

# UO-D 2,500 - 12,000 FU

## Reverse osmosis units

The reverse osmosis unit is used for the desalination of softened water with a salinity of up to 1,000 mg/l. It is equipped with a high-quality centrifugal pump with variable-speed drive (VSD = FU). Frequency-controlled operation reduces electricity cost by 30 - 50 %, extends the lifespan of the unit and keeps permeate production constant irrespective of operation pressure. The RO digital microprocessor controller enables fully automatic operation with logging of all relevant operating data and freely adjustable limit values. The unit can be connected to the central control system via optional interfaces.

### BENEFITS

- Equipment with VSD (FU) saves 30 - 50 % electricity cost, maintains permeate production constant and enables a longer lifespan as well as particularly quiet operation
- Versatile RO digital controller with logging of operation data and many parametrisation options
- Optionally equipped with PLC Siemens S7-1200

### APPLICATIONS

- Desalination of softened water
- Suitable for all industrial applications
- Suitable for reduction of electricity cost



UO-D 4300 FU

# UO-D 2,500 - 12,000 FU

## Reverse osmosis units

### DESCRIPTION

#### Reverse osmosis

- Base frame made of stainless steel, high-pressure piping made of stainless steel with orbital welding
- Pre-filter (5 µm) with two glycerine-filled manometers
- High-pressure pump as low-noise, multi-stage centrifugal pump with variable-speed drive (VSD = FU)
- Low pressure elements with PA/PS composite membranes in GRP pressure vessels
- Control cabinet with lockable main switch and power section for controlling the pump
- Unit incl. piping and wiring, electrical construction acc. to VDE 0100 Part 600, VDE 0113 Part 1
- Unit tested, parameterised and conserved in own test field

#### Fittings and instrumentation

- Inlet solenoid valve and sampling valves for feed water and permeate (each vessel and total)
- Valves for adjusting the flow rates of permeate, concentrate and concentrate recirculation
- Permeate check valve per pressure pipe
- Pressure sensors for pump inlet pressure, operating and concentrate pressure
- Flow sensors for permeate, concentrate and concentrate recirculation
- Conductivity measurement of permeate with temperature compensation

#### Microprocessor controller RO digital

- Fully automatic monitoring and control of the unit
- Easy menu-guided operation of the controller with six buttons
- Four-line illuminated display and two LEDs as local signals for operation and fault
- Languages of the plain text display: German / English / French / Spanish
- Circular storage of operation data (1,960 data sets) with adjustable storage interval
- Operational reliability through adjustable limit values with fault message and display
- Password-protected programming of operating parameters

#### Available inputs

- DIGITAL: External stop (e.g. in case of interrupted feed water supply), motor protection / hard water, 2x level permeate tank (tank min / max) and 3x universal input (configurable)
- ANALOGUE: Level permeate tank (4 - 20 mA)

#### Available outputs

- DIGITAL: collective fault signal, universal output (configurable)
- ANALOGUE: conductivity permeate, measuring range 1 - 999 µS/cm (4 - 20 mA)

#### Optional available

- Hardness control unit limitron and HR modules to increase the demineralisation rate
- Permeate recirculation PR, concentrate flushing unit KSE, manual cleaning unit MRA and connecting set ARA
- Interfaces Profinet, Profibus, Modbus RTU/TCP, BACnet and back-up / alternating / parallel RO operation
- DOSIN dosing stations with SAW collecting trays

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### CONDITIONS OF USE

The unit may only be used for the desalination of softened feed water with drinking water quality or appropriately pre-treated well or surface water. The unit is designed for a salinity (TDS) of 1,000 mg/l and a temperature of 15 °C. Under these conditions, the projected permeate output is achieved even after three years of operation. The permeate yield depends on the raw water quality and the pre-treatment. The following parameters must be maintained in the feed water:

Free chlorine	not detectable
Iron (Fe)	< 0.2 mg/l
Manganese (Mn)	< 0.05 mg/l
Silica (SiO <sub>2</sub> )	< 25 mg/l
Silt density index (SDI)	< 3
Feed water temperature	5 – 35 °C
Feed water pressure	2 – 6 bar
Pressure fluctuation	± 0.5 bar

### TECHNICAL DATA OF SERIES

Controller	RO digital (PLC optional)
Desalination rate min.	97 %
Permeate recovery	75 – 80 %
Permeate back pressure max.	0.3 bar
pH value operation	6.5 – 9.5
pH value cleaning	2 – 12
Ambient temperature	5 – 40 °C

Product name	Mains connection	Hydraulic connection	Dimensions in mm	Item number
Permeate l/h	kW / V / Hz	feed/permeate/conc.	W x D x H	
UO-D 2500 FU	3.0 / 3 x 380 - 500 / 50 - 60	DN 32 / DN 25 / DN 25	2,480 x 710 x 1,650	387 195
UO-D 3000 FU	3.0 / 3 x 380 - 500 / 50 - 60	DN 32 / DN 25 / DN 25	3,500 x 710 x 1,650	387 196
UO-D 3500 FU	3.0 / 3 x 380 - 500 / 50 - 60	DN 32 / DN 25 / DN 25	3,500 x 710 x 1,650	387 197
UO-D 4300 FU	5.5 / 3 x 380 - 500 / 50 - 60	DN 32 / DN 32 / DN 32	2,900 x 790 x 1,790	387 198
UO-D 5400 FU	5.5 / 3 x 380 - 500 / 50 - 60	DN 50 / DN 32 / DN 32	2,900 x 790 x 1,790	387 199
UO-D 7000 FU	5.5 / 3 x 380 - 500 / 50 - 60	DN 50 / DN 40 / DN 32	3,870 x 790 x 1,830	387 200
UO-D 8000 FU	7.5 / 3 x 380 - 500 / 50 - 60	DN 50 / DN 40 / DN 32	3,870 x 790 x 1,830	387 201
UO-D 10000 FU	7.5 / 3 x 380 - 500 / 50 - 60	DN 65 / DN 50 / DN 32	4,880 x 790 x 1,830	387 202
UO-D 12000 FU	11.0 / 3 x 380 - 500 / 50 - 60	DN 65 / DN 50 / DN 50	4,060 x 840 x 1,880	387 203