

ACQUITY UPC² System

Designed to solve routine and complex separations challenges, the Waters® ACQUITY UPC²™ System enables unparalleled selectivity through combinations of solvent and stationary phase that is simply not possible by any other chromatographic technique. Using CO₂ as its main mobile phase allows you to minimize harmful waste while gaining greater sensitivity, improved resolution, and better control over the retention on analytes. The system works with optical and MS detection, Empower® and MassLynx® software, and is suitable for regulatory and non-regulatory environments.

ACQUITY UPC² SYSTEM FEATURES

Operating flow rate range	0.010 to 4.000 mL/min, in 0.001-mL increments
Maximum operating pressure	6000 psi (413 bar), up to 4 mL/min
Unattended operation	Leak sensors, full 96-hour diagnostic data display through console software

ACQUITY UPC² BINARY SOLVENT MANAGER (BSM)

Number of solvents	Four solvents on the co-solvent side of the pump, labeled B1, B2, B3, and B4
Co-solvent pump only	which will be selected by the Solvent Select Valve (SSV)
Solvent conditioning	Integrated vacuum degassing, four chambers
Co-solvent pump only	
Operating flow rate range	0.010 to 4.000 mL/min, in 0.001-mL increments
Maximum operating pressure	6000 psi (413 bar), up to 3 mL/min, and 4250 psi (293 bar), up to 4 mL/min
Stroke volume	140 µL
Intelligent intake valve – <i>i</i> ² <i>V</i>	Active inlet check valve on the co-solvent primary side
Passive intake valve	Passive check valves on each accumulator pump
Ball and seat check valve	CO ₂ primary pump will have a single ball and seat
pH-range	2.0 to 12.0
Compressibility compensation	Automatic and continuous
Physical dimensions	Width: 34.3 cm (13.5 in.) Height: 67.2 cm (26.5 in.) Depth: 71.1 cm (28.0 in.)
Primary wetted materials	316L stainless steel, ETFE, PPS, fluoropolymer, perfluoroelastomer, FEP, PTFE, UHMWPE, sapphire, ruby, Zirconia ceramic, Nitronic 60, diamond-like coating (DLC), PEEK and PEEK alloy, Titanium alloy, Tygon 2275, polyethylene

ACQUITY UPC² SAMPLE MANAGER

Number of sample plates	Total of two plates <ul style="list-style-type: none"> ■ 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
Number of sample injections	1 to 99 injections per sample
Injection volume range	0.1 to 50.0 μ L, in 0.1- μ L increments; 10- μ L loop is standard
Sample delivery precision	<1% RSD within 20% to 75% of loop volume for 10- μ L loops, UV detection
Injector linearity	>0.999 coefficient of deviation (from 20% to 75%)
Sample temperature control	4.0 to 40.0 $^{\circ}$ C, settable in 0.1 $^{\circ}$ C increments (assumes an ambient temperature of 25.0 $^{\circ}$ C). At an ambient temperature of 21.0 $^{\circ}$ C or lower and sample manager will maintain the temperature of the sample compartment down to 4.0 $^{\circ}$ C with a tolerance of -2.0/+4.0 $^{\circ}$ C, when configured with the maximum number of vials and/or plates
Sample probe	XYZZ based needle-in-needle design
Minimum sample required	5 μ L residual, using maximum recovery 2-mL vials (zero offset)
Wash solvents	Two degassed: strong solvent and weak wash solvent, programmable to suit application
Sample carryover	<0.005% or <2.000 nL, whichever is greater
Advanced operations	Loop off-line mode, load ahead
Unattended operation	Leak sensors, full diagnostic data control captured through console software
Primary wetted materials	Titanium alloy, 316 stainless steel, fluoropolymer, fluoroelastomer, PPS Alloy, PEEK alloy, PPS, PEEK, DLC coating, gold

ACQUITY UPC² COLUMN MANAGER (CM-A AND CM-AUX)

Column	2.1 to 4.6 mm I.D. up to 150 mm in length With guard column OR filter 30 mm length max
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 injector style, 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 to 90 °C settable in 0.1 °C increments Two independent heat/cool zones per module, up to six zones in stacked configuration
Column compartment temperature accuracy	±0.5 °C
Column compartment temperature precision	±0.1 °C
Column compartment temporal temperature stability	±0.3 °C
Solvent conditioning	Active pre-heating as standard
Column tracking	eCord™ Technology column information management tracks and archives achiral Viridis™ Column usage history

ACQUITY UPC² COLUMN HEATER (CH-30A)

Column capacity	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
Column compartment temperature stability	±0.3 °C
Solvent conditioning	Active pre-heating as standard; passive pre-heating
Column tracking	eCord Technology column information management tracks and archives column usage history

ACQUITY UPC² MANAGER

Pressure control stability	± 7.25 psi (0.5 bar) or 1.25 times the pump pressure fluctuations, whichever is greater using 100% CO ₂
CO ₂ purity level	99.97%, and should be considered food grade Liquid CO ₂ : CO ₂ cylinder with a dip tube Gas CO ₂ : CO ₂ cylinder without a dip tube
Control precision	Control precision of the active back pressure regulator shall be $\leq \pm 0.5$ bar (≤ 7.25 psi)

ACQUITY UPC² PDA DETECTOR

Wavelength range	190 to 800 nm
Light source	Prealigned, Intelligent Technology Deuterium lamp
Wavelength accuracy	± 1.0 nm
Linearity range	$< 5\%$ at 2 AU (Propylparaben 257 nm, 10-mm cell)
Optical resolution	1.2 nm
Noise, wet	≤ 60 μ AU (254 nm, 2 Hz, 1 s TC, 3.6 BW res, 10 mm analytical cell)
Drift, dry	≤ 5000 μ AU/h (2 h warm-up, constant temp. and humidity at 230 nm, 3.6 BW res, 2 Hz)
Data rate	Up to 80 Hz
Flow cells	Stainless steel, Intelligent Technology flow cell
Pathlength	10 mm (analytical cell)
Cell volume	8.4 μ L (analytical cell)
Pressure limit	6000 psi
Wetted materials	316 SST, PEEK, Fused Silica
Line voltage	100 to 240 VAC

ACQUITY UPC² INSTRUMENT CONTROL

External control	Empower Software, MassLynx Software, or (standalone through console software)
External communications	Ethernet interfacing via RJ45 connection to host PC
Event input/outputs	Rear panel contact closure and/or TTL inputs/outputs
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, system
Operating temperature range	15.0 to 28.0 °C (59.0 to 82.4 °F)
Operating humidity range	20% to 80%, non-condensing

POWER REQUIREMENTS

Voltage range	100 to 240 Vac
Frequency	50 to 60 Hz

Waters

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