

Agilent 1200 Infinity II LC



Specification Compendium



Agilent Technologies

Notices

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CAUTION

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A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

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Agilent 1290 Infinity II Flexible Pump (G7104A)

Physical Specifications

Table 1 Physical Specifications

Type	Specification	Comments
Weight	16.1 kg (35.5 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	120 VA / 110 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.

Performance Specifications

Table 2 Agilent 1290 Infinity II Flexible Pump (G7104A) Performance Specifications

Feature	Specification
Hydraulic system	Dual pistons in series pump with proprietary servo-controlled variable stroke design and smooth motion control for active damping.
Pump resolution step size	300 pL step size
Settable flow range	0.001 – 5 mL/min, in 0.001 mL/min increments (executed in 300 pL/step increments).
Flow precision	≤0.07 % RSD or 0.01 min SD, whatever is greater
Flow accuracy	±1 % or ±10 µL/min, whatever is greater
Pressure range	up to 130 MPa (1300 bar) at 0 – 2 mL/min ramping down to 80 MPa (800 bar) at 5 mL/min
Pressure pulsation	<1 % amplitude or <0.5 MPa (5 bar), whatever is greater
Compressibility compensation	Automatic
Recommended pH-range	1.0 – 12.5, solvents with pH <2.3 should not contain acid which attack stainless steel.
Gradient formation	Low pressure quaternary mixing
Delay volume	As low as 350 µL
Composition range	Settable range: 0 – 100 % Recommended range: 1 – 99 % or 5 µL/min
Composition precision	<0.15 % RSD or 0.02 min SD, whatever is greater
Composition accuracy	±0.4 % absolute (1 – 99 % B)
Number of solvent	4 out of maximum 26 solvents
Solvent selection valve	Internal 4-solvent gradient formation valve included. External 2x 12 solvent valve as option, fully integrated in the pump control interface.

1 Pumps

Agilent 1290 Infinity II Flexible Pump (G7104A)

Table 2 Agilent 1290 Infinity II Flexible Pump (G7104A) Performance Specifications

Feature	Specification
Degassing unit	Integrated. Number of channels: 4, Internal volume per channel: 1.5 mL
Materials in contact with solvent	TFE/PDD copolymer, FEP, PEEK, PPS, stainless steel, polyimide
Automatic Purge Valve	Included, allows automatic inline-filter back-flush and automatic mixer change, e.g. for optional TFA-mixer
Active Seal wash	Included
Intelligent System Emulation Technology (ISET)	Included
Communications	Controller-area network (CAN), RS232C, APG remote: ready, start, stop and shutdown signals, LAN
Safety and maintenance	Extensive diagnostics, error detection and display through included 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 1290 Infinity II High Speed Pump (G7120A)

Physical Specifications

Table 3 Physical Specifications

Type	Specification	Comments
Weight	21.0 kg (46.3 lbs)	
Dimensions (height × width × depth)	200 × 396 × 436 mm (7.9 × 15.6 × 17.2 inches)	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	210 VA / 180 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.

Performance Specifications

Table 4 Agilent 1290 Infinity II High Speed Pump (G7120A) Performance Specifications

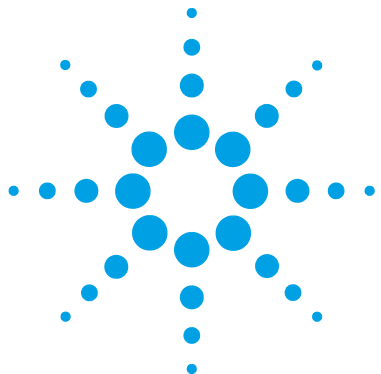
Feature	Specification
Hydraulic system	Two dual pistons in series, pumps with proprietary servo-controlled variable stroke design and smooth motion control.
Pump resolution step size	300 pL step size
Settable flow range	0.001 – 5 mL/min, in 0.001 mL/min increments (executed in 300 pL/step increments).
Flow precision	≤0.07 % RSD or 0.005 min SD, whatever is greater
Flow accuracy	±1 % or 10 µL/min, whatever is greater
Pressure range	up to 130 MPa (1300 bar) at 0 – 2 mL/min ramping down to 80 MPa (800 bar) at 5 mL/min
Pressure pulsation	<1 % amplitude or <0.5 MPa (5 bar), whatever is greater
Compressibility compensation	Automatic
Recommended pH-range	1.0 – 12.5, solvents with pH <2.3 should not contain acid which attack stainless steel.
Gradient formation	High pressure binary mixing
Delay volume	As low as 45 µL (10 µL without mixer)
Composition precision	<0.15 % RSD or 0.01 min SD, whatever is greater
Composition accuracy	±0.35 % absolute
Number of solvent	2 out of maximum 26 solvents
Solvent selection valve	Internal 4-solvent selection valve included. External 2x 12 solvent valve as option, fully integrated in the pump control interface.
Integrated degassing unit	Included Number of channels: 2 Internal volume per channel: 1.5 mL Materials in contact with solvent: TFE/PDD Copolymer, FEP, PEEK, PPS.

Table 4 Agilent 1290 Infinity II High Speed Pump (G7120A) Performance Specifications

Feature	Specification
Automatic Purge Valve	Included
Active Seal wash	Included
Intelligent System Emulation Technology (ISET)	Included
Communications	Controller-area network (CAN), RS232C, APG remote: ready, start, stop and shutdown signals, LAN
Safety and maintenance	Extensive diagnostics, error detection and display through included Agilent LabAdvisor, leak detection, safe leak handling, leak output signal for shutdown of the pumping system. Low voltage in major maintenance areas.
GLP feature	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.

1 Pumps

Agilent 1290 Infinity II High Speed Pump (G7120A)



2 Injectors

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Agilent 1290 Infinity II Multisampler (G7167B)

Physical Specifications

Table 5 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)	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 Agilent 1290 Infinity II Multisampler (G7167B) Performance Specifications

Type	Specification	Comment
Injection range for <i>Single-needle</i> instruments	Default: 0.1 – 20 µL in 0.1 µL increments; optional: 40 µL or 100 µL (using 100 µL analytical head)	Up to 1300 bar using 40 µL (default) or optional 100 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 1300 bar Multi-draw modus (Injection into needle-seat capillary)
Injection range for <i>Dual-needle</i> instruments	Default: 0.1 – 20 µL in 0.1 µL increments; optional: 40 µL or 100 µL	Up to 1300 bar using 100 µL analytical head
	Up to 500 µL in 0.1 µL increments depending on installed loop size	Up to 1300 bar using 100 µL analytical head + Multi-load
Precision for <i>Single-needle</i> instruments	<0.15 % RSD or SD <10 nL, whatever is greater	Measured caffeine
Precision for <i>Dual-needle</i> instruments	<0.2 % RSD or SD <10 nL, whatever is greater	Measured caffeine
Pressure range	Up to 1300 bar (G7167B)	Max pressure for basic instrument
Sample viscosity range	0.2 – 5 cp	
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)

2 Injectors

Agilent 1290 Infinity II Multisampler (G7167B)

Table 6 Agilent 1290 Infinity II Multisampler (G7167B) Performance Specifications

Type	Specification	Comment
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	Using the following conditions: <ul style="list-style-type: none"> • Column: Agilent Pursuit XRs 3 C18, 2.0 x 50 mm • Mobile phase: <ul style="list-style-type: none"> • A: 0.1 % TFA in water • B: 0.1 % TFA in Acetonitrile • Isocratic : % B=40 % • Flow rate: 0.5 mL/min • Temperature: 25 °C • Wavelength: 257 nm • Sample: 1200 ng/µL Chlorhexidine (dissolved with mobile phase A), 1 µL injected and measured on G4212A DAD • Wash solution: H₂O with 0.1 % TFA (3 s)
Multiwash	Outer needle wash and seat backflush for carryover reduction with up to 3 different solvents	
Control and data evaluation	Agilent Open Lab CDS	A.02.01 or above (A.02.02 supports Sample Entry UI)
	MassHunter QQQ	B.07.00 SP1 ¹ or above
	MassHunter QTOF	B.05.01 SP3 ¹ or above
	Lab Advisor	B.02.05 or above
	ICF for 3rd party SW control	A.02.01 or above
	LC and CE Drivers	A.02.10 or above
Local Control	Agilent Instant Pilot (G4208A)	B.02.17 or above (currently not supported/official release 2015)

Table 6 Agilent 1290 Infinity II Multisampler (G7167B) Performance Specifications

Type	Specification	Comment
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.	
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	

¹ only for the integration in an Infinity I LC setup

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 7 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
Line 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, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

Table 8 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 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 Multisampler (G7167A)

Physical Specifications

Table 9 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)	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

2 Injectors

Agilent 1260 Infinity Multisampler (G7167A)

Performance Specifications (G7167A)

Table 10 Agilent 1260 Infinity Multisampler (G7167A) Performance Specifications

Type	Specification	Comment
Injection range for <i>Single-needle</i> 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 <i>Dual-needle</i> 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 <i>Single-needle</i> instruments	<0.15 % RSD or SD <10 nL, whatever is greater	Measured caffeine
Precision for <i>Dual-needle</i> 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	
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)

Table 10 Agilent 1260 Infinity Multisampler (G7167A) Performance Specifications

Type	Specification	Comment
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	Using the following conditions: <ul style="list-style-type: none"> • Column: Agilent Pursuit XRs 3 C18, 2.0 x 50 mm • Mobile phase: <ul style="list-style-type: none"> • A: 0.1 % TFA in water • B: 0.1 % TFA in Acetonitrile • Isocratic : % B=40 % • Flow rate: 0.5 mL/min • Temperature: 25 °C • Wavelength: 257 nm • Sample: 1200 ng/µL Chlorhexidine (dissolved with mobile phase A), 1 µL injected and measured on G4212A DAD • Wash solution: H₂O with 0.1 % TFA (3 s)
Multiwash	Outer needle wash and seat backflush for carryover reduction with up to 3 different solvents	
Control and data evaluation	Agilent Open Lab CDS	A.02.01 or above (A.02.02 supports Sample Entry UI)
	MassHunter QQQ	B.07.00 SP1 ¹ or above
	MassHunter QTOF	B.05.01 SP3 ¹ or above
	Lab Advisor	B.02.05 or above
	ICF for 3rd party SW control	A.02.01 or above
	LC and CE Drivers	A.02.10 or above
Local Control	Agilent Instant Pilot (G4208A)	B.02.17 or above (currently not supported/official release 2015)

2 Injectors

Agilent 1260 Infinity Multisampler (G7167A)

Table 10 Agilent 1260 Infinity Multisampler (G7167A) Performance Specifications

Type	Specification	Comment
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.	
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	

¹ only for the integration in an Infinity I LC setup

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 11 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
Line 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, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

Table 12 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 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 1290 Infinity II Vialsampler (G7129B)

Physical Specifications

Table 13 Physical Specifications

Type	Specification	Comments
Weight	19 kg (41.9 lbs)	w/o sample cooler
Dimensions (height × width × depth)	324 x 396 x 468 mm (12.8 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	350 VA / 350 W / 1195 BTU/h	
Ambient operating temperature	4 - 40 °C (39 - 104 °F), without chiller up to 55 °C (131 °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

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

Table 14 Performance Specifications (G7129B)

Type	Specification	Comment
Injection range	0.1 – 20 μL in 0.1 μL increments (default)	Up to 1500 μL with 1400 μL -multi-draw kit and 100 μL -analytical head
	0.1 – 40 μL in 0.1 μL increments if 40 μL loop is installed	
	0.1 – 120 μL in 0.1 μL increments with 1290 Infinity large volume injection kit (hardware modification required)	up to 130 MPa (1300 bar, 18854 psi)
	0.1 – 100 μL in 0.1 μL (if 100 μL -loop and 100 μL -head is installed)	up to 60 MPa (600 bar, 8702 psi)
Precision	<0.25 % RSD of peak areas from 5 μL to 100 μL	Measured caffeine
Pressure range	Up to 130 MPa (1300 bar, 18854 psi)	
Sample viscosity range	0.2 – 5 cp	
Sample capacity	132 x 2 mL vial (two trays default) 100 x 2 mL vial (two classic trays optional) 36 x 6 mL vials (two trays optional)	
Carry over	<0.004 % (40 ppm) with needle wash	<p>Using the following conditions:</p> <ul style="list-style-type: none"> • ZORBAX Eclipse Plus C18, RRHD, 2.1 x 50 mm, 1.8 μm (959757-902) • Mobile Phase: <ul style="list-style-type: none"> • A: 0.1 % TFA in water • B: 0.1 % TFA in acetonitrile • Isocratic : % B=33 % • Flow rate: 0.5 mL/min • Column temperature: 50 $^{\circ}\text{C}$ • Wavelength detection: 257/4 nm, ref. wavelength 380/100 nm, 20 Hz • Injection volume: 1 μL • Sample: 1200 ng/μL Chlorhexidine for UV, (dissolved with mobile phase A), 1 μL injected and measured both on Agilent G7117B DAD • Wash solution: H_2O with 0.1 % TFA (5 s)

2 Injectors

Agilent 1290 Infinity II Vialsampler (G7129B)

Table 14 Performance Specifications (G7129B)

Type	Specification	Comment
Injection cycle time	18 s for draw speed 200 $\mu\text{L}/\text{min}$ Ejection speed: 200 $\mu\text{L}/\text{min}$ Injection volume: 1 μL	
Minimum sample volume	1 μL from 5 μL sample in 100 μL microvial, or 1 μL from 10 μL sample in 300 μL microvial.	Needle height offset has to be adapted to ensure that needle doesn't touch vial bottom. Default needle height = 0 equates to 2 mm above the vial bottom.
Control and data evaluation	Agilent Open Lab CDS Mass hunter QQQ Mass hunter TOF/QTOF Lab Advisor ICF for 3rd party SW control LC and CE Drivers	A.02.02 or above B.08.01 or above B.07.02 or above B.02.07 or above A.02.04 or above A.02.12 or above
Local control	Agilent Instant Pilot (G4208A)	B.02.17 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.	
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 15 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
Line 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, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

Table 16 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 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 Autosampler (G7129A)

Physical Specifications

Table 17 Physical Specifications

Type	Specification	Comments
Weight	19 kg (41.9 lbs)	w/o sample cooler
Dimensions (height × width × depth)	324 x 396 x 468 mm (12.8 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	350 VA / 350 W / 1195 BTU/h	
Ambient operating temperature	4 - 40 °C (39 - 104 °F), without chiller up to 55 °C (131 °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

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

Table 18 Performance Specifications (G7129A)

Type	Specification	Comment
Injection range	0.1 – 100 µL in 0.1 µL increments with 100 µL up to 60 MPa 0.1 – 900 µL in 0.1 µL increments with 900 µL up to 40 MPa	Up to 1800 µL with multiple draw (hardware modification required)
Precision	<0.25 % RSD of peak areas from <5 µL to 100 µL	Measured caffeine
Pressure range	0 – 60 MPa (0 – 600 bar, 0 – 8702 psi) 0 – 40 MPa (0 – 400 bar, 0 – 5801 psi)	for 900 µL Analytical Head
Sample viscosity range	0.2 – 5 cp	
Sample capacity	132 x 2 mL vial (two trays default) 100 x 2 mL vial (two classic trays optional) 36 x 6 mL vials (two trays optional)	
Carry over	<0.004 % (40 ppm) with needle wash	Using the following conditions: <ul style="list-style-type: none"> • ZORBAX Eclipse Plus C18, RRHD, 2.1 x 50 mm, 1.8 µm (959757-902) • Mobile Phase: <ul style="list-style-type: none"> • A: 0.1 % TFA in water • B: 0.1 % TFA in acetonitrile • Isocratic : % B=33 % • Flow rate: 0.5 mL/min • Column temperature: 50 °C • Wavelength detection: 257/4 nm, ref. wavelength 380/100 nm, 20 Hz • Injection volume: 1 µL • Sample: 1200 ng/µL Chlorhexidine for UV, (dissolved with mobile phase A), 1 µL injected and measured both on Agilent G7117B DAD • Wash solution: H₂O with 0.1 % TFA (5 s)
Injection cycle time	18 s for draw speed 200 µL/min Ejection speed: 200 µL/min Injection volume: 1 µL	

2 Injectors

Agilent 1260 Infinity Autosampler (G7129A)

Table 18 Performance Specifications (G7129A)

Type	Specification	Comment
Minimum sample volume	1 µL from 5 µL sample in 100 µL microvial, or 1 µL from 10 µL sample in 300 µL microvial.	Needle height offset has to be adapted to ensure that needle doesn't touch vial bottom. Default needle height = 0 equates to 2 mm above the vial bottom.
Control and data evaluation	Agilent Open Lab CDS Mass hunter QQQ Mass hunter TOF/QTOF Lab Advisor ICF for 3rd party SW control LC and CE Drivers	A.02.02 or above B.08.01 or above B.07.02 or above B.02.07 or above A.02.04 or above A.02.12 or above
Local control	Agilent Instant Pilot (G4208A)	B.02.17 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.	
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

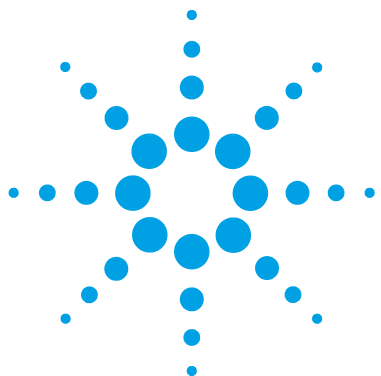
Type	Specification	Comments
Weight	< 6 kg	
Dimensions (height × width × depth)	205 mm x 340 mm x 370 mm	
Refrigerant gas	HFC-134a (0.042 kg)	Ozone depletion potential (ODP) = 0
Line voltage	24 VDC (nominal)	
Current	10 A max.	
Ambient operating temperature	4 – 40 °C (39.2 – 104 °F)	
Ambient non-operating 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, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

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 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

2 Injectors

Agilent 1260 Infinity Autosampler (G7129A)



3 UV-Detectors

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Agilent 1290 Infinity II Variable Wavelength Detector (G7114B)

Physical Specifications

Table 21 Physical Specifications

Type	Specification	Comments
Weight	11 kg (24.3 lbs)	
Dimensions (height × width × depth)	140 x 396 x 436 mm (5.5 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 2000 m (6562 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.

Performance Specifications

Table 22 Agilent 1290 Infinity II Variable Wavelength Detector (G7114B) Performance Specifications

Feature	Specification
Detection type	Double-beam photometer
Light source	Deuterium lamp
Number of signals	Single and dual wavelength detection
Maximum data rate	240 Hz (single wavelength detection) 2.5 Hz (dual wavelength detection)
Noise	< $\pm 0.15 \cdot 10^{-5}$ AU, at 230 nm (single wavelength detection) < $\pm 0.80 \cdot 10^{-5}$ AU, at 230 nm and 254 nm (dual wavelength detection)
Drift	< $1 \cdot 10^{-4}$ AU/h, at 230 nm
Linearity	>2.5 AU upper limit
Wavelength range	190 – 600 nm
Wavelength accuracy	± 1 nm, self-calibration with deuterium lines, verification with holmium oxide filter
Wavelength precision	< ± 0.1 nm
Slit width	6.5 nm typical over whole wavelength range
Time programmable	Wavelength, polarity, peak width, lamp on/off
Flow cells	<i>Standard:</i> 14 μ L volume, 10 mm cell path length and 40 bar (588 psi) pressure maximum <i>Micro:</i> 2 μ L volume, 3 mm cell path length and 120 bar (1760 psi) pressure maximum <i>Semi-micro:</i> 5 μ L volume, 6 mm cell path length and 40 bar (588 psi) pressure maximum <i>Preparative:</i> 4 μ L volume, 3 mm cell path length and 120 bar (1760 psi) pressure maximum <i>Preparative:</i> 0.3 mm cell path length and 50 bar (725 psi) pressure maximum <i>Preparative:</i> 0.06 mm cell path length and 50 bar (725 psi) pressure maximum
Spectral tools	Stop-flow wavelength scan

3 UV-Detectors

Agilent 1290 Infinity II Variable Wavelength Detector (G7114B)

Table 22 Agilent 1290 Infinity II Variable Wavelength Detector (G7114B) Performance Specifications

Feature	Specification
Analog output	Recorder/Integrator 100 mV or 1 V, 1 output
Communication	LAN, Controller-area network (CAN), ERI: ready, start, stop and shut-down signals
GLP	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. RFID for electronics records of flow cell and UV lamp conditions (path length, volume, product number, serial number, test passed, and usage). Verification of wavelength accuracy with built-in holmium oxide filter.
Safety and maintenance	Extensive diagnostics, error detection and display through Agilent Instant Pilot and Agilent Lab Advisor software. Leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas. Tracking of flow cells and lamps with RFID (radio frequency identification) tags

Agilent 1290 Infinity II DAD (G7117B)

Physical Specifications

Table 23 Physical Specifications

Type	Specification	Comments
Weight	11.5 kg (25.4 lbs)	
Dimensions (height × width × depth)	140 x 396 x 436 mm (5.5 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	110 VA, 100 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)	Non-condensing
Operating altitude	Up to 2000 m (6562 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.

Performance Specifications

Table 24 Agilent 1290 Infinity II Diode Array Detector (G7117B) Performance Specifications

Feature	Specification
Detector type	1024-element diode array
Light source	Deuterium
Number of signals	8
Maximum sampling rate	240 Hz (both spectra and signals)
Short-term noise	with 10 mm Max-Light cartridge cell: $<\pm 3 \cdot 10^{-6}$ AU at 230/4 nm, slit width 4 nm, TC 2 s, ASTM with 60 mm Max-Light cartridge cell: $<\pm 0.6 \cdot 10^{-6}$ AU/cm at 230/4 nm, slit width 4 nm, TC 2 s, ASTM
Drift	$<0.5 \cdot 10^{-3}$ AU/h at 230 nm
Linearity	>2.0 AU (5 %) at 265 nm Typically 2.5 AU (5 %)
Wavelength range	190 – 640 nm
Wavelength accuracy	± 1 nm, self-calibration with deuterium lines
Wavelength precision	$<\pm 0.1$ nm
Slit width	Programmable: 1, 2, 4, 8 nm
Diode width	~ 0.5 nm
Wavelength bunching	Programmable, 2 – 400 nm, in steps of 1 nm
Spectral tools	Data analysis software for spectra evaluation, including spectral libraries and peak purity functions

Table 24 Agilent 1290 Infinity II Diode Array Detector (G7117B) Performance Specifications

Feature	Specification
Flow cells	User-exchangeable, self-aligning cartridge cells with RFID tags. Max-Light Cartridge Cell (Standard): 10 mm, $\sigma_V = 1.0 \mu\text{L}$ Max-Light Cartridge Cell (High Sensitivity): 60 mm, $\sigma_V = 4 \mu\text{L}$ Max-Light Cartridge Ultra Low Dispersion (ULD) Cell: 10 mm, $\sigma_V = 0.6 \mu\text{L}$ Max-Light Cartridge High Dynamic Range (HDR) Cell: 3.7 mm, $\sigma_V = 0.8 \mu\text{L}$ Maximum Operating Pressure (MOP) ¹ : 70 bar Maximum Incidental Pressure (MIP) ² : 150 bar
Analog output	Recorder/integrator: 100 mV or 1 V, output range 0.001 – 2 AU, one output
Communications	LAN, controller-area network (CAN), ERI: ready, start, stop and shut-down signals
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 settable limits and feedback messages. Electronic records of maintenance and errors. Verification of wavelength accuracy with deuterium lines.
Safety and maintenance	Extensive diagnostics, error detection and display through Agilent Instant Pilot and Agilent Lab Advisor software. Leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.
Others	Second generation of Electronic temperature control (ETC) for the complete optical unit

¹ Maximum operating pressure (MOP): Maximum pressure at which a system can operate continuously under normal conditions.

² Maximum incidental pressure (MIP): The maximum pressure which the system can experience during a short time.

Agilent 1290 Infinity II DAD FS (G7117A)

Physical Specifications

Table 25 Physical Specifications

Type	Specification	Comments
Weight	11.5 kg (25.4 lbs)	
Dimensions (height × width × depth)	140 x 396 x 436 mm (5.5 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	110 VA, 100 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)	Non-condensing
Operating altitude	Up to 2000 m (6562 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.

Performance Specifications

Table 26 Agilent 1290 Infinity II Diode Array Detector FS (G7117A) Performance Specifications

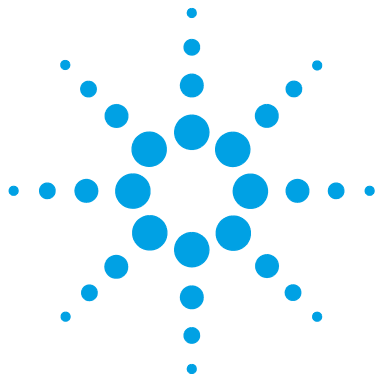
Feature	Specification
Detector type	1024-element diode array
Light source	Deuterium
Number of signals	8
Maximum sampling rate	120 Hz (both spectra and signals)
Short-term noise	with 10 mm Max-Light cartridge cell: $<\pm 3 \cdot 10^{-6}$ AU at 230/4 nm, slit width 4 nm, TC 2 s, ASTM with 60 mm Max-Light cartridge cell: $<\pm 0.6 \cdot 10^{-6}$ AU/cm at 230/4 nm, slit width 4 nm, TC 2 s, ASTM
Drift	$<0.5 \cdot 10^{-3}$ AU/h at 230 nm
Linearity	>2.0 AU (5 %) at 265 nm Typically 2.5 AU (5 %)
Wavelength range	190 – 640 nm
Wavelength accuracy	± 1 nm, self-calibration with deuterium lines
Wavelength precision	$<\pm 0.1$ nm
Diode width	~ 0.5 nm
Wavelength bunching	Programmable, 2 – 400 nm, in steps of 1 nm
Flow cells	User-exchangeable, self-aligning cartridge cells with RFID tags. Max-Light Cartridge Cell (Standard): 10 mm, $\sigma_V = 1.0 \mu\text{L}$ Max-Light Cartridge Cell (High Sensitivity): 60 mm, $\sigma_V = 4 \mu\text{L}$ Max-Light Cartridge Ultra Low Dispersion (ULD) Cell: 10 mm, $\sigma_V = 0.6 \mu\text{L}$ Max-Light Cartridge High Dynamic Range (HDR) Cell: 3.7 mm, $\sigma_V = 0.8 \mu\text{L}$ Maximum Operating Pressure (MOP) ¹ : 70 bar Maximum Incidental Pressure (MIP) ² : 150 bar

Table 26 Agilent 1290 Infinity II Diode Array Detector FS (G7117A) Performance Specifications

Feature	Specification
Spectral tools	Data analysis software for spectra evaluation, including spectral libraries and peak purity functions
Analog output	Recorder/integrator: 100 mV or 1 V, output range 0.001 – 2 AU, one output
Communications	LAN, controller-area network (CAN), ERI: ready, start, stop and shut-down signals
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 settable limits and feedback messages. Electronic records of maintenance and errors. Verification of wavelength accuracy with deuterium lines.
Safety and maintenance	Extensive diagnostics, error detection and display through Agilent Instant Pilot and Agilent Lab Advisor software. Leak detection, safe leak handling, leak output signal for shutdown of pumping system. Low voltages in major maintenance areas.
Others	Second generation of Electronic temperature control (ETC) for the complete optical unit

¹ Maximum operating pressure (MOP): Maximum pressure at which a system can operate continuously under normal conditions.

² Maximum incidental pressure (MIP): The maximum pressure which the system can experience during a short time.



4 Special Detectors

Agilent 1290 Infinity II Evaporative Light Scattering Detector (G7102A) 44

Physical Specifications 44

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Agilent 1290 Infinity II Refractive Index Detector (Micro) (G7162B) 47

Physical Specifications 47

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Agilent 1260 Infinity II Refractive Index Detector (G7162A) 50

Physical Specifications 50

Performance Specifications 51



Agilent 1290 Infinity II Evaporative Light Scattering Detector (G7102A)

Physical Specifications

Table 27 Physical Specifications

Type	Specification	Comments
Weight	11 kg (non-cooled), 13 kg (cooled)	
Dimensions (height × width × depth)	415 × 200 × 450 mm (16.3 × 7.9 × 17.7 inches)	
Line voltage	100 – 240 V~, ± 10 %	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5 %	
Power consumption	150 W (max)	Maximum
Ambient operating temperature	10–35 °C (50–95 °F)	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 80 % r.h. at 40 °C (104 °F)	Non-condensing
Operating altitude	Up to 2000 m (6562 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

Performance Specifications

The instrument is suitable for indoor use only and is classified suitable under the following categories (EN 61010- 1):2010

- Installation category II
- Pollution degree 2
- Safety class 1

Table 28 Agilent 1290 Infinity II Evaporative Light Scattering Detector (G7102A) Performance Specifications

Type	Specification
Light Source	LASER 405 nm, 10 mW (Class 3B)
Detector	Dual PMT with digital signal processing
Nebuliser	OFF, 25 – 90 °C
Evaporator	
Non-cooled	OFF, 25 – 120 °C
Cooled	OFF, 10 – 80 °C
Gas Flow Range	0.9 – 3.25 SLM (controlled gas shut-off)
Dynamic Raange	4 orders of magnitude
Short Term Noise	<0.1 LSU/h (1 mL/min water).
Drift	<1 LSU/h (1 mL/min water).
Operating Pressure	60 – 100 psi (4.1 – 6.9 bar)
Eluent Flow range	0.2 – 5.0 mL/min
Digital Output	10, 40 or 80 Hz (24 bit)
Remote Operation	Remote Start Input
Communication	Ethernet Serial (RS232) Remote Start Input Pump Stop: 1 Contact closure

4 Special Detectors

Agilent 1290 Infinity II Evaporative Light Scattering Detector (G7102A)

Table 28 Agilent 1290 Infinity II Evaporative Light Scattering Detector (G7102A) Performance Specifications

Type	Specification
PC Control	ELSD driver for OpenLAB ChemStation edition ELSD driver for OpenLAB EZChrom edition
Safety and maintenance	Gas shut-off Valve, Leak Detection, Laser Interlock

Agilent 1290 Infinity II Refractive Index Detector (Micro) (G7162B)

Physical Specifications

Table 29 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	70 W / 80 VA	Maximum
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 2000 m (6562 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

4 Special Detectors

Agilent 1290 Infinity II Refractive Index Detector (Micro) (G7162B)

Performance Specifications

Table 30 Agilent 1290 Infinity II Refractive Index Detector (G7162B) 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: 2.5 μ L Maximum pressure: 5 bar (0.5 MPa) Maximum flow rate: 1 mL/min (100% water)	
Valves	Automatic purge and automatic solvent recycle	
Volumes	Inlet port to sample cell 2.5 μ L, inlet port to outlet port 265 μ L	
Liquid contact materials	316 stainless steel, PTFE and quartz glass	
pH range	2.3 – 9.5	
Performance specifications	Short term noise: $< \pm 1.75 \cdot 10^{-9}$ RIU Drift: $< 200 \cdot 10^{-9}$ RIU/hr	see note below this table
Time programmable parameters	polarity, peak width	
Maximum data rate	148 Hz	
Detector zero	automatic zero before analysis	
Control and data evaluation	Parameter entry, signal display, on-line help and diagnostics with the Agilent 1260 Infinity Control Module.	
Analog outputs	Recorder/integrator: 100 mV or 1 V, output range selectable, one output	

Table 30 Agilent 1290 Infinity II Refractive Index Detector (G7162B) Performance Specifications

Type	Specification	Comments
Communications	LAN, controller-area network (CAN), 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	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.	

NOTE

Based on ASTM method E-1303-95 Practice for Refractive Index Detectors used in Liquid Chromatography. Reference conditions: optics temperature 35 °C, response time 4 s, flow 1.0 mL/min LC-grade Water, restriction capillary, column compartment temperature 35 °C, Agilent on-line degasser (e.g. G4225A), pump and thermostatted column compartment. Instrument equilibrated for 2 hours.

4 Special Detectors

Agilent 1260 Infinity II Refractive Index Detector (G7162A)

Agilent 1260 Infinity II Refractive Index Detector (G7162A)

Physical Specifications

Table 31 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	70 W / 80 VA	Maximum
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 2000 m (6562 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards: IEC, CSA, UL	Installation category II, Pollution degree 2	For indoor use only.

Performance Specifications

Table 32 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 μ L 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 μ L, inlet port to outlet port 590 μ L	
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	see note below this table
Time programmable parameters	polarity, peak width	
Maximum data rate	74 Hz	
Detector zero	automatic zero before analysis	
Control and data evaluation	Parameter entry, signal display, on-line help and diagnostics with the Agilent 1260 Infinity Control Module.	
Analog outputs	Recorder/integrator: 100 mV or 1 V, output range selectable, one output	

4 Special Detectors

Agilent 1260 Infinity II Refractive Index Detector (G7162A)

Table 32 Agilent 1260 Infinity II Refractive Index Detector (G7162A) Performance Specifications

Type	Specification	Comments
Communications	LAN, controller-area network (CAN), 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	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.	

NOTE

Based on ASTM method E-1303-95 Practice for Refractive Index Detectors used in Liquid Chromatography. Reference conditions: optics temperature 35 °C, response time 4 s, flow 1.0 mL/min LC-grade Water, restriction capillary, column compartment temperature 35 °C, Agilent on-line degasser (e.g. G4225A), pump and thermostatted column compartment. Instrument equilibrated for 2 hours.



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Agilent 1290 Infinity II Multicolumn Thermostat (G7116B)

Physical Specifications

Table 33 Physical Specifications

Type	Specification	Comments
Weight	12.5 kg (27.6 lbs)	
Dimensions (height × width × depth)	160 × 435 (472) × 436 mm (6.3 × 17.1 (18.6) × 17.2 inches)	
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 2000 m (6562 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.

Performance Specifications

Table 34 Agilent 1290 Infinity II Multicolumn Thermostat (G7116B) Performance Specifications

Feature	Specification
Operating principle	Dual, independent Peltier-element thermostatted column compartment. Solvent pre-heating and still-air operation for reduction of chromatographic band-broadening under UHPLC-conditions. Up to three devices can be clustered and controlled by a single user interface for additional flexibility ¹ .
Temperature range	4 °C to 110 °C, (minimum 20 °C below ambient)
Temperature stability	±0.03 °C
Temperature accuracy	±0.5 °C (with calibration)
Temperature precision	0.05 °C
Independent Temperature zones	2 (in single device) up to 6 in clustered configuration ¹
Column capacity	8 columns of 100 mm length plus Quick-Connect fittings or pre-columns 4 columns of 300 mm length plus Quick-Connect fittings or pre-columns Selection of columns by single optional integrated 8-column selection valve (1300 bar) Maximum of 24 columns of 100 mm length plus Quick-Connect fittings or pre-columns 12 columns of 300 mm length plus Quick-Connect fittings or pre-columns with clustering ¹ of three devices.
Heat-up/cool-down time	5 min from ambient to 40 °C 10 min from 40 °C to 20 °C <30 min from 25 °C to 100 °C
Solvent heat exchangers	Individually quick-installable for every column. Available at 1 µL (ultra-low dispersion), 1.6 µL (standard) and 3 µL (high-flow) volume.

Table 34 Agilent 1290 Infinity II Multicolumn Thermostat (G7116B) Performance Specifications

Feature	Specification
Valve options	1x integrated valve drive as option 2x external valve drives as option to host user-exchangeable Quick-Change valve heads of different formats, materials and pressure ratings (up to 1300 bar): 2-position/6-port, 2-position/10-port, 6-column selection (6-pos/14-port), 8-column selection (8-pos/18-port). Equipped with tags, valve heads are automatically identified by SW
Communications	Controller-area network (CAN).
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. Door-open sensor.
GLP	Valve heads carrying tags with serial number, pressure rating, number of switches and valve type.

¹ Availability 2015

NOTE

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.

Extended Specifications

The G7116B MCT comes along with one 1.6 μ L Low Dispersion Heat Exchanger that is suitable for most applications.

Additional Heater devices are available for optimization regarding better heating performance at higher flow rates (>2.5 mL) or for reducing the dispersion volume for low flow applications.

Agilent 1200 Infinity Integrated Column Compartment (G7130A)

Physical Specifications

Table 35 Physical Specifications (G7130A)

Type	Specification	Comment
Weight	1.8 kg	
Dimensions (height x width x depth)	86.5 x 396 x 106.5 mm	maximum outside
Power consumption	110 VA / 110 W / 335.3 BTU/h	
Ambient operating temperature	4 – 55 °C (39 – 131 °F),	
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Operating altitude	Up to 3000 m (9842 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing the module
Safety standards	IEC, CSA, UL Installation category II, Pollution degree 2	For indoor use only

Performance Specifications

Table 36 Performance Specifications Agilent 1200 Infinity Integrated Column Compartment (ICC)

Type	Specification	Comments
Temperature range	5 °C above ambient to 80 °C	
Column capacity	2 columns up to 30 cm and 4.6 mm ID	
Temperature stability	±0.10 °C sensor	
Temperature accuracy	±0.5 K	At sensor
Warm up time	20 – 40 °C in 5 min	

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In This Book

The compendium contains specifications of Agilent 1200 Infinity II modules:

- pumps
- injectors
- UV-detectors
- special detectors
- multicolumn thermostat

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