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ACQUITY Premier System with Multi-Dimensional Technology

The Waters™ ACQUITY™ Premier System with Multi-Dimensional Technology is the first to offer novel MaxPeak™ High Performance Surfaces (HPS) Technology, which provides a truly inert multi-dimensional LC system designed to complement the Waters sub-2-µm particle ACQUITY Premier Column family. This multi-dimensional system configuration allows chemists to increase sensitivity and selectivity, eliminate unwanted interference, and characterize the most complex samples. Additionally, by adding a second reversed-phase separation to the application, a scientist may perform separations that are normally incompatible with a mass spectrometer. The system is comprised of a choice of two Binary Solvent Manager pumps, or a combination of one Quaternary Solvent Manager (Injection Pump) and one Binary Solvent Manager (Analytical Pump), along with a Sample Manager with Flow-Through Needle (FTN) design, and a Column Manager.

PREMIER BINARY SOLVENT MANAGER (BSM)

Number of solvents	Up to four, in any combination of two: Al or A2 and B1 or B2
Solvent conditioning	Five vacuum degasser, one allocated for injector purge solvent
Operating flow rate range	0.001 to 2.000 mL/min, in 0.001 ml increments (firmware v1.71 and later)
Compressibility compensation	Automatic and continuous, no user intervention required
Plunger seal wash	Integral, active, programmable
Gradient profiles	11 gradient curves (including linear, step [2], concave [4], and convex [4])
Wet prime	Automatic
Maximum operating pressure	15,000 psi up to 1 mL/min, 9000 psi up to 2 mL/min per pump, not more than 15,000 psi total
Composition accuracy	±0.5% absolute (full scale) from 5% to 95% of flow rates from 0.50 to 2.00 mL/min
Composition precision	0.15% RSD or ±0.01 min SD, whichever is greater, based on retention time
Flow precision	0.075% RSD or ±0.02 min SD, or 1.00 s for run times less than 1.00 min based on retention time or volumetric measures (0.5 to 2.0 mL/min)
Primary wetted materials	Titanium, PPS, fluoropolymer, fluoroelastomer, UHMWPE blend, sapphire, ruby, zirconia, Nitronic 60, DLC, PEEK and PEEK blend, Inconel 600, FEP

PREMIER QUATERNARY SOLVENT MANAGER (QSM)

Solvent capacity	Blend up to four solvents in any combination (standard); total capacity of nine solvents with integrated solvent select valve (optional)
Number of fluidic paths	Three (Path 1, Path 2, and waste), with Arc™ Multi-flow path technology (standard)
Dwell volume selection	Automated with Arc Multi-flow path technology
Solvent conditioning	Integrated vacuum degassing, four chambers
Gradient formation	Low-pressure mixing, quaternary gradient

Gradient profiles	11 gradient curves [including linear, step (2), concave (4), and convex (4)]
Check valves	Passive check valves
Flow accuracy	+/- 1.0% at 0.5, 3.0, and 5.0 mL/min
Flow precision	≤0.075% RSD or +/-0.020 min SD, whichever is greater, based on six replicates [60:40 water:methanol pre-mixed; 1.5 mL/min; alkylphenone mix; 24.0 µL injection volume; CORTECS™ C_{18} 2.7 µm, 4.6 x 50 mm; 35 °C; UV @254 nm]
Composition ripple	≤0.5 mAU [mobile phase containing 0.1% TFA in water/acetonitrile; 1.5 mL/min; CORTECS C_{18} 2.7 µm, 4.6 x 50 mm; 35 °C; UV @214 nm]
Composition accuracy	+/- 0.5% absolute (full scale) from 5 to 95%; 0.5 to 5.0 mL/min [methanol; methanol with 5.0 mg/mL caffeine step gradient; UV @273 nm]
Composition precision	+/- 0.15% RSD or 0.04 min SD, whichever is greater based on six replicate injections [60:40 water:methanol via Auto•Blend™ Technology; 0.5 mL/min; alkylphenone mix; 24.0 µL injection volume; CORTECS C_{18} 2.7 µm, 4.6 x 50 mm; 35 °C; UV @254 nm]
Compressibility compensation	Automatic and continuous
Priming	Wet priming can run at flow rates up to 10 mL/min
Pump seal wash	Standard
Primary wetted materials	316L stainless steel, PPS, fluoropolymer, UHMWPE blend, sapphire, ruby, zirconia, DLC, PEEK and PEEK blend, titanium alloy

PREMIER SAMPLE MANAGER-FTN (SM-FTN-H)

Injection volume range	0.1 to 10.0 µL as standard Up to 1000.0 µL with optional extension loops
Accuracy (aspiration)	±0.2 µL (measured by fluid weight removed from vial with 10 µL injections averaged over 20 injections using standard 100-µL syringe)
Linearity†	≥999 (standard needle)
Precision†	≤0.25% RSD, 5 to 100 µL
Number of sample plates	Any two of the following: 96 and 384 microtiter plates 48-position 2.00-mL vial plates 48-position 0.65-mL micro-centrifuge tube plates 24-position 1.50-mL micro-centrifuge tube plates
Maximum sample capacity	768 in two 384-well plates or 96 in 2-mL vial holders, four additional positions for dilution functions
Sample compartment temp.	4.0 to 40.0 °C, settable in 0.1 °C increment
Temperature accuracy	±0.5 °C at sensor
Temperature stability	±1.0 °C at sensor
Sample manager heat time	≤30 min ambient -40 °C

Injection needle wash	Integral, active, programmable
Minimum sample required	3 µL residual, using Waters Total Recovery 2-mL vials (zero offset)
Sample carryover†	≤0.002% caffeine (UV) ≤0.002% sulphadimethoxine (MS)
Advanced Sample Manager capabilities	Auto-dilution, auto-addition, and load-ahead
Primary wetted materials	Vespel SCP, PEEK blend, DLC, and HPS

COLUMN MANAGEMENT (CM-A)

Column capacity	CM-A: Two columns, as standard (maximum length of 150 mm with filter or guard column), or four columns (maximum length of 50 mm) can be supported with optional tubing kit, up to 4.6 mm internal diameter (I.D.)
Multidimensional valves	Two six-port, two-position valves
Column compartment(s) temperature range	4.0 to 90.0 °C, settable in 0.1 °C increments Two independent heat/cool zones per module
Column compartment(s) temperature accuracy	±0.5 °C at sensor
Column compartment(s) temperature stability	±0.3 °C at sensor
Column compartment heat time	≤15 min ambient -60 °C
Column compartment cool time	≤15 min 60-20 °C
Solvent conditioning	Active pre-heating as standard
Column tracking	eCord™ Technology column information management tracks and archives column usage history for one column

INSTRUMENTAL CONTROL

External communication	Ethernet interfacing via RJ45 connection to host PC with BSM, or Column Manager and UPLC™ detectors and mass spectrometers
Event inputs/outputs	Rear panel contact closure and/or TTL inputs/outputs
External control	MassLynx™ v4.1 with OpenLynx™ Open Access, with specific SCN releases
User diagnostics	Available through software on host PC; system control via console software
Unattended operation	Leak sensors on supported modules, full diagnostic data captured through console software

ENVIRONMENTAL

Acoustic noise	<62 dBA
Operating temperature range	4.0 to 40.0 °C (39.2 to 104.0 °F)
Operating humidity range	20% to 80%, non-condensing

POWER REQUIREMENTS

Voltage	100 to 240 VAC
Frequency	50 to 60 Hz

PHYSICAL DIMENSIONS

ACQUITY Premier Multi-Dimensional System with FTN-H, one Binary Solvent Manager, one Quaternary Solvent Manager, and a Column Manager	Width: 83.8 cm (33 in.) Depth: 86.4 cm (34 in.) Height: 103.4 cm (40.7 in.)

Note: Dimensions are listed with only components listed above.

ORDERING INFORMATION	PART NUMBER
ACQUITY Premier Multi-Dimensional System	Varies, based on detailed configuration

†For specific test conditions, contact your Waters sales representative.

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