



Systems for ultra-pure water Electro-deionization UP 550-UP 1350

Vertical frame system for desalination of softened drinking water operating on the principle of reverse osmosis (RO) in conjunction with the electro-deionization method (EDI).

Systems for ultra-pure water electro-deionization EDI UP 550-UP 1350



Unit design

Stainless steel main frame with plastic front panel housing the instruments and controls,

Pressure reducing valve to limit the input pressure, **special inlet filter** with 5 µm filter cartridge, **high-pressure pump** low noise, multi-stage centrifugal type, **low energy spirally wound modules** with energy-efficient PA/PS composite membranes in GRP vessels with inliner, permeate recirculation subject to conductivity.

Electro-deionization module for continuous desalination of the RO permeate, consisting of a carefully designed robust housing containing a series of special ion selective membranes which create alternating concentrate and desalination chambers filled with mixed-bed ion exchanges resins. Two special electrodes are used to create an DC electric field across the chambers.

Valves such as sampling valves for feed water, RO permeate and EDI product, inlet solenoid valve, control valves made of stainless steel to regulate the flow rate of permeate, RO concentrate and EDI concentrate.

Pressure monitoring vibration-resistant pressure gauges for inlet and outlet pressure, pre-filter, operating pressure, RO concentrate pressure, pressure EDI feed water, inlet pressure EDI concentrate, product output pressure, pressure switch for monitoring the feed water pressure,

Flow meters for permeate, RO concentrate, EDI feed water, EDI concentrate, electrolyte, control of minimal EDI concentrate flow rate,

Permeate conductivity measurement, temperature compensated, measuring range 0 – 200 µS/cm,

Product water resistivity measurement, constant on-line with temperature compensation as defined by ASTM D 1125-95, measuring range 0 – 20 MΩ x cm.

Control cabinet with lockable main switch, **electrical switchgear** for control of the high-pressure pump, **integral power supply** for supply of voltage to the EDI module,

RO 1000 microprocessor control system for fully automated monitoring and control of the system with two line text display (16 characters per line) for display of **operational status**: permeate conductivity, temperature, operating hours, password-protected programming of the operating sequences.

Malfunction displays for low pressure feed motor overload, high conductivity.

Additional connections: Inputs (low voltage) for level control with 1 or 2 float switches, shut-down by external signal (forced stop, regeneration),

Outputs for Pretreatment (230 V/50 Hz), solenoid valves for permeate discard and -recycling, and DDC (collective malfunction signal on volt-free changeover contact).

Unit is completely wired, pre-assembled and ready for installation. Electrical equipment in accordance with VDE 0100 part 600, VDE part 1.

The units are designed for softened feed water (< 0.1 °GH) with a maximum TDS of 1,000 mg/l, a water temperature of 15 °C, a maximum colloidal index of 3, a CO₂ content of 10 mg/l and a SiO₂ content of 20 mg/l. Under these conditions, the units still reach design product flow after three years of operation. The EDI product recovery depends on the raw water quality and the type of pre-treatment.

| Technical data | | UP 550 | UP 800 | UP 1100 | UP 1350 |
|---|---------|------------|------------|------------|------------|
| Product flow rate | l/h | 550 | 800 | 1,100 | 1,350 |
| Resistivity EDI product (with free CO ₂) | MΩ x cm | 5 | 5 | 5 | 5 |
| Resistivity EDI product (without free CO ₂) | MΩ x cm | > 10 | > 10 | > 10 | > 10 |
| Recovery | % | 70 | 70 | 70 | 70 |
| Operating pressure | bar | 15 | 15 | 15 | 16 |
| Membrane element / number | | 4040 / 2 | 4040 / 3 | 4040 / 4 | 4040 / 5 |
| Voltage | V/Hz | 3 x 400/50 | 3 x 400/50 | 3 x 400/50 | 3 x 400/50 |
| Power consumption | kW | 4,1 | 4,1 | 4,1 | 4,1 |
| Max. pre-fusing | A | 16 | 16 | 16 | 16 |
| Feed water connection | DN | 25 | 25 | 25 | 25 |
| Waste water connection | HT | 50 | 50 | 50 | 50 |
| Product water connection | DN | 20 | 20 | 20 | 20 |
| Min./max. feed water pressure | bar | 2 / 6 | 2 / 6 | 2 / 6 | 2 / 6 |
| Min./max. feed water temperature | °C | 5 / 35 | 5 / 35 | 5 / 35 | 5 / 35 |
| Min./max pH value feed water | | 5,0 / 9,5 | 5,0 / 9,5 | 5,0 / 9,5 | 5,0 / 9,5 |
| Max. ambient temperature | °C | 40 | 40 | 40 | 40 |
| Height | mm | 1,950 | 1,950 | 1,950 | 1,950 |
| Width | mm | 1,300 | 1,300 | 1,300 | 1,300 |
| Depth | mm | 850 | 850 | 850 | 850 |
| Weight approx. | kg | 200 | 230 | 260 | 280 |
| Code no. | | 425002 | 425012 | 425022 | 425032 |