

Elix[®] Gulfstream Clinical Water Purification System

All-in-one water purification system
for clinical analyzers

for analyzers with pure water needs of up to 2000 L daily



Elix Gulfstream Clinical water purification system

All-in-one system provides lower running costs and consistently pure clinical laboratory reagent water (CLRW) for your analyzer.



Biomedical laboratories' needs:

To ensure optimal productivity, biomedical labs running large-scale clinical analyzers require a dependable water purification solution that reduces running costs and eliminates downtime. Users need:

Low running costs

A reliable water purification system

Optimized lab space

Professional and rapid service

A system that meets today's increased water and environmental standards

The Elix Gulfstream Clinical system answer:

The Elix Gulfstream Clinical water purification system consistently provides high quality pure water to feed your lab's clinical analyzers—at reduced running costs.

Designed to provide up to 100 LPH and 2000 L daily, this new system:

Profits from proven Elix electrodeionization (EDI) technology and improved reverse osmosis (RO) cartridges. This helps extend purification cartridge lifetimes and reduce tap water use, thus reducing running costs.

Has a robust design that benefits from Merck Millipore's patented Elix technology to maintain consistent water quality. A built-in emergency backup function gives users peace of mind by ensuring they can continue their work.

Features a small footprint due to its "All-in-One" design. Everything needed for operation is pre-installed in/on the unit.

Is backed by a responsive and professional service organization providing rapid intervention.

Is designed to provide pure water that meets Clinical and Laboratory Standards Institute (CLSI®) CLRW standards
Is RoHS compliant
Does not require chemical regeneration in the Elix EDI module
Minimizes water consumption thanks to advanced RO and Elix EDI technologies.

Elix electrodeionization technology for reduced running costs

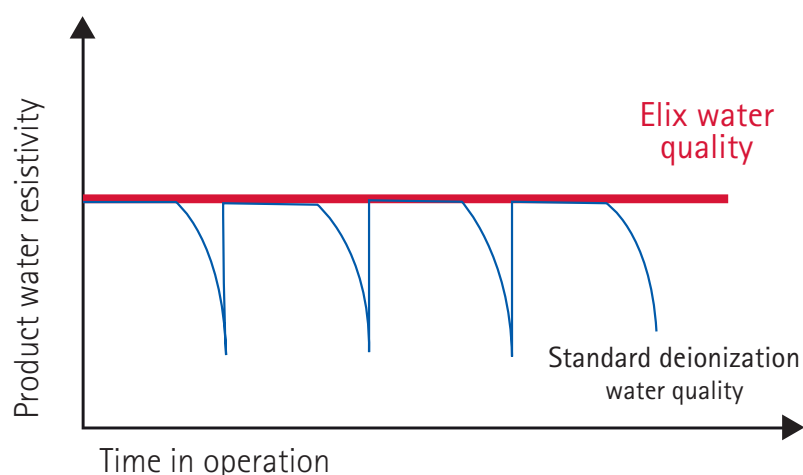
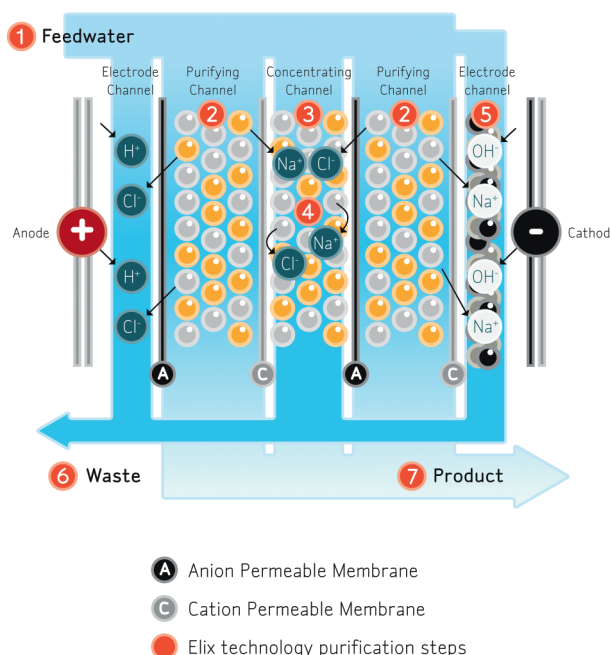
Elix electrodeionization module is key to savings

At the heart of the Elix Gulfstream Clinical system, the Elix module is the key to the system's low running costs. Following pretreatment and reverse osmosis purification steps, water from the system flows into the Elix module, where Elix technology removes additional contaminants, boosting the purification process to provide consistent, superior quality pure water.

Merck Millipore's Elix module: unique technology based on anion-permeable and cation-permeable membranes; high quality ion-exchange resin; and activated carbon beads. No maintenance is required for the Elix module.

Lower costs and consistent water quality

Within the Elix module, water is deionized using ion-selective membranes and ion-exchange resins that are permanently and gently regenerated by a small electrical field. Because there is no need for chemical resin regeneration, water produced by the Elix module remains consistently pure. This cuts costs in comparison to other systems requiring the frequent exchange of DI resin cartridges or tanks.



Elix technology vs. replaceable ion-exchange resins

The graph clearly shows the superiority of Elix technology over other systems using ion-exchange resins that must be chemically regenerated or exchanged.

Unique design eliminates the need for softeners or conditioning cartridges prior to the Elix module

Superior, unique activated carbon technology in the Merck Millipore-patented Elix module provides lower running costs and reduces maintenance for system users:

- There is no need for an anti-scaling cartridge upstream of the Elix module
- No extra softeners are required

Robust, reliable and built to last

The Elix Gulfstream Clinical system is built to last. It incorporates the best purification technologies and components, and is manufactured at ISO® 9001 v. 2000 and ISO 14001-registered production sites.

► High-performance RO purification

In Elix Gulfstream Clinical systems, improved RO cartridges achieve a higher rate of ionic rejection that improves the reliability and purity of the product water. Additionally, the membranes used in the RO cartridges have a greater surface area, which means that up to 70 % of incoming tap water is either recycled or becomes RO product water. This translates to:

- Lower water consumption
- Extended lifetime for the pretreatment packs
- Better resistance to difficult feed water conditions
- Constant RO product water flow rate

► Bacterial levels kept under control

RO sanitization port: In addition to the sanitization that automatically occurs whenever a Progard® pretreatment pack is changed, an RO membrane sanitization port allows access for an easy method of additional sanitization when desired.

UV bactericidal effect: Before pure water is stored in the system's reservoir, it passes through a powerful 254 nm UV lamp, which has an important bactericidal effect. For further protection, an optional Automatic Sanitization Module (ASM) with a second UV lamp may be added to the internal reservoir. The ASM can be used with either manual or programmed UV exposure to maintain low bacterial levels in the stored tank water.

Final purification step: As a last safeguard the water is sent through a final filter before entering the analyzer. Depending on your laboratory usage, Merck Millipore offers either a 0.22 µm filter that will remove particles and bacteria, or an ultrafilter which will remove bacteria by-products, bacteria, and particles for Alkaline Phosphatase-free water. Both of these options produce water that is designed to exceed CLRW specifications for bacteria.

► Optimized control over water quality

To provide you with optimized control over water quality, the Elix Gulfstream Clinical system checks relevant parameters regularly following each purification step (pre-treatment, advanced reverse osmosis, Elix module EDI, polishing with Q-Gard® purification pack). The values below are displayed on the LCD display located on the front of the system, where users can check them easily and make sure that the system is functioning optimally:

- Feed pressure, feed water quality
- RO pressure, RO water quality, RO membrane efficiency (% ion rejection)
- Elix water: resistivity and temperature
- Product water sent to feed the analyzer: resistivity and temperature



► Strict quality control

All standard or optional components included in the Elix Gulfstream Clinical system (resistivity meters, RO membranes, pumps, UV lamps, Automatic Sanitization Modules used on storage reservoirs, water detection sensors, etc.) have been tested according to strict protocols during the development phase in order to provide the best and most reliable performance for users.

► Backup function

All Elix Gulfstream Clinical systems have a standard built-in emergency backup function, which provides biomedical laboratory users with several hours of emergency coverage.

A quiet, all-in-one solution—on wheels!

A true all-in-one solution, the Elix Gulfstream Clinical system has been designed for a safe and "clean" installation. Combining all system components in one cabinet avoids inconvenient and unwieldy tubing between the different purification steps.

The system's purification technologies, reservoir, and pumps are all inside the system cabinet. For easy access when replacement is needed, purification and polishing packs are installed on the system exterior. The frame base is watertight, and for added protection, an optional water sensor can be incorporated inside the system to shut down the feed water flow if a leak should occur. No assembly is required: installation can be quickly completed by a single Merck Millipore technician.

For laboratories short on space, the system's small footprint—nearly half the size of some current biomedical lab solutions—is a real advantage, allowing installation in confined areas. Thanks to its mobility, the system can easily be placed elsewhere in the lab to supply other analyzers, or to accommodate floor cleaning or other necessary lab interventions. Finally, with all system components located inside the frame, users benefit from quiet, non-obtrusive operation.

Responsive and efficient service support

Merck Millipore has developed an extensive service portfolio that lets users select a service plan to match their specific needs. All service plans include at least one scheduled preventive maintenance visit, so usually there will be no need for you to contact our service organization directly. However, in the rare instance that a problem should occur between scheduled maintenance visits, we are committed to providing you with a solution as quickly as possible.

Merck Millipore's technical support hotline is manned by dedicated in-house support experts who are available to investigate, diagnose, and solve customer issues. Field service engineers and hotline experts are on duty for extended hours to meet the needs of our customers.

Meets increased water and environmental standards

Thanks to an efficient combination of purification technologies, the Elix Gulfstream Clinical system meets the stringent CLSI clinical laboratory reagent water (CLRW) standards: > 10 MΩ.cm @ 25 °C; bacteria levels of < 10 cfu/mL; < 500 ppb TOC; and < 0.22 µm particulates.

To comply with CLSI validation criteria, Merck Millipore proposes a Qualification Program for the Elix Gulfstream Clinical system. Qualification protocols will be performed by trained, certified Merck Millipore Field Service Support Engineers using calibrated equipment.

The Elix Gulfstream Clinical system complies with the European Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC, which concerns the use of hazardous substances in electronic and electrical equipment. Its strong RO water recovery also means less tap water use, which is another "plus" for the environment.

Manufacturing sites are ISO 9001 v. 2000 and ISO 14001-registered.

To ensure efficiency and safety of operation, the Elix Gulfstream Clinical system is certified for safety and electromagnetic compatibility (CE, UL, cUL, FCC).

Specifications

Quality of Water Distributed to the Analyzer

Resistivity	> 10 MΩ.cm
Conductivity	< 0.1 µS / cm
Microorganisms	< 10 cfu/ml (immediately after the final filter)
Max. dispense flow at 1 bar (15 psi)	2.4 LPM
Max. dispense flow at 2 bar (30 psi)	1.8 to 2 LPM

Quality of Water Distributed to the Reservoir

	Elix water flow rate*	Elix water quality feeding the reservoir
Elix Gulfstream Clinical 35	35 LPH	>5 MΩ.cm @ 25°C (Typically 10-15 MΩ.cm**)
Elix Gulfstream Clinical 70	70 LPH	>5 MΩ.cm @ 25°C (Typically 10-15 MΩ.cm**)
Elix Gulfstream Clinical 100	100 LPH	>5 MΩ.cm @ 25°C (Typically 10-15 MΩ.cm**)

* Nominal flow from 7-30 °C

** When CO₂ is < 30 ppm in the feed water

Feed Water Specifications

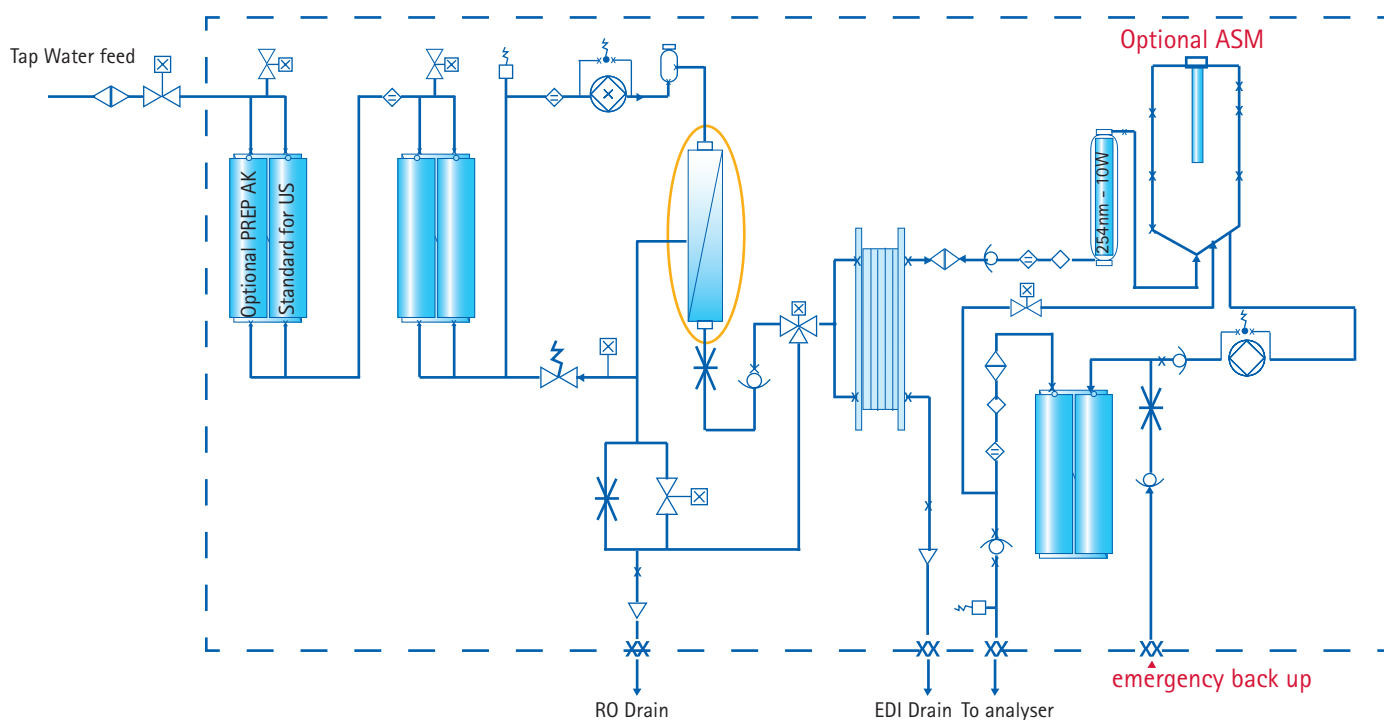
Feed water quality	Potable tap water feed
Feed water conductivity	< 2000 $\mu\text{S}/\text{cm}$ at 25 °C
Feed water temperature	5 to 35 °C
Pressure	2 to 6 bar
Maximum LSI	+0.3
pH	4 to 10

General System Information

	Approximate Operating Weight (with full tank)	Dimensions
Elix Gulfstream Clinical 35	239 kg (527 lb)	Height – 1528 mm (60 in) Width – 492 mm (19.4 in) Depth – 852 mm (33.5 in)***
Elix Gulfstream Clinical 70	248 kg (547 lb)	Height – 1528 mm (60 in) Width – 492 mm (19.4 in) Depth – 852 mm (33.5 in)***
Elix Gulfstream Clinical 100	257 kg (567 lb)	Height – 1528 mm (60 in) Width – 492 mm (19.4 in) Depth – 852 mm (33.5 in)***

*** The tubing protection at the back of the system adds 100 mm to the depth.

Flow Schematic





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