



Fisherbrand™
QUALITY. RELIABILITY. VALUE.

Instruction Manual

Accu100

Ultrapure Water System

USER MANUAL





Notice

The Accu100 system is manufactured in a facility whose quality management system is approved by an accredited registering body to the ISO9001 Quality System Standards.

DECLARATION OF CONFORMITY **EUROPEAN UNION EC DIRECTIVES AND FCC RULES**



Directive 2006/95/EC
Directive 2004/108/EC



FCC Part 15 Class B

We certify that these water systems are designed and manufactured in accordance with the following European Council directives and FCC rules:

- The Essential Safety Requirements of EU Low Voltage Directive 2006/95/EC Applied Codes and Standards.
- The Essential Safety Requirements of EU Electromagnetic Compatibility Directive 2004/108/EC Applied Codes and Standards.
- The Requirements of FCC Part 15 Class B Rules.



This Manual is Applicable to the Following Accu100 Models

15489749	Accu100 Ultrapure Water System, 100 - 240 VAC
15499749	Accu100 UV Ultrapure Water System, 100 - 240 VAC



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1 INTRODUCTION

This manual describes in detail about system performance characteristics, installation, operation, and routine maintenance. Please read this manual thoroughly for its instruction on installation, use and maintenance. Proper installation and maintenance guarantee the continuous flow of high quality pure water.

Please contact us or your local distributor if you encounter any issues during installation and use. Professional engineers are fully trained to support you.

Safety Information



WARNING!

To avoid electrical shock, always:

- 1) Use with a properly grounded electrical outlet of correct voltage and current handling capacity.
- 2) Replace fuses with those of the same type and rating.
- 3) Disconnect from the power supply prior to maintenance and service.
- 4) Refer servicing to qualified personnel.



1.1 Product Features

The Accu100 Ultrapur Water System produces ultrapure water from reverse osmosis (RO), distillation or deionized water. Ultrapure water from the Accu100 system meets or exceeds quality standards of ASTM, CAP, CLSI and ISO Type I water standards.

The system has the following characteristics:

- Automatic system recirculation every hour to prevent bacteria from growing inside the system
- Large-capacity purification cartridges contain uniquely formulated ion resin and fine activated carbon to ensure long useful life and a low running cost
- A 0.2 µm final filter or an ultrafiltration filter (optional) removes any remaining contaminants
- A dual UV lamp to kill bacteria and reduce organics to trace level (optional)
- Volumetric dispensing and dispense volume calibration for easy dispensing of ultrapure water
- Resistivity measurement by a high-precision resistivity sensor (cell constant 0.01cm⁻¹)
- Alarms when consumable reach the end of life
- Small compact footprint that occupies minimal space, and easy to move around with an ergonomically designed handle
- CE marked and FCC certified



1.2 Main Applications

Preparation of blanks, buffers and samples in GC/HPLC/AA/ICP-MS and other advanced analytical techniques.

Preparation of media and reagents in cell culture/molecular biology/nanotechnology research.

1.3 Specifications

Operating Voltage	100 - 240 V
Max. Power	55 W
System Dimensions Width x height x depth	8 x 17 x 14 in 21 x 44 x 36 cm
Water Production Rate	1 - 1.5 L/min
Resistivity of Ultrapure Water (@25°C)	18.2 MΩ.cm
TOC of Ultrapure Water	< 10 ppb, or < 5 ppb (with a dual wavelength UV lamp)
Particles in Ultrapure Water (> 0.2 µm)	< 1 /mL (with a 0.2 µm final filter or final ultrafilter)
Microorganism	< 0.1 cfu/mL (with a 0.2 µm final filter or final ultrafilter)
Pyrogen Content	< 0.001 EU/mL (with a final ultrafilter)



2 INSTALLATION

2.1 Preparation for Installation

2.1.1 Power Supply:

Power supply must be properly grounded

2.1.2 Feed Water:

20L of purified water

2.1.3 Tools Needed (Not Included):

Scissors or a box opener to open packages and cut water tubing

2.2 Items Included

The Accu100 system comes with the following items in the package. The following items are packed separately. These items need to be installed at initial set-up:

- 1) Main system
- 2) User Manual and Quality Certificate
- 3) Accessories Pack: power adapter, 1.5m 3/8 in OD PE tubing for feed water connection (place one end to the feed water tank and the other end to the Accu100 system), tweezers, degassing fitting and 1/4 in PE tubing

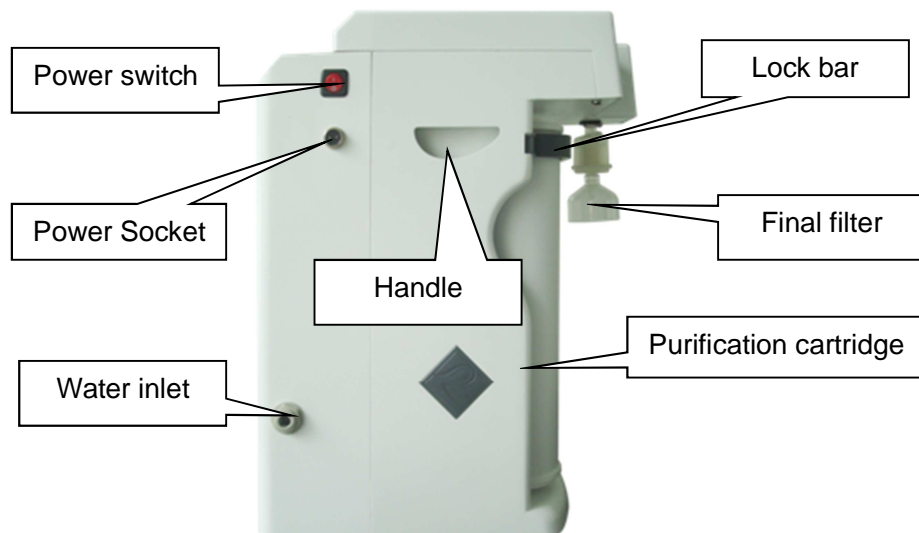


2.3 Structure and Flow Diagrams

2.3.1 System External Layout



Front View

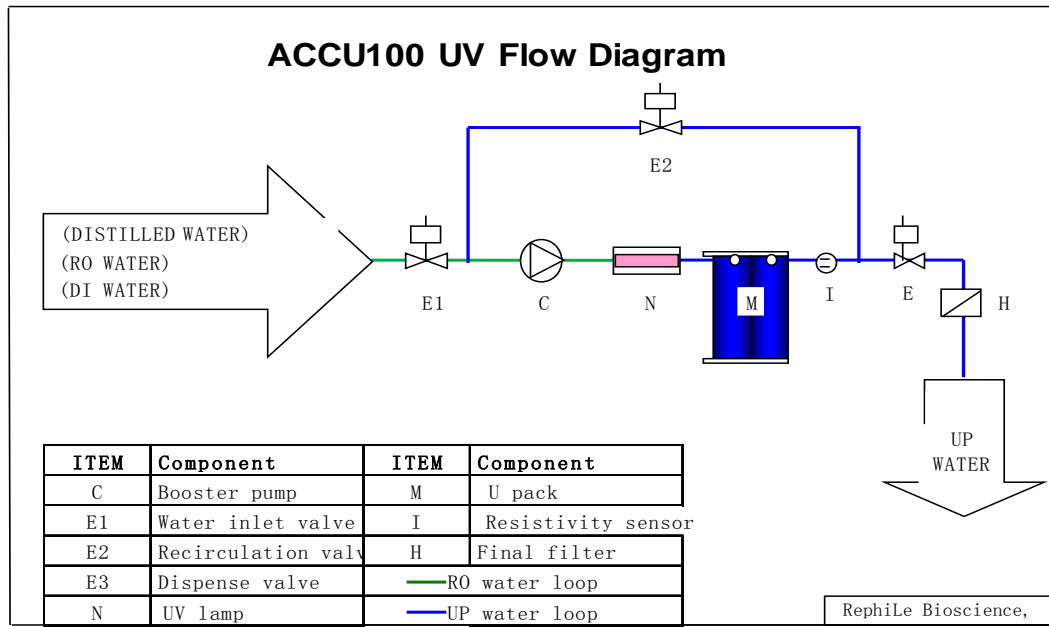


Side View



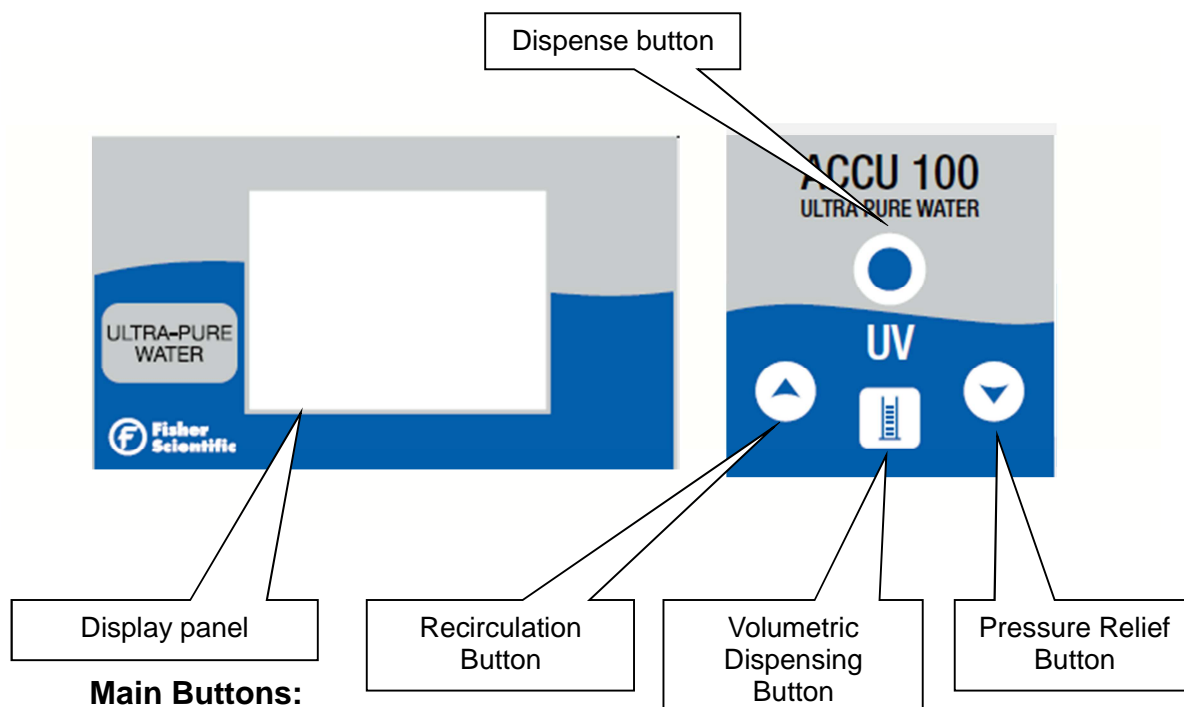
2.3.2 Accu100 System Water Flow Diagram

The water flow path for the Accu100 and Accu100 UV models are described below. Each component is explained in the legend.





2.3.3 System Control Panel





Dispense

Press it to dispense water. Press it again to stop dispensing.





Recirculation

In Ready mode, press it to enter Recirculation mode, Press  and  simultaneously to enter user menu.



Volumetric Dispensing

In Ready mode, press it to enter volumetric dispensing. Press  and  simultaneously to enter user menu.



Pressure Relief

In Ready mode, press it to enter Pressure Relief mode.

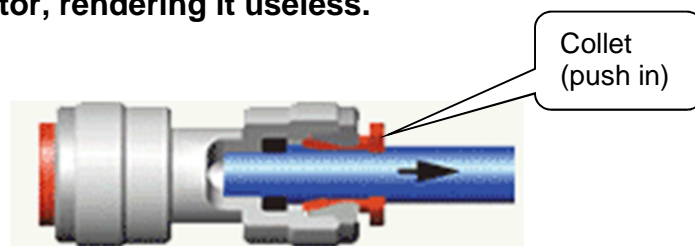


2.4 Installation



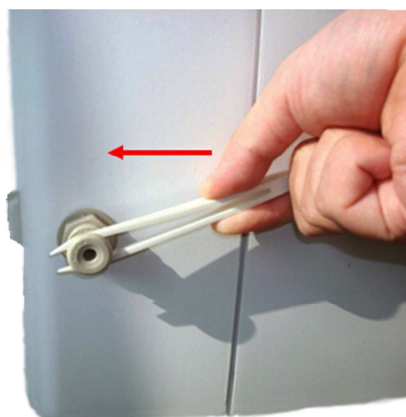
Attention

Water inlet is a quick connector type with a lock (collet). It comes protected by a stopper. **DO NOT** attempt to pull the stopper out from the port with force without unlocking the collet first as this will damage the quick connector, rendering it useless.



Please follow the instruction below to remove the stopper

- Insert the tweezers to the gap between the stopper and the collet.
- Pinch the tweezers and push it as the picture indicated to remove the stopper.

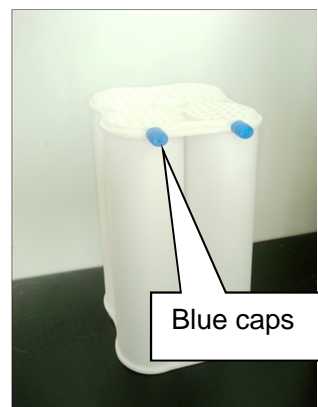




2.4.1 Installing the AccuQuatro U Pack Cartridge

2.4.1.1

- 1) Take out the cartridge from its packaging.
- 2) Remove blue caps on the cartridge inlet / outlet.



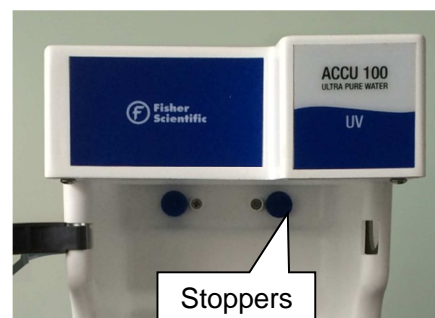
2.4.1.2

Open the lock bar at the front of the system.



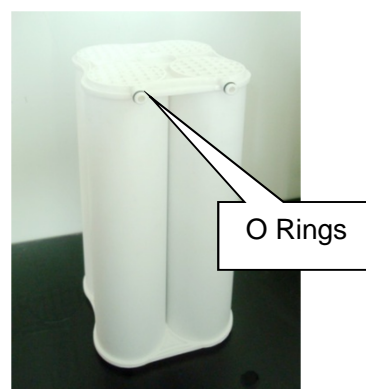
2.4.1.3

Remove the two blue caps at the water inlet/outlet inside the cabinet.



2.4.1.4

Wet the O-rings on the cartridge with purified water.





2.4.1.5

Push the cartridge gradually into the cabinet until it is seated fully inside the cabinet.



2.4.1.6

Lock the front lock bar by inserting the flexible buckle to the groove.

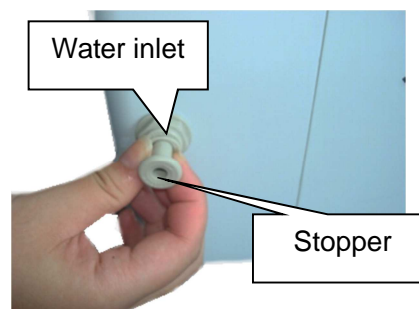
If the bar cannot be locked, reseal the cartridge all the way in, then lock the bar again.



2.4.2 Connecting the Inlet Water Tubing

2.4.2.1

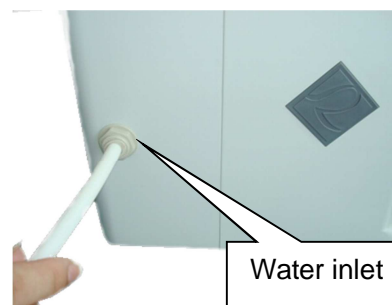
Remove the stopper at the water inlet with the tweezers as described before.



2.4.2.2

1) Insert one end of the PE tubing into the water inlet (Note: make sure to insert the tubing all the way in for about 20 mm).

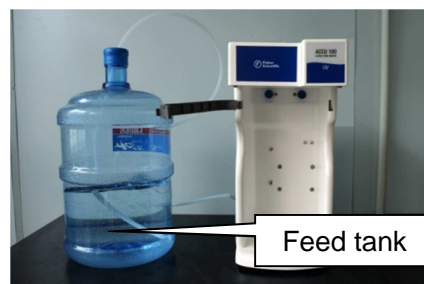
2) Gently pull the tubing outwards to check if the connection is secure.





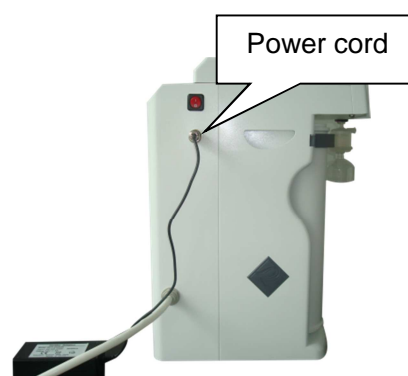
2.4.2.3

Connect the other end of the tubing to a feed water tank; ensure the tubing inlet is immersed **to the bottom of the tank.**



2.4.3 Connecting Power Cord

- 1) Make sure the **power switch is OFF** at "O" position.
- 2) Insert one end of the power cord into the socket on the left side of the Accu100 system.
- 3) Plug the other end of the power cord into the power outlet.



Note: **Do not install the final filter** at this stage. It will be installed after system start-up and degassing.

End of System Installation
Proceed to "System Start up and Operation"



3 SYSTEM START UP AND OPERATION

3.1 Check List Prior to System Start Up

Prior to system start up, use the table below to make sure all parts have been installed and connected, and quality of feed water meets minimal requirements.

Check List	Results
Feed Water quality	
Water temperature: 5 - 35°C	
Feed Water connection	
Power cord connection	
AccuQuatro U Pack cartridge installed	



3.2 System Start Up and Display

3.2.1 Panel Display


System panel will display the following messages at start up.

S4PPAL3701

Displays system serial number (S/N) at power up, then enters Ready mode.

Ready


In Ready mode

Press  to dispense ultrapure water, system enters Product mode.

Product

18.2 MΩ.cm
25°C


In Product mode


Press  again to stop dispensing. System enters Recirculation mode.

Recirculation

18.2 MΩ.cm
25°C


In Recirculation mode

Press  to dispense water.


Press  to enter Ready mode



Operations:

In Ready mode → press  → system enters Recirculation mode.

In Recirculation / Ready mode → press  → system enters Product mode.

In Product mode → press  → system enters Recirculation mode.

In Recirculation mode → press  → system enters Ready mode.

3.2.2 Starting Up the System

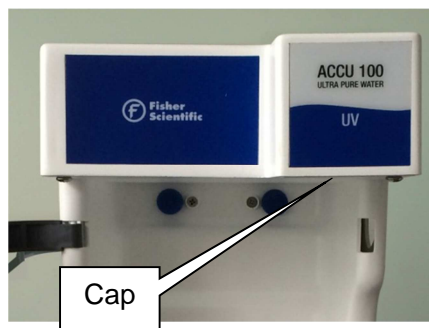
After turning on the power, system displays serial number (S / N) for 3 seconds, then automatically goes to Ready mode.

S4PPAL3701

3.2.3 Degassing the System

3.2.3.1

Screw off the cap from the water outlet.



3.2.3.2

Screw the degassing fitting from the system accessory bag onto the water outlet and connect it with 1/4 inch PE tubing, put another end of the tubing to the sink.


Press  to enter Product mode;

Gas inside the system will be flushed out with water.



3.2.3.3

1) Wait until no more gas (bubbles) is discharged from the outlet and the resistivity reaches 18.2 MΩ·cm @ 25°C.

2) Press  to stop degassing.

3.2.3.4

Screw off the degassing fitting.

3.2.4 Installing the Final Filter

3.2.4.1

Open the attached 0.2µm final filter package.



3.2.4.2

Screw the final filter onto the water outlet till finger tight (no leaking at dispensing).


DO NOT over-tighten it.

3.2.4.3

Loosen the knob on the top of the final filter for degassing.



3.2.4.4


1) Press  to dispense water and flush out the gas from the filter into a container.

2) Tighten the knob on the top of the final filter after no more air in the filter.


3.2.4.5

Press  to enter Recirculation mode.

3.2.4.6

1) Press  to turn the system from Recirculation into Ready mode.

2) Installation is completed.





3) Alternatively, the system automatically enters Ready mode after 30 s without pressing .



If an ultrafiltration filter for pyrogen removal is needed, follow the same installation procedures as above.



3.2.5 Resetting the System



3.2.5.1 AccuQuatro U Pack



In Ready mode, press  and  simultaneously for 3 seconds to enter user menu, press  to move cursor to **PACK** and press  to reset cartridge life. Newly replaced cartridge shows 360 days life and 0 L water dispensed.

Press  and  simultaneously for 3 seconds again to exit user menu.

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701



3.2.5.2 Final Filter



In user menu, press  to move cursor to **FILTER** and press  to reset final filter life. Newly replaced final filter shows 360 days life.

Press  and  simultaneously for 3 seconds again to exit user menu.

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701

3.2.5.3 UV(Optional)

In user menu, press  to move cursor to UV and press  to reset UV lamp life. Newly replaced UV lamp shows 720 days life.

Press  and  simultaneously for 3 seconds again to exit user menu.


PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701





3.3 Routine Operation

Turn on the power switch.




Press  to put the system from Ready to Recirculation mode and wait for the resistivity to reach 18.2 MΩ·cm.

Press  to dispense water.

Press  again to stop dispensing, system enters Recirculation mode.



3.4 Volumetric Dispensing

3.4.1 In Ready mode, press  to enter volumetric dispensing mode.

Volumetric
01.0 L

3.4.2 Press  or  to adjust the volume.

Volumetric
02.0 L

3.4.3 Press  to start dispensing.

3.4.4 System enters Recirculation mode after dispensing.

Recirculation
18.2 MΩ.cm
25°C



4 MAINTENANCE

4.1 Messages for Maintenance

Messages for system maintenance will display at the bottom of the screen when a service is due or an error occurs. For consumables, they have preset service life countdown. These messages are explained in the table below. The maintenance indicator on the control panel will light up and background color changes to show that the system needs maintenance or service.






Message	Background color	Meaning
EXCH. U PACK	Yellow	U pack cartridge has reached the end of its expected service life and need to be replaced.
EXCH. FINAL FILTER	Yellow	Final filter has reached the end of its expected service life and need to be replaced.
EXCH. UV LAMP	Yellow	UV lamp has reached the end of its expected service life and need to be replaced.
TANK EMPTY	Red	Accu100 system can be connected to a tank level sensor. When water level inside the tank is below the minimum level, system will not dispense water
PRODUCT < S.P	Red	Product water resistivity is below standard set point.
TEMP > S.P	Red	Water temperature exceeds standard range.

Recommended replacement frequency is listed in the table below.

Consumables		Replacement Frequency	Performance Indicator
185/254 nm UV lamp		24 months	Increase in TOC
Final Filter	Remove bacteria and particles	Change with the U Pack purification cartridge	Reduce in flow rate
		When needed	Flow rate is less than 0.5 liter per minute
U Pack	Remove ions	12 months	Reduce in resistivity of product water



4.2 Maintenance Menu and Settings

- Press  and  simultaneously for 3 seconds to enter user menu.
- Press  to move the cursor to different functions, press  and  simultaneously to exit and back to Ready mode.

4.2.1 Re-setting AccuQuatro U Pack

Please follow the procedures in 3.2.5.1

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701

4.2.2 Re-setting Final Filter

Please follow the procedures in 3.2.5.2

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701

4.2.3 Re-setting UV Lamp



Please follow the procedures in 3.2.5.3


PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701





4.2.4 Calibrating Dispensing Rate

Use a 2-liter volumetric cylinder, dispense water for 60 seconds and get an accurate volume of the collected water in liter.

Press  and  simultaneously to enter the user menu.

Press  to move the cursor to **FLOW**.



Enter the volume dispensed to calibrate:

Press  to move cursor to corresponding number and press  to increase the number.

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701


4.2.5 Select Product Water Display Units



In user menu, press  to move cursor to



UNIT and press  or  to switch between MΩ·cm and μS/cm

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701

4.2.6 Setting Date and Time

Press  to move cursor to **TIME**.



Press  to move cursor to corresponding number and press  to increase the numbers.

Press  and  simultaneously to exit and back to Ready mode.

PACK: 360 DAYS 0L
FILTER: 360 DAYS
UV: 720DAYS 0Hr
FLOW: 1.50 L/min
UNIT: MΩ.cm
TIME: 2014-11-27 09:21:27
LANGUAGE/语言: ENGLISH
SERIAL NO: S4PPAL3701




4.3 Replacing the Ultrapure Pack and the Final Filter

- a. Switch the system to Ready mode.
- b. Screw off the exhausted final filter.
Screw the degassing fitting in the system accessory bag onto the water outlet and connect it with 1/4 inch PE tubing, put another end of the tubing to the sink.
- c. Press  to depressurize the system.
- d. When no water is coming out from the dispense port, press  to put the system into Ready mode. Screw off the degassing fitting.




- e. Follow procedures in 2.4.1 for replacing AccuQuatro U Pack.



- f. 1) Press  to turn the system into Recirculation.

2) Check system leakage. If leakage occurs, reseal the cartridge.

- g. Follow procedures in 3.2.3 for degassing.

- h. Press  to put system into Ready mode.

- i. Follow procedures in 3.2.5.1 to reset AccuQuatro U Pack life.
- j. Follow procedures in 3.2.4 for installing final filter.
- k. Follow procedures in 3.2.5.2 to reset final filter life.



4.4 Replacing the UV Lamp (for UV models)



Warning!


Ultraviolet (UV) radiation is harmful to the eyes and skin. Do not observe the lamp directly when it is illuminated. This system equipped with a lamp cover to prevent UV light leakage. This cover must be on at ALL TIMES when a UV lamp is installed.



Caution!

Keep the UV lamp straight in and out of the stainless steel chamber during its installation to avoid any action that could cause the lamp to break.

In order to protect the UV lamp from getting contamination through hands, gloves must be worn while handling the UV lamp by hands. Gloves are included in the UV lamp package.

- a. Confirm the system is in Ready mode.
Otherwise, press  to put the system into Ready mode.

- b. 1) Turn off the power.
2) Unplug the power cord.





- c. 1) Remove the four screws on the back of the system.

2) Take off the back cover.



- d. Wear gloves included in the new UV lamp package to avoid a direct skin contact with the quartz glass or the UV lamp.

1) Locate the UV lamp chamber.

2) Remove the black cover from the UV lamp chamber.



- e. 1) Carefully remove the old UV lamp from the chamber.

2) Unplug the UV lamp from its power cord.

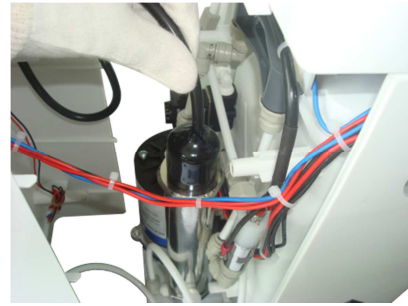


- f. 1) Hold the top of the new UV lamp and connect it to the ballast cable connector (4-pin connector),
- 2) Gently insert the UV lamp completely into the chamber.





- g. Recap the UV lamp chamber with the black cover on the power cable.



- h. Reinstall the system back cover and tighten the screws. Do not over-tighten them.



- i. Follow the procedures in 3.2.5.3 for resetting UV lamp.



5 BASIC TROUBLESHOOTING

Problem	Possible Cause	Solution
System inactive	No power supply	Check the power supply
	Main fuse blown	Check the main fuse
	Circuit partially broken	Contact a ULS agent
No water	Gas in the system	Degassing
	Boost pump failure	Contact a ULS agent
Low water flow rate	Final filter clogged	Replace final filter
	System internal water flow clogged	Contact a ULS agent

If the problem occurring is not listed in the chart above, please contact a ULS agent.



6 PARTS AND ORDER INFORMATION

Catalogue. No.	Description
15489749	Accu100 Ultrapure Water System, English, 100 - 240 V
15499749	Accu100 UV Ultrapure Water System, English, 100 - 240 V
15479709	AccuQuatro U Pack Cartridge (RO Feed)
15489709	AccuQuatro U Pack Cartridge kit with a 0.2 µm Capsule Filter (RO Feed)
15499709	AccuQuatro U Pack Cartridge (DI Feed)
15409719	AccuQuatro U Pack Cartridge kit with a 0.2 µm Capsule Filter (DI Feed)
15419719	AccuQuatro U Pack Cartridge (Low TOC)
TBD	AccuQuatro U Pack Cartridge kit with a 0.2 µm Capsule Filter (Low TOC)
15449689	UV Lamp, 185/254 nm dual wavelength



Other Maintenance Spare Parts

Contact Fisher Scientific for ordering information:

Main control panel

Booster Pump

Resistivity Sensor

Commonly Used Connector Package

UV lamp ballast

Power Switch

Fuse

3/8" PE tubing (5 meters)

1/4" PE tubing (5 meters)



7 WARRANTY INFORMATION

Conditions of Sales

Thermo Fisher Scientific is committed to improve its products and services. As a result, the information contained in this manual may be changed without further notice. Thermo Fisher Scientific assumes no responsibility for any errors that may appear in this manual. The plant's quality management system where this Accu100 water system was manufactured has passed the ISO9001:2008 quality management system certification.

System Limited Warranty

Thermo Fisher Scientific warrants the water system against defects due to materials and workmanship when used in compliance with instructions and operating conditions specified in this manual. Thermo Fisher Scientific warrants the system for 24 months from the earlier of

1. The date of installation, or
2. The 183th day of shipment from the manufacturing warehouse.

Within the warranty period, Fisher Scientific will provide replacement for the defected parts at no charge. Such service must be conducted by Fisher Scientific or its authorized distributor.

This warranty does not include cartridges.

Other than the warranty expressed above, Thermo Fisher Scientific disclaims any other warranty, express or implied, including marketability and suitability of use. Thermo Fisher Scientific shall under no circumstance be liable for incidental or consequential damages.

