

AquaMax Microplate Washers

Full-featured microplate washer systems for biochemical and cell-based assays

KEY FEATURES

- Interchangeable 96- and 384-well wash heads
- 96- and 384-well Cell Wash Head options
- Simultaneous well washing without plate indexing or quadrant processing
- Completely programmable via touch screen interface
- No external pumps or computer
- Comprehensive, automated cleaning utilities
- Robotics-friendly design

Introduction

AquaMax® Microplate Washers from Molecular Devices are fully self-contained systems, configurable for both 96- and 384-well microplate washing applications. For biochemical assays, the washers are primarily used to remove unbound material and unreacted reagents in microplate wells, and are compatible with SBS-conforming polystyrene and polypropylene flat, round, and V-bottom microplates. For cell-based assays, the AquaMax microplate washer has the option for 96 or 384 well cell wash heads with angled pins to allow extremely gentle washing of weakly adherent cell types.

Unique design

AquaMax washers do not require external pumps or a computer to operate, thereby minimizing bench space requirements. The 96 and 384 interchangeable wash heads can be installed in seconds, without tools, calibration or alignment (Figure 1). Aspiration and dispensing of all 96 and 384 wells occurs simultaneously leading

to high-precision assays and faster microplate processing without mechanical plate indexing or quadrant processing. Comprehensive cleaning protocols can be activated at the touch of a button to maintain trouble-free operation. A Standby feature keeps the system primed and probe tips submerged in buffer for instant startup. AquaMax washers are available in two different configurations: The AquaMax 2000 washer has two fluid inlets; the AquaMax 4000 washer has four fluid inlets and additional programming capabilities.

Flexibility

By using interchangeable 96 and 384 wash heads on a single instrument, the AquaMax washers configure easily to meet current and future, higher-density microplate application requirements. Two- or four-fluid inlets with matching color-coded tubing facilitate quick assembly of the buffer and solution bottles and allow multiple wash protocols to be run without switching bottles (Figure 2).



Figure 1. User-interchangeable heads. The user-interchangeable 96 and 384 wash heads can be exchanged and re-attached very quickly to the washer manifold using a simple lever mechanism.



Figure 2. Color-coded inlet connectors. Color-coded inlets with quick connects decrease assembly time and allow the use of multiple buffers and solutions without bottle switching. The level sensors, when connected to the reservoir bottle sensors, detect if bottles are empty or full.



Figure 3. Touchscreen system control. Using the front panel LCD, program control features can be easily selected to set up, edit, delete, copy, and rename wash protocols, create new microplates in the microplate library, or perform washer maintenance.

Versatility

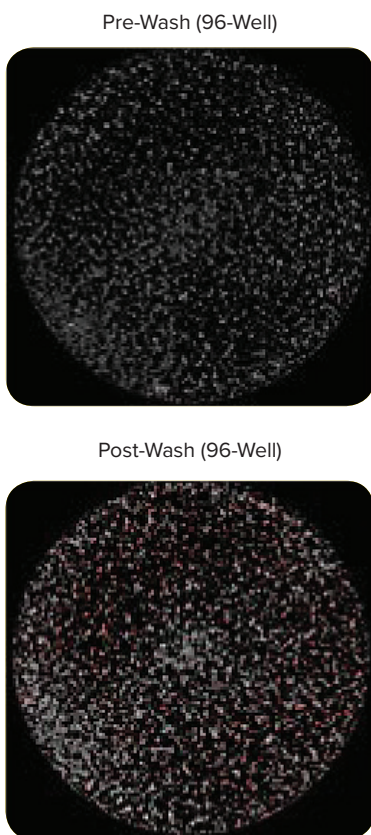
Using the intuitive touchscreen user interface, up to 100 different programs, each containing up to 50 program steps, can be configured to wash plates and perform system maintenance (Figure 3). Various system head designs and control features optimize the ability to run biochemical and cell-based microplate washing applications. Precise dispense and aspiration control allows both fast processing of robust biochemical assays and gentle processing of cell-based assays without cell disruption (Figure 4). Fast sequential washing, continuous washing, and bottom washing options allow the AquaMax Washer to be set up to meet specific assay needs while reducing the wash time to a minimum. AquaMax washers can also be used in conjunction with magnetic adapter plates to wash the magnetic beads used in highly multiplexed assays.

Automation

AquaMax washer systems are easy to integrate with the latest automation tools. AquaMax washer systems are compatible with Molecular Devices' StakMax® Microplate Stacker and many robotic plate handlers.

Performance specifications (plate wash heads)

FastWash times (optimized for speed)	96 Wash Head 300 μ L/well, three cycles: 14 sec. 384 Wash Head, 100 μ L/well, three cycles: 16 sec.
Precision (96-well)	< 4% CV @ 300 μ L
Precision (384-well)	\leq 3% CV @ 100 μ L
Washing times 96 wash head, 300 μ L/well	Single cycle: 11 sec. Three cycles: 26 sec.
Washing times 384 wash head, 100 μ L/well	Single cycle: 12 sec. Three cycles: 28 sec.
Dispense volume	10–400 μ L per well
Process time with integrated, optional StakMax Microplate Stacker (Fast Wash, 96 Wash Head, 300 μ L/well, three cycles)	< 13 min. for 20 plates
Wash volume	100–3000 μ L
Residual volume, 96	\leq 5 μ L
Residual volume, 384	\leq 2 μ L



Ordering information	Part number
AquaMax 2000 Microplate Washer • AquaMax modular washer (two fluid inlets) • 1-year warranty covering parts and labor	0310-5363
AquaMax 4000 Microplate Washer • AquaMax modular washer (four fluid inlets) • 1-year warranty covering parts and labor	0310-5227
96-Well Microplate Wash Head	0310-5216T
384-Well Microplate Wash Head	0310-5219T
96-Well Cell Wash Head	0310-5217T
384-Well Cell Wash Head	0310-5218T
4-Liter Bottle without Level Sensor	5000801
4-Liter Bottle with Level Sensor	5000802
10-Liter Waste Reservoir	9000-02 96
AquaMax Sterilant	R8156

Figure 4. Washing cell-based assays. HEK293 cells were seeded at 10,000 cells/well and incubated overnight. The cells were then labeled with Calcein AM dye and pre-washed to remove most of the dye using the AquaMax 4000 washer with the 96 Well Cell Wash Head. Cells were washed twice with 200 μ L of wash buffer containing 1X PBS and at 5 mm above plate bottom and imaged. Cells were washed again 3 times with 300 μ L of wash buffer at 3 mm above plate bottom. Cells were then imaged again to measure post-wash cell area. 95% of cells were retained in wells after washing.

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