Wasserlab

Sistemas de purificación de agua

*Water Purification Systems*

# Ecomatic
# Autwomatic
# Autwomatic Plus
# Autwomatic Plus 1+2
# Ultramatic GR
# Ultramatic Plus

## Laboratories

# The alternative in Water Purification Systems”

Wasserlab, a firm with over 20 years of experience, designs and manufactures water purification systems to satisfy the daily Pure and Ultrapure Water requirements of laboratories and companies.

We are manufacturers, and therefore we are in a position to offer both, standard equipment and user bespoke equipment.

Wasserlab offers the market's best quality/price ratio for its water purification systems, together with its Maintenance and Technical Assistance Service.

Our company’s philosophy focuses on providing our clients with the fastest and most efficient after sales service.

We offer different solutions to your different laboratory or company needs:

- Type I Ultrapure Water (Reagent Grade)
- Type II Purified Water (Analytical Grade)
- Type III Water (Osmotized)

Wasserlab
Sistemas de purificación de agua
*Water Purification Systems*



## The products are designed for use in:

### LABORATORIES
Desktop equipment

### HOSPITALS
High production equipment

### INDUSTRY
Bespoke facilities

### Type I and II Water specifications according to ASTM (American Society for Testing and Materials)

| Characteristic | Type I (Reagent Grade) Water | Type II (Analytical Grade) Water | Type III (Osmotized) Water | Type IV |
|---|---|---|---|---|
| Conductivity **(µS/cm)** | 0,055 | 1,0 | 4 | 5 |
| Resistivity **(MΩ.cm)** | 18,2 | 1,0 | 0,25 | 0,2 |
| Total Organic Carbon **(ppb)** | 10 | 50 | 200 | |
| Sodium **(ppb)** | 1 | 5 | 10 | 50 |
| Chloride **(ppb)** | 1 | 5 | 10 | 50 |
| Total Silica **(ppb)** | 3 | 3 | | |
| Endotoxins **(EU/ml.)** | < 0,03 | < 0,25 | - | - |

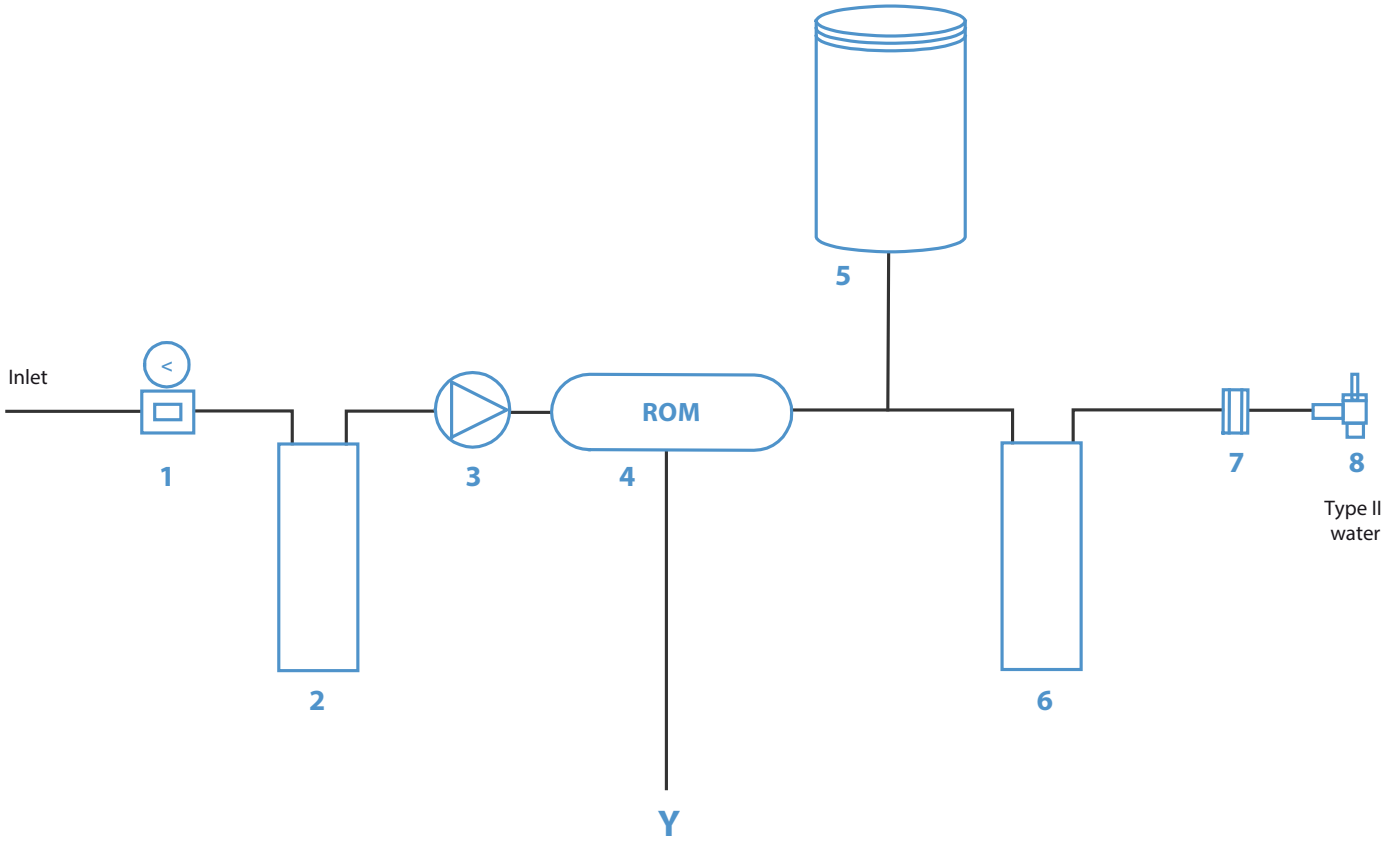
Bacterial content ufc/ml <1. It requires use of 0,22 µm final filter.

### Clinical and Laboratory Standards Institute (CLSI)

| Parameter | Type I (Reagent Grade) Water | Type II (Analytical Grade) Water | Type III (Osmotized) Water |
|---|---|---|---|
| Bacteria **(cfu/ml)** | < 1 | < 100 | < 1000 |
| Resistivity **(MΩ.cm @ 25°C)** | > 18 | > 1 | > 0,05 |
| Silica **(ppb)** | < 10 | < 100 | < 1000 |
| TOC **(ppb)** | < 10 | < 50 | < 200 |
| Pyrogens **(EU/ml)** | < 0,03 | - | - |

# ECOMATIC
## PURIFIED WATER (TYPE II)
## OSMOTIZED WATER (TYPE III)

Water that is always freshly produced, with stable quality and the best performance at the lowest cost.




## The Ecomatic Equipment always dispenses freshly purified Type II Water

**1** Pressure Regulator. **2** Pretreatment module. **3** Pump. **4** Reverse Osmosis membrane. **5** Pressure Tank. **6** DI module. **7** Type II water conductivity sensor. **8** Dispensation tap.

# Ecomatic: Compact water purification equipment that produces Type II (ASTM*, Analytical Grade) Water, using water directly from the mains

*American Society for Testing and Materials


## Ecomatic provides Type II (Analytical Grade) Water, with productions of 3, 5 and 10 l/h, according to model

The combination of water purification systems using inverse osmosis and deionization, provides purified water with a stable quality, at a very competitive price.

The equipment **always dispenses freshly produced Type II Water**, avoiding its deterioration caused by storage.

## Accumulation of Osmotized water

The permeate water from the reverse osmosis module accumulates in a pressurized tank (30 or 50 liters), which is opaque and airtight and protects the water from any contact with light and air, thereby preserving it from any possible contamination.

## Easy to handle

**Easy to install.**
**Easy, quick maintenance**, thanks to its system of exchangeable cartridges, using fast connections.


Type II Water Monitoring

## Continuous control of the purification process using a microprocessor

An easy-to-read digital screen informs users, at all times, of the following conditions:

- The quality of the water produced measured in µS/cm, with a resolution of ± 0,1 µS/cm.
- The status of the purification process (in production, full tank, equipment dispensing) and warnings, using easy-to-interpret symbols.

**Fully automatic operation** for maximum tranquility for users.

**Warning set point parameters** can be programmed as desired.

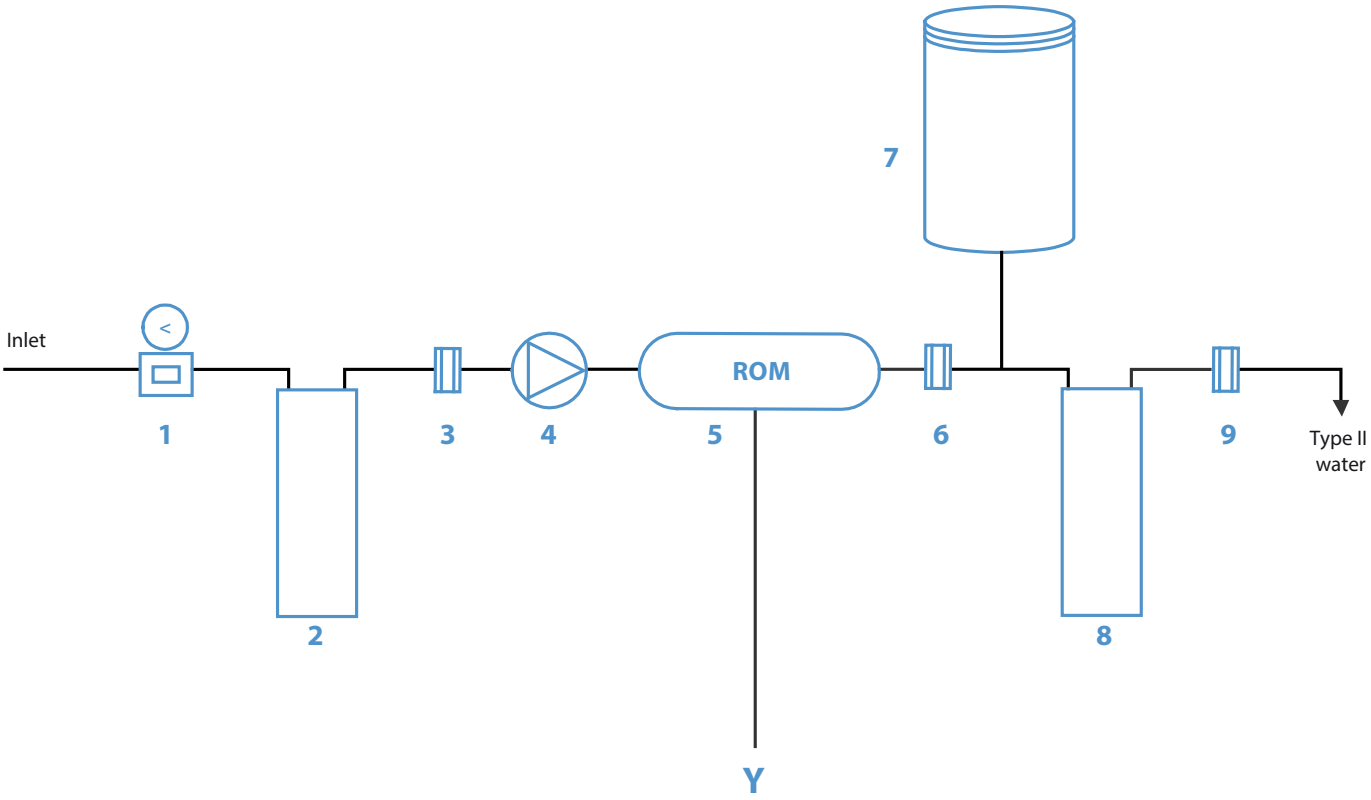
## Applications

More than 90% of general laboratory assays require Type II Water:

- Preparation of culture media
- Preparation of reagents and buffer solutions
- Cleaning the material
- Clinical Analyses
- Salt spray Chambers and Climatic Test Chambers
- Supplying equipment to produce Type I (Ultrapure) Water
- Ecomatic can also provide Type III (Osmotized ) Water for thermal disinfection devices and Autoclaves.

# AUTWOMATIC
## PURIFIED WATER (TYPE II)
## OSMOTIZED WATER (TYPE III)


"Always freshly produced water, with controlled, monitored quality"




## Autwomatic equipment:
## Maximum tranquility for users

**1** Pressure regulator. **2** Pretreatment module. **3** Inlet water conductivity sensor. **4** Pump. **5** Reverse osmosis membrane. **6** Osmotized water conductivity sensor. **7** Pressure tank . **8** DI module. **9** Type II water conductivity/temp sensor.

## Pretreatment

The pretreatment module protects the reverse osmosis membrane by removing:

- Particles (≥ 5 micron)
- Chloride and colloids
- Organic material

## Reverse osmosis

The high efficiency and performance reverse osmosis module provides with a flow rate of 3, 5 and 10 liters per hour of Osmotized water, removing:

- 95-98% of dissolved inorganic salts.
- >99% of dissolved organic matter (PM > 100 dalton).
- >99,95% of microorganisms and particles.

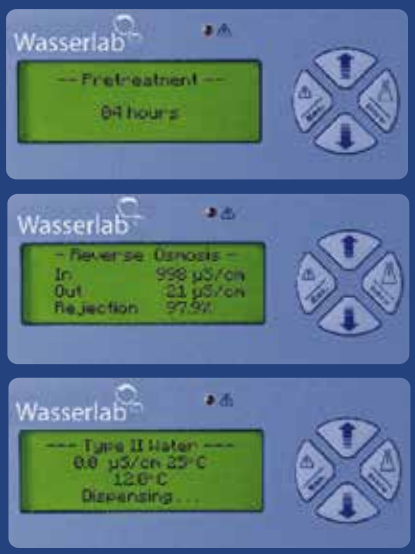
## Deionization

A highly effective mixed bed of anion/cation ionic exchange resins removes any ions from the permeate water from the inverse osmosis module. The resulting water has a conductivity value ≤ 1 µS/cm.

## Monitoring

The Autwomatic microprocessor constantly monitors all the purification process parameters:

- Real number of equipment operating hours.
- Measurement in µS/cm (± 1 µS/cm) of the conductivity of the equipment supply water and the permeate water from the reverse osmosis module.
- % performance of the reverse osmosis module (± 0.1%).




- Measurement in µS/cm of the conductivity of the Type II Water produced (± 0,1 µS/cm).
- Water temperature. All the conductivity measurements are compensated at 25ºC.
- Equipment operating status (Producing/Full Tank/Dispensing).

## Accumulation of Osmotized water

The permeate water from the reverse osmosis module accumulates in a pressurized tank (30 or 50 liters), which is opaque and airtight and protects the water from any contact with light and air, thereby preserving it from any possible contamination.

# Automatic equipment with multi-parameter monitoring

## Type II (Analytical Grade) Water

The Autwomatic equipment stores the Osmotized water, unlike other purification systems which store the Type II Water end product, with the subsequent loss of quality.

**Upon user's request, the Autwomatic always dispenses maximum quality, freshly purified Type II water**.

## Self-checking and preventive maintenance

- The Autwomatic software is configured to conduct a programmed self-check on system operation, constantly and effectively controlling the equipment components and the monitoring values of the quality of the water produced.

Users can program the following as desired:

- Minimum performance of the reverse osmosis module.
- Maximum conductivity of the Type II Water produced.

to anticipate any possible problems caused by using water of a non-desired quality.


The microprocessor will provide with a preventive notification, in the form of an audible warning and a written message on the screen, indicating the maintenance tasks required to guarantee the desired water quality.

- Low performance of the reverse osmosis module.
- Pretreatment and deionization Module Wear and Tear.
- Temperature sensor or conductivity sensors not working properly.

## Conductivity meter calibration and system check

The Autwomatic software allows adjusting and calibrating the conductivity meter using a certified standard based on the International standards.

The Wasserlab Technical Assistance Service offers, at user's request:

1. Regular equipment calibration service.
2. Full system check over and corresponding certificate.

## Purified Type II water Applications

- Preparing microbiological culture media
- Spectrophotometry
- RIA/ELISA
- AA-Flame
- Preparing buffer solutions
- Salt spray chambers
- Climatic Test Chambers

## Osmotized Water (Type III) Applications

- Feeding Autoclaves and washing machines
- Glassware cleaning

# Ecomatic – Autwomatic Technical Specifications

| Equipment | ECOMATIC | AUTWOMATIC |
|---|---|---|
| **Final Water Quality** | **Type II** | **Type II** |
| Conductivity (µS/cm) | <1 | <1 |
| **Rate and Storage** | | |
| Flow Rate LPH | 3/5/10 l/h | 3/5/10 l/h |
| Max. Flow rate Recommended LPD | 30 - 50 - 100 | 30 - 50 - 100 |
| RO Pressurized Tank (L) | 30/50 | 30/50 |
| **Dispensation** | | |
| Manual Dispensing | √ | √ |
| **Continuous Monitorization** | | |
| Touch Screen / Keyboard | Keyboard | Keyboard |
| Visual and audible warning messages | √ | √ |
| Feed Water Conductivity (µS/cm) | | √ |
| Osmotized water Conductivity (µS/cm) | | √ |
| Ionic Rejection % | | √ |
| Final Water Conductivity (µS/cm) | √ | √ |
| Work Time counter | √ | √ |
| Water Temperature (ºC) | | √ |
| Temperature compensation | √ | √ |
| **Warning to user messages** | | |
| Out of range parameters | √ | √ |
| Pretreatment cartridge exchange | √ | √ |
| RO exchange | | √ |
| DI cartridge exchange | √ | √ |
| Feed water supply failure | √ | |
| **Automatisms** | | |
| Automatic Start/Stop | √ | √ |
| Automatic Stop/water supply failure | √ | √ |
| **Other elements** | | |
| DI increasable | √ | √ |
| **Dimensions (Height/Widht/Depth) [cm]** | 45x25x48 | 52x25x48 |
| **Weight [kg]** | 12 | 15 |
| **Power supply** | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz |
| **Feed Water Requirements** | | |
| Min. Inlet Pressure | 2 bar | 2 bar |
| Max. Inlet Pressure | 6 bar | 6 bar |
| Max. Water Temperature | 30 ºC | 30 ºC |
| Max. Hardness | 300 ppm (CaCO3) | 300 ppm (CaCO3) |
| SDI (Silt Density Index) | < 5 | < 5 |
| Max. Feed Water conductivity | 1000 µS/cm | 1500 µS/cm |
| Free Chlorine | < 1 ppm | < 1 ppm |
| Turbidity | < 1NTU | < 1NTU |

# AUTWOMATIC PLUS
## PURIFIED WATER (TYPE II)
## OSMOTIZED WATER (TYPE III)

"Maximum performance and optimal control of the purification process on touch screen":

- Purified Water (Type II)
- Osmotized Water (Type III)


The **Autwomatic Plus** range of equipment produce Type II purified water (according to ASTM standards) of maximum quality and RO water (Type III), incorporating the latest technology in production and quality control of Purified Water.

**Autwomatic Plus Model Configurations**

| Versions | Code | Purified Water Type II | | | | | |
|---|---|---|---|---|---|---|---|
| | | Production rate | Double Osmosis System | Purification Module Water Type II | Storage Tank | UV lamp | Final filter 0,22 µm |
| Autw. Plus 3 L | QA03DP | 3 l/h | - | X | 30/50 Liters | - | - |
| Autw. Plus UV 3 L | QA03DPUV | 3 l/h | - | X | 30/50 Liters | X | X |
| Autw. Plus 5 L | QA05DP | 5 l/h | - | X | 30/50 Liters | - | - |
| Autw. Plus UV 5 L | QA05DPUV | 5 l/h | - | X | 30/50 Liters | X | X |
| Autw. Plus HC 5 L | QAHC05DP | 5 l/h | X | X | 30/50 Liters | - | - |
| Autw. Plus HC UV 5 L | QAHC05DPUV | 5 l/h | X | X | 30/50 Liters | X | X |
| Autw. Plus 10 L | QA10DP | 10 l/h | - | X | 50 Liters | - | - |
| Autw. Plus UV 10 L | QA10DPUV | 10 l/h | - | X | 50 Liters | X | X |

## Type II Water

- Water quality at 25ºC
  - Conductivity < 1 µS/cm.
  - TOC[1]< 30 ppb.
  - Bacteria[1] < 0,01 cfu/ml.
  - Particles[1] > 0,22 µm/ml<1
- Volume production of Reverse Osmosis
  - 3 l/h
  - 5 l/h
  - 10 l /h
- Storage Tank
  - 30 Liters
  - 50 Liters

[1] Autwomatic Plus UV version

**Applications:**

- Preparing microbiological culture media.
- Preparing buffer solutions.
- RIA/ELISA.
- AA-Flame.
- Spectrophotometry.

## Osmotized Water

- RO water quality.

Removal of:

- 95-98% dissolved inorganic salts.
- > 99% dissolved organic material (PM> 100 dalton).
- >99,95% of microorganisms and particles.

**Applications:**

- Feeding Autoclaves and washing machines.
- Glassware cleaning.

# Stages of water purification

## RO Water

**Pretreatment:** System particle filters and activated carbon to remove particles (≥5 µm), chlorine, organic material and colloids.

**Reverse Osmosis:** Reverse Osmosis Module High efficiency and performance, provides with a production rate of 3, 5 and 10 l/h (depending on model), eliminating 95-98% of dissolved inorganic salts, > 99% of dissolved organic material (MW> 100 dalton) and 99.95% of microorganisms and particles.

**HC version (high Conductivity) for high inlet water conductivity.**

The **Autwomatic Plus HC,** incorporates a system of double Osmosis, suitable to work with inlet water having high conductivity, improving performance and reducing the consumption of ion exchange resin.

**Available in version 5 l / h.**

**Accumulation of Osmotized water:** The permeate water from the reverse osmosis module accumulates in a pressurized tank (30 or 50 liters), which is opaque and airtight and protects the water from any contact with light and air, thereby preserving it from any possible contamination. Available pressurized tanks 30 and 50 liters.

## Type II Water

**Deionization:** A highly effective mixed bed of anion/cation ionic exchange resins, removes any ions from the permeate water from the inverse osmosis module. The resulting water has a conductivity value ≤ 1 µS/cm.

**Ultraviolet Lamp and 0,22 µm Final Filter** (Autwomatic Plus UV and Autwomatic Plus HC UV versions).

For a reduction of microorganisms present in the water, the equipment incorporates a UV lamp reducing this contamination.

In order to achieve even stricter microbiological requirements (<0.01 cfu/ml) a final filter of 0,22 µm is placed in the dispensing point, thus retaining any microorganisms in the final water.

## Dispensation

The Autwomatic Plus dispenses two water qualities independently.

In order to obtain water Type II, the system allows three types of dispensing:

- Continuous
- Volume wise
- Time control

The RO water is obtained directly from the pressurized tank.

## Monitorng

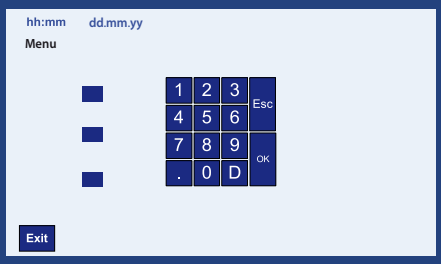
Through a touch screen of 4.3", the Autwomatic Plus monitors all the parameters of the water purification process of the equipment.

**Water Quality**

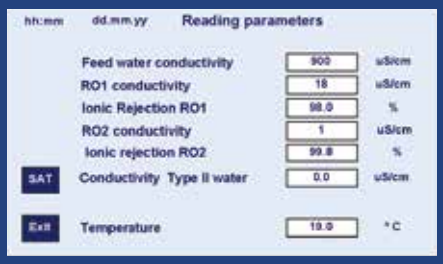
- Measurement of the feeding water conductivity (µS/cm)
- Measurement of the water permeate reverse osmosis module conductivity (µS/cm)
- % perfomance of the reverse osmosis module
- Measurement of the Type II Water conductivity (µS/cm)
- Temperature of the water (ºC)

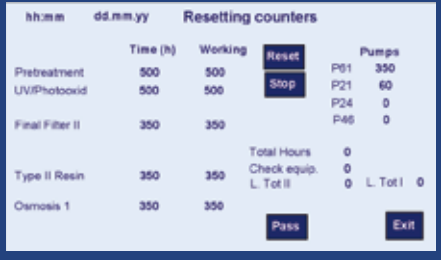
**Parameter Control**

- Hours of installation and working for each item.
- Total liters produced.
- Hours of operation of the equipment






## Security

The system has a user password to allow access to different parts of the menu, as well as for parameterization of the conductivity warning.

## Automatisms

Automatic operation depending on the volume of stored water.

System features:

- Stop due to water cut.
- Cleaning of the osmosis membrane.

The system warns about the change of consumables as well as abnormalities such as inlet water cut, or malfunction of the measuring sensors.

## Data output

The equipment allows you to extract operating data from the equipment to an external memory (USB).

The report reflects the quality and quantity of dispensed water records, as well as warnings and change of consumable material.

## Maintenance, sanitization and calibration

Easy to use and maintain system.

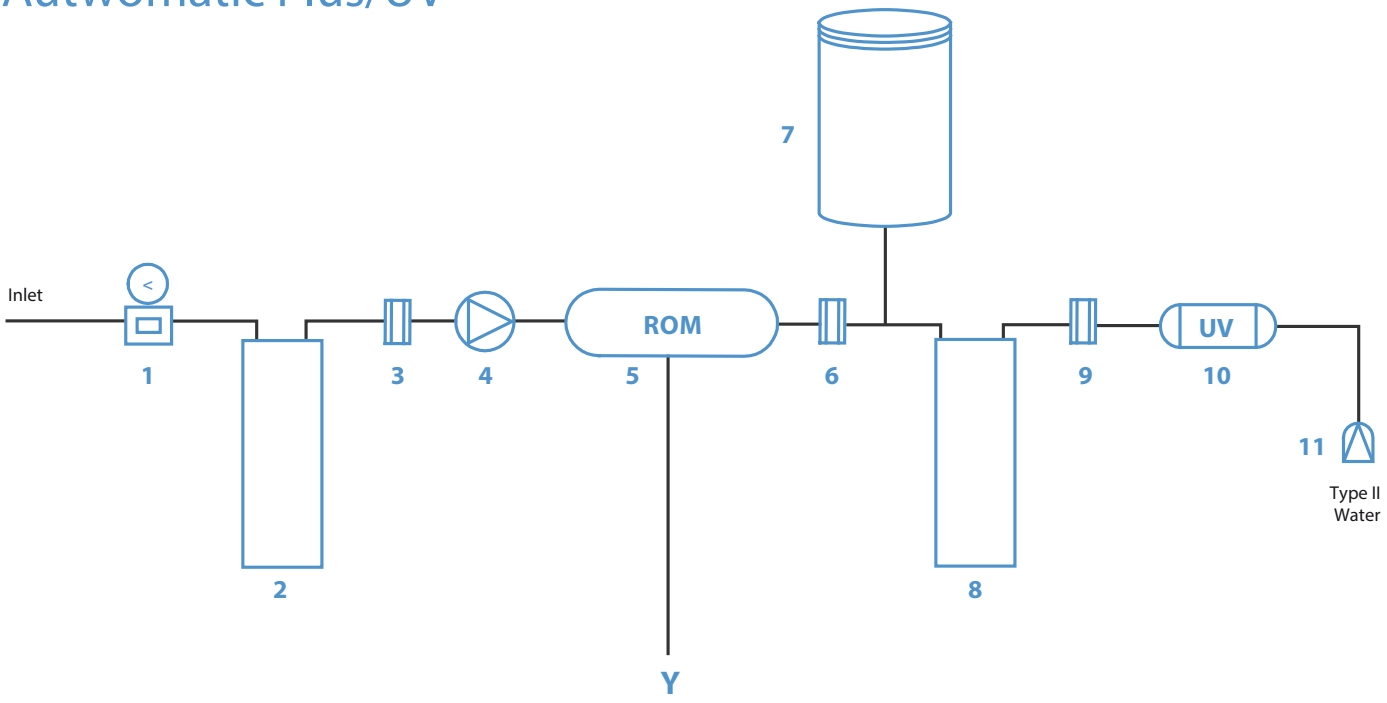
Very quick Fungible change, with cartridges with fast connection and anti-drip system.

Possibility of sanitizing the hydraulic circuit.

Equipment calibrated by certified standard traceable to national standards of the German DKD.

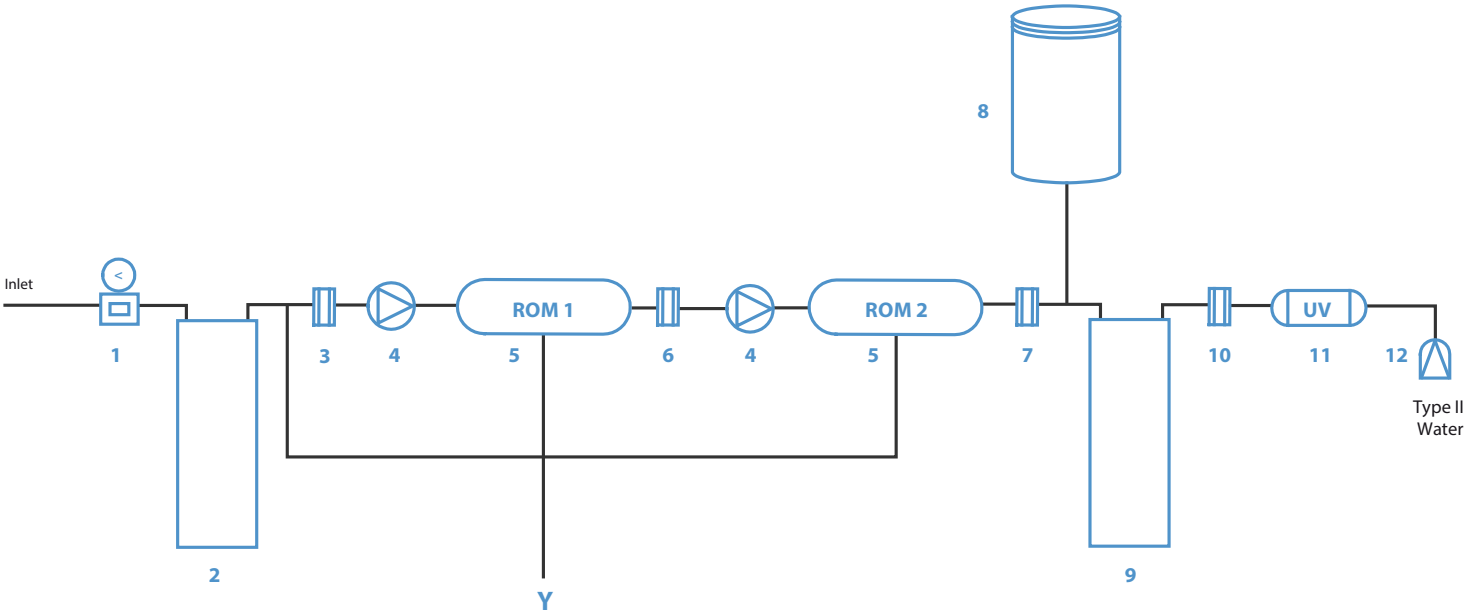
CE Marking.

# Autwomatic Plus/UV




**1** Pressure regulator. **2** Pretreatment module. **3** Inlet water conductivity/temp sensor. **4** Pump. **5** Reverse osmosis membrane.
**6** RO water conductivity sensor. **7** Pressure tank. **8** DI module. **9** Type II water Conductivity / Temp sensor. **10** UV lamp (optional).
**11** Final Filter 0,22 µm (optional).

# Autwomatic Plus HC/UV




**1** Pressure regulator. **2** Pretreatment module. **3** Inlet water conductivity/temp sensor. **4** Pump. **5** Reverse osmosis membrane.
**6** RO water conductivity sensor. **7** RO water conductivity sensor. **8** Pressure tank. **9** DI module. **10** Type II water Conductivity / Temp sensor.
**11** UV lamp (optional).**12** Final Filter 0,22 µm (optional).

# Autwomatic Plus - Autwomatic HC Technical specifications

| Equipment | AUTWOMATIC PLUS | | AUTWOMATIC PLUS HC | |
|---|---|---|---|---|
| **Model** | **AUTWOMATIC PLUS** | **AUTWOMATIC PLUS UV** | **AUTWOMATIC PLUS HC** | **AUTWOMATIC PLUS HC UV** |
| **Final Water Quality** | **Type II** | **Type II** | **Type II** | **Type II** |
| Water Conductivity (µS/cm) | <1 | <1 | <1 | <1 |
| TOC (ppb)[1] | | <30 | | <30 |
| Bacteria (cfu/ml)[1] | | <0.01 | | <0.01 |
| Particles>0,22 µm/ml[1] | | <1 | | <1 |
| **Rate and Storage** | | | | |
| Flow Rate LPH | 3/5/10 l/h | 3/5/10 l/h | 5 l/h | 5 l/h |
| Double Osmosis Stage | | | √ | √ |
| Max. Flow rate Recommended LPD | 30 - 50 - 100 | 30 - 50 - 100 | 50 | 50 |
| RO Pressurized Tank (L) | 30/50 | 30/50 | 30/50 | 30/50 |
| **Dispensation** | | | | |
| Manual Dispensing | √ | √ | √ | √ |
| Volume controlled Dispensing | √ | √ | √ | √ |
| Time Controlled dispensing | √ | √ | √ | √ |
| **Continuous Monitorization** | | | | |
| Touch Screen/ keyboard | Touch Screen | Touch Screen | Touch Screen | Touch Screen |
| Visual and audible warning messages | √ | √ | √ | √ |
| Feed Water Conductivity (µS/cm) | √ | √ | √ | √ |
| Osmotized water Conductivity (µS/cm) | √ | √ | √ | √ |
| Ionic Rejection % | √ | √ | √ | √ |
| Final Water Conductivity (µS/cm) | √ | √ | √ | √ |
| Work Time counter | √ | √ | √ | √ |
| Multiparameter Time counter | √ | √ | √ | √ |
| Water Temperature (ºC) | √ | √ | √ | √ |
| Temperature compensation | √ | √ | √ | √ |
| **Data Output** | | | | |
| USB Output | √ | √ | √ | √ |
| **Warning to user messages** | | | | |
| Out of range parameters | √ | √ | √ | √ |
| Pretreatment cartridge exchange | √ | √ | √ | √ |
| RO exchange | √ | √ | √ | √ |
| DI cartridge exchange | √ | √ | √ | √ |
| UV lamp exchange | | √ | | √ |
| Final Filter exchange | | √ | | √ |
| Feed water supply failure | √ | √ | √ | √ |
| **Automatismos** | | | | |
| Automatic Start/Stop | √ | √ | √ | √ |
| Automatic/Programmable recirculation | Programmable | Programmable | Programmable | Programmable |
| Automatic Stop/water supply failure | √ | √ | √ | √ |
| Automatic RO cleanning | √ | √ | √ | √ |
| **Other components** | | | | |
| UV Lamp | | √ | | √ |
| Final Filter 0,22 µm | | √ | | √ |
| **Dimensions (Height/Widht/Depth) [cm]** | 60x36x49 | 60x36x49 | 60x36x49 | 60x36x49 |
| **Weight [kg]** | 35 | 35 | 35 | 35 |
| **Power supply** | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz |
| **Feed Water Requirements** | | | | |
| Min. Inlet Pressure | 2 bar | 2 bar | 2 bar | 2 bar |
| Max. Inlet Pressure | 6 bar | 6 bar | 6 bar | 6 bar |
| Max. Water Temperature | 30 ºC | 30 ºC | 30 ºC | 30 ºC |
| Max. Hardness | 300 ppm (CaCO3) | 300 ppm (CaCO3) | 300 ppm (CaCO3) | 300 ppm (CaCO3) |
| SDI (Silt Density Index) | < 5 | < 5 | < 5 | < 5 |
| Max. Feed Water conductivity | 1500 µS/cm | 1500 µS/cm | 2000 µS/cm | 2000 µS/cm |
| Free Chlorine | < 1 ppm | < 1 ppm | < 1 ppm | < 1 ppm |
| Turbidity | < 1NTU | < 1NTU | < 1NTU | < 1NTU |

1) These values are typical and may vary depending on the nature and concentration of contaminants in the feed water.

# AUTWOMATIC PLUS 1+2
## PURIFIED (TYPE II) AND ULTRAPURE (TYPE I) WATER

"Three qualities of water on a single Equipment, from tap water":

- Ultrapure Water (Type I)
- Purified water (Type II)
- Osmotized Water (Type III)


The range of equipment **Autwomatic Plus 1+2**, supplies RO water Type III, Purified water Type II and Ultrapure Water Type I (according to ASTM standards), of the highest quality, from three independent dispensers, including the highest technologies for production and quality control of Purified Water.

**Configurations Autwomatic Plus 1+2 Model**

| Versions | Code | Purified Type II Water | | | | Ultrapure Type I water | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Production Rate | Purification Module Type II Water | Storage Tank | Final Filter 0,22 µm | Production Rate | Ultrapurification Module Type I | Foto-oxidation Lamp | Ultrafiltration Cartridge | Final Filter 0,22 µm |
| Autw. Plus 1+2 GR 3 L | QA03DPGR | 3 l/h | X | 10/30/50 Liters | X | 2 l/min | X | X | - | X |
| Autw. Plus 1+2 GR 5 L | QA05DPGR | 5 l/h | X | 30/50 Liters | X | 2 l/min | X | X | - | X |
| Autw. Plus 1+2 GR 10 L | QA10DPGR | 10 l/h | X | 30/50 Liters | X | 2 l/min | X | X | - | X |
| Autw. Plus 1+2 GRUF 3 L | QA03DPGF | 3 l/h | X | 10/30/50 Liters | X | 2 l/min | X | X | X | X |
| Autw. Plus 1+2 GRUF 5 L | QA05DPGF | 5 l/h | X | 30/50 Liters | X | 2 l/min | X | X | X | X |
| Autw. Plus 1+2 GRUF 10 L | QA10DPGF | 10 l/h | X | 30/50 Liters | X | 2 l/min | X | X | X | X |

# Stages of water purification

## Osmotic Water (Type III)

**Pretreatment:** System of particle filters and activated carbon that remove particles (≥5 µm), chlorine, colloids and organic material.

**Reverse Osmosis:** Reverse osmosis module of high efficiency and performance, that provides with a production rate of 3/5/10 liters per hour (depending on model), removing 95-98% of dissolved inorganic salts,> 99% dissolved organic material (PM> 100 dalton) and 99.95% of microorganisms and particles.

**Accumulation of Osmotic Water:** The water Permeate reverse osmosis module collects it in a pressurized, sealed opaque tank that keeps it out of contact with light and air, preserving it from possible contamination.

Available pressurized 10, 30 and 50 liters tanks.

## Purified Water (Type II)

**Deionization:** A bed of ion exchange resins of high efficiency, removes the few ions from water permeate reverse osmosis module. The result is a water conductivity of ≤1 µS/cm

**Final Filter 0,22 µm:** Encapsulated filter that ensures a bacterial count <0.01 cfu/ml

## Ultrapure Water (Type I)

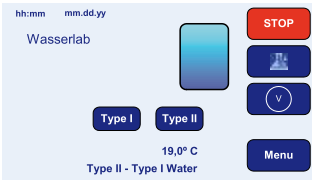
**Ultrapurification Module:** The Type II Water produced in the deionization module, flows through a Ultrapurification module, thus reducing trace levels of ionic contaminants.

**Foto-Oxidation Module:** Reduces organic contamination at trace level, emitting ultraviolet radiation at 254 nm with germicidal action and 185 nm radiation capable of generating hydroxyl free radicals, which oxidize the organic compounds dissolved in water, into carbonate and bicarbonate ions. These ions will be retained by the Refining Ion module, removing traces of ions in ultrapure water and thus obtaining a resistivity of 18.2 MΩ·cm.

**Polishing Module:** Reduction of organic matter (TOC) removing traces of ions in Ultrapure Water, to obtain a resistivity of 18,2 MΩ.cm.

**Ultrafiltration Module (Autwomatic Plus 1+2 GRUF Version):** a hydrophyllic membrane of encapsulated hollow fiber, with a large filtering surface, eliminates the pyrogens and nucleases in the water.

**Final Filter 0,22 µm:** Encapsulated filter that ensures a bacterial count <0.01 cfu/ml






## Dispensation

The 1 + 2 Autwomatic Plus dispenses three water qualities independently.
It allows three types of dispensing:

- Continuous
- Volume wise
- Time control

## Monitoring

Through a **touch screen** of 4.3", the Autwomatic Plus 1 + 2 monitors all the parameters of the water purification process of the equipment.

### Water Quality

- Measurement of the feeding water conductivity (µS/cm)
- Measurement of the water permeate reverse osmosis module conductivity (µS/cm)
- % perfomance of the reverse osmosis module
- Measurement of the Type II Water conductivity (µS/cm)
- Measurement of the produced Type I Water Resistivity (MΩ·cm)
- Temperature of the water (ºC)

### Parameter Control

- Hours of installation and working for each item .
- Total liters produced
- Hours of operation of the equipment

## Security

The system has a user password to allow access to different parts of the menu, as well as for parameterization of the conductivity warning.

## Automatisms

Automatic operation depending on the volume of stored water.

System features:

- Stop due to water cut
- Cleaning of the osmosis membrane
- Programmable Type I Water Recirculation
- Inability to dispense Type I Water with less than a preset resistivity.

The system warns about the change of consumables as well as abnormalities such as inlet water cut, or malfunction of the measuring sensors.

## Data output

The equipment allows you to extract operating data from the equipment to an external memory (USB).

The report reflects the quality and quantity of dispensed water records, as well as warnings and change of consumable material.

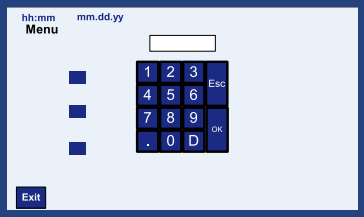
## Maintenance, sanitization and calibration

Easy to use and maintain system.

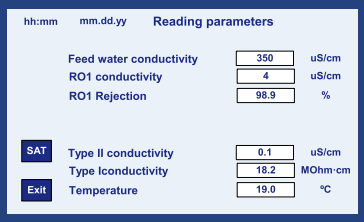
Very quick fungible change, with cartridges with fast connection and anti-drip system.

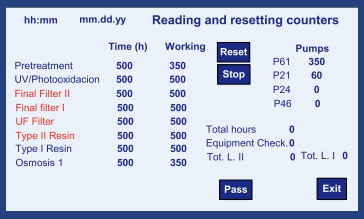
Possibility of sanitizing the hydraulic circuit.

Equipment calibrated by certified standard traceable to national standards of the German DKD.






# Quality of the water

## Ultrapure Water (Type I)

**Autwomatic 1+2 Plus GR Version**

- Water Quality at 25ºC
  - Resistivity 18,2 MΩ·cm.
  - TOC < 3 ppb.
  - Bacteria < 0.01 cfu/ml.
  - Particles > 0,22 µm/ml<1
- Dispensation 2 l/min.
- Applications: analytical methods such as analysis of organic and inorganic traces, HPLC, ICP-MS, IC and TOC analysis.

**Autwomatic Plus 1+2 GRUF Version**

- Water Quality at 25ºC
  - Resistivity 18,2 MΩ·cm
  - TOC< 3 ppb
  - Bacteria < 0.01 cfu/ml
  - Endotoxines < 0,001 (IU/ml)
  - Particles > 0,22 µm/ml<1
  - RNases y DNases removal
- Dispensation 2 l/min
- Applications: Molecular Biology, Cell Culture, PCR, DNA sequencing, Monoclonal Antibody Production.

## Purified Water (Type II)

- Water Quality at 25ºC
  - Conductivity <1 µS/cm.
  - TOC< 30 ppb.
  - Bacteria < 0.01 cfu/ml.
  - Particles > 0,22 µm/ml<1
- Production rate of Reverse Osmosis
  - 3 l/h
  - 5 l/h
  - 10 l /h
- Storage Tank
  - 10 Liters
  - 30 Liters
  - 50 Liters

**Applications:**

- Preparation of microbiological culture media.
- Preparation of reagents and buffers.
- RIA / ELISA.
- Atomic Absorption-Flame.
- Spectrophotometry.

## Osmotic Water (Type III)

- Water Quality Osmotic Water.

Removal of :

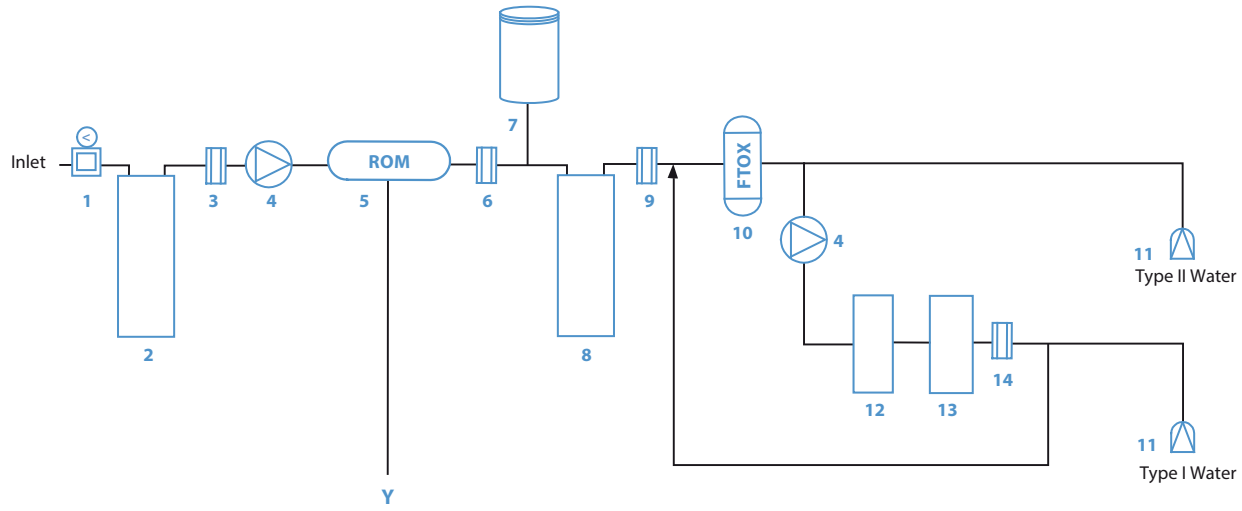
- 95-98% dissolved inorganic salts.
- > 99% of dissolved organic matter (PM> 100 dalton).
- >99,95% microorganisms and particles.

**Applications:**

- Feeding of autoclaves and cleaning equipment.
- Cleaning glassware material.

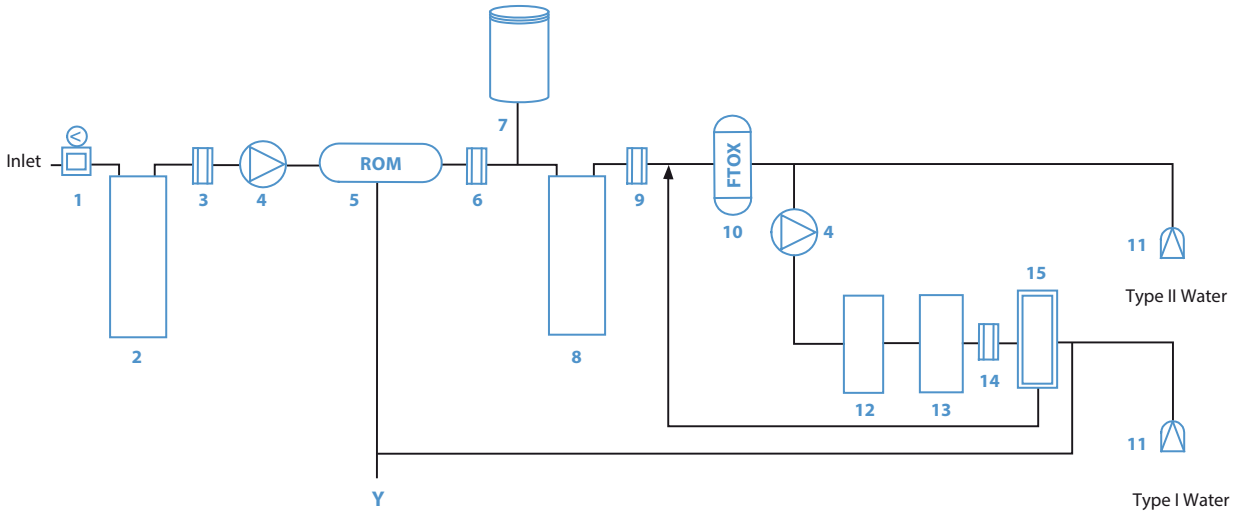
# Hydraulic scheme

## Autwomatic plus 1+2 GR




**1** Pressure regulator. **2** Pretreatment module. **3** Inlet water conductivity sensor. **4** Pump. **5** Reverse Osmosis membrane. **6** Osmotized water conductivity sensor. **7** Pressure tank. **8** DI module. **9** Type II water conductivity sensor. **10** UV-Photo-oxidation lamp. **11** Final filter 0,22 µm. **12** Ultrapurification module. **13** Polishing module. **14** Resistivity / Temperature sensor.

## Autwomatic plus 1+2 GR UF




**1** Pressure regulator. **2** Pretreatment module. **3** Inlet water conductivity sensor. **4** Pump. **5** Reverse Osmosis membrane. **6** Osmotized water conductivity sensor. **7** Pressure tank. **8** DI module. **9** Type II water conductivity sensor. **10** UV -Photo-oxidation lamp. **11** Final filter 0,22 µm. **12** Ultrapurification module. **13** Polishing module. **14** Resistivity / Temperature sensor. **15** Ultrafiltration module.

# Technical specifications

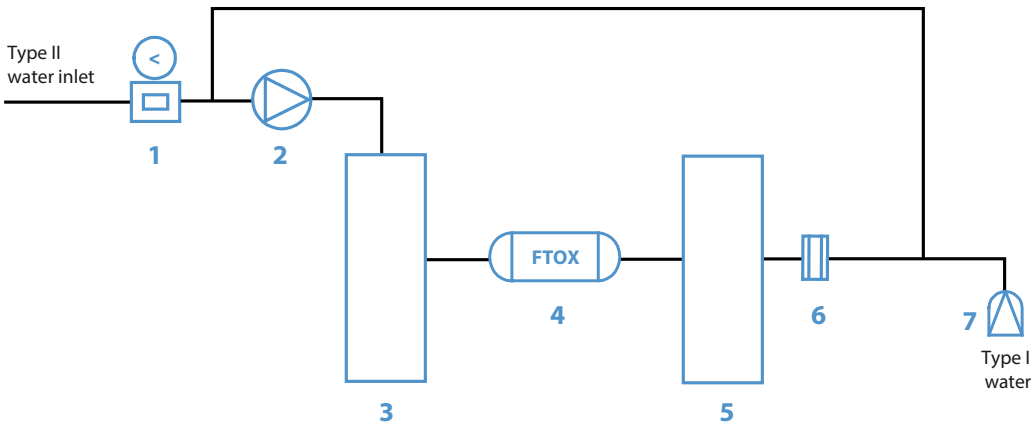
| Equipment | AUTWOMATIC PLUS 1+2 | | | |
|---|---|---|---|---|
| **Model** | **GR** | | **GRUF** | |
| **Final Water Quality** | **Type II** | **Type I** | **Type II** | **Type I** |
| Water Conductivity (µS/cm) | <1 | 0,055 | <1 | 0,055 |
| Water Resistivity (MΩ·cm) | | 18,2 | | 18,2 |
| TOC (ppb)[1] | < 30 | < 3 | < 30 | < 3 |
| Bacteria (cfu/ml)[1] | <0.01 | <0.01 | <0.01 | <0.01 |
| Endotoxins (EU/ml)[1] | | | | < 0,001 |
| Particles > 0,22 µm/ml[1] | <1 | <1 | <1 | <1 |
| **Rate and Storage** | | | | |
| Flow Rate | 3/5/10 l/h | 2 l/min | 3/5/10 l/h | 2 l/min |
| Max. Flow rate Recommended LPD | 30-50-100 | | 30-50-100 | |
| RO Pressurized Tank (L) | 10/30/50 | | 10/30/50 | |
| **Dispensation** | | | | |
| Manual Dispensing | √ | √ | √ | √ |
| Volume controlled Dispensing | √ | √ | √ | √ |
| Time Controlled dispensing | √ | √ | √ | √ |
| **Continuous Monitorization** | | | | |
| Touch Screen/ keyboard | Touch Screen | Touch Screen | Touch Screen | Touch Screen |
| Visual and audible warning messages | √ | √ | √ | √ |
| Feed Water Conductivity (µS/cm) | √ | | √ | |
| Osmotized water Conductivity (µS/cm) | √ | | √ | |
| Ionic Rejection % | √ | | √ | |
| Final Water Conductivity (µS/cm) | √ | | √ | |
| Final Water Resistivity (MΩ·cm) | | √ | | √ |
| Work Time counter | √ | √ | √ | √ |
| Multiparameter Time counter | √ | √ | √ | √ |
| Water Temperature (ºC) | √ | √ | √ | √ |
| Temperature compensation | √ | √ | √ | √ |
| **Data Output** | | | | |
| USB Output | √ | √ | √ | √ |
| **Warning to user messages** | | | | |
| Out of range parameters | √ | √ | √ | √ |
| Pretreatment cartridge exchange | √ | | √ | |
| RO exchange | √ | | √ | |
| DI cartridge exchange | √ | √ | √ | √ |
| Ultrapure cartridge exchange | | √ | | √ |
| UV/Photo-oxidation Lamp exchange | √ | √ | √ | √ |
| Final Filter/UF exchange | √ | √ | √ | √ |
| Feed water supply failure | √ | | √ | |
| **Automatisms** | | | | |
| Automatic Start/Stop | √ | | √ | |
| Automatic/Programmable recirculation | | Programmable | | Programmable |
| Automatic Stop/water supply failure | √ | | √ | |
| Automatic RO cleanning | √ | | √ | |
| **Other components** | | | | |
| Photo Oxidation lamp/UV | √ | √ | √ | √ |
| Final Filter 0,22 µm | √ | √ | √ | √ |
| Ultrafiltration cartridge | | | √ | √ |
| **Dimensions (Height/Widht/Depth) [cm]** | 60x36x49 | | 60x36x49 | |
| **Weight [kg]** | 35 | | 35 | |
| **Power supply** | 110-220VAC/50-60 Hz | | 110-220VAC/50-60 Hz | |
| **Feed Water Requirements** | | | | |
| Min. Inlet Pressure | 2 bar | | 2 bar | |
| Max. Inlet Pressure | 6 bar | | 6 bar | |
| Max. Water Temperature | 30 ºC | | 30 ºC | |
| Max. Hardness | 300 ppm (CaCO3) | | 300 ppm (CaCO3) | |
| SDI (Silt Density Index) | < 5 | | < 5 | |
| Max. Feed Water conductivity | 1500 uS/cm | | 1500 uS/cm | |
| Free Chlorine | < 1 ppm | | < 1 ppm | |
| Turbidity | < 1NTU | | < 1NTU | |

1) These values are typical and may vary depending on the nature and concentration of contaminants in the feed water.

# ULTRAMATIC GR
## ULTRAPURE WATER (Type I )

"Ultrapure Water Type I (Reagent Grade), at the lowest cost"


## Ultramatic GR




## The Ultramatic GR equipment produces Type I water (Reagent Grade) according to the ASTM Quality Standards

**1** Pressure regulator. **2** Pump. **3** GR Purification module. **4** Photo-oxidation lamp. **5** GR Purification module.
**6** Resistivity / Temp. sensor. **7** Final Filter 0,22 µm.

The Wasserlab Ultramatic GR equipment produces, and instantly dispenses at user's demand, Type I Ultrapure Reagent Grade water which exceeds the ASTM quality standards, adapting to the various purity requirements of each user according to the analysis techniques applied.

## Basis

Ultramatic dispenses 1.1 liters/minute of Ultrapure water Type I Reagent Grade water of 18.2 MΩ.cm at 25 ºC, COT <10 ppb and bacterial count ≤1 ufc/ml, from pre purified water:

- Type II Water(Ecomatic/ Autwomatic)
- Osmotized Water
- Deionized Water
- Distilled Water

The pre purified water flows through:

- A **GR** purification module that reduces contaminating ions to traces level.
- A photo oxidation module that reduces organic contamination to traces level.
- The water is dispensed through a 0,22 µm amicrobic Filter.

## Automatic recirculation

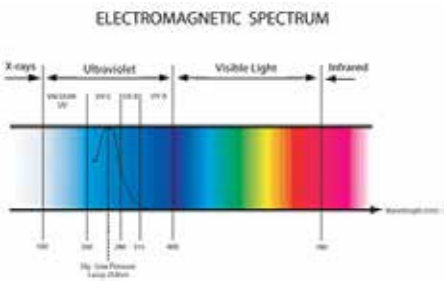
Ultramatic automatically recirculates the water contained in its circuit, ensuring the maximum quality of the water dispensed.

## Photo-oxidation

Ultramatic includes a photo oxidation module as a base feature, and its lamp emits:

- UV radiation at 254 nm with germicide activity (irreversibly alters bacterial DNA).
- Radiation at 185 nm with the capacity to generate free hydroxyl radicals that oxidize the organic compounds dissolved in the water into ions, carbonate and bicarbonate which will be retained by the third **GR** purification module.

The Wasserlab Ultramatic GR equipment produces, and instantly dispenses at user's demand, Type I Ultrapure Reagent Grade water which exceeds the ASTM quality standards, adapting to the various purity requirements of each user according to the analysis techniques applied




## Measurement of resistivity

Ultramatic **GR** provides with a continuous measurement of the water's resistivity (± 0,1 MΩ.cm) with temperature compensation (± 0,1 ºC).

**As a safety mechanism for users, the equipment software includes a prefixed set point minimum value (10 MΩ.cm) the equipment does not dispense water if this value is reached.**


## Calibration

Equipment calibrated using certified standard traceable to international standards.

## Applications

- AA / ICP
- HPLC / IC
- GC-MS

# ULTRAMATIC PLUS
## ULTRAPURE WATER (TYPE I)


"Ultrapure water of the highest quality, for the most critical applications in your laboratory. Touch screen control".

## Ultrapure Water (Type I)

The range of **Ultramatic Plus** equipment supplies Ultrapure water of the highest quality, exceeding ASTM specifications for Type I Water, Purified Water based (Type II, distilled or RO), incorporating the highest technologies for the production and quality control of the ultrapure water obtained.

### Ultramatic Plus Model configurations

| Versions | Code | Ultrapure Water Type I | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Flow rate | | Ultrapurification Module | | Ionic Polishing Module | | Photo-oxidation Lamp | | Polishing Module | | Ultrafiltration Module | | Final Filter 0,22 µm |
| Ultramatic Plus DI | QUDI0011 | 2 l/min. | | X | | X | | - | | - | | - | | X |
| Ultramatic Plus GR | QUGR0011 | 2 l/min. | | X | | - | | X | | X | | - | | X |
| Ultramatic Plus GR UF | QUGF0011 | 2 l/min. | | X | | - | | X | | X | | X | | X |

### Water Quality

| Model | Ultramatic Plus DI | Ultramatic Plus GR | Ultramatic Plus GR UF |
|---|---|---|---|
| Dispensing | 2 l/min. | 2 l/min. | 2 l/min. |
| Resistivity | 18,2 MΩ·cm. | 18,2 MΩ·cm. | 18,2 MΩ·cm. |
| TOC | < 10 ppb | < 3 ppb | < 3 ppb |
| Bacterial count | < 0.01 cfu/ml | < 0.01 cfu/ml | < 0.01 cfu/ml |
| Endotoxins | - | - | 0,001 EU/ml |
| Particles | 0,22 µm | 0,22 µm | Ultrafiltration |
| RNase y DNase | - | - | Removal |

# Stages of the Ultrapurification of the water

## Water Quality

### Ultramatic Plus DI

**Applications:**

- Analysis of Inorganic traces.
- AA, IC, ICP-MS.
- Photometry.

### Ultramatic Plus GR

**Applications:**

- Analytical methods such as analysis of organic and inorganic trace, HPLC, ICP-MS, IC and TOC analysis.

### Ultramatic Plus GR UF

**Applications:**

- Molecular Biology, Cell Culture, PCR, DNA sequencing, production of monoclonal antibodies.

## Ultrapurification Module (Ultramatic Plus GR and GR UF versions)

Purified feed water flows through a Ultrapurification module reducing trace levels of ionic contaminants, in order to reach a resistivity of 18,2 MΩ.cm.

## Ionic Polishing Module (Ultramatic Plus DI version)

Final deionization by ion exchange resin beds, removing ionic contaminants at trace levels, obtaining Ultrapure Water (Type I) of a resistivity of 18,2 MΩ.cm.

## Photo -Oxidation Module (Ultramatic Plus GR and GR UF versions)

Reduces organic contamination at trace level, emitting ultraviolet radiation at 254 nm with germicidal action and 185 nm radiation capable of generating hydroxyl free radicals, which oxidize the organic compounds dissolved in water, into carbonate and bicarbonate ions. These ions will be retained by the Refining Ion module, removing traces of ions in ultrapure water and thus obtaining a resistivity of 18,2 MΩ.cm.

## Polishing module (Ultramatic Plus GR and GR UF version)

Reduction of organic matter (TOC) removing traces of ions in ultrapure water, to obtain a resistivity of 18,2 MΩ·cm.

## Ultrafiltration Module (Ultramatic Plus GR UF version)

For the more critical applications in Molecular Biology (PCR, DNA sequencing, cellular cultures, electrophoresis....) a hydrophyllic membrane of encapsulated hollow fiber, with a large–filtering surface, eliminates the pyrogens and nucleases in the water.

## Final Filter 0,22 µm

Final amicrobic encapsulated filter 0,22 µm, with high-flow membrane and no removables for particle retention and bacterial count <0.01 cfu/ml.

## Dispensation

The Ultramatic Plus dispenses three water qualities independently:

- Continuous
- Volume wise
- Time control

## Monitoring

Through a touch screen of 4.3", the Ultramatic Plus monitors all the parameters of the water purification process of the equipment.

### Water Quality

- Measurement of the feeding water conductivity (µS/cm)
- Measurement of the produced Type I Water Resistivity (MΩ·cm)
- Temperature of the water (ºC)

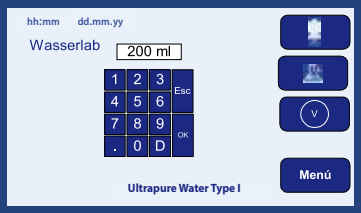
### Parameter Control

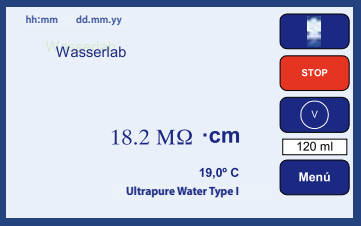
- Hours of installation and working times for each item of the equipment.
- Total liters produced.
- Hours of operation of the equipment.

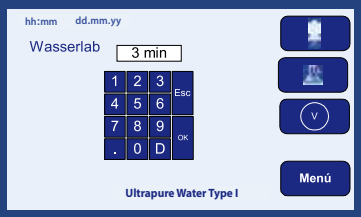
## Security

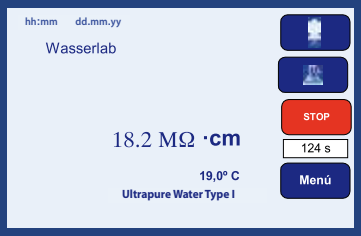
The system has a user password to allow access to different areas of the menu, and to access certain features such as:

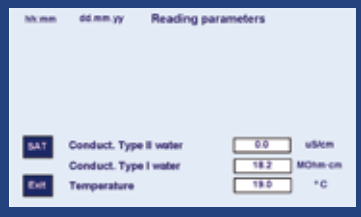
- Access to the configuration menus and reset counters.
- Definition of dispensing type.





## Automatisms

Programmable Type I Water Recirculation:

- Programmed auto recirculation system: Automatically recirculates the water in the circuit, ensuring the highest quality of water dispensed.
- Inability to dispense Type I Water if resistivity is below preset level.

The system warns about the change of consumables as well as abnormalities such as inlet water cut, or malfunction of the measuring sensors.

## Data output

The equipment allows you to extract operating data from the equipment to an external memory (USB).

The report reflects the quality and quantity of dispensed water records, as well as warnings and change of consumable material.

## Maintenance, sanitization and calibration

Easy to use and maintain system.

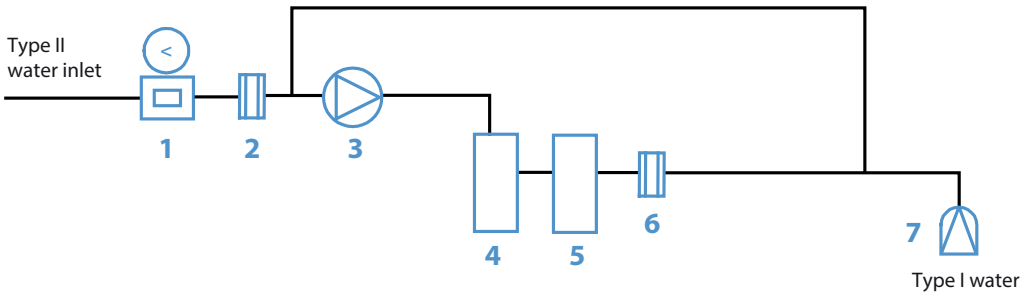
Very quick Fungible change, with cartridges with fast connection and anti-drip system.

Possibility of sanitizing the hydraulic circuit.

Equipment calibrated by certified standard traceable to national standards of the German DKD.

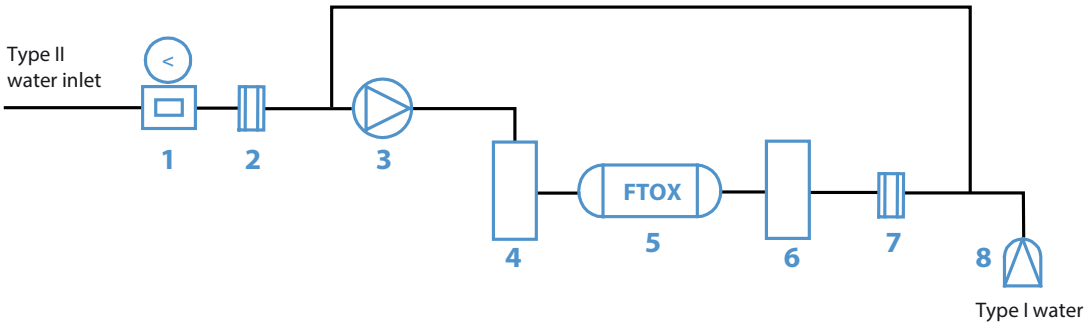
CE Certificated.

# Ultramatic Plus DI



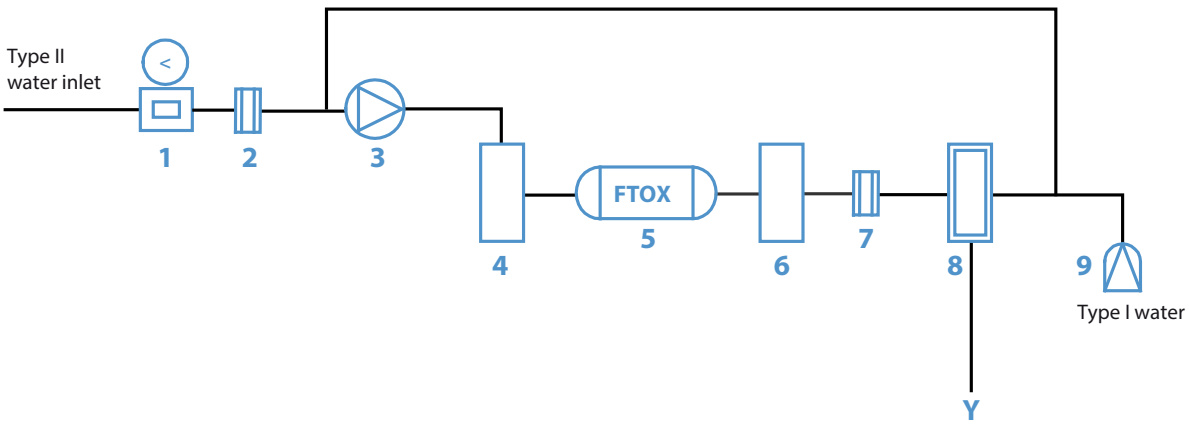

**1** Pressure regulator. **2** Type II Water Conductivity / Temp sensor. **3** Pump. **4** Ultrapurification module.
**5** Ionic Polishing module. **6** Resistivity / Temp. sensor **7** Final Filter 0.22 µm.

# Ultramatic Plus GR




**1** Pressure regulator. **2** Type II Water Conductivity / Temp sensor. **3** Pump. **4** Ultrapurification module.
**5** Photo-Oxidation lamp. **6** Polishing Module. **7** Resistivity / Temp. sensor. **8** Final Filter 0,22 µm.

# Ultramatic Plus GR UF




**1** Pressure regulator. **2** Type II Water Conductivity / Temp sensor. **3** Pump. **4** Ultrapurification module.
**5** Photo-Oxidation lamp. **6** Polishing Module. **7** Resistivity / Temp. sensor. **8** Ultrafiltration Module.
**9** Final Filter 0,22 µm.

# Ultramatic GR - Ultramatic Plus Technical specifications

| Equipment | ULTRAMATIC GR | ULTRAMATIC PLUS | | |
|---|---|---|---|---|
| **Model** | **GR** | **DI** | **GR** | **GR UF** |
| **Final Water Quality** | **Type I** | **Type I** | **Type I** | **Type I** |
| Water Conductivity (µS/cm) | 0,055 | 0,055 | 0,055 | 0,055 |
| Water Resistivity (MΩ·cm) | 18,2 | 18,2 | 18,2 | 18,2 |
| TOC (ppb)[1] | <10 | <10 | <3 | <3 |
| Bacteria (cfu/ml)[1] | <1 | <0.01 | <0.01 | <0.01 |
| Endotoxins (EU/ml)[1] | | | | <0,001 |
| Particles >0,22µm/ml[1] | <1 | <1 | <1 | <1 |
| **Rate and Storage** | | | | |
| Flow Rate LPH | 1,1 l/min | 2 l/min | 2 l/min | 2 l/min |
| **Dispensation** | | | | |
| Manual Dispensing | √ | √ | √ | √ |
| Volume controlled Dispensing | | √ | √ | √ |
| Time Controlled dispensing | | √ | √ | √ |
| **Continuous Monitorization** | | | | |
| Touch Screen/ keyboard | Keyboard | Touch Screen | Touch Screen | Touch Screen |
| Visual and audible warning messages | √ | √ | √ | √ |
| Feed Water Conductivity (µS/cm) | | √ | √ | √ |
| Final Water Resistivity (MΩ·cm) | √ | √ | √ | √ |
| Work Time counter | | √ | √ | √ |
| Multiparameter Time counter | | √ | √ | √ |
| Water Temperature (ºC) | √ | √ | √ | √ |
| Temperature compensation | √ | √ | √ | √ |
| **Data Output** | | | | |
| USB Output | | √ | √ | √ |
| **Warning to user messages** | | | | |
| Out of range parameters | √ | √ | √ | √ |
| Ultrapurification module exchange | | √ | √ | √ |
| GR Purification module exchange | √ | | | |
| Photo-oxidation lamp exchange | | | √ | √ |
| Final Filter exchange | | √ | √ | √ |
| Ultrafiltration module exchange | | | | √ |
| **Automatisms** | | | | |
| Automatic/Programmable recirculation | Automatic | Programmable | Programmable | Programmable |
| **Other components** | | | | |
| Photo-oxidation Lamp | √ | | √ | √ |
| Final Filter 0,22 µm | √ | √ | √ | √ |
| Ultrafiltration module | | | | √ |
| **Dimensions (Height/Widht/Depth) [cm]** | 52x25x48 | 60x36x49 | 60x36x49 | 60x36x49 |
| **Weight [kg]** | 12 | 35 | 35 | 35 |
| **Power supply** | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz | 110-220 VAC / 50-60 Hz |
| **Feed Water Requirements** | | | | |
| Min. Inlet Pressure | 1 bar | 1 bar | 1 bar | 1 bar |
| Max. Inlet Pressure | 6 bar | 6 bar | 6 bar | 6 bar |
| Max. Water Temperature | 30 ºC | 30 ºC | 30 ºC | 30 ºC |
| Max. Feed Water conductivity | 20 µS/cm | 20 µS/cm | 20 µS/cm | 20 µS/cm |

1) These values are typical and may vary depending on the nature and concentration of contaminants in the feed water.

## A large number of customers already trust the Wasserlab products

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