Pumping Systems

G1311A Quaternary Pump

Performance Specifications

Table 3 Performance Specification Agilent 1200 Quaternary Pump

Type	Specification
Hydraulic system	Dual plunger in series pump with proprietary servo-controlled variable stroke drive, floating plungers and active inlet valve
Setable flow range	0.001 – 10 ml/min, in 0.001 ml/min increments
Flow range	0.2 – 10.0 ml/min
Flow precision	≤0.07% RSD, or ≤0.02 min SD whatever is greater, based on retention time at constant room temperature
Flow accuracy	±1% or 10µl/min whatever is greater
Pressure	Operating range 0 – 40 MPa (0 – 400 bar, 0 – 5880 psi) up to 5 ml/min Operating range 0 – 20 MPa (0 – 200 bar, 0 – 2950 psi) up to 10 ml/min
Pressure pulsation	< 2 %amplitude (typically < 1 %), at 1 ml/min isopropanol, at all pressures > 1 MPa (10bar)
Compressibility compensation	User-selectable, based on mobile phase compressibility
Recommended pH range	1.0 – 12.5, solvents with pH < 2.3 should not contain acids which attack stainless steel
Gradient formation	Low pressure quaternary mixing/gradient capability using proprietary high-speed proportioning valve Delay volume 800 – 1100 µl, dependent on back pressure
Composition Range	0 – 95 % or 5 – 100 %, user selectable
Composition Precision	< 0.2 % RSD, at 0.2 and 1 ml/min
Control and data evaluation	Agilent ChemStation for LC
Analog output	For pressure monitoring, 2 mV/bar, one output
Communications	Controller-area network (CAN), GPIB, RS-232C, APG Remote: ready, start, stop and shut-down signals, LAN optional
Safety and maintenance	Extensive diagnostics, error detection and display (through control module and Agilent ChemStation), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.

Injection Systems

G1329A Autosampler 100 µl metering head

Performance Specifications

Table 15 Performance Specifications Agilent 1200 Autosampler (G1329A). Valid when standard 100 µl metering head installed.

Type	Specification
GLP features	Early maintenance feedback (EMF), electronic records of maintenance and errors
Communications	Controller-area network (CAN). GPIB (IEEE-448), RS232C, APG-remote standard, optional four external contact closures and BCD vial number output
Safety features	Leak detection and safe leak handling, low voltages in maintenance areas, error detection and display
Injection range	0.1 – 100 µl in 0.1 µl increments Up to 1500 µl with multiple draw (hardware modification required)
Replicate injections	1 – 99 from one vial
Precision	< 0.25 % RSD from 5 – 100 µl, < 1 % RSD 1 – 5 µl variable volume
Minimum sample volume	1 µl from 5 µl sample in 100 µl microvial, or 1 µl from 10 µl sample in 300 µl microvial
Carryover	Typically < 0.1 %, < 0.05 % with external needle cleaning
Sample viscosity range	0.2 – 50 cp
Replicate injections per vial	1 – 99
Sample capacity	100 × 2-ml vials in 1 tray 40 × 2-ml vials in ½ tray 15 × 6-ml vials in ½ tray (Agilent vials only)
Injection cycle time	Typically 50 s depending on draw speed and injection volume

Physical Specifications

Table 16 Physical Specifications - Autosampler (G1329A / G2260A)

Type	Specification	Comments
Weight	14.2 kg (31.3 lbs)	
Dimensions (height × width × depth)	200 × 345 × 435 mm (8 × 13.5 × 17 inches)	
Line voltage	100 – 120 or 220 – 240 VAC, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption (apparent power) Power consumption (active power)	300 VA 200 W	Maximum Maximum
Ambient operating temperature	4 – 55 °C (41 – 131 °F)	see *User Manual*
Ambient non-operating temperature	-40 to 70 °C (-4 to 158 °F)	
Humidity	< 95 %, at 25 – 40 °C (77 – 104 °F)	Non-condensing
Operating Altitude	Up to 2000 m (6500 ft)	
Non-operating altitude	Up to 4600 m (14950 ft)	For storing the autosampler
Safety standards: IEC, CSA, UL	Installation Category II, Pollution Degree 2 For indoor use only	

Part Number: 01200-90100

Edition: 05/06

Printed in Germany
Agilent Technologies
Hewlett-Packard-Strasse 8
76337 Waldbronn, Germany

01200-90100

UV Detectors

G1314B Variable Wavelength Detector and G1314C Variable Wavelength Detector SL

Performance Specifications

Table 25 Performance Specifications Agilent 1200 Series Variable Wavelength Detector

Type	Specification	Comments
Detection type	Double-beam photometer	
Light source	Deuterium lamp	
Wavelength range	190–600 nm	
Short term noise (ASTM)	± 0.75 × 10^{-5} AU at 254 nm	See NOTE in manual.
Drift	3 × 10^{-4} AU/hr at 254 nm	See NOTE in manual
Linearity	> 2 AU (5%) upper limit	See NOTE in manual
Wavelength accuracy	± 1 nm	Self-calibration with deuterium lines, verification with holmium oxide filter
Band width	6.5 nm typical	
Flow cells	Standard: 14-µl volume, 10-mm cell path length and 40 bar (588 psi) pressure maximum High pressure: 14-µl volume, 10-mm cell path length and 400 bar (5880 psi) pressure maximum Micro: 1-µl volume, 5-mm cell path length and 40 bar (588 psi) pressure maximum Semi-micro: 5-µl volume, 6-mm cell path length and 40 bar (588 psi) pressure maximum	Can be repaired on component level
Control and data evaluation	Agilent ChemStation for LC	
Analog outputs	Recorder/integrator: 100 mV or 1 V, output range 0.001 – 2 AU, one output	
Communications	Controller-area network (CAN), GPIB, RS-232C, APG Remote: ready, start, stop and shut-down signals, LAN optional	GPIB for G1314B only
Safety and maintenance	Extensive diagnostics, error detection and display (through control module and Agilent ChemStation), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.	

Special Detectors

G1321A Fluorescence Detector

Performance Specifications

Table 33 Performance Specifications Agilent 1200 Series Fluorescence Detector

Type	Specification	Comments
Detection type	Multi-signal fluorescence detector with rapid on-line scanning capabilities and spectral data analysis	
Performance Specifications	10 fg Anthracene, Ex=250 nm, Em=400 nm* **RAMAN single wavelength (H_2O) > 500** with Ex=350 nm, Em=397 nm, dark value 450 nm, standard flow cell time constant=4 seconds (8 seconds responsetime) **RAMAN dual wavelength (H_2O) > 300** with Ex=350 nm, Em=397 nm, dark value 450 nm, standard flow cell time constant=4 seconds (8 seconds responsetime)	see note below this table in manual see "Raman ASTM Signal-to-Noise Test in manual see "Raman ASTM Signal-to-Noise Test in manual
Light source	Xenon Flash Lamp, normal mode 20 W, economy mode 5 W	
Pulse frequency	296 Hz for single signal mode 74 Hz for spectral mode	
Excitation Monochromator	Range:200 nm - 700 nm and zero-order Bandwidth:20 nm (fixed) Monochromator:concave holographic grating, F/1.6, blaze: 300 nm	
Emission Monochromator	Range:280 nm - 900 nm and zero-order Bandwidth:20 nm (fixed) Monochromator:concave holographic grating, F/1.6, blaze: 400 nm	
Reference System:	in-line excitation measurement	
Timetable programing:	up to 4 signal wavelengths, response time, PMT Gain, baseline behavior (append, free, zero), spectral parameters	
Spectrum acquisition:	Excitation or Emission spectra Scan speed: 28 ms per datapoint (e.g. 0.6 s/spectrum 200-400 nm, 10 nm step) Step size: 1-20 nm Spectra storage: All	
Wavelength characteristic	Repeatability+/- 0.2 nm Accuracy+/- 3 nm setting	

Table 33 Performance Specifications Agilent 1200 Series Fluorescence Detector(continued)

Type	Specification	Comments
Flow cells	Standard: 8 µl volume and 20 bar (2 MPa) pressure maximum, quartz Optional: Fluorescence cuvette for offline spectroscopic measurements with 1 ml syringe, 8 µl volume, quartz	
Control and data evaluation	Agilent ChemStation for LC, Agilent Instant Pilot G4208A or Agilent Control Module G1323B with limited spectral data analysis and printing of spectra	
Analog outputs	Recorder/integrator: 100 mV or 1 V, output range >10^2 luminescence units, two outputs	
Communications	Controller-area network (CAN), GPIB, RS-232C, LAN, APG Remote: ready, start, stop and shut-down signals	
Safety and maintenance	Extensive diagnostics, error detection and display (through Instant Pilot G4208A, Control Module G1323B and ChemStation), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.	
GLP features	Early maintenance feedback (EMF) for continuous tracking of instrument usage in terms of lamp burn time with user-settable limits and feedback messages. Electronic records of maintenance and errors. Verification of wavelength accuracy, using the Raman band of water.	
Housing	All materials recyclable.	
Environment:	0 to 40 °C constant temperature at <95% humidity (non-condensing)	
Dimensions:	140 mm x 345 mm x 435 mm (5.5 x 13.5 x 17 inches) (height x width x depth)	
Weight:	11.5 kg (25.5 lbs)	

Miscellaneous

G1322A Vacuum Degasser

Performance Specifications

Table 53 Performance Specifications Agilent 1200 Series Vacuum Degasser

Type	Specification
Maximum flow rate	10 ml/min per channel
Number of channels	4
Internal volume per channel	Typically 12 ml per channel
Materials in contact with solvent	PTFE, PEEK
pH range	1 – 14
Analog output (AUX)	For pressure monitoring, range 0 – 3 V

Physical Specifications

Table 54 Physical Specifications

Type	Specification	Comments
Weight	7 kg (15.4 lbs)	
Dimensions (width × depth × height)	345 × 435 × 80 mm (13.5 × 17 × 3.1 inches)	
Line Voltage	100 – 120 or 220 – 240 VAC, ± 10 %	Wide-ranging capability
Line Frequency	50 or 60 Hz, ± 5 %	
Power consumption	30 W	Maximum
Ambient Operating Temperature	0 – 55 °C (32 – 131 °F)*	see *User manual*
Ambient Non-operating Temperature	-40 – 70 °C (-4 – 158 °F)	
Humidity	< 95 %, at 25 – 40 °C (77 – 104 °F)	Non-condensing
Operating Altitude	Up to 2000 m (6500 ft)	
Non-operating Altitude	Up to 4600 m (14950 ft)	For storing the instrument

Miscellaneous

G1316A Thermostatted Column Compartment
G1316B Thermostatted Column Compartment

Performance Specifications

Table 57 Performance Specifications Agilent 1200 Series Thermostatted Column Compartment G1316A/G1316B

Type	Specification	Comments
Temperature range	10 degrees below ambient to 80 °C 10 degrees below ambient to 100 °C	G1316A G1316B (SL)
	up to 80 °C: flow rates up to 5 ml/min up to 100 °C: flow rates up to 2.5 ml/min	G1316A / G1316B (SL) G1316B (SL)
Temperature stability	± 0.15 °C ± 0.05 °C	G1316A G1316B (SL)
Temperature accuracy	± 0.8 °C ± 0.5 °C	 With calibration
Column capacity	Three 30 cm	
Warm-up/cool-down time	5 minutes from ambient to 40 °C 10 minutes from 40 – 20 °C	
Dead volume	3 µl left heat exchanger 6 µl right heat exchanger	i.d. 0.17 mm
Dimensions (h × w × d)	140 × 410 × 435 mm (5.5 × 16 × 17 inches)	
Weight	10.2 kg (22.5 lbs)	
Communications	Controller-area network (CAN), GPIB, RS-232C, APG Remote: ready, start, stop and shut-down signals, LAN via other 1200 series module	no GPIB on G1316B SL
Safety and maintenance	Extensive diagnostics, error detection and display (through control module and Agilent ChemStation), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.	

Miscellaneous

G1330B Autosampler Thermostat

Performance Specifications

Table 59 Performance Specifications Agilent 1200 autosampler thermostat

Type	Specification
Temperature range:	setable from 4°C to 40°C in 1° increments
Temperature accuracy at ambient temperatures < 25°C and humidity < 50%	-1°C to +4°C at a setpoint of 4°C
Temperature accuracy at ambient temperatures > 25°C and/or humidity > 50%	-1°C to +5°C at a setpoint of 4°C

Physical Specifications

Table 60 Physical Specifications - Thermostatted Autosampler

Type	Specification	Comments
Thermostat Weight	20.7 kg (45.6 lbs)	
Dimensions (height × width × depth)	140 × 345 × 435 mm (5.5 × 13.5 × 17 inches)	
Line voltage	100 – 120 or 220 – 240 VAC, ± 10 %	Automatic selection
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	Autosampler: 300 VA ALS Thermostat: 260 VA	Maximum Maximum
Ambient operating temperature	4 – 40 °C (41 – 131 °F)	see *User manual*
Ambient non-operating temperature	-40 – 70 °C (-4 – 158 °F)	
Humidity	< 95 %, at 25 – 40 °C (77 – 104 °F)	Non-condensing;
Operating Altitude	Up to 2000 m (6500 ft)	