

## Smartline

### ► Manager 5000



## Three-in-one system upgrade with gradient, degasser, and interface

Designed as an extension for the Smartline Pump 1000, the Smartline Manager 5000 adds quaternary gradient functionality by means of four precisely controlled eluent proportioning valves and a high efficiency 4-channel degasser. The Manager 5000 can also be optionally equipped with an A/D-D/A interface for integration of third-party equipment into your Smartline HPLC system.

**Speed up your analysis** – By adding the Smartline Manager 5000 to the Smartline Pump 1000, you transform the isocratic pump to a quaternary low pressure gradient system, allowing for optimized mobile phase composition during runs and faster results.

**Eluent flexibility** – The Smartline Manager 5000 enables you to dynamically form eluent mixtures from up to 4 different eluents, or to run a binary gradient and switch between a column regenerating and washing solution, the choice is yours.

- mobile phase composition accuracy is better than  $\pm 0.5\%$ , precision better than 1 %
- analytical to semi-preparative flow rates (up to 50 ml/min)

**Quick installation and maintenance** – Installation is as fast as plugging in one cable and connecting the supplied pre-cut tubing. All connections are easily accessible. The LPG module is completely controlled over the Smartline Pump 1000, for either stand-alone operation or via software.

**Efficient degassing** – The degassing module provides reliable and convenient degassing of up to 4 eluents. It is recommended to minimize dissolved gases in the eluent and reduce baseline noise during analysis.

- innovative Teflon® AF amorphous fluoropolymer membrane offers higher gas diffusion rates
- continuous vacuum pump operation for reduced hysteresis and baseline stability
- less than 0.5 ml internal chamber volume makes changing eluents faster
- excellent physical and chemical stability

**Integration** – The optional high resolution A/D-D/A-conversion interface (24-bit) allows for data acquisition from third-party detectors or integration of other instruments via configurable analog and digital I/O ports.

## Technical data

## LPG module

<b>Number of eluents</b>	up to 4
<b>Gradient range</b>	0–100%
<b>Progression</b>	1% increments
<b>Accuracy</b>	± 0.5%
<b>Gradient precision</b>	< 0.3% RSD
<b>Max. flow</b>	50 ml/min
<b>Control</b>	by Smartline Pump 1000 or through ChromGate® software; ClarityChrom® software

## Degasser module

<b>Max. flow rate</b>	analytical: up to 10 ml/min; semi-preparative: up to 50 ml/min
<b>Number of channels</b>	analytical: 4; semi-preparative: 2
<b>Degassing method</b>	gas permeation through Teflon® AF amorphous fluoropolymer membrane
<b>Degassing efficiency</b>	< 0.5-ppm residual dissolved O <sub>2</sub> at 1 ml/min
<b>Dead volume</b>	analytical: 480 µl per channel; semi-preparative: 7.7 ml per channel
<b>Solvent applicability</b>	universal, except fluorinated hydrocarbons
<b>Wetted materials</b>	PEEK, Tefzel®, Teflon® AF
<b>Vacuum chamber</b>	polypropylene and stainless steel
<b>Vacuum pump</b>	low hysteresis operation > 6.2 kPa : 400 cycles/min; < 6.2 kPa : 60 cycles/min

## Interface module

<b>Analog inputs</b>	4 x multiplexed, bipolar, differential, 24 bit resolution, maximum input range: ± 2.56 V, programmable by software (same setting for all channels), data acquisition rate: 1 Hz–10 Hz
<b>Analog outputs</b>	4 x single ended unipolar, output range: 0 to +10 V, 12 bit resolution, 2.5 mV steps
<b>Digital inputs</b>	4 inputs, grounded contact or TTL/CMOS or TTL/Open collector compatible
<b>Digital outputs</b>	4 outputs, single pole double throw (SPDT) electromechanical relays
<b>Power supply</b>	via Smartline Pump 1000
<b>Dimensions</b>	226 x 135 x 410 mm (W x H x D)
<b>Weight</b>	max. 4.8 kg

## Ordering information

Order no.	Interface module	Degasser module analytical	Degasser module semi-prep.	LPG module	Order no.	Recommended accessories
A5311	•	•		•	A5310	eluent tray incl. 4 one liter bottles
A5312	•	•			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
A5313		•		•	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
A5314	•			•	A5340	static mixing chamber up to 2 ml/min
A5316		•			A5341	static mixing chamber from 1–6 ml/min
A5317				•	A0285	dynamic mixing chamber, analytical, stainless steel
A5320	•		•	•		
A5321	•		•			
A5322			•	•		
A5323			•			

Technical data are subject to change without notice.

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