

Reverse Osmosis Units

UO 4000 KR – UO 10000 KR



Permeate recovery up to 90% by special concentrate stage (KR).

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Stand-type unit for desalination of softened drinking water according to German drinking water regulations (free chlorine not detectable), operating on the principle of reverse osmosis, with very high permeate recovery and high salt rejection.

Unit design

Stainless steel main frame housing the instruments and controls.

Special inlet filter with 5 µm-filter cartridge, **high pressure pump** low noise, multi-stage centrifugal type, **specially combined spirally wound modules** with PA/PS composite membranes in GRP vessels with inliner.

Valves such as sampling valves for feed water and permeate (for each pressure vessel), inlet solenoid/diaphragm valve, valves made of stainless steel to regulate the flow rate of permeate, concentrate and concentrate recirculation.

Pressure gauges for inlet and outlet pressure pre-filter, pump pressure, operating pressure and concentrate pressure, pressure switch for monitoring the feed water pressure.

Flow meters for permeate, KR-permeate recirculation, concentrate and concentrate recirculation flow rate.

Conductivity measurement for permeate and KR-permeate recirculation temperature compensated, measuring ranges 2-200 µS/cm and 20-2,000 µS/cm.

Control cabinet with lockable main switch, electrical switchgear for control of the high-pressure pump.

RO 5000 microprocessor control system

for fully automated monitoring and control of the reverse osmosis unit with graphics display with scrollable display (selectable) of **Operating data**: permeate and feedwater conductivity (temperature compensated), permeate and feedwater temperature, operating hours, time

Malfunction signals: low pressure, hard water, motor overload, high conductivity prealarm (permeate) high conductivity fault (permeate), **Status signals**: operation, permeate discard/permeate recycling, concentrate displacement, concentrate rinse, intermittent rinse during shut down, shut down by external signal (forced stop) regeneration, tank full, **LEDs** for operation, malfunction.

Chip card reader for storage of parameters and data (1 chip card is included in our scope of delivery).

Inputs (low voltage) for level control with 1 or 2 float switches, hardness monitoring unit (the RO 5000 control systems includes control functions for the limitron hardness monitoring unit), shut-down by external signal (forced stop, regeneration)

Outputs for 2 solenoid valves for concentrate rinse, permeate discard and permeate recycling, collective malfunction, prealarm high conductivity and freely programmable universal output, analogue output of conductivity and temperature.

Technical Data		UO 4000KR	UO 5000KR	UO 6000KR	UO 7000KR	UO 8500KR	UO 10000KR
Permeate flow rate	l/h	4,000	5,000	6,000	7,000	8,500	10,000
Min. salt rejection	%	98.5	98.5	98.5	98.5	98.5	98.5
Recovery	%	85	85	87	90	90	90
Operating pressure	bar	16.0	15.5	15.0	15.0	16.0	15.0
Membrane element / Number		8040/3+ 4040/4	8040/4+ 4040/4	8040/5+ 4040/5	8040/6+ 4040/6	8040/7+ 4040/7	8040/9+ 4040/9
Voltage	V/Hz	3x400/50	3x400/50	3x400/50	3x400/50	3x400/50	3x400/50
Motor power	kW	7.5	7.5	7.5	7.5	11.0	11.0
Pre-fusing	A	20	20	20	20	25	25
Feedwater connection	DN	32	40	40	40	50	50
Permeate/concentrate conn.	DN	32/32	32/32	40/32	40/32	40/32	50/32
Conduct. range perm.	µS/cm	2-200	2-200	2-200	2-200	2-200	2-200
Cond. range KR perm. recirc.	µS/cm	20-2,000	20-2,000	20-2,000	20-2,000	20-2,000	20-2,000
Min./max. feedwater pressure	bar	2/4	2/4	2/4	2/4	2/4	2/4
Min./max. feedwater temp.	°C	5/25	5/25	5/25	5/25	5/25	5/25
Max. ambient temperature	°C	40	40	40	40	40	40
pH		3-11	3-11	3-11	3-11	3-11	3-11
Height	mm	1,900	1,900	1,900	1,900	1,900	2,000
Width	mm	2,800	2,800	3,800	3,800	4,800	3,900
Depth	mm	750	750	750	750	750	1,000
Weight approx.	ca. kg	520	570	680	800	900	1,050
Code no.		381840	381850	381860	381870	381880	381890

The units are designed for a maximum TDS of 1,000 mg/l, a max. SiO₂-concentration of 10 mg/l, a water temperature of 15°C, a maximum colloidal index of 3 and permeate back pressure. Under these conditions, the units still reach design permeate flow after three years of operation. The permeate recovery depends on the raw water quality and the type of pre-treatment.

Subject to modification. 08-06

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