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# ACQUITY PREMIER with Binary Solvent Management

The Waters™ ACQUITY™ PREMIER™ System is the first to offer novel PREMIER 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 UPLC™ PREMIER Column family. This system represents the ultimate in chromatographic performance and confidence. The ACQUITY PREMIER System reduces variability and losses due to surface interactions, while avoiding time consuming passivation and/or additive use. The system also increases sensitivity, repeatability, and confidence in analytical results, ultimately leading to time savings, improved productivity, and better decision making. This configuration features the robustness and low dispersion of binary solvent management with a direct-injection style sample manager. The ACQUITY PREMIER System is available with a choice of column management options.

## ACQUITY PREMIER WITH BINARY SOLVENT MANAGEMENT FEATURES

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|---|---|
| Total system bandspread,[†] 5$\sigma$ | ≤12 µL, default configuration |
| Dwell volume (total system)[†] | ≤115 µL, default configuration |
| Gradient delay volume[†] | ≤90 µL |
| Integrated leak management | Leak sensors, as standard, and safe leak handling |
| System synchronization | Injection synchronization between both pumps and the sample manager enhances retention time reproducibility |
| Operating flow rate range | 0.001 to 2.000 mL/min, in 0.001 mL increments (firmware version 1.71 and later) |
| Maximum operating pressure | 15,000 psi up to 1.0 mL/min, 9000 psi up to 2.0 mL/min |
| pH range[†] | 2 to 10 |
| Unattended operation | Leak sensors, full 96-hour diagnostic data display through console software |
| Cycle time | ≤30 s inject-to-inject |

## BINARY SOLVENT MANAGER (BSM)

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|---|---|
| Number of solvents | Up to four, in combination of two, A1 or A2 and B1 or B2 |
| Solvent conditioning | Five vacuum degasser chambers, one allocated for injector purge solvent |
| Gradient formation | High pressure mixing, binary gradient |
| Gradient profiles | 11 gradient curves (including linear, step [2], concave [4], and convex [4]) |
| Primary check valves | Intelligent Intake Valves (*i²Valve*) |
| Flow accuracy[†] | ±1.0% of set flow rate at 0.500 mL/min, as per Empower™ SystemsQT™ |
| Flow precision[†] | ≤0.075% RSD or 0.01 min SD, (0.2 to 2.0 mL/min), whichever is greater using premixed solvent |
| Composition ripple (baseline noise)[†] | ≤1.0 mAu |
| Composition precision[†] | ≤0.15% RSD or ±0.01 min SD, whichever is greater |

| | |
|---|---|
| Composition accuracy[†] | ±0.5% absolute from 5% to 95%, 0.2 to 2.0 mL/min |
| Pressure pulsation[†] | ≤0.4% or 25 psi, whichever is greater |
| Compressibility compensation | Automatic, no user intervention required |
| Priming | Wet priming runs at a flow rate of 4 mL/min |
| Pump seal wash | Equipped with a programmable active wash system to flush the rear of the high-pressure seals and the plungers |
| Flow ramping | Automatic |
| Primary wetted materials | Titanium, PPS, fluoropolymer, fluoroelastomer, UHMWPE blend, sapphire, ruby, zirconia, Nitronic 60, DLC, PEEK and PEEK blend, Inconel 600, FEP |
| Mixing options | Standard: 50 µL<br>Optional: 340 µL |

## SAMPLE MANAGER-FTN (SM-FTN)

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| Injection volume range | 0.1 to 10.0 µL as standard configuration<br>Up to 1000.0 µL with optional extension loop |
| Accuracy | ±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%, 5 to 100 µL |
| Linearity[†] | ≥0.999 |
| Maximum sample capacity | Any two of the following:<br>▪ 96 and 384 microtiter plates<br>▪ 48 position 2.00-mL vial plates<br>▪ 48 position 0.65-mL micro-centrifuge tube plates<br>▪ 24 position 1.50-mL micro-centrifuge tube plates |
| Sample compartment | 4.0 to 40.0 °C, settable in 0.1 °C increments; maintains 19 °C below ambient with a temperature range tolerance range between -2 and +4 °C |
| 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)<br>≤0.002% sulphadimethoxine (MS) |
| Advanced sample manager capabilities | Auto-dilution and auto-addition |
| Primary wetted materials | Vespel SCP, PEEK blend, DLC, HPS |

## COLUMN HEATER (CH-A)

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| Column capacity | Single column, up to 4.6 mm internal diameter (I.D.), up to 150 mm in length with filter or guard column. Mounting extends out for use with MS-based detector |
| Fittings | 15,000 psi, low dispersion, with reusable column inlet fittings |
| Column compartment temperature range | Settable from 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 (for legacy method support) |
| 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) 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 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 |
| 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; passive pre-heating (for legacy method support) |
| Fittings | 15,000 psi, low dispersion, with reusable column inlet fittings |
| Column tracking | eCord Technology column information management tracks and archives column usage history |

## SAMPLE ORGANIZER

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| Sample plate capacity | Sample plate capacity is configured based on the types and combinations of plates being used:<br>▪ Maximum of 19 standard microtiter plates, up to 15.5 mm high, or<br>▪ Maximum of 9 intermediate height plates (or 2-mL vial holders), up to 40.0 mm high, or<br>▪ 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 | 4.0 to 40.0 °C, settable in 0.1 °C increments with a tolerance range between temperature range -2 and +4 °C |
| Temperature accuracy | ±1 °C at the sensor |
| Temperature stability | ±1 °C at the sensor |

## BASED INSTRUMENTAL CONTROL

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| 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

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| Acoustic noise | ≤62 dBA, system |
| Humidity – operating | 20% to 80%, non-condensing |
| Operating temperature range | 4 to 40 °C |

## ELECTRICAL SPECIFICATIONS

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| Power requirements | 100 to 240 VAC |
| Line frequency | 50 to 60 Hz |
| Power consumption | BSM: 360 VAC<br>FTN: 400 VAC<br>CM-A: 400 VAC |

## PHYSICAL SPECIFICATIONS

### ACQUITY PREMIER

| System with Binary Solvent Management: BSM, SM-FTN, CH-A | Width: | 34.3 cm (13.5 in.) |
| | Height: | 71.1 cm (28.0 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.) |

†*For specific test conditions, contact your Waters Sales Representative.*

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