

SYKAM CHROMATOGRAPHY CATALOG

- Ion Chromatography System
- HPLC system
- Preparative HPLC system
- Amino Acid Analyzer



COMPACT ION CHROMATOGRAPHY SYSTEM

S 155-A/C Plus

The **Compact Ion Chromatograph S 155^{Plus}** is an economic solution for low sample throughput.

The **S 155^{Plus}** is an all-in-one IC system with integrated anion or cation suppressor, column oven and 1-channel conductivity detector. It can be upgraded with an online vacuum degasser, eluent selection valve or inert gas supply regulator.



ORDER INFORMATION

Compact IC System S 155-A^{Plus}

Catalog No	Description	Consisting of
S010100	Compact Ion Chromatography System for Anion Determination without data system and separation column	S 155 ^{Plus} Ion Chromatography System - integrated self-regenerating anion suppressor - integrated column oven - integrated manual injection valve S 6120 w. 50 ul sample loop - integrated 1-channel conductivity detector - integrated isocratic eluent pump

Compact IC System S 155-C^{Plus}

Catalog No	Description	Consisting of
S010101	Compact Ion Chromatography System for Cation Determination without data system and separation column	S 155 ^{Plus} Ion Chromatography System - integrated self-regenerating cation suppressor - integrated column oven - integrated manual injection valve S 6120 w. 50 MI sample loop - integrated 1-channel conductivity detector - integrated isocratic eluent pump

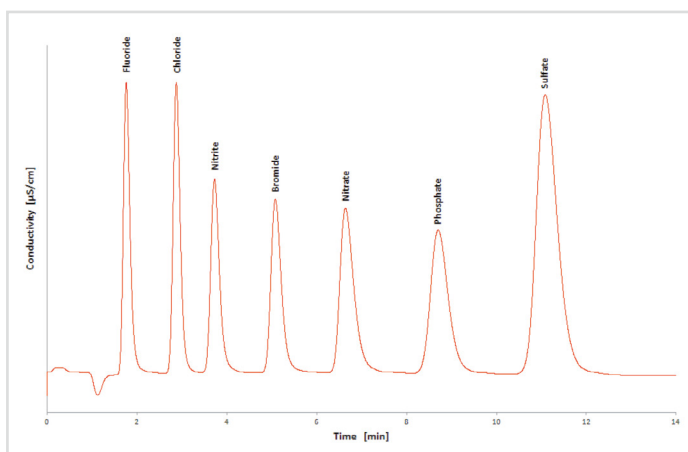
Upgrade Options

Catalog No	Description	Notes
S003581	Vacuum Degasser	Online 1-channel vacuum degasser
S008547	Eluent Selection Valve S 6131	Switching valve for 2 eluents and second 2000 ml eluent bottle
S008546	Inert Gas Supply	Gas regulator for inert gas supply and 2000 ml coated eluent bottle

AUTOMATIC ANION IC SYSTEM

S 151-A/AG^{Plus}

The **Automatic Anion IC System S 151-A/AG^{Plus}** is a modular system which can be customized to any application needs.



ORDER INFORMATION

Automatic Isocratic Anion IC System S 151-A^{Plus}

Catalog No	Description	Consisting of
S010107	Automatic Isocratic IC System for Anion Determination without data system and separation column	S 150 ^{Plus} Ion Chromatography Module, including column oven; S 1130 Isocratic Pump, analytical, PEEK; including 1-channel degasser; S 5300 Automatic Sample Injector with S 6115 PEEK Valve, variable volume mode S 7150 Reagent Organizer, isocratic, including 1 bottle (1000 ml); without gas regulator integrated anion self-regenerating suppressor 1-channel conductivity detector

Automatic Gradient Anion IC System S 151-AG^{Plus}

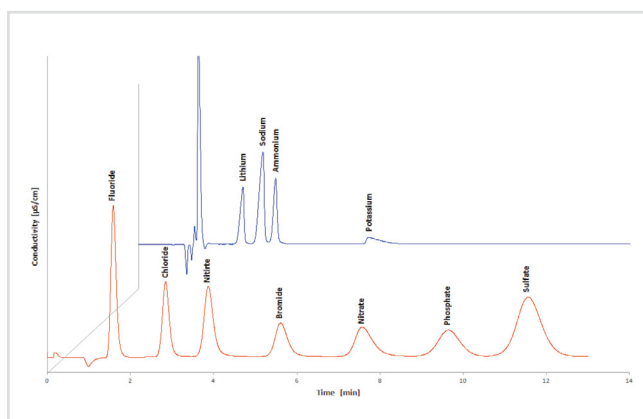
Catalog No	Description	Consisting of
S010108	Automatic Gradient IC System for Anion Determination without data system and separation column	S 150 ^{Plus} on Chromatography Module, including column oven; S 1130 Quaternary Gradient Pump, analytical, PEEK; including 4-channel degasser; S 5300 Automatic Sample Injector with S 6115 PEEK Valve, variable volume mode S 7150 Reagent Organizer, isocratic, including 4 bottles (1000 ml); without gas regulator integrated electronic anion suppressor 1-channel conductivity detector

Upgrade Options

Catalog No	Description	Notes
S003585	Dual Channel Detector Upgrade	S 150 ^{Plus} Ion Chromatography Module (2nd detector channel)
S009687	Cation Self-Regenerating Suppressor (CSS)	Cation suppressor (for update of Anion system to Cation determination)
S007037	Organic Acid Suppressor	integrated organic acid chemical suppressor
S003846	S 7155 Reagent Organizer with Gas Regulator	Analytical, incl. 4 bottles (1000 ml)
S000172	S 3250 UV/Vis Detector	Update for difficult sample matrices (e.g. high C- concentrations)
S000203	S 3250 Flowce	Analytical, PEEK
var.	Integrated Switching Valve	S 150 Ion Chromatography Module (integrated S6000 series switching valve)

AUTOMATIC DUAL IC SYSTEM **S 153-A/AG DUAL^{Plus}**

The **Automatic Ion Chromatograph S 153-A/AG Dual^{Plus}** is a modular system which can be customized to any application needs.



ORDER INFORMATION

Automatic Isocratic Dual IC System S 153-A Dual^{Plus}

Catalog No	Description	Consisting of
5004671	Automatic Dual Isocratic IC System Anion & Cation simultaneous Determination without data system and separation column	S 150 ^{Plus} Ion Chromatography Module, including column oven; 2 x S 1130 (isocratic Pump, analytical, PEEK; including 1-channel degasser; S 5300 Automatic Sample Injector with S 6165 PEEK Valve, variable mode S 7150 Reagent Organizer, isocratic, including 2 bottles (1000 ml); without gas regulator integrated anion and cation self-regenerating suppressors 2-channel conductivity detector

Automatic Gradient Dual IC System S 153-AG Dual^{Plus}

Catalog No	Description	Consisting of
5004882	Automatic Dual Gradient IC System Anion & Cation simultaneous Determination without data system and separation column	S 150 ^{Plus} Ion Chromatography Module, including column oven; 1x S 1130 Quaternary Gradient Pump, analytical, PEEK; including 4-channel degasser; 1x S 1130 Isocratic Pump, analytical, PEEK; including 1-channel degasser; S 5300 Automatic Sample Injector with S 6165 PEEK Valve, variable volume mode S 7150 Reagent Organizer, isocratic, including 4 bottles (1000 ml); without gas regulator integrated anion and cation self-regenerating suppressors 2-channel conductivity detector

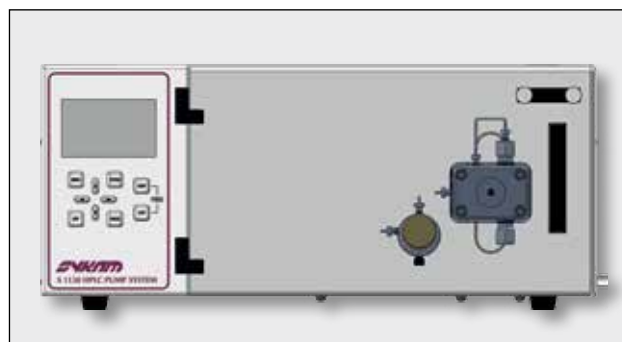
Upgrade Options

Catalog No	Description	Notes
5003846	S 7155 Reagent Organizer with Gas Regulator	Analytical, incl. 4 bottles (1000 ml) integrated organic acid chemical suppressor
5007037	Organic Acid Suppressor	Update for difficult sample matrices (e.g. high C- concentrations)
5000172	S 3250 UV/Vis Detector	Analytical, PEEK
5000203 var.	S 3250 Flowcell Integrated Switching Valve	S150 ^{Plus} Ion Chromatography Module (integrated S6000 series switching valve)

S 1130 Configurations

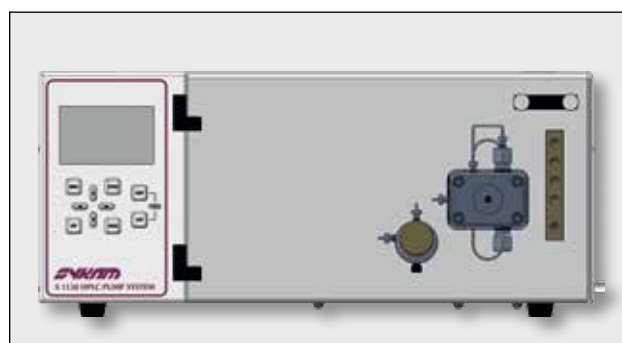
S 1130 Isocratic HPLC Pump

The **S 1130 Isocratic Pump** is a robust, low-pulsation solvent delivery system. The pumphead is easily accessible from the front panel to make routine maintenance, like changing pump seals, easy and fast. The system is available with Micro, Analytical or Semi-Preparative pumphead in Stainless Steel or PEEK.



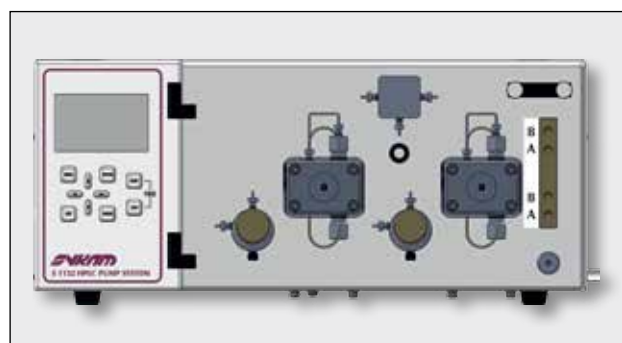
S 1130G Low-Pressure Quaternary Gradient Pump

The **S 1130G Low-Pressure Quaternary Gradient Pump** incorporates an active low pressure mixer with adjustable mixing volume. The mixing chamber volume can be freely adjusted. An optional integrated vacuum degasser removes dissolved gases in the eluents and prevents air bubbles in the system. The system is available with Micro, Analytical or Semi-Preparative pumphead in Stainless Steel or PEEK.



S 1132 High-Pressure Binary Gradient Pump

The **S 1132 High-Pressure Binary Gradient Pump** incorporates two pump systems with active high pressure mixer with adjustable chamber volume. An optional integrated vacuum degasser removes dissolved gases in the eluents and prevents air bubbles in the system. The system is available with Micro, Analytical or Semi-Preparative pumpheads in Stainless Steel or PEEK.



S 5300 SAMPLE INJECTOR SYSTEM

The **Sykam S 5300 Sample Injector System** is a very flexible and powerful HPLC autosampler with excellent reproducibility and linearity properties. Variable vial racks and adaptors for microtiter plates as well as a multitude of firmware options make this system highly adaptable and suitable for any analytical application.

Robust Design

Durable X/Y/Z-Sampling

The **S 5300 Sample Injector System** features a mechanically durable X/Y/Z-Sampling-Mechanic designed for long life operation. The self-lubricating bearings keep the routine maintenance at a minimum and avoid troubles caused by dusty environments.

High precision stepper motors drive the X/Y axis for accurate positioning. Microstepping mode enables a high resolution for the syringe dosing and vial positioning.

Dual-Needle Design

The Dual-Needle design of the **S 5300 Sample Injector System** avoids system blockages due to septum particles injected into the system. The ventilation needle pierces the septum before the injection needle moves into the sample vial (see figure on the right). As the more fragile injection needle does not need to pierce the vial septum, stronger vial caps or plastic vials can be used without problems.



Accessibility

The injection valve with sample loop and injection port can be accessed directly from the instrument front without removing any protective covers. The dosing syringe can be accessed from the side of the instrument through a hinged glass panel. The exchange of the syringe can be done without the requirement of any tools.

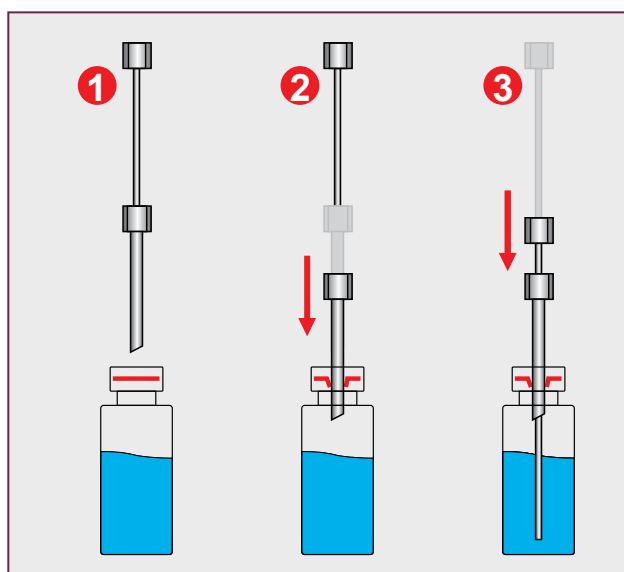


Figure: Dual-Needle Injection

S 3250 UV/VIS DETECTOR

The Sykam **S 3250 UV/Vis Detector** is a variable wavelength UV/Vis detector for routine analysis and sophisticated research. The dual lamp design offers a wavelength range of 190 – 800 nm with a low base- line noise. The front-accessible flowcell can be easily exchanged, as well as the lamps which are accessible through a side panel in the instrument housing.

Integrated Wavelength Program

The **S 3250 UV/Vis Detector** features a wavelength program to change the selected wavelength over time. With this feature the optimum wavelength can be selected for each analyzed substance according to its retention time.

Integrated Peak Detector

The integrated Peak Detector works as a basic fraction collector. The peak detection level can be freely programmed for peak start and peak end to enhance the collection purity. An integrated 24V output for switching a solenoid valve is used for the fraction collection, which is automatically operated with a selectable time delay.

Optional – Dual-Wavelength

The **S 3250 UV/Vis Detector** is available with an optional second wavelength. This feature enhances the Wavelength Program feature that you can measure 2 different wavelengths at the same time. A second D/A converter output comes with this option to keep the system flexible to be used with any data acquisition software available.



Optional – Online-Scan

Another option for the **S 3250 UV/Vis Detector** is the Online Scan. With the Online Scan whole spectrum information can be gathered at a certain time. This scan information is stored internally and can be accessed at any time. The Online Scan is a good alternative to a full UV PDA detector.

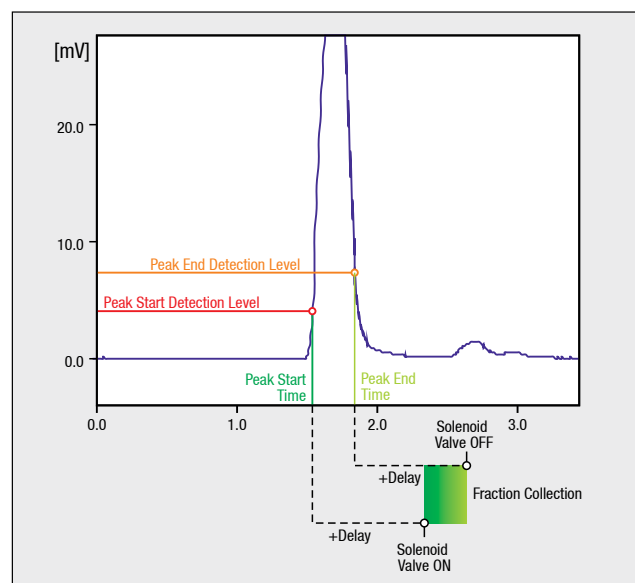


Figure: S 3250 Peak Detector

S 3350 PDA DETECTOR

The **Sykam S 3350 UV/Vis Detector** is a photo-diodearray (PDA) detector for routine analysis and sophisticated research. The dual lamp design offers a wavelength range of 190 – 720 nm (256 Diodes) or 190 - 1015nm (1024 diodes)

with a low baseline noise. The front-accessible flowcell can easily be exchanged, as can be the lamps which are accessible through a side panel in the instrument housing.



4-Channel UV Detector

The **S 3350 PDA Detector** features 4-Wavelength channels to measure chromatograms at 4 different wavelengths at the same time. With this feature the optimum wavelength can be selected for each analyzed substance.

collection purity. An integrated 24V output for switching a solenoid valve is used for the fraction collection, which is automatically operated with a selectable time delay.

Integrated Peak Detector

The integrated Peak Detector works as a basic fraction collector. The peak detection level can be freely programmed for peak start and peak end to enhance the

(Optional – Analog Output

The **S 3350 PDA Detector** is available with an optional 4-Channel analog output. This D/A converter output option is offered to keep the system flexible to be used with any data acquisition software available.

S 3590 REFRACTIVE INDEX DETECTOR



The **Sykam S 3590 Refractive Index Detector** offers the sensitivity, stability and reproducibility required for optimal RI detection.

The thermal isolated optic with a countercurrent heat exchanger and with its programmable temperature control, results in an extremely stable baseline and an optimal Signal / Noise ratio.

The **Sykam S 3590 Refractive Index Detector** provide autopurge and autozero capabilities, as well as RS232 communication to acquire data directly without using any external signal interface.

Sykam S 3590 Refractive Index Detectors are available for:

- micro
- analytical
- semipreparative mode

PREPARATIVE HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY SOLUTIONS

The Sykam S 700 series of preparative LC modules and preparative LC systems offers the user a wide range of possible system configurations.

Whether you need a simple isocratic chromatography system with manual sample injection or a fully automated quaternary high pressure gradient system for multi-dimensional chromatography with column switching and reversed flow capabilities, the S 700 series offers the user maximum flexibility to configure the system for virtually any preparative chromatographic application.

Following general features apply to the Sykam S 700 chromatography systems:

- Stainless steel or biocompatible (PEEK) flow paths
- Pumps with flow rate ranges of 150 ml/min up to 1000 ml/min as isocratic system or as low pressure mixing or high pressure mixing gradient configurations and pressure ranges up to 400 bar
- UV/Vis detectors: 1-channel, 2-channel or PDA detector with integrated peak detection and switching valve and/or fraction collector control
- Several autosampling methods: a combined manual and automatic injector for large volume sample injection and a combined fraction collector/autosampler with a variable choice of tube and bottle sizes
- Motorized automatic single valve and multiple valve units for variable flow path configurations - functions like reversed flow, solvent recycling, large volume sample uptake, column switching and multidimensional chromatography can be easily configured and automated
- Fraction collectors configurable for a variety of tube sizes and bottles up to 500 ml or container fraction collection for even larger volumes

Specific details are listed with each instrument and the preconfigured integrated systems on the next pages of this brochure. You are invited to contact Sykam or your local distributor for specialized support and advice.



FRACTION COLLECTION

The final stage of a preparative chromatography system is in fact proper and adequate fraction collection. Intelligent fraction collection is largely initiated and controlled by the detector signals and the chromatography control software. Sykam offers a choice of three fraction collectors. The S 6410 carousel fraction collector, the S 6420 rack-type fraction collector and the S 6425 combination instrument as rack- type fraction collector and autosampler as described on page 11 of this brochure.



The S 6410 Carousel Type Fraction Collector



The S 6420 Rack Type Fraction Collector



A dual function instrument. The S 6425 Rack Type Fraction Collector and Autosampler

SWITCHING VALVES AND VALVE CONTROL

As soon as a preparative chromatography system must be configured for more than a straightforward isocratic system with a single column, applying one or more switching valves gives the user flexibility to configure and automate application specific flow paths.

Sykam offers a complete range of high pressure and low pressure multiport switching valves. With the S 6510 single valve actuator or the S 6515 multiple valve actuator for up to 5 switching valves virtually any flow path can be configured.



The S 6510 Valve Actuator for a single valve

THE S 6515 MULTIPLE VALVE ACTUATOR

The Sykam S 6515 Automatic Multiple Valve Actuator can be configured with up to 5 independent multiport switching valves with any valve of the Sykam S 6000 or S 6800 valve series, enabling automation of switching flow paths for column switching, reversing flow directions, eluent recycling, sample loading and fraction collection.

The S 6515 Valve Actuator can also be used as a standalone unit. The RS232 control and TTL control enables flexible integration with most chromatography systems from other brands as well.



*The S 6515 Multiple Valve Actuator for up to five switching valves.
The PrepCon5 control program allows control of multiple S 6515 modules
offering virtually unlimited flow path configurations*

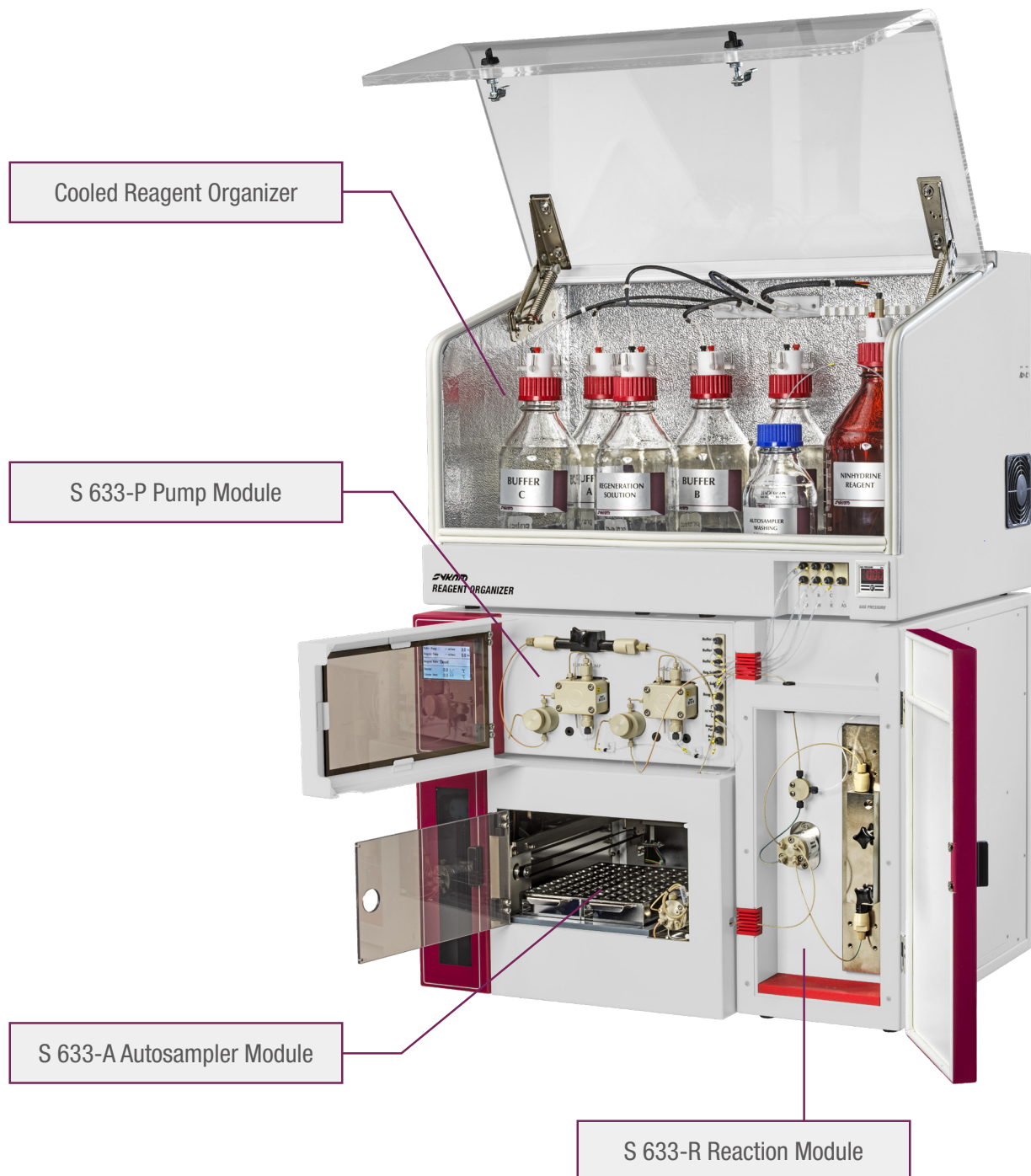
AMINO ACID ANALYZER S 633

The **Amino Acid Analyzer S 633** is the latest generation of Amino Acid Analyzer produced by Sykam for more than 30 years.

The modular proven design of the new Model **S 633** features

the latest technological advances in the field of analytical instruments.

The whole system is inert and suitable for biological samples.



SYKAM Amino Acid Analyzer S433

The modular system design of the S 433 enables the budget-minded buyer to use several components as parts for a standard HPLC system without further costs. Another solution is our low-cost Amino Acid Analyzer S 430 with manual injection valve and ambient temperature reagent

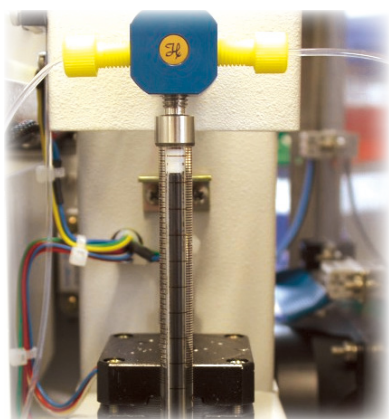
organizer, consisting of the same Amino Acid Reaction Module and Quaternary Gradient Pump as the S 433.



Sample Racks for up to 120 samples



Exchangeable Sample Loop made of PEEK



Exchangeable Dosing Syringe

- **Autosampler**
- only inert materials come in contact with buffer solutions & samples (except sample needle)
- exchangeable sample loop (PEEK)
- fixed and variable volume injection mode
- integrated sample cooling
- up to 120 samples / microtiter plates
- also usable as standard HPLC Autosampler
- optionally with pre-column derivatisation mode



SYKAM S 7130 AMINO ACID REAGENT ORGANIZER



SYKAM S 5200 SAMPLE INJECTOR

Consumables

- ready made buffer solutions (each lot tested individually)
- separation columns for a variety of applications with long term stability
- ready made Ninhydrin solution
- a variety of standard solutions



Reagent Organizer

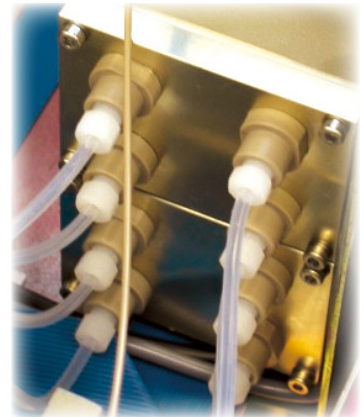
- inert gas (N₂) supply with adjustable pressure to prevent buffer/reagent oxidation and contamination
- integrated cooling



Reagent Organizer Pressure Control

Amino Acid Reaction Module

- only inert materials come in contact with buffer solutions & samples
- integrated 2-plunger reagent dosing pump with a flow rate from 0.01 to 2.0 ml/min
- programmable reactor temperature
- integrated column oven with programmable temperature gradient and leakage sensor
- automatic washing of reactor coil with washing solution after the last sample
- integrated dual-channel photometer for the detection of amino acids at 440 and 570 nm.



Integrated Vacuum Degasser

Quaternary Gradient Pump

- only inert materials come in contact with buffer solutions & samples
- flow rate of 0.01 to 10.0 ml/min
- integrated 4-channel vacuum degasser
- more than 100 programmable gradient steps with a resolution of 0.1%
- two-plunger pump for smooth eluent delivery
- also usable as HPLC gradient pump

