

PureFlex™ DLX

Modular Desalination and Water Purification Systems

The RODI Systems PureFlex™ product line represents a unique approach to providing custom-built water treatment solutions at “standard product” prices. The PureFlex™ line includes a number of modular treatment systems (modules) that may be used standalone or in various combinations to meet the requirements of a wide range of water treatment applications. This flexibility lowers engineering cost and provides customers with cost-effective, yet technically effective, solutions.

The PureFlex™ DLX represents the line of desalination systems in the PureFlex™ product offering. The DLX products are available for either brackish water desalination (generally up to 2,500 ppm TDS) or seawater desalination (generally up to 40,000 ppm TDS). The PureFlex™ DLX is suitable for a number of applications:

- **Seawater Desalination**
- **Brackish Water Desalination**
- **Wastewater Reuse**
- **High Purity Water Production**

Benefits

The PureFlex™ DLX desalination systems offer a number of benefits that makes them an excellent choice for your desalination or water purification application.

Industrial Grade — The DLX systems are unique in that they are available in small capacities yet they are designed as industrial grade systems. This is unique in that most small RO systems currently available are of commercial quality only.

Compact Size — The unique design of the DLX systems provides a larger capacity in daily output relative to other systems with the same footprint.

Flexibility — The DLX systems are available in a wide range of capacities. Furthermore, numerous pretreatment and post-treatment modules are available to fit most any desalination or water purification application.

Quality — PureFlex™ is designed and built by RODI Systems Corp., a leader in the fabrication of desalination and water treatment systems for over twenty-five years..

General Features

The PureFlex™ DLX incorporates a number of features that make it a cost-effective way to produce pure water from seawater, brackish water, and many other water sources requiring high performance treatment.



State-of-the-Art Technology — RODI's PureFlex™ DLX desalination systems feature state-of-the-art technologies to provide a high quality product at the lowest possible cost. The DLX seawater systems utilize Danfoss APP pumps which are some of the most efficient high pressure pumps available. The DLX systems use only high quality thin film membrane elements from manufacturers such as Dow Filmtec, Hydranautics, and Toray. All DLX systems include a modern microprocessor control system which includes electronic sensors for flow, pressure, and water quality along with a color touchscreen operator interface. The state-of-the-art control system ensures safe and efficient operation of the system, even while unattended.

Technical Support and Training — All of RODI's PureFlex™ systems are supported by a well-trained and highly experienced group of technical and administrative professionals. Whether by email, telephone, or an on-site visit, RODI's staff is dedicated to supporting each and every product manufactured by RODI Systems.



The RODI Systems PureFlex™ DLX desalination systems incorporate a number of specifications which make them a high quality choice for your desalination application.

- 1 Frame** — The system is totally enclosed inside a powder coated marine grade aluminum frame. Piping, vessels, and other system components are supported inside the periphery of the frame with fiberglass or stainless steel structural members.
- 2 Piping** — All low pressure piping is Schedule 80 PVC or other non-metallic materials. High pressure piping utilizes 316L and duplex stainless steel alloys. Welded joints are used wherever possible and threaded joints are avoided as much as possible to prevent leaks. All valves and fittings are of industrial quality.
- 3 Pre-Filtration** — The standard DLX desalination systems include a self-cleaning screen followed by a five micron cartridge filter.
- 4 Pressure Vessels** — Membrane pressure vessels are filament wound using fiberglass roving and sealed with an epoxy resin. This results in a corrosion-proof vessel that will last for years with little or no maintenance.
- 5 Reject Recycling** — All DLX brackish water systems are equipped with reject recycling. This allows higher recoveries with a single stage array and also insures sufficient membrane cross flow velocity, an important operating factor especially in wastewater applications.

- 6 Controls and Instrumentation** — The advanced control system includes a color touch screen operator interface with data logging, automatic alarm shutdowns, remote monitoring, and the ability to connect to plant-wide control systems via Ethernet I/P or Modbus TCP. The control system also includes a complete set of electronic sensors for conductivity, flow, temperature, and pressure. A number of optional analyzers can be provided to allow monitoring the quality of both inlet and outlet of the system. Optional instruments include pH, ORP, chlorine, turbidity, and silt density index.

- 7 Electrical** — All electrical construction is done to recognized standards (UL508A). Only NEMA 4X non-metallic enclosures are used. All electrical systems are thoroughly tested before the treatment system is shipped to the client.

Variable Frequency Drive (VFD) — The high pressure pump is equipped with a variable speed drive (VFD) allowing the pump to operate at a proper speed. This prolongs the life of the pump by allowing for soft starts and stops. It also insures that the system operates at peak electrical efficiency.

- 8 High Pressure Pump** — All seawater systems utilize Danfoss APP high pressure pumps. The APP pumps are constructed of duplex stainless steel and are some of the most efficient pumps available. Brackish water systems utilize Procon rotary vane pumps or Ebara multi-stage centrifugal pumps depending upon system size.

PureFlex™ DLX Brackish Water RO General Specifications

Model Number	PF-DLX-BW-9	PF-DLX-BW-18	PF-DLX-BW-35	PF-DLX-BW-70	PF-DLX-BW-150	PF-DLX-BW-300
Production (Gal/Day)¹	900	1,800	3,500	7,000	15,000	30,000
Feed Flow (GPM)²	1-2	2-3	3-6	6-10	13-20	25-40
Maximum Membrane Feed Pressure (PSI)	250	250	250	250	250	250
Vessel Array (Number of Elements/Vessel)	3 x 2.5 in (1)	6 x 2.5 in (1)	3 x 4 in (1)	6 x 4 in (1)	3 x 8 in (1)	3 x 8 in (2)
Pump Model (HP)	Procon Series 5 (0.75)	Procon Series 5 (1)	Procon Series 6 (2)	Procon Series 6 (3)	Ebara EVMU10-12 (10)	Ebara EVMU10-14 (15)
Electrical Requirement³	1 Ph 200-240 VAC, 50-60 Hz, 7 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 3 Amps	1 Ph 200-240 VAC, 50-60 Hz, 8 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 4 Amps	1 Ph 200-240 VAC, 50-60 Hz, 12 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 7 Amps	1 Ph 200-240 VAC, 50-60 Hz, 17 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 10 Amps	3 Ph 240-480 VAC, 50-60 Hz, 28 Amps	3 Ph 240-480 VAC, 50-60 Hz, 42 Amps

¹ Assuming a nominal flux rate of 13 gallons per square foot of membrane surface area per day.

² Actual feed flow and recovery will depend upon feed water quality.

³ Amperage values correspond to the lower voltage of the power voltage range.

PureFlex™ DLX Seawater RO General Specifications

Model Number	PF-DLX-SW-6	PF-DLX-SW-12	PF-DLX-SW-20	PF-DLX-SW-40	PF-DLX-SW-100	PF-DLX-SW-200
Production (Gal/Day)¹	600	1,200	2,000	4,000	10,000	20,000
Feed Flow (GPM)²	1.5	2.5	4.5	6	18	35
Maximum Membrane Feed Pressure (PSI)	1000	1000	1000	1000	1000	1000
Vessel Array (Number of Elements/Vessel)	3 x 2.5 in (1)	6 x 2.5 in (1)	3 x 4 in (1)	6 x 4 in (1)	3 x 8 in (1)	3 x 8 in (2)
Pump Model (HP)²	Danfoss APP1.0 (2)	Danfoss APP1.5 (3)	Danfoss APP2.5 (5)	Danfoss APP3.5 (7.5)	Danfoss APP5.1 (15)	Danfoss APP8.2 (25)
Electrical Requirement³	1 Ph 200-240 VAC, 50-60 Hz, 12 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 7 Amps	1 Ph 200-240 VAC, 50-60 Hz, 17 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 10 Amps	1 Ph 200-240 VAC, 50-60 Hz, 12 Amps Or 3 Ph 240-480 VAC, 50-60 Hz, 7 Amps	3 Ph 240-480 VAC, 50-60 Hz, 22 Amps	3 Ph 240-480 VAC, 50-60 Hz, 42 Amps	3 Ph 240-480 VAC, 50-60 Hz, 68 Amps

¹ Assuming a nominal flux rate of 8 gallons per square foot of membrane surface area per day.

² Based on 40% recovery.

³ Amperage values correspond to the lower voltage of the power voltage range.

The RODI PureFlex™ product line is comprised of a number of individual treatment modules in addition to the DLX desalination modules. Selecting the appropriate modules allows customers to configure a system for their application and budget. Here are some of the other modules available:

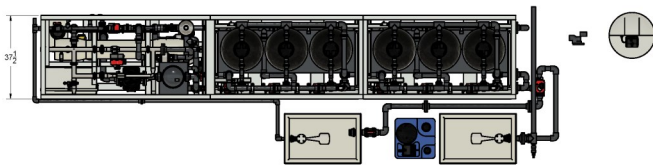
Media Filtration — Various types of media filtration modules are available. These include multi-media, greensand, zeolite, and activated carbon filtration modules. These may be used as pretreatment to a DLX module or on their own for simple filtration should the application not require desalination.

Membrane Filtration — For more demanding applications, membrane filtration modules are available. These include ceramic microfiltration membrane modules as well as polymeric membrane ultrafiltration modules. As in the case of media filtration, these may be used as pretreatment to a DLX module or on their own should the application not require desalination.

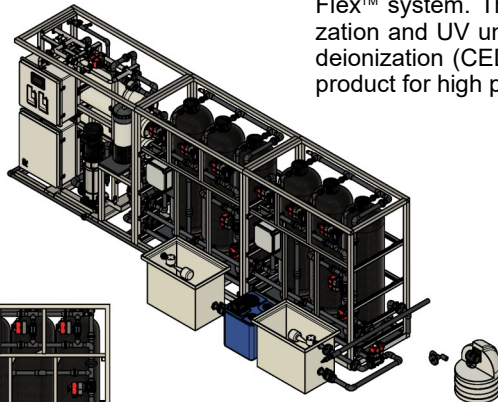
Chemical Dosing — Chemical dosing modules are available for applications such as oxidant dosing before a greensand filter, coagulant dosing before a multi-media filter, scale inhibitor injection before the DLX unit, or chemical disinfection of the final product.



PureFlex™ Media Filtration Module



Complete Water Treatment System Comprised of Multiple PureFlex™ Modules



Permeate Rinse/Cleaning System — This module allows the DLX system to automatically rinse with permeate upon shutdown thus preventing excessive permeate conductivity upon startup. This feature may also be used as a membrane element clean-in-place (CIP) system for routine chemical cleaning of the membrane elements.

Post-treatment — Various post-treatment modules are available to condition the final product from the PureFlex™ system. This includes calcite filters for remineralization and UV units for disinfection. Continuous electro-deionization (CEDI) modules are available to polish DLX product for high purity applications.



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