SPECIFICATIONS

Liquid Chromatography

LC 300 Liquid Chromatography System

The PerkinElmer LC 300 liquid chromatography systems offer the superior analytical performance needed to tackle even the toughest analytical applications. Designed for enhanced ease-of-use and operational simplicity, the LC 300 features a high-visibility color display, integrated column oven, choice of high-end HPLC (10K psi) or UHPLC (18K psi) system, and a suite of five available detectors that allow you to customize the system to meet your needs. Whatever the application, the PerkinElmer LC 300 system's performance and enhanced user experience will ensure your lab's success, whether that need be for pharmaceutical, food, consumer products or specialty chemicals.

LC 300 Pump Platform

KEY DESIGN COMPONENTS	
Technology	• High pressure dual series piston pump with individually driven pistons • Patent pending pump head design • Automated self-priming with integrated prime pump and auto purge valve • Fully automatic and continuous compressibility compensation • Dedicated piston seal wash pump • Integrated solvent degassing
Solvent Selection	• 4 solvents available with binary solvent delivery
Safety Features	• Adjustable over and under pressure limits • Solvent leak detection with automatic pump shut down

OPERATING SPECIFICATIONS	
Pressure Range	HPLC Pump: 0 - 10,000 psi / 0 - 690 bar UHPLC Pump: 0 - 18,000 psi / 0 - 1240 bar
Pressure Ripple	< 1 % of system pressure or < 5 bar (72 psi), whichever is greater
Solvent	4 solvent input, fully automated binary solvent delivery
Flow Range	HPLC Pump: 1 - 3,000 µL/min UHPLC Pump: 1 - 2,000 µL/min
Flow Resolution	1.0 µL/min increments
Flow Precision	≤ 0.075 % RSD or 0.005 minutes SD, whichever is greater*
Flow Accuracy	± 1 % or ± 10 µL/min, whichever is greater*
Gradient Range	0 - 100 %
Gradient Composition Accuracy	± 0.5 % absolute from 5 - 95 %*
Gradient Composition Precision	≤ 0.15 % RSD or 0.01 minute SD, whichever is greater*
Gradient Delay Volume	50 µL (w/ 35 µL UHPLC mixer) 115 µL (w/ 100 µL HPLC mixer)
Gradient Profiles	Linear, concave (4) and convex (4)

*Condition: Water in a flow range of 0.200 - 2.000 mL/min

POWER REQUIREMENTS	
Voltage Requirements	100 - 230 V
Line Frequency	50 - 60 Hz
Power Consumption	450 VA

PHYSICAL AND ENVIRONMENTAL	
pH Range	All wetted materials are suitable for pH range 1.0 - 10.0
Dimensions	56 cm L x 34.5 cm W x 16.8 cm H / 22 in L x 13.5 in W x 6.6 in H
Weight	21 kg / 46 lb
Operating Humidity	20 - 80% non-condensing
Operating Temperature	10 - 40 °C

LC 300 Autosampler Platform

KEY DESIGN COMPONENTS	
Technology	• System status display • Built-in oven with integrated preheater • Patented ILD™ injection valve[1] • Automated dilution and derivatization capabilities • Support for multiple sample vial and tray formats
Safety Feature	• Door interlock sensor

OPERATING SPECIFICATIONS	
Max Operating Pressure	HPLC Autosampler: 0 - 10,000 psi / 0 - 690 bar UHPLC Autosampler: 0 - 18,000 psi / 0 - 1240 bar
Injection Modes	Full-loop, partial loop-fill, µL pickup
Injection Volume	Programmable from 0 - 9999 µL in 1 microliter increments
Injection Precision	Full-loop injection ≤ 0.3 % RSD; Partial loop-fill ≤ 0.5 % RSD; µL pickup ≤ 1.0 % RSD
Injection Cycle Time	< 20 seconds typical in partial loop mode
Carryover	≤ 0.005%
Optional Sample Cooling	4 - 40 °C (with Peltier)
Integrated Column Compartment	Temperature range: Ambient +5 - 60 °C; Accuracy: ± 1 °C Max column length: 150 mm

POWER REQUIREMENTS	
Voltage Requirements	100 to 240 V
Line Frequency	50 - 60 Hz
Power Consumption	320 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 34.5 cm W x 34.6 cm H / 22 in L x 13.5 in W x 13.6 in H
Weight	19 kg / 42 lb (without cooling); 21 kg / 46.3 lb (with cooling)
Humidity	20 - 80 % non-condensing
Operating Temperature	10 - 40 °C

LIQUID HANDLING				
	Needle	**Syringe**	**Buffer Tubing**	**Sample Loop**
UHPLC (18K) Standard Configuration	15 µL	250 µL	500 µL	20 µL
HPLC (10K) Standard Configuration	15 µL	500 µL	1000 µL	100 µL
Wetted Parts	SS316, PTFE, TEFZEL, VESPEL, DLC, glass			
Syringe Volume	100, 250, 500 and 1000 µL			
Tray Types/Microtiter Plates Supported	• 100-vial tray: 2-mL vials (standard) • 85-vial tray: 80 2-mL vials plus 5 6-mL vials • 80-vial dilution tray: 80 2-mL vials plus 60-mL dilution tank • 205-vial tray: 200 0.2-mL micro vials plus 5 2-mL vials • 25-vial tray: 25 6-mL vials • 2 x 96-well microtiter plate, high (deep) • 2 x 96-well microtiter plate, low (shallow) • 2 x 384-well microtiter plate All trays compatible with cooling, heating, and missing vial/plate detection			

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

LC 300 Peltier Column Oven

KEY DESIGN COMPONENTS	
Technology	• Integrated solvent preheater • Optional column selection valve allows automated column switching of up to 6 columns • Peltier heating/cooling • Accommodates longer columns (up to 30 cm)
Safety Features	• Temperature and vapor safety sensors with alarm and shutoff

OPERATING SPECIFICATIONS	
Temperature Range	5 - 90 °C, with 1 °C increments 5 - 75 °C, with 1 °C increments if optional Column Selection Valve is installed
Temperature Accuracy	Better than 0.1 °C
Temperature Stability	Better than 0.1 °C
Temperature Rate	Heat @ 10 °C/min from 40 to 60 °C Cool @ 2 °C/min from 60 to 40 °C

POWER REQUIREMENTS	
Voltage Requirements	100 - 240 V
Line Frequency	50 - 60 Hz
Power Consumption	454 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 16.8 cm W x 58.4 cm H / 22 in L x 6.6 in W x 23 in H
Weight	16 kg / 35 lb
Humidity	20 - 80 % non-condensing
Operating Temperature	10 - 40 °C

LC 300 Photodiode Array Detector

KEY DESIGN COMPONENTS	
Technology	• Patented Flow Cell technology[2] • Self-aligning Flow Cell and lamp • Integrated solvent tray
Safety Features	• Temperature sensors • Leak sensor

OPERATING SPECIFICATIONS	
Wavelength Range	190 - 790 nm
Wavelength Accuracy	± 0.5 nm
Optical Resolution	4 nm
Photodiodes	1024
Digital Resolution	0.6 nm
Linearity Range	<3 % at 2 AU
Baseline Noise	<8 µAU
Drift	<0.5 mAU/hr
Data Acquisition	0.5 - 200 pts/sec (Hz)
Leak Detection	Heated thermistor sensor in glass envelope, located in flow cell drip tray

OPTICAL COMPONENTS	
Light Source Warranty	Deuterium lamp
Flow Cell Design	Liquid core waveguide

POWER REQUIREMENTS	
Voltage Requirements	100 - 240 V
Line Frequency	50 - 60 Hz
Power Consumption	140 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 34.5 cm W x 24.1 cm H / 22 in L x 13.5 in W x 9.5 in H
Weight	19 kg / 42 lb
Operating Humidity	20 - 80 % non-condensing
Operating Temperature	10 - 35 °C

FLOW CELLS	
Path Length	10 mm or 50 mm (optional)
Cell Volume	1 or 5 µL (optional)
Pressure Limit	1500 psi
Wetted Materials	Fused silica, PEEK, PTFE AF, Titanium

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

LC 300 Multi-Wavelength Detector

KEY DESIGN COMPONENTS	
Technology	• Patented Flow Cell technology[2] • Self-aligning Flow Cell and lamp • Integrated solvent tray
Safety Features	• Temperature sensors • Leak sensor

OPERATING SPECIFICATIONS	
Number of Channels	Up to 8
Wavelength Range	190 - 790 nm
Wavelength Accuracy	± 0.5 nm
Optical Resolution	4 nm
Photodiodes	1024
Digital Resolution	0.6 nm
Linearity Range	<3% at 2 AU
Baseline Noise	<8 µAU
Drift	<0.5 mAU/hr
Data Acquisition	0.5 - 200 pts/sec (Hz)
Leak Detection	Heated thermistor sensor in glass envelope, located in flow cell drip tray

OPTICAL COMPONENTS	
Light Source Warranty	Deuterium lamp
Flow Cell Design	Liquid core waveguide

POWER REQUIREMENTS	
Voltage Requirements	100 - 240 V
Line Frequency	50 - 60 Hz
Power Consumption	140 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 34.5 cm W x 24.1 cm H / 22 in L x 13.5 in W x 9.5 in H
Weight	19 kg / 42 lb
Operating Humidity	20 - 80 % non-condensing
Operating Temperature	10 - 35 °C

FLOW CELLS	
Path Length	10 mm or 50 mm (optional)
Cell Volume	1 or 5 µL (optional)
Pressure Limit	1500 psi
Wetted Materials	Fused silica, PEEK, PTFE AF, Titanium

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

LC 300 UV/Vis Detector

KEY DESIGN COMPONENTS	
Technology	• Self-aligning Flow Cell and lamp • Integrated solvent tray
Safety Features	• Leak sensor

OPERATING SPECIFICATIONS	
Wavelength Range	190 - 700 nm
Wavelength Accuracy	±1 nm
Wavelength Precision	±1 nm
Bandwidth	5 nm
Linearity	≥ 2.5 AU (with 5% deviation)
Data Acquisition Rate	100 pt/sec (Hz)
Sensitivity Range	0.0005 to 3.000 AUFS in 0.0001 increments from 0.0005 to 0.1, and 0.01 increments above 0.1 AUFS
Noise	$<7.5 \times 10^{-6}$ AU, 210 - 280 nm, 2 sec response time, std test cell
Drift	$<1 \times 10^{-4}$ AU/hr, after warmup
Leak Detection	Heated thermistor sensor in glass envelope, located in flow cell drip tray

OPTICAL COMPONENTS	
Optics	Dual beam
Light Sources	Deuterium (190 - 360 nm) or Tungsten (360 - 700 nm), pre-focused, no adjustment required on replacement

POWER REQUIREMENTS	
Voltage Requirements	100 - 240 V
Line Frequency	50 - 60 Hz
Power Consumption	130 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 34.5 cm W x 24.1 cm H / 22 in L x 13.5 in W x 9.5 in H
Weight	19 kg / 42 lb
Operating Humidity	20 - 80 % non-condensing
Operating Temperature	10 - 30 °C

FLOW CELLS	
Path Length	6 mm
Cell Volume	2.4 µL
Pressure Limit	500 psi / 34 bar
Wetted Materials	Kel-F, PEEK, quartz

LC 300 Refractive Index Detector

KEY DESIGN COMPONENTS	
Technology	• Long-life LED light source • Optical system mounted within a precisely temperature-controlled housing
Safety Features	• Temperature sensors • Leak sensor

OPERATING SPECIFICATIONS	
Refractive Index Range	1.00 to 1.75
Measurement Range	• High 50 x 10^{-6} RIU/1V • Standard 500 x 10^{-6} RIU/1V • Low 5000 x 10^{-6} RIU/1V
Linearity	• High 5 x 10^{-5} • Standard 5 x 10^{-4} RIU • Low 5 x 10^{-3} RIU
Noise	≤0.20 x 10^{-8} RIU
Drift	≤200 uV/h (0.1 uRIU/h)
Temperature Setting Range	0 to 45 °C (1 °C increments) via PID control heater
Control Range	Ambient + 10 °C to Ambient + 25 °C

OPTICAL COMPONENTS	
Measurement System	Deflection type
Light Source Type	Light Emitting Diode (LED)

POWER REQUIREMENTS	
Voltage Requirements	100 - 240 V
Line Frequency	50 - 60 Hz
Power Consumption	80 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 34.5 cm W x 16.8 cm H / 22 in L x 13.5 in W x 6.6 in H
Weight	30 kg / 66 lb
Operating Humidity	35 - 85 % non-condensing
Operating Temperature	10 - 30 °C

FLOW CELLS	
Cell Volume	10 µL
Pressure Limit	14 psi / 1 bar
Wetted Materials	Quartz glass, fluorine-containing resin, and SUS316

LC 300 Fluorescence Detector

KEY DESIGN COMPONENTS	
Technology	• Axially irradiated flow cell • Dynamically temperature-controlled cell body design • Integrated mercury lamp
Safety Features	• Temperature sensors • Leak sensor • Lamp door safety interlock

OPERATING SPECIFICATIONS	
Settable Wavelength Range	200 to 900 nm (for EX and EM wavelengths)
Measuring Wavelength Range	220 to 700 nm (for EX and EM wavelengths)
Slit Width Emission	20 nm or 40 nm (selectable)
Wavelength Accuracy	± 2 nm
Wavelength Repeatability	± 0.2 nm
Sensitivity (S/N)	1400:1 RMS Water Raman Baseline Method

OPTICAL COMPONENTS	
Monochromator	Holographic concave diffraction gratings (EX and EM)
Light Source	150 W Xenon lamp
Detectors	Excitation: Photodiode Emission: Photomultiplier tube

POWER REQUIREMENTS	
Voltage Requirements	100 - 240 V
Line Frequency	50 - 60 Hz
Power Consumption	230 VA

PHYSICAL AND ENVIRONMENTAL	
Dimensions	56 cm L x 34.5 cm W x 29.5 cm H / 22 in L x 13.5 in W x 11.6 in H
Weight	31kg / 69 lb
Operating Humidity	35 - 85 % non-condensing
Operating Temperature	10 - 30 °C

FLOW CELLS	
Flow Cell Volume	12.7 µL Standard 4 µL optional cell available
Maximum Pressure	580 psi / 40 bar
Wetted Materials	Synthetic quartz, fluoropolymer, and stainless steel (SUS316)

Consolidated Specifications

MODULE	HEIGHT	WIDTH	DEPTH	WEIGHT	POWER SPECIFICATIONS	POWER CONSUMPTION	BTU PER HOUR	TEMPERATURE RANGE	HUMIDITY RANGE
LC 300 Waste Management Module	6 cm 2.4 in	34.5 cm 13.5 in	56 cm 22 in	5 kg 11 lb	100 to 240 V 50 or 60 Hz	1000 VA Total	4 Total Modules	20 °C - 60 °C	20 - 80% non-condensing
	Maximum stackable weight on top of module 82 kg / 180.8 lb								
LC 300 10K/18K Pump	16.8 cm 6.6 in	34.5 cm 13.5 in	56 cm 22 in	21 kg 46 lb	100 - 230 V 50 - 60 Hz	450 VA	1535 BTU	10 °C- 40 °C	20 - 80% non-condensing
LC 300 Autosampler	34.6 cm 13.6 in	34.5 cm 13.5 in	56 cm 22 in	21 kg 46 lb	100 - 240 V 50 - 60 Hz	320 VA	1092 BTU	10 °C - 30 °C	20 - 80% non-condensing
LC 300 MWD/PDA	24.1 cm 9.5 in	34.5 cm 13.5 in	56 cm 22 in	19 kg 42 lb	100 - 240 V 50 - 60 Hz	140 VA	478 BTU	10 °C - 35 °C	20 - 80% non-condensing
LC 300 UV/Vis Detector	24.1 cm 9.5 in	34.5 cm 13.5 in	56 cm 22 in	19 kg 42 lb	100 - 240 V 50 - 60 Hz	130 VA	444 BTU	10 °C - 30 °C	20 - 80% non-condensing
LC 300 FL Detector	29.5 cm 11.6 in	34.5 cm 13.5 in	56 cm 22 in	31 kg 69 lb	100 - 240 V 50 - 60 Hz	230 VA	785 BTU	10 °C - 30 °C	35 - 85% non-condensing
LC 300 RI Detector	16.8 cm 6.6 in	34.5 cm 13.5 in	56 cm 22 in	30 kg 66 lb	100 - 240 V 50 - 60 Hz	80 VA	273 BTU	10 °C - 30 °C	35 - 85% non-condensing
LC 300 Column Oven	58.4 cm 23 in	16.8 cm 6.6 in	56 cm 22 in	16 kg 35 lb	100 - 240 V 50 - 60 Hz	454 VA	1549 BTU	10 °C- 40 °C	20 - 80% non-condensing
Stand Alone Solvent Organizer	25.4 cm/ 10 in to top of 1 L bottle	34.5 cm 13.5 in	56 cm 22 in	5 kg 11 lb	N/A	N/A	N/A	N/A	N/A

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