

LSta80-PLC



DIMENSIONS

Dimensions*	1300 x 600 x 800 mm (L x W x H)
Weight	approx. 200 kg
Material (wetted parts)	Stainless steel (group 316) / EPDM / PTFE / PVDF/ PEEK / FEP

ELEKTRICAL DATA

Connection for power supply	400 V / 50 Hz / 3-phase / 16 A-CEE
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DATA

Storage tank	approx. 7,5l, stainless steel
Test cell for flat sheet membrane	85 cm ² (stackable up to 3 membranes)
Heat exchanger in feed line	stainless steel
Temperature range	up to 60°C
Pressure range	up to 80 bar
Flow rate (feed)	25 - 100 l/h membrane pump with EPDM membrane (controllable via pump FC)
Pulsation damping	dynamic over the entire pressure range
Dead volume	approx. 230 ml (pressureless)

System control via PLC and HMI (touch screen)
(PLC: type Siemens S7 / Profinet)

- Dry-running and safety shut-off (p, T)
- Control to constant concentrate flow rate or constant pump frequency
- Control to constant pressure or transmembrane pressure
- Recording and storage of sensor and system values (on USB stick).
- Trend display of the control parameters on the HMI.

The system control via PLC ensures that long-term tests can be carried out and that the system can be operated independently safely, even without a data acquisition computer.

(The specified technical data are maximum values and do not coincide all at the same time!)

SENSORS	MEASURING RANGE	QUANTITY
Pressure	0 - 100 bar	(3 pieces)
Flow rate (concentrate) (magnetic-inductive flow meter)	25 - 100 l/h at 80bar Minimum conductivity 5 µS/cm (20 µS/cm for demineral. water)	(1 piece)
Level sensor (storage tank)	guided microwave	(1 piece)
Temperature (PT 100)	0 - 100 °C	(1 piece)

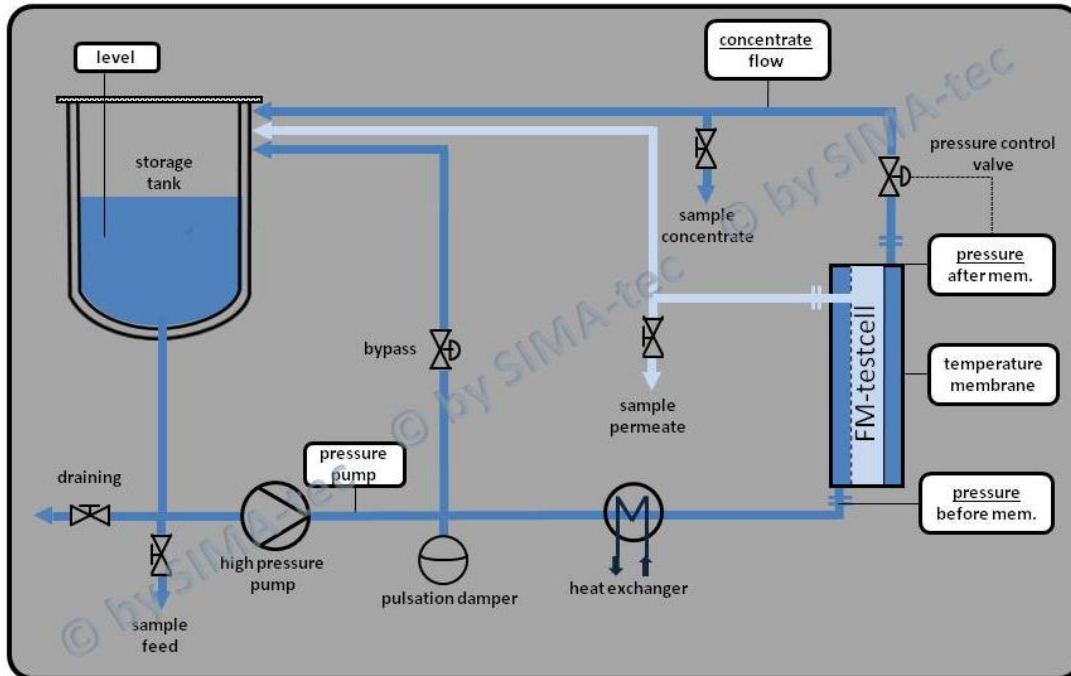
FIELD OF USE

- Experiments with different membrane materials and/or flow aids
- Experiments to optimise process parameters of industrial applications
- Long-term tests to check the long-term behaviour of the membranes
- Concentration experiments
- Experiments on the cleanability of membranes
- Feed & Bleed experiments
- Diafiltration experiments

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* incl. Switch cabinet: 600 x 400 x 800 mm (L x W x H)

Schematic view of the LSta80-PLC, without options



OPTIONS

Option 1:
Extension test cell

Test cell extension incl. pressure sensor
Expandable up to three membranes

Option 2:
Mass measurement permeate

Coriolis-mass meter (per permeate)
Measuring range: 0,1 - 20 kg/h, alternative 0,02 – 1,00 kg/h
Measuring deviation: 0,2 % of m.v.
Additional pressure measurement (0-4 bar) in the permeate line

Option 3:
Conductivity measurement

Conductivity measurement for concentrate or permeate(s)
Conductive conductivity sensor with temperature compensation and 4-pole measuring cell
Measuring range: 1 μ S/cm to 500 mS/cm and graduated in 5 measuring ranges
Flow cell made of PVDF for installation in the concentrate or permeate line(s)
Display via PLC

Option 4:
Data acquisition

Mobile data acquisition unit, Siemens-S7 driver
Processing and evaluation via DASyLab® (runtime-version)
Programming of the data acquisition

Option 5:
pH-measurement (feed and/or concentrate, permeate)

Standard pH-glass electrode

- Wetted parts: glass, plastic shaft, ceramic
- 12 mm shaft

Electrode suitable for horizontal installation

Measuring range: 1 – 12 pH

Flow cell made of PVDF for installation in the concentrate or permeate line

Option 6:
MF / UF conversion kit for flat sheet membranes

Conversion kit for operation of MF/UF experiments

Pressure range: 1 – 10 bar, at 25-100 l/h overflow

- Pressure control valve with actuator and quick-change device
- 3* pressure sensors, 0 – 10 bar

Option 7:
Dead-End extension

Dead-End connection point for operating the flat sheet cell or an additional module in Dead-End mode

Option 8:
Mobile substructure

Mobile substructure to accommodate the LSta80

Option 9:
PLC-extension package 1

Prerequisite: option 2, mass measurement permeate

Extension of the operating modes to:

- Control to constant feed volume flow at constant pressure or transmembrane pressure
- Control on constant permeate mass flow or total permeate mass flow (depending on the expansion stage)

Option 10:
PLC-extension package 2

Prerequisite: option 3, conductivity in concentrate

Extension to Feed & Bleed mode

- Feed refill via peristaltic pump, controlled via level sensor in the storage tank
- Concentrate discharge via peristaltic pump, controlled via conductivity limit values in the concentrate

Option 10a:
PLC-extension package 2a

Prerequisite: option 2, mass measurement permeate

- Feed refill via peristaltic pump, controlled via level sensor in the storage tank
- Concentrate discharge via dosing pump

	(0,0025 – 7,5 l/h)
	<ul style="list-style-type: none"> Concentrate is discharged in proportion to the volume of permeate discharged <p>Operation at constant concentration level possible</p>
Option 11: PLC-extension package 3	<p>Prerequisite: option 5, pH measurement concentrate</p> <p>pH-value static adjustment</p> <ul style="list-style-type: none"> Dosing of acid or lye via peristaltic pump to target pH value
Option 12: Extension hollow fibre membrane	<p>Unit for holding hollow fibre membranes</p> <p>Hollow fibre membranes potted into a PVC pipe (AD 25 mm)</p> <ul style="list-style-type: none"> Permeate collector for flange-mounting 2* pressure sensors, 0 – 10 bar
Option 13: Extension ceramic module	<p>Prerequisite: option 12, extension hollow fibre membrane</p> <p>Mounted in the hollow fibre mounting unit</p> <p>Mounting of monochannel membranes, 3 mm ID / 6mm OD by Atech</p>
Option 14: Extension 1812er spiral-wound module (For tests according to standard test specifications of DUPONT/DOW and Suez)	<p>Winding module housing made of stainless steel</p> <p>Winding module type 1812 (approx. 0,3 m² membrane surface)</p> <p>Pressure stage PN60, up to 60 °C</p>
Option 15: Highly accurate differential pressure measurement between membrane inlet and outlet	<p>VA differential pressure sensor:</p> <ul style="list-style-type: none"> 0 – 400 mbar Turn Down 1:50 Basic accuracy 0,075 % <p>Display on unit and via PLC</p>
Option 16: Remote access to touch screen	<p>Enables access to the touch screen within your own network. Suitable for display and/or control via PC, tablet or smartphone.</p> <p>Mirroring of the touch screen 1 to 1</p>
Option 17: Data access on USB stick	<p>The measurement data from the USB stick can be copied within the own network..</p>
Option 18: Conditioning unit flat sheet membrane	<p>Simple and chemical-saving conditioning and hydrophilising of dry flat sheet membranes</p>

Option 19:
Pulsation damper filling set

Easy filling or refilling of the pulsation damper
Consisting of:

- Compressed air hand pump with drain valve
- Pressure gauge
- High pressure filling hose

Option 20:
Splash guard

Hinged splash guard bonnet in the area of the membrane housing
Fixed splash protection plates around the system frame

Option 21:
Temperature control unit (circulation thermostat)

Connected to a separate temperature output on the unit.

Circulation thermostat can be controlled directly to the temperature at the membrane.

Cooling capacity: 600 W

Heating capacity: 2000 W

Pump capacity: 8-23 l/min

Schematic view of the LSta80-PLC, with options

