

GENESYS 10 Bio UV-Visible Spectrophotometer



Versatile, accurate UV-Vis for life science applications

In busy life-science labs, nothing can be left to chance. There's no room for error. Time is critical. With over 60 years of UV-Visible design experience behind it, the Thermo Scientific GENESYS™ 10 Bio spectrophotometer is the instrument you can count on to meet the demands of your laboratory.

Rapid, Reliable Nucleic Acid and Protein Analysis Results

The GENESYS 10 Bio spectrophotometer puts leading-edge technology into a compact, convenient design. You get all the versatility and flexibility needed to obtain accurate, reliable measurements for your research. The instrument features a user-friendly interface, powerful optics, rugged design, versatile software capabilities, optional built-in printer, and much more.

The time-saving software makes your job easier. Just put in your sample and obtain accurate results in seconds. Pre-programmed procedures enable even first-time users to:

- Measure DNA ratio and concentration with and without scanning
- Measure protein concentrations using Bradford, Lowry, BCA, and Biuret reagents
- Measure concentrations of dsDNA, ssDNA, RNA, and oligonucleotides
- Monitor cell growth
- Perform oligo calculations of molecular weight and Tm

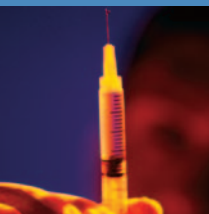
Everything a Life Sciences Lab Needs and More:

- Customize your instrument for your specific applications. Use the unique SmartStart™ feature to easily create a power-up menu that displays only the tests that your lab uses. This saves time and reduces error.
- Save time by using the built-in Oligo calculator to determine the molecular weight and the theoretical Tm (used to determine the PCR annealing temperature) of your oligonucleotides.
- Save time and reduce setup error by saving your programmed methods, and protect your saved methods with passwords.
- Easily ensure that your instrument is performing to specification with logs and documented evidence using built-in and/or accessory traceable instrument performance standards.

Plus, All the Capabilities of a Standard Lab Spectrophotometer

The GENESYS 10 Bio spectrophotometer is not just dedicated to DNA and protein analyses. It is an ideal general-purpose spectrophotometer for such life science applications as multi-cell kinetics reactions and determining labeling efficiency from fixed wavelength measurements.

This instrument is monochromator-based, offering you a full wavelength range and superior performance.



Hardware

- Optical specifications comparable to instruments twice their size
- High-resolution graphics display
- Small footprint saves bench space
- Easy-to-use keyboard to set up tests, print results, and move cell changer

Additional Features and Accessories

- nanoCell accessory for small volume measurements (0.7 to 5.0 µL)
- Test tube holders
- Affordable sipper accessory
- Multi-cell holders measure multiple samples with the push of a button
- Micro-cells for small volumes
- Built-in printers show all parameters, date, time, test name, data, final results, and statistics

For Busy Lab Operators, it is the Smart Choice

This spectrophotometer features the unique SmartStart screen that lets you select only the tests you require. Simply pre-program one, two, or more of your frequently used methods. When you turn the instrument on, the boot-up screen immediately shows the selected tests – without additional scrolling. After your data is acquired, you can print all instrument parameters, date, time, sample number, and data on an optional printer.

DNA/Protein Concentration and DNA Purity

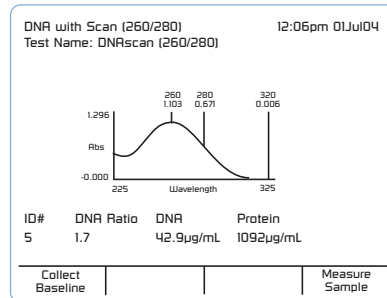
- Test results appear on the screen within seconds.
- Parameters for determining DNA purity, DNA concentration, and protein concentration are pre-selected; use default parameters or customize them to specific needs.
- Choose whether or not to display protein concentration on the results screen.
- An optional reference wavelength corrects for the effect of turbidity.

DNA (260/280) 12:06pm 01Jul04			
Test Name: DNA (260/280) Cell #5			
ID#	Abs 260nm	Abs 280nm	Abs 320nm
1	0.725	0.410	0.010
	DNA Ratio =		1.79
	DNA Conc =		30.57 µg/mL
	Protein Conc =		79.33 µg/mL
2	0.294	0.162	0.005
	DNA Ratio =		1.84
	DNA Conc =		12.53 µg/mL
	Protein Conc =		24.80 µg/mL
Set Blank			Measure Sample

- Built-in dilution-factor calculator delivers direct concentration results.

DNA/Protein Concentration and DNA Purity with Scan

- Provides an easy, one-step operation
- Displays scan of DNA sample and results
- Offers the option to add reference wavelength and dilution factor



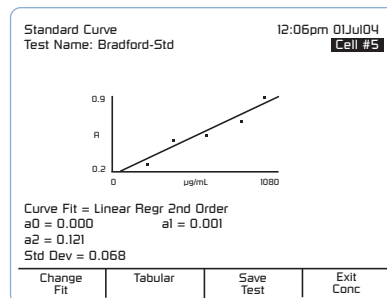
Direct UV/DNA Measurements

- Measures direct ssDNA, dsDNA, RNA, and oligo concentrations using absorbance at 260 nm
- Measures oligo concentrations using base sequence calculator
- Enables operators to select pre-set units or create new ones

Oligos (calc factor) 12:31pm 01Jul04			
Test Name: Oligos (calc) Cell #1			
ID#	Abs 260nm	Oligos µg/mL	Oligos pmol/µL
1	0.736	21.79	1.342
2	0.309	9.146	0.562
3	0.452	13.38	0.824
Set Blank			Measure Samples

Protein Concentration

- Offers seven standard curve methods for measuring protein – Bradford, Lowry, BCA (all with standard and micro) plus Biuret
- Allows use of pre-set or user-defined wavelength, units of measure, and curve fit
- Provides three direct UV methods – 280 nm, 205 nm, and Warburg-Christian calculation
- Offers print-outs that show the standard curve and results



Std Curve - Standards 12:06pm 01Jul04		
Test Name: Bradford-Std		
Std#	µg/mL	Abs 595nm
1	200	0.221
2	400	0.464
3	600	0.521
4	800	0.650
5	1000	0.883
Curve Fit = Linear Regr 2nd Order		
a0 = 0.00	a1 = 0.001	
a2 = 0.121		
Std Dev = 0.068		
	View Graph	Edit Conc
		Measure Standards

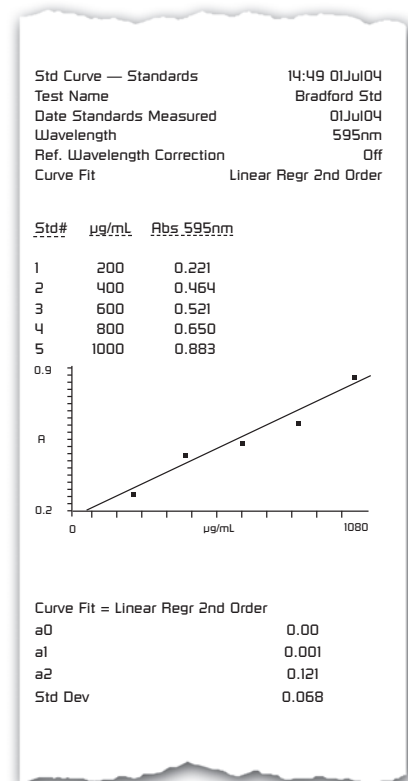
Cell Growth

- Monitors cell growth by measuring absorbance at 600 nm
- Determines when to harvest cells

Oligo Calculator

- Enter in a base sequence and the instrument calculates molecular weight, theoretical Tm, and oligo concentration factor.
- Choose from one of four Tm calculation methods.

Oligos 12:06pm 01Jul04	
Base Sequence = ATCGTCGATTGAGCATCAGCATGACTAGATCAGAGTCCGC	
Number of bases =	40
%GC =	47.56
DNA Mol. Wt. =	12388
DNA ϵ (260) =	441550
Conversion Factor =	28.06
Base Sequence	Tm Calc



Typical printout showing standard curve data and plot.

Built to Perform. Built to Last

As a researcher, you need reliable answers from your assay. Use a high quality spectrophotometer for the most reliable data. Whatever your need or application, the GENESYS 10 Bio spectrophotometer will exceed your expectations.

The instrument features high-quality optics for accurate and precise measurements. Its long-life xenon lamp delivers an outstanding signal-to-noise ratio, negligible drift and no warm-up time for accurate, precise measurements over the 190 – 1100 nm wavelength range. It also provides calibrated wavelength peaks that are used as built-in wavelength standards for performance verification.

GENESYS 10 Bio Spectrophotometer – Additional Benefits

- Dual beam optics for high performance
- 5 nm bandwidth for DNA peak resolution
- Sampling flexibility for microliter to milliliter measurements
- 100 nm range survey scan to find peak wavelengths
- Good stray-light rejection for excellent linearity
- Ability to save methods to internal memory
- Customize your instrument using the SmartStart feature to display your tests on the boot-up menu
- Automatic cell correction for cell-to-cell precision with unmatched cuvettes

VISION/lite Software for Expanded Capabilities

VISION/lite™ software gives you complete control over the spectrophotometer allowing you to measure, analyze, and export data. You can easily perform wavelength scans, single or multicell kinetic experiments, single or multiple fixed wavelength measurements, and quantitative analyses with this software. The individual applications of VISION/lite are described below.

Scan – Collection of Sample Spectrum

This application records a spectrum of your sample for measurement or characterization. Scan options include:

- Selectable wavelength range allowing full or specific spectrum investigations
- Automated or post-run peak pick to identify wavelength peaks or valleys
- View up to 13 spectra simultaneously
- Auto scaling of data
- Data saving
- Import or export data in CSV or ASCII text format

Rate – Measurements of Reaction Kinetics

This application measures the change of absorbance at a specific wavelength over a period of time. Rate capabilities include:

- Measure in parallel of serial mode
- Measurements of up to 100 samples
- View up to 13 kinetics measurements simultaneously
- Automatic enzyme activity calculation
- Auto scaling of data
- Automatic data storage
- Import or export data in CSV or ASCII text format

Fixed – Measurements at Pre-selected Wavelengths

This application performs fixed wavelength measurements at one to 31 wavelengths.

- Reference wavelength for automatic background correction
- Import or export data in CSV or ASCII text format
- Perform wavelength addition, subtraction, multiplication, and division measurements
- Set factors for more complex analysis

Quant – Determination of Sample Concentration

The Quant application automates sample concentration measurements based on either a standard curve or an entered calibration factor. Standard curve graphs, tabular data and calibration fitting curve parameters (slope and intercept), are viewed on one screen. Optional parameters include:

- Four curve-fitting options for linear and non-linear calibration curves
- Use up to 20 standards
- Choose from 11 pre-programmed units or enter your own
- Auto data save
- Import or export data in CSV or ASCII text format



Accessories for Every Sample, Every Assay

Before the software can work its magic, you need an instrument versatile enough to accommodate a wide range of optional sample holders. The GENESYS 10 Bio spectrophotometer gives you an impressive range of choices for fast, efficient sample measurements.

nanoCell Accessory

- Use for small volume measurements – 0.7 to 5.0 µL of sample
- Fits into the single cell holder with no alignment
- Analyze DNA concentrations from 2.0 to 4,500 µL/mL
- Clean cell quickly with lab tissue and analyze the next sample



Single-cell Peltier Accessory

- Precise temperature control from 20 to 60 °C
- External temperature controller with air cooled Peltier cell holder
- Easily thermostat samples from 0.2 mm to 10 mm pathlength



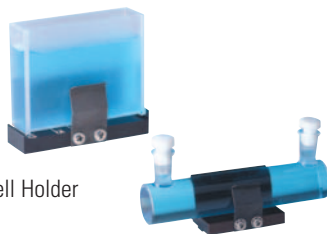
Fiber Optics Accessories

- Measure down to 125 µL of solution in PCR tubes
- ATR probe for highly concentrated samples
- Disposable probe tips eliminate contamination



Longpath Cell Holders

- Used to measure low absorbance samples without the time and error of physically concentrating the sample
- Used to increase sensitivity of readings
- Hold rectangular or cylindrical cells
- Hold up to three 50 mm pathlength cells in 6-Position Cell Holder or one 100 mm pathlength cell in Single Cell Platform



Flow-Through Accessory

- Great for fast sample throughput
- Optical glass or quartz flowcell
- Selectable tubing and pumping times accommodate sample volumes from 2 – 15 mL
- Option to return sample to vessel



Filter Holders

- Used to measure transmittance and cut-off wavelengths in glass and filters
- Both spring-loaded and adjustable holders are available



Test Tube Holder

- Ideal for COD tubes and glassware from reagent kits
- Holds test tubes up to 25 mm diameter and up to 102 mm tall



GENESYS 10 Bio Spectrophotometer

Spectral Bandwidth	5 nm
Optical System	Dual beam with internal reference detector, grating-based
Lamp Source: Typical Lifetime	Xenon: 5 years
Wavelength: Range	190 – 1100 nm
Accuracy	± 1.0 nm
Repeatability	± 0.5 nm
Graphic Display	320 x 240 pixel LCD, 3.8" x 2.8"
Photometric: Range	0.3 – 125%T; -0.1 – 3.0A; 0 – 9999 C
Readout	Absorbance, Transmittance, Concentration
Accuracy	0.5% of reading or 5 mA, whichever is greater, up to 2A
Noise	< 1 mA at 0A; < 2 mA at 2A, peak-to-peak at 340 nm
Drift	< 1 mA/hour after warm-up
Stray Light	< 0.1%T at 220 and 340 nm
Standard Interface	Bi-directional RS-232C
Standard Cell Holder	1-position or 6-position automatic cell holder
Keypad	Membrane keypad
Software	DNA ratio/concentration and protein concentration with or without scanning Direct oligo concentration at 260 nm Direct protein at 280 nm and 205 nm Protein standard curves Cell growth Oligo calculator: absorptivity, molecular weight, factor and theoretical T _m Absorbance, %T, Concentration Standard curve Absorbance ratio Absorbance difference Multiwavelength Kinetics Survey Scan Performance Validation
Test Storage	Up to 40 sets of test parameters
Languages	Software, printout, and Operator's Manual: English, French, German, Spanish, Italian (user-selectable)
Printer (optional)	40-column internal graphical
Power Requirements	Selected automatically; 100 – 240 volts
Dimensions	330 W x 410 D x 235 H mm; (13" x 16" x 9")
Weight	8.6 Kg (19 lb.)
Warranty	1 year

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BR50743_E 04/08M

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