Varian 920-LC

ANALYTICAL LIQUID CHROMATOGRAPH

Design Overview

The Varian 920-LC analytical high performance liquid chromatograph is an integrated, pre-configured, pre-plumbed system that can be controlled by Varian Galaxie™ Chromatography Software on a single computer, or through a fully networked client and acquisition server. The low pressure quaternary gradient reciprocating dual piston pump with built-in Degasser, or isocratic pump delivers consistent, reliable solvent flow throughout the HPLC system. The autosampler direct injection method ensures carryover of less than 0.01% and has optional sample cooling. A column heater holds up to two columns from 4.6 to 13 mm ID and 50 to 300 mm length. Options of a UV-Vis or photodiode array (PDA) detector provide high sensitivity and low noise. Fluorescence, refractive index (RI) and evaporative light scattering (ELS) detectors with a cooling option can also be added for the analysis of non UV-Vis absorbing compounds.

These specifications represent typical performance.

Low pressure gradient solvent delivery system	
Type	Reciprocating dual piston design
Primary piston displacement	100 µL
Maximum pressure	39.2 MPa (5685 psi, 392 bar) from 0.001 to 5 mL/min 20 MPa (2900 psi, 200 bar) from 5 to 9.999 mL/min
Number of solvents	Maximum of 4
Degasser	4 channel, vacuum, built in
Flow rate range	0.001 to 9.999 mL/min
Wetted surfaces	316 stainless steel, ceramic, fluorocarbon resin
Compositional accuracy	±1%
Compositional precision	<0.2% RSD at 1 mL/min
Compositional range	0 to 100% in 1% increments
Isocratic solvent delivery system	
Type	Reciprocating dual piston design
Primary piston displacement	100 µL
Maximum pressure	39.2 MPa (5685 psi, 392 bar) from 0.001 to 5 mL/min 20 MPa (2900 psi, 200 bar) from 5 to 9.999 mL/min
Autosampler	
Maximum number of samples	200 x 2 mL HPLC vials 3 x 96-well wellplates
Autosampler syringe volume	100 µL
Injection volume range	0.1 to 50 µL (500 µL with 1 mL syringe kit)
Injection repeatibility	<0.3% RSD (using a 10 µL injection)
Carryover	<0.01%
Wetted surfaces	316 stainless steel, PEEK™, fluorocarbon resin, polypropylene or EPDM

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Varian 920-LC Analytical HPLC

Temperature-controlled autosampler	
Settable temperature range	4 to 35 °C (in increments of 1 °C)
Cooling system	Peltier effect-based thermoelectronic cooling type
Column heater compartment (measured using H_2O flow of 1 mL/min through a C18 column held at 40 °C)	
Temperature range	Ambient+10 to 65 °C (90 °C option available)
Temperature accuracy	±1 °C at 40 °C
Temperature reproducibility	±0.15 °C
Warm-up time	<15 min
Column switching valve with manual injector	
Port size	Accepts 10-32 male-threaded fittings
Flow passage diameters	Stator: 0.3 mm and 0.25 mm for vertical port Rotor seal: 0.25 mm
Volume port-to-port	445 nL
Maximum pressure	41 MPa (6000 psi, 410 bar)
Actuation time	100 ms
UV-Vis detector	
Light source	Deuterium for UV and quartz halogen for visible
Wavelength range	190 to 900 nm
Spectral bandpass	6 nm
Wavelength accuracy	±1 nm at 260 nm
Wavelength precision	±0.1 nm
Noise	$\pm 5 \times 10^{-6}$ AU
Drift	$<1 \times 10^{-3}$ AU/h
Linearity	1% to 2 AU using acetone in H_2O
Data acquisition rate	20 Hz single wavelength mode
Maximum pressure rating	Flow cell rated to 7 MPa (1000 psi, 70 bar)
Flow cells	9 x 0 mm analytical, 15 µL volume (standard) 4 x 0 mm micro, 1.5 µL volume
PDA detector	
Light source	Deuterium for UV and quartz halogen for visible
Wavelength range	190 to 950 nm
Wavelength accuracy	±1 nm verified with 486 nm D_2 line
Spectral resolution	<1 nm per photodiode with a total of 1024 photodiodes
Digital resolution	1 nm
Noise	$\pm 10 \times 10^{-6}$ AU
Linearity	5% to 2 AU using acetone in H_2O
Data acquisition rate	10 Hz
Maximum pressure rating	Flow cell rated to 7 MPa (1000 psi, 70 bar)
Flow cells	9 x 0 mm analytical, 15 µL volume (standard) 4 x 0 mm micro, 1.5 µL volume

Fluorescence detector (optional)	
Excitation wavelength range	200 to 850 nm
Emission wavelength range	250 to 900 nm
Excitation bandwidth	15 nm
Emission bandwidth	15 or 30 nm
Wavelength accuracy	±3 nm
Wavelength reproducibility	±0.5 nm
Sensitivity	>600 using H_2O Raman scattering line with baseline method
Flow cell capacity	12 µL
Wetted surfaces	Quartz glass or fluorocarbon resin
RI detector (optional)	
Refractive index range	1.00 to 1.75
Noise	$5x10^{-9}$ RIU
Drift	$<250x10^{-9}$ RIU/h
Linearity	$600x10^{-6}$ RIU
Flow cell temperature range	30 to 50 °C in 1 °C increments
Flow cell capacity	6 µL
Maximum pressure rating	100 kPa (15 psi, 1 bar)
ELS detector (external, optional)	
Detector	Blue LED 480 nm. Class 1 LED product.
Temperature range: **Evaporator** **Nebulizer**	 Ambient to 120 °C (10 to 80 °C, cooled ELS detector) Ambient to 90 °C
Nebulizer gas: **Typical inlet pressure** **Maximum inlet pressure** **Gas flow rate**	 414 to 689 kPa (60 to 100 psi, 4 to 7 bar) 689 kPa (100 psi, 7 bar) Up to 3.25 SLM
Eluent flow rate	Up to 5 mL/min
Digital output	24 bit (10 and 40 Hz)
Communications	Serial I/O (RS232), contact closure, TTL
Power requirements	90/120 V AC or 220/250 V AC, 50/60 Hz, VA 1200
Dimensions (W x D x H)	200 x 450 x 415 mm
Weight	11 kg (13 kg, cooled ELS detector)
Input/output	
	Start out Ready out Start in Ready in Analog in
Dimensions and weight	
Instrument dimensions (W x D x H)	750 x 725 x 665 mm
Instrument weight	Not heavier than 133 kg

Recommended enviromental conditions	
Instrument storage	5 to 45 °C at 20 to 80% relative humidity, non-condensing, altitude <3050 m
Instrument operation	10 to 35 °C, 8 to 80% relative humidity, non-condensing, altitude <2000 m
Instrument electrical requirements	Mains supply of 100 to 120 V AC or 220 to 240 V AC, 50 to 60 Hz with up to 1000 VA power consumption
Varian customer support policies	
Warranty	Twelve (12) months, though this may vary according to locations.
Hardware support period	Five (5) years from date of last unit manufacture. After this time, parts and supplies will be provided if available.
Software support	Software upgrades to fix non-conformances or safety problems will be issued free of charge. Software upgrades to add additional functionality will require an additional fee.
Further details	
	For further details on the following: • Computer configurations • GLP, 21 CFR Part 11 and Validation functionality • Accessory specifications and application information • Part numbers and other ordering information please consult your Varian office or supplier, or our Web site at www.varianinc.com

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