

## 5.4 Technical specifications

For the complete specifications for each component refer to the individual User Manuals and Instructions.

Listed below are the relevant system specifications.

### 5.4.1 Operating data

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#### Pump P-901

Flow rate range	
isocratic mode	0.01–100 ml/min in steps of 10 µl/min
gradient mode	0.01–100 ml/min in steps of 10 µl/min
Pressure range	0–10 MPa (100 bar, 1450 psi)
pH stability range	1–13, 1–14 (< 1 day exposure)
Viscosity	Max. 5 cP
Flow rate accuracy	
0.2–10.0 MPa	±2% or 20 µl/min whichever is greater
Flow rate reproducibility	
> 0.5 ml/min	rsd < 0.5%
Gradient composition	
accuracy	< ±1% at 0.5–100 ml/min
reproducibility	rsd < 0.25% at 0.5–100 ml/min
Internal volume	< 1800 µl/pump module

#### Pump P-903

Flow rate range	
isocratic mode	0.001–10 ml/min in steps of 10 µl/min
gradient mode	0.001–10 ml/min in steps of 10 µl/min
double mode	0.001–20 ml/min in steps of 10 µl/min
Pressure range	0–25 MPa (250 bar, 3625 psi)
pH stability range	1–13, 1–14 (< 1 day exposure)
Viscosity	Max. 5 cP
Flow rate accuracy	
0.2–25.0 MPa	±2% or 20 µl/min whichever is greater, with compression compensation activated
Flow rate reproducibility	
> 0.05 ml/min	rsd < 0.5%
Gradient composition	
accuracy	< ±1% at 0.05–10 ml/min
reproducibility	rsd < 0.25% at 0.05–10 ml/min
Internal volume	< 600 µl/pump module

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**Monitor UV-900**

Wavelength range	190–700 nm in step of 1 nm, 3 wavelengths simultaneously
Bandwidth	4 nm
Wavelength accuracy	± 2 nm
Wavelength reproducibility	± 0.01 nm
Wavelength switch time	< 500 ms (one cycle from 214 nm to 254 nm and back to 214)
Linearity	< 2% deviation up to 2 AU at 260 nm with Uracil at pH 2
Noise <sup>1</sup> (at 230 nm)	< 6x10 <sup>-5</sup> AU, with 10 mm cell, H <sub>2</sub> O at 1 ml/min
Drift <sup>1</sup> (at 254 nm)	< 2x10 <sup>-4</sup> AU/h
Flow cell	
Max. flow rate	100 ml/min
Max. pressure	2 MPa (20 bar, 290 psi)

1) Typical values at room temperature after warm/up

**Conductivity unit**

Conductivity range	1 µS/cm–999.9 mS/cm
Deviation from theoretical conductivity	Max. ± 2% of full scale calibration range or ± 10 µS/cm whichever is greater in the range 1 µS/cm–300 mS/cm
Reproducibility	Max. ± 1% maximum or ± 5 µS/cm whichever is greater in the range 1 µS/cm–300 mS/cm
Noise	Max. ± 0.5% of full scale calibrated range
Flow cell	
Max. flow rate	100 ml/min
Max. pressure	5 MPa (50 bar, 725 psi)

**pH unit (if applicable)**

pH range	0 to 14 (spec. valid between 2 and 12)
Accuracy	± 0.1 pH unit, temperature compensated within +4 to +40 °C
Long term drift	Max 0.1 pH units deviation/10 h
Flow cell	
Max. flow rate	100 ml/min
Max. pressure	0.5 MPa (5 bar, 72 psi)

**Sample Pump P-960**

Flow rate range	0.1–50 ml/min in steps of 0.001 ml/min
Pressure range	2.0 MPa (20 bar, 290 psi)

### 5.4.2 Physical data

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Degree of protection	IP 20
Power requirement	100–120/220–240 V ~, 50–60 Hz
Power consumption	600 VA
Fuse specification	T 6.3 AL 250 V
Dimensions, H x W x D	450 x 480 x 610 mm
Weight	66.8 kg
Environment	+4 to +40 °C, 10–95% relative humidity (noncondensing), 84–106 kPa (840–1060 mbar atmospheric pressure).

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### 5.4.3 Hardware requirements

Refer to *UNICORN Administration and Technical Manual*.

### 5.4.4 Software requirements

Refer to *UNICORN Administration and Technical Manual*.

### 5.4.5 Network requirements

Refer to *UNICORN Administration and Technical Manual*.



## 5.5 Chemical resistance guide and chemical compatibility

The chemical resistance of ÄKTAexplorer to some of the most commonly used chemicals in liquid chromatography is indicated in the table below.

The ratings are based on the following assumptions:

- 1 The synergistic effects of the chemical mixtures have not been taken into account.
- 2 Room temperature and limited over-pressure is assumed.

**Note:** Chemical influences are time and pressure dependent. Unless otherwise stated, all concentrations are 100%.

Chemical	Exposure < 1 day	Exposure up to 2 months	Comments
Acetaldehyde	OK	OK	
Acetic acid, < 5%	OK	OK	
Acetic acid, 70%	OK	OK	
Acetonitrile	OK	OK	FFKM, PP and PE swell
Acetone, 10%	OK	Avoid	PVDF is affected by long term use
Ammonia, 30%	OK	OK	Silicone is affected by long-term use
Ammonium chloride	OK	OK	
Ammonium bicarbonate	OK	OK	
Ammonium nitrate	OK	OK	
Ammonium sulphate	OK	OK	
1-Butanol	OK	OK	
2-Butanol	OK	OK	
Citric acid	OK	OK	
Chloroform	OK	Avoid	ECTFE, CTFE, PP and PE are affected by long term use
Cyclohexane	OK	OK	
Detergents	OK	OK	
Dimethyl sulphoxide	Avoid	Avoid	PVDF is affected by long term use
1, 4-Dioxane	Avoid	Avoid	ETFE, PP, PE and PVDF are affected by long term use
Ethanol	OK	OK	
Ethyl acetate	OK	Avoid	Silicone not resistant. Pressure limit for PEEK decreases.

Chemical	Exposure < 1 day	Exposure up to 2 months	Comments
Ethylene glycol	OK	OK	
Formic acid	OK	OK	Silicone not resistant
Glycerol	OK	OK	
Guanidinium hydrochloride	OK	OK	
Hexane	OK	Avoid	Silicone not resistant. Pressure limit for PEEK decreases.
Hydrochloric acid, 0.1 M	OK	OK	Silicone not resistant
Hydrochloric acid, > 0.1 M	OK	Avoid	Silicone not resistant. Titanium is affected by long term use
Isopropanol	OK	OK	
Methanol	OK	OK	
Nitric acid, diluted	OK	Avoid	Silicone not resistant
Nitric acid, 30%	Avoid	Avoid	Elgiloy is affected by long term use
Phosphoric acid, 10%	OK	Avoid	Titanium, aluminium oxide and glass are affected by long term use
Potassium carbonate	OK	OK	
Potassium chloride	OK	OK	
Pyridine	Avoid	Avoid	ETFE, PP and PE not resistant
Sodium acetate	OK	OK	
Sodium bicarbonate	OK	OK	
Sodium bisulphate	OK	OK	
Sodium borate	OK	OK	
Sodium carbonate	OK	OK	
Sodium chloride	OK	OK	
Sodium hydroxide, 2 M	OK	Avoid	PVDF and borosilicate glass are affected by long term use
Sodium sulphate	OK	OK	
Sulphuric acid, diluted	OK	Avoid	PEEK and titanium are affected by long term use
Sulphuric acid, medium concentration	Avoid	Avoid	

## 5 Reference information

Tetrachloroethylene	Avoid	Avoid	Silicone, PP and PE are not resistant
Tetrahydrofuran	Avoid	Avoid	ETFE, CTFE, PP and PE are not resistant
Toluene	OK	Avoid	Pressure limit for PEEK decreases
Trichloroacetic acid, 1%	OK	OK	
Trifluoroacetic acid, 1%	OK	OK	
Urea	OK	OK	
o-Xylene p-Xylene use	OK	Avoid	PP and PE are affected by long term