Product Data Sheet

LRo04

DIMENSIONS

Dimension	1250 x 550 x 850 cm (L x W x H)
Weight	approx. 60 kg
Material (wetted parts)	Stainless steel (group 316) + (group 304) / PVC / PE / EPDM / NBR / FEP / PTFE / PVDF
IP protection class	IP 54

ELEKTRICAL DATA

Connection for power supply	230V / 50 Hz / 16 A-CEE

DATA

Storage tank	approx. 15 l / PE
Membrane types	Tube / ceramic / hollow fibre membrane
Application range	MF / UF
Temperature range	5 - 55 °C
Pressure range	1 - 4 bar
Flow rate (feed)	Centrifugal pump (adjustable via bypass), max.3 m^3/h
Dead volume	approx. 1 l
Connections	Adaptable connections to different module geometries

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

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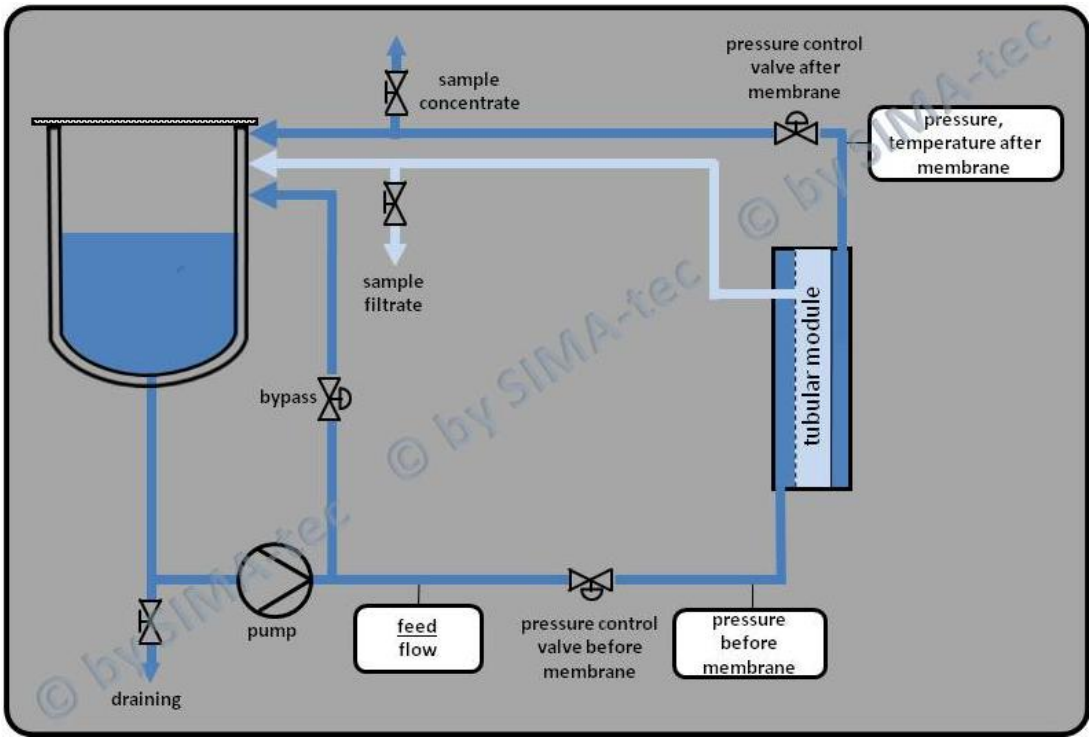
SENSORS	MEASURING RANGE	QUANTITY
Pressure	0 - 6 bar	(2 pieces)
Flow rate (feed) (rotameter)	100 - 1000 l/h	(1 piece)
Temperature	0 - 100 °C	(1 piece)

ANWENDUNGEN

Training and practical operation
Experiments with different membrane materials and/or module geometries
Concentration of test solutions
Experiments of the cleanability of membranes

Schematic view of the LRo04, without options



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Options

Option 1: Backwash device	Transparent filtrate reservoir for backwashing the membrane with filtrate • Backwash parameters freely adjustable via Siemens Logo
Option 2: Cooling coil	Stainless steel cooling coil mounted on the tank lid (8 mm tube diameter)
Option 2a: Temperature control unit (via solenoid valve with tap water)	Solenoid valve with downstream regulation valve Switchable socket with temperature display and temperature sensor
Option 3: Volume flow measurement (filtrate)	Rotameter • Measuring range: 5 – 50 l/h
Option 4: Pressure tube with tubular membrane	Symmetrical PP tubular membrane in PVC pressure tube • Cut-off: 0,2 µm • Module length: 750 mm • Membrane area: 0,012 m² (suitable for filtrate backwash)
Option 5: Pressure tube with ceramic membrane	Symmetrical tubular membrane (AI2O3) in PVC pressure tube • Cut-off: 0,2 µm • Inner diameter: 6 mm • Module length: 500 mm • Membrane area: 0,01 m² (suitable for filtrate backwash)

Option 5a:
Replacement membrane / ceramic membrane
	Replacement or exchange ceramic membrane
	• Cut-off: 1,2 µm, 0,8 µm, 0,4 µm, 0,2 µm, 0,1 µm, 0,05 µm, 20 KD, 10 KD, 5 KD
	• Membrane material:
	  ○ MF: AI2O3
	  ○ UF: TiO2
	• Module length: 500 mm
	• Membrane area: 0,01 m²
	(suitable for filtrate backwash)

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Option 6: Exposed tubular membrane with collection tray (without pressure tube)	Exposed tubular membrane with filtrate collection tray • Filtrate return to the storage tank or for sampling • Cut-off: 100 KD • Inner diameter: 10 mm • Module length: 600 mm • Membrane area: 0,019 m² (**not** suitable for filtrate backwash)
Option 7: Extension hollow fibre membrane	Unit for holding hollow fibre membranes Hollow fibre membranes potted into a PVC pipe (OD 25 mm) • Permeate collector for flange mounting • 2* pressure sensors 0 – 6 bar • 1* temperature sensor 0 – 100 °C
Option 8: Extension 1812er spiral-wound module	Winding module housing made of stainless steel • Type 1812er (approx. 0,3 m² membrane area) • Up to a maximum of 60 °C
Option 9: Flow visualisation laminar / turbulent	The different flow conditions are visualised with the aid of dye, which flows into the centre of the test tube via stainless steel capillaries. • Transparent test tube with stainless steel capillaries • 50 ml receiver with dosing valve for colouring agent • Adjustment of various volume flows via pump bypass

Option 10:
Adjustable feed pump
	Impeller pump, controllable via FC
	• Volume flow:
	  ○ max. 1,8 m³/h (unpressurised)
	  ○ 1,2 m³/h (2 bar)
	  ○ 0,7 m³/h (4 bar)

Option 11: Measuring box (measurement data collector with progress display)	Input: 8 sensor inputs Display: measurement data in colour display as online value and line recorder. Data memory: internal or SD-card Interface: USB and Ethernet Electronic sensors supplied: • 2* pressure 0 – 6 bar

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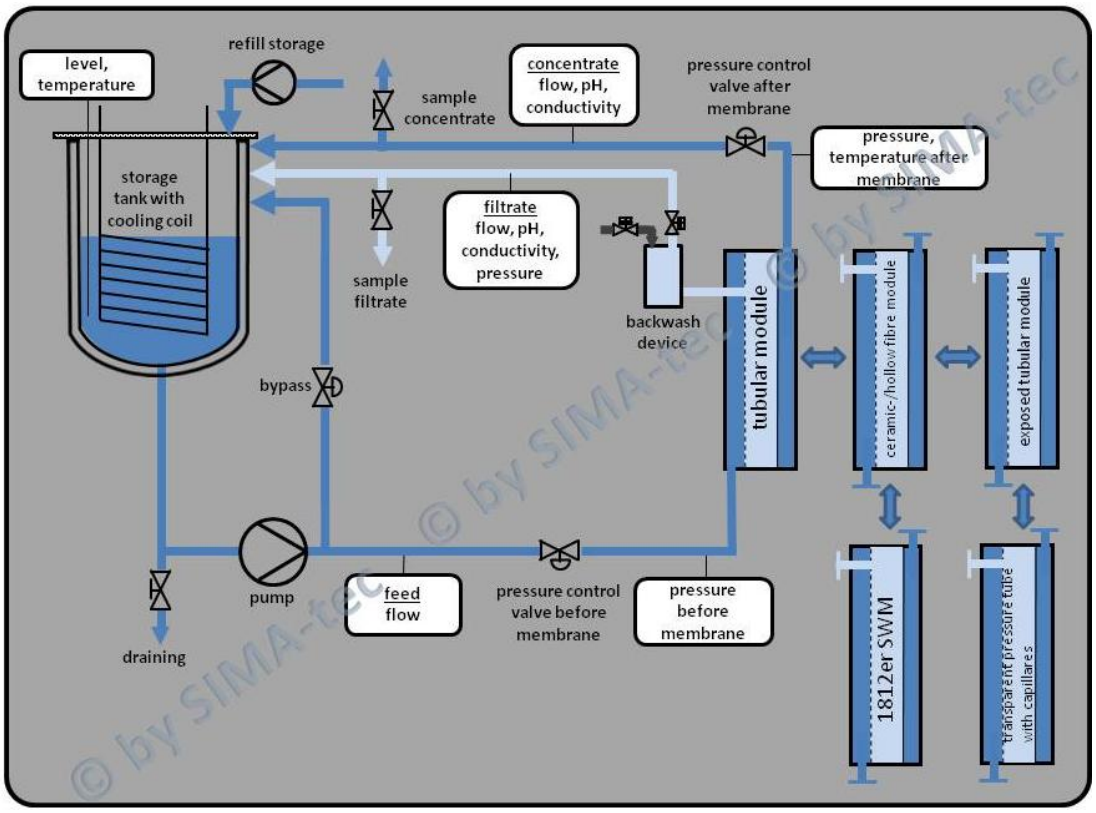
	• 1* temperature 0 -100 °C • 1* volume flow (concentrate), 15 – 3000 l/h, magnetic–inductive • 1* volume flow (filtrate), 2 – 180 l/h, magnetic-inductive
Option 11a: Extension of the measuring box	Extension of the sensor inputs from 8 to 12 (4 -20 mA)
Option 11b: Conductivity sensor for connection to measuring box	Conductive conductivity sensor with temperature compensation and 4 pole measuring cell Measuring range: 0 – 500 mS/cm and graduated in 5 measuring ranges Flow cell made of PVDF for installation in the concentrate or filtrate line Cable with pre-configured plug for direct connection to the measuring box
Option 11 c: pH-sensor for connection to measuring box	pH transmitter with automatic or manual temperature compensation Standard pH electrode: • wetted parts: glass, plastic shaft, ceramic • 2 mm shaft Electrode suitable for horizontal installation Measuring range: 1 – 12 pH Flow cell made of PVDF for installation in the concentrate or filtrate line Cable with pre-configured plug for direct connection to the measuring box
Option 11d: Pressure sensor filtrate	Pressure sensor 0 – 2,5 bar Cable with pre-configured plug for direct connection to the measuring box
Option 12: Storage tank refill system (via peristaltic pump and level switch)	Height adjustable level switch in the storage tank Peristaltic pump for refilling (max. 20 l/h)
Option 13: Mobile substructure	Mobile substructure to accommodate the LRo04

Schematic view of the LRo04, with options



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