

## AZURA® Pump P 4.1S

AZURA® Pump P 4.1S was developed for high-pressure dosing applications of up to 400 bar and for flow rates of up to 50 ml/min. Whenever a compact and the easy-to-integrate pump is required, this pump is a perfect choice. The pump contains a manual purge valve with a built-in pressure sensor. The pump automatically stops the flow when minimum or maximum pressure limits are reached. The exchangeable pump heads are compatible with a wide range of chemicals and the versatile control options allow easy remote and standalone operation.



### Specifications

#### Solvent delivery

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

#### Communication

<b>Display</b>	Yes
<b>Inputs</b>	LAN, Pin header connectors (Analog IN, Start In, Error IN), RS-232
<b>Analog inputs</b>	0 - 10 V
<b>Analog control input</b>	Flow Rate
<b>Control</b>	LAN, RS-232, analog, standalone

#### Technical parameters

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

#### General

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



For accessories  
see page 19.



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

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## AZURA® Pump P 4.1S with 10 ml pump head

### Specifications

#### Pump specifications

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

### Ordering details:

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

## AZURA® Pump P 4.1S with 50 ml pump head

### Specifications

#### Pump specifications

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

### Ordering details:

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