

## ACQUITY UPLC M-Class System with HDX Technology

Waters® ACQUITY UPLC® M-Class System with Hydrogen Deuterium Exchange (HDX) Technology supplies direct nano- to microscale flow rates for UPLC separations at 0 °C, optimized for columns ranging from 300 µm to 1 mm internal diameter. The system includes the ACQUITY UPLC M-Class HDX Manager, micro Binary Solvent Manager, Auxiliary Solvent Manager, and optional LEAP HDX-2 Automation Manager.

### SYSTEM SPECIFICATION

Flow control	Direct, non split, and automatic solvent flow control algorithms provide pulse-free flow
Operating flow rate range	200 nL/min to 100 µL/min without flow splitting
Maximum operating pressure	15,000 psi
pH range	pH 2 to 10
Unattended operation	Full 96-hour diagnostic data display through console software

### ACQUITY UPLC M-CLASS HDX MANAGER

Injection volume range	50-µL loop standard; 1, 2, 5, 10, 20, 100, 250-µL loops available
HDX chamber temperature control	0.1 to 25.0 °C, in 0.1 °C increments (with ambient temperature of 20.0 °C)
Digestion column heater	Accommodates one column up to 50 mm length
Digestion column temperature control	10.0 °C above HDX chamber temperature to 45.0 °C in 0.1 °C increments

### MICRO BINARY SOLVENT MANAGER (µBSM)

Number of solvents	Up to four, in combination of two: A1 or A2, and B1 or B2
Solvent conditioning	Integrated vacuum degassing, six lines with two allocated for the injector needle wash/purge solvents
Gradient formation	High pressure mixing, binary gradient
Primary check valves	Intelligent Intake Valves ( <i>i</i> <sup>2</sup> Valve)
Pump compositional precision	<0.25 min SD based on six repeat injections (see ACQUITY UPLC M-Class Systems Specification Guide for conditions)
Compressibility compensation	Automatic, no user intervention required
Priming	Automatic, user programmable; wet priming runs at a flow rate of 4 mL/min

**MICRO BINARY SOLVENT MANAGER ( $\mu$ BSM) CONTINUED**

Pump seal wash	Equipped with an integrated, programmable active wash system to flush the rear of the high pressure seals and the plungers
Flow ramping	User selectable from method editor
Primary wetted materials	UHMWPE blend, MP35N, titanium alloy, gold, sapphire, ruby, zirconia, DLC, fluoropolymer, fluoroelastomer, PEEK, PEEK blend, PPS, and fused silica
Mixing options	Optional mixer for micro scale (1.0 mm I.D.)

**AUXILIARY SOLVENT MANAGER (ASM)**

Column trapping pump (A side)	Choice of two eluents
NanoLockSpray™ addition (B side)	Choice of two calibration solutions
Flow rate range	A side: 0 mL/min to 1 mL/min B side: 0 $\mu$ L/min to 100 $\mu$ L/min
Solvent conditioning	Integrated vacuum degassing, six lines
Primary check valves	Intelligent Intake Valves ( $i^2$ Valve)
Compressibility compensation	Automatic, no user intervention required
Priming	Automatic, user programmable; wet priming runs at a flow rate of 4 mL/min
Primary wetted materials	UHMWPE blend, MP35N, titanium alloy, gold, sapphire, ruby, zirconia, DLC, fluoropolymer, fluoroelastomer, PEEK, PEEK blend, and PPS

**LEAP HDX-2 AUTOMATION MANAGER [OPTIONAL]**

Sample capacity	Protein samples 20 positions for 2 mL vials Reagent vials 10 positions for 10 mL vials Reaction/Quench vials Capacity for 100 time points in 2mL vials
Temperature zones	2x independently controlled noncondensing Peltier Tray holders each with two tray positions
Temperature control	0 °C to ambient in 0.1 degree increments
Syringe volume ranges	Protein samples: 0.5 $\mu$ L to 10.0 $\mu$ L in 0.1- $\mu$ L increments Labeling and Injection: 10.0 $\mu$ L to 500.0 $\mu$ L in 0.1- $\mu$ L increments
Labeling time	10 s up to >24 h with an accuracy of 12 s
Instrument Control	CHRONOS with sample list export to MassLynx using the proprietary Waters Sample Wizard

**ACQUITY UPLC M-CLASS INSTRUMENT CONTROL**

External communications	Ethernet interfacing via RJ45 connection to host PC
Event inputs/outputs	Rear panel contact closure and/or TTL inputs/outputs
External control	MassLynx® Software
User diagnostics	Available through software on host PC via the Instrument console software
Connections INSIGHT®	Provides real-time monitoring and automatic notification of instrument performance and diagnostic information, allowing for quicker problem resolution

**ENVIRONMENTAL**

Acoustic noise	<65 dBA
Operating temperature range	15 to 28 °C (58 to 82 °F)
Operating humidity range	20% to 80%, noncondensing

**POWER REQUIREMENTS**

Voltage range	100 to 240 Vac
Frequency	50 to 60 Hz

**PHYSICAL DIMENSIONS**

ACQUITY UPLC M-Class System with HDX Technology	Same components as listed above, except: LEAP HDX-2 Automation Manager Width: 34 cm (14 inches) Height: 76 cm (30 inches) Depth: 71 cm (28 inches)
ACQUITY UPLC M-Class System with HDX-2 Automation	Micro Binary Solvent Manager, HDX Manager, LEAP HDX-2 Automation Manager, and Auxillary Solvent Manager Width: 163 cm (64 inches) Height: 104 cm (41 inches) Depth: 74 cm (29 inches)

# Waters

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