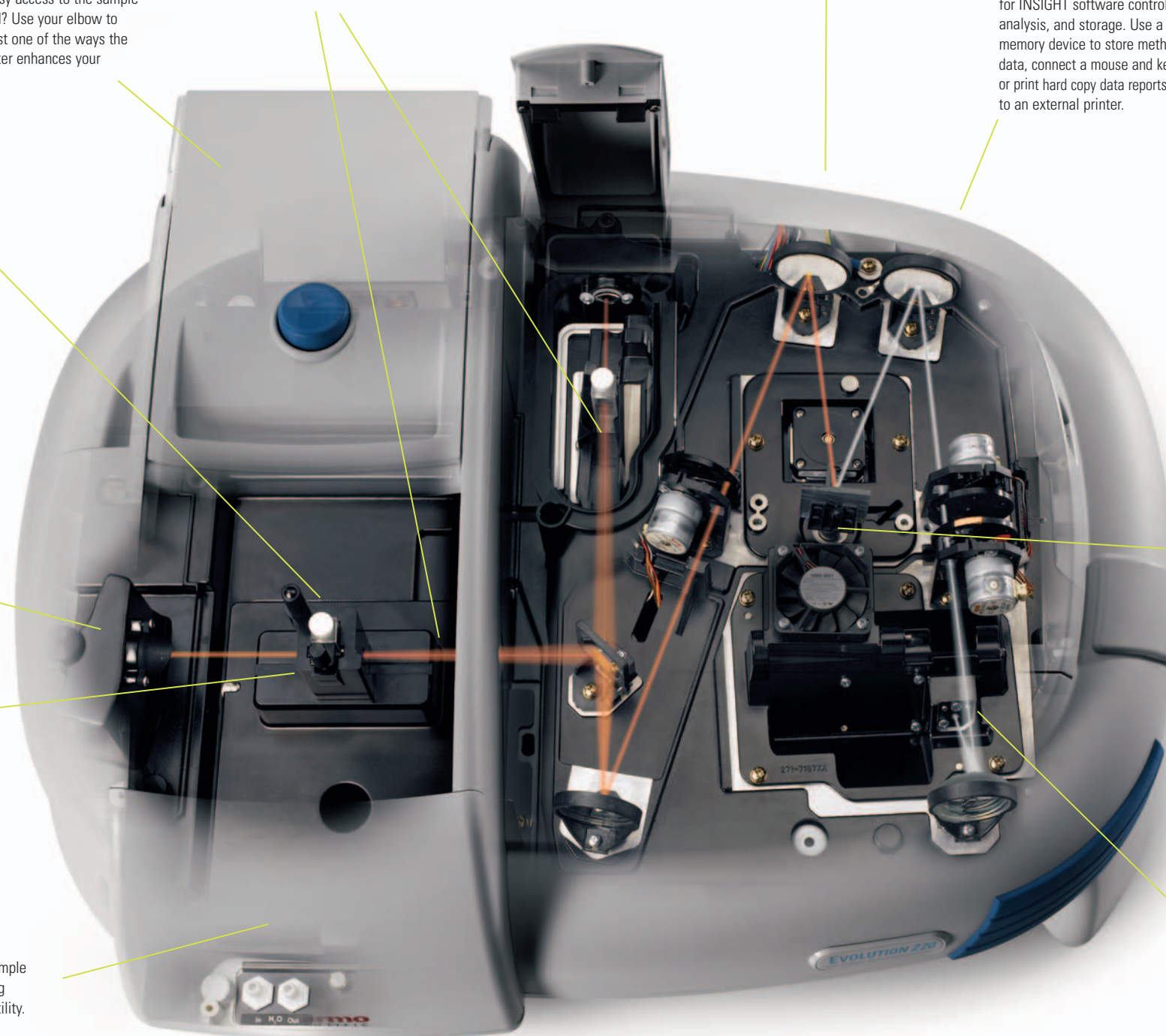
Our precision monochromator drive delivers fast scanning data collection with high wavelength accuracy. Scan samples up to 6,000 nm/min. A 31,000 nm/min slew speed makes both scanning and non-scanning measurements faster.

## Mercury Lamp Port

Don't rely on two lines from a deuterium lamp to calibrate your instrument. Use calibrations points throughout the UV, visible, and near-IR region with our Mercury Lamp accessory. No other instrument in this class has this remarkable capability.

## Xenon Flash Lamp

A xenon flash lamp provides exceptional energy in the UV where most life science measurements are made. Getting more light to the sample gives you more accurate and consistent measurements. Xenon lamps have the added benefit of not producing heat and raising the sample compartment temperature. The high pulse rate of the lamp allows for advanced kinetics measurements with up to 100 data points per second. The long lifetime of our xenon lamp is guaranteed for 3 years of continuous use.



# Routine Simplicity. Research Results

INNOVATIVE SOFTWARE STREAMLINES YOUR ANALYSIS

## Help with your Routine Assays

Tired of copying data from the spectrophotometer into Microsoft Excel® for colorimetric protein calculations? Let INSIGHT software guide you through protein concentration assays in easy-to-follow steps. Measure the calibration curve, check the accuracy of your standards and then measure samples all in a seamless process that gets you from samples to answers faster.

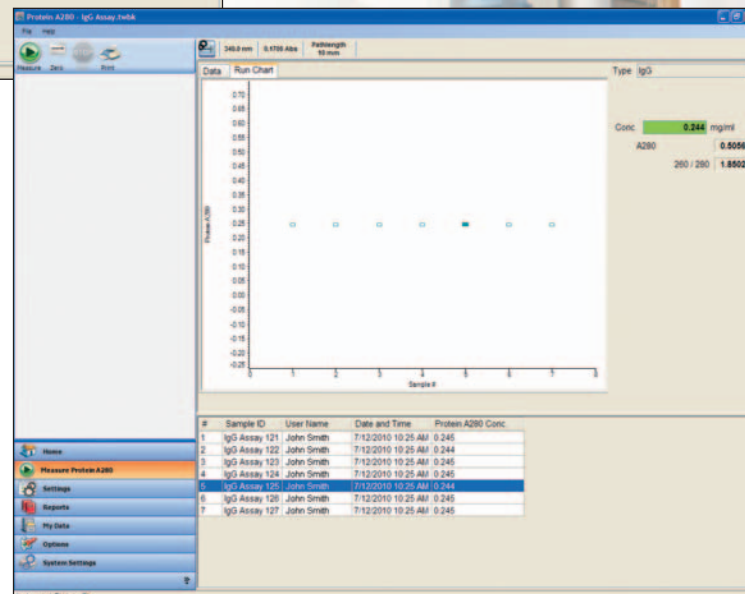
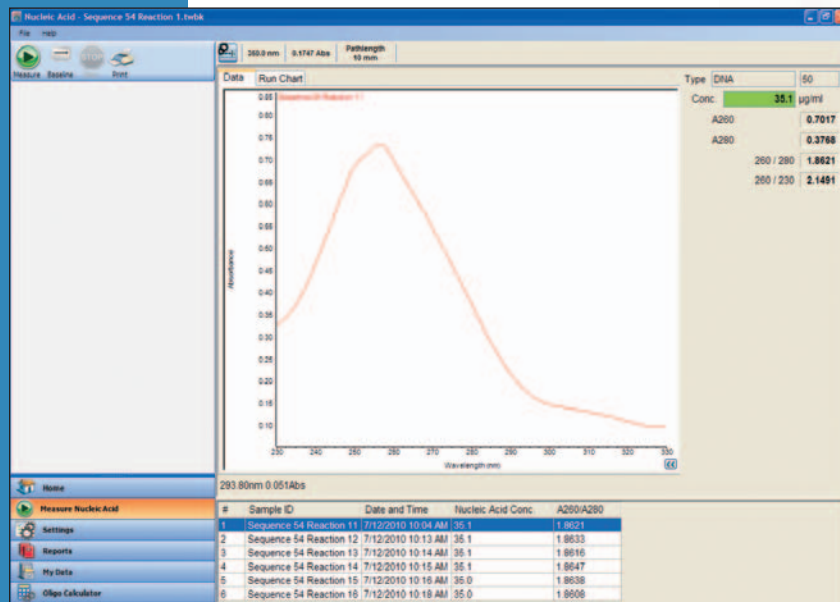
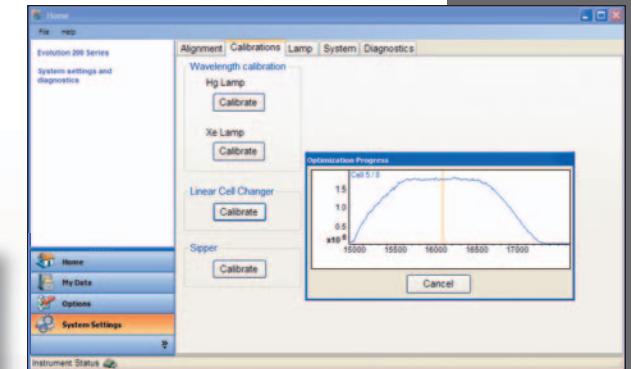
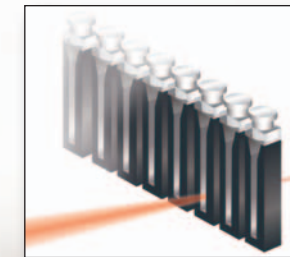
Need to automate a protocol? Use CUE software to streamline your workflow and prompt you through the measurement. Validate incubation and equilibration times by locking out the instrument until the proper time has elapsed. Use our custom analyzer tool to create the display you want to see while the analysis is running.

You demand answers from your spectrophotometer, not more questions. Innovative INSIGHT software gives you the streamlined convenience of easy-to-understand nucleic acid and protein analysis methods. INSIGHT software has dedicated modules for:

- Nucleic Acid concentration by direct UV measurement at 260 nm including DNA, ssDNA, RNA, and siRNA
- Nucleic acid purity measurements from 260/280 nm and 260/230 ratios
- Protein analysis by direct UV measurement at 205 or 280 nm
- Most common colorimetric analysis methods including:
  - Pierce 660 nm Protein Assay
  - Bradford
  - BCA
  - Lowry
- Measuring the fluorescence labeling efficiency for proteins and nucleic acids
- Measuring the microarray labeling efficiency with one or two dyes

## Automated Cell Changers

Cell changers bring the time-saving benefit of automation to your laboratory. Driven by an accurate stepper motor, the new linear eight cell changer for the Evolution platform provides rugged and reliable performance. A calibration tool in the software automatically finds the center position of each cell, even with semi-micro or ultra-micro cells. Fast movement from cell-to-cell shortens measurement times and gives you excellent performance for multicell kinetics experiments.

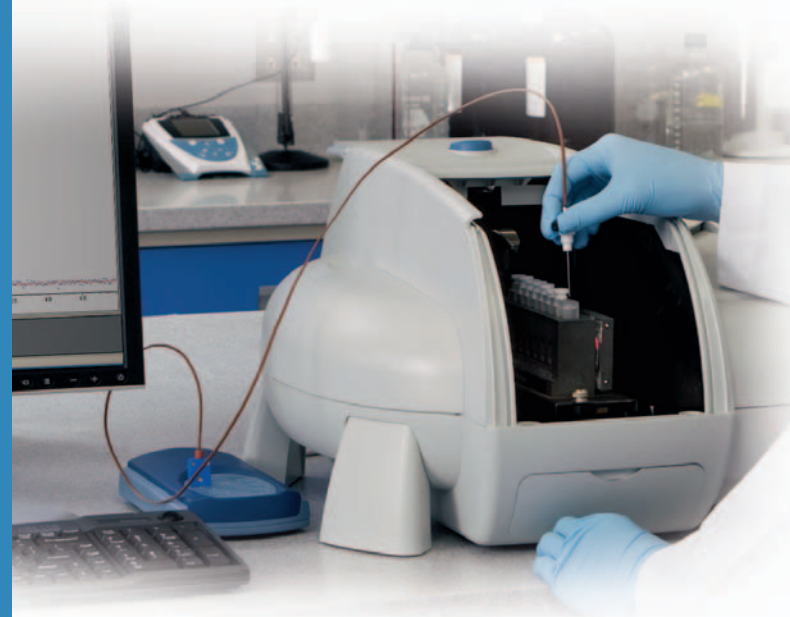


Use our built-in protein colorimetric methods to automate your protein concentration studies. Measure your standards, calculate the calibration curve and associated statistics, and measure samples – ALL within INSIGHT software. For greater productivity, use a cell-changer to automate measurements of samples and standards with our loading-guide feature that leads you through the experiment.



# Revolutionary Performance for Kinetics and Temperature Control

UNRIVALED KINETIC MEASUREMENTS AT ACCURATE TEMPERATURES



## Precise Temperature Control

Leverage the capabilities of precise temperature control for accurate and reliable measurements. Whether you are performing temperature based kinetics experiments or simply have a temperature sensitive sample, we have a temperature control accessory for you. Choose from a Peltier Single Cell Holder or a Smart 8-Cell Peltier system for temperature control and sample monitoring from 0 to 100 °C. Use our temperature probe hub to monitor the temperature in up to eight cells simultaneously. The Thermostatted Smart Linear 8-Cell Changer, Smart Rotary 7-Cell Changer and Single Cell Holder offer temperature control using liquid recirculation for temperatures from -10 to 100 °C.

## High-speed Kinetics Measurements

Take your kinetics experiments to the next level with the Evolution 260 Bio spectrophotometer. With an industry-leading 100 data points per second data acquisition rate, you have a spectroscopic window into reactions unavailable with any other conventional UV-Visible spectrophotometer. Precise electronic triggering and our convenient Rapid Mixing accessory combine to give you the performance you demand for millisecond kinetics measurements.

## Multicell Kinetics Powered by Dwell Time

Dwell time allows you to set the amount of time spent taking data in each position of a cell changer during a multicell kinetics experiment. Taking data points at 0.01 second intervals, but "dwelling" on the cell for 0.2 seconds allows you to measure 20 data points before moving the cell changer. With an 8-Cell changer accessory you could acquire up to 160 data points per cell per minute. More data gives you more power for data analysis and allows you to make the most of your kinetics measurements.

## Not Just for Fast Reactions

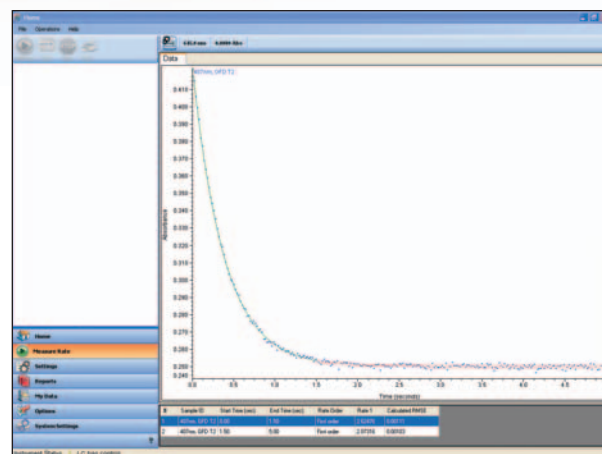
While some researchers need the ultimate in high-speed performance, some reactions are slower. With a double-beam configuration and reliable accessories, the Evolution 260 Bio spectrophotometer offers exceptional performance for long-term measurements. Active reference cell correction allows the user to monitor reactions for extended periods while minimizing drift.

## Our Pledge of Support

Your Evolution 260 Bio spectrophotometer is backed by a highly trained service and applications support team dedicated to improving your productivity, reducing your total cost of ownership and ensuring compliance across your laboratory. Available product and support services for installing, qualifying and maintaining your Thermo Scientific system include:

- UV Validator IQ/OQ Documentation
- Installation and Operational Qualification Services
- Depot and On-Site Maintenance and Repair Services
- Technical and Operational Assistance
- Training Support Services

Pull all the information possible from your data with our Kinetics software package in INSIGHT software. INSIGHT software not only fits kinetics data to zero, first, or second order reaction models, it also allows you to determine reactant, intermediate, or product rates using a consecutive reaction model based on first order kinetics.



## Reliable Assurance of System Performance

The Thermo Scientific UV Validator package provides support for system qualification and validation activities for your spectrophotometer, software and accessories. The UV Validator package provides all of the documentation and reference materials needed to facilitate Installation, Operation and Performance Qualification (IQ/OQ/PQ) procedures for your Evolution 260 Bio system.

Ensure the accuracy of your data while saving time and money with hands-free performance verification of Evolution 260 Bio spectrophotometer. Together, a CVC and Mercury Lamp Accessory automate testing over the entire UV to near IR region from 254 to 810 nm. Simply select the CVC accessory from the software menu and press the start button. Collected results are returned for your review when the tests are complete.

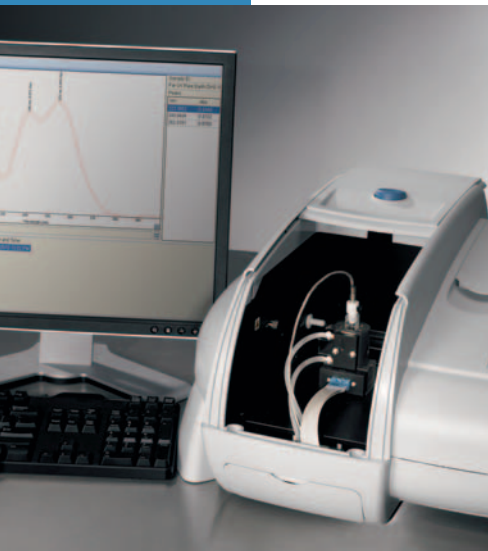
If your laboratory requires 21 CFR Part 11 Compliance, Thermo Scientific INSIGHT Security software is here to make your life easier. Using the same innovative, easy-to-use interface, INSIGHT Security software combines security and data integrity assurance with the flexibility required for your multi-user laboratory. For large enterprises with multiple systems, Thermo Scientific Security Administration Server software allows you to manage user policies over a network so system use is consistent throughout your global organization.



# Accessories For All Your Sampling Needs

EXPAND YOUR INSTRUMENT CAPABILITIES

Our high-quality, life science accessories complement your work and allow you to get the best productivity from your UV-Visible spectrophotometer. Versatility, easy software interaction and unique sampling features make these accessories the right fit for your laboratory.



## SMALL VOLUME SAMPLING



nanoCell Accessory

## TEMPERATURE MONITORING

Temperature Probe Hub and Temperature Probes



## TEMPERATURE CONTROL

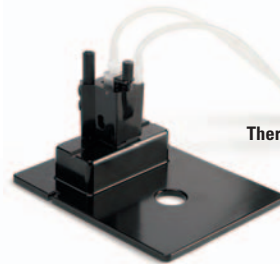
Smart Peltier 8-Cell Changer



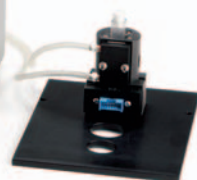
Smart Thermostatted 8-Cell Changer



Thermostatted Rectangular Cell Holder



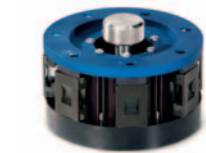
Peltier Single Cell Holder System



TPS-1500W Sealed Peltier Recirculator



## PERFORMANCE VERIFICATION AND CALIBRATION



Calibration Validation Carousels (General, EP, USP)

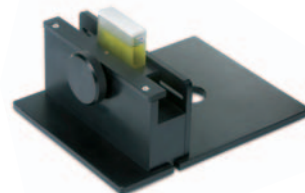


Mercury Lamp Calibration Accessory

## SAMPLE AND CELL HOLDER ACCESSORIES



Smart Thermostatted 7-Cell Changer



Adjustable Pathlength Rectangular Cell Holder



Rectangular and Cylindrical Reference Cell Holders

## RAPID MIXING KINETICS



Rapid Mixing Accessory

## SIPPER SYSTEMS

Smart Sipper Accessory



## FIBER OPTIC PROBES



Integrated Fiber Optics Module shown with Fiber Optic Microprobe

## SOLID SAMPLING



DRA Cuvette Holder



ISA-220 Accessory

## Thermo Scientific Lumina Fluorescence Spectrometer

Give your life science experiments a fresh new spectroscopic window with the Thermo Scientific Lumina fluorescence spectrometer. With 0.5 nm resolution for both excitation and emission and best-in-class sensitivity performance, the Lumina™ spectrometer offers a new level of clarity to fluorescence spectroscopy.



This exceptional performance helps researchers dig deeper into their samples and unlock new information. Combining the Lumina spectrometer, high-performance accessories with our intuitive Thermo Scientific Luminous software, we deliver a complete fluorescence solution for your life science research laboratory. We offer accessories and software for:

- High resolution spectral analysis
- Thermal denaturation experiments with Peltier temperature control
- Rapid mixing accessories for microsecond kinetics measurements
- Fluorescence polarization measurements
- Intracellular calcium measurements

For more information, visit [www.thermoscientific.com/lumina](http://www.thermoscientific.com/lumina)

## Thermo Scientific Protein Assays

Pre-programmed assay methods in the Evolution 260 Bio spectrophotometer allow easy and automated analysis of protein concentration using the popular Thermo Scientific Pierce BCA Assay or the more recent Thermo Scientific Pierce 660 nm Protein Assay. With your instrument and reagents working together, you can depend on Thermo Scientific Protein Assays for accurate and reliable protein analysis.

### Thermo Scientific Pierce BCA Protein Assay

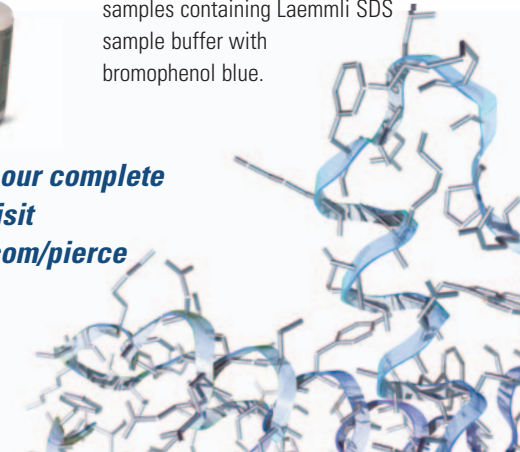
Pierce™ BCA Protein Assays are used in more labs than any other detergent-compatible protein assay. This simple colorimetric assay exhibits less protein-to-protein variation than dye-binding methods and is compatible with most common ionic and nonionic detergents. The Pierce BCA reagents demonstrate a linear working range of 20 to 2000 g/mL and can detect down to 5 g/mL with the enhanced protocol.

### Thermo Scientific Pierce 660 nm Protein Assay

The Thermo Scientific Pierce 660 nm Protein Assay is a quick, ready-to-use colorimetric method for total protein quantitation. The dye-binding assay is more linear than coomassie-based Bradford assays and compatible with higher concentrations of most detergents, reducing agents and other commonly used reagents. The accessory Ionic Detergent Compatibility Reagent (IDCR) provides for even broader detergent compatibility making the Pierce 660 nm Protein Assay the only protein assay on the market that is suitable for samples containing Laemmli SDS sample buffer with bromophenol blue.



For a selection guide to our complete line of protein assays, visit [www.thermoscientific.com/pierce](http://www.thermoscientific.com/pierce)



## Evolution 260 Bio Specifications

Optical Design	Double-beam with sample and reference cuvette positions; Application Focused Beam Geometry; Czerny-Turner Monochromator
Spectral Bandwidth(s)	Variable: 1 nm; 2 nm; AFBG Microcell optimized; AFBG Fiber optic optimized; AFBG Materials optimized
Light Source	Xenon flash lamp, 3-year warranty (5 years typical lifetime)
Detector	Dual Silicon Photodiodes
Scan Ordinate Modes	Absorbance, % Transmittance, % Reflectance, Kubelka-Munk, log (1/R), log (Abs), Abs*Factor, Intensity
Resolution	> 1.6 (peak-to-valley ratio; toluene in hexane)
Wavelength	
Range	190 – 1100 nm
Accuracy	± 0.8 nm (full range 190 to 1100 nm) ± 0.5 nm (546.11 nm mercury line)
Repeatability	≤ 0.1 nm (546.11 nm mercury line, SD of 10 measurements)
Scanning Speed	< 1 to 6000 nm/min; variable
Data Intervals	10, 5, 2, 1.0, 0.5, 0.2, 0.1 nm
Photometric	
Range	> 3.5 A
Display Range	-0.3 to 4.0 A
Accuracy – Instrument	0.5 A: ± 0.004 A 1A: ± 0.006 A 2A: ± 0.010 A Measured at 440 nm using neutral density filters traceable to NIST/NPL
Accuracy – Sealed Solutions (EP/BP/TGA)	± 0.010 A (60 mg/L K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> )
Noise	0A: ≤ 0.00015 A 1A: ≤ 0.00050 A 2A: ≤ 0.00080 A 260 nm, 1.0 nm SBW, RMS
Drift (Stability)	< 0.0005 A/hr 500 nm, 1.0 nm SBW, 1 hour warm-up
Stray Light	KCl, 198 nm: ≤ 1% T NaI, 220 nm: ≤ 0.05% T NaNO <sub>2</sub> , 340 nm: < 0.05% T
Baseline Flatness	± 0.0010 A 200 – 800 nm, 1.0 nm SBW, smoothing
Keypad	Sealed Membrane
Local Control Option	
Display	Touchscreen LCD panel; 800 × 480; 17.8 cm (7 in) diagonal
Operating System	Microsoft Windows XP embedded
Dimensions	62.2 cm L × 48.6 cm W × 27.9 cm H (24" L × 19" W × 11" H)
Weight	14.4 kg (32 lb)
Electrical Supply	100 – 240 V, 50 – 60 Hz, selected automatically 150 W maximum

[www.thermoscientific.com/uv-vis](http://www.thermoscientific.com/uv-vis)

*In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.*

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