

Smartline

► Systems



Smartline – HPLC by design

Smartline high performance liquid chromatography instruments are designed to provide reliable separation solutions for routine tasks such as sensitive analytical determinations, as well as for special applications such as GPC cleanup or purification of valuable products.

Application range

- Analytical HPLC
- Biochromatography
- Semi-preparative HPLC
- Preparative HPLC, flow rates up to 1.0 l/min
- Automated sample preparation solutions

This wide range of solutions is made possible through the highly modular system concept, which flexibly adapts to the application.

Configurable – Smartline instruments cover the tasks of injection, solvent delivery, online degassing, solvent blending, temperature control, detection, fraction collection, and different kinds of switching jobs. The flow paths of the instruments can be configured for various applications and solvents including bioseparations and SFC.

Exceptional – With a maximum data rate of 80 Hz fast LC is supported. Some detector models feature a fiber optics flow cell connection which can be beneficial for measurements in non-standard or hazardous environments.

Communicative – Smartline communication options include LAN, RS-232, analog or contact closure signals and allow control by a variety of chromatography software packages.



Modern technology and thoughtful instrument design not only contribute to excellent specifications, but also conserve valuable bench space and allow operation with ease.

In this brochure we present an overview of the available Smartline HPLC instruments and software.

Our offer to you

- Let us know which substances you would like to separate or analyze.
- Together we'll find the right application for you and configure an HPLC system which best fits your needs.

More information is available on our website www.knauer.net

For requests, please contact info@knauer.net

Eluent delivery

Smartline Pump 1050



Our universal HPLC pump offers outstanding flow rate precision and accuracy for the most reliable results. Exchangeable pump heads, also available in biocompatible versions, allow the pump to cover a flow rate range from 0.01 to 50 ml/min. Very low pulsation through electronic drive control provides for a stable baseline and protects the LC column. This pump supports both low pressure and high pressure gradient formation of up to 4 solvents. The LPG option requires a Manager 5050 and a binary, ternary or quaternary HPG is possible by adding additional Pump 1050 units.

Smartline Manager 5050



This instrument is an extension to the Pump 1050. It can be equipped with up to 3 modules: a quaternary low pressure gradient module, a low volume four-channel degasser with innovative membrane technology (Teflon® AF), as well as an interface board for integration of third-party instruments.

Special models are available for bioseparations and semi-preparative applications.

Smartline Pump 100



Probably the most compact high pressure pump on the market, the Pump 100 is available with or without pressure sensor for a variety of solvent delivery tasks such as direct feeding of large sample volumes to the column inlet, automated column preconditioning or backflushing, dosing of postcolumn derivatization eluents, or for use as an isocratic HPLC pump. It is specified up to a maximum of 400 bar when equipped with a 10 ml pump head (150 bar with 50 ml pump head).

Smartline Preparative Pump 1800



Engineered for durability and built with high quality components and materials, the Preparative Pump 1800 is a dependable eluent delivery solution for preparative HPLC. By adding one or more additional pumps, binary, ternary or even quaternary high-pressure gradient systems can be easily configured. The pump can also be equipped with a binary or ternary gradient valve block to configure cost-effective low-pressure gradient systems, a unique feature in its class. Numerous features and available options also make the Pump 1800 well-suited for other high pressure liquid pumping tasks aside from HPLC. Exchangeable pump heads for flow rates up to 1.0 l/min and pressures up to 400 bar make it possible to easily optimize the pump to changing performance requirements. Available in stainless steel or biocompatible titanium versions, the pump heads enable a wide range of applications. Automatic piston seal wash is a standard feature for extended seal lifetime.

Smartline PDA Detector 2850



This diode array detector covers the entire wavelength range from UV up to the near IR (190 to 1 020 nm) by combining a deuterium and a tungsten-halogen lamp. It has a very high resolution at 0.8 nm per pixel and offers a wavelength accuracy of < 0.5 nm and a wavelength reproducibility (precision) of < 0.1 nm. Three-dimensional data can be recorded to discover full spectral information for the peaks in your chromatograms as well as the spectra of each of the substances separated. If you only perform measurements in the UV range, this detector is also available as a one lamp device.

The Smartline PDA Detector 2800 is equipped with fiber optics, making it possible to spatially separate the measurement cell from the detector.

Smartline UV Detector 2600



This multiple-wavelength detector based on PDA technology works in the range of 190 to 500 nm and offers outstanding noise and drift specifications. With a fast wavelength scanning speed of 0.1 seconds/scan it can be used in all standard HPLC applications. It features automatic wavelength verification via a built-in holmium oxide filter. Special versions of the detector are available for the VIS wavelength range and for fiber optics flow cells. Standalone solvent recycling is supported by simply adding a valve. If you want to acquire data for more than one wavelength per run, this is the detector of choice.

Smartline UV Detector 2550



This multi-channel UV-VIS detector for HPLC and fast HPLC combines the advantages of a spectrophotometer (high spectral resolution, high sensitivity and low drift) with high speed scanning technology. The detector is available with different lamp options and covers the wavelength range from 190 to 900 nm. With a remarkable linear range of 3 AU, simultaneous determination of main analytes and impurities can be carried out without recalibration. Its high data acquisition rate of up to 80 Hz allows for use in fast chromatography applications.

Smartline UV Detector 2520



This variable wavelength UV detector is ideal for use in routine analytical, fast and preparative HPLC with flow rates from 1 µl/min up to 10 l/min. The Smartline UV detector 2520 allows for sensitive detection in the wavelength range of 190 to 750 nm and features excellent noise and drift specifications. This robust detector supports data acquisition at up to 80 Hz, automatic wavelength calibration, self-adjusting integration time, and is easy to operate.

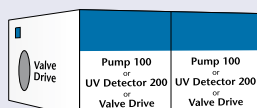
Smartline UV Detector 200



This 254 nm fixed-wavelength detector is extremely compact and features exchangeable flow cells, enabling its use for a wide range of concentrations and flow rates. The mercury vapor lamp has a long lifespan of approx. 6 000 h.



Smartline Assistant



Save space by combining up to 3 “mini” modules (Pump 100, UV Detector 200, Valve Drives) in one Smartline Assistant to handle a large variety of tasks in a compact solution such as sample feeding, peak monitoring, column switching, or fraction collection.

Smartline RI Detector 2300 / 2400



This refractive index detector is the best choice for detecting substances not absorbing in the UV range such as carbohydrates or for the analysis of polymers in size exclusion chromatography. The analytical model of this detector (RI Detector 2300) is designed for flow rates up to 5 ml/min and the preparative model (RI Detector 2400) for flow rates up to 100 ml/min.

Smartline Conductivity Monitor 2900



High precision on-line monitor for the measurement of pH and conductivity in liquid chromatography, particularly bi chromatography. This monitor features contactless conductivity measurement from 1 μ S/cm to 500 mS/cm with low noise and fast response. Measurements are temperature compensated to achieve high accuracy and reproducibility. A self-test as well as a self-calibration function make working with this monitor uncomplicated.



More ...

Smartline HPLC systems easily connect with many other detectors from different manufacturers. Please ask for your desired type.

Sample injection / automated switching

Smartline Autosampler 3950



This fast and flexible HPLC autosampler supports up to 768 samples in 2 microtiter plates, or up to 96 samples in 2 ml standard sample vials. An interior and exterior needle wash feature significantly minimizes sample carryover. One complete sample injection cycle takes less than one minute, including needle wash. Precolumn derivatization is supported, as well as various injection modes (full loop and partial loop filling for dilution series, » μ l pickup« for lossless injection of extremely small sample volumes). Options include sample tray cooling (4 to 22°C), biocompatible sample path, and a preparative version for sample volumes up to 10 ml.

Smartline Valve Drives



These electrical valve drives can be used for various switching tasks such as automatic injection, column switching, sample preparation, or fractionation. Available for switching between 2, 6, 12, or 16 positions, these electrical valve drives can be equipped with a range of different valve heads, including injection valves and switching valves with up to 17 ports. Most valves are also available in biocompatible PEEK versions.

Temperature control

Smartline Column Thermostat



Stable column temperatures ensure reproducible results. The Smartline Column Thermostat supports heating and cooling in the range from 5 to 85 °C. Safety features such as leak detection and automatic temperature shut-off to protect the column are integrated. Linear and non-linear temperature gradients are easily programmable. As with all of our Smartline instruments, this thermostat can be controlled with KNAUER HPLC software.

Smartline Fraction Collector 3050



This flexible fraction collector works extremely fast, allowing for collection of fractions from very narrow peaks. It can collect up to 384 fractions in 4 microtiter plates or up to 192 fractions in standard 2 ml vials. Fractions collected in 2 ml vials can be transferred directly to the Smartline Autosampler 3950 since the sample trays are fully compatible.

This fraction collector is capable of flow rates up to 5 ml/min and can be equipped with optional sample tray cooling.



Smartline Valve Drives ...

with 6, 12, or 16 positions can also be used for fraction collection, especially for purification tasks. Using our preparative software packages, the valves can be cascaded.

ChromGate® software



Based on the well-known EZChrom Elite™ kernel, ChromGate® is an advanced chromatography software, scalable for standalone installations as well as large networked laboratories via client/server functionality. It provides the highest available level of data security and GLP compliance and fully implements the guidelines specified by FDA 21 CFR Part 11 for the storage and protection of electronic archived data and electronic signatures.

Besides analytical HPLC, a wide range of instruments is supported including GC, GPC/SEC systems, preparative purification systems, as well as KNAUER simulated moving bed systems (additional licenses may be required). Since the software is sold as license options, you only buy the software that you really need.

The Fraction Collector Control (FRC) option turns ChromGate® into a full featured preparative chromatography software. The FRC option enables control of a variety of fraction collectors for time-based or detector-controlled fraction collection and includes functions for solvent recycling and "peak shaving". Fractionation can even be triggered by spectral similarity. Just one sample chromatogram is sufficient to optimize the fractionation of value products, without the need for any additional waste of sample or solvent. To speed up purifications and to save solvent the stacked injection feature is optionally available.

ClarityChrom® software



This chromatography data system provides an economical solution for the demands of modern small and medium-sized laboratories. Users of this software will especially appreciate its ease-of-use. A large base of instruments can be controlled with ClarityChrom®, including PDA, GC, GPC systems. ClarityChrom® *Prep*, a special version for advanced fractionation control in HPLC purification systems, is also available.



Preparative HPLC systems

KNAUER offers complete systems for the reliable purification of value products by HPLC. Pressure stability up to 400 bar, flow rates up to 1 000 ml/min, piston seal wash, a gradient option, eluent recycling, as well as a variety of detection principles are available. All components are optimally matched to each other and can also be controlled through software, enabling precise fraction collection and unique features. GLP compliance is also provided.



Simulated moving bed systems (SMB)

KNAUER has many years of experience with this chromatography technology for the continuous extraction of pure substances.

SMB from KNAUER is used with great success in many areas of chemistry and biochemistry. Compared to preparative HPLC, up to 90% of eluent costs can be saved and column packing materials are also more economical. Up to 1 000 kg of pure substance can be produced per year by using a KNAUER SMB system.

HPLC columns



KNAUER offers separation columns from 2 to 62 mm inner diameter and stationary phases for a large variety of applications.

This includes columns for fast chromatography and ultra high performance separations such as Bluespher® columns (2 µm particles, selectivity comparable to Eurospher) and BlueOrchid® columns (1.8 µm particles). Other column materials offered by KNAUER are Eurocel®, a polysaccharide-based stationary phase for chiral separations, Eurokat, a polymer-based material for aqueous separations, Eurospher I & Eurospher II, silica-based phases for reversed phase and normal phase separations, biochromatography materials, and more. Every column is individually tested to ensure the highest quality and reproducibility of your results.

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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