arium® mini Ultrapure Water Systems

Compact Laboratory Water Systems
for 10 Liters per Day

Advantages

- Reliable: Delivers consistently high water quality for reliable and reproducible results
- Intuitive: Touch-activated color display with direct access to all important dispensing options
- Innovative: With unique bagtank technology, depending on the type of system; saves time-intensive tank cleaning
- Compact: Space-saving, with a width of only 28 cm

Product Description

Compact arium® mini laboratory water systems have been designed for Type 1 ultrapure water requirements of 10 liters per day and are ideal for use in preparation of buffers, media and samples, both in life sciences applications and in analytical laboratory procedures.

A large, touch-activated screen and intuitive menu navigation ensure exceptionally easy operation. Regardless of your type of feed water available, use arium® mini or arium® mini plus featuring our unique bagtank technology or connect arium® mini essential directly to your deionized water supply line in the lab.

Reliable

To ensure that you always obtain reliable and reproducible results, the system ensures consistently high water quality. For your analytical requirements and especially critical applications, you additionally have the option of obtaining your system with an integrated UV lamp (185/254 nm) to reduce TOC to ≤ 5 ppb*.

Innovative

The most advanced bagtank technology will save you from performing time-intensive cleaning and rinsing procedures. As this eliminates the need for using chemicals that can be hazardous to your health, you will help protect the environment and increase your own safety.

Intuitive

Easily operate the arium® mini using the touch-activated color display – even when you are wearing laboratory gloves. Easy-to-understand icons will guide you through the menu for intuitive, error-free operation. Simplify your sample preparation and benefit from direct access to all important dispensing functions: manual, volume-controlled or predefined volumes (Favorites function).

Compact

With a width of only 28 cm, arium® mini will readily fit into any laboratory environment. This handy device will give you the flexibility you need in integrating it into nearly any location.

* Depends on the type of system and your feed water

Unique Bagtank Technology

The arium® mini and arium® mini plus are the only ultrapure water systems with incorporated bagtank technology, which features a 5-liter bag originally designed for the pharmaceutical industry and integrated on the side of the system. This bag enables you to optimally store your pretreated pure water in the bag for further purification to Type 1 ultrapure water.

In the process, the closed system prevents ions and gases from entering, ensuring that the conductivity remains constantly low.

Depending on your needs, you can easily exchange the bag, which thus prevents the buildup of a permanent biofilm.

arium® mini – unique quality "made in Germany"

Three Product Versions

It's your choice depending on your specific requirements:

Type of System	Feed Water*
arium® mini plus with integrated bagtank	Direct connection to tap water
arium® mini with integrated bagtank	Pretreated water from supply container
arium® mini essential	Directly connects to pretreated water line (RO | DI | EDI)

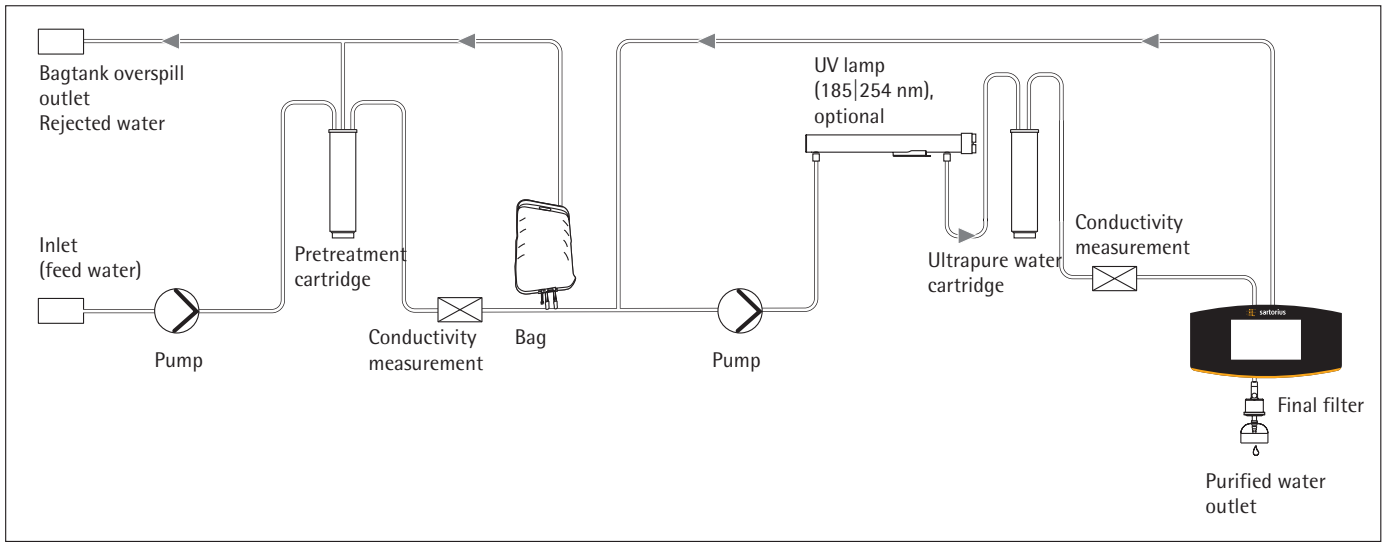
* For details, see inlet water specifications.

Technical Specifications

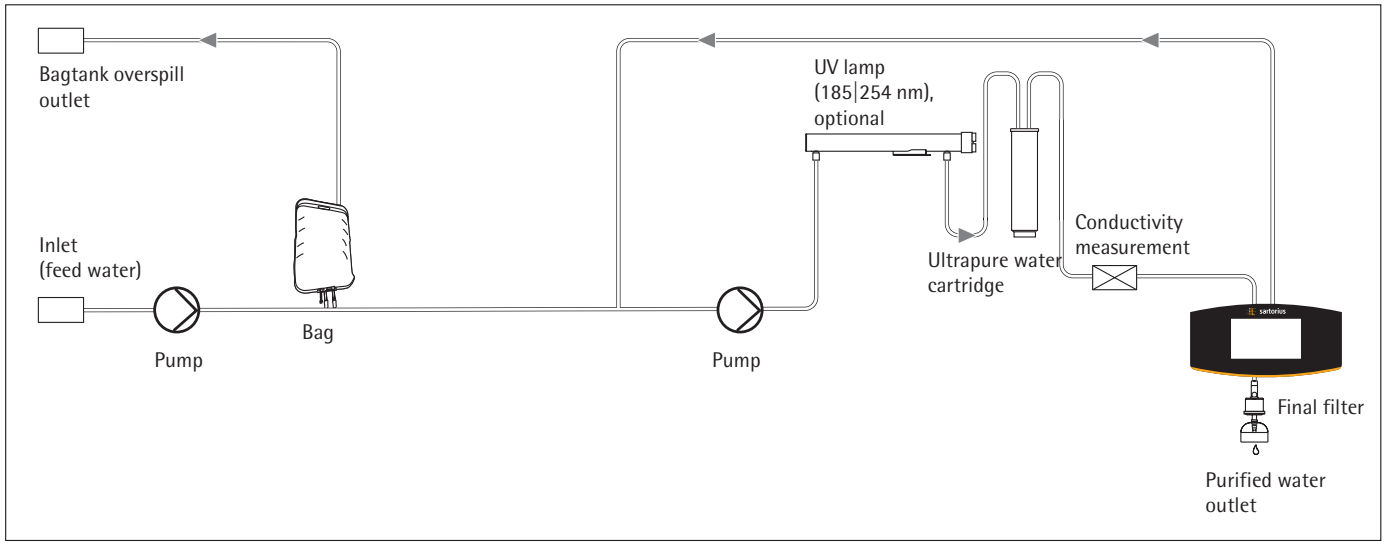
General Specifications

Water purification method	Adsorption by spherical activated carbon, catalyst, reverse osmosis, ion exchange, optional UV irradiation, and by point-of-use particle-removing filtration | sterile filtration
Dimensions: width × height × depth	280 × 509.4 × 530.7 mm (11 × 20 × 20.9")
Empty weight	Approx. 13 kg (28.6 lbs.)
Operating weight	Approx. 23 kg (50.6 lbs.)
Power supply	100 – 240 VAC; 50 and 60 Hz, 2 A (max.)
Operating temperature	2°C – 35°C at max. 80% relative humidity
Storage temperature	5°C – 45°C at max. 80% relative humidity

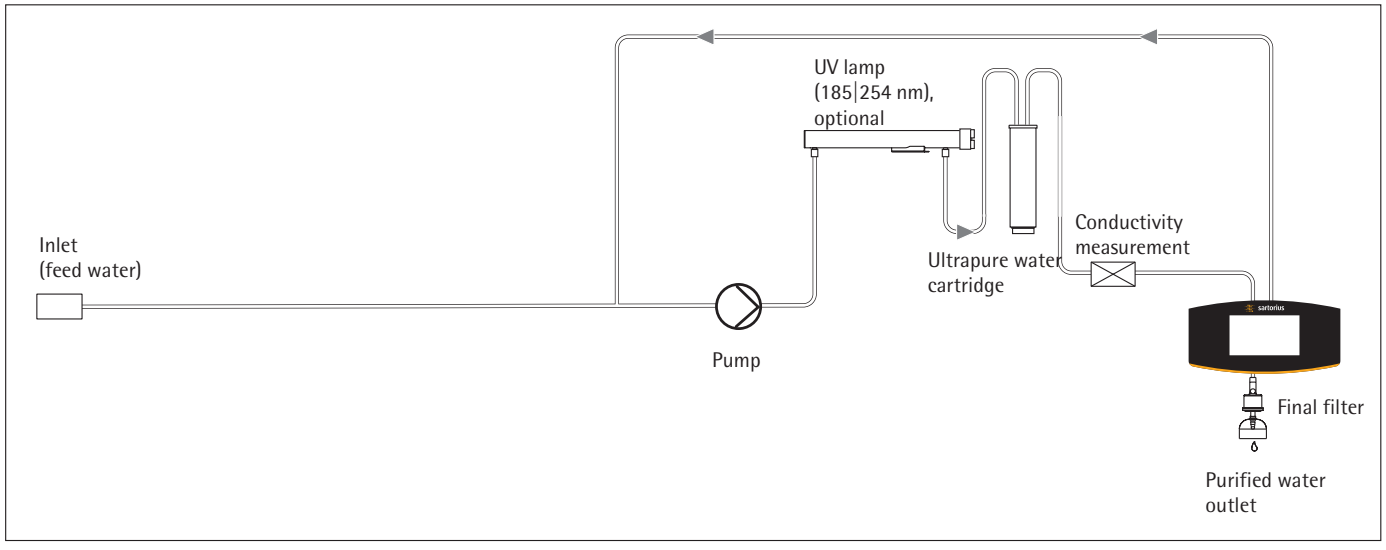
Example showing arium® mini plus with opened side cover



Flow diagram for arium® mini plus



Flow diagram for arium® mini



Flow diagram for arium® mini essential

Specifications of Water Purified by arium® mini plus

Type of water	ASTM Type 1 ultrapure water	Type 3 pure water
Output performance for purified water[1]	–	Up to 8 L/hr.
Water dispensing flow rate[2]	Up to 1.0 L/min.	Pressure-free via ball valve
Volume-controlled dispensing[2]	50 mL increments, between 0.05 L and 5 L	–
Volume accuracy[3]	± 3% between 0.25 L and 5 L	–
Typical conductivity	0.055 µS/cm, compensated to 25°C[6]	< 20 µS/cm[7]
Typical resistivity	18.2 MΩ × cm, compensated to 25°C[6]	< 0.05 MΩ × cm[7]
TOC content[4] (system with UV lamp)	≤ 5 ppb	–
Bioburden (microorganisms)[5]	< 1 CFU/1,000 mL	< 1 CFU/1,000 mL
Particle content > 0.2 µm[5]	< 1/mL	< 1/mL
Typical ion retention	–	Up to 98%
Retention of dissolved organic substances (MW > 300 daltons)	–	> 99%
Particle and microorganism retention	–	> 99%

Feed Water Specifications for arium® mini plus
Exclusively tap water of potable quality according to the drinking water standards of the USA, the European Union or Japan.

Inlet pressure	0.5 – 6 bar (approx. 7.3 – 87 psi); recommended > 2 bar (> 29 psi)
Temperature	2°C – 30°C
Specific conductivity	< 1,500 µS/cm, compensated to 25°C
TOC content	< 2,000 ppb
Max. total hardness (max. $CaCO_3$)	360 ppm
Unbound chlorine	< 4 ppm
Iron (total Fe content)	< 0.1 ppm
Fouling index (SDI)	< 10
Turbidity	<1 NTU
pH range	4 – 10

Ordering Information

arium® mini plus for production of ASTM Type 1 Ultrapure Water and Type 3 Pure Water
Equipment supplied:
1 arium® mini plus; optionally supplied with UV lamp

Order No. Without UV Lamp	Order No. Incl. UV Lamp	Description
H2O-MA-T	H2O-MA-UV-T	arium® mini plus, benchtop system; flow rate for Type 3 pure water, 8 L/hr.

[1] Depending on the feed water pressure, temperature and condition of the RO modules
[2] Depending on the hydrostatic pressure and accessories and/or final filter connected
[3] Under constant operating conditions
[4] Determined using tap water of the municipal water supply in Goettingen, Germany; TOC approx. 1,000 ppb
[5] If an arium® SterilePlus (Sartopore® 2 150) is used
[6] Output of the values measured can be set to compensated to 25°C or non-compensated
[7] Depending on the feed water

Specifications of Water Purified by arium® mini

Type	ASTM Type 1 ultrapure water
Output performance for purified water	–
Water dispensing flow rate[1]	Up to 1.0 L/min.
Volume-controlled dispensing[1]	50 mL increments, between 0.05 L and 5 L
Volume accuracy[2]	± 2% between 0.05 L and 5 L
Typical conductivity	0.055 µS/cm, compensated to 25°C[4]
Typical resistivity	18.2 MΩ × cm, compensated to 25°C[4]
TOC content[4] (system with UV lamp)	≤ 5 ppb
Bioburden (microorganisms)[3]	< 1 CFU/1,000 mL
Particle content > 0.2 µm[4]	< 1/mL

Feed Water Specifications for arium® mini
Water pretreated by reverse osmosis, distillation or deionization

Inlet pressure	Without pressure
Temperature	2°C – 30°C
Specific conductivity	< 100 µS/cm, compensated to 25°C
TOC content	< 50 ppb
Turbidity	<1 NTU
pH range	4 – 10

Ordering Information

arium® mini for production of ASTM Type 1 Ultrapure Water
Equipment supplied:
1 arium® mini; optionally supplied with UV lamp

Order No. Without UV Lamp	Order No. Incl. UV Lamp	Description
H2O-MM-T	H2O-MM-UV-T	arium® mini, benchtop system, for manual feed with pretreated water from a supply container

[1] Depending on the hydrostatic pressure and accessories and | or final filter connected
[2] Under constant operating conditions
[3] If an arium® SterilePlus (Sartopore® 2 150) is used
[4] Output of the values measured can be set to compensated to 25°C or non-compensated

Specifications of Water Purified by arium® mini essential

Type of water	ASTM Type 1 ultrapure water
Water dispensing flow rate[1]	Up to 1.0 L/min
Volume-controlled dispensing[1]	50 mL increments, between 0.05 L and 5 L
Volume accuracy[2]	± 2% between 0.05 L and 5 L
Typical conductivity	0.055 µS/cm, compensated to 25°C[4]
Typical resistivity	18.2 MΩ × cm, compensated to 25°C[4]
TOC content[4] (system with UV lamp)	≤ 5 ppb
Bioburden (microorganisms)[3]	< 1 CFU/1,000 mL
Particle content > 0.2 µm [4]	< 1/mL

Feed Water Specifications for arium® mini essential
Water pretreated by reverse osmosis, distillation or deionization

Inlet pressure	0 – 6.9 bar; (0 – approx. 100 psi); recommended > 2 bar (>29 psi)
Temperature	2°C – 30°C
Specific conductivity	< 100 µS/cm, compensated to 25°C
TOC content	< 50 ppb
Turbidity	< 1 NTU
pH range	4 – 10

Ordering Information

arium® mini essential for Production of ASTM Type 1 Ultrapure Water
Equipment supplied:
1 arium® mini essential; optionally supplied with UV lamp

Order No. Without UV Lamp	Order No. Incl. UV Lamp	Description
H2O-MU-T	H2O-MU-UV-T	arium® mini essential, benchtop system; for direct connection to pretreated water supply

[1] Depending on the hydrostatic pressure and accessories and/or final filter connected
[2] Under constant operating conditions
[3] If an arium® SterilePlus (Sartopore® 2 150) is used
[4] Output of the values measured can be set to compensated to 25°C or non-compensated

arium® SterilePlus

For Sterile and Particle-Free Water Dispensing

- Excellent total throughput and flow rates
- Integrity-tested
- Validated according to HIMA and ASTM F-838-05
- Meets WFI quality standards compliant with USP, incl. USP Plastic Class VI Test
- Manufactured according to EN ISO 9001
- Easy to install
- Certified quality

Description

The arium® SterilePlus (Sartopore® 2 150) is a sterile, ready-to-use membrane filter capsule designed to meet the highest requirements. Sartopore® 2 150 filter capsules contain a hydrophilic, heterogeneous polyethersulfone double-layer membane, delivering excellent total throughput and flow rate performance.

The capsule is attached by a quick-connect coupling to the point of use and reliably removes particles and microorganisms >0.2 µm in the last water purification step. A hydrophobic PTFE membrane at the highest upstream point permits easy and clean venting of the capsule.

All pleated SterilePlus membrane filter units are validated as sterilizing-grade filters for biopharmaceutical use according to HIMA and ASTM F-838-05 guidelines (documents available). Each capsule is integrity-tested during the manufacturing process to ensure it meets the highest quality standards and safety regulations.

Technical Specifications | Ordering Information

Materials	
Membranes	Asymmetrical polyethersulfone
Filling bell assembly	Polycarbonate
Other plastics	Polypropylene
Pore sizes	0.45 µm + 0.2 µm
Filtration area	0.015 m^2
Inlet and outlet	¼" plug-in connector
Sterilization (3 cycles max.)	Autoclavable at 134°C, 1 bar (14.5 psi), 30 min.
Max. diffusion	1 mL/min. at 2.5 bar (36 psi)
Min. bubble point	3.2 bar (46.4 psi)

Order Number	Description
5441307H4--CE	arium® SterilePlus (Sartopore® 2 150 capsule), 0.2 µm pore size; qty. per pkg.: 5

Intended Use

Attached to a dispense gun or the dispensing unit below the display on the following types of laboratory water systems:
arium® mini, arium® mini essential and arium® mini plus
arium® comfort I and comfort II
arium® pro, pro DI, pro UF, pro UV and pro VF
arium® 611
arium® dispense

arium® CellPlus Ultrafilter

For Effective Removal of Endotoxins in Cell Culture Applications

- Effective removal of RNase | DNase
- Reliable removal of endotoxins
- High flow rate performance
- Certified quality
- Sterile-packaged

Description

The arium® CellPlus is a point-of-use ultrafilter for efficient removal of endoxtoxins, RNase | DNase, microorganisms and particles.

Designed for arium® comfort and arium® mini ultrapure water systems, this sterile-packaged ultrafilter provides the highest safety for your critical cell culture applications. A protective bell supplied with the ultrafilter additionally prevents retrograde contamination.

Moreover, the high-quality material selected for arium® CellPlus enables excellent total throughputs and optimal flow rates.

Technical Specifications | Ordering Information

Materials	
Membrane	Polysulfone
Composite material	Polyurethane (PUR)
Housing	Acrylonitrile butadiene styrene (ABS)
Protective bell	Polycarbonate (PC)

Typical Specifications for Purified Water	
Flow rate (depends on the inlet pressure and the type of system)	Up to 2.0 L/min.
Endotoxins	< 0.001 EU/mL
Bacteria	< 1 CFU/100 mL
RNase concentration	< 1 pg/mL
DNase concentration	< 5 pg/mL

General Specifications	
Dimensions (height × diameter)	169 mm × 50 mm (6.6" x 1.9")
Max. operating pressure	6 bar (87 psi)
Max. inlet temperature	50°C
Effective membrane area	0.5 m^2 (5.4 ft^2)

Order Number	Description
H2O-CUF	arium® CellPlus ultrafilter; qty. per pkg.: 1

Intended Use

On the dispensing unit below the display on the following types of laboratory water systems:
arium® comfort I and comfort II
arium® mini, arium® mini essential and mini plus

arium® mini plus Pretreatment Cartridge

Reliable Protection for the Pretreatment of Feed Water

- Fast and effective adsorption of impurities by high-grade activated carbon
- Highly efficient catalyzer for removing oxidating agents such as chlorine
- Highly efficient reverse osmosis membranes; optimized water usage
- Low-energy membranes for ecological and economic operation

Description

Efficient purification is performed by a combination of activated carbon, a catalyzer and a downstream reverse osmosis membrane.

The spherical, catalytic activated carbon and an additional catalyst reliably remove oxidants, such as chlorine and ozone, heavy metal ions and particulate contaminants, from feed water.

In addition, due to the downstream reverse osmosis membrane, up to 98% of all salts, as well as bacteria and particles, are retained.

Technical Specifications | Ordering Information

Materials	
Housing	High-grade polypropylene
Filter media	Spherical, catalytic activated, carbon
Dimensions [W × H × D]	18 × 26 × 11 cm (7 × 10.2 × 4.3")
Operating weight	3.5 kg (7.7 lbs.)
Feed water requirements	See Technical Specifications on page 3

Order Number	Description
H2O-CPR	arium® mini plus pretreatment cartridge; qty. per pkg.: 1

Intended Use

arium® mini plus

arium® UV Lamp (185 | 254 nm)

Ultrapure Water Free of TOC

- Horizontal installation; optimized temperature gradient
- Effective breakdown of organic compounds
- Prevents the growth of microorganisms
- Easy replacement

Description

Horizontally aligned, the UV lamp delivers especially reliable results. Unlike vertical units, the temperature gradient is less pronounced and therefore does not affect the activity of UV radiation.

With two different wavelengths, the UV lamp reliably removes total organic compounds (TOCs), efficiently preventing microbial growth. At 185 nm, organic compounds are oxidized and at 254 nm, microorganisms are killed off.

Technical Specifications | Ordering Information

Material	Quartz glass
TOC for purified water*	≤ 5 ppb

Order Number	Description
H2O-CEL1	arium® UV lamp (185 | 254 nm); qty. per pkg.: 1

Intended Use

arium® mini, arium® mini essential and arium® mini plus

* Depends on the type of system and on the feed water

arium® Scientific Pack

Deionization Cartridge Featuring Top-Down Flow Technology

- High performance capacity due to efficient ion exchange resins
- Fast and effective adsorption of impurities by high-grade activated carbon
- Optimized flow prevents separation of the mixed-bed resin
- Patented connection method; easy exchange of consumables

Description

The cartridge kits have been optimized for removal of both organic and inorganic constituents. Each kit has been designed specifically to match the particular laboratory water system and delivers ultrapure water that exceeds the ASTM Type 1 quality standard. This consistently high-quality water ensures optimal reproducibility of your results.

Optimized filling materials, such as highly effective activated carbon along with exceptionally efficient ion exchange resins, ensure long-lasting performance and low-maintenance operation.

The top-down technology provides ideal purification kinetics, preventing any mixing of cleaning media. The cartridge has been designed for enhanced flow rate in the cross section and optimal contact time with the medium.

Technical Specifications | Ordering Information

Materials	
Housing	Highly pure polypropylene
Filter media	Spherical, catalytic activated carbon Ultrapure mixed bed ion exchange resin, semiconductor-grade
Further data on purified water quality	See Technical Specifications on page 3

Order Number	Description
H2O-S-PACK	arium® Scientific kit; qty. per pkg.: 1

Intended Use

arium® mini, arium® mini essential and arium® mini plus

arium® Bag

The Most Innovative Bagtank System

- Fast and easy replacement of the arium® Bag
- High user safety as the bagtank eliminates the need for cleaning chemicals

Description

Pure water is stored inside the laboratory water system, which reliably protects preteated pure water from secondary contamination.

Sartorius bagtank technology enables consistent water quality over a prolonged period, ensuring continuously reproducible results.

Unlike conventional water tanks, the arium® Bag ensures high user safety and saves time as it eliminates the need for a complicated cleaning procedure with chemicals.

Technical Specifications | Ordering Information

Materials	
Bag	S71 proprietary film
Tubing	TuFlux®

Bag dimensions [H × W]	
5-liter bag	40 × 33 cm (15.7" × 12.9")

Order Number	Description
H2O-CBS-5-S	arium® 5-liter bag; qty. per pkg.: 1

Intended Use

arium® mini and arium® mini plus

Sartorius Service

We Ensure the Quality of Your Results

At Sartorius, quality products go hand in hand with professional service. With our wide service offering, we will help guarantee the safe, reliable and optimal operation of your arium® mini. Just ask us and we will even cover the entire life cycle of your laboratory water system – from commissioning to qualification to regular maintenance. Together with you, we will ensure the consistently high quality of your laboratory water purification.

Our Services at a Glance:

Installation and Commissioning
Your advantage: Your system will operate reliably at peak performance from day one

Equipment Qualification (IQ | OQ)
Your advantage: You will meet all regulatory requirements (GMP|GLP)

Regular Preventative Maintenance, Including **Calibration**, inspection and testing of your system and exchange of consumables

Your advantages: Optimal operation of your system; reliable results; prevention of downtime or even equipment failure

Get more information now at:
www.sartorius.com/service

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