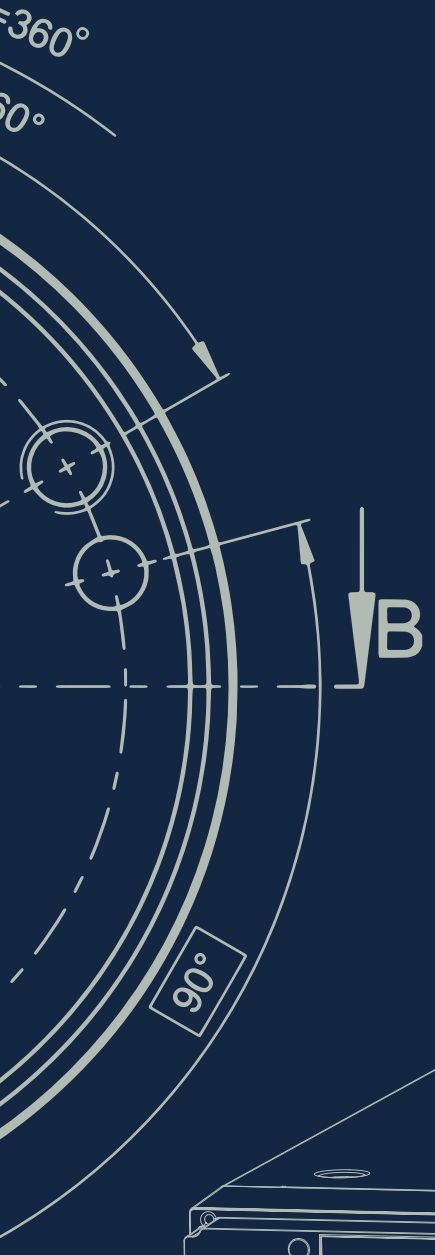
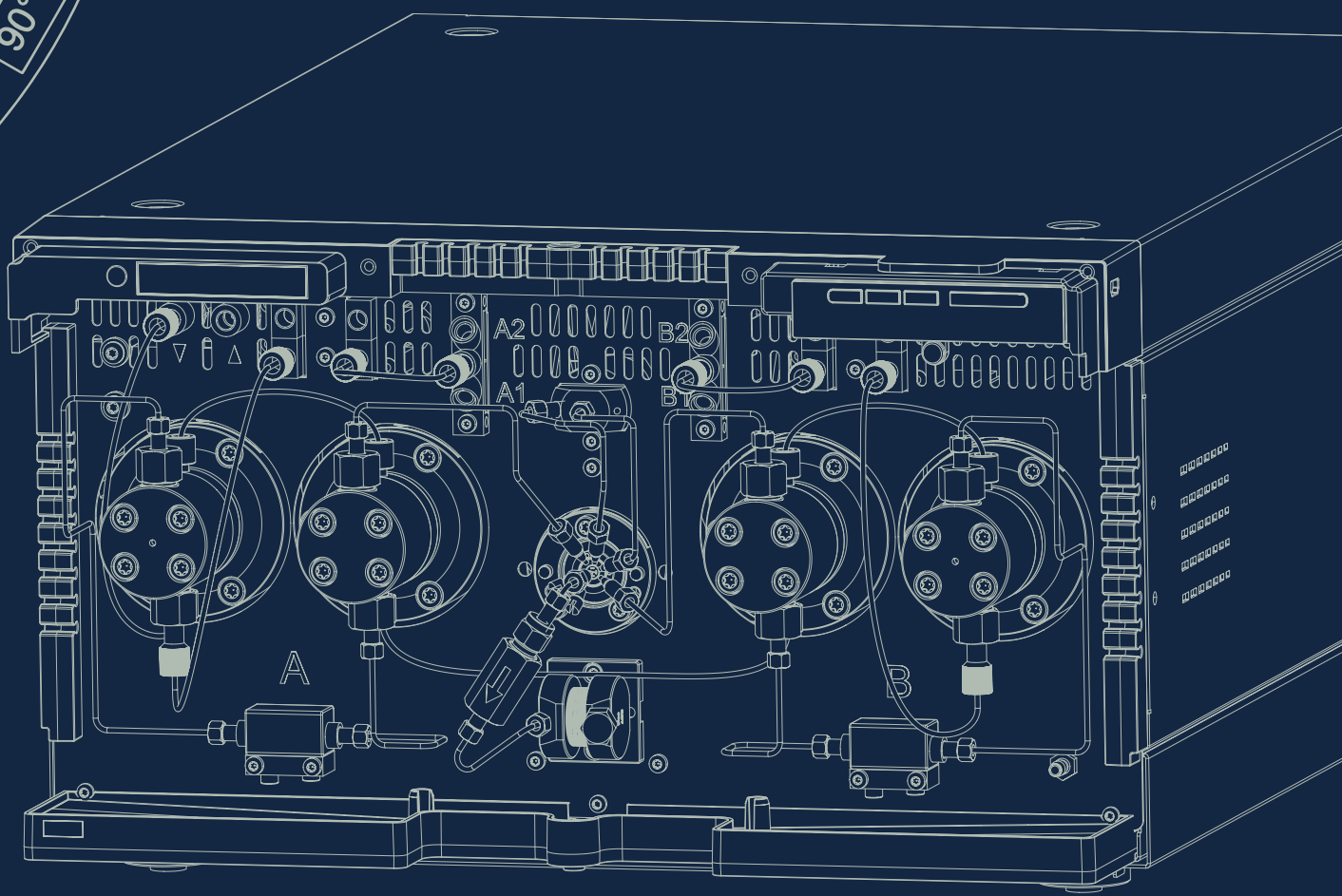
Science with Passion

KNAUER

Product Selection Guide

2023/2024





Get in touch

Sales

If you want to learn more about our products and services or get a quote, the experts from our sales team are happy to assist you with your request.

Phone: +49 30 809727-0 (workdays 9-17h CET)
Fax: +49 30 8015010
E-mail: **sales@knauer.net**

Support

Do you have questions about the installation or the operation of your device or software?

International Support:

Contact your local KNAUER partner for support:
www.knauer.net/en/Support/Distributors-worldwide

Phone: +49 30 809727-111 (workdays 9-17h CET)
Fax: +49 30 8015010
E-mail: **support@knauer.net**

Welcome to KNAUER

About KNAUER

Based in Berlin, KNAUER is a medium-sized, owner-managed company that has been serving the sciences since 1962. We develop and manufacture scientific instruments of superior quality for liquid chromatography. The range includes systems and components for analytical HPLC/UHPLC, preparative HPLC, fast protein liquid chromatography (FPLC), multi-column chromatography/simulated moving bed (SMB), gel permeation chromatography/size exclusion chromatography (GPC/SEC), osmometry and Skids for the production of lipid nanoparticles (LNP).

Sustainability & ecological commitment

We are committed to protect the environment for ourselves and our children. KNAUER contributes to the conservation of a healthy environment by basing our work on an environmental management system according to DIN EN ISO 14001. The KNAUER quality management system according to DIN EN ISO 9001 and EN ISO 13485:2016 makes sure that we continuously manufacture products in the best quality possible. As a family business with about 190 employees, KNAUER focuses on sustainability and takes responsibility for our future.

Some of our ecological activities:

- The regular creation of an input and output balance for the determination and evaluation of energy and resource flows
- Environmentally friendly product development, energy-efficient production, and shipping with biodegradable packaging materials and re-usable packaging with local suppliers
- Fixed specifications for the development of new products according to ecological aspects such as low solvent consumption, repairability, and longevity of the products
- Complete modernization of the company building included thermal insulation, new windows, electric blinds, and a green rooftop, which resulted in a 50 % heating energy saving
- 100 % green electricity and generation of solar power with our photovoltaic system on the roof
- Guidelines for business travel from an environmental, economic, and social perspective
- Tips and instructions for clients to reduce solvent consumption during instrument use
- Environmentally compatible working and manufacturing of HPLC instruments and accessories, e.g. by using energy-efficient working equipment and reducing the use of solvents and harmful substances
- A life cycle assessment to optimize the manufacturing process and concentrate on electricity saving components

Sustainability: #KNAUERforFuture

Many KNAUER employees have good ideas for sustainability, and so we all get better together every year. We would like to inspire YOU to implement sustainability in many areas of your company, too. May these short videos keep you entertained and invite you to act! **www.knauer.net/sustainable**.

KNAUER

Table of contents

KNAUER Systems & Devices

Accessories, maintenance & spare parts

PC Hardware & Software

KNAUER Services

Analytical HPLC/UHPLC systems

Efficient and adaptable – with ULDC option

KNAUER AZURA® liquid chromatography instruments are designed to support and facilitate your work. Whether doing routine analysis or demanding separation tasks, AZURA® systems are the right tool to overcome your analytical challenges. Choose between different gradient forming technologies and maximum flow rates to find the best configuration for your task. A large variety of detectors is available.

AZURA® Analytical ULDC/UHPLC systems brochure

SEC systems

GPC/SEC from analytical to preparative scale

KNAUER AZURA® SEC is a line of GPC and SEC systems that offer solutions for different applications and labs. These systems analyze, separate and fractionate sample components based only on their size, making them useful for industries such as polymer, food, biochemistry, and pharmaceuticals, as well as research. The systems come in various options, each tailored to specific lab needs, such as the AZURA® SEC Compact for budget-friendly solutions or the AZURA® SEC Lab for highest analytical performance.

AZURA® GPC/SEC systems brochure

Preparative HPLC systems

Customized purification

AZURA® preparative systems are the perfect solution for frequently changing separation tasks – from milligram to kilogram scale. These prep HPLC systems combine flexibility and reliability. The systems can be configured freely choosing different materials, flow rates, valves, and detectors. Due to the flexible design of the devices, parts like pump heads or flow cells can be easily exchanged. All components of the compact system e.g. can be integrated into the pilot-scale system.

AZURA® Preparative HPLC systems brochure

FPLC systems (Bio purification)

The flexible FPLC platform for protein purification

The AZURA® FPLC with its biocompatible/metal-free components is the perfect choice for any protein purification task. Multiple functionalities such as automatic sample injection via autosampler, column switching, buffer and sample selection, as well as fraction collection enable the user to automate purification processes. A large range of different detectors make your target molecules visible. Different flow rates and compatibility to columns from all vendors offer maximum flexibility.

AZURA® FPLC systems brochure

Multi-column chromatography (SMB)

Continuous separation for higher productivity and purity

Simulated moving bed chromatography is increasingly applied as a separation technique in the pharmaceutical industry, production of fine chemicals and in the field of bioengineering. SMB is a method in process chromatography that enables substance mixtures to be continuously separated and extracted in two fractions. By repeated use of the SMB process each partial fraction can be separated into a further fraction – down to binary substance mixtures. It´s efficiency is significantly higher than batch chromatography, through better utilization of the column stationary phase.

AZURA® SMB systems brochure

Chromatography Data Systems

Choose your software drivers and control software

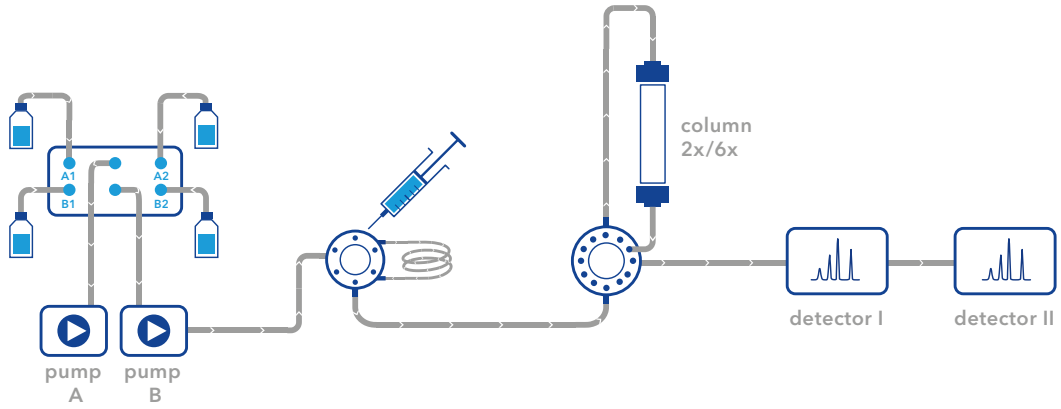
KNAUER modules can be controlled via various CDS. Above that, Mobile Control is the right solution as control software if you need a basic, easy-to-use, and cost-effective software for your LC system.

AZURA® predifined systems brochure

System Configurator
HPLC/UHPLC by KNAUER

MAKE YOUR PRESELECTION

☐ **UHPLC** (SST, max. 1240 bar)
☐ **HPLC** (SST, max. 862 bar)
☐ **Bio-Inert** (metal-free, max. 400 bar)



ELUENT SELECTION & DELIVERY

- ☐ 5 ml/min binary gradient pump P 8.1L (UHPLC), max. delivery pressure 1240 bar
- ☐ 5 ml/min binary gradient pump P 6.1L (UHPLC), max.delivery pressure 1000 bar
- ☐ 5 ml/min quaternary gradient pump P 6.1L (UHPLC), max. delivery pressure 1000 bar
- ☐ 10 ml/min binary gradient pump P 6.1L, max. delivery pressure 862 bar
- ☐ 10 ml/min quaternary gradient pump P 6.1L, max. delivery pressure 862 bar
- ..... **x** solvent selection valve (6 further inlets)

SAMPLE INJECTION

- ☐ Manual injection valve
- ☐ Autosampler AS 6.1L
- ☐ Autosampler AS 6.1L cool/heat

COLUMN SELECTION & THERMOSTAT

- ☐ 2 column selection
- ☐ 4 column selection
- ☐ 8 column selection
- ☐ Column thermostat
- ☐ Column kit HPLC
- ☐ Column kit UHPLC
- ☐ Eluent pre-heating cartridge 0.1 mm ID UHPLC
- ☐ Eluent pre-heating cartridge 0.18 mm ID HPLC

DETECTION

- ☐ UV/VIS single wavelength
- ☐ UV/VIS multiple wavelength
- ☐ Conductivity
- ☐ Refractive index
- ☐ Light Scattering
- ☐ A/D-converter (integration of further detectors)
- ☐ DAD 2.1L
- ☐ DAD 6.1L
- ☐ Fluorescence Detector RF-20 A
- ☐ Fluorescence Detector RF-20 Axs

ACCESSORIES

- ☐ 0.1 mm tubing
- ☐ 0.18 mm tubing
- ☐ PEEK tubing
- ..... **x** Back pressure regulator
- ☐ Workstation (Windows)

FLOW CELLS FOR UV-DETECTOR

- ☐ 10 mm/10 µl Pressure proof
- ☐ 10 mm/2 µl LightGuide®
- ☐ 50 mm/6 µl LightGuide®
- ☐ 3 mm/2 µl (up to 100 ml/min) Pressure proof

SOFTWARE

- ☐ ClarityChrom®
- ☐ OpenLab EZChrom/CDS
- ☐ Chromeleon™
- ☐ Mobile Control

COMMON APPLICATIONS

- ☐ Reversed phase
- ☐ Normal phase
- ☐ other...
- ☐ System Qualification

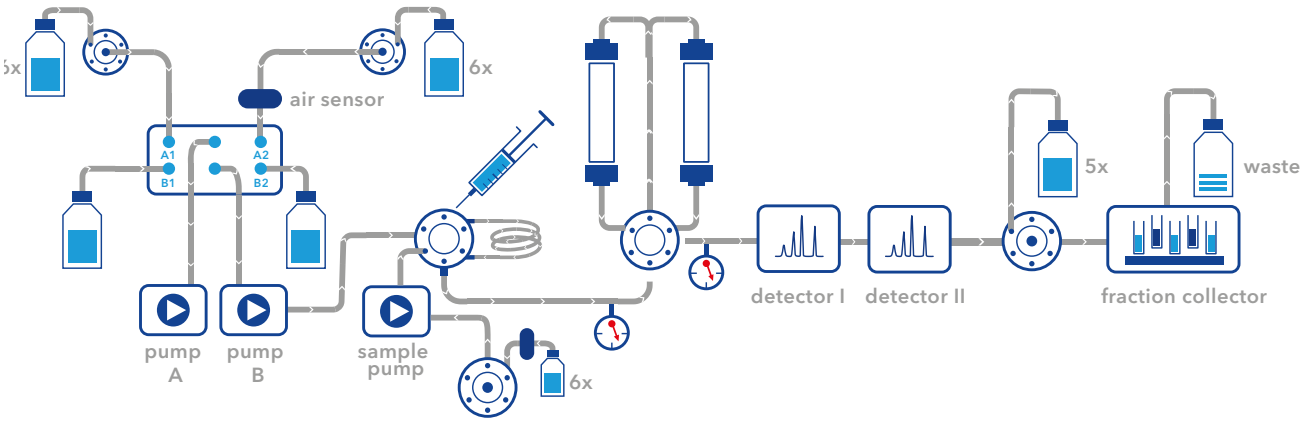
KNAUER

System Configurator

Preparative HPLC by KNAUER

MAKE YOUR PRESELECTION

☐ **SST** ☐ **Titanium** ☐ **Ceramic**



BUFFER SELECTION & DELIVERY

- ☐ 10 ml/min binary gradient pump P 6.1L
- ☐ 10 ml/min quaternary pump P 6.1L
- ☐ 50 ml/min binary gradient pump P 6.1L
- ..... **x** 100 ml/min pump P 2.1L
- ..... **x** 250 ml/min pump P 2.1L
- ..... **x** 500 ml/min pump P 2.1L
- ..... **x** 1000 ml/min pump P 2.1L
- ☐ Ternary gradient module for pump P 2.1L
- ☐ Binary gradient module for pump P 2.1L
- ..... **x** solvent selection valve (6 further inlets)

SAMPLE INJECTION

- ☐ Injection valve
- ☐ Sample pump module
- ☐ Sample selection valve: ..... **x** inlets
- ☐ Autosampler AS 6.1L
- ☐ Autosampler AS 6.1L cool/heat

COLUMN SELECTION & THERMOSTAT

- ☐ Column selection (two columns or one bypass)
- ☐ Eluent heater
- ☐ Heating sleeve for HPLC columns

DETECTION

- ☐ UV/VIS single wavelength
- ☐ UV/VIS multiwave length
- ☐ DAD 2.1L
- ☐ Fluorescence Detector RF-20 A
- ☐ Conductivity
- ☐ pH
- ☐ Refractive index
- ☐ Light Scattering
- ☐ A/D-converter (integration of further detectors)

FRACTION COLLECTION

- ☐ Fractionation valve
- ☐ Foxy fraction collector with fixed rack types
- ☐ Labocol fraction collector with individual rack types
- ☐ Rack for fraction collector
- ☐ Flow splitter

ACCESSORIES

- ..... **x** Airsensor main pump
- ..... **x** Tubing 1/16″
- ..... **x** Airsensor feed pump
- ..... **x** Tubing 1/8″
- ☐ Pressure control (2 pressure sensors)
- ..... **x** Tubing 1/4″
- ..... **x** Back pressure regulator
- ☐ Workstation (Windows)
- ☐ AZURA® Organizer

SOFTWARE

- ☐ ClarityChrom®
- ☐ Chromeleon™
- ☐ OpenLAB® EZChrom
- ☐ OpenLAB® CDS
- ☐ PurityChrom® 5
- ☐ PurityChrom® 6
- ☐ Mobile Control

COMMON APPLICATIONS

- ☐ Reversed phase
- ☐ other...
- ☐ Normal phase
- ☐ System Qualification

System Configurator

FPLC (Bio purification) by KNAUER

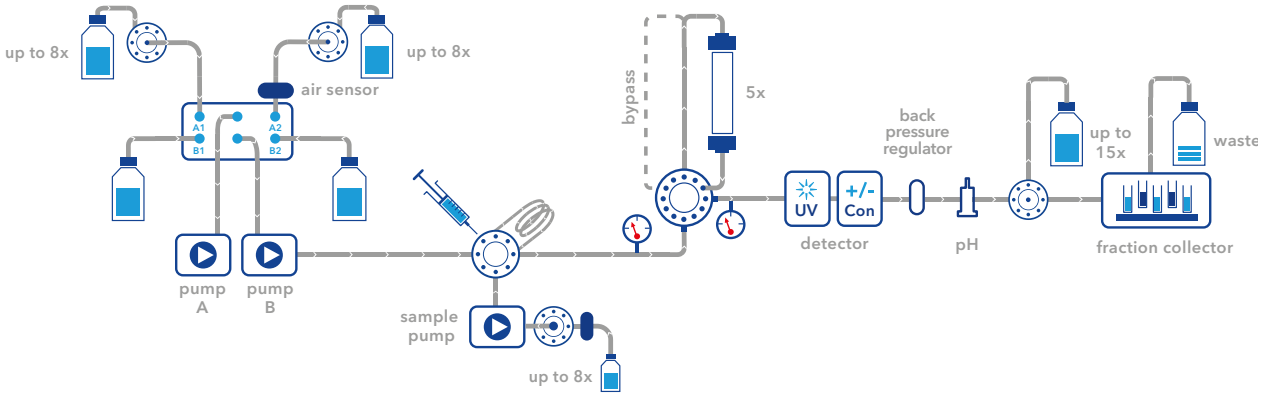
METHOD

☐ **SEC**
Size Exclusion Chromatography

☐ **AC**
Affinity Chromatography

☐ **IEX**
Ion-Exchange Chromatography

☐ **HIC**
Hydrophobic Interaction Chromatography



BUFFER SELECTION & DELIVERY

☐ 10 ml/min binary gradient pump P 6.1L

☐ 10 ml/min quaternary pump P 6.1L

☐ 50 ml/min binary gradient pump P 6.1L

..... **x** 100 ml/min pump P 2.1L

..... **x** 250 ml/min pump P 2.1L

..... **x** 500 ml/min pump P 2.1L

..... **x** 1000 ml/min pump P 2.1L

☐ Ternary gradient module for pump P 2.1L

☐ Binary gradient module for pump P 2.1L

..... **x** Buffer selection valve (8 further inlets)

SAMPLE INJECTION

☐ Multi-Injection valve

..... **x** Injection valve

☐ Sample pump module

☐ Sample selection valve: ..... **x** inlets

☐ Biocompatible Autosampler AS 6.1L

COLUMN SELECTION

☐ Column selection valve up to 50 ml/min (5 columns, one bypass, reverse flow)

☐ Column selection (two columns or one bypass)

☐ Column selection high flow (5 columns, one bypass)

☐ Column selection high flow (7 columns, one bypass, reverse flow)

DETECTION

☐ UV/VIS single wavelength

☐ UV/VIS multiwave-length

☐ Conductivity

☐ pH

☐ Fluorescence

☐ Refractive index

☐ Light Scattering

☐ Analog integration of further detectors

FRACTION COLLECTION

☐ Outlet valve

☐ Foxy fraction collector with fixed rack types

☐ Labocol fraction collector with individual rack type

☐ Rack for fraction collector

COLUMNS & MEDIA

☐ **SEC**: Desalting ..... ml
☐ **SEC**: SEC 75 ..... ml
☐ **SEC**: SEC 200 ..... ml

☐ **AC**: Protein A ..... ml
☐ **AC**: Protein G ..... ml
☐ **AC**: Ni-NTA ..... ml

☐ **IEX**: DEAE – Weak anion exchange ..... ml
☐ **IEX**: CM – Weak cation exchange ..... ml
☐ **IEX**: Q – Strong anion exchange ..... ml
☐ **IEX**: SP – Strong cation exchange ..... ml

ACCESSORIES

..... **x** Air sensor main pump

..... **x** Air sensor feed pump

☐ Pressure control (2 pressure sensors)

..... **x** Back pressure regulator

☐ AZURA Organizer

..... **x** Tubing 1/16"

..... **x** Tubing 1/8"

..... **x** Tubing 1/4"

☐ Workstation (Windows)

AZURA® Pump P 8.1L

NEW

The new AZURA® P 8.1L UHPLC pump offers a maximum delivery pressure of 124 MPa/ 1240 bar and a flow rate range up to 5 ml/min for ultra-fast and high-resolution applications.

The adaptive pulsation compensation of the pump is independent of flow rate, backpressure, and eluent type through real-time eluent compressibility monitoring and variable piston stroke. Together with the ultra-precise piston movement thanks to KNAUER's proprietary advanced piston drive technology, this results in outstanding flow reproducibility at any working conditions.

Developed with innovative technology and decades of continuous improvements the AZURA® P 8.1L UHPLC pump enters a new level of performance and durability. With a high level of in-house component production KNAUER achieves an industry-leading level of manufacturing precision. This results in unmatched piston seal life and system uptime.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For pump accessories **see p. 59**

Further information:
www.knauer.net/en/prod/APF45PA

Specifications

Solvent delivery

Pump type	Analytical UHPLC pump
Delivery system	Double Serial Piston Pump
Pulsation compensation	Active pulsation compensation
Piston seal washing	Active Wash
Flow rate accuracy	± 0.25 % (water, 1 ml/min, 1200 bar)
Flow rate precision	≤ 0.04 % RSD or 0.008 min SD whichever is greater
System protection	Soft start, P_{min} and P_{max} are programmable
Gradient range	0 - 100 % in 0.1 % increments
Solvent selection valve	HPG only
Gradient formation	HPG
Liquid temperature range	4 - 60 °C (39.2 - 104 °F)
HPG: gradient accuracy	± 0.3 %
HPG: gradient precision	< 0.1 % RSD at 1 ml/min, based on retention time at constant room temperature

Degasser module

Degasser channels	4 channels
Max. flow rate/channel	5 ml/min
Degassing method	Gas permeation through amorphous fluoropolymer membrane
Degassing efficiency	< 0.5 ppm dissolved O_2 at 1 ml/min
Degassing chamber volume	280 µl volume per channel
Solvent applicability	Universal, with exception of hydrochloric acid and halogenated hydrocarbons
Wetted materials	PEEK, Tefzel® (ETFC), Systec AF ™

Communication

Display	Mobile Control (optional)
Inputs	LAN, Pin header connectors (Analog IN, Start In, Error IN)
Analog inputs	Flow rate, 0 - 10 V via pin header connectors
Analog control input	Flow rate
Level/event outputs	8 event outputs (TTL, OC, Relais) and 24 V
Control	LAN, Analog and event control, Mobile Control

Technical parameters

Leak sensor	Yes
Special features	Pump head is detected automatically using Radio frequency indentificaion (RFID)
Ambient conditions	4 - 40 °C (39.2 - 104 °F) Air humidity below 90 %, non-condensing

General

Power supply	100 - 240 V; 50 - 60 Hz; Maximum power consumption 310 W
Dimensions	361 mm x 208.2 mm x 523 mm (W × H × D)
Weight	26.7 kg

AZURA® Pump P 8.1L with 5 ml pump head

Pump specifications	
Pump head	5 ml
Continuous working conditions	0.1 - 4 ml/min
Best working conditions	0.02 - 5 ml/min
Flow rate increment	0.001 ml/min
Mixing volume	50 µl (HPG)
Wetted materials	Stainless steel, sapphire, ruby, PEEK, zirconium oxide, nickel-cobalt-chromium-molybdenum alloy (MP35N®), diamond-like carbon (DLC), polyimide (Vespel®), polyethylene
Maximum delivery pressure	18000 psi / 1240 bar / 124 MPa
Flow rate range	0.001 - 5 ml/min
Pump head material	Stainless steel
Purge valve	Automated

Ordering details:

Device	
APF45PA	AZURA® P 8.1L UHPLC pump with a maximum delivery pressure of up to 124 MPa/1240 bar for ultra-fast and high-resolution applications

AZURA® Pump P 6.1L

The AZURA® Pump P 6.1L uses technology to overcome the challenges of pumping LC solvents at high pressure with low pulsation. This pump is designed to fulfil the needs for high pressure and low pressure mixing tasks. The pump can deliver flow in the range of 0.001 – 50 ml/min at pressures up to 1000 bar (depending on model and flow rate). The AZURA® binary pump contains two identical high-pressure pumps, a 2 × 2-channel solvent selection valve and the new developed AZURA® mixer, a low-volume microfluidic mixing device. The AZURA® quaternary pump contains one high-pressure pump and an integrated LPG mixing block with a 4 channel valve and mixer. The integrated degasser and AZURA® inline filter are completing the analytical AZURA® HPLC pump and turn this pump into a working horse in the lab. This pump is also available with wetted materials made from ceramic, PEEK and titanium for biocompatible applications.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For pump accessories
see p. 59

Further information:
www.knauer.net/en/prod/APH34EA

Specifications

Solvent delivery

Pump type	Analytical HPLC pump
Delivery system	Double Serial Piston Pump
Pulsation compensation	Active Pulsation Compensation
Piston seal washing	Active Wash
Flow rate accuracy	± 0.25 %, measured at 5 – 80 % of flow range, using ethanol
Flow rate precision	≤ 0.04 % RSD or 0.008 min SD whichever is greater
System protection	Soft start, P_{min} and P_{max} are programmable
Gradient range	0 - 100 % in 0.1 % increments
Solvent selection valve	HPG only
Gradient formation	LPG / HPG
Liquid temperature range	4 - 60 °C (39.2 - 140 °F)
HPG: gradient accuracy	± 0.3 % at 1 ml/min, 150 bar (ethanol/caffeine tracer) ± 1 % (5 - 95 %, measured at 0.1 – 10 ml/min, water/caffeine tracer)
HPG: gradient precision	< 0.1 % RSD at 1 ml/min, 0.3% RSD overall, based on retention time at constant room temperature
LPG: gradient accuracy	± 0.3 % at 1 ml/min, 150 bar (ethanol/caffeine tracer) ± 2 % (1 - 99 %, measured at 5 - 50 % of the flow range, water/caffeine tracer)
LPG: gradient precision	< 0.1 % RSD at 1 ml/min, 0.5 % RSD overall, based on retention time at constant room temperature

Degasser module

Degasser channels	4 channels (LPG versions), 2 / 4 channels (HPG versions); optional
Max. flow rate/channel	10 ml/min
Degassing method	Gas permeation through amorphous fluoropolymer membrane
Degassing efficiency	< 0.5 ppm dissolved O_2 at 1 ml/min
Degassing chamber volume	280 µl volume per channel
Solvent applicability	Universal, with exception of hydrochloric acid and halogenated hydrocarbons
Wetted materials	PEEK, Tefzel® (ETFC), Systec AF ™

Communication

Display	Mobile Control (optional)
Inputs	LAN, Pin header connectors (Analog IN, Start IN, Error IN)
Analog inputs	Flow rate, 0 - 10 V via pin header connectors
Analog control input	Flow rate
Level/event outputs	8 event outputs (TTL, OC, Relais) and 24 V
Control	LAN, Analog and event control, Mobile Control

Technical parameters

Leak sensor	Yes
Special features	Pump Head is detected automatically using Radio frequency indentificaion (RFID)
Ambient conditions	4 - 40 °C (39.2 - 104 °F) Air humidity below 90 %, non-condensing

General

Power supply	100 - 240 V; 50 - 60 Hz; Maximum power consumption 100 W
Dimensions	361 mm x 208.2 mm x 523 mm (W × H × D)
Weight	14.1 kg

AZURA® Pump P 6.1L with 5 ml pump head

Pump specifications	
Pump head	5 ml
Continuous working conditions	0.1 - 4 ml/min
Best working conditions	0.02 - 5 ml/min
Flow rate increment	0.001 ml/min
Mixing volume	200 µl (HPG)
Wetted materials	GFP, stainless steel, FKM, PEEK, sapphire, aluminium oxide, ruby, zirconium oxide
Maximum delivery pressure	14500 psi / 1000 bar / 100 MPa up to 2 ml/min, 10150 psi / 700 bar / 70 MPa up to 5 ml/min
Flow rate range	0.001 - 5 ml/min
Pump head material	Stainless steel

Ordering details:

Device	
APH34GA	AZURA® Pump P 6.1L (LPG), with 5 ml pump head (stainless steel), degasser and mixer (100 µl)
APH35GA	AZURA® Pump P 6.1L (HPG), with 5 ml pump head (stainless steel), degasser and mixer (100 µl)

AZURA® Pump P 6.1L with 10 ml pump head

Pump specifications	
Pump head	10 ml
Continuous working conditions	0.1 - 4.0 ml/min
Best working conditions	0.1 - 8.0 ml/min
Flow rate increment	0.001 ml/min
Mixing volume	200 µl (HPG), 400 µl (LPG)
Wetted materials	GFP, stainless steel, FKM, PEEK, sapphire, aluminium oxide, ruby, zirconium oxide
Maximum delivery pressure	12500 psi / 862 bar / 86 MPa up to 2 ml/min; 5800 psi / 400 bar / 40 MPa up to 10 ml/min
Flow rate range	0.001 - 10 ml/min
Pump head material	Stainless steel

Ordering details:

APH30EA	AZURA® Pump P 6.1L isocratic, without degasser, with 10 ml pump head (stainless steel)
APH31EA	AZURA® Pump P 6.1L isocratic, with degasser, with 10 ml pump head (stainless steel) and solvent selection valve
APH30ED	AZURA® Pump P 6.1L isocratic, without degasser, with 10 ml NP pump head (stainless steel)
APH34EA	AZURA® Pump P 6.1L (LPG), with 10 ml pump head (stainless steel), degasser and mixer (200 µl)
APH35EA	AZURA® Pump P 6.1L (HPG), with 10 ml pump head (stainless steel), degasser and mixer (100 µl)
APH35ED	AZURA® Pump P 6.1L (HPG), with 10 ml NP pump head (stainless steel), degasser and mixer (100 µl)
APH38EA	AZURA® Pump P 6.1L (HPG), without degasser, with 10 ml pump head and mixer (100 µl)
APH38ED	AZURA® Pump P 6.1L (HPG), without degasser, with 10 ml NP pump head and mixer (100 µl)
APH39EA	AZURA® Pump P 6.1L (LPG), without degasser, with 10 ml pump head (stainless steel) and mixer (200 µl)

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AZURA® Pump P 6.1L with 50 ml pump head

Pump specifications	
Pump head	50 ml
Continuous working conditions	0.1 - 20 ml/min
Best working conditions	0.1 - 40 ml/min
Flow rate increment	0.001 ml/min
Mixing volume	200 µl
Wetted materials	GFP, FKM, PEEK, sapphire, aluminium oxide, ruby, zirconium oxide
Maximum delivery pressure	4350 psi / 300 bar / 30 MPa up to 10 ml/min; 2900 psi / 200 bar / 20 MPa up to 50 ml/min
Flow rate range	0.01 - 50 ml/min
Pump head material	Stainless steel

Ordering details:

APH30FA	AZURA® Pump P 6.1L isocratic, without degasser, with 50 ml pump head (stainless steel)
APH30FD	AZURA® Pump P 6.1L isocratic, without degasser, with 50 ml normal phase pump head (stainless steel)
APH38FA	AZURA® Pump P 6.1L (HPG), without degasser, with 50 ml pump head (stainless steel) and mixer (200 µl)

AZURA® Pump P 6.1L Biocompatible

Pump specifications	
Pump head	10 ml / 50 ml
Continuous working conditions	For 10 ml pump heads: 0.1 - 4.0 ml/min; for 50 ml pump heads: 0.1 - 20 ml/min
Best working conditions	For 10 ml pump heads: 0.1 - 8.0 ml/min; for 50 ml pump heads: 0.1 - 40 ml/min
Flow rate increment	0.001 ml/min
Mixing volume	250 µl
Wetted materials	UHMW PE, PEEK, sapphire, aluminium oxide, ruby
Maximum delivery pressure	5800 psi / 400 bar / 40 MPa for 10 ml head, 2900 psi / 200 bar / 20 MPa for 50 ml head
Flow rate range	0.001 - 10 ml/min / 0.01 - 50 ml/min
Pump head material	Ceramic

Ordering details:

APH60EB	AZURA® Pump P 6.1L, isocratic, without degasser, with 10 ml pump head (ceramic)
APH60FB	AZURA® Pump P 6.1L, isocratic, without degasser, with 50 ml pump head (ceramic)
APH61EB	AZURA® Pump P 6.1L, isocratic, with degasser and solvent selection valve, with 10 ml pump head (ceramic)
APH64EB	AZURA® Pump P 6.1L (LPG), with 10 ml pump head (ceramic), degasser and mixer (250 µl)
APH69EB	AZURA® Pump P 6.1L (LPG), without degasser, with 10 ml pump head (ceramic) and mixer (250 µl)
APH65EB	AZURA® Pump P 6.1L (HPG), with degasser, with 10 ml pump head (ceramic) and mixer (250 µl)
APH68EB	AZURA® Pump P 6.1L (HPG), without degasser, with 10 ml pump head (ceramic) and mixer (250 µl)
APH68FB	AZURA® Pump P 6.1L (HPG), without degasser, with 50 ml pump head (ceramic) and mixer (250 µl)

AZURA® Pump P 2.1L

AZURA® preparative HPLC pump P 2.1L covers wide flow rate range and pressure capabilities. It has been designed for purification of mg and gram samples. The pump can deliver flow in the range of 0.01 – 1000 ml/min at pressures up to 400 bar (depending on model). The integrated automatic recognition of the pump head with RFID technology allows fast adaptions of the pump for various applications.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For pump accessories
see p. 59

Further information:
www.knauer.net/en/prod/APE20

Specifications

Solvent delivery

Pump type	Preparative HPLC pump
Delivery system	Dual Piston Pump with pistons parallel
Pulsation compensation	Yes, with compressibility factor
Piston seal washing	Active Wash
Flow rate accuracy	± 2 %, measured at 5 - 50 % of flow range using ethanol/water 10:90
Flow rate precision	< 0.1% RSD
System protection	Soft start, P_{min} and P_{max} are programmable
Gradient range	0 - 100 %
Gradient formation	LPG / HPG
Liquid temperature range	4 - 60 °C (39.2 - 140 °F)
HPG: gradient accuracy	± 2 % (5 - 95 %, measured at 5 - 50 % of flow range, water/caffeine tracer)
Leak management	Yes
HPG: gradient precision	< 1 % RSD based on retention time at constant room temperature
LPG: gradient accuracy	± 3 % (5 - 95 %, measured at 5 - 50 % of flow range, water/caffeine tracer)
LPG: gradient precision	2 % RSD, based on retention time at constant room temperature
Pump head inlet (standard)	M8 x 1 (flat bottom)
Pump head outlet (standard)	M8 x 1 (coned)

Communication

Display	Mobile Control (optional)
Inputs	LAN, Pin header connectors (Analog IN, Start IN, Error IN)
Analog inputs	Flow rate, 0 - 10 V via pin header connectors
Analog control input	Flow rate
Level/event outputs	8 event outputs (TTL, OC, Relais) and 24 V
Control	LAN, Analog and event control, Mobile Control

Technical parameters

Leak sensor	Yes
Special features	Pump head is detected automatically using Radio frequency indentification (RFID)
Ambient conditions	10 - 40 °C (50 - 104 °F), Air humidity below 90%, non-condensing

General

Power supply	100 - 240 V; 50 - 60 Hz; Maximum power consumption 320 W
Dimensions	361 mm x 208.2 mm x 523 mm (W × H × D)
Weight	19 kg
Optional accessories	Ternary low pressure gradient valve block, 10 - 220 ml/min, binary low pressure gradient valve block, 10 - 800 ml/min, pump head heating and cooling device

AZURA® Pump P 2.1L with 100 ml pump head

Pump specifications	
Pump head	100 ml
Continuous working conditions	1 - 40 ml/min
Best working conditions	1 - 80 ml/min
Flow rate increment	0.01 ml/min
Wetted materials	Zirconium oxide (ZrO_2), FFKM, graphite fiber reinforced PTFE, PEEK, sapphire, ruby, stainless steel, titanium
Maximum delivery pressure	5800 psi / 400 bar / 40 MPa
Flow rate range	0.01 - 100 ml/min
Pump head material	Stainless steel / titanium

Ordering details:

APE20KA	AZURA® Pump P 2.1L with 100 ml pump head (stainless steel)
APE20KB	AZURA® Pump P 2.1L with 100 ml pump head (titanium)

AZURA® Pump P 2.1L with 250 ml pump head

Pump specifications	
Pump head	250 ml
Continuous working conditions	2.5 - 100 ml/min
Best working conditions	2.5 - 200 ml/min
Flow rate increment	0.01 ml/min
Wetted materials	Zirconium oxide (ZrO_2), FFKM, graphite fiber reinforced PTFE, PEEK, sapphire, ruby, stainless steel, titanium
Maximum delivery pressure	3260 psi / 225 bar / 22.5 MPa up to 100 ml/min, 2900 psi / 200 bar / 20 MPa up to 250 ml/min
Flow rate range	0.01 - 250 ml/min
Pump head material	Stainless steel / titanium

Ordering details:

APE20LA	AZURA® Pump P 2.1L with 250 ml pump head (stainless steel)
APE20LC	AZURA® Pump P 2.1L with 250 ml pump head (titanium)

AZURA® Pump P 2.1L with 500 ml pump head

Specifications

Pump specifications	
Pump head	500 ml
Continuous working conditions	5 - 200 ml/min
Best working conditions	5 - 400 ml/min
Flow rate increment	0.1 ml/min
Wetted materials	Zirconium oxide (ZrO_2), FFKM, graphite fiber reinforced PTFE, PEEK, sapphire, ruby, stainless steel, titanium
Maximum delivery pressure	1450 psi / 100 bar / 10 MPa
Flow rate range	0.01 - 500 ml/min
Pump head material	Stainless steel / titanium

Ordering details:

APE20MA	AZURA® Pump P 2.1L with 500 ml pump head (stainless steel)
APE20MC	AZURA® Pump P 2.1L with 500 ml pump head (titanium)

AZURA® Pump P 2.1L with 1000 ml pump head

Pump specifications	
Pump head	1000 ml
Continuous working conditions	10 - 400 ml/min
Best working conditions	10 - 800 ml/min
Flow rate increment	0.1 ml/min
Wetted materials	Zirconium oxide (ZrO_2), FFKM, graphite fiber reinforced PTFE, PEEK, sapphire, ruby, stainless steel, titanium
Maximum delivery pressure	1080 psi / 75 bar / 7.5 MPa up to 350 ml/min, 720 psi / 50 bar / 5 MPa up to 1000 ml/min,
Flow rate range	1 - 1000 ml/min
Pump head material	Stainless steel / titanium

Ordering details:

APE20NA	AZURA® Pump P 2.1L with 1000 ml pump head (stainless steel)
APE20NB	AZURA® Pump P 2.1L with 1000 ml pump head (titanium)

LPG Modules

Ordering details:

AZZ00AA	LPG module for Pump P 2.1L binary up to 800 ml/min (stainless steel)
AZZ00AB	LPG module for Pump P 2.1L ternary up to 220 ml/min (stainless steel)
AZZ10AB	LPG module for Pump P 2.1L ternary up to 220 ml/min (PEEK)

AZURA® Pump P 4.1S

The AZURA® Pump P 4.1S was developed for high-pressure dosing applications of up to 400 bar and for flow rates of up to 50 ml/min. Whenever a compact and easy-to-integrate pump is required, this pump is a perfect choice.

The pump contains a manual purge valve with a built-in pressure sensor. The pump automatically stops the flow when minimum or maximum pressure limits are reached. The exchangeable pump heads are compatible with a wide range of chemicals and the versatile control options allow easy remote and standalone operation.

Further information:
www.knauer.net/en/prod/APG20

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For pump accessories
see p. 59

Specifications

Solvent delivery

Pump type	Ultra-compact high pressure pump
Delivery system	Dual piston pump with one working piston, one auxillary piston
Pulsation compensation	No
Piston seal washing	Passive Wash
Flow rate accuracy	± 2 %, measured at 5 - 50 % of flow range using ethanol/water 10:90
Flow rate precision	≤ 0.5% RSD, measured at 1/5 ml/min using ethanol/water 10:90
System protection	P_{min} and P_{max} are programmable
Liquid temperature range	4 - 60 °C (39.2 - 140 °F)
Pump head inlet (standard)	1/8" OD, 2.1 mm ID FEP tubing (UNF 1/4-28 thread, flat bottom)
Pump head outlet (standard)	UNF 10-32 Thread (for 1/16" capillary)

Communication

Display	Yes
Inputs	LAN, Pin header connectors (Analog IN, Start IN, Error IN), RS-232
Analog inputs	0 - 10 V
Analog control input	Flow rate
Control	LAN, RS-232, analog, standalone

Technical parameters

Display	Yes
Ambient conditions	10 - 40 °C (50 - 104 °F) Air humidity below 90 %, non-condensing

General

Power supply	100 - 240 V; 50 - 60 Hz; Maximum power consumption 100 W
Dimensions	121 mm x 129 mm x 220 mm (W × H × D)
Weight	2.4 kg

AZURA® Pump P 4.1S with 10 ml pump head

Pump specifications	
Pump head	10 ml
Flow rate range	0.001 - 10 ml/min
Maximum delivery pressure	5800 psi / 400 bar / 40 MPa up to 10 ml/min
Wetted materials	Graphite fiber reinforced PTFE, FKM (FFKM for APG20EC), PEEK (PCTFE for APG20EC), sapphire, ruby, zirconium oxide, titanium and pump head material
Maximum viscosity	100 mPa s (at reduced max. flow)
Flow rate increment	0.001 ml/min
Best working conditions	0.1 - 8.0 ml/min
Continuous working conditions	0.1 - 4.0 ml/min
Pump head material	Stainless steel / ceramic / Hastelloy® C

Ordering details:

APG20EA	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min stainless steel pump head, stainless steel connections
APG20EB	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min ceramic pump head, PEEK connections
APG20EC	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min Hastelloy® C pump head, Titanium pressure sensor, Hastelloy® C connections
APG20EF	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min ceramic pump head, Ti connections.
APG20EG	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min stainless steel pump head, stainless steel connections, recommended for aqueous solutions
APG20EH	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min ceramic pump head, Titanium connections, recommended for aqueous solutions

AZURA® Pump P 4.1S with 50 ml pump head

Pump specifications	
Pump head	50 ml
Flow rate range	0.01 - 50 ml/min
Maximum delivery pressure	2180 psi / 150 bar / 15 MPa up to 50 ml/min
Wetted materials	Graphite fiber reinforced PTFE, FKM (FFKM for APG20FC), PEEK (PCTFE for APG20FC), sapphire, ruby, zirconium oxide, titanium and pump head material
Maximum viscosity	100 mPa s (at reduced max. flow)
Flow rate increment	0.01 ml/min
Best working conditions	0.5 - 40.0 ml/min
Continuous working conditions	0.5 - 20 ml/min
Pump head material	Stainless steel / ceramic / Hastelloy® C

Ordering details:

APG20FA	AZURA® Pump P 4.1S compact HPLC pump with 50 ml/min stainless steel pump head, stainless steel connections
APG20FB	AZURA® Pump P 4.1S compact HPLC pump with 50 ml/min ceramic pump head, PEEK connections
APG20FC	AZURA® Pump P 4.1S compact HPLC pump with 50 ml/min Hastelloy® C pump head, Hastelloy® C connections
APG20FG	AZURA® Pump P 4.1S compact HPLC pump with 50 ml/min stainless steel pump head, stainless steel connections, recommended for aqueous solutions
APG20FI	AZURA® Pump P 4.1S compact HPLC pump with 50 ml/min ceramic pump head, PEEK connections, recommended for aqueous solutions

AZURA® Pump P 2.1S

The AZURA® Pump P 2.1S was developed for high-pressure dosing applications of up to 400 bar and for flow rates of up to 50 ml/min. Whenever a compact and easy-to-integrate pump is required, this pump is a perfect choice.

The exchangeable pump heads are compatible with a wide range of chemicals and the versatile control options allow easy remote and standalone operation. For aggressive liquids, a Hastelloy® C version is available.

Further information:
www.knauer.net/en/prod/APG90EA

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For pump accessories **see p. 59**

Specifications

Solvent delivery

Pump type	Ultra-compact high pressure pump
Delivery system	Dual piston pump with one working piston, one auxillary piston
Pulsation compensation	No
Piston seal washing	Passive Wash
Flow rate accuracy	± 5 %, measured at 5 - 50 % of flow range using ethanol/water 10:90 ± 2 % at calibration point (one point calibration), measured at 5 - 50 % of flow range
Flow rate precision	≤ 0.5 % RSD, measured at 1/5 ml/min using ethanol/water 10:90
System protection	I_{min} and I_{max} are programmable (I ~ pressure)
Liquid temperature range	4 - 60 °C (39.2 - 140 °F)
Pump head inlet (standard)	1/8" OD, 2.1 mm ID FEP tubing (UNF 1/4-28 thread, flat bottom)
Pump head outlet (standard)	UNF 10-32 Thread (for 1/16" capillary)

Communication

Display	Yes
Inputs	LAN, Pin header connectors (Analog IN, Start IN, Error IN), RS-232
Analog inputs	0 - 10 V
Analog control input	Flow rate
Control	LAN, RS-232, analog, standalone

Technical parameters

Display	Yes
Ambient conditions	10 - 40 °C (50 - 104 °F) Air humidity below 90 %, non-condensing

General

Power supply	100 - 240 V; 50 - 60 Hz; Maximum power consumption 100 W
Dimensions	121 mm x 129 mm x 220 mm (W × H × D)
Weight	2.3 kg

AZURA® Pump P 2.1S with 10 ml pump head

Pump specifications

Pump head	10 ml
Flow rate range	0.001 - 10 ml/min
Maximum delivery pressure	5800 psi / 400 bar / 40 MPa up to 10 ml/min
Wetted materials	Graphite fiber reinforced PTFE, FKM (FFKM for APG90EC), PEEK (PCTFE for APG90EC), sapphire, ruby, zirconium oxide and pump head material
Maximum viscosity	100 mPa s (at reduced max. flow)
Flow rate increment	0.001 ml/min
Best working conditions	0.1 - 8.0 ml/min
Continuous working conditions	0.1 - 4.0 ml/min
Pump head material	Stainless steel / ceramic / Hastelloy® C

Ordering details:

APG90EA	AZURA® Pump P 2.1S compact HPLC pump with 10 ml/min stainless steel pump head
APG90EB	AZURA® Pump P 2.1S compact HPLC pump with 10 ml/min ceramic pump head
APG90EC	AZURA® Pump P 2.1S compact HPLC pump with 10 ml/min Hastelloy® C pump head
APG90EG	AZURA® Pump P 2.1S compact HPLC pump with 10 ml/min stainless steel pump head, recommended for aqueous solutions

AZURA® Pump P 2.1S with 50 ml pump head

Pump specifications	
Pump head	50 ml
Flow rate range	0.01 - 50 ml/min
Maximum delivery pressure	2180 psi / 150 bar / 15 MPa up to 50 ml/min
Wetted materials	Graphite fiber reinforced PTFE, FKM (FFKM for APG90FC), PEEK (PCTFE for APG90FC), sapphire, ruby, zirconium oxide and pump head material
Maximum viscosity	100 mPa s (at reduced max. flow)
Flow rate increment	0.01 ml/min
Best working conditions	0.5 - 40.0 ml/min
Continuous working conditions	0.5 - 20 ml/min
Pump head material	Stainless steel / ceramic / Hastelloy® C

Ordering details:

APG90FA	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min stainless steel pump head
APG90FB	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min ceramic pump head
APG90FC	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min Hastelloy® C pump head
APG90FG	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min stainless steel pump head, recommended for aqueous solutions

AZURA® Assistant ASM 2.2L

Docking station for pumps, valves and detectors

The Assistant ASM 2.2L is a docking station for up to three compact devices. Valves, pumps and UV detectors can be combined in one housing.

The plug-in modules are removed by loosening four screws allowing the user to exchange modules in case of service within minutes. Likewise, the configuration of the LC system can be adapted to new requirements. Routine maintenance work e.g. replacing the lamp of a detector are easily performed by the user.

Depending on the integrated modules the assistant fulfills many different tasks like eluent delivery, detection, sample and solvent selection, sample injection, column switching or fraction collection. An assistant including a pump, injection valve, and detector features a complete, compact chromatographic system. As a part of a larger system, the ASM 2.2L is extremely versatile in analytical, preparative and continuous liquid chromatography.

Select your desired plug-in modules for the left, middle and right position in the assistant and you will get your perfect assistant for chromatography and beyond.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

Further information:
www.knauer.net/assistants

Specifications

General

Power supply	100 – 240 V, 50 – 60 Hz, maximum 130 W
Dimensions	361 x 208 x 523 mm (W x H x D)
Weight	About 17 kg (depending on integrated modules)
Leak sensor	Yes
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F Humidity: 10 - 90 % non-condensing

Communication

Interfaces	LAN
Control	Mobile Control, Software
Inputs	Error (IN), Start (IN), Autozero, 0 – 10 V Analog (IN)
Outputs	Event 1–2, Error (OUT) (OC), +5 V, +24 V
Analog inputs	Integrator output (detector signal)

Software functions

Assistant configuration: The ASM 2.2L is supported as complete device. Modules are addressed via the assistant.

	ClarityChrom®	OpenLAB®	Mobile Control (version 6)
Two pumps (independent)	yes	no	yes
Fraction valve	one	one	yes, one valve
Injection module*	no	no	yes, but part of a method

Single device configuration: The ASM 2.2L is not supported as device. Integrated modules are addressed as separate devices via IP port.

	ClarityChrom®	OpenLAB®	PurityChrom®	Chromeleon
Two pumps (independent)	no	yes	yes	yes
Fraction valve	no	cascading (Multi valve fraction collector)	one	yes
Injection module*	yes, but part of a method	yes, fully automatic module with trigger for data acquisition	yes, but part of a method	yes, but part of a method

* An injection module is a combination of one pump and one 6 port 2 position valve.

The Assistant ASM 2.2L can be equipped with following plug-in modules. Use the web-based configurator to customize your assistant: **www.knauer.net/assistantconfigurator**.

Select the chosen plug-in modules for the left, middle and right position of the assistant to receive the article number of your assistant variant.

Further information:
www.knauer.net/assistantconfigurator

Configuration note

An assistant with following configuration is not allowed:

- more than two pump modules - a high-pressure gradient is not supported
- more than one UV detector
- without a plug-in module

Basic device

ASM 2.2L basic device	AY*

Plug-in modules

Basic plug-in modules	Article number for ordering individual modules (without the assistant housing)*
Empty module	AG2022
AZURA® Valve Unifier VU 4.1**	AWA04
AZURA® UV Detector UVD 2.1S	ADA03XA
AZURA® UV Detector UVD 2.1S, fiber optics	ADA07XA
Compact pump without pressure sensor	
AZURA® Pump P 2.1S, 10 ml, stainless steel	APG92EA
AZURA® Pump P 2.1S, 10 ml, Hastelloy C	APG92EC
AZURA® Pump P 2.1S, 10 ml, ceramic	APG92EB
AZURA® Pump P 2.1S, 50 ml, stainless steel	APG92FA
AZURA® Pump P 2.1S, 50 ml, Hastelloy C	APG92FC
AZURA® Pump P 2.1S, 50 ml, ceramic	AGP92FB
Compact pump with pressure sensor	
AZURA® Pump P 4.1S, 10 ml, stainless steel	APG22EA
AZURA® Pump P 4.1S, 10 ml, stainless steel, normal phase	APG22ED
AZURA® Pump P 4.1S, 10 ml, ceramic	APG22EB
AZURA® Pump P 4.1S, 50 ml, stainless steel	APG22FA
AZURA® Pump P 4.1S, 50 ml, stainless steel, normal phase	APG22FD
AZURA® Pump P 4.1S, 50 ml, ceramic	APG22FB
AZURA® Pump P 4.1S, 50 bar, 10 ml, stainless steel	APG12EA
AZURA® Pump P 4.1S, 50 bar, 10 ml, ceramic	APG12EB
AZURA® Pump P 4.1S, 50 bar, 50 ml, stainless steel	APG12FA
AZURA® Pump P 4.1S, 50 bar, 50 ml, ceramic	APG12FB

AZURA® Valve Unifier VU 4.1**

AZURA® Detector UVD 2.1S

AZURA® Pump P 4.1S

Accessories

* Use the assistant configurator to find your desired plug-in module combination configured in the assistant housing: **www.knauer.net/assistantconfigurator**.

** Note that valves V 4.1 must be ordered in addition to the valve drive VU 4.1. **For valves, see p. 32.**

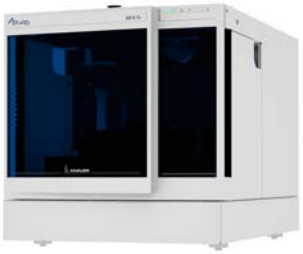
Column holder - replacing empty module	AG2022B

Column holder

AZURA® Autosampler AS 6.1L

The Autosampler AS 6.1L can inject from up to 768 positions when equipped with microtiter plates (either high or low formats) or from up to 108 standard 1.5 ml sample vials. The sample carryover is significantly minimized thanks to a highly-effective interior and exterior needle wash procedure. This autosampler is also fast and flexible: one complete sample injection cycle takes less than one minute, including needle wash. Three different injection modes are supported; "full loop filling" (highest precision and reproducibility), "partial loop filling" (variable volumes, e.g. for dilution series) and "µl pickup" (loss-free injection of extremely small sample volumes), allowing the user to optimize sample usage. The headspace pressure function prevents bubbles from forming in the vial during sample uptake. Precolumn derivatization is supported.

For high-pressure injections, the autosampler is equipped with a so-called ILD™ valve (Intermediate Loop Decompression). This valve consists of a rotor-stator combination and includes a central port for depressurizing. For high-pressure applications, the sample loop is depressurized prior to receiving the sample. This way, the sample is not diluted with a solvent. Because the valve is switched extremely fast, pressure spikes are reduced. Analyses are more precise and wear of the column is reduced.



Further information:
www.knauer.net/de/Systemloesungen/Autosampler

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For autosampler accessories
see p. 64

Specifications

Sample injection

Autosampler Flow Path	Analytical
Maximum back pressure	See device versions
Vial/plate dimensions	Well plate dimensions according to ANSI SLAS 4-2004 (formerly ANSI/SBS 4-2004) max. plate/vial height: 47 mm (incl. septa or capmat)
Injection volume range	0.1 µl - 10 ml depending on sample loop
Headspace pressure	Built-in compressore, only for sample vials with septum
Switching time inj. valve	< 100 ms
Piercing needle precision	± 0.6 mm
Sample tray cooling	Optional (4 - 40 °C)
Vial detection	Missing vial/well plate detection by sensor
Wetted materials	ETFE (buffer & needle tubing), stainless steel (sample needle, valve stator), Vespel (rotor seal), Kel-F (syringe valve), glass (syringe), PTFE (tip of syringe plunger)

Analytical performance

Injection modes	Full loop filling, partial loop filling and microliter pickup; PASA™ (pressure-assisted sample aspiration)
Injection precision	Full loop filling: < 0.3 % RSD partial loop injection at injection volumes > 5 µl: < 0.5 % RSD microliter pickup at injections > 5 µl: < 1.0 % RSD
Injection accuracy	0.2 µl for 250 µl injection syringe
Sample carryover	< 0.0015 % for partial loop (chlorhexidine) < 0.0003 % with extended needle wash (s. Technical Note VTN0004)
Injections per vial	Max. 9 injections
Injection cycle time	Min. 7 s from the same vial, 14 s from different vials; < 60 s for >100 µl sample injection in all injection modes, incl. 300 µl needle wash
Analysis time	Max. 9 h, 59 min, 59 s

Communication

Inputs	2 programmable TTL inputs (next injection, freeze, stop)
Outputs	1 programmable relay output (inject marker, auxiliary, alarm)
Control	Ethernet (LAN)
Interfaces	LAN, analog

Technical parameters

Ambient conditions	Temperature range: 10 – 40 °C; 50 – 104 °F; air humidity: 20 - 80 %

General

Power supply	95 – 240 V AC
Dimensions	361 x 375 x 570 mm (W x H x D)
Weight	30 kg

Device versions

	HPLC+	UHPLC	Bio	Prep
Maximum back pressure	862 bar	1240 bar	345 bar	350 bar
Sample needle	15 µl	15 µl	15 µl	60 µl
Dispenser syringe	250 µl	250 µl	250 µl	2500 µl
Buffer tubing	500 µl	500 µl	500 µl	2000 µl
Sample loop	100 µl, 0.4 mm ID	10 µl, 0.18 mm ID	100 µl, 0.4 mm ID	10 ml
Order number	AAA50AA	AAA10AA	AAA20AA	AAA40AA
Order number (cool/heat option)	AAA51AA	AAA11AA	AAA21AA	AAA41AA*

* also available as biocompatible version: AAA31AA

Ordering details:

AAA50AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 862 bar
AAA51AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 862 bar, with sample cooling/heating
AAA10AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 1240 bar
AAA11AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 1240 bar, with sample cooling/heating
AAA20AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 345 bar, with biocompatible flow path
AAA21AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 345 bar, with biocompatible flow path and sample cooling/heating
AAA31AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler, 350 bar, with biocompatible flow path and sample cooling/heating
AAA40AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler, 350 bar
AAA41AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler, 350 bar, with sample cooling/heating

Preparative Liquid Handler LH 2.1

NEW

KNAUER's new preparative Liquid Handler LH 2.1 allows for the expansion of purification processes with the ability to combine sample injection and fraction collection in one device. A high capacity of sample and fraction vessels meets a flexible arrangement facilitating re-injection of samples to reach new levels of purification. The handler injects samples with minimal loss regardless of their volume – perfect for working with expensive compounds.

- Combine sample injection and fraction collection
- Inject small and large sample volumes with minimal loss
- Expand your vessel capacities
- Flexible arrangement of samples and fractions
- Reinject collected fractions to reach new levels of purity

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For LH 2.1 accessories
see p. 64

Further information:
www.knauer.net/en/prod/A5080

Specifications

Fraction collection

Fraction capacity	Maximum vessel capacity with 5 KNAUER racks • 15 x micro titer well plates • 15 x 24 well plates • 810 x 2 ml tubes • 490 x 15 ml tubes • 160 x 50 ml tubes
Diverter valve	Yes
Number of racks	5 KNAUER racks, teaching module for own racks (racks are not included)

Sample injection

Sample injection	Standard and sandwich injection mode
Sample loop	Up to 60 ml; included 10 ml (PEEK)
Injection valve	Valve and valve drive not included, 1/16" or 1/8" V 4.1 injection valves and VU 4.1 supported
Temperature control	No
Needle wash	Single needle wash step after each injection
Wash solvent	4
Wetted materials	Aluminium oxide 99.5 %, borosilicate glass, PTFE, FEP, AISI 316L, PEEK

General

Power supply	100 – 240 V, 50 – 60 Hz
Dimensions	96 cm x 104 cm x 70 cm; working area 75 cm x 30 cm
Weight	82 kg
Leak sensor	No
Ambient conditions	10 – 35 °C, 30 – 80 % RH, non-condensing
Note	Valve drive VU 4.1, injection valve V 4.1, sample loop and racks are not included

Communication

Control	LAN, supported by PurityChrom 5 and Chromeleon 7.2
Programming	Loop Volume, Syringe Volume, Syringe Speed, Syringe Delay, Sandwich Volume, Wash Volume, Wash Speed, Dead Volume

Ordering details:

Device

A5080	Preparative Liquid Handler LH 2.1

Accessories

A50801	LH 2.1 Rack for 3 x microtiter plates
A50802	LH 2.1 Rack for 162 x 2 ml tubes (Eppendorf)
A50803	LH 2.1 Rack for 98 x 15 ml tubes (Falcon)
A50804	LH 2.1 Rack for 32 x 50 ml tubes
A50805	LH 2.1 Rack for 3 x 24-deep-well plates

Analytical Liquid Handler LH 8.1

COMING SOON

The new analytical Liquid Handler LH 8.1 from KNAUER allows for the expansion of your analytical processes. It comes with a new modularity to completely change the autosampler to your needs. The "in syringe" sample injection design allows for a special injection method, which combines the precision of partial loop with the zero sample loss of µl pickup. To further develop your automation, the software solutions will also allow sample preparation processes. Like all KNAUER devices, the LH 8.1 will have full software support from all standard CDS packages.

Key features

- Inject small and large sample volumes with zero sample loss
- Add multiple injection or switching valves for online SPE and column switching applications
- Up to four robotic coolers for max. 24 racks or well plates
- Flexible arrangement of modules
- The standard rail lengths are 557 mm and 887 mm, optional lengths up to 1217 mm are possible on request

Specifications

Sample injection

Sample injection	Full loop, Sandwich loop, Partial loop
Maximum back pressure	1240 bar
Sample capacity	6 sample racks per robotic cooler. Up to 4 robotic coolers. 2 racks for manual rack holder.
Vial/plate dimensions	Per rack 60 x 2 ml vials, 96 well plates or 284 well plates possible. 130 x 2 ml vial rack available (2 rack positions needed)
Sample loop	Possible from 2 µl to 200 µl (not included)
Injection valve	Injection valve included (special 6 port, 2 position)
Switching time inj. valve	< 100 ms
Piercing needle precision	± 0.6 mm
Sample tray cooling/heating	4 – 40 °C possible
Temperature control	Yes
Vial detection	Yes
Needle wash	Programmable by method
Wash solvent	2 minimum up to 10
Wetted materials	PTFE, PEEK, Stainless steel, Borosilicate glass

Communication

Interfaces	LAN, analog
Control	Ethernet
Inputs	Programmable TTL inputs
Analog inputs	RS-232

General

Dimensions	550 mm x 650 mm x 550 mm (W x H x D)
Weight	~ 15.5 kg (~ 27 kg with robotic cooler)
Leak sensor	No
Ambient conditions	10 – 35 °C, 30 – 80 % RH, non-condensing

Analytical performance

Injection volumes	0.5 - 200 µl (higher injection volumes possible on request)
Injection precision	RSD (Relative Standard Deviation): full loop injection: ≤ 0.1 %; sandwich injection at an injection volume > 5 µl: < 0.15 %
Sample carryover	0.015 % with chlorhexidin and fast wash station
Injections per vial	Max. 9 injections

Technical parameters

GLP	Yes, valve switches, syringe injections
Display	No

Ordering details:

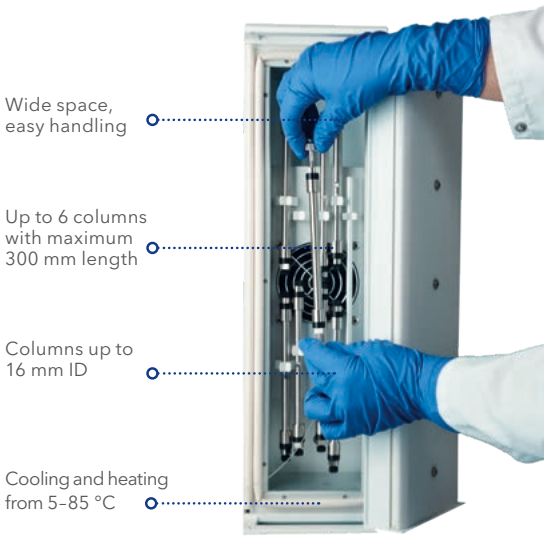
Device

A5100	Analytical Liquid Handler LH 8.1 with injection valve and 2 feet

Accessories

A5101	Fast wash station for 2 solvents
A5102	Manual wash station with two reservoirs and wasteline
A5103	Manual sample rack holder
A5104	Robotic cooler with three drawers
A5105	Injection valve

AZURA® Column Thermostat CT 2.1



The AZURA® CT 2.1 is a price attractive basic column thermostat. It allows temperature control in the range of 5 °C and 85 °C and thus is appropriate for most HPLC applications. For advanced purification and analysis purposes, the oven can optionally be equipped with an eluent pre-heating cartridge. This ensures even more constant separation conditions leading to higher selectivity and an improved peak shape.

The instrument operates with a microprocessor controlled Peltier element for precise temperature settings. In combination with its high temperature stability, this allows programming of linear as well as non-linear temperature gradients.

Specifications

Thermostatting

Heating and cooling system	Microprocessor controlled Peltier element for heating and cooling, fan supported 2-way air circulation
Temperature range	5 – 85 °C
Heating/cooling rate	2 °C/min
Temperature accuracy	± 0.2 °C
Temperature stability	± 0.1 °C

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

Further information:
www.knauer.net/en/prod/ATC00

Column compartment

Column dimensions

max. number	max. length*	max. outer diameter*	matching column
8	160 mm	12 mm	125 mm x 4.6 mm ID with precolumn
4	325 mm	12 mm	300 mm x 4.6 mm ID
1	325 mm	35 mm	300 mm x 16 mm ID

* total outer dimensions of the column including screw caps.

Dimensions, internal	90 x 390 x 47 mm (W x H x D)
Safety	Self-check and auto-calibration at power-on, selectable turn-off temperature
Leak sensor	Gas sensor, adjustable sensitivity, acoustic signal, turn-off switch

Communication

Control	Optional for stand-alone functionality: Mobile Control
Interfaces	LAN Interface

General

Power supply	90 – 230 V, 50 – 60 Hz, 100 W
Dimensions	150 x 470 x 310 mm (W x H x D)
Weight	8.4 kg

Other

Optional accessories	Cartridge for eluent pre-heating for capillary with an ID of 0.1 or 0.18 mm

Ordering details:

Device

ATC00	Column Thermostat AZURA® CT 2.1 for constant temperatures and reproducible results

Accessories

A05852-3	Cartridge for eluent Pre-heating ID 0.1 mm, ~5.5 µl
A05852-2	Cartridge for eluent Pre-heating ID 0.18 mm, ~18 µl

AZURA® Detector DAD 6.1L

The AZURA® DAD 6.1L is a high-end diode array detector (DAD) which combines outstanding performance with easy handling.

A wide range of easily exchangeable flow cells make this device the right choice for fast, standard analytical, semi-preparative and preparative separations with bio-compatible or stainless steel wetted parts.

State-of-the-art total reflection flow cells (LightGuide technology) are available for this detector providing maximum light throughput (due to total internal reflection) with minimal peak dispersion (due to small cell volume) to guarantee an optimized signal to noise (S/N) ratio.

An optional fiber optics adapter offers the possibility to separate the flow cell spatially from the device and thus provides enhanced security for hazardous, explosive or toxic work processes, as well as protecting the device from leakages at high flow rates.

The newly developed optical unit with KNAUER Polka-Dot technology and intelligent temperature management ensure maximum sensitivity combined with minimal baseline drift over the whole spectrum.

Furthermore, easy frontal access and improved safety features enable effortless lamp replacement. This eases maintenance and guarantees short downtimes.

The DAD 6.1L comes installed with a high brightness deuterium and tungsten halogen lamps, which cover a wavelength range from 190 to 1000 nm.

Key features

- Wide application range
- Large choice of flow cells
- Fiber optics adapter available
- Attractively priced
- Made in Germany

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For detector accessories
see p. 65

Specifications

Further information:
www.knauer.net/en/prod/ADC11

Detection	
Detector type	Diode array detector
Number of diodes	1024
Pixel pitch	0.8 nm/diode
Detection channels	8 (Digital)/4 (Analog)
Light source	High brightness deuterium (D_2) lamp and halogen lamp with integrated GLP chip
Wavelength range	190 - 1000 nm
Spectral bandwidth	< 3.5 nm at H_α line (FWHM) /Note: digital bandwidth 1 - 32 nm
Slit width	70 µm
Wavelength accuracy	± 1 nm
Wavelength repeatability	± 0.1 nm
Noise	± 3.5 µAU at 254 nm (ASTM E1657-98)
Drift	300 µAU/h at 254 nm (ASTM E1657-98)
Linearity	> 2.5 AU at 274 nm (ASTM E1657-98)
Maximum data rate	100 Hz (LAN)/12.5 Hz (analog)
Flow cell	Flow cells are not included and must be ordered separately (see “Accessories”)
Time constants	0.00 / 0.01 / 0.02 / 0.05 / 0.1 / 0.2 / 0.5 / 1.0 / 2.0 / 5.0 / 10.0 s
Integration time	Automatic
Wavelength verification	Internal holmium filter and deuterium lines
Leak sensor	Yes

Communication	
Inputs	Error (IN), Start (IN), Autozero
Outputs	Events 1 - 2 (Relay and TTL compatible, respectively), Error (OUT), +5 V, Valve +24 V, Valve (OUT)
Analog outputs	4 x 0 - 5 V, 20 bit, offset adjustable
Control	Mobile Control, software, event control, analog, terminal protocol
Interfaces	LAN (RJ-45), USB (service only), multi-pin connector, analog (RCA cinch connector)

Technical parameters	
GLP	Detailed report including lamp recognition, operating hours, lamp operating hours, number of lamp ignitions
Display	Mobile Control (optional)
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F, Humidity: below 90 % non condensing

General	
Power supply	100 – 240 V, 50 – 60 Hz, 75 W
Dimensions	361 x 158 x 523 mm (W x H x D)
Weight	13.8 kg

Ordering details:

Device

ADC11	AZURA® Detector DAD 6.1L Diode array detector DAD 6.1L without flow cell 190 - 1000 nm, incl. test cell

Accessories

AMC19XA	10 mm path length, 2 µl, 1/16", 50 bar, LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMD59XA	50 mm path length, 6 µl, 1/16", 50 bar, High Sensitivity LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMC38	10 mm path length, 10 µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD
AMB18	3 mm path length, 2 µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD
AZL01	HBST deuterium lamp for AZURA® Detector DAD 6.1L
AZL02	Halogen lamp for AZURA® Detector DAD 6.1L
AMKX8KIT	Fiber optics adapter kit for AZURA® Detector DAD/MWD, with fiber optic cables (1x 400 mm and 1x 750 mm) and mounting bracket
AMLX8	Test cell for AZURA® Detector DAD/MWD
AZZ00OC	AZURA® Heat Exchanger for analytical PressureProof flow cells, 14 µl

AZURA® Detector DAD 2.1L & MWD 2.1L

The AZURA® DAD 2.1L and MWD 2.1L is a highly competitive diode array detector and a sensitive, 8-channel multiwavelength detector, respectively. Both combine high performance with easy handling at an affordable price.

State-of-the-art total reflection flow cells (LightGuide technology) are available for this device providing maximum light throughput (due to total internal reflection) with minimal peak dispersion (due to the small cell volume) to guarantee an optimized S/N ratio. An optional fiber optics adapter offers the possibility to separate the flow cell spatially from the device and thus provides enhanced security for hazardous, explosive or toxic work processes, as well as protecting the device from leakages at high flow rates.

The newly developed optical unit and intelligent temperature management ensure maximum sensitivity combined with minimal baseline drift. Furthermore, easy frontal access and improved safety features enable effortless lamp replacement. This eases maintenance and guarantees short downtimes.

The DAD 2.1L and MWD 2.1L come installed with a deuterium lamp which covers a wavelength range from 190 to 700 nm.

Key features

- Wide application range
- Large choice of flow cells
- Fiber optics adapter available
- Leak management
- Made in Germany

For detector accessories **see p. 65**

Further information:
www.knauer.net/detectors

Specifications

Detection

Detector type	Diode array detector or variable multiwavelength detector
Number of diodes (for DAD 2.1L)	256
Pixel pitch (for DAD 2.1L)	2 nm/diode
Detection channels	8 (Digital)/4 (Analog)
Light source	Deuterium (D_2) lamp with integrated GLP chip
Wavelength range	190 - 700 nm
Spectral bandwidth	< 10 nm at H_α line (FWHM) /Note: digital bandwidth 1 - 32 nm
Slit width	70 µm
Wavelength accuracy	± 1 nm
Wavelength repeatability	± 0.1 nm
Noise	± 5 µAU at 254 nm (ASTM E1657-98)
Drift	400 µAU/h at 254 nm (ASTM E1657-98)
Linearity	> 2.0 AU at 274 nm (ASTM E1657-98)
Maximum data rate	100 Hz (LAN)/12.5 Hz (analog)
Flow cell	Flow cells are not included and must be ordered separately (see "Accessories")
Time constants	0.00 / 0.01 / 0.02 / 0.05 / 0.1 / 0.2 / 0.5 / 1.0 / 2.0 / 5.0 / 10.0 s
Integration time	Automatic
Wavelength verification	Internal holmium filter and deuterium lines
Leak sensor	Yes

Communication

Inputs	Error (IN), Start (IN), Autozero
Outputs	Events 1 - 2 (Relay and TTL compatible, respectively), Error (OUT), +5 V, Valve +24 V, Valve (OUT)
Analog outputs	4 x 0 - 5 V, 20 bit, offset adjustable
Control	Mobile Control, software, event control, analog, terminal protocol
Interfaces	LAN (RJ-45), USB (service only), multi-pin connector, analog (RCA cinch connector)

Technical parameters

GLP	Detailed report including lamp recognition, operating hours, lamp operating hours, number of lamp ignitions
Display	Mobile Control (optional)
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F, Humidity: below 90 % non condensing

General

Power supply	100 – 240 V, 50 – 60 Hz, 75 W
Dimensions	361 x 158 x 523 mm (W x H x D)
Weight	12.2 kg

Ordering details:

Device	
ADC01	AZURA® Detector DAD 2.1L Diode array detector DAD 2.1L without flow cell 190 - 700 nm, incl. test cell
ADB01	AZURA® Detector MWD 2.1L Multiwavelength detector MWD 2.1L, without flow cell 190 - 700 nm, incl. test cell
Accessories	
AMC19XA	10 mm path length, 2 µl, 1/16", 50 bar, LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMD59XA	50 mm path length, 6 µl, 1/16", 50 bar, High Sensitivity LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMC38	10 mm path length, 10 µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD
AMB18	3 mm path length, 2 µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD
A5193	Deuterium lamp, replacement, for S2520, 10D, 40D, UVD 2.1S, UVD 2.1L, DAD 2.1L, MWD 2.1L
AMKX8KIT	Fiber optics adapter kit for AZURA® Detector DAD/MWD, with fiber optic cables (1 x 400 mm and 1 x 750 mm) and mounting bracket
AMLX8	Test cell for AZURA® Detector DAD/MWD
AZZ00OC	AZURA® Heat Exchanger for analytical PressureProof flow cells, 14 µl

AZURA® Detector UVD 2.1L

The AZURA® UV/VIS Detector UVD 2.1L is a competitively priced HPLC spectrophotometer for routine HPLC applications including fast LC methods. Besides offering excellent technical specifications, this robust detector features a highly flexible and compact design. The UVD 2.1L comes with an installed deuterium lamp which covers a wavelength range from 190 to 750 nm.

Due to a smart design the flow cell is easily accessible and can be changed very quickly. You can choose between a wide range of flow cells for analytical or preparative LC applications with flow rates from 10 µl/min up to 10 l/min.

Key features

- Large choice of flow cells
- Leak management
- 60 years experience
- Made in Germany

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For detector accessories see p. 65

Further information:
www.knauer.net/en/prod/ADA01XA

Specifications

Detection	
Detector type	Variable single wavelength UV detector
Detection channels	1
Light source	Deuterium (D_2) lamp with integrated GLP chip
Wavelength range	190 - 750 nm
Spectral bandwidth	11 nm at H_α line (FWHM)
Wavelength accuracy	± 2.5 nm
Wavelength precision	0.3 nm (ASTM E275-93)
Noise	± 15 µAU at 254 nm (ASTM E1657-98)
Drift	300 µAU/h at 254 nm (ASTM E1657-98)
Linearity	> 2.0 AU at 274 nm (ASTM E1657-98)
Maximum data rate	50 Hz (LAN)/20 Hz (Analog)
Flow cell	Flow cells are not included and must be ordered separately (see "Accessories")
Time constants	0.0 / 0.1 / 0.2 / 0.5 / 1.0 / 2.0 / 5.0 / 10.0 s
Integration time	Automatic
Leak sensor	Yes
Communication	
Inputs	Error (IN), Start (IN), Autozero, 0 - 10 V Analog (IN)
Outputs	Events 1 - 3, + 5 V, 24 V Valve
Analog outputs	1 x 0 - 5 V scalable, 20 bit, offset adjustable
Control	Digital: LAN, remote connector/Analog: wavelength control/Manual: Mobile Control (optional)
Programming	Timed: wavelength, events, fraction valve, links, wake up (program, link); 9 programs, 50 program lines
Technical parameters	
GLP	Detailed report incl. lamp recognition, operating hours, lamp operating hours, number of lamp ignitions
Display	Mobile Control (optional)
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F, Humidity: below 90 % non condensing
General	
Power supply	100 - 240 V, 50 - 60 Hz, 65 W
Dimensions	361 x 158 x 523 mm (W x H x D)
Weight	5.9 kg

Ordering details:

Device	
ADA01XA	AZURA® Detector UVD 2.1L with deuterium lamp without flow cell, incl. test cell
ADA04XA	AZURA® Detector UVD 2.1L Fiber Optics Version with deuterium lamp without flow cell
Accessories	
A4061XB	10 mm path length, 10 µl, 1/16", 300 bar, stainless steel, with heat exchanger one sided inlet and outlet, classical KNAUER flow cell
A4042	3 mm path length, 2 µl, 1/16", stainless steel, classical KNAUER flow cell
A5193	Deuterium lamp, replacement, for S2520, 10D, 40D, UVD 2.1S, UVD 2.1L, DAD 2.1L, MWD 2.1L
A4126	Test cell Holmium Oxid Filter
A4146	Test cell, WG 280 filter stray light
A4123	Test cell

AZURA® Detector UVD 2.1S

The AZURA® UVD 2.1S is a highly competitive single variable wavelength UV detector for HPLC. It offers excellent technical specifications for routine laboratory work. With its small footprint, it is one of the smallest detectors for HPLC on the market.

The UVD 2.1S comes in the novel small AZURA® housing. The installed deuterium lamp covers a wavelength range from 190 to 500 nm. The UV detector can be controlled with various CDS software packages via LAN, RS-232 or analog input/output, as well as from the front panel as stand alone device.

Due to a smart design, the flow cell is easily accessible and can be changed very quickly. Choose between a wide range of flow cells for analytical or preparative LC applications with flow rates from 10 µl/min up to 10 l/min. Also available as a module for AZURA® Assistant ASM 2.2L.

Key features

- Compact
- Large choice of flow cells
- 60 years experience
- Made in Germany

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For detector accessories see p. 65

Further information:
www.knauer.net/en/prod/ADA00

Specifications

Detection

Detector type	Variable single wavelength UV detector
Detection channels	1
Light source	Deuterium (D_2) lamp with integrated GLP chip
Wavelength range	190 - 500 nm
Spectral bandwidth	13 nm at H_α line (FWHM)
Wavelength accuracy	± 3 nm
Wavelength precision	0.7 nm (ASTM E275-93)
Noise	± 20 µAU at 254 nm (ASTM E1657-98)
Drift	300 µAU/h at 254 nm (ASTM E1657-98)
Linearity	> 2.0 AU at 274 nm (ASTM E1657-98)
Maximum data rate	50 Hz (LAN)/20 Hz (Analog)/10 Hz (RS-232)
Flow cell	Flow cells are not included and must be ordered separately (see “Accessories”)
Time constants	0.00 / 0.02 / 0.05 / 0.1 / 0.2 / 0.5 / 1.0 / 2.0 s
Integration time	Automatic

Communication

Inputs	Autozero, Start (IN), Error (either IN or OUT)
Outputs	Error (either OUT or IN)
Analog inputs	Wavelength 0 - 10 V
Analog outputs	1 x ± 2.5 V scalable, 20 bit
Control	Front panel, Mobile Control, software, event control, analog, terminal protocol
Interfaces	LAN (RJ-45), RS-232 (SUB-D 9), multi-pin connector, analog (RCA cinch connector)

Technical parameters

GLP	Lamp operating hours
Display	LED
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F, Humidity: below 90 % non condensing

General

Power supply	External: input 100 - 240 V, output 24 V DC, 60 W
Dimensions	121 x 129 x 187mm (W x H x D)
Weight	1.5 kg

Ordering details:

Device	
ADA00	AZURA® Detector UVD 2.1S with deuterium lamp without flow cell, incl. test cell
ADA05	AZURA® Detector UVD 2.1S Fiber Optics Version with deuterium lamp without flow cell
Accessories	
A4061XB	10 mm path length, 10 µl, 1/16”, 300 bar, stainless steel, with heat exchanger one sided inlet and outlet, classical KNAUER flow cell
A4042	3 mm path length, 2 µl, 1/16”, stainless steel, classical KNAUER flow cell
A4045	3 mm path length, 2 µl, 1/16”, 30 bar, biocompatible, classical KNAUER flow cell
A5193	Deuterium lamp, replacement for S2520, 10D, 40D, UVD 2.1S, UVD 2.1L, DAD 2.1L, MWD 2.1L

AZURA® Detector RID 2.1L

The AZURA® RID 2.1L is a sensitive and competitively priced differential refractometer. It is universally applicable for detecting compounds with little or no UV activity such as alcohols, sugars, lipids or polymers. This instrument is designed for use in analytical HPLC (high per-formance liquid chromatography) as well as under certain conditions for GPC (gel permeation chromatography) applications.

The intelligently designed optical unit with advanced temperature control ensures high sensitivity, fast baseline stabilization, and excellent reproducibility. Furthermore, the long-life LED, highly pressure resistant flow cell, improved safety features and enhanced diagnostics functions guarantee easy handling and minimal maintenance. The wide linear dynamic range and 10 ml/min maximum flow rate make the AZURA® RID 2.1L the perfect choice for most laboratory tasks.

Key features

- Temperature controlled optical unit
- Long-life LED
- Pressure resistant flow cell
- 60 years experience
- Made in Germany

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For detector accessories **see p. 65**

Further information:
www.knauer.net/en/prod/ADD31

Specifications

Detection	
Detector type	Refractive index detector
Version	Analytical
Light source	Long-life LED
Detection channels	1
Refractive index range	1.00 - 1.75 RIU
Noise	± 2.5 nRIU
Drift	200 nRIU/h
Linearity	> 1000 µRIU
Flow cell	5 bar back pressure resistance flow cell included
Max. flow rate	10 ml/min (pure water)
Flow cell volume	15 µl (43 µl dispersion volume)
Wetted materials	Stainless steel / quartz / PTFE
Temperature control	OFF, 30 - 55 °C (1 °C increment)
Time constants	0.00 / 0.01 / 0.02 / 0.05 / 0.1 / 0.2 / 0.5 / 1.0 / 2.0 / 5.0 / 10.0 s
Maximum data rate	100 Hz (LAN)/20 Hz (Analog)
Autozero	Full range
Leak sensor	Yes (internal and external leak management)

Communication	
Inputs	Error (IN), Start (IN), Autozero, Flush (IN)
Outputs	Event 1, Start (OUT), Error (OUT), + 5 V, 24 V Valve
Analog outputs	1 x 0- 2.5 V scalable, 20 bit, offset adjustable
Control	Mobile Control, software, event control, analog, terminal protocol
Interfaces	2 x LAN (RJ-45, dual IP-stack), USB (service only), multi-pin connector, analog (cinch connector)

Technical parameters	
GLP	Detailed report including operating hours, light source operating hours
Display	Mobile Control (optional)
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F, Humidity: below 90 % non condensing

General	
Power supply	100 - 240 V, 50 - 60 Hz, 65 W
Dimensions	361 x 158 x 523 mm (W x H x D)
Weight	10.8 kg
Optional accessories	Mobile Control

Ordering details:

Device	
ADD31	AZURA® Detector RID 2.1L analytical refractive index detector with flow cell
ADD38	AZURA® Detector RID 2.1L HighFlow preparative refractive index detector with flow cell and external pressure release valve, max. flow rate 100 ml/min

Fluorescence Detector RF-20A/Axs

The fluorescence detector RF-20A/Axs provides world-class sensitivity, excellent maintainability and diverse validation / support functions. It supports a wide range of applications in the wavelength range of 200 to 650 nm (or 200 to 750 nm for RF-Axs) from conventional analysis to high-performance analysis. With a signal-to-noise ratio of 1200 for the water-Raman band, the fluorescence detector is well suited for trace analysis. The xenon lamp and flow cell are directly accessible on the device, thus allowing a quick and easy handling and maintenance of the device by the user, thereby minimizing downtime. The lamp life is 2000 hours. When replacing the xenon lamp, no positional adjustment is required

Key features

- Pressure resistant flow cell

Specifications

Detection

Detector type	Fluorescence detector
Detection channels	1 (for RF-20A) / 2 (for RF-20Axs)
Number of signals	1 (for RF-20A) / 2 (for RF-20Axs)
Light source	RF-20A: xenon lamp; RF-20Axs: Low-pressure mercury lamp (to wavelength accuracy check)
Wavelength range	200-650 (RF-20A) / 200-750 (RF-20Axs)
Spectral bandwidth	20 nm
Wavelength accuracy	± 2 nm
Wavelength precision	± 0.2 nm, indicates the precision performance when the power is turned ON in the single wavelength mode and the wavelength is changed.
Sensitivity	can be set at three levels: HIGH (x 1), MED (x 32), LOW (x 1024)
Wetted materials	SUS316L, PTFE (fluorocarbon polymers), quartz
Flow cell volume	12 µl
Temperature control option	Temperature controlled flow cell for RF-20Axs
Time constants	11 levels can be selected, equivalent to "no filter", 0.05, 0.1, 0.5, 1.0, 1.5, 2.0, 3.0, 6.0, 8.0 and 10.0 seconds
Autozero	auto zero function, basline shift function

Further information:
www.knauer.net/en/prod/A59200

Communication

Gain	can be set at three levels: x 1, x 4, x 16

Technical parameters

Ambient conditions	operating temperature: 4 to 35 °C, relative humidity: 20 to 85 % (non condensing)

General

Power supply	AC220–240 V, 400 VA, 50/60 Hz
Dimensions	260 x 210 x 420 mm (W x H x D)
Weight	16 kg (RF-20A) / 18 kg (RF-20Axs)

Ordering details:

Device	
A59200	Fluorescence detector RF-20 A 200 - 650 nm incl. accessories and flow cell
A59201	Fluorescence detector RF-20 Axs 200-750 nm, temperature control function, incl. accesories
A59203	Fluorescence detector RF-20 A with photomultiplier from 200 - 900 nm incl. accessories and flow cell
A59204	Fluorescence detector RF-20 Axs with photomultiplier from 200-900 nm, temperature control function, incl. accesories
Accessories	
A59210	Xenon lamp for RF-20A/Axs fluorescence detector
A59211	Flow cell for Semi micro LC cell capacity 3 µl, supports temperature control (RF-20Axs only)
A59212	Inert flow cell for RF-20A/Xs, cell capacity 12 µl, contact materials: PEEK, PTFE

Low-temperature evaporative light scattering detector Sedex LC/85LT/90LT/100LT

Evaporative Light Scattering Detection (ELSD) is a universal modern technology with which every analyte that is less volatile than the mobile phase can be detected. Using the unique Low Temperature technology, this detector allows the achievement very high sensitivity. The technology is gradient compatible and is independent of the absorption characteristics of the eluents. Compounds can be universally measured with this detector (carbohydrates, proteins, peptides, polymers, lipids, steroids, etc.), regardless of their fluorescence, absorption or refractive-index characteristics. Comprehensive SOP protocols for GLP conformity and validation procedures are available.

Specifications (for Sedex 85 LT)

Detection	
Detector type	Light scattering detector
Detection channels	1
Light source	Selected high effciency blue LED (470 nm), elapsed-time counter
Sensitivity	< 1 ng caffein (LOD)
Maximum data rate	Digital: 100 Hz/Analog: 30 Hz
Gas requirements	
Gas	Nitrogen preferred
Gas flow rate	< 3 l/min
Gas inlet pressure	3.5 bar
HPLC flow rate	standard HPLC with 4 nebulizers: 0.2 - 2.5 ml/min ultra high performance LC with 1 nebulizer
Maintenance	easily accessible from the front for cleaning
Heated zone	
Temperature range	ambient to 100 °C
Communication	
Gain	1 to 12 - factor 2^{11} (2048)
Filter	Moving average (0 – 10 s)
Analog outputs	0 – 1 V
Analog control input	contact closure, TTL for ready, autozero, power down
Control	RS-232
Power-down methods	shut-off: gas, LED, heating and/or PMT cleaning mode
Technical parameters	
Display	LCD and keypad
General	
Power supply	230 V/50 Hz, 1.7 A - 115 V/60 Hz, 1.8 A
Dimensions	250 mm x 480 mm x 550 mm (W x H x D)
Weight	16 kg

Key features

- Long-life LED
- Attractively priced
- Wide application range
- Large choice of nebulizers

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For detector accessories **see p. 65**

Further information:
www.knauer.net/en/prod/A0754-1

Note: This product is only available in Germany.

Ordering details:

Device	
A0754-1	Sensitive Light scattering detector ELSD 85LT for univ. detection 0.2 - 2.5 ml/min, 100 Hz including accessories
A0754-3	High sensitive ELSD 90LT for univ. detection for HPLC and UHPLC, low temp. technology, supports high data rates
A0754-5	Preparative Light scattering detector ELSD SEDEX LC for univ. detection 200 µl/min - 2 ml/min
A0754-6	Ultra high sensitive light scattering detector ELSD SEDEX 100LT for univ. detection 200 µl/min - 2 ml/min 100 Hz including accessories, SAGA
Accessories	
A2618-01	OpenLAB® CDS EZChrom Edition drivers for 80LT, 85LT, 90LT, 100LT and LC from Sedere
A1783-4	Sedex Driver for Chromeleon 7.2; For Sedex 85LT / 90LT; Instrument Controller Class 3 necessary
A1783-5	Sedex Driver for Chromeleon 7.2; For Sedex FP / LC / 100LT; Instrument Controller Class 3 necessary
A2618-12	OpenLab® CDS EZChrom Edition driver for Sedex 80LT, 85LT, 90LT from Sedere
A2618-13	OpenLab® CDS EZChrom Edition driver for Sedex FP, LC, 100LT from Sedere
A2628-1	OpenLab® CDS driver for Sedex 80LT, 85LT, 90LT from Sedere
A2628-2	OpenLab® CDS driver for Sedex FP, LC, 100LT from Sedere

High Sensitive Conductivity Detector for Ion Chromatography CDD 10-Avp

The CDD-10-AVP is a highly senstitive conductivity detector applicable to ion chromatography or organic acid analysis. Low noise, low drift and wide dynamic range assure proven performance of the CDD-10-AVP detector. A special features is the VP key for validation.

Flow cell 0.25 µl included.

Specifications

Detection	
Detector type	Conductivity detector
Detection channels	1
Measurement range	0.01 - 52000 µS/cm
Noise	< 4 nS/cm
Drift	< 25 nS/cm per hour
Flow cell volume	0.25 µl
Time constants	0.05, 0.1, 0.5, 1.0, 1.5, 2.0, 3.0, 6.0, 8.0, 10.0 s

Further information:
www.knauer.net/en/prod/A1252-1

Communication	
Outputs	10 mV recorder terminal, integrator

Ordering details:

Device	
A1252-1	Conductivity detector CDD-10 Avp with flow cell 0.25 µl

Accessories	
AZB00XA	AZURA® Interface Box IFU 2.1 LAN, A/D converter, 4 channels

KNAUER

Conductivity monitor mikron 81

NEW

The mikron 81 is a reliable in-line conductivity monitor with a very low footprint and measures with a high linearity in the range from 0.002 to 500 mS/cm. Its cutting edge temperature sensor technology enables highly precise automated temperature correction of the conductivity measurement. The intelligent flow cell design allows for a broad flow rate regime from microliter to lower liter per minute scale. It comes pre-calibrated and ready-to-use with all accessoires needed.

Further information:
www.knauer.net/en/prod/ADG61

Common applications

- Monitoring salt gradients in FPLC systems
- Cleaning-in-place monitoring in process plants and skids
- Value-based triggering within a flow system
- Upscaling (eg. from 1 ml/min to 1 l/min)
- Ask our support (support@knauer.net) for driver scripts to work without CDS

Order recommendation

ADG61GD is optimized to monitor low conductivity values down to 2 µS/cm in a small cavity - the ideal choice for low flow applications and ion sensitive components.

ADG61GE is optimized to monitor high conductivity values of up to 500 mS/cm with a low back pressure design - the ideal choice for high flow FPLC applications and highly viscous solutions.

Scope of delivery

ADG61GD and ADG61GE, respectively comes with:

- Mounting bracked incl. screws for installation to an AZURA L module (ADG6101)
- 3 m cable for direct connection to a USB-A port of a PC (part of ADG6102)
- User manual in four languages (EN, GE, FR, ES) (part of ADG6102)
- Fittings and ferrules to connect either 1/16" or 1/8" OD tubing (FZG10)

Specifications

	ADG61GD	ADG61GE
Flow cell		
Flow cell type	Conductivity flow cell	Conductivity flow cell
Biocompatible	Yes	Yes
Body material	Titanium	Titanium
Capillary connection	UNF 1/4-28, flat bottom	UNF 1/4-28, flat bottom
Wetted materials	Titanium, PEEK	Titanium, PEEK
Flow cell volume	11 µl	53 µl
Max. flow rate	100 ml/min (recommended)	1000 ml/min (recommended)
Maximum pressure	Max. 171 bar (depending on utilized ferrule and fitting)	Max. 171 bar (depending on utilized ferrule and fitting)
Back pressure	< 0.1 bar at 100 ml/min, ~1 bar at 500 ml/min (water, room temperature)	< 0.1 bar at 1000 ml/min (water, room temperature)
Note	Colour code: blue (50 cm^{-1} nominal cell constant)	Colour code: orange (10 cm^{-1} nominal cell constant)
Detection		
Detector type	Conductivity monitor	Conductivity monitor
Sensor	Conductivity and temperature	Conductivity and temperature
Measurement accuracy	Conductivity: ± 2 % or ± 2 mS/cm (whatever is greater) Temperature: ± 0.2 °C	Conductivity: ± 2 % or ± 1 mS/cm (whatever is greater) Temperature: ± 0.2 °C
Measurement precision	Conductivity: ± 0.2 % or ± 0.2 mS/cm (whatever is greater) Temperature: ± 0.1 °C (determined for 1-250 mS/cm)	Conductivity: ± 0.2 % or ± 0.1 mS/cm (whatever is greater) Temperature: ± 0.1 °C (determined for 1 - 250 mS/cm)
Measurement range	0.002 - 100 mS/cm (linear), 0.000 - 1000 mS/cm (display)	0.010 - 500 mS/cm (linear), 0.000 - 1 000 mS/cm (display)
Linearity	< 2 % full scale value (0.002 - 100 mS/cm)	< 2 % full scale value (0.01 - 500 mS/cm)
Maximum data rate	Conductivity: 10 Hz (variable in 1 Hz steps) Temperature: 1 Hz (fixed)	Conductivity: 10 Hz (variable in 1 Hz steps) Temperature: 1 Hz (fixed)

Communication

Digital inputs	Via hyperterminal
Digital outputs	Via hyperterminal
Digital control and output	Via PurityChrom or ClarityChrom

Technical parameters

Special features	Free of charge calibration software (see below)
GLP	Serial number Firmware version Number of switching cycles Operating hours Date of last maintenance by customer service Date of last validity check
Conformity	CE, UKCA For wetted parts: EN 10204-3.1, USP Class VI, ADI-free
Display	None
Ambient conditions	Operating temperature: 3 – 45°C, 37.4 – 113°F Relative humidity: 0 – 90 %, non condensing

General

Power supply	Max. 5 V via USB connection (max. 500 mA, max. 2.5 W power uptake)
Dimensions	32 x 83 mm (Diameter x Length)
Weight	95 g (monitor + flow cell)

Other

Optional accessories	Adapters to connect 3/16" or 1/4" OD tubing

Ordering details:

Device

ADG61GD	Conductivity monitor mikron 81 with biocompatible flow cell for up to 100 ml/min
ADG61GE	Conductivity monitor mikron 81 with biocompatible flow cell for up to 1000 ml/min
ADG61	Conductivity monitor mikron 81 main unit without flow cell

Accessories and spare parts

ADG6102	Supplement for mikron 81 including hexagon socket key, USB-C-USB-A cable (3 m) and operation manual
ADG6102	Gasket for mikron 81 for liquid-tight connection of monitor unit and flow cell
AMN90	Biocompatible flow cell for mikron 81 for up to 100 ml/min
AMO90	Biocompatible flow cell for mikron 81 for up to for up to 1000 ml/min

AZURA® pH Monitor pH 2.1S

NEW

The AZURA pH 2.1S is a reliable pH monitor which is usually utilized in FPLC to follow buffer gradients.

Please combine an external flow cell according to the systems tubing and flow rate.
The flow cell needs to be ordered separately.

Specifications

Further information:
www.knauer.net/en/prod/ADG31

Flow cell

Flow cell type	External pH flow cell
Biocompatible	Yes
Connection of flow cell	1/4-28 UNF or 5/16-24 UNF dependent on flow cell
Capillary connection	1/16", 1/8'' and 3/16" dependent on flow cell
Wetted materials	PEEK

Detection

Detector type	pH monitor
Measurement accuracy	± 0.5 pH (within 4 - 25°C)
Measurement precision	± 0.2 pH (within 4 - 25 °C)
Measurement range	2 - 12
Maximum data rate	5 Hz
Supported electrodes	All pH electrodes with BNC connector and a voltage output of maximal ± 500 mV

Communication

Digital outputs	LAN; RS-232

Technical parameters

GLP	Electronic serial number
Display	LCD, 2 x 8 characters
Ambient conditions	Operating temperature: 4 – 40°C, 39.2 – 104 °F Relative humidity: below 90 %, non condensing

General

Power supply	100 - 240 V, 50 - 60 Hz, max. 20 W
Dimensions	121 x 129 x 187 mm (W x H x D)
Weight	3.2 kg

Ordering details:

Device

ADG31	AZURA® pH Monitor pH 2.1S

Accessories

A9854-3	Mounting bracket AZURA® L for AZURA® Valve Unifier VU 4.1, AZURA® Conductivity monitor CM 2.1S, AZURA® Degasser DG 2.1S or AZURA® UV detector UVD 2.1S on AZURA® L devices
A70091-2	Flow cell for pH monitor pH 2.1S and conductivity monitor CM 2.1S
A70091-3	Flow cell for pH monitor pH 2.1S and conductivity monitor CM 2.1S
A9854-1	Mounting bracket AZURA® L Bio for manual KNAUER injection valve, pH-flow cell and a prepacked column

Fraction collector LABOCOL Vario-4000

The LABOCOL Vario-4000 fraction collectors are characterized by their high robustness and optimal ratio of dimensions/benefit. The user is not limited to given rack types. The rack layout can be designed according to individual needs. Freely define the number of fraction vessels and their position. The wide application area make the Vario-4000 series ideal for use in research and development as well as in production. The Vario-4000 models differ in the base area and the flow rate range.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For purification accessories
see p. 73

Further information:
www.knauer.net/en/prod/A591022

Specifications

Fraction collection

Brand	LABOCOL Vario-4000
Max. flow rate	100 ml/min for 1/16"; 500 ml/min for 1/8"
Fraction capacity	consider list of racks in accessories below
Wetted materials	Stainless steel, PEEK and PTFE
Number of racks	3 (Vario-4000) / 5 (Vario-4000 Plus)
Capillary connection	1/16": 100 ml/min 1/8": 500 ml/min 1/4": 1000 ml/min

Communication

Control	LAN, RS-232

Technical parameters

Ambient conditions	0 - 40 °C, 32 - 104 °F

General

Power supply	100 - 240 VAC, 50 - 60 Hz, max. 2.5 A			
Dimensions	Vario-4000 Vario-4000 Plus min. H *: 52 cm max. H *: 67 cm	30 x 50 cm (WxD) 46 x 50 cm (WxD)	Max. floor space Vario-4000 Vario-4000 Plus	 24 x 41 cm (WxD) 40 x 41 cm (WxD)
Weight	8 kg (Vario-4000) / 10 kg (Vario-4000 Plus)			

* with touchpanel

Ordering details:

Device

A591022	Fraction collector LABOCOL Vario-4000, for 1/16" or 1/8" tubing
A591024	Fraction collector LABOCOL Vario-4000, for 1/4" tubing
A591023	Fraction collector LABOCOL Vario-4000 Plus, for 1/16" or 1/8" tubing
A591026	Fraction collector LABOCOL Vario-4000 Plus, for 1/4" tubing

Accessories

A591029	Touchpanel for LABOCOL Vario-4000/Vario-4000 Plus
A5910221	Enclosure for LABOCOL Vario-4000/Vario-4000 Plus, customized dimensions, made of acrylic glass, 2x front doors, hole cut-outs on rear side for point suction and cable feed-through
A59130	Rack standard for 80 tubes 18 mm/max. 36 ml/ 15 ml Falcons for LABOCOL Vario-4000/Vario-4000 Plus
A59131	Rack micro for 125 tubes 10.5 mm/max. 9 ml for LABOCOL Vario-4000/Vario-4000 Plus
A59132	Rack prep for 20 tubes 36 mm/max. 140 or 240 ml for LABOCOL Vario-4000/Vario-4000 Plus
A59133	Rack semiprep for 39 tubes 26 mm/max 80 ml for LABOCOL Vario-4000/Vario-4000 Plus
A59134	Rack for 24 Falcon® tubes of 50 ml for LABOCOL Vario-4000/Vario-4000 Plus
A20521	Micro test tubes, 9 ml, 100 pcs, L 150 mm, OD 10.5 mm for rack A59131
A20522	Preparative tubes, 25 pcs, L 284 mm x OD 36 mm, V 240 ml for rack A59132

Fraction Collector Foxy® R1 / R2

The Foxy® R1 fraction collector can be adapted to a broad spectrum of applications. Fractions can be collected into 96 well microplates, standard tube sizes, and bottles. For essentially unlimited volumes, funnel racks can direct fluids to any collection vessel or downstream process.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For purification accessories see p. 73

Further information:
www.knauer.net/en/prod/A59100

Specifications

Fraction collection

Brand	Foxy R1
Fractionation modes	Drop counting, time intervals, volume intervals, level
Max. flow rate	25 ml/min or 125 ml/min
Fraction capacity	Consider list of racks in accessories below
Diverter valve	Drop former (NC): 110 µl waste (NO): 130 µl
Wetted materials	Valve: PEEK and perfluoroelastomer (FFKM), Supplied ferrules: ETFE, Supplied valve tubing: PTFE, supplied drain tubing: vinyl
Fractionation control	operator: front panel control via touch screen LCD integrated systems: direct communication via Ethernet (TCP/IP) and RS-232 serial communications
Maximum test tube height	160 mm
RFID rack recognition	No
Number of racks	1
Capillary connection	1/16" : 25 ml/min 1/8" : 125 ml/min 1/4" : 1000 ml/min (Foxy R2 only)

Communication

Control	LAN, RS-232

Technical parameters

Conformity	CE, CSA
Display	Touch screen LCD displays
Ambient conditions	0 - 40 °C, 32 - 104 °F

General

Power supply	100 - 240 V AC, 50 - 60 Hz, max. 1 A
Dimensions	R1: 311 x 330 x 355 mm (W x D x H) R2 1/8": 311 x 533 x 378 mm (W x D x H) R2 1/4": 311 x 533 x 394 mm (W x D x H)
Weight	R1: 7.1 kg R2 1/8": 10.3 kg R2 1/4": 10.4 kg

Ordering details:

Device

A59100	Fraction collector Foxy® R1 for 1/16" or 1/8" tubing
A59102	Fraction collector Foxy® R2 for 1/16" or 1/8" tubing
A591021	Fraction collector Foxy® R2 for 1/4" tubing

Accessories

A59122	Cooling option for Foxy® R1 with cooling hood, cooling plate and accessories
A59117	Cooling rack for 144 tubes 1.5 ml for Foxy® R1 *
A59118	Cooling rack for 72 Falcons 15 ml for Foxy® R1 *
A59119	Cooling rack for 96-Well Microplates for Foxy® R1 *
A59105	Rack for 100 vials 16 mm/max. 20 ml for Foxy® R1/R2
A59104	Rack for 144 vials 13 mm/max. 9 ml for Foxy® R1/R2
A59111	Rack for 2 microwell plates 96 well for Foxy® R1/R2
A59114	Rack for 2 x 9 bottles 480 ml for Foxy® R2 (not suitable for Foxy® R1, bottles too tall)
A59110	Rack for 36 Falcon 50 ml for Foxy® R1/R2
A59108	Rack for 36 vials 25 mm/max. 70 ml for Foxy® R1/R2
A59107	Rack for 60 tubes 1.5 ml for Foxy® R1/R2
A59106	Rack for 72 Falcons 15 ml for Foxy® R1/R2
A59109	Rack with 36 funnels with vinyl tubing for Foxy® R1/R2
A591092	Scintillation rack for 36 vials 28 mm for Foxy® R1/R2
A70055	Thermostatting unit -20 to 40 °C
A70050	Thermostatting unit -40 to 200 °C

* for Foxy R1 with cooling option

AZURA® Degasser DG 2.1S

Dissolved gases in the solvent can cause bubbles in the flow path of pumps and detectors. Reliable chromatographic separation therefore requires degassing of the solvent. The small analytical 2-channel degasser DG 2.1S is equipped with two degassing chambers and can thus degas two solvents simultaneously.

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

Further information:
www.knauer.net/en/prod/AZE02

Specifications

Degasser module

Degasser channels	2
Max. flow rate/channel	10 ml/min
Recommended flow rate/channel	2.8 ml/min
Degassing method	Gas permeation through a fluoropolymere membrane
Degassing chamber volume	285 µl
Solvent applicability	Universal, except hydrochloric acid, halogenated hydrocarbons, hexafluoro isopropanol (HFIP)
Wetted materials	PTFE, PPS, PEEK, Systec AF ™
Pressure decline	1.37 mm (Hg/ml/min)
Maximum pressure stability	70 psi

Technical parameters

Display	1 LED
Ambient conditions	Temperature range: 4 - 40 °C, 39.2 - 104 °F Relative humidity: below 90 %, non-condensing

General

Power supply	85 - 265 V, 50 - 60 Hz, 20 W
Dimensions	121 x 138 x 190 mm (W x H x D)
Weight	2.3 kg
Connector	1/4"-28 UNF female port

Feature overview

Order no.	Degasser type	Channels	Max. flow rate	Chamber volume
AZE02	analytical	2	10 ml/min (recommended 2 ml/min)	285 µl per channel
AZE03-1	analytical	4	10 ml/min (recommended 2 ml/min)	285 µl per channel
A5335	analytical, for GPC	2	10 ml/min (recommended 3 ml/min)	480 µl per channel
A5328	semi-preparative	2	30 ml/min (recommended 15 ml/min)	5.3 ml per channel
AZE02-1	preparative	2	200 ml/min (recommended 75 ml/min)	23 ml per channel
AZE03	preparative	4	200 ml/min (recommended 75 ml/min)	23 ml per channel

Ordering details:

Device

AZE02	Biocompatible 2 channel degasser
AZE03-1	Analytical 4 channel degasser, biocompatible
A5335	Analytical 2 channel GPC degasser
A5328	Semi-preparative 2 channel degasser
AZE02-1	Preparative 2 channel degasser, biocompatible
AZE03	Preparative 4 channel degasser, biocompatible

AZURA® Valve Unifier VU 4.1

The valve drive AZURA® Valve Unifier VU 4.1 enables automatic valve switching. Due to its low switching time, the flow path is blocked only for a very short time, and pressure peaks are reduced to a minimum. Valves are identified via RFID technology, which guarantees an easy valve exchange of KNAUER valves. An additional feature is the easy monitoring of GLP data, which simplifies maintenance such as the exchange of a rotor seal. The display enables user-friendly standalone operation. In addition, the valve drive can be operated with software as well with an optional touch display (Mobile Control), via LAN or analog input/output, by which it can be integrated into nearly every LC system.

Specifications

Communication

Interfaces	LAN, display, terminal strip
Control	Display, software, event control
Inputs	Binary control; Home, Backward/Inject, Forward/Load, Start (IN)
Outputs	Trigger out, Event

General

Power supply	External DC 24 V, 65 W
Dimensions	80 x 123 x 192 mm (W x H x D)
Weight	1.9 kg
Ambient conditions	Temperature range: 4 – 40 °C; 39.2 – 104 °F below 90 % humidity (non condensing)

Key features

- One valve drive for all valves
- Ultra fast switching cycle
- Easy maintenance
- Compact
- Multiple interfaces and drivers available

KNAUER offers various software control options:
www.knauer.net/softwarecontrol

For valve accessories
see p. 69

Further information:
www.knauer.net/en/prod/AWA01XA

Further information:
www.knauer.net/valves

Valve drive VU 4.1 (AWA01XA) with 6 port 2-position valve (AVC28AC)

AVS34CE AVN94CE AVR38AC AVC38AC AVS62CE

Ordering details:

Device

AWA01XA	VU 4.1 valve drive for V 4.1 valves

Accessories

A9854-3	Mounting bracket AZURA® L for AZURA® Valve Unifier VU 4.1 (both-sided) or AZURA® UVD 2.1S and AZURA® CM 2.1S (left-sided on AZURA® L)

Valves for Valve Unifier VU 4.1

AVJ26AE

AVG24CE

AVK25AE

AVJ36AE

Manual valves*

Ports	Stator material	Rotor material	Max. pressure [bar]	Bore size [mm]	Capillary connection	Order number
6	SST DLC[1]	POM	100	0.75	1/16" (UNF 10-32)	AVJ23AF
6	SST DLC[1]	PEEK	500	0.75	1/16" (UNF 10-32)	AVJ26AE
6	SST DLC[1]	Vespel®	1200	0.3	1/16" (UNF 10-32)	AVI28AC
6	PEEK	PEEK	240	0.75	1/16" (UNF 10-32)	AVG24CE
6	SST DLC[1]	PEEK	300	1.5	1/8" (UNF 1/4-28, coned)	AVK25AE
6	PEEK	PEEK	100	2.0	1/8" (UNF 1/4-28, coned)	AVL23CE
8	SST DLC	PEEK	500	0.75	1/16" (UNF 10-32)	AVJ36AE
8	SST DLC[1]	Vespel®	1200	0.3	1/16" (UNF 10-32)	AVI38AC

* The mounting bracket A9853 is required to mount the manual valves to an AZURA® L device.

[1] Stainless steel coated with diamond-like carbon

AVD26AE

AVD24CE

AVD36AE

AVF32CE

2-position valves

Ports	Stator material	Rotor material	Max. pressure [bar]	Bore size [mm]	Capillary connection	Order number
6	SST DLC[1]	POM	100	0.75	1/16" (UNF 10-32)	AVD23AF
6	SST DLC[1]	PEEK	500	0.75	1/16" (UNF 10-32)	AVD26AE
6	SST DLC[1]	PEEK	500	0.75	1/16" (UNF 10-32)	AVD26AH* NEW
6	SST DLC[1]	Vespel®	1200	0.3	1/16" (UNF 10-32)	AVC28AC
6	PEEK	PEEK	240	0.75	1/16" (UNF 10-32)	AVD24CE
6	SST DLC[1]	PEEK	300	1.5	1/8" (UNF 1/4-28, coned)	AVE25AE
6	SST DLC[1]	PEEK	300	1.5	1/8" (UNF 1/4-28, coned)	AVE25AI**
6	PEEK	PEEK	100	2.0	1/8" (UNF 1/4-28, coned)	AVF23CE
8	SST DLC[1]	PEEK	500	0.75	1/16" (UNF 10-32)	AVD36AE
8	SST DLC[1]	Vespel®	1200	0.3	1/16" (UNF 10-32)	AVC38AC
8	PEEK	PEEK	50	2.0	1/8" (UNF 1/4-28, coned)	AVF32CE
10	SST DLC[1]	Vespel®	1200	0.3	1/16" (UNF 10-32)	AVC48AC NEW

* Break-free valve design.

**Special version of AVE25AE with 2-channel rotor seal instead of 3 channels.

[1] Stainless steel coated with diamond-like carbon

AVT84AH

AVS26AE

AVS62CE

AVU32CE

Multiposition valves

Ports	Stator material	Rotor material	Max. pressure [bar]	Bore size [mm]	Capillary connection	Order number
2	SST DLC[1]	PEEK	300	0.75	1/16" (UNF 10-32)	AVS85AH NEW
2	SST DLC[1]	PEEK	200	1.5	1/8" (UNF 1/4-28 coned)	AVT84AH
6	SST DLC[1]	POM	100	0.75	1/16" (UNF 10-32)	AVS23AF
6	SST DLC[1]	PEEK	500	0.75	1/16" (UNF 10-32)	AVS26AE
6	SST DLC[1]	Vespel	1200	0.3	1/16" (UNF 10-32)	AVR28AC
6	SST DLC[1]	PEEK	300	1.5	1/8" (UNF 1/4-28 coned)	AVT25AE
8	SST DLC[1]	PEEK	300	0.75	1/16" (UNF 10-32)	AVS35AE
8	SST DLC[1]	PEEK	500	0.75	1/16" (UNF 10-32)	AVS36AE
8	SST DLC[1]	Vespel	1200	0.3	1/16" (UNF 10-32)	AVR38AC
8	PEEK	PEEK	240	0.75	1/16" (UNF 10-32)	AVS34CE
8	SST DLC[1]	PEEK	300	0.75	1/16" (UNF 10-32)	AVS35AH
8	SST DLC[1]	PEEK	200	1.5	1/8" (UNF 1/4-28 coned)	AVT34AE
8	SST DLC[1]	PEEK	200	1.5	1/8" (UNF 1/4-28 coned)	AVT34AH
8	PEEK	PEEK	50	2.0	1/8" (UNF 1/4-28, flat-bottom)	AVU32GE
8	PEEK	PEEK	50	2.0	1/8" (UNF 1/4-28 coned)	AVU32CE
12	SST DLC[1]	PEEK	100	1.5	1/8" (UNF 1/4-28 coned)	AVT53AE
12	PEEK	PEEK	100	1.5	1/8" (UNF 1/4-28 coned)	AVT53CE
16	SST DLC[1]	POM	100	0.75	1/16" (UNF 10-32)	AVQ63AF
16	SST DLC[1]	PEEK	500	0.6	1/16" (UNF 10-32)	AVQ66AE
16	PEEK	PEEK	50	0.75	1/16" (UNF 10-32)	AVS62CE
16	PEEK	PEEK	150	0.75	1/16" (UNF 10-32)	AVS63CE

[1] Stainless steel coated with diamond-like carbon

AVN94CE

AVN96AE

AVZ52CE

AVM48AC

Special purpose valves*

Valves	Capillary connection	Max. pressure [bar]	Bore size [mm]	Order number
Multi-injection valve, biocompatible. Allows manual and automated sample loading as well as direct injection.	1/16" (UNF 10-32)	240	0.75	AVN94CE
Multi-injection valve, stainless steel. Allows manual and automated sample loading as well as direct injection.	1/16" (UNF 10-32)	500	0.75	AVN96AE
Column selection valve, biocompatible. Allows switching of up to 5 columns incl. bypass and reverse flow option.	1/16" (UNF 10-32)	50	0.4	AVZ52CE
Column selection valve for high pressure applications. Can be used for up to 4 columns and bypass.	1/16" (UNF 10-32)	1200	0.2	AVM48AC NEW

* For detailed information please check our website: **www.knauer.net/valves**

K-7400S Semi-Micro Osmometer

KNAUER is the pioneer in the field of osmometry and known for its reliable and user friendly instruments for many decades.

Our freezing point osmometer K-7400S allows the easy and fast determination of the osmolality of various aqueous solutions. Also, the freezing point depression of the samples can be read. The proven technology of freezing point determination in combination with the robust and intelligent design of the device allows reproducible measurements.

The instrument is equipped with a peltier cooler and an integrated microprocessor controlling the automated measurement. The freezing point osmometer is a standalone device that optionally can be equipped with a printer. Furthermore, the device can be controlled via the EuroOsmo 7400 software. The software automatically plots the temperature curve for each measurement and calibration and allows saving of the measured values. In addition, the data can optionally be exported into various file formats for archival storage.

The measurement specifications of the KNAUER Semi-Micro Osmometer K-7400S comply with the European Pharmacopoeia for osmolality (Ph. Eur. 2.2.35, 10/2021) in the pharmaceutically relevant range of 0-400 mOsmol/kg.

Key features

- Made in Germany
- 60 years experience
- Fast measurements

For more osmometry accessories and standards **see p. 73**

Specifications

Technical parameters	
Sample volume	50 - 150 µl
Osmolality range	0 - 2000 mOsmol/kg
Resolution	Osmolality: integer value without decimal part, e.g. 850 mOsmol Temperature: value with three digits, e.g. -1.576 °C
Test time	~ 2 min
Precision	SD ≤ 4 mOsmol/kg [0 - 400 mOsmol/kg] RSD ≤ 1 % [400 - 2000 mOsmol/kg]
Linearity	± 1 % [0 -1500 mOsmol/kg] ± 1.5 % [0 - 2000 mOsmol/kg]
Calibration	Two-point calibration (0 mOsmol/kg and one freely selectable osmolality) Optional: Three-point calibration (0 Osmol/kg and two freely selectable osmolalities)

Further information:
www.knauer.net/osmometry

General	
Power supply	100 - 240 V, 50 - 60 Hz, 70 W
Dimensions	160 x 182 x 340 mm (W xH x D)
Weight	5.3 kg
Ambient conditions	Temperature range: 10 - 35 °C Relative humidity: 20 - 80 % (non-condensing)

Communication	
Interfaces	RS-232 port
Control	Keypad (LED display, 2 rows with 24 characters) optional: EuroOsmo7400 Software

Ordering details:

Device

A0006AC	Osmometer for the determination of osmolality or freezing point of aqueous solutions, including calibration standards (400 & 850 mOsmol/kg) and sample tubes (500 pcs.)

Accessories

A0840-2	Measuring head for plastic sample tubes; compatible with the K-7400 and the K-7400S Semi-Micro Osmometer
A3705	EuroOsmo 7400 - software for K-7400 and K-7400S osmometers
A3711	Plain paper printer for freezing point osmometer K-7400 and K-7400S
A13270	Barcode Scanner with USB cable, for EuroOsmo 7400
A0272	500 Pack of plastic sample tubes for Semi-Micro Osmometer K-7400S

Maintenance kits

Each maintenance kit contains all parts that are to be replaced according to the maintenance plan. Included parts are wear parts.

Pump and pump head maintenance

Maintenance kits for AZURA® Pumps

Maintenance kit for pump P 2.1L, 80P - incl. all wear parts: tooth belts, silicon tube	ARP00
Maintenance kit for pump P 2.1S, P 4.1S, 40P - incl. all wear parts: tooth belt, silicon tube	ARP10
Maintenance kit for pump P6.1L - isocratic LPG; 40P - including all wear parts: tooth belt, silicon tube, filter cartridge	ARP20
Maintenance kit for pump P6.1L - HPG - including all wear parts: tooth belt, silicon tube, filter cartridge	ARP21
Maintenance kit for pump P6.1L - isocratic, LPG; 40P - metal free - including all wear parts: tooth belt, silicon tube, filter cartridge	ARP22
Maintenance kit for pump P6.1L - HPG - metal free - including all wear parts: tooth belt, silicon tube, filter cartridge	ARP23
Maintenance kit for pump P 8.1L - incl. all wear parts: tooth belt, filter cartridge, rotor seal	ARP31

Maintenance kits for mixing chambers

Maintenance kit for Dynamic Mixer 1/16" SST - incl. all wear parts: sieves, gaskets	ARM01
Maintenance kit for Dynamic Mixer 1/16" Titanium - incl. all wear parts: sieves, gaskets	ARM02
Maintenance kit for Dynamic Mixer 1/8" SST, Titanium - incl. all wear parts: gaskets	ARM03

A9670

A9671

A9672

A9673

Tool kits for pump head maintenance

Maintenance tool kit for 10 ml pump heads	A9670
Maintenance tool kit for 50 ml pump heads	A9671
Maintenance tool kit for 100 ml pump heads	A9672
Maintenance tool kit for 250 ml pump heads	A9673
Maintenance tool kit for 500 ml pump heads	A9674
Maintenance tool kit for 1000 ml pump heads	A9675

ARH30

ARH38

ARH40

ARH48

Maintenance kits for AZURA® Pump heads

Maintenance kit for pump head 5 ml (P 8.1L) - AHA70 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings	ARH20
Maintenance kit for pump head 5 ml/10 ml - AHA60, AHB32, AHB32DA, AHB40, AHB40CA, AHB40CB, AHB40CB - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH30
Maintenance kit for pump head 10 ml - AHB40BA - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH31
Maintenance kit for pump head 10 ml - AHB43 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH32
Maintenance kit for pump head 10 ml - AHB40FA, AHB32GA, AHB32FA - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH33
Maintenance kit for pump head 50 ml - AHC20, AHC20CA, AHC22, AHC20CB - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH34
Maintenance kit for pump head 50 ml - AHC23 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH35
Maintenance kit for pump head 50 ml - AHC20FA - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH36
Maintenance kit for pump head 50 ml - AHC20BA - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH37
Maintenance kit for pump head 50 ml - AHC22FA - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings, compression springs	ARH38
Maintenance kit for pump head 100 ml - A4029-1 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH40
Maintenance kit for pump head 100 ml - A4023V5 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, backing rings	ARH41
Maintenance kit for pump head 100 ml - A4029V2 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH42
Maintenance kit for pump head 250 ml - A4021-1 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH43
Maintenance kit for pump head 250 ml - A4021V2 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH44
Maintenance kit for pump head 500 ml - A4038-1 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH45
Maintenance kit for pump head 500 ml - A4038V2 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH46
Maintenance kit for pump head 1000 ml - A4022-1 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH47
Maintenance kit for pump head 1000 ml - A4022V2 - incl. all wear parts: check valves, piston rods, gaskets, O-rings, compression springs	ARH48

Detector maintenance

Maintenance kits for detectors

Maintenance kit for detector UVD 2.1S, UVD 2,1L, MWD 2.1L, DAD 2.1L, 10D, 40D - incl. all wear parts: deuterium lamp	ARD10
Maintenance kit for detector DAD 6.1L - incl. all wear parts: only deuterium lamp	ARD11
Maintenance kit for detector DAD 6.1L - incl. all wear parts: deuterium lamp, halogen lamp	ARD12
Maintenance kit for detector RID 2.1L - incl. all wear parts: LED	ARD20
Maintenance kit for detector 50D - incl. all wear parts: only deuterium lamp	ARD30
Maintenance kit for detector 50D - incl. all wear parts: deuterium lamp, halogen lamp	ARD31

Autosampler maintenance

Maintenance kits for autosampler

Maintenance kit for Autosampler AS 6.1L, S3950 (700 bar) - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA10
Maintenance kit for Autosampler AS 6.1L (1240 bar), S3950 (1000 bar) - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA11
Maintenance kit for Autosampler S3950 - biocompatible - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA12
Maintenance kit for Autosampler AS 6.1L, S3950 - biocompatible, preparative - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA13
Maintenance kit for Autosampler AS 6.1L, S3950 - preparative - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA14
Maintenance kit for Autosampler AS 6.1L (862 bar) - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA15
Maintenance kit for Autosampler AS-1 - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA16
Maintenance kit for Autosampler S3950 - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA17
Maintenance kit for Autosampler AS 6.1L - biocompatible - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARA18

Valve Maintenance

Maintenance kits for VICI Valves

Maintenance kit for valve A5850 - incl. all wear parts: rotor seal	ARV20
Maintenance kit for valve A5854 - incl. all wear parts: rotor seal	ARV21
Maintenance kit for valve A5858 - incl. all wear parts: rotor seal	ARV22
Maintenance kit for valve A5859 - incl. all wear parts: rotor seal	ARV23
Maintenance kit for valve A5860 - incl. all wear parts: rotor seal	ARV24
Maintenance kit for valve AVZ52CE, M6032-1 - incl. all wear parts: rotor seal	ARV25
Maintenance kit for valve EVZ34CE, M6035-1 - incl. all wear parts: rotor seal	ARV26
Maintenance kit for valve M6036 - incl. all wear parts: rotor seal	ARV27

Maintenance kits for KNAUER Valves

Maintenance kit for valve A1357, A1369, AWA10AA - incl. all wear parts: rotor seal, O-ring	ARV10
Maintenance kit for valve A1359, A1371, AWA10DA - incl. all wear parts: rotor seal, O-ring	ARV11
Maintenance kit for Autosampler S3950 (biocompatible) - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARV12
Maintenance kit for valve A1378, AWA20BG - incl. all wear parts: rotor seal	ARV13
Maintenance kit for valve A1379, AWA30BH - incl. all wear parts: rotor seal, O-ring	ARV14
Maintenance kit for valve A1374V1, A1376V1, AWA10BB, AWA10BD - incl. all wear parts: rotor seal, O-ring	ARV15
Maintenance kit for valve A1358V1, A1370V1, AWA10AC - incl. all wear parts: rotor seal, O-ring	ARV16
Maintenance kit for valve A1372, AWA10AE - incl. all wear parts: rotor seal, O-ring	ARV17
Maintenance kit for Autosampler AS 6.1L (biocompatible) - incl. all wear parts: sample needle, air needle, rotor seal, syringe, syringe valve, buffer tubing, wash position	ARV18
Maintenance kit for valve AVC26BC, AVI26BC, AWA11CA - incl. all wear parts: rotor seal, O-ring	ARV30
Maintenance kit for valve AVC38AC, AVI38AC - incl. all wear parts: rotor seal	ARV31
Maintenance kit for valve AVS35AE, AVS36AE, AVS34CE - incl. all wear parts: rotor seal	ARV32
Maintenance kit for valve AVD26AE, AVJ26AE - incl. all wear parts: rotor seal	ARV33
Maintenance kit for valve AVD36AE, AVJ36AE - incl. all wear parts: rotor seal	ARV34
Maintenance kit for valve AVD24CE, AVG24CE - incl. all wear parts: rotor seal	ARV35
Maintenance kit for valve AVC28AC, AVI28AC - incl. all wear parts: rotor seal	ARV36
Maintenance kit for valve AVR26BC, AWA11DA - incl. all wear parts: rotor seal, O-ring	ARV37
Maintenance kit for valve AVR28AC - incl. all wear parts: rotor seal	ARV38
Maintenance kit for valve AVR38AC - incl. all wear parts: rotor seal	ARV39
Maintenance kit for valve AVN94CE - incl. all wear parts: rotor seal	ARV40
Maintenance kit for valve AVU32CE, AVU32GE - incl. all wear parts: rotor seal	ARV41
Maintenance kit for valve AVT34AH, AVT84AH - incl. all wear parts: rotor seal	ARV42
Maintenance kit for valve AVQ66AE - incl. all wear parts: rotor seal	ARV43
Maintenance kit for valve AVS62CE, AVS63CE - incl. all wear parts: rotor seal	ARV44
Maintenance kit for valve AVU34AE, AVT34AE - incl. all wear parts: rotor seal	ARV45
Maintenance kit for valve AVS26AE - incl. all wear parts: rotor seal	ARV46
Maintenance kit for valve AVT53AE, AVT53CE - incl. all wear parts: rotor seal	ARV47
Maintenance kit for valve AVJ23AF, AVD23AF - incl. all wear parts: rotor seal	ARV48
Maintenance kit for valve AVK25AE, AVE25AE - incl. all wear parts: rotor seal	ARV49
Maintenance kit for valve AVL23CE, AVF23CE - incl. all wear parts: rotor seal	ARV50
Maintenance kit for valve AVE25AI - incl. all wear parts: rotor seal	ARV51
Maintenance kit for valve AVF32CE - incl. all wear parts: rotor seal	ARV52
Maintenance kit for valve AVS23AF - incl. all wear parts: rotor seal	ARV53
Maintenance kit for valve AVT25AE - incl. all wear parts: rotor seal	ARV54
Maintenance kit for valve AVN96AE - incl. all wear parts: rotor seal	ARV55
Maintenance kit for valve AVQ63AF - incl. all wear parts: rotor seal	ARV56
Maintenance kit for valve AVS35AH, AVS34CH - incl. all wear parts: rotor seal	ARV57
Maintenance kit for valve AVD26AH - incl. all wear parts: rotor seal	ARV58
Maintenance kit for valve AVC48AC - incl. all wear parts: rotor seal	ARV59

Spare parts and kits

Spare part kits contain parts that are replaced during repairs.

Pump spare parts

Filters and filter cartridges for pumps

Filter Cartridge for pump P 6.1L/40P, Titanium frit, 2 µm pore size, 50 ml/min maximum flow, High capacity filter, 60 µl volume, 3 pcs.	A9661
Filter Cartridge for pump P 6.1L/40P, Stainless steel frit, 2 µm pore size, 10 ml/min maximum flow, Volume optimized filter, 20 µl volume, 3 pcs.	A96601
Filter Cartridge for pump P 6.1L/40P, PEEK frit, 2 µm pore size, 10 ml/min maximum flow, 20 µl volume, 3 pcs.	A96611
Replacement filters for pump P 6.1L/40P ceramic for serial no 2109 and newer, PEEK frit, 2 µm pore size, 50 ml/min max. flow rate, 3 pcs.	A9663


A06840


A06841


A068411


A1122

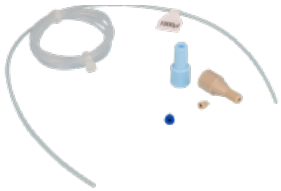
Check valves for pumps

Check valve unit for 10 / 50 ml pump heads, for dosing applications, Bore: Ø 1.4 mm , Ball: Ø 1.75 mm	A06840
Check valve unit for 10 ml pump heads, for HPLC applications, Bore: Ø 0.7 mm , Ball: Ø 1.75 mm	A06841
Spring-loaded check valve unit for 10 ml / 50 ml pump heads, for normal phase applications, Bore: Ø 1.4 mm , Ball: Ø1.75 mm	A068411
Check valve unit (KEL-F) for 10 ml pump head, for aggressive substances, Bore: Ø 0.7 mm , Ball: Ø 1.75 mm	A068412
Check valve unit for 50 ml pump heads, for HPLC applications, Bore: Ø 1.2 mm, Ball: Ø 1.75 mm	A06842
Check valve unit (KEL-F) for 50 ml pump head, for aggressive substances, Bore: Ø 1.2 mm , Ball: Ø 1.75 mm	A068422
Check valve unit stainless steel/PEEK for 500 ml and 1 000 ml pump heads, Bore: Ø 2.9 mm, Ball: Ø 4.76 mm	A1080
Check valve unit titanium/PEEK for 500 ml and 1 000 ml pump heads, Bore: Ø 2.9 mm, Ball: Ø 4.76 mm	A1080V1
Check valve unit titanium/KEL-F for 500 ml and 1 000 ml pump heads, Bore: Ø 3.0 mm, Ball: Ø 4.17 mm	A1080V2
Check valve unit stainless steel/KEL-F for 500 ml and 1 000 ml pump heads, Bore: Ø 3.0 mm, Ball: Ø 4.17 mm	A1080V3
Check valve unit stainless steel/PEEK for 100 ml and 250 ml pump heads, Bore: Ø 2.0 mm, Ball: Ø 3.17 mm	A1122
Check valve unit titanium/PEEK for 100 ml and 250 ml pump heads, Bore: Ø 2.0 mm, Ball: Ø 3.17 mm	A1122-1
Check valve unit titanium/KEL-F for 100 ml and 250 ml pump heads, Bore: Ø 2.0 mm, Ball: Ø 3.17 mm	A1122-2
Check valve unit stainless steel/KEL-F for 100 ml and 250 ml pump heads, Bore: Ø 2.0 mm, Ball: Ø 3.17 mm	A1122-3

Rebuild kits for pumps

Rebuild-Kit for one pump head AZURA® Pump P 2.1L and BlueShadow 80P (100 ml/250 ml), Venting screw KEL-F, Check valve unit KEL-F, O-ring	A58211
Rebuild-Kit for one pump head AZURA® Pump P 2.1L and BlueShadow 80P (500ml/1 000 ml), Venting screw KEL-F, Check valve unit KEL-F, O-ring	A58212
Rebuild-Kit Kel-F for AZURA® Pump P 4.1S/P 2.1S/P 6.1L/40P, 10 ml/min pump head	A5821-1
Rebuild-Kit Kel-F for AZURA® Pump P 4.1S/P 2.1S/P 6.1L/40P, 50 ml/min pump head	A5821-2
Rebuild-Kit for aqueous eluents (for P 2.1S/P 4.1S/P 6.1L/40P with 10 ml pump head)	A5823
Rebuilt-Kit for aqueous eluents (for AZURA® P 4.1S, P 2.1S, P 6.1L and BlueShadow 40P (50 ml pump head))	A5823-1

Autosampler spare parts



A500526

Buffer tubings kits

Buffer tubing for AZURA® Autosampler AS 6.1L, 500 µl incl. fittings; Spare part for AAA00AA, AAA01AA, AAA10AA, AAA11AA, AAA20AA, AAA21AA, AAA50AA & AAA51AA	A500525
Buffer tubing for AZURA® Autosampler AS 6.1L, 1 000 µl, incl. fittings; alternative to standard configuration	A500526
Buffer tubing for AZURA® Autosampler AS 6.1L, 2 000 µl, incl. fittings; Spare part for AAA31AA, AAA40AA, AAA41AA	A500527

A500846

Syringes

100 µl Syringe for AZURA® Autosampler AS 6.1L autosamplers and other KNAUER Autosamplers; alternative to standard configuration	A500846
250 µl Syringe for AZURA® Autosampler AS 6.1L; Spare part for AAA00AA, AAA01AA, AAA10AA, AAA11AA, AAA20AA, AAA21AA, AAA50AA & AAA51AA	A500847
500 µl Syringe for AZURA® Autosampler AS 6.1L; alternative to standard configuration	A500864
1000 µl Syringe for AZURA® Autosampler AS 6.1L; alternative to standard configuration	A500865
2500 µl Syringe for AZURA® Autosampler AS 6.1L; Spare part for AAA31AA, AAA40AA, AAA41AA	A500866

A500519

Rotor seals for AZURA® Autosampler

Rotor seal for AZURA® Autosampler AS 6.1L, 700 bar, Vespel; Spare part for AAA00AA, AAA01AA	A500519
Rotor seal for AZURA® Autosampler AS 6.1L, 1000 bar, Vespel; Spare part for AAA50AA & AAA51AA	A500520
Rotor seal for AZURA® Autosampler AS 6.1L, 1240 bar, Vespel; Spare part for AAA10AA, AAA11AA	A500521
Rotor seal for AZURA® Autosampler AS 6.1L, 345 bar, PEEK; Spare part for AAA20AA, AAA21AA	A500522
Rotor seal for AZURA® Autosampler AS 6.1L, 350 bar, ValconH; Spare part for AAA40AA, AAA41AA	A500523
Rotor seal for AZURA® Autosampler AS 6.1L, 350 bar, ValconE; Spare part for AAA31AA	A500524

A50078

A50077

Sample loops

Sample loop incl. fittings, 10 µl, stainless steel; Spare part for AAA10AA, AAA11AA	A50078
Sample loop incl. fittings, 10 ml, stainless steel; Spare part for AAA40AA, AAA41AA	A500509
Sample loop incl. fittings, 10 ml, PEEK; Spare part for AAA31AA	A500511
Sample loop incl. fittings, 100 µl, stainless steel; Spare part for AAA00AA, AAA01AA, AAA50AA, AAA51AA	A50077
Sample loop incl. fittings, 100 µl, PEEK; Spare part for AAA20AA, AAA21AA	A500510
Sample loop 250 µl, stainless steel for AZURA® Autosampler AS 6.1L & 3950, incl. fittings	A500528

Sample needles

Sample needle for preparative AZURA® Autosampler AS 6.1L; Spare part AAA40AA, AAA41AA	A500516
Sample needle for biocompatible autosampler AZURA® Autosampler AS 6.1L; Spare part AAA20AA, AAA21AA	A500517
Sample needle for bio-preparative AZURA® AutosamplerAS 6.1L; Spare part AAA31AA	A500518
Sample needle for analytical AZURA® AutosamplerAS 6.1L; Spare part for AAA00AA, AAA01AA, AAA10AA, AAA11AA, AAA50AA, AAA51AA	A64700

A50058

Air needles

Air needle for AZURA® Autosampler AS 6.1L; 50 mm protrusion length; Spare part for AAA40AA, AAA41AA and for biocompatible AAA31AA	A500529
Air needle for AZURA® Autosampler AS 6.1L; 56 mm protrusion length	A500530
Air needle for AZURA® Autosampler AS 6.1L; 62 mm protrusion length - standard for all autosampler versions (except AAA40AA, AAA41AA, AAA31AA)	A50058
Air needle for AZURA® Autosampler AS 6.1L; 68 mm protrusion length	A500531
Air needle for AZURA® Autosampler AS 6.1L; 74 mm protrusion length	A500532
Air needle for AZURA® Autosampler AS 6.1L; 80 mm protrusion length	A500533
Set of air needles for AZURA® Autosampler AS 6.1L, 1 pc. of each length	A50059

A50050

A500502

A500505

A500507

Vial plates

Vial plate for 48 x 1.5 ml vials for Autosampler 3950 and AZURA® Autosampler AS 6.1L, 1 pc.	A50050
Vial plate for 84 x 1.5 ml and 3 x 10 ml vials for Autosampler 3950 and AZURA® Autosamlpler AS 6.1L, 1 pc.	A500501
Prep vial plate for 12 x 10 ml for Autosampler 3950 and AZURA® Autosampler AS 6.1L, 1 pc.	A500502
Vial plate for 108 x 1.5 ml vials for Autosampler 3950 and AZURA® Autosampler AS 6.1L, 1 pc.	A500505
Prep vial plate for 30 x 10 ml for Autosampler 3950 and AZURA® Autosampler AS 6.1L, 1 pc.	A500507

Other autosampler spare parts

Fuse (2.5 A) for AZURA® Autosampler AS 6.1L, 2 pcs.	A500534
Rectangular bottle (250 ml, PE) for wash or transport solution	A500535
Waste tube for AZURA® Autosampler AS 6.1L, silicone, 1 m	A500536
Waste tube for AZURA® Autosampler AS 6.1L, PTFE, 1 m	A500537

A50810

A50809

A50806

A50807

Liquid Handler spare parts

Tip/Injection needle - Liquid Handler LH 2.1	A50810
Dispenser syringe 12.5 ml - Liquid Handler LH 2.1	A50809
Dispenser syringe 5 ml - Liquid Handler LH 2.1	A50811
Dispenser syringe 2.5 ml - Liquid Handler LH 2.1	A50812
Dispenser syringe 1 ml - Liquid Handler LH 2.1	A50813
Buffer tubing, ID 2.1 mm, AD 1/8", 600 cm, 21 ml, FEP - Liquid Handler LH 2.1	A50814
Liquid Handelr LH 2.1 Rack fixation for docking a LH 2.1 rack to the drainage tray	A50806
Tubing for tip, ID 1.5 mm, 180" 457 cm, FEP - Liquid Handler LH 2.1	A50807
Tubing for washing solution, ID 2 mm, 70" 177 cm, FEP - Liquid Handler LH 2.1	A50808
Wash Station for Liquid Handler LH 2.1	A50815

Detector spare parts

Spare parts kits for flow cells

Spare part kit for analytical flow cells, 10 mm (A4061, A4061V1, A4061XB)	A1131
Spare part kit for PEEK TRI-Clamp flow cells (A4152-1, A4154-1)	A1132-1
Spare part kit for preparative flow cells (A4066, A4067, A4068)	A1132
Spare part kit for semi-preparative flow cell, 3 mm (A4042, A4045)	A1132V3
Spare part kit for analytical flow cell, 10 mm (A4130)	A1540
Spare part kit for analytical flow cell, 3 mm (A4131, A4132)	A1540V1

ADG61

AMN90

AMO90

Conductivity monitor mikron 81 spare parts

Conductivity monitor mikron 81 main unit without flow cell	ADG61
Gasket for mikron 81 for liquid-tight connection of monitor unit and flow cell	ADG6103
Biocompatible flow cell for mikron 81 for up to 100 ml/min	AMN90
Biocompatible flow cell for mikron 81 for up to for up to 1000 ml/min	AMO90

AZL01

A4072

A4448

A5197

Lamps

Deuterium lamp for Smartline S2500 and S2600 detectors	A4071
Deuterium lamp for Smartline PDA detectors K-2800, S2800 and S2850	A4447V1
HBST deuterium lamp for AZURA® Detector DAD 6.1L	AZL01
HBST deuterium lamp for PLATINblue MW-1 and PDA-1 detectors	A64210
Deuterium lamp, replacement, for S2520, 10D, 40D, UVD 2.1S, UVD 2.1L, DAD 2.1L, MWD 2.1L	A5193
HBST deuterium lamp for Smartline UV and UV/VIS detectors 2550 and BlueShadow 50D	A5194
Halogen lamp for AZURA® Detector DAD 6.1L	AZL02
Halogen lamp for converting Smartline UV 2500 detector into Smartline VIS 2500 detector	A4073
Halogen lamp for converting Smartline UV 2600 detector into Smartline VIS 2600 detector	A4073XA
Halogen lamp for PLATINblue MW-1 detector	A64200
Halogen lamp for PLATINblue PDA-1 detector	A64201
Halogen lamp for Smartline 2500 detector, VIS version	A4072
Halogen lamp for Smartline 2600 detector, VIS Version	A4072XA
Halogen lamp for Smartline PDA 2800 and 2850 detectors	A4448
Halogen lamp for Smartline UV/VIS detector 2550	A5195
Halogen lamp for upgrading Smartline UV detector 2550 to Smartline UV/VIS detector 2550	A5197
LED for Sedex 80LT and Sedex 85LT light scattering detectors	A07541
Xenon lamp for RF-10AXL fluorescence detector	A0753
Xenon lamp for RF-20A/Axs fluorescence detector	A59210

Valve spare parts

Spare parts for valves

Valve article no.	Description	Spare part (stator) article no.
AVT84AH	2 Port multiposition valve, 200 bar	A205150
AVS85AH	2 Port multiposition valve, 300 bar	A205142
AVC28AC	6 Port 2-position valve, 1 200 bar	A205118
AVC38AC	8 Port 2-position valve, 1 200 bar	A205120
AVC48AC	10 Port 2-position valve, 1 200 bar	A205168
AVD23AF	6 Port 2-position valve, 100 bar	A205140
AVD24CE	6 Port 2-position valve, 240 bar, bioinert	A205102
AVD26AE	6 Port 2-position valve, 500 bar	A205140
AVD26AH1	6 Port 2-position valve, 500 bar	205140
AVD36AE	8 Port 2-position valve, 500 bar	A205142
AVE25AI	6 Port 2-position valve, 300 bar	A205146
AVE25AE	6 Port 2-position valve, 300 bar	A205146
AVF23CE	6 Port 2-position valve, 100 bar, bioinert	A205156
AVF32CE	6 Port 2-position valve, 50 bar, bioinert	A205130
AVG24CE	Manual 6 Port 2-position valve, 240 bar, bioinert	A205102
AVI28AC	Manual 6 Port 2-position valve, 1 200 bar	A205118
AVI38AC	Manual 8 Port 2-position valve, 1 200 bar	A205120
AVJ23AF	Manual 6 Port 2-position valve, 100 bar	A205140
AVJ26AE	Manual 6 Port 2-position valve, 500 bar	A205140
AVJ36AE	Manual 8 Port 2-position valve, 500 bar	A205142
AVK25AE	Manual 6 Port 2-position valve, 300 bar	A205146
AVL23CE	Manual 6 Port 2-position valve, 100 bar, bioinert	A205156
AVN94CE	8 Port multi-injection valve, 240 bar, bioinert	A205132
AVN96AE	8 Port multi-injection valve, 500 bar	A205161
AVQ63AF	16 Port multiposition valve, 100 bar	A205152
AVQ66AE	16 Port multiposition valve, 500 bar	A205152
AVR28AC	6 Port multiposition valve, 1 200 bar	A205118
AVR38AC	8 Port multiposition valve, 1 200 bar	A205120
AVS23AF	6 Port multiposition valve, 100 bar	A205140
AVS26AE	6 Port multiposition valve, 500 bar	A205140
AVS34CE	8 Port multiposition valve, 240 bar, bioinert	A205104
AVS34CH1	8 Port multiposition valve, 240 bar, bioinert	A205104
AVS35AE	8 Port multiposition valve, 300 bar	A205142
AVS35AH	8 Port multiposition valve, 300 bar	A205142
AVS36AE	8 Port multiposition valve, 500 bar	A205142
AVS62CE	16 Port multiposition valve, 50 bar, bioinert	A205106
AVS63CE	16 Port multiposition valve, 150 bar	A205106
AVT25AE	6 Port multiposition valve, 300 bar	A205146
AVT34AE	8 Port multiposition valve, 200 bar	A205150
AVT34AH	8 Port multiposition valve, 200 bar	A205150
AVT53AE	12 Port multiposition valve, 100 bar	A205154
AVT53CE	12 Port multiposition valve, 100 bar	A205164
AVU32CE	8 Port multiposition valve, 50 bar, bioinert	A205130
AVU32GE	8 Port multiposition valve, 50 bar, flat bottom	A205153
AVT34AE	8 Port multiposition valve, 200 bar	A205150

KNAUER

Accessories

Pump accessories

AZC00

A5325

A2056

A5324

Eluent trays & bottles

AZURA® Eluent tray E 2.1L for AZURA® devices with a capacity of 6 x 1 l bottles or 4 x 2.5 l bottles or 2 x 5 l bottles, (delivery without bottles)	AZC00
Eluent bottle 1000 ml, Clear glass, incl. cap for eluent tubing, GL45	A5325
250 ml bottle for piston back flushing	A2056
Set of 4 eluent bottles 1000 ml, incl. caps for eluent tubing, GL45	A5324
Set of 2 eluent bottles 1000 ml, incl. caps for eluent tubing, GL45	A5324-1
Set of 4 eluent bottles 1000 ml, 1 bottle 250 ml for piston backflushing, incl. caps for eluent tubing, GL45	A5324-2
Recommended for AZURA systems: Set of 4 eluent bottles 1000 ml, 1 bottle 250 ml for piston backflushing, incl. closed caps, GL45 use with AZURA® tubing kit	A5324-3
Set of 2 eluent bottles 1000 ml, 1 bottle 250 ml for piston backflushing, incl. closed caps, GL45 use with AZURA® tubing kit	A5324-4
Set of eluent supply bottles, 3 x 2.5 L brown glass bottles (borosilicate glass) with special round bottom for minimal eluent remainder, for preparative HPLC/FPLC, includes screw-type cap	A70037
Eluent supply bottle plastic 2 L incl. cap and tubing for IC and ECD systems	A70038
Eluent supply bottle 2000 ml, GL45 thread, round, clear glass, without screw cap	A59158-1
Waste can 2.5 L with GL45 screw top, UN-approved, 153 x 115 x 202 mm	A59173
Waste can, 10 L with GL45 screw top, UN-approved, 192 × 317 × 231 mm	A59256

A5390

A5398

A5396

Mass flow controllers*

Mini CORI-Flow (M13) Mass flow controller incl. mounting block, Flow: 1 -50 ml/min, stainless steel 316	A5390
Mini CORI-Flow (M14) Mass flow controller incl. mounting block, Flow: 2 -833 ml/min, stainless steel 316	A5391
Mini CORI-Flow (M14) Mass flow controller incl. mounting block, Flow: 2 - 833 ml/min, stainless steel 316, Profibus	A5391P
Mini CORI-Flow (M13) Mass flow controller incl. mounting block, Flow: 1 - 50 ml/min, stainless steel 316, Profibus	A5393
Mini CORI-Flow (M12) Mass flow controller incl. mounting block, Flow: 0.03 – 3.3 ml/min, stainless steel 316	A5394
Mini CORI-Flow (M13) Mass flow controller incl. mounting block, Flow: 1 - 50 ml/min, Hastelloy-C22	A5395
Mini CORI-Flow (MI140) Mass flow controller, Flow: 2 - 833 ml/min, stainless steel 316, Profinet	A5398
HI-TEC Bright display for Mini CORI-Flow mass flow controller (display, setpoint and counter)	A5396

*analog and bus versions on request

AZZ00MB

AZZ00MC

AZZ10ME

A5830

Static mixers

AZURA® HPLC mixer up to 1240 bar, 50 µl mixing volume, stainless steel	AZZ00MB
AZURA® HPLC mixer up to 1240 bar, 100 µl mixing volume, stainless steel	AZZ00MC
AZURA® HPLC mixer up to 1240 bar, 200 µl mixing volume, stainless steel	AZZ00MD
AZURA® HPLC mixer up to 1240 bar, 400 µl mixing volume, stainless steel	AZZ00MF
AZURA® HPLC mixer up to 1240 bar, 600 µl mixing volume, stainless steel	AZZ00MG
AZURA® HPLC mixer up to 40 MPa, 250 µl mixing volume, PEEK (biocompatible)	AZZ10ME
HyperShear Static Mixer, 1.5 ml, 1 - 40 ml/min, max. 414 bar, stainless steel and PEEK, incl. mounting brackets for AZURA® L devices (A9853-8)	A5830

A0285

Dynamic mixers

Dynamic mixing chamber (250 V), titanium, analytical, 1/16“, up to 420 bar, 1740 µl mixing volume	A0275
Dynamic mixing chamber (115 V), titanium, analytical, 1/16“, up to 420 bar, 1740 µl mixing volume	A02751
Dynamic mixing chamber (250 V), stainless steel, analytical, 1/16“, up to 420 bar, 1740 µl mixing volume	A0285
Dynamic mixing chamber (115 V), stainless steel, analytical, 1/16“, up to 420 bar, 1740 µl mixing volume	A02851
Dynamic mixing chamber (250 V), titanium, preparative, 1/8“, up to 250 bar, 5.9 ml mixing volume	A70581
Dynamic mixing chamber (115 V), titanium, preparative, 1/8“, up to 250 bar, 5.9 ml mixing volume	A705811
Dynamic mixing chamber (250 V), stainless steel, preparative, 1/8“, up to 250 bar, 5.9 ml mixing volume	A0581
Dynamic mixing chamber (115 V), stainless steel, preparative, 1/8“, up to 250 bar, 5.9 ml mixing volume	A05811
Extension unit for dynamic mixer A70581/A705811	A2515

A3373

A3374

A3375

A3364

Solvent filters & inlet tubing

Mobile Phase Filter, stainless steel, 2 µm, 1/8" pipe OD, suitable for all analytical HPLC systems, max. flow rate 50 ml/min	A3373
Mobile Phase Filter, stainless steel, 20 µm, for 1/8" OD, compatible with the AZURA® Tubing Kit (A9650), suitable for all analytical and semi preparative HPLC systems, max. flow rate 100 ml/min	A3374
Mobile Phase Filter, stainless steel, 10 µm, for 1/8" OD, compatible with the AZURA® Tubing Kit (A9650), suitable for all analytical HPLC systems, max. flow rate 50 ml/min	A3375
Mobile Phase Filter, Biocompatible PE, 20 µm, 1/8" pipe OD, suitable for all FPLC systems, max. flow rate 500 ml/min	A3364
AZURA® Tubing kit with cap and solvent filter (A3375, stainless steel, 10 µm), suitable for all analytical HPLC systems	A9650
AZURA® Tubing kit bio with cap and insert, solvent filter inlet and fittings, 1 set	A96507
Inlet-bushing kit with 1/4"-PTFE Tubing and 20 µm stainless steel solvent filter (up to 250 ml/min)	A58207

AZZ00NA

AZZ00NB

AZZ10NB

FZZ2

Pulse dampers

KNAUER Pulse Damper, Low Volume, 275 µl, stainless steel, 1/16'', 1000 bar	AZZ00NA
KNAUER Pulse Damper, High Volume, 290 µl, stainless steel, 1/16'', 1000 bar	AZZ00NB
This pulse damper combines high damping performance with reliable, membrane-free assembly. Fully biocompatible, it can be easily integrated into all AZURA® FPLC systems.	AZZ10NB
Mounting Bracket KNAUER Pulse Damper	FZZ2

A9861

A9868

A98611

A58267

Pump head inlet fittings

Pump head inlet for AZURA® Pump P 2.1L, BlueShadow 80P, 1/4" (NPT), stainless steel	A9861
Pump head inlet for AZURA® Pump P 2.1L, Set, 1/2"-20 UNF, PEEK with CTFE (Kel-F) adapter, including tubing 1/4" PTFE	A9868
Inlet bushing for prep pump heads, adapter to 3/8" tube stub	A98611
Inlet bushing for binary LPG prep pump heads, LPG inlet to 3/8" tube stub	A98612
Inlet bushing for LPG prep pump heads, LPG ternary inlet to 3/8" tube stub	A98613
Male connector to connect a 1/4'' OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58267
Male connector to connect a 4 mm OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58268
Male connector to connect a 1/8'' OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58269
Inlet-bushing kit for P 2.1S, P 4.1S, P 6.1L, 40P and S1050 pumps for pump heads 10 ml (1/8" capillaries)	A58202
Inlet-bushing kit for P 2.1S, P 4.1S, P 6.1L, 40P and S1050 pumps for pump heads 10 ml (1/16" capillaries)	A58203
Inlet-bushing kit for P 2.1S, P 4.1S, P 6.1L, 40P and S1050 pumps for pump heads 50 ml (1/8" capillaries)	A58204
Inlet-bushing kit for P 2.1S, P 4.1S, P 6.1L, 40P and S1050 pumps for pump heads 50 ml (1/16" capillaries)	A58205
Inlet-bushing kit with 1/4"-PTFE tubing and 20 µm stainless steel solvent filter (up to 250 ml/min)	A58207

A5822

A7200

Pump head outlet fittings

Outlet-bushing kit 1/8" tube stub for S1800, 80P and P 2.1L pumps	A5822
Adapter to connect a capillary with 1/16" OD (thread: 10-32 UNF) to AZURA® Pump P 2.1L or BlueShadow Pump 80P outlet (1/8", M8x1 thread), material: stainless steel, 2 pcs.	A7200

AHB40XA

AHB32

AHC20

AHB40CA

Replacement pump heads for analytical AZURA® pumps

Pump head 10 ml, stainless steel, 862 bar	AHB40XA
Pump head 10 ml, stainless steel, 400-700 bar	AHB40
Pump head 10 ml, ceramic with PEEK bushings, 400 bar	AHB32
Pump head 10 ml, ceramic with Ti-bushings, 400 bar	AHB32DA
Pump head 10 ml, Hastelloy-C, 400 bar, for corrosive chemicals	AHB43
Pump head 50 ml, stainless steel, 300 bar	AHC20
Pump head 50 ml, ceramic, 200 bar	AHC22
Pump head 50 ml/min, Hastelloy® C, 300 bar, for corrosive chemicals	AHC23
Pump head 10 ml, stainless steel, 700 bar, for aqueous solutions	AHB40FA
Pump head 10 ml, ceramic with Titanium bushings, 400 bar, for aqueous solutions	AHB32GA
Pump head 50 ml, stainless steel, 300 bar, for aqueous solutions	AHC20FA
Pump head 50 ml, ceramic, 200 bar, for aqueous solutions	AHC22FA
Pump head 5 ml, stainless steel, 1000 bar	AHA60
Pump head 10 ml, stainless steel, for normal phase applications	AHB40BA
Pump head 10 ml, stainless steel, 700 bar, for high-temperature applications	AHB40CA
Pump head 50 ml, stainless steel, for normal phase applications	AHC20BA
Pump head 50 ml, stainless steel, 300 bar, for high-temperature applications	AHC20CA

A4029-1

A4029V2

A4021-1

A4021V2

Replacement pump heads for preparative AZURA® pumps

Pump head 100 ml, stainless steel, 400 bar	A4029-1
Pump head 100 ml, titanium, 400 bar	A4029V2
Pump head 250 ml, stainless steel, 200 bar	A4021-1
Pump head 250 ml, titanium, 200 bar	A4021V2
Pump head 500 ml, stainless steel, 100 bar	A4038-1
Pump head 500 ml, titanium, 100 bar	A4038V2
Pump head 1000 ml, stainless steel, 50 bar	A4022-1
Pump head 1000 ml, titanium, 50 bar	A4022V2

AZZ00AA

AZZ00AB

AZZ10AB

LPG modules

LPG module for Pump P 2.1L binary up to 800 ml/min (stainless steel)	AZZ00AA
LPG module for Pump P 2.1L ternary up to 220 ml/min (stainless steel)	AZZ00AB
LPG module for Pump P 2.1L ternary up to 220 ml/min (PEEK)	AZZ10AB

A2034-1

A2035-1

A57024

A57036-1

Temperature control

Pump head cooling and heating device for 100/250/500/1000 ml/min pump heads	A2034-1
Pump head cooling and heating device for 10 and 50 ml/min pump heads	A2035-1
Temperature controller for column heating sleeve	A57024
St~100 Transformer for small diameter column heating sleeves	A57024-3
Heating solution for 10 and 50 ml/min pump heads, includes temperature controller, heating plate and insulation sleeve	A57036-1
Heating solution for 10 and 50 ml/min pump heads, includes heating plate and insulation sleeve (without temperature controller)	A57037-1

Detector accessories

AMC19XA

A4045

A4061V2

A4061XB

Flow cells 1/16"

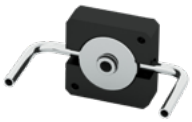
0.5 mm path length, 3 µl, 1/16", 200 bar, stainless steel, classical KNAUER flow cell	A4069
0.5 mm path length, 3 µl, 1/16", 100 bar, biocompatible, classical KNAUER flow cell	A4095
3 mm path length, 2 µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD	AMB18
3 mm path length, 2 µl, 1/16", stainless steel, classical KNAUER flow cell	A4042
3 mm path length, 2 µl, 1/16", 30 bar, biocompatible, classical KNAUER flow cell	A4045
10 mm path length, 10 µl, 1/16", 300 bar, stainless steel, for BlueShadow Detector 50D, S2550 and MW-1, classical KNAUER flow cell	A4061V2
10 mm path length, 10 µl, 1/16", 300 bar, stainless steel, with heat exchanger one sided inlet and outlet, classical KNAUER flow cell	A4061XB
10 mm path length, 2 µl, 1/16", 50 bar, LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD	AMC19XA
10 mm path length, 10 µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD	AMC38
10 mm path length, 2.4 µl, 1/16", 100 bar, biocompatible, fiber optic connectors, for PDA-1	A64150
50 mm path length, 6 µl, 1/16", 50 bar, High Sensitivity LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD	AMD59XA
50 mm path length, 10 µl, 1/16", 100 bar, biocompatible, fiber optics connectors, for PDA-1	A64151

A4066

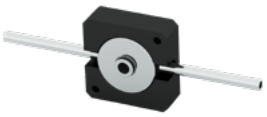
A4067

Flow cells 1/8"

2 mm path length, 1/8", 200 bar, stainless steel, changeable to 0.5/1.25 mm, classical KNAUER flow cell	A4066
2 mm path length, 1/8", 100 bar, biocompatible, changeable to 0.5/1.25 mm, classical KNAUER flow cell	A4067



A4068



A4068-2

Flow cells 1/4"

2 mm path length, 1/4" angular connections, 200 bar, stainless steel, changeable to 0.5/1.25 mm, without fittings, classical KNAUER flow cell	A4068
2 mm path length, 1/4" straight connections, 200 bar, stainless steel, changeable to 0.5/1.25 mm, without fittings, classical KNAUER flow cell	A4068-2

A4044

A4044HT

AMKX8KIT

A4047

Flow cells 1/16" fiber optics

0.5 mm path length, 3 µl, 1/16", 200 bar, stainless steel, fiber optic connectors, classical KNAUER flow cell	A4089
0.5 mm path length, 3 µl, 1/16", 100 bar, biocompatible, fiber optic connectors, classical KNAUER flow cell	A4096
3 mm path length, 2 µl 1/16", 30 bar, biocompatible, fiber optic connectors, classical KNAUER flow cell	A4047
3 mm path length, 2 µl, 1/16", 300 bar, 85 °C, stainless steel, fiber optic connectors, classical KNAUER flow cell	A4044HT
3 mm path length, 2 µl, 1/16", 300 bar, stainless steel, fiber optic connectors, classical KNAUER flow cell	A4044
10 mm path length, 10 µl, 1/16", 300 bar, stainless steel, fiber optic connectors, classical KNAUER flow cell	A4074
Fiber optics adapter kit for AZURA® Detector DAD/MWD, with fiber optic cables (1x 400 mm and 1x 750 mm) and mounting bracket	AMKX8KIT

A4078

A4079

Flow cells 1/8" fiber optics

2 mm path length, 1/8", 200 bar, stainless steel, fiber optic connectors, changeable to 0.5/1.25 mm, classical KNAUER flow cell	A4078
2 mm path length, 1/8", 100 bar, biocompatible, fiber optic connectors, changeable to 0.5/1.25 mm, classical KNAUER flow cell	A4079

A4081

A4153

A4152

A4152-1

Flow cells larger than 1/8" fiber optics

2 mm path length, 1/4" angular connections, 200 bar, stainless steel, fiber optic connectors, changeable to 0.5/1.25 mm	A4081
variable path length and variable volume, 1/4" straight connections, 200 bar, stainless steel, fiber optic connectors	A4081V2
2 mm path length, 1/4" TRI-Clamp connections, 80 bar, stainless steel, fiber optic connectors, changeable to 0.5/1.25 mm	A4153
2 mm path length, 3/8" TRI-Clamp connections, 80 bar, stainless steel, fiber optic connectors, changeable to 0.5/1.25 mm	A4152
7 mm path length, 3/8" TRI-Clamp connections, 10 bar, biocompatible, fiber optic connectors	A4152-1
2 mm path length, 1/2" TRI-Clamp connections, 80 bar, stainless steel, fiber optic connectors, changeable to 0.5/1.25 mm	A4154
10 mm path length, 3/8" TRI-Clamp connections, 10 bar, biocompatible, fiber optic connectors	A4154-1
2 mm path length, 3/4" TRI-Clamp connections, 80 bar, stainless steel, fiber optic connectors, changeable to 0.5/1.25 mm	A4155

A4104

Nano flow cell

3 mm path length, 6 nl, 375 µm OD, 50 µm ID, 300 bar, fused silica, fiber optic connectors	A4104

A0740

Fiber optic cables

Fiber optic cables (2 pcs.), 750 mm, 2x SMA 905 600/660, polymicro	A0740
Fiber optic cables (2 pcs.), custom made sizes, 2x SMA 905 600/660, polymicro	A0743
Fiber optic cables (2 pcs.), 750 mm, 2x SMA 905 600/660, polymicro, up to 85 °C	A0740HT

A4123

A4125

A4126

A4128

Test cells

Standard test cell for AZURA UVD 2.1S, UVD 2.1L and Smartline 200, 2520, 2500, 2550 and 2600	A4123
Test cell with fiber optic connectors for AZURA® Detector UVD 2.1S, UVD 2.1L and Smartline 2520, 2500 and 2600	A4125
Standard test cell with holmium filter for AZURA UVD 2.1S, UVD 2.1L and Smartline 200, 2520, 2500, 2550 and 2600	A4126
Test cell with holmium filter and fiber optic connectors for AZURA® Detector UVD 2.1S, UVD 2.1L and Smartline 200, 2520, 2500, 2550 and 2600 detectors	A4128
Standard test cell with stray light filter, WG280, for AZURA UVD 2.1S, UVD 2.1L and Smartline 200, 2520, 2500, 2550 and 2600	A4146
Test cell with stray light filter, WG280, and fiber optic connectors for AZURA® Detector UVD 2.1S, UVD 2.1L and Smartline 2520, 2500 and 2600	A4148

A9842

A9843

A9844

Waste tubing kits

Waste tubing kit for AZURA® Detector RID 2.1L, 1/16", 0.9 mm ID, 1500 mm length	A9841
Waste tubing kit for LightGuide flow cells, 1/16", 0.5 mm ID, 1500 mm length	A9842
Waste tubing kit for UV flow cells, 1/16", 0.5 mm ID, 1500 mm length	A9843
Waste tubing kit for UV flow cells, 1/8", 2 mm ID, 1500 mm length	A9844

AZZ00OC

External heat exchangers

AZURA® Heat Exchanger for analytical PressureProof flow cells, 14 µl internal volume	AZZ00OC

Adjustable flow splitters

Analytical post-column flow splitters for flow rates of 0.25 - 5.0 ml/min

The default inlet flow for calibration is 1.0 ml/min. However, please always specify your inlet flow (0.25 - 5 ml/min) before order. This way we can assure optimum pressure drop across the splitter, even if the inlet flow differs from the default calibration inlet flow rate.

For orders of spare parts please provide the part number and the serial number of the splitter.

Flow splitter	Split ratio [min.]	Split ratio [max.]
A1770-1	50:1	1000:1
A1770-2	15:1	300:1
A1770-3	5:1	100:1
A1770-4	1:1	20:1

Port size: 1/16" OD; UNF 10-32 thread

Max. operating pressure: 350 bar / 5.000 psi

Wetted materials: Stainless steel, PEEK, Teflon

Dimensions (HxWxD): 12.2 cm x 10.2 cm x 13 cm (4.8" x 4" x 5.1")

Semi-preparative post-column flow splitters for flow rates of 5.0 - 40 ml/min

The default inlet flow for calibration is 20.0 ml/min. However, please always specify your inlet flow (5.0 - 40 ml/min) before order. This way we can assure optimum pressure drop across the splitter, even if the inlet flow differs from the default calibration inlet flow rate.

For orders of spare parts please provide the part number and the serial number of the splitter.

Flow splitter	Split ratio [min.]	Split ratio [max.]
A5816-2	1 000:1	20.000:1
A5816-3	100:1	2 000:1
A5816-4	15:1	300:1
A5816-5	1:1	20:1

Port size: 1/16" OD; UNF 10-32 thread

Max. operating pressure: 350 bar / 5.000 psi

Wetted materials: Stainless steel, PEEK, Teflon

Dimensions (HxWxD): 12.2 cm x 10.2 cm x 13 cm (4.8" x 4" x 5.1")

Preparative post-column flow splitters

The preparative flow splitters are set to a custom split ratio. Therefore, please always specify your inlet flow and the desired split ration before order.
Please note, that the port of the low flow rate outlet has a UNF 10-32 threadi and is for 1/16" OD capillaries. For the ports of the Inlet and the high flow rate outlet we offer also versions with UNF 5/16-24 thread for 1/8" OD capillaries as indicated in the tabel below.

For orders of spare parts please provide the part number and the serial number of the splitter.

Flow splitter	Flow rate	Port size (inlet & outlet of high flow)
A5815-1	40 - 125 ml/min	1/16" OD UNF 10-32 thread
A5815-2	75 - 200 ml/min	1/16" OD UNF 10-32 thread
A5815-3	75 - 200 ml/min	1/8" OD UNF 5/16-24 thread
A5815-4	100 - 1 000 ml/min	1/16" OD UNF 10-32 thread
A5815-5	100 - 1 000 ml/min	1/8" OD UNF 5/16-24 thread

Max. operating pressure: 350 bar / 5.000 psi

Wetted materials: Stainless steel, PEEK, Teflon

Dimensions (HxWxD): 12.2 cm x 10.2 cm x 13 cm (4.8" x 4" x 5.1")

Further information:
www.knauer.net/en/Systems-Solutions/Accessories-and-supplies/FlowSplitter

A5815-1

Valve accessories

Fittings for 1/8" valves of V 4.1 valve generation

A7205

A7206

A7207

A7212

Bushings for 1/8" UNF 1/4-28 coned

1/8″ Bushing, short, for UNF 1/4-28 thread, SSt	A7205
1/8″ Bushing, long, for UNF 1/4-28 thread, SSt	A7206
1/8″ Bushing, long, UNF 1/4-28 thread, SSt, for biconical sealing	A7207
1/8'' Blind fitting, for UNF 1/4-28 thread, SSt	A7208
1/8'' Bushing with integrated sealing ring, for UNF 1/4-28 thread, PEEK	A7209
1/8″ Bushing for bionical sealing, UNF 1/4-28 thread, PEEK	A7210
1/8'' Bushing with integrated seal ring, for UNF 1/4-28 thread, PCTFE	A7211
1/8″ Blind plug, for UNF 1/4-28 thread, PEEK	A7212

A7213

A7214

A7215

A7217

Ferrules, seal rings and clamp rings for 1/8- UNF 1/4-28 coned

1/8″ Ferrule for wrench-tight fittings, for ports with UNF 1/4-28 thread, SSt	A7213
Split-grooved clamp ring for 1/8″ capillary, for ports with UNF 1/4-28 thread, SSt	A7214
Split-grooved clamp ring for 1/8'' capillary, for ports with UNF 1/4-28 thread, Titanium	A7215
Biconical seal ring for 1/8″ capillary, for ports with UNF 1/4-28 thread, PTFE	A7216
Seal ring for 1/8″ capillary, for ports with UNF 1/4-28 thread, PEEK	A7217

A7218

A7219

A7220

A7221

Adapters and couplings for 1/8- UNF 1/4-28 coned

Coupling to connect two 1/8″ capillaries, 1/8″ (UNF 1/4-28) to 1/8″ (UNF 1/4-28), SSt	A7218
Coupling to connect two 1/8″ capillaries, 1/8″ (UNF 1/4-28) to 1/8″ (UNF 1/4-28), Titanium	A7219
Coupling to connect two 1/8″ capillaries, 1/8″ (UNF 1/4-28) to 1/8″ (UNF 1/4-28), PEEK	A7220
Coupling to connect 1/16″ with 1/8″ capillary 1/8″ (UNF 1/4-28) to 1/16″ (UNF 10-32), SSt	A7221
Coupling to connect 1/16″ with 1/8″ capillary, 1/8″ (UNF 1/4-28) to 1/16″ (UNF 10-32), Titanium	A7222
Coupling to connect 1/16″ with 1/8″ capillary, 1/8″ (UNF 1/4-28) to 1/16″ (UNF 10-32), PEEK	A7223
T-connector to connect 3 capillaries with 1/8'' OD (material: stainless steel, Swagelok®)	A58260
Adapter to connect a capillary with 1/16″ OD (thread: 10-32 UNF) to 1/8″ (1/4-28 UNF coned), PEEK	A7224

KNAUER

Sample loops

Sample loops 1/16" SST incl. fittings

These stainless steel sample loops are designed to be used for 1/16" injection valves with a UNF 10-32 thread.

Sample loop,1 µl, stainless steel, 0.1 mm ID	A05642
Sample loop, 2 µl, stainless steel, 0.1 mm ID	A05643
Sample loop, 5 µl, stainless steel, 0.25 mm ID	A05644
Sample loop, 10 µl, stainless steel, 0.25 mm ID	A05645
Sample loop, 20 µl, stainless steel, 0.25 mm ID	A05646
Sample loop, 50 µl, stainless steel, 0.45 mm ID	A05647
Sample loop, 100 µl, stainless steel, 0.45 mm ID	A05648
Sample loop, 200 µl, stainless steel, 1 mm ID	A0565
Sample loop, 500 µl, stainless steel, 1 mm ID	A0566
Sample loop, 1000 µl, stainless steel, 1 mm ID	A0567
Sample loop, 2000 µl, stainless steel, 1 mm ID	A0568
Sample loop, 5000 µl, stainless steel, 1.6 mm ID	A0586-2

Sample loops 1/8" SST incl. fittings

These stainless steel sample loops are designed to be used for 1/8" injection valves. Based on the port geometry of the valve we offer two variants. For our older valve generations (e.g. V 2.1 valves) please use the one with M8x1 fittings.
For our current V 4.1 valve generation please choose the variant with UNF 1/4-28 fittings. If you´re not sure which sample loop to select, you can check the thread specification for your individual valve on our website.

1 ml sample loop, stainless steel, 2.2 mm ID, incl. M8x1 fittings	A1043
1 ml sample loop, stainless steel, 2.2 mm ID, incl. UNF 1/4-28 fittings	A142609
2 ml sample loop, stainless steel, 1.6 mm ID, incl. M8x1 fittings	A1044
2 ml sample loop, stainless steel, 1.6 mm ID, incl. UNF 1/4-28 fittings	A142610
10 ml sample loop, stainless steel, 1.76 mm ID, incl. M8x1 fittings	A0843
10 ml sample loop, stainless steel, 1.76 mm ID, incl. UNF 1/4-28 fittings	A142611

Sample loops 1/16" PEEK incl. fittings

Sample loop, 10 µl, PEEK, 345 bar, 0.25 mm ID	A1058
20 µl, PEEK, 345 bar, 0.25 mm ID	A1059-1
20 µl, PEEK, 345 bar, 0.5 mm ID	A1059
Sample loop, 50 µl, PEEK, 240 bar, 0.75 mm ID	A1060
Sample loop, 100 µl, PEEK , 240 bar, 0.75 mm ID	A0508
Sample loop, 200 µl, PEEK, 240 bar, 0.75 mm ID	A1061
Sample loop, 500 µl, PEEK, 240 bar, 0.75 mm ID	A1057
Sample loop, 1000 µl, PEEK, 240 bar, 0.75 mm ID	A0423
Sample loop, 2000 µl, PEEK, 240 bar , 0.75 mm ID	A0785

Sample loops 1/8" PEEK incl. fittings

5 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. M8x1 fittings	A78980
5 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. UNF 1/4-28 fittings	A142612
10 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. M8x1 fittings	A78985
10 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. UNF 1/4-28 fittings	A142613

Syringes & injection ports

A0723

TECH TIP

For full-loop injections an overfilling with sample of two to five loop volumes is recommended to ensure precise and reproducible results. Therefore, choose a syringe that exceeds the loop volume by the mentioned factor.

Injection syringes for 1/16" injektion port

Injection syringe 10 µl	A0723
Injection syringe 25 µl	A0724
Injection syringe 50 µl	A0725
Injection syringe 100 µl	A0726
Injection syringe 250 µl	A0727
Injection syringe 500 µl	A0728
Injection syringe 1000 µl	A0729
Injection syringe 2500 µl	A0730

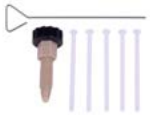
A0653 A0653

Luer-Lock glass syringes for 1/8" injection port

Luer-Lock glass syringe, 10 ml	A0573
Luer-Lock glass syringe, 20 ml	A0653

A0555

A0328



A03281

A0505

Loop filling ports

Guide for the injection port of manual injection valves to make the insertion of different sized injection needles safer.	A0555
Injection Port, stainless steel, 1/16"	A0328
Injection Port, PEEK, 1/16"	A03281
Injection Port, stainless steel, 1/8"	A0505
Injection Port, PEEK, 1/8"	A05051
Injection Port, 1/8", UNF 1/4-28, PEEK	A05053

Purification accessories

A70054V3

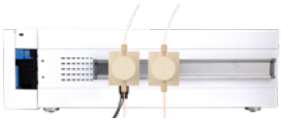
A70054V4

A57024

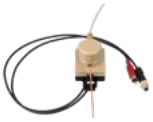
A57026

Eluent & column heating

Eluent heating device (1 channel), 1/16'', temperature range: ambient to 100 °C, 5,7'' display, cleanroom compatible	A70054V3
Eluent heating device (2 channels), 1/16'', temperature range: ambient to 100 °C, 5,7'' display, cleanroom compatible	A70054V4
Eluent heating device (2 channels), 1/16'', temperature range: ambient to 60 °C, 5,7'' display, cleanroom compatible, reduced dead volume	A70054V6
Temperature controller for column heating sleeve	A57024
Heating sleeve for HPLC column 150 x 20 mm HM D = 25..57* L = 193 mm 100 °C, 230 V, 200 W, Pt100	A57026
Heating sleeve for HPLC column 250 x 20 mm HM D = 25..57* L = 293 mm 100 °C, 230 V, 200 W, Pt100	A57027
Heating sleeve for HPLC column 150 x 30 mm HM D = 38..70* L = 203 mm 100 °C, 230 V, 400 W, Pt100	A57028
Heating sleeve for HPLC column 250 x 30 mm HM D = 38..70* L = 303 mm 100 °C, 230 V, 500 W, Pt100	A57029
Heating sleeve for HPLC column 150 x 50 mm HM D = 60..100* L = 211 mm 100 °C, 230 V, 500 W, Pt100	A57030
Heating sleeve for HPLC column 250 x 50 mm HM D = 60..100* L = 311 mm 100 °C, 230 V, 800 W, Pt100	A57031
Heating sleeve for HPLC costum made up to 350 x 50 mm	A57032
Heating sleeve for HPLC costum made up to 350 x 50 mm (moisture-proof, for clean room use)	A57034



AZG10



AZG10-1

AZG10-2

A70083

Purification accessories

Pressure control for delta pressure measurement up to 250 ml/min for 1/16" and 1/8". Incl. interface box.	AZG10
External pressure sensor up to 250 ml/min for 1/16" and 1/8".	AZG10-1
External pressure sensor for up to 1000 ml/min for 1/4", 0 - 10 bar, analog output	AZG10-2
External pressure sensor for up to 1000 ml/min for 1/4", 0 - 10 bar, LAN	AZG10-3
External pressure sensor for up to 1000 ml/min for 1/4", 0 - 10 bar, LAN, biocompatible	AZG10-4
External pressure sensor for up to 1000 ml/min for 1/8", 0 - 50 bar, LAN	AZG10-5
Air sensor (1/16") for AZURA® Bio LC with one air sensor and wiring for up to 4 air sensors	A70092
Additional air sensor for AZURA® Bio LC for 1/16" tubing	A70092-1
Air sensor (1/8") for AZURA® Bio LC with one air sensor and wiring for up to 4 air sensors	A70093
Additional air sensor for AZURA® Bio LC for 1/8" tubing	A70093-1
Air sensor (1/4") for AZURA® Bio LC with one air sensor and wiring for up to 4 air sensors	A70083
Additional Air Sensor for AZURA® BIO LC for 1/4" tubing	A70083-1
AZURA Organizer for attachment of columns and FPLC accessoires to an AZURA® device or system	A70085
Clamp for AZURA® Organizer 12 mm	A70085-1
Clamp for AZURA® Organizer 16 mm	A70085-2
Clamp for AZURA® Organizer 25 mm	A70085-3
AZURA® Click rail to attach IFU 2.1 LAN, air sensors, pressure sensors, pH flow cells or the AZURA® Organizer to AZURA® L devices	A70089
Don't forget to order! Power Supply: Distribution Box 24 V for 6 devices like air sensor, external pressure sensor, IFU 2.1 LAN	AZS80SA

Lab equipment

A0569

A0851

A0809

A9865

Capillary and tube cutter

Tube cutter, suitable for all tubes	A0569
Capillary cutter for PEEK capillaries and tubings with OD up to 4 mm	A0851
Metal capillary cutting pliers for 1/16" capillaries	A0809
Metal capillary cutter for 1/8" capillaries	A9865

Tools

X0219

X0003

X0030

Wrenches & tightening tools

Torque wrench basic tool, 1 - 25 Nm, without plug-in head	X0219
Open-jaw plug-in head for Torque wrench X0219, 1 - 17 mm (for 100 - 1000 ml pump head in-/outlet and LPG block)	X0220
Open-jaw plug-in head for Torque wrench X0219, 1 - 10 mm (for Smartline I pump heads)	X0221
Open-jaw plug-in head for Torque wrench X0219, 1 - 13 mm (for 10 - 50 ml Smartline II/ AZURA® pump heads in-/outlet)	X0222
Double open-end wrench, 1/4" and 5/16"	X0003
Double open-end wrench, 8/10 mm	X0030
Double open-end wrenches, 2 pcs., 1/4"and 5/16"	A0138
Tightening tools for PEEK fittings, blue, 1/16" fittings 1/4" hex head nut (10 - 32 threads)	A25030
Tightening tools for PEEK fittings, green, 1/32" fittings 3/16 hex head nut (6 - 40 threads)	A25031

A0137

A9864

A9870

Capillary graters and benders

Capillary grater for degrating of 1/16" stainless steel capillaries, can also be used to remove column filters	A0137
Capillary grater for degrating of 1/8" stainless steel capillaries	A9864
Tube bender for 1/8" and 3/16" tubings with an bend radius of 90°	A9870

A1033

A1033-2

Tool kits for AZURA® systems

Tool Kit AZURA® for systems with PEEK or pre-cut capillary kits	A1033
Tool Kit AZURA® for 1/16" systems (stainless steel)	A1033-1
Tool Kit AZURA® for 1/8" systems (stainless steel)	A1033-2

Racks

A70010

A70011

Application example (devices not included in the scope of delivery)

A9860

LC racks - space saving solution for AZURA system setup

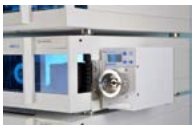
The Benchtop Racks area solution to install AZURA® L systems at space-limited sites, especially in cold rooms.

Benchtop rack: AZURA® S 300 x 160 x 210 mm (WHD), designed to place an AZURA® S device with a height of 129 mm beneath it	A70016
Benchtop rack: AZURA® L low 480 x 190 x 420 mm (WHD), designed to place AZURA® S or low AZURA® L devices with a height of 150 mm beneath it	A70010
Benchtop rack: AZURA® L high 480 x 430 x 420 mm (WHD), designed to place the Foxy fraction collector or AZURA® L devices beneath it	A70011
Benchtop rack: custom made with individual dimensions	A70015
Product Riser AZURA®: Set of 4 feet that lift the device to a height of 28 mm for easy handling of the waste tube of the drainage system - for L devices before 2018	A9860

Mounting brackets

A9853

A9854-2



A9854-3

A9853-5

AZURA® mounting brackets

Mounting bracket AZURA® L for KNAUER manual injection valves	A9853
Mounting bracket AZURA® L for Vici valve drives	A9853-2
Mounting bracket AZURA® L for columns with 25 - 29 mm AD	A9853-3
Mounting bracket AZURA® L for KNAUER flow cells	A9853-5
Mounting bracket AZURA® L for prep sample loop	A9853-6
Mounting bracket AZURA® L for Hypershear mixing chambers	A9853-8
Mounting bracket AZURA® L Bio for manual KNAUER injection valve, pH-flowcell and a prepacked column	A9854-1
Mounting bracket AZURA® S for manual KNAUER injection valve	A9854-2
Mounting bracket AZURA® L for AZURA® Valve Unifier VU 4.1, AZURA® Conductivity monitor CM 2.1S, AZURA® Degasser DG 2.1S or AZURA® UV detector UVD 2.1S on AZURA® L devices	A9854-3

Column holders

A9847

A1319

A70190

A0070A

LC column holder/multi column base

Column holder: Magnetic clip, for all KNAUER columns with 3, 4 and 4.6 mm ID, compatible with all AZURA® devices	A9847
Prism column holder for horizontal storage of HPLC columns on the lab bench, the most price attractive alternative to store your HPLC columns	A3983
Glass column holder, Stand, plate and 2 clamps, can hold one glass column in the dimensions of 10 - 40 mm ID	A1319
Multi Column Base Bio 60 x 40 x 130 cm (w x d x h) for up to 3 MPLC columns with conn. for cooling device	A70190
Multi Column Base including bosshead and clamps, serves as a holder for up to 3 columns with inner diameter up to 50 mm, especially made for preparative column solutions	A0070A

A4364

A4368

A2820

A2820A

Accessories for LC column holder

3-finger clamps, long shaft, finger with silicone coating, clamp width 12 - 100 one piece	A4364
3-finger clamps, short shaft, finger with silicone coating, clamp width 12 - 100, one piece	A4364-1
Clamp for Multi Column Base, short shaft, to fix an HPLC column or other accessories to the Multi Column Base, for up to 20 mm ID columns	A4368
Clamp for Multi Column Base, long shaft, to fix an HPLC column or other accessories to the Multi Column Base, for up to 20 mm ID columns	A2820
Bosshead squared for Multi Column Base, used in combination with clamps with a long shaft on the Multi Column Base	A2820A

Installation accessories

A1071

A9862

Installation accessories

HPLC Standard accessory kit	A1071
Installation Box Kit, Box for small parts, KNAUER file folder and support sticker	A9862

Consumables

Fittings and bushings

KNAUER K-connect fittings

The K-Connect system consists of a bushing, a split-grooved clamping ring, and a polymer sealing. The split-grooved clamping ring and polymer sealing are slipped over the capillary "back to back", while the bushing tightens all parts. K-Connect fingertight fittings can optionally be tightened further using wrenches if a higher backpressure resistance is needed.

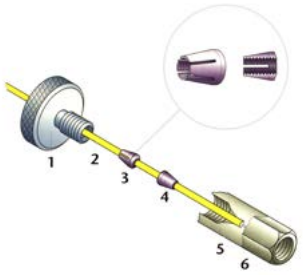
Article number	Description	Material	For capillary OD [inch]	Thread	Included ferrules	Max.back-pressure [bar]	Amount in set	Picture
A9646	Fingertight Fitting, long	PEEK	1/16"	UNF 10/32	Biconical sealing rings A1022	n/a	2	
A9646-1	Fingertight Fitting, long	PEEK	1/16"	UNF 10/32	Biconical sealing rings A1070	n/a	10	
A9645	Fingertight Fitting, long	SST	1/16"	UNF 10/32	Split-grooved clamping rings A0484 and polymer Sealing rings A0139	1200	2	
A9645-1	Fingertight Fitting, long	SST	1/16"	UNF 10/32	Split-grooved clamping rings A0484 and polymer Sealing rings A0139	1200	10	
A9647	Standard Fitting	SST	1/16"	UNF 10/32	Stainless steel ferrules A0110	1200	2	
A9647-1	Standard Fitting	SST	1/16"	UNF 10/32	Stainless steel ferrules A0110	1200	10	

Flat bottom fittings

Article number	Description	Material	For capillary OD [inch]	Thread	Included ferrules	Amount in set	Picture
A5829	Bushings flat bottom, super flangeless	PEEK	1/8"	1/4-28	without ferrules	10	
A58291	Bushings flat bottom, super flangeless	PEEK	1/16"	1/4-28	without ferrules	10	
A58292	Ferrules for super flangeless fittings, with lock ring	PEEK/Stainless steel	1/16"			10	
A58293	Ferrules for super flangeless fittings, with lock ring	PEEK/Stainless steel	1/8"			10	
A58294	Ferrules for super flangeless fittings, with lock ring	ETFE/Stainless steel	1/8"			10	

Dynaseal Fittings

The DYNASEAL connecting system connects capillaries made out of stainless steel and PEEK, as well as PTFE and Tefzel tubings with low dead volumes. It allows maintenance-free operation and provides a long life. Suitable for UNF-threads of type 10/32.
The system consists of a bushing ①, a split-grooved clamping ring ③ and a polymer ferrule ④. The split-grooved clamping ring and polymerferrule are slipped over the capillary ② "back to back", while the bushing tightens all parts. Thus, leak-free operation is made possible.
DYNASEAL connections are pressure stable up to 450 bar. DYNASEAL can be optionally used with double-cone sealings made out of PEEK. In this case, pressure stability is accordingly reduced to 150 bar.



Article number	Description	Material	For capillary OD [inch]	Thread	Included ferrules	Max.back-pressure [bar]	Amount in set	Picture
A0108	Dynaseal bushings, short	SST	1/16"	UNF 10/32	Split-grooved clamping rings A0484 & polymer Sealing rings A0139	450	4	
A1021	Dynaseal bushings, short	SST	1/16"	UNF 10/32	without ferrules	depends on ferrule	10	
A0181	Dynaseal bushings, long	SST	1/16"	UNF 10/32	Split-grooved clamping rings A0484 & polymer Sealing rings A0139	450	3	
A1064	Dynaseal bushings, long	SST	1/16"	UNF 10/32	without ferrules	depends on ferrule	5	
A1020	Dynaseal bushings, short	SST	1/16"	UNF 10/32	Biconical sealing rings A1022	150	10	
A1069	Dynaseal bushings, long	SST	1/16"	UNF 10/32	Biconical sealing rings A1022	150	5	
A0736	Dynaseal bushings, long	SST	1/8"	M8x1	Split-grooved clamping rings A1239 & polymer Sealing rings A0232	n/a	4	
A0735	Dynaseal bushings, long		1/8"	M8x1	without ferrules	depends on ferrule	4	
A0644	Dynaseal bushings, short	SST	1/8"	M8x1	Split-grooved clamping rings A1239 & polymer Sealing rings A0232	n/a	4	
A1201	Dynaseal bushings, long, hex head	SST	1/8"	M8x1	without ferrules	depends on ferrule	4	
A1201-1	Dynaseal bushings, long, hex head	PEEK	1/8"	M8x1	without ferrules	depends on ferrule	4	

Standard fittings, stainless steel

Article number	Description	Material	For capillary OD [inch]	Thread	Included ferrules	Max.back-pressure [bar]	Amount in set	Picture
A0112	Bushings short, wrench caliber 1/4"	SST	1/16"	UNF 10/32	without ferrules	1200	10	
A0113	Bushings short, wrench caliber 1/4"	SST	1/16"	UNF 10/32	without ferrules	1200	25	
A0115	Bushings long, wrench caliber 1/4"	SST	1/16"	UNF 10/32	without ferrules	1200	3	
A0116	Bushings long, wrench caliber 1/4"	SST	1/16"	UNF 10/32	without ferrules	1200	10	
A0830	Bushings, wrench caliber 10	SST	1/8"	M8x1	without ferrules	n/a	10	
A7227	Fitting Set for 1/8"	SST	1/8"	UNF 5/16-24	with ferrules	400	2	

Standard fittings, PEEK & polymer

Article number	Description	Material	For capillary OD [inch]	Thread	Included ferrules	Max.back-pressure [bar]	Amount in set	Picture
A0141	Bushings knurled, short	Polymer	1/16"	UNF 10/32	without ferrules	depends on ferrule	10	
A0142	Bushings knurled, short	Polymer	1/16"	UNF 10/32	without ferrules	depends on ferrule	30	
A0144	Bushings knurled, long	Polymer	1/16"	UNF 10/32	without ferrules	depends on ferrule	10	
A0145	Bushings knurled, short	Polymer	1/16"	UNF 10/32	integrated sealing cone	n/a	10	
A0584	Bushings short	PEEK	1/16"	UNF 10/32	integrated sealing cone	n/a	10	
A0733	Bushings short	Polymer	1/8"	M8x1	integrated sealing cone	n/a	10	
A2501	Bushings short, hex-head	PEEK	1/16"	UNF 10/32	integrated sealing cone	350	1	
A25011	Bushings short, hex-head	PEEK	1/16"	UNF 10/32	integrated sealing cone	350	5	
A2502	Bushings long,hex-head	PEEK	1/16"	UNF 10/32	integrated sealing cone	350	1	
A25021	Bushings long, hex-head	PEEK	1/16"	UNF 10/32	integrated sealing cone	350	5	
A7226	Fitting Set for 1/8"	PEEK	1/8"	UNF 5/16-24	incl. ferrules and clamp rings	100	2	

Fittings

A9646

A9646-1

A9645

A9645-1

K-Connect system

K-Connect Fingertight Fitting, PEEK, long, Set of 2, incl. ferrule, UNF 10/32 Thread for 1/16 inch K-Connect and PEEK Capillaries	A9646
K-Connect Fingertight Fitting, PEEK, long, Set of 10, incl. ferrule, UNF 10/32 Thread for 1/16 inch K-Connect and PEEK Capillaries	A9646-1
K-Connect Fingertight Fitting, Stainless Steel, long, Set of 2, incl. ferrules, UNF 10/32 Thread for 1/16 inch K-Connect Capillaries	A9645
K-Connect Fingertight Fitting, Stainless Steel, long, Set of 10, incl. ferrules, UNF 10/32 Thread for 1/16 inch K-Connect Capillaries	A9645-1
K-Connect Standard Fitting, Stainless Steel, Set of 2, incl. ferrule, UNF 10/32 Thread for 1/16 inch K-Connect Capillaries	A9647
K-Connect Standard Fitting, Stainless Steel, Set of 10, incl. ferrule, UNF 10/32 Thread for 1/16 inch K-Connect Capillaries	A9647-1

A0108

A0181

A1020

A1069

DYNASEAL system

DYNASEAL connection system, 1/16", 4 short bushings, 4 clamping rings and 8 sealing rings	A0108
DYNASEAL connection system, 1/16", 3 long bushings, 3 clamping rings and 4 sealing rings	A0181
DYNASEAL connection system, 1/16", 10 short bushings, 10 biconical sealing rings	A1020
DYNASEAL connection system, 1/16", 5 long bushings, 5 biconical sealing rings	A1069
DYNASEAL connection system, 1/8", M8x1, 4 long bushings, 4 clamping rings and 8 sealing rings	A0736
DYNASEAL connection system, 1/8", M8x1, 4 short bushings, 4 clamping rings and 8 sealing rings	A0644

Ferrules and clamping rings

A0484

Split-grooved clamping rings

4 Split-grooved clamping rings for capillaries with 1/16″ OD	A0484
4 Split-grooved clamping rings for capillaries with 1/8″ OD	A1239
100 Split-grooved clamping rings for capillaries with 1/16″ OD	A0482

A0139

A1062

A0232

Sealing rings

30 Sealing rings for capillaries with 1/16″ OD, PETP	A0139
100 Sealing rings for capillaries with 1/16″ OD, PETP	A0140
10 Sealing rings for capillaries with 1/16″ OD, PEEK	A1062
10 Sealing rings for capillaries with 1/8″ OD, PETP	A0232
10 Sealing rings for capillaries with 1/8″ OD, PEEK	A1063

A1070

A1022

A0738

Biconical sealing rings

10 Biconical sealing rings for 1/16″, PEEK	A1070
10 Biconical sealing rings for 1/16″, PETP	A1022
10 biconical sealing rings for 1/8″, PETP	A0738

A0112

A0115

Bushings for capillaries, SST

10 Bushings for capillaries with 1/16″ OD, stainless steel, wrench caliber 1/4″, UNF 10-32, short	A0112
25 Bushings for capillaries with 1/16″ OD, stainless steel, wrench caliber 1/4″, UNF 10-32, short	A0113
3 Bushings for capillaries with 1/16″ OD, stainless steel, wrench caliber 1/4″, UNF 10-32, long	A0115
10 Bushings for capillaries with 1/16″ OD, stainless steel, wrench caliber 1/4″, UNF 10-32, long	A0116
10 Bushings for capillaries with 1/8″ OD, M8x1, wrench caliber 10, stainless steel	A0830

A0110

A0874

A01101

Ferrules for capillaries

30 Ferrules for capillaries with 1/16″ OD, stainless steel	A0110
100 Ferrules for capillaries with 1/16″ OD, stainless steel	A0111
10 Ferrules for capillaries with 1/8″ OD, stainless steel	A0874
10 Ferrules for capillaries with 1/16″ OD, Hastelloy	A01101
10 Ferrules for capillaries with 1/16″ OD, titanium	A01102

A0141

A0142

A0144

A0145

Bushings for capillaries, PEEK & polymer

Bushings for 1/16″ capillaries, PETP, fingertight, UNF 10-32, short, 10 pcs.	A0141
Bushings for 1/16″ capillaries, PETP, knurled, UNF 10-32, short, 30 pcs.	A0142
Bushings for 1/16″ capillaries, PETP, fingertight, UNF 10-32, long, 10 pcs.	A0144
Bushings for 1/16″ capillaries, PETP, with integrated sealing cone, fingertight, UNF 10-32, short, 10 pcs.	A0145
Bushings for 1/16″ capillaries, PEEK, with integrated sealing cone, fingertight, UNF 10-32, 10 pcs.	A0584
Bushings for 1/8″ capillaries, PETP, with integrated sealing cone, fingertight, M8x1, short,10 pcs.	A0733
Bushing for 1/16″ capillaries, PEEK, with integrated sealing cone, wrench tight (Hex), UNF 10-32, short, 5 pcs.	A25011
Bushing for 1/16″ capillaries, PEEK, long, wrench tight (Hex), with integrated sealing cone, 5 pcs.	A25021

A5829

A58291

A58292

A58293

Flat bottom fittings and adapters

Bushings flat bottom for 1/8" capillaries, PEEK, Super flangeless, 1/4-28, 10 pcs.	A5829
Bushings flat bottom for 1/16" capillaries, PEEK, Super flangeless, 1/4-28, 10 pcs.	A58291
Ferrules for 1/16" capillaries and flat bottom bushings, PEEK, with lock ring (stainless steel), for Super flangeless bushings, 10 pcs.	A58292
Ferrules for 1/8" capillaries and flat bottom bushings, PEEK, with lock ring (stainless steel), for Super flangeless bushings, 10 pcs.	A58293
Ferrules for 1/8" capillaries and flat bottom bushings, ETFE, with lock ring (stainless steel), for Super flangeless bushings, 10 pcs.	A58294
Adapter PEEK 1/8" flat bottom internal on 1/16" external 10/32 thread	A1982
Adapter to connect an 1/16"-OD capillary onto an female, coned M8x1 port	A05841

Blind fittings & connectors

A0146

A0582

A0734

Blind fittings / Plugs

10 Blind plugs, 1/16", knurled, UNF 10-32, short, PETP	A0146
30 Blind plugs, 1/16", knurled, UNF 10-32, short, PETP	A0147
10 Blind plugs, 1/16", knurled, UNF 10-32, short, PEEK	A0582
10 Blind plugs, 1/8", knurled, M8x1, short, PETP	A0734

Couplings & adapters

A0148

A0233

A0233-1

A1407

Couplings and adapters

Coupling to connect 2 capillaries with 1/16'' OD (material: PEEK/PETP, thread: UNF10-32), including 2 bushings and sealing rings, 0.5 mm bore, suitable for classical HPLC, 1 pc.	A0148
Coupling to connect 2 capillaries with 1/16'' OD (material: PEEK/PETP, thread: UNF10-32), including 2 bushings and sealing rings, 0.5 mm bore, suitable for classical HPLC, 5 pcs.	A0149
Coupling to connect 2 capillaries with 1/16'' OD (material: PEEK, thread: 10-32 UNF), including 2 one-piece PEEK fittings, 0.5 mm bore, suitable for classical HPLC, 1 pc.	A0233
Coupling to connect 2 capillaries with 1/16'' OD (material: PEEK, thread: 10-32 UNF), without fittings, 0.5 mm bore, suitable for classical HPLC, 1 pc.	A0233-1
Coupling to connect 2 capillaries with 1/16'' and 1/8"OD (material: PEEK, thread: 10-32 UNF, M8x1), including 2 one piece fittings (1x 1/16", 1x 1/8"), 1 mm bore, 1 pc.	A1407
Coupling to connect 2 capillaries with 1/8"OD (material: PEEK, thread: M8x1), including 2 one piece fittings 1/8", 2 mm bore, suitable for preparative HPLC, 1 pc.	A14071

A0117V1

A2512

A0845

A0480

Couplings, SST/Titanium

Coupling to connect 2 capillaries with 1/16'' OD (material: titanium, thread: 10-32 UNF), including 2 bushings and ferrules, 0.5 mm bore, suitable for classical HPLC, 1 set	A0117V1
Coupling to connect 2 capillaries with 1/16'' OD (material: stainless steel, thread: 10-32 UNF), including 2 bushings and ferrules, 0.5 mm bore, suitable for classical HPLC, 1 set	A0117
Coupling to connect 2 capillaries with 1/16'' OD (material: stainless steel, thread: 10-32 UNF), including 2 bushings and ferrules, 0.5 mm bore, suitable for classical HPLC, 5 sets	A0118
Coupling to connect 2 capillaries with 1/16'' OD (material: stainless steel, thread: 10-32 UNF), including 2 bushings and ferrules, 0.5 mm bore, suitable for classical HPLC, 25 sets	A0119
Coupling to connect 2 capillaries with 1/8" OD (material: stainless steel, thread: M8x1), including 2 bushings and ferrules, 2 mm bore, suitable for preparative HPLC, 1 set	A2512
Coupling to connect a capillary with 1/16" OD to a capillary with 1/8'' OD (material: stainless steel, thread: M8x1, 10-32 UNF), 1 mm bore, 1 set	A2513
Coupling Dynaseal to connect a capillary with 1/16" OD to a capillary with 1/8'' OD (material: stainless steel, thread: M8x1, 10-32 UNF), including Dynaseal bushings and ferrules (1x 1/16", 1x 1/8"), 1 mm bore, 1 set	A0485
Coupling Dynaseal to connect 2 capillaries with 1/8" OD (material: stainless steel, thread: M8x1), including 2 Dynaseal bushings and ferrules, 2 mm bore, suitable for preparative HPLC, 1 set	A0480

A58263

A58264

A582886

A582891

SST Swagelok® unions & reducing unions

Union to connect 2 capillaries with 1/4" OD, material: stainless steel, Swagelok®	A58263
Reducer to connect a capillary with 3/8" OD to a capillary with 1/4'' OD, material: stainless steel, Swagelok®	A58264
Reducer to connect a capillary with 8 mm OD to a capillary with 1/4'' OD, material: stainless steel, Swagelok®	A58265
Reducer to connect a capillary with 1/8'' OD to a capillary with 1/4'' OD, material: stainless steel, Swagelok®	A58266
Reducer to connect a capillary with 1/16'' OD to a 1/8'' OD pipe, material: stainless steel, Swagelok®	A58270
Reducer to connect a capillary with 1/8'' OD to a 1/4'' pipe union, material: stainless steel, Swagelok®	A58271
Reducer for 1/4'' OD capillary to 1/8'' OD pipe socket, material: stainless steel, Swagelok®	A582713
Reducer to connect a 1/16'' tube socket to 1/4'' pipe union, material: stainless steel, Swagelok®	A58273
Reducer to connect a capillary with 4 mm OD to a 1/8'' pipe union, material: stainless steel, Swagelok®	A58282
Reducer to connect a capillary with 10 mm OD to a capillary with 1/4'' OD, material: stainless steel, Swagelok®	A58257
Reducer to connect a capillary with 12 mm OD to a capillary with 1/4'' OD, material: stainless steel, Swagelok®	A58258
Reducer to connect a capillary with 1/4" OD to a capillary with 1/8" OD, material: stainless steel, Swagelok®	A582881
Reducer to connect a capillary with 1/4'' OD to a 3/16'' OD pipe, material: stainless steel, Swagelok®	A582895
Reducer to connect a capillary with 1/4" OD to a capillary with 3/16'' OD, material: stainless steel, Swagelok®	A582894
Bulkhead Union to connect two capillaries with 1/16" OD, material: stainless steel, Swagelok®	A582882
Male connector to connect a 1/4'' OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58267
Male connector to connect a 4 mm OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58268
Male connector to connect a 1/8'' OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58269
Blind plug for 1/4" OD capillary, material: stainless steel, Swagelok®	A582883
Blind plug for 1/8" OD capillary, material: stainless steel, Swagelok®	A582884
Blind plug for 1/16" OD capillary, material: stainless steel, Swagelok®	A582885
Blind plug for 6 mm OD capillary, material: stainless steel, Swagelok®	A582892
Blind plug for 12 mm OD capillary, material: stainless steel, Swagelok®	A582893
Ferrule set for a capillary with 1/4" OD, 1 front Ferrule/ 1 back Ferrule, material: stainless steel, Swagelok®	A582886
Ferrule set for a capillary with 1/8" OD, 1 front Ferrule/ 1 back Ferrule, material: stainless steel, Swagelok®	A582887
Ferrule set for a capillary with 1/16" OD, 1 front Ferrule/ 1 back Ferrule, material: stainless steel, Swagelok®	A582888
Gap Inspection Gauge for 1/8" OD, 2 mm and 3 mm female nuts, material: stainless steel, Swagelok®	A582890
Gap Inspection Gauge for 1/4", 3/8", 1/2" OD, 6 mm and 12 mm female nuts, material: stainless steel, Swagelok®	A582891
Tube Fitting Union to connect two 1/8" OD capillaries, material: stainless steel, Swagelok®	A582671

Connectors

A2511

A0120

A58260

A58261

Metal T-connectors

T-connector to connect 3 capillaries with 1/8'' OD (material: stainless steel, thread: M8x1), including 3 bushings and ferrules	A2511
T-connector to connect 3 capillaries with 1/16'' OD (material: stainless steel, thread: 10-32 UNF), including 3 bushings and ferrules	A0120
Reducer to connect a capillary with 12 mm OD to a capillary with 1/4'' OD, material: stainless steel, Swagelok®	A58258
T-connector to connect 3 capillaries with 1/4'' OD (material: stainless steel, Swagelok®)	A58261
T-connector to connect 3 capillaries with 1/4'' OD (material: titanium, Swagelok®)	A58262

A150-1

A2511-1

A0150

Polymer T-connectors

T-connector to connect 3 capillaries with 1/16'' OD (material: PETP/POM, thread: 10-32 UNF, coned), inclusive 3 bushings and sealing rings	A0150
T-connector to connect 3 capillaries with 1/16'' OD (material: PEEK, thread: 10-32 UNF, coned), without bushings	A150-1
T-connector to connect 3 capillaries with 1/8'' OD (material: PEEK, thread: M8x1, coned), including 2 one piece 1/8"-PEEK fittings	A2511-1

A0121

A1096

A58272

SST X-connectors

X-connector to connect 4 capillaries with 1/16'' OD (material: stainless steel, thread: 10-32 UNF), including 4 bushings and ferrules	A0121
X-connector to connect 4 capillaries with 1/8'' OD (material: stainless steel, thread: M8x1), including 4 bushings and ferrules	A1096
X-connector to connect 4 tubings with 1/4'' OD (material: stainless steel, Swagelok®) for 1000 ml/min systems	A58272

A0151

Polymer X-connectors

X-connector to connect 4 capillaries with 1/16'' OD (material: PEEK, thread: 10-32 UNF), including 4 one-piece fittings	A0151

A5800

A5805

A5804

A5805

Pressure release valves

Pressure Release Valve Kit for AZURA® pump P 2.1L and 80P (25 to 50 bar), 1/8", stainless steel, cross piece titanium	A5800
Pressure Release Valve Kit for AZURA® pump P 2.1L and 80P (3.4 to 24 bar), 1/8", stainless steel, cross piece titanium	A5801
Pressure Release Valve for AZURA® pump P 2.1L and 80P (without spring), 1/4", stainless steel	A5802
Backpressure Regulator/pressure release valve kit for 1/16" OD tubing, stainless steel, provides a constant backpressure of 3 bar, contains pressure release valve tee and fittings for 1/16"	A5805
Backpressure Regulator/pressure release valve for 1/16" OD tubing, stainless steel, provides a constant back-pressure of 52 bar, contains pressure release valve tee and fittings for 1/16"	A5805-1
Spring for pressure release valve, 25 - 50 bar	M1070
Spring for pressure release valve, 3.4 - 24 bar	M1080
Back-Pressure Regulator/pressure relief valve for 1/8" and 1/16" OD tubing, 134 µl volume, PEEK, provides a constant back-pressure of 1.4 bar (20 psi), contains pressure release valve tee and fittings for 1/8" and 1/16"	A5804
Backpressure Regulator for 1/16" OD tubing, 134 µl volume, PEEK, provides a constant backpressure of 0.3 bar (5 psi), contains Y assembly and fittings	A5804-1

A70087

A70088

A70084

A70082

Backpressure regulators

Backpressure Regulator for 1/16" OD tubing, 10 - 32 threads, PEEK, Range 1 - 20 bar (15 - 300 psi)	A70087
Backpressure Regulator for 1/16" OD tubing, 10 - 32 threads, PEEK, Range 20 - 103 bar (300 - 1500 psi)	A70088
Backpressure Regulator for 1/16" OD tubing, 10 - 32 threads, stainless steel, Range 90 - 300 bar (1300 - 4200 psi)	A70084
Spare membranes for Backpressure Regulators A70084, A70087, A70088	A70082
Back-Pressure Regulator/pressure relief valve for 1/8" and 1/16" OD tubing, 134 µl volume, PEEK, provides a constant back-pressure of 1.4 bar (20 psi), contains pressure release valve tee and fittings for 1/8" and 1/16"	A5804
Backpressure Regulator for 1/16" OD tubing, 134 µl volume, PEEK, provides a constant backpressure of 0.3 bar (5 psi), contains Y assembly and fittings	A5804-1

Capillaries and Start up kits

A0130

KNAUER Capillaries, straight

Capillaries 1/16", SST

Stainless steel, 1/16" OD, 0.1 mm ID, 300 cm length, 1 pc.	A0130
Stainless steel, 1/16" OD, 0.25 mm ID, 300 cm length, 1 pc.	A0131
Stainless steel, 1/16" OD, 0.5 mm ID, 300 cm length, 1 pc.	A0132
Stainless steel, 1/16" OD, 0.7 mm ID, 300 cm length, 1 pc.	A0133
Stainless steel, 1/16" OD, 1 mm ID, 300 cm length, 1 pc.	A0134
Stainless steel, 1/16" OD, 0.1 mm ID, 10 cm length, 10 pcs.	A0123
Stainless steel, 1/16" OD, 0.1 mm ID, 20 cm length, 10 pcs.	A0124
Stainless steel, 1/16" OD, 0.1 mm ID, 30 cm length, 10 pcs.	A0125
Stainless steel, 1/16" OD, 0.25 mm ID, 10 cm length, 10 pcs.	A0126
Stainless steel, 1/16" OD, 0.25 mm ID, 20 cm length, 10 pcs.	A0127
Stainless steel, 1/16" OD, 0.25 mm ID, 30 cm length, 10 pcs.	A0128

Capillaries 1/16", titanium

Titanium, 1/16" OD, 0.7 mm ID, 50 cm length, 1 pc.	A0506

Capillaries 1/4", SST

Stainless steel, 1/4" OD, 4.6 mm ID, 100 cm length, straight, 1 pc.	A01322-4
Stainless steel, 1/4" OD, 4.6 mm ID, 150 cm length, straight, 1 pc.	A01322-5
Stainless steel, 1/4" OD, 4.6 mm ID, 200 cm length, straight, 1 pc.	A01322-6

Capillaries 1/8", SST

Stainless steel, 1/8" OD, 1.6 mm ID, 150 cm length, oval bent, 1 pc.	A0639
Stainless steel, 1/8" OD, 2.2 mm ID, 150 cm length, oval bent, 1 pc.	A0640
Stainless steel, 1/8" OD, 2.2 mm ID, 100 cm length, straight, 1 pc.	A0640-4
Stainless steel, 1/8" OD, 2.2 mm ID, 150 cm length, straight, 1 pc.	A0640-5
Stainless steel, 1/8" OD, 2.2 mm ID, 200 cm length, straight, 1 pc.	A0640-6
Stainless steel, 1/8" OD, 1.6 mm ID, 100 cm length, straight, 1 pc.	A0639-4
Stainless steel, 1/8" OD, 1.6 mm ID, 150 cm length, straight, 1 pc.	A0639-5
Stainless steel, 1/8" OD, 1.6 mm ID, 200 cm length, straight, 1 pc.	A0639-6

AZF40

AZF50

AZF60

AZF80

Capillaries, AZURA® Analytical K-Connect, SST 1/32" with fitting sleeve for 1/16" connections

Set of precut capillaries 0.1 mm, fittings, connectors and adapters, red	AZF40
Set of precut capillaries 0.18 mm ID, fittings, connectors and adapters, yellow	AZF50
Set of precut capillaries 0.45 mm, fittings, connectors and adapters, black	AZF60
Set of precut capillaries 0.1 and 0.18 mm ID, fittings, connectors and adapters, red/yellow	AZF80

AZF41

AZF51

AZF61

Capillaries, AZURA® Analytical K-Connect, SST 1/32" with fitting sleeve for 1/16" connections

Stainless steel, 0.1 mm ID, 150 mm length, red	AZF41
Stainless steel, 0.1 mm ID, 300 mm length, red	AZF42
Stainless steel, 0.1 mm ID, 400 mm length, red	AZF43
Stainless steel, 0.1 mm ID, 700 mm length, red	AZF44
Stainless steel, 0.1 mm ID, 900 mm length, red	AZF45
Stainless steel, 0.18 mm ID, 150 mm length, yellow	AZF51
Stainless steel, 0.18 mm ID, 300 mm length, yellow	AZF52
Stainless steel, 0.18 mm ID, 400 mm length, yellow	AZF53
Stainless steel, 0.18 mm ID, 700 mm length, yellow	AZF54
Stainless steel, 0.18 mm ID, 900 mm length, yellow	AZF55
Stainless steel, 0.45 mm ID, 150 mm length, black	AZF61
Stainless steel, 0.45 mm ID, 300 mm length, black	AZF62
Stainless steel, 0.45 mm ID, 400 mm length, black	AZF63
Stainless steel, 0.45 mm ID, 700 mm length, black	AZF64
Stainless steel, 0.45 mm ID, 900 mm length, black	AZF65

AZURA® Capillary start-up kit, SST

AZURA® start-up kit 1/16" stainless steel, capillary kit	A9849
AZURA® start-up kit 1/16", stainless steel, semi-prep, capillary kit	A9849-1
AZURA® start-up kit 1/8" stainless steel, capillary kit	A9850
AZURA® start-up kit 1/16" stainless steel, 0.25 mm ID precut capillaries	AZF70
AZURA® Accessory kit for ScaleUp system, 1/16" (0.25, 0.5, and 0.7 mm ID), stainless steel	A9850-1
AZURA® Start-Up Kit 1/4'' HPG, stainless steel, set of capillaries and fittings	A9850-2
AZURA® Start-Up Kit 1/4'' LPG, stainless steel, Set of capillaries and fittings	A9850-3

A50041

A9849-2

A70501

AZURA® Capillary start-up kits for special HPLC systems

AZURA® GPC Cleanup Start up kit, Tefzel-(ETFE) tubing, OD 1/16", ID 0.7 mm	A50041
AZURA® Accessory kit for ScaleUp system, 1/16" (0.25, 0.5, and 0.7 mm ID), stainless steel	A9850-1
AZURA® Capillary Start-up kit for educational system 1/16", stainless steel	A9849-2
AZURA® Start-up Kit PEEK, for Analytical HPLC System, up to 5 ml/min or 300 bar	A70501

Tubing

Articles grouped under the expression "by the meter" can be shipped in the desired length, by simply ordering it multiple times. E.g. ordering 3.4 x A2528 will result in capillary with a length of minimum 3.4 meters.

Note: If you need tubings with an exact length please contact KNAUER directly.

A70500

A70500A

A70600

A70300

Tubing start-up kits for FPLC

AZURA® FPLC Start-up kit, PEEK, 1/16" for 10 ml/min FPLC systems	A70500
AZURA® FPLC Start-up kit, transparent FEP, 1/16" for FPLC systems up to 10 ml/min and 20 bar	A70500A
AZURA® FPLC Start-up kit, PEEK/Tefzel, 1/16" for 50 ml/min FPLC systems	A70600
AZURA® FPLC Start-up kit, FEP/PEEK, 1/8" for 100 ml/min - 500 ml/min FPLC systems	A70300
AZURA® FPLC Start-up kit, PEEK, 1/8" for 100 ml/min - 500 ml/min FPLC systems, up to 100 bar.	A70300A
AZURA® FPLC Start-up kit, PEEK/Tefzel, 1/16" for FPLC systems up to 100 ml/min	A70300B
AZURA® FPLC Start-up kit, 1/4" for 1000 ml/min FPLC systems	A70400
AZURA® Start-Up Kit 1/4'' HPG, PFA, set of capillaries and fittings	A9850-4

A9869

A9869-1

Tubing, various OD, FEP

2.1 mm ID, 300 cm length, 1/8" OD (FEP tubing)	A9869
0.81 mm ID, 300 cm length, FEP tubing, 1/16" OD	A9869-1

A2522

Tubing 1/16" OD, PEEK, by meter

0.13 mm ID, variable length, max. pressure 420 bar, red striped	A2522
0.18 mm ID, variable length, max. pressure 400 bar, yellow striped	A2523
0.25 mm ID, variable length, max. pressure 385 bar, blue striped	A2524
0.50 mm ID, variable length, max. pressure 350 bar, orange striped	A2525
0.75 mm ID, variable length, max. pressure 240 bar, green striped	A2526
1.00 mm ID, variable length, max. pressure 165 bar, grey striped	A2527
1.40 mm ID, variable length, max. pressure 50 bar, black striped	A2528

Tubing 1/8" OD, PEEK, by meter

0.75 mm ID, variable length, max. pressure 345 bar, natural	A2541
1.59 mm ID, variable length, max. pressure 220 bar, natural	A2540
2.00 mm ID, variable length, max. pressure 165 bar, natural	A2542

A0182-1

Tubing 1/16" OD, Tefzel™, by meter

0.25 mm ID, variable length, max. pressure 185 bar	A0182-1
0.75 mm ID, variable length, max. pressure 115 bar	A0183-1
1.0 mm ID, variable length, max. pressure 85 bar	A04781-1

Tubing 1/8" OD, ETFE, by meter

1.6 mm ID, variable length, max. pressure 70 bar	A0478-1

Tubing, various OD, PTFE, by meter

0.45 mm ID, variable length, max. pressure 150 bar, 1.6 mm (1/16") OD	A0152-1
0.9 mm ID, variable length, 1.6 mm OD	A04782-1
1.45 mm ID, variable length, max. pressure < 10 bar, 2 mm OD	A0153-1
1.5 mm ID, variable length, max. pressure 35 bar, 3.2 mm (1/8") OD	A0732-1
2 mm ID, variable length, 1/8'' OD	A0873-1
3 mm ID, variable length, max. pressure 20 bar, 4 mm OD	A0154-1
7 mm ID, variable length, 9 mm OD	A1099-1
1.6 mm ID, variable length, 1/8" OD, black, antistatic	A3306
4.4 mm ID, variable length, 1/4" OD, black, antistatic	A3307

Tubing, various OD, PFA, by meter

PFA tubing, 1/4'' OD, 4 mm ID, translucent, max. pressure 15.4 bar, variable length	A31891
PFA tubing, 1/8'' OD, 1.6 mm ID, translucent, variable length	A31892
PFA tubing, 1/4'' OD, 4.8 mm ID, translucent, max. pressure 15.4 bar, variable length	A31891-1
PFA tubing, 1/8'' OD, 2.4 mm ID, translucent, variable length	A31892-1

Inline and pre-column filter, shut-off valves, and adapters

A3381

A00161

B2

A00164-1

Inline filters, SST, for HPLC

Inline Filter (prep.) 5-10 µm, stainless steel, max. flow rate 1000 ml/min (for 1/8" tubing)	A3381
Replacement frit for A3381 5-10 µm, stainless steel, max. flow rate 1000 ml/min	A33811
Inline Filter, PEEK body, stainless steel frit, 1/16", to protect your column, with 2 µm pore size, 3 pcs., easily connected directly to any column	A00161
UHPLC/HPLC precolumn filter, universal, 0.5 µm titanium frit, set of 5, stainless steel body, up to 1034 bar	B2
Inline Filter, stainless steel, frit 0.5 µm, 0.2 µl, for 1/16" capillaries, 0.25 mm bore, up to 1375 bar	A00164
Frit 0.5 µm, 0.2 µl for Inline Filter, stainless steel with 0.25 mm bore up to 1375 bar, 5 pcs.	A00164-1

A3378

A3378-1

A00162

Inline and pre-column filter, biocompatible, for FPLC

Inline Filter, PEEK/Titanium, 1/16", biocompatible, to protect your column, with 2 µm pore size titanium frit	A3378
Inline Filter, PEEK/Titanium, 1/16", biocompatible, to protect your column, with 10 µm pore size titanium frit	A3379
Replacement Frits 2 µm for Inline Filter, PEEK/Titanium, biocompatible	A3378-1
Replacement Frits 10 µm for Inline Filter, PEEK/Titanium, biocompatible	A3379-1
Inline Filter, PEEK body, titanium frit, 1/16", to protect your column, with 0.5 µm pore size, 3 pcs., easily connected directly to any column	A00162
Inline Filter, PEEK body, titanium frit, 1/16", to protect your column, with 2 µm pore size, 3 pcs., easily connected directly to any column	A00163

A5811

Shut-off valves

Shut-off valve, PEEK, 1/16", including connectors (1/4-28 flat bottom)	A5811
Shut-off valve, PEEK, 1/8", including connectors (1/4"-28 flat bottom)	A5812

A1980

A7237

A7238

Adapters

Luer Adapter to 10-32, ETFE, female Luer to male 10/32 threads for injection, simply screw the adapter in the port of your injection valve	A1980
Adapter to connect a capillary with 1/8" OD (thread: 1/4-28 UNF coned) to 1/16" V4.1 valve (thread: 10-32 UNF coned), material: sst	A7237
Adapter to connect a capillary with 1/8" OD (thread: 1/4-28 UNF) to 1/16" V4.1 valve (thread: 10-32 UNF coned), material: PEEK	A7238

Safety-caps

A59257

A59257-1

A59259

A59258

Safety caps sets for AZURA analytical systems

for isocratic systems, incl. filters, bottles and fittings	A59257
Safety Caps Set for HPG/LPG systems, incl. filters, bottles and fittings (4 pcs.)	A59257-1
for HPG systems, incl. filters, bottles and fittings (2 pcs.)	A59257-2
Eluent waste kit for all AZURA® Analytical systems, incl. filter, waste can and cap	A59258
Safety Cap set for AZURA® Preparative systems, for one eluent line, incl. filter, bottle and fittings	A59259
Waste Cap set for AZURA® Preparative systems, incl. filter, canister and fittings	A59259-1

A59260

A59261

A59231

A59234

Safety caps

Eluent Safety Cap, GL45 Thread, 2 ports, 1/4"-28 connection, including air valve and fittings	A59260
Eluent Safety Cap Prep, GL45 Thread, 2 ports for 1/4" tubing, including air filter and fittings	A59261
Eluent Safety Cap Prep, GL45 Thread, 2 ports for 1/4" tubing, including air filter and fittings	A59262
Eluent Safety Cap Filter, spare part, 6 months usable	A59263
VICI Cap, GL45 Thread, 3 ports, 1/4"-28 connection, including O-ring EPDM, nuts and ferrules	A59231
VICI Safety Cap with stopcocks, GL45 Thread, 3 ports, 1/4"-28 connection, including O-ring EPDM, nuts and ferrules	A59234
VICI Safety Cap with stopcocks, GL45 Thread, 4 ports, 1/4"-28 connection, including O-ring EPDM, nuts and ferrules	A59235
VICI Waste Cap, GL45 Thread, 3 ports 1/4"-28 connection, 1 x 10M x 1 for barbed hose adapter, including O-ring EPDM, nuts and ferrules	A59236
VICI Cap, GL45 Thread, 2 ports, 1/4"-28 connection, including O-ring EPDM, nuts and ferrules	A59232
VICI Cap, GL45 Thread, 2 ports, 1/4"-28 connection, including O-ring EPDM, nuts and ferrules	A59230
VICI Safety Cap with stopcocks, GL45 Thread, 2 ports, 1/4"-28 connection, including O-ring EPDM, nuts and ferrules	A59233

A59240

A59241

A59242

A59243

Safety caps accessories

VICI Safety Air Inlet Valve with 4 mm filter, fit any VICI cap or VICI safety cap	A59240
VICI Safety Air Inlet Valve with 15 mm filter, fit any VICI cap or VICI safety cap	A59241
VICI Safety Exhaust Filter filled with absorbent, fit any VICI cap or VICI safety cap	A59242
VICI Safety Exhaust Filter with detector, filled with absorbent, fit any VICI cap or VICI safety cap	A59243
O-ring FEP coated for sealing all VICI caps or VICI safety caps, improved chemical resistance	A59244
VICI 1/4-28 flangeless nuts, PPS, for 1/16" tubing, for VICI caps, 10 pcs.	A59245
VICI 1/4-28 flangeless nuts, PPS, for 1/8" tubing, for VICI caps, 10 pcs.	A59246
VICI inverted ferrules, ETFE, for 1/16" tubing, suitable for A59245, for VICI caps, 10 pcs.	A59247
VICI inverted ferrules, ETFE, for 1/8" tubing, suitable for A59246, for VICI caps, 10 pcs.	A59248
VICI plugs, PEEK, 1/4"-28, 1 pc., for closing unused ports for VICI caps	A59249
VICI Barbed hose adapter for 1/8" tubing, for VICI caps	A59251
Cellulose filter, 0.2 µm, 4 mm diameter for VICI Safety Air Inlet Valve, fit any VICI cap or VICI safety cap	A59252
Cellulose filter, 0.2 µm, 15 mm diameter for VICI Safety Air Inlet Valve, fit any VICI cap or VICI safety cap	A59253
VICI Barbed hose adapter for 8 mm ID tubing, for VICI caps	A59254
for basic solutions in IC, fit any VICI cap or VICI safety cap	A59255
AZURA® Tubing kit with cap and solvent filter (A3375, stainless steel, 10 µm), suitable for all analytical HPLC systems	A9650

A0638-6

A0638-7

A18201-3

A15854

Vial kits for analytical & preparative HPLC

Vials: Screw neck vials N9 (ø 11.6 mm), 1.5 ml, clear glass, flat bottom, wide opening, with label & scale Caps: Screw caps blue with septum silicone beige/PTFE white 100 pcs. each	A0638-6
Vials: Screw neck vials N9 (ø 11.6 mm), 1.5 ml, amber glass, flat bottom, wide opening, with label & scale Caps: Screw caps blue with septum silicone beige/PTFE white 100 pcs. each	A0638-7
Vials: Screw neck vials N9 (ø 11.6 mm), 1.5 ml, clear glass, flat bottom, wide opening, with label & scale Caps: Screw caps blue with septum rubber red/TEF colourless 100 pcs. each	A0638-8
Vials: Screw neck vials N9 (ø 11.6 mm), 1.5 ml, amber glass, flat bottom, wide opening, with label & scale Caps: Screw caps blue with septum rubber red/TEF colourless 100 pcs. each	A0638-9
Microinserts 0.1 ml for Screw neck vials N9, 1.5 ml, 100 pcs.	A18201-3
Vials: Screw neck vials N18 (ø 22.5 mm), 10 ml, clear glass, round bottom Caps: Screw caps, magnetic, with septum rubber red/TEF colourless 100 pcs. each	A15854

A01242

A0272

A7013

A02330

Osmometry consumables

Pack of 12 ampules NaCl calibrating solution, 300 mOsmol/kg	A01240
Pack of 12 ampules NaCl calibrating solution, 400 mOsmol/kg	A01241-1
Pack of 12 ampules NaCl calibrating solution, 850 mOsmol/kg	A01250
Pack of 12 ampules NaCl calibrating solution, 100 mOsmol/kg	A01242
Pack of 12 ampules NaCl calibrating solution, 2000 mOsmol/kg	A01248
100 Pack of plastic sample tubes for Semi-Micro Osmometer K-7400S	A02721
500 Pack of plastic sample tubes for Semi-Micro Osmometer K-7400S	A0272
1000 Pack of plastic sample tubes for the Semi-Micro Osmometer K-7400S	A0720
Cleaning tissue, lint-free, for thermistor cleaning	A02330
Printer paper for the plain paper printer A3711 (60 m roll)	A7013
Ribbon cartridge for the plain paper printer A3711 (black)	A7014

Standards for Performance Verification (PV)

A PV procedure is recommended for testing newly installed AZURA® systems as well as for regularly monitoring the system performance.

This table gives an overview of the needed PV document, PV standard and separation column for a specific AZURA® system.

Backpressure range	Type of detection	Flow cell path length [mm]	Injection: Sample loop volume [µl]	PV document	Article no. of PV standard	Article no. of HPLC column
UHPLC systems (max. 1000 bar)	UV, DAD	10	1 – 20	VPV-001: Analytical HPLC, UV detection	A01260-3	10BE181E2F
	UV, DAD	10	21 – 100	VPV-001: Analytical HPLC, UV detection	A01260-2	10BE181E2F
	UV, DAD	50	1 – 20	VPV-001: Analytical HPLC, UV detection	A01260-2	10BE181E2F
	UV, DAD	50	21 – 100	VPV-001: Analytical HPLC, UV detection	A01260-1	10BE181E2F
	FLD	all	1 – 20	VPV-004: Analytical HPLC, FL detection	A01262-2	10BE181E2F
	FLD	all	21 – 100	VPV-004: Analytical HPLC, FL detection	A01262-3	10BE181E2F
	RID	all	all	VPV-002: Analytical HPLC, RI detection	A01261-1	05WE184E2J
HPLC Plus systems (max. 862 bar)	UV, DAD	10	1 – 20	VPV-001: Analytical HPLC, UV detection	A01260-4	15WE181E2J
	UV, DAD	10	21 – 100	VPV-001: Analytical HPLC, UV detection	A01260-3	15WE181E2J
	UV, DAD	50	1 – 20	VPV-001: Analytical HPLC, UV detection	A01260-3	15WE181E2J
	UV, DAD	50	21 – 100	VPV-001: Analytical HPLC, UV detection	A01260-2	15WE181E2J
	FLD	all	1 – 20	VPV-004: Analytical HPLC, FL detection	A01262-1	15WE181E2J
	FLD	all	21 – 100	VPV-004: Analytical HPLC, FL detection	A01262-2	15WE181E2J
	RID	all	all	VPV-002: Analytical HPLC, RI detection	A01261-1	05WE184E2J
	ECD in PAD mode	n/a	20, 100	VPV-106: AZURA systems with ECD	A01132	n/a
	ECD in DC mode	n/a	20, 100	VPV-106: AZURA systems with ECD	A01273-2 A01273-3	n/a
	UV (normal phase)	10, 50	10, 20, 100	VPV-009: AZURA HPLC systems in normal phase mode	n/a	15WE000E2J
	RID (normal phase)	all	all	VPV-009: AZURA HPLC systems in normal phase mode	n/a	15WE000E2J
Preparative HPLC systems	UV, DAD	≤ 2	all	VPV-007: Preparative HPLC, UV detection	A01264-1	05JE181E2J
	UV, DAD	> 2	all	VPV-007: Preparative HPLC, UV detection	A01264-2	05JE181E2J
	RID	all	all	VPV-008: Preparative HPLC, RI detection	A01265-1	05IE184E2J
FPLC systems	UV, DAD	all	all	VPV-003: AZURA FPLC systems	A01261-1	05WE184E2J

Software & PC Hardware

NEW FRACTION COLLECTION OPTION

Mobile Control for Windows

With the hand-held Mobile Control and Mobile Control Chrom software you have your devices and systems at your fingertips. Remotely control and monitor your devices and enjoy the touch-screen-optimized user interface. Choose Mobile Control as an easy-to-use and cost-effective control software!

Mobile Control Display provides full access to devices. Change device settings, set operating parameters, automate device control or check the system status. Mobile Control features all functionalities of a device display.

Mobile Control Data features data acquisition of pump and detector traces in addition to full device control.

Mobile Control FRC features a fraction collection option for simple preparative applications.

Only pay for what you use: Mobile Control features basic functions to operate devices and systems. The software can operate dedicated applications which do not require a highly developed and cost-intensive Chromatographic Data System (CDS).

Save space: Mobile Control runs on a tablet. Especially in labs with little space avoiding a desktop PC with keyboard and monitor can be a decisive factor. The touch-optimized user interface allows device control using just your fingers.

Save time: Mobile Control convinces due to an intuitive user interface and a clearly structured menu function. The training period is minimal in comparison to a complex CDS.

Free updates: With every release new features are available in Mobile Control. Download the current version for free.

Free trial: To evaluate if Mobile Control holds up to your expectations, you can download the software and test the free trail option. Perfect for those who'd like to try before they buy.

Customized software design: Mobile Control is made by KNAUER and can be adapted to the requirements of our OEM partners.

This software supports a wide range of instruments:
www.knauer.net/softwarecontrol

For PC hardware & periphery
see p. 107

Specifications

Software name	**Mobile Control Display** without data acquisition **Mobile Control Data** with data acquisition **Mobile Control FRC** with data acquisition and fraction collection option
Operating system	Windows 10, Windows 11
Software version	Mobile Control v6.0.x, Data Viewer v6.0.x
Supported instruments	Consider release notes (downloads below)
Field of application	Display software, device control, simple preparative applications with fraction collection

Expandability

Stand-alone	yes
Multi-user environment	yes
Report functions	yes
Special features	with tablet

Free demo version:
www.knauer.net/mobilecontrol

Ordering details:

Software

A9607	Mobile Control Display without data acquisition including tablet
A9608	Mobile Control Data with data acquisition including tablet
A96132	Mobile Control FRC with data acquisition and fraction collection option including tablet
A9610	Mobile Control Display without data acquisition
A9612	Mobile Control Data with data acquisition
A9613	Mobile Control with data acquisition and column test option
A96131	Mobile Control FRC with data acquisition and fraction collection option
A9614	Upgrading Mobile Control Display A9610 to Data A9612
A96141	Upgrade Mobile Control Data A9612 to FRC A96131

Accessories

A96181	USB-LAN ADAPTER Network adapter USB 2.0 ⇔ 10/100 Ethernet for tablets
A64809	WiFi router, 8x LAN GBit RJ-45 ports, 1x WAN GBit RJ-45 port
A64809INT	WiFi router, 8x LAN GBit RJ-45 ports, 1x WAN GBit RJ-45 port, power plug UK, US or AUS
A64811	Single device WLAN router for Mobile Control - 1x RJ45, 10/100 MBit; WLAN
A9617	Mobile Control Mount - flexible tablet mount for tablets

OpenLab® CDS EZChrom Edition/CDS

OpenLab® CDS EZChrom Edition

OpenLAB® CDS EZChrom Edition is the next generation of chromatography data sytems and the successor of ChromGate CDS. OpenLAB® CDS EZChrom Edition provides chromatography data acquisition, processing and control of GC and LC chromatographs and is used in chromatography operations ranging from single user/single instrument to multi-user/multi-instrument laboratories. It provides support of devices from KNAUER and many other manufacturers.

The basic workstation license can only be installed on one PC and allows for control and data acquisition from one system. The license includes System Suitability, Fraction Collector Control and one year Software Maintenance Agreement (SMA).

The system suitability option allows for test if the system is suitable for particular analysis by testing several parameters as resolution, peak asymmetry and theoretical plates.

The KNAUER fraction collector control option includes the drivers of several fraction collectors, including the KNAUER electric valves, and supports fractionation by time, the peak recognition by level and/or slope, also with spectral confirmation. Collet Slices allows for setting a desired volume for each fraction, within the defined fraction vial volume. Also, manual fractionation is supported. The collected fractions will be visualized in the rack view with retention time and volume. If a chromatogram of your separation already exists, the required fractionation commands can be derived directly from the chromatogram with a double mouse-click. The combination of virtual detector and virtual fraction collector allows for optimizing the fractionation settings from an existing chromatogram of your separations without any physically existing device and, therefore, without the loss of solvent or target substance.

This software supports a wide range of instruments:
www.knauer.net/softwarecontrol

For PC hardware & periphery
see p. 107

OpenLAB® EZChrom Edition and EZChrom Elite are registered trademarks of Agilent Technologies, Inc.

Specifications

Software name	OpenLAB CDS EZChrom Edition
Extensions / Licenses	Fraction collection, System suitability, PDA / 3D UV
System architecture	32-bit CDS
Operating system	Depends on CDS version. Latest version, supported by KNAUER drivers, is A.04.09. It runs on Windows 10 Prof./Enterprise, 64-bit and Windows 7 Prof., 32- and 64-bit.

Additional options/extensions

FRC option	always included, for preparative HPLC, adds tools for detector controlled fraction collection, solvent and peak recycling, stacked injection, rack view with information about RT and volume
FRC features	fractionation can be controlled by time (volume), level, slope including AND/OR combination of these criteria, spectra comparison, local maximum and local minimum, slices, full manual control of fractionation during a run
PDA option	3D chromatogram, peak purity analysis, spectrum search in self-made or commercial spectra library (must be converted in OpenLAB® spectral library format)
GPC/SEC option	license is discontinued
System suitability test	license always included, automates the calculation of system suitability parameters for system validation

Ordering details:

Software

A2600-1	OpenLAB® CDS EZChrom Edition workstation for one system with SMA and 4x System Suitability
A2610-1	OpenLAB® CDS EZChrom Edition 3D option for UV detectors MW-1, 2550 and 2600
A2611-1	OpenLAB® CDS EZChrom Edition 3D UV Option for DAD DAD6.1L, DAD2.1L, PDA-1, S2850
A2618-01	OpenLAB® CDS EZChrom Edition drivers for 80LT, 85LT, 90LT, 100LT and LC from Sedere
A2602-1	OpenLAB® CDS EZChrom Edition Instrument Control License
A2614-1	OpenLAB® CDS EZChrom Edition for distributed systems - please ask for desired configuration

OpenLab® CDS

COMING SOON

The latest CDS from Agilent will be available from KNAUER with drivers for our AZURA® (U)HPLC series later this year.

Ordering details:

Software

A2630-1	OpenLab® CDS Workstation
A2632-1	OpenLab® CDS Workstation Plus
A2634-1	OpenLab® CDS non-Agilent Instrument Connection

ClarityChrom®

KNAUER ClarityChrom® is a powerful, yet easy-to-use chromatography software (or chromatography data system, CDS) for instrument control, data acquisition and data processing. ClarityChrom is designed for smaller laboratories. It is an economical solution compared to other more complex chromatography software while still offering FDA 21 CFR Part 11 compliance.

ClarityChrom comes as a complete package with LC control and including autosampler control. It is scalable from 1 up to 4 systems; depending on the desired instruments. The built-in fractionation option as well as the optional extensions as SST for automated system tests, PDA for 3D (UV spectra) data handling, GPC analysis, MS and GC control cover a wide range of the requirements for a CDS on a modern lab. KNAUER additionally offers a more advanced fractionation with the KNAUER FRC control module.

ClarityChrom supports all KNAUER devices that can be controlled by software. Please refer to the instrument support list in the Support section of our website, the download link can be found below. Beside this, devices and systems from more than 45 manufacturers can be controlled. Additionally, data acquisition can also be performed with any detector providing a voltage output by simply connecting a KNAUER IFU 2.1 interface box or any other supported A/D converter.

The system suitability (SST) extension automates the calculation of system suitability parameters for system validation and calculates up to 12 parameters and compares the results with the limits the user has set.

The PDA extension allows to acquire and process 3D data from a photo diode array detector (KNAUER PDA detectors are fully supported). The PDA extension provides peak purity analysis and peak identification by spectral library search in self-made or commercial spectra libraries.

The SEC/GPC extension provides interactive and automated gel permeation chromatography analysis, including recalibration and GPC reporting, as well as simplifies the retrieval of GPC data. The GPC extension allows flow rate and multi-detector delay corrections and includes Narrow, Broad and Broad on Narrow calibrations.

ClarityChrom comes with some basic fractionation functionality. The KNAUER-exclusive KNAUER FRC control module for ClarityChrom adds more drivers of several fraction collectors and supports the peak recognition by level and/or slope as well as fractionation by time. Also more advanced functionality as solvent recycling, manual fractionation and rack view with detailed fraction information and chromatogram links are available. The functionality corresponds exactly to the KNAUER preparative functionality of discontinued ClarityChromPrep.

ClarityChrom offers all the necessary operations for an analytical lab. Moreover, the preparative version adds fractionation options to this feature list and allows more flexibility in the lab. ClarityChrom is the best solution for all laboratories searching for an up-to-date and robust software with support of devices from many manufacturers to be flexible in instrumentation but also meet the requirements for modern laboratories.

This software supports a wide range of instruments:
www.knauer.net/en/supp_cc

For PC hardware & periphery
see p. 107

Further information:
www.knauer.net/claritychrom

Specifications

Software name	ClarityChrom 8.7
Extensions / Licenses	PDA / 3D UV, System suitability, Fraction collection, SEC/GPC, Mass spectrometry
System architecture	32-bit CDS
Operating system	Windows 11, Windows 10, Windows 8.1, Windows 7, all 32- and 64-bit

Expandability

Stand-alone	Workstation version, max. 4 systems controlled by one computer, max. 3 LC systems, max. 2 systems with PDA or 1 system with MS or special devices per computer
Client/server	No Client/Server functionality
Multi-user environment	Selectable system of user accounts with independently customizable behavior and appearance for individual users
Network environment	Easy offline data sharing (at the file level) among all stations in a local network
Fields of application	Analytical and preparative HPLC, GPC/SEC, GC, MS
Supported instruments	All KNAUER devices are supported, driver for devices from many other manufacturers are available
Instrument connection	Supports RS-232, Ethernet, PCI interface card, A/D-D/A interface
Recommended PC hardware	Pentium 2 GHz, 4 GB RAM, 80 GB free hard disk space, separate graphics card if one PC should control more than one system, USB for dongle, connectors as LAN, RS-232 etc. for device control
Graphics capabilities	Multiple chromatogram view and overlay, PDA view
Integration	27 integration parameters (peak width, threshold, tangent slope ratio etc.) integration parameters programmable in time, automatic re-integration
Calculation types	with/without calibration (int./ext. standard method)
Security and GLP	Installation qualification test of the software; FDA 21 CFR Part 11 conformance, validation with virtual detector
Instrument control	method-based instrument control, Instrument status display and Direct-Control mode,
Calibration	6 types of calibration curves, up to 20 levels, reference peaks, groups, unlimited number of standards (peaks), LOD, LOQ
Chromatogram operations	Overlay view, custom labels and settings, also applying mathematical operations to chromatograms
Automation	Sequences, automatic launch of selected commands or applications immediately following chromatogram acquisition – Post run, Batch
Presentation of results	Integrated customizable table of results, columns with userdefined calculation, summary table, and export in text or database format
Calculations	Custom: 12 predefined mathematical operators, 15 basic and 4 summary functions, special: Kovats indexes for GC, determination of noise/drift, performance calculations
Data import and export	ASCII, AIA, dBase

Additional options/extensions

FRC option	separate license option; Control of fraction collectors and KNAUER valve drives as fraction collector, fractionation per time/level/slope, rack info with filling level and chromatogram link
PDA option	separate license option; 3D chromatogram, peak purity analysis, spectrum search in self-made or commercial spectra library
GPC/SEC option	separate license option; molecular weight determination in size exclusion chromatography with various calibration methods
System suitability test	separate license option; automates the calculation of system suitability parameters for system validation
Note	Autosampler control included

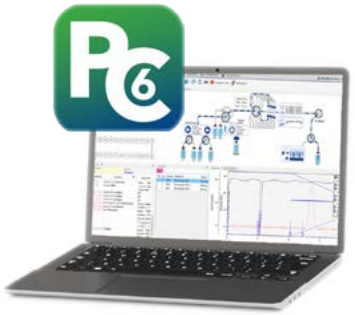
Ordering details:

Software

A1670	ClarityChrom® single instrument license for one time base
A1674	ClarityChrom® offline license for data evaluation
A1671	ClarityChrom® additional instrument license on additional time base
A1676	ClarityChrom® option for PDA data processing
A1677	ClarityChrom® system suitability option
A1678	ClarityChrom® option for GPC data processing
A1679	ClarityChrom® option for MS data processing
A1682	ClarityChrom® KNAUER FRC control module for preparative HPLC
A1681	Upgrade for one system from former version to ClarityChrom®
A1687	Upgrade for former ClarityChrom® Prep to latest ClarityChrom® with KNAUER FRC control module
A1690	30-day trial version of ClarityChrom
A1675	ClarityChrom® university package one offline license

PurityChrom® 6

NEW



PurityChrom 6 is the next generation of KNAUERs purification software.

It is designed to address all separation tasks in bio-purification and preparative HPLC.

PurityChrom 6's animated flow path visualization improves usability and method writing. Methods can be also divided into different steps. The software also enables intelligent and flexible fractionation. Furthermore, different hardware configurations can be managed and controlled. The cherry on top? The software also meets the standards of GAMP 5 and 21 CFR part 11.

The basic license enables the control of up to 2 pump systems, 2 detectors, 1 fraction collector and an unlimited number of valves. To control an extended purification system, please refer to the other PurityChrom licenses. To also get the full GMP documentation including OQ, GAMP 5 and 21 CFR part 11 certificates, please refer to the special GMP license of PurityChrom 6.

Specifications

Software

Software name	PurityChrom® 6
Operating system	Windows 10, Windows 11 (English or German only)

Expandability

Stand-alone	License for controlling one system
Multi-user environment	Optional user administration with individual assignment of rights for individual users
Fields of application	FPLC & Prep LC
Instrument connection	supports RS-232, Ethernet, A/D-D/A interface
Integration	Real-time analysis of peaks, automatic or manual integration and baseline correction
Security and GLP	FDA 21 CFR Part 11, GAMP 5 conformance
Automation	via sequences
Presentation of results	Individual report configuration as pdf or csv
Special features	Method creation based on volume or column volume; hold function; animated visualisation; direct control during a run; display of solvent supply; usage of variable values

Additional options/extensions

FRC option	included
FRC features	Control of fraction collectors and KNAUER valve drives as fractionation valve, fractionation per Time/Level/Slope, rack info with filling level and chromatogram link

Ordering details:

Licence overview

Article no.	License type	Detectors	Pump systems	Fraction collector	Autosampler	Valves	Flow-meter	GMP documents	DAD	MS
A2680	Basic license	2	2	1	0	∞	0	-	-	-
A2681	Full license	∞	3	∞	∞	∞	∞	-	-	-
A2682	GMP license	∞	3	∞	∞	∞	∞	+		-
A2683	DAD license	∞	3	∞	∞	∞	∞	-	+	-
A2685	LNP small license	∞	8	∞	∞	∞	∞	+	-	-
A2686	LNP big license	∞	16	∞	∞	∞	∞	+	-	-
A2687	Update PC5 → PC6	Dependent on initial license								
A2689	GMP Update PC5 → PC6	Incl. all GMP Documentation (GAMP 5 and 21CFR Part 11) and OQ								

PurityChrom® 5

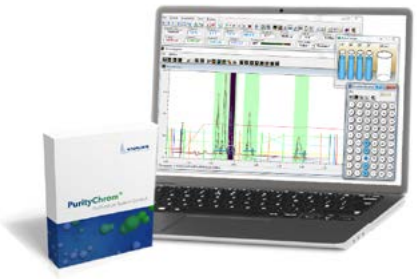
PurityChrom is a chromatography software especially designed for the area of preparative purifications and FPLC applications. PurityChrom provides a user-friendly and clearly structured interface. The **system visualization** offers a graphical representation of the purification system and allows easy handling even of complex flow processes. Furthermore, each device which is displayed in the fluidic scheme can be manually controlled, giving the opportunity to optimize, change and adapt your conditions during the run.

You have the option to create a **method** based on volume, column volume or time. There is also a possibility to pause or to change the method parameters during the run, which gives you complete control over your chromatography process. In PurityChrom you can define important functions in your method with **variables**. This allows you to write methods that can be adapted more flexibly to a specific sample or column, just before the run with only one click. In combination with the **sequence table** a quick and easy method scouting provides you with the best method for your purification problem in less time.

For **fractionation**, you can use a fractionation valve as well as a fraction collector.

Current guidelines and regulations like 21 CFR part 11 are entirely supported. Please check for more information about supported devices the Release Notes of the latest PurityChrom version. With an unlimited number of **free offline licenses**, you can write methods and evaluate runs on any computer of your choice, without blocking the system.

The **basic version** is limited to 3 data channels and the control of eight devices (excl. autosampler). The **upgrade version** (A2652) supports 8 data channels and an unlimited number of devices including an autosampler. The **3D option** (A2654) allows the support of an diode-array detector and the **MS option** (A2655) the usage of an mass spectrometer.



This software supports a wide range of instruments:
www.knauer.net/softwarecontrol

For PC hardware & periphery
see p. 107

Further information:
www.knauer.net/en/prod/A2650

Specifications

Software name	PurityChrom® 5
Operating system	Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10 (English or German only)

Expandability

Stand-alone	License for controlling one system
Fields of application	FPLC and Prep LC
Instrument connection	supports RS-232, Ethernet, A/D-D/A interface
Recommended PC hardware	CPU/Memory: Pentium III or higher with at least 1 GHz; 32 or 64 bit; at least 512 MB RAM (Windows XP) and 2 GB (Windows Vista and higher); Graphics: Screen with minimal resolution 1024 x 768 Connectors and Slots: USB for license dongle; COM, USB or LAN according to connected instruments
Integration	Real-time analysis of peaks, automatic or manual integration and baseline correction
Security and GLP	FDA 21 CFR Part 11 conformance
Automation	via sequences and autosampler control files
Presentation of results	Individual report configuration as pdf or csv
Calculations	Column performance calculations according to DAB
Data import and export	Comma Separated Value, AIA/ANDI, ChromStar Slice
Special features	User administration

Additional options/extensions

FRC option	Included
FRC features	Control of fraction collectors and KNAUER valve drives as fractionation valve, fractionation per Time/Level/Slope, rack info with filling level and chromatogram link
PDA option	Special licence option; no 3D presentation
Note	For autosampler control the upgrade licence is needed

Ordering details:

Software

A2650	Basic License for one system
A2652	Extends the Basic License to an unlimited number of controllable devices and 8 data channels, adds autosampler and stacked injections support
A2654	3D option for a diode-array detector (DAD)
A2655	Mass spectrometry (MS) option for supporting the mass spectrometer 4000 MiD®
A2656	PurityChrom® Maintenance and Support including free updates and 5 hours Software support by KNAUER

Purity Chrom® MCC / MCC PLUS

PurityChrom® MCC is a special version of our purification software PurityChrom® and is optimized to be used with continuous chromatography systems e.g. SMBC systems. PurityChrom® provides a very user-friendly and clearly structured interface. The system visualization offers a graphical representation and allows easy handling even of complex flow processes. Furthermore each device which is displayed in the fluidic scheme can be manually controlled, giving the opportunity to optimize, change and adapt your conditions also during the run. The new PurityChrom MCC SMB parameter wizard helps you to generate new SMB methods and optimize your parameters while the process is running. With the integrated starting point calculator, you can easily generate you SMB method with the adsorption isotherms of your substances. There is also a possibility to pause your method during a run. The hold function provides you with complete control over your chromatography process.

PurityChrom® MCC Plus is a special software extension enabling monitoring of up to 16 data channels and controlling of up to 8 independent pumps without gradient formation. Accordingly, the software can manage complex, preparative purification systems with an enhanced number of multiple devices. For example, in comparison to other PurityChrom® software packages, the combination of a multiwavelength detector and more than one single UV detector is enabled and up to 8 flowmeters can be controlled in one system.

This software supports a wide range of instruments:
www.knauer.net/softwarecontrol

For PC hardware & periphery
see p. 107

Specifications

Software name	PurityChrom® MCC / PurityChrom® MCC PLUS
Operating system	Windows 10
Field of application	SMB, prep LC

Further information:
www.knauer.net/en/prod/A2659

Expandability

Stand-alone	License for controlling one system
Multi-user environment	Selectable system of user accounts with independently customizable behavior and appearance for individual users
Instrument connection	supports RS-232, Ethernet, A/D-D/A interface
Recommended PC hardware	CPU/Memory: Pentium III or higher with at least 1 GHz; 32 or 64 bit; at least 512 MB RAM (Windows XP) and 2 GB (Windows Vista and higher); Graphics: Screen with minimal resolution 1024 x 768 Connectors and Slots: USB for license dongle; COM, USB or LAN according to connected instruments
Security and GLP	FDA 21 CFR Part 11 conformance
Automation	via control files
Presentation of results	Individual report configuration as pdf or csv
Data import and export	Comma Separated Value, AIA/ANDI
Special features	controlling of up to 4 independent pumps without gradient formation

Ordering details:

Software

A2659	PurityChrom® MCC: Software solution to control and monitor AZURA® multi column chromatography systems - SMB
A2657	PurityChrom® MCC PLUS: Software solution for complex preparative systems without gradient formation

Chromeleon™ 7.2 Drivers

Thermo Scientific™ Dionex™ Chromeleon™ is one of the most wide-spread chromatography data systems. Its intuitive handling benefits laboratory workflow and the highly developed algorithms simplify data processing. It offers a broad range of third-party drivers and can be easily used with existing HPLC systems. KNAUER offers drivers for a lot of its devices.

Disclaimer: KNAUER Wissenschaftliche Geräte GmbH is solely responsible for development, testing and support of Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System driver software for KNAUER instruments and therefore solely liable for damages associated with the use of this driver software.

Further information:
www.knauer.net/en/prod/A1783-2

Specifications

Computer requirements	
Operating system	Windows 10 Enterprise or Professional Edition. Windows 8.1 Professional, 64-bit;Windows 7 SP1 Professional, Enterprise, 64-bit, (32-bit version is not recommended); Windows Vista SP2 Business, Ultimate, 32-bit (Vista is not recommended)
CPU (recommended)	3 GHz Intel Core i7 or better
Memory RAM (reccomended)	8 GB
Free Hard Disk Space	120 GB available, for system with PDA detectors
Optical Drive	DVD
Display (recommended)	1280 x 1024, 32-bit color
USB Ports	1 port for USB license key
Ethernet Port	1 port for router (for system connection)

Ordering details:

Drivers

A1783-2	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Driver CD (AZURA® only)
A1783-3	Shimadzu LC Driver for Chromeleon™ 7.2 Shimadzu CBM-20A required. Only for CBM-20A available.
A1783-4	Sedex Driver for Chromeleon™ 7.2; For Sedex 85LT / 90LT; Instrument Controller Class 3 necessary
A1783-5	Sedex Driver for Chromeleon™ 7.2; For Sedex FP / LC / 100LT; Instrument Controller Class 3 necessary
A1783-6	Teledyne Foxy R2 Driver for Chromeleon™ 7.2

Enterprise

A1791-1	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Enterprise. Complete Software Package incl. Secure Client Lizenz: Data Client, Instrument Operation, Report Designer Pro, Compliance Tools
A1792-1	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Enterprise license - enables full control of one 3rd Party LC Instrument, includes Instrument Controller, Spectral, Fraction Collection and one Class 3 license

Workgroup

A1780-2	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Bundle Workstation. Complete Software Package incl. License Dongle
A1782-2	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Instrument Controller Option - Instrument Class 3. Max 2 LC per workstation
A1783-8	Thermo Scientific Dionex Chromeleon™ 7.2 Instrument Contoller Option- Fraction collection License
A1784-2	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Instrument Controller Option - PDA License
A1787-2	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Instrument Controller Option - MS License

KNAUER

PC Hardware & periphery

Desktop PCs

Desktop PC (SFF) for OpenLAB® and Chromeleon™ with 24" monitor, English edition Windows 10 Prof. 64-bit English, Intel® Core™ i7, 8 GB RAM, 256 GB SSD, two network cards	A13121
Desktop PC (SFF) for OpenLAB® and Chromeleon™ with 24" monitor, German edition Windows 10 Prof. 64-bit German, Intel® Core™ i7, 8 GB RAM, 256 SSD, two network cards	A13111
Desktop PC (SFF) for PurityChrom® and ClarityChrom® with 24" monitor, English edition Windows 10 Prof. 64-bit English, Intel® Core™ i5, 8 GB RAM, 256 GB SSD, two network cards	A13120
Desktop PC (SFF) for PurityChrom® and ClarityChrom® with 24" monitor, German edition Windows 10 Prof. 64-bit German, Intel® Core™ i5, 8 GB RAM, 256 SSD, two network cards	A13110
Laptop for OpenLAB®, Windows 10 Prof. German, Intel® Core™ i5, 8 GB RAM, 500 GB HDD, German edition	A13113
Laptop for PurityChrom® and ClarityChrom®, Windows 10, min. Intel® Core™ i3, 8 GB RAM, 256 GB SSD, German edition	A13112
Microsoft Surface Pro for PurityChrom®, Windows 10, Core m3, 4GB RAM, 128 GB SSD, German edition with keyboard, Surface Pen and docking station	A13114

Configuration on request

Tell us your requirements and we will figure out the matching CDS workstation. We offer the complete CDS installation and promise you a smooth operation.	A13130

Network devices

WiFi router, 8x LAN GBit RJ-45 ports, 1x WAN GBit RJ-45 port	A64809
WiFi router, 8x LAN GBit RJ-45 ports, 1x WAN GBit RJ-45 port, power pl ug UK, US or AUS	A64809INT
8-port LAN GBit Switch NetGear GS108GE, 8x RJ-45, GBit, Auto MDI-X	A3119
8-port LAN GBit Switch NetGear GS108GE, 8x RJ-45, GBit, Auto MDI-X, power plug UK, US or AUS	A3119INT
16-port LAN Gigabit Ethernet Switch NetGear GS116GE, 16x RJ-45, 10/100/1000 MBit, Auto MDI-X	A3129

A64809

IT accessories

VSCOM USB 4 COM 4 x RS-232 DE9 on USB	A3114
AZURA® Interface Box IFU 2.1 LAN, A/D converter, 4 channels	AZB00XA
Ethernet Eventbox for 12 digital inputs and outputs each; only supported under PurityChrom® & PurityChrom MCC Plus®	AZB01
Input cable for Ethernet Eventbox (5 m, M3 plug, open ends with wire end ferrules)	AZB01-01
Output cable for Ethernet Eventbox (3 m, hollow plug, open ends with wire end ferrules)	AZB01-02
Cable for connection of an air sensor to an Ethernet Eventbox (2 m, 2-pole and 3-pole plug)	AZB01-03
RS-232 f/f cable 9-pol nullmodem	A0895
RS-232 m/f cable 9-pol	A0884
APC Smart UPS 1500 VA, uninterruptible power supply for up to 8 devices	A3121

AZB00XA

A3121

Power cables

Power cable for Europe, 2 m, with rubber connector type C13, 230 V	M1642
Power cable for Switzerland, 2 m, with rubber connector type C13, 230 V	M1597
Power cable for UK, 2.5 m, with rubber connector type C13, 230 V	M1278
Power cable for USA, 2 m, with rubber connector type C13, 115 V	M1651
Power cable, 1.5 m, with rubber connector for UPS APC Smart connector	M2561
Power Supply: Distribution Box 24 V for 6 devices like air sensor, external pressure sensor, IFU 2.1 LAN	AZS80SA
EU power cable with 4 cold-device plugs and cover caps	A12345

AZS80SA

KNAUER Services

Application Services

With profound application knowledge of analytical and preparative HLPC and FLPC, our team is at your service around the world.

Our experts are pleased to receive your inquiries and requests and will offer attractive customized solutions.

HPLC method development

Qualify, quantify or purify

Do you plan to separate substances by HPLC in order to qualify, quantify or even purify without spending too much time in developing a suitable method? We offer an application and method development service and support you to select a suitable system for your lab.

According to your specifications we prepare an efficient HPLC or FPLC method including advice for an appropriate sample preparation.

HPLC method transfer & optimization

For optimized quality and speed

Do you intend to perform your analyses faster, more efficient and cost effective? We are happy to support you with our profound expertise and experience in liquid chromatography. The team assists in transferring LC applications and methods.

1. Method transfer

We investigate the transfer of your method to one of our HPLC systems. Especially complex separations can cause trouble when transferring them to a different system.

We ensure continuous and consistent quality after the transfer.

2. Method optimization

Using ultra-pure solvents in HPLC can increase the expenses of an analysis substantially. A shift from classic HPLC columns to smaller inner diameters and smaller particle size could cut costs enormously since considerably less solvent is required. We optimize and transfer your LC analyses in order to obtain identical, or even better and faster results, reduce eluent consumption and operating costs.

Column Screening Services

Chiral column screening and/or method development and optimization

As most chiral separations are not predictable, KNAUER offers a screening service to find the best suiting Eurospher II Chiral column for your chiral separation task.

- Column screening with all available Eurospher II Chiral columns
- Optional: Method optimization
- Results will be reported completely and send as a report
- Method parameters and column specifications will be handed over directly

Eurokat column screening for the analysis of carbohydrates

Not sure which column separates your saccharides best? We offer a screening service for Eurokat columns that are recommended for the separation of sugars and all types of carbohydrates.

- Column screening with all available Eurokat columns
- Optional: Method optimization
- Results will be reported completely and send as a report
- Method parameters and column specifications will be handed over directly

Note: Details and requirements must be discussed previously with KNAUER´s application specialists.

Find more information about chiral columns at: **www.knauer.net/chiralcscreening**

KNAUER Academy

KNAUER has been successfully leading courses for many years for its customers, dealers and sales staff. Our main goal is to familiarize every participant with the latest chromatographic technologies in small groups with practical examples. We offer HPLC courses for beginners and advanced users. In individual courses, participants can receive specialized knowledge, e.g. in UHPLC, FPLC or preparative HPLC. Take part in one of the regularly offered courses or book an individual training on special topics.

Workshops at KNAUER in Berlin or on site (see dates online: **www.knauer.net/academy**)
Ordering information online or upon request: Tel. +49 30 8097270, E-Mail **academy@knauer.net**

HPLC Workshops	Description
HPLC Basics (1 day)	Practical work in small groups on compact HPLC systems from installation to system performance verification.
HPLC Troubleshooting (1 day)	Participants gain theoretical as well as practical knowledge in troubleshooting detectors, pumps, autosamplers and columns.
HPLC Method Development (1 day)	Learn HPLC method development from the beginning and become an HPLC method development pro with our training.

FPLC Workshop	Description
FPLC Basics & Troubleshooting (1 day)	Learn protein purification from the beginning and become a FPLC pro with our training.

Prep Workshop	Description
Preparative HPLC Basics & Troubleshooting (1 day)	Learn preparative LC from the beginning and become a preparative LC pro with our training.

SMB Workshops	Description
SMB Basics (1 day)	The participants will gain basic knowledge on SMB chromatography.
SMB Method Development (2 days)	In this course, SMB method development is explained and practiced using a sample application.

Software Workshops	Description
ClarityChrom® Software (2 days)	Deepen your knowledge and improve your analyses through better software skills. The courses provide step by step explanation of the software and all components including advanced functions.
OpenLAB® EE Software (2 days)	
PurityChrom® Software (1 day)	

Maintenance Trainings	Description	Article number
Maintaining KNAUER instruments (individual duration, at KNAUER)	Learn how to perform preventative maintenance on KNAUER equipment by yourself (at KNAUER in Berlin, on site or online).	WM0001
Maintaining KNAUER instruments (at customer)		WM0002

Individual Workshops (individual duration, at KNAUER in Berlin or on site)	
Academy Individual Workshop (individual duration)	Do you wish a different course date or a customized workshop for your department? We will gladly help to achieve your individual goals (at KNAUER in Berlin or on site).

Research

Scientific research generates new results and knowledge for industry and society. Currently, KNAUER is involved in different research projects. Obviously, we mostly focus on activities where we can efficiently contribute with our expertise in HPLC technology.

With our research commitments, we intend to generate new knowledge in the field of chromatography as well as learn even more about our own products.

Are you looking for a competent partner in scientific research projects? Do not hesitate to contact us: **academy@knauer.net**

Compliance

Qualification

Note: Standard procedure for IQ and OQ can be handled differently in individual cases for devices.

Installation Qualification (IQ)

The customer may request the IQ, which is free of charge. In case of a request, the Technical Support of KNAUER or from a provider authorized by KNAUER performs this functionality test during the installation.

The IQ is a standardized document including:

- confirmation of flawless condition at delivery
- check if the delivery is complete
- certification on the functionality of the device

Operation Qualification (OQ)

The Operation Qualification includes an extensive functionality test according to KNAUER standard OQ documents. The Operation Qualification is a standardized document. It is not part of the delivery, please contact the Technical Support in case of request.

The OQ includes the following:

- definition of customer requirements and acceptance terms
- documentation on device specifications
- device functionality check at installation site

Test intervals: To make sure that the device operates within the specified range, the device should be tested regularly. The test intervals depend on the use of the device.

Execution: The test can be carried out either by the Technical Support of KNAUER or from a provider authorized by KNAUER (for a fee).

Instrument	IQ Document
all instruments	VIQ-Installation-Qualification

Instrument / Software	OQ Doc.
AZURA® Assistant ASM 2.1L, ASM 2.2L	VOQ-ASM
AZURA® AS 6.1L, AS 3950, PLATINblue AS-1	VOQ-AS
AZURA® CM 2.1S	VOQCM21SA
AZURA® CT 2.1 Column Thermostat	VOQCT21
AZURA® DAD 6.1L, DAD 2.1L, MWD 2.1L	VOQ-DAD
AZURA® RID 2.1L, Smartline S2300	VOQ-RID-2.1L
AZURA® UVD 2.1S, UVD 2.1L	VOQ-Detectors
Flow cells	VOQ-Flowcells
Fraction collectors	VOQ-FRC
Osmometer K-7400	VOQ-K7400
Osmometer K-7400S	VOQ-K7400S
Pumps AZURA®, Smartline, BlueShadow, Platinblue	VOQ-Pumps
PurityChrom® 5 (For Purity Chrom® 6: aricle no. A2682 icludes OQ)	VOQ-PUC
RF20A/RF20Axs	VOQ-RF20
System OQ for analytical systems	VOQ-Sys-01
Valves	VOQ-Valves
Impingement Jets Mixing Systems	VOQ-IJM

Performance Verification (PV)

Definition: The document Performance Verification (PV) is part of the quality management system of KNAUER. The Performance Verification includes a qualification test of an AZURA® LC system and must be purchased from the manufacturer. The PV is a standardized KNAUER document and includes:

- Documentation on device specifications
- All necessary method parameters to perform the PV

Goals: The system runs reliably within the documented specifications and the PV is a summary of the results with comments and evaluations.

Target group: The test can be carried out either by the Technical Support of KNAUER, from a provider authorized by KNAUER or by the customer.

System	Document
AZURA® analytical systems with UV detector used in reversed phase mode	VPV-001-AZURA-UV
AZURA® analytical systems with RI detector used in reversed phase mode	VPV-002-AZURA-RID
AZURA® FPLC systems	VPV-003-AZURA-FPLC
AZURA® analytical systems with FLD detector used in reversed phase mode	VPV-004-AZURA-FLD
AZURA® SMB Lab and Pilot systems	VPV-005-AZURA-SMB
AZURA® preparative systems with UV detector used in reversed phase mode	VPV-007-AZURA-Prep
AZURA® preparative systems with RI detector used in reversed phase mode	VPV-008-AZURA-Prep-RID
AZURA® systems with UV or RI detector used in normal phase mode	VPV-009-AZURA-HPLC-RI-UV-normal-phase
AZURA® systems with ECD detector and flow cell with GC or Au working electrode.	VPV-106-ECD

Material certification

Upon request customized material certification for all wetted parts with varying degrees of complexity from manufacturer statement (only material) to full documentation (e.g. material certification 3.1, FDA compliance statements).

Note: Retrospective material certification is not possible.

FAT / SAT

The factory acceptance test (FAT) refers to the functional test that is performed upon completion of the manufacturing process to prove the equipment has the same specification and functionality that indicated in the datasheet, specification and purchase order. We are experienced in establishing such test procedures with you before your equipment is shipped.

The acceptance of the equipment at your site (site acceptance test, SAT) is also possible: A technician comes to you and ensures that everything works to your utmost satisfaction. In addition, we can integrate the equipment into the existing production environment, if necessary.

Capillary labeling

Complex HPLC systems with a myriad of valves and variable flow paths can be somewhat confusing. We offer professional capillary labeling upon request, to aid end-users in everyday use.

Support

We are committed to provide the best quality support with experienced staff and technical expertise. All standard user instructions, helpful video tutorials, and a structured section of frequently asked questions is freely accessible on our web page **www.knauer.net**.

If you need further support, our friendly Support team is happy to help you via e-mail, phone or Team Viewer. They will work with you personally until all issues are resolved.

Contact

Do you have questions about the installation or the operation of your instrument or software?

Support in Germany
(Austria & Switzerland on case-to-case basis):

Phone: +49 30 809727-111 (workdays 9-17h CET)

E-mail: **support@knauer.net**

International support:
www.knauer.net/en/Support/Distributors-worldwide

Worldwide Technical Services

Our highest goal is to keep your laboratory work as effective and productive as possible. Therefore, we not only pay attention to the highest quality in the development and production of our components and instruments, but also stand by your side after the purchase. With our wide range of services, we are ready to meet any demands to your full satisfaction.

KNAUER offers worldwide quality service of all products, purchased from KNAUER or our authorized partners. All KNAUER Service technicians have completed a specialized service training in the KNAUER headquarter in Berlin, Germany. They are ready to help on site ensuring efficient operation and minimized downtime.

Installation & Instruction

Our experienced KNAUER Service technicians can ensure the proper set-up of your instruments. Get in contact whether you want to use a single device, install a complete system or update your chromatography data system.

KNAUER installations always include introduction in proper handling of the devices as well as tips for self-maintenance and imparting of neccessary software knowledge.

On request you may add an IQ, OQ, PV or PQ for compliance (see page 112).

Maintenance

Preventive maintenance has proven to be very successful in ensuring the highest availability of HPLC equipment. Unforeseeable failures of individual system components are thus almost impossible, production processes and laboratory capacities can be planned safely.

We offer maintenance services customized to your needs. You may either ship your instruments to the nearest KNAUER Service facility or contact your local dealer for on-site service of an authorized KNAUER Service technican.

Repair

KNAUER still repairs and maintains the following product lines: the current AZURA®, the former Smartline and PLATINblue devices and - to our best ablilities - the Wellchrom equipment which was introduced in the 90s.

If you discover any malfunction of your device, don't worry, we will repair it for you! Please contact your local dealer for shipment matters or ask for an on-site visit of our skilled KNAUER service technicians.

Development Services

Software development

How does your software limit you?

Many devices rely on some kind of software to run and interact with you, either internal software (firmware) or drivers and application software on your PC.

Development of firmware for HPLC devices like

- UHPLC and HPLC pumps
- UV, PDA, RI, detectors
- Autosamplers
- Valves
- Column ovens
- Fraction collectors

Development of device drivers for

- OpenLAB® CDS
- Chromeleon™
- HyStar
- ClarityChrom® (Clarity based)

KNAUER software support for firmware, drivers and software solutions

To provide the most useful tools for your daily work, our team of software engineers combines its expertise in developing firmware, instrument control drivers, as well as application software. KNAUER also has a long experience in customizing instrument operation and in developing drivers for various OEM customers.

Let us know about your software challenges - we will program a solution!

Hardware development

KNAUER has a long experience in customizing scientific equipment according to your needs. With on-site hardware designers, mechanical production and assembly, we can provide tailor made products under certain conditions. Contact us for more information.

Storage of instruments and systems

At times equipment must be removed from your laboratory or you are forced to order equipment before your laboratory is up and running. We can offer storage facilities where your equipment can be stored for future use, giving you peace of mind knowing that you are protecting your investment.

Configuration of your PC

We strongly recommend ordering a KNAUER computer with your HPLC system. However, we understand that sometimes certain constraints do not allow this. We offer a PC configuration service of your PC, in order to assure a safe and reliable installation.

Note: We cannot guarantee installation on a non-KNAUER PC.

KNAUER GMP Services

KNAUER Services for Good Manufacturing Practice for biopharmaceutical industry

KNAUER provides equipment for downstream processing in the biopharmaceutical industry such as skids for the formulation of lipid nanoparticles, or chromatographic systems for mRNA purification or continuous chromatography. KNAUER provides a wide range of services to support our customers and to ensure that GMP requirements are met.

KNAUER's GMP services are based on our hardware- and software-solutions; encompassing product safety, quality control and the training of personnel. Risk management, in relation to GMP, is covered by the user:

Further information:
www.knauer.net/gmp

Product safety:

Documentation on the compliance of materials used for wetted parts is an important requirement for product safety. In the bio-pharmaceutical industry, potentially harmful substances must be avoided in liquids for clinical, cosmetic or food applications. Therefore, any materials of the liquid flow path that come into contact with the final product must meet certain criteria. According to our end user's requirements KNAUER can provide compliance with the order (EN 10204-2.1), certificates of compliance on the materials used for wetted parts, and further documentation from the supplier such as 2.1 certificates.

Overview of KNAUER options:

Certificates are available for KNAUER products and selected third party products. Contact sales@knauer.net.

Type of certificate/statement	Unit of quantity	Article number
Declaration of Compliance with order (EN 10204-2.1)	for 1 order	A0000TDCOO
Declaration of Compliance (EN 10204-2.1) with Certificate and compliance of material of wetted parts	for 1 article with less than 5 components	A0000COMS
Declaration of Compliance (EN 10204-2.1) with Certificate and compliance of material of wetted parts	for 1 article with 5 or more components	A0000COM
Declaration of Compliance (EN 10204-2.1) with Certificate and compliance of material of wetted parts for one pump	for 1 article	A0000COMP
Declaration of Compliance (EN 10204-2.1) with Certificate and compliance of material of wetted parts for one pump head	for 1 article	A0000COMPK
Declaration of Compliance (EN 10204-2.1) with Certificate and compliance of material of wetted parts for one valve	for 1 article	A0000COMV
Declaration of Compliance (EN 10204-2.1) with Certificate and compliance of material of wetted parts for one detector	for 1 article	A0000COMD
TSE/BSE Statement: Customized order- and article related	for 1 article	A0000TDTSE
Stepfile per device without functional groups	for 1 article	A0000IDSTE
Documentation on compliance of material of wetted parts: Compliance with the order (EN 10204-2.1); Certificate of compliance on material of wetted parts; Documentation on references (supplier information of material) and wetted parts (certificates such as 2.1)	customized	A0000TD

KNAUER BlueShadow Pumps and Detectors

Versatile stand alone instruments for your lab and production systems

KNAUER BlueShadow pumps & detectors are the ideal choices for upgrading your existing LC, reaction system or process instruments.

BlueShadow Pumps 40P and 80P

BlueShadow Pump 40P

BlueShadow Pump 80P

Pumps from the BlueShadow line can be integrated into every existing LC system, but they can also be used for high-pressure dosing applications. KNAUER dosing pumps are highly accurate two-piston pumps for applications in the chemical and pharmaceutical industries as well as in research and method development.

They pump and dose aqueous and organic liquids, aggressive media or liquid gases. The metering pumps impress with their high chemical resistance, excellent flow rate precision and low pulsation of the pumped medium in a wide range of applications.

BlueShadow Detectors 40D and 50D

BlueShadow Detector 40D

BlueShadow Detector 50D

Detectors from the BlueShadow line are spectrophotometers that can be used for LC applications, reaction monitoring, and other applications. They are offering excellent technical specifications in a highly flexible and compact design.

The flow cells are easily accessible, can be changed quickly and cover flow rates from 10 µl/min up to 10 l/min. With the unique fiber optics design of the BlueShadow 40D, the flow cell can also be separated from the detector and directly placed in the stream of the product flow.

Further information on BlueShadow devices:
www.knauer.net/dosingpump-psg

KNAUER

Power cable overview

Allocation of power plug types to devices

Every device is supplied with a power plug of the AZURA® series (cold-device plug) in the suitable country-specific version (see Table 2).

Exception of allocation (Table 1)

Device	Power plug type
▪ BlueShadow Pump 40P ▪ BlueShadow Detector 40D/50D ▪ Smartline Degasser (article no. A5328) ▪ Osmometer	Smartline series (see Table 2)
▪ Router ▪ Switch	Power plug is supplied. For outside Europe, a suitable adapter is supplied (see Table 2).
▪ Degasser (article no. AZE03, AZE03-1, AZE02-1)	Power plug is supplied for US, UK, Europe, Australia.
▪ Pressure Control (article no. AZG10) ▪ Pressure Sensor (article no. AZG10-1) ▪ Airsensor (article no. A70092, A70093, A70082) ▪ Interface Box (article no. AZB00XA)	Power distributor (article no. AZS80SA) and accessories kit with 1x power plug (article no. F1518) is needed. The distributor can provide power for up to 6 devices. Only one power distributor per system is required. ▪ Power plug for China: Article no. M3027D ▪ Power plug for Australia: Article no. M3027C
▪ Gas Sensor (article no. A70111) ▪ Leak Sensor (article no. A70112)	Power distributor (article no. A70110), includes 1x power plug
▪ Tablet for Mobile Control	The Tablet includes an european power cable. Order M1279/M1277 in addition for an US/UK power cable.

Overview of country-specific power plugs, routers and switches

If no suitable adapter is available for a specific country, contact the responsible distributor:
www.knauer.net/en/Support/Distributors-worldwide

Overview (Table 2)

Power plugs/ routers/switches	Article no. USA	Article no. UK	Article no. China	Article no. Switzerland	Article no. Europe	Article no. Argentina
Power plug AZURA® series (cold-device plug)	M1651	M1278	M3381	M1597	M1642	M3233
Power plug Smartline series	M1279	M1277	-	M1479-1	M1479	-
Router (power plug incl.): Router WLAN, 8 x LAN	A64809INT Adapter: M0447V2	A64809INT Adapter: M0447V1	-	-	A64809	-
Switch (power plug incl.): Switch 8 x LAN	A3119INT Adapter: M0447V2	A3119INT Adapter: M0447V1	-	-	A3119	-
Switch (power plug incl.): Switch 16 x LAN	A3129INT Adapter: M0447V2	A3129INT Adapter: M0447V2	-	-	A3129	-

Note: For connecting multiple devices, we provide a special power plug for up to 4 AZURA® devices (Europe), Article no. A12345.

Allocation interfaces to devices

Currently, desktop PCs from KNAUER have one serial interface (RS-232, DE9). If more than one device with a serial interface must be connected, you must install an additional serial interface for the computer. Nearly all laptops have no serial interface; here in general an serial interface must be installed. For a single device, you can use the USB to serial adapter, article no. A3108 (works also with Shimadzu RF-20A/Axs), for more than one device the USB 4COM, article no. A3114.

- Sedex 85 LT
- Shimadzu RF-20A/Axs
- Bronkhorst Flowmeter
- GJC Flowmeter,
- Chiralyser-MP
- GABI* Gamma Spectrometer
- Osmometer (only with software)

Note: If the tablet for Mobile Control is to be connected via LAN and not via WLAN, the USB-to-LAN adapter (article no. A96181) is required.
You can find the driver on the KNAUER website: www.knauer.net/en/usb-lan-adapter

Detail overview of devices by power plug type

Power Plug AZURA® series (cold-device plug)	AZURA® series (cold-device plug)
All devices of AZURA® series	Autosamplers
PCs and monitors	AZURA® Column Thermostat CT 2.1 (Article no. ATC00)
Preparative pumps BlueShadow 80P (Article no. APD20xx)	Fraction collectors ■ Foxy® R1/R2 (Article no. A59100/A59102/A591021) ■ LABOCOL Vario-4000 (Article no. A591022/ A591024)
External pressure sensor (Article no. AZG10-2)	Liquid Handler ■ Liquid Handler LH 2.1 (Article no. A5080) ■ Liquid Handler LH 8.1
Detectors ■ RF20A (Article no. A59200) ■ RF20AXS, CBM-20A (Article no. A59201) ■ GABI Nova ■ HERM LB500, LB514 Flowstar ■ Sedex85LT, Sedex90LT, Sedex100LT, Sedex LC (Article no. A0754-x) ■ CHIRALYSER-MP	Micro devices ■ BlueShadow Pump 10P/20P ■ BlueShadow Detector 10D ■ Degasser 20DG (Article no. AZE02)

Power plug Smartline series
Analytical Pumps 40P (Article no. APC30xx)
UV Detector 40D/50D
Smartline Degasser (Article no. A5328)
Osmometers

This document is subject to technical changes. Find the latest version of the cable overview (document no. V1662) here: www.knauer.net/en/cableoverview

KNAUER

Conversion tables

Dimensions

mm	inches
0.10	.004"
0.12	.005"
0.15	.006"
0.25	.010"
0.40	.016"
0.50	.020"
0.75	.030"
1.00	.040"
1.50	.060"
2.00	.080"
4.60	.180"
6.00	.236"
6.40	.253"
7.00	.276"
10.00	.400"

inches	mm
1/32"	0.8
1/16"	1.6
1/8"	3.2
1/4"	6.4
3/8"	9.5
1/2"	12.7
1"	25.4

Tubing volume/length

Tubing ID	µl/cm	µl/in
.004"	0.08	0.21
.005"	0.13	0.32
.010"	0.51	1.29
.015"	1.14	2.90
.020"	2.03	5.15
.025"	3.17	8.04
.030"	4.56	11.58
.040"	8.11	20.59
.060"	18.24	46.33
.070"	24.83	63.06
.085"	36.61	92.99

Pressure

MPa	bar	psi
5	50	725
10	100	1 450
20	200	2 901
30	300	4 351
40	400	5 802
50	500	7 252
60	600	8 702
70	700	10 153
80	800	11 603
90	900	13 054
100	1 000	14 504
110	1 100	15 954
120	1 200	17 405
130	1 300	18 855
140	1 400	20 306
150	1 500	21 756
160	1 600	23 206
170	1 700	24 657
180	1 800	26 107
190	1 900	27 558
200	2 000	29 008

Temperature

°C	°F	°C	°F	°C	°F
-40	-40	65	149	170	338
-35	-31	70	158	175	347
-30	-22	75	167	180	356
-25	-13	80	176	185	365
-20	-4	85	185	190	374
-15	5	90	194	195	383
-10	14	95	203	200	392
-5	23	100	212	205	401
0	32	105	221	210	410
5	41	110	230	215	419
10	50	115	239	220	428
15	59	120	248	225	437
20	68	125	257	230	446
25	77	130	266	235	455
30	86	135	275	240	464
35	95	140	284	245	473
40	104	145	293	250	482
45	113	150	302	255	491
50	122	155	311	260	500
55	131	160	320	265	509
60	140	165	329	270	518

Terms & Conditions

1. Definition of terms

The following terms and conditions apply to every order received by KNAUER and every delivery of goods. This holds as well in case of contradictory buying conditions of the purchaser. Exceptions are only valid when confirmed by KNAUER in writing. Purchase orders are only binding if confirmed by KNAUER in writing.

2. Payment

Deliveries are due and payable, net, within 30 days of invoice date or in advance. Deductions are not allowed. Foreign deliveries must be paid by irrevocable letter of credit or in advance. All bank and transfer fees must be paid by the customer. The consequences arising out of delay are due to statutory provisions. Payments are due irrespective of an eventual notice of defect, except such defects are evidently justified.

3. Delivery

Delivery dates are not binding unless expressly stated in the contract as binding dates. Delay in delivery requires a written reminder and an adequate additional grace period set by the customer. KNAUER is only liable for claims for damages under the requirements of no. 6.

4. Claims

Condition for any warranty claim is the immediate inspection of the goods upon delivery, and complaint towards and damage assessment together with the carrier, and an immediate written complaint to KNAUER. The complaint must be made within five workdays in case of visible defects or losses.

5. Risk liability

Delivery is made at the customer's own risk. As soon as the goods leave KNAUER's plant the risk of accidental loss, destruction or deterioration passes to the customer.

6. Warranty and damages

6.1. Warranty claims

The warranty begins with receipt of the goods. If commissioning has been ordered, after commissioning. In the case of delayed commissioning, the warranty begins at the latest four weeks after receipt of the goods unless the supplier is responsible for delayed commissioning.

The warranty for osmometers and liquid chromatography instruments is limited to two years, excluding glass breakage, damages due to stoppage and consumable materials such as membranes, light bulbs, columns, bushings, gaskets and valves. KNAUER's liability shall be restricted to the replacement of defective material or repair only. Transportation costs are borne by the customer. In case of failure of replacement or repair the customer may demand a reduction in price or cancellation of the contract with respect to the defective material. The customer has to inspect the goods delivered immediately and shall immediately give written notification of any defects to KNAUER, in case of non-obvious defects within 10 working days after delivery at the very latest.

6.2. Claims for damages

The liability of KNAUER shall be restricted to intentional acts and acts of gross negligence and compensation shall only be due for direct, foreseeable damages. Liability for breach of a material, essential duty of the contract, liability because of personal injury, liability according to the stipulations of the German Law on Product Liability and liability for the lack of the condition of the contract goods guaranteed by KNAUER remain unaffected.

7. Third party rights on industrial or other intellectual property

KNAUER shall not be liable for the infringement of third party rights founded on industrial or other intellectual property caused by the use of the delivered goods. The customer is fully responsible for the products manufactured with the goods. In particular KNAUER is not obliged to indemnify and hold harmless the customer from all claims raised by third parties based on the infringement of their industrial or intellectual property rights by the use of the goods.

8. Property rights

The ownership of the goods shall remain with KNAUER until payment in full for all our claims resulting from our business relation is received. In case of improper treatment of the goods or in case of default KNAUER may demand the return of the delivered goods. This demand entails resignation of the contract only if KNAUER declares it explicitly.

Resellers are allowed to sell the goods to third parties in due course of the business. The customer herewith assigns his resale claims against third parties to KNAUER.

9. Export

Instruments and products delivered by KNAUER may not be exported to a country other than of the customer's headquarters without KNAUER's prior written permission.

10. Place of settlement and court of jurisdiction

The place of performance is Berlin. Proper venue for all claims is the competent local court at KNAUER's principal place of business - Berlin. KNAUER reserves the right to sue the customer at his principal place of business.

This agreement shall be governed by the laws of the Federal Republic of Germany excluding the UN-Convention on the International Sale of Goods (CISG).

KNAUER Wissenschaftliche Geräte GmbH
Hegauer Weg 38
14163 Berlin, Germany

These terms and conditions apply since June 1, 2016

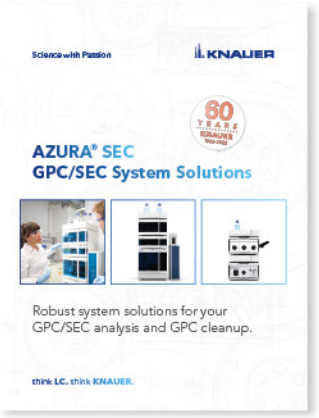
KNAUER

Notes

KNAUER Brochures

AZURA® Analytical HPLC/UHPLC
(Document no. V7852US)

AZURA® SMB System Solutions
(Document no. V7741US)



AZURA® SEC System Solutions
(Document no. V7721US)

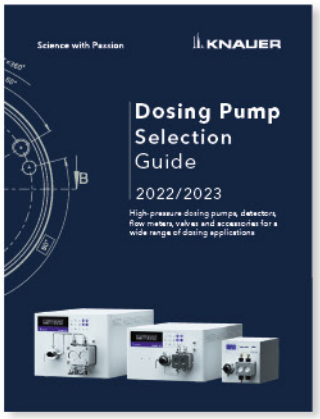
AZURA® Preparative HPLC
(Document no. V7820US)

AZURA® Bio purification
(Document no. V7855US)

Freezing point osmometry
(Document no. V7716US)

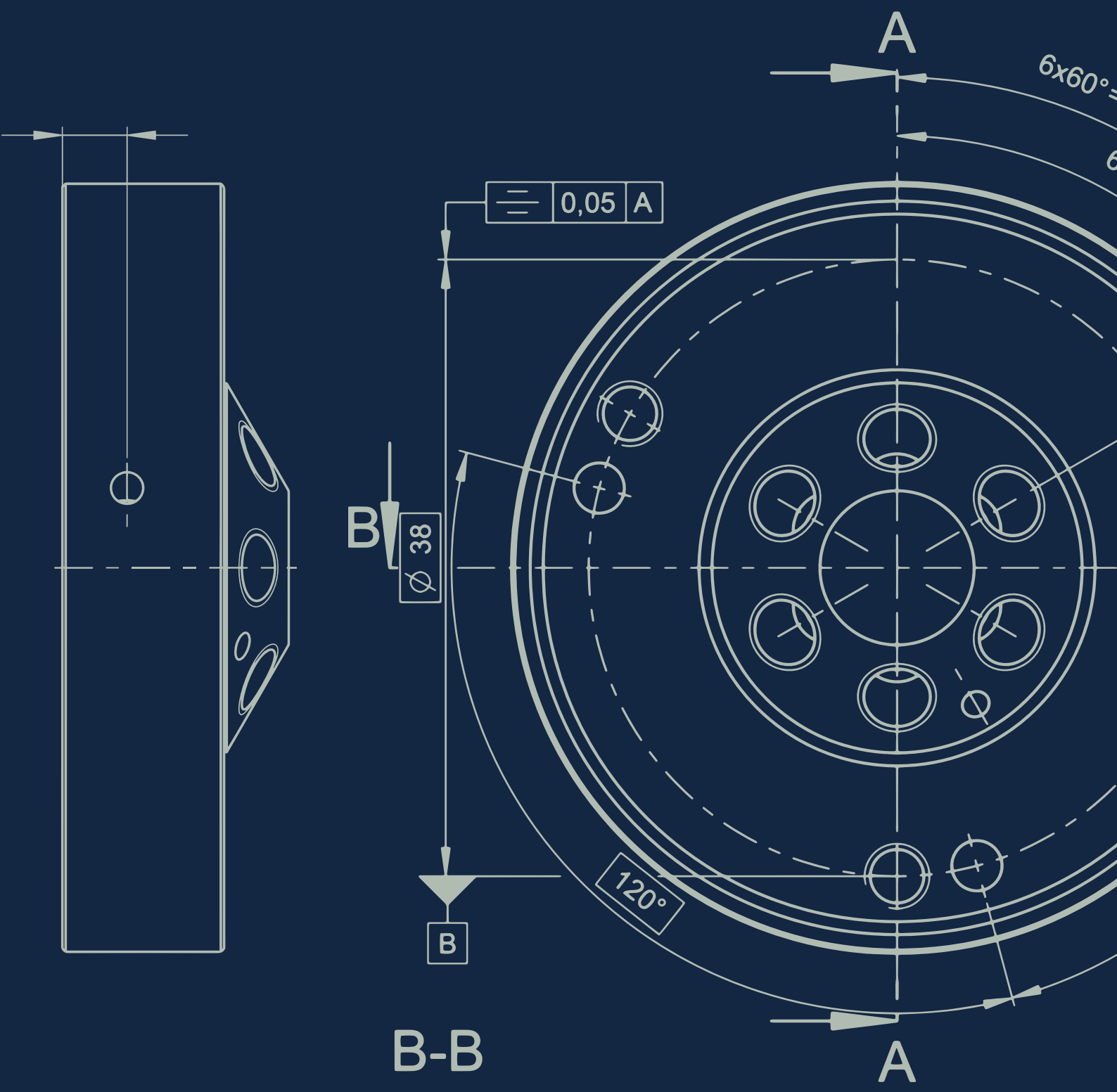
KNAUER LNP Flyer
(Document no. V7720US)

KNAUER OEM Brochure
(Document no. V7712US)



KNAUER
Dosing Pump Selection Guide
(Document no. V7866US)

All KNAUER brochures:
www.knauer.net/brochures



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