



**Spark Holland introduces  
SPH1299™**

UHPLC Gradient Pump

**BETTER SAMPLE CARE**

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UHPLC Gradient Pump

## SPH1299™

Robust, Precise and  
Easy to use

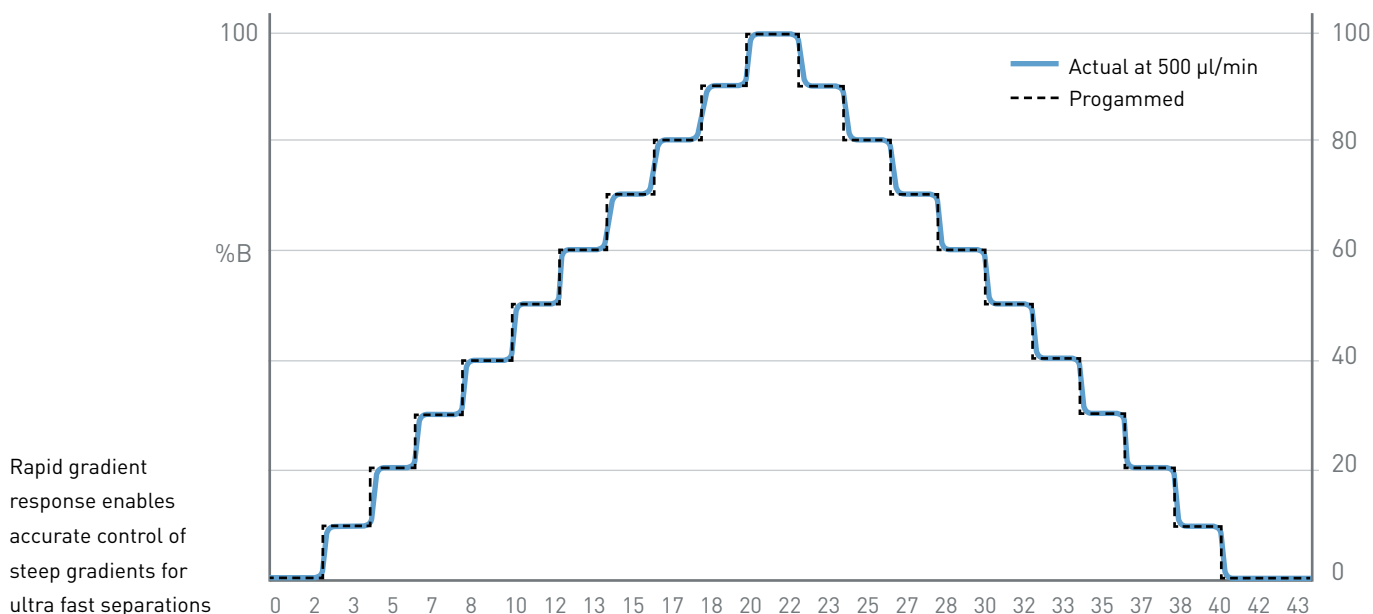


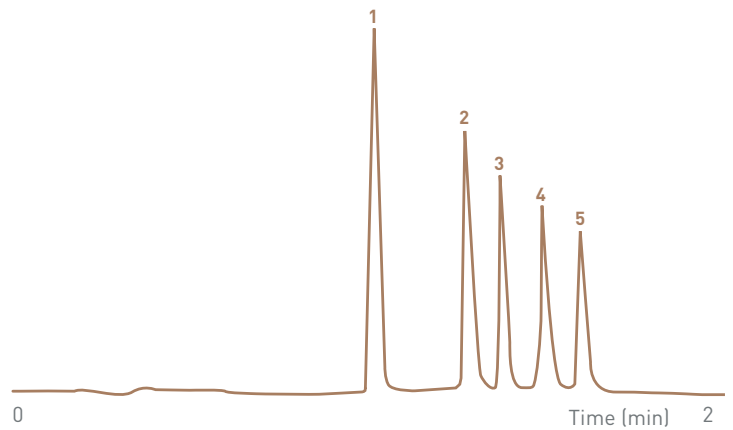
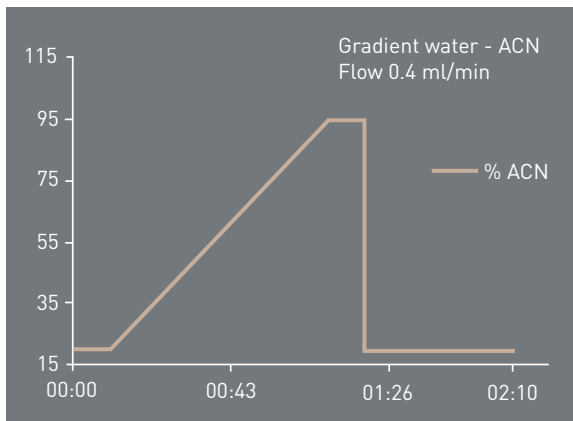
# Innovative pumping technology created Holland, now Spark Holland creates a novel pump.

The SPH1299™ UHPLC pump is an advanced workhorse for robust, state-of-the-art UHPLC performance and beyond. Delivering ultra-precise UHPLC gradient flow up to 18,850 psi (1300 bar). Featuring truly automatic compressibility compensation, real self-priming and clearing plus simple maintenance, this pump will turn users into friends.

## Robust proven concept guarantees reliable performance

SPH1299™ is based on the reliable, proven concept of linear drive technology for two pairs of serially coupled pump heads. Each of the four pump heads is individually driven and controlled. This generates maximum freedom for flow control and pulse reduction. With intelligent novel flow control algorithms this freedom has been fully explored to create a stable and accurate flow, independent of solvent compressibility, pressure and flow rate. This results in solvent gradients with exceptional precision of both the solvent composition and the flow rate; i.e. in robust and precise gradient UHPLC.





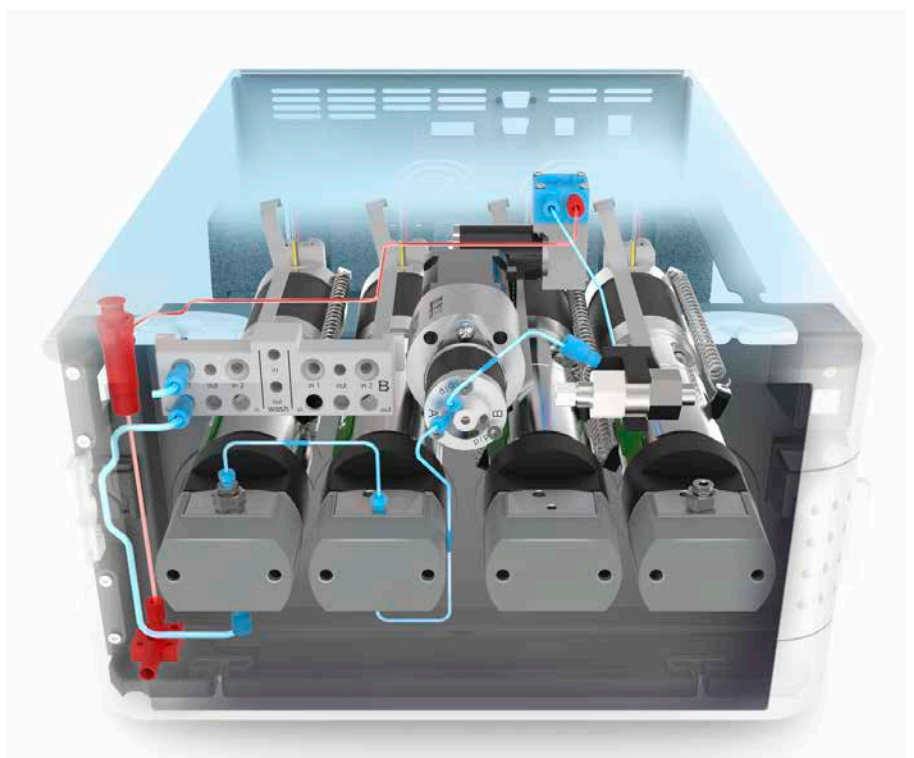
Inj. vol: 1  $\mu$ L  
 UV: 254 nm  
 Temp.: 30°C  
 Column: Kinetex 1.3  $\mu$ m C18 (50x2.1mm)  
 Pressure: 300 - 600 bar

1: Acetophenone SD 0.0015 min  
 2: Butyrophenone SD 0.0015 min  
 3: Valerophenone SD 0.0017 min  
 4: Hexanophenone SD 0.0018 min  
 5: Heptanophenone SD 0.0017 min

Exceptional flow and gradient precision virtually eliminates retention time variations.

### True automatic self-priming

A novel automatic priming concept fully automates the cumbersome priming procedure. A built-in prime pump aspirates solvent through the pump heads when starting with empty solvent inlet lines. No need to help your pump with a syringe for awkward manual solvent aspiration. Using an electrically actuated purge valve, SPH1299™ can truly prime and purge all by itself in just a few minutes!



Rapid automated self-priming with the integrated prime pump

### Accurate flow rate – what you set is what you get

When you set the flow rate of the SPH1299™ to a certain value, this will be the precise volumetric flow rate as it leaves the column, independent of solvent composition and pressure – even in gradient mode. Automatic solvent compressibility measurement is not only used to compensate for flow pulsation, but also to compensate for flow rate reduction caused by solvent compression. This unique feature of the SPH1299™ makes UHPLC methods easier to maintain and transfer.

### Easy and economic user maintenance

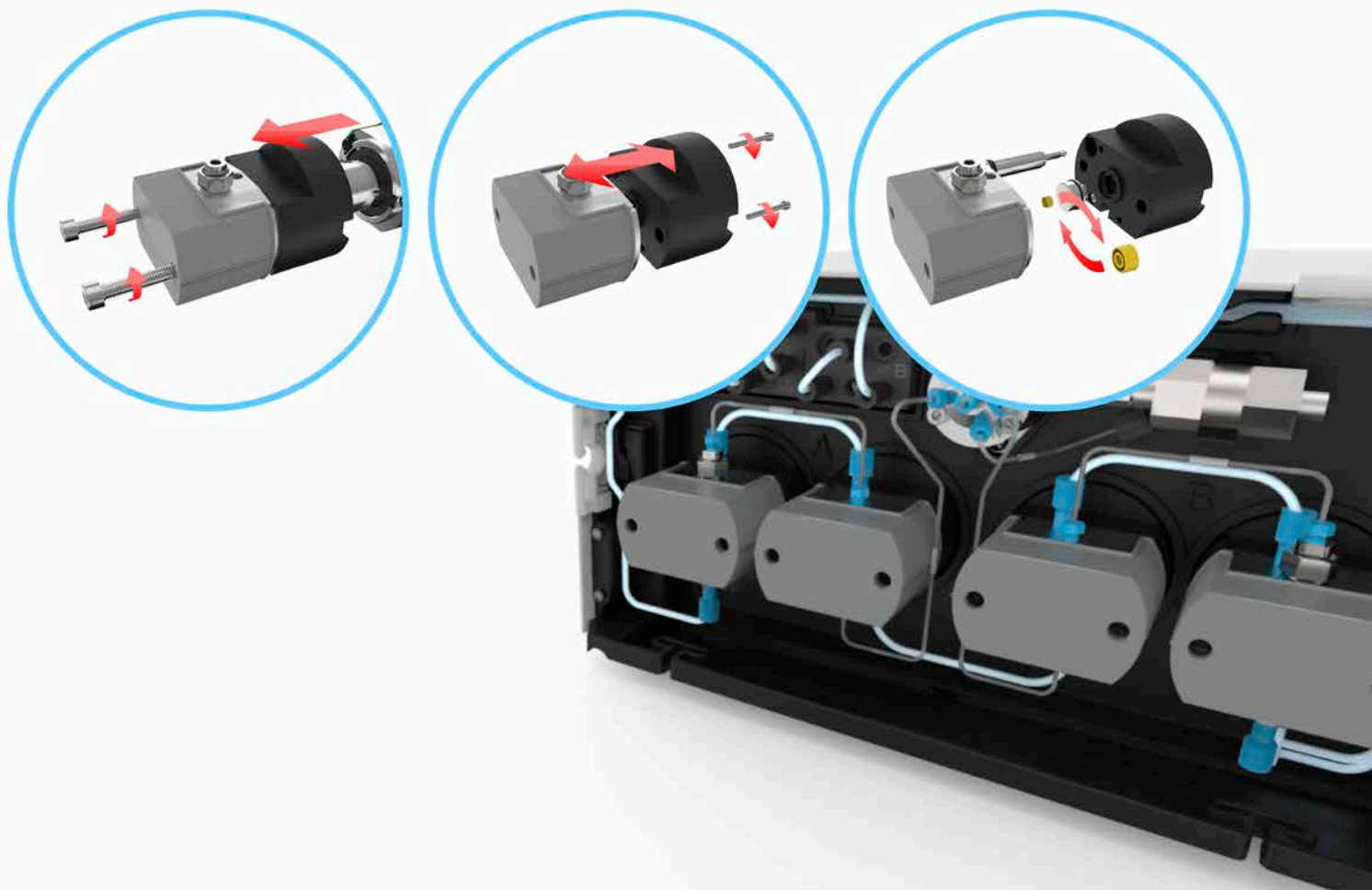
SPH1299™ has active piston backwash for longer lifetime of piston seals. This is very effective to increase up-time of the pump, but eventually a seal will need

replacement. With this in mind, the pump head has been designed to facilitate easy disassembly and seal exchange. No need to remove covers or take the pump out of the UHPLC stack. No need, also, for expensive exchange of entire pump head/drive assemblies! Simply disconnect the pump head from its drive, remove the piston and replace the seal. In just minutes!

### OEM is in our genes

SPH1299™ UHPLC pump is available for OEM. In fact it is one of the very few state-of-the-art high pressure gradient UHPLC pumps available on the OEM market. And we are not just offering a top class pump! Designing instruments for OEM business has become second nature to us, and the SPH1299™ UHPLC pump has been designed for easy customization. We aim to be your partner at every stage – from customizing the

product to creating and integrating its driver in your software package. Our quality management complies with ISO 9001 and ISO 13485 and our products are REACH and RohS compliant. We have over 30 years of experience in development and production of HPLC instruments. Over 40,000 instruments have been delivered to OEM customers worldwide. Reassuring numbers if you demand a dependable OEM partner in HPLC instrumentation.





# Specifications

Functional	
<b>Technology</b>	<ul style="list-style-type: none"> <li>• High pressure dual series piston pump with individually driven pistons (driven by BLDC motors)</li> <li>• High Pressure Gradient mixing with low volume mixer</li> <li>• Active plunger back-wash with integrated wash pump</li> <li>• Automated self-priming with integrated prime pump and automatic purge valve</li> <li>• Automated purging with safe pressure relief</li> <li>• No pulse dampener</li> </ul>
<b>Solvent compressibility compensation</b>	Fully automatic and continuous
<b>Solvent selection</b>	2 solvents per pump module (A/B)
<b>Solvent degassing</b>	Integrated vacuum degassing Individual degassing for each pump module (A/B)
<b>Leakage drain</b>	Guided leakage drainage towards a central outlet tube connection
<b>Performance monitoring</b>	<ul style="list-style-type: none"> <li>• Continuous pressure monitoring</li> <li>• Air-in-pump detection</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Adjustable over-pressure limit</li> <li>• Adjustable under-pressure limit</li> <li>• Solvent leak detection with automatic pump shut-down and feed-back to user</li> </ul>
<b>Pump diagnostics</b>	Automatic leak test which reports secondary pump head seal leakage, primary pump head total leakage and outlet check valve leakage
<b>pH range</b>	All wetted materials are suitable for pH range 1.0 - 12.0, with the exception of the Vespel rotor seal which should not be used at pH > 10

Performance	
<b>Pressure</b>	
Pressure range	0 - 1300 bar / 0 - 18,850 PSI (0 - 2000 $\mu$ l/min)
Pressure ripple	< 1 % of system pressure or < 5 bar, whichever is greater
<b>Flow</b>	
Flow range	1 - 4000 $\mu$ l/min
Flow resolution	1.0 $\mu$ l/min increments
Flow precision	$\leq$ 0.075 % RSD or 0.005 minutes SD whichever is greater (water flow range 0.200 - 2.000 ml/min)
Flow accuracy	$\pm$ 1 % or $\pm$ 10 $\mu$ L/min whichever is greater (water flow range 0.200 - 2.000 ml/min)
<b>Gradient</b>	
Gradient range	0-100 %
Gradient composition accuracy	$\pm$ 0.5 % absolute from 5-95 % (flow range 0.200 - 2.000 ml/min)
Gradient composition precision	$\leq$ 0.15 % RSD or 0.01 minute SD, whichever is greater (flow range 0.200 - 2.000 ml/min)
Gradient delay volume	50 $\mu$ L when using 35 $\mu$ L mixer
Gradient profiles	Linear, concave and convex; 4 of each

# Specifications

General	
Installation class	II
Pollution degree	2
Operating environment	Indoor use only
Operating temperature	5-40°C
Operating humidity	20-80% RH, non-condensing
Operating altitude	Up to 2000 m
Transport and storage temperature	-30 to 60°C
Transport and storage humidity	Max. 85% RH, non-condensing
Sound pressure level	< 55db LaEq

Physical	
Dimensions (Wide x Height x Depth)	330 x 180 x 540 mm
Weight	21 kg
Stackable weight on top	60 kg

Electrical	
Power supply	100-240V~ / 50-60Hz
Power consumption	450VA max.
Fuses	2x 5AT, 250V, 1500A breaking capacity, IEC60127-2, UL recognized

Communication and control	
External IO	4 programmable in/outputs, TTL level 2 programmable relay outputs, NC/NO
External IO functions	Input: start/stop/synchronize Output: ready/error/synchronize/event
Ethernet interface	10/100Mb, RJ45-shielded (use CAT 5E shielded cable)
USB interface	Optional for OEM only USB HID, USB-B device connector
RS232 interface	BR 57k6, Rx-Tx only Maximum length for RS232, USB and IO cables is 3 meter
PC control software	Sparklink 5 driver with configuration tool and graphical user interface.

Compliance and certification	
Regulatory compliance	CE
Applied safety standards	IEC61010-1
Applied EMC standards	IEC61326-1 / EN55011 / CISPR11 / FCC
Certification	NTRL certificate of compliance with UL and CSA standards
IVD Medical device	Developed to comply with registration as FDA class 1 medical device

# Ordering information

## SPH 1299™ UHPLC

SPH 1299™ UHPLC high-pressure-gradient pump with integrated:

- solvent degasser
- piston backwash pump
- 2 solvent selection valves
- aspiration pump for automated purge and prime

SP770.000

**For more information:**

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