ACQUITY PREMIER with Quaternary Solvent Management System

The Waters ACQUITY™ PREMIER System is the first to offer novel MaxPeak High Performance Surfaces (HPS)-based technology that provides a truly inert LC system and is holistically designed to complement the Waters sub-2-µm particle ACQUITY PREMIER Column family. This system features the flexibility of quaternary solvent blending and a direct-injection style sample manager. Expect improved robustness and peak shape of metal-sensitive analytes. The ACQUITY PREMIER System is available with a choice of column management options.

ACQUITY PREMIER SYSTEM WITH QUATERNARY SOLVENT MANAGEMENT SYSTEM FEATURES

Total system bandspread,† 5σ	≤12 µL, default configuration
Dwell volume (total system)†	≤400 µL, includes standard 100 µL mixer
Gradient delay volume†	≤300 µL, includes standard 100 µL mixer
Integrated leak management	Leak sensors, as standard, and safe leak handling
Quantum synchronization	Injection synchronization between pump and sample manager enhances retention time reproducibility
Settable flow rate range	0.010 to 2.000 mL/min, in 0.001 mL increments (firmware version 1.5x and earlier) 0.010 to 2.200 mL/min, in 0.001 mL increments (firmware version 1.60) 0.001 to 2.200 mL/min in 0.001 mL increments (firmware version 1.65 and later)
Maximum operating pressure	15,000 psi up to 1.0 mL/min, 9000 psi up to 2.0 mL/min (firmware version 1.5x and earlier) 15,000 psi up to 1.0 mL/min, 7800 psi up to 2.2 mL/min (firmware version 1.6x and later)
pH range†	2 to 10
Unattended operation	Leak sensors and safe leak handling, full 96-hour diagnostic data display through console software
Cycle time	≤30 s inject-to-inject

QUATERNARY SOLVENT MANAGER (QSM)

Number of solvents	Blend up to four solvents in any combination (standard) Expanded solvent choices with optional six-port solvent select valve
Solvent degassing	Integrated vacuum degassing, four chambers One additional chamber for the SM-FTN purge solvent
Solvent blending	Automated, online pH, ionic strength, and organic modifier blending from pure solvents with Auto•Blend Plus™ Technology
Gradient formation	Low pressure mixing, quaternary gradient
Gradient profiles	11 gradient curves (including linear, step [2], concave [4], and convex [4])
Primary check valves	Intelligent Intake Valves (*i*^{2}Valve), standard

Pressure pulsation†	≤1.0% or 25 psi, whichever is greater
Flow accuracy†	±1.0% at 0.5 to 2.0 mL/min using 100% A (with *i*²Valve)
Flow precision†	≤0.075% RSD or ±0.01 min SD, whichever is greater, based on six replicates (with *i*²Valve)
Composition ripple†	≤1.0 mAu (≤0.1 mAU with optional 250 µL mixer) (with *i*²Valve)
Composition precision†	≤0.15% RSD or ±0.02 min SD, whichever is greater, based on six replicate injections (with *i*²Valve)
Composition accuracy†	±0.5% absolute (full scale) from 5% to 90% from 0.5 to 2.0 mL/min (with *i*²Valve)
Compressibility compensation	Automatic and continuous
Priming	Wet priming can run at flow rates up to 4 mL/min
Pump seal wash	Equipped with an automated active wash system to flush the rear of the high pressure seals and the plungers
Flow ramping	Range: 0.01 to 30.00 min to reach 2.00 mL/min Default: 0.45 min to reach 2.00 mL/min
Primary wetted materials	Titanium, PPS, fluoropolymer, fluoroelastomer, UHMWPE blend, sapphire, ruby, zirconia, Nitronic 60, DLC, PEEK and PEEK blend

SAMPLE MANAGER-FTN (SM-FTN)

Injection volume range	0.1 to 10.0 µL as standard configuration Up to 1000.0 µL with optional extension loop
Accuracy (aspiration)	±0.2 µL, measured by fluid weight removed from vial with 10.0 µL injections averaged over 20 injections using standard 100-µL syringe
Precision†	≤0.25% RSD, 5 to 100 µL
Linearity†	≥0.999 (standard needle)
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 temperature range	4.0 to 40.0 °C, settable in 0.1 °C increments
Temperature accuracy	±0.5 °C at sensor
Temperature stability	±1.0 °C at sensor
Sample manager heat time	≤30 min ambient 40 °C

Sample manager cool time	≤60 min ambient -4 °C
Injection needle wash	Integrated, 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 HEATER (CH-A)

Column capacity	CH-A: Single column, up to 4.6 mm internal diameter (I.D.), up to 150 mm in length with filter or guard CH-30A: Single column, up to 4.6 mm internal diameter (I.D.), up to 300 mm length with filter or guard column
Column compartment temperature range	20.0 to 90.0 °C, settable in 0.1 °C increments
Column compartment temperature accuracy	±0.5 °C at sensor
Column compartment temperature stability	±0.3 °C at sensor
Column compartment heat time	≤15 min ambient -60 °C
Solvent conditioning	Active pre-heating as standard; passive pre-heating (optional in CH-A only)
Column tracking	eCord™ Technology column information management tracks and archives column usage history Care and Use information can be access by use of custom QR code

COLUMN MANAGEMENT (CM-A AND CM-AUX)

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.) CM-Aux: Two columns (maximum length of 150 mm, with filter or guard column) – up to two CM-Aux units can be configured with one CM-A for support of up to six columns
Switching valves	Two nine-port, eight-position valves (CM-A only); provides programmable, automatic, random access switching, waste and bypass positions for rapid solvent changeover
Column compartment(s) temperature range	4.0 to 90.0 °C, settable in 0.1 °C increments; two independent heat/cool zones per module, up to six zones in stacked configuration
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

SAMPLE ORGANIZER

Sample plate capacity	Sample plate capacity is configured based on the types and combinations of plates being used: ▪ Maximum of 19 standard microtiter plates, up to 15.5 mm high, or ▪ Maximum of 9 intermediate height plates (or 2-mL vial holders), up to 40.0 mm high, or ▪ Maximum of 6 deep well plates (or 4-mL vial holders), up to 47.0 mm high
Maximum sample capacity	Maximum of 7296 samples in 19 384-well plates
Sample compartment temperature range	4.0 to 40.0 °C, settable in 0.1 °C increments
Temperature accuracy	±1 °C at the sensor
Temperature stability	±1 °C at the sensor

INSTRUMENTAL CONTROL

External control	Empower™ Software, MassLynx™ Software, UNIFI™ Scientific Information System, or standalone through console software
External communications	Ethernet interfacing via RJ45 connection to host PC
Event inputs/outputs	Rear panel contact closure and/or TTL inputs/outputs

ENVIRONMENTAL SPECIFICATIONS

Acoustic noise	≤62 dBA, system
Operating humidity range	20% to 80%, non-condensing
Operating temperature range	4 to 40 °C (39.2 to 104.0 °F)

ELECTRICAL SPECIFICATIONS

Power requirements	100 to 240 VAC
Line frequency	50 to 60 Hz
Power consumption	QSM: 360 VAC SM-FTN: 400 V CM-A: 400 V

PHYSICAL SPECIFICATIONS

ACQUITY PREMIER System with Quaternary Solvent Management: SM-FTN-H, CH-A, and Solvents Tray	Width: 34.3 cm (13.5 in.) Height: 79.6 cm (31.4 in.) Depth: 71.2 cm (28.0 in.)
Sample Organizer	Width: 25.4 cm (10.0 in.) Height: 96.5 cm (38.0 in.) Depth: 71.1 cm (28.0 in.)

[1] *For specific test conditions, contact your Waters sales representative.*

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