



## Microplate Instrumentation

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Read



Wash



Dispense



Automate

 **BioTek**<sup>®</sup>  
*Get a Better Reaction.*

At BioTek® our goal is to become the number one supplier of microplate based instrumentation and software in the world. However, creating the finest microplate instrumentation is only part of what makes us unique. We also combine an innovative development process with unwavering dedication to customer service to help eliminate the roadblocks in your scientific discovery process. Our company-wide commitment to quality and value is backed by superior customer care, technical service centers, scientific application experts, and a knowledgeable sales force.

This helps to ensure your processes will be rapid, efficient and successful.

BioTek promises to consistently exceed your expectations. Our Customer Resource Center is one example of this promise. We want you to Get a Better Reaction through your remarkable individual experience with BioTek. Another example is the introduction of our new patent-pending Synergy™ H4 Hybrid Microplate Reader with Hybrid Technology™. Synergy™ H4 is an exclusive member of the Hybrid Microplate Reader class that provides a complete solution for current and future microplate-based assays;

combining the exquisite sensitivity of filter-based detection with the flexibility of monochromator-based detection in one compact unit.

We share our customers' common goals to advance life science research, facilitate the drug discovery process and to enable cost-effective quantification of disease relevant molecules in the clinic.

This catalog provides an overview of our complete line of microplate instrumentation. For more detailed information, visit our web site at [www.biotek.com](http://www.biotek.com).



BioTek is headquartered in Vermont, USA with global sales, service and distribution support. BioTek is ISO9001/ISO13485 Certified, an FDA Registered Medical Device Manufacturer, and has appropriate products in compliance with the EU *In Vitro* Diagnostic Directive (IVD). Regulatory compliance is ensured with both validation (IQ/OQ/PQ) and FDA 21 CFR Part 11 tools.

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BioTek offers an extensive range of microplate readers that fit most price and performance profiles, from the patent-pending Synergy™ H4 Hybrid Microplate Reader to the basic ELISA reader, the ELx800™, used in thousands of laboratories around the globe. Included in the BioTek reader product range are multi-mode readers, fluorometers, luminometers and a variety of both monochromator-based spectrophotometers and filter-based absorbance readers.

For important assays like nucleic acid and protein quantification, where very small sample size is critical, BioTek's Take3™ Multi-Volume Plate offers the ability to measure multiple samples as small as 2 µL in the monochromator-based multi-mode and absorbance readers. Many of the microplate readers come with the powerful Gen5™ Data Analysis Software and are compatible with the BioStack™ automation products, to provide increased throughput and unattended operation.



### Synergy™ H4 Hybrid Microplate Reader

Patent-pending Hybrid Technology™ combines high-performance filter-based detection and flexible monochromator-based detection in one compact instrument. Synergy H4 is BioTek's most versatile microplate reader.



### FLx800™ Fluorescence Microplate Reader

A fluorescence and luminescence microplate reader with an outstanding price/performance ratio. For fluorescence detection, Synergy multi-mode readers are also available in fluorescence-only configurations.



### Synergy 2 Multi-Mode Microplate Reader

Optical filters and dichroic mirrors are used for high performance in fluorescence. An ultra-low noise detector ensures the best luminescence sensitivity available today. The Synergy 2 also incorporates BioTek's signature monochromator-based absorbance system.



### PowerWave™ Microplate Spectrophotometer

High-performance microplate spectrophotometers that read from 200 to 999 nm without filters. Temperature control and shaking are included with all models.



### Synergy Mx Multi-Mode Microplate Reader

This fully monochromator-based multi-mode reader is extremely easy to use and provides more flexibility than filter-based systems.



### Epoch™ Microplate Spectrophotometer

Outstanding performance at an accessible price are the hallmarks of the Epoch monochromator-based microplate spectrophotometer, ideal for a wide range of UV/Vis applications.



### Synergy HT Multi-Mode Microplate Reader

An entry-level multi-mode reader used in thousands of laboratories worldwide for life-science research applications.



### ELx808™ Absorbance Microplate Reader

Fast measurement, superior incubation and exceptional optical performance highlight this filter-based microplate reader, suitable for a wide variety of endpoint or kinetic assays for the research or clinical laboratory.



### Synergy 2SL Luminescence Microplate Reader

The Synergy 2SL luminescence microplate reader is available with or without reagent injectors, and may be upgraded with other Synergy 2 detection modules.



### ELx800™ Absorbance Microplate Reader

A compact, cost effective, yet high quality filter-based microplate reader for use within the clinical and life science research laboratory.

# Synergy™ H4 Hybrid Microplate Reader



## QuickFacts:

- **Hybrid Technology:** high-performance filter-based detection, flexible monochromator-based detection
- **Compatible with Take3™ Multi-Volume Plate with 2 µL microspots** for low-volume assays
- **Fluorescence intensity (FI), Fluorescence Polarization (FP), Time-Resolved Fluorescence (TRF), TR-FRET, High-Performance Luminescence, UV-Visible Absorbance**
- **Variable bandpass selection system adds flexibility**
- **Validated with HTRF®, LANCE®, AlphaScreen®/AlphaLISA®, LanthaScreen™, Transcreener® and more**

Synergy™ H4 with Hybrid Technology™ is a patent-pending multi-mode detector that combines the optical systems of Synergy Mx and Synergy 2 in one compact instrument. It is the ideal instrument for research and drug discovery applications when having to choose between flexibility and performance is not an option. The monochromator-based optics

provide a high level of flexibility; any wavelength can be used from the low UV to the near infrared. The quadruple grating monochromators, equipped with a variable bandpass selection system, is ideal for spectral scanning applications. The filter-based optics use dichroic mirrors for enhanced performance. This system is faster and more sensitive than the

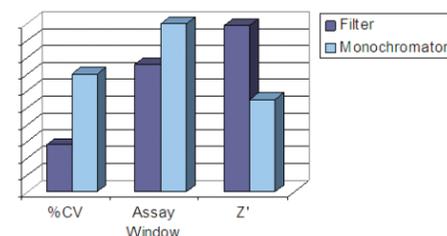
monochromator optics. A dual reagent dispenser option is available for inject and read assays such as flash luminescent assays and fluorescent ion channel assays. Additional read modes include: fluorescence polarization, time-resolved fluorescence and AlphaScreen/AlphaLISA.

## Patent-Pending Hybrid Technology

The choice is yours.	Filter-based	Monochromator-based	Hybrid Technology
Spectral Scanning		✓	✓
Flexible Wavelength Selection		✓	✓
Take3™ 2µL Microspots		✓	✓
Highest Sensitivity	✓		✓
Fastest Read Speed	✓		✓
Filtered Luminescence	✓		✓
AlphaScreen®/AlphaLISA®	✓		✓

With the combined benefits of filter-based and monochromator-based optics, the Synergy H4's hybrid optical system covers more applications than any other BioTek reader.

## Flexibility and Sensitivity



Fluorescence intensity assay data: the filter-based system typically delivers tighter coefficients of variation (%CV) and higher Z' values, while the monochromator-system often provides a higher assay window because of its low intrinsic noise.

# Synergy™ 2 Multi-Mode Microplate Reader



## QuickFacts:

- **High performance:** deep-blocking filters and dichroic mirrors for fluorescence
- **Monochromator-based absorbance:** no-filters from 200 to 999 nm
- **Compatible with Take3™ Multi-Volume Plate with 2 µL microspots** for low-volume assays
- **Fluorescence intensity (FI), Fluorescence Polarization (FP), Time-Resolved Fluorescence (TRF), Luminescence, UV-Visible Absorbance**
- **Validated with HTRF®, LANCE®, AlphaScreen®/AlphaLISA®, LanthaScreen™, Transcreener® and more**

Synergy™ 2 is BioTek's high-performance multi-mode microplate reader designed for research and drug discovery applications. Its fluorescence detection system uses deep blocking filters and dichroic mirrors for the best level of performance. The dedicated

absorbance detection system is monochromator-based, providing high flexibility in this read mode: work from 200 to 999 nm without filters. A low-noise photomultiplier tube (PMT) coupled with a liquid light guide is used for best performance in luminescence mode. A dual reagent

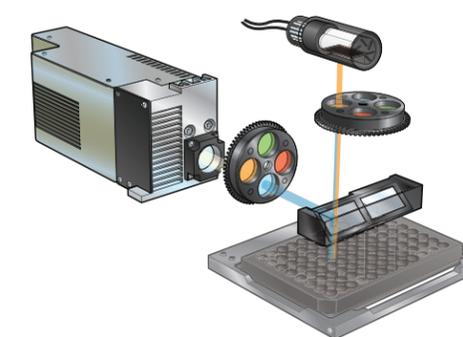
dispenser option is available for inject and read assays such as flash luminescent assays and fluorescent ion channel assays. For temperature sensitive assays up to 65°C, all configurations come with an advanced 4-Zone™ temperature control system.

## Compatible with Automation



Synergy 2 is easily integrated into robotic systems, and has been validated with all major screening detection technologies including TR-FRET, fluorescence polarization, and AlphaScreen.

## High-Performance Filter-Based Detection



The combination of deep blocking interference filters and dichroic mirrors provides very high performance in all fluorescence read modes (fluorescence intensity, fluorescence polarization, time-resolved fluorescence, AlphaScreen/AlphaLISA).

# Synergy™ Mx Multi-Mode Microplate Reader



## QuickFacts:

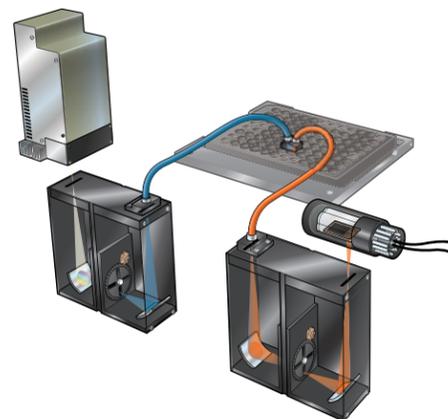
- Fully monochromator-based
- Compatible with Take3™ Multi-Volume Plate with 2 µL microspots for low-volume assays
- High performance fluorescence (top and bottom), absorbance and dedicated luminescence detection system
- Variable bandpass selection system adds flexibility
- Cuvette port to measure standard 1-cm path cuvettes
- Optional dual reagent injector automates inject and read assays

Ultra Fine-Tuned™ Technology is what sets the Synergy™ Mx Multi-Mode Reader apart. Its quadruple monochromator system selects wavelengths with a repeatability of ± 0.2 nm. Its top optical head can focus up and down on the samples with a 100 µm resolution.

Four slits on the excitation and emission side provide a choice of 16 bandpass combinations for every wavelength pair. Its advanced 4-Zone™ temperature control system incubates up to 65°C with a precision of ± 0.5°C at 37°C. These unique features and BioTek's exclusive focus

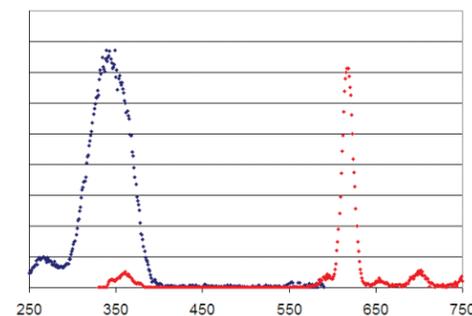
on microplate instrumentation and software make the Synergy Mx the most precise, sensitive and flexible multi-mode microplate reader available today for life science research applications.

## Flexible Quadruple-Grating Monochromator System



A quadruple grating architecture increases sensitivity, reduces stray-light and provides smooth spectral scanning functionality.

## Fluorescence Spectral Scanning



Excitation and emission spectra measured on Synergy Mx. Any wavelength can be selected from 250 nm to 900 nm in 1 nm increments.

# Synergy™ HT Multi-Mode Microplate Reader



## QuickFacts:

- Compatible with Take3™ Multi-Volume Plate with 2 µL microspots for low-volume nucleic acid quantification
- Filter-based top and bottom fluorescence system provides high performance for a wide range of applications
- Monochromator-based absorbance system: work from 200 to 999 nm without filters
- Low-noise photomultiplier tube for high performance in luminescence mode
- Optional dual reagent injector automates inject and read assays

Used in thousands of laboratories worldwide, this entry-level multi-mode reader is ideal for life science research applications. It includes a sensitive filter-based top/bottom fluorescence system and a flexible monochromator-based absorbance detection system. Combined with

Gen5™ Data Analysis Software, Synergy™ HT is commonly used for a variety of applications. Its fluorescence system can be used for sensitive DNA quantification assays, or cell-based FRET assays. Its monochromator-based absorbance optics enable nucleic acid quantification at 260 nm,

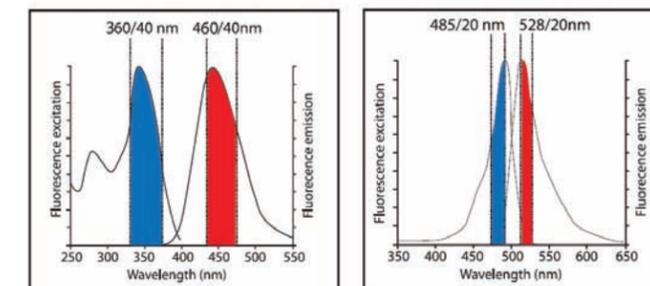
ELISA assays, or cell-growth assays at 620 nm. Its low-noise luminescence optics are used in luciferase gene expression assays, as well as cell proliferation or cytotoxicity assays based on ATP detection.

## Take3 Multi-Volume Plate



Combined with the Take3 Multi-Volume Plate, the Synergy HT can measure samples down to 2 µL.

## Filter-Based Fluorescence



In Fluorescence mode, filters with dye specific bandwidths provide high sensitivity for all applications. No matter what fluorescent label is used, the optical system can be configured to exactly match its spectral characteristics.

Choose from four Synergy models – from a basic multi-mode reader to a high-performance Hybrid multi-mode reader. Each model has a range of detection modes, features and options so that you can select the one that's perfect for your applications.

Can't decide? We're happy to recommend the best solution for your needs, or to arrange for a product demonstration. Visit [www.biotek.com](http://www.biotek.com) for more information.

## Which Synergy is right for you?

	Synergy HT Value	Synergy Mx Flexibility	Synergy 2 Performance	Synergy H4 Hybrid
<b>Key Facts</b>				
Monochromator-based UV-Visible Absorbance	•	•	•	•
Fluorescence Top/Bottom	•	•	•	•
Luminescence	•	•	•	•
Reagent Injectors	•	•	•	•
Filter-based Fluorescence	•		•	•
Monochromator-based Fluorescence		•		•
TRF & TR-FRET			•	•
Fluorescence Polarization			•	•
AlphaScreen			•	•
Hybrid Technology				•
<b>Performance Specifications</b>				
Fluorescein Typical – Top	5 pM	2.5 pM	1 pM	1 pM / 2.5 pM
Fluorescein Typical – Bottom	5 pM	5 pM	5 pM	5 pM
ATP Typical – Flash Luminescence	30 amol	10 amol	10 amol	10 amol
Polarization Typical – 1 nM Fluorescein			3 mP std. deviation	3 mP std. deviation
Europium Typical			60 fM	60 fM
Fastest Read Speed 96-/384-Well Plates	14 s / 26 s	11 s / 22 s	11 s / 22 s	11 s / 22 s
<b>General Specifications</b>				
Microplate Type	6- to 384-well	6- to 384-well	6- to 1536-well	6- to 1536-well
Compatible with Take3 Plate - 2 µL samples	•	•	•	•
Temperature Control System	to 50°C	to 65°C	to 65°C	to 65°C
Microplate Shaking	•	•	•	•
Automation Friendly	•	•	•	•
Pathlength Correction	•	•	•	•
OD Dynamic Range	0 - 4.0	0 - 4.0	0 - 4.0	0 - 4.0
OD Resolution	0.001	0.0001	0.0001	0.0001
OD Bandpass (nm)	2.4	2 (<285 nm), 4 (>285 nm)	2.4	2 (<285 nm), 4 (>285 nm)
Fluorescence Wavelength Range	200-700 nm (900 nm option)	250-900 nm	200-700 nm (900 nm option)	250-900 nm
Fluorescence Bandpass (nm)	Filter-dependent	Variable: 9, 13.5, 17, 20	Filter-dependent	Variable: 9, 13.5, 17, 20 Filter-dependent
Injection Volume Range	5 - 1000 µL	5 - 1000 µL	5 - 1000 µL	5 - 1000 µL
Gen5 Software Included	•	•	•	•

\* Specifications subject to change

## Partners

Through reagent vendor partnerships, you are assured that our readers perform optimally with a wide range of assays. Application notes available on [www.biotek.com](http://www.biotek.com) present data obtained in partnership with these companies and the conditions required to perform these assays on BioTek's equipment.



# FLx800™ Fluorescence Microplate Reader



## QuickFacts:

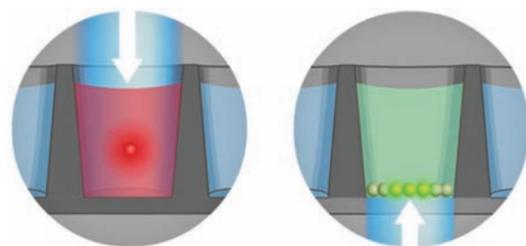
- Top and bottom fluorescence measurements for a wide variety of applications
- Sensitive luminescence detection
- Great price/performance ratio
- Automatic reagent injector available
- Temperature control option to 50°C
- Can read PCR plates

The FLx800™ provides researchers with outstanding value by combining excellent performance and ease-of-use at a price much lower than traditional fluorescence-luminescence microplate readers. The design features a low-noise

detection system for increased performance in both fluorescence and luminescence modes. The FLx800 includes several models with options that meet the specific needs of research and clinical users, including the ability to read

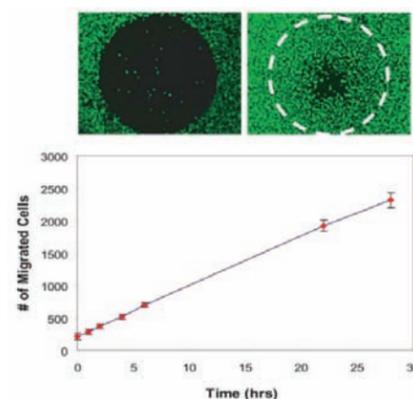
multiple microplate types and PCR plates. The FLx800 includes onboard data reduction software or can be interfaced with BioTek's easy-to-use Gen5™ Data Analysis Software.

## Top and Bottom Measurements



Top measurement is used when the fluorescent molecules are in suspension in the wells (e.g. DNA quantification, protein quantification). Bottom measurement is used when fluorescence is segregated at the bottom of the wells (e.g. GFP gene expression assays and ion-channel assays).

## Cell-Based Assays



Bottom fluorescence detection can be used to precisely quantify cell populations. The Oris™ cell migration assay can be performed using a microscope (top) or a microplate reader (bottom) for higher throughput quantitative data.

# PowerWave™ Microplate Spectrophotometer



## QuickFacts:

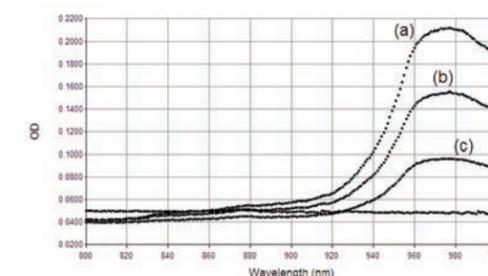
- Monochromator optics with Xenon flash lamp for all applications from 200 nm to 999 nm
- Automatic pathlength correction based on infrared absorption of water
- Precise 4-Zone temperature control system with tight  $\pm 0.5^\circ\text{C}$  variation specification
- Robust shaking mechanism for 24/48 hour cell-growth assays
- Advanced Gen5™ Data Analysis Software

The PowerWave™ Microplate Spectrophotometers use advanced monochromator optics for high performance from low UV to near infrared applications. All models include BioTek's superior 4-Zone™ temperature control system, robust shaking, and automatic pathlength correction to cover a broad range of

applications. Typical assays run on the PowerWave include nucleic acid quantification at 260 nm, 260/280 nm nucleic acid purity assessment, enzyme kinetic assays, ELISA assays, or cell-growth assays at 620 nm. Three models are available: the flexible PowerWave XS2 can accommodate any plate type

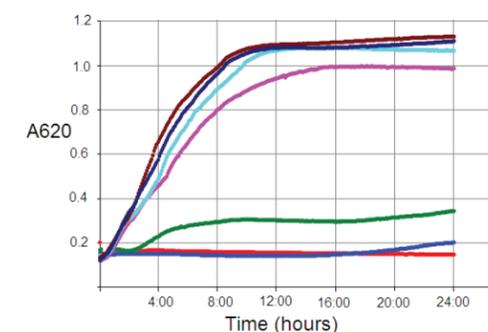
from 6- to 384-well microplates as well as BioTek's Take3™ Multi-Volume Plate. The ultra-fast PowerWave HT can read a 96-well microplate in 5 seconds. And the high-value PowerWave 340 can read 96-well microplates at any wavelength above 340 nm.

## Pathlength Correction



Spectral scans of 300  $\mu\text{L}$  (a), 200  $\mu\text{L}$  (b) and 100  $\mu\text{L}$  (c) of water in the infrared using a PowerWave. This IR peak of water can be used to calculate pathlength in the wells with a 100  $\mu\text{m}$  resolution.

## Cell Growth Monitoring



24-hour *E. coli* growth curves measured at 620 nm (scattering). The PowerWave's precise temperature control system and robust shaking mechanism allows running experiments over several days.

## Epoch™ Microplate Spectrophotometer & Take3™



### QuickFacts:

- Multi-volume, multi-sample system
- 200 nm to 999 nm in 1 nm increments
- 6- to 384-well microplate reading capability
- Take3™ Multi-Volume Plate compatibility for low volume 2  $\mu$ L microspots, BioCell™ or cuvette measurements
- Wavelength scanning, end point, kinetic and well area scanning
- Automated pathlength correction for direct quantification

The new Epoch™ Microplate Spectrophotometer is a monochromator-based microplate absorbance reader that offers superior functionality for the life science laboratory...without breaking the budget. The UV/Vis optical system, with continuous wavelength selection, is ideal for nucleic acid quantification and a myriad of other biomolecular and ELISA assays. No need to purchase

interference filters to meet the lab's assay requirements...the entire 200 – 999 nm wavelength range is always available! Along with endpoint reading, Epoch can also perform spectral scanning, kinetic and well area scanning measurements. Controlled by the user friendly Gen5™ Data Analysis Software, data collection, analysis, exporting and reporting are completely customizable. Even with its powerful capabilities,

Epoch is priced in the range of most high performing filter-based absorbance readers, filling a void in today's microplate reader options through its smart design and unique feature set. When used with the optional Take3 Multi-Volume Plate, samples with volumes as low as 2  $\mu$ L are easily measured, making Epoch a truly "multi-volume, multi-sample, multi-application" system.

### Take3 Multi-Volume Plate



The Take3 Multi-Volume Plate is designed to allow up to sixteen 2  $\mu$ L sample measurements. With its unique Gen5 Data Analysis Software interface, protocols for dsDNA, ssDNA, RNA and protein samples make low volume quantification fast and easy for one or multiple samples. Take3 also allows measurement of patented BioCells or a standard cuvette.

### 2 $\mu$ L Sample Measurement



Use Take3 for 2  $\mu$ L sample measurements in BioTek's Epoch, PowerWave™ XS2 or Synergy™ Multi-Mode Microplate Readers. The precision printed, fused silica slides are easy to pipette onto...and clean up is simple - just wipe with a laboratory tissue.

## ELx808™ Absorbance Microplate Reader



### QuickFacts:

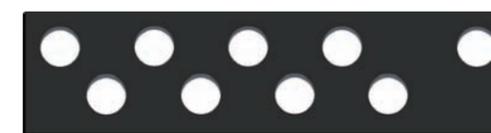
- 4-Zone™ temperature control option provides excellent reproducibility for temperature-sensitive assays
- Fast kinetic measurements in intervals as short as 6 seconds with multiple kinetic analysis options
- Compatible with Gen5™ Data Analysis Software
- 6-filter capacity
- Endpoint, kinetic and linear well scanning read modes

High quality optics and rugged design are the hallmarks of the ELx808™ Absorbance Microplate Reader. The 340 nm – 900 nm wavelength range encompasses a wide range of potential applications for this multichannel reader. The ELx808 offers the unsurpassed 4-Zone™ natural convection

incubation, providing excellent stability for temperature sensitive assays like endotoxin analysis and long-term bacteria and yeast growth studies. Through the optional control of Gen5™ Data Analysis Software, the ELx808 becomes even more efficient, easy-to-use and powerful, for a variety of microplate based

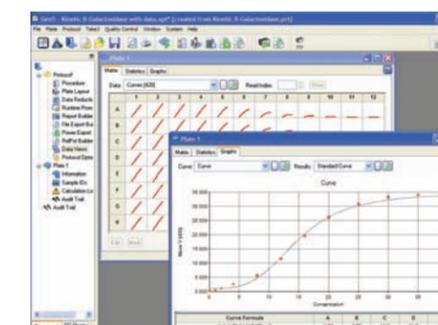
applications. Endpoint and kinetic measurements are easily defined and analyzed through Gen5 Data Analysis Software, but when bench space is a premium or a computer interface isn't available, the ELx808 offers extensive user-programmable software with curve-fitting, data transformation and other analysis options.

### Superior Optical Design



The optics channels of the ELx808 are staggered to eliminate crosstalk between wells and include a reference channel to eliminate channel to channel variation. This unique design provides superior, proven optical performance.

### Gen5 Data Analysis Software



Through Gen5 Data Analysis Software, the applications for ELx808 are expanded. Multiple kinetic analyses, endpoint measurements and well scanning are all easily programmed, analyzed, exported or printed. Data transformations and curve fitting are available, as are cutoff and validation criteria to meet the needs of the life science research or clinical laboratory.

# ELx800™ Absorbance Microplate Reader



## QuickFacts:

- *Reliable and robust design*
- *6- to 384-well microplate reading capability*
- *Gen5™ Data Analysis Software compatible*
- *5-filter capacity*
- *Extensive onboard data analysis*

The ELx800™ is a compact, robust microplate reader ideally suited for applications within the clinical and life science research laboratory. When interfaced with BioTek's Gen5™ Data Analysis Software, the ELx800 applications are expanded to include

kinetic and well area scanning measurements in microplates from 6- to 384-well. When space or budget are limited, the ELx800 offers extensive onboard software, complete with multiple curve fit options, data transformations, cutoff

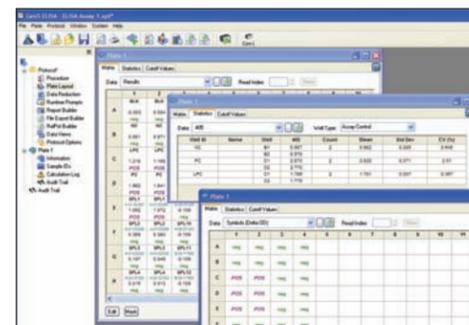
and assay validation calculations. The outstanding performance of this hardworking microplate reader and its proven reliability makes the ELx800 an unbeatable value for your laboratory.

## Absorbance Test Plate



BioTek's Absorbance Test Plate is a convenient tool for GMP/GLP compliance. Fast and easy testing of the ELx800's optical system allows for worry-free, uninterrupted operation. Use on the ELx800 alone, or through the Gen5 Data Analysis Software diagnostic interface for reporting and results archiving.

## Gen5 Data Analysis Software Adds Assay Flexibility



Expand the ELx800's applications with Gen5 Software, and customize the data views and data output to suit your laboratory's requirements. User selected data, results and sample information are easily exported to a LIMS/LIS acceptable file format.

BioTek is world renowned for manufacturing the most reliable microplate washers on the market. From basic ELISA to sensitive cell washing to bead washing, the ELx405™, ELx50™, and EL406™ are configured with many options to meet a myriad of assay requirements. Each is equipped with comprehensive and easy-to-use onboard software for the utmost flexibility in operation. BioTek's Liquid Handling Control™ PC software adds the convenience of assay-specific protocol requirement definition in a familiar Microsoft® Windows® environment. The ELx405 and EL406 are compatible with BioTek's BioStack™ automation products for increased throughput and unattended operation.

## ELx405™ Microplate Washer



The most versatility in 96- and 384-well washing available today, along with BioTek's patented Dual-Action™ manifold and Ultrasonic Advantage™ for reduced assay failure. Models with biomagnetic separation and vacuum filtration expand the ELx405's range for full microplate washing.

## ELx50™ Microplate Strip Washer



Its compact footprint contains a powerhouse of washing capabilities unsurpassed in its class. The washer's excellent dispense precision and evacuation efficiency supports 96- and 384-well strip or plate washing for ELISA, biomagnetic separation and vacuum filtration applications.

## EL406™ Microplate Washer Dispenser



The only instrument on the market offering fast microplate washing along with both peristaltic and microprocessor-controlled syringe drive reagent dispenser technologies to optimize liquid handling processes in the microplate format, including complex wash routines.



# ELx405™ Microplate Washer



## QuickFacts:

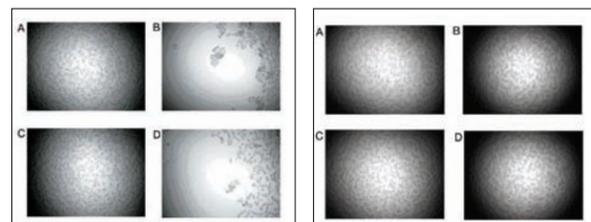
- Industry leading washer
- Specifically designed for cell-based assays
- Bead based assays and standard ELISAs
- 96- and 384-well full microplate washing
- Unique Ultrasonic Advantage™ for automated self-maintenance
- Automated four-buffer switching
- Compatible with BioTek's Liquid Handling Control™ Software

This fourth generation product offers several models and options to meet all throughput washing requirements in ELISA, biomagnetic separation and vacuum filtration assays such as Luminex xMAP® technology. The patent-pending Ultrasonic Advantage option eliminates the number one cause of assay failure – clogged

manifold tubes. Valuable time is saved with this automated maintenance capability. Programming the ELx405 is easy through its intuitive keypad interface. The ELx405 can also be fully controlled with BioTek's Liquid Handling Control Software. The patented Dual-Action™ manifold allows independent control of the

aspirate and dispense manifolds to easily adjust for assays where X, Y and Z parameters are important. The ELx405 product line includes a system designed specifically for washing sensitive cell-based assays, by providing unique low flow parameters along with standard flow rates for more robust assays.

### Sensitive Cell Assays



Before (A/C) and after (B/D) washing two wells containing HEK cells using a standard dispense flow rate.

Before (A/C) and after (B/D) washing two wells containing HEK cells using an ELx405 Select CW low flow rate.

### Multiple Washers In One



ELx405 accessory modules accommodate full plate washing of polystyrene and magnetic bead assays.

# ELx50™ Microplate Strip Washer



## QuickFacts:

- Excellent performance for standard ELISAs
- Automated magnetic bead washing
- Automated vacuum filtration
- 96- and 384-well strip washing
- Syringe drive fluid delivery for precise control over multiple flow rates
- Small footprint with integrated dispense and waste pumps
- Automated three-buffer switching

BioTek's recognized leadership in full plate microplate washers extends to the ELx50™ Microplate Strip Washer. Its compact footprint contains a powerhouse of washing capabilities unsurpassed in its class. The washer's excellent dispense precision and evacuation efficiency supports 96- and 384-well strip or microplate

washing. Comprehensive onboard software makes programming quick and easy. An available module for biomagnetic separation allows washing of magnetic bead assays, while a vacuum filtration module allows a user to process polystyrene bead assays, widely used in many diverse applications such as those

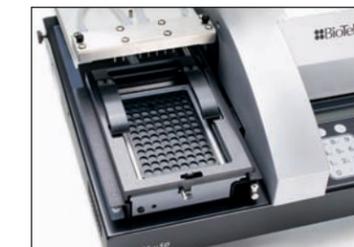
incorporating Luminex xMAP® technology. The ELx50's vacuum filtration module is also well suited for filtration-to-waste processes such as PCR cleanup after DNA amplification to remove unwanted residues or reaction by-products with filtrate.

### High Strength Biomagnetic Separation



The ELx50's custom magnet design incorporates high-energy neodymium iron boron magnets for rapid separation of micrometer and nanometer beads with superior retention.

### Fast and Efficient Vacuum Filtration



An available vacuum filtration module automates the washing of 96-well filter bottom plates. Vacuum is adjusted via a range of settings for optimal performance with various filter pore sizes.



# EL406™ Microplate Washer Dispenser



## QuickFacts:

- Fast microplate washing and dispensing
- Up to three reagent dispensers
- 96-, 384- and 1536-well microplates
- Bead based assays and standard ELISAs
- Automates long and tedious assay liquid handling processes
- Automated four-buffer switching

The EL406™ Combination Washer Dispenser offers fast, full plate washing along with three reagent dispensers in one, compact instrument...all from the recognized industry leader. The EL406 incorporates BioTek's patented Dual-Action™ manifold, optimized washing for loosely adherent cell monolayers, built-in patent-pending Ultrasonic Advantage™ for unattended wash manifold maintenance and up to four wash buffers for complex wash routines in 96-, 384- and 1536-well

microplates. The EL406 also offers full microplate washing of magnetic microspheres used in a growing number of multiplex assays and bead-based ELISAs along with reagent dispensing. Developed in conjunction with leaders in genotyping, gene expression and protein assays built upon the Luminex xMAP® platform, BioTek's magnets incorporate high-energy neodymium iron boron magnets for rapid and efficient separation of beads with superior

retention. Up until now, scientists had to choose their microplate dispenser technology – usually between either a peristaltic or syringe pump. Each of these technologies has its unique advantages. The EL406 eliminates the need to choose, offering both dispenser technologies on a single platform plus microplate washing. Now you can simply press a button and walk away.

## Optimized Wash Module Design



BioTek's patented Dual-Action manifolds provide independent control of aspirate and dispense functions.



1536-well microplates are washed with two 32-tube manifolds and one 128-tube aspiration manifold for speed and efficiency.

## Liquid Handling Control™ Software



Liquid Handling Control is a powerful yet flexible interface for EL406 users, offering totally unattended operation and the ability to define protocols from the PC or downloaded to the instrument's keypad.

BioTek offers two different microplate reagent dispenser platforms, the MicroFlo™ Select and the MicroFill™. Each incorporates a specific fluid delivery technology to encompass the vast spectrum of dispensing requirements. Our reagent dispensers offer simple, repeatable and precise liquid delivery throughout their defined volume range. Both are compatible with BioStack™ automation products for increased throughput and unattended operation. BioTek's Liquid Handling Control™ software offers full control of the MicroFlo Select Dispenser with StepWise™ protocol creation that even novice users will find easy to use.



## MicroFlo™ Select Dispenser

BioTek's latest development in peristaltic pump technology offers a wide range of dispense volumes, flow rates, and dispense heights in 6- to 1536-well microplates.



## MicroFill™ Microplate Dispenser

BioTek's microprocessor controlled syringe drive technology provides outstanding precision and accuracy while dispensing to 24-, 96-, and 384-well microplates.

# MicroFlo™ Select Dispenser



## QuickFacts:

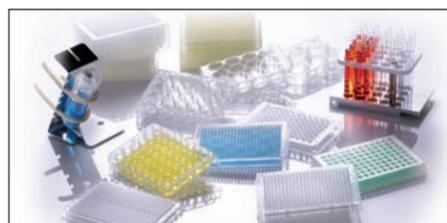
- Convenient peristaltic pump technology
- Unmatched volume range down to 1 µL
- Speed – dispense 1536 wells in 18 seconds
- Cassettes autoclaved without recalibration
- Skip microplate columns or rows for customized dispense patterns
- Easily automated with commercial robotic systems

MicroFlo™ Select offers superior microplate dispensing flexibility and a wide range of choices in dynamic dispense volumes, microplate types, sample tube sizes and automated dispense height adjustment. Accurate dispensing technology delivers full and reproducible incremental volumes of liquid within its specified volume range, even after numerous autoclave cycles. For cell-based assays, angled

dispensing minimizes disturbance in wells, helping to retain the cell monolayer. For assays involving precious reagents, MicroFlo Select's minimum prime volume is just over 1 mL. The built-in priming trough is designed to allow both recovery of reagents or to send primed reagent directly to waste. MicroFlo Select is easily integrated with BioStack™ automation products for unattended

operation. Alternatively, robotic integration of MicroFlo Select to third party automated systems is seamless with available .NET based interface software. BioTek's optional Liquid Handling Control™ Software allows dispense protocols to be created and run from the PC or downloaded to the onboard user interface.

## Widest Range in Accommodated Labware



MicroFlo Select accommodates 6- to 1536-well microplates, PCR trays, deep well blocks, microtubes and other tube configurations up to 4 inches high.

## Confidence-Plus Lifetime Warranty



Due to their unique design and incorporation of the highest quality materials, MicroFlo Select dispense cassettes are guaranteed, even after continuous use and repeated autoclave cycles.



# MicroFill™ Microplate Dispenser



## QuickFacts:

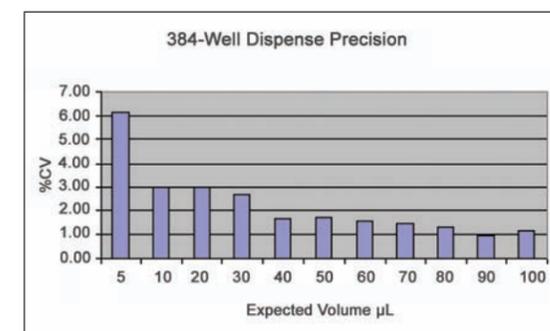
- Accurate and precise dispensing
- Low maintenance syringe pump design
- Requires no recalibration
- Ideal for medium and high volume dispensing
- Unique carrier accommodates varying microplate heights in 24-, 96- and 384-well formats
- Up to 75 protocols stored onboard
- Autoclavable design

MicroFill™ offers an economical, compact, and reliable alternative to other microplate dispensers. The microprocessor controlled syringe pump provides accurate and precise dispensing without the time-consuming recalibration, cassette

replacement, and maintenance commonly associated with other dispensers. Autoclavability of the entire fluid path is available for those applications requiring sterility. User-controlled dispense flow rates allow low- to high-velocity

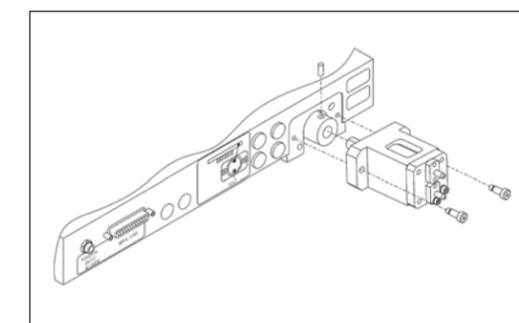
dispensing for both biochemical and cell-based assays in 24-, 96-, and 384-well standard and low-profile microplates. Deep well blocks are also accommodated with flexible volume ranges from 5 µL to 6,000 µL per well.

## Superior Performance



MicroFill repeatedly delivers reagents across a range of sample viscosities. Typical performance is 1.5% CV at 80 µL.

## Sterile Fluid Path

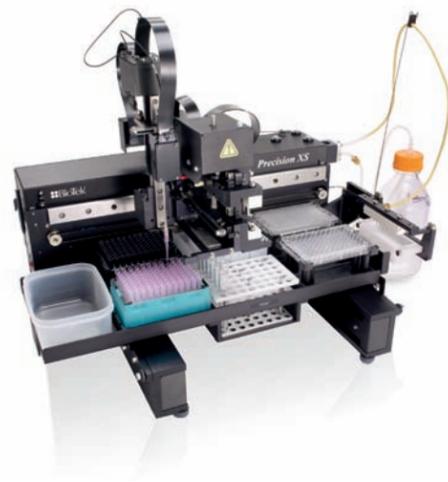


MicroFill's autoclavable syringe pump is quickly changed for guaranteed sterility and no reagent carryover.



BioTek's automation products provide speed, flexibility and unattended operation when configured with BioTek's line of reading, washing and dispensing products. The result is a scalable, cost-effective system that can adapt to your changing requirements. Additionally, the BioStack™ and Precision™ products can be integrated with most commercially available robotic arms to expand any automated system's microplate capacity.

## Precision™ Automated Microplate Pipetting Systems



### Precision™ Automated Microplate Pipetting Systems

A unique range of compact and affordable pipetting systems for your laboratory's specific liquid handling needs. Single, 8- and 12-channel transfer tools are available, along with bulk reagent dispensers, to meet varied requirements in a wide range of sample tubes, microplates and reagent reservoirs.



### QuickFacts:

- Replaces manual pipetting
- Small, compact footprint fits in standard size biological safety cabinets
- Affordable alternative to high-end liquid handlers
- Accommodates 96- and 384-well microplates with no hardware change
- Easy set-up and programming with Precision Power™ PC software



### BioStack™ Microplate Stacker

A compact microplate stacker to use with BioTek microplate readers, washers, dispensers and liquid handling systems. BioStack is easily configured to meet automation needs.

Precision™ Microplate Pipetting Systems accommodate a wide range of sample tubes, microplates and reservoirs. Reagent additions, serial dilutions, sample transfers and plate replications are possible with Precision. BioTek's proprietary pipette technology and unique tip sealing capability allow most

standard tips to be used. Precision's user-configurable, multi-station platforms allow for flexible experiment design; microplates, tips and other vessels can be placed for optimal efficiency. Functionality and throughput can be further enhanced with BioStack™ automation products for unattended operation.

Precision XS delivers outstanding liquid handling performance in a compact design. Precision XS features four liquid transfer tools on one platform which can all be intermixed throughout an automated protocol – single and multi-channel pipetting along with single- and multi-channel bulk reagent dispensing.



### BioStack™ Twister® II Microplate Handler

For higher throughput automation needs, BioStack Twister II can integrate one or multiple instruments for walkaway automation.

### Precision Power Software



Precision Power offers complete Precision control with powerful and flexible protocol creation under Microsoft® operating systems. Precision Power expands the instrument's dynamic capabilities with a graphical program simulator, sample ID tracking and integration of up to two BioStack Microplate Stackers.

### Space Efficiency



Precision's compact footprint is perfect for installation inside standard size biological safety cabinets.

## BioStack™ Microplate Stacker



### QuickFacts:

- Choice of 30- or 50-microplate storage stacks
- Rotational gripper for portrait or landscape positioning
- Optional barcode scanner for microplate identification
- Automatic restacking capability
- Can be integrated with third party microplate equipment
- Rugged design for heavy usage

The BioStack™ is a compact and flexible microplate stacker compatible with BioTek's microplate washers, dispensers, pipetting systems and detection systems. Speed, ease-of-use and walk-away automation are guaranteed for any routine microplate process. The result is a scalable,

cost-effective system that will adapt to your changing requirements. Its rotational wrist allows users to integrate both landscape and portrait orientation microplate carriers with the instrument remaining in its optimal, ergonomic-friendly position. BioStack also features optional

higher-capacity storage stacks. For individual throughput requirements, users can customize the stacker with either 30- or 50-microplate storage stacks. These stacks are removable and interchangeable to accommodate individual throughput needs.

### Automated Detection



BioStack shown with 50-microplate stacks, delivers a microplate to the Synergy™ Mx Multi-Mode Microplate Reader, allowing walk-away automation of end point or kinetic measurements over time.

### Automated Liquid Handling



Coupled with the MicroFlo™ Select as shown above, BioStack's rotational wrist allows you to place the system for convenient keypad access.

## BioStack™ Twister® II Microplate Handler



### QuickFacts:

- Up to 320 microplate capacity for wide range of throughput requirements
- Fully automated for walkaway operation
- Small footprint requires less space than linear track systems
- Fast processing for high throughput speed requirements
- Single or multiple instruments can be accessed with the 340° axis of rotation
- Extending reach eases setup and increases system flexibility

The BioStack™ Twister® II Microplate Handler is a high-capacity, plug-and-play bench top automation solution for integrating BioTek's washers, readers, dispensers and liquid handling systems together with expandable microplate capacity,

ultimate flexibility and intuitive yet powerful software. The BioStack Twister II is a cost effective alternative to linear track and stationary robotic options. The compact footprint and removable stacks enable capacity to be effortlessly expanded or reduced,

so the system never takes up more valuable laboratory space than is absolutely necessary. BioStack Twister II can handle microplates with and without lids, pipette tip boxes, deep well microplates and low profile microplates.

### Unattended, Reliable Operation



To automate an avian influenza assay for poultry testing, a BioStack Twister II system was designed incorporating 1 Precision™ XS Pipetting System, 3 MicroFill™ Dispensers, 1 ELx405™ Washer, 1 PowerWave™ Spectrophotometer and 1 LiCONic Instruments Plate Hotel.

### Compact Automation



BioStack Twister II allows flexible placement of BioTek Microplate Readers, like the Synergy™ 2 Multi-Mode Reader shown above. Peripheral placement options free up valuable space on any benchtop.

At BioTek, we recognize that our success is not just based on the quality of our instrumentation and software – it's also the people behind the product. We pride ourselves in giving our customers personal attention and service. Our experienced team – backed by our technical service center, scientific applications group, and knowledgeable sales force – are available worldwide to assist with questions on instrumentation, software usage, or applications. It is this continuous after-sale support that distinguishes BioTek from our competitors.

## Global Technical Support Center

U.S. based Technical Support is available at no charge for all BioTek customers. The BioTek Global Technical Support (GTS) Center is your Help Desk for all questions related to BioTek product use, maintenance, troubleshooting support and other frequently asked questions. BioTek's GTS Center makes every attempt to quickly resolve your question or issue.

## Technical Training

Our service staff are specially trained to support our customers worldwide. In addition, we can develop customized training to prepare your staff to use, install, and even maintain your BioTek equipment. Most of our user training is conducted in the field when equipment is purchased, but, if you would like in-depth training, please contact us to discuss your needs and options.

## Service

Throughout the world, BioTek Service Centers and Field Service personnel are prepared to repair your instrument and confirm operation to current factory performance specifications. Our technicians are experts in delivering quality service in Installation and Operational Qualification, Instrument and Software Training, Preventative Maintenance, Instrument and Software Upgrades, Instrument Repair and Test Plate Certification. Visit our web site at [www.biotek.com](http://www.biotek.com) for details on our Service and Support offerings.

Applications using microplates are becoming increasingly more diverse, and to remain current with our customer needs, BioTek has invested heavily in Applications Support to assist our customers worldwide with their specific discovery needs. We have greatly expanded our team of applications-dedicated scientists in our Vermont headquarters and have made large capital investments to construct a new laboratory facility to develop unique applications for our products and prove their efficacy in real-lab environments. This new facility includes cell culture capability for cell-based assays. Approximately 75% of our current activity is devoted to developing applications for cell-based assays.

To stay at the forefront of new technologies, BioTek has developed co-marketing collaborations with many industry-leading reagent vendors. An example includes Promega Corporation, centered on demonstrating the utility of our Precision™ automated pipetting station for ADME/Tox assays in its ability to dispense reagents in a 96- or 384-well format, including cells, and the serial dilution of chemical compounds to assess their influence on metabolic enzymes and toxicity on cells. Often, these assays are improved by multiplexing, which again demonstrates the utility of our Synergy™ Multi-Mode Microplate Reader product line. We presented over 15 posters with Promega at various conferences, including LabAutomation, SBS, DDT, SBS-ELRIG, MipTec and ISSX depicting these applications.

We are also collaborating extensively with Invitrogen (Life Technologies) with their Cellular LanthaScreen™ platform and Predictor™ hERG FP assay to demonstrate our liquid handling products and multi-mode readers suitable for screening applications. Posters at SBS, and MipTec, documented this partnership. We are continuing our collaboration on multiple fronts, including GPCR screening applications.

We recently began working with Enzo Life Sciences to provide key expertise and capabilities in their cutting-edge live cell analysis reagents and kits. Posters were presented and industry announcements made at MipTec and the North American Regional ISSX meeting.

To view these application notes, posters and other presentations provided by BioTek, please visit our Technical Resources page on our web site at: [www.biotek.com/resources](http://www.biotek.com/resources)



BioTek's Customer Resource Center (CRC) continues our tradition of superior service and support. Designed to provide customers with access to information about their specific BioTek microplate instrumentation and software, this web site makes it easy for customers to acquire relevant and necessary information. Customers can:

- Check the status and track your order
- Maintain equipment inventory
- Register software
- Access warranty information
- Download technical information, user manuals and software updates
- Request service and technical support
- And much more!

Registration for BioTek's Customer Resource Center with exclusive features and content is available at <https://customer.biotek.com>.



## World Headquarters, United States

BioTek U.S.  
Tel: (802) 655-4740  
Toll Free: (888) 451-5171  
Service Toll Free: (800) 242-4685  
Fax: (802) 655-7941  
[www.biotek.com](http://www.biotek.com)

## China

BioTek China  
Tel: +86 (10) 85865569  
Fax: +86 (10) 85861829  
[www.biotekchina.com.cn](http://www.biotekchina.com.cn)

## France

BioTek France  
Tel: +33 (3) 89206329  
Fax: +33 (3) 89204379  
[www.biotek.fr](http://www.biotek.fr)

## Germany

BioTek Germany  
European Coordination Center  
Tel: +49 (0) 71369680  
Fax: +49 (0) 713696811  
[www.biotek.de](http://www.biotek.de)

## India

BioTek India  
Tel: +91 (22) 28789966  
Fax: +91 (22) 28759944  
[www.biotek.in](http://www.biotek.in)

## Singapore

BioTek Singapore  
Tel: +65 65922100  
Fax: +65 67772611  
[www.biotek.com](http://www.biotek.com)

## Switzerland

BioTek Switzerland  
Tel: +41 412504060  
Fax: +41 412505064  
[www.biotek.ch](http://www.biotek.ch)

## United Kingdom

BioTek UK  
Tel: +44 (1767) 262000  
Fax: +44 (1767) 262330  
[www.biotek.uk.com](http://www.biotek.uk.com)

For the rest of the world, contact your local distributor or BioTek U.S. at:

Tel: +1 (802) 655-4740  
Fax: +1 (802) 655-7941  
E-mail: [CustomerCare@biotek.com](mailto:CustomerCare@biotek.com)  
Service E-mail: [TAC@biotek.com](mailto:TAC@biotek.com)

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Tel: 802-655-4040 • Toll-Free: 888-451-5171 • Outside the USA: 802-655-4740