

Smartline

▶ HPLC Pump 1000



High precision HPLC pump

Based on more than 30 years of experience in HPLC manufacturing, the Smartline Pump 1000 was designed to provide exceptionally precise and reliable solvent delivery for a wide range of HPLC applications, including quality control and testing as well as research and method development.

Versatile – Exchangeable pump heads make a wide range of flow rates with one pump possible – settable from 0.001 up to 50 ml/min, with maximum pressures up to 400 bar (5800 psi) and a variety of available pump head materials (stainless steel, ceramic, or titanium), making the Smartline Pump 1000 suitable for a wide range of tasks including bioseparations, ion chromatography, semi-preparative product purification, or even non-HPLC applications.

Enables highly sensitive analysis – Practically pulse-free flow is achieved by a smart drive control which prevents pressure ripple instead of just dampening the pressure. This design also ensures for a low dead volume – crucial for low flow rates or fast LC applications.

Reliable – High quality materials and well thought-out design provide for long lifetime. Good accessibility keeps maintenance costs low. Automatic piston seal wash is a standard feature for extended seal life, especially with applications using high salt mobile phases.

Upgradeable – Simply add the Smartline Manager 5000 to turn the Smartline Pump 1000 into a quaternary gradient pump including 4-channel degasser. High pressure mixing is also available by combining up to four Pumps 1000, for an even lower total system volume and more dynamic gradient performance.

GLP support – Important operational parameters are logged and stored automatically in the instrument. A report is accessible via software.

Flexible control – Direct control of the pump is possible either with chromatography software or an ASCII communication protocol, by timed events/gradient programming via touchpad, or via analog signals.

Technical data

Delivery system	double piston pump (one working piston, one auxiliary)
Residual pulsation absorption	electronic drive control
Active piston seal wash	standard
Pump heads	10 and 50 ml/min with stainless steel, ceramic, or with titanium inlays
Flow rate range	10 ml/min pump head: 0.001 to 9.999 ml/min 50 ml/min pump head: 0.01 to 50.00 ml/min
Max. delivery pressure	10 ml/min pump head: 400 bar (40 MPa); 50 ml/min pump head: 150 bar (15 MPa)
Flow rate accuracy	deviation ≤ 0.5 % (1 ml/min)
Flow rate precision	RSD ≤ 0.1 % (1 ml/min)
Gradient support	<div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; background-color: #4a7ebb; color: white; padding: 2px 5px; margin-right: 5px;">Pump</div> = isocratic HPLC pump </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; background-color: #4a7ebb; color: white; padding: 2px 5px; margin-right: 5px;">Pump</div> + <div style="border: 1px solid black; background-color: #4a7ebb; color: white; padding: 2px 5px; margin-right: 5px;">Manager</div> = 4 channel gradient pump (LPG) with degasser </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; background-color: #4a7ebb; color: white; padding: 2px 5px; margin-right: 5px;">Pump</div> + <div style="border: 1px solid black; background-color: #4a7ebb; color: white; padding: 2px 5px; margin-right: 5px;">Pump</div>] n=1...3 = binary to quaternary gradient pump (HPG) </div>
System protection	soft start, P_{min} and P_{max} are programmable
Control	RS-232, remote control strip, touchpad
Programming	20 Programs + 9 links (to programs) + 1 wake up program
GLP function	detailed report
Display	LCD, 2 lines, 24 characters each
Power supply	voltage range: 90–260 V, 47–63 Hz
Dimensions / Weight	226 x 135 x 410 mm (W x H x D) / 5.3 kg
Optional accessories	pump heads, cooling and heating device for pump heads, eluent tray; pump extension Smartline Manager 5000, available with LPG proportioning valves, online degassing and A/D-D/A interface.

Ordering information

Order no.	Smartline Pump 1000 incl. 10 ml pump head*	Order no.	LPG options*
A50303	with stainless steel inlays	A5317	Smartline Manager 5000 with LPG module
A50302	with ceramic inlays	A5313	Smartline Manager 5000 with LPG module and degasser module analytical
A50301	with titanium inlays	A5322	Smartline Manager 5000 with LPG module and degasser module semi-preparative
	Smartline Pump 1000 incl. 50 ml pump head*	A5326	eluent tray
A50313	with stainless steel inlays		Mobile phase mixer
A50312	with ceramic inlays	A5350	SmartMix 100, highly efficient static mixer, < 100 µl, LPG: 0.1–0.5 ml/min, HPG: 0.5–2.0 ml/min, max. 1 000 bar
A50311	with titanium inlays	A5351	SmartMix 350, highly efficient static mixer, < 350 µl, LPG: 0.5–2.0 ml/min, HPG: 2.0–50.0 ml/min, max. 400 bar
	Pump heads*	A0285	dynamic mixing chamber analytical, stainless steel
A54103	10 ml, with stainless steel inlays	A0275	dynamic mixing chamber analytical, titanium
A54102	10 ml, with ceramic inlays		
A54101	10 ml, with titanium inlays		
A54113	50 ml, with stainless steel inlays		
A54112	50 ml, with ceramic inlays		
A54111	50 ml, with titanium inlays		

* More options upon request
Technical data are subject to change without notice.

Visit www.knauer.net for details on complete HPLC systems, HPLC columns, and osmometers.

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