

Liquid Chromatography

- Enhanced ease-of-use and operational simplicity
- High visibility color display for immediate assessment of system status
- Integrated solvent containment and column oven for reduced system complexity
- Precise, repeatable solvent delivery
- Automated sample dilution and derivatization
- Wide range of detectors
- Intuitive PerkinElmer SimplicityChrom CDS Software

Redefining LC Versatility, Maximizing Lab Productivity



*PerkinElmer LC 300 HPLC
and UHPLC Systems*

Introduction

For laboratories looking to achieve the highest levels of versatility without compromising on productivity, the LC 300 HPLC and UHPLC Systems deliver the flexibility, performance, and efficiency you need for even the most challenging analytical demands.

With fully customizable configurations and accessories, each LC 300 HPLC and UHPLC System is intuitive and designed to meet high-throughput laboratory requirements, with no additional burden on lab staff. The SimplicityChrom™ CDS Software manages the complete workflow and with the LC 300 HPLC and UHPLC System delivers an innovative user experience with intuitive functions and automated processes.

LC 300 AUTOSAMPLERS



One of the most important part of your lab's workflow is the handling of your samples by the autosampler. Ensuring samples remain free from degradation or contamination, automating and documenting necessary dilution or derivatization, and injecting samples precisely are critical for reproducible and accurate analytical results. It's also critical that the flowpath and needle be thoroughly cleaned to avoid cross-contamination, and that the system be ready for the next injection quickly, to ensure throughput goals are achieved. The LC 300 family of autosamplers have been engineered with the most advanced fluidics technology available, with close attention paid to ensuring precision and reproducibility for superior analytical performance.

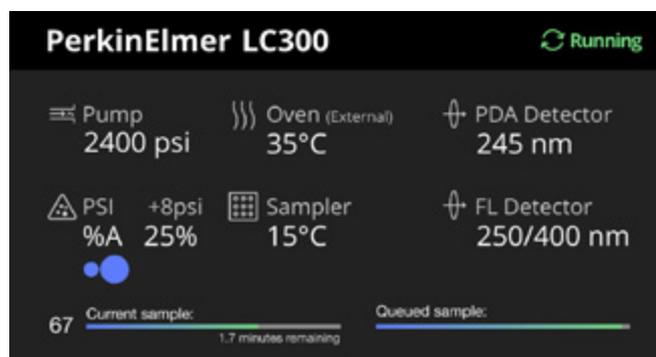
From the moment your samples are placed in the LC 300 Autosampler, the system works to protect them from degradation or precipitation. While many autosamplers claim to offer some form of cooling or heating of the sample tray, the consistency of the temperature may not always be reliable. The LC 300 Autosampler can be configured with optional Peltier cooling to provide uniform and precise cooling of all samples in the tray, as well as the environment surrounding them. If automated dilution or derivatization is required – or if preparation of calibrants is desired – the LC 300 Autosampler can perform these once laborious tasks with no additional hardware or software. When it's time to perform an analysis, the LC 300 Autosampler advanced fluidics design delivers outstanding injection-to-injection reproducibility, even for very low injection volumes. The patented* injection valve design makes the LC 300 ideal for analyses at extreme pressures (up to 18,000 psi with the UHPLC configuration), while an ultra-fast valve switching mechanism reduces pressure and shock perturbations that would otherwise negatively affect analytical performance and impact column life. Performing fast and effective needle washing with a choice of different wash solvents reduces the chances of carryover and contaminant concerns.

Key Features Include:

- 10,000 psi (690 bar) or 18,000 psi (1240 bar) autosampler
- Patented injection valve design
- High visibility color LCD display showing complete LC system status, current queue and sample progress
- Integrated column temperature oven settable from ambient+5 °C to 60 °C
- Precise, uniform sample tray temperature control from 4 °C to 40 °C (with Peltier option)
- Wide variety of vial and microtiter tray formats
- Sample injection volumes as low as 1 µL, at pressures up to 18,000 psi
- Three injection modes: full loop, partial fill and µL-pickup for maximum flexibility
- Loads sample in only eight seconds (in partial fill mode)
- Integrated solvent and waste tubing management design

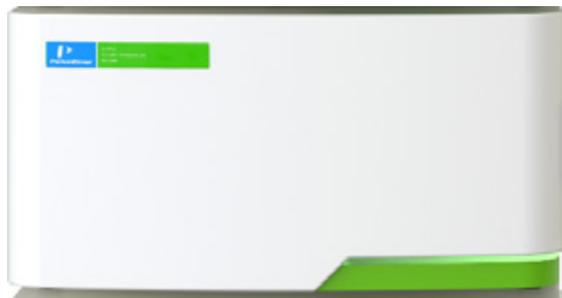
The LC 300 also features an integrated column oven with pre-heater to support a single column up to 150 mm in length. This capability eliminates the need for another module in the system stack, and reduces the length of the required interconnect tubing for optimal peak shape and resolution.

In addition to the key technical features of the LC 300 Autosampler, an integrated, full color LCD display provides users with critical operating feedback. Unlike many other systems, the LC 300 status display allows users to see operational conditions in real time, right on the system itself. The high visibility display includes color coded information on pump composition and pressure, detector wavelength(s), sample and column temperature, current vial being analyzed, as well as the overall progress of the total sequence. The freedom and convenience of always having this information available at a glance eliminates the need to continuously check in on the controlling computer.



*U.S. Patent No. 8,322,197 B2, European Patent No. 2196801

LC 300 PUMPS



Accuracy and precision aren't just requirements for an autosampler. In fact, accurate, precise and rugged formulation and delivery of your mobile phase is critical to your results. The range of LC 300 pump offerings ensures you'll find the right pump to meet your needs, whether it's the tried-and-true ruggedness and versatility of conventional HPLC or the full benefits of UHPLC, we've got you covered.

The LC 300 Analytical Pump, operating at up to 6100 psi (420 bar), is a rugged seventh-generation LC pump incorporating a patented uni-directional pumping mechanism designed to maximize seal life and minimize maintenance*. High speed piston retraction assures minimum pressure pulsations for extremely precise mobile phase flow rates. The patented design provides positive pressure solvent transfer to eliminate vacuum bubbles and cavitation, while a double ball check valve design prevents solvent backflow on each delivery stroke, assuring efficient operation even at lower flow rates. A proprietary proportioning valve ensures precise and accurate blending of four solvents and uses minor component interlacing to assure compositional accuracy even at low mixing levels. High flow, turbulent mixing within the pump's dual-piston chambers assures high-efficiency solvent mixing with extremely low mixing volumes. Patented real-time blending compensation accounts for and meters different volumes according to solvent shrinkage occurring with mixing automatically and corrects for solvent compressibility changes under pressure. The Analytical Pump features a built-in solvent degasser and slides out of the chassis for quick and easy routine maintenance. Normal phase compatible right out of the box, the LC 300 Analytical Pump offers maximum versatility to handle all of your LC method needs, without requiring upgrades or changes to hardware.

Key Features Include:

- 6,000 psi (420 bar), 10,000 psi (690 bar) or 18,000 psi (1240 bar) solvent delivery systems
- Binary and quaternary solvent delivery options
- Integrated vacuum degassing technology
- Automatic solvent compressibility compensation to ensure accurate solvent blends
- Designed to ensure long seal life
- Specifically designed for quick and easy routine maintenance
- Integrated solvent and waste tubing management design

Available in both binary and quaternary configurations, the LC 300 HPLC and UHPLC Pumps utilize an advanced implementation of a rugged linear drive to deliver ultra-precise gradient flows up to 10,000 psi (HPLC configuration) or 18,000 psi (UHPLC configuration). Each patented** pump head is individually motor-driven and controlled, generating maximum freedom for precise flow control and pulsation reduction. Intelligent flow control algorithms in the microprocessor create stable and accurate solvent flows, no matter what solvents or flow rates you choose. The LC 300 HPLC and UHPLC Pumps incorporate truly automatic solvent compressibility compensation (no need to enter factors in the method) and is essentially self-cleaning via an active seal wash system that ensures maximum life of the piston seals. Unlike many other high pressure and ultra-high pressure solvent delivery systems, the LC 300 HPLC and UHPLC Systems were engineered to allow for quick routine maintenance to provide maximum uptime and lab productivity. A novel automatic priming design allows the system to achieve full self-priming capabilities, automating the otherwise cumbersome priming process utilized in many other systems. There's no need to manually help prime the pump with a syringe, as the LC 300 HPLC and UHPLC Systems can truly prime and purge all by itself in just a few minutes, freeing you to prepare your samples or handle other important laboratory tasks. Finally, these pumps incorporate built-in solvent degassing technology, thus eliminating the need for a separate, external degassing module.

*U.S. Patent No. 4,643,649

**U.S. Patent No. 10,690,132 B2

LC 300 FAMILY OF DETECTORS



High sensitivity detection is essential for most LC applications. The PerkinElmer LC 300 System can be configured with either a single detector, or multiple LC detection options to meet all of your needs, even if they evolve or change in the future. Whether its photodiode array (PDA), multi-wavelength UV/Vis (MWD), single wavelength UV/Vis, fluorescence (FL) or refractive index

Key Detector Range Features:

- Support for both HPLC and UHPLC applications
- Choice of five detectors: PDA*, MWD*, UV/Vis*, FL* and RI
- Designed for quick and easy routine maintenance
- Integrated solvent and waste tubing management design

*Denotes detectors with wavelength programming capability.

(RI) detection, the LC 300 family of detectors connect quickly and easily to the system via Ethernet communication to provide robust control and secure data transfer. All detectors feature an integrated solvent and waste tubing management system, while the PDA, MWD and UV/Vis detectors also feature a built-in solvent organizer to reduce the number of modules in the LC stack, reducing asset management complexity.

LC 300 PHOTODIODE ARRAY DETECTOR (PDA)

The LC 300 PDA detector is ideal for laboratories balancing high sample throughput requirements with low levels of detection. Additionally, the PDA detector's qualitative capabilities of spectral identification and confirmation reduce risk and increase confidence in analysis.

The LC 300 PDA wide linear dynamic range (up to 2.0 AU with less than 3% deviation) rivals or exceeds that of even conventional UV detectors. Low baseline noise coupled with high linear dynamic range provides for the ultimate in analyte concentration tolerance. This allows detection from very low concentrations (those previously lost in the noise) to high concentrations, with no need to dilute samples. An interchangeable, modular, novel patented* flow cell design

allows for one-motion installation and exchange, enabling greater flexibility and ultimately higher productivity in your laboratory. To further improve your sensitivity, an optional 50 mm flow cell is available. The combination of sampling rates up to 200 Hz, low optical dispersion, and the benefits of spectral identification make the LC 300 PDA detector the perfect solution for almost any application.



Patented light guided 50 mm flow cell.

LC 300 MULTI-WAVELENGTH UV/VIS DETECTOR (MWD)

The LC 300 Multi-Wavelength UV/Vis detector (MWD) is designed for laboratories that require more than one single wavelength to be monitored, processed and stored per analysis. In fact, the LC 300 MWD allows for the collection of up to eight channels simultaneously at any desired wavelength. The LC 300 MWD offers a wide linear dynamic range (up to 2.0 AU, with less than 3% deviation), very low baseline noise, and sampling rates up to 200 Hz. This allows detection from very low to very high concentrations, with no need to dilute

samples. Borrowing from the LC 300 PDA design, the MWD also features an interchangeable modular flow cell that allows for quick and easy one-motion installation and exchange, enabling greater flexibility and higher productivity in your lab. To further improve your sensitivity, an optional patented 50 mm flow cell is available. To future-proof your investment should your analysis needs change, you can upgrade your MWD to a full-featured photodiode array detector with spectral analysis capabilities.

*US Patent Numbers US8797528, US8947654, and US9025142; Chinese Patent Number CN204945029; EU Patent Allowed EP13780024.9

LC 300 UV/VIS DETECTOR

The LC 300 UV/Vis detector was designed to achieve a high level of sensitivity and stability through innovative engineering. The LC 300 UV/Vis features a proven dual-beam optical design for ultimate stability and sensitivity. Utilizing an optional tungsten lamp, the LC 300 UV/Vis can be configured

for high sensitivity in the visible region – a sacrifice many other detectors make when using a single, universal source lamp design. The LC 300 UV/Vis can be optimized for any application, and supports sampling rates up to 100 Hz for UHPLC application needs.

LC 300 FLUORESCENCE DETECTOR

The LC 300 Fluorescence (FL) detector enables the selective detection of fluorescing compounds, with sensitivity that can be up to 1,000 times greater than UV detection, which is critical in many applications. The LC 300 Fluorescence detector was designed to achieve a high level of sensitivity and stability through innovative engineering, including low noise

electronics and an axially irradiated flow cell. The LC 300 Fluorescence detector can simultaneously collect data at two sets of wavelengths (excitation and emission) for additional chromatographic confirmation. An integrated mercury lamp is provided to check wavelength accuracy, ensuring confidence in performance.

LC 300 REFRACTIVE INDEX DETECTOR

The LC 300 Refractive Index (RI) detector enables the detection of compounds that do not absorb in the UV/Vis range, and do not naturally, or cannot be made to fluoresce. RI detection is commonly employed in the analysis of carbohydrates, sweeteners and polymers.

The LC 300 RI detector was designed to achieve outstanding stability through an optical system mounted within a precisely temperature-controlled housing, reducing the impact of even subtle changes in ambient temperature. The LC 300 RI detector contains a long-life LED light source for the ultimate in uptime and productivity.

LC 300 COLUMN OVEN



While the LC 300 System incorporates an integrated column oven within the autosampler, occasionally the need to support multiple or long column formats is required. In addition, some applications require a column temperature specifically at or below ambient temperature for optimal results. The LC 300 Column Oven was designed as the ideal solution for all of these situations. The LC 300 column oven delivers precise and consistent temperature control, while offering a spacious multi-column compartment for quick and easy access. An integrated solvent pre-heater mechanism that affects solvent temperature before it reaches the column is employed to ensure maximum stability and reproducibility from run-to-run. An optional column selection valve can be installed at any time to support automated column selection of up to six columns via the SimplicityChrom CDS Software.

Key Features Include:

- Accurate and precise temperature control from 5 °C to 90 °C (75 °C when the column selection valve is installed)
- Integrated solvent preheater
- Temperature and vapor safety sensors with alarm
- Large column compartment that can accommodate columns up to 30 cm in length
- Optional column selection valve for automated column switching of up to six columns

LC 300 WASTE MANAGEMENT MODULE

The LC 300 Waste Management Module allows for increased flexibility with the option to drain from the front or the back of the instrument stack. An integrated power strip built into the instrument streamlines operation, and reduces external power



outlet requirements. Further, a single power switch allows for easy and efficient powering on and off of the entire system. A standalone solvent organizer is also available for the LC 300 System.

Key Features Include:

- Drainage from front or back
- Built-in power strip
- Easily accessible single power switch for the entire system