

thermo scientific



# Thermo Scientific Evolution 260 Bio UV-Visible Spectrophotometer

Simple, versatile UV-Vis solutions for life science

**ThermoFisher**  
SCIENTIFIC

# Innovation for tomorrow's challenges

In the dynamic field of Life Science, you need instrumentation and software that keeps up with your changing demands. From quantifying nucleic acids and proteins to performing thermal denaturation studies, the Thermo Scientific™ Evolution™ 260 Bio UV-Visible Spectrophotometer with Thermo Scientific™ INSIGHT™ Software delivers the simplicity and versatility you need to meet your next challenge. Available in the language you prefer, with all of the tools you need to accelerate your work, the Evolution 260 Bio will keep you moving forward.

**Colorimetric Assays**

**Proteins**

**Nucleic Acids**

**DNA Melting**

**Kinetics**

**Cell Cultures**

**Labeling Efficiency**

The Evolution 260 Bio with pre-programmed applications walks you through each step of your analysis, making the most common life science applications easy.

## Speed-up your analysis with integrated Smart Accessories

Configuring your system couldn't be easier. Thermo Scientific™ Smart Accessories™ are hot-swappable and feature a cable-free, snap-in design for convenience and consistency. INSIGHT Software communicates directly with each accessory automatically initializing and displaying the appropriate software menus and status monitors on the screen.

- Precisely align accessories in seconds
- Eliminate manual set-up requirements
- Achieve experimental consistency



Smart Sipper Accessory



Smart Thermostatted Rotary 7-cell Changer

## Choose from a line of Smart Accessories to meet your unique needs

- 7- and 8-cell changers automate repetitive, high throughput sample analyses
- Temperature control accessories protect your samples from environmental fluctuations and extend your experimental capabilities
- Smart Sippers eliminate time-consuming sample transfer steps



8-cell Peltier System

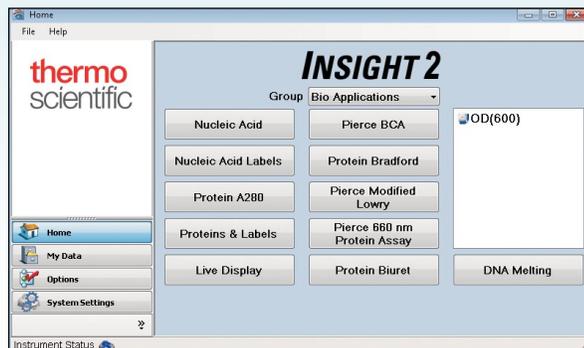
## Have confidence in your results with precise temperature control

Leverage the capabilities of precise temperature control for accurate and reliable measurements. Whether you are performing thermal denaturation/renaturation experiments or simply have a temperature-sensitive sample, we have a thermostatted accessory for you.

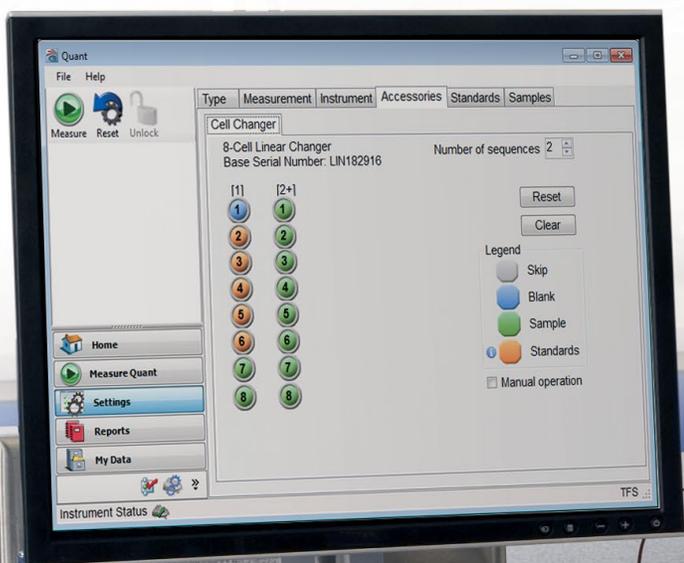
- Control the temperature of your samples at every stage of the experiment with a single or 8-cell Peltier system with temperature ranges up to 110 °C
- Monitor and record temperatures in up to eight sample locations with a Temperature Probe Hub
- Set parameters and interact directly with accessories throughout your sample analysis using INSIGHT Software

## Simplify your work with a personalized home screen

A customizable home screen conveniently puts your methods front and center for immediate access. Organize your laboratory with custom user groups, then hide or display applications and methods to match each group's needs and proficiency. Users can go directly to the methods they use every day and start collecting data immediately.



The Bio Applications home screen delivers one-touch access to the most commonly used life science methods.



# Routine level simplicity with research quality results

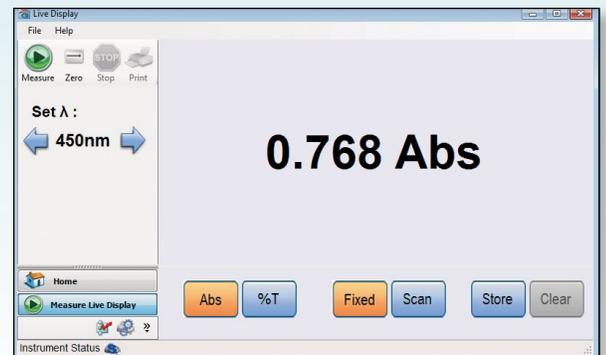
## Streamline your routine measurements with Bio applications

Simplify your routine assays with pre-programmed modules for nucleic acid and protein analyses. Bio Application modules guide you swiftly through commonly used methods in easy to follow steps. With INSIGHT Bio Application modules, you can:

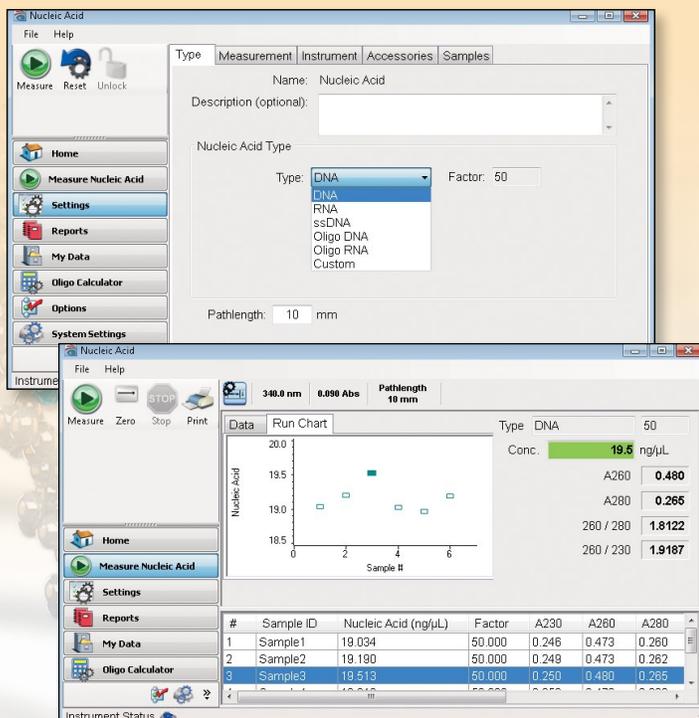
- Collect a full spectrum with each measurement for enhanced analysis and result reporting
- Eliminate calculation errors with automatically applied correction factors and user-defined equations
- Automatically save your data, export it in a portable format (XML, CSV, or TSV), or e-mail it to a chosen account for off-line data processing or storage
- Use the built-in Oligo Calculator to calculate molecular weight, extinction coefficients, concentration factors, and melting points by entering specific nucleic acid sequences and characteristics, such as degree of phosphorylation

## Quickly measure and preview your sample

The Live Display Feature of INSIGHT Software offers walk-up simplicity for real-time measurements or quick identification of a sample peak. Display your results in absorbance or transmittance mode and print them for your records.



The Live Display module offers simplified data collection when a quick look is all you need.



## Direct absorbance assays for your every day needs

All the standard tests you use to evaluate your samples are pre-programmed to make your life easier. Sample concentrations can be determined by simple ratios or by wavelength scanning. Direct absorbance assays include:

- Nucleic acid quantitation and purity ratios ( $A_{260}/A_{280}$ ,  $A_{260}/A_{230}$ ) of DNA, RNA, ssDNA and Oligos
- Protein quantitation and purity ratios ( $A_{260}/A_{280}$ )
- Fluorescent dye incorporation of labeled nucleic acids and proteins
- $OD_{600}$  for cell cultures

## Colorimetric assays for crude protein samples

When direct absorbance readings are not possible due to buffers or other highly UV-absorbing components, as seen in cell lysate and crude protein extracts, colorimetric assays are the method of choice for protein quantitation. The most common commercially available colorimetric assays are pre-programmed for you, eliminating tedious method configuration steps.

Assay	Description	Wavelength(s)	Compatibility
Pierce 660 Assay	<ul style="list-style-type: none"> <li>Uses a proprietary dye for detection</li> <li>Designed to be faster and have a greater linear response than traditional assays</li> <li>Reaches a stable end point</li> </ul>	<ul style="list-style-type: none"> <li>Measured at 660 nm</li> <li>Normalized at 800 nm</li> </ul>	<ul style="list-style-type: none"> <li>Compatible with reducing agents, chelators and most detergents</li> <li>Requires compatibility reagent for use with SDS and most ionic detergents</li> </ul>
Pierce BCA Assay	<ul style="list-style-type: none"> <li>Uses bicinchoninic acid (BCA)</li> <li>While this assay is linear over a wide concentration range, the calibration curves are best represented as second order</li> <li>Exhibits least protein to protein variation</li> </ul>	<ul style="list-style-type: none"> <li>Measured at 562 nm</li> <li>Normalized at 750 nm</li> </ul>	<ul style="list-style-type: none"> <li>Compatible with most detergents</li> <li>Not recommended for use with reducing agents, thiols, and chelators</li> </ul>
Pierce Modified Lowry Assay	<ul style="list-style-type: none"> <li>Uses cupric sulfate in alkaline solution</li> <li>Works with peptides (three amino acids or larger)</li> <li>Requires timed reagent addition and longer total assay time</li> </ul>	<ul style="list-style-type: none"> <li>Measured at 650 nm</li> <li>Normalized at 405 nm</li> </ul>	<ul style="list-style-type: none"> <li>Compatible with SDS</li> <li>Not recommended for use with reducing agents, chelators and most detergents</li> </ul>
Bradford (Coomassie)	<ul style="list-style-type: none"> <li>Uses Coomassie Blue dye</li> <li>Simple and fast assay with ready to use formulation</li> <li>Color response is pH sensitive and temperature dependent</li> <li>Protein must be &gt;3,000 Da</li> </ul>	<ul style="list-style-type: none"> <li>Measured at 595 nm</li> <li>Normalized at 750 nm</li> </ul>	<ul style="list-style-type: none"> <li>Compatible with most reducing agents and chelators</li> <li>Not recommended for use with detergents</li> </ul>
Protein Biuret	<ul style="list-style-type: none"> <li>Uses cupric sulfate in alkaline solution</li> <li>Similar to Pierce Modified Lowry Assay, but requires more protein for the analysis</li> </ul>	<ul style="list-style-type: none"> <li>Measured at 545 nm</li> <li>Normalized at 750 nm</li> </ul>	<ul style="list-style-type: none"> <li>Compatible with most detergents</li> <li>Not recommended for use with ammonium salts</li> </ul>

## Thermo Scientific protein assays

Pre-programmed methods in the Evolution 260 Bio provide easy and automated analysis of protein concentration using the convenient Thermo Scientific™ Pierce™ BCA™ Protein, Pierce Modified Lowry, or Pierce 660 nm Protein Assays. Having your instrument and reagents working together helps ensure an accurate and reliable analysis every time.



To access our complete Protein Assay Selection Guide please visit [thermofisher.com/proteinassays](http://thermofisher.com/proteinassays)

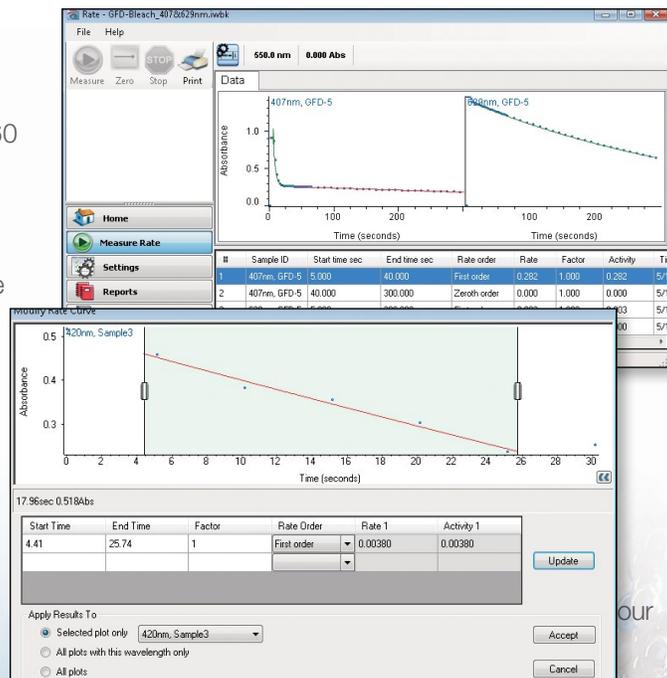


# Comprehensive tools for your kinetics research

## Time and temperature based kinetics

Obtain accurate, reliable results quickly with comprehensive software and accessory solutions. From scanning experiments to stop-flow kinetics, the Evolution 260 Bio with INSIGHT Software delivers maximum versatility to meet any need.

- Collect a full spectrum with each measurement for enhanced analysis
- Get more data faster with an industry leading acquisition rate of 100 data points per second for single-cell measurements and 160 data-points per second using INSIGHT Software's Dwell Time feature and a Smart Linear 8-cell Changer
- Analyze complex data sets with ease using multi-staged curve fitting and consecutive reaction mode options for comprehensive data fitting
- Perform millisecond kinetic measurements with precise electronic triggering and our convenient stopped flow Rapid Mixing accessory
- Convert data into the format you need using sophisticated math analysis functions, including derivatives and smoothing
- Merge data sets into a single workbook to quickly and conveniently compare data from multiple experiments with Merge Workbooks feature



A collection of versatile software tools provides complete control over your kinetics analysis.

## Integrated solutions for DNA melting curves

Whether you are examining short or long DNA or RNA sequences, duplexes or triplexes, the Evolution 260 Bio DNA Melting system meets all of your experimental needs.

- Precisely control your experiment from beginning to end with multi-stage heating and cooling profiles featuring ramp rates from 0.4–20 °C/min.
- Calculate T<sub>m</sub> values automatically using built-in fitting algorithms to address a wide variety of melting curves
- Choose from single and 8-cell Peltier options with ranges of 0–110 °C to meet the sampling requirements of your laboratory



# Cost-effective, reliable performance

## 1 Easy Sample Access

Have your hands full? Use your elbow. Unique, quick-release sample compartment lid uses a push-button release to slide the lid open for easy access to the sample compartment.

## 2 Optimized Cell Positioning

Our innovative cell holder includes horizontal and vertical positioning adjustments to optimize 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.

## 3 Long-term Stability

Double-beam geometry is 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 for greater stability of your long-term measurements.

## 4 Faster Scanning

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.

## 5 Accurate Rapid Kinetics

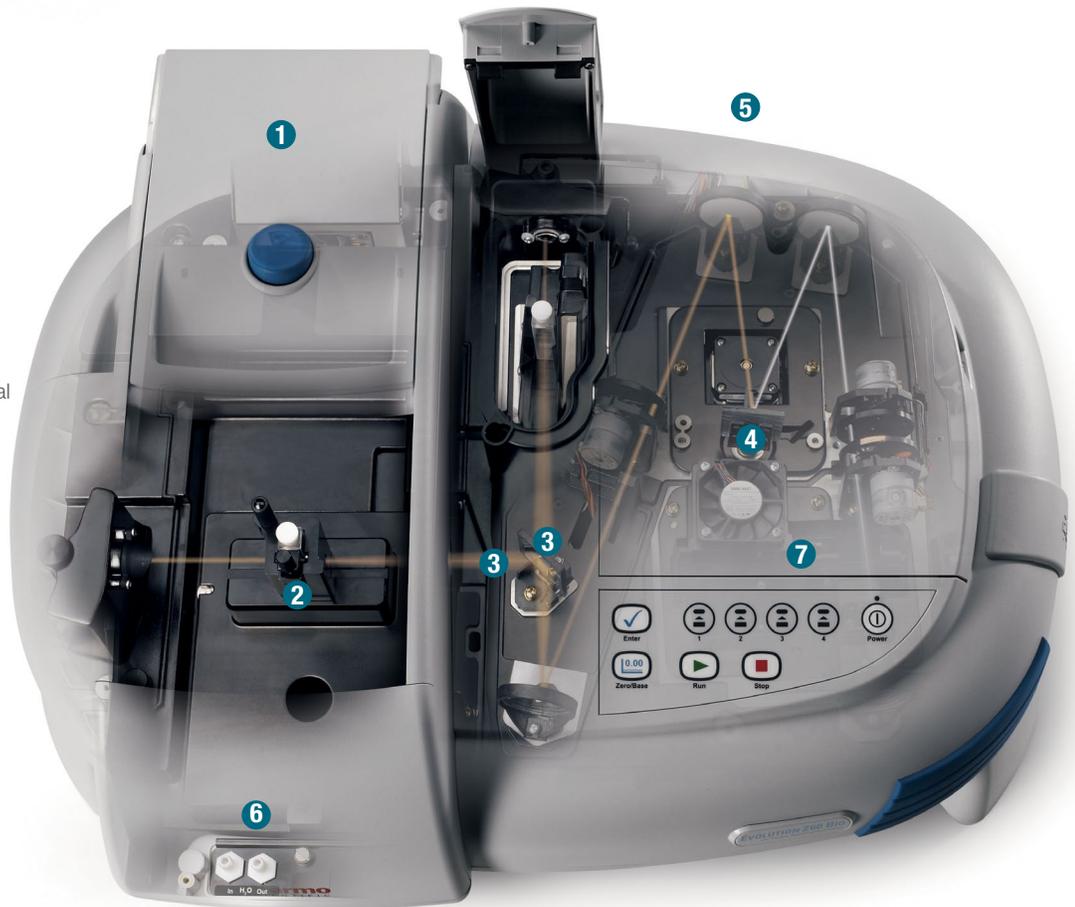
Accurate kinetics measurements rely on precisely known zero-time data. Electronic in/out triggering provides the highest level of accuracy for rapid-mixing kinetics measurements.

## 6 Versatile Sampling Options

Large, room light resistant sample compartment provides maximum versatility and ease of use for your most challenging samples. The connections plate keeps external connections out of your working space. Hose connectors, a pass-through slit for cables, and the option to remove the plate entirely to accommodate insulated tubes provides ideal support for all available accessories.

## 7 Fingertip Control

The integrated keypad communicates with INSIGHT Software to start measurements or launch CUE scripts and other applications using the four programmable buttons. Optional tablet control module provides a color touchscreen display with the power and flexibility of an external computer.



## The Xenon Lamp

### A green, economical solution for your laboratory

The xenon lamp in the Evolution 260 Bio provides you with excellent performance over the entire wavelength range of 190–1100 nm. The intense light of the xenon lamp in the UV region of the spectrum delivers added sensitivity for life science, environmental, and organic chemistry applications. Benefits of the xenon lamp include:

- Instant measurements with **no warm-up time required**
- Seven or more years of **maintenance-free operation** and a guarantee for three years of continuous use
- **Minimized exposure of samples to UV effects** by powering on only during measurements
- Does not heat the sample compartment, providing **enhanced temperature stability** and eliminating sample degradation issues seen with traditional lamp sources

## Ensure consistency of your instrument performance

Ensure the accuracy and reliability of your QA/QC data while improving the efficiency of your laboratory with automated performance verification.

- Save your analyst's time, improving the productivity of your laboratory, with automated PV testing
- Eliminate transcription activities and return results that are ready for sign-off when tests are complete
- Ensure compliance to industry guidelines and regulations for laboratories with traceable standards and your choice of configuration options

**System Performance Verification Report**

Company name: Thermo Scientific  
 Test Name: Wavelength Accuracy (Holmium oxide)  
 Operator: Bruce, Claire  
 Date: Thursday, April 11, 2013 9:51:59 AM (GMT-05:00)  
 Instrument: Evolution 260  
 Serial number: CMC\_00410  
 CVC Serial number: USP\_11373  
 Accessory base serial number: 803F133902

Measurement Description	High Limit	Low Limit	Measured	Result
Wavelength of 680.55 nm line	681.50	679.50	680.25	Pass
Wavelength of 520.83 nm line	517.75	523.91	520.60	Pass
Wavelength of 451.41 nm line	452.41	450.41	451.70	Pass
Wavelength of 366.31 nm line	362.21	368.41	366.00	Pass
Wavelength of 287.50 nm line	288.50	286.50	287.70	Pass
Wavelength of 241.21 nm line	242.21	240.21	241.75	Pass

Company name: Thermo Scientific  
 Test Name: Wavelength Reproducibility (Holmium oxide)  
 Operator: Bruce, Claire  
 Date: Thursday, April 11, 2013 9:49:58 AM (GMT-05:00)  
 Instrument: Evolution 260  
 Serial number: CMC\_00410  
 CVC Serial number: USP\_11373  
 Accessory base serial number: 803F133902

Measurement Description	High Limit	Low Limit	Measured	Result
Standard deviation of 561 nm peak	0.10	0.02	0.02	Pass

Company name: Thermo Scientific  
 Test Name: Resolution (Toluene/Hexane)  
 Operator: Bruce, Claire  
 Date: Thursday, April 11, 2013 10:02:49 AM (GMT-05:00)  
 Instrument: Evolution 260  
 Serial number: CMC\_00410  
 CVC Serial number: USP\_11373  
 Accessory base serial number: 803F133902

Measurement Description	High Limit	Low Limit	Measured	Result
Ratio: Max/Min (266 nm/267 nm)	3.0	1.0	2.1	Pass

Company name: Thermo Scientific  
 Test Name: Stray Light (62, 120 nm)  
 Operator: Bruce, Claire  
 Date: Thursday, April 11, 2013 10:03:46 AM (GMT-05:00)  
 Instrument: Evolution 260  
 Serial number: CMC\_00410  
 CVC Serial number: USP\_11373  
 Accessory base serial number: 803F133902

Measurement Description	High Limit	Low Limit	Measured	Result
Stray Light at 220 nm (%T)	0.05	0.00	0.03	Pass

Company name: Thermo Scientific  
 Test Name: Photometric Accuracy (Dichromates)

Multiple results files included in report



## Routine analysis of microvolume samples

The Evolution 260 Bio is a life science research instrument for all your advanced applications. If your workflow includes quantifying 1–2  $\mu\text{L}$  of extracted DNA, RNA or protein, then the Thermo Scientific™ NanoDrop™ One Microvolume UV-Vis Spectrophotometer is the ideal solution. Obtain answers in seconds – pipette, measure, know!

- Identify common contaminants
- Obtain corrected concentrations
- Information alerts with guided technical support
- Touchscreen control saves bench space
- No dilutions needed with wide dynamic range
- USB, Ethernet and Wi-Fi data transfer

For more information on Thermo Scientific NanoDrop products, please visit [thermofisher.com/nanodrop](http://thermofisher.com/nanodrop)

For more information on Thermo Scientific spectrophotometers, please visit [thermofisher.com/evolution260bio](http://thermofisher.com/evolution260bio)