



**PREPARATIVE, ANALYTICAL, AND FLASH
LIQUID CHROMATOGRAPHY EQUIPMENT**



**Product
CATALOG
2024**

ECOM COMPANY PROFILE

ECOM is an established European manufacturer of scientific and laboratory instruments for liquid chromatography. The company is based in the Czech Republic and headquartered just outside of the capital Prague in Chrastany. Our company strategy is to supply our customers with high-quality, powerful and durable laboratory equipment at good prices. We develop and manufacture our devices in the European Union.



ECOM main focus

ECOM intensely emphasizes research and development and hones the skills and knowledge of our experts. This allows us to constantly expand our product portfolio to provide customers with a wider range of products and to continuously pursue innovations. Besides our standard product offer, we can provide many customer solutions and modifications, in contrast to many other manufacturers, thanks to our enduring focus on innovative development.

Portfolio

We manufacture high-quality instruments for liquid, HPLC, analytical, preparative and flash chromatography. Whether it is for preparative or analytical use, customers can choose from both complete laboratory chromatographic sets and standalone single-function devices – such as HPLC detectors, pumps, fraction collectors and others. We also offer custom flow cells, control software and many other related products. Thanks to our reliable production quality and ongoing development, we are recognized not just as a supplier of standalone devices and systems for end users, but also as a supplier of

high-quality built-in units and OEM devices for manufacturing companies.

Worldwide distribution and service support

ECOM successfully supplies its devices and systems all over the world. For more than 30 years we have built a large worldwide network of distributors and service partners who, together with us, ensure that high-quality support is provided for all end customers.

Certifications

One of the ways in which we ensure consistently high performance levels of production process and process management is through our fulfillment of the ISO 9001 standard. Our other certifications include product certifications – e.g. CSA for detectors. We would also like to mention that sustainability and a strong focus on areas related to the environment, social impact, and governance are among the values we hold in high esteem, which is why we work in accordance with ESG principles.

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HPLC PREPARATIVE AND FLASH SYSTEMS

ECOM Preparative and Flash Modular System

The highly effective ECOM modular systems are composed of ECOM preparative units, which allows them to be configured according to the needs of the customer. This solution assures fulfillment of all functional requirements and, at the same time, minimizes purchasing expenses. The system can be configured as follows:

Solvent delivery

For solvent delivery, pumps with flow rates up to 50, 100, 300 and 1000 ml/min in isocratic mode can be selected. Also, it is possible to operate in gradient mode using an ECOM gradient module for a low-pressure gradient elution of up to 4 solvents. Furthermore, it is possible to use two pumps for achieving a high-pressure gradient. Pumps are made of 316L stainless steel, but they are also available in Hastelloy, PEEK, and titanium versions.

Sampling

Sample injection can be done using a manual or a motorized injection valve with loops in volumes from 1 up to 50 ml. For repeated injecting, one of the gradient valves, or an auxiliary pump, can be used.

Detection

UV and UV-VIS PDA detectors, available in ranges from 190/200 nm up to 400, 600 and 800 nm and in versions allowing measurement at two or four wavelengths at the same time, are normally used. Also, versions which provide continuous data scanning of the entire spectrum and allow the creation of a 3D data view of the complete separation, are available.

An ECOM CDPH monitor to measure sample conductivity and pH is offered as an additional detector. For applications where analytes require advanced detection capabilities, refractometric or evaporative light scattering (ELSD) detectors are available.

Controlling and evaluation

ECOM systems are equipped with RS232, USB, and LAN communication ports which offer the choice of required connection to a PC. The control system can be selected from either ECOMAC software, mainly used for preparative applications, or Clarity software, which is 21 FDA Part 11 compliant.

...choose your ideal system components...

GRADIENT BOX

- With a gradient valve
- Optionally with a built-in PC

PREPARATIVE PUMP

You can choose a preparative pump with the following flow rates: **50, 250, 300, 1000 or 3000 ml/min**

DETECTOR TOY20DAD H

Available wavelength range versions: **Up to 400, 600, and 800 nm**



FRACTION COLLECTOR

Wide assortment of different sizes of tubes, vials, and funnels



FRACTION COLLECTOR

- Features a 10-position valve
- Large volume fraction collection

HPLC PREPARATIVE AND FLASH SYSTEMS

System Configuration Examples

ECS21

Quaternary Gradient Preparative System

ECS21 is a universal and robust chromatography system. It has been designed for high-pressure sample separations at flow rates up to 50 ml/min, with the possibility of a gradient elution of up to 4 solvents. The system enables manual sample injection by loop, at up to 30 MPa, and it also uses a connection of flash cartridges to serve as a flash chromatography system. The UV-VIS PDA detector allows measuring at four wavelengths at the same time up to 600 nm. This makes the system universal and also allows conducting peak purity checks and other advanced techniques during the process.

Examples of use: The system is ideal for the separation of reaction mixtures during small molecule development as well as for the purification of peptides, proteins and oligonucleotides.

SW and modifications: It is fully integrated with ECOMAC software via a LAN connection and can be easily extended with other ECOM devices, such as a fraction collector, conductivity/pH monitor, etc. The ECOMAC software has full control over all important device parameters, and the integrated programming of the chromatographic steps facilitates repetitive, automated work that is useful on similar types of samples. To save table space in your laboratory, this unit could be equipped with an embedded PC. It only needs to connect to a monitor, mouse, and keyboard for complete operational readiness.



ECS22

Isocratic Preparative System

ECS22 is a cost-effective chromatography system. It has been designed for repetitive high-pressure sample separations at flow rates up to 250 ml/min and 30 MPa with an isocratic elution. The fraction collector consists of a 10-position valve, which enables collecting up to 9 fractions of purified compounds at large volumes (as defined by the reservoir size). This makes the system ideal for high-load purifications in mid-scale chromatography processes. The system supports manual sample injection by loop up to 30 MPa or the connection of flash cartridges to serve as a flash chromatography system. The UV-VIS PDA detector allows measuring at four wavelengths up to 400 nm at the same time. This capability enables conducting peak purity checks and other advanced techniques during the process.

SW and modifications: The ECOMAC software fully supports the entire system's management. Communication takes place via LAN. The ECOMAC software also enables easy system extension using additional ECOM-produced devices – such as a conductivity/pH monitor, a gradient elution device, etc. – and their integration into the system. The ECOMAC software supports the programming of automated separations with the possibility of smart fraction collecting.



ECS23

Quaternary Gradient Preparative Systems

ECS23 is a powerful chromatography tool for a wide array of preparative and flash applications. It is an ideal solution as a development chromatography system designed for high-pressure sample separations at a flow rate up to 300 ml/min with the possibility of a gradient elution of up to 4 solvents. The tube-based fraction collector – with a variety of tube volumes from 8 ml to 60 ml – makes the system great for first-time separation with new reaction mixtures without the loss of your products. The UV-VIS PDA detector enables measuring absorbance at four wavelengths at the same time up to 600 nm. This ability makes the system universal, and it also allows for a peak purity check and other advanced techniques during the process.

SW and modifications: It is fully integrated with ECOMAC software by a LAN connection and can be easily extended by other ECOM-produced devices, such as a valve-based fraction collector or a conductivity/pH monitor, etc. To save table space in your laboratory, this unit could be equipped with an embedded PC. It only needs to connect to a monitor, mouse, and keyboard for complete operational readiness.



HPLC PREPARATIVE AND FLASH SYSTEMS

ECS08, ECS28, ECS58

Compact Preparative System



The ECOM Compact System (ECS) is an instrumental compact solution for flash and high-pressure preparative chromatography.

Mobile Phase Delivery and Mixing: The compact system is equipped with a four-way low-pressure gradient valve for gradient mixing with unique six solvent inlets for high flexibility regarding mobile phases used and liquid chromatography techniques. Available in three variants depending on the preparative pump installed, all available pumps are rated for high-pressure. Suitable for preparative work in ranges from milligrams up to a few grams of sample loading, depending on the type of liquid chromatography method performed. The sample is loaded into the column via an automatic injection valve with an attached sampling loop.

Detection and Fraction Collection: It is done by using the embedded TOY18DAD UV-VIS detector. This 4-channel UV-VIS detector is PDA with the ability to measure up to 4 wavelengths at the same time, from 200 nm up to 800 nm. Detection capabilities are further extended by a UV-VIS scanning feature that enables drawing 3D scans across the whole recorded UV-VIS spectrum. It is easy to reach and change the UV-VIS flow cell in the detector for a different optical path. This enables flexibility in increasing/decreasing sensitivity, based on the amount of sample loaded without any instrument downtime. Optionally, detection capabilities can be extended by adding an additional external evaporation light-scattering detector (ELSD) for the detection of analytes without absorption within the UV-VIS spectrum. ELSD is highly

utilized by organic scientists across the chemical industry, as their analytes of interest often do not absorb UV-VIS light. An integral part of the instrument is the embedded fraction collector that enables five rack options to be used with 8, 21, 40, or 60ml tubes. The last option uses funnels placed in racks instead of vials for the largest volume collection. Fraction collection can be started manually or at a specific time during the procedure or by exceeding the level/threshold or slope of the detector signal.

Control: This compact system is controlled by Queen software developed by ECOM. Features of this software include 3D UV-VIS spectrum scanning, column equilibrations, and remote control. The instrument is capable of performing pauses of the preparative method and of editing the gradient table during operation. The advanced control features of the separations include skipping to the next gradient step and holding a constant mobile composition for an extended time period without interrupting separation. Reports of the results are well arranged and detailed with information about the purification method, records of the solvents used, pressure, flow, and elution method. The number of fractions and the volume collected are reported as well. These reports can be printed or exported to a remote secure server, where the results can be reviewed from the comfort of an office space.

Applications: This overall configuration makes the ECOM Compact System (ECS) an exceptional choice for academics and R&D laboratories that are developing new organic molecules without a clear path to isolate them. With this instrument, it is now far easier to operate day-to-day in an organic synthesis lab, where performing the isolation of analytes without a previously known purification path indicates how to do so. This instrument is a good choice when you would like to develop a purification method from the beginning. It is possible to use the knowledge learned from separation on a smaller scale to transfer the isolation method to large-scale preparative liquid chromatography instruments, which ECOM supplies as well. These systems have been proven over time with users able to utilize the full performance of the instrument for their research and scientific work. The compact system is very well suited for the separation of small molecules,

oligonucleotides, and peptides.

This compact system is the true workhorse of any organic synthesis laboratory, which indeed means business, where fast and flawless operation is necessary for a quick turnaround without interruptions.

Connectivity: This compact system has one RS232, two Ethernet, and three USB ports for connectivity, but it can operate as a standalone unit without any connection to a network.

HPLC PREPARATIVE AND FLASH SYSTEMS

PREPBOX A3L8E and A338E

Chromatography Separation Systems

The PrepBox is a popular instrument in flash and high-pressure preparative liquid chromatography.

Mobile Phase Delivery and Mixing: The PrepBox is an HPLC system with a low-pressure gradient valve for the accurate and precise gradient mixing of mobile-phase composition during purification. The system is designed with a preparative pump with a four-way low-pressure gradient mixing valve. The preparative pump is capable of flow rates up to 300 ml/min or up to 1000 ml/min. A second auxiliary pump is used for sample loading. These pumps are connected to a high-pressure switching valve. The use of a high-pressure switching valve between the two pumps allows the PrepBox to achieve exceptional performance, especially in the automation of the purification process. The auxiliary sample-loading pump allows injection of a large volume of sample into the column.

Detection and Fraction Collection: It is done by a 4-channel UV-VIS TOY18DAD (200–800 nm) detector, optionally capable of a 3D-scanning function across the spectrum. Optionally, the PrepBox can be equipped with a conductivity monitor and/or a pH monitor for further detailed information about mobile-phase composition. Fraction collection is done by using a multi positional selector valve. This is an outlet valve with one inlet port and multiple outlet ports, where one outlet is reserved for waste. This allows the collection of a large fraction volume. The selected valve outlet position can be programmed via software to switch into specific positions during analysis time or after a specific volume has been collected. This includes possible threshold/level fraction collection triggered by a signal value from the UV-VIS detector. Programming timing events and the fraction collector allows for the collection of multiple analytes in a single analysis, that might have been included in the sample.

The PrepBox is capable of an advanced automatic purification method called **stacking injections**. By cycling the timing of switching valve positions during analysis between the preparative and auxiliary loading pumps, the stacking injection method can be created. Stacking injection works only for isocratic elution.

Applications: This instrument is ideal for routine large-scale purification of small molecules, cannabinoid, oligonucleotides, and peptides. If the chromatography data software (CDS) is Clarity, then it is compliant with CFR 21 Part 11 regulation. The PrepBox is suitable for manufacturing active pharmaceutical ingredients (API), when following GMP regulation guidelines. The PrepBox can conduct advanced liquid chromatography techniques, like countercurrent (CCC) and centrifugal partition chromatography (CPC) in connection with a suitable CCC or CPC instrument.

Control: The PrepBox's chromatography data software can be ECOMAC, Clarity or FlashService. The PrepBox comes with a **Windows PC built-in**. A monitor and peripherals are external and are not part of the system.

Connectivity: The system has the following ports: 2 × Ethernet, 2 × RS232, and 3 × USB.



PREPSYSTEM

Chromatography Separation Systems

The PrepSystem is a high-end compact preparative binary HPLC system with high-pressure gradient mixing.

Mobile Phase Delivery and Mixing: The system contains three pumps, two preparative pumps for high-pressure gradient (HPG) mixing, and one auxiliary pump for sample loading. The two installed preparative pumps for high-pressure gradient mixing minimize gradient delay. The system is suitable for flash and high-pressure preparative liquid chromatography. The binary preparative pump configuration allows the PrepSystem to achieve exceptionally accurate and precise gradient mixing. An additional auxiliary loading pump is used for sample injection into the column. Preparative and sample loading paths are separated by a high-pressure switching valve. The PrepSystem has the same chromatography features as the PrepBox, which includes stacking injections and a high level of automation programming.

Detection and fraction collection: Detection capabilities are the same as for the PrepBox, which include a four channel UV-VIS detector. Optionally, a conductivity and/or pH monitor may be included. Fraction collection is performed by using a multi-positional selector valve.

Applications: PrepSystem applications are similar to the PrepBox, but they are also suited for the most demanding and complex separations, including small molecules, cannabinoids, oligonucleotides, and peptides. The PrepSystem is especially useful for applications, where a very precise and accurate gradient composition is required.

Control: Chromatography data software can be ECOMAC or Clarity. A Windows PC is built-in. The instrument is controlled by a touchscreen and an industrial keyboard.

Connectivity: 1 × Ethernet and 2 × USB.



new




HPLC PREPARATIVE AND FLASH SYSTEMS

System Configuration Examples Table

To give you a better idea, we have prepared the following sample preparative and flash system configurations. However, we would like to remind you that it is possible to equip our systems with a number of other configurations of pumps and detectors, as well as versions with an embedded PC.

Control SW: The following configurations are controlled by ECOMAC chromatography data software. Optionally, you can request Clarity software, which is FDA 21 CFR Part 11 compliant.

HPLC Preparative and Flash Systems Examples

	Name	Type	Max. Flow Rate	Max. Pressure	No. of Solvents	Detection	Main System Parts
	ECS21	Quaternary Gradient Preparative Systems	50 ml/min	30 MPa/ 4351 psi	4	<ul style="list-style-type: none"> • UV-VIS DAD up to 600 nm • 4 channels simultaneously • Scan: informative 	<ul style="list-style-type: none"> • Detector • Pump • Gradient box • Ecomac SW
	ECS22	Isocratic Preparative System	250 ml/min	30 MPa/ 4351 psi	1	<ul style="list-style-type: none"> • UV-VIS DAD up to 400 nm • 4 channels simultaneously • Scan: informative 	<ul style="list-style-type: none"> • Detector • Pump • Fraction collector • Ecomac SW
	ECS23	Quaternary Gradient Preparative Systems	300 ml/min	15 MPa/ 2176 psi	4	<ul style="list-style-type: none"> • UV-VIS DAD up to 600 nm • 4 channels simultaneously • Scan: informative 	<ul style="list-style-type: none"> • Detector • Pump • Gradient box • Fraction collector • Ecomac SW

HPLC Special Preparative and Flash Systems

	Name	Type	Pumps and Max Flow Rates	Max. Pressure	No. of Solvents	Detection	Main system parts
	PrepSystem	HPG Chromatography Separation System	3 pumps- • 2 × 1000 ml/min and 1 × 300 ml/min or • 3 × 300 ml/min	15 MPa/ 2176 psi	6	Up to 800 nm	<ul style="list-style-type: none"> • PDA Detector • 3 Pumps • Loop sample injection valve • Switching valve for CCC/CPC applications • Embedded PC • Fraction collection 10-position valve • Ecomac or Clarity SW
	PrepBox A3L8E	LPG Compact Large-scale Separation Systems	1000 ml/min 300 ml/min	15 MPa/ 2176 psi	4	Up to 800 nm	<ul style="list-style-type: none"> • UV-VIS DAD detector • 2 Pumps • Embedded PC • Fraction collection 10-position valve • Ecomac SW
	PrepBox A338E		2 × 300 ml/min				
	ECS28	LPG Compact Preparative Systems	250 ml/min	30 MPa/ 4351 psi	6	<ul style="list-style-type: none"> • UV-VIS DAD up to 800 nm • 4 channels simultaneously • Scan: full spectrum 	<ul style="list-style-type: none"> • UV-VIS DAD detector • Pump • Gradient valve • Fraction collector • Auto-inject valve • Embedded PC • Queen SW
	ECS58		50 ml/min				
	ECS08		10 ml/min	40 MPa/ 5082 psi	4		

HPLC PREPARATIVE AND FLASH UNITS

Detectors

UV-VIS PDA (DAD) detectors TOY18DAD and TOY20DAD – V, VEX, H and HK versions designed for preparative and flash applications with 2 or 4 wavelengths or for **continuous scanning** in wavelength ranges of 190–800 nm (TOY20DAD), and 200–800 nm (TOY18DAD). The noise level at 254 nm is $\pm 50 \times 10^{-6}$ AU. Communication is via LAN, USB, RS232, and I/O ports.

TOY18DAD V, TOY20DAD V



- Features an internal flow cell
- Equipped with a keyboard, a display and analog outputs

TOY18DAD VEX, TOY20DAD VEX



- Uses an external flow cell connected by optical cables
- Equipped with a keyboard, a display and analog outputs

TOY18DAD H, TOY20DAD H



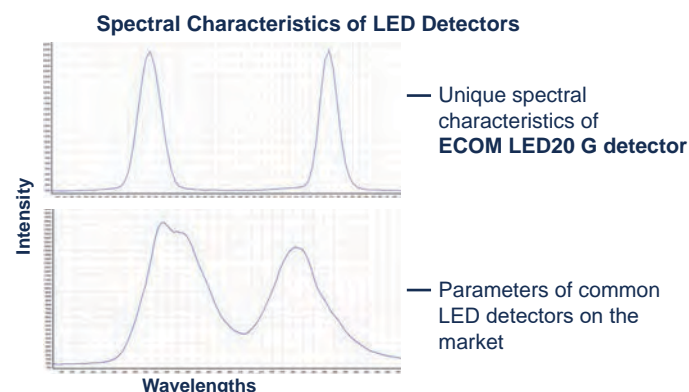
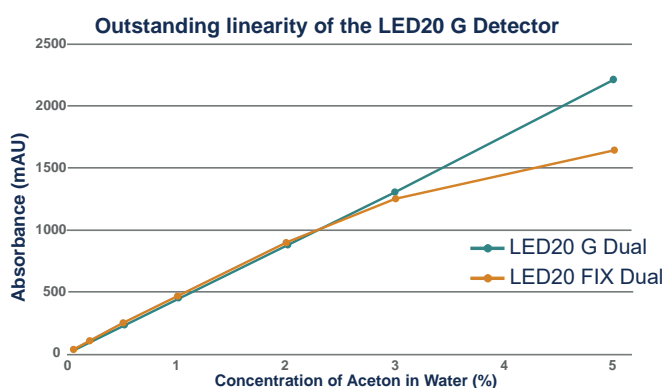
- Most commonly used detector in ECOM preparative systems
- Communication: LAN, USB, RS232 and I/O ports

TOY18DAD HK, TOY20DAD HK



- Equipped with a keyboard, a display and analog outputs
- Communication: LAN, USB, RS232 and I/O ports

LED DETECTORS – LED20 FIX and LED20 G are OEM built-in units with a UV LED diode as a light source, suitable for preparative and flash chromatography with fixed wavelengths.



LED20 G



LED20 FIX



- Thanks to **ECOM's patented technology**, the detector cuts out 4 nm halfwidth and an exact wavelength from the LED spectrum
- The energy of the light passing through the sample is very low, lower than other detectors on the market, which has the advantage of not damaging the sample
- Single or dual fixed wavelengths
- Wavelengths: 254–280 nm (± 1 nm), others on request

- Single or dual fixed wavelengths with LED diodes and low noise of $\pm 5 \times 10^{-6}$ AU
- Wavelengths: 254–280 nm (± 5 nm), 281–600 nm on request
- Dimensions: 125 × 65 × 62 mm (4.92 × 2.56 × 2.44 in.)

HPLC PREPARATIVE AND FLASH UNITS

Detectors

- Compact and powerful built-in ECOM UV-VIS PDA (DAD) detectors, available in many mechanical and optical versions
- 2 or 4 wavelengths or continuous scanning, in wavelength ranges 190–400, 190–600, or 190–800 nm with noise of $\pm 50 \times 10^{-6}$ AU at 254 nm.

OEM DETECTOR TOY I



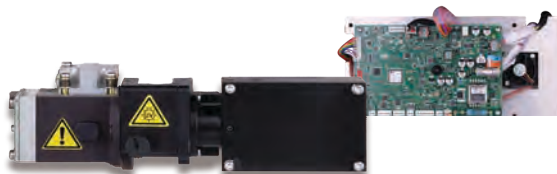
- Features compact flow cell housing
- Dimensions: 220 × 120 × 70 mm (8.67 × 4.72 × 2.75 in)

OEM DETECTOR TOY L



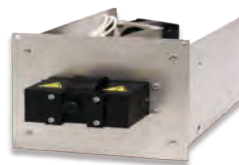
- Easy maintenance: Flow cell and lamp accessible from front panel
- Dimensions: 220 × 120 × 110 mm (8.67 × 4.72 × 4.33 in)

OEM DETECTOR BABY



- Features most compact unit among ECOM detectors
- Dimensions: 182 × 59 × 67 mm (7.17 × 2.32 × 2.64 in.)

OEM DETECTOR TOY U



- Features a compact detector of 130 mm width
- With a cell accessible from the front
- 130 × 130 × 200 mm (5.19 × 5.19 × 7.87 in.)

OEM UV-VIS DAD detectors with SMA 905 connectors, for an external cell connected by optical cables

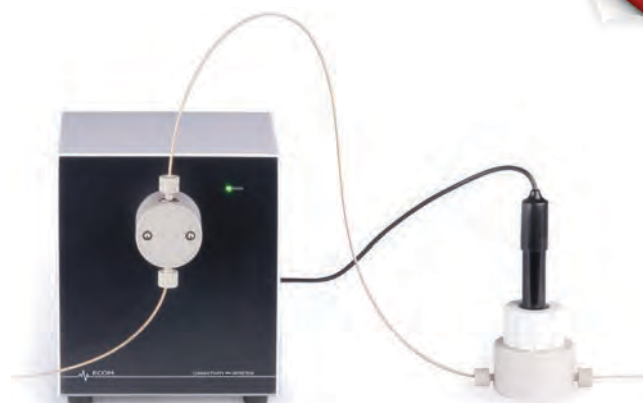
Conductivity and pH Monitors

DETECTORS TOY EXR, EXL



- Improved versions of previous OEM UV EX detectors with SMA 905 connectors
- External flow cell connected by optical cables (flow cell not included)
- Communication by version: EXL–RS232, LAN, USB
EXR–RS232

new ECDM 2100



- Conductivity monitor (1–300 mS/cm) with pH measurement (0–14 pH)
- Pressure resistance: Up to 20 MPa
- Maximum flow rate: 250 ml/min
- High-pressure cell up to 17 MPa
- Simple conductivity calibration

HPLC PREPARATIVE AND FLASH UNITS

Pumps

- ECOM powerful and reliable pumps with pulsation suppression for use in preparative HPLC and flash chromatography
- Flow rates from 50 ml/min up to 3000 ml/min, maximum pressures up to 15 MPa (2176 psi)
- NEW: Most of the pumps also in PEEK, Titanium, or Hastelloy wetted material design
- NEW: ECOM SEPARTRIX pump, primarily used in systems with industrial-scale prep columns, also for ATEX environments

ECP Pumps 50, 250, 300 ml/min



- Isocratic version
- Optionally, also configurable with a gradient box, to serve as gradient pumps
- NEW: Wetted materials also in PEEK, Titanium, or Hastelloy

ECP Pump 1000 ml/min



- One of the latest ECOM preparative pumps, features outstanding parameters
- Flow rates: Up to 1000 ml/min
- Maximum pressure: 15 MPa (2176 psi)

ECP Pump 3000 ml/min



- New preparative unit with outstanding parameters
- Very high flow rates - up to 3000 ml/min
- Maximum pressure: 5 MPa (725 psi)
- Smart controls and diagnostics
- An innovative, powerful, and cost-effective unit



ECP LG Gradient Pumps 1000 ml/min



- One of the latest ECOM preparative pumps features outstanding parameters
- Flow rates: Up to 1000 ml/min
- Maximum pressure: 15 MPa (2176 psi)
- New gradient box, up to 4 solvents for low-pressure gradient mixing

ECOM Separatrix PP03 Pump Series



- Pulse-less triplex piston pumps for preparative chromatography applications, also for ATEX
- Flow rates: Up to 3000 ml/min
- Maximum pressure: 26 MPa, 3771 psi
- Also, configurations for a high-pressure gradient
- Supported by ECOMAC or Clarity SW



Pump Head Thermostat ACZ Series



- Heating pump heads to the required temperature
- Temperature range: From ambient temperature up to 110 °C (230 °F)
- Used for pumps ECP201L, ECP2050, ECP2200, ECP2300, and IOTA



HPLC PREPARATIVE AND FLASH UNITS

Pumps • Gradient Boxes • Fraction Collectors

ECP Built-in Pump 1000 ml/min



- New ECOM preparative pump with outstanding parameters
- Flow rates: Up to 1000 ml/min
- Maximum pressure: 15 MPa (2176 psi)
- Provides very stable run even at low flow rates

ECP Built-in Pump 3000 ml/min



- New ECOM preparative pump with outstanding parameters
- Flow rates: up to 3000 ml/min
- Maximum pressure: 15 MPa (2176 psi)
- Provides very stable run even at low flow rates

ECP Built-in Pumps 50, 250, 300 ml/min



- OEM preparative pumps with pulsation compensation
- Controlled by RS232 and LAN
- Work as isocratic pumps
- Also, optionally configurable with a gradient box to serve as gradient pumps

Gradient Box ECB line



- Suited for liquid handling within ECOM gradient preparative systems
- Accommodates a container for solvent bottles, a 4-way gradient valve, and a built-in computer
- Pump controlled
- Optionally available with a built-in PC

Fraction Collector ECV 2010



- For automation of flash and preparative purification
- ECV2010 is equipped with a 10-position rotary valve
- Easy programming of fraction collection using ECOMAC software
- Compact size

Fraction Collector ECF 2096



- Controlling: Keyboard and display on front panel
- Analog input for collecting based on detector signal
- Racks for different number and sizes of vials, tubes and funnels
- Control SW: ECOMAC or Clarity

PREPARATIVE COLUMNS AND SYSTEMS

ECOM SEPARLAB

Thanks to our recently acquired production of industrial-scale preparative columns and systems of the Separlab brand, ECOM can now offer the following:

- Industrial-scale preparative HPLC columns and systems
- High-pressure pulseless pumps
- Complete LC systems equipped with gradient mixers
- Fraction collectors
- Column temperature control

These products conveniently complement ECOM's existing product assortment (preparative and analytical HPLC systems, detectors, pumps, etc.). They are employed for laboratory use and production plants, where the isolation or purification of various compounds is needed. These systems and columns are suitable for ATEX environments. These systems, which are implemented worldwide in many operations, feature perfect functionality, reliability, ease of use, quality craftsmanship, good pricing, and flexibility in customization.

High performance columns with axial compression

ECOM Separchrom PC01



ECOM SEPARCHROM PC01 columns meet the highest requirements of preparative liquid chromatography. They are designed to be used in axial compression mode with a moving input piston.

The PC01 columns are equipped with identical pistons on both input and output (biaxial compression is an option). Also, a modification is available, where the lower piston is replaced by a fixed plate. Pistons and plates are equipped with frits. A liquid distributing system is installed under each frit. The design guarantees perfect piston flow and high efficiency – even at a high injection volume – and the simple accessibility of frits for cleaning.

Materials and design: ECOM SEPARCHROM PC01 columns are made of stainless steel AISI 316L (tube inner surface is polished to reach $Ra < 0.3 \mu\text{m}$) with stainless steel pistons and UHMWPE (PTFE on request) sealing rings. The stroke of the main piston is proportional to the hydraulic cylinder used or the length of the flange bolts. The pistons are sectional. The frit (sintered mesh disc $3 \mu\text{m}$ pore size, 5 mm thickness) with the frit ring can be removed. The output plate in the FE version is made of UHMWPE, and the frit is fixed with a simple frit ring. Column flanges are not welded, but they are screwed onto the column tube. No temperature increases during their manufacture guarantee that there are no changes in their steel properties. The column stand, made of stainless-steel profiles, is included for columns over 100 mm I.D. Hydraulic cylinders fitted onto the upper flange are offered with manual oil pumps as well as with fully automated electric motor-driven devices for column packing/unpacking procedures.

Column packing methods: Columns can be packed by the dynamic slurry method, by sedimentation, or by sorbent in a dry state.

Accessories: Available in a broad range, such as filling adapters, slurry mixing vessels, slurry transporting pumps, etc.



PREPARATIVE COLUMNS AND SYSTEMS

Columns for Medium-pressure with Axial Bed Compression

ECOM Separchrom PC02

ECOM SEPARCHROM PC02 medium-pressure stainless-steel columns are intended for separation where high pressure is not necessary, but excellent efficiency is still required.

Materials and design: Stainless steel tubes, UHMWE piston with stainless steel support and mesh frit.

Flow distributor with grooves is incorporated into the piston to guarantee piston flow with nearly zero pressure drop. The frits are simply accessible for easy cleaning.

Column packing methods: Columns can be packed by the dynamic slurry method, by sedimentation, or by sorbent in a dry state.

For soft polymer sorbents, ECOM Separchrom PC02 oil systems can be equipped with a special software application to compensate for the swelling and unswelling of sorbents in different mobile phases.

(The column piston is moved in very small up-and-down increments during use.)



Non-metal Columns

ECOM Separchrom PC04

Polyethylene cartridge columns are usually intended for flash chromatography, especially in bio chromatography and some other special applications.

Materials and design: Columns are made of high-quality ultra-high molecular weight polyethylene. They are equipped with moving pistons with no metal coming into contact with the mobile phase.

They are equipped with the same pistons on the input and the output. The input piston is moved either by flange bolts, or by a central stainless steel threaded rod.

ECOM SEPARCHROM PC04 plastic columns for preparative liquid chromatography arrive unfilled.



Hydraulic Systems for Prep Chromatographic Columns

ECOM Separpress

ECOM SEPARPRESS hydraulic system for preparative chromatographic columns. It is used to compress the piston inside the column and to compact the sorbent.

Supplied as a kit that includes a hydraulic double-action cylinder or a spring, connecting hoses, oil pump - manual or driven by motor, with a mechanical manometer control device or an electronic system with a pressure gauge. Small single-action cylinders are not able to pull a column piston out of the tube, so liquid pressure has to be used instead.

Bigger cylinders (D30 +) are delivered only with an electric oil pump, since a high oil-flow rate is necessary.

All EE systems can be ordered in versions for hazardous environments.



Other Parts of the Preparative Column Systems

Mobile Phase Delivery

HPLC Pump

ECOM Separatrix PP03 Series

ECOM Separatrix PP03 are non-pulsating triplex piston pumps for preparative chromatography applications, but they can be used wherever high pressure, precise flow without pulsation, and high corrosion resistance are required. PP03 units are also used for ATEX environments.

The pumps are equipped with a unique compact triplex piston head for smooth flow and easy maintenance without risk of leakage between the connecting parts. Back-flushed pistons are coated with a hard and chemically resistant polycrystalline carbon layer. Piston cylinders have a low dead volume, and samples injected through the pump appear to be low spreading.

Pumps with different flow ranges differ only by head type, piston diameter, and tubing diameter. ECOM Separatrix PP03 pumps are normally supplied with an asynchronous motor and a frequency converter. But, they are also available with a stepper motor, which allows the pump to be used in an extremely wide range of flow rates for both analytical and preparative applications.

Special configurations of the ECOM Separatrix PP03 pumps are used for three-phase low-pressure gradient applications where it is extremely important that pumps provide an almost constant flow rate not only at the output but also at the input. Low-pressure gradient units are supplied with three solenoid valves on the plate that can be connected to the pump side. The power supply for the valves is installed in the pump housing. The 10 linear steps are programmable.

PP03 pumps are also supplied in a high-pressure binary gradient configuration.

Control software: Pumps can be controlled with either ECOMAC or Clarity data station software. Flow rate, gradient composition, and pressure limit can be programmed. PP03 pumps can also be controlled by ECOMAC software. A remote control mode is available as well.



Fraction Collectors

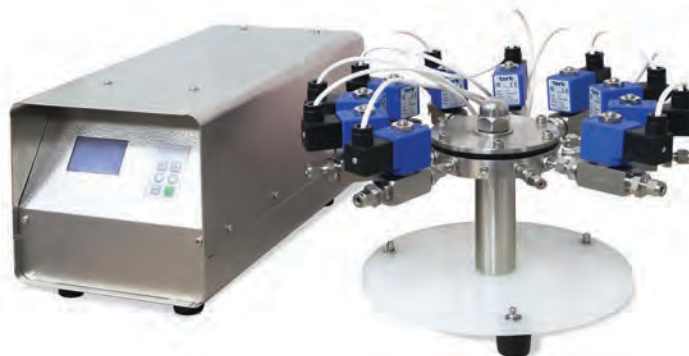
ECOM Separflow FC X-Y

ECOM Separflow FC X-Y fraction collectors are designed to capture fractions in preparative liquid chromatography. However, they can be used in other facilities where the programmed collecting of liquid volume is required.

Materials: It is designed for liquids which are resistant to stainless steel, PTFE, and UHMW. ECOM Separflow FC X-Y typically consists of a stainless steel box of electronics with a keyboard and display on an oblique front panel and a circular segment consisting of two parts with a radial groove in between. The groove has side outputs in which a liquid input and Y-solenoid valves (with PTFE closing elements) on the output are connected. The opening of various valves can be programmed. The outlet valve pipes are connected by flexible hoses and are forwarded to liquid containers of the proper size.

Control: The collector can be controlled independently from the front panel keyboard or externally via an RS232 serial port. In the external control, the keypad is locked, and it is only possible to display parameters. Nevertheless, the STOP button always works. Step time is 0.1–180 min., and the pressure limit is 2 bar.

ECOM Separflow fraction collectors can be supplied in versions for environments with the danger of explosion according to ATEX, where the electronic part of the system has to be situated in a remote place out of the critical zone.



Automatic Flow Splitting

ECOM Separpass

ECOM Separpass is a device that allows preparative liquid chromatography detector cells to be used with analytical detectors.

Often older analytical detectors are available but they cannot be used due to their low flow rates and limited pressures on the cell. ECOM Separpass allows a small amount of liquid to flow through the detector while a large number of phases bypass the detector cell. An overpressure for the detector is generated by a spring force.

The pressure drop to the detector can be adjusted with a control knob.

The bypass eliminates any flow adjustment during separation – the spring force is only adjusted at the beginning by a rotary knob. The pressure on the detector cell can be set in a range of 1–3 bar.



HPLC ANALYTICAL SYSTEMS

ECOM Analytical Modular System

We offer high-performance liquid chromatography analytical systems. Each configuration contains the following basic or optional components:

- A high-performance analytical pump with a high backpressure rating
- A low-pressure gradient box with degasser – can optionally be embedded with PC
- A column thermostat with a cooling and heating option or a column oven with heating only
- A multichannel PDA or a variable UV-VIS detector with ranges from 200 nm up to 800 nm
- Injection of samples: An autosampler for 96 vials with high accuracy and linearity of injections, or an injection valve with an injection loop
- Optional:
 - A high-sensitivity analytical refractive index detector
 - A single quadrupole mass spectrometer – optional

The system is variable and allows for the different configurations of components. You can choose from various wetted pump heads materials. Detectors can be equipped with various flow cells with different parameters and materials (including bio-inert materials). All units have implemented support for ECOMAC and Clarity software.

...choose your ideal analytical system components...

HPLC PUMP

- With maximum flow rate of 10 ml/min
- Max. back pressure rating up to 60 MPa (8703 psi)

COLUMN OVEN

- Features heating and cooling 0–80 °C
- Or with heating only, up to 99 °C

PDA/UV-VIS DETECTOR

With a continuously variable wavelength

GRADIENT BOX

- With a degasser and a gradient valve
- Optionally with a built-in PC

SAMPLE INJECTION VALVE

- Stainless-steel sample loop



AUTOSAMPLERS






Feature excellent accuracy and linearity, the AS96 also does heating and cooling



HPLC ANALYTICAL SYSTEMS

ECOM Modular Analytical System

Configuration Examples

HPLC Analytical Systems	Name	Type	Flow Rate	Max. Pressure	No. of Solvents	Detection	Main System Parts
	ECS01	HPLC Analytical Gradient System	10 ml/min	40 Mpa/ 5802 psi	4	<ul style="list-style-type: none"> UV-VIS up to 800 nm High speed up to 100 Hz 	<ul style="list-style-type: none"> Detector: UV-VIS HPLC pump Gradient box with degasser Column oven with heating and cooling Analytical injection valve SW Clarity
	ECS02	HPLC Analytical Gradient System			4	<ul style="list-style-type: none"> UV-VIS up to 600 nm High speed up to 100 Hz 	
	ECS03	HPLC Analytical Isocratic System			1	<ul style="list-style-type: none"> Detector: UV-VIS HPLC pump Analytical injection valve SW Clarity 	
	ECS04	HPLC Analytical Gradient System			4	<ul style="list-style-type: none"> UV-VIS up to 800 nm High speed up to 100 Hz 	<ul style="list-style-type: none"> Detector: (ECS04) UV-VIS, (ECS05) UV-VIS PDA HPLC pump Gradient box with degasser Column oven with cooling and heating Autosampler Analytical injection valve SW Clarity
	ECS05	HPLC Analytical Gradient System			4	<ul style="list-style-type: none"> UV-VIS PDA up to 800 nm 8 channels simultaneously 3D Scan of full spectrum, high speed up to 100 Hz 	

ECS01 Gradient Analytical System

ECS01 is a superior-quality, highly efficient analytical gradient HPLC system.

Configuration includes a high-precision analytical pump; a four-way, low-pressure gradient module with an integrated efficient degasser; and a reservoir for mobile phases.

The temperature of the column is regulated by a thermostat within ranges from 0 to 80 °C with a capacity of up to three columns.

An extremely sensitive, high-frequency, variable UV-VIS detector with wavelength ranges from 190 to 800 nm is installed for continuous detection.

Sample injection is performed via a manual injection loop at a selectable volume.



ECS02 Gradient Analytical System

ECS02 is an analytical gradient HPLC system.

It differs from other systems by the use of a column oven, which enables heating of up to three columns up to 99 °C. This system is equipped with a high-precision analytical pump; a four-way, low-pressure gradient module with an integrated degasser; and a reservoir for mobile phases.

Detection is provided by a variable UV-VIS detector at wavelength ranges from 190 to 600 nm.

Sample injection is performed with a manual injection loop at a selectable volume.

HPLC ANALYTICAL SYSTEMS

ECOM Modular Analytical System

Configuration Examples

ECS03

Isocratic Analytical System

ECS03 is an analytical isocratic HPLC system, equipped with a mobile phase reservoir and an isocratic high-precision analytical pump.

Detection is provided by a variable UV-VIS detector at wavelength ranges from 190 to 600 nm.

Sample injection is carried out with a manual injection loop at a selectable volume.

This system is an affordable choice for isocratic normal phase and reverse phase separations.



ECS04

Gradient Analytical System

ECS04 is an analytical gradient HPLC system equipped with an autosampler.

The system consists of a high-precision analytical pump; a four-way, low-pressure gradient module with an integrated efficient degasser; and a reservoir for mobile phases.

The temperature of the column is regulated by a thermostat within ranges from 0 to 80 °C with a capacity of up to three columns.

For continuous detection, the system is equipped with a sensitive, high-frequency, variable UV-VIS detector within ranges from 190 to 600 nm.

Utilization of the autosampler guarantees high accuracy and the linearity of injections.

ECS05

Gradient Analytical System

ECS05 is an analytical gradient HPLC system equipped with an autosampler.

The system includes a high-precision analytical pump, a four-way, low pressure gradient module with an integrated efficient degasser, and a reservoir for mobile phases.

The temperature of the column is regulated by a thermostat within ranges from 0 to 80 °C with a capacity of up to three columns.

A sensitive UV-VIS PDA detector is installed for continuous detection. This multichannel detector enables high-frequency scanning of the entire UV/VIS spectrum within a wide range of wavelengths from 200 to 800 nm.

Utilization of the autosampler guarantees high accuracy and the linearity of injections.

Applications: Configuration of this system supports demand for high-end laboratory automation. It is used in the analysis and quality control of active pharmaceutical ingredients, peptides and products of the chemical industry.



HPLC ANALYTICAL UNITS

Detectors • Pumps • Gradient Boxes

UV-VIS PDA Detector ECDA 2800



- UV-VIS photodiode array detector
- Measures at 8 wavelengths simultaneously or provides a scan of the full spectrum
- Noise level at 254 nm: $\pm 5 \times 10^{-6}$ AU
- Wavelengths ranges: 200–800 nm
- Sampling speed: up to 100 Hz
- Clarity PDA module support for 3D measurement
- Easy flow cell replacement from the side of the detector

UV-VIS Detector ECD 2600/2800, ECD 2600/2800 CE



- ECD 2600/2800 - UV-VIS variable wavelength detector
- Wavelength ranges: Continuously variable within 190–800/190–600 nm
- Noise level at 254 nm: $\pm 3 \times 10^{-6}$ AU
- Automatic wavelength calibration by deuterium spectral lines
- ECD 2600/2800 CE is a modification suitable for capillary electrophoresis
- Easy flow cell replacement
- Noise level at 254 nm: 10×10^{-6} AU

UV-VIS EX Detector ECD 2600/2800 EX



- Features a configuration of the basic ECD 2600/2800 units used with external flow cells connected by optical cables with SMA 905 connectors
- Noise level at 254 nm: $\pm 15 \times 10^{-6}$ AU
- Wide assortment of external cells upon request

Analytical Pump ECP 2010 (H)



- ECP 2010 (H) with the max. flow rate up to 10 ml/min
- Maximum pressure: 40 (60) MPa
- Works as an isocratic pump, optionally also configurable with a gradient box with degasser to serve as a gradient pump
- Head materials: Stainless steel. NEW: Also in PEEK, Titanium, and Hastelloy materials

Single-Piston Pump ECP 2011



- Used for column washing and column regeneration process
- Maximum flow rate: 10 ml/min
- ECP2011 P features a pressure sensor
- Piston back-washing function

Gradient Boxes ECB line



- Suitable for liquid handling within ECOM gradient systems
- Container for solvent bottles
- 4-way gradient valve
- Powerful built-in vacuum degasser
- Optionally, ECB2004 BP includes a built-in PC

HPLC ANALYTICAL UNITS

Autosamplers • Column Ovens • Analytical Cells • Valves • Column Washing System

Autosampler AS96



- Features heating and cooling
- Backpressure: 60 MPa (8702 psi)
- Capacity: 96 vials
- Fast injection and wash cycles
- Quick-fit injection valve for fast service
- Multi-solvent needle wash



Autosampler L3320



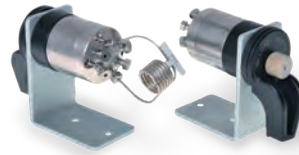
- Automatically samples 96 vials with excellent sample injection accuracy and linearity
- Wide range of injection modes: Full-loop, partial full-loop, μ L pick-up – achieves zero sample loss
- Backpressure: 40 MPa (5802 psi) or 60 MPa (8702 psi)
- Easy management

Column Oven ECO line



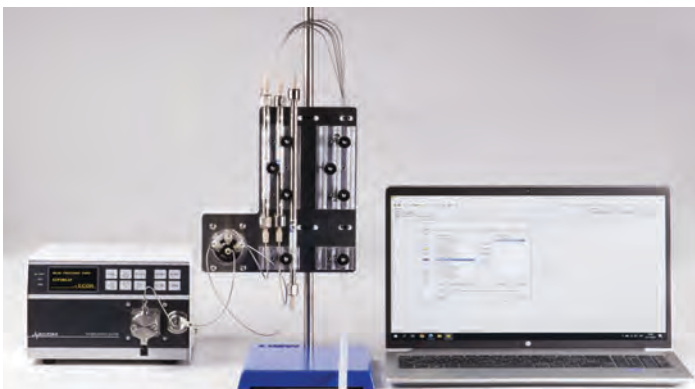
- Peltier heating/cooling column oven (0-80 °C)
- Alternative configuration as a dedicated heating unit (up to 99 °C)
- Capacity: Up to 3 columns of 300 mm length

Sample Injection Valve



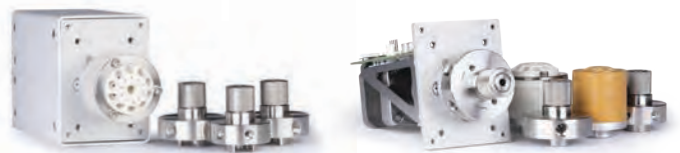
- Analytical/semipreparative stainless steel 2-position injection valve
- Needle injection port on the front side
- No-flow interruption technology

HPLC Column Washing System ECW 2006



- Consists of an ECP2011P single-piston pump, a motorized 6+1 ports valve, a column holder and SW
- Up to 6 columns' capacity
- Using the ECOMAC control software, it is possible to set the number of columns to be washed, required flow rate, rinsing time, and maximum pressure limit
- This enables a fully automatic process which will be stopped after all columns have been washed

Valve Actuator ECVA 2000



External version

Embedded version

- An advanced valve actuator to control injection and switching valves in LC and GC
- For all Vici valves, high- and low-pressure options
- Supports 2-position and multi-position valves
- Switching speed optimization, switching time from as little as 95 ms
- Safe shutdown in case of power failure
- Motor stall detection
- Switching/selecting/injecting functions
- Smart control and diagnostics
- FDA approved materials available

HPLC ANALYTICAL SYSTEMS AND UNITS

Amino Acid Analysis System • Columns

Amino Acid Analysis System ECA AMINO 500

new

A complete solution for automated amino acid analysis.

Applications: Specifically used for identification and quantification of amino acids in protein hydrolysates and peptides, of free amino acids in physiological liquids and extracts, as well as for biogenic amines detection. Suitable for a wide range of use in biochemical research, in research in human and animal nutrition, in diagnostics in medicine and in control of pharmaceuticals, food and feed – as well as in standardized processes. The highest accuracy and reproducibility. It uses very accurate and robust chromatographic methods low-pressure ion exchange chromatography with post-column derivatization with ninhydrin and photometric detection.

Configurations: The analyzer uses a 2-channel spectrophotometer detector, a 6-fold gradient, and an 8-channel degasser, optionally equipped with a chilled sample rack, with a heated column thermostat. Possible customization of the system helps to use it for a wide range of amino acids.

Effectivity: The ECA AMINO 500 offers a very good price-performance ratio, also it is very cost-effective



regarding operation and maintenance costs – for example thanks to the use of own chemicals with no need to purchase ready-made buffers.

Chromatography Software: Supported by Clarify SW.

Columns

Wide range of high-quality, but also price affordable, analytical columns, designed and developed in the Czech Republic. Suitable for use with HPLC and UHPLC systems.

Perfect end-capping, no broken particles, stability over wide pH ranges, and resistance to high pressures (up to 130 MPa). 4 stationary phase variants and a wide range of column dimensions and various particle sizes. The assortments are available with various physical parameters, enabling a diverse selection from the viewpoint of applications. This lets the user raise resolution and effectiveness, or lower the mobile phase consumption. Used for analysis of medium hydrophobic, aromatic, and amine substances.

Columns C18-HE: Common stationary phase with chemical ligand C18. Free silanol groups are efficiently endcapped by an alkyl substituent. This column is one of the most widely used stationary phases for reversed-phase separations. Suitable for the analysis of peptides, ionized and non-ionized moderately hydrophobic substances.

Columns Diol: The chemically bonded ligand 1,2-dihydroxypropyl is in the stationary phase of this column. The stationary phase exhibits a moderate degree of polarity. Suitable for normal and reversed phase separations, as well for HILIC chromatography. The column is stable in the purely aqueous mobile phase. This property allows an easy transition between the normal and reversed phase separations on the same instrument.



Columns Specifications	
Column lengths	50–250 mm
Inner diameter	4.6 mm; 3 mm; 2.1 mm
Stationary-phase particle size	5 μm ; 3 μm ; 2 μm
Pressure limit	Up to 130 MPa (1,300 bar ;19,000 Psi)

Columns DM: A specially developed stationary phase DM (Dual Modification). The first polar functional group is inserted into the non-polar alkyl chain, which is embedded in the stationary phase. The entire chain is terminated with a second polar group. This dual-modified polar alkyl chain excels in weak non-bonding interactions with analytes steric, dipole-dipole, π-π, hydrogen bonds). The stationary phase shows a high rate of end-capping (>99%). Suitable for the measurement of polar, aromatic or amine substances.

Columns C18-AQ: Specially modified stationary phase with chemically bound C18 ligand. Free silanol groups are effectively endcapped by a polar substituent, which ensures stability in a purely aqueous mobile phase.

HPLC FLOW CELLS

Standard cells: We manufacture a wide range of external and internal **standard flow cells**.

Custom cells: We are constantly expanding our technological production equipment; thus, we offer an ever wider assortment for the **development and production of custom flow cells**, including OEM versions. Do not hesitate to contact us for a request for customized cells.

Materials: Stainless steel, PEEK, Hastelloy, sapphire glass, quartz glass, FEP, titanium, and various bioinert materials including FDA-compatible materials, etc.



Preparative Flow Cells

Stainless Steel Flow Cells of the PFC Series

- A very new series of ECOM stainless-steel flow cells – PFC
- Variants: PFC Basic (without a holder), PFC L (with a holder), PFC EX (external)
- Intended for ECOM HPLC and flash UV/VIS detectors and systems
- Optical path lengths: 0.05; 0.1; 0.3; 0.5; 1; 2; 3; 4 and 5 mm
- Maximum pressure: 6 MPa (870 psi, 60 bar)
- Maximal flow rate: 200 ml/min (tubing 1/16"), 500 ml/min (tubing 1/8"); 3,000 ml/min (tubing 3/16")
- By default, detectors supplied with a PFC010 cell, other cells on request
- Custom cell parameters available



PLCC Series and UHPLC Flow Cells

- Maximum pressures: 30, 100, and 200 MPa (4,351; 14,504; 29,007 psi)
- Cell connection: 1/4"-28 for 1/8" tubing, UNF10-32 for 1/16" capillaries or 5/16" for 3/16" tubing
- Materials: PEEK, stainless steel
- Custom cell parameters available

Triclamp EX Flow Cells

- A series of flow cells with a tri-clamp or hose pipeline connection, used in HPLC
- Various materials: Stainless steel, Hastelloy, and PEEK
- Optional optical path length ranges: 0.1–10 mm
- Maximum operating pressure: 30 MPa (4,351 psi)
- Elimination of dead volume inside the cell
- Custom cell parameters available

Single-Use Flow Cells

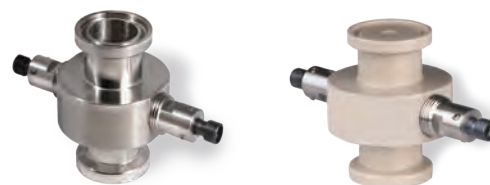
- A new cost-effective solution – single-use cells exchangeable in the stainless steel holder – cells can be easily replaced in the holder by the customer after each use, or after a few uses
- Connection: Tri-clamp or hose connection to piping systems (others on request)
- Materials: PEEK body and a sapphire window
- Optional optical path length ranges: 0.1–10 mm
- Resistant to: high pressures (30 MPa, 4,351 psi) and high temperatures (up to +260 °C, 500 °F)



Analytical Flow Cells

- 3 versions of optical path lengths: 2, 5 and 10 mm
- These cells included by default in detectors/systems, with a 5 mm optical path length, other path lengths on request
- Designed with a temperature exchanger which suppresses temperature changes
- Custom cell parameters available

Cell Design Examples



HPLC SOFTWARE

ECOMAC Software

ECOMAC is software produced by ECOM used for chromatography device control and data acquisition. The software is designed to maximize the ease of operation of ECOM chromatographic systems. All ECOM devices are supported by ECOMAC software.



ECOMAC features and benefits

- ECOMAC is a useful tool for the convenient management of work with devices, servicing activity purposes and easy diagnostics
- Easy installation
- Connection by USB, LAN or RS232
- No need for an A/D converter (an added PC card)
- Data export in various formats
- Secure access
- Unit control and data collection from one place
- Language support: English, Chinese and Czech

Clarity Chromatography Software

Clarity software is a globally used advanced chromatography data software for data acquisition, processing, and instrument control, which enables controlling all ECOM devices from one environment. Clarity is useful for both analytical and preparative purposes.

Integration of ECOM devices: The benefit of ECOM for the customers is that we constantly prepare for our clients the integration of all our devices into the Clarity system. Thus, all ECOM device drivers are included within the software. There is no need for an A/D converter (an added PC card). Drivers contain full control of instruments as well as diagnostic tools which are made by ECOM in cooperation with the producer. This guarantees the highest quality and full integration into the Clarity station.

Data acquisition: Simultaneous data acquisition from up to four independent chromatographs. Each chromatograph can acquire data from up to 32 detectors.

Language support: Clarity is multilingual; users can switch between 6 languages – English, Chinese, Russian, Spanish, French, and German.

GLP (Good Laboratory Praxis) and regulated environment compliance: Clarity contains tools to meet **21 CFR Part 11** requirements, ensuring its suitability for use in regulated environments. Also, Clarity cooperates with **LIMS** systems.



Find out more about ECOM
products and services

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