



HYDROLAB[®]

EN

USER MANUAL FOR **SERIE ULTRA**

www.hydrolab.eu

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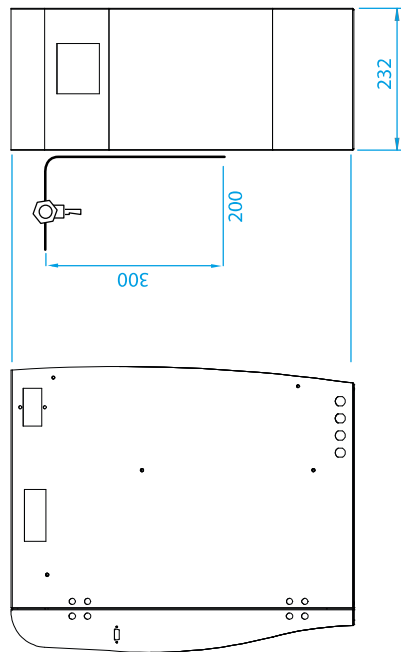
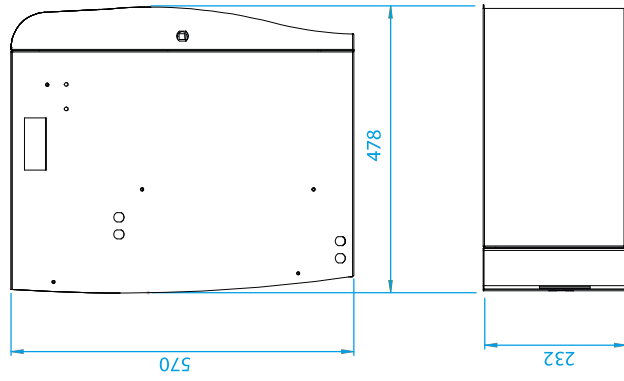


Models of the series **ULTRA**

Model	Module H7 TOC	Microfiltration capsule 0,2 µm	UV Lamp radiator 185/254nm	UV Lamp radiator 254 nm	UF ultrafiltration module	Standard PN-EN 3696:1999	Cat. No
ULTRA	+	+	-	+	-	1 class	DR-TOC-00
ULTRA UV	+	+	+	-	-	1 class	DR-TOC-UV
ULTRA UF	+	+	+	-	+	1 class	DR-TOC-UF



ULTRA
ULTRA UV
ULTRA UF



1.0 INTRODUCTION

1.1 Safety of use

Please carefully read this manual before using. It contains all important information regarding safe installation, usage and maintenance of the device. Please keep this manual so you can use it in the future.

- After delivery please unpack the demineralizer and check if it is not damaged. In case of any damage please describe it in the delivery documentation.
- All installation and maintenance work may be done by the user.
- Repairs must be done only by the qualified personnel from an authorized service. The user must not attempt to repair the device by himself.
- Do not use the device if the plug, power cord or the device itself is broken or damaged.
- Check if the power cord has not been damaged after relocating the device.
- Caution, the demineralizer is heavy. Be very careful when relocating the device.
- Place the device in a suitable place.
- Perform regular maintenance tasks for a long-time and efficient operation.
- The manufacturer is not responsible for any damage caused by a wrong installation.

1.2 Feed water parameters

Devices must be fed with pre-treated water.

Pressure - from 1.0 bar (minimum) to 6.0 bar (maximum). A reduction may be used if necessary. If the pressure is too low, it is recommended to use a pressure pump.

Temperature - the temperature in the room should be between 5°C and 40°C. The feed water temperature should be between 4°C do 40°C.

1.3 Power supply parameters

Before connecting the device please make sure, that the voltage specific on the device conforms with the voltage of your electrical grid.

- Voltage: 220-240V
- Frequency: 50Hz

2.0 GENERAL INFORMATION

Purified water meets the requirements of the PN-EN ISO 3696:1999, EP, ASTM standard for first water purity class.

It has extensive automation enabling work monitoring, data archiving, individual setting of alarm thresholds for parameters of ultra-pure water and control of the recirculation function. The systems are equipped with a number of safeguards allowing for comfortable operation of the device.

2.1 How it works

The demineralizer must be fed with pretreated water. Water purification processes are fully automated and unattended. The purification process consists of the following stages:

1. **Mixed TOC bed demineralization**
2. **UV lamp 254 nm, UV lamp 185 / 254 nm***
3. **UF ultrafiltration module***
4. **Microfiltration capsule**

* depends on the model

2.2 Ion exchange bed demineralization

TOC ion exchange module - contains ion exchange beds in H⁺/OH⁻ ion forms. Osmotic water is purified by deionization columns, where all remaining mineral salts are captured. In the ion exchange process ions and particles in water that have a particular current are bound by ion exchangers (ionites). After this process conductivity drops to 0,055 µS/cm.



The TOC series ion exchange modules are dedicated to research, where low organic carbon is required.



2.3 UV lamp 254 nm* or UV lamp 185/254 nm*

The 254nm UV lamp is used for water disinfection. The device emits a radiation of 254 nm or of 185/254nm wave length, wave length, which causes a photochemical reaction that damages the DNA structure of microorganisms existing in water. Additionally, the 185/254 nm wave length, reduces the TOC level by photooxidation of organic compounds. The UV lamp consists of a radiation chamber, containing a UV radiator protected by a removable quartz cover installed inside.



2.4 Ultrafiltration module*

Ultrafiltration module reduces endotoxin R-Nases and D-Nases and suspended particle levels.



2.5 Microfiltration capsule 0,2 µm

Microfiltration capsule - ready to use flow filter. Intended for sterilizing water. In a polypropylene housing there is a cascade membrane with 0,45 and 0,2 µm pores. Working capacity is equal to amount of bacteria held on a defined area of membrane surface.



* depends on the model

3.0 STRUCTURE

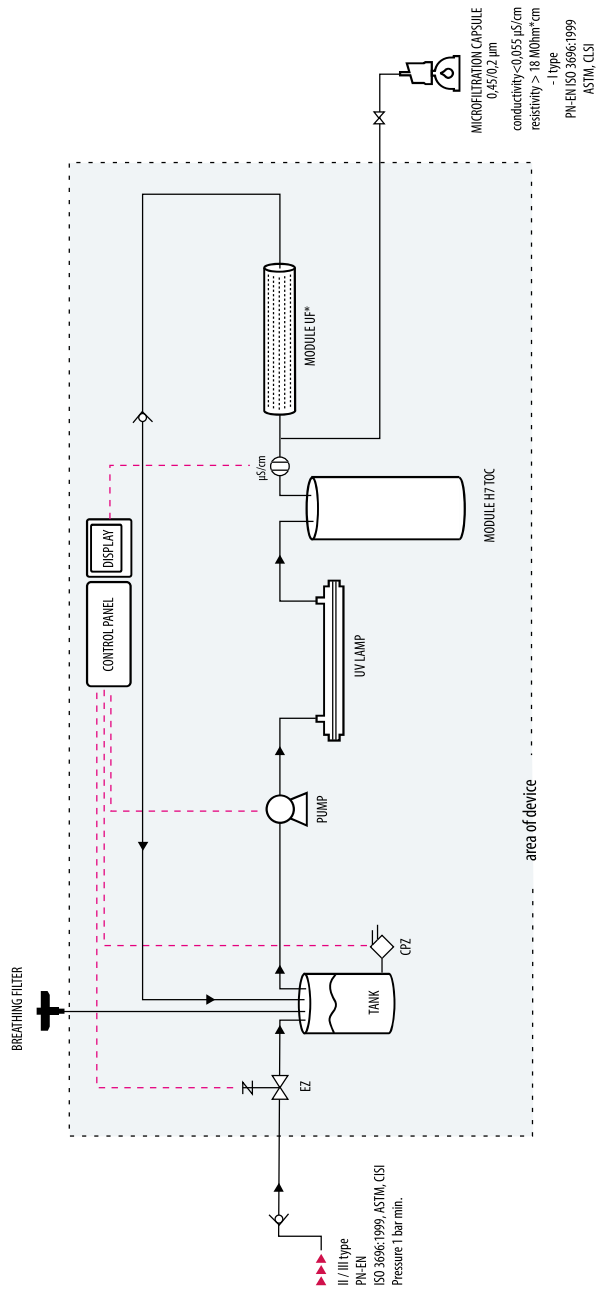
The device is equipped with:

- recirculation pump
- ion exchange TOC module
- recirculation tank
- 254 nm or 185/254 nm UV lamp*
- UF ultrafiltration module*
- conductivity meter
- low/high pressure sensor
- microfiltration capsule

*depends on the model

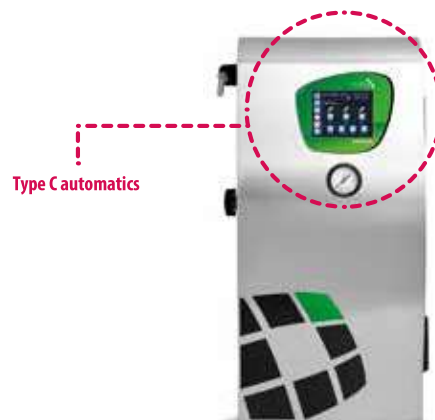
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-
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3.1 Diagram of the ULTRA series



3.2 Type C automatics

- 24 V automatics with a microprocessor control and measurement system.
- Color LCD screen with Touch Panel.
- Conductometer measuring conductivity and temperature of purified water in $\mu\text{S}/\text{cm}$ lub $\text{M}\Omega\text{m}$.
- Temperature compensated and uncompensated values view.
- Clock displaying date and time.
- System status information.
- Tank fill level.
- Water dosing (option).
- Graphic and sound prealarms and alarms:
 - when need to change an ion exchange module,
 - when need to change a UV lamp radiator,
 - when need to change a microfiltration capsule,
 - when need to change a ultrafiltration module.
- Service dates view.
- Built-in RS 232/USB to connect with a computer for individual adjustment of alarm levels and maintenance procedure frequencies.
- Software.
- Feed water manometer.





4. INSTALLATION

READ BEFORE INSTALLING

- The best results are achieved when the demineralizer is fed with pretreated water (up to 5 $\mu\text{S}/\text{cm}$).
- The feed water must fit the requirements specified in the pt. 1.3 (temperature, pressure, etc.)
- The cartridges should be replaced regularly with the frequency described further in this manual.

4.1 Device installation

Step 1

Unpack the device and place it in a suitable place.



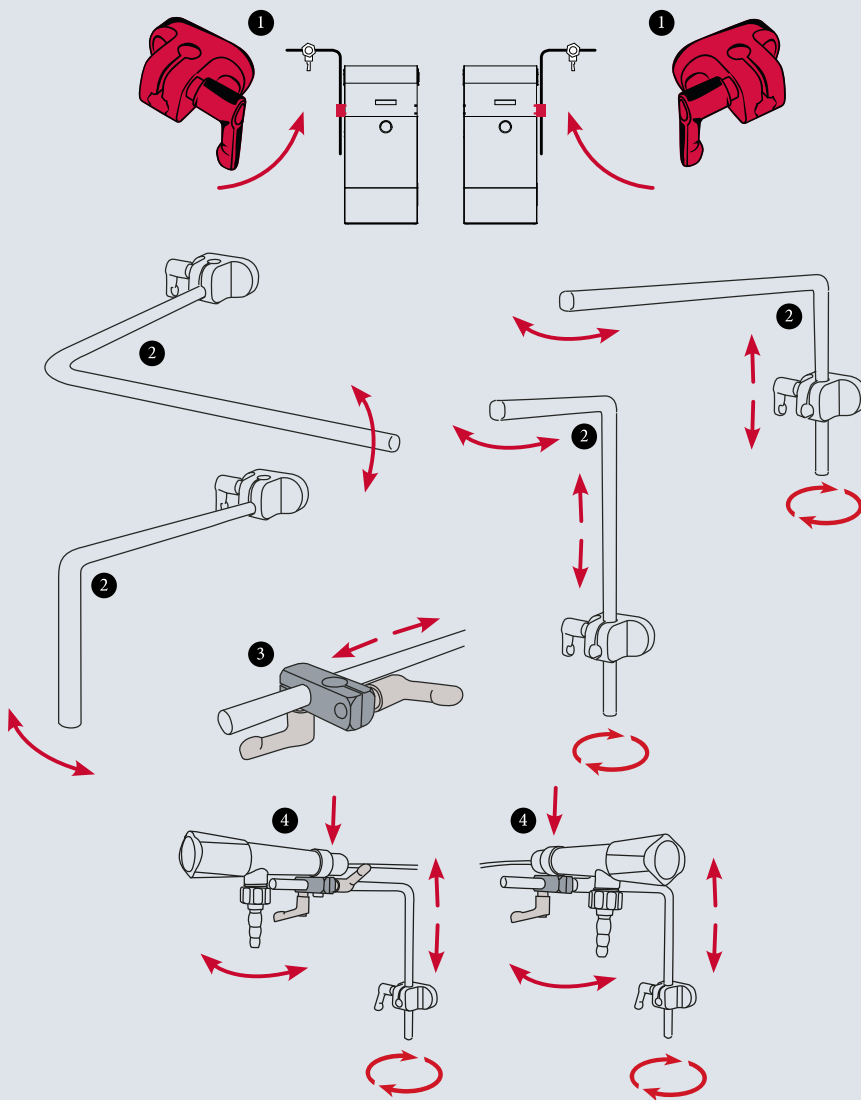
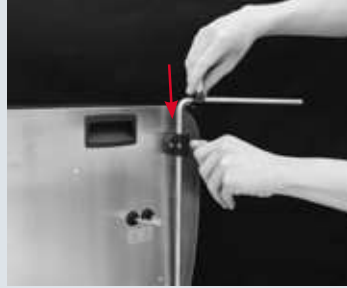
Step 2

Feed valve installation.

The ULTRA device must be fed with pre-treated water.

Step 3

The kit includes an INOX arm holder (1), which can be screwed on the right or left side of the device. The INOX arm (2) should be placed in the holder. It is used to attach the water tap. Then mount the tap handle (3) and the tap itself (4).



Step 4

Connect the demi water tap with the microfiltration capsule. Install the tap on the INOX arm. Insert the tap hose to the class 1 water purity output to EN ISO 3696.



Step 5

Connect the power cord with the electric socket and the 230 V power supply socket.



Step 6

Connect the breathing filter.



5. TURNING THE DEMINERALIZER ON AND OFF

Step 1

- Check all connections.
- Turn the power switch to "1".

Pressure leakproof test:

- Open the feed water valve.
- Open the I class water purity tap. When water appears - close it.
- Check if there are no leaks present.

5.1 Turning off the device.

- Turn the power switch to "0" position.
- Disconnect the device from the water source.

6. MONITORING FUNCTIONS

Demineralizer has its own control system informing the user of necessity to replace particular cartridges. It also has a touch pane; allowing to adjust maintenance procedures frequencies and alarm levels. A built-in conductivity meter measures the conductivity and temperature of purified water, and feed water pressure.

6.1 Control and measurement panel

The device contains automatics with a microprocessor control and measurement system that has a touch panel (Details see page 45)



CAUTION!

Reading all of the parameters displayed on the panel should take place during system operation (while collecting water – tap open). All alarms should be verified during water collection (tap open) – collect at least 0.5 l of water.



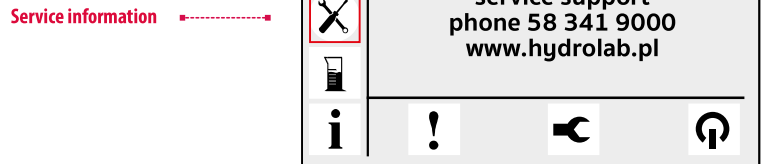
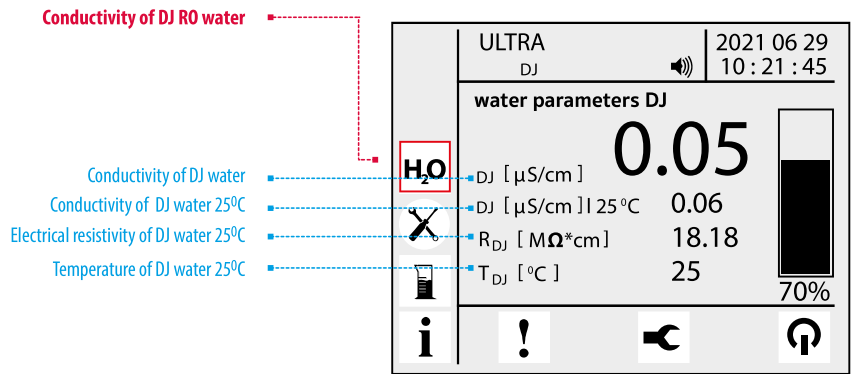
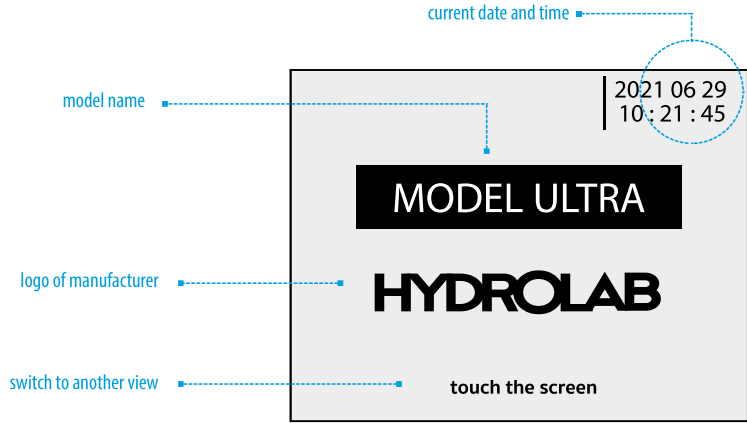
6.2 Protection

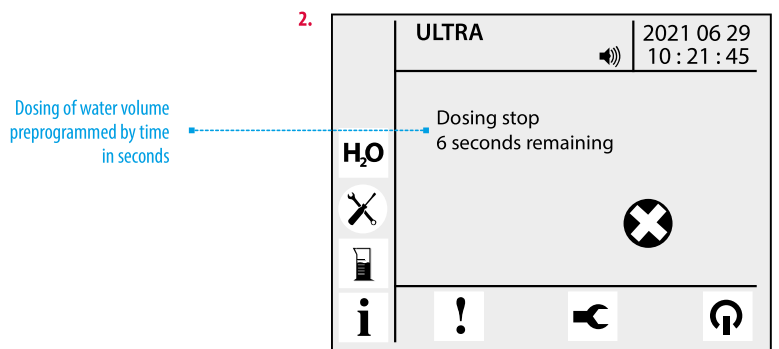
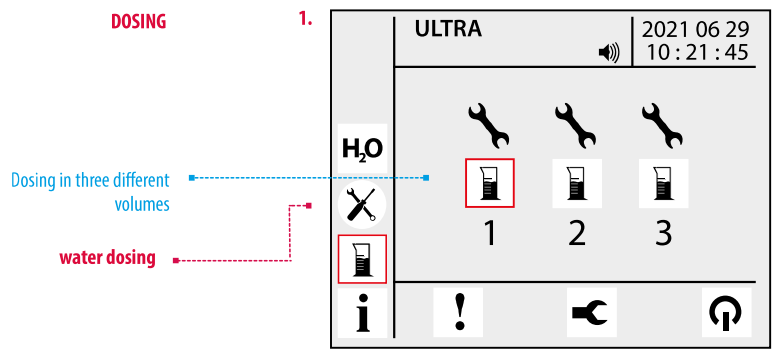
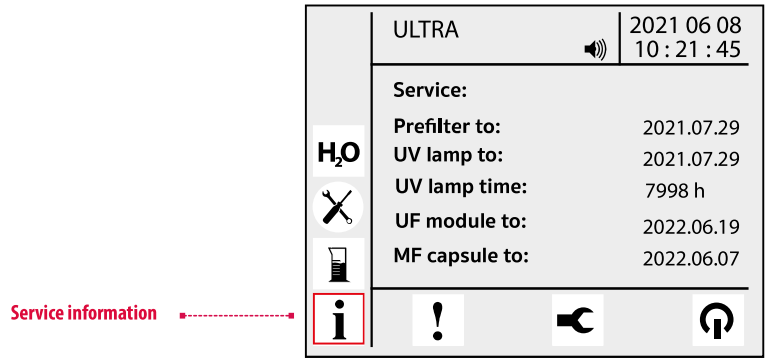
The device turns on automatically when the demi tap is on and works until it is closed.

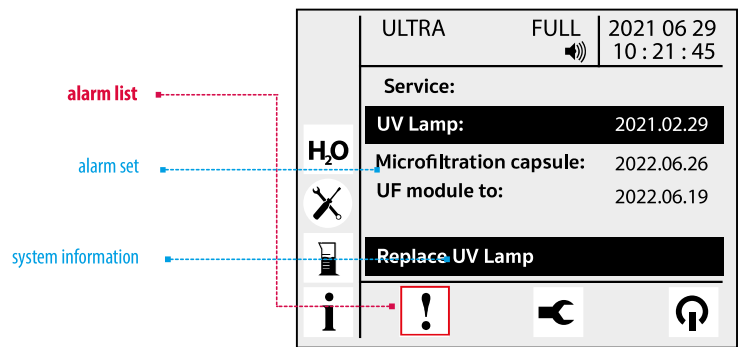
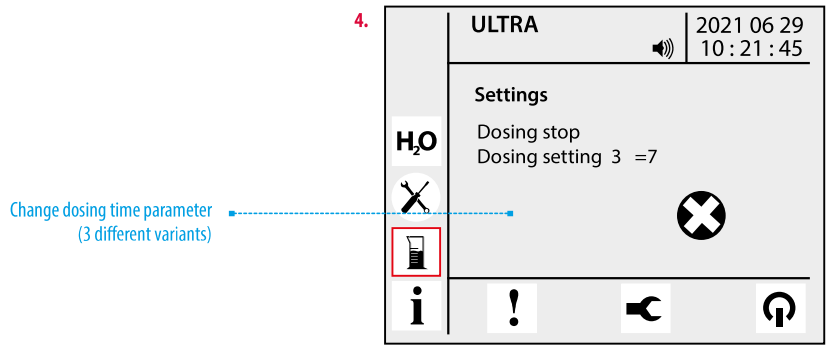
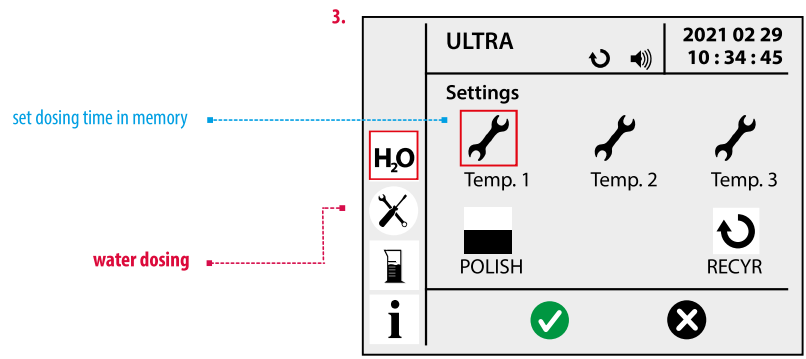
The device shuts off automatically:

- the pressure is too low,
- no feed water.

Automation type C







Icons
 DJ - out of range
 T! - alarms triggered
 🔊 - mute

1.

set parameters

2.

language select

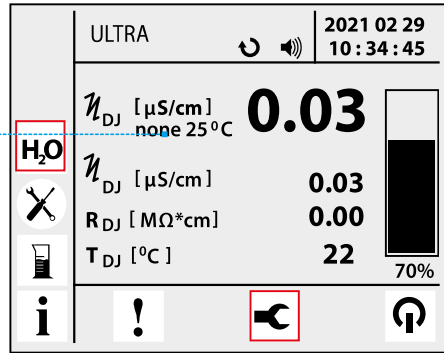
Recirculation

COMPENSATION

1.

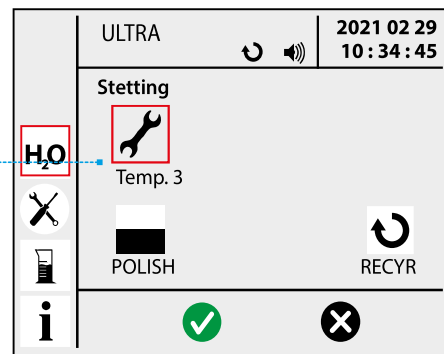
NONE 25°C - compensation turned off

set parameters



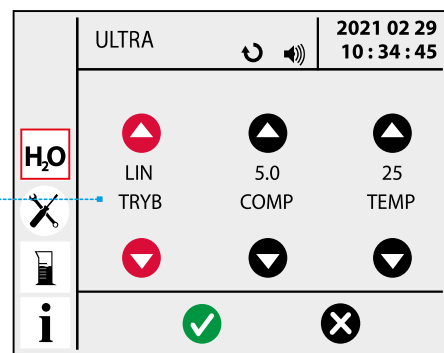
2.

Temp. comp. 3 - Purified water



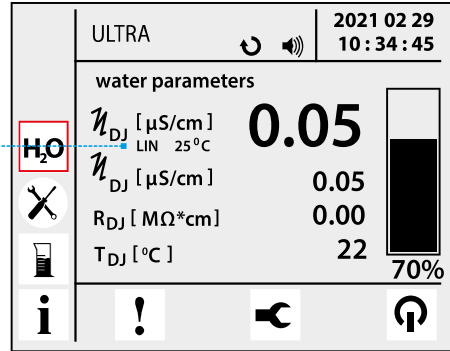
3.

Mode:
LIN - linear compensation
NONE - compensation turned off



4.

LIN 25°C - turned on compensation confirmation



7. MAINTENANCE

Maintenance procedures consist of replacing the filter cartridges. These are:

- microfiltration capsule 0.45/0.2 µm,
- H7 TOC ion exchange module,
- UF ultrafiltration module,
- 254nm or 185/254nm UV lamp radiator.

ATTENTION:

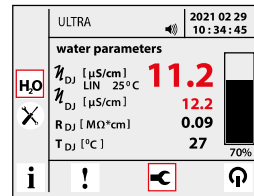
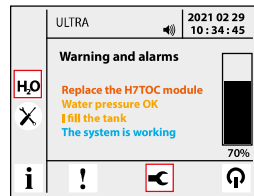
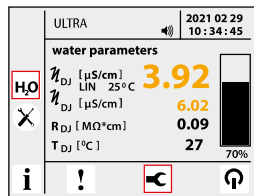
List of cartridges for particular demineralizer models is located at the end of this manual.



7.1 Ion exchange cartridges replacement

This should be done if purified water conductivity rises above 4 µS/cm. In such case the device displays an alert DJ and triggers a sound alarm, also the conductivity value indicator is colored in red. To check the details of an active alarm enter the ! tab, which displays a red message Replace ion module.

NOTE: The yellow pre-alarm informs about the H7TOC replacement date.



To replace the module, please perform the following steps:

Step 1

- Turn off the device and close the feed water valve.
- Open the front door.

Step 2

Ion exchange module replacement:

- Disconnect the exhausted ion exchange module.
- Connect a new module, mind the flow directions.
- Close the front door.



Step 3

- Open the main valve
- Check if there are no leaks.

Step 4

The message replace module H7 TOC disappears automatically, when water conductivity drops below 4 $\mu\text{S}/\text{cm}$ (after flushing the ion exchange cartridges).

CAUTION!

After replacing the ion exchange resin first 10 dm³ of produced water should be wasted.



7.2 Microfiltration capsule replacement

The lifetime of a microfiltration capsule is 12 months. The system displays a notification replace MF and triggers a sound alarm when the capsule needs to be replaced.

To change the capsule:

- Disconnect the old capsule installed in the I class water quality tap.
- During the procedure the tap valve must be closed. Press the tap quick connect fitting.
- Connect the new capsule.
- Reset the alarm in the „i“ tab.



ULTRA	2020.06.29 10:21:45
Service date:	
H ₂ O	UV lamp to: 2020.07.29
✂	UV lamp time: 7998 h
📄	UF module to: 2019.06.26
📄	MF capsule to: 2020.06.30
i	⬆ ⬇ ⬆

7.3 UV radiator replacement

After one year of lamp operation the system triggers a loud alarm reminding that the radiator needs to be changed to keep an optimal disinfection performance. This may be done by the user. On the display screen there is a highlighted in red alert T! and a sound alarm is triggered. To check the details enter the i tab which displays an alert highlighted in red UV lamp to: (date when it must be replaced). There is also a service suggestion below: Replace UV lamp.

CAUTION!

The radiator is very fragile. Be very careful with it.



Step 1

- Turn off the device and close the feed water valve.
- Open the front door.

Step 2

- Disconnect the radiator from power supply.
- Twist off ground cable, take off the radiator joint.
- Slide off the radiator from the reaction chamber.

Step 3

To install a new radiator, carefully take it out from the packing - do not touch its transparent surface (if there is any dirt on it, wash it with alcohol). Carefully slide it into the housing, put on the joint, screw in the ground cable and turn on the device.



Step 4

- Open the feed water valve.
- Check that water is not leaking.
- Open the tank valve.

Step 5

- Turn on the demineralizer,
- Reset the radiator alarm in the i tab.

	ULTRA	2020 06 29 10 : 21 : 45
	Service date:	
H ₂ O	UV lamp to:	2019.06.29
X	UV lamp time:	7998 h
	UF module to:	2020.06.29
	MF capsule to:	2020.06.29
i	↑	↓

7.4 UF ultrafiltration module replacement

The ultrafiltration module can operate up to 12 months. It can be replaced by the user. The device informs the user when this module must be replaced by showing an alert T! on the display screen and triggering a sound alarm. To check the details enter the i tab which displays an alert highlighted in red UF capsule. to (date when it must be replaced)". Below there is also a service suggestion Replace UF capsule.

Step 1

- Open the front door.
- Disconnect the exhausted UF module.
- Connect a new module, mind flow directions.
- Check that no tubes are bent.
- Close the front door.

ULTRA	2020.06.29 10:21:45
Service date:	
UV lamp to:	2017.07.20
UV lamp time:	7998 h
UF module to:	2020.08.29
MF capsule to:	2020.06.20

Step 2

- Open the feed water valve.
- Check that no water is leaking.
- Reset the alarm in the „i“ tab.

7.5 Sanitization

The sanitization process must be performed by authorized Hydrolab staff only.

8. WORK SAFETY REGULATIONS

In particular the user should not:

- touch the switches with wet hands
- touch the tubes with sharp objects

9. MALFUNCTIONS

Some kinds of damage occur due to not performing simple maintenance tasks or other overlooks and can be fixed without calling the service. Unnecessary service call to fix these kinds of damage will be charged, even during the warranty period.

CONSUMABLE PARTS

Model	Microfiltration capsule 0.2 µm	Module H7 TOC	UV lamp radiator 185/254 nm	UV lamp radiator 254 nm	UF ultrafiltration module	Cat. no.
Ultra	+	+	-	+	-	DR-TOC-00
Ultra UV	+	+	+	-	-	DR-TOC-UV
Ultra UF	+	+	+	-	+	DR-TOC-UF
Cat. no.	EM-SP-20	EJ-2000-1	EUV-185-254-HLP	EUV-254-HLP	EU-HLP-01	



DECLARATION OF CONFORMITY

Manufacturer: **Hydrolab Sp. z o.o. Sp. K.**
Manufacturer Address: **ul. Wesola 1, 83-010 Straszyn**

We hereby declare, that water purification systems (deminalizers) *ULTRA models: ULTRA UF, ULTRA UV, ULTRA* conforms requirements of directives:

- Low Voltage Directive (LVD) 2014/35/UE.
- Electromagnetic Compatibility Directive (EMC) 2014/30/UE.
- Restriction of the use of certain hazardous substances in electrical equipment and electronic.

The conformity assessment used the following standards:

- PN-EN 61010 safety of electrical instruments for measurement, control and use in laboratories.
- PN-EN 61326 Electrical equipment for measurement, control and use in laboratories.
Requirements for electromagnetic compatibility (EMC).
- PN-EN 62311 Assessment of electronic and electrical equipment related to the limitation of exposure people to electromagnetic fields (0 Hz - 300 GHz)
- PN-EN 50581 Technical documentation for the assessment of electrical and electronic products, taking into account the limitation of the use of hazardous substances.

HYDROLAB
Sp. z o.o. Sp. K.
ul. Wesola 1, 83-010 Straszyn
NIP 604-015-22-97 KRS 0000392441

Printed Name:

Przemyslaw Ganczarek

WARRANTY

1. The Hydrolab company provides a warranty for the demineralizer:

Model:

Serial no.:

Membrane no.

2. Warranty period: 12 months.

3. The warranty is valid only if the user respects the parameters and usage instructions included in the manual.

4. In case of any malfunction it will be removed in:

- 10 working days after delivery (cost covered by the user) to the service to the address:
Hydrolab Sp. z o.o., ul. Wesola 1, 83-010 Straszyn, Poland.

5. The warranty does not cover any mechanical damage and damage occurred due to:

- wrong usage (ex. no servicing)
- wrong installation
- repairs performed by unauthorized people
- feed water not matching the standards described in the manual

6. The warranty does not cover the disposable materials of lifetime depending on the flow rate, its characteristics, contamination type and level.

7. The warranty period is exceeded by the time the device remains at the warrant's location for repairing.

8. Repairing the device by unauthorized service renders the warranty invalid.

9. When receiving the demineralizer, the user is obliged to pay the costs occurred due to the user's fault.

date, signature and stamp of company

date and buyer's signature