

Synergy™ 4 Multi-Detection Microplate Reader



Features

- **Hybrid Technology™:** The Synergy™ 4 combines the sensitivity of a filter-based system with the convenience of monochromator-based optics to provide the broadest range of applications available on the market today.
- **Detection modes:** Fluorescence Intensity, Time-Resolved Fluorescence, Fluorescence Polarization, Luminescence, UV-Visible absorbance, FRET, TR-FRET, BRET, well area scanning and spectral scanning.
- **Modular and upgradeable architecture:** Read modes are available as individual modules for cost-effectiveness and peace of mind.
- **Quadruple grating system:** The Synergy 4 optics incorporates two double-grating monochromators. This design provides the best in spectral scanning performance and flexibility.
- **Deep blocking filter and dichroic mirrors:** Synergy 4's filter/dichroic combination provides the best possible performance in fluorescence, time resolved fluorescence and fluorescence polarization applications.

BioTek's new Synergy™ 4 Multi-Detection Microplate Reader with Hybrid Technology™ combines two powerful detection systems, monochromator-based and filter-based, in one compact unit. You can finally enjoy complete flexibility and instant control in assay choice for current as well as future demands. The result – the world's first true multi-detection system capable of performing an unlimited number of microplate-based assays. Synergy 4's unique technologies are patent pending.

The choice is yours.	Filter-based	Monochromator-based	Hybrid Technology
Spectral Scanning		✓	✓
Flexible wavelength selection		✓	✓
Convenience		✓	✓
Fluorescence Polarization performance	++	+	++
TRF / TR-FRET performance	++	+	++
Best performance across spectrum	✓		✓
Ratiometric ion channel assays	✓		✓
Filtered luminescence (e.g. BRET)	✓		✓
Fast wavelength switching	✓		✓

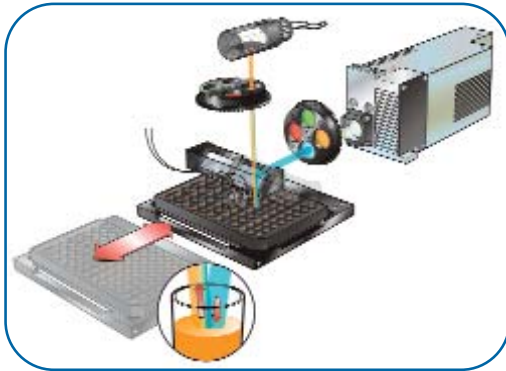
++ indicates best performance
+ indicates good performance; less sensitivity than filter performance

- **Certified by reagent manufacturers.** Ultra-sensitive luminescence certified by Promega for the dual luciferase reporter gene assay (DLR™); high performance TRF detection certified by Cisbio for their HTRF® TR-FRET assay platform.



The Synergy 4 monochromator system uses two double-grating monochromators. Highest stray light rejection, continuous wavelength selection, spectral scanning: this system combines high performance with convenience and flexibility.

Detection



The Synergy 4 filter/mirror system delivers more energy to the sample and provides high signal-to-noise ratios. Faster read speed, more sensitivity, more precise control over optical parameters: this system delivers ultimate performance.

Applications

- Screening assays (e.g. fluorescence polarization, TR-FRET, luminescence AlphaScreen™)
- Spectral scanning
- Binding assays
- Ion channel assays
- Quantitative assays (DNA, protein)
- Kinetic assays
- Gene expression assays (GFP, Luciferase)
- ELISA assays
- Cell proliferation, Cytotoxicity

Optional Accessories

- Gen5™ Secure (for 21 CFR Part 11 Compliance)
- Product Qualification Package

Models

Synergy 4: Detection systems and injectors available as individual modules

See Web site or price list for complete model listings and descriptions.



patent pending

Specifications*

Dimensions	17"W x 20.9"D x 15"H (43.5 x 53.1 x 38.1 cm)
Weight	78 lbs (35 kg)
Microplate Types	Monochromator system: 1- to 384-well plates Filter system: 1- to 1536-well plates (luminescence 1 - 384)
Temperature Control	4°C above ambient to 50°C ± 0.5°C at 37°C
Shaking	Yes
Top Optics Adjustment	Automated
Bio-Stack™ Compatible (Automation-Ready)	Yes
Software	Gen5™
Fluorescence Intensity:	
Light Source	Tungsten Halogen High Energy DPR Xenon Flash
Wavelength Range	Monochromators: 250 - 800 nm Filters: 200 - 700 nm (900 nm option)
Wavelength Selection	Double grating monochromators (Top) and, deep blocking bandpass filters / dichroic mirrors (Top/Bottom)
Sensitivity Top	Monochromators: fluorescein 5 pM typical (0.5 fmol/well 384-well plate) Filters/mirrors: fluorescein 1 pM typical (0.1 fmol/well 384-well plate)
Luminescence:	
Wavelength Range	300 - 700 nm
Dynamic Range	> 6 decades
Sensitivity (ATP)	10 amol ATP typical (flash)
Absorbance:	
Light Source	SQ Xenon Flash
Wavelength Selection	Monochromator
Wavelength Range	200 - 999 nm, 1 nm increment
Bandwidth	2.4 nm
Measurement Range	0 - 4.0 OD
OD Accuracy	< 1% at 2.0 OD typical
OD Precision	< 0.5% at 2.0 OD typical
Fluorescence Polarization:	
Light Source	Tungsten Halogen High Energy DPR Xenon Flash
Wavelength Range	200 - 700 nm (900 nm option)
Wavelength Selection	Deep blocking bandpass filters / dichroic mirrors (Top)
Sensitivity Top	3 mP at 1 nM fluorescein typical
Time Resolved Fluorescence:	
Light Source	High Energy DPR Xenon Flash
Wavelength Range	Filters: 200 - 700 nm (900 nm option) Monochromators: 250 - 850 nm
Wavelength Selection	Double grating monochromator (Top) and, deep blocking bandpass filters / dichroic mirrors (Top / Bottom)
Sensitivity Top	Europium 60 fM typical with filters (6 amol/well in 384-well plate)
Dispensers:	
Number of Injectors	2 syringe pumps
Dispense Volume	5 - 1000 µl in 1 µl increment
Dead Volume	1.1 ml, 100 µl with backflush
Speed (Minimum Kinetic Interval):	
96-well	11 seconds
384-well	22 seconds
1536-well	43 seconds

*Specifications subject to change



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DLR™ is a registered trademark of Promega Corp. HTRF® is a registered trademark of Cisbio International. AlphaScreen™ is a registered trademark of Perkin Elmer.

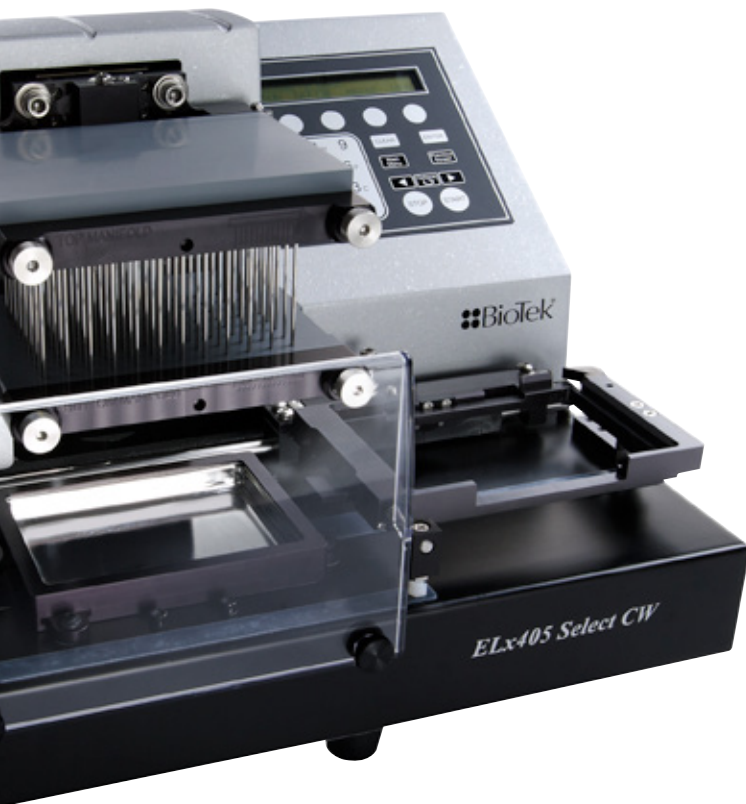


ELx405™ Select Deep Well Washer

BioTek's deep well microplate washer aspirates and dispenses into 96- and 384-well plates ≤50 mm in height. ANSI/SBS standard microplates are also accommodated, resulting in a total solution for all of a laboratory's solid bottom microplate washing needs.

The ELx405™ Select Deep Well Microplate Washer is a robot compatible, full plate washer incorporating BioTek's patented Dual-Action™ manifold with independent filling and evacuation control for precise overflow washing and overflow protection.

Available low-flow rates and angled dispensing make the ELx405 particularly useful in cell-based assays. With optional patented Ultrasonic Advantage™, BioTek washers are the only products available today with built in ultrasonic cleaners able to automatically prime with cleaning solution, sonicate tubes to remove any protein or salt crystal build up and re-prime with rinse or wash buffer leaving the instrument clean and ready for its next wash.



Features:

- Washes microplates ≤50 mm in height
- 96- and 384-well formats
- Optional cell washing with gentle, low-flow rates and 20° angled dispense tubes
- Patented Dual-Action™ manifold for independent dispense and aspiration control
- Available automatic 1-to-4 wash buffer switching
- Optional patented Ultrasonic Advantage™ – built in ultrasonic cleaner for manifold self-maintenance
- Biomagnetic separation ready
- Software control from onboard keypad or Liquid Handling Control™ PC Software
- 21 CFR Part 11 compliance with LHC™ Secure Software
- BioStack™ Microplate Stacker compatibility for standard height plates

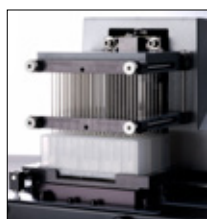
Typical Applications:

Deep Well Plates

- Plasmid DNA purification
- Serum/plasma sample preparation
- Cell signaling – phospho flow setup for flow cytometry
- Hematopoietic progenitor cell enumeration
- Cell culture – bacterial, yeast and mammalian cells grown in suspension

Standard Height Plates

- ELISAs
- MSD assays
- HCS immune cytochemistry
- FLIPR® Ca²⁺ flux
- Cell-based assays
- Magnetic bead assays – such as gene expression and cytokine panels
- ELISPOT assays



The ELx405™ Select Deep Well Washer aspirates and dispenses into full size 96- and 384-well blocks with unattended operation.

Configurations:

Configurations	Part #	96- /384-well	Deep well	Cell wash	Wash buffer switch	Ultrasonic Advantage	Biomag sep
ELx405™ Select	ELX405UD	●	●				●
	ELX405USD	●	●			●	●
	ELX405UVD	●	●		●		●
	ELX405UVSD	●	●		●	●	●
	ELX405UCWD	●	●	●			●
	ELX405UCWSD	●	●	●		●	●
	ELX405UCWWD	●	●	●	●		●
	ELX405UCWSD	●	●	●	●	●	●

Optional Accessories:

- Dispense/Waste Systems – choice of 4L or 10L bottles and standard or high flow* vacuum pumps
- Direct Drain Waste System
- Product Qualification Package
- BioStack™ Microplate Stacker
- Liquid Handling Control™ PC Software
- Magnets – choice of 96- or 384-well formats

Dual-Action™ and Ultrasonic Advantage™ are patented under US 5,951,783 and EP 2 093 572 B2 respectively.

FLIPR® is a registered trademark of Molecular Devices.

Specifications:

Assays:	ELISA Cell-based assays (<i>configuration dependent</i>) Magnetic bead <ul style="list-style-type: none"> • Multiplex assays • Bead-based ELISA
Microplate types:	96- and 384-well Low profile and standard height Deep well up to 50 mm
Magnet:	Choice of high strength, flat or ring designs 96- and 384-well formats
Onboard software:	2x24 character backlit LCD display
Software:	Optional LHC™ PC Software for wash protocol programming and execution
Manifold type:	96-/384-well washing - Dual-Action™ 96-tube (8x12)
Washing speed:	96-well (96-tube manifold) - <30 sec: 3 asp./disp. cycles, 300 µL/well
Fluid delivery:	Internal positive displacement pump
Volume range:	50 – 3,000 µL/well
Buffer selection:	Optional switching of up to 4 wash buffers
Wash cycles:	1 – 10
Dispense precision:	≤3% CV
Residual volume:	≤2 µL/well
Shaking:	User-programmable speeds and timing
Soak time:	1 – 600 seconds
Power:	100 – 240 Volts AC. 50/60 Hz
Dimensions:	Depth: 17" (43.2 cm) Width: 14" (35.6 cm) Height: 11" (27.9 cm)
Weight:	30 lbs (13.5 kg)

Regulatory

In Vitro Diagnostic use configurations available. CE and TUV marked, RoHS compliant.

*High flow vacuum pump recommended for 384-well washing with buffers not containing surfactant.



The ELx405 is Luminex® xMAP® approved.
xMAP® is a registered trademark of Luminex Corporation.

Performance values represent the average observed factory test values.
Specifications subject to change.



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