

Nitto

Innovation for Customers

HYDRANAUTICS



K4R-PW1

Ultrafiltration Solution for Human Life Segments

PURE < PURER < PUREST

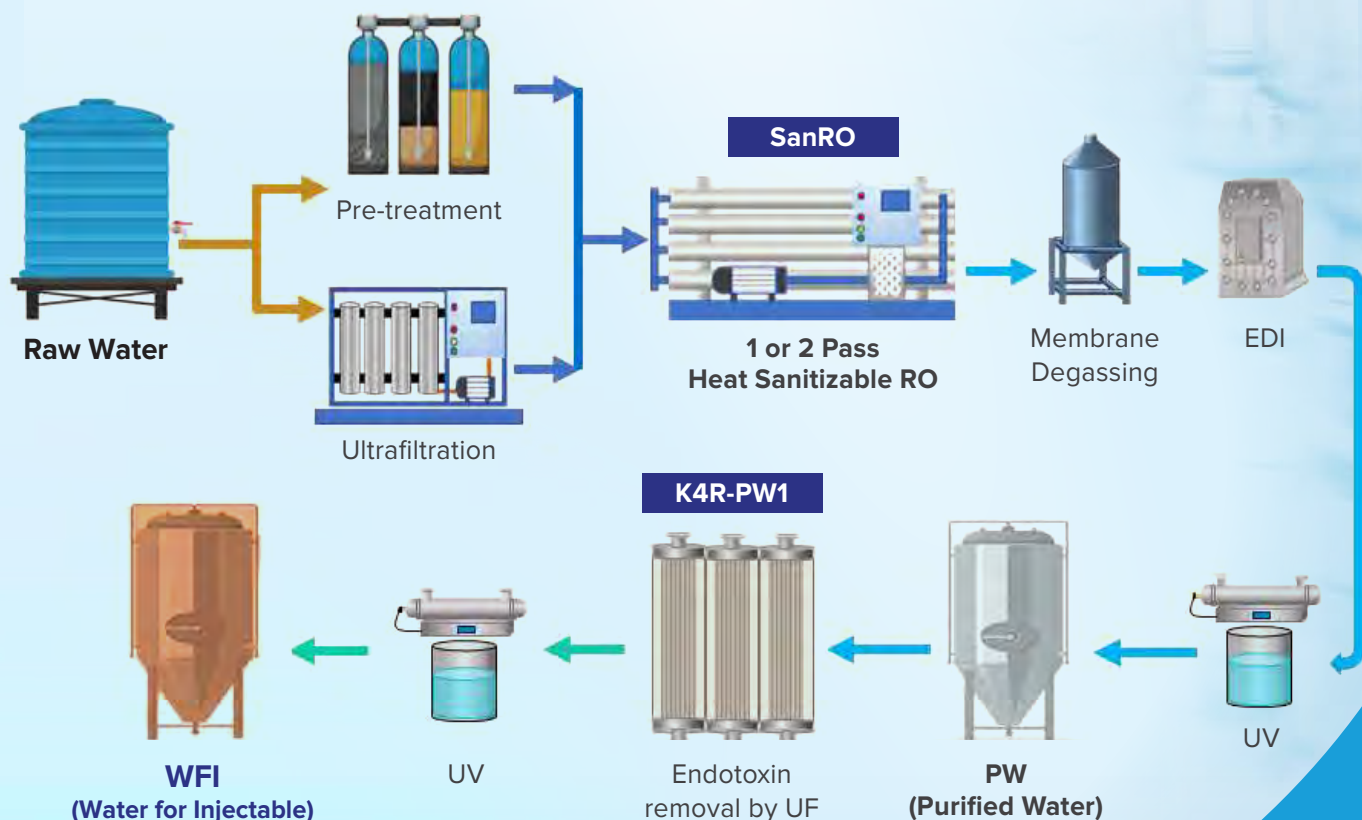
Defining Purity

The segments focusing on human life, such as Pharmaceutical, Biotechnology and Life-sciences, are playing a pivotal role in improving the health and quality of life for people around the world. Water is critical to these industries as it is used as an excipient, raw material, ingredient, or solvent in manufacturing pharmaceutical products or for research and development work in life sciences industries.

For the pharmaceutical industry, global pharmacopeias, including the United States, European, Japanese, Indian and Chinese provide quality standards for different grades of water to be used for various applications.

These grades of water include Purified Water (PW) and Water for Injection (WFI). To generate PW and WFI, the microbiological quality of water needs to be controlled. This is to ensure that the water used in manufacturing pharmaceutical products should not contain any viable micro-organisms or endotoxin.

We at Hydranautics understand the requirement of high purity water in the pharmaceutical industry. To address this requirement, we offer innovative hot water sanitizable Ultrafiltration (UF) membrane K4R-PW1.



K4R-PW1

Hot Water Sanitizable Ultrafiltration Membrane

K4R-PW1® is a high-performance, heat-sanitizable ultrafiltration (UF) membrane engineered for critical high-purity water applications in the pharmaceutical, biotechnology, and life science industries. Designed to support effective control of microbiological contaminants and endotoxins, K4R-PW1 plays a key role as a final purification and polishing step within advanced water treatment systems. By combining robust construction with thermal sanitization capability, it enables reliable, hygienic operation while supporting system designs aligned with stringent regulatory and quality requirements.

K4R-PW1 is typically installed downstream of Hydranautics' SanRO® reverse osmosis (RO) membranes as a final polishing step within an integrated high purity water treatment system. While SanRO® membranes provide bulk purification through the removal of dissolved salts, organics, and other contaminants, K4R-PW1 delivers downstream ultrafiltration to support enhanced control of microorganisms and endotoxins. Together, this combined RO-UF configuration enables a complementary treatment approach, supporting consistent water quality and hygienic system performance when properly designed, validated, and operated.

K4R-PW1 membranes are designed for high purity water applications; however, compliance with pharmacopeial requirements depends on a number of factors, including overall system design and material selection.

Key Features & Benefits



Hot Water Sanitizable Design

- Designed to withstand controlled thermal sanitization
- Supports hygienic system operation
- May reduce reliance on chemical disinfection



6000 Dalton MWCO Membrane

- Supports retention of endotoxins and macromolecular contaminants



Outside-In Filtration Configuration

- Supports efficient operation and high flux
- Designed to minimize permeate-side accumulation



Robust Construction

- Designed for repeated sanitization and cleaning cycles





Regulatory & Material Compliance

Manufactured using materials that are referenced in applicable sections of FDA 21 CFR Title 21, Part 177 & have been tested in accordance with USP <88> Class VI (as applicable).

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