



Image HA-RO modular 300 – 1800 EDI

**application areas:**

- laboratory, industrial, medical and pharmaceutical applications

**special features:**

- ready-to-connect reverse osmosis system
- compact central control cabinet
- pre-wired to control the entire water treatment
- stainless steel frame for holding the individual components
- digital conductivity and temperature measurement
- flow measurement of concentrate, permeate, recirculation, electrolyte
- automatic restart after a power failure
- fault display for feed water pressure
- schematic display of all operating processes and measured values on the graphic display
- cyclical flushing device to protect against contamination from standstill
- digital control for fully automatic monitoring and control of the complete pure water treatment including the periphery

**standard frame system:**

for the desalination of pre-treated water according to the German Drinking Water Ordinance based on the principle of reverse osmosis. A previous water analysis is necessary for the system calculation

**technical specifications \***

electrical connection	400 V / 50 Hz
connected load	5,1 – 10,0 kW project-dependent
Diluate output	260 l/h - 2700 l/h
work pressure	up to 14 bar
permissible ambient temperature min./max.	+2°C / +40°C
feed water pressure	4-6 bar
desalination rate	99%
wcf rate	max. 75%
edi quality	< 1 µS/cm (depending on raw water quality)
dimensions (wxdxh)	1500/2350 x 750/900 x 1800 mm

**\*We reserve the right to make changes to products or technical specifications.**

item numbers								
	HA-RO modular 300 EDI	HA-RO modular 600 EDI	HA-RO modular 900 EDI	HA-RO modular 1200 EDI	HA-RO modular 1500 EDI	HA-RO modular 1800 EDI	HA-RO modular 2000 EDI	HA-RO modular 3000 EDI
system with 10" touch control	10107021	10107022	10107023	10107024	10107025	10107026	10107027	-
system with S7 Siemens control	10108283	10108327	10108330	10108332	10108334	10108336	10108338	10108896

electrical connection								
	HA-RO modular 300 EDI	HA-RO modular 600 EDI	HA-RO modular 900 EDI	HA-RO modular 1200 EDI	HA-RO modular 1500 EDI	HA-RO modular 1800 EDI	HA-RO modular 2000 EDI	HA-RO modular 3000 EDI
nominal voltage	3~ 400 V							
frequency	50 Hz							
backup fuse	16 A							20,0 A
power consumption	8,2 A	8,2 A	9,6 A	9,6 A	9,6 A	11,2 A	11,2 A	16,2 A
connected load	4,4 kW	4,4 kW	5,1 kW	5,1 kW	5,1 kW	5,8 kW	5,8 kW	10,0 kW

hydraulic connection								
	HA-RO modular 300 EDI	HA-RO modular 600 EDI	HA-RO modular 900 EDI	HA-RO modular 1200 EDI	HA-RO modular 1500 EDI	HA-RO modular 1800 EDI	HA-RO modular 2000 EDI	HA-RO modular 3000 EDI
feed water pressure min./max.	4,0 - 6,0 bar							
feed water temperature min./max.	5 – 30 °C							
feed water connection	DN25							DN40
connections permeate/concentrate	DN25							
membrane element	1	2	3	4	5	6	8	3

product water								
	HA-RO modular 300 EDI	HA-RO modular 600 EDI	HA-RO modular 900 EDI	HA-RO modular 1200 EDI	HA-RO modular 1500 EDI	HA-RO modular 1800 EDI	HA-RO modular 2000 EDI	HA-RO modular 3000 EDI
Diluate output (at 15°C)	260 l/h	530 l/h	800 l/h	1070 l/h	1340 l/h	1600 l/h	1800 l/h	2700 l/h

dimensions								
	HA-RO modular 300 EDI	HA-RO modular 600 EDI	HA-RO modular 900 EDI	HA-RO modular 1200 EDI	HA-RO modular 1500 EDI	HA-RO modular 1800 EDI	HA-RO modular 2000 EDI	HA-RO modular 3000 EDI
height	1800 mm							1850 mm
width	1500 mm				2350 mm			2400 mm
depth	750 mm				900 mm			

installation site	
ambient temperature	2 – 40 °C

weight								
	HA-RO modular 300 EDI	HA-RO modular 600 EDI	HA-RO modular 900 EDI	HA-RO modular 1200 EDI	HA-RO modular 1500 EDI	HA-RO modular 1800 EDI	HA-RO modular 2000 EDI	HA-RO modular 3000 EDI
weight (without water)	300 kg	310 kg	320 kg	330 kg	380 kg	390 kg	400 kg	500 kg

**Construction of the reverse osmosis system:**

- **base frame made of stainless steel** with plastic paneling to accommodate all system components
- **pre-filter** with 5 µm filter cartridge, inlet and outlet manometer for monitoring the differential pressure
- Vertical **high pressure pump**
- **membrane modules** with composite membranes in GRP pressure pipes with inliners
- **fittings:** inlet solenoid valve, pressure switch for dry run protection, flow meter, for permeate, diluate and concentrate
- manometer for pump and concentrate pressure, valves for setting the flow rates
- **electrodeionization module:** For further processing of the permeate in diluate.
- **control:**
  - choice between premium embedded control with touch display (10 "4: 3) or Simatic S7 control with touch display (12 "16: 9)
  - process visualization as a flow chart with display of all relevant measured values and status messages and operating status
  - event logging
  - freely configurable selection of collective fault messages
  - manual control level
  - database for storage of measured values \*
  - user management with several levels
  - ethernet interface for connection to a higher-level control system or for remote maintenance
  - integrated web server (HTTPS) for monitoring / operation / configuration \*
  - curve display of measured values
  - possibility to download the alarm list as well as the measured value database in csv format
- **inputs:**
  - 16 digital inputs (including hardness measurement, pump malfunction, input pressure, flow, external release)
  - 8 analog inputs (including tank level, UV intensity, EDI voltage, EDI current)
- **outputs:**
  - 16 digital outputs (including pumps, solenoid valves, EDI, collective fault messages, operating messages)
- **internal fieldbus:** communication with conductivity transmitters, pumps
- **conductivity and temperature measurement**

\* premium controls only

**options**

- digital flow measurement
- additional conductivity and temperature measuring points to monitor quality
- flow monitoring for permeate, concentrate, diluate, concentrate EDI and ring circulation
- remote monitoring (Ethernet): Modbus-TCP, BACnet, email alerting, other protocols on request

**equipment:**

- hardness controller 10008033
- 3 µm Pre-filter 10001005 Microfiber
- 5 µm Pre-filter 10001003 Activated carbon (for HA RO modular 1800/2000: 10105589)  
10001006 wrapped  
10001040 Microfiber
- optical warning device 10107748

**further machine options available on request!**

# Product information HA-RO modular EDI

Reverse osmosis systems with electrodeionization



Image HA-RO modular 300 EDI - 2000 EDI



Image HA-RO modular 3000 EDI