

[modula]

Central Reverse
Osmosis System



[modula TP]

Double-stage Central
Reverse Osmosis System



The modular concept for permeate production

[modula]

Effective and reliable

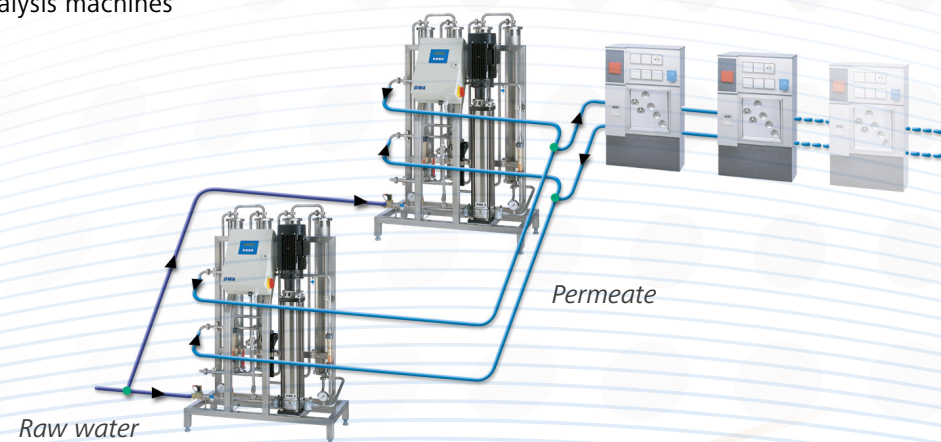
The **modula** reverse osmosis was developed to incorporate the proven and reliable DWA standard of dialysis water treatment into a flexible design concept. Based on an economic, cost effective and adaptable system designed to comply with different international dialysis requirements and regulations.

The **modula** uses high quality materials and superior manufacturing to fulfill the objective to achieving maximum hygiene, optimum safety, long life and reliability of permeate production – with guaranteed economy through low operating costs and economical water consumption.

modula – the modular concept from DWA for high purity water for dialysis.

modula redundant – parallel

- Redundancy for higher reliability
- Parallel for higher capacity
- Optionally with nephro SAFE / HDS – Ultrafiltration and heat disinfection into the dialysis machines



Key features

- Compact design / modular construction
- Hygienic stainless steel tubing and frame
- Water saving technology / Permeate recirculation
- Microprocessor controlled & monitored
- Autoflush system
- Secure inlet valve control
- 3-way valve for permeate to ring or drain
- Automatic on/off (two times per day)
- 2 sampling and disinfection points (raw water and permeate)
- 4-button control panel
- Back-lit display
- Monitoring parameters (permeate and concentrate flow, membrane pressure, raw water/permeate pressure, permeate temperature, permeate and raw water conductivity)
- Security parameters (permeate over pressure, permeate conductivity, permeate over temperature, dry run protection, voltage stabilization, pump protection, operational history)
- Alarm history for 128 events, special service menu
- Automatic restart after power interruption of max. 5 minutes
- Connections:
 - 2 status output (alarm, operational status)
 - Tank monitoring and control
- Optional:
 - Remote control on/off
 - nephro SAFE / HDS – Ultrafiltration and heat disinfection systems
 - Ultrafiltration membrane upgrade kit

modula double-stage – serial

- Double-stage RO for higher permeate quality
- Optionally with nephro SAFE / HDS – Ultrafiltration and heat disinfection into the dialysis machines



Central double-stage Reverse Osmosis System

[modula TP]

By the double-stage setup the **modula TP** provides highest permeate quality even at a low feed water quality.

As with the modula system the **modula TP** is designed to comply with different international dialysis requirements and regulations.

Through two independent stages the **modula TP** provides for total operation safety. With one stage out of service the other can take over the complete duty to provide continuation of treatment.

For heat disinfection of ring mains, media supply systems and dialysis machines **modula TP** can be easily connected to our Heat Disinfection and Ultrafiltration Systems.

The user-friendly operating menu not only simplifies the setting and control of the **modula TP** also offers the possibility of easy connectivity and software updates.



modula TP in combination with HDS for highest microbiological safety.

Key Features

- Increased chemical and microbiological permeate quality through double-stage operation
- Water Saving Technology through permeate recirculation
- 5,7" multicolour touch screen
- Compact design
- Semi-automatic disinfection programmes
- Energy-saving polyamide membranes
- Permeate pressure sustaining valve for system pressure settings
- Internal surface of passivated stainless steel piping with clamp connectors
- Continuous monitoring of conductivity, pressure, temperature and permeate flow
- Programmable shut on / off
- Integrated self-test at power up
- Emergency mode in case of electronic failures
- Microprocessor controlled and monitored
- Ethernet Connector
- USB Firmware update
- Secure menu for service technicians
- Automatic restart after power interruption of max. 5 minutes
- Security parameters (permeate over pressure, permeate conductivity, permeate over temperature, dry run protection, voltage stabilization, pump protection, operation history)
- Manual bypass for pump or membrane failure
- Stainless steel tubing and frame
- Dead leg free for maximum hygiene
- Secure inlet valve control
- 3-way valve for permeate to ring or drain
- Optional
 - Remote control on / off
 - Ultrafiltration and Heat Disinfection Systems nephro SAFE / HDS
 - Ultrafiltration membrane upgrade kit



Manual bypass at both stages



Technical Datasheet [modula]

Designation			Specification
Performance Data	Dimensions (W x H x D)		1,000 x 1,550 x 550 mm
	Weight (max.)		170 kg
	Maximum dialysis water production capacity at 10 °C and with a back pressure of 2.5 bar		350 to 1,650 l/h
	Dialysis water pressure		2–5 bar
	Retention rate		> 99 % NaCl
	System recovery		up to 75 %
Water Connections	Soft water feed		Hose nipple for hose DN 20
	Dialysis water feed		Hose nipple for hose DN 20
	Dialysis water return		
Electrical Data	Mains plug		CEE 16 A (3L+N+PE, 6h)
	Supply voltage		380 – 415 V 3~ (N) / 50 Hz or 380 – 400 V 3~ (N) / 60 Hz or 200 – 220 V 3~ (N) / 60 Hz
	Power consumption (per phase)		7 A (400 V-Versions) 12 A (200 V-Version) 25 A / Fi ΔI 30 mA
	Energy consumption		max. 5.0 kW
	Fuse		16 A / Fi ΔI 30 mA
	Electrical Safety	Safety class	
Overvoltage category		II	
Degree of pollution		2	
Protection class		IPx4	
Feed Water	Quality		Drinking water, softened
	Hardness		< 0.018 mmol/l
	SDI		< 3
	Conductivity		< 2,000 µS/cm
	Iron		< 0.05 mg/l
	Chlorine		< 0.10 mg/l
	Temperature range		5 – 30 °C
	pH-value		6.5 – 8.5
Ambient Conditions	Temperature	Shipping / Storage	+1 to +45 °C
		Operation	+1 to +35 °C
	Air humidity		max. 90 % rel. humidity, non-condensing
	Installation altitude		max. 2,000 m above NHN
On-site Requirements	Isolable water supply, for full extension 3 m³/h at 3 bar dynamic		Pressure reducing valve or pressure booster as required
	Drain max. 10 cm above floor level		HT50 pipe, for 3 m³/h by gravity

Conformity declared with directive 93/42/EEC concerning medical devices
We reserve the right to make technical changes



Technical Datasheet [modula TP]

Designation		Specification	
Performance Data	Dimensions (W x H x D)	1.270 x 1.540 x 690 mm	
	Weight (max.)	385 kg	
	Maximum dialysis water production capacity (at 10 °C and 2,5 bar back pressure)	350 to 1.650 l/h	
	Dialysis water pressure	2–5 bar	
	Retention rate	> 99 % NaCl	
Water Connections	System recovery	Up to 85 %	
	Soft water feed	Hose nipple for hose DN 25	
	Dialysis water feed	Hose nipple for hose DN 20 or DIN 11851 – DN 15 IG	
Dialysis water return			
Electrical Data	Mains plug	CEE 32 A (3L+N+PE, 6h)	
	Supply voltage	400 V 3~ (N) / 50 Hz or 400 V 3~ (N) / 60 Hz	
	Power consumption (per phase)	12 A	
	Energy consumption	max. 7,0 kW	
	Fuse	25 A / Fi ΔI 30 mA	
Electrical Safety	Safety class	I	
	Overvoltage category	II	
	Degree of pollution	2	
	Protection class	IPx4	
Feed Water	Quality	Drinking water, softened	
	Hardness	< 0,1 °dH (0,018 mmol/l)	
	SDI	< 3	
	Conductivity	< 2.000 µS/cm	
	Iron	< 0,05 mg/l	
	Chlorine	< 0,1 mg/l	
	Temperature range	5 – 30 °C	
	pH-value	6,5 – 8,5	
Ambient Conditions	Temperature	Shipping / Storage	+1 to +45 °C
		Operation	+1 to +35 °C
	Air humidity	max. 90 % rel. humidity, non-condensing	
	Installation altitude	max. 2.000 m above NHN	
On-site Requirements	Isolable water supply, for full extension 3 m³/h at 3 bar dynamic	Pressure reducing valve or pressure booster as required	
	Drain max. 50 cm above floor level	HT50 pipe, for 3 m³/h by gravity	

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