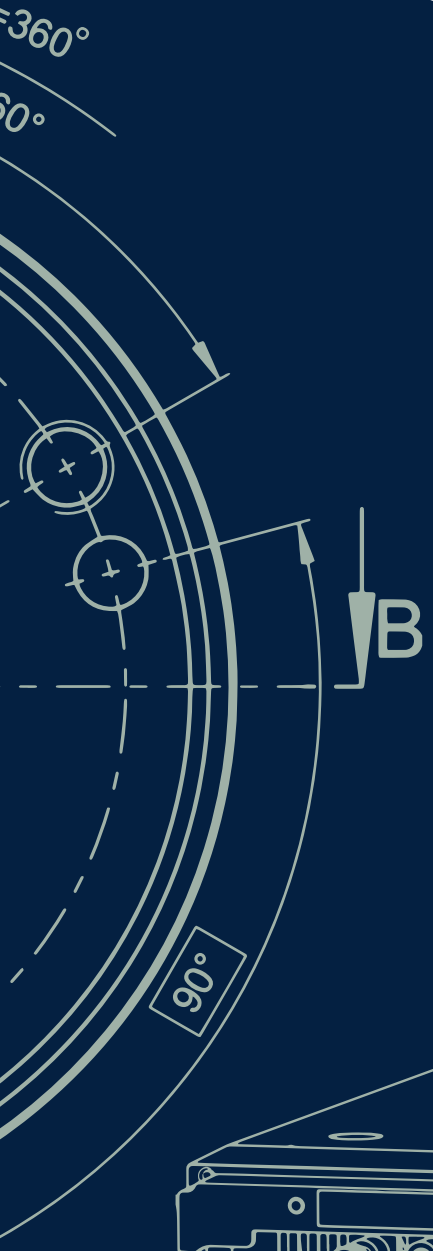
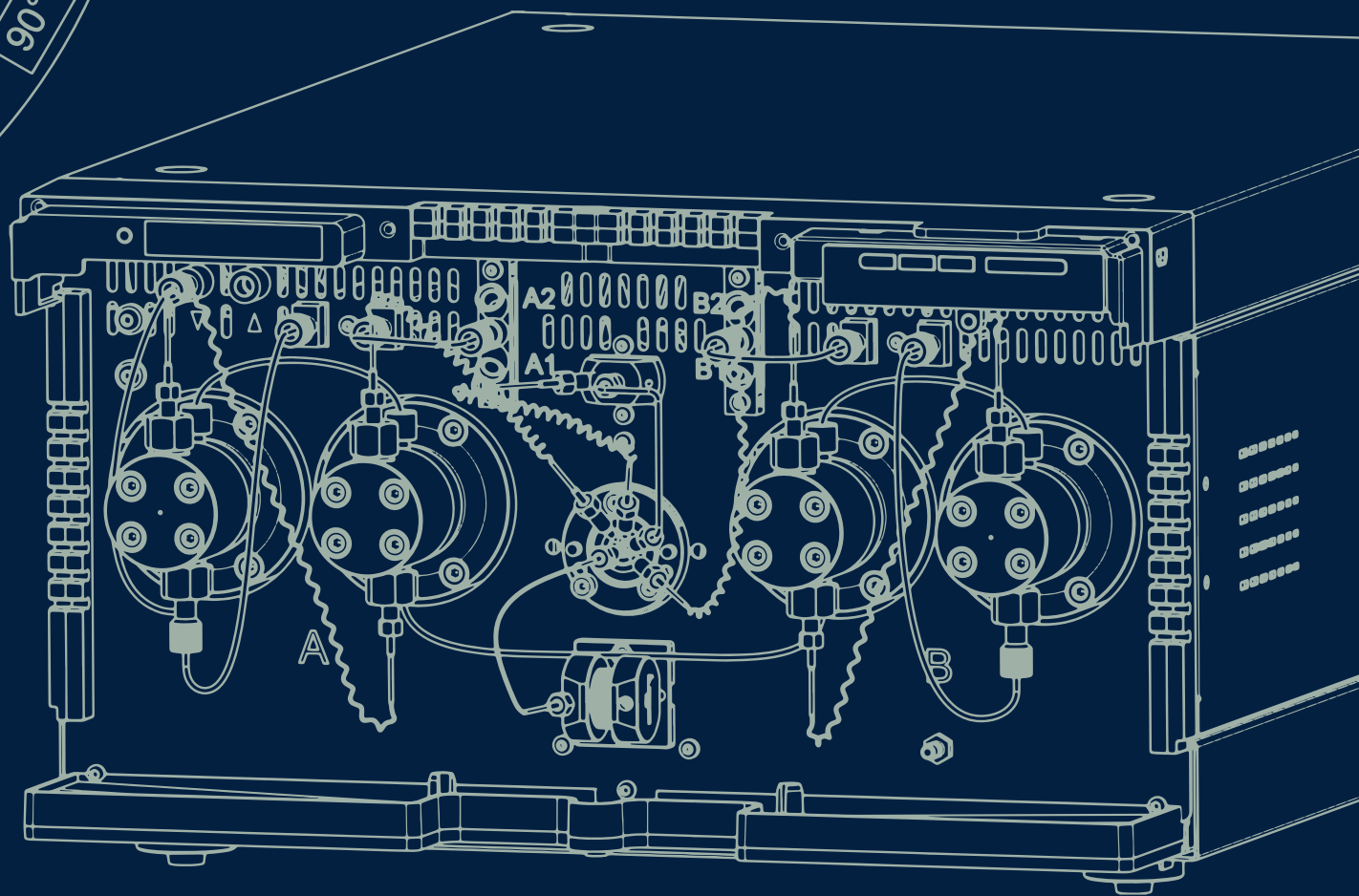
Science Together

KNAUER

Product Selection Guide

2021/2022





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
Email: **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

Support in Germany

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

Welcome to KNAUER

About KNAUER

Based in Berlin, KNAUER is a medium-sized company that has been serving the sciences since 1962. We develop and manufacture scientific instruments of superior quality for liquid chromatography and other laboratory tasks. The product range includes systems and components for analytical HPLC/UHPLC, preparative HPLC, fast protein liquid chromatography (FPLC), multi-column chromatography/simulated moving bed (SMB), as well as equipment for high pressure dosing and osmometry.

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 makes sure that we continuously manufacture products in the best quality possible. As a family business with around 160 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

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Instruments

Accessories

PC Hardware & software

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. 34

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	< 1%, measured at 5 - 50 % of max. flow range using ethanol/water 10:90
Flow rate precision	≤ 0.1% RSD
System protection	Soft start, Pmin und Pmax 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
Pump head inlet (standard)	UNF 1/4-28 Thread (for 1/8'' tubing)
Pump head outlet (standard)	UNF 10-32 Thread (for 1/16'' capillary)

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 Teflon® AF 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 Watt
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	100 µl (HPG)
Wetted materials	GFP, Stainless Steel, FKM, PEEK, Sapphire, Aluminiumoxide, Ruby, Zirconiumoxide
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	100 µl HPG, 200 µl LPG
Wetted materials	GFP, Stainless Steel, FKM, PEEK, Sapphire, Aluminiumoxide, Ruby, Zirconiumoxide
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)

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, Aluminiumoxide, Ruby, Zirconiumoxide
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
NEW **Wetted materials**	UHMW PE, PEEK, Sapphire, Aluminiumoxide, 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)
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. 34

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, Pmin und Pmax 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

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 Watt
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.

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

For pump accessories
see p. 34

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	Pmin und Pmax 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 Watt
Dimensions	121 x 129 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.

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

For pump accessories
see p. 34

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	Imin und Imax 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 Watt
Dimensions	121 x 129 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.

www.knauer.net/assistants

Freely combine pumps, valves and detectors in one housing

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

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

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

Plug-in modules

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.

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

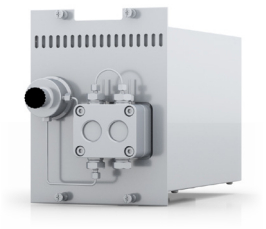
Basic plug-in modules	Article number for ordering individual modules (without the assistant housing)*
Empty module	AG2022
AZURA® Valve Unifier VU 4.1**	AWA04
AZURA® UV Detector UVD 2.1S	ADA03XA
AZURA® UV Detector UVD 2.1S, fiber optics	ADA07XA
Compact pump without pressure sensor	
AZURA® Pump P 2.1S, 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

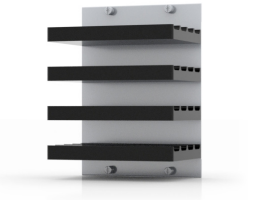
* Use the assistant configurator to find your desired plug-in module combination configured in the assistant housing: **www.knauer.net/assistantconfigurator**.

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

AZURA® Valve Unifier VU 4.1**

AZURA® Detector UVD 2.1S





Column holder

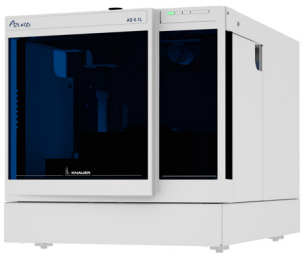
Accessories

Column holder - replacing empty module	AG2022B

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.



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

For autosampler accessories **see p. 41**

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
NEW **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	200 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	1000 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, 200 bar, with biocompatible flow path and sample cooling/heating
AAA40AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler, 200 bar
AAA41AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler, 200 bar, with sample cooling/heating

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

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. 44

Specifications

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
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	Not included (see Accessories / Spare parts)
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

Other

Note	Flow cells are not included and must be ordered separately (see Accessories / Spare parts)

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, 2µl, 1/16", 50 bar, LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMD59XA	50 mm path length, 6µl, 1/16", 50 bar, High Sensitivity LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMC38	10 mm path length, 10µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD
AMB18	3 mm path length, 2µl, 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
NEW AZZ00OC	AZURA® Heat Exchanger for analytical PressureProof flow cells, 14 µl

AZURA® Detector DAD 2.1L & MWD 2.1L

The AZURA® DAD 2.1L is a highly competitive diode array detector which combines high performance with easy handling at an affordable price.

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

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 comes 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

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

For detector accessories **see p. 44**

Specifications

Detection

Detector type	Diode array detector
Number of diodes	256
Pixel pitch	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
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	Not included (see Accessories / Spare parts)
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

Note	Flow cells are not included and must be ordered separately (see Accessories / Spare parts)

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, 2µl, 1/16", 50 bar, LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMD59XA	50 mm path length, 6µl, 1/16", 50 bar, High Sensitivity LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD
AMC38	10 mm path length, 10µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD
AMB18	3 mm path length, 2µl, 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 (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 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
- 55 years experience
- Made in Germany

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

For detector accessories **see p. 44**

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	Not included (see Accessories / Spare parts)
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
Note	Flow cells are not included and must be ordered separately (see Accessories / Spare parts)

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 OpenLab EZChrom Edition®, ChromGate®, PurityChrom Bio and ClarityChrom® software, as well as from the front panel (stand-alone operation), via LAN, via RS-232, or through analog input/output; allowing it to be integrated into almost any LC system.

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
- 55 years experience
- Made in Germany

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

For detector accessories **see p. 44**

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	Not included (see Accessories / Spare parts)
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
Note	Flow cells are not included and must be ordered separately (see Accessories / Spare parts)

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 suitable 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 performance 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
- 55 years experience
- Made in Germany

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

For detector accessories see p. 44

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

Fluorescence Detector RF-20A/Axs

The fluorescence detector RF-20A 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 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 adjustment is required.

Specifications

Detection

Detector type	Fluorescence detector
Detection channels	1
Number of signals	1
Light source	xenon lamp
Wavelength range	200 - 650 nm
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
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

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

Key features

- Pressure resistant flow cell

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

For detector accessories **see p. 44**

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 incl. accessories and flow cell
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 incl. accessories and flow cell
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

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.

Note: This product is only available in Germany, Austria and Switzerland. For other countries please send us a request.

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. 44**

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

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 ultrafast HPLC, low temperature technology, supports high data rates
A0754-5	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 Controler Class 3 necessary
A1783-5	Sedex Driver for Chromeleon 7.2; For Sedex FP / LC / 100LT; Instrument Controler Class 3 necessary

Electrochemical Detector AZURA® ECD 2.1

With its measurement frequency up to 100 Hz, this electrochemical detector is specially designed for super-fast highly sensitive and selective measurement of oxidisable and reducible substances in (U)HPLC. The AZURA® ECD 2.1 comprises of a thermostat-controlled Faraday's cage, accommodating column and flow cell.

The AZURA® ECD 2.1 unites the three operating modes DC, Pulse and Scan in one instrument. The DC mode covers about 90% of all applications. The pulse mode is important for PAD (Pulsed Amperometric Detection) of e.g. carbohydrates. The scan mode is used to obtain a voltammogram in method optimization.

A digital low-pass filter provides an excellent signal-to-noise ratio. For highest sensitivity, the SenCell flow cell is recommended. The correct flow cell can be chosen from a broad variety of flow cells after our advice.

The AZURA® ECD 2.1 is controlled by software packages ClarityChrom® and Chromeleon®.

Key features

- Compact
- Thermostat included

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

For detector accessories **see p. 44**

Specifications

Puls mode

Measuring range	10 pA-200 µA in steps of 1, 2 and 5
Filter (cut off)	Advanced Digital Filter, 0.5 -0.001 Hz in steps of 1, 2 and 5
Pulse times	t1: 100-2000 ms; t2: 0-2000 ms; t3: 0-2000 ms in steps of 10 ms
Data recording	20, 40, 60, 80 and 100 ms

DC mode

Measuring range	10 pA-200 µA in steps of 1, 2 and 5
Filter (cut off)	Advanced Digital Filter, 0.5 -0.001 Hz in steps of 1, 2 and 5
Noise	< 2 pA with dummy cell

Scan mode

Measuring range	10 pA-200 µA in steps of 1, 2 and 5
Scan speed	1-50 mV/s in steps of 1, 2 and 5
Scan cycle	half, complete, continuous

Detection

Detector type	Electrochemical detector
Version	DC, pulse, scan operating modes
Detection channels	1
Working potential	-2.0 V to +2.0 V
Maximum data rate	10 Hz
Autozero	triggered via key, TTL, RS-232

Heated zone

Thermostatting	oven included
Temperature range	from 7°C above ambient temperature to 45°C

Communication

Control	Parametric control and data-acquisition via LAN port (USB service port)

Ordering details:

Device	
A1651	Electrochemical detector AZURA® ECD 2.1 without flow cell

Accessories (Flow cells)

Art. no.	Flow cell type	Typical applications
A1652	Flow cell SenCell GC Salt-Bridge	DC mode for Phenols, Polyphenols, Aminophenols
A1652-1	Flow cell FlexCell Au HyREF	3-Step PAD for Carbohydrates
A1652-2	Flow cell SenCell GC HyREF	DC mode for Phenols, Polyphenols, Bisphenol A
A1652-3	Flow cell SenCell Au HyREF	4-Step PAD for Carbohydrates

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

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

For detector accessories **see p. 44**

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

AZURA® Conductivity Monitor CM 2.1S

The AZURA® CM 2.1S is a reliable conductivity monitor which is usually utilized in FPLC to follow salt gradients. By adding a pH sensor also pH values can be measured.

The contactless measurements of conductivity reduces the risk of carryover to a minimum and makes the device easy to maintain. The fully biocompatible flow cells cover a flow rate of up to 100 ml/min. Choose between ADG30GC and ADG30GD for a CM 2.1S with ready to measure flow cells for either 10 or 100 ml/min maximum flow.

Specifications

Flow cell

Flow cell type	Contactless conductivity flow cell
Biocompatible	Yes
Connection of flow cell	Female 10-32" UNF or M8x1 thread (PEEK) – both included in shipment
Capillary connection	1/16" or 1/8" – both included in shipment
Wetted materials	PEEK

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

Flow cell features by device

Device order number	ADG30GC	ADG30GD
Flow cell volume	30 µl	300 µl
Max. flow rate	10 ml/min	100 ml/min
Maximum pressure	160 bar	100 bar

Detection

Measurement accuracy	Conductivity: < 5% full scale end value Temperature: ± 1.0°C pH: +/-0.5 pH (within 4 – 25°C)
Measurement precision	Conductvity: < 2 % of end value or ≤ 5 mS/cm of higher values (measured within 0.1 – 300 mS/cm; pH: +/-0.2 pH (within 4 – 25°C)
Measurement range	0.1 – 999 mS/cm
pH measurement	2 – 12
Maximum data rate	5 Hz
Supported electrodes	All pH electrodes with BNC connector and compatible flow cell

Communication

Analog outputs	2 channels (conductivity and pH value – not active if remote controlled by software) DAC 18 bit
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

ADG30GC	AZURA® CM 2.1S with flow cell - up to 10 ml/min - conductivity monitor with optional pH measurement
ADG30GD	AZURA® CM 2.1S with flow cell - up to 100 ml/min - conductivity monitor with optional pH measurement

Accessories

A4156	Flow cell CM 2.1S for flow rates up to 10 ml/min
A4157	Flow cell CM 2.1S for flow rates up to 100 ml/min
NEW A70091-2	pH measuring kit for conductivity monitor CM 2.1S for flow rates up to 100 ml/min, delay volume ~ 80 µl, max. pressure 5 bar
A5813	Flow splitter for CM 2.1S when used with flowrates over 100 ml/min
A9854-3	Mounting bracket AZURA® L for AZURA® UVD 2.1S and AZURA® CM 2.1S (left-sided on AZURA® L)

pH Sensors

NEW A1943	AZURA® pH flow cell for AZURA pH sensor
NEW A1942-1	AZURA® pH dummy electrode for AZURA® pH sensor
NEW A1933-1	pH electrode for AZURA® pH sensor & CM 2.1S respectively

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. 53**

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: viny
Fractionation control	operator: front panel control via touch screen LCDintegrated systems: direct communication via Ethernet (TCP/IP) and RS-232 serial communi-cations
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
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 VAC, 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
A591091	Rack with 26 funnels with vinyl tubing for Foxy R2, up to 1000 ml/min
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

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. 53**

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
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
NEW A20521	Micro test tubes, 9 ml, 100 pcs, L 150 mm, OD 10,5 mm for rack A59131
NEW A20522	Preparative tubes, 25 pcs, L 284 mm x OD 36 mm, V 240 ml for rack A59132

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

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 air 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 µl 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 24V, 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. 48

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 drive VU 4.1

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 NEW
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.

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 NEW
6	SST DLC	PEEK	500	0.75	1/16 (UNF 10-32)	AVD26AE
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* NEW
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 NEW

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

Multiposition 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)	AVS23AF NEW
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	200	1.5	1/8" (UNF 1/4-28 coned)	AVT34AE
8	PEEK	PEEK	50	2.0	1/8" (UNF 1/4-28, flat-bottom)	AVU32GE NEW
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 NEW
16	SST DLC[1]	POM	100	0.75	1/16 (UNF 10-32)	AVQ63AF NEW
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 NEW

[1] stainless steel coated with diamond-like carbon

Special purpose valves*

Valves	Capillary connection	Max. pressure [bar]	Bore size [mm]	Order number
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
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

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

K-7400S Semi-Micro Osmometer

KNAUER is one of the pioneers 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
- 55 years experience
- Fast measurements

For more osmometry accessories and standards **see p. 52**

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)

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 Rel. 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

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
A0011XB	Upgrade Kit for K-7400 required to use measuring head for sample tubes (A0840-2)
A0272	500 Pack of plastic sample tubes for Semi-Micro Osmometer K-7400S

Pump accessories

AZC00

A5325

A2056

A5324

Eluent trays & bottles

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 4 eluent bottles 1000 ml, 1 bottle 250 ml for piston backflushing, incl. caps for eluent tubing, GL45	A5324-2
Set of 4 eluent bottles 1000 ml, incl. caps for eluent tubing, GL45	A5324
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
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
Eluent supply bottle 2000 ml, GL45 thread, round, clear glass, without screw cap	A59158-1
250 ml bottle for piston backflushing	A2056
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, 192×317×231mm	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 1000 bar, 50 µl mixing volume, stainless steel	AZZ00MB
AZURA® HPLC mixer up to 1000 bar, 100 µl mixing volume, stainless steel	AZZ00MC
AZURA® HPLC mixer up to 1000 bar, 200 µl mixing volume, stainless steel	AZZ00MD
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
Mounting bracket AZURA® L for Hypershear mixing chambers	A9853-8

A0285

Dynamic mixers

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), 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
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), 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
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, 1set	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
KNAUER Pulse Damper, 290 µl, PEEK, 1/16'', 225 bar	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
Adapter female 1/4-28 Flat Bottom to 1/2-20 UNF, for pump head inlet A9868 & 1/4" VICI valves, material: PEEK	A142605
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, P6.1L, 40P and S1050 pumps for pump heads 10 ml (1/8" capillaries)	A58202
Inlet-bushing kit for P 2.1S, P 4.1S, P6.1L, 40P and S1050 pumps for pump heads 10 ml (1/16" capillaries)	A58203
Inlet-bushing kit for P 2.1S, P 4.1S, P6.1L, 40P and S1050 pumps for pump heads 50 ml (1/8" capillaries)	A58204
Inlet-bushing kit for P 2.1S, P 4.1S, P6.1L, 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, 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

A06840

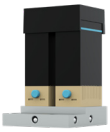
A06841

A068411

A1122

Check valves

Check valve unit for 10/50 ml pump heads, for dosing applications, Bore: Ø1.4 mm, Ball: Ø1.75 mm	A06840
Check valve unit for 10 ml pump heads, for HPLC applications, Bore: Ø0.7 mm, Ball: Ø1.75 mm	A06841
Spring-loaded check valve unit for 10 ml/50 ml pump heads, for normal phase applications, Bore: Ø1.4 mm , Ball: Ø1.75mm	A068411
Check valve unit (KEL-F) for 10 ml pump head, for aggressive substances, Bore: Ø0.7 mm, Ball: Ø1.75mm	A068412
Check valve unit for 50 ml pump heads, for HPLC applications, Bore: Ø1.2 mm, Ball: Ø1.75 mm	A06842
Check valve unit (KEL-F) for 50 ml pump head, for aggressive substances, Bore: Ø1.2 mm, Ball: Ø1.75 mm	A068422
Check valve unit stainless steel/PEEK for 500 ml and 1000 ml pump heads	A1080
Check valve unit titanium/PEEK for 500 ml and 1000 ml pump heads	A1080V1
Check valve unit titanium/KEL-F for 500 ml and 1000 ml pump heads	A1080V2
Check valve unit stainless steel/KEL-F for 500 ml and 1000 ml pump heads	A1080V3
Check valve unit stainless steel/PEEK for 100 ml and 250 ml pump heads	A1122
Check valve unit titanium/PEEK for 100 ml and 250 ml pump heads	A1122-1
Check valve unit titanium/KEL-F for 100 ml and 250 ml pump heads	A1122-2
Check valve unit stainless steel/KEL-F for 100 ml and 250 ml pump heads	A1122-3



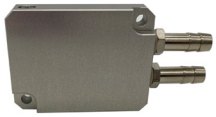
AZZ00AA

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
Heating solution for 10 and 50 ml/min pump heads, incl. heating plate and insulation sleeve	A57036-1
Heating solution for 10 and 50 ml/min pump heads, incl. heating plate and insulation sleeve (without temperature controller)	A57037-1

A96423

A96424

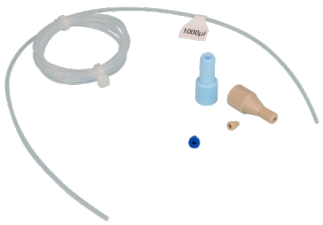
A96425

A9670

Maintenance kits for AZURA® Pumps

Maintenance kit for AZURA® Pump P 2.1S / P 4.1S, AZURA® Pump P 6.1L, BlueShadow 40P, 10 ml pump head, including 1 set of gaskets, 2 piston rods, 2 sapphire backing rings, 2 O-rings, for organic solvents	A96423
Maintenance kit for AZURA® Pump P 4.1S & P 2.1S, AZURA® Pump P 6.1L, BlueShadow 40P, 50 ml pump head, including 1 set of gaskets, 2 piston rods, 2 sapphire backing rings, 2 O-rings	A96424
Maintenance kit for AZURA® Pump P 4.1S & P 2.1S, AZURA® Pump P 6.1L, BlueShadow 40P, 50 ml pump head, including 1 set of gaskets, 2 piston rods, 2 sapphire backing rings, 2 O-rings, for aqueous solutions	A964242
Maintenance kit 100 ml for AZURA® Pump P 2.1L and BlueShadow 80P, including 2 sets of gaskets, 2 piston rods, 2 springs	A96425
Maintenance kit 250 ml for AZURA® Pump P 2.1L and BlueShadow 80P, including 2 sets of gaskets, 2 piston rods, 2 springs	A96426
Maintenance kit 500 ml for AZURA® Pump P 2.1L and BlueShadow 80P, including 2 sets of gaskets, 2 piston rods, 2 springs	A96427
Maintenance kit 1000 ml for AZURA® Pump P 2.1L and BlueShadow 80P, including 2 sets of gaskets, 2 piston rods, 2 springs	A96428
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/1000 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 P2.1S/P4.1S/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
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 1000 ml pump heads	A9675
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
Replacement filters for pump P 6.1L/40P ceramic for serial no 2109 and newer, PEEK frit, 2 µm pore size, 3 pcs.	A9663

Autosampler accessories - spare parts



A500526

Buffer tubings kits

Buffer tubing for AS 6.1L, 500 µl; Spare part for AAA00AA, AAA01AA, AAA10AA, AAA11AA, AAA50AA & AAA51AA	A500525
Buffer tubing for AS 6.1L, 1000 µl; Spare part for AAA20AA & AAA21AA	A500526
Buffer tubing for AS 6.1L, 2000 µl; Spare part for AAA31AA, AAA40AA & AAA41AA	A500527

A500519

Rotor seals

Rotor seal for AS 6.1L, 700 bar, Vespel; Spare part for AAA00AA & AAA01AA	A500519
Rotor seal for AS 6.1L, 1000 bar, Vespel; Spare part for AAA50AA & AAA51AA	A500520
Rotor seal for AS 6.1L, 1240 bar, Vespel; Spare part for AAA10AA & AAA11AA	A500521
Rotor seal for AS 6.1L, 345 bar, PEEK; Spare part for AAA20AA & AAA21AA	A500522
Rotor seal for AS 6.1L, 200 bar, ValconH; Spare part for AAA40AA & AAA41AA	A500523
Rotor seal for AS 6.1L, 200 bar, ValconE; Spare part for AAA31AA	A500524

A500515

A500512

Syringes

100 µl Syringe for AS 6.1L; alternative to standard configuration	A500515
250 µl Syringe for AS 6.1L; Spare part for AAA00AA, AAA01AA, AAA10AA, AAA11AA, AAA50AA & AAA51AA	A500512
500 µl Syringe for AS 6.1L; Spare part for AAA20AA & AAA21AA	A500513
NEW 1000 µl Syringe for AS 6.1L; alternative to standard configuration	A500539
2500 µl Syringe for AS 6.1L; Spare part for AAA31AA, AAA40AA & AAA41AA	A500514

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 incl. fittings, 250µl, SSt for AZURA AS 6.1L & 3950	A500528

Sample needles

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

A50058

Air needles

Air needle for AS 6.1L; 50 mm protrusion length - standard for AAA40AA & AAA41AA	A500529
Air needle for AS 6.1L; 56 mm protrusion length	A500530
Air needle for AS 6.1L; 62 mm protrusion length - standard for all autosampler versions except AAA40AA & AAA41AA	A50058
Air needle for AS 6.1L; 68 mm protrusion length	A500531
Air needle for AS 6.1L; 74 mm protrusion length	A500532
Air needle for AS 6.1L; 80 mm protrusion length	A500533
Set of air needles for autosampler AS 6.1L, 1 pc. of each length	A50059

Optional accessories

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

A0638-6

A0638-7

A18201-3

A15854

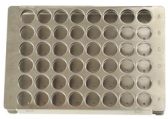
Vial kits for analytical & preparative HPLC

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

Maintenance kits

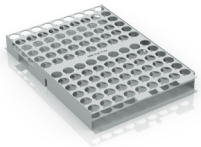
Maintenance kits include the following device specific items: sample needle, air needle, rotor seal, buffer tubing, syringe, syringe valve and wash position.

Preventive maintenance kit for AS 6.1L/3950 (1240 bar/1000 bar) AAA10AA/AAA11AA/A50060/ A500601/A50070/A500701	A5009-1
Preventive maintenance kit for AS 6.1L/3950 (700 bar) AAA00AA/AAA01AA/A50080/A50081	A5009-2
Preventive maintenance kit for AS 6.1L/3950 (345 bar, Bio) AAA20AA/AAA21AA/A50052-1/ A50053/A50053-1	A5009-3
Preventive maintenance kit for AS 6.1L/3950 (200 bar, Prep) AAA40AA/AAA41AA/A50054-1/ A50056-1	A5009-4
Preventive maintenance kit for AS 6.1L/3950 (200 bar, Prep-Bio) AAA31AA/A50055-2	A5009-5
Preventive maintenance kit for AS-1 (1000 bar) A63500/A63501/A63502	A5009-6
Preventive maintenance kit for AS 6.1L (862 bar) AAA50AA/AAA51AA	A5009-7



A50050

A500502



A500505

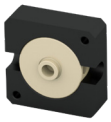
A500507

Vial plates

Vial plate for 48x 1.5 ml vials for autosampler 3950 and AZURA® AS 6.1L, 1pcs.	A50050
Vial plate for 84x1.5 ml and 3x10ml vials for autosampler 3950 and AZURA® AS 6.1L, 1pcs.	A500501
Prep vial plate for 12 x 10 ml for autosampler 3950 and AZURA® AS 6.1L, 1pcs.	A500502
Vial plate for 108x 1.5 ml vials for autosampler 3950 and AZURA® AS 6.1L, 1pcs.	A500505
Prep vial plate for 30 x 10ml for autosampler 3950 and AZURA® AS 6.1L, 1pcs.	A500507

Detector accessories

AMC19XA



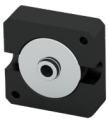
A4045

A4061V2

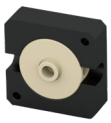
A4061XB

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 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



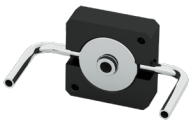
A4066



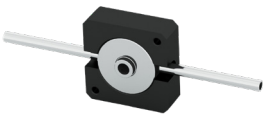
A4067

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

A4104

Nano flow cell

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

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
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

A0740

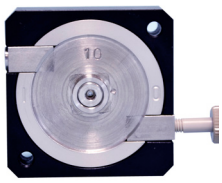
A0743

A0740HT

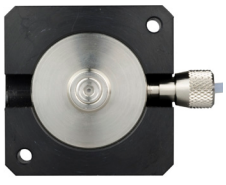
Fiber optic cables

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

A9842



A9843



A9844

Waste tubing kits

Waste tubing kit for AZURA® RID 2.1L, 1/16"	A9841
Waste tubing kit for LightGuide flow cells, 1/16"	A9842
Waste tubing kit for UV flow cells, 1/16"	A9843
Waste tubing kit for UV flow cells, 1/8"	A9844

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

AZZ00OC

External heat exchangers

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

A5815

Flow splitters

Adjustable preparative post column flow splitter. Calibrated on customer flow rate, split ratio and eluent.	A5815
Passive post column flow splitter for analytical applications. Calibrated with water for split ratios of 15:1 - 250:1	A1770
Flow splitter for CM 2.1S when used with flowrates over 100 ml/min	A5813
Adjustable semi-preparative post column flow splitter. Calibrated on customer flow rate, split ratio and eluent	A5816

Valve accessories - spare parts

Valves, rotor seals and stators

Description	Valve	Rotor seal	Stator
6 Port 2-position valve, 1/16", 1200 bar	AVC28AC	A0611.2	A205118
8 Port 2-position valve, 1/16", 1200 bar	AVC38AC	A0611.3	A205120
6 Port 2-position valve, 1/16", 100 bar	AVD23AF	A205107	A205140
6 Port 2-position valve, 1/16", 240 bar, bioinert	AVD24CE	A205101	A205102
6 Port 2-position valve, 1/16", 500 bar	AVD26AE	A205145	A205140
8 Port 2-position valve, 1/16", 500 bar	AVD36AE	A205144	A205142
6 Port 2-position valve, 1/8", 300 bar	AVE25AE	A205147	A205146
6 Port 2-position valve, 1/8", 300 bar, 2 channel	AVE25AI	A205162	A205146
6 Port 2-position valve, 1/8", 100 bar, bioinert	AVF23CE	A205157	A205156
8 Port 2-position valve, 1/8", 50 bar, bioinert	AVF32CE	A205111	A205130
Manual 6 Port 2-position valve, 1/16", 240 bar, bioinert	AVG24CE	A205101	A205102
Manual 6 Port 2-position valve, 1/16", 1200 bar	AVI28AC	A0611.2	A205118
Manual 8 Port 2-position valve, 1/16", 1200 bar	AVI38AC	A0611.3	A205120
Manual 6 Port 2-position valve, 1/16", 100 bar	AVJ23AF	A205165	A205140
Manual 6 Port 2-position valve, 1/16", 500 bar	AVJ26AE	A205145	A205140
Manual 8 Port 2-position valve, 1/16", 500 bar	AVJ36AE	A205144	A205142
Manual 6 Port 2-position valve, 1/8", 300 bar	AVK25AE	A205147	A205146
Manual 6 Port 2-position valve, 1/8", 100 bar, bioinert	AVL23CE	A205157	A205156
8 Port multiinjection valve, 1/16", 240 bar, bioinert	AVN94CE	A205131	A205132
8 Port multiinjection valve, 1/16", 500 bar	AVN96AE	A205160	A205161
16 Port multiposition valve, 1/16", 100 bar	AVQ63AF	A205113	A205152
16 Port multiposition valve, 1/16", 500 bar	AVQ66AE	A205151	A205152
6 Port multiposition valve, 1/16", 1200 bar	AVR28AC	A0880.2	A205118
8 Port multiposition valve, 1/16", 1200 bar	AVR38AC	A0880.4	A205120
6 Port multiposition valve, 1/16", 100 bar	AVS23AF	A205109	A205140
6 Port multiposition valve, 1/16", 500 bar	AVS26AE	A205139	A205140
8 Port multiposition valve, 1/16", 240 bar, bioinert	AVS34CE	A205103	A205104
8 Port multiposition valve, 1/16", 300 bar	AVS35AE	A205103	A205142
8 Port multiposition valve, 1/16", 500 bar	AVS36AE	A205103	A205142
16 Port multiposition valve, 1/16", 50 bar, bioinert	AVS62CE	A205105	A205106
16 Port multiposition valve, 1/16", 150 bar, bioinert	AVS63CE	A205105	A205106
6 Port multiposition valve, 1/8", 300 bar	AVT25AE	A205148	A205146
12 Port multiposition valve, 1/8", 100 bar	AVT53AE	A205155	A205154
12 Port multiposition valve, 1/8", 100 bar, bioinert	AVT53CE	A205155	A205164
8 Port multiposition valve, 1/8", 50 bar, bioinert	AVU32CE	A205129	A205130
8 Port multiposition valve, 1/8", 50 bar, bioinert	AVU32GE	A205129	A205153
8 Port multiposition valve, 1/8", 200 bar	AVT34AE	A205149	A205150

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

The ports of V 4.1 valves for 1/8” capillaries are coned with a UNF 1/4-28 thread.
Appropriate fittings are provided with each valve. The tables below give an overview on the available fittings.

A7205

A7206

A7207

A7212

NEW 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

NEW 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, PFTE	A7216
Seal ring for 1/8” capillary, for ports with UNF 1/4-28 thread, PEEK	A7217

A7218

A7219

A7220

A7221

NEW 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
Adapter to connect a capillary with 1/16” OD (thread: 10-32 UNF) to 1/8” (thread: 1/4-28 UNF coned), SSt	A7204
Adapter to connect a capillary with 1/16” OD (thread: 10-32 UNF) to 1/8” (thread: 1/4-28 UNF coned), PEEK	A7224

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, 5µl, 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
NEW 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
NEW 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
NEW 10 ml sample loop, stainless steel, 1.76 mm ID, incl. UNF 1/4-28 fittings	A142611

Sample loops 1/16" PEEK incl. fittings

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

Sample loop, 10 µl, PEEK, 345 bar, 0.25 mm ID	A1058
Sample loop, 20 µl, PEEK, 345 bar, 0.25 mm ID	A1059-1
Sample loop, 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

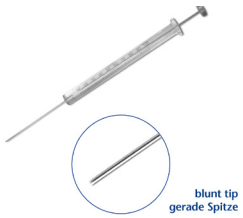
5 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. M8x1 fittings	A78980
NEW 5 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. UNF 1/4-28 fittings	A142612
10 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. M8x1 fittings	A78985
NEW 10 ml sample loop, PEEK, 50 bar, 1/16" ID, incl. UNF 1/4-28 fittings	A142613

A1159-2

A1160-1

Variloop for sample loading

KNAUER VariLoop S, 10 ml, 1/16", stainless steel, variable injection volume and multiple injections	A1054-2
KNAUER VariLoop S, 10 ml, 1/8", stainless steel, variable injection volume and multiple injections	A1159-2
KNAUER VariLoop L, 40 ml, 1/16", stainless steel, variable injection volume and multiple injections	A1055-1
KNAUER VariLoop L, 40 ml, 1/8", stainless steel, variable injection volume and multiple injections	A1160-1
Superloop, 150 ml, variable injection volumes and multiple injections, movable piston protects against dilution, 1/16", Glass, 20 bar	A1928



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

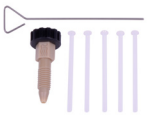
A0653

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

Loop filling port 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

Osmometry accessories

A01242

A0272

A7013

A02330

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
Printer paper for the plain paper printer A3711 (60 m roll)	A7013
Ribbon cartridge for the plain paper printer A3711 (black)	A7014
Cleaning tissue, lint-free, for thermistor cleaning	A02330

Purification accessories

A70054V3

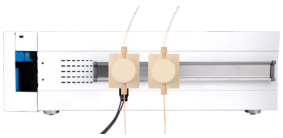
A70054V4

A57024

A57026

Eluent & column heating

Eluent heating device (1 channel), 1/16'', temperature range: ambient to 100°C, 5,7'' display, clean room compatible	A70054V3
Eluent heating device (2 channels), 1/16'', temperature range: ambient to 100°C, 5,7'' display, clean room compatible	A70054V4
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

Pressure control for delta pressure measurement up to 250 ml/min for 1/16'' and 1/8''. Includes 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

Consumables

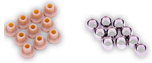
Fittings and bushings

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.

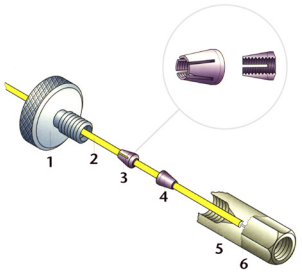
Article number	Description	Material	For capillary OD [inch]	Thread	Included ferrules	Max.back-pressure [bar]	Amount in set	Picture
A9646	Fingertight Fitting, long	PEEK	1/16"	UNF 10/32	Biconical sealing rings A1022	n/a	2	
A9646-1	Fingertight Fitting, long	PEEK	1/16"	UNF 10/32	Biconical sealing rings A1070	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	
A1067	Dynaseal bushings, short	SST	1/8"	M8x1	without ferrules	depends on ferrule	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	

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	

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

Ferrules and clamping rings

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

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

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

A0484

A1239

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

Couplings & adapters

A0148

A0233

A0233-1

A1407

Polymer couplings

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

Metal couplings

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	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	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	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	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	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	A0480

A58263

A58264

A58265

A58266

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
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
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

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
T-connector to connect 3 capillaries with 1/8'' OD (material: stainless steel, Swagelok®)	A58260
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

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

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
Back-Pressure Regulator/pressure release 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
Back-Pressure Regulator/pressure releasevalve for 1/16" OD tubing, 134 µl volume, PEEK, provides a constant back-pressure of 0.3 bar (5 psi), contains Y assembly and fittings	A5804-1
Back-Pressure Regulator/pressure release valve kit for 1/16" OD tubing, stainless steel, provides a constant back-pressure of 3 bar, contains pressure release valve tee and fittings for 1/16"	A5805
Back-Pressure 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

A70087

A70088

A70084

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

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 pcs.	A0130
Stainless steel, 1/16" OD, 0.25 mm ID, 300 cm length, 1 pcs.	A0131
Stainless steel, 1/16" OD, 0.5 mm ID, 300 cm length, 1 pcs.	A0132
Stainless steel, 1/16" OD, 0.7 mm ID, 300 cm length, 1 pcs.	A0133
Stainless steel, 1/16" OD, 1 mm ID, 300 cm length, 1 pcs.	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 pcs.	A0506

Capillaries 1/4", SST

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

Capillaries 1/8", SST

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

AZF40 AZF50 AZF60 AZF80

Analytical K-Connect start-up kits, SST, 1/32" capillaries with fitting sleeves 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

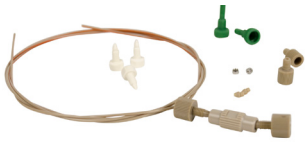
Stainless steel, 0.1 mm ID, 150 mm length, red	AZF41
Stainless steel, 0.1 mm ID, 300 mm length, red	AZF42
Stainless steel, 0.1 mm ID, 400 mm length, red	AZF43
Stainless steel, 0.1 mm ID, 700 mm length, red	AZF44
Stainless steel, 0.1 mm ID, 900 mm length, red	AZF45
Stainless steel, 0.18 mm ID, 150 mm 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.

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

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

A0478-1

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

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

Inline filters

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 filters, 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

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

Safety-caps

A59257

A59257-1

A59259

A59258

Safety caps sets for AZURA analytical systems

for isocratic systems, incl. filters, bottles and fittings	A59257
for LPG systems, incl. filters, bottles and fittings (4 pcs.)	A59257-1
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

A59246

A59248

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 pcs., 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

Lab equipment

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 LPGblock)	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 pc., 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

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

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

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

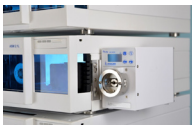
The Benchtop Racks area solution to install AZURA® L systems at space-limited sites, especially in cold rooms.

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: special manufactured with customized 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	A9860

AZURA® Mounting brackets

A9853

A9854-2



A9854-3

A9853-5

Mounting bracket AZURA® L Bio for manual KNAUER injection valve, pH-flowcell and a prepacked column	A9854-1
Mounting bracket AZURA® L for Vici valve drives	A9853-2
Mounting bracket AZURA® S for manual KNAUER injection valve	A9854-2
Mounting bracket AZURA® L for columns with 25 - 29 mm AD	A9853-3
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)	A9854-3
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 for KNAUER manual injection valves	A9853

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
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 130cm (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 ID columns	A2820A
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

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

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

Mobile Control (Chrom) for Windows 10

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

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

Do you want to acquire data without the overhead of an advanced chromatographic data system? **Mobile Control Chrom** features data acquisition from AZURA® detectors in addition to full device control.

Why to use Mobile Control (Chrom) software

Only pay for what you use: Mobile Control features basic functions to operate AZURA® devices and systems. Mobile Control 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. You can 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. 82

Specifications

Software

Software name	**Mobile Control** - display software for AZURA® devices without data acquisition **Mobile Control Chrom** - display software for AZURA® devices with data acquisition
Operating system	Windows 10
Software version	Mobile Control v5.5.36, Data Viewer v3.5.37
Supported instruments	Consider release notes (downloads below)
Field of application	Display software, device control

Expandability

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

Free demo version:
www.knauer.net/mobilecontrol

Ordering details:

Software

A9607	Mobile Control without data acquisition including tablet and mount
A9608	Mobile Control Chrom with data acquisition including tablet and mount
A9610	Mobile Control without data acquisition
A9612	Mobile Control Chrom with data acquisition
A9613	Mobile Control Chrom with data acquisition and column test option
A96131	Coming soon - Mobile Control Chrom with data acquisition and fraction collection option
A96132	Coming soon - Mobile Control Chrom with data acquisition and fraction collection option including tablet and mount
A9614	Upgrading Mobile Control to Mobile Control Chrom gaining data acquisition

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

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.

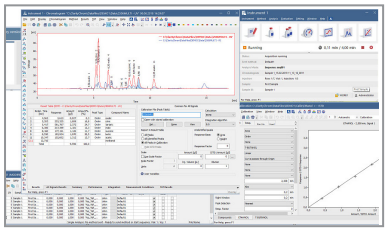
The system suitability (SST) extension automates the calculation of system suitability parameters for system validation and calculates up to 12 parameters and compares the results with the limits the user has set.

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. 82

Specifications

Software	
Software name	ClarityChrom
Extensions / Licenses	PDA / 3D UV, System suitability, Fraction collection, SEC/GPC, Mass spectrometry
System architecture	32-bit CDS
Operating system	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:

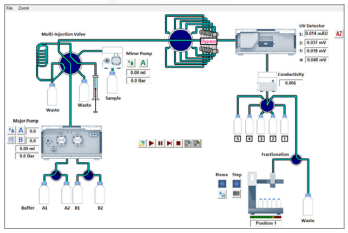
Software

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®

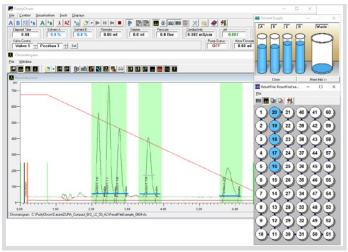
PurityChrom is a chromatography software especially designed for the area of preparative purifications and FPLC applications. PurityChrom provides a user-friendly and clearly structured interface. The **system visualization** offers a graphical representation of the purification system and allows easy 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.

Specifications

Software

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

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

For PC hardware & periphery **see p. 82**

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. 82

Specifications

Software

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

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:

Device

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

OpenLAB® CDS EZChrom Edition

OpenLAB CDS EZChrom Edition is the next generation of chromatography data systems 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 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. In the fraction collector configuration the delay volume and the fraction vial volume can be defined. This ensures that the target substance will be collected in the fraction vial and the fraction vial will not overflow. The pump flow rate, which is required for calculation of delay and fraction vial fill level, will be automatically read from the pump's method setup. 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 rack view gives an overview of the already collected fraction, their volume and retention time. The manual fraction control and the option to use the KNAUER electric valves for fractionation gives you more flexibility. 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.

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

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

For PC hardware & periphery
see p. 82

Specifications

Software

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

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.

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

PC Hardware & periphery

Desktop PCs

Desktop PC (SFF) for OpenLAB® and Chromeleon™ with 24" monitor, English edition Windows 10 Prof. 64-bit Englisch, 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

A64809

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
5-port LAN Fast Ethernet Switch NetGear FS105, 5x RJ-45 10/100 MBit	A3126
5-port Fast Ethernet switch NetGear FS105 5x RJ-45, 100 MBit, power plug UK, US or AUS	A3126INT
16-port LAN GBit Ethernet Switch NetGear GS316 16x RJ-45, 10/100 MBit, Auto MDI-X, power plug UK, US or AUS	A3129

AZB00XA

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
NEW Ethernet Eventbox for 12 digital inputs and outputs each; only supported under PurityChrom® & PurityChrom MCC Plus®	AZB01
NEW Input cable for Ethernet Eventbox (5 m, M3 plug, open ends with wire end ferrules)	AZB01-01
NEW Output cable for Ethernet Eventbox (3 m, hollow plug, open ends with wire end ferrules)	AZB01-02
NEW 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

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
NEW 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.

Rent-an-expert

Get professional assistance in your lab

Some of the numerous chromatographic challenges are better solved in your own lab with your own HPLC equipment. Just order a specialist for your assistance in your lab.

In order to develop the best procedure for your HPLC/FPLC or even purification challenge, we will together compile a concept with you in advance.

In addition, we offer a range of column screening services. If you are unsure which column you need, simply ask our sales department for a quote. We offer analytical column screening support for the most common phases (C18, C18A and C18H) and specialty phases (Eurocat screening or chiral screening).

Chiral 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**

Update due to Covid-19

We currently only offer online trainings for our most popular courses HPLC basic training and FPLC basic training. Our regulary on-site trainings are on hold due to the Corona pandemic. Please contact us if you are interested in a individual training for your team - we will try to make it possible.

HPLC Workshops	Description	Article number
HPLC Basics (1 day)	Practical work in small groups on compact HPLC systems from installation to system performance verification.	AL0520
HPLC Troubleshooting (1 day)	Participants gain theoretical as well as practical knowledge in troubleshooting detectors, pumps, autosamplers and columns.	AL0510
HPLC Method Development (1 day)	Learn HPLC method development from the beginning and become an HPLC method development pro with our training.	AL0511

Online HPLC Training	Description	Article number
Online HPLC basic training (1/2 day - German language)	Online workshop on HPLC systems from installation to System Performance Verification. Learn HPLC from the beginning and become a HPLC pro with our training.	AL0520-1

FPLC Workshop	Description	Article number
FPLC Basics & Troubleshooting (1 day)	Learn protein purification from the beginning and become a FPLC pro with our training.	AL0580

Online FPLC Training	Description	Article number
Online FPLC training (1/2 day - German language)	This course teaches the basics of FPLC in theory and practice and thus contributes to a better understanding of chromatographic separation techniques. The participant will learn to purify proteins and to develop methods.	AL0580-1

Prep Workshop	Description	Article number
Preparative HPLC Basics & Troubleshooting (1 day)	Learn preparative LC from the beginning and become a preparative LC pro with our training.	AL0570

SMB Workshops	Description	Article number
SMB Basics (1 day)	The participants will gain basic knowledge on SMB chromatography.	AL0590
SMB Method Development (2 days)	In this course, SMB method development is explained and practiced using a sample application.	AL0501

Software Workshops	Description	Article number
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.	AL0551
OpenLAB® EE Software (2 days)		AL0550
PurityChrom® Software (1 day)		AL0552

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

Instrument	IQ Document
all instruments	VIQ-Installation-Qualification

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 / 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®	VOQ-PUC
RF20A/RF20Axs	VOQ-RF20
System OQ for analytical systems	VOQ-Sys-01
Valves	VOQ-Valves
Impigement Jets Mixing Skid	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)

Email: **support@knauer.net**

International Support:

Contact your local KNAUER partner for 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 86).

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.

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. CH	Article no. Europe	Article no. Argentina
Power plug AZURA® series (cold-device plug)	M1651	M1278	M1597	M1642	M3233
Power plug Smartline series	M1279	M1277	M1479-1	M1479	-
Router (power plug incl.): Router WLAN, 8x LAN	A64809INT Adapter: M0447V2	A64809INT Adapter: M0447V1	-	A64809	-
Switch (power plug incl.): Switch 8x LAN	A3119INT Adapter: M0447V2	A3119INT Adapter: M0447V1	-	A3119	
Switch (power plug incl.): Switch 5x LAN	A3126INT Adapter: M0447V2	A3126INT Adapter: M0447V2	-	A3126	-

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, PCs from KNAUER have no serial interface (RS-232). Thus, to operate the following devices, you must install a serial interface (USB-4COM, Article no. A3114):

- Sedex 85 LT
- Osmometer (only with software)
- Shimadzu RF-20A/Axs, ordered from KNAUER, comes with an RS-232 adapter card PCI-e x1 for desktop computers since this device does not work reliably with USB adapters.

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

Detail overview of devices by power plug type

AZURA® series (cold-device plug)
All devices of AZURA® series
PCs and monitors
Preparative pumps BlueShadow 80P (Article no. APD20xx)
Micro devices - BlueShadow Pump 10P/20P - BlueShadow Detector 10D - Degasser 20DG (Article no. AZE02)
Detectors - RF20A (Article no. A59200) - RF20AXS, CBM-20A (Article no. A59201) - Gabi Star - HERM flumo, HERM LB500 - Sedex85LT, Sedex90LT, Sedex100LT, Sedex LC (Article no. A0754-x) - CHIRALYSER-MP
Autosamplers
AZURA® Column Thermostat CT 2.1 (Article no. A05852)
Fraction collectors - Foxy® R1/R2 (Article no. A59100/A59102/A591021) - LABOCOL Vario-4000 (Article no. A591022/ A591024)
External pressure sensor (Article no. AZG10-2)

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

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This document is subject to technical changes. For an up-to-date version, please visit:
www.knauer.net/en/cableoverview

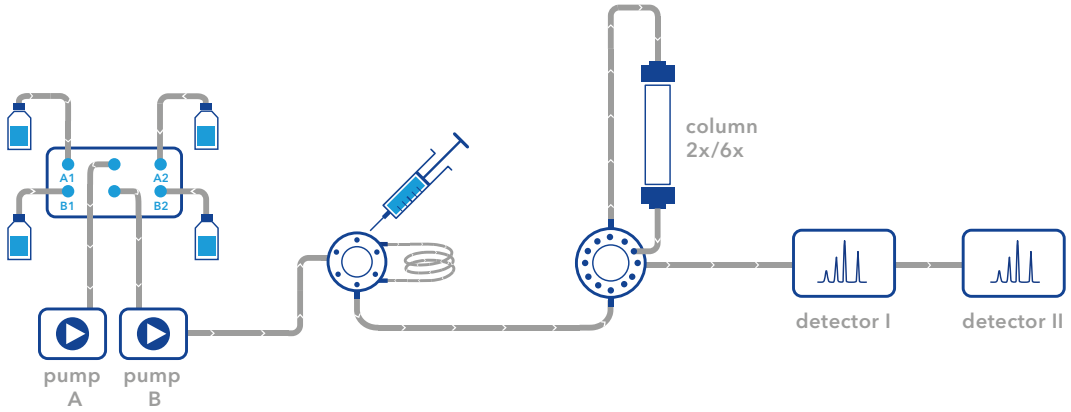
System configurator
HPLC/UHPLC by KNAUER

MAKE YOUR PRESELECTION

☐ **UHPLC**
(SST, max. 1000 bar)

☐ **HPLC**
(SST, max. 862 bar)

☐ **Bio-Inert**
(metal-free, max. 400 bar)



ELUENT SELECTION & DELIVERY

- ☐ 5 ml/min binary gradient pump P 6.1L (UHPLC)
- ☐ 5 ml/min quaternary gradient pump P 6.1L (UHPLC)
- ☐ 10 ml/min binary gradient pump P 6.1L
- ☐ 10 ml/min quaternary pump P 6.1L
- ..... **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
- ☐ 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
- ☐ ECD 2.1

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®
- ☐ Chromeleon™
- ☐ Mobile Control

COMMON APPLICATIONS

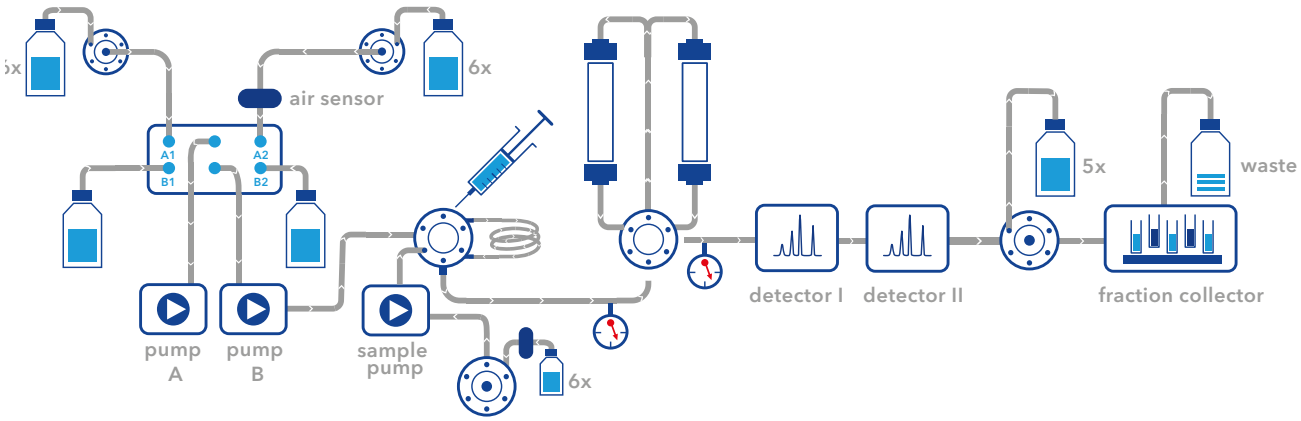
- ☐ Reversed phase
- ☐ Normal phase
- ☐ other...
- ☐ System Qualification

System configurator

Preparative HPLC by KNAUER

MAKE YOUR PRESELECTION

☐ **SST** ☐ **Titanium**



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)

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®
- ☐ Mobile Control
- ☐ PurityChrom®

COMMON APPLICATIONS

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

System configurator

Bio purification by KNAUER

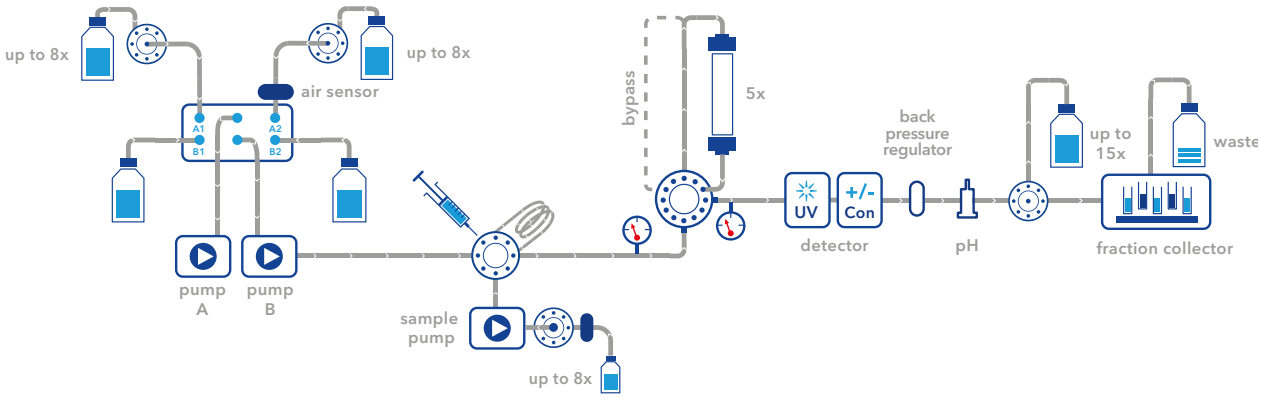
METHOD

☐ **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
☐ **AC**: Glutathione ..... 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)

KNAUER BlueShadow Pumps and Detectors

NEW

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.

For more information on the BlueShadow devices please refer to the KNAUER website or our High-Pressure Dosing Pumps and Accessories selection guide: www.knauer.net/dosingpump-psg.

KNAUER GMP Services NEW

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

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
3/16"	4.8
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

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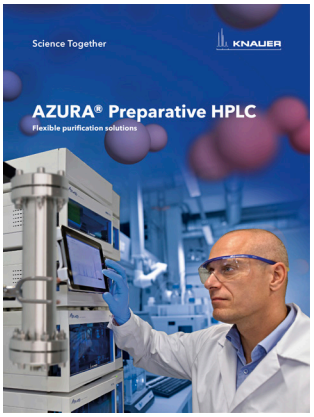
KNAUER Brochures

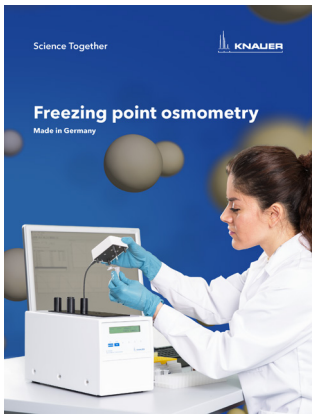
AZURA® Analytical HPLC/UHPLC
(Document no. V7852US)

AZURA® Bio purification
(Document no. V7855US)

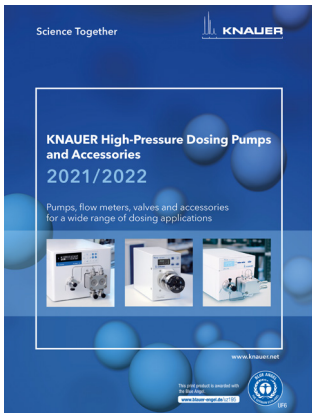


AZURA® Preparative HPLC
(Document no. V7820US)

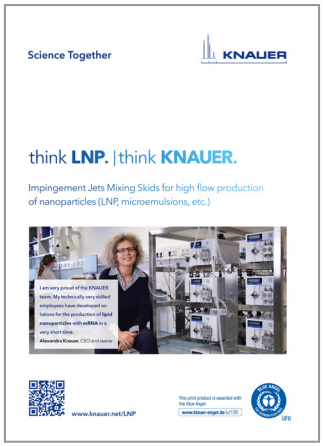
AZURA® SMB systems
(Document no. V7741US)



Freezing point osmometry
(Document no. V7716US)

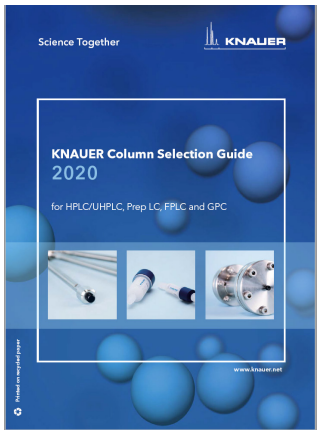


KNAUER Dosing Pump Selection Guide
(Document no. V7866US)



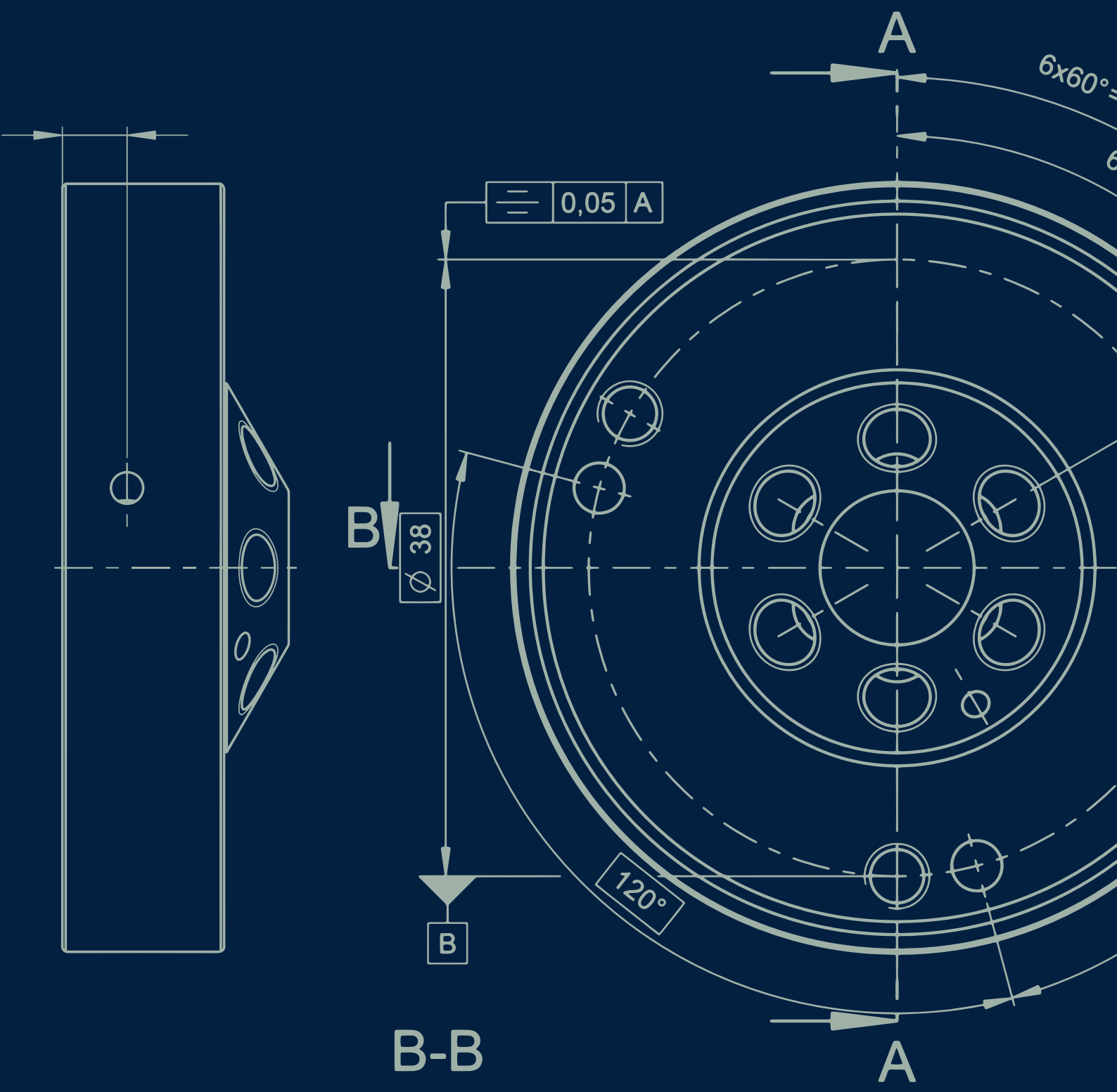
KNAUER LNP Flyer
(Document no. V7720US)

KNAUER OEM Brochure
(Document no. V7712US)



KNAUER Column Selection Guide
(Document no. V7803US)

All KNAUER brochures:
www.knauer.net/brochures



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