
User Guide

CLARIMAX

Water-Filter-System for Treatment of Heating-System Make-Up Water

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Chapter 1 - General Information / Safety Instructions

1.1 General Information

CLARIMAX 1200 DM pH+ LED is a water treatment system for deionization of make-up water for heating systems according to different European guidelines, such as VDI 2035, ÖNORM H 5195, SWKI BT 102-01, and protects heating systems against limescale deposits that might cause different malfunctions or damages. CLARIMAX water is a special deionized water with low conductivity and slightly alkaline pH within the range of the salt-free operation of heating system according to the guidelines mentioned above. Note: Dissimilar materials need different ranges of the pH and the pH of the treated water fluctuates in a small range as well. The average pH of the treated water is within the average range for these dissimilar materials.

All functional parts of the CLARIMAX cartridge are made of high-quality plastics. The body and all inner plastics parts are made of impact resistant thermoplastic material, all rubber parts are made of age-resistant elastomers. The used materials comply with the state of the art.

The information in this user guide allow a secure, proper and economic use of the device. The basic information for installation, operation and maintenance shall be considered in particular.

Anyone working with this device must read this manual completely and follow the instructions.

In addition to the operating instructions, the locally applicable regulations for accident prevention and for safe and professional work must be considered.

The manufacturer of the water treatment systems recommends to run a written documentation at the side of use. The user should record the date of filling, the water volume, the method of water treatment, if necessary the blend, the pH, the total hardness and the system pressure.

This manual must be available at the place of use at all times.

Observe Safety Instructions!

1.1.1 Field of use

This unit is used for preparation of tap water as boiler feed water or heating-system make-up water according to European guidelines, such as VDI 2035, ÖNORM H5195 and SWKI 97-1. The use of untreated tap water for feeding heating systems is very limited. Untreated tap water can cause malfunctions. These malfunctions can be corrosion in the boiler or in the pipeline network, formation of sludge, limescale and loss of heat transfer. The guidelines describe actions against these problems. Please take always the instructions of boiler manufacturers or those of other system parts into consideration.

1.1.2 Operator obligations

The operator of the unit is responsible for:

- The instruction of the user
- Regular maintenance

1.2 Safety instructions

-> Please read this guide carefully before commissioning and follow the instructions. Keep this guide accessible at all times.

-> Personal injury, caused by non-observance of this guide, are not covered by the product liability law.

-> The manufacturer takes no liability for any other damages caused by non-observance of this guide.

Please note:

Safety instructions warn against dangers and help to prevent personal injury and damage to property. Comply with the safety instructions for your own safety. The applicable national and international safety regulations must be observed. Every operator is responsible for compliance with the regulations applicable to him and must make every effort to comply with the latest regulations.

1.2.1 Safety regulations

- The CLARIMAX water filter system shall only be used by trained service technicians.
- The manufacturer's specifications must be complied with for maintenance and / or replacement of spare parts.
- In case of unauthorized modifications at the device, the CE declaration of the manufacturer expires.
- The manufacturer takes no liability for damage caused by improper use. Furthermore, the warranty expires.
- CLARIMAX must not be operated in potentially explosive atmospheres.
- CLARIMAX must only be used in perfect condition.
- CLARIMAX must only be used for treatment of tap water with a quality according to the local tap water law. Treatment of acids, alkalis, etc. is not permitted.
- Check the system for possible damage prior use.
- The intended use within the performance limits must be ensured.
- Release water pressure from the unit and / or disconnect it from the mains supply before any repairs.
- Damaged equipment must be put out of service.
- Repairs should only be done by qualified personnel.
- Observe relevant and binding standards, such as DIN EN 1717; DIN 1988 etc.

1.2.2 Disclaimer

The use must be carried out exactly as described in this manual. The manufacturer is not liable for any damage including consequential damage that may result from improper installation or misuse of the product.

1.2.3 Specific security instructions

Feed water used for CLARIMAX 1200 pH+ LED water treatment system should only be untreated tap water. CLARIMAX is only to be used with cold water within the water inlet temperature range specified in the technical data. Microbiologically contaminated water or water of unknown quality must not be used without appropriate disinfection.

The filter system is not resistant to highly concentrated cleaning agents (eg bleaching agents, chlorinated solvents, strong oxidizing agents) and should not come into contact with them.

Do not open the system during operation.

The filter cartridge must not be opened.

The pressure housing and the filter head of the system are designed for a service life of 10 years (from installation date).

1.2.4 Safety work instructions

Protect the water filter system from direct sunshine and mechanical damage. Do not use near sources of heat and open fire. Installed a safety armature category 4 according to the European standard DIN EN 1717 at the inlet of CLARIMAX.

If the water pressure is higher than 6.9 bar, a pressure limiter should be installed at the inlet of the water treatment system. It is generally recommended to use a pressure limiter when filling heating systems. At the water inlet of the filter head, a DVGW model-tested backflow preventer according to DIN EN 13959 is factory installed. The installation of all parts must be carried out according to the country specific guidelines. The CLARIMAX filter system must be operated within the specified ambient temperature.

Caution in case of frost:

Once filled with water the filter should not be stored at temperatures below 4°C. Frost may destroy the water filter system.

New filters, that are not filled with water, can be stored and transported at temperatures below 0°C. These filters need to be stored at temperature of the site of installation for at least 24 hours prior use.

Please observe the technical data, the operating and maintenance instructions as well as the safety instructions in this manual before commissioning.

1.3 Technical description

1.3.1 Electrical data

CLARIMAX 1200 pH+ LED is equipped with an integrated electrical conductivity meter. An external power supply is necessary for its operation.

Power supply: Power adapter DC 12V

1.3.2 Physical data

Operation pressure.....2 bar - max. 6,9 bar
 Operation- / Water temperature.....4°C to 60°C
 Ambient temperature.....10°C to 50°C
 Ambient temperature for storage and transport
 commissioned filter system.....4°C to 50°C
 Ambient temperature for storage and transport
 dry new filter system-20°C to 50°C
 Nominal flow rate filter cartridge DM pH+approx. 300 l/h at a pressure drop of ~1.2 bar
 Weight (dry/wet)18 kg/24 kg
 Capacity744 L at 500 μ S/cm (conductivity of untreated tap water)
 Dimensions (Width/Depth/Height).....288/255/550 mm (Total system)
 Operating positionvertical
 Inlet connection.....G 3/4“
 Outlet connectionG 3/4“
 Noise<70 dB(A)

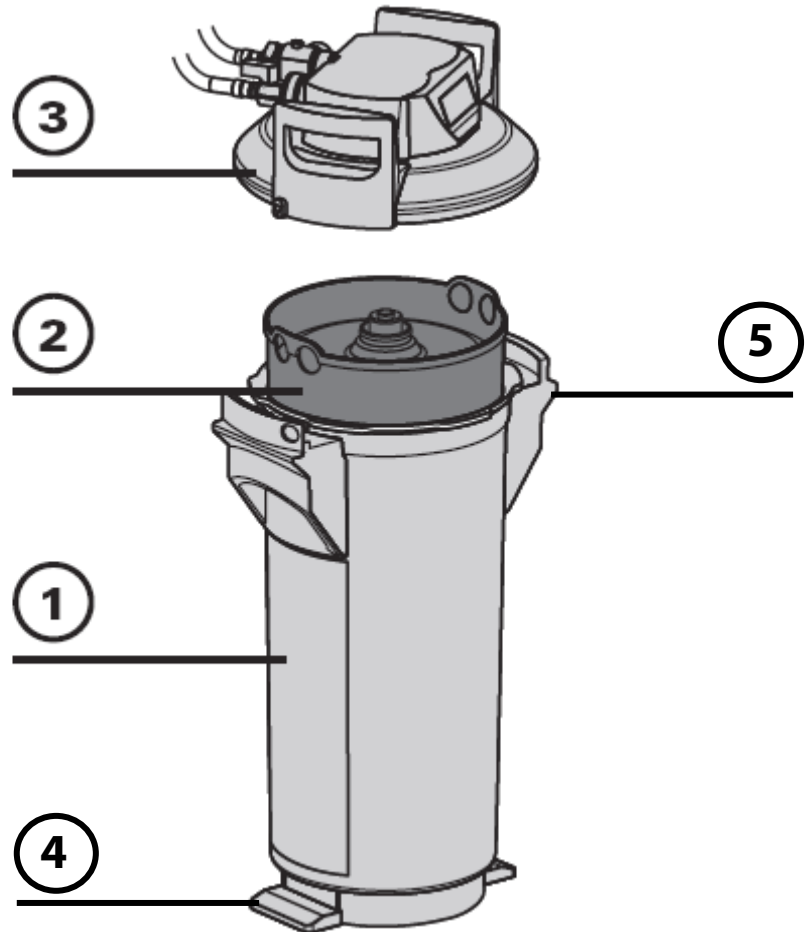
1.4 Capacity filter-cartridge CLARIMAX 1200 DM pH+

CLARIMAX 1200DM pH+ (Conductivity untreated water in μ S/cm / Capacity in Liter)			
μ S/cm	Capacity	μ S/cm	Capacity
200	1860	1200	310
300	1240	1300	286
400	930	1400	265
500	744	1500	248
600	620	1600	232
700	531	1700	218
800	465	1800	206
900	413	1900	195
1000	372	2000	186
1100	338		

Chapter 2 - Assembly / Comissioning

2.1 System overview

- 1..... Pressure housing
- 2..... Filter cartridge
- 3..... Filter head
- 4..... Floor brackets
- 5..... Housing handles



Note

There is an integrated electrical device in the filter head of CLARIMAX 1200 DM pH+ LED for capacity control. You need an external power adapter for operation of this device.

Attention

Please pay attention to the technical data and to the operation and security instructions prior assembly and comissioning. After storage below 0°C (Note: Store only new dry cartridges below 0°C) the product need to be stored at room temperature for at least 24 hours.

2.2 Scope of delivery

For installation of an CLARIMAX 1200 DM pH+ LED you need the pressure housing (incl. filter cartridge) and the filter head.

Please check the scope of delivery prior use:

- Pressure housing
- Filter head with integrated measurement device
- Filter cartridge
- Power adapter

Please contact your supplier if parts are missing.

2.3 Assembly of the Pressure housing and the filter head

Place both feet on the floor brackets #4. Lift pressure housing #1 and turn clockwise so that the handles #5 are in one line with the floor brackets. At one handle you can find a security lock at the side. Press it and turn the filter head #3 counter-clockwise, lift it to the top to remove it from the housing.

Remove the red transport cap from the filter cartridge #2 and check the o-ring-seals for correct installation, integrity and cleanliness. Place cartridge #2 in pressure housing #1.

Place both feet on the floor brackets #4. Place filter head #3 in position „INSERT“ at pressure housing #1. Turn the filter head clockwise until it snaps back to the security lock.

2.4 Assembly of inlet and outlet

Note: Inlet and outlet hoses are not included in the delivery.

Caution: The maximum tightening torque at the connections must not exceed 15 Nm! Only connections with flat gaskets may be used. Conical Connections will damage the connections of the filter head and will lead to the extinguishing of warranty claims. The direction of flow indicated on the filter head by arrows must be observed.

Operate the system only vertically. Please observe the relevant regulations, such as DIN EN 1717 or DIN 1988.

Chapter 3 - Operation / Handling

3.1 General note

The guideline DIN EN 1717 will replace the DIN 1988-100. The „short-term connection“ of the heating system with mains water supply by a hose connection is then not longer state of the art.

According to DIN EN 1717 chapter 5.3.2 : „All connections to the tap water installation are regarded as permanent connections“.

Therefore we recommend to install a safety armature with fluid class 4 when filling a heating system with CLARIMAX 1200 DM pH+ LED.

3.2 Comissioning

Starting with a new filter cartridge you always should displace air out of the water filter system and flush the filter system.

Please proceed as follows:

1. Install filter cartridge in system, close system with filter-head and connect with hoses.
2. Position filter system horizontally and let water run into connection „IN“. Rinse the filter with 10 liters water.
3. Position the filter vertically and rinse with additional 10 liters of water.
4. Dispose the rinsing water.

The filter-system is ready for operation after this procedure.

Repeat this process after any cartridge change.

3.3 Filling of heating systems

As soon as the system is ready for operation you can fill the heating system as usual. The filter treats the water in a single flow through principle. The inlet of CLARIMAX is to be connected to the mains tap water supply and the outlet of CLARIMAX with the heating system. Once the water has passed CLARIMAX it has the quality according to the guidelines. We recommend to install a system separator or a compact filling armature at the inlet of the CLARIMAX filter system.

3.4 In-line water correction

You even can treat existing heating water with the CLARIMAX filter system. Simply install CLARIMAX in a bypass and pump the heating water via CLARIMAX and back into the system, where the treated water will dilute the circulating system water. As a temporary limited but continuous process all the heating water will be corrected after a while. Please observe the maximum operation pressure and that the heating water should be in a quality of natural water without chemicals. The water must not contain strong oxidants. Particles should be removed by additional filtration at the inlet of CLARIMAX.

3.5 Capacity control

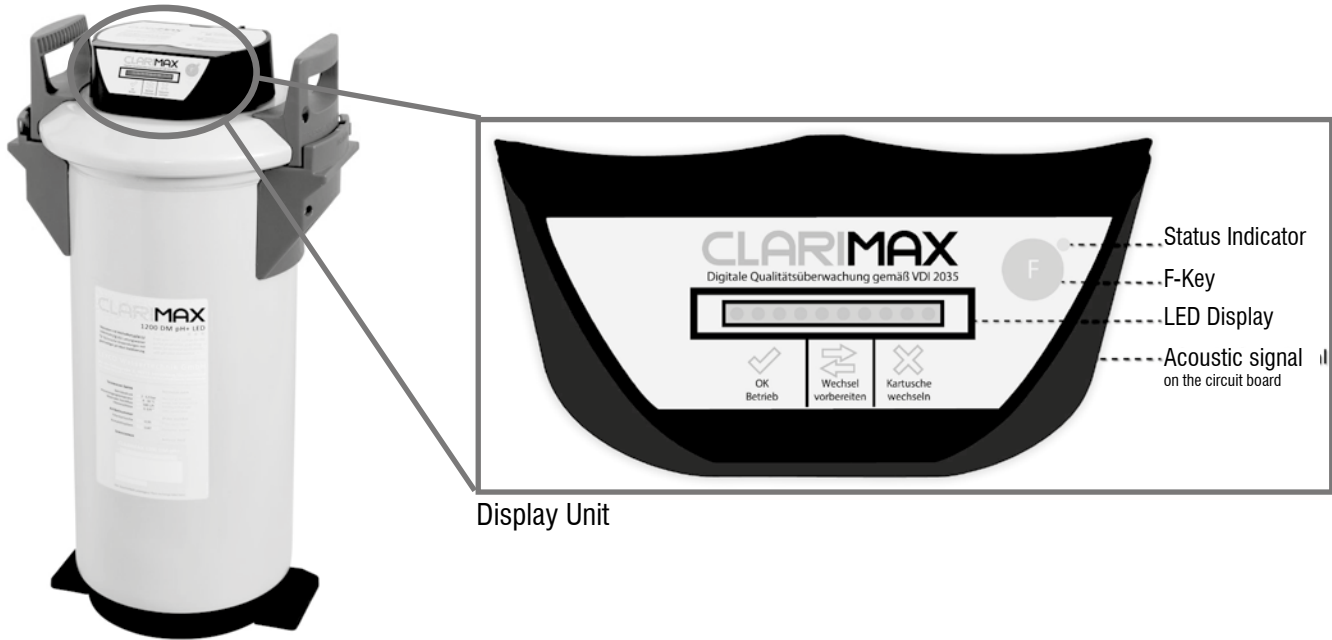
There is a conductivity meter installed in the filter head. This device controls the filter capacity and gives a signal, as soon as the cartridge is exhausted and needs to be replaced.

The end of capacity is indicated by an electrical conductivity of the treated water at a level of 90 - 100 $\mu\text{S}/\text{cm}$.

3.5.1 Integrated conductivity measurement

There is an electrical conductivity measurement device installed in the filters head.

The device has an optical LED unit, an acoustic signal and needs an external 12 V power adapter for operation and charging of the battery pack.



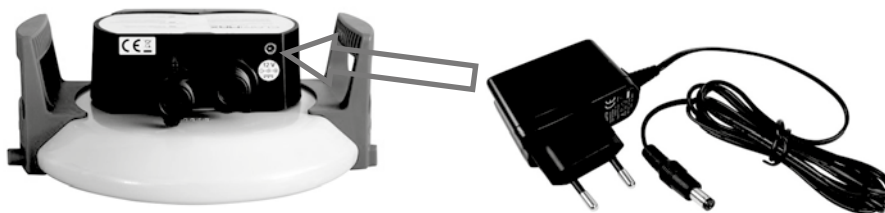
3.5.1.1 Battery and mains operation

All functions are independently from the power supply.

The batteries are not charged in the state as delivered and therefore should be charged for at least 24 hours.

You can operate CLARIMAX either in mains supply mode with the power adapter or in battery mode.

A fully charged battery allows 48 hours operation.



You can find the connection for the power adapter on the backside of the filter head.

3.5.1.2 Description LED display

The optical LED display is divided into three areas, which are modeled after the traffic light system.

The LED lights change their color and the illuminated area with increased cartridge exhaustion.



The first area is divided into 4 green LED lights. The LEDs turn on consecutively until all 4 LEDs are active. This signals an increasing cartridge exhaustion. The water quality is within the recommended range of VDI 2035.



The second area is divided into 3 yellow LEDs. All LEDs turn on together and the green LEDs turn off. This signals that the cartridge is soon to be exhausted and that a replacement of the cartridge will soon be necessary. The quality of the treated water is still within the range of VDI 2035.



The third area is divided into 3 red LEDs. All LEDs start flashing accompanied by an acoustic signal. The yellow LEDs turn off. The filter cartridge is exhausted and needs to be replaced. The quality of the water does not comply with VDI 2035 anymore.

3.5.1.3 Standby-Mode



The conductivity measurement is deactivated as long as the device is in the standby-mode. The LED display is not active.

There will neither be an acoustical nor an optical signal in case of cartridge exhaustion when the device is operated in the standby-mode.

3.5.1.4 Interval measurement (Short-term-mode)



The interval measurement is activated by a single press of the F-key. The status indicator flashes as long as the device is active. In this mode the measurement and the display stays on for 30 seconds. Afterwards the device is deactivated automatically. This is a power-saving mode and therefore recommended for battery operation.

3.5.1.5 Continuous measurement



The continuous measurement mode is activated by pressing the F-button for approximately 3 seconds. The activation is confirmed by 3 successive acoustic signals. The status indicator stays on until the measurement mode is deactivated. In this mode the measurement and the display stay on constantly. For deactivation the F-key need to be pressed again for a longer time. The deactivation is also confirmed acoustically. The continuous measurement is only recommended in mains operation.

3.5.1.6 Battery capacity



The remaining battery capacity indicates the charge statuses of the integrated rechargeable battery. As the number of highlighted LEDs decreases, the charge level decreases. (From green to red). The 3 red LEDs always stay on and represent a critical state of charge. The mains power adapter should be connected for further operation.

The display of the remaining battery capacity is activated by pressing the F key 5 times.

The status indicator flashes as follows: 3x flashing -> 2 seconds pause -> 3x flashing.....

This mode stays on constantly. The conductivity measurement is switched off during this mode. For deactivation the F-key need to be pressed one time. The display returns to the previous mode.

3.5.1.7 Acoustic signal



As soon as the measurement enters the red area, an acoustic signal will sound. This remains active until the water quality is improved or it is deactivated manually.

The acoustic signal sounds in the following cycle: 5x tone -> 30 sec pause -> 5x tone

To deactivate, press the F-key once.

3.5.1.8 Technical data conductivity meter

Power supply: 12 V DC with included power adapter. Only the original power adapter must be used.

Max. current consumption during operation with power supply: 35 mA

Standby current consumption: < 1mA

Rechargeable Battery: 1,2 V 750mAh

Operation with battery (fully charged): min 48h

Charging time with empty battery: 24h

3.6 Recycling / Disposal

The packing material of this product is suitable for recycling and can be reused. Please dispose all materials according to local regulations. Exhausted filter cartridges are taken back at the expenses of the sender or can be disposed in accordance with local regulations.

3.7 Warranty

The CLARIMAX 1200 DM pH+ LED filter system is subject to the statutory warranty of 2 years.

A warranty claim can only be asserted if all instructions in this manual are followed and observed.

Damage caused by improper changes, use or grossly negligent damage to the product are not covered by the warranty.

Malfunctions due to incorrect or faulty handling are not covered by this warranty.

Manufacturer of the cartridge filter

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