



Image HA-RO modular 300 – 1800

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,
- 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	4,4 – 5,8 kW project-dependent
diluate output	300 l/h bis 2000 l/h
work pressure	up to 14 bar
permissible ambient temperature min./max.	+5°C / +30°C
feed water pressure	4-6 bar
desalination rate	99%
wcf rate	max. 75%
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	HA-RO modular 600	HA-RO modular 900	HA-RO modular 1200	HA-RO modular 1500	HA-RO modular 1800	HA-RO modular 2000
system with 10" touch control	10106871	10106872	10106873	10106874	10106875	10106876	10106877
system with S7 Siemens control	10108282	10108319	10108329	10108331	10108333	10108335	10108337

electrical connection							
	HA-RO modular 300	HA-RO modular 600	HA-RO modular 900	HA-RO modular 1200	HA-RO modular 1500	HA-RO modular 1800	HA-RO modular 2000
nominal voltage	3~ 400 V						
frequency	50 Hz						
backup fuse	16 A						
power consumption	9,7 A	9,7 A	11,1 A	11,8 A	11,8 A	14,2 A	14,2 A
connected load	5,1 kW	5,4 kW	6,0 kW	6,3 kW	6,3 kW	7,7 kW	7,7 kW

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

product water							
	HA-RO modular 300	HA-RO modular 600	HA-RO modular 900	HA-RO modular 1200	HA-RO modular 1500	HA-RO modular 1800	HA-RO modular 2000
Permeate output (at 15°C)	300 l/h	600 l/h	900 l/h	1200 l/h	1500 l/h	1800 l/h	2000 l/h

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

installation site	
ambient temperature	5 – 30 °C

weight							
	HA-RO modular 300	HA-RO modular 600	HA-RO modular 900	HA-RO modular 1200	HA-RO modular 1500	HA-RO modular 1800	HA-RO modular 2000
weight (without water)	290 kg	300 kg	310 kg	320 kg	370 kg	380 kg	390 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 and concentrate
- manometer for pump and concentrate pressure, valves for setting the flow rates
- **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)
- **outputs:**
 - 16 digital outputs (including pumps, solenoid valves, collective fault messages, operating messages)
- **internal fieldbus:** communication with conductivity transmitters, pumps
- **conductivity and temperature measurement**

* premium controls only

Optionen

- digital flow measurement
- additional conductivity and temperature measuring points to monitor quality
- flow monitoring for permeate, concentrate, diluate 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 10001006 wrapped
10001040 Microfiber
- optical warning device 10107748

further machine options available on request!