

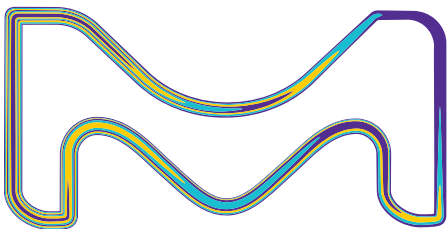
Milli-Q® CLX 7000 Series

Connected Water
Purification Systems

- Economical and reliable high-performance systems
- Incorporating Elix® electrodeionization technology
- For analyzers with pure water needs up to 3000 L daily



Now with MyMilli-Q™
Remote Care



The Life Science business
of Merck operates as
MilliporeSigma in the
U.S. and Canada.

Milli-Q®
Lab Water Solutions

Robust & Reliable Performance for Maximum Lab Productivity

Your biomedical laboratory is a busy and demanding environment, with clinical analyzers capable of processing several thousand samples per day. As water is the most frequently used fluidic reagent onboard an analyzer, your choice of water purification system is key to smooth and uninterrupted daily lab operations.

The water purification solution must reliably provide your clinical analyzer(s) with consistent water quality that meets CLRW standards of the CLSI®.

With the high-throughput **Milli-Q® CLX 7000 analyzer feed series**, your clinical laboratory benefits from a high-performance and economical water purification solution that fulfills its many critical needs:

Assured productivity

- **Robust and reliable performance** is supported by patented water purification technologies, 24/7 real-time monitoring and secure remote control access.

Low & predictable running costs

- Ensured thanks to our patented and environmentally-responsible water purification technologies:
 - **Elix® EDI module** provides consistently high quality water with no need for resin cylinders. This reduces maintenance, running costs and analyzer downtime.
 - **E.R.A.® technology** automatically optimizes water recovery to decrease water expenses.

Time savings

- **Easy-to-use with minimal maintenance** thanks to step-by-step touchscreen instructions, automated consumables traceability, and UV lamps that reduce sanitization needs for the system and the analyzer.
- **Facilitated data traceability and accreditation** thanks to full monitoring capabilities, automatic e-record archiving, and the new MyMilli-Q™ Remote Care service platform.

Maximum uptime

- The outstanding, rapid service of **Milli-Q® Services** is now expanded to include a new remote connection capability. **MyMilli-Q™ Remote Care** gives you 24/7 secure online access to your system and its data, simplifying system management and supporting your productivity.

CLRW, clinical laboratory reagent water; CLSI, Clinical and Laboratory Standards Institute; EDI, electrodeionization; E.R.A.®, Evolutive Reject Adjustment

*“Great instrument and great customer service!
Much easier to use than our prior water system.
Very easy to maintain and the water purity
seems to be much better.”*

– Kimberly Bartlett, Chemistry Supervisor,
Athens-Limestone Hospital, Alabama, USA

Best-in-class Milli-Q® Services, now supported by MyMilli-Q™ Remote Care

Because the reliability of biomedical laboratories is critical to patients and doctors alike, we offer an unprecedented level of service with the Milli-Q® CLX 7000 Series.

Simply log into the **MyMilli-Q™** web interface to discover **MyMilli-Q™ Remote Care**, our online service and monitoring capability designed to support you in maximizing uptime. This unique service gives you and our support teams access to your Milli-Q® CLX 7000 system and its data, for quick and precise remote diagnostics as well as repairs. *Learn more about this new service capability on pages 8 and 9 of this brochure.*

And because every lab situation is different, our Milli-Q® Services offering can be customized around your needs:

- Before installation, a certified Field Service Engineer will analyze your feed water quality to provide the **optimal parameter configuration** for your system. This maximizes the performance and reliability of your Milli-Q® CLX 7000 instrument and associated clinical analyzers.
- Choose the **Milli-Q® Service Plan** that’s right for your lab—from a single annual Preventive Maintenance Visit with replacement of aging parts, to full system coverage.
- **Online Contract Management** lets you more efficiently track your water system’s service history and easily schedule maintenance visits.
- A **range of options** lets you customize your service solution. Choices include qualification, calibration and verification services, scheduled consumables shipments, and sanitization.

Contact your local Merck office for information about the service offer available for your facility, or visit SigmaAldrich.com/milli-qservices

Trust in Pure Experience & Expertise

We are a partner you can count on. As one of the top three R&D investors in the Life Science Tools industry, we have a long history of strong partnerships with both biomedical laboratories and major clinical analyzer manufacturers. This valuable experience has enabled us to develop our expertise concerning end-user applications, such as biology, biochemistry, microbiology and immunology, and to design top-quality water purification solutions dedicated to feeding clinical analyzers.

The Milli-Q® CLX 7000 Series is manufactured in an ISO® 9001- and ISO® 14001-registered site. Additionally, to ensure efficiency and safety of operation, systems are CE-, cULus-, and FCC-certified. Furthermore, to reduce environmental impact, the Milli-Q® CLX 7000 Series follows European Restriction of Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE) directives.



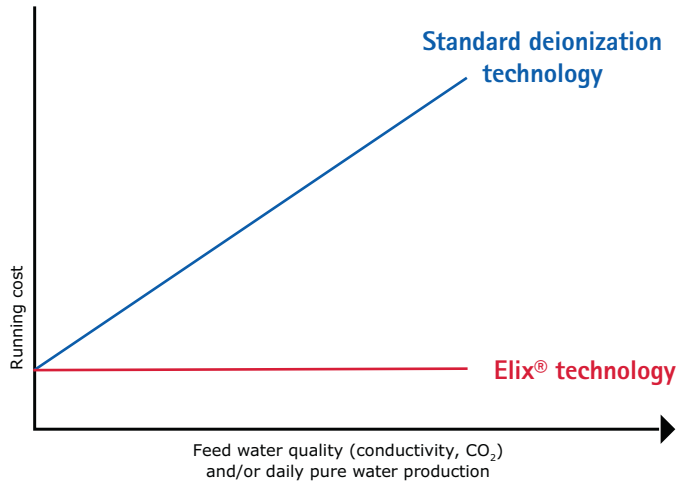
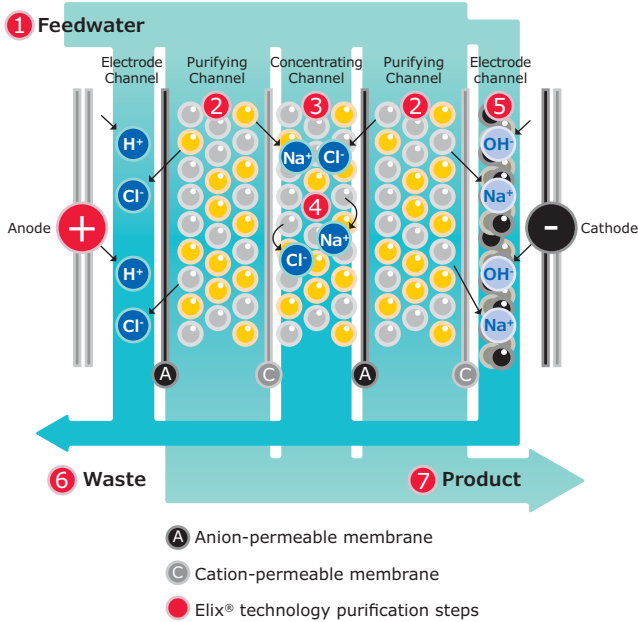
Low and predictable running costs with Elix® technology

The Milli-Q® CLX 7000 Series relies on complementary water purification techniques, including state-of-the-art Elix® electrodeionization (EDI) technology, to ensure production of consistently high quality water meets CLRW standards – at low and predictable running costs.

In the Milli-Q® CLX 7000 Series, potable tap water is first treated with a Progard® pack and purified by reverse osmosis (RO) to remove up to 99% of contaminants. The resulting RO permeate water then enters the Elix®

EDI module, where ion-exchange resins are continuously regenerated by a small electrical field.

Elix® technology provides consistently high quality, pure water with no maintenance (or maintenance-related costs) required for the Elix® module. There is no need to replace resin cylinders, or to use softeners and conditioning cartridges. Water purification system maintenance is thus reduced, resulting in less analyzer downtime and greater lab productivity.



Elix® module: Our unique technology is based on anion-permeable and cation-permeable membranes and high-quality, ion-exchange resin. Water produced by the Elix® module enters the reservoir with resistivity greater than 5 MΩ·cm @ 25 °C (typically up to 15 MΩ·cm @ 25 °C).*

The graph shows running costs for a water purification system using Elix® electrodeionization technology or standard ion-exchange resins that must be exchanged or chemically regenerated. With Elix® technology, running costs remain constant, and are independent of feed water quality, RO membrane efficiency, or pure water use — making it easy to predict the running cost of your Milli-Q® CLX 7000 system.

Three built-in UV lamps, for the best control over bacterial levels ever achieved

Bacteria and their by-products interfere with chemistry assays and enzyme immunoassays, typically leading to unstable analyzer calibrations, high absorbance of blanks, reference drifts, and errors on mean patient values.

In the Milli-Q® CLX 7000 Series, UV lamp sanitization occurs at three stages:

- **During water production**, a 254 nm bactericidal UV lamp inactivates bacteria.
- **In the tank**, a UV lamp (ASM, Automatic Sanitization Module) regularly irradiates stored water and the tank walls, preventing bacterial growth and the formation of biofilm.

- **In the distribution loop**, water is automatically recirculated through a UV lamp and a pharmaceutical grade Opticap® 0.22 µm sterilizing filter before entering the analyzer.

This design helps you achieve the highest water quality at each step in the purification process, dramatically reducing the frequency of system sanitization. This is the best way to avoid downtime due to decontamination of your water purification system and/or analyzer.

* When CO₂ dissolved in feed water is less than 30 ppm.

Optimize water consumption with an environmentally responsible system containing E.R.A.® technology

The Milli-Q® CLX 7000 Series incorporates our E.R.A.® (Evolutive Reject Adjustment) technology — providing users with even greater savings.

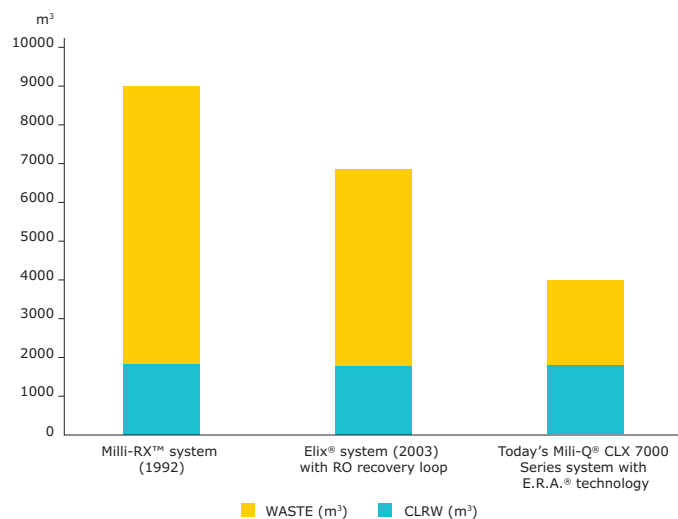
With its innovative and efficient reverse osmosis (RO) recovery loop, the Milli-Q® CLX 7000 Series optimizes water consumption by recycling part of the water rejected to the drain, thus reducing water waste and also extending RO cartridge and Progard® pack lifetimes.

Furthermore, depending on the feed water quality analysis, the Milli-Q® CLX 7000 Series will calculate the best water recovery and will automatically optimize water consumption by means of motorized valves.

No matter what the feed water temperature, inlet pressure, or conductivity may be, E.R.A.® technology's automated valves ensure that the Milli-Q® CLX 7000 Series flow rate and water recovery remain constant.* Users no longer need to manually adjust valves to maintain production flow rate and protect RO cartridge lifetime.

These latest RO technologies illustrate our dedication to developing environmentally responsible water purification solutions to reduce tap water and system consumables use. The solutions reduce maintenance time, as well as the risk of human error — letting users save money on system operation, and also enjoy peace of mind with higher reliability, and optimized water purification system/analyzer uptime.

* Please refer to Feed Water Requirements in the Specifications Table.



Over the last 25 years, we have dramatically reduced water purification system water consumption, **enabling laboratories to save up to several thousand dollars per year on tap water expenses.** The graph shows water consumption and the split between CLRW produced and reject water for three of our water purification systems over a seven-year period (production of 1000 L/day of CLRW-quality water, 312 days per year).

“Small footprint with great reliability and ease of use. It’s a very reliable DI water system with excellent service and sales reps in the Kansas City area. The small footprint of this system makes it easy to store in our lab and provide excellent water to our clinical analyzer. The interface is easy to use and changing filters is no problem.”

– Josh Kollmeyer MLS (ASCP), Laboratory Manager,
Clay Platte Family Medicine Clinic, Kansas City, Missouri, USA

User-friendly system interface with all relevant information at a glance

With its large, innovative touchscreen, the system is designed for intuitive operation, with all information available at a glance in a dashboard format. Nine different languages are available for greater convenience. Navigating and interacting with your water purification system has never been easier!

System status zone

Large display shows water qualities and storage volume

Clear, visible status of all consumables

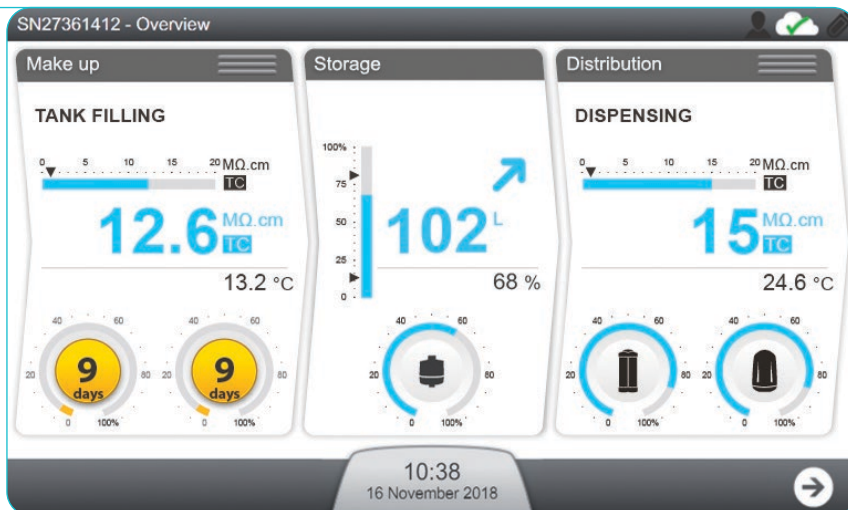
Notification zone for alerts and alarms



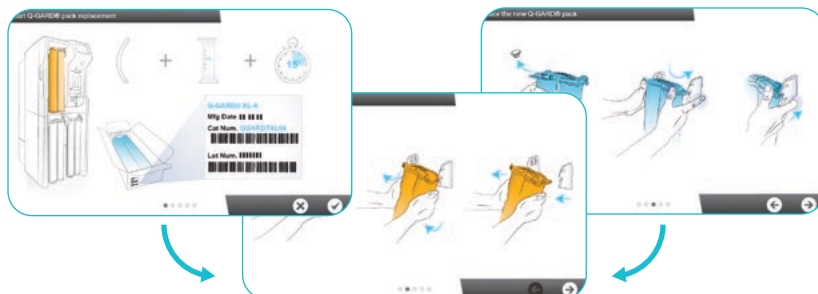
If a consumable change is required, the system will display a yellow, blinking alert 15 days in advance. Just touch the yellow alert symbol to open a new screen...

Now you can view and control your system's interface remotely via MyMilli-Q™ Remote Care.

See pages 8 & 9 for more information.



... where a wizard will guide you through the maintenance procedure with easy, step-by-step instructions. You don't need to be an expert to perform regular maintenance on your system!



An easy-to-use, low-maintenance system

Low maintenance saves time and increases profitability

- Robust and patented Elix® technology ensures consistent pure water, as well as low and predictable running costs – regardless of your feed water quality.* No maintenance is required for the Elix® module.
- An ergonomic and patented pack-locking system lets you change packs easily and quickly.
- RFID technology prevents insertion of an incorrect purification cartridge in Milli-Q® CLX 7000 systems, and also ensures automatic traceability of pack use and replacement, saving time for the user.
- Automatic self-maintenance functions significantly reduce tap water use and increase cartridge lifetime:
 - The Progard® pretreatment pack incorporates several purification media in just one consumable to protect the RO membrane from particles, free chlorine, and scaling. Maintenance is easier and quicker with only one pack to change!
 - The system’s flush mode and cleaning cycles keep the RO membrane in top operating condition.



An ergonomic and patented pack-locking system.

Never before has it been so easy—or so time-saving—to use and maintain your water purification system.

A mobile, customizable system

Optimal use of lab space

The Milli-Q® CLX 7000 Series is compact, quiet, and mounted on wheels with brakes, so it can be placed wherever it's convenient — and moved to another location as the lab configuration grows or evolves.

Customizable systems to fit your specific requirements

A number of options and accessories are available for the Milli-Q® CLX 7000 Series to fit your specific requirements and to improve water quality monitoring:

- **An online TOC (Total Organic Carbon) monitor** allows verification that the TOC level of system water is below 500 ppb as required for CLRW quality. This avoids the need for duplicate assays or repeated analyzer calibrations.
- **Degassing option** provides a solution for feed water that is highly contaminated with gases, such as a CO₂ concentration above 30 ppm.
- **RO regeneration tool**, for use when feed water quality is poor, provides additional RO membrane cleaning, and completes the action of the Progard® Autoclean pack.
- **Sanitary sampling valve** for safe and reliable water sampling for microbiological analysis.
- **Water sensor(s) and alarm output(s)** also can be easily added to your Milli-Q® CLX 7000 system.



* Please refer to Feed Water Requirements in the Specifications Table.

connect to peace of mind

Milli-Q® Services presents MyMilli-Q™ Remote Care, an online service that simplifies the management of your Milli-Q® CLX 7000 water purification system.



What can MyMilli-Q™ Remote Care help you to achieve?

- **Assure productivity 24/7.** Access real-time system information, water quality data and much more from anywhere at any time for 24/7 confidence in your lab's performance.
- **Save time.** In the event you need support, your interaction with Milli-Q® Services is streamlined as MyMilli-Q™ Remote Care provides our service organization a secure and direct view of your system information. Our service teams can remotely diagnose and potentially repair your system, avoiding the need to wait for a service visit.
- **Maximize uptime.** Receive notification of alerts and alarms (by email or SMS) allowing you to promptly and remotely manage your system, either independently or with our remote assistance.
- **Easier data traceability & accreditation.** Audit preparation and lab accreditation have never been so effortless as data are automatically saved and can be easily accessed, searched and retrieved. Choose to download a standard Quality Report, or to create your own tailored reports.

The screenshot displays the MyMilli-Q™ Remote Care web interface. At the top, there's a navigation bar with the MyMilli-Q™ logo and a search bar. Below this, the 'Equipment Details' section shows fields for Equipment name, Product catalog number, Serial, Asset number, Location, and City. A sidebar on the right contains quick actions: Remote Access, Notification Status, Contact Hotline, and Generate Quality Report. A central navigation bar includes tabs for Peripheral Devices, My Contracts, File Management, Water Information, Process Information, Diagnostic Information, and Inventory Information. The main content area is divided into 'Current Service Contract' and 'Service Visit' sections. The 'Current Service Contract' section lists details like Contract number, End of manufacturer warranty, Service Type, Service Option, Contract start date, and Preventive maintenance visit status. The 'Service Visit' section shows a table with columns for Type, Number, Estimated Date, Scheduled Time, and Attachments. A light blue callout box on the right side of the screenshot contains a numbered list of seven key features.

The MyMilli-Q™ Remote Care customer home page can be accessed online 24/7.

- 1 Quickly view all system details.
- 2 Easily share water quality and system information with your analyzer supplier's service hotline.
- 3 Access and remotely control your system's interface (see page 6).
- 4 Send a direct message to Milli-Q® Services.
- 5 Instantly generate a Quality Report over the timeframe you specify.
- 6 Find all system documentation and generated reports.
- 7 Scroll down to view:
 - Brand/model/serial no. of analyzer(s) fed by the water system
 - Real-time water quality parameters: resistivity, temperature and TOC
 - Service contract information
 - History of service visits and reports
 - Current alarms and alerts
 - Interactive Event Traceability tool for a visual timeline of all system events
 - Graphs of water resistivity, temperature and TOC over your chosen timeline
 - Remaining lifetime of each consumables as well as consumable contracts

A water purification system that facilitates accreditation.

Water used to feed an analyzer is a critical reagent. Its quality must be documented for biomedical laboratories seeking accreditation (or reaccreditation) to the ISO 15189:2012 standard supported by CAP[†] 15189SM accreditation.

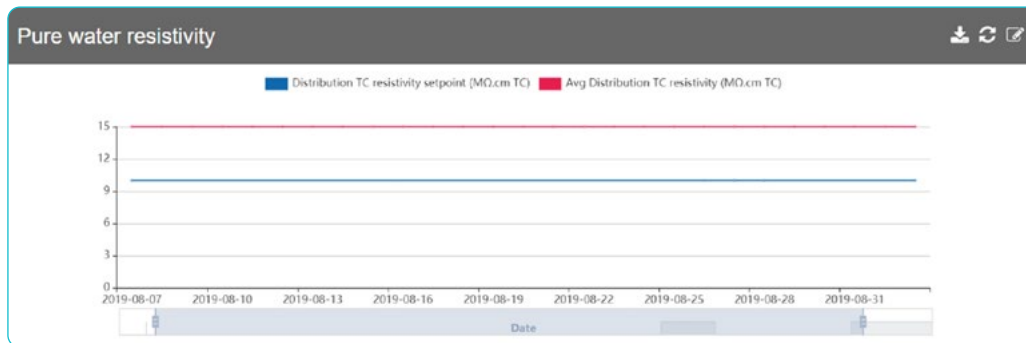
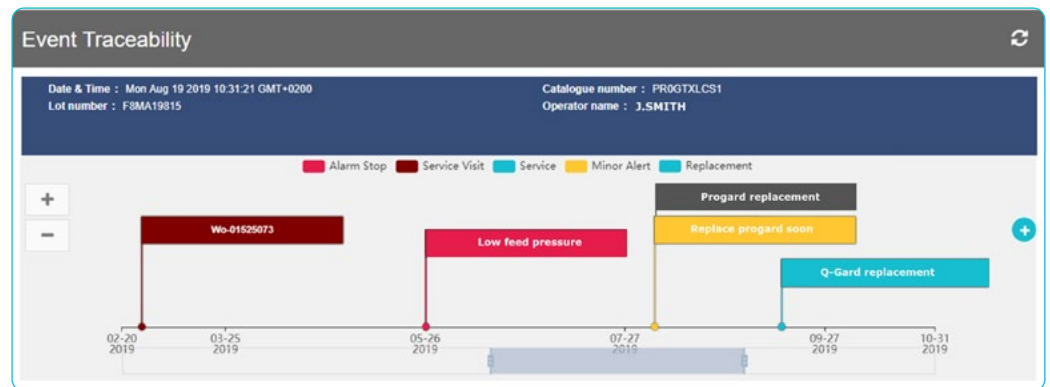
To facilitate compliance with worldwide regulatory organization guidelines, Milli-Q[®] CLX 7000 systems allow for full monitoring capabilities as well as automatic e-record archiving both:

- **Directly in the system** — data are retrievable by USB key or via your lab's intranet connection.
- **In the cloud** when MyMilli-Q[™] Remote Care is activated.

E-record archiving supports traceability of all water-related daily operations, measurements and events. It saves time and is less expensive to manage versus paper documentation, as it removes the need for daily checks of the water purification system, hand-recording of parameters in a lab book, and physically archiving years of paper data.

Now, with the user-friendly MyMilli-Q[™] web interface and MyMilli-Q[™] Remote Care service capability, data management is even more simplified. Your system and water data are readily accessible and rapidly searchable, graphable and reportable — from anywhere at any time.

An interactive Event Traceability tool lets you view events by type and over the timeline you specify. View past events (alarms, alerts, consumable replacements, service visits, custom events) and plan for future system maintenance. Click on any event and its details are displayed in the blue banner above the timeline. In this example, a Progard[®] cartridge was replaced by J.SMITH on Aug 19, 2019.



Water quality parameters (resistivity, temperature, TOC) are graphed over the timeline of your choice and can be easily downloaded.

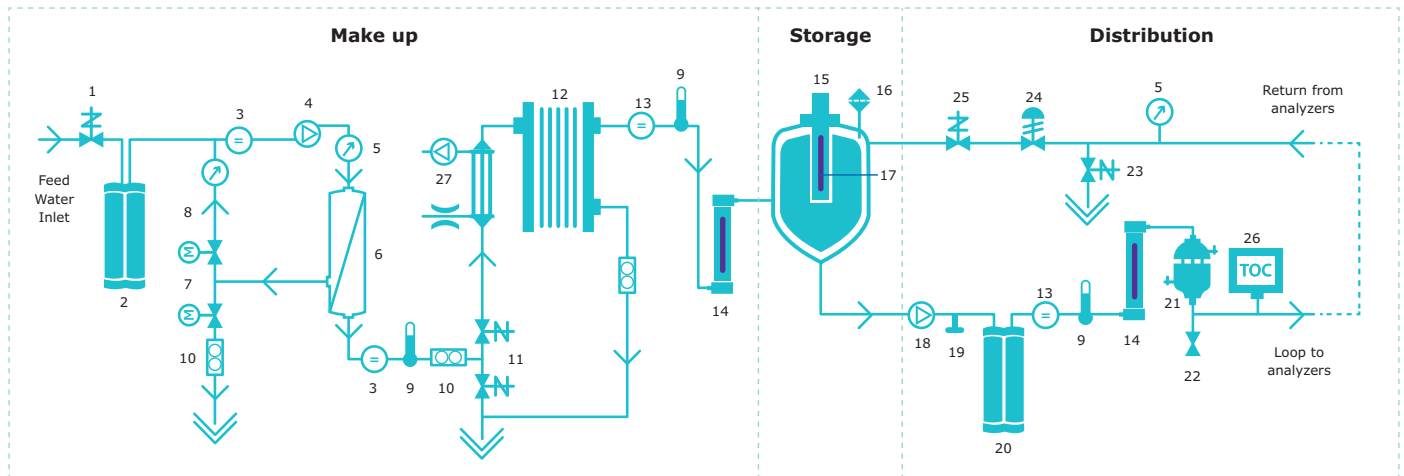
The system automatically stores a fully traceable—and easily retrievable—record of service history. In addition to archiving data, MyMilli-Q[™] online tool lets you streamline contract management. You'll be able to schedule maintenance visits, manage consumable deliveries and renew your service contracts, all online.

Number	Type	Scheduled date	Status	Closed date	Attachments
WO-01552478	Preventive Maintenance	Oct-21-2019	Open	N/A	
WO-01484798	Preventive Maintenance	Oct-23-2018	Billed	Oct-23-2018 17:51:51	
WO-01414935	Repair	Apr-25-2018	Billed	Apr-25-2018 17:29:55	
WO-01319139	Preventive Maintenance	Oct-22-2017	Billed	Oct-22-2017 18:42:39	
WO-01224863	Installation	Oct-18-2016	Billed	Oct-18-2016 15:22:14	

[†] CAP, College of American Pathologists

Technical Appendix

Milli-Q® CLX 7000 Series Water Purification Process



- | | | | |
|--|-----------------------------------|---|----------------------------------|
| 1. Inlet Valve | 8. RO Recirculation Loop | 15. Vent Filter | 22. Sampling Valve |
| 2. Progard® Pretreatment Pack | 9. Temperature Sensor | 16. Sanitary Overflow Sensor | 23. Automatic Loop Rinsing Valve |
| 3. Conductivity Cell | 10. Flow Sensor | 17. Automatic Sanitization Module (ASM) | 24. Back Pressure Regulator |
| 4. RO Pump | 11. 3-Way Automatic Rinsing Valve | 18. Distribution Pump | 25. Recirculation Loop Valve |
| 5. Pressure Sensor | 12. Elix® Module | 19. Emergency Back Up - Quick Connector | 26. TOC Monitor (Option) |
| 6. RO Cartridge | 13. Resistivity Cell | 20. Q-Gard® Polishing Pack | 27. Degassing Unit (Option) |
| 7. Twin Motorized Valve - RO Recirculation | 14. UV Lamp (254 nm) | 21. Opticap® Filter (0.22 µm) | |

*Subject to subscription. Please contact your local Merck office for information about the service offer available for your facility.

Milli-Q® CLX 7000 Series Specifications

The Clinical Laboratory Reagent Water (CLRW) Quality Standard, defined by the CLSI®

Resistivity	> 10 MΩ.cm @ 25 °C
Total organic carbon (TOC)	< 500 ppb
Bacteria	< 10 CFU/mL
Filtration	0.22 µm

Milli-Q® CLX 7000 Series Performance

	Milli-Q® CLX 7040	Milli-Q® CLX 7080	Milli-Q® CLX 7120	Milli-Q® CLX 7150
Make-up flow rate to reservoir*	40 L/h (10.6 gal/h)	80 L/h (21.1 gal/h)	120 L/h (31.7 gal/h)	150 L/h (39.6 gal/h)
Make-up resistivity	> 5 MΩ.cm @ 25 °C (10-15 MΩ.cm @ 25 °C typically)			
Built-in reservoir volume (net volume)	90 L	90 L	140 L	140 L
Distribution flow rate to analyzers	4 L/min			
Distribution pressure to analyzers	Adjustable: 0.9 up to 2.1 bar†			

Water Quality Distributed to Analyzers

Resistivity	> 15 MΩ.cm @ 25 °C
Total organic carbon (TOC)	Typically < 30 ppb
Bacteria	Typically < 1 CFU/mL
Dissolved silica	< 0.05 mg/L

* Nominal flow rates ± 10% between 10 and 35 °C. Additional deviation of -3% per °C from 10 °C to 5 °C.

† With a distribution loop length of 20 m.

Dimensions and Weights

	Milli-Q® CLX 7040	Milli-Q® CLX 7080	Milli-Q® CLX 7120	Milli-Q® CLX 7150
Dimensions (H x W x D)	1255 x 543 x 797 mm (49.4 x 21.4 x 31.4 in)	1255 x 543 x 797 mm (49.4 x 21.4 x 31.4 in)	1255 x 543 x 947 mm (49.4 x 21.4 x 37.3 in)	1255 x 543 x 947 mm (49.4 x 21.4 x 37.3 in)
Net weight (shipping box)	134 kg (295.4 lb)	143 kg (315.3 lb)	155 kg (341.7 lb)	167 kg (368.2 lb)
Operating weight	222 kg (489.4 lb)	234 kg (515.9 lb)	303 kg (668 lb)	318 kg (701.1 lb)

Feed Water Requirements

Pressure	2 – 6 bar
Flow rate	> 10 L/min at 2 bar
Tap water connection	¾ in. Gaz M
Feed water type	Potable
Temperature	5 – 35 °C
Conductivity	10 – 2000 µS/cm at 25 °C
pH	4 – 10
Total hardness (as CaCO₃)	< 300 ppm
CO₂	< 30 ppm
Silica	< 30 ppm
Langelier Saturation Index (LSI)	< 0.3
Fouling Index (FI₅) or Silt Density Index (SDI₅)	≤ 7*
Total organic carbon (TOC)	≤ 1 ppm
Free chlorine	< 1.5 ppm†
Drain requirements (gravity fall with air gap)	≥ 10 L/min

* FI₅ > 7: An additional external pretreatment is required.

† Up to 3 ppm for Milli-Q® CLX 7040 (HC) and Milli-Q® CLX 7080 (HC) models.

General Specifications

Voltage and frequency*	230-240 VAC ± 10%, 50/60 Hz or 120 VAC ± 10%, 60 Hz or 100 VAC ± 10%, 50/60 Hz
Power consumption (VA)	900 (Milli-Q® CLX 7040/Milli-Q® CLX 7080) 1100 (Milli-Q® CLX 7120/Milli-Q® CLX 7150)
Noise level	< 50 db
Communication protocol	TCP/IP/CGI, embedded web server and HTML 5 embedded website†
Communication ports	Ethernet, USB 2.0
Languages	English, French, Spanish, Portuguese, Italian, German, Russian, Chinese, Japanese

* Depending on the system catalog number.

† No additional software needed for remote control.

MyMilli-Q™ Remote Care Specifications

Internet protocol version	IPV4
Security protocol	TLS 1.2 with AES 128-bit encryption and mutual authentication (server and client)
Remote control protocol	Secure websocket over TLS

For more information, please visit
SigmaAldrich.com/labwater

Milli-Q®

Lab Water Solutions

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[SigmaAldrich.com/labwater](https://www.SigmaAldrich.com/labwater)

For more information on Milli-Q® CLX 7000 systems, please visit:
[SigmaAldrich.com/milliqhighflow](https://www.SigmaAldrich.com/milliqhighflow)

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