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KNAUER

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

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

For pump accessories see p. 52

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

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

Degasser module

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

Communication

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

Technical parameters

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

General

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

AZURA® Pump P 6.1L with 5 ml pump head

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

Ordering details:

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

AZURA® Pump P 6.1L with 10 ml pump head

Pump specifications	
Pump head	10 ml
Continuous working conditions	0.1 - 4.0 ml/min
Best working conditions	0.1 - 8.0 ml/min
Flow rate increment	0.001 ml/min
Mixing volume	400 µl (HPG), 600 µl (LPG)
Wetted materials	GFP, stainless steel, FKM, PEEK, sapphire, aluminum oxide, ruby, zirconium oxide
Maximum delivery pressure	12500 psi / 862 bar / 86 MPa up to 2 ml/min; 5800 psi / 400 bar / 40 MPa up to 10 ml/min
Flow rate range	0.001 - 10 ml/min
Pump head material	Stainless steel

Ordering details:

APH30EA	AZURA® Pump P 6.1L isocratic, without degasser, with 10 ml pump head (stainless steel)
APH31EA	AZURA® Pump P 6.1L isocratic, with degasser, with 10 ml pump head (stainless steel) and solvent selection valve
APH30ED	AZURA® Pump P 6.1L isocratic, without degasser, with 10 ml NP pump head (stainless steel)
APH34EA	AZURA® Pump P 6.1L (LPG), with 10 ml pump head (stainless steel), degasser and mixer (600 µl)
APH35EA	AZURA® Pump P 6.1L (HPG), with 10 ml pump head (stainless steel), degasser and mixer (400 µl)
APH35ED	AZURA® Pump P 6.1L (HPG), with 10 ml NP pump head (stainless steel), degasser and mixer (400 µl)
APH38EA	AZURA® Pump P 6.1L (HPG), without degasser, with 10 ml pump head and mixer (400 µl)
APH38ED	AZURA® Pump P 6.1L (HPG), without degasser, with 10 ml NP pump head and mixer (400 µl)
APH39EA	AZURA® Pump P 6.1L (LPG), without degasser, with 10 ml pump head (stainless steel) and mixer (600 µl)