Waters™

Alliance iS Bio HPLC System

The Alliance™ iS Bio HPLC System is for applications that ensure uninterrupted supply of safe and effective biotherapeutics. The flow path is designed using biocompatible materials like MP35N and titanium, along with MaxPeak™ High Performance Surfaces (HPS) Technology, ensuring resilient and durable performance for even the most challenging biopharmaceutical applications.

The instrument intelligently performs a series of automated checks before starting sample analysis, assuring users that the analysis will be completed successfully. The checks that the system performs reduce common errors by up to 40%. To ensure results are right the first time, a unique set of features within Empower™ Chromatography Data System (CDS) is unlocked for the Alliance iS Bio HPLC System.

SYSTEM FEATURES

Dwell volume (total system)	≤1600 µL
Gradient delay volume*	≤1100 µL
Integrated leak management	Leak sensors, as standard, and safe leak handling
Quantum synchronization	Injection synchronization between pump and injector enhances retention time reproducibility
Operating flow rate range	0.001 to 10.000 mL/min, in 0.001-mL increments
Maximum operating range	10,000 psi up to 5.000 mL/min, linearly decreasing to 4000 psi at 10 mL/min
pH range*	1 to 13
Unattended operation	Leak sensors and safe leak handling, full 96-hour diagnostic data display through console software
Cycle time	≤60 seconds inject-to-inject

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

QUATERNARY SOLVENT MANAGER (QSM)

Solvent capacity	Blend up to four solvents in any combination (standard)
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% from 0.2 to 5.0 mL/min

Flow precision*	≤0.01 min SD, for retention times <20.00 minutes ≤0.05% RSD, for retention times ≥20.00 minutes based on six replicates
Composition ripple*	≤0.5 mAU over a 10-s window
Composition accuracy*	±0.5% absolute (full scale) from 5 to 95%; 0.5 to 5.0 mL/min
Composition precision*	≤0.04 min SD, for retention times <26.667 minutes ≤0.15% RSD, for retention times ≥26.667 minutes based on six replicate injections
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	PPS, fluoropolymer, UHMWPE blend, sapphire, ruby, zirconia, DLC, PEEK and PEEK blend, titanium, MP35N, Inconel 600, fused silica

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SAMPLE MANAGER FTN

Injection volume range	0.1 to 100.0 µL as standardSolvent conditioning
Sample capacity (Any three of the following:)	1,152 (3x 384-well plate) or 162 (54x3 2-mL vials) 48-position, 2.00-mL vial holder 54-position, 2.00-mL vial holder 96-well plate 384-well plate 48-position, 0.65-mL micro-centrifuge tube plate 24-position, 1.50-mL micro-centrifuge plate
Sample compartment temp.	4.0 – 40.0 °C, settable in 0.1 °C increments
Temperature accuracy	±0.5 °C at the sensor
Temperature stability	±1.0 °C at the sensor
Injection needle wash	Integral, active, and programmable
Minimum sample required	10 µL residual, using total recovery 1-mL vials
Accuracy (aspiration)	±0.2 µL
Linearity	≥0.999 R^2, for all injection volumes between 2% and 100% of the maximum injection volume supported by the system configuration
Precision	≤0.25% RSD from 5.0 to 50.0 µL
Sample carryover*	≤0.002% [Caffeine]

Primary wetted materials	Sample path: MP35N, PEEK blend, polyimide, titanium, titanium with DLC Wash path: Stainless steel, Fluoropolymer, HDPE, MP35N, PEEK, PPS, Teflon coated neoprene, titanium, titanium with DLC Peristaltic Pump: Transmaster Needle Wash Pump Seals: UHMW PE PTFE-filled PPS

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COLUMN HEATER/COOLER (CHC)

Column capacity	Single column, up to 8.0 mm I.D.; up to 300 mm length with filter or guard column up to 30 mm
Column compartment temp.	4.0 (or 15.0 °C below ambient, whichever is greater) to 90.0 °C, settable in 0.1 °C increments
Temperature accuracy	±0.5 °C at the sensor
Temperature stability	±1 °C at the sensor
Solvent conditioning	Passive pre-heating
Column tracking	eConnect™ Technology enables tracking column usage history

TUV DETECTOR[1,3]

Wavelength range	190 to 700 nm
Bandwidth	<5 nm
Wavelength accuracy	±1.0 nm (via patented[2] Erbium filter)
Wavelength repeatability	±0.1 nm
Linearity and dynamic range	r^2 ≥0.999 from 0.0001 to 2 AU, ≤5% deviation up to 2.5 AU
Baseline noise (dry), single wavelength	<5 µAU
Baseline noise (dry), dual wavelength	≤35 µAU
Drift	≤100 µAU/hour
Thermal drift	≤100 µAU/C
Sampling rate	1, 2, 5, 10, 40, 80, 160 Hz (single channel) 1, 2 Hz (dual channel)

TUV OPTICAL COMPONENT SPECIFICATIONS:

Light source	Deuterium arc lamp, warranty 2000 hours or one year (whichever comes first)
Flow cell design	TaperSlit™ Flow Cell
Path length	10 mm (analytical cell)
Cell volume	16.3 µL (analytical cell)
Pressure limit	1000 psi (analytical cell)
Wetted materials	Fluoropolymer, fused silica, PEEK

INSTRUMENT CONTROL

Informatics compatibility	Empower Chromatography Data System (CDS) (FR4 with Windows® 10 Operating System and later)
Communications	Ethernet
Event input/output	Contact closure and/or TTL input/output

ENVIRONMENTAL SPECIFICATIONS

Acoustic noise [total system]	≤55 dBA
Operating temperature range	4.0°C to 40.0°C (39 to 104 °F)
Operating humidity range	20% to 80% RH, non-condensing

ELECTRICAL SPECIFICATIONS

Power requirements	100 to 240 VAC
Line frequency	50 to 60 Hz
Power consumption	775 VA

PHYSICAL SPECIFICATIONS

Width:	49.9 cm (19.64 in.)
Height	74.2 cm (29.23 in.)
Depth	63.5 cm (24.99 in.)
Weight	72.5 kg (160.0 lbs.)

References:

1. All performance specifications are measured following a warm-up period of one hour. Ambient ΔT ≤±2.0 °C
2. U.S. Patent Numbers: 6,423,249 and 6,783,705
3. ASTM E1657-98, unless otherwise specified

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