Waters® 2796 XE & XC Bio-separations Module

The Alliance® Bioseparations System is a high-pressure, high-resolution HPLC system for the fractionation and analysis of complex bimolecule mixtures. The heart of the Alliance Bioseparations System is the Waters 2796 Bioseparations Module. Designed for robust operation under the harsh salt and pH conditions typical of bioseparations, it features a titanium and PEEK flowpath. The system's high-pressure capability also makes it ideal for protein purification, peptide mapping and nucleic acid analysis.

Solvent Management

Number of Solvents	One (1) to four (4)
Solvent Conditioning	Vacuum degas, 4 solvents plus purge solvent
Typical Operating Flow Rate Range	0.050 - 5.000 mL/min, in 0.001 mL/min increments
Programmable Flow Rate Range	0.000 and 0.010 to 10.000 mL/min in 0.001 mL/min increments
Compressibility Compensation	Automatic and continuous
System Delay Volume	<400 µL, independent of backpressure, 1mL/min
Plunger Seal Wash	Integral, active, programmable
Gradient Profiles	Eleven (11) gradient curves (including linear, step [2], concave [4] and convex [4])
Dry Prime/Wet Prime	Automatic front panel control
Flow Ramping	Time (0.01 - 30.00 minutes in 0.01 min increments) to reach maximum flow rate
Maximum Operating Pressure	5000 psi (345 bar) (0.010 - 3.000 mL/min) Programmable upper and lower limits
Composition Range	0.0 - 100.0% in 0.1% increments
Composition Accuracy	±0.5% absolute, independent of backpressure (Proportioning Valve Pair Test, {degassed methanol:methanol/propylparaben, 2 mL/min, 254 nm})
Composition Precision	≤0.15% RSD or ≤0.02 min SD, whichever is greater, based on retention time (degassed methanol:water 60:40 dial-a-mix, 1 mL/min, 6 replicates phenone mix, 254 nm)
Flow Precision	≤0.075% RSD or ≤0.02 min SD, whichever is greater, based on retention time or volumetric measures (0.200 - 5.000 mL/min), isocratic premix, 6 replicates
Flow Accuracy	±1% or 10 µL/min, whichever is greater, (0.200 - 5.000 mL/min) degassed methanol at 600 psi backpressure
Primary Wetted Materials	Titanium, UHMWPE, Sapphire, Ruby, Tefzel® (ETFE), Teflon® (FEP and PTFE) PEEK, Fluoroloy G®, MP35N®

Waters

Sample Management

Number of Sample Plates	Total of four (4) plates: 96- and 384-well plates; vial plate (2-mL vials, 48); tube plates 0.65 mL microcentrifuge tube, (48) or 1.5 mL microcentrifuge tube, (24); Open Access Plate (2-mL vials, 24)
Sample Temperature Control	4° to 40° C, programmable in 1° C increments
Maximum Sample Capacity	1,536 in four (4) 384-well plates
Number of Sample Injections	1 - 99 injections per sample
Sample Delivery Precision	<0.3% RSD, full loop 50 µL (default wash/purge condi tions, degassed methanol: water, 60:40 dial-a-mix, 1 mL/min, 6 replicates, paraben mix, 254 nm) with 3X overfill
	<1.0% RSD, partial loop 10 - 25 µL with 50 µL sample loop (default wash/purge conditions, degassed methanol: water, 60:40 dial-a-mix, 1 mL/min, 6 replicates, paraben mix, 254 nm)
Sample Volume Linearity	>0.999% correlation, 5 - 25 µL, partial in 50 µL loop (default wash/purge conditions, degassed methanol: water, 60:40 dial-a-mix, 1 mL/min, 6 replicates, paraben mix, 254 nm)
Needle Wash Solvents	Two (2): wash (strong solvent) and purge (sample compatible) solvent
Sample Carryover	<0.01% or <2.5 nL (default wash/purge volumes) whichever is greater
Sample Loop	5 µL, 20 µL, 50 µL (standard),100 µL, 500 µL, 2000 µL

Instrument Control

Column Heater	5° C above ambient to 65° C
Column Heater/Cooler	Ambient -15° C or 4° C (greatest) to 65° C
Column Selection	3- or 6-column select valve (optional)
	Regeneration valve 10 port/2 position (optional)
IEEE-488 Interface	Control of Waters IEEE equipped detectors
RS-232	Output of ASCII files to printer/PC/ integrator (Port A)
Floppy Disk Drive	1.44 MB, 3.5 inch disk for methods transfer and archiving, reportable GLP log, sample list import from ASCII file
Event Inputs	Three (3), TTL or switch closure
Programmable Event Outputs	Six (6), contact closure

System Physical Specifications

Dimensions (not including sample heater/ cooler, column heater, eluent monitor, or column manager)	Width: 17 inches (43 cm) Height: 22.5 inches (57 cm) Depth: 23.5 inches (60 cm) Weight: 114 pounds (52 kg)

Environmental

Acoustic Noise	<55 dB(A)
Operating Temperature Range	4° to 40° C
Operating Humidity Range	20 to 80%, non-condensing

Power Requirements

Voltage Range	90 - 264 VAC
Frequency	50 - 60 Hz
Input Current	9.5 Amps RMS @ 115V and full load

Eluent Monitor/Column Manager

pH/Conductivity Monitor	Independent pH & conductivity flow cells and electrodes operate individually or parallel operation
pH Displayed	0 to 14 pH
pH Accuracy	+/- 0.1 pH between 2 and 12 pH
pH Calibration	2 point calibration
Conductivity Displayed	0 to 500 mS/cm
Conductivity Accuracy	5% of reading between 0.5 and 300 mS/cm
Conductivity Calibration	1 point standardization (2 point calibration option)
Valve Manager	One (1) or two (2) Free standing switching valves Titanium, 2 position/10 port PEEK, 6 position/7 port
Column Capacity	Three (3) columns (up to 7.8 mm x 300 mm)

Eluent Monitor/Column Manager Physical Specifications

Dimensions	Width: 6 inches (15 cm) Height: 21.5 inches (55 cm) Depth: 15 inches (38 cm) Weight: 14 pounds (6.5 kg)

Ordering Information	Part Numbers
2796 XE Bioseparations Module	176000553
2796 XC Bioseparations Module	176000554
Eluent Monitor/Column Manager	186002147

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