

Varian Modular Analytical HPLC Systems

PERFORMANCE & FLEXIBILITY FOR ANY SEPARATION CHALLENGE



Whether you are performing low-throughput, routine HPLC analyses or high-throughput, complex separations, Varian has a HPLC solution for you. Select a pre-configured solvent delivery system, optimized for commonly performed analyses. Or customize your solvent delivery system to perfectly match your unique requirements. Since each module can be tailored for your particular application, the possibilities are endless.

Whatever you choose, you can be confident your system will provide outstanding performance and reliability day in, day out.

Key Benefits

- ▶ **Reliable solvent delivery.** Engineered for continuous use, rugged Varian 210 solvent delivery systems provide dependable performance using a single-piston, rapid-refill design.
- ▶ **Adaptable.** Quickly extend the capabilities of your system by interchanging pump heads, tubing, mixers and other accessories. As your needs change or grow, the system can too.
- ▶ **Outstanding flexibility.** Our complete range of accessories and consumables such as column heaters, valves, columns, fittings, tubing and lamps make it easy to set up for any application.
- ▶ **Bio-inert capability.** Choose robust stainless steel fittings for most applications, or biocompatible PEEK™ or titanium fittings to protect biological samples from trace amounts of metal ions.
- ▶ **Multiple detection options.** We have a detector ideal for your application. The range includes UV-Vis, PDA, RI and ELSD detectors.
- ▶ **Automatic, intelligent software.** Be in complete control of your analysis, with Varian Galaxie™ Chromatography Software. Of course, tools to assist with your 21 CFR Part 11 compliance needs are provided.
- ▶ **Upgradeable.** Easily upgrade from an isocratic to a gradient system. And don't buy a whole new system if you decide you need binary, ternary, or quaternary capability — simply add extra solvent delivery modules.
- ▶ **Global service and support.** Get assistance wherever you are, to maximize uptime and keep productivity at its peak. Comprehensive Varian Care support and training programs extend the life of your instrument, lower the cost of ownership and give you peace of mind.

NOTICE: This document contains references to Varian. Please note that Varian, Inc. is now part of Agilent Technologies. For more information, go to www.agilent.com/chem.

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Outstanding Solvent Delivery Performance

Choose from five pre-configured solvent delivery systems, which include pump heads, valves and injectors suitable for commonly performed HPLC analyses. Need a slightly different solvent delivery system? No problem – choose whatever components you need. No matter which solvent delivery system you choose, you get:

- High performance pumps that deliver the required gradient and flow for reproducible separations every time (Figure 1).
- Exceptional flow rate accuracy, precision, compositional accuracy and gradient linearity specifications. Achieve flow rates of 0.01–10 mL/min at 8700 psi.

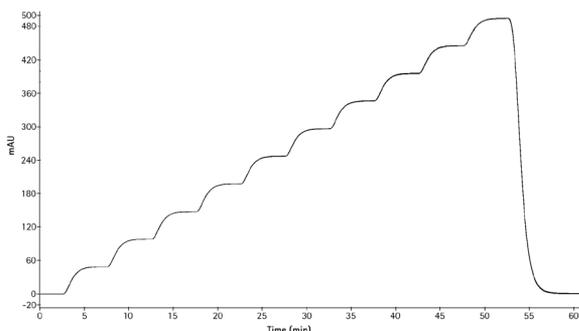


Figure 1. Overlay of 6 pump proportioning chromatograms in 10% gradient steps showing the excellent reproducibility and compositional accuracy of Varian binary gradient solvent delivery systems with 10 mL pump heads running at 1 mL/min.

For biochromatography applications with high salt concentration buffers, PEEK™ and titanium pump heads with a piston wash option dramatically extend seal life, saving you money and increasing your throughput.

Typical Configurations

Isocratic System with the Most Sensitive UV-Vis Detector Available

Add a Varian 325 UV-Vis detector to the isocratic solvent delivery system to make a HPLC that is ideal for straightforward separations or where a gradient is not needed, as in routine analyses in low to moderate throughput laboratories. A typical system might include:

- Varian 210 based isocratic solvent delivery system with 10 mL/min head and 8700 psi Ti pressure module
- Varian 325 UV-Vis detector with analytical flow cell
- Mast kit with purge valve and manual injector
- Pre-formed 0.02 in. ID stainless steel tubing kit
- Galaxie™ Chromatography Software

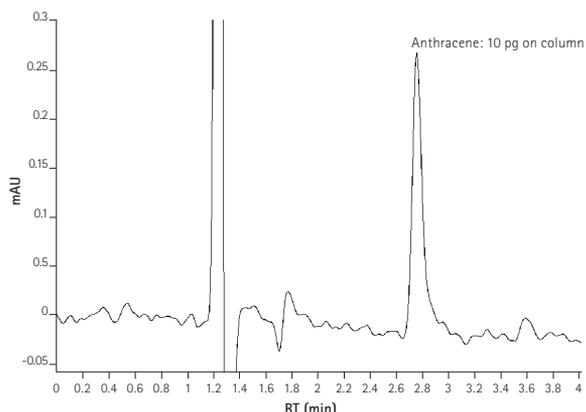


Figure 2. Achieve excellent signal-to-noise ratios with the Varian 325 UV-Vis detector. This example shows a S:N of 36 for 10 pg of anthracene on-column.

Use the Varian 356-LC Refractive Index (RI) detector and Varian 500 Column Valve Module with 90 °C column heater to create the perfect system for the analysis of sugars, carbohydrates and other non-UV absorbing compounds.



Figure 3. Detect compounds with no chromophore with the Varian 356-LC RI detector.

Flexible Binary Gradient System

The high pressure binary gradient system delivers excellent gradient reproducibility and flow precision. Combine the gradient solvent delivery system with the sensitive Varian 325 UV-Vis detector for low detection limits to make this system ideal for more complex separations. A typical system might include:

- Varian 210 based binary gradient solvent delivery system with 10 mL/min heads and 8700 psi Ti pressure module
- Varian 325 UV-Vis detector with analytical flow cell
- Mast kit with mixer, purge valves and manual injector
- Pre-formed 0.02 in. ID stainless steel tubing kit
- Galaxie Chromatography Software

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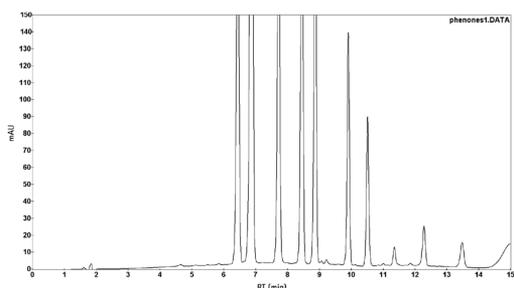


Figure 4. Excellent resolution and peak shape of a complex phenone and benzoate sample, produced using a Varian 210 based solvent delivery system with Varian 325 detector.

Add the Varian 335 Photodiode Array detector and you have a versatile method development system, which provides full spectral display for enhanced compound identification and purity information.

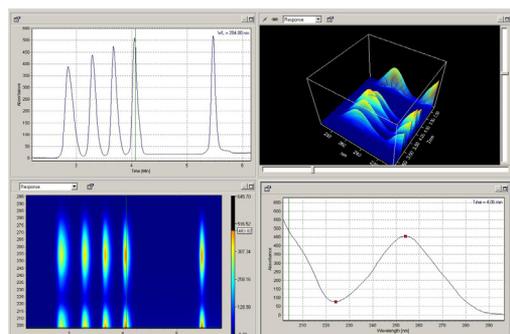


Figure 5. With a Varian 335 PDA and Galaxie™ Chromatography Software, uncover and decipher minute spectral differences for the most accurate information. This 'four view' display shows the chromatogram, 3D, iso absorbance and spectrum plots of methyl, ethyl, propyl, butyl and heptyl para-hydroxy benzoate.

A Varian 500 Column Valve Module with column heater, column selection valve and solvent selector for automated method development will slash your method development time.

For analytes without a UV absorbing chromophore, Varian's 380/385-LC Evaporative Light Scattering Detectors provide great sensitivity due to enhanced nebulizer technology. Patented gas flow technology gives unrivalled detection performance even for semi-volatile compounds.



Figure 6. Easily detect non-UV absorbing volatiles with the Varian 380/385-LC ELSD.

Inert PEEK Solvent Delivery Systems

For biological and metal speciation applications, gradient and isocratic solvent delivery systems are available in PEEK™ and titanium. The elimination of stainless steel from the flow path provides a system that is resistant to acidic mobile phases and is free of Fe, Cr and V contamination that may interfere with the analysis. For analysis of biological samples, the use of inert material in the flow path such as PEEK, avoids adsorption of proteins, guaranteeing the highest levels of analytical accuracy and reproducibility.

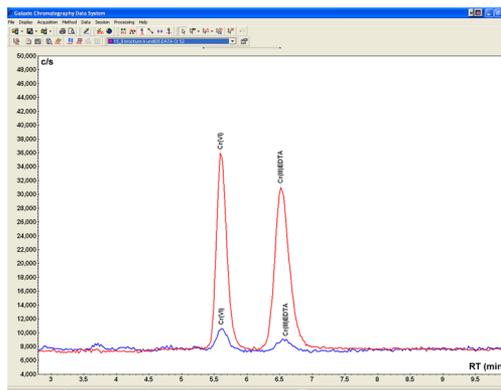


Figure 7. Example of a LC-ICP-MS speciation chromatogram showing mineral water (blue) and mineral water spiked with 1 ppb CrVI and CrIII (red). Samples were stabilized with EDTA prior to analysis.

Columns and Accessories

Other accessories that can be added to enhance your productivity include:

- Column ovens
- Fraction collectors
- Degassers
- Full line of high performance columns from small particle size columns up to full prep and process size columns in a wide range of phases and column dimensions. From packing material to axial compression column packers for preparative purposes.

With a full range of accessories, tubing, mixers, purge valves, fittings and sample vials, Varian is your one stop shop for all of your HPLC needs.

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Ordering Information

Solvent Delivery Systems

Part Number	Description
0010096100	<ul style="list-style-type: none"> • 210 solvent delivery module (isocratic system) • 10 mL head • Titanium pressure module • Purge valve • Mast kit • Manual injector with loop • Stainless steel plumbing kit
0010096000	<ul style="list-style-type: none"> • 210 solvent delivery module (isocratic system) • 10 mL PEEK™ head • PEEK pressure module • PEEK purge valve • Mast kit • PEEK manual injector with loop • PEEK plumbing kit
0010096400	<ul style="list-style-type: none"> • 2 x 210 solvent delivery modules (binary system) • 5 mL heads • Titanium pressure module • Purge valve • Mixer • Mast kit • Manual injector • Stainless steel plumbing kit
0010096500	<ul style="list-style-type: none"> • 2 x 210 solvent delivery modules (binary system) • 10 mL heads • Titanium pressure module • Purge valve • Mixer • Mast kit • Manual injector • Stainless steel plumbing kit
0010096300	<ul style="list-style-type: none"> • 2 x 210 solvent delivery modules (binary system) • 10 mL PEEK heads • PEEK pressure module • PEEK purge valve • PEEK mixer • Mast kit • PEEK manual injector • PEEK plumbing kit

Detectors and Flow Cells

Part Number	Description
0010081300	325 programmable wavelength UV-Vis
0010081500	325 dual wavelength programmable UV-Vis
0010083800	335 analytical PDA, 190 to 950 nm
0210181800	9 mm pathlength analytical flow cell
0210182100	4 mm pathlength microbore flow cell
PL0880-0000	356-LC Refractive Index
PL0890-0110 (110 V) PL0890-0240 (240 V)	380-LC Evaporative Light Scattering - for detecting semi-volatile compounds
PL0890-1110 (110 V) PL0890-1240 (240 V)	385-LC Evaporative Light Scattering - sub-ambient for detecting volatile compounds

Column Valve Modules

Part Number	Description
393587402	500 CVM base unit
393580001 (110 V) 393580002 (240 V)	Column heater assembly for CVM
393586701	6-solvent selection valve
393586601	6-column stainless steel selection valve
393586602	6-column PEEK selection valve

Accessories

Part Number	Description
393550001	210 solvent delivery module
393594091	5 mL/min titanium pump head
R007101061	10 mL/min stainless steel pump head
R007101063	10 mL/min titanium pump head with piston wash
R007101073	10 mL/min PEEK pump head with piston wash
393554601	0.6 mL volume stainless steel microbore dynamic mixer
393554701	0.6 mL volume titanium microbore dynamic mixer
393554801	1.2 mL volume stainless steel analytical dynamic mixer
393554901	1.2 mL volume titanium analytical dynamic mixer
393555001	1.2 mL volume PEEK analytical dynamic mixer
393557491	Mast kit for solvent delivery modules
RE7725i	Rheodyne 7725 analytical injector valve with switch
RE7725i005	Titanium Rheodyne 7725 analytical injector valve with switch
R000481802	1/16 in. stainless steel purge valve
R000481567	1/16 in. PEEK prime/purge valve
R000220193	1/16 in. titanium prime/purge valve
0393552501	10 mL/min, titanium, FEP pressure module
0393552601	50 mL/min, titanium, FEP pressure module
0393552701	100 mL/min, titanium, FEP pressure module
0393552801	10 mL/min, PEEK, FEP pressure module
0393552901	50 mL/min, PEEK, FEP pressure module
0393553001	100 mL/min, PEEK, FEP pressure module
0393650501	200 mL/min, titanium, FEP pressure module

Software

Part Number	Description
0395000096 (Single license) 0395000094 (Four license)	Galaxie™ Chromatography Software with Varian LC drivers

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