

UO-D 600 - 2000 FU CD

Reverse osmosis units with duplex softener

The ready-to-connect combi unit includes a pre-filter, a backflow preventer, a duplex water softener, a limitron hardness control device and a reverse osmosis unit. It is used for the desalination of water with a salinity of up to 1,000 mg/l and 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 an optional Profinet interface.

BENEFITS

- Compact unit
- Equipment with VSD (FU) saves 30 - 50 % electricity cost, maintains permeate production constant and enables a longer lifespan as well as particularly quiet operation
- Continuous operation due to duplex softening
- Versatile RO digital controller with logging of operation data and many parametrisation options

APPLICATIONS

- Continuous water softening and desalination
- Suitable for all commercial and industrial applications
- Suitable for reduction of electricity cost



UO-D 900 CD

UO-D 600 - 2000 FU CD

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DESCRIPTION

Reverse osmosis with pre-treatment as combi unit

- Base frame made of stainless steel with plastic front panel
- High-pressure piping made of stainless steel with orbital welding
- Prefilter (100 µm) with two manometers, backflow preventer
- Duplex softener, volume-controlled with hardness monitoring unit limitron (on skid, SLB on floor)
- Pre-filter RO (5 µm) with two glycerine-filled manometers and low-maintenance valve block hard nickel-plated
- High-pressure pump as low-noise, multi-stage centrifugal pump with variable-speed drive (FU)
- Low pressure elements with PA/PS composite membrane in GRP pressure vessels
- Control cabinet with lockable main switch and power section for high-pressure 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
- Valves for adjusting the flow rates of permeate, concentrate and concentrate recirculation
- 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
- Connection fittings for manual cleaning system and permeate check valve per pressure vessel

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)

Optionally available

- HR modules, PR permeate recirculation, KSE concentrate flushing unit and VSE blending device
- Profinet interface and back-up / alternating / parallel RO operation

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CONDITIONS OF USE

The unit may only be used for the desalination of 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 ₂) | < 25 mg/l |
| Silt density index (SDI) | < 3 |
| Feed water temperature | 5 – 35 °C |
| Feed water pressure | 4 – 6 bar |
| Pressure fluctuation | ± 0.5 bar |

TECHNICAL DATA OF SERIES

| | |
|-----------------------------|------------|
| Controller | RO digital |
| 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 600 FU-CD | 2.2 / 3 x 380 - 500 / 50 - 60 | DN 25 / DN 20 / HT 100 | 1,760 x 810 x 1,860 | 420 241 |
| UO-D 900 FU-CD | 2.2 / 3 x 380 - 500 / 50 - 60 | DN 25 / DN 20 / HT 100 | 1,760 x 810 x 1,860 | 420 242 |
| UO-D 1200 FU-CD | 2.2 / 3 x 380 - 500 / 50 - 60 | DN 25 / DN 20 / HT 100 | 1,940 x 810 x 2,000 | 420 243 |
| UO-D 1500 FU-CD | 2.2 / 3 x 380 - 500 / 50 - 60 | DN 25 / DN 20 / HT 100 | 1,940 x 810 x 2,000 | 420 244 |
| UO-D 2000 FU-CD | 4.0 / 3 x 380 - 500 / 50 - 60 | DN 32 / DN 20 / HT 100 | 1,940 x 810 x 2,000 | 420 245 |