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ChroZen UHPLC Specifications

1. ChroZen UHPLC Pump

1) Operating principle: Dual pistons in series pump with proprietary individual servo-controlled linear drive technology
2) Self-priming by FFAP (Full-Flush-Auto-Prime)
3) Compressibility compensation: Truly Automatic Compressibility Compensation
4) Flow range: 0.001 - 5.000 mL/min , 0.001 increment
5) Pressure pulsation: < 1% of system pressure or < 5 bar, whichever is greater
6) Flow rate accuracy: ± 1% or ± 10 µL/min, whichever is greater
7) Flow rate precision: ≤ 0.075 % RSD or 0.005 min SD, whichever is greater
8) Pressure range: 0~18,800 psi (~1,300 bar @ 0.001-2.000mL/min; 1,000 bar @ 2.000-5.000mL/min)
9) Number of eluent lines: 2
10) Degasser: Integrated 2-channel degasser, with 480 µL chambers
11) Solvent selection valve: 2 SSVs (2 solvents per pump channel)
12) Gradient composition step resolution: 1 %
13) Gradient composition time step resolution: 0.01 min
14) Gradient composition accuracy: ± 0.5 % absolute from 5 - 95%
15) Gradient composition precision: ≤ 0.15% or 0.01 min SD, whichever is greater
16) Gradient profiles: Linear, concave (4), convex (4)
17) Delay volume 50 µL when using 35 µL mixer / Optional mixer: 100µL, 150µL
18) Communications: LAN
19) Dimensions: 330 X 178 X 549 mm (width X height X depth)
20) Weight: 20 Kg
21) Line Voltage: 100-240VAC, ±10%, automatic voltage selection
22) Line frequency: 50/60Hz, ±5%
23) Power consumption: 450 VA

2. ChroZen UHPLC UV/VIS Detector

1) Wavelength Range: 190-900 nm
   - Dual Wavelength Detection
2) Data collection rate: up to 125 Hz (Single wavelength detection)

3) Light source: Deuterium arc lamp & tungsten lamp

4) Bandwidth: 5 nm
5) Wavelength Accuracy: ±1 nm, self-calibration with deuterium lines, verification with holmium oxide filter
6) Wavelength Precision: ±0.1nm
7) Linearity: >2.0 AU upper limit
8) Noise level : <0.5 x 10^{-5} AU, at 254 nm (single wavelength detection)
9) Drift : <4 X 10^{-4} AU/hour
10) Flow Cell: Total Reflection Cell with the Liquid Core Waveguide Technology
11) Path Length: 10 mm
12) Cell Volume: 2.4 µL
13) Pressure limit: 1,000 psi
14) Communications: LAN
15) Power-up Diagnostics: Optics and electronic diagnostic routine
16) Power-up Wavelength Verification: Automatic on power up via internal holmium filter and D2 lamp
17) 5-Point Wavelength Calibration: On demand via internal holmium filter and D2 lamp
18) Safety & maintenance: Leak detection, Diagnostics, Error detection
19) Dimensions: 330 X 172 X 549 mm (width X height X depth)
20) Weight: 14 Kg
21) Line Voltage: 100-240 VAC, ±10%, automatic voltage selection
22) Line frequency: 50/60 Hz, ±5%
23) Power consumption: 100W

3. ChroZen UHPLC PDA Detector

1) PDA AD Resolution: 16 bit
2) Slit Bandwidth : 1.7 nm
3) Pixel Resolution: 0.9 nm
4) No. of PDA Channel: 1024
5) Wavelength: 190~950
6) Shield Optics
7) Flow Cell
- Path-length : 10 mm
- Pressure limit : 1000 psi

- Cell Volume : 2.4 µL

8) Dimensions: 330 X 172 X 549 mm (width X height X depth)

9) Weight: 15 Kg

10) Noise Level: <± 0.7 x 10-5 AU (Empty Cell, 2 sec Rise Time, 254 nm)

11) Drift: 4 x 10-4 AU/hr (Baseline Correction)

12) Wavelength Accuracy: <1 nm (HY-1 Holmium Oxide Filter)

13) Sampling Rate: Max. 100 Hz

14) 1~16 nm Spectral Bandwidth, Wide Spectral Range, Alternative Spectral Function

15) GLP Compliance:

- Photometric Accuracy, Linearity, Noise Level, Drift

- System Check,

16) Analog Output: 2 channel (Replaceable Dual Wavelength Detector)

17) Valve Output: 2 ch, Programmable Sampling (Fraction Collector Function Available)

18) Trigger Input: 2 ch

19) Communication: TCP/IP, RS232C

20) Simultaneous Data Channel: 8 or Full Scan

21) Filtering: Bessel, RC, Aver. 0.01~10Hz

4. ChroZen UHPLC Column Compartment

1) Temperature range: 4°C (Cooling) - 90 °C

2) Temperature stability: ±0.05°C

3) Temperature accuracy: ±0.5°C

4) Temperature programs: 40 Steps

5) Column capacity: Three columns up to 150 mm length

6) Preheat: 230mm heat exchanger 1/16"OD, upper 12ul 0.01"ID, down 3ul 0.005"ID

7) Communications: LAN

8) Safety & maintenance: Leak detection, Diagnostics, Error detection

9) Dimensions: 330 X 172 X 549 mm (width X height X depth)

10) Weight: 14 Kg

11) Line Voltage: 100-240 VAC, ±10%, automatic voltage selection

12) Line frequency: 50/60Hz, ±5%

13) Power consumption: 150 W

5. ChroZen UHPLC Autosampler

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1) General

(1) Sound pressure level: LeAq < 70 dB

(2) Working temperature: 10 - 40°C

(3) Storage temperature: -25 - +60˚C

(4) Humidity: 20 - 80% RH

(5) Safety and EMC compatibility: According to EC-directives; CSA (UL) approved

(6) Power requirements: 95 - 240 Volt AC ± 10%; 50/60 Hz; 200VA

(7) Dimensions: 330 x 358 x 556 (Width x Height x Depth)

(8) Weight: 20 Kg

2) Sampling:

(1) Sample capacity: 2 Micro Well Plates according to SBS standards; 96-well high/low

(2) Loop volume: 1 - 5000 µL programmable, 10 mL loop optional

(3) Dispenser syringe: 250 µL standard

(4) Pressure range: 0 ~ 18,800 psi (0 ~ 1300 bar)

(5) Vial detection: Missing vial/well plate detection by sensor

(6) Headspace pressure: Built-in compressor, but only for vials with septa

(7) Switching time injection valve: Electrically < 100 msec

(8) Piercing precision needle: ± 0.6mm

(9) Wash solvent: Integrated wash solvent bottle

(10) Wetted parts in flow path: SS316, PTFE, TEFZEL, VESPEL, glass, For Bio-kit option: PEEK and Coated-steel (needle) instead of SS316

(11) Injection cycle time: < 60 sec. in all injection modes for 1 injection ≤ 100 µL including 250 µL wash / < 20 sec in partial loopfill mode for 1 injection of 10µL including 500 µL wash

3) Analytical performance:

(1) Injection modes: Partial loop injections, PASA™ (pressure-assisted sample aspiration)

(2) Reproducibility:

RSD ≤ 0.5% for partial loopfill injections, Injection Volume>5 µL

(3) Carry-over: < 0.05% with programmable needle wash

4) Program

(1) User interface: Xcalibur driver and Service Manager

(2) Injection volume: 0 µL - 10 µL(depending on loop) /

(3) Injections per vial/well: max. 9 injections

(4) Analysis time: max. 9 hr, 59 min, 59 sec

(5) Wash: Programmable - Wash between injections, Wash between vials

(6) Timed events: Programmable/ 4 x AUX ON/OFF

(7) Priority sample: Programmable

(8) Sample Temperature: heating/cooling for temperature range of 4 - 40 °C (optional)

6. YL-Clarity Data System

1) Direct control of ChroZen UHPLC.

2) Measuring: Simultaneous data acquisition from up to four independent chromatographs, each chromatograph can acquire data from up to 12 detectors.

3) Integration: There is extensive possibility to modify chromatograms. The chromatogram can be changed by entering global parameters or interactively, through direct graphic modification of the baseline.

4) Overlay: Simultaneously displays a virtually unlimited number of chromatograms and their mathematical modification; for example, mutual deductions or derivations of any order.

5) Calibration: Internal and external standard calculation methods, calibration of groups of peaks and reference peaks method for better identification.

6) Automated measuring support: Sequence tables for any set of samples with or without an autosampler.

7) Postrun: Automatically displays, prints, exports and starts other programs after the completion of a measurement.

8) Summary result tables: Displays and prints selected results from all simultaneously displayed chromatograms.

9) User settings: User selects parameters for peak display and the specification for axes, including color from an extensive array of color settings. Text labels and lines, either as part of the area or anchored to a chromatogram, may also be inserted.

10) Export: Optional exportation of all results, with or without the chromatogram, in various formats, into a file or clipboard.

11) Import: Imports chromatograms or mathematical curves, which have been saved in text or AIA formats, from other programs.

12) Method and calibration history: Each chromatogram can easily be displayed under the same conditions as when it was printed, exported or saved.

13) Column performance: Calculations of peaks in terms of symmetry, efficiency, resolution; all by several methods (tangent, moments, etc.).

14) Batch: Automatically batch processes, displays, exports or prints any number of chromatograms.

15) User calculations: Users can define custom calculations in the Result and Summary tables. Using the integrated editor you can create your own columns from original columns and individual mathematical functions.

16) User accounts: Sets up access rights and passwords (including their parameters e.g., minimum length, validity, etc.). Each user can define his or her own station appearance.

17) Audit trail: Records selected events and operations into a special file. Records selected operations directly into a chromatogram.

18) Electronic signature: Each chromatogram can be signed electronically. Signature selection is based on the username or the signature certificate.

19) Networked Solution: Clarity chromatography station files can be accessed from networked computers using Clarity software. This enables the offline evaluation of chromatograms, development of new methods and printing reports.

20) 21 CFR Part 11: Clarity Satisfies with the requirements of the 21 CFR Part 11 directive of the FDA.

21) Operating Windows: Microsoft Window XP, Vista, 7, 8 and 10.