

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.

Key features

- versatile due to wide flow rate range (0.01-50 ml/min)
- powerful and precise drive, with low pulsation
- compact dimensions
- flexible control via Ethernet, RS-232 and analog signals



Specifications

Pump type	Ultra-compact high pressure pump
Delivery system	Dual piston pump with one working piston, one auxiliary
Pump head	10 / 50 ml/min
Pump head materials	ceramic/SST/Hastelloy C
Maximum delivery pressure	40MPa 10ml & 15MPa 50ml pump head
Maximum flow rate	10 ml pump head: 0.01-10 ml/min (0.1-8.0 ml/min recommended, 0.1-4.0 ml/min continuous operation) 50 ml pump head: 0.01-50 ml/min (1.0-40 ml/min recommended, 0.1-25.0 ml/min continuous operation)
Flow rate increment	0.01 ml/min
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 using ethanol/water 10:90
Flow rate precision	≤ 0.5 % RSD, measured at 1 / 5 ml/min using ethanol/water 10:90
System protection	I_{min} and I_{max} are programmable, (I ~ pressure, pump without pressure sensor)
Wetted materials	graphite fiber reinforced PTFE, FKM (FFKM for APG90EC and APG90FC), PEEK (PCTFE for APG90EC and APG90FC), sapphire, zirconium oxide (ZrO ₂) and pump head material
Max. viscosity	100 mPa·s (at reduced max. flow)
Liquid temperature range	-10-60 °C
Communication	
Control	LAN, RS-232, analog and event controlled
Analog inputs	0-10 V
Analog control input	flow rate
Technical parameters	
Ambient conditions	temperature range: 10-40 °C; 50-104 °F air humidity: below 90 % humidity (non-condensing)
General	
Power supply	100-240 V power supply included, 24 V DC, 60 W
Dimensions	113 x 135 x 225 mm (W x H x D)

Ordering details:

APG90EA	Compact HPLC pump with 10 ml/min pump head, stainless steel
APG90EB	Compact HPLC pump with 10 ml/min pump head, ceramic
APG90EC	Compact HPLC pump with 10 ml/min pump head, Hastelloy C
APG90FA	Compact HPLC pump with 50 ml/min pump head, stainless steel
APG90FB	Compact HPLC pump with 50 ml/min pump head, ceramic
APG90FC	Compact HPLC pump with 50 ml/min pump head, Hastelloy C

AZURA® Pump P 4.1S

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.

Key features

- integrated pressure sensor
- versatile due to wide flow rate range (0.01-50 ml/min)
- powerful and precise drive, with low pulsation
- compact dimensions
- flexible control via Ethernet, RS-232 and analog signals



Specifications

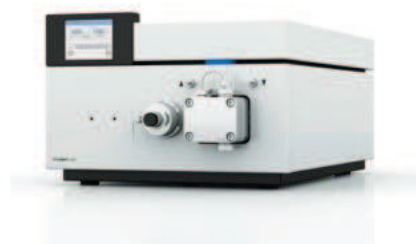
Pump type	Ultra-compact high pressure pump
Delivery system	Dual piston pump with one working piston, one auxiliary
Pump head	10 / 50 ml/min
Pump head materials	ceramic/SST
Maximum delivery pressure	40MPa 10ml & 15MPa 50ml pump head
Maximum flow rate	10 ml pump head: 0.01-10 ml/min (0.1-8.0 ml/min recommended, 0.1-4.0 ml/min continuous operation) 50 ml pump head: 0.01-50 ml/min (1.0-40 ml/min recommended, 0.1-25.0 ml/min continuous operation)
Flow rate increment	0.01 ml/min
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	P _{min} and P _{max} are programmable
Wetted materials	graphite fiber reinforced PTFE, FKM, PEEK, sapphire, zirconium oxide (ZrO ₂), titanium and pump head material
Max. viscosity	100 mPa·s (at reduced max. flow)
Liquid temperature range	-10-60 °C
Communication	
Control	LAN, RS-232, analog and event controlled
Analog inputs	0-10 V
Analog control input	flow rate
Technical parameters	
Ambient conditions	temperature range: 10-40 °C; 50-104 °F air humidity: below 90 % humidity (non-condensing)
General	
Power supply	100-240 V power supply included, 24 V DC, 60 W
Dimensions	113 x 135 x 225 mm (W x H x D)

Ordering details:

APG20EA	Compact HPLC pump with 10 ml/min pump head, stainless steel
APG20EB	Compact HPLC pump with 10 ml/min pump head, ceramic
APG20EF	Compact HPLC pump with 10 ml/min pump head, ceramic, with Ti-connections
APG20FA	Compact HPLC pump with 50 ml/min pump head, stainless steel
APG20FB	Compact HPLC pump with 50 ml/min pump head, ceramic

BlueShadow Pump 40P

The pump was designed to provide exceptionally precise and reliable solvent delivery for a wide range of HPLC applications in quality control and testing as well as research and method development. Two exchangeable pump heads allow a wide range of flow rates with one pump. Practically pulse-free flow is achieved by our enhanced smart drive control which actively prevents pressure ripple instead of just dampening it. The improved design also ensures a low dead volume.



Specifications

Pump type	analytical high pressure pump
Delivery system	dual piston pump with one working piston, one auxiliary
Flow properties	0.1-50.00 ml/min
Pulsation compensation	active pulsation compensation
Active piston seal wash	standard
Pump head	10 / 50 ml/min
Pump head materials	ceramic/SST
Maximum flow rate	10 ml pump head: 0.01-10 ml/min (0.1-8.0 ml/min recommended, 0.1-4.0 ml/min continuous operation) 50 ml pump head: 0.01-50 ml/min (1.0-40 ml/min recommended, 0.1-25.0 ml/min continuous operation)
Flow rate range	0.01-50.00 ml/min
Maximum delivery pressure	10 ml PH (SST): 70 MPa (700 bar, 10150 psi) up to 5 ml/min, 40 MPa (400 bar, 5800 psi) 50 ml PH (SST): 30 MPa (300 bar, 4351 psi) up to 10 ml/min, 20 MPa (200 bar, 2900 psi) at 50 ml/min
Flow rate accuracy	< 1 % (0.5-40 ml/min)
Flow rate precision	RSD ≤ 0.4 % (5 ml/min)
Pulsation	< 2 % amplitude (typically < 1.3 %) or < 0.3 MPa (3 bar), whatever is greater, at 1 ml/min ethanol, at all pressures < 1 MPa (10 bar, 147 psi).
System protection	P _{min} and P _{max} programmable
Wetted materials	graphite fiber reinforced PTFE, FKM, PEEK, sapphire, zirconium oxide (ZrO ₂), titanium & pump head material
Max. viscosity	100 mPa·s (at reduced max. flow)
Liquid temperature range	-10-60° C; HT version up to 120° C

Communication

Analog inputs	flow (0-10 V)
Analog control input	flow rate
Control	digital: RS-232, LAN; touchscreen, remote control connections (Stop, Flow, Pressure, Error)
Programming	20 programs + 9 links (to programs) + 1 wake up program

Technical parameters

Special features	The system pump head is detected automatically using radio frequency identification (RFID)
GLP	RFID pump head recognition, detailed report
Display	Touchscreen
Ambient conditions	temperature range: 4-40° C; 39.2-104 °F, air humidity: below 90 % (non-condensing)

General

Power supply	voltage range: 100-240 V, 50-60 Hz
Dimensions	242 x 165 x 399 mm (W x H x D)
Weight	6.1 kg
Optional accessories	mixer

Ordering details:

APC30EA	BlueShadow Pump 40P 10 ml pump head, stainless steel
APC30EB	BlueShadow Pump 40P 10 ml pump head, ceramic
APC30EE	BlueShadow Pump 40P 10 ml pump head, stainless steel (for high temperature applications up to 120 °C)
APC30FA	BlueShadow Pump 40P 50 ml pump head, stainless steel
APC30FB	BlueShadow Pump 40P 50 ml pump head, ceramic
APC30FE	BlueShadow Pump 40P 50 ml pump head, stainless steel (for high temperature applications up to 120 °C)

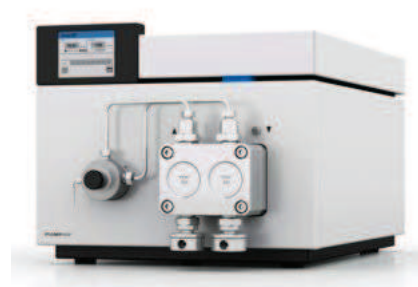
BlueShadow Pump 80P

The preparative pump 80P delivers stable and precise solvent flow for semi-preparative as well as preparative HPLC applications.

By adding one or more additional pumps, binary, ternary or even quaternary high-pressure gradient systems can be easily configured. The pump can also be equipped with a binary or ternary gradient valve block to configure cost-effective low-pressure gradient systems.

Exchangeable pump heads for flow rates up to 1000 ml/min and pressures up to 40 MPa make it possible to easily optimize the pump to changing performance requirements and allow simple maintenance.

Available in stainless steel or biocompatible titanium versions, the pump heads enable a wide range of applications.



Specifications

Pump type	dual-piston pump with two main piston
Flow rate range	0.1-1000 ml/min
Maximum delivery pressure	400/200/100/50 bar up to 100/250/500/1000 ml/min
Flow rate accuracy	± 2 % at 5-50 % of the flow range with methanol-water mixture (80/20, v/v)
Flow rate precision	RSD < 0.1 % (1 ml/min)
Pulsation	< 0.5 % at 1 ml/min
Gradient support	isocratic HPLC pump pump with binary or ternary LPG valve block (LPG system)
Wetted materials	graphite fiber reinforced PTFE, FKM, PEEK, sapphire, zirconium oxide (ZrO ₂), titanium and pump head material
Max. viscosity	1000 mPa·s
Liquid temperature range	-10-60 °C
System protection	P _{min} and P _{max} adjustable

Communication

Control LAN; RS-232; remote control connections; RFID for automatic pump head detection; touchscreen

Programming 10 programs, 9 program links, WAKE UP program

General

Power supply	pump: 100-240 V binary LPG valve lock: 24 V ternary LPG valve block: 12 V
Dimensions	397 x 242 x 201 mm (length x width x height)
Ambient conditions	temperature range: 4-40 °C; 39-104 °F air humidity: below 90 % humidity (non-condensing)

Ordering details:

APD20KA	BlueShadow Pump 80P with 100 ml pump head, stainless steel
APD20KB	BlueShadow Pump 80P with 100 ml pump head, titanium
APD20LA	BlueShadow Pump 80P with 250 ml pump head, stainless steel
APD20LC	BlueShadow Pump 80P with 250 ml pump head, titanium
APD20MA	BlueShadow Pump 80P with 500 ml pump head, stainless steel
APD20MC	BlueShadow Pump 80P with 500 ml pump head, titanium
APD20NA	BlueShadow Pump 80P with 1000 ml pump head, stainless steel
APD20NB	BlueShadow Pump 80P with 1000 ml pump head, titanium
AZZ00AA-1	LPG Modul for 80P binary, max flow 800 ml/min
AZZ00AB-1	LPG Modul for 80P ternary, max flow 220 ml/min