Agilent

Trusted Answers

Agilent BioTek Washers and Dispensers

Solutions for better workflows

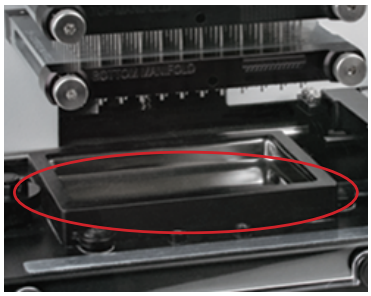
Agilent BioTek Washers and Dispensers

Efficiently handle a wide range of applications

Many life science laboratories benefit from automating their routine workflows, including microplate dispensing and washing processes. Agilent BioTek microplate washers, dispensers, and combination systems can help save time, space, and money. Our affordable, compact, and modular instruments are designed to offer the best performance, low maintenance, ease of use, and powerful functionality. For applications ranging from basic ELISA to pre-imaging cell fixing and staining processes, to gentle automated media exchange, our extensive line of Agilent BioTek microplate liquid handling systems has just the right instrument solution.

Typical applications for Agilent BioTek washers and dispensers

ELISA	Filtration-to-waste processes	Genomics and proteomics research
2D and 3D cell-based assays	HCS immunocytochemistry	Dispense/wash protocol automation
ELISpot assays	Screening assays	Drug transport assays
Multiplex assays	Cell fixing and staining	Calcium flux assays
Magnetic- and polystyrene-bead assays	Compound storage	MSD assay automation
Gentle automated media exchange	Concentration normalization assays	Serum/plasma sample preparation



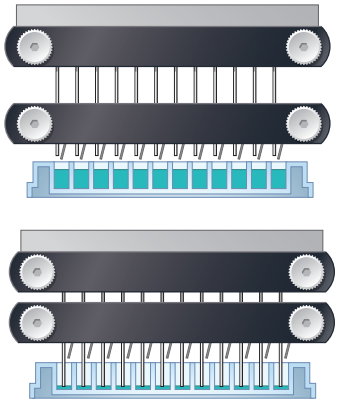
The priming/cleaning reservoir (circled) offers ultrasonic cleaning of both dispense and aspirate manifolds.

Proprietary Ultrasonic Advantage

Pin clogging is the primary cause of poor washer performance. The priming/cleaning reservoir in the Agilent BioTek 405 TS/LS washers and 406 FX washer dispenser with Ultrasonic Advantage offers ultrasonic cleaning of both dispense and aspirate manifolds.

Ultrasonic Advantage benefits:

- Automated ultrasonic cleaning helps prevent clogs
- Reduces assay failure, maintains assay integrity
- Cleans the toughest protein and salt crystal buildup



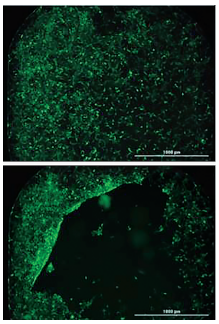
The Agilent BioTek Dual-Action manifold allows independent control of dispense and aspirate tubes for optimal X-, Y-, and Z-positions. Dispense tubes are angled to 20° for gentle dispensing into wells containing delicate cell layers.

Dual-Action manifold

The Agilent BioTek Dual-Action manifold allows independent control of dispense and aspirate tubes for optimal X-, Y-, and Z-positions. Dispense tubes are angled to 20° for gentle dispensing into wells containing delicate cell layers.

Dual-Action manifold benefits:

- Wash 96- and 384-well microplates on one instrument without changing the manifold
- Optimal independent positioning of dispense and aspirate tubes for cell-based assays or for standard ELISA washing
- Angled dispense tubes do not disrupt cell layers
- Allows vigorous overfill/overflow washing



Top: Cells washed with angled tips.
Bottom: Cells washed with straight tips.

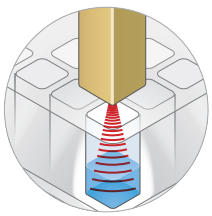
The Agilent BioTek Verify module is built in above the manifold and determines the fluid volumes in each well following dispense and aspirate cycles.

Proprietary Verify technology

Verify technology is a built-in module that tests the performance of washer dispense and aspiration cycles, and alerts users to the specific location of any suspected manifold clog. This allows the blockage to be identified and resolved before the next assay is run.

Verify benefits:

- Automates clog detection in dispense and aspirate tubes
- Provides clear visual pass/fail results
- Reduces failed assay incidents caused by blockages
- Built-in design requires no additional bench space



The Agilent BioTek Verify probe sends ultrasonic waves into a microplate.

The available "8-to-1" tip allows bulk-reagent dispensing to one or more wells of 6- to 24-well plates.

Random Access Dispensing technology

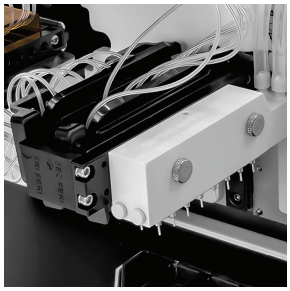
The Agilent BioTek Random Access Dispensing (RAD) option for the Agilent BioTek MultiFlo FX multimode dispenser brings increased functionality to the dispenser. The single-channel design allows rapid, custom-mapped dispensing into discrete wells on the microplate, and rapid, high-volume dispensing to lower-density microplates.

RAD benefits:

- Rapid dispensing to random or contiguous wells of a plate, ideal for optimizing experimental design
- Import custom plate maps in .CSV format to facilitate many applications, including nucleic acid and protein concentration normalization
- Bulk-reagent dispensing of up to 30,000 µL/well to large-well geometries for convenience and versatility

	A	B	C
1	PlateID	Well	Volume
2	Plate 1	A1	5
3	Plate 1	C2	11
4	Plate 1	D4	14
5	Plate 2	A1	5
6	Plate 2	C2	11
7	Plate 2	D4	14
8	Plate 3	D7	8
9	Plate 3	E6	20
10	Plate 3	G2	35

Agilent BioTek RAD technology provides a single-channel design for rapid, custom-mapped dispensing to discrete wells on the microplate.



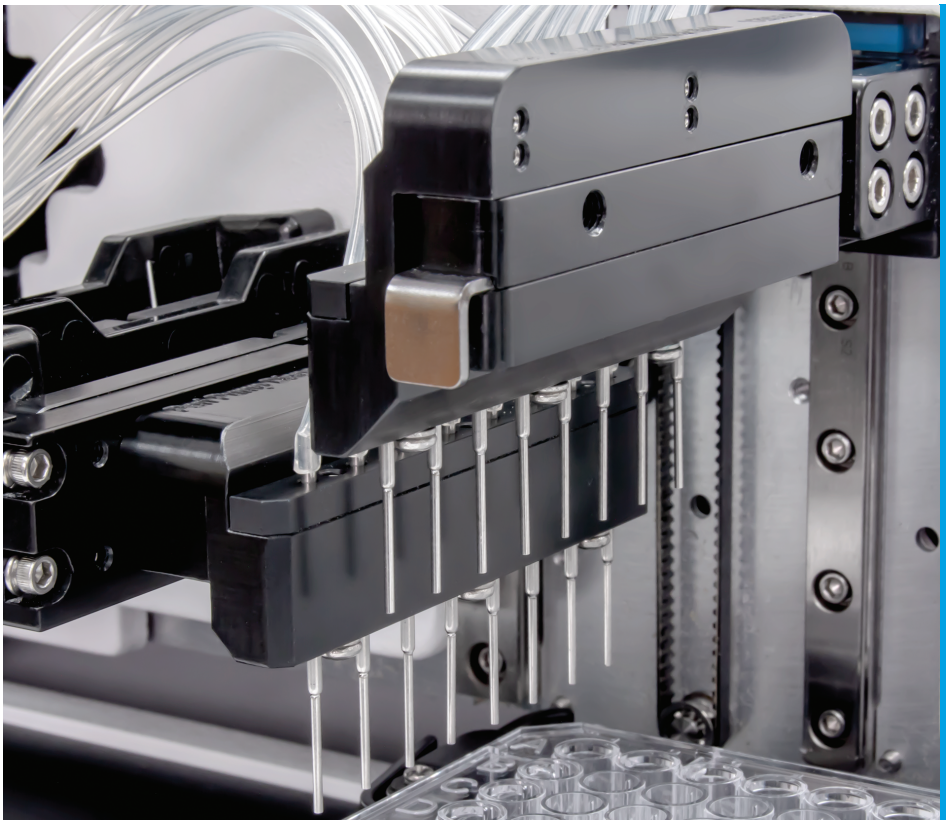
Four manifolds independently dispense four different reagents.

Parallel Dispense

Two pump technologies are combined in the Agilent BioTek Parallel Dispense functionality of MultiFlo FX and 406 FX. Peristaltic pumps offer a broad volume range and the ability to save reagent by backflushing and inherent low dead volume. Syringe pumps are fast and do not require recalibration; autoclavable versions are available.

Parallel Dispense benefits:

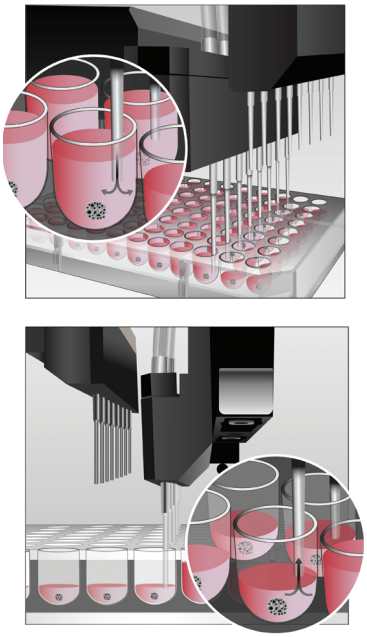
- Dispensing of up to four reagents without carryover
- Fast dispensing into 6- to 1536-well plates
- Angled tubes for gentle dispensing into cell monolayers
- Volume range of 500 nL to 30 mL
- Compact size for use on the benchtop or in automated systems



Unique dispensing technologies

Automated Media Exchange

The proprietary Agilent BioTek Automated Media Exchange (AMX) module for the MultiFlo FX enables gentle media exchange to protect and encourage proliferation of spheroids, tumoroids, and other 3D cell structures in microplate-based assays. The AMX module uses both peristaltic pumps and software control to aspirate and dispense media from the plate wells.

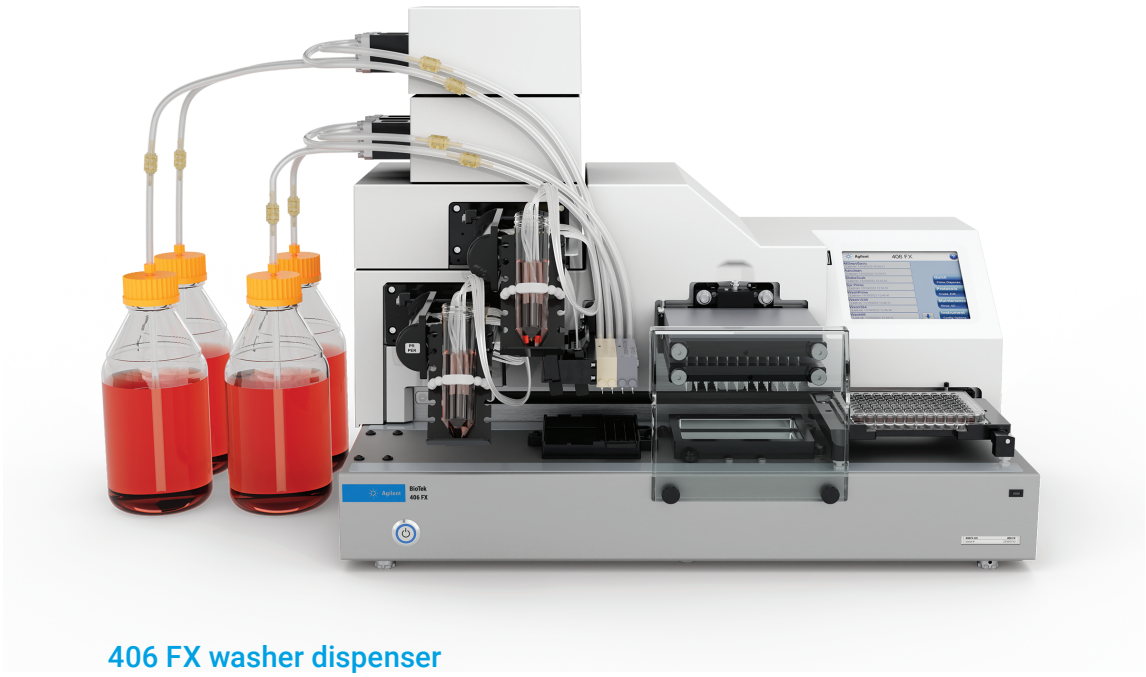


Close-up views show the critical positioning of the dispense tubes (top) and aspirate tubes (bottom) during media exchanges.

Automated Media Exchange benefits:

- Automates media exchange for spheroids, tumoroids, and other 3D and 2D cell-based assays
- Helps protect cells and encourage cell structure growth
- AMX module can be added to MultiFlo FX and easily exchanged with other modules for workflow versatility

Our combination instruments are designed to handle multiple processes in a single platform

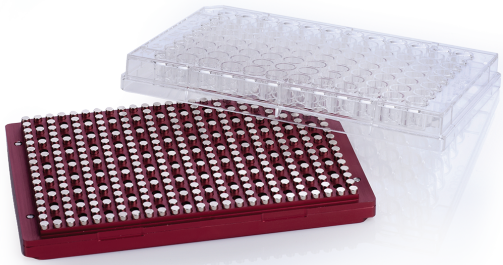


406 FX washer dispenser

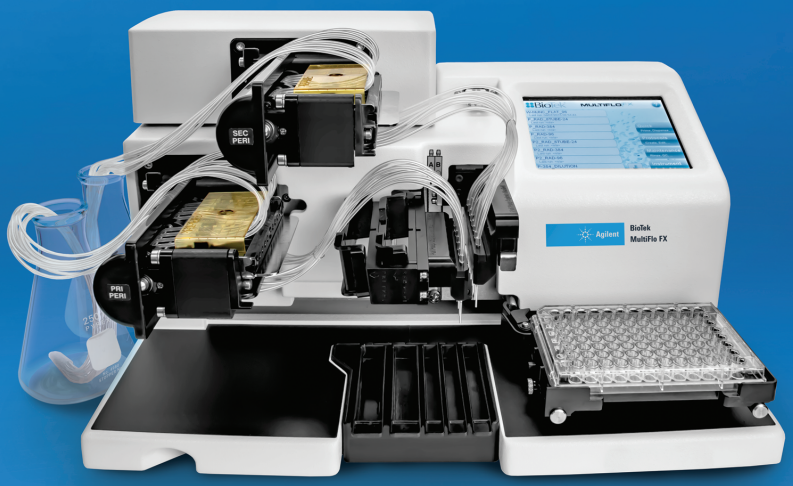
The Agilent BioTek 406 FX washer dispenser automates plate washing and multiple-reagent dispensing in one instrument. The 406 FX is ideal for applications such as cell fixing and staining before imaging, ELISA, multiplex assays, and many other common routines. The Dual-Action manifold and proprietary Ultrasonic Advantage ensure excellent washing performance and easy maintenance.

Features include:

- Fast plate washing with up to six reagent dispensers
- 96-, 384-, and 1536-well plate compatible
- Full automation of intra-assay liquid handling steps
- Magnetic-bead-based assays
- Built-in cleaning with Ultrasonic Advantage
- Direct-to-drain waste option eliminates the need to empty waste bottles
- Automation friendly with right- or left-side integration



The Agilent BioTek 406 FX washer dispenser is a powerhouse for many standard plate-washing and dispensing protocols. It also automates more complex operations such as magnetic-bead washing workflows, and it is Luminex xMap approved. Bead washing is available for 96- and 384-well microplates.

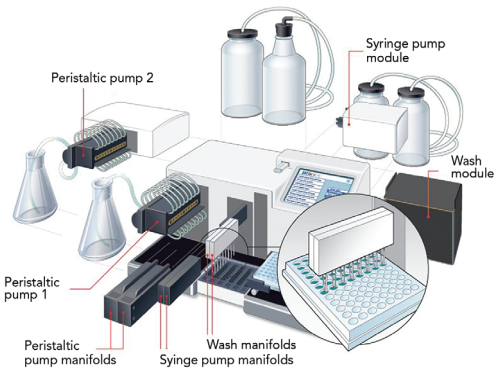


MultiFlo FX multimode dispenser

The Agilent BioTek MultiFlo FX is an automated multimode reagent dispenser that incorporates several unique technologies to facilitate applications from 2D and 3D cell culture to concentration normalization assays, ELISA, bead-based assays, and more. MultiFlo FX integrates with the Agilent BioTek BioStack microplate stacker, and BioSpa 8 automated incubator, and the Agilent BenchCel microplate handler to automate workflows for many microplate-based applications.

Features include:

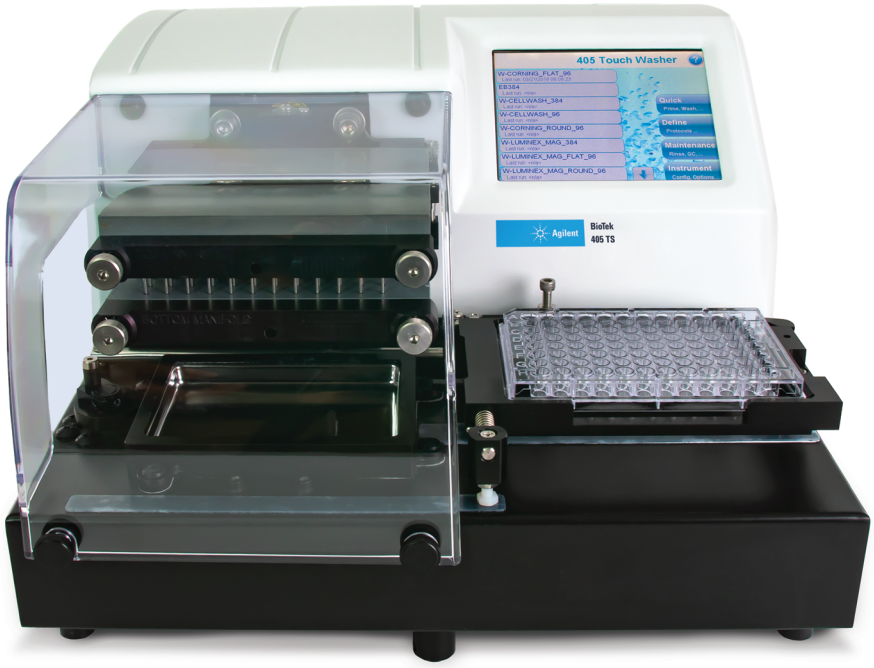
- Multimode dispensing replaces multiple instruments in a user-upgradable platform
- AMX module automates gentle media exchange
- RAD module for mapped dispensing into individual wells
- Wash module for 6- to 384-well plates
- Parallel Dispense: peristaltic and/or syringe pumps
- Direct-to-drain waste option eliminates the need to empty waste bottles



The configurable Agilent BioTek MultiFlo FX multimode dispenser with four reagent dispensers, a wash module, media exchange, and single-channel dispensing.

"Agilent BioTek has been the gold standard for plate washers in my experience. The 405 TS is easy to use, maintain, and clean, and has many options and adjustments to customize for any assay and plate. Field service engineers are very knowledgeable and helpful and know how to help people set the plate washer up and keep it operating optimally."

– **Agilent BioTek 405 TS washer user,** SelectScience review

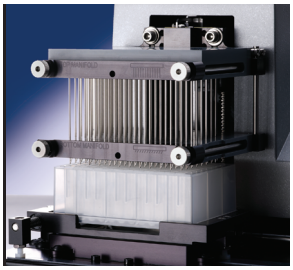


405 TS washer

The Agilent BioTek 405 TS washer enables applications ranging from gentle cell-based assay washing to rigorous ELISAs, biomagnetic separation, and vacuum filtration processes. For computer control or use in an automated system, Agilent BioTek Liquid Handling Control (LHC) software with SiLA compliant drivers is available, and Agilent BioTek LHC Secure software enables 21 CFR Part 11 compliance.

Features include:

- Fast 96- and 384-well microplate washing in a single instrument
- Angled dispense tips for gentle cell-based assay washing
- Proprietary Verify technology and Ultrasonic Advantage check for clogged manifold tubes and automatically clean them
- Internal four-buffer switching
- Password protection for onboard protocols
- Programmable to leave wells empty or with specific residual volume
- Direct-to-drain waste option eliminates the need to empty waste bottles



For deep-well plate washing, the Agilent BioTek ELx405 Select deep well washer is compatible with 96- and 384-well plates and deep wells up to 50 mm.

50 TS washer

The Agilent BioTek 50 TS washer offers functionality that is unsurpassed in its class. The color touch screen provides a visual interface that makes creating protocols fast and intuitive. It has excellent performance for conventional plate washing, cell-based assays, and for processing biomagnetic- or polystyrene-bead and vacuum filtration protocols. The 50 TS is Luminex xMap certified.

Features include:

- Offers 24-, 96-, and 384-well strip or full-plate washing
- Affordable, high-quality, and high-performance washing
- Applications from ELISA to cell- and bead-based assays
- Color, touch screen for quick, easy programming and operation
- Automated maintenance routines for continued reliable operation
- Direct-to-drain waste option eliminates the need to empty waste bottles
- Automated buffer switching automates complex wash routines

The Agilent BioTek 50 TS washer is an ideal partner to the Agilent BioTek 800 TS absorbance reader to automate ELISA and other applications.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MultiFlo FX

Dispensing is an exact science

MultiFlo FX multimode dispenser

The Agilent BioTek MultiFlo FX multimode dispenser accurately and precisely dispenses up to four reagents in parallel without carryover. The AMX module provides gentle media exchange for 3D cell structures, and the RAD single-channel dispenser enables custom-mapped dispensing to individual wells to facilitate many applications, including concentration normalization assays.

Features include:

- Multimode dispensing replaces multiple instruments in a user-upgradable platform
- Wide dispense-volume range of 500 nL to 3 mL
- Compatible with 6- to 1536-well microplates
- Compact footprint, ideal for integration into automated systems
- Compatible with BioStack, BioSpa 8, and BenchCel for walk-away automation
- Available wash module for 6- to 384-well plates
- Direct-to-drain waste option eliminates the need to empty waste bottles

MicroFill dispenser

The Agilent BioTek MicroFill dispenser is an economical, compact, and reliable alternative for accurate and precise dispensing of 5 to 6,000 µL volume per well. Variable dispensing flow rates allow low- to high-velocity dispensing for any application. The fluid path is autoclavable, and the MicroFill's compact footprint makes it ideally suited to fit inside common laboratory enclosures.

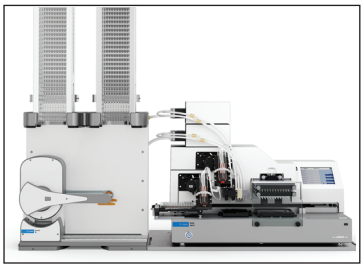
Features include:

- Accommodates 24-, 96-, and 384-well standard and deep-well microplates
- Syringe pump guarantees optimal precision and accuracy
- No recalibration required; low-maintenance design with built-in routines
- User-controlled dispensing flow rates for low- to high-velocity dispensing
- Up to 75 programs stored in multiple languages at the touch of a button

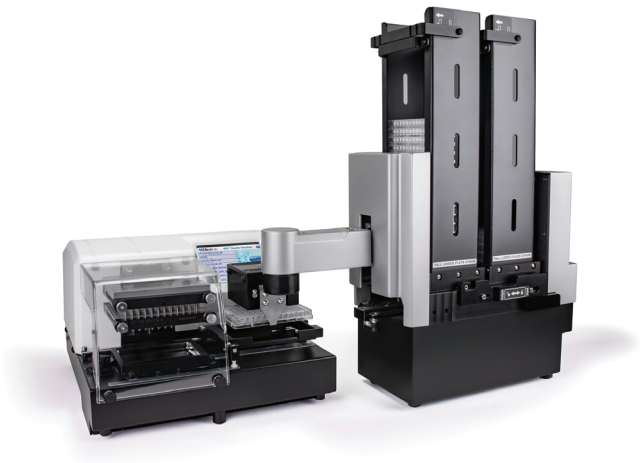
The Agilent BioTek liquid handling systems are ideal partners with our automation and detection instruments. Integrating a washer or dispenser to an automated system helps improve workflow efficiency across many applications.

BenchCel microplate handler

The Agilent BenchCel microplate handler is a compact, automated system that can be integrated with a variety of Agilent BioTek instrumentation. For liquid handling, the MultiFlo FX multimode dispenser, 406 FX washer dispenser, 405 TS and LS washers, and the ELx405 Select deep well washer can be combined. Agilent BioTek detection instruments, including the Cytation 5 cell imaging multimode reader, Synergy Neo2 hybrid multimode reader, Synergy H1 multimode reader, and Epoch 2 microplate spectrophotometer can also be added. In addition, the BenchCel is compatible with a wide range of microplates including deep-well plates. The combined automated workflows enable a wide variety of applications.



The Agilent BioTek 406 FX washer dispenser can be integrated in the right or left side of the Agilent BenchCel as needed for best workflow automation.



BioStack microplate stacker

Automate routine microplate washing or dispensing processes with the compact Agilent BioTek BioStack microplate stacker. BioStack 4 offers proprietary plate de and relidding for sensitive cell-based workflows, and all BioStack configurations are available with 10-, 30-, or 50-plate-capacity stacking columns.

BioSpa 8 automated incubator

The BioSpa 8 automated incubator optimizes liquid handling, plate reading, and imaging workflows for multiple plates. Built-in scheduling and environmental monitoring allow you to walk away with confidence—and multiple users can run processes simultaneously without disrupting others.

Features include:

- Complete workflow automation, from sample preparation to detection
- Temperature and CO_2/O_2 control, and humidity monitoring
- Records environment conditions and produces automated alerts
- OnDemand mode: Remove/replace labware, independent scheduling, and multi-user profiles
- Compact for biosafety cabinet use
- Uncomplicated software and simple integration

The Agilent BioTek BioSpa 8 automated incubator processes up to eight microplates or other labware at a time.

Microplate washers and dispensers are essential to many laboratory workflows, from basic ELISA to kinetic live cell imaging. Agilent BioTek offers a complete line of single-mode and multimode microplate readers, plus cell imaging systems.

800 TS absorbance reader

The Agilent BioTek 800 TS absorbance reader offers a simple and intuitive user interface with excellent performance for a range of absorbance assays.

Epoch 2 microplate spectrophotometer

The Agilent BioTek Epoch 2 microplate spectrophotometer offers ultimate assay flexibility with filter-free wavelength selection from 200 to 999 nm.

Synergy Neo2 hybrid multimode reader

The Agilent BioTek Synergy Neo2 hybrid multimode reader—our flagship multimode reader—offers unparalleled performance and speed.

Cytation 1/5/7 cell imaging multimode readers

The Cytation 1, 5, or 7 cell imaging multimode reader, integrated with an Agilent BioTek liquid handler and BioSpa 8 automated incubator, creates a live cell imaging system for up to eight plates at a time.

Instrument comparison

	Combination Systems		Washers		Dispensers
	406 FX	**MultiFlo FX**	**405 TS/LS**	**50 TS**	**MicroFill**
Key Features: Washing					
Plate Types	96 to 1536	6 to 384	96, 384	24, 96, 384	
Low Profile and Standard Height	•	•	•	•	
Solid and Filter Bottom	•		•	•	
Deep Well		•	ELx405 Select		
Automatic Buffer Switching	•		•	•	
Volume Range (per Well)	3 µL—3 mL	20 µL—30 mL	25 µL—3 mL	25 µL—3 mL	
Full-Plate Washing	•	•	•	•	
Strip Washing		•		•	
Washing Speed (96 wells, 3 cycles, 300 µL/well)	≤ 30 s	≤ 130 s	≤ 30 s	≤ 80 s with 2 x 8 well manifold ≤ 130 s	
Magnetic Bead Assays	•	•	•	•	
Vacuum Filtration		•	•	•	
Dual-Action Manifold Available	•		•		
Overflow Protection	•	•	•	•	
Key Features: Dispensing					
Plate Types	96 to 1536	6 to 1536			24, 96, 384
Volume Range	500 nL to 3 mL	500 nL to 3 mL 500 nL to 30 mL (RAD)			5 µL to 6 mL
Peristaltic Pump Dispensing	•	•			
Syringe Pump Dispensing	•	•			•
General					
AMX		•			
RAD Single-Channel Dispensing		•			
Variable Flow Rates	•	•	•	•	•
Microplate Shaking		•	•	•	
BioSpa 8 Compatible		•	•		
BenchCel Compatible	•	•	•		
BioStack Compatible	•	•	•		•
LHC Software Compatible	•	•	•	•	
Ultrasonic Advantage Available	•		•		
Verify Technology Available			•		

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