5.3 Technical specifications

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

The relevant system specifications are listed below.

5.3.1 Operating data

Pump P-920	
Flow rate range isocratic mode gradient mode	 0.05–20 ml/min in steps of 10 µl/min 0.1–20 ml/min in steps of 10 µl/min
Pressure range	0–5 MPa (50 bar, 725 psi)
Pressure pulsation	Max. 6% (dP/P) during pump stroke
pH stability range	1–13 (1–14 < 1 day exposure)
Viscosity < 10 ml/min > 10 ml/min	 Max. 10cP Max. 5 cP
Flow rate reproducibility flow rate 0.5–10 ml/min flow rate 10–20 ml/min	 rsd < 0.2% rsd < 0.5%
Gradient composition accuracy between turnings accuracy during turnings reproducibility	 ± 2% at 0.5–5 ml/min and < 5 MPa ± 2% at 0.5–5 ml/min and 0.5–2.0 MPa rsd < 0.5% at 0.5–20 ml/min and < 5 MPa
Leakage	< 0.5 µl/min (pump module A and B each)
Monitor UPC-900 ***UV measurement***	
Absorbance range	0.01–5.0 AU (full scale)
Autozero range	-0.2–2.0 AU
Baseline adjust	Adjustable 0–100% of full scale
Wavelengths Hg lamp, fixed by changing filter Zn lamp	 254 and 280 nm 313, 365, 405, 436 and 546 nm 214 nm

UV flow cell, 2 mm	
Flow rate	0–100 ml/min
Max. pressure	4.0 MPa (40 bar, 580 psi)
Max. back-pressure	0.05 MPa at 100 ml/min
Liquid temperature range	+4 to +60 °C
Optical path length	2 mm
Cell volume	2 µl (30 µl detector volume)
UV flow cell, 5 mm	
Flow rate	0–20 ml/min
Max. pressure	4.0 MPa (40 bar, 580 psi)
Max. back-pressure	0.02 MPa at 20 ml/min
Optical path length	5 mm
Cell volume	6 µl (10 µl detector volume)
Conductivity measurement	
Conductivity range	1 µS/cm to 999.9 mS/cm
Conductivity flow cell	
Flow rate	0–100 ml/min
Max. pressure	5 MPa (50 bar, 725 psi)
Max. back-pressure	0.01 MPa at 100 ml/min
pH measurement	
pH range	0 to 14
Fraction collector	
Refer to the User Manual of the fraction collector used.	

5.3.2 Physical data

Degree of protection	IP 20
Power requirement	100–120/220–240 V ~, 50–60 Hz
Power consumption	900 VA
Fuse specification	T 6.3 AL
Dimensions, H x W x D	380 x 480 x 470 mm
Weight	50 kg
Environment	+4 to +40 °C, 10–95% relative humidity (non-condensing), 84–106 kPa (840–1060 mbar atmospheric pressure).

5.3.3 Hardware requirements

Refer to *UNICORN Administration and Technical Manual*.

5.3.4 Software requirements

Refer to *UNICORN Administration and Technical Manual*.

5.3.5 Network requirements

Refer to *UNICORN Administration and Technical Manual*.

5.3.6 ÄKTAFPLC component materials

The wetted materials of ÄKTAFPLC are listed below:

	FFKM	PEEK	PTFE	FEP	ETFE	ECTFE	PP	PVDF	PE	Titanium alloy	Quartz	Gold	Alum. oxide	Stainl. st. (Elgiloy)	Ruby/ sapphire
Pump P-920			X			X		X	X	X			X	X	X
Monitor UPC-900		X	X							X	X				
Fraction collector	Refer to respective user manual														
Mixer M-925	X	X	X												
INV-907		X													
On-line filter		X					X								
Flow restrictor		X	X		X							X			
Tubing		X		X											
Inlet filters							X			X					
Unions/ Connectors		X			X										

FFKM = perfluororubber
PEEK = polyetheretherketone
PTFE = polytetrafluoroethylene
FEP = perfluoroethylenepropylene copolymer
ETFE = ethylenetetrafluoroethylene
ECTFE = ethylenechlorotrifluoroethylene
PP = polypropylene
PVDF = polyvinylidenefluoride
PE = polyethylene

5.4 Chemical resistance guide and chemical compatibility

The chemical resistance of ÄKTA*FPLC* 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***		***Comments***
	< 1 day	***up to 2 months***	
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, 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.
Ethylene glycol	OK	OK	
Formic acid	OK	OK	Silicone not resistant

Chemical	*Exposure*		*Comments*
	< 1 day	*up to 2 months*	
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 and aluminium oxide 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	
Tetrachloroethylene	Avoid	Avoid	Silicone, PP and PE are not resistant
Tetrahydrofuran	Avoid	Avoid	Silicone, 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	OK	Avoid	Silicone, PP and PE are affected by long term use