

AUTWOMATIC PLUS 1+2

PURIFIED (TYPE II) AND ULTRAPURE (TYPE I) WATER

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

- I Ultrapure Water (Type I)
- I Purified water (Type II)
- I 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 ($\geq 5 \mu\text{m}$), 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 $\leq 1 \mu\text{S/cm}$

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 $18.2 \text{ M}\Omega\cdot\text{cm}$.

Polishing Module: Reduction of organic matter (TOC) removing traces of ions in Ultrapure Water, to obtain a resistivity of $18,2 \text{ M}\Omega\cdot\text{cm}$.

Ultrafiltration Module (Autwomatic Plus 1+2 GRUF Version): a hydrophilic 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



I AUTWOMATIC PLUS 1+2

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 ($\mu\text{S}/\text{cm}$)
- | Measurement of the water permeate reverse osmosis module conductivity ($\mu\text{S}/\text{cm}$)
- | % performance of the reverse osmosis module
- | Measurement of the Type II Water conductivity ($\mu\text{S}/\text{cm}$)
- | Measurement of the produced Type I Water Resistivity ($\text{M}\Omega\text{-cm}$)
- | Temperature of the water ($^{\circ}\text{C}$)

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.

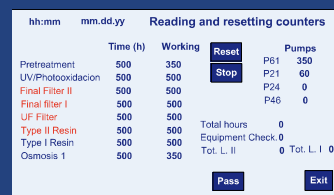
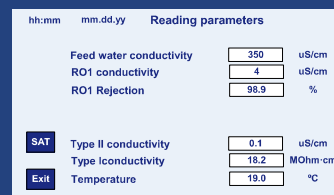
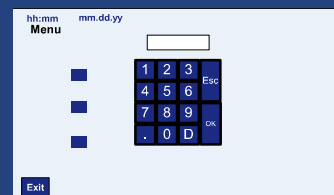
Maintenance, sanitization and calibration

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 25°C
 - 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 25°C
 - 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 25°C
 - 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 :

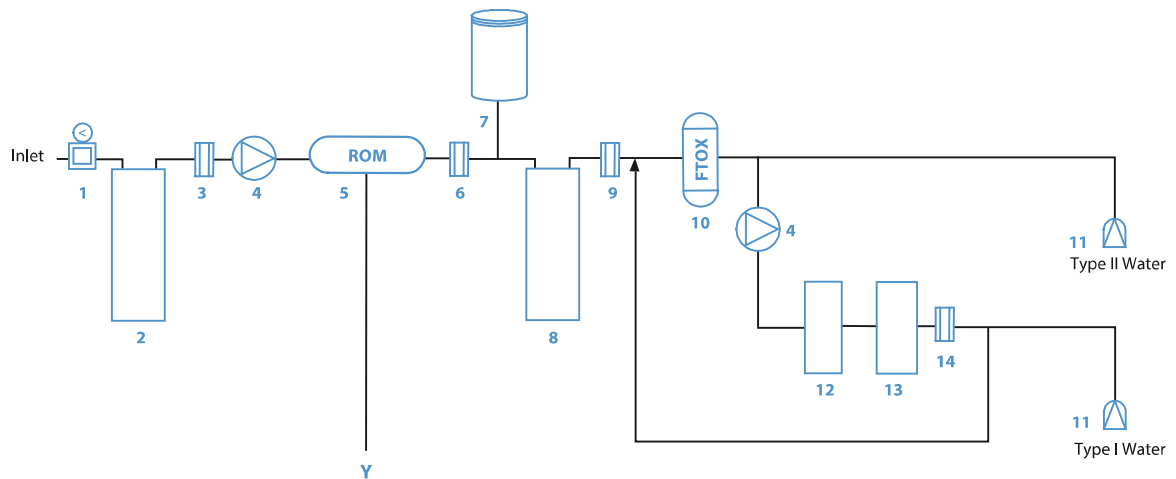
- 95-98% dissolved inorganic salts.
- > 99% of dissolved organic matter (PM > 100 dalton).
- > 99,95% microorganisms and particles.

Applications:

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

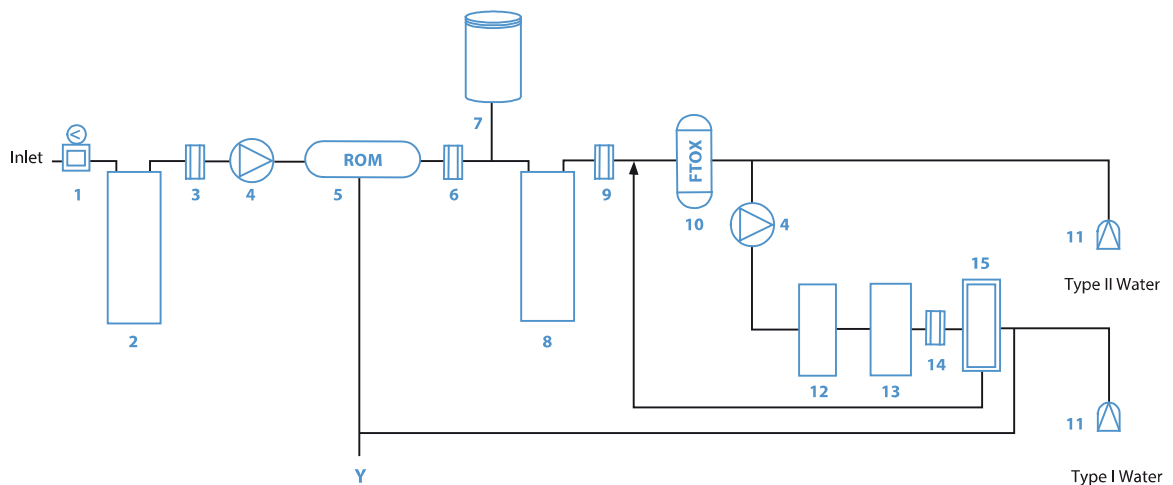
Hydraulic scheme

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	
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 (°C)	✓	✓	✓ ✓
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	✓		✓
Automatism			
Automatic Start/Stop	✓		✓
Automatic/Programmable recirculation		Programmable	Programmable
Automatic Stop/water supply failure	✓		✓
Automatic RO cleaning	✓		✓
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 °C		30 °C
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.