Agilent 1260 Infinity II Quaternary Pump (G7111B)

Physical Specifications

Table 5 Physical Specifications

Type	Specification	Comments
Weight	14.7 kg (32 lbs)	
Dimensions (height × width × depth)	180 x 396 x 436 mm (7.1 x 15.6 x 17.2 inches)	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	80 VA, 65 W	
Ambient operating temperature	4–55 °C (39–131 °F)	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 95 % r.h. at 40 °C (104 °F)	Non-condensing
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, EN, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.
ISM Classification	ISM Group 1 Class B	According to CISPR 11

Performance Specifications

Table 6 Performance Specifications Agilent 1260 Infinity II Quaternary Pump (G7111B)

Type	Specification
Hydraulic system	Dual piston in series pump with servo-controlled variable stroke drive, power transmission by gears and ball screws, floating pistons
Settable flow range	Set points 0.001 – 10 mL/min, in 0.001 mL/min increments
Recommended 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 ≤0.07 % RSD, or ≤0.02 min SD whatever is greater
Flow accuracy	± 1 % or 10 µL/min whatever is greater, pumping degassed H_2O at 10 MPa (100 bar)
Pressure operating range	Operating range up to 60 MPa (600 bar, 8700 psi) up to 5 mL/min Operating range up to 20 MPa (200 bar, 2950 psi) up to 10 mL/min
Pressure pulsation	< 2 % amplitude (typically < 1.0 %), or < 0.3 MPa (3 bar, 44 psi), whatever is greater, at 1 mL/min isopropanol, at all pressures > 1 MPa (10 bar, 145 psi)
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	600 – 900 µL, dependent on back pressure; measured with water at 1 mL/min (water/caffeine tracer)
Settable composition range	0 – 100 % in 0.1 % increments
Composition precision	< 0.2 % RSD or < 0.04 min SD, whatever is greater
Integrated degassing unit	Number of channels: 4 Internal volume per channel: 1.5 mL

Table 6 Performance Specifications Agilent 1260 Infinity II Quaternary Pump (G7111B)

Instrument Control	Lab Advisor B.02.08 or above LC and CE Drivers A.02.14 or above For details about supported software versions refer to the compatibility matrix of your version of the LC and CE Drivers
Local Control	Agilent Instant Pilot (G4208A) B.02.20 or above
Communications	Controller-area network (CAN), Enhanced Remote Interface: ready, start, stop and shut-down signals, LAN onboard
Safety and maintenance	Extensive diagnostics, error detection and display through Agilent LabAdvisor, leak detection, safe leak handling, leak output signal for shutdown of the pumping system. Low voltage in major maintenance areas.
GLP features	Early maintenance feedback (EMF) for continuous tracking of instrument usage in terms of seal wear and volume of pumped mobile phase with pre-defined and user settable limits and feedback messages. Electronic records of maintenance and errors
Housing	All materials are recyclable

Agilent 1260 Infinity II Multisampler (G7167A)

Physical Specifications

Table 17 Physical Specifications

Type	Specification	Comments
Weight	22 kg (48.5 lbs)	w/o sample cooler
Dimensions (height × width × depth)	320 x 396 x 468 mm (12.6 x 15.6 x 18.4 inches)	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	180 VA, 180 W	
Ambient operating temperature	4 - 40 °C (39 - 104 °F)	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 95 % r.h. at 40 °C (104 °F)[1]	Non-condensing
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, EN, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.
ISM Classification	ISM Group 1 Class B	According to CISPR 11
Permitted solvents	Boiling point ≥56 °C Auto-ignition temperature ≥200 °C	

[1] If a sample cooler is included the upper value for humidity can be reduced. Please check your lab conditions to stay beyond dew point values for non–condensing operation.

Performance Specifications (Agilent 1260 Infinity II Multisampler G7167A)

Table 18 Agilent 1260 Infinity II Multisampler (G7167A) Performance Specifications

Type	Specification	Comment
Injection range for *Single-needle* instruments	Default: 0.1 – 100 µL in 0.1 µL increments; optional: 20 µL or 40 µL (using optional 40 µL analytical head)	Up to 600 bar using 100 µL (default) or optional 40 µL analytical head
	0.1 – 500 µL or 900 µL in 0.1 µL increments (using 900 µL analytical head)	Pressure range up to 400 bar due to 900 µL analytical head
	0.1 – 120 µL in 0.1 µL increments with 1290 Infinity large volume injection kit (hardware modification required) G4216-68711 0.1 – 500 µL or 1500 µL in 0.1 µL increments with 100 µL upgrade kit (hardware modification required) G7167-68711	Pressure range up to 600 bar Multi-draw modus (Injection into needle-seat capillary)
Injection range for *Dual-needle* instruments	Default: 0.1 – 100 µL in 0.1 µL increments; optional: 20 µL or 40 µL (using 100 µL analytical head)	Up to 600 bar using 100 µL analytical head
	Up to 900 µL in 0.1 µL increments depending on installed loop size	Up to 600 bar using 100 µL analytical head
Precision for *Single-needle* instruments	<0.15 % RSD or SD <10 nL, whatever is greater	Measured caffeine
Precision for *Dual-needle* instruments	<0.2 % RSD or SD <10 nL, whatever is greater	Measured caffeine
Pressure range	Up to 600 bar (G7167A)	Max pressure for basic instrument
Sample viscosity range	0.2 – 5 cp	

Table 18 Agilent 1260 Infinity II Multisampler (G7167A) Performance Specifications

Type	Specification	Comment
Sample capacity	1H Drawer up to 8 drawers and 16 positions Shallow well plates (MTP)	Max. 6144/1536 samples (384MTP/96)
	2H Drawer up to 4 drawers and 8 positions MTP, deep well plates, vials, Eppendorf	3072 samples, 432 vials (2 mL)
	3H Drawer up to 2 drawers and 4 positions MTP, deep well plates, vials up to 6 mL, Eppendorf	1536 samples, 60 vials (6 mL), 384 vials (1 mL), 216 vials (2 mL)
Injection cycle time	<10 s using following standard conditions: Default draw speed: 100 µL/min	Using standard Single-needle setup
	Default eject speed: 400 µL/min Injection volume: 1 µL	Time between 2 injections is not mechanically limited, time delay depends on communication speed of software, OS or network connections
Carry Over	<0.003 % (30 ppm) Multisampler Standard and Dual Needle <0.0009 % (9 ppm) Multisampler Multiwash	
Multiwash	Outer needle wash and seat backflush for carryover reduction with up to 3 different solvents	
Instrument Control	Lab Advisor B.02.06 or above LC and CE Drivers A.02.10 or above	For details about supported software versions refer to the compatibility matrix of your version of the LC and CE Drivers
Local control	Agilent Instant Pilot (G4208A)	B.02.19 or above
Communications	Controller-area network (CAN), Local Area Network (LAN) ERI: ready, start, stop and shut-down signals	
Safety and maintenance	Extensive support for troubleshooting and maintenance is provided by the Instant Pilot, Agilent Lab Advisor, and the Chromatography Data System. Safety-related features are leak detection, safe leak handling, leak output signal for shutdown of pumping system, and low voltages in major maintenance areas.	

Table 18 Agilent 1260 Infinity II Multisampler (G7167A) Performance Specifications

Type	Specification	Comment
GLP features	Early maintenance feedback (EMF) for continuous tracking of instrument usage with user-settable limits and feedback messages. Electronic records of maintenance and errors.	
Housing	All materials recyclable.	
Metering device	Metering device in high pressure flow path	

Physical Specifications of the Sample Cooler

Cooling unit is designed as vapor-compression refrigeration system. Contains fluorinated greenhouse gas (refrigerant) according to the Kyoto protocol. For specifications of refrigerant, charge capacity, carbon dioxide equivalent (CDE), and global warming potential (GWP) see instrument label.

Table 19 Physical Specification of the Sample Cooler

Type	Specification	Comments
Weight	< 6 kg	
Dimensions (height × width × depth)	205 mm x 340 mm x 370 mm	
Refrigerant gas	HFC-134a (0.042 kg)	Ozone depletion potential (ODP) = 0
Supply voltage	24 VDC (nominal)	
Current	10 A max.	
Ambient operating temperature	4 – 40 ° C (39.2 – 104 ° F)	
Ambient non-operating temperature	-40 – 70 ° C (-20 – 158 ° F)	
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15091 ft)	
Safety standards: IEC, EN, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.
ISM Classification	ISM Group 1 Class B	According to CISPR 11

Table 20 Performance Specifications Agilent 1290 Sample Cooler

Type	Specifications
Operating principle	High performance, low-energy consumption micro-compressor based cooler with ozone-friendly HFC-134a coolant (42 g), user-upgradable.
Temperature range	from 4 °C to 5 °C below ambient
Temperature settable	from 4 – 40 °C in 1 ° increments
Temperature accuracy (<25 °C, <50 % r.H.)	2 °C to 6 °C at a setpoint of 4 °C

Agilent 1260 Infinity II Diode Array Detector WR (G7115A)

Physical Specifications

Table 37 Physical Specifications

Type	Specification	Comments
Weight	12 kg (26.5 lbs)	
Dimensions (height × width × depth)	140 x 396 x 436 mm (5.5 x 15.6 x 17.0 inches)	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	110 VA / 100 W	
Ambient operating temperature	4–55 °C (39–131 °F)	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 95 % r.h. at 40 °C (104 °F)	Non-condensing
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, EN, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.
ISM Classification	ISM Group 1 Class B	According to CISPR 11

Performance Specifications

Table 38 Performance specifications G7115A

Type	Specification	Comments
Detection type	1024-element photodiode array	
Light source	Deuterium and tungsten lamps	The UV-lamp is equipped with RFID tag that holds lamp typical information.
Data rate	up to 120 Hz	
Wavelength range	190 – 950 nm	
Short term noise (ASTM) Single and Multi-Wavelength	< ± $0.7 \cdot 10^{-5}$ AU at 254 and 750 nm	
Drift	< $0.9 \cdot 10^{-3}$ AU/h at 254 nm	
Linear absorbance range	> 2 AU (5 %) at 265 nm	
Wavelength accuracy	± 1 nm	Self-calibration with deuterium lines, verification with holmium oxide filter
Wavelength bunching	1 – 400 nm	Programmable in steps of 1 nm
Slit width	1, 2, 4 , 8, 16 nm	Programmable slit
Diode width	< 1 nm	

Table 38 Performance specifications G7115A

Type	Specification	Comments
Flow cells	Standard: 13 µL volume, 10 mm cell path length and 120 bar (1740 psi) pressure maximum Standard bio-inert: 13 µL volume, 10 mm cell path length and 120 bar (1740 psi) pressure maximum Semi-micro: 5 µL volume, 6 mm cell path length and 120 bar (1740 psi) pressure maximum Micro: 2 µL volume, 3 mm cell path length, 120 bar (1740 psi) pressure maximum Semi-nano: 500 nL volume, 10 mm cell path length and 50 bar (725 psi) pressure maximum Nano: 80 nL volume, 6 mm cell path length and 50 bar (725 psi) pressure maximum High pressure: 1.7 µL volume, 6 mm cell path length and 400 bar (5800 psi) pressure maximum Prep SST: 3 mm cell path length and 120 bar (1740 psi) pressure maximum Prep Quartz:0.3 mm cell path length and 20 bar (290 psi) pressure maximum Prep Quartz: 0.06 mm cell path length and 20 bar (290 psi) pressure maximum SFC Flow Cell: Light path 10 mm, Pressure Rating 400 bar, Internal Volume 13 µL SFC Flow Cell LD: Light Path 3 mm, Pressure Rating 400 bar, Internal Volume 2 µL	All flow cells are equipped with RFID tags that hold cell typical information. pH range 1.0 – 9.5 (12.5 solvent dependent with bio-inert version)
Time programmable	Wavelength, polarity, peak width, lamp bandwidth, autobalance, wavelength range, threshold, spectra storage mode	

Table 38 Performance specifications G7115A

Type	Specification	Comments
Spectral tools	Data analysis software for spectra evaluation, including spectral libraries and peak purity functions	
Instrument Control	Lab Advisor B.02.08 or above LC and CE Drivers A.02.14 or above	For details about supported software versions refer to the compatibility matrix of your version of the LC and CE Drivers
Local control	Agilent Instant Pilot (G4208A)	B.02.20 or above
Analog outputs	Recorder/integrator: 100 mV or 1 V, output range 0.001 – 2 AU, two outputs	
Communications	Controller-area network (CAN), USB Extended Remote Interface (ERI): ready, start, stop and shut-down signals	
Safety and maintenance	Extensive diagnostics, error detection and display (through control module and ChemStation), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.	
GLP features	RFID for electronics records of flow cell and UV lamp conditions (path length, volume, product number, serial number, test passed, usage) Early maintenance feedback (EMF) for continuous tracking of instrument usage in terms of lamp burn time with user-setable limits and feedback messages. Electronic records of maintenance and errors. Verification of wavelength accuracy with built-in holmium oxide filter.	

Table 38 Performance specifications G7115A

Type	Specification	Comments
Housing	All materials recyclable.	
Others	Second generation of Electronic temperature control (ETC) for the complete optical unit	

Agilent 1260 Infinity II Refractive Index Detector (G7162A)

Physical Specifications

Table 55 Physical Specifications

Type	Specification	Comments
Weight	15 kg (33 lbs)	
Dimensions (height × width × depth)	180 x 396 x 436 mm (7.1 x 15.6 x 17.2 inches)	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	80 VA / 70 W	
Ambient operating temperature	4–55 °C (39–131 °F)	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 95 % r.h. at 40 °C (104 °F)	Non-condensing
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, EN, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.
ISM Classification	ISM Group 1 Class B	According to CISPR 11

Performance Specifications

Table 56 Agilent 1260 Infinity II Refractive Index Detector (G7162A) Performance Specifications

Type	Specification	Comments
Detection type	Refractive Index	
Refractive index range	1.00 – 1.75 RIU, calibrated	
Measurement range	$\pm 600 \cdot 10^{-6}$ RIU	
Optical zeroing		via set screw
Optics temperature control	5 °C above ambient to 55 °C	
Sample cell	Volume: 8 µL Maximum pressure: 5 bar (0.5 MPa) Maximum flow rate: 5 mL/min	
Valves	Automatic purge and automatic solvent recycle	
Volumes	Inlet port to sample cell 62 µL, inlet port to outlet port 590 µL	
Liquid contact materials	316 stainless steel, PTFE and quartz glass	
pH range	2.3 – 9.5	
Performance specifications	Short term noise: $<\pm 1.25 \cdot 10^{-9}$ RIU Drift: $<200 \cdot 10^{-9}$ RIU/hr	
Time programmable parameters	polarity, peak width	
Maximum data rate	74 Hz	
Detector zero	automatic zero before analysis	
Instrument Control	Lab Advisor B.02.07 or above LC and CE Drivers A.02.12 or above	For details about supported software versions refer to the compatibility matrix of your version of the LC and CE Drivers

Table 56 Agilent 1260 Infinity II Refractive Index Detector (G7162A) Performance Specifications

Type	Specification	Comments
Local control	Agilent Instant Pilot (G4208A)	B.02.20 or above
Analog outputs	Recorder/integrator: 100 mV or 1 V, output range selectable, one output	
Communications	LAN, controller-area network (CAN), ERI: ready, start, stop and shut-down signals	
Safety and maintenance	Extensive diagnostics, error detection and display, 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 with user-selectable limits and feedback messages. Electronic records of maintenance and errors. Automated operational qualification/performance verification (OQ/PV).	
Housing	All materials recyclable.	

Agilent 1260 Infinity II Multicolumn Thermostat (G7116A)

Physical Specifications

Table 61 Physical Specifications

Type	Specification	Comments
Weight	12.5 kg (27.6 lbs)	
Dimensions (height × width × depth)	160 x 435 x 436 mm (6.3 x 17.1 x 17.2 inches), Width with column identification kit: 460 mm	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	150 VA, 150 W	
Ambient operating temperature	4–55 °C (39–131 °F)	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 95 % r.h. at 40 °C (104 °F)	Non-condensing
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, EN, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.
ISM Classification	ISM Group 1 Class B	According to CISPR 11

Performance Specifications

Table 62 Agilent 1260 Infinity II Multicolumn Thermostat (G7116A) Performance Specifications

Feature	Specification[1]
Operating principle	Thermostatted column compartment with dual, independent Peltier-element. Solvent pre-heating and still-air operation for reduction of chromatographic band-broadening under UHPLC-conditions.
Temperature range	10 °C below ambient (minimum 4 °C) to 85 °C settable in steps of 0.1 K
Temperature stability	±0.1 °C
Temperature accuracy	±0.5 °C (with calibration for 40 °C)
Temperature precision	0.05 °C
Independent Temperature zones	2in single device
Column capacity	4 columns of up to 300 mm length plus InfinityLab Quick-Connect fittings or pre-column Number of precolumn Quick-Connect Heat Exchangers is scalable – each column can be equipped with individual heat exchanger for best performance 4-column selector valve is available to access each column without replumbing
Heat-up/cool-down time	5 min from ambient to 40 °C 10 min from 40 °C to 20 °C <25 min from 25 °C to 85 °C
Solvent heat exchangers	For pre-column solvent heating, G7116A is equipped with a Quick-Connect Heat Exchanger Large ID (0.17 mm capillary, 3 µL internal volume) as default. Other dimensions of Quick-Connect Heat Exchangers are optionally available as well as heat exchangers made out of bio-inert materials (metal-free).

Table 62 Agilent 1260 Infinity II Multicolumn Thermostat (G7116A) Performance Specifications

Feature	Specification[1]
Valve options	1 x integrated valve drive as option to host user-exchangeable Quick-Change valve heads (up to 600 bar) of different formats: 2-position/6-port, 2-position/10-port, 4-column selection. Also available in bio-inert materials. Valve heads are automatically identified by their tag.
Column identification	Optionally, column identification kit to track history of up to four columns. Mounted left hand-side of module.
Communications	Controller-area network (CAN). G7116A is a hosted module (LC stack needs to contain a LAN communication and control card)
Software compatibility	Requires OpenLAB CDS A.01.03 - A.02.02 (with LC & CE Drivers A.02.14 or higher) • OpenLAB CDS ChemStation ed. C.01.03 -C.01.07 SR2 or higher • OpenLAB CDS EZChrom ed. A.04.05 - A.04.07 SR2 or higher MassHunter (LC Drivers A.02.14) or higher • MassHunter B.07.01 or higher for (Q)-TOF • MassHunter B.08.02 or higher for QQQ
Instrument Control	Lab Advisor B.02.08 or above LC and CE Drivers A.02.14 or above For details about supported software versions refer to the compatibility matrix of your version of the LC and CE Drivers
Local Control	Agilent Instant Pilot (G4208A) B.02.20 or above
Safety and maintenance	Extensive diagnostics, error detection and display (through Instant Pilot control module and Agilent LabAdvisor), leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in main maintenance areas.
GLP	Valve heads carrying tags with serial number, pressure rating, number of switches and valve type. Concept of column identification.

[1] All specifications are valid for distilled water at ambient temperature (25 °C), set point at 40 °C and a stable flow range from 0.2 – 5 mL/min. Equilibration Time: 10 min.