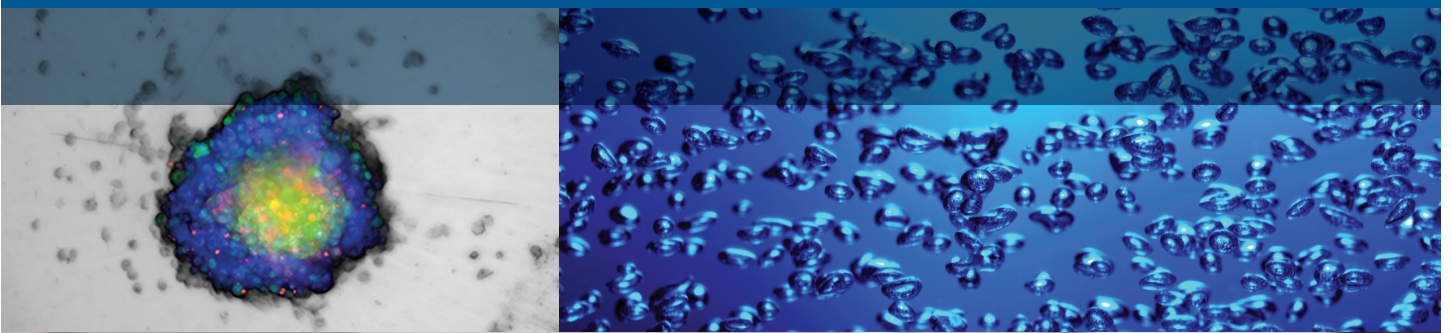


# Agilent BioTek Washers and Dispensers

Solutions for better workflows



# Agilent BioTek Microplate Liquid Handling Systems

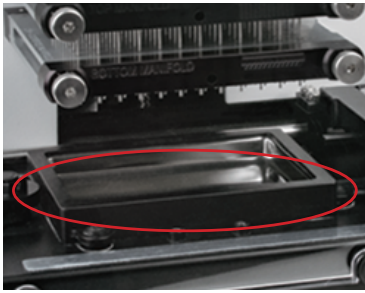


## Efficiently handle a wide range of applications

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 prep



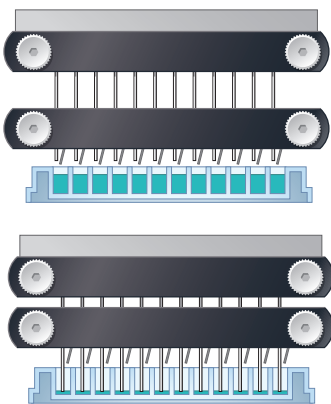
The priming/cleaning reservoir (circled) offers ultrasonic cleaning of both dispense and aspirate manifolds.

### Patented Ultrasonic Advantage

Pin clogging is the primary cause of poor washer performance. The priming/cleaning reservoir in the Agilent BioTek 405 microplate washer and Agilent BioTek EL406 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



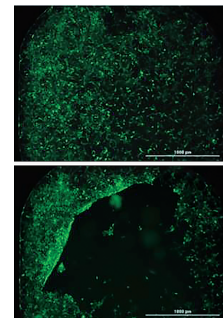
The dual-action manifold allows independent control of dispense and aspirate tubes for optimal x-, y- and z- positions. Dispense tubes are angled to 20° for gentle dispensing into well containing delicate cell layers.

### 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 won't disrupt cell layers
- Allows vigorous overflow/overflow washing



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



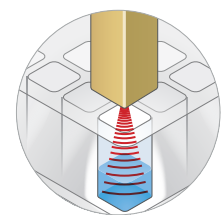
The Verify module is built-in above the manifold and determines the fluid volumes in each well following dispense and aspirate cycles.

### Patented Verify technology

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



The 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 (RAD) technology

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

#### RAD benefits:

- Rapid dispense 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  $\mu\text{L}$ /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

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



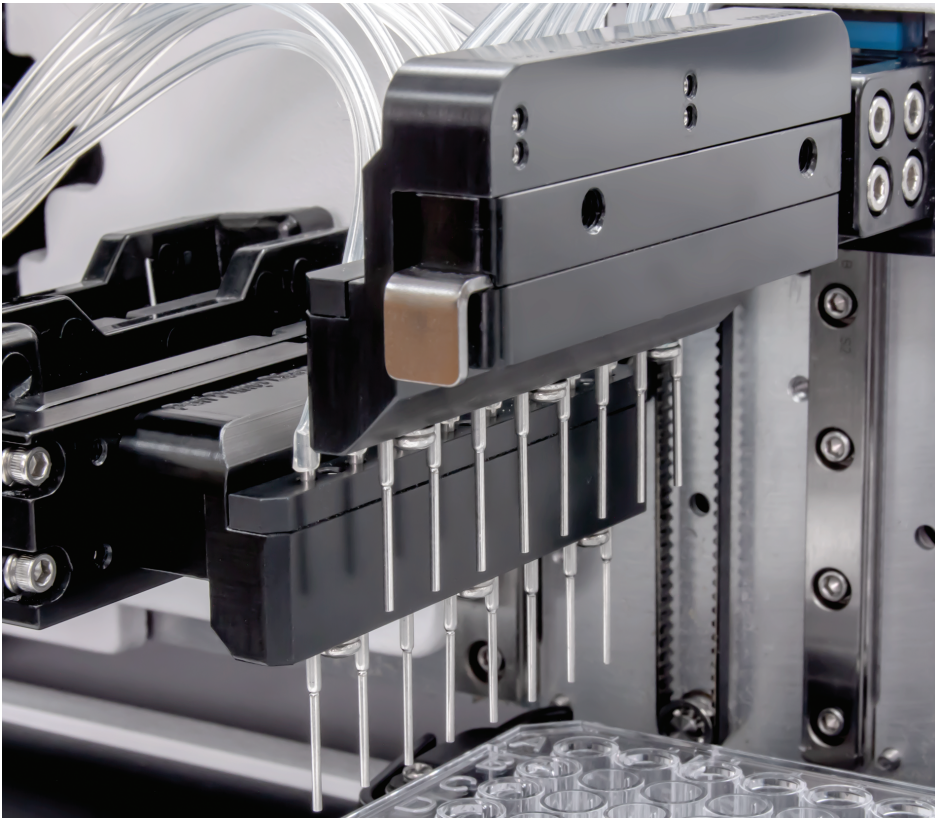
Four manifolds independently dispense four different reagents.

### Parallel Dispense

Two pump technologies are combined in the Parallel Dispense functionality of MultiFlo 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 don't require recalibration – and autoclavable versions are available.

#### Parallel Dispense benefits:

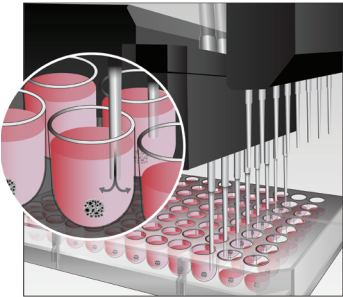
- Up to four reagent dispensing without carryover
- Fast dispense speeds to 6- to 1536-well plates
- Angled tubes for gentle dispense to cell monolayers
- Volume range of 500 nL to 30 mL
- Space savings on benchtop and in automated systems



## Unique Dispensing Technologies

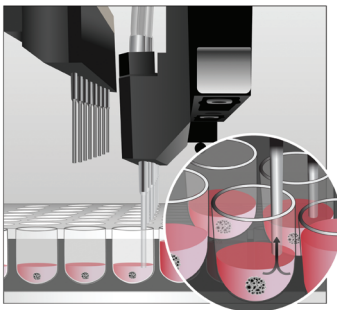
### Automated Media Exchange (AMX)

The patented AMX module for the MultiFlo FX enables gentle automated 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.



#### AMX 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



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

## Our "Combination" Instruments are Designed to Handle Multiple Processes on a Single Platform

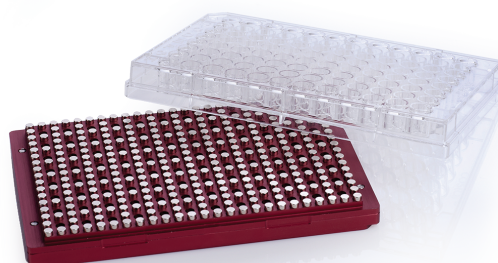


### Agilent BioTek EL406 washer dispenser

The Agilent BioTek EL406 automates plate washing and multiple reagent dispensing in one instrument. The EL406 is ideal for applications like cell fixing and staining prior to imaging, ELISA, multiplex assays, and many other common routines. The Dual-Action manifold and patented Ultrasonic Advantage ensure excellent washing performance and easy maintenance.

#### EL406 features include:

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



The EL406 is a powerhouse for many standard plate washing and dispensing protocols, but it also automates more complex operations like magnetic and polystyrene bead washing workflows – and it's Luminex xMap approved. Bead washing is available for 96- and 384-well microplates.

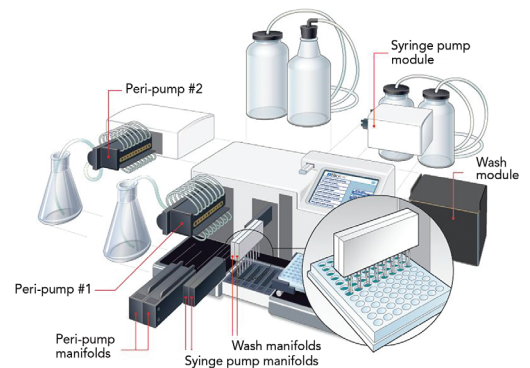


### Agilent BioTek MultiFlo FX multimode dispenser

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 to the Agilent BioTek BioStack microplate stacker and the Agilent BioTek BioSpa 8 automated incubator to automate many cell imaging and biochemical applications workflows.

#### MultiFlo FX features include:

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

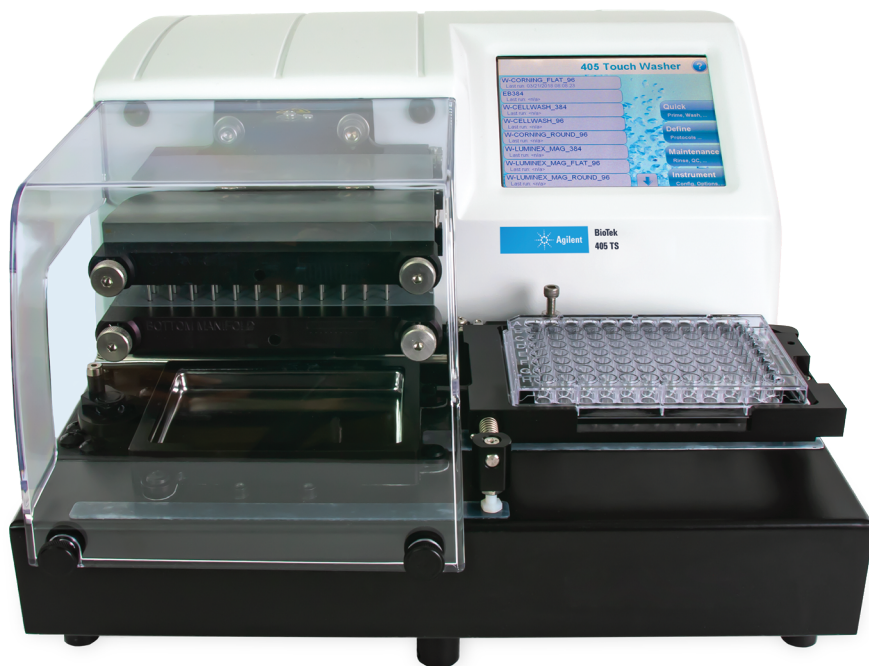


The configurable MultiFlo FX: four reagent dispensers, washer, media exchange, and single channel dispense.

## Washers

*"BioTek has been the gold standard for plate washers in my experience. It 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."*

- **405 TS user,**  
SelectScience review

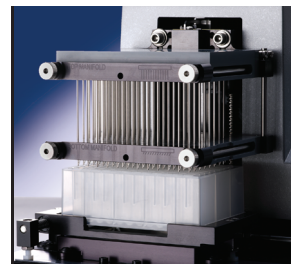


### Agilent BioTek 405 TS microplate washer

The Agilent BioTek 405 TS 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 LHC Secure provides 21 CFR Part 11 compliant features.

#### 405 TS features include:

- Fast 96- and 384-well microplate washing in a single instrument
- Angled dispense tips for gentle cell-based assay washing
- Patented Verify and Ultrasonic Advantage check for clogged manifold tubes and automatically cleans them
- Internal four-buffer switching
- Password protection for onboard protocols
- Programmable to leaves wells empty or with specific residual volume
- Direct drain to 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 microplate washer

The Agilent BioTek 50 TS washer offers functionality that is unsurpassed in its class. The color touchscreen 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.

#### 50 TS features include:

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



The 50 TS is an ideal partner to the 800 TS absorbance reader to automate ELISA and other applications.



# 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 automated 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.

#### MultiFlo FX features include:

- Multimode dispensing replaces multiple instruments in a user upgradeable 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 and BioSpa 8 automated incubator for walkaway automation
- Available wash module for 6- to 384-well plates
- Direct drain to waste option eliminates the need to empty waste bottles



### Agilent BioTek MicroFill dispenser

MicroFill is an economical, compact, and reliable alternative for accurate and precise dispensing from 5  $\mu$ L to 6,000  $\mu$ L per well volume. Variable dispense flow rates allow low- to high-velocity dispensing for any application. The fluid path is autoclavable and the MicroFill compact footprint makes it ideally suited to fit inside common laboratory enclosures.

#### MicroFill 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 dispense flow rates for low- to high-velocity dispensing
- Up to 75 programs stored in multiple languages at the touch of a button



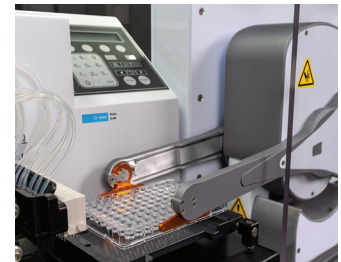
## Automation

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

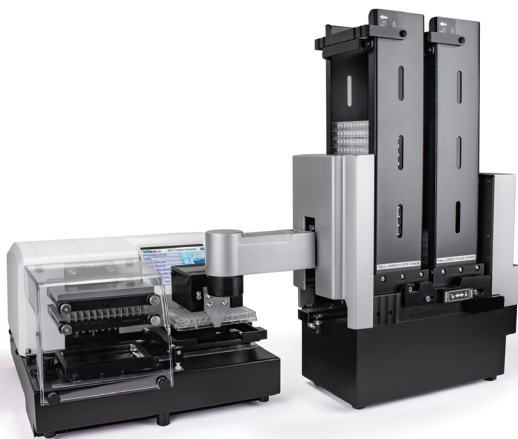


### Agilent BenchCel microplate handler

The Agilent BenchCel microplate handler is a compact, automated system that can be integrated to the MultiFlo FX multimode dispenser and EL406 washer dispenser, enabling automated workflows for a variety of applications. The BenchCel is compatible with a wide range of microplates including deep-well.



BenchCel precisely places a microplate on the EL406 carrier.



### BioStack microplate stacker

Automate routine microplate washing or dispensing processes with the compact BioStack microplate stacker. BioStack 4 offers patented plate de-lidding and re-lidding for sensitive cell-based workflows, and all BioStacks are available with 10-, 30- or 50-plate capacity stacking columns.



### BioSpa 8 automated incubator

BioSpa 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 allows multiple users to run processes simultaneously without disrupting others.

#### **BioSpa 8 features include:**

- Complete workflow automation, sample prep to detection
- Temperature, CO<sub>2</sub>/O<sub>2</sub> control; humidity monitoring
- Records environment conditions; automated alerts
- OnDemand mode: Remove/replace labware, independent scheduling and multi-user profiles
- Compact for biosafety cabinet use
- Uncomplicated software and simple integration



BioSpa processes up to 8 microplates or other labware at a time.

## Related Instruments

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- and multimode microplate readers, plus cell imaging systems. You'll find all the details of these and more on [www.biotek.com](http://www.biotek.com).



### **Agilent BioTek 800 TS absorbance reader**

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



### **Agilent BioTek Epoch 2 microplate spectrophotometer**

Ultimate assay flexibility is offered with filter-free wavelength selection from 200 nm to 999 nm in the Epoch 2!



### **Agilent BioTek Synergy Neo2 hybrid multimode reader**

The Synergy Neo2, the Agilent BioTek flagship multimode reader, offers unparalleled performance and speed.



### **Agilent BioTek Cytation cell imaging multimode reader**

Cytation cell imaging multimode reader, integrated with a BioTek liquid handler and BioSpa, creates a live cell imaging system for up to eight plates at a time.

# Instrument Comparison



	Combination Systems		Washers		Dispensers
	EL406	MultiFlo FX	405 TS/LS	50 TS	MicroFill
<b>Key Features: Washing</b>					
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 2x8 well manifold ≤130 s	
Magnetic and polystyrene bead assays	•	•	•	•	
Dual-Action manifold available	•		•		
Overflow protection	•	•	•	•	
<b>Key Features: Dispensing</b>					
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	•	•			•
<b>General</b>					
Automated Media Exchange (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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RA44435.3090625

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© Agilent Technologies, Inc. 2021  
Published in the USA, December 2, 2021  
5994-2412EN

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