Science Together

KNAUER

KNAUER Product Selection Guide

Instruments, components and services
for HPLC/UHPLC, Prep LC, FPLC and osmometry

Made in Germany

KNAUER

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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)
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Technical Support

Do you have questions about the installation or the operation of your instrument or software? Our friendly and competent Technical Support staff will be glad to answer your questions.

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Welcome to KNAUER

Made in Germany since 1962

Based in Berlin, KNAUER is a medium-sized, owner-managed company that has been serving the sciences since 1962.

We develop and manufacture scientific instruments of superior quality for liquid chromatography. The range includes systems and components for analytical HPLC / UHPLC, preparative HPLC, fast protein liquid chromatography (FPLC), multi-column chromatography / simulated moving bed (SMB), and osmometry.

Independent and family owned

The founder Dr. Herbert Knauer and his wife Roswitha are still active as advisers in the company to this day. The couple's daughter, Alexandra Knauer, has been managing director and owner of the company since 2000.

Several awards for outstanding products and innovations as well as entrepreneurial excellence make KNAUER a „leading employer".

Comprehensive service from the manufacturer

Our wide-ranging services complement our excellent instruments: The trainings are performed by experts and cover a variety of topics for beginners to experienced users.

The high-performance customer support and repair service provide fast and spot on solutions.

If you need support for your research project, we help you to develop applications, transfer and optimize methods or develop software.

Table of contents

Instruments

Accessories 38

PC hardware & software 62

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 inlet solvent selection valve and the new developed AZURA® mixer, a low-volume mixing device. The AZURA® quaternary pump contains one high-pressure pump and an integrated LPG mixing block with a 4 channel valve and the new developed AZURA® mixer, a low-volume mixing device. 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. For biocompatible applications or ion chromatography, this pump is also available with a complete metal-free design.

Specifications

Solvent delivery

Pump type	Analytical HPLC pump
Delivery system	Dual 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%
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

Degasser module

Degasser channels	4 channels (LPG Versions), 2 channels (HPG Versions); optional
Max. flow rate/channel	10 ml/min
Degassing method	Gas Permeation trough Teflon(R) AF amorphous fluoropolymer membrane
Degassing efficiency	< 0.5 ppm dissolved O2 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

For pump accessories
see page 38.

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

AZURA® Pump P 6.1L with 10 ml pump head

Pump specifications

Pump head	10 ml
Flow rate range	0.001 - 10 ml/min
Maximum delivery pressure	10150 psi / 700 bar / 70 MPa up to 5 ml/min; 5800 psi / 400 bar / 40 MPa up to 10 ml/min
Wetted materials	GFP, Stainless Steel, FKM, PEEK, Sappire, Aluminiumoxide, Ruby, Zirconiumoxide
Mixing volume	100 µl
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
Pumphead material	Stainless Steel

Ordering details:

APH30EA	AZURA® Pump P 6.1L isocratic, without degasser, with 10 ml pump head (stainless steel)
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 (100 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
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 (100 µl)

AZURA® Pump P 6.1L with 50 ml pump head

Pump specifications

Pump head	50 ml
Flow rate range	0.001 - 50 ml/min
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
Wetted materials	GFP, FKM, PEEK, Sappire, Aluminiumoxide, Ruby, Zirconiumoxide
Mixing volume	200 µl
Flow rate increment	0.001 ml/min
Best working conditions	0.1 - 40 ml/min
Continuous working conditions	0.1 - 20 ml/min
Pumphead material	Stainless Steel

Ordering details:

APH30FA	AZURA® Pump P 6.1L isocratic, without degasser, with 50 ml 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 with 5 ml pump head

Pump specifications	
Pump head	5 ml
Flow rate range	0.001 - 5 ml/min
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
Wetted materials	GFP, Stainless Steel, FKM, PEEK, Sappire, Aluminiumoxide, Ruby, Zirconiumoxide
Mixing volume	100 µl
Flow rate increment	0.001 ml/min
Best working conditions	0.02 - 5 ml/min
Continuous working conditions	0.1 - 4 ml/min
Pumphead material	Stainless Steel

Ordering details:

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 metal-free

Pump specifications	
Pump head	10 ml / 50 ml
Flow rate range	0.001 - 10 ml/min / 0.001 - 50 ml/min
Maximum delivery pressure	5800 psi / 400 bar / 40 MPa for 10 ml head, 2900 psi / 200 bar / 20 MPa for 50 ml head
Wetted materials	GFP, FKM, PEEK, Sappire, Aluminiumoxide, Ruby, Zirconiumoxide
Mixing volume	200 µl
Flow rate increment	0.001 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
Continuous working conditions	for 10 ml pump heads: 0.1 - 4.0 ml/min; for 50 ml pump heads: 0.1 - 20 ml/min
Pumphead 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)
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)
APH69EB	AZURA® Pump P 6.1L (LPG), without degasser, with 10 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.

Specifications

Solvent delivery

Pump type	Preparative HPLC pump
Delivery system	Dual Piston Pump with Al2O3 pistons parallel
Pulsation compensation	Active Pulsation Compensation
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
Programming	19 programs + 9 links (to programs) + 1 wake up program

Technical parameters

Leak sensor	Yes
Special features	Pump Head is detected automatically using Radio frequency indentificaion (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

For pump accessories
see page 38.

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

AZURA® Pump P 2.1L with 100 ml pump head

Pump specifications

Pump head	100 ml
Flow rate range	0.01 - 100 ml/min
Maximum delivery pressure	5800 psi / 400 bar / 40 MPa
Wetted materials	aluminium oxide (Al_2O_3), FKM, graphite fiber reinforced PTFE, PEEK, sapphire, stainless steel, titanium
Flow rate increment	0.01 ml/min
Best working conditions	1 - 80 ml/min
Continuous working conditions	1 - 40 ml/min
Pumphead 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
Flow rate range	0.01 - 250 ml/min
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
Wetted materials	aluminium oxide (Al_2O_3), FKM, graphite fiber reinforced PTFE, PEEK, sapphire, stainless steel, titanium
Flow rate increment	0.1 ml/min
Best working conditions	2.5 - 200 ml/min
Continuous working conditions	2.5 - 100 ml/min
Pumphead material	stainless steel / titanium

Ordering details:

APE20LA	AZURA® Pump P 2.1L with 250 ml pump head (stainless steel)
APD20LC	mit 250 ml Pumpenkopf, Titan

AZURA® Pump P 2.1L with 500 ml pump head

Pump specifications	
Pump head	500 ml
Flow rate range	0.01 - 500 ml/min
Maximum delivery pressure	1450 psi / 100 bar / 10 MPa
Wetted materials	aluminium oxide (Al2O3), FKM, graphite fiber reinforced PTFE, PEEK, sapphire, stainless steel, titanium
Flow rate increment	0.1 ml/min
Best working conditions	5 - 400 ml/min
Continuous working conditions	5 - 200 ml/min
Pumphead material	stainless steel / titanium

Ordering details:

APE20MA	AZURA® Pump P 2.1L with 500 ml pump head (stainless steel)
APD20MC	mit 500 ml Pumpenkopf,Titan

AZURA® Pump P 2.1L with 1000 ml pump head

Pump specifications	
Pump head	1000 ml
Flow rate range	1 - 1000 ml/min
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,
Wetted materials	aluminium oxide (Al2O3), FKM, graphite fiber reinforced PTFE, PEEK, sapphire, stainless steel, titanium
Flow rate increment	0.1 ml/min
Best working conditions	10 - 800 ml/min
Continuous working conditions	10 - 400 ml/min
Pumphead 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)
AZZ10AB	LPG module for Pump P 2.1L ternary up to 220 ml/min (PEEK)
AZZ00AB	LPG module for Pump P 2.1L ternary up to 220 ml/min (stainless steel)

AZURA® Pump P 4.1S

The AZURA® Pump P 4.1S was developed for eluent delivery up to 400 bar and for flow rates up to 50 ml/ min in HPLC and other applications where a compact easy-to-integrate pump is required. Apart from serving as a compact isocratic pump for small HPLC systems, it can also be used as a sample pump for preparative chromatography. This pump is the perfect choice for dosing applications as the exchangeable pump heads are compatible to a wide range of chemicals.

Specifications

Solvent delivery

Pump type	Ultra-compact high pressure pump
Delivery system	Dual piston pump with one working piston, one auxillary
Piston seal washing	Passive Wash
Flow rate accuracy	± 1%, 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)

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
Level/event outputs	1 event output (TTL)
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

For pump accessories
see page 38.

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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 cp (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
Pumphead 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, 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, for water dosing
APG20EA	AZURA® Pump P 4.1S compact HPLC pump with 10 ml/min ceramic pump head, for water dosing, stainless steel connections

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 cp (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
Pumphead 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

AZURA® Pump P 2.1S

AZURA® Pump P 2.1S was developed for eluent delivery up to 400 bar and for flow rates up to 50 ml/min in HPLC and other applications where a compact easy-to-integrate pump is required. This pump is the perfect choice for dosing applications as the exchangeable pump heads are compatible to a wide range of chemicals.

Specifications

Solvent delivery

Pump type	Ultra-compact high pressure pump
Delivery system	Dual piston pump with one working piston, one auxillary
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)

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
Level/event outputs	1 event output (TTL)
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

For pump accessories
see page 38.

A variety of software control options is available:
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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 cp (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
Pumphead 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

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 cp (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
Pumphead material	Stainless steel / ceramic / Hastelloy® C

Ordering details:

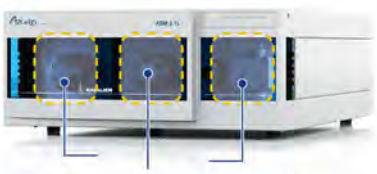
APG90FA	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min stainless steel pump head
APG90FB	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min ceramic pump head
APG90FC	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min Hastelloy® C pump head
APG90FG	AZURA® Pump P 2.1S compact HPLC pump with 50 ml/min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

AZURA® Assistant ASM 2.1L

The Assistant ASM 2.1L is a compact module which can be equipped with up to three device modules. The assistant combines valves, pumps, degassers and an UV detector.

Depending on the integrated modules the assistant fulfills many different tasks like eluent delivery, detection, sample and eluent selection, sample injection, column switching or fraction collection. An assistant including a pump, valve, and detector features a compact chromatographic system. As a part of a larger system, the ASM 2.1L is extremely versatile in analytical, preparative and continuous liquid chromatography. A leak sensor and the capillary guidance, as well as the optional display software Mobile Control, facilitate a safe and user-friendly operation.

The concept of the flexible combination of device modules combines the highest functionality with minimal space requirements.



Can be equipped with combinations of: valves, pumps, or one detector

Specifications

General

Power supply	100 – 240 V, 50 – 60 Hz, maximum 100 W
Dimensions	361 x 158 x 523 mm (W x H x D)
Weight	about 14 kg (depending on integrated modules)
Leak sensor	Yes
Ambient conditions	Temperature range: 0 - 40 °C, 32 - 104 °F Humidity: below 95 % noncondensing

Communication

Interfaces	LAN
Control	Mobile Control, Software
Inputs	Error (IN), Start (IN) both TTL
Outputs	Event 1 - 3 (OC, Relay), Error (OUT) (OC)
Analog inputs	Integrator output (detector signal)

Maximum number of modules for each assistant device

- 1 x degasser
- 1 x detector
- 2 x VICI valve drives (order no. AWB02)
- 2 x pumps
- 3 x KNAUER valve drives

Configuration limitations

It is not allowed/supported to have:

- An assistant with only one degasser as single device
- An assistant with only one UVD 2.1S detector as single device
- A pump P 4.1S to the right of a UVD 2.1S detector
- HPG (high pressure gradient)
- A detector between two pumps
- An assistant with no module

Software functions supported by the ASM 2.1L

Assistant configuration: The ASM 2.1L is supported as complete device. Modules are addressed via the assistant.

	ClarityChrom®	OpenLAB®	Mobile Control (version 5)
Two pumps (independent)	yes	no	yes
Fraction valve	one	one	one valve, time-based
Injection module*	no	no	yes, but part of a method

Single device configuration: The ASM 2.1L 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.

Assistant modules

Please consider that listed article numbers represent standalone devices.

Pumps

Type	Pressure sensor	Pump head volume	Material	Order number
P 2.1S	No	10 ml	SST	APG90EA
			Hastelloy C	APG90EC
			ceramic	APG90EB
		50 ml	SST	APG90FA
			Hastelloy C	APG90FC
			ceramic	APG90FB
P 4.1S	Yes	10 ml	SST	APG20EA
			SST / normal phase	APG27ED
			ceramic	APG20EB
		50 ml	SST	APG20FA
			SST / normal phase	APG20FD
			ceramic	APG20FB
	Yes (50 bar)	10 ml	SST	APG17EA
			ceramic	APG17EB
		50 ml	SST	APG17FA
			ceramic	APG17FB

Valves

Ports	Position	Material	Connection	Bore size	Pressure limit	Flow rate	Order number*
6	2	SST	1/16"	0.6 mm	300 bar	100 ml/min	AWA10AA
				0.3 mm	400 bar	50 ml/min	AWA11CA
					1200 bar	10 ml/min	AVC28AC & AWB02*
			1/8"	1.2 mm	300 bar	500 ml/min	AWA10AD
		PEEK	1/16"	0.6 mm	200 bar	50 ml/min	AWA10AC
			1/8"	1.2 mm	150 bar	500 ml/min	AWA10AE
	Multi	SST	1/16"	0.6 mm	300 bar	100 ml/min	AWA10BA
				0.3 mm	400 bar	50 ml/min	AWA11DA
					1200 bar	10 ml/min	AVR28AC & AWB02*
			1/8"	1.2 mm	300 bar	500 ml/min	AWA10BC
		PEEK	1/16"	0.6 mm	200 bar	50 ml/min	AWA10BB
			1/8"	1.2 mm	150 bar	500 ml/min	AWA10BD
8	Multi	SST	1/16"	0.3 mm	1200 bar	10 ml/min	AVR38AC & AWB02*
12	Multi	SST	1/8"	1.2 mm	25 bar	500 ml/min	AWA20BG
16	Multi	SST	1/16"	0.6 mm	50 bar	100 ml/min	AWA30BH

* Article numbers for valve and valve drive (AWB02) are separately listed.

Detector

Type	Single wavelength	Wavelenth range	Fiber optics connectors	Order number
UV	variable	190 - 500 nm	No	ADA00

For flow cells **see page 42**.

Degassers

Type	Channels	max. flow rate (per channel)	Order number
analytic	2	10 ml/min	AZE02
semi-preparative	2	30 ml/min	AZE34

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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 2 ml sample vials. 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 of up to 1240 bar, 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 highpressure applications, the sample loop is depressurized prior to receiving the sample. This way, the sample is not diluted with solvent. Because the valve is switched extremely fast, pressure spikes are reduced. Analyses are more precise and wear of the column is reduced.

Specifications

Sample injection

Autosampler Flow Path	see device versions
Maximum back pressure	see device versions
Vial/plate dimensions	max. plate/vial height: 47 mm (incl. septa or capmat)
Injection volume range	0.1 µl - 10 ml depending on sample loop
Sample loop	see device versions
Dispenser syringe	see device versions
Headspace pressure	built-in compressor, only for sample vials with septum
Switching time inj. valve	< 100 ms
Piercing needle precision	± 0.6 mm
Sample tray cooling	optional
Vial detection	missing vial/well plate detection by sensor
Needle wash	programmable: wash between injections and wash between vials
Wetted materials	Tefzel® (ETFE), Glass, Teflon® (PTFE), Kel-F® (PCTFE), stainless steel, PEEK, Vespel

Analytical performance

Injection modes	full loop filling, partial loop filling and microliter pickup; PASA™ (pressure-assisted sample aspiration)
Injection precision	RSD (Relative Standard Deviation):full loop injection: <0.3% partial loop injection at injection volume>5 µl: <0.5%microliter pickup injection at an injection volume>5 µl: <1.0%
Accuracy	±0,5% using a 250 µl syringe partial loop fill with dispensing 10% of a full syringe stroke
Sample carryover	< 0,01 % under typical conditions using needle wash; < 0.005 % under special conditions with extended needle wash
Injections per vial	max. 9 injections
Injection cycle time	minimum 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	377 x 300 x 510 mm (W x H x D)
Weight	30 kg

Device versions

	HPLC+	UHPLC	Bio	Prep
Maximum back pressure	700 bar	1240 bar	345 bar	200 bar
Sample needle	15 µl	15 µl	60 µl	60 µl
Dispenser syringe	250 µl	250 µl	250 µl	2500 µl
Buffer tubing	500 µl	500 µl	500 µl	200 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	AAA00AA	AAA10AA	AAA20AA	AAA40AA
Order number (cool/heat option)	AAA01AA	AAA11AA	AAA21AA	AAA41AA
Order number (bio cool option)	-	-	-	AAA31AA

Ordering details:

AAA00AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 700 bar
AAA01AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler, 700 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 with biocompatible flow path
AAA21AA	AZURA® Autosampler AS 6.1L analytical HPLC autosampler with biocompatible flow path and sample cooling/heating
AAA31AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler with biocompatible flow path and cooling option
AAA40AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler
AAA41AA	AZURA® Autosampler AS 6.1L preparative HPLC autosampler with sample cooling/heating

For autosampler accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
https://www.knauer.net/softwarecontrol

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

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	adjustable sensitivity, acoustic signal, turn-off switch

Communication

Control	optional for Stand-alone functionality: • keyboard unit with LCD • 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

A05852	Column thermostat 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
A05852-1	Keyboard unit for stand-alone operation

A variety of software control options is available: KNAUER offers various options for drivers. For more information, please visit www.knauer.net/softwarecontrol

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

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
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

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

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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 for 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

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
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 % noncondensing

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

Other

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
ADB01	AZURA® Detector MWD 2.1L Multiwavelength detector MWD 2.1L, without flow cell 190 - 700 nm

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 S2550, S2520, 10D, 40D, 50D, 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

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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

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 270 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 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 % noncondensing
General	
Power supply	100 - 240 V, 50 - 60 Hz, 75 W
Dimensions	361 x 158 x 523 mm (W x H x D)
Weight	5.9 kg
Other	
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
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 S2550, S2520, 10D, 40D, 50D, 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

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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. 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

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

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 270 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 % noncondensing

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

Other

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
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
A5193	Deuterium lamp, replacement, for S2550, S2520, 10D, 40D, 50D, UVD 2.1S, UVD 2.1L, DAD 2.1L, MWD 2.1L

For more detector accessories
see page 42.

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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

Specifications

Detection

Detector type	Refractive index detector
Version	analytical (RID 2.1L) / preparative (RID 2.1L HighFlow)
Light source	Long-life LED
Detection channels	1
Refractive index range	1.00 - 1.75 RIU
Noise	± 2.5 nRIU (RID 2.1L) / ± 50 nRIU (RID 2.1L HighFlow)
Drift	200 nRIU/h (RID 2.1L) / 2000 nRIU/h (RID 2.1L HighFlow)
Linearity	> 1000 µRIU (RID 2.1L) / > 4000 µRIU (RID 2.1L HighFlow)
Flow cell	5 bar back pressure resistance Flow cell included
Max. flow rate	10 ml/min (pure water) (RID 2.1L) / 100 ml/min (pure water) (RID 2.1L HighFlow)
Flow cell volume	15 µl
Wetted materials	Stainless steel / fused silica / PTFE / PEEK
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 % noncondensing

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

Other

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

For detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

Mass spectrometer 4000 MiD®

The 4000 MiD is a miniaturized chip-based single quadrupole mass spectrometer suitable for a broad range of applications. An integrated oil-free pump system enables a small footprint and thereby the installation of this detector nearly everywhere.

The easy to use concept with plug and play consumable results in low maintenance costs and a completely tool-less front end. Due to its small design, the nitrogen consumption of the 4000 MiD is reduced leading to low operating costs. With the MiDas automated sampling unit, the 4000 MiD is the ideal addition for preparative HPLC systems and mass-directed purification.

With the integrated vacuum system and integrated electronics inside of one box the KNAUER 4000 MiD brings mass spectrometry to places where no other spectrometer can be deployed.

With a mass range of 50 to 800 m/z, the KNAUER 4000 MiD can be used for a broad variety of applications. In combination with the KNAUER MiDas, it is the ideal choice for preparative chromatography and direct introduction methods.

Key features

- Wide application range
- Compact

Specifications

Detection	
Detector type	Mass spectrometer
MS Detection	
MS type	Single Quadrupole
Ionization modes	ESI (positive and negative)
Mass range	50 m/z to 800 m/z
Mass sensitivity	
Mass resolution	m/z 0.7 (FWHM)
Mass accuracy	m/z ± 0.3 (Full scan)
Gas requirements	
Gas	Nitrogen
Gas flow rate	2.5 l/min
Gas inlet pressure	2-6 bar
General	
Dimensions	550 x 350 x 250 mm (L x W x H)
Weight	32 kg (4000 MiD only)

Ordering details:

Device	
A66900	Chip-based miniaturized mass spectrometer with flow split module MiDas
Accessories	
A66921	Solaris Air Compressor for Solaris nitrogen gas generator
A66920	Nitrogen gas generator Solaris without air compressor, 10 l/min
A0000MSEU	Installation and instruction in Europe, 2 days, including flight and hotel. Training in MS basics not included.
A0000MSIN	Installation and instruction International, 2 days, including flight and hotel. Training in MS basics not included.

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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.

Key features

- Pressure resistant flow cell

Specifications (for RF-20A)

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 % (no condensation)
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

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
A59300	CBM-20A Interface CE/IVD PC Interface (request software control option via KNAUER)

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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.

Key features

- Attractively priced
- Wide application range
- Large choice of nebulizers

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	Analog: 100 Hz/Digital: 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/minultra 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	Preparative Light scattering detector ELSD SEDEX LC for univ. detection 200 µl/min - 2 ml/min
A0754-6	Ultra high sensitive light scattering detector ELSD SEDEX 100LT for univ. detection 200 µl/min - 2 ml/min 100 Hz including accessories, SAGA

Accessories

A2618-01	OpenLAB® CDS EZChrom Edition drivers for 80LT, 85LT, 90LT, 100LT and LC from Sedere
A1783-4	Sedex Driver for Chromeleon 7.2; For Sedex 85LT / 90LT; Instrument Controler Class 3 necessary
A1783-5	Sedex Driver for Chromeleon 7.2; For Sedex FP / LC / 100LT; Instrument Controler Class 3 necessary

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

Electrochemical Detector DECADE Elite SCC

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 DECADE Elite comprises of a thermostat-controlled Faraday's cage, accommodating column and flow cell. The DECADE Elite 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.

Key features

- Compact
- Thermostat included

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	RS-232

Ordering details:

Device

A07545	Electrochemical detector DECADE Elite SCC without flow cell

Accessories

AZB00XA	AZURA® Interface Box IFU 2.1 LAN, A/D converter, 4 channels
A07546	Flow cell SenCell 2 mm GC Salt-Bridge
A07546-1	Flow cell FlexCell Au HyREF
A07546-3	Flow cell SenCell Au HyREF
A07546-2	Flow cell SenCell GC HyREF

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

Conductivity detector CDD-10 Avp

The CDD-10AVP is a highly senstitiv conductivity detector applicable to ion chromatograph or organic acid analysis. Low noise, low drift and wide dynamic range assure proven performance of the CDD-10AVP 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

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

For more detector accessories **see page 42.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

AZURA® Conductivity Monitor CM 2.1S

The AZURA® CM 2.1S is a reliable conductivity monitor which is utilized in FPLC to follow salt gradients. Optionally pH values can be measured. Wetted parts are completely biocompatible. The contactless measurements of conductivity reduces the risk of carryover to a minimum. The flow cell covers a flow rate up to 10 ml/min and is delivered with the CM 2.1S.

Please order the pH measuring kit in addition to the conductivity monitor. Note that the flow cell for up to 10 ml/min generates a certain back pressure (approximately 1 bar at 1 ml/min). Choose the device with the 100 ml/min flow cell for minimal back pressure.

Specifications

Flow cell

Flow cell type	Conductivity flow cell	
Biocompatible	Yes	
Fiber optics version	No	
Capillary connection	1/16"	
Wetted materials	PEEK	
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
Back pressure	1 bar at 1ml/min	-

Detection

Detector type	Conductivity monitor
Measurement accuracy	Temperature sensor accuracy: ± 1.0 °C;Conductivity accuracy: <5 % full scale end valuepH accuracy: +/-0.5 pH in temperature range of 4-25°C
Measurement precision	Conductvity precision measured in range 0.1-300 mS/cm: <2% of end value or ≤ 5 mS/cm of higher values pH precision +/-0.2 pH in temperature range 4-25°C
Measurement range	0.1 – 999mS/cm
pH measurement	2-12
Maximum data rate	5 Hz
Flow cell	included with CM 2.1S
Supported electrodes	conductivity: automatic recognition pH: all pH electrodes with BNC connector (compatible) and available flow cell

Communication

Analog outputs	2 channelsDAC 18 bitConductivity value pH Value (only for the stand-alone device)
Digital outputs	LAN; RS-232

Technical parameters

GLP	electronic Serial No.
Display	LCD, 2 x 8 characters
Ambient conditions	operating temperature: 4 to 35 °C, relative humidity: 45 to 85 %

General

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

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
A70091	pH measuring kit for conductivity monitor CM 2.1S for flow rates up to 80 ml/min, delay volume 80 µl, pressure limit 5 bar
A5813	Flow splitter for use of CM 2.1S over 100 ml/min
A9854-3	Mounting bracket AZURA® L for AZURA® Valve Unifier VU 4.1(both-sided) and AZURA® Conductivity Monitor CM 2.1S (left-sided on AZURA® L)

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

Foxy® R1 and 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.

Specifications

Fraction collection

Brand	Foxy R1	Foxy R2
Fractionation modes	drop counting, time intervals, volume intervals, level, slope	
Fraction capacity	consider list of racks in accessories below	
Cooling option	yes	no
Diverter valve	drop former (NC): 110 µl waste (NO): 130 µl	
Wetted materials	valve: PEEK and perfluoroelastomer (FFKM), supplied ferrules: ETFE, supplied valve tubing: PTFE, supplied drain tubing: vinyl	
Fractionation control	operator: front panel control via touch screen LCDintegrated systems: direct communication via Ethernet (TCP/IP) and RS-232 serial communications	
Maximum test tube height	160 mm	1/8" - 196 mm; 1/4" - 180 mm
RFID rack recognition	no	yes
Number of racks	1	2
Capillary connection & max. flow rate	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:

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

Accessories	
A59111	Rack for 2 microwell plates 96 well for Foxy® R1/R2
A59110	Rack for 36 Falcons 50 ml for Foxy® R1/R2
A59109	Rack with 36 funnels with vinyl tubing for Foxy® R1/R2
A591091	Rack with 26 funnels with vinyl tubing for Foxy R2, up to 1000 ml/min
A59108	Rack for 36 vials 25 mm 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
A59105	Rack for 100 vials 16 mm for Foxy® R1/R2
A59104	Rack for 144 vials 13 mm for Foxy® R1/R2
A59103	Rack for 144 vials 12 mm for Foxy® R1/R2
A59114	Rack for 2 x 9 bottles 480 ml for Foxy® R2 (not suitable for Foxy® R1, bottles too tall)
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 *
A59122	Cooling option for Foxy® R1 with cooling hood, cooling plate and accessories
A70050	Thermostatting unit -40° to 200°C
A70055	Thermostatting unit -20° to 40°C
A591092	Scintillation rack for 36 vials 28 mm for Foxy® R1/R2

* for Foxy R1 with cooling option

For purification accessories
see page 48.

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

LABOCOL Vario-4000 / Plus

The LABOCOL Vario-4000 fraction collectors are characterized by their optimal dimensions/benefit ratio. The open system without limitation in fractions and vessel sizes can be tailored to individual rack layouts. The fraction collectors of the LABOCOL Vario-4000 series offer the corresponding program for each application and are flexible to handle. The versatile application possibilities make the Vario-4000 series ideal for use in research and development as well as in production. The individual Vario-4000 models differ in the base area and the flow rate range.

Specifications

Fraction collection

Brand	LABOCOL Vario-4000	LABOCOL Vario-4000 Plus
Fraction capacity	consider list of racks in accessories below	
Wetted materials	PEEK and PTFE	
Number of racks	3	5
Capillary connection & max. flow rate	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 30 x 50 cm (WxD) Vario-4000 Plus 46 x 50 cm (WxD) min. H *: 52 cm max. H *: 67 cm Max. floor space Vario-4000 24 x 41 cm (WxD) Vario-4000 Plus 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 for LABOCOL Vario-4000/Vario-4000 Plus
A59131	Rack micro for 125 tubes 10.5 mm for LABOCOL Vario-4000/Vario-4000 Plus
A59132	Rack prep for 20 tubes 36 mm for LABOCOL Vario-4000/Vario-4000 Plus
A59133	Rack semiprep for 39 tubes 26 mm for LABOCOL Vario-4000/Vario-4000 Plus
A59134	Rack for 24 Falcon® tubes of 50 ml for LABOCOL Vario-4000/Vario-4000 Plus

For purification accessories
see page 48.

A variety of software control options is available:
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For more information, please visit
www.knauer.net/softwarecontrol

AZURA® Valve Unifier VU 4.1

The valve drive AZURA® Valve Unifier VU 4.1 enables automatic valve switching. The display provides an user friendly operation. Due to its low switching time, the flow path is interrupted only for a very short time, and the pressure peaks are reduced to a minimum. 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 in nearly every LC system. Valves are identified via innovative RFID technology, which guarantees an easy valve exchange of KNAUER valves with RFID technology. This RFID technology enables to read GLP data, for example the maintenance of the rotor seal exchange is simplified by automatic notifications.

Specifications

Communication

Interfaces	LAN, RS-232, display, terminal strip
Control	Display, software, event control
Inputs	Binary control; Home, Backward/Inject, Forward/Load, Start IN
Outputs	Trigger out, Event

Key features

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

General

Power supply	External DC 24V, 65 W
Dimensions	80 x 123 x 153 mm (without adapter); 80 x 123 x 192 mm (with adapter)
Weight	2 kg
Ambient conditions	Temperature range: 4–40 °C; 39.2–104 °F;below 90 % humidity (non condensing)

Ordering details:

Valve drive VU 4.1 (AWA01) with 6 Port 2-position valve (AVC28AC)

8 Port Multiposition valve (AVS34CE)

6 Port 2-position valve (AVC28AC)

Valve drive

AWA01	Valve drive VU 4.1 for V 4.1 valves

For valve accessories **see page 45.**

Valves for valve drive VU 4.1

Ports	Position	Stator material	Rotor material	Capillary connection	Max. pressure [bar]	Bore size [mm]	Order number
6	2	SST DLC[1]	Vespel	1/16" (UNF 10-32)	1200	0.3	AVC28AC
	Multi	SST DLC[1]	Vespel	1/16" (UNF 10-32)	1200	0.3	AVR28AC
	2	PEEK	PEEK	1/16" (UNF 10-32)	240	0.75	AVD24CE
8	2	SST DLC[1]	Vespel	1/16" (UNF 10-32)	1200	0.3	AVC38AC
	Multi	SST DLC[1]	Vespel	1/16" (UNF 10-32)	1200	0.3	AVR38AC
	Multi	PEEK	PEEK	1/16" (UNF 10-32)	240	0.75	AVS34CE
	Multi	PEEK	PEEK	1/8" (M8x1)	50	2	AVU32CE
12	Multi	PAEK	cPTFE	1/16" (UNF 10-32)	50	0.4	AVZ52CE
16	Multi	PEEK	PEEK	1/16" (UNF 10-32)	50	0.75	AVS62CE

[1] - stainless steel coated with diamond-like carbon

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

AZURA® Valve Drive V 2.1S

Valves are ubiquitous in all liquid chromatography applications. They act like a switch and can control the flow path of the chromatography system in various ways. Therefore, valves are indispensable for eluent selection, sample injection, column selection, and fractionation as well as any switching task. KNAUER valves are designed for a wide range of chromatographic and dosing applications. Flexibility is provided by choice of different materials and sizes as well as drivers for various software packages. Valves are driven either manually or automatically through a valve drive.
All valves include suitable fittings. Additionally, valves with two positions include an injection port for injection and the 12-port and 16-port valve include tubing for fractionation.

Key features

- Integrable into assistant
- Maximum flexibility
- Compact

Specifications

Communication	
Interfaces	LAN, RS232, display, terminal strip
Control	Display, software, event control
Inputs	Binary control; Home, Backward/Inject, Forward/Load
Outputs	Trigger out

General	
Power supply	External DC 24V, 60 W
Dimensions	121 x 129 x 187 mm (W x H x D), valve diameter: 47.5 mm
Weight	1.9 kg
Leak sensor	No
Ambient conditions	Temperature range: 4–40 °C; 39.2–104 °F;below 90 % humidity (non condensing)

Ordering details:

6 Port 2-position valve with valve drive (AWA11CA)

6 Port 2-position valve (1/16", SST, 400 bar, 0.3 mm) without valve drive (AVC26BC)

Valve drives

AWA10	V 2.1S valve drive for 6 Port V 2.1 valves
AWA20	V 2.1S valve drive for 12 Port V 2.1 valves
AWA30	V 2.1S valve drive for 16 Port V 2.1 valves

Valves with and without valve drive V 2.1S

Ports	Position	Stator material	Rotor material	Capillary connection	Max. pressure [bar]	Bore size [mm]	Order number	
							valve with drive	valve only
6	2	SST	Vespel	1/16" (UNF 10-32)	300	0.6	AWA10AA	A1369[1]
	2	SST	Vespel	1/16" (UNF 10-32)	400	0.3	AWA11CA	AVC26BC[1]
	2	SST	Vespel	1/8" (M8x1)	300	1.2	AWA10AD	A1371[1]
	2	PEEK	PPS-HPV	1/16" (UNF 10-32)	200	0.6	AWA10AC	A1370V1[1]
	2	PEEK	PPS-HPV	1/8" (M8x1)	150	1.2	AWA10AE	A1372[1]
	Multi	SST	Vespel	1/16" (UNF 10-32)	300	0.6	AWA10BA	A1373[1]
	Multi	SST	Vespel	1/16" (UNF 10-32)	400	0.3	AWA11DA	AVR26BC[1]
	Multi	SST	Vespel	1/8" (M8x1)	300	1.2	AWA10BC	A1375[1]
	Multi	PEEK	PPS-HPV	1/16" (UNF 10-32)	200	0.6	AWA10BB	A1374V1[1]
	Multi	PEEK	PPS-HPV	1/8" (M8x1)	150	1.2	AWA10BD	A1376V1[1]
12	Multi	SST	POM-H-TF	1/8" (M8x1)	25	1.6	AWA20BG	A1378[2]
16	Multi	SST	POM-H-TF	1/16" (UNF 10-32)	50	0.6	AWA30BH	A1379[3]

[1] - valve drive AWA10 required
[2] - valve drive AWA20 required
[3] - valve drive AWA30 required

For valve accessories **see page 45.**

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

Manual injection valves

V 4.1 Ultra High Pressure Valve (AVI28AC)

Ports	Stator material	Rotor material	Max. pressure [bar]	Bore size [mm]	Capillary connection	Thread	Order no.
6	SST	Vespel	400	0.3	1/16"	UNF 10-32	AVI26BC
6	SST DLC	Vespel	1200	0.3	1/16"	UNF 10-32	AVI28AC
8	SST DLC	Vespel	1200	0.3	1/16"	UNF 10-32	AVI38AC
6	SST	Vespel	300	0.6	1/16"	UNF 10-32	A1357
6	PEEK	PPS	150	0.6	1/16"	UNF 10-32	A1358V1
6	SST	Vespel	300	1.2	1/8"	M8x1	A1359
6	PEEK	PPS	150	1.2	1/8"	M8x1	A1360V1

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.

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), hexane, heptane
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

Feature overview

Order no.	Degasser type	Channels	Max. flow rate	Chamber volume	Vacuum pump
AZE02	analytical	2	10 ml/min (recommended 2 ml/min)	285 µ per channel	1.37 mm (Hg /ml /min)
A5335	analytical, for GPC	2	10 ml/min (recommended 3 ml/min)	480 µ per channel	1.37 mm (Hg /ml /min)
A5328	semi-preparative	2	30 ml/min (recommended 15 ml/min)	5.3 µ per channel	I > 6.2 kPa : 400 cycles/min < 6.2 kPa : 60 cycles/min

Ordering details:

AZE02	Biocompatible 2 channel degasser
A5335	Analytical 2 channel GPC Degasser
A5335	Semi-preparative 2 channel Degasser

A variety of software control options is available:
KNAUER offers various options for drivers.
For more information, please visit
www.knauer.net/softwarecontrol

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 newest freezing point Osmometer K-7400S allows the easy and fast determination of the osmolality of various aqueous solutions. In addition, the freezing point depression of such samples can be measured. The proven technology of freezing point determination in combination with the robust and intelligent design of the device allows fast and 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 K-7400S Semi-Micro Osmometer complies with the European Pharmacopoeia for osmolality (2.2.35, 01/2012).

Key features

- Made in Germany
- 55 years experience
- fast measurements

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 free selectable osmolality) optional: Three-point Calibration (0 Osmol/kg and two free selectable osmolalities)

General

Power supply	100 – 240 V, 50 – 60 Hz, 70 W
Dimensions	160 x 182 x 340 mm
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	Freezing point osmometer for the determination of osmolality or depressed 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 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)

For more osmometry accessories
see page 47.

Pump accessories

Eluent trays & bottles

AZURA® Eluent tray E 2.1L for AZURA® devices with a capacity of 6 x 1 l bottles or 4 x 2.5 l bottles or 2 x 5 l bottles, (delivery without bottles)	AZC00
Eluent supply bottle 1000 ml, GL45 thread, square, Clear glass, with screw cap with 2 holes for tubing	A5325
250 ml Bottle for Piston Back Flushing	A2056
Set of eluent supply bottles 4 x 1 L bottles (borosilicate glass) with special round bottom for minimal eluent remainder, includes screw-type cap	A5324
Set of eluent supply bottles, 2 x 1 L bottles (borosilicate glass) with special round bottom for minimal eluent remainder, includes screw-type cap	A5324-1
Set of eluent supply bottles, 4 x 1 L bottles (borosilicate glass) for Eluents and 1 x 250 ml bottle piston backflushing	A5324-2
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

AZC00

A70037 A5324 A2056
A5324-1
A5324-2

Solvent filters & inlet tubing

Mobile Phase Filter, stainless steel, 2 µm, 1/8" pipe OD, suitable for all analytical HPLC systems	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 10 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
Filter Cartridge for pump P 6.1L, 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, Stainless steel frit, 2 µm pore size. 10 ml/min maximum flow, Volume optimized filter, 20 µl volume, 3 pcs.	A96601

A3374
A3375

A3364

A9650

A96507

Static mixers

AZURA® HPLC mixer up to 100 MPa, 50 µl mixing volume	AZZ00MB
AZURA® HPLC mixer up to 100 MPa, 100 µl mixing volume	AZZ00MC
AZURA® HPLC mixer up to 100 MPa, 200 µl mixing volume	AZZ00MD
AZURA® HPLC mixer up to 40 MPa, 250 µl mixing volume (biocompatible)	AZZ10ME
HyperShear Static Mixer, (1.5mL), high flow series, SST	A5830
Mounting bracket AZURA® L for Hypershear mixing chambers	A9853-8

AZZ00MB
AZZ00MC
AZZ00MD

AZZ10ME A5830

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
Mixing chamber extension unit for A70581/ A705811, 1 intermediate section, titanium, 4.8 ml, 3 screws 6 x 60 mm	A2515

Mass flow controllers*

Mini CORI-Flow (M13) Mass flow controller incl. mounting block, Flow: 1 - 50 ml/min	A5390
Mini CORI-Flow (M14) Mass flow controller incl. mounting block, Flow: 2 - 833 ml/min	A5391
Mini CORI-Flow (M13) Mass flow controller incl. mounting block, Flow: 1 - 50 ml/min, Profibus	A5393
Mini CORI-Flow (M12) Mass flow controller incl. mounting block, Flow: 0,03 – 1,66 ml/min	A5394
Mini CORI-Flow (M13) Mass flow controller incl. mounting block, Flow: 1 - 50 ml/min, Hastelloy	A5395
HI-TEC Bright display for Mini CORI-Flow mass flow controller (display, setpoint and counter)	A5396

*analog and bus versions on request

Pump head inlet fittings

Pump head inlet for AZURA® Pump P 2.1L, BlueShadow 80P, 3/8” (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
Bushing inlet for prep pump heads, adapter to 3/8” tubing	A98611
Bushing inlet for LPG prep pump heads, LPG binary inlet to 3/8” tubing	A98612
Bushing inlet for LPG prep pump heads, LPG ternary inlet to 3/8” tubing	A98613
Male connector to connect a 1/4'' OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58267
Male connector to connect a 4 mm OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58268
Male connector to connect a 1/8'' OD capillary to a 1/4'' male NPT adapter (material: stainless steel) for A9861	A58269
Inlet-bushing kit for P 2.1S, P 4.1S and S1050 pumps for pump heads 10 ml (1/8” capillaries)	A58202
Inlet-bushing kit for P 2.1S, P 4.1S and S1050 pumps for pump heads 10 ml (1/16” capillaries)	A58203

A9861

A9868

A58267
A58268
A58269

A98611
A98612
A98613

Pump head inlet fittings

Inlet-bushing kit for P 2.1S, P 4.1S and S1050 pumps for pump heads 50 ml (1/8" capillaries)	A58204
Inlet-bushing kit for P 2.1S, P 4.1S and S1050 pumps for pump heads 50 ml (1/16" capillaries)	A58205
Solvent Filter 1/4"-PTFE Tubing up to 250 ml/min	A58207

A58203

Pump head outlet fittings

Outlet-bushing kit 1/8" for S1800, 80P and P 2.1L pumps for S1800, 80P and P 2.1L pumps	A5822
adapter to connect a capillary with 1/16" OD (thread: 10-32 UNF) to a M8x1 thread (material: stainless steel)	A7200

A5822

Replacement pump heads for AZURA® Pump P 2.1S/P 4.1S

Pump head 10 ml, stainless steel	AHB40
Pump head 10 ml, ceramic	AHB32
Pump head 10 ml, ceramic with Ti-bushings	AHB32DA
Pump head 10 ml, Hastelloy-C, for corrosive chemicals	AHB43
Pump head 50 ml, stainless steel	AHC20
Pump head 50 ml, ceramic	AHC22
Pump head 50 ml, Hastelloy-C, for corrosive chemicals	AHC23
Pump head, 10 ml, stainless steel, for water dosing	AHB40FA

AHB40

Replacement pump heads for AZURA® Pump P 6.1L

Pump head 5 ml, stainless steel (1000 bar)	AHA60
Pump head 10 ml, stainless steel	AHB40
Pump head 10 ml, stainless steel, for normal phase applications	AHB40BA
Pump head 10 ml, stainless steel, for high temperature dosing applications	AHB40CA
Pump head 10 ml, ceramic	AHB32
Pump head 10 ml, ceramic with Ti-bushings	AHB32DA
Pump head 50 ml, stainless steel	AHC20
Pump head 50 ml, stainless steel, for normal phase applications	AHC20BA
Pump head 50 ml, ceramic	AHC22
Pump head 50 ml, Hastelloy-C, for corrosive chemicals	AHC23
Pump head 10 ml, Hastelloy-C, for corrosive chemicals	AHB43

AHB40CA

Replacement pump head for BlueShadow Pump 40P

Pump head 10 ml, stainless steel	AHB40
Pump head 10 ml, ceramic	AHB32
Pump head 50 ml, stainless steel	AHC20
Pump head 50 ml, ceramic	AHC22
Pump head 10 ml, stainless steel, for high temperature dosing applications	AHB40CA
Pump head 50 ml, stainless steel, for high temperature dosing applications	AHC20CA

AHB32

Replacement pump heads for AZURA® Pump P 2.1L & BlueShadow Pump 80P

Pump head 100 ml, stainless steel	A4029-1
Pump head 100 ml, titanium	A4029V1
Pump head 250 ml, stainless steel	A4021-1
Pump head 250 ml, titanium	A4021V1
Pump head 500 ml, stainless steel	A4038-1
Pump head 1000 ml, stainless steel	A4022-1
Pump head 1000 ml, titanium	A4022V1

A4029-1

Check valves

Check valve unit for 10 ml (AZURA® Pump P 4.1S/ P 2.1S, BlueShadow 40P)	A06841
Check valve unit for 50 ml (AZURA® Pump P 4.1S/ P 2.1S, BlueShadow 40P)	A06842
Check valve unit (KEL-F) for 10 ml pump head (AZURA® Pump P 2.1S/P4.1S, BlueShadow 40P)	A068412
Check valve unit (spring-loaded) for 10 ml and 50 ml pump head (AZURA® Pump P 4.1S/ P 2.1S, BlueShadow 40P)	A068411
Check valve unit for 100 ml and 250 ml pump head (AZURA® Pump P 2.1L, BlueShadow 80P)	A1122
Check valve unit for 500 ml and 1000 ml pump head (AZURA® Pump P 2.1L, BlueShadow 80P)	A1080

Maintenance kits

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	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 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 Pump AZURA® Pump P 2.1L and BlueShadow 80P (100ml/250 ml), Venting screw KEL-F, Check valve unit KEL-F, O-ring	A58211
Rebuild-Kit for AZURA® Pump P 4.1S & P 2.1S, 10 ml/min pump head., Venting screw KEL-F, Check valve unit KEL-F, O-ring (FFKM)	A5821-1
Rebuild-Kit for AZURA® Pump P 4.1S & P 2.1S, 50 ml/min pump head., Venting screw KEL-F, Check valve unit KEL-F, O-ring (FFKM)	A5821-2

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

AZZ00AB

Autosampler accessories

Vials: Crimp neck vials N11 (ø 11 mm), 1.5 ml, clear glass, wide opening, flat bottom, Caps: Crimp caps aluminium, center hole, ready assembled with septa rubber/TEF 1000 pcs. each	A0638
Accessory kit for autosampler with vials, caps, septum and pliers for opening and closing	A0664
Vials: Crimp neck vials N20 (ø 22 mm), 10 ml, clear glass Caps: Cap PE transparent, N20 for flat crimp neck, center hole, Septa: Natural rubber red-orange/TEF, 1000 pcs. each	A1585
Vial plate for 84x1.5ml and 3x10ml vials for autosampler 3950 and AZURA® AS 6.1L	A500501
Prep vial plate for 12 x 10ml for autosampler 3950 and AZURA® AS 6.1L	A500502
Prep vial plate for 30 x 10ml for autosampler 3950 and AZURA® AS 6.1L	A500507
Vial plates for 1.5 ml vials for autosampler 3950 and AZURA® AS 6.1L, 2 pcs.	A50050
Sample loop 100 µl, Stainless Steel for autosampler 3950 and AZURA® AS 6.1L	A50077
Sample loop 10 µl, Stainless Steel for autosampler 3950 and AZURA® AS 6.1L	A50078
Kit for large injection samples for autosampler 3950 and AZURA® AS 6.1L, incl. injection syringe 1000 µl, sample loop 500 µl	A50079
Preventive maintenance kit A50060/A50061/A50070/A500701/AAA10AA/ AAA11AA for autosampler 3950 and AZURA® AS 6.1L - 100 MPa	A5009-1
Preventive maintenance kit A50080/A50081/AAA00AA/AAA01AA for autosampler 3950 and AZURA® AS 6.1L - 70 MPa	A5009-2
Preventive Maintenance Kit A50052-1/A50053/A50053-1/AAA20AA/AAA21AA for autosampler 3950 and AZURA® AS6.1L - Bio	A5009-3
Preventive Maintenance Kit A50055-1/A50056-1/AAA40AA/AAA41AA for autosampler 3950 and AZURA® AS 6.1L - Prep	A5009-4
Autosampler 3950 and AZURA® AS 6.1L rotor seal (70 MPa)	A5009-5
Preventive Maintenance Kit A50080/A50081 /AAA00AA/AAA01AA autosampler 3950 and AZURA® AS 6.1L - 70MPa	A5009-6
Sample needle kit for autosampler 3950 and AZURA® AS 6.1L for SPARK valve 1/16''	A64700

Detector accessories

Flow cells 1/16"

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	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
3 mm path length, 2µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD	AMB18
10 mm path length, 2µl, 1/16", 50 bar, LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD	AMC19XA
10 mm path length, 10µl, 1/16", 300 bar, PressureProof Flow cell cartridge for AZURA® Detector DAD/MWD	AMC38
50 mm path length, 6µl, 1/16", 50 bar, High Sensitivity LightGuide Flow cell cartridge for AZURA® Detector DAD/MWD	AMD59XA
10 mm path length, 2.4 µl, 1/16", 100 bar, biocompatible, fiber optic connectors, for PDA-1	A64150

A4061XB

AMC19XA
AMD59XA

Flow cells 1/16”

50 mm path length, 10 µl, 1/16”, 100 bar, biocompatible, fiber optics connectors, for PDA-1	A64151
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

A64151

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

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

A4068

Flow cells 1/16” fiber optics

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

A4044
A4044HT
A4074
A4089

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

A4079

Nano flow cell

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

A4104

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

A4152
A4153
A4154
A4155

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

A0740

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 S2550, S2520, 10D, 40D, 50D, 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
Mercury vapor lamp for Smartline (S200) and WellChrom (K200) fixed wavelength detectors 200	A4142
Xenon lamp for RF-10AXL fluorescence detector	A0753
Xenon lamp for RF-20A/Axs fluorescence detector	A59210

AZL01

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

A9844

Valve accessories

Rotor seals

Replacement for 16 Port Multiposition valve (AWA30BH/A1379), 1/16", POM-H-TF, 50 bar	A1588
Replacement for 12 Port Multiposition valve (AWA20BG/A1378), 1/8", POM-H-TF, 25 bar	A1587
Replacement for 6 Port Multiposition valve (AWA10BB/A1374V1 and AWA10BD/A1376V1), PPS, 1/16" (200 bar) and 1/8" (150 bar)	A0880.3
Replacement for 6 Port Multiposition valve (AWA10BA/A1361/A1373 and AWA10BC/A1363), Vespel, 1/16" (300 bar) and 1/8" (300 bar)	A0880
Replacement for 6 Port Multiposition valve (AVR28AC), 1/16", Vespel, 1200 bar	A0880.2
Replacement for 6 Port Multiposition valve (AWA11DA/AVR26AC), 1/16", Vespel, 400 bar	A0880.1
Replacement for 6 Port 2-position valve (AWA10AC/A1370V1/A1358V1), 1/16", PPS, 200 bar	A15801
Replacement for 6 Port 2-position valve (AWA10AE/A1372), 1/8", PPS, 150 bar	A15802
Replacement for 6 Port 2-position valve (AVC28AC/AVI28AC), 1/16", Vespel, 1200 bar	A0611.2
Replacement for 6 Port 2-position valve (AWA11AA/A1369/A1357), 1/16", Vespel, 300 bar	A0611
Replacement for 6 Port 2-position valve (AWA11CA/AVC26BC/AVI26BC), 1/16", Vespel, 400 bar	A0611.1
Replacement for 6 Port 2-position valve (AWA10AD/A1371/A1359), 1/16", Vespel, 300 bar	A0611.4
Replacement for 8 Port 2-position valve (AVC38AC/AVI38AC), 1/16", Vespel, 1200 bar	A0611.3
Replacement for 8 Port Multiposition valve (AVR38AC), 1/16", Vespel, 1200 bar	A0880.4

Sample loops 1/16" SST incl. fittings

Sample Loop VICI,1 µL, stainless steel, 0.1 mm ID	A05641
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 loops 1/16" SST incl. fittings

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
KNAUER VariLoop S, 10 ml, 1/16", stainless steel, variable injection volume and multiple injections	A1054-2
KNAUER VariLoop L, 40 ml, 1/16", stainless steel, variable injection volume and multiple injections	A1055-1

A1054-2

Sample loops 1/8" SST incl. fittings

Sample loop, 1 ml, stainless steel, 2.2 mm ID	A1043
Sample loop, 2 ml, stainless steel, 1.6 mm ID	A1044
Sample loop, 5ml, stainless steel, 1.6 mm ID	A0586-2
Sample loop, 10ml, stainless steel, 2.2 mm ID	A0843
KNAUER VariLoop S, 10 ml, 1/8", stainless steel, variable injection volume and multiple injections	A1159-2
KNAUER VariLoop L, 40 ml, 1/8", stainless steel, variable injection volume and multiple injections	A1160-1

A1159-2

Sample loops 1/16" PEEK incl. fittings

Sample loop, 10 µl, PEEK, 345 bar, 0.25 mm ID	A1058
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 1 ml, PEEK, 240 bar, 0.75 mm ID	A0423
Sample loop 2ml, PEEK, 240 bar , 0.75 mm ID	A0785

A0423

Sample loops 1/8" PEEK incl. fittings

Sample Loop 5ml, PEEK, 50 bar, 1/8" and 1/16", 1.6 mm ID	A78980
Sample Loop 10ml, PEEK, 50 bar, 1/8" and 1/16", 1.6 mm ID	A78985
Superloop, 50 ml, variable injection volumes and multiple injections, movable piston protects against dilution, 1/16", Glass, 40 bar	A1929
Superloop, 150 ml, variable injection volumes and multiple injections, movable piston protects against dilution, 1/16", Glass, 20 bar	A1928

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 µ	A0729
Injection syringe 2500 µl	A0730

A0723

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

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

A0653

Loop filling ports

Loop filling port	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

A0555

A0328

Osmometry accessories

Osmometry accessories

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, 2000 mOsmol/kg	A01248
Cleaning tissue, lint-free, for thermistor cleaning	A02330
Ribbon cartridge for the plain paper printer A3711 (black)	A7014
Printer paper for the plain paper printer A3711 (60 m roll)	A7013
Plastic sample tubes for Semi-Micro Osmometer K-7400S, 100 pcs.	A02721
Plastic sample tubes for Semi-Micro Osmometer K-7400S, 500 pcs.	A0272
Plastic sample tubes for Semi-Micro Osmometer K-7400S, 1000 pcs.	A0720

A01240

A0720
A02721
A0272

Purification accessories

Eluent & column heating

Eluent heating device to control the temperature of eluent (1-Channel). Cleanroom compatible.	A70054V3
Eluent heating device to control the temperature of eluent and a cloumn heating sleeve (2-Channel). Cleanroom compatible.	A70054V4
Temperature controller for heating sleeve 2300 W (10 A) 230 VAC	A57024
Heating sleeve for HPLC column 150 x 20 mm HM D=25..57*L=193 mm 100 °C, 230V, 200W, Pt100	A57026
Heating sleeve for HPLC column 250 x 20 mm HM D=25..57*L=293 mm 100 °C, 230V, 200W, Pt100	A57027
Heating sleeve for HPLC column 150 x 30 mm HM D=38..70*L=203 mm 100 °C, 230V, 400W, Pt100	A57028
Heating sleeve for HPLC column 250 x 30 mm HM D=38..70*L=303 mm 100 °C, 230V, 500W, Pt100	A57029
Heating sleeve for HPLC column 150 x 50 mm HM D=60..100*L=211 mm 100 °C, 230V, 500W, Pt100	A57030
Heating sleeve for HPLC column 250 x 50 mm HM D=60..100*L=311 mm 100 °C, 230V, 800W, Pt100	A57031
Heating sleeve for HPLC costum made up to 350 x 50 mm	A57032

A57026

Purification

Pressure control for delta P measurement up to 250 ml/min with interface box	AZG10
External pressure sensor up to 250 ml/min	AZG10-1
External pressure sensor up to 1000 ml/min	AZG10-2
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") 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 1/8" tubing	A70083-1
Distribution Box 24 V for 6 devices like air sensor, external pressure sensor, IFU 2.1 LAN	AZS80SA
AZURA® Organizer Holder for AZURA® Click for attaching falcons, columns (5 mm - 26 mm OD) and the pH Flow Cell	A70085
Clamp for AZURA® Organizer 12 mm	A70085-1
Clamp for AZURA® Organizer 16 mm	A70085-2
Clamp for AZURA® Organizer 25 mm	A70085-3
AZURA® Click rail for AZURA® L devices for attaching IFU 2.1 LAN, air sensor, pressure Control and the AZURA® Organizer	A70089
Flow splitter for use of CM 2.1S over 100 ml/min	A5813

AZG10

AZG10-2

A70092

Consumables

K-Connect system

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

A9646/-1 A9645/-1

A9647/-1

DYNASEAL system

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

A0108 A0181

A1020 A1069

Bushings for capillaries - DYNASEAL

DYNASEAL connection system, bushings for 1/16" capillaries, stainless steel, fingertight, short, 10 pcs.	A1021
DYNASEAL connection system, bushings for 1/16" capillaries, stainless steel, fingertight, long, 5 pcs.	A1064
DYNASEAL connection system, bushings for 1/8" capillaries, stainless steel, fingertight, short, 4 pcs.	A1067
DYNASEAL connection system, bushings for 1/8" capillaries, stainless steel, fingertight, long, 4 pcs.	A0735

A1021 A0735

A1064 A1067

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

Sealing rings

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

Biconical sealing rings

10 Biconical sealing rings with 1/16", PEEK	A1070
10 Biconical sealing rings with 1/16", polymer	A1022
10 biconical sealing rings 1/8" PETP	A0738

A1070

Bushings for capillaries 1/16" 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

Bushings for capillaries 1/8" SST

10 Bushings for capillaries with 1/8" OD, M8x1, wrench caliber 10, stainless steel	A0830

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, Hastelloy, for capillaries with 1/16" OD	A01101
10 Ferrules, Titanium, for capillaries with 1/16" OD	A01102

Bushings for capillaries PEEK & polymer

Bushings for 1/16" capillaries, polymer, knurled, UNF 10-32, short, 10 pcs.	A0141
Bushings for 1/16" capillaries, polymer, knurled, UNF 10-32, short, 30 pcs.	A0142
Bushings for 1/16" capillaries, polymer, knurled, UNF 10-32, long, 10 pcs.	A0144
Bushings for 1/16" capillaries, polymer, with integrated sealing cone, knurled, UNF 10-32, short, 10 pcs.	A0145
Bushings for 1/16" capillaries, PEEK, UNF 10-32, 10 pcs.	A0584
Bushings for 1/8" capillaries, polymer, with integrated sealing cone, M8x1, knurled, short,10 pcs.	A0733
Bushing for 1/16" capillaries, PEEK, short Hex, with integrated sealing cone, 5 pcs.	A25011
Bushing for 1/16" capillaries, PEEK, long Hex, with integrated sealing cone, 5 pcs	A25021

A0584

A0142

A0733

A25021

Flat bottom fittings and adapters

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

A58291
A5829

A58294

Blind fittings

Blind fittings, 1/16", polymer, knurled, UNF 10-32, short, 10 pcs.	A0146
Blind fittings, 1/16", polymer, knurled, UNF 10-32, short, 30 pcs.	A0147
Blind fittings, 1/16", PEEK, knurled, UNF 10-32, short, 10 pcs.	A0582
Blind fittings, 1/8", polymer, knurled, M8x1, short, 10 pcs.	A0734

A0734 A0146 A0147

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

A1980

Couplings, polymer/PEEK

Coupling to connect 2 capillaries with 1/16'' OD (material: PEEK/PETP, thread: UNF10-32), including 2 bushings and sealing rings, 1 pc., 0.5 mm bore, suitable for classical HPLC	A0148
Coupling to connect 2 capillaries with 1/16'' OD (material: PEEK/PETP, thread: UNF10-32), including 2 bushings and sealing rings, 1 pc., 0.5 mm bore, suitable for classical HPLC	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	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	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	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	A14071

Couplings, SST/Titanium

Coupling to connect 2 capillaries with 1/16'' OD (material: titanium, thread: 10-32 UNF), including 2 bushings and ferrules, 0.5 mm bore, suitable for classical HPLC	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	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	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

Swagelok® unions & reducing unions, SST

Union to connect 2 capillaries with 1/4" OD	A58263
Reducer to connect a capillary with 3/8" OD to a capillary with 1/4'' OD	A58264
Reducer to connect a capillary with 8 mm OD to a capillary with 1/4'' OD	A58265
Reducer to connect a capillary with 1/8'' OD to a capillary with 1/4'' OD	A58266
Reducer to connect a capillary with 1/16'' OD to a 1/8'' OD pipe	A58270
Reducer to connect a capillary with 1/8'' OD to a 1/4'' pipe union	A58271
to connect a capillary with 4 mm OD to a 1/8'' pipe union (material: stainless steel)	A58282

A58270
A58271

A58263
A58264
A58265
A58266

T-connectors, SST/titanium

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

A0120

A58260
A58261
A58262

T-connectors, polymer

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

A150-1

X-connectors, SST

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

X-connectors, polymer

X-connector to connect 4 capillaries with 1/16'' OD (material: polymer, thread: 10-32 UNF), including 4 bushings and sealing rings	A0151

Pressure release valves

Pressure Release Valve for AZURA® pump P 2.1L and Pump 1800 (up to 50 bar), 1/8", stainless steel	A5800
Pressure Release Valve for AZURA® pump P 2.1L and Pump 1800 (up to 50 bar), 1/8", titanium	A5800V1
Pressure Release Valve for AZURA® pump P 2.1L and Pump 1800 (up to 25 bar), 1/8", stainless steel	A5801
Pressure Release Valve for AZURA® pump P 2.1L and Pump 1800 (without spring), 1/4", stainless steel	A5802
Pressure release valve stainless steel, up to 3 bar, 1/16" connectors	A5805

A5802

Pressure release valves

Spring for pressure release valve, 25 - 50 bar	M1070
Spring for pressure release valve, 3.4-24 bar	M1080

M1080

Backpressure regulators

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

A70087

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 1/8", SST

Stainless steel, 1/8"OD, 1.6 mm ID, 150 cm length, 1 pcs.	A0639
stainless steel, 1/8" OD, 2.2 mm ID, 150 cm length	A0640

Capillaries, AZURA® Analytical K-Connect, stainless steel, 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® Analytical K-Connect start-up kits, stainless steel, 1/32" capillaries with fitting sleeves for 1/16"connections

Set of precut capillaries 0.1 mm and adapters, red	AZF40
Set of precut capillaries 0.18 mm and adapters, yellow	AZF50
Set of precut capillaries 0.45 mm and adapters, black	AZF60

AZURA® Capillary start-up kit, SST

All kits contain a special amount of capillaries, fittings, ferrules, couplings, connectors and adapters.

AZURA® start-up kit 1/16" stainless steel, 0.25 mm ID precut capillaries	AZF70
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
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, capillary kit	A9849
Accessory kit for ScaleUp system, 1/16", stainless steel	A9850-1

AZURA® Capillary start-up kits for special HPLC systems

Dedicated Start up kits for special HPLC systems include anything you need for system build-up.

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

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

Tubing 1/16", PEEK, by the metre

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 the metre

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

Tubing 1/16" OD, Tefzel™

0.25 - 0.3 mm ID, 300 cm length, max. pressure 185 bar	A0182
0.7 mm ID, 10 m length, max. pressure 115 bar	A01831
0.7 mm ID, 300 cm length, max. pressure 115 bar	A0183
1.0 mm ID, 300 cm length, max. pressure 85 bar	A04781

Tubing 1/8" OD, ETFE

1.6 mm ID, 300 cm length, max. pressure 70 bar	A0478

Tubing, various OD, PTFE

PTFE Tubing, 1.6 mm OD (1/16"), 0.45 mm ID, 300 cm length, max. pressure 150 bar	A0152
PTFE Tubing, 1.6 mm OD(1/16"), 0.9 mm ID, 300 cm length	A04782
PTFE Tubing, 2 mm OD, 1.45 mm ID, 300 cm length, max. pressure < 10 bar	A0153
PTFE Tubing, 3.2 mm OD (1/8"), 1.5 mm ID, 300 cm length, max. pressure 35 bar	A0732
PTFE Tubing, 3 mm OD, 2 mm ID, 300 cm length	A0873
PTFE Tubing, 4 mm OD, 3 mm ID, 300 cm length, max. pressure 20 bar	A0154

Tubing, various OD, PTFE

PTFE Tubing, 9 mm OD, 7 mm ID, 300 cm length	A1099

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

A3381

B2

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, for A3378	A3378-1
Replacement Frits 10 µm for Inline Filter, PEEK/Titanium, biocompatible, for A3379	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

A3378
A3379

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

Vials & caps kits for analytical HPLC

Vials: Screw neck vials N8 (ø 11 mm), 1.5 ml, clear glass, flat bottom, small opening Caps: Screw Caps N8 PP, black with center hole Septa: PTFE white, thickness 0.25 mm 1000 pcs. each	A0637
Vials: Screw neck vials N8 (ø 11 mm), 1.5 ml, clear glass, flat bottom, small opening Caps: Ready assembled screw closures, septa are assembled, caps are ready-to-use, Screw Caps N8 PP, black with center hole Septa red rubber/FEP colorless 1000 pcs. each	A0637-1
Vials: Screw neck vials N8, (ø 11 mm), 1.5 ml, amber glass, with label field Caps: Screw Caps N8 PP, black, center hole, Septa: PTFE white, thickness 0.25 mm 1000 pcs. each	A0637-2
Vials: Crimp neck vials N11 (ø 11 mm), 1.5 ml, clear glass, wide opening, flat bottom, Caps: Crimp caps aluminium, center hole, ready assembled with septa rubber/TEF 1000 pcs. each	A0638
Accessory kit for autosampler with vials, caps, septum and pliers for opening and closing	A0664

A0637 A0637-2

A0664

Vials & caps kits including microinserts for analytical HPLC

Vials: Screw neck vials N9 (ø 11 mm), 1.5 ml, amber glass, flat bottom Inlays: 0.3 ml glass micro inserts Caps: Screw caps blue with septum silicone white/PTFE red 100 pcs each	A0638-1
Vials: Screw neck vials N9 (ø 11 mm), 0.2 ml, amber glass, flat bottom, incl. integrated microinserts Caps: Screw caps blue Septa: Silicone white/PTFE red 100 pcs each	A0638-2

Vials and caps kits for preparative HPLC

Vials: Crimp neck vials N20 (ø 22 mm), 10 ml, clear glass Caps: Cap PE transparent, N20 for flat crimp neck, center hole, Septa: Natural rubber red-orange/TEF, 1000 pcs. each	A1585
Vials: Crimp neck vials N20 (ø 22 mm), 10 ml, clear glass Caps: Cap PE transparent, N20 for flat crimp neck, center hole, Septa: Natural rubber red-orange/TEF, 100 pcs. each	A15851

A1585
A15851

Pliers for analytical & preparative vials

Closing pliers for crimpcaps, for ø 11 mm vials	A0864
Opening pliers for crimpcaps, for ø 11 mm vials	A0865
Closing pliers for crimpcaps, for ø 20 mm vials	A1660
Opening pliers for crimpcaps, for ø 20 mm vials	A1661

A0865

Safety cap sets for analytical systems

All sets include 1 l eluent bottles and Vici eluent caps with safety air inlet filter, 1 waste can and cap with safety exhaust filter and adapter to connect the AS 6.1L waste tubing, 250 ml bottle for piston backflushing

Safety caps sets for AZURA® analytical systems

for isocratic systems, incl. filters, bottles and fittings	A59257
for LPG systems, incl. filters, bottles and fittings	A59257-1
for HPG systems, incl. filters, bottles and fittings	A59257-2
Eluent waste kit for all AZURA® Analytical systems with Autosampler, incl. filter, waste can and cap	A59258

A59257

A59258

Safety caps

VICI 1/4-28 flangeless nuts, PPS, for 1/16" tubing, for VICI caps, 10 pcs.	A59245
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

A59231

A59234

Safety caps

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

A59232 A59233

Safety caps accessories

VICI 1/4-28 flangeless nuts, PPS, for 1/16" tubing, for VICI caps, 10 pcs.	A59245
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
VICI Barbed hose adapter for 8 mm ID tubing, for VICI caps	A59254
VICI Safety Air Inlet Valve with 15 mm filter, fit any VICI cap or VICI safety cap	A59241
VICI Safety Exhaust Filter with detector, filled with absorbent, fit any VICI cap or VICI safety cap	A59243
VICI Safety Air Inlet Valve with 4 mm filter, fit any VICI cap or VICI safety cap	A59240
VICI Safety Exhaust Filter filled with absorbent, fit any VICI cap or VICI safety cap	A59242
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 1/8" 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
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
AZURA® Tubing kit with cap and solvent filter (A3375, stainless steel, 10 µm), suitable for all analytical HPLC systems	A9650

A59242

A59249

A9650

Lab equipment

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


X0219


X0030

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


A0851


A0809

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


A9870

Tool sets 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

Tool sets for AZURA® pump heads

Tool Kit for 10 ml pump head	A9670
Tool Kit for 50 ml pump head	A9671
Tool Kit for 100 ml pump head	A9672
Tool Kit for 250 ml pump head	A9673
Tool Kit for 500 ml pump head	A9674
Tool Kit for 1000 ml pump head	A9675


A1033
A1033-1
A1033-2

LC racks

Benchtop rack: AZURA® S 300 x 160 x 210 mm (WHD)	A70016
Benchtop rack: AZURA® L low 480 x 190 x 420 mm (WHD)	A70010
Benchtop rack: AZURA® L high 480 x 430 x 420 mm (WHD)	A70011


A70011

LC racks

Benchtop rack: special manufacture 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

Mounting bracket AZURA® L Bio for manual KNAUER injection valve, pH-flowcell and 2 prepacked columns	A9854-1
Mounting bracket AZURA® L for Hypershear mixing chambers	A9853-8
Mounting bracket AZURA® L for KNAUER manual injection valves	A9853
Mounting bracket AZURA® L for KNAUER flow cells	A9853-5
Mounting bracket AZURA® L for Vici manual injection valves	A9853-1
Mounting bracket AZURA® L for prep sample loop	A9853-6
Mounting bracket AZURA® L for Vici valve drives	A9853-2
Mounting bracket AZURA® L for columns with 25 - 29 mm AD	A9853-3
Mounting bracket AZURA® S for manual KNAUER injection valve	A9854-2
Mounting bracket AZURA® L for AZURA® Valve Unifier VU 4.1(both-sided) and AZURA® Conductivity Monitor CM 2.1S (left-sided on AZURA® L)	A9854-3

A9853

LC column holder/multi column base

Column holder: Magnetic clip, for all columns with 1/4" OD, for all KNAUER columns with 3, 4 and 4.6 mm ID, compatible with all AZURA® devices	A9847
Prism column holder for horizontal storage of HPLC columns on the lab bench, the most price attractive alternative to store your HPLC columns	A3983
Glass column holder, Stand, plate and 2 clamps, can hold one glass column in the dimensions of 10-40 mm ID	A1319
Multi Column Base Bio 60 x 40 x 130cm (w x d x h) for up to 3 MPLC columns with conn. for cooling device	A70190
Multi Column Base serves as a holder for up to 3 columns with inner diameter up to 50 mm, especially made for preparative column solutions	A0070A

A9847

A3983

A1319

A0070A

Accessories for LC column holder

4-finger clamps, long shaft finger with silicone coating ø12mm clamp width 35-100 one piece	A0714A
4-finger clamps, short shaft finger with silicone coating ø12mm clamp width 35-100 one piece	A4363
Clamp for Multi Column Base, short shaft, to fix an HPLC column or other accessories to the Multi Column Base	A4368
Clamp for Multi Column Base, long shaft, to fix an HPLC column or other accessories to the Multi Column Base	A2820
Bosshead squared for Multi Column Base, used in combination with clamps with a long shaft	A2820A

A4363

A4368

A2820

Installation accessories

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

A9862

Standards for Performance Verification (PV) of HPLC systems

A PV procedure is recommended for testing newly installed AZURA® HPLC systems as well as for regular monitoring of system performance.

This table gives an overview of the needed PV document, PV Standard and HPLC column for a specific AZURA system.

Backpressure range	Type of detection	Flow cell path length [mm]	Injection: Symple 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
HPLC Plus systems (max. 700 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
HPLC & UHPLC systems	RID	all	all	VPV-002: Analytical HPLC, RI detection	A01261-1	05WE184E2J
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

PC Hardware

CDS Workstation

Chromatography Workstation for PurityChrom® and ClarityChrom® with 24" monitor, Windows 10, Intel® Core™ i5, 8 GB RAM, 256 SSD, two network cards, german edition	A13110
Chromatography Workstation for OpenLAB® and Chromeleon™ with 24" monitor, Windows 10 Prof., Intel® Core™ i7, 8 GB RAM, 256 SSD, two network cards, german edition	A13111
Laptop for PurityChrom® and ClarityChrom®, Windows 10, Intel® Core™ i3, 8 GB RAM, 256 SSD, german edition	A13112
Laptop for OpenLAB® and Chromeleon™, Windows 10 Prof., Intel® Core™ i5, 8 GB RAM, 500 GB HDD, german edition	A13113
Microsoft Surface Pro 4 for PurityChrom®, Windows 10, Core m3, 4GB RAM, 128 GB SSD, german edition with keyboard, Surface Pen and docking station	A13114
Chromatography Workstation for PurityChrom® and ClarityChrom® with 24" monitor, Windows 10, Intel® Core™ i5, 8 GB RAM, 256 SSD, two network cards, international edition	A13120
Chromatography Workstation for OpenLAB® and Chromeleon™ with 24" monitor, Windows 10 Prof., Intel® Core™ i7, 8 GB RAM, 256 SSD, two network cards, international edition	A13121

Configuration on request

PC, special edition on request	A13130

Network devices

WLAN Router, 8-port Gigabit RJ-45	A64809
WLAN Router with international power supply wo plug, 8-port Gigabit RJ-45	A64809INT
8-port LAN GB Switch NetGear GS108GE 8x RJ-45, GBit, Auto-MDIX	A3119
8-port LAN GB Switch NetGear GS108GE 8x RJ-45, Gigabit, Auto-MDIX power plug UK/US/ AUS	A3119INT
5-port Fast Ethernet Switch NetGear FS105 5x RJ-45, 100 MBit	A3126
5-port Fast Ethernet Switch NetGear FS105 5x RJ-45, 100 MBit power plug UK/US/ AUS	A3126INT

A64809

IT accessories

VSCOM USB 4 COM 4 x RS-232 DE9 on USB	A3114
AZURA® Interface Box IFU 2.1 LAN, A/D converter, 4 channels	AZB00XA
RS232 f/f cable 9-pol nullmodem	A0895
RS232 m/f cable 9-pol	A0884
APC Smart UPS 1500 VA, uninterruptible power supply	A3121

AZB00XA

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
Distribution Box 24 V for 6 devices like air sensor, external pressure sensor, IFU 2.1 LAN	AZS80SA

AZS80SA

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.

Specifications:

Software

Software name	Mobile Control - basic display software for AZURA devices without data acquisition Mobile Control Chrom - basic display software for AZURA devices with data acquisition
Operating system	Windows 10
Field of application	Display software, device control, basic LC system operation

Expandability

Stand-alone	yes
Multi-user environment	yes
Report functions	yes

Free demo version:
www.knauer.net/mobilecontrol

Ordering details:

Software	
A9607	Mobile Control for AZURA® devices without data acquisition including 10" tablet and mount
A9608	Mobile Control Chrom for AZURA® devices with data acquisition including 10.8" tablet and mount
A9610	Mobile Control for AZURA® devices without data acquisition
A9612	Mobile Control Chrom for AZURA® devices with data acquisition
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	WLAN Router, 8-port Gigabit RJ-45
A64809INT	WLAN Router with international power supply wo plug, 8-port Gigabit RJ-45
A64811	Single device WLAN router for Mobile Control - 1x RJ45, 10/100 MBit; WLAN
A9615	Tablet lock with stand for all tablets
A9616	Tablet lock for all tablets
A9617	Mobile Control Mount - flexible tablet mount for 7-10" tablets

This software supports a wide range of instruments.
For more information, please visit
www.knauer.net/softwarecontrol

For PC hardware
see page 62.

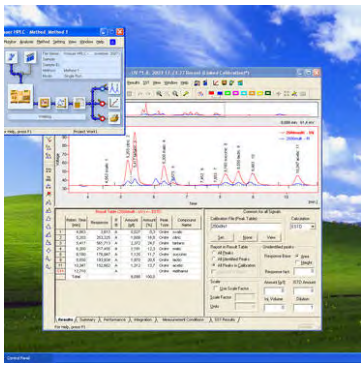
ClarityChrom®

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 are 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 re-calibration 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.

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; Windows XP SP3 (32-bit only)

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

Expandability

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 KANUER 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 beside Educational license

Ordering details:

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 trail version of ClarityChrom
A1675	ClarityChrom® university package one offline license

This software supports a wide range of instruments.
For more information, please visit
www.knauer.net/softwarecontrol

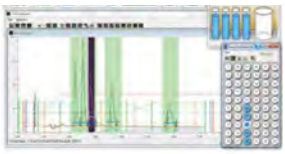
For PC hardware
see page 62.

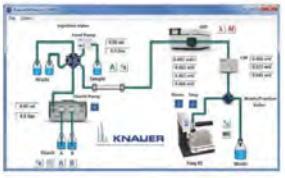
PurityChrom®

PurityChrom is a volume-based chromatography software especially designed for the area of preparative purification and FPLC applications.

PurityChrom provides a very user-friendly and clearly structured interface. The system visualisation 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 during the run. PurityChrom includes intuitive data evaluation with peak recognition and integration. Due to its high flexibility, methods can be developed according to specific demands. You have the option to create a method based on volume, column volume or time. There is also a possibility to pause your method during a run. The hold function provides you with complete control over your chromatography process. Solvent visualisation calculates the consumption of solvent for the current run and prevents your column from running dry. Waste management allows the collection of waste and prevents accidental loss of your sample. For fractionation you can use a fractionation valve as well as a fraction collector. The feature Variables allows to write flexible methods with parameters, that can be adjusted before the run and allow an easy and quick method developement.

Current guidelines and regulations like 21 CFR part 11 are supported. PurityChrom allows flexible control of different devices from KNAUER and other manufacturers. The basic version offers all main features, but is limited regarding the number of devices and data channels. This version can easily be upgraded to the full version by adding the ''PurityChrom® 5 Upgrade'' to support more devices, data channels and automatic injection via autosampler. The DAD license is needed for using teh DAD 2.1L or DAD 6.1L.





Specifications:

Software

Software name	PurityChrom® 5
Operating system	Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10 (English or German only)
Supported instruments	All KNAUER AZURA devices, the Foxy R1/R2 Fraction Collector (see Release Notes) and many other devices, detailed information on request

Expandability

Stand-alone	For one system and one computer. Basic License: 8 devices, 3 data channels, no autosampler supported
Fields of application	FPLC and Prep LC
Supported instruments	All KNAUER AZURA devices, the Foxy R1/R2 Fraction Collector (see Release Notes) and many other devices, detailed information on request
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	Sequences
Presentation of results	Individual report configuration
Calculations	Column performance calculations according to DAB
Data import and export	Comma Separated Value, AIA/ANDI, ChromStar Slice
Special features	Method creation based on volume or column volume; hold function; functionalized visualisation; direct control during a run; display of solvent supply; waste management

Additional options/extensions

FRC option	Included

Ordering details:

A2650	Basic License for one system
A2652	Extends the Basic License to an unlimited number of controllable devices and 8 data channels, adds autosampler support
A2654	3D option for a diode-array detector (DAD)
A2656	PurityChrom® Maintenance and Support including free updates and 5 Hours Software support by KNAUER

This software supports a wide range of instruments.
For more information, please visit
www.knauer.net/softwarecontrol

For PC hardware
see page 62.

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 meethod 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.

Specifications:

Software

Software name	OpenLAB CDS EZChrom Edition
Extensions / Licenses	Fraction collection, System suitability, PDA option (3D / UV)
System architecture	32-bit CDS
Operating system	Depends on CDS version. Latest version, supported by KNAUER drivers, is A.04.06. It runs on 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
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, separate license option
GPC/SEC option	license is discontinued
System suitability test	license always included, automates the calculation of system suitability parameters for system validation

Ordering details:

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

This software supports a wide range of instruments.
For more information, please visit
www.knauer.net/softwarecontrol

For PC hardware
see page 62.

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 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:

A1780-2	Thermo Scientific™ Dionex™ Chromeleon™ 7.2 Bundle Workstation Open. 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
A1783-2	Thermo Scientific™ Dionex™ Chromeleon™ Driver CD (AZURA® only)*
A1783-3	Shimadzu LC Driver for Chromeleon 7.2 Shimadzu CBM-20A required
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
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

* more driver options for a wide range of systems available

This software supports a wide range of instruments. For more information, please visit
www.knauer.net/softwarecontrol

For PC hardware
see page 62.

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 supports you to select a suitable system four your lab. According to your specifications we prepare an efficient HPLC or FPLC method including advice for an appropriate sample preparation.

HPLC method transfer & optmization

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 its 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.

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

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 additional 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 upon request: Tel. +49 30 8097270, **academy@knauer.net**

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

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

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

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

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

Service & Maintenance Trainings (individual duration, at KNAUER in Berlin or on site)	
Maintaining KNAUER instruments	Learn how to perform preventative maintenance on KNAUER equipment by yourself.

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

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 that includes the following:

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

Instrument	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 and free of charge. It is not part of the delivery, please contact the Technical Support in case of request.

The Operation Qualification 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, you should test the device regularly. The test intervals are dependent on the usage 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	Document
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 2.1L	VOQUVD21LA
AZURA® UVD 2.1S	VOQUVD21SA
Flow cells	VOQ-Flowcells
Fraction collectors	VOQ-FRC
Osmometer K-7400	VOQ-K7400

Instrument / Software	Document
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

Performance Verification (PV)

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

- Documentation on device specifications
- All necessary method parameter 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

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 by 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 together with you before your equipment is delivered.

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.

Worldwide Technical Service & Support

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 instruments, 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 technicans 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 71).

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 you local dealer for shipment matters or ask for an on-site visit of our skilled KNAUER service technicans.

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 us!

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

Development Services

Software development

How does your software limit you?

Many of today's 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)

Automation of measurement and operation process

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

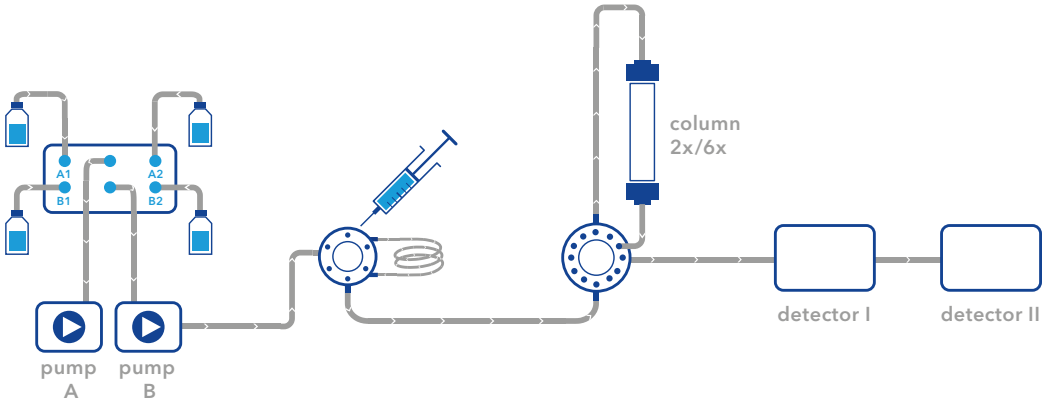
We strongly recommend ordering a KNAUER computer with your HPLC system. However, we understand that sometimes certain constraints do not allow this. We offer a PC configuration service of your PC, in order to assure a safe and reliable installation.

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

System configurator
HPLC/UHPLC by KNAUER

MAKE YOUR PRESELECTION

☐ **UHPLC** (SST, max. 1000 bar)
☐ **HPLC** (SST, max. 700 bar)
☐ **Bio-Inert** (metal-free, max. 400 bar)



BUFFER 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 columns
- ☐ 6 columns
- ☐ Column thermostat
- ☐ Column kit HPLC
- ☐ Column kit UHPLC
- ☐ Precolumn heater 0.1mm ID UHPLC
- ☐ Precolumn heater 0.18mm ID HPLC

DETECTION

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

ACCESSORIES

- ☐ 0.1 m tubing
- ☐ 0.18 m tubing
- ☐ PEK tubing
- ..... **x** Back pressure regulator
- ☐ Workstation (Windows)

FLOW CELLS FOR UV-DETECTOR

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

SOFTWARE

- ☐ ClarityChrom®
- ☐ OpenLAB®
- ☐ Chromeleon™
- ☐ Mobile Control

COMMON APPLICATIONS

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

System configurator
Bio purification by KNAUER

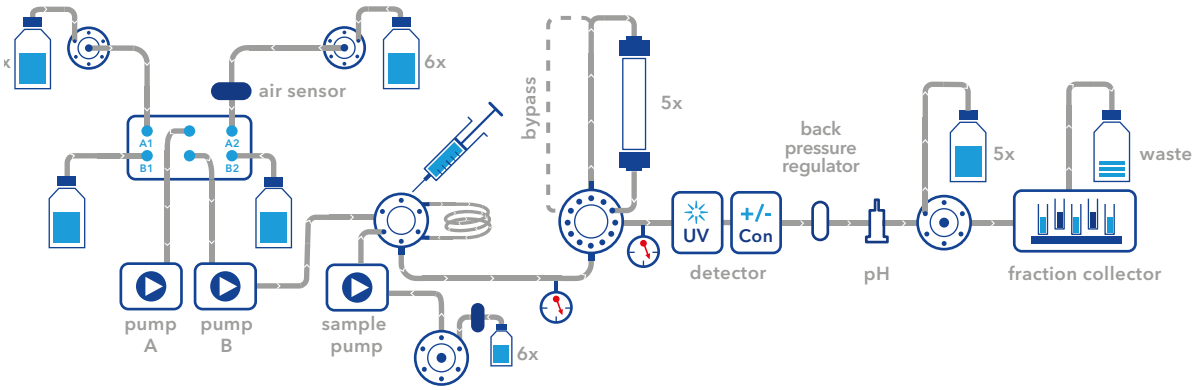
METHOD

☐ **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 (6 further inlets)

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

SAMPLE INJECTION

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

☐ Sample pump module

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

☐ Biocompatible Autosampler AS 6.1L

COLUMN SELECTION & THERMOSTAT

☐ 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 (5 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

☐ Fractionation valve

☐ Foxy fraction collector with fixed rack types

☐ Labocol fraction collector with individual rack types

☐ 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**: NiNTA ..... ml
☐ **AC**: Glutathione ..... ml

☐ **IEX**: Weak anion exchange ..... ml
☐ **IEX**: Weak cation exchange ..... ml
☐ **IEX**: Strong anion exchange ..... ml
☐ **IEX**: Weak cation exchange ..... ml

ACCESSORIES

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

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

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

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

☐ Pressure control (2 pressure sensors)

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

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

☐ Workstation (Windows)

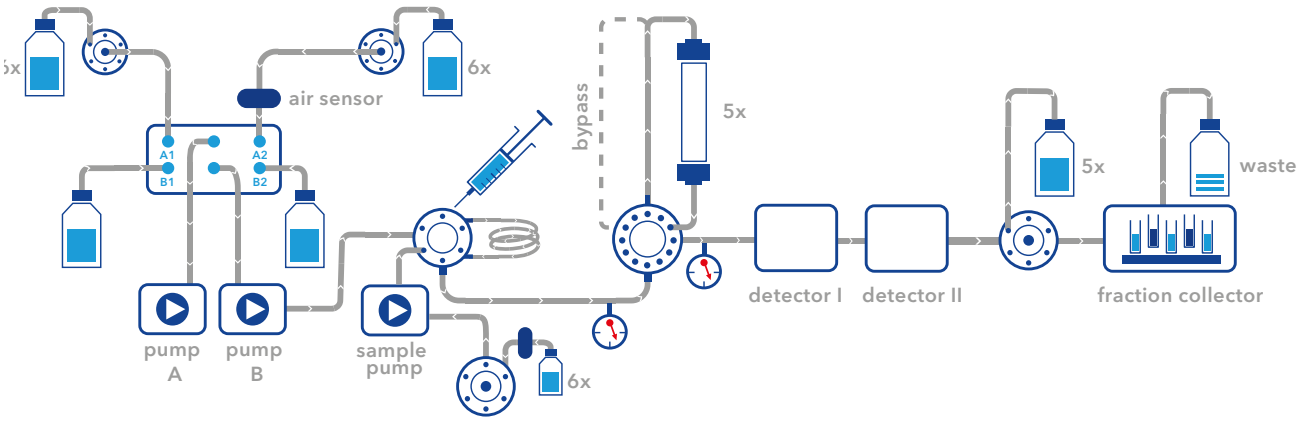
☐ AZURA Organizer

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** 1 000 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

COLUMN SELECTION & THERMOSTAT

- ☐ Column selection (two columns or one bypass)
- ☐ Column selection high flow (5 columns, 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
- ☐ 4000 MiD
- ☐ 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

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 40 P - 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 distriburor can provide power for up to 6 devices. Only one power distributor per system is required. - Power plug for China: Order no. M3027D - Power plug for Australia: Order no. M3027C
Tablet for Mobile Control	Power plug is supplied for US, UK, Europe, Australia.

Overview of country-specific power plugs, routers and switches

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

Overview (Table 2)

Power plugs/ routers/ switches	Order no. USA	Order no. UK	Order no. CH	Order no. Europe	Order 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	-

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):

- Foxy R1/R2 with ClarityChrom®
- 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, CBM10 (Article no. A59201) - Decade Elite SCC (Article no. A07545) - Gabi Star - HERM flumo, HERM LB500 - Sedex85LT, Sedex90LT, Sedex100LT, Sedex LC (Article no. A0754-x) - CHIRALYSER-MP
Autosamplers
AZURA® Column Thermostat CT 2.1L (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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For an up-to-date version, please visit: **www.knauer.net/en/cableoverview**

KNAUER - a success story

We are an established partner in science. Today and in the future.

1962
Dr.-Ing. Herbert Knauer and his wife Roswitha founded the company.

1970
At Leipzig Trade Fair in East Germany, Knauer is honored with a gold medal.

1974
Knauer develops new instruments and columns for High Performance Liquid Chromatography (HPLC).

1976
Knauer presented HPLC instruments in modular format and they quickly become well-known for their outstanding flexibility.

1987
Knauer offers HPLC columns with inner diameters ranging from 2 to 32 mm.

1992
Introduction of a complete range of products for preparative chromatography.

1995
Alexandra Knauer, daughter of the company's founder, is appointed General Manager and begins managing the company.

1996
Development of the smallest SMB system in the world for preparative continuous chromatography.

1998
The WellChrom HPLC line, one of the most compact HPLC systems on the market with a scanning UV detector was available.

2000
Alexandra Knauer becomes sole owner of the company.

2001
Starting in 2001, production is increasingly moved in-house to ensure quality and improve flexibility.

2003
Introduction of the modern Smartline HPLC series with a diode array detector.

2006
The Smartline Assistant can take over a variety of tasks such as sample preparation, sample injection or fraction collection.

2008
PLATINblue, the new modular system for UHPLC features a pressure range of up to 1000 bar.

2009
BlueShadow, a new product line for OEM customers is developed.

2010
Alexandra Knauer wins the prestigious "Prix Veuve Clicquot" as female entrepreneur of the year in Germany.

2012
The new product line Azura with the flagship Azura Prep LC which includes numerous modules and new axially compressible columns is presented.

2013
Knauer receives the Innovation Award Berlin Brandenburg 2013.

2014
New product line Azura Analytical HPLC is launched.

2015
Introduction of the new Azura Bio LC Systems for FPLC-Applications.

2016
Knauer receives the Quality Award Berlin-Brandenburg and the Application Award 2016 in the food analysis category of the specialist magazine "Laborpraxis".

2017
The University of St. Gallen awarded the title of TOP-employer 2017 to Knauer.

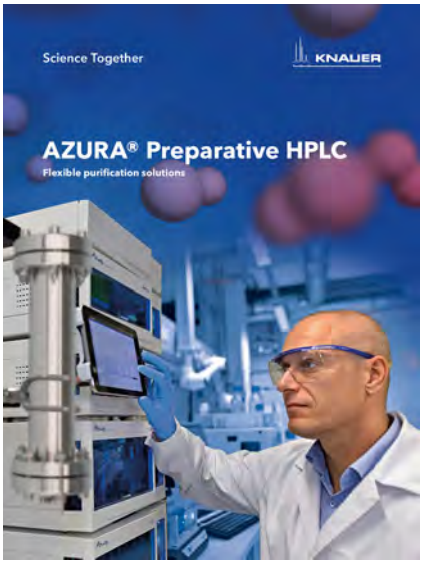
2017
Knauer is a global partner to the scientific community. We support research and development both now and in the future.

KNAUER Brochures

Please visit **www.knauer.net/brochures** to find more information about KNAUER products and systems.

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 Column Selection Guide
(Document no. V7803US)

Terms and 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.

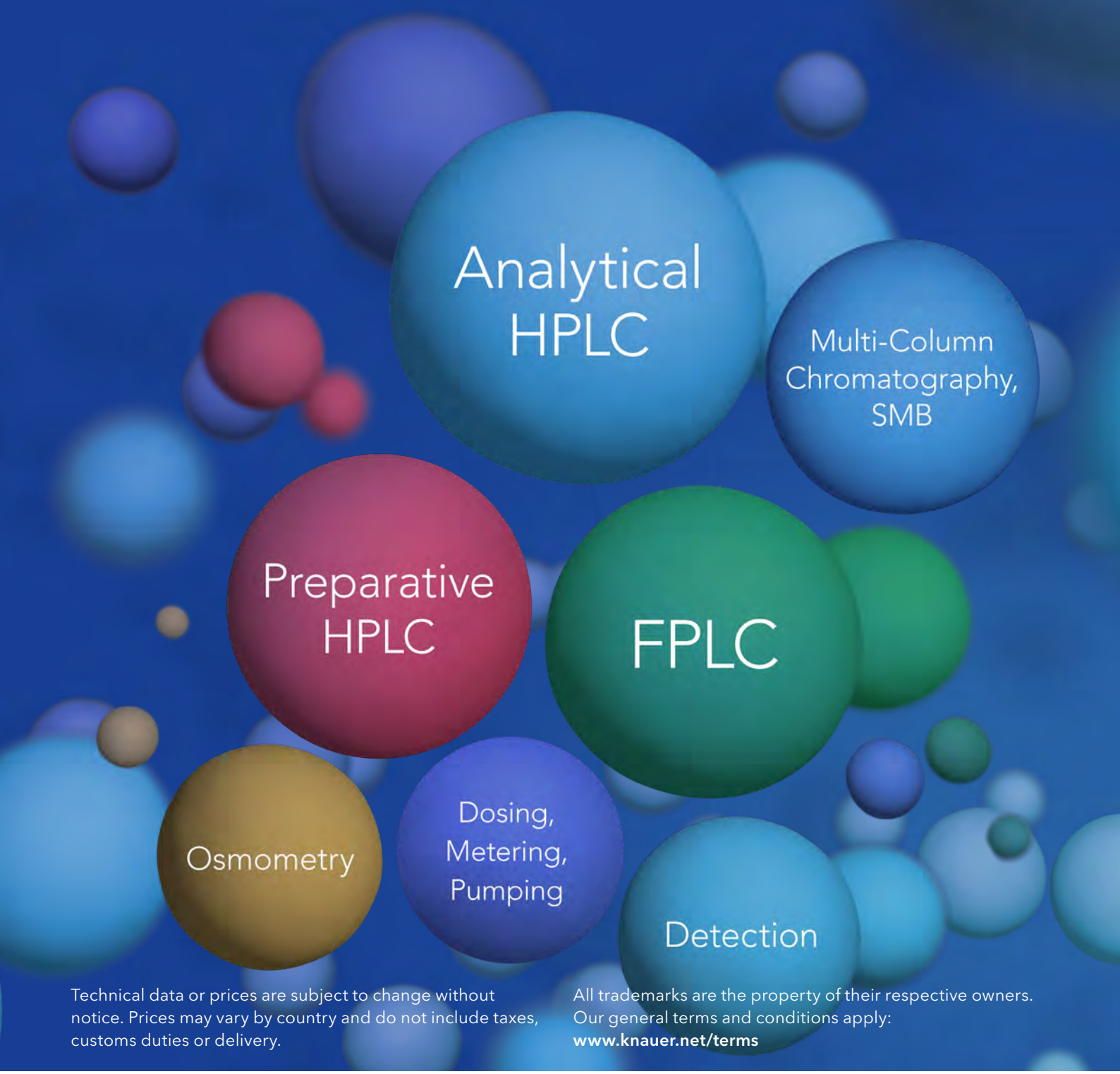
This agreement shall be governed by the laws of the Federal Republic of Germany excluding the UN-Convention on the International Sale of Goods (CISG).

KNAUER Wissenschaftliche Geräte GmbH

Hegauer Weg 38

14163 Berlin, Germany

These terms and conditions apply since June 1, 2016



Technical data or prices are subject to change without notice. Prices may vary by country and do not include taxes, customs duties or delivery.

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