



GPC HLC-8320GPC



GPC System HLC-8320



HLC-8320GPC

HLC-8320GPC is a dedicated size exclusion chromatography (SEC) system equipped with the functions necessary for SEC analysis. And the GPC Workstation EcoSEC-WS gives full control of the main unit, enabling molecular mass analysis with excellent operability and high precision. This system complies with various regulations (CE, UL, FDA 21 CFR Part 11).



Compounds

Part #	Description	Quantity
0021792	High Performance GPC System HLC-8320GPC	1
0021792	UV Detector UV-8320	1
0022000	GPC Workstation EcoSEC-WS	1
0021793	Column Switching Unit	1



Product view



Front view



Autosampler



Operator panel



Column oven



Pumping Unit & UV Detector
(built-in option)



De-gas / Purge Unit



Features

High Reliability

When the system is used with semi-micro SEC columns, featuring calibration curves with superior linearity*, and the standard polystyrene kit PStQuick, which ensures minimization of preparation errors, highly reliable data with minimized variation between systems may be obtained.

(*Compared with Tosoh's conventional products)

High Stability

The column oven has a double structure and a double temperature-control mechanism.

A double-path, double-flow refractive index detector (RI detector) is used for temperature control of the main units, including tubing. A stable baseline is obtained by suppressing fluctuation of the refractive index in the solvent.

High Reproducibility

The pumping unit features a newly designed structure and control system. Temperature control of the entire pumping unit gives high reproducibility which is not affected by varying solvent conditions or environmental temperature fluctuations.

Fast, Efficient, Low Solvent Consumption

Combined use with TSKgel semi-micro SEC columns (SuperMultiporeHZ, SuperHZ, SuperH, and SuperAW) allows fast, efficient separation and SEC analysis and reduces solvent consumption.

Easy Operation

Using the GPC Workstation EcoSEC-WS, the system can easily be operated through warm-up, analysis, and shut-down. The main unit may also be independently controlled using the operator panel.

The automatic purge function eliminates solvent replacement and other time-consuming manual operations.

Global Standard

Compliant with China RoHS.

UL61010-1 and CE mark certification.

Also compliant with FDA 21 CFR PART 11*.

(*Authentication using user ID and password, logout when finished, software validation, etc.)



Options

UV-8320

Part # 0021792

No extra installation space is necessary for this built-in option.

As it can be used in the pump oven, the detector is highly stable.



Specifications	Description	
Method	Dual beam, single flow cell	
Wavelength	195 – 350 nm	
Flow Cell	Volume	2 μ L
	Maximum pressure	3 MPa
	Noise	2.5×10^{-5} ABU
	Drift	(254 nm, cell containing air, response: 1.0 s)
		3.0×10^{-4} ABU/h
Safety Features	(254 nm, cell containing air, response: 1.0 s)	
	Leak sensor, lamp lighting monitor	
	Pan for liquid leakage in the installation area	
Weight	7 kg	



Column Switching Valve Unit

Part # 0021793

Two series of analytical columns can be connected to this electric-powered two-series four-way switching valve.

The valve allows the easy switching of high-and low-molecular columns.



* When the following organic solvents are used as eluent, alternative rotor seal, P/N 0023288 should be used. DMF (dimethylformamide), DMAc (dimethylacetamide), NMP (n-methylpyrrolidone)

Sample Cups

Part #	Description	Quantity
0022006	Glass cup for use with septum 2.0 mL	1000
0022007	Cap for use with septum	1000
0022009	Septum packing	1000
0022008	Glass cup for use with septum 2.0 mL	500
	(Cap + packing)	
0022115	Glass cup - Transparent 2.0 mL	1000
0022116	Glass cup - Brown 2.0 mL	1000
0023213	Glass cup - Transparent 1.1 mL	1000
0016330	Cap	1000
0013718	Aluminum sheet	100
0013717	Packing	100
0016618	Glass cup - Transparent 2.0 mL	500
	Cap + aluminum sheet + packing)	



GPC Workstation 8321GPC-WS

Part # 0023802, OS : Windows® 7 (32bit)

The GPC Workstation 8321GPC-WS comprises system control and data analysis software for use with HLC-8321GPC/HT.

Using USB connections, two systems can be controlled and used for analysis.

This software provides molecular weight analysis with excellent operability and high precision and allows ease of use without changing the essential concepts of analysis.



Easy Operation

Setting of items is simplified by introducing the concept of the PROJECT. In addition, the data management and analysis screens are integrated for enhanced operability.

Compliant with

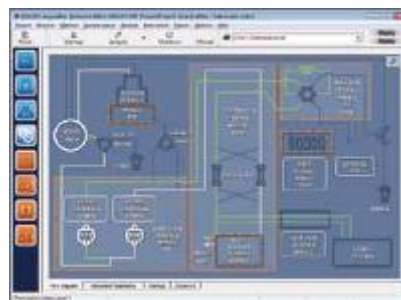
FDA 21 CFR PART 11

Authentication with user ID and password, logout method, and software validation are designed to be easily set by the user.

Acquisition Application

Flow Diagram

Realtime display allows system status monitoring and easy on-screen operation. The display differs depending on the operating status of the device.





USB Connection

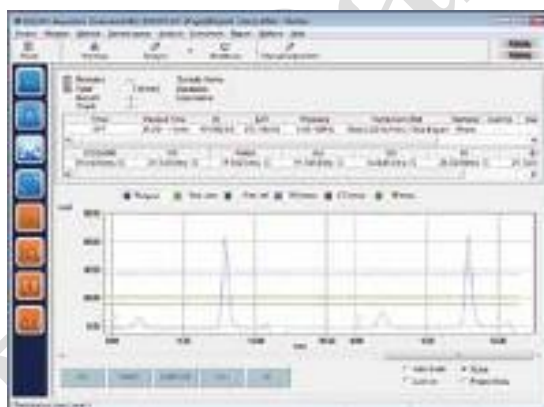
USB connection allows realtime data acquisition. No interface board is necessary.

Multiple Word® Report Formats and Print Layouts

8 kinds of standard format are available for chromatogram reports. The chromatogram scale and output items can be changed as required. Print formats from other computers can be imported. The print layout can also be changed.

Monitor

As well as RI signal, various types of information can be monitored from the system in real time. All information can be monitored on a multi-axial display to allow easy and clear viewing of analysis status.



Specifications	Description
Media	CD-ROM
Applications	Data acquisition, data analysis, data management, report layout, analytical method validation, and operator manual



Data Acquisition	
Data acquisition	2-channel (RI, UV)/1-system USB connection
Acquisition time	0.0 to 999.9 min
Acquisition interval	50 ms or more (10 ms steps) Upper limit: 1000 ms
Data Analysis	
Calibration Curve	First-degree expression, 3rd-degree expression
Approximation	3rd-degree expression + hyperbola, 5th-degree expression
	7th-degree expression, 7th-degree expression (odd power)
	7th-degree expression (odd power) + hyperbola
Calibration Curve Correction	Mark-Houwink, Q factor, polymerization degree, USP
Quantitative Calculation	Number, weight, Z average, viscosity average molecular weight calculation, derivative/integral molecular weight, concentration ratio
Special Calculation Function	Internal standard correction function, copolymer analysis, molecular weight fraction specific calculation, calculation range specification, lag time correction
Column Test	Theoretical plate number, resolution, symmetry factor, half bandwidth
Calculation Standard	ASTM, DIN, USP, JIS, JP, ISO 16014, Tosoh Standard
Other	Search, statistical calculation
Data Management	
Record Format	Microsoft® Access®
Record Items	Raw data, analytical conditions, calculation results, instrument information
System Control	
Number of System Controls	2-system GPC (requiring two USB cables)
Instrument	For use with HLC-8321GPC/HT only
GPC Support Program	
Function	Peak separation processing, GPC-8020 model II data converter, text converter, AIA converter
Compliant with FDA 21 CFR PART 11	
Function	Software validation, authentication by user ID and password, logout, and audit trail



Specifications

Specifications	Description
Degas Unit	
Method	Vacuum Degassing method Vacuum selection from two levels
Volume	Solvent: 20 mL x 2 series (selectable) Wash: 10 mL
Pump Oven Unit	
Method	Hot-air agitation, PID control Room temperature +10 to 50 °C (1 °C steps) Temperature setting accuracy: ± 0.5 °C Temperature control precision: ± 0.1 °C
Safety Features	Temperature sensor for oven temperature monitor. Temperature control stops if abnormality is detected Gas sensor for stopping temperature control Thermal fuse (70 °C) for temperature control circuit block Door status monitor: Temperature control stops when door is opened Pan for liquid leakage
Pump	
Liquid supply mode	Parallel liquid supply
Flow Rate	10 to 2000 $\mu\text{L}/\text{min}$ (1 $\mu\text{L}/\text{min}$ steps) (Sample flow rate only: Reference flow rate is set by ratio [1/2, 1/3, 1/4] to the sample flow rate)
Accuracy	$\pm 2\%$ or less OR ± 5 $\mu\text{L}/\text{min}$ or less, whichever is greater (when H ₂ O supply pressure is 1 MPa or more, 1200 $\mu\text{L}/\text{min}$ or less)
Precision	$\pm 2\%$ or less OR ± 1 $\mu\text{L}/\text{min}$ or less, whichever is greater (when H ₂ O supply pressure is 1 MPa or more, 1200 $\mu\text{L}/\text{min}$ or less)
Max Pressure	0 to 25 MPa (0.1 MPa steps)
Safety features	Liquid supply stops if pressure rises above the upper limit or drops below lower limit Plunger drive count monitoring Pan for liquid leakage



Autosampler	
Method	Syringe measurement
Standard loop	100 μ L
Injection volume	1 to 1500 μ L (1 μ L steps) (For injections of 100 μ L or greater, loop replacement)
Reproducibility	CV 0.5 % or less (when 10 μ L or more is injected)
Number of samples	100
Safety features	Air detection in wash solution and sample solution Needle lock when the sample table is not loaded Monitoring of 6-way and 4-way valve rotations
Column Oven	
Method	Hot-air agitation (double structure), PID control (cascade control)
Range	Room temperature +10 to 60 °C (1 °C steps)
Accuracy	± 0.5 °C (inside internal box)
Precision	± 0.02 °C (inside internal box)
No. of columns accommodated	7.8 mm I.D. \times 30 cm column \times 8 (Tosoh product)
Safety features	Temperature sensor for oven temperature monitor. Temperature control stops if abnormalities are detected Gas sensor for stopping temperature control Thermal fuse (70 °C) for temperature control circuit block Door status monitor: Temperature control stops when door is opened Pan for liquid leakage
Detector: RI detector	
Method	Brice-type, double-path, double-flow
Range	1.00 - 1.80
Flow cell	Material: Quartz glass Volume: 2.5 μ L Maximum pressure: 0.5 MPa
Noise	2×10^{-9} RIU (THF sealed, response: 3.0 s)
Drift	1×10^{-7} RIU/h (THF, 1.0 mL/min during liquid supply))
Temperature control	OFF, 35, 40, 45 °C
Safety features	Leak sensor Thermal fuse for circuit block
Dimensions	680 (W) \times 550 (H) \times 500 (D) mm (excluding projections)
Weight	95 kg
Power	AC 100 – 240 V, 50/60 Hz, 500 VA