

SpectraSYSTEM™ HPLC



Modular High Performance Liquid Chromatography System

SpectraSYSTEM HPLC

An Economical and Full-featured Family of LC Modules

The Thermo Fisher Scientific family of SpectraSYSTEM instruments are completely ROHS compliant providing HPLC analysis in a compact, modular design for every type of laboratory. For a wide range of HPLC applications, our detectors are recognized across the industry as the most sensitive.

This broad choice of instruments allows system configuration that matches your application needs and performance demands. A stand-alone instrument, the SpectraSYSTEM remains your best choice for routine HPLC applications and the Chromatography Data Systems provide an easy-to-use interface, superior productivity and high security for today's busy laboratory.



A Range of Pumping Options and Configurations

SpectraSYSTEM solvent delivery instruments offer superior gradient formation, longer seal life and improved solvent compressibility across a wide range of flow rates for less maintenance and maximum system uptime. Low delay volume and excellent gradient precision ensure highly reproducible chromatographic separations and compatibility with all column types. Available in standard isocratic and gradient configurations, the pumps meet every analytical need.

Unsurpassed Precision and Performance

SpectraSYSTEM pumps feature a real-time pressure feedback and automatic solvent compressibility system optimized to provide accurate and precise pump flows, regardless of solvent composition.

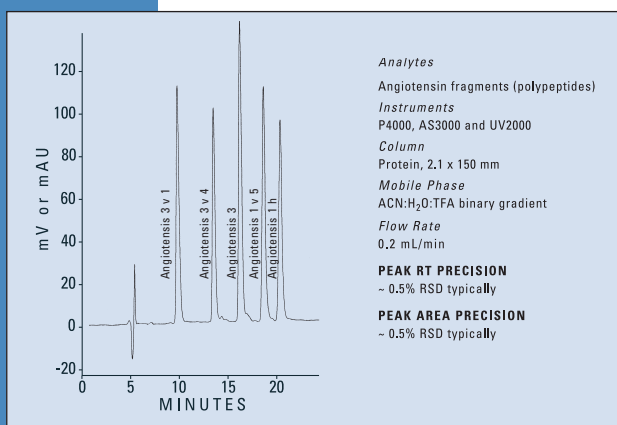
- Flow range from 10 μ L to 10 mL/min
- Real-time pressure feedback
- Gradient accuracy and linearity of $\pm 1.0\%$ (models P2000 and P4000)
- Flow rate precision < 0.2% RSD
- Unique bayonet liquid-end design to maximize productivity
- Automatic solvent compressibility
- Built-in diagnostic maintenance programs

P1000 Isocratic Pump

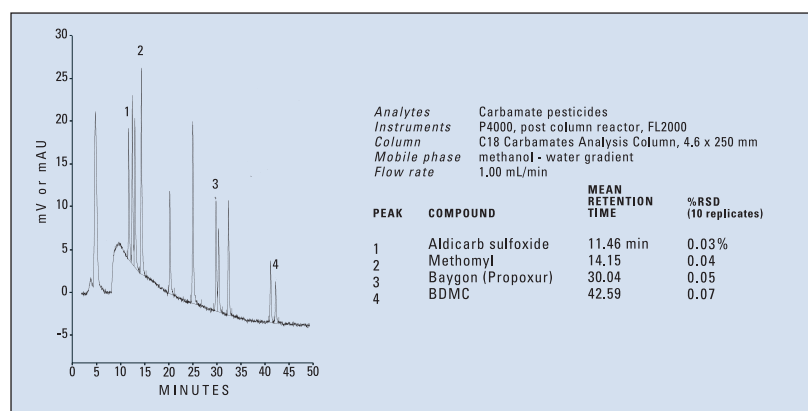
The P1000 is a unique and economical isocratic solvent delivery solution. Real-time pressure feedback ensures exceptional flow rate precision. A maintenance log tracks pump operation.

P4000 Quaternary Gradient Pump

The P4000 gradient pump provides quaternary gradient flow programming. Step, linear or up to twenty-one pre-programmed quaternary gradients expand methods development flexibility. A unique dual, in-line piston design delivers smooth, pulse-free flow for outstanding gradient results and reliable operation.



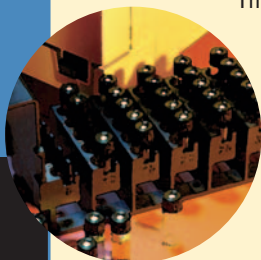
Peak shape, peak area and retention time precision are excellent with the P4000 solvent system.



SpectraSYSTEM pumps can reproduce difficult gradients despite significant solvent viscosity changes or system components that contribute to unpredictable backpressure variations.

Autosamplers

These sample processing systems have exceptional built-in capabilities, such as column temperature control, for both research and routine analyses. Micro-robotic technology provides the precision and robustness you're looking for.

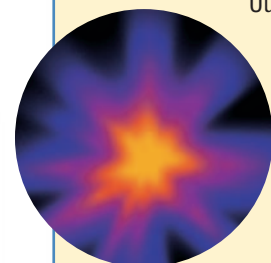


Pumps

These SpectraSYSTEM solvent delivery systems provide a wide range of options. They offer real-time pressure feedback control and the highest retention time reproducibility.



Detectors



Exceptional Built-in Capabilities for Flexible Operations

The SpectraSYSTEM autosampler integrates micro-robotic technology, environmental control, and powerful software into compact, highly versatile sample processing systems. For high throughput applications several user configurable options allow specific needs to be met:

- 120-vial capacity for high throughput
- Increased flexibility with integrated temperature control of oven, injector and sample
- Greater sampling options with the patented PushLoop™ injection process

Unmatched Performance Standards

Injection precision and excellent run-to-run reproducibility are ensured through use of Rheodyne® injection valves and superior valve control. Unique sample withdrawal and automatic flush procedures minimize carryover, less than 0.01% with a flush volume of only 400 µL. RSD precision is better than 0.5%.

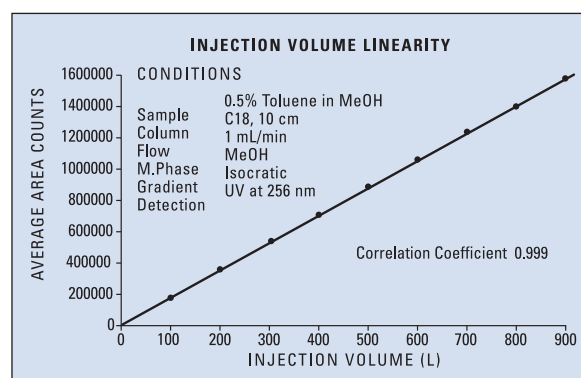
Multiple Injection Modes Maximize Sampling Flexibility

Three injection techniques accommodate diverse sampling requirements while maximizing chromatographic performance. Patented PushLoop variable-volume injection maximizes injection precision for volumes under 200 µL while only requiring 15 µL of excess sample per injection. PullLoop™ injection is ideal for applications with limited sample quantities, using only 1.1 µL of excess sample per injection. Standard FullLoop injections offer the highest precision for applications not limited by sample volumes.

Integrated Column Oven Increases Applications Versatility

SpectraSYSTEM autosamplers provide environmental control of samples without external, bulky accessories. Crucial temperature control options are all integrated into the same compact self-contained instrument.

- Column oven provides temperature stability to ± 0.2 °C. The oven completely controls the column, injector and mobile phase temperature up to 80 °C for increased separation efficiency



Injection linearity is unsurpassed from 1 µL to over 1000 µL with highly-controlled injection processes and accurate syringe drives.

r detection systems' optical performance and programmability provide the highest sensitivity in the industry.



Excellent Optical Performance, Programmability, and Spectra

SpectraSYSTEM detectors provide the right combination of features for optimum sensitivity and broad applications versatility. UV/Vis programmable detectors combine exceptional optical performance for unmatched flexibility and value in research, method development, and process control applications. Using both tungsten and deuterium lamps, the SpectraSystem offers exceptional performance across a wide spectral range from 190 to 800 nm. An automatic lamp start-up and shut-down feature prolongs lamp life and reduces warm-up time.

Applications Flexibility

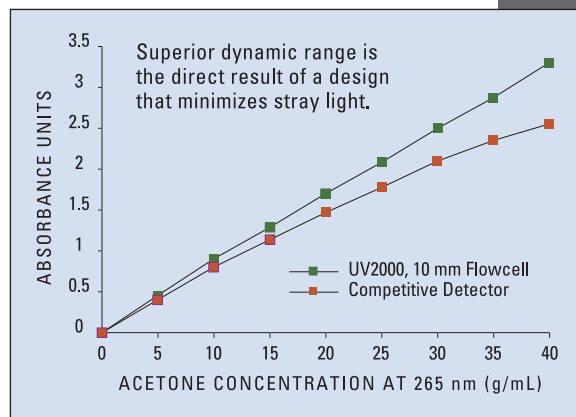
Thermo Scientific provides numerous interchangeable flow cells for its UV/Vis detectors. Flow cells support many applications including microbore LC, capillary LC, prep and semi-prep LC, and analytical LC. Each flow cell is optimized for its application, thus ensuring superior sensitivity with minimal peak dispersion and low-refractive-index sensitivity. Flow cells mount externally and are pre-aligned for easier and quick exchange without the need for tools.

UV1000

A unique dual-beam, forward optical design minimizes refractive-index sensitivity by focusing the light beam away from the flow cell walls. The design facilitates the reduction of noise and drift. It also provides a wide linear dynamic range, and eliminates stray light. Reference and sample beams are monitored at the same wavelength for a highly accurate differential measurement. The net effect is accurate results at trace levels or at high concentrations.

- Unique optical design reduces noise to $\pm 1.0 \times 10^{-5}$ AU at 254 nm
- Programmable wavelength changes
- A wide operational range from 190 to 800 nm*
- Minimal drift of $< 2 \times 10^{-4}$ AU/hr
- Broad applications flexibility with interchangeable flow cells

* Requires optional tungsten lamp

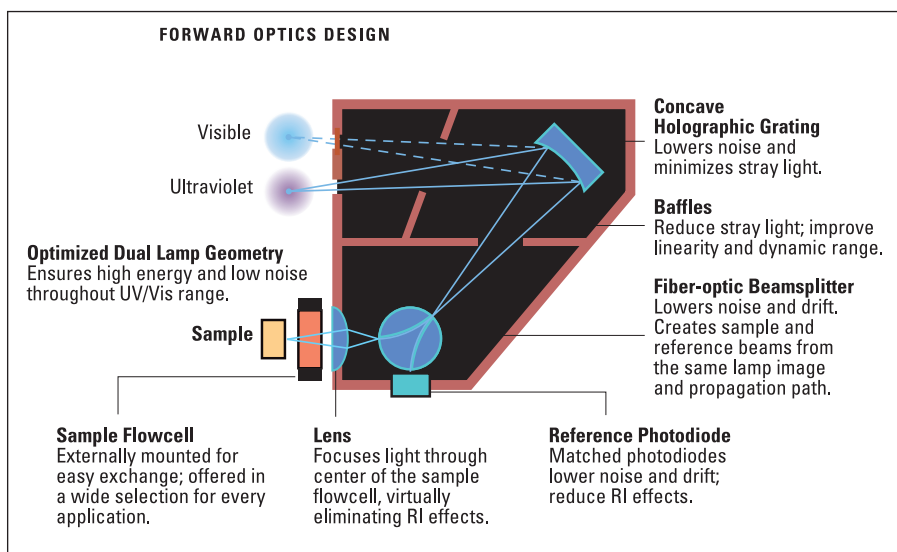


Absorbance non-linearity is less than 5% at up to 2.0 AU at 254 nm.

UV2000 – Dual-wavelength Programmable Detector

The UV2000 is a dual-wavelength detector that provides excellent signal-to-noise ratio for either research or routine analyses. Its ease-of-use and programmability are especially helpful for routine applications. Wavelength programming enhances sensitivity or selectivity of different compounds in a separation. When used in stand-alone mode, the UV2000 can collect up to twenty spectra in real-time without stopping the flow.

- Collects up to 20 spectra per run in stand-alone mode
- Dual-wavelength operation for measuring absorbance ratios
- Linearity is better than 2.0 AU
- Automatic lamp shut down extends usable lamp life



The optical design maximizes light throughput improving signal-to-noise ratios.

Laboratory Solutions Backed by Worldwide Service and Support

Tap our expertise throughout the life of your instrument. Thermo Scientific Services extends its support throughout our worldwide network of highly trained and certified engineers who are experts in laboratory technologies and applications. Put our team of experts to work for you in a range of disciplines – from system installation, training and technical support, to complete asset management and regulatory compliance consulting. Improve your productivity and lower the cost of instrument ownership through our product support services. Maximize uptime while eliminating the uncontrollable cost of unplanned maintenance and repairs. When it's time to enhance your system, we also offer certified parts and a range of accessories and consumables suited to your application.

To learn more about our products and comprehensive service offerings, visit us at www.thermo.com.



In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.

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