



**Operating Instructions  
Thermo Scientific Barnstead MicroPure  
with storage tank  
Water Purification System**

- Art. no.: 50132367 (Standard)
- Art. no.: 50132369 (UF)
- Art. no.: 50132372 (UV/UF)
- Art. no.: 50132374 (UV)



Serial number: .....

**It is imperative that you read these Operating Instructions prior to installing and operating this system!**

50133345; State: 12.12 Rights to technical changes reserved!



## EC-Declaration of Conformity

in accordance with the EEC machine directive 2006/42/EC, appendix II A

We hereby certify that the following described machine in its conception and form put by us into circulation is in accordance with all the relevant essential health and safety requirements of the EC machinery directive 2006/42/EC as amended and the national laws and regulations adopting this directive.

This declaration is no longer valid if the machine is modified without our consent.

**Manufacturer:** Thermo Electron LED GmbH  
Stockland 3  
D-56412 Niederelbert

### Description of the machine:

function: Ultrapure water system

type: MicroPure with tank, MicroPure UF with tank,  
MicroPure UV/UF with tank, MicroPure UV with tank

article number: 50132367, 50132369, 50132372, 50132374

### The agreement with further valid guidelines/regulations following for the product is explained:

EMC Directive (2004/108/EC)

### Reference to the harmonised standards:

DIN EN ISO 12100-1 Safety of machinery, Part 1: Basic terminology  
DIN EN ISO 12100-2 Safety of machinery, Part 2: Technical principles  
DIN EN ISO 14121-1 Safety of machinery, Part 1: Risk assessment  
DIN EN 61326-1

### Authorized person for the technical documentation:

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Niederelbert, 10. November 2010

Detlef Opp, Head of Technical documentation

  
\_\_\_\_\_  
Signature

## Preface

Dear Sir or Madam

In deciding to purchase an ultrapure water system from the **MicroPure with storage tank** series, you have selected a high-quality product.

Thank you for the confidence you have placed in us.

Before you start to install and work with your ultrapure water system, please carefully read the information that is given in these Operating Instructions on how it is to be installed and operated.

This is particularly important as we, the manufacturer, cannot accept liability for any damage occurring as a result of incorrect operation of this system or from use of it for other than the specified purpose.

Niederelbert, 10.11.2010

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## 2. Explanatory notes on the operating instructions



**EU Mark of Conformity**



**Important operating and/or maintenance instructions! Read the operating instructions with due care.**

**Risk of electric shock! Electrical work on the system is only to be carried out by qualified personnel.**



**General information! Particularly important notes are marked with this information sign.**



**Protective conductor connection**

**Connect the power supply to an electrical socket with a protective connection.**

The information provided in these operating instructions is only valid for the system which has the serial number which is to be entered on the front page.



**Please enter the serial number\* of your MicroPure system with tank in space provided on the front page.**

\* Read the serial number of your ultrapure water system from the type plate.

For quick and correct service, please include the following information on all inquiries and replacement parts orders which relate to your system:

- The serial number
- The article number

### 3. Transport and packaging

Ultrapure water systems are carefully controlled and packed prior to dispatch, but damage could still possibly occur during transport.

#### 3.1 Examination on receipt

- Check the completeness of the goods received against the delivery note.



#### **Does the packaging show signs of damage?**

- Inspect the system for damage.

#### 3.2 Complaints

Should damage have occurred to the goods during transport:

- Contact the post, railway or forwarding agent immediately\*.
- Save the complete packaging, including the cardboard box, for a possible inspection and/or return shipment).

#### 3.3 Packaging and return shipment

If possible, use the original box and packaging material.

Should these no longer be available:

- Pack the goods in a suitable bag or sheet and a strong cardboard box that provides shock protection.



**\* The time limit for claims is 6 days from the time of receipt of the goods. The right to claim for damages ceases when this time has elapsed.**

## 4. Parts supplied

MicroPure ultrapure water systems with a performance up to 1,5 l/min are available in the following versions:

50132367	MicroPure with tank	(Standard system)
50132369	MicroPure UF with tank	(Standard system + Ultrafiltration module)
50132372	MicroPure UV/UF with tank	(Standard system + UV-Photooxidation + Ultrafiltration module)
50132374	MicroPure UV with tank	(Standard system + UV-Photooxidation)

(Please check that the article number given on the delivery note agrees with that of the system you ordered.)

1x MicroPure with tank (acc. to version, see above)	Article no. 5013xxxx
including an installation kit , consisting of:	Article no. 50133343
Filter cartridge	Article no. 09.1006
Sterile filter capsule 0.2 µm	Article no. 09.1003
Sterile venting filter	Article no. 22.0091
Rinse water hose, 8 mm o.d., 3 m	Article no. 18.0036
Operating Instructions	Article no. 50133345
Tabletop power pack, 24 VDC	Article no. 50129629
Universal adapter	Article no. 21.1006
Universal holder	Article no. 21.1007
Connecting cord (rubber connector to nema plug connector)	Article no. 50132200
Connecting cord (rubber connector to british ST plug connector)	Article no. 50132203
Connecting cord (rubber connector to euro plug connector)	Article no. 50132215

## 5. Safety precautions



### **Observe these safety precautions for your own safety!**

- Each system of the MicroPure with tank series is a modern ultrapure through out water system, exclusively designed for the purification of tap water of drinking water quality.
- Please do not start to install and operate your system until you have read through the information given in these operating instructions.
- Please note that the manufacturer is freed from all liability when the system is used for other than the intended purpose and/or is improperly operated.
- Lifting and carrying the ultrapure water system, e.g. to the installation location, should be carried out by two people. To lift it, each takes hold of it under the base plate at two corners.
- The CE-mark is invalidated when constructional changes are made to the system or foreign products are installed in it.
- Protect the system from frost. The temperature at the installation area must be at least + 2°C.
- Observe all general rules and regulations that are valid at the installation location, including the current accident prevention regulations.
- The feedwater pressure must be min. 1 bar and max. 6 bar. An additional pressure reducer must be installed should it be higher.
- According to DIN EN 1717, water purification systems must be equipped with a device that safeguards the tap water against contamination.
- A suitable electric socket must be made available for the system (refer to Technical Specifications).
- The installation area must have a drain at floor level with at least DN 50 pipe and which allows free run off.
- When the system is to be wall-mounted, please previously check that the wall has a sufficient load-bearing capacity (refer to Technical Specifications for the weight).

- The maximum operating temperature of the system is 35°C.
  
- If neither a floor drain is not is available, then proceed as follows during longer system standstills (e.g. long holidays):
  - **Switch the system off (unplug the mains plug).**
  - **Shut off the supply of water to the ultrapure water system.**Do not re-start the system with the water supply still in the shut off condition, as the pump would then suffer damage. The manufacturer will not accept any liability should this occur.
  
- When installing the ultrapure water system, ensure that there is sufficient working room around it for problem-free operation of it as well as for filter replacement, checking connections etc.
  
- The guarantee is valid for a period of 12 months!
  
- Never look directly at a switched-on UV-lamp, because UV light endangers eyesight!  
Never switch the UV-lamp on when is has been taken out of the metal cylinder!  
Only authorized personnel are to carry out UV-lamp replacement.

## 6. Intended purpose

Decisive for the development of the novel MicroPure with tank ultrapure water systems were the continually increasing requirements that ultrapure water quality must fulfill, the ever stricter demands resulting from technological advances, and the need for user-friendly systems and complete solutions.

MicroPure with tank systems have been specifically designed to produce ultrapure water that is free of particles, salts and organic compounds and is sterile filtered.

### - Analytical techniques in laboratories:

- HPLC ( **H**igh **P**erformance **L**iquid **C**hromatography )
- IC ( **I**on **C**hromatography )
- ICP ( **I**nductive **C**oupled Argon **P**lasma )
- AAS ( **A**tomically **A**bsorption **S**pectrophotometry )
- TOC-Analyse ( **T**otal **O**rganic **C**arbon )
- etc.

### - Reagent and solution preparation:

- Cell culture media
- Tissue culture media

### - Cleaning water for high-purity rinsing processes in laboratories

## 7. Technical specifications

Demands on the feedwater	
Source	Potable tap water pretreated by reverse osmosis, ion exchange or distillation.
Feedwater conductivity	< 5 $\mu\text{S/cm}$
Free chlorine	max. 0.05 ppm
TOC Value	max. 50 ppb
Turbidity	< 1.0 NTU
Carbon dioxide	max. 30 ppm
Silicate	max. 2 ppm
Pressure	0.1- 6 bar, A pressure reducer must be connected in series when the feedwater pressure is > 6 bar.
Temperature	+2 - +35 °C

Product water quality				
	Standard	UF	UV/UF	UV
Conductivity $\mu\text{S/cm}$	0.055	0.055	0.055	0.055
Resistance $\text{M}\Omega\text{cm}$ at 25°C	18.2	18.2	18.2	18.2
TOC ppb	5 - 10	5 - 10	1 - 5	1 - 5
Bacteria CFU/ml	< 1	< 1	< 1	< 1
Bacterial endotoxines EU/ml	--	0.001*	0.001*	--
Particles > 0.2 $\mu\text{m}$ per ml	< 1	< 1	< 1	< 1
Flow rate l/min	1.0	1.0	0.8	0.8

\* Dependent on feedwater and disinfection!

Dimensions	
Height:	545 mm
Width:	305 mm
Depth:	400 mm
Weight:	
MicroPure Standard	approx. 19 kg
MicroPure UF	approx. 19 kg
MicroPure UV/UF	approx. 19 kg
MicroPure UV	approx. 19 kg

Water connections	
Rinse water	Hose, 8 mm o.d.
Tank overflow	Hose, 8 mm o.d.

Cell constants of the measuring cells	
Feedwater conductivity	0.16 $\text{cm}^{-1}$
Ultra pure water conductivity	0.01 $\text{cm}^{-1}$

<b>Electrical connections / external switched mode power supply</b>	
Input voltage	AC 100 – 240 V, 50 – 60 Hz, 3 – 1.5 A
Output voltage	DC 24 V, 3.3 A
System connection	DC 24 V, 80 W
Serial interface	RS 232
Potential-free contact	max. 30V, 2A
Protection Class	Class II (external SMPS certified as Class I)

<b>Airborne sound emission</b>	
Sound-pressure level	49 dB(A)

<b>Ambient conditions (DIN EN 61010-1 (VDE 0411-1):2011-02)</b>	
Usage	Indoor rooms
Height	Up to 2000 m
Temperature range	From 5° C to 40° C
Relative humidity	Maximum relative humidity 80 % at temperatures of up to 31° C, linearly decreasing to 50 % relative humidity at 40° C
Line-voltage variation	Not more than $\pm 10$ % of the line voltage
Transient overvoltages	As usually occur in the supply network (overvoltage category II acc. to IEC 60364-4-443). <u>Note:</u> The rated level of transient overvoltage is the withstand impulse voltage acc. to overvoltage category II of IEC 60364-4-443
Ventilation requirements	There are no special requirements with regard to ventilation.
Degree of pollution	2

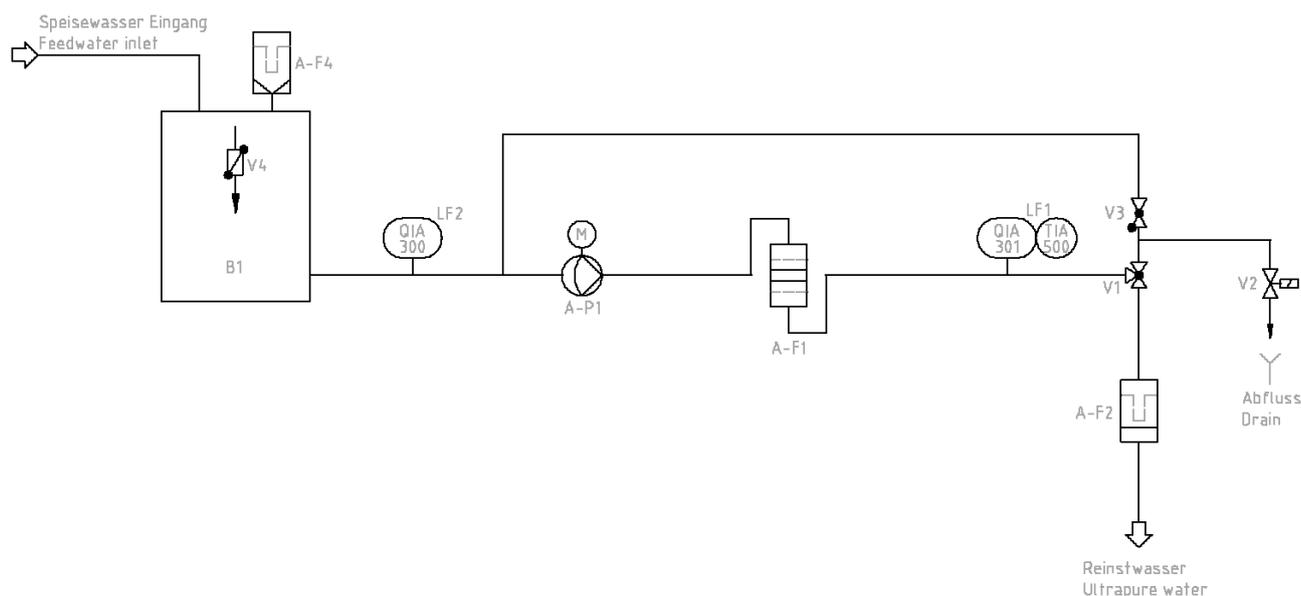
<b>Parts which contact water</b>	
Pump head	Nylon with glass fibre
UV-Lamp	High-purity synthetic quartz
UV Housing	Stainless steel
Filter cartridge	PP
UF Housing	Polycarbonate
Rinsing solenoid valve	PA
Pressure reducer	VA, EPDM
Dispensing valve	POM
Conductivity measuring cells	PVC, stainless steel
Connections	POM
Hoses	PE
O-Rings	EPDM
Sterile filter	PP, PE, PSU

## 8. How MicroPure systems function

### MicroPure Standard with tank, UF, UV/UF, UV

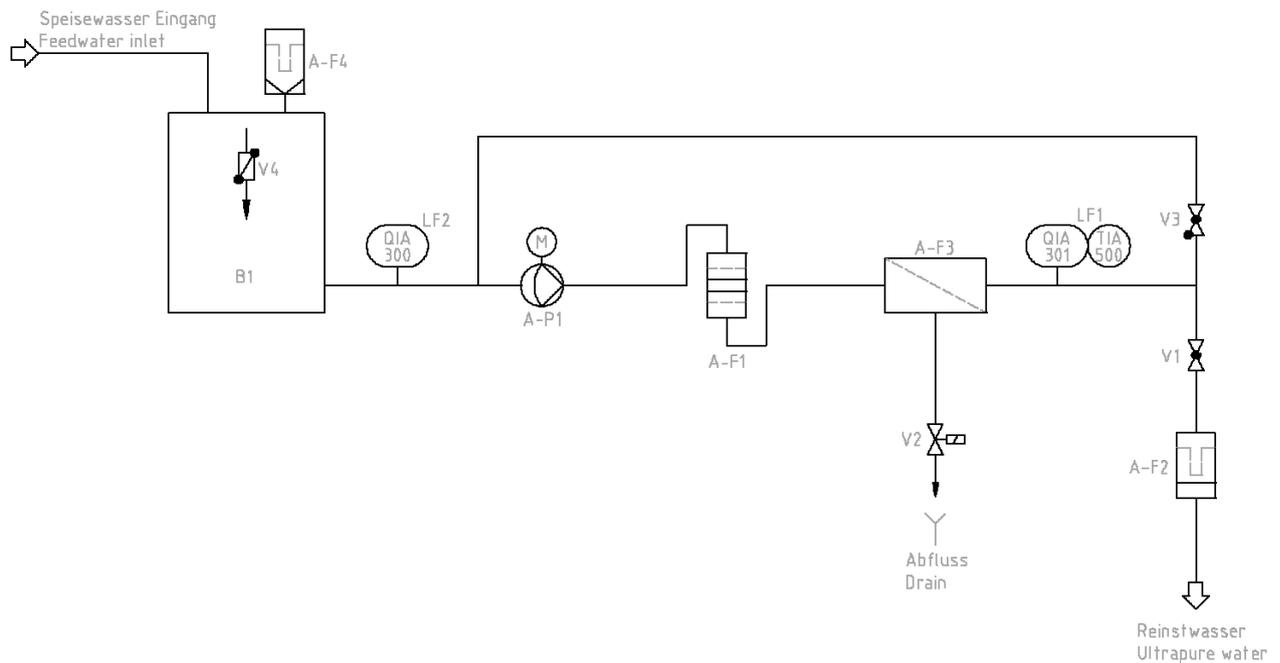
Tap water that has been subjected to pre-treatment (by reverse osmosis, ion exchange or distillation) flows from the storage tank into the ultrapure water system, where the electrical conductivity is monitored. A pump forces this feedwater through UV-photooxidation (with MicroPure UV and MicroPure UV/UF only) and a filter cartridge. Following this, the water is further pumped through an ultrafiltration module (with MicroPure UF and MicroPure UV/UF only) and on through a special conductivity measuring cell equipped with temperature compensation that measures continuously. When treated water is dispensed, it flows through a sterile filter and out through the ultrapure water outlet. During "Interval" operation, the water in the system is re-circulated through an internal circuit at regular time intervals.

### 8.1 Flow chart, MicroPure Standard with tank



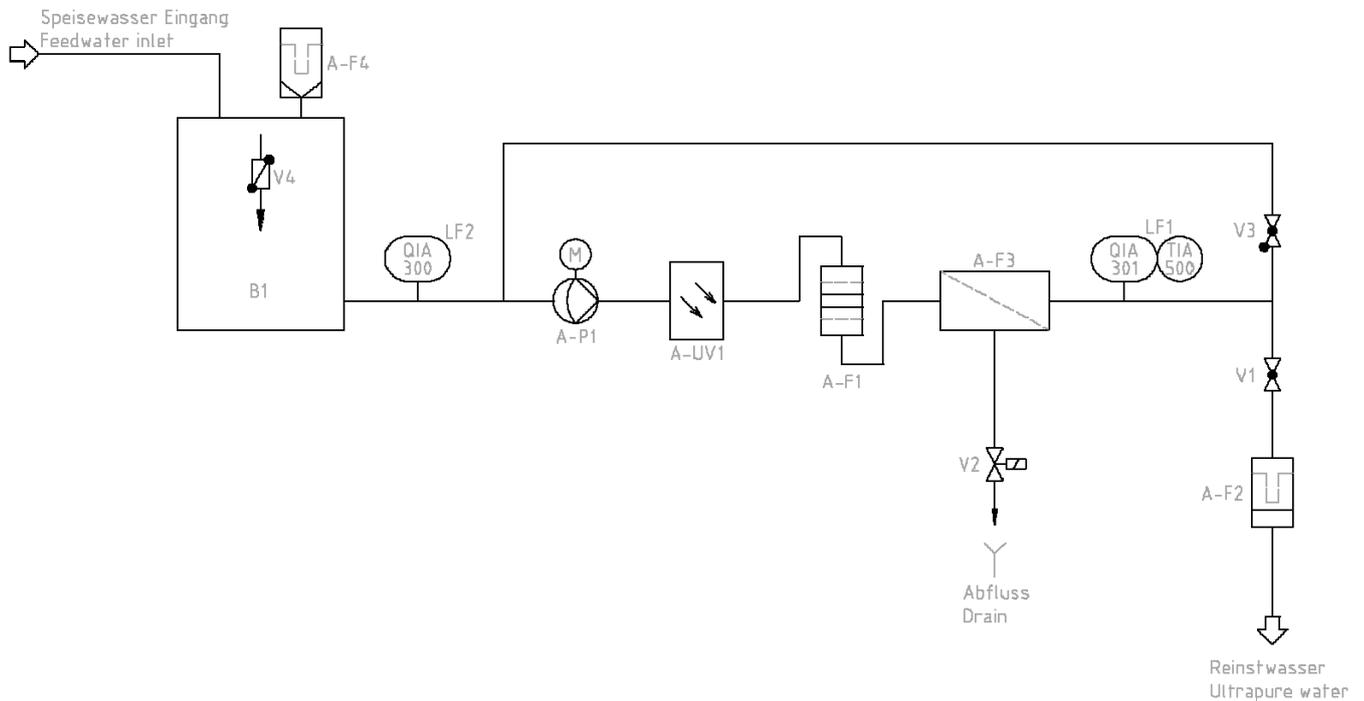
A-B1	Storage tank
A-F1	Filter cartridge
A-F2	Sterile filter
A-F4	Sterile venting filter
A-P1	Circulation pump
QIA 300	Feedwater conductivity
QIA 301	Ultrapure water conductivity
TIA 500	Temperature sensor
V1	Dispensing valve
V2	Rinsing solenoid valve
V3	Check valve
V4	Sterile overflow

## 8.2 Flow chart, MicroPure UF with tank



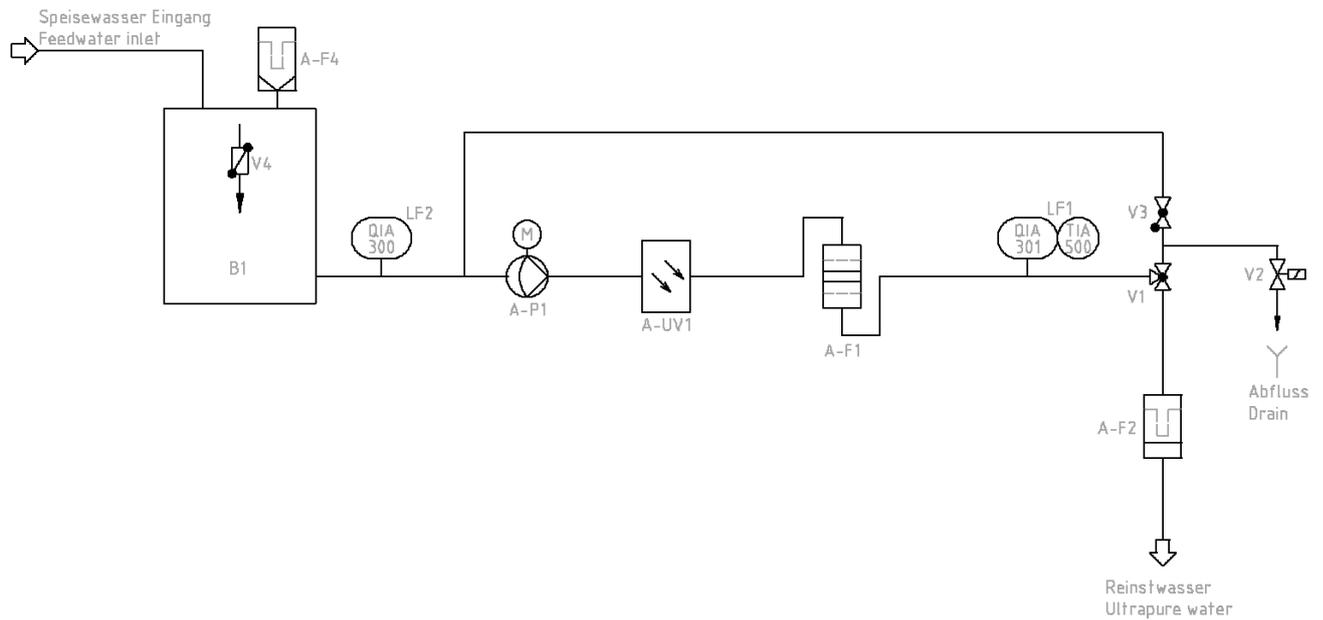
A-B1	Storage tank
A-F1	Filter cartridge
A-F2	Sterile filter
A-F3	Ultrafiltration module
A-F4	Sterile venting filter
A-P1	Circulation pump
QIA 300	Feedwater conductivity
QIA 301	Ultrapure water conductivity
TIA 500	Temperature sensor
V1	Dispensing valve
V2	Rinsing solenoid valve
V3	Check valve
V4	Sterile overflow

### 8.3 Flow chart, MicroPure UV/UF with tank



A-B1	Storage tank
A-F1	Filter cartridge
A-F2	Sterile filter
A-F3	Ultrafiltration module
A-F4	Sterile venting filter
A-P1	Circulation pump
A-UV1	UV-photooxidation
QIA 300	Feedwater conductivity
QIA 301	Ultrapure water conductivity
TIA 500	Temperature sensor
V1	Dispensing valve
V2	Rinsing solenoid valve
V3	Check valve
V4	Sterile overflow

## 8.4 Flow chart, MicroPure UV with tank



A-B1	Storage tank
A-F1	Filter cartridge
A-F2	Sterile filter
A-F4	Sterile venting filter
A-P1	Circulation pump
A-UV1	UV-photooxidation
QIA 300	Feedwater conductivity
QIA 301	Ultrapure water conductivity
TIA 500	Temperature sensor
V1	Dispensing valve
V2	Rinsing solenoid valve
V3	Check valve
V4	Sterile overflow

## 9. Installation of the system

### 9.1 The installation area

Take the following criteria into consideration when selecting the installation area:

- Feedwater pressure, not below 0.1 bar, not above 6 bar.



**The feedwater pressure must not be allowed to go above 6 bar. Install an additional pressure reducer when the feedwater pressure is higher.**

- Minimum temperature + 2°C.
- Level standing surface
- A smooth wall is required when the system is to be wall-mounted.
- The standing or wall surface must be strong enough to hold the system (for system weight, see "Technical Specifications")
- A floor drain with a DN 50 size (id 38.5 mm) waste pipe is required. When no such floor drain is available, install a water watcher (article no.: 16.0129) to guard against water damage!



**Free gravity flow to drain must be ensured!**

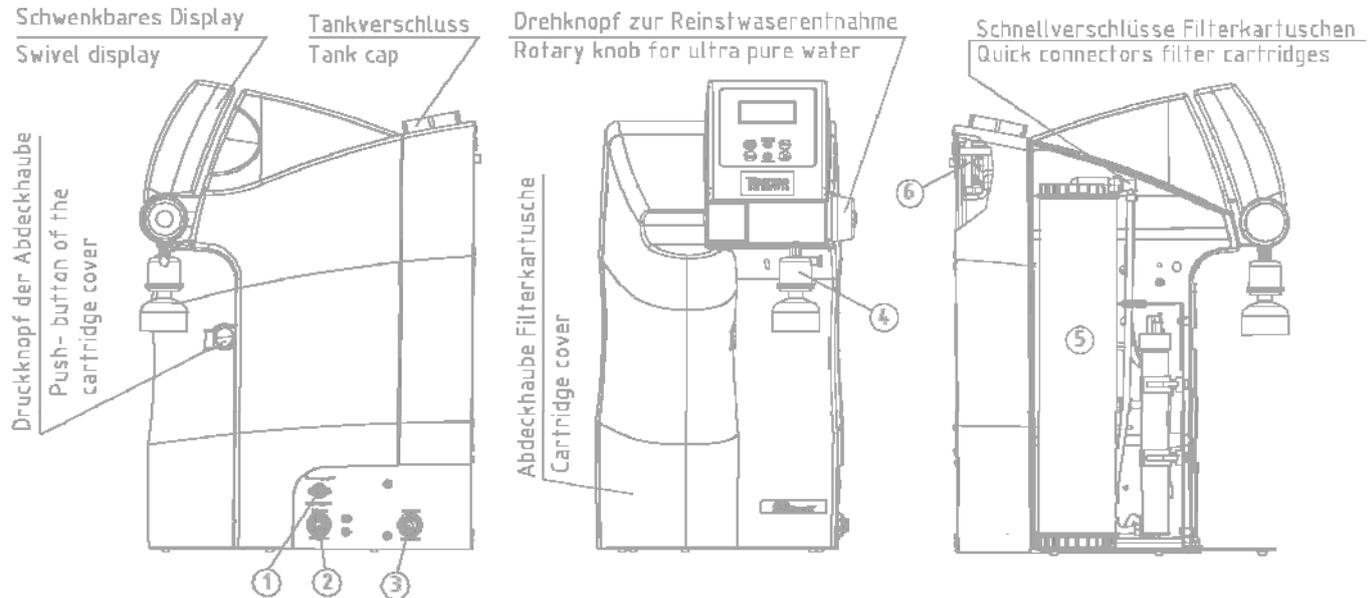
- An electric socket with protective conductor must be available for connection of the system to the voltage supply (see Technical specifications).



**Position the system so that there is no difficulty in separating the device from the electric mains.**

- There must be sufficient working space around the system (filter replacement etc.).
- The system must be easy to operate and check.
- An R 3/4" tap water connector is required.

## 9.2 Installation



- 1) Connection power supply 4-pin, 24V DC
- 2) Rinse water connector   Hose, 8 mm o.d.
- 3) Tank overflow connector   Hose, 8 mm o.d
- 4) Sterile filter
- 5) Filter cartridge
- 6) Sterile venting filter

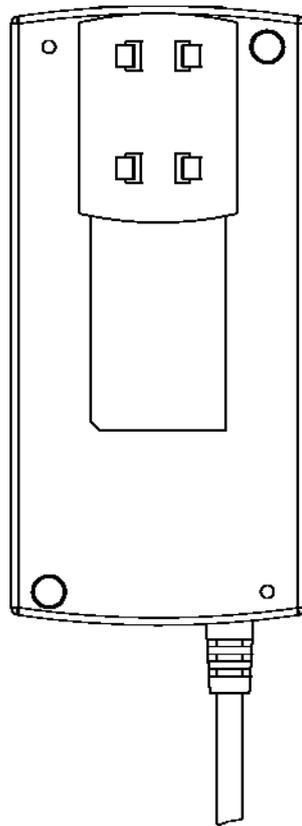
### Proceed as follows to install and start your MicroPure ultrapure water system:

- Either stand the system at the intended location, or hang it on the wall using the wall-mount that is available as an accessory.
- Press the push-button of the cartridge cover to unlock the cover. Remove the cover.
- Remove the stoppers from the filter cartridge (5) standardly supplied and save them for possible return of the spent filter cartridge (only when *it* is to carry out waste disposal).
- Fit filter cartridge (5) in the free space at the back of the compartment, then plug the 2 quick-connect couplings onto the filter cartridge connections so that they audibly snap into position.
- Use the 8 mm o.d. water hose supplied to make a pressureless connection from the system (2) and (3) to the waste drain.
- If needed, screw the sterile filter (4) standardly supplied into the outlet of the dispensing valve (R 1/4" female thread).
- Screw the sterile vent filter (6) at the back of the system into the G 1/8" tank thread intended for it.
- Fill the tank with pre-treated potable tap water (see "Technical specifications").

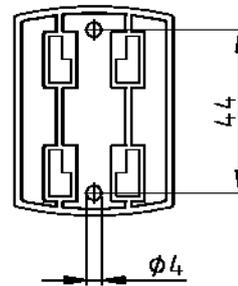
- Open the water tap so that feedwater is supplied and check that all connections are leak-free.
- Replace the cartridge cover, ensuring that the catch on the right side of the cover locks into position.

### 9.3 Mounting the power pack (voltage supply)

Back view power supply



Universal adapter



Wall mount  
with screws

- Whenever possible, mount the power pack on the wall to the left or right of the ultrapure water system where it is freely accessible.
- Stick the universal holder which is supplied in the assembly kit to the back of the power pack as shown in the above Figure.
- Stick the universal adapter to a smooth wall surface or screw it to the wall using the dowels and screws supplied in the assembly kit.
- When the universal holder and universal adapter have been fitted, hang the power pack in.
- Plug the connecting cable (appliance cable) in the power pack socket.
- Connect the power pack to the ultrapure water system (4-pin power supply connector, pos. 1).
- The system is now ready for use.

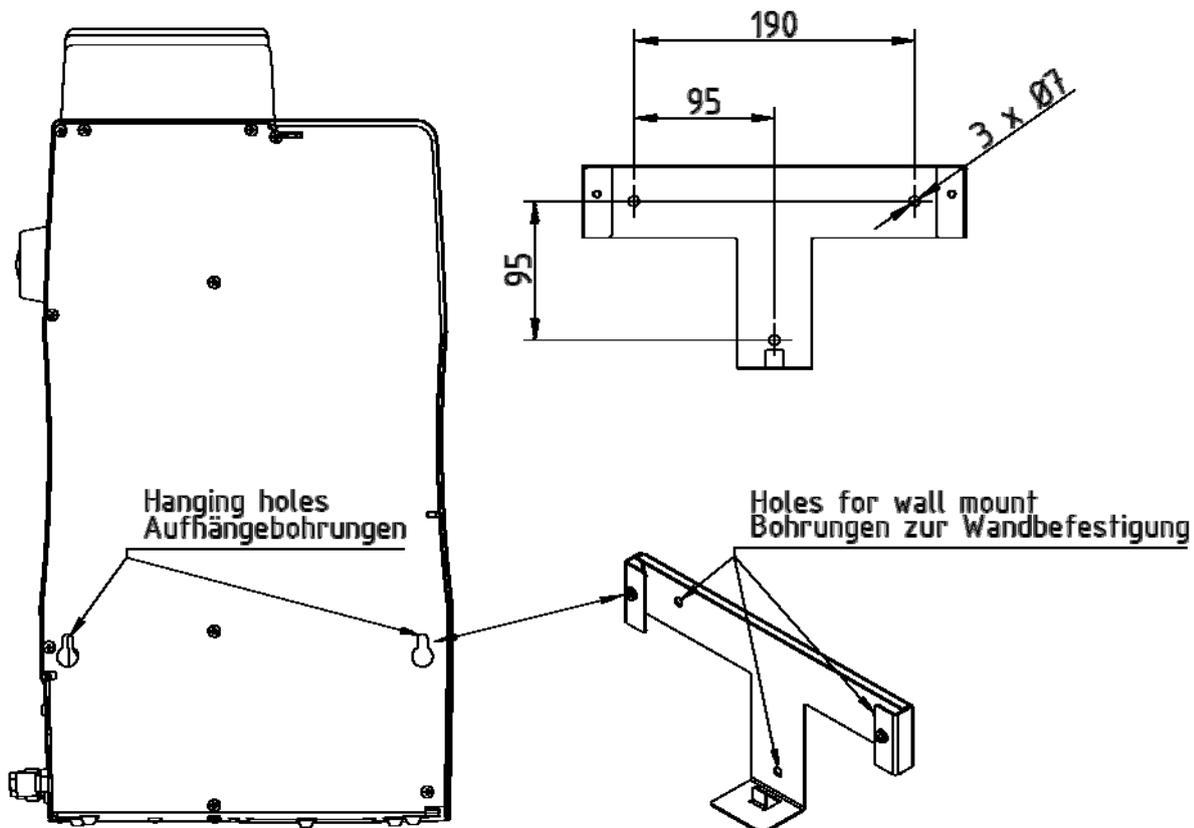
## 9.4 Wall mounting (option)

Please use the wall-mount (article number 09.2212) to mount the system on a wall. Fasten it to the wall by means of three screws.



The screws and dowels are supplied with the wall mount, are exclusively to fix the wall mount to a concrete wall or a solid masonry!

- Use the twist drill (8 mm or 5/16 inch) to make the three holes in the wall that required as shown in the diagram,
- Plug the nylon S8 dowels that are with supplied in the holes. Screw the 6 x 40 mm screws that are also with supplied in the dowels.
- Lift the MicroPure system (2 people are required for this) and hang the back side of it on the wall bracket.



## 10. Putting the system into operation



**Allow the system to warm up to, or to cool down to, room temperature before starting it up for the first time.**



**Check that all hose connections have been made as specified in the "Setting up the system" section.**



Switch the system on by pressing this button. After a compulsory rinse the system switches to the last operating mode.



**To vent air from the system, switch the system 3 times successively to "Rinsing" in the menu and collect and discard approx. 5 litres of water each time. The ultrapure water limiting value can be gone below during this procedure.**



Use this "NONSTOP"-key to switch the system to the "Nonstop" operating mode.

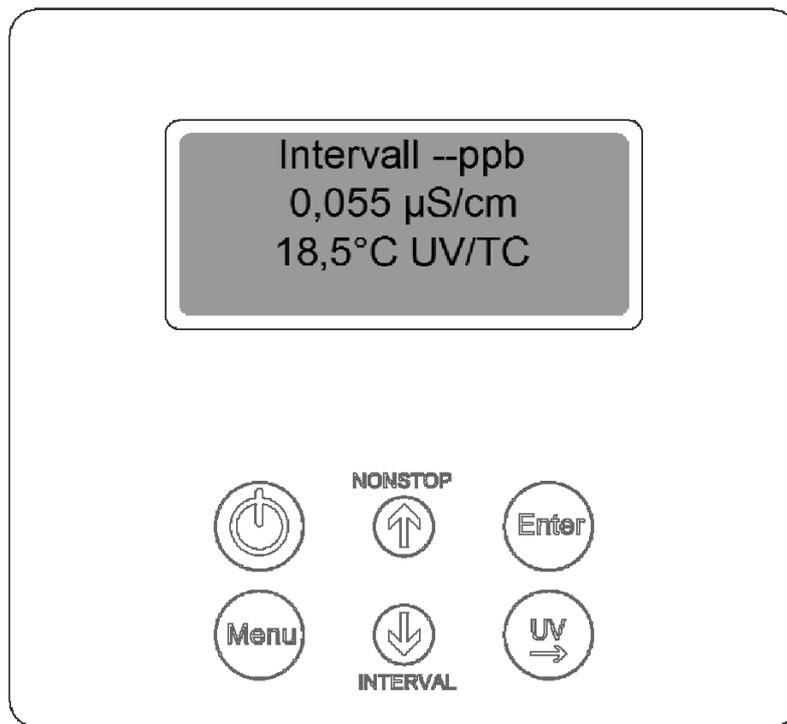


You can set the system back to "Interval" operation when the system has brought the ultrapure water to the quality you require.

### 10.1 Venting the sterile filter

To air-vent the sterile filter, turn the milled screw on this filter anti-clockwise to open it, wait until ultrapure water flows out of vent outlet, then turn the screw clockwise to close it. The sterile filter has now been vented.

## 11. Operating elements



Switches the system on or off

NONSTOP



Switches "Nonstop" operation on or, in the menu, increases a value on display



Confirms the value shown in a menu point



Switches the menu to the next menu point



INTERVAL

Switches "Interval" operation on or, in the menu, decreases a value on display



Switches the UV-lamp on or, in the menu, allows you to select the position in a number that you wish to change

## 12. System control

### General information

A press on the ON/OFF-key causes the system to run in the *Interval* operating mode (see Interval mode).

Interval operation then starts up automatically every 0.5 hours and runs for the set length of time to ensure the high ultra pure water quality.

The "UV" text message is displayed when the UV-lamp is on. The "TC" message is displayed when temperature compensation of measured values is active. In addition, the measured values of ultra pure water conductivity and temperature are displayed.

In the case of a fault, a fault message is given out across the potential-free output and the fault is shown in line 4 of the display. Should several faults occur simultaneously, then they are alternately displayed.

When the Nonstop-key is now pressed, the system switches to the *Nonstop* mode, the pump is started and the solenoid rinsing valve opens for the set rinsing time. *Nonstop* operation can be stopped by pressing the Interval-key. After a wait of 2 hours, the system switches itself back to the Interval mode.

A press on the UV-key brings "UV" to display, but the UV-lamp is only switched on when the system is in the Nonstop mode and switches itself off when Nonstop mode is ended (2 h). When Nonstop operation is manually stopped by a press on the Interval-key, however, the UV-lamp is not switched off until it has been burning for 0.5 hours.

The intensity of the UV-light is monitored during the time that the UV-lamp is burning. The display of the UV-intensity is made in the menu. The TOC-value is also displayed.

### User-menu

All of the measured values, operating times and limiting values that are relevant for the user can be set and read in this menu.

A press on the menu-key brings you to this menu. Each further press on the menu-key moves you further from one menu prompt to the next.

Settings can be changed with the arrow keys. When you confirm a value by pressing the Enter-key, you are taken to the next menu prompt. Settings can only be made when the system control has been previously unlocked.

To simplify changing settings, a press on the UV-key allows you to select a certain individual number in the numerical value that you wish to change. The arrow-keys can then be used to enter the wanted number from 0 to 9 at the selected position.

A minimum and a maximum measured value are fixed in the programme for all three measuring cells for conductivity and the temperature sensor. Should measured values be below or above these values respectively, then it must be assumed that there is a cable break. In such a case, the appropriate fault message "Measuring cell LF1", "Measuring cell LF2", "Measuring cell LF3" or "Measuring cell Temp." is displayed in line 4.

## 12.1 Menu

### 12.1.1 Feedwater conductivity

After a single press on the menu-key, the feedwater conductivity can be read and the limiting value of the feedwater conductivity can be set. The fault message that flashes in the fourth line of the display when the feedwater limiting value is exceeded is "*Limit value feed*" (Measuring point LF2).

**Measuring range, feedwater:** 0.1- 99,9  $\mu\text{S/cm}$   
**Setting range, limiting value:** 0.1- 50.0  $\mu\text{S/cm}$   
**Basic setting:** 2  $\mu\text{S/cm}$

With settings higher than 50  $\mu\text{S/cm}$ , the limiting value is switched off and the word "*Off*" is shown in the display.

The display shows:

Feedwater 0.8 $\mu\text{S/cm}$ Limit value feed 2,0 $\mu\text{S/cm}$
---

### 12.1.2. Ultra pure water limiting value:

After a second press on the menu-key, the fault display for the ultra pure water limiting value and the ultra pure water limiting value can be set. As soon as the fault display is switched on, the fault is displayed both in Stand-by mode and Production mode. When the fault display is switched off, the fault is only displayed in Production mode. When the entered limiting value is exceeded, "*Lim. val.pure w.*" is displayed.

**Measuring range, ultra pure water:** 9.999  $\mu\text{S/cm}$   
**Setting range, limiting value:** 0.055- 5.000  $\mu\text{S/cm}$   
**Basic setting:** 0.1  $\mu\text{S/cm}$   
**Basic setting, fault suppression:** On

With settings higher than 5.000  $\mu\text{S/cm}$ , the limiting value is switched off and the word "*Off*" is shown in the display.

The display shows:

Fault message Stand-by On Lim. val. pure w. 0.100 $\mu\text{S/cm}$
---

### 12.1.3. UV-Lamp operating time and intensity:

Not active in this version.

The display shows:

UV-time  
0000 h  
UV-intensity  
0%

### 12.1.4. Filter cartridge operating time counter:

The operating time counter for the filter cartridge can be set in this menu by a fourth press on the menu-key and the entry of a valid serial number for the filter cartridge.

The display shows:

Ser. no.:  
cartridge  
Press enter  
-----/--

### 12.1.5. Rinsing

A fifth press on the menu key in this menu allows rinsing to be carried out if this is necessary. Triggering is made by confirming the requirement with a press on the Enter-key. The pump is started and the rinsing solenoid valve is opened for the rinsing time period set in the OEM-menu.

The count-down of the rinsing time is displayed during rinsing.

When rinsing has finished, the system returns to the last operating mode (Interval or Non-stop).

The display shows:

Rinse ?  
Press enter

During rinsing, the display shows:



### 12.1.6. Disinfection

A sixth press on the menu-key gives you the possibility of carrying out disinfection. The command "*Disinfection cartridge. Install one*" is shown when this menu-prompt is confirmed with Enter. After confirming this with Enter, disinfection is carried out. The pump runs for the disinfection time that has been set in the OEM-menu. When half of the disinfection time has passed, the rinsing solenoid valve opens and stays open up to the end of the disinfection process. The "*New filter cartridge. Install one*" message is given when the disinfection process has finished

The system returns to the last operating mode when this is confirmed with Enter. A count-down of the disinfection time is shown in the display during disinfection.

The display shows:



After confirmation with Enter, the display shows:



During disinfection, the display shows:



After disinfection, the display shows:



New  
filterset  
  
Press enter

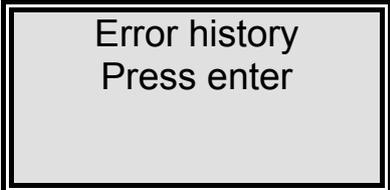
### 12.1.7 Display of fault storage:

A seventh press on the menu-key calls the fault storage. Confirmation with Enter allows you to look through the faults in the fault storage.

Should several faults have occurred, then two faults, each with date and time, are shown in the display. Appropriate pressing of the arrow-keys brings previous and subsequent faults to display.

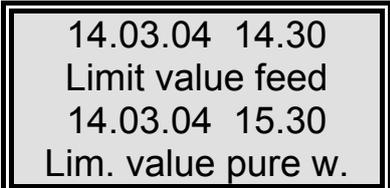
A press on the menu-key or the Enter-key returns the display to the last operating mode.

The display shows:



Error history  
Press enter

The fault storage display shows:



14.03.04 14.30  
Limit value feed  
14.03.04 15.30  
Lim. value pure w.

### 12.1.8 Data print out

Not active in this version.

The display shows:



### 12.1.9 Unlocking the system

An nine press on the menu-key in this menu brings you to the "Code" menu. To prevent unauthorized access to the settings in the system control, changes to the settings can only be carried out when a correct code from the Assignment Table that follows is entered and confirmed with the Enter-key.

Unlocking remains active for 5 minutes.

Each access via the code is issued to the printer (RS 232) complete with date, time and abbreviated code number ("Code 0001" corresponds to code 150, "Code 0002" to code 250 etc.).

The display shows:



Code numbers can be assigned to individual persons in the Assignment Table on the following page.

Please remove this page from the Operating Instructions and store it where it is safe from unauthorized viewing.

## Assignment Table for code numbers which unlock the system

Code no.	Printer output	Person
150	0001	
250	0002	
350	0003	
450	0004	
550	0005	
650	0006	
750	0007	
850	0008	
950	0009	

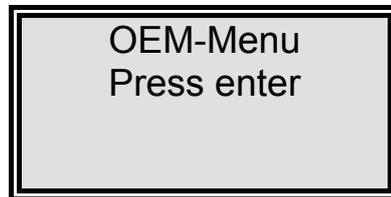
## 12.2 OEM Menu:

Basic settings and limiting values can be changed in this menu.  
 To make changes in the OEM menu, system control must previously be unlocked.

Calling the OEM menu:

Simultaneous pressing of the Interval-key and the Nonstop-key calls the OEM menu. Following this, the prompt "*OEM menu Press Enter*" appears. When this is confirmed with the Enter-key, the first menu prompt can be worked on. To simplify changing settings, press the UV-key to select the individual number in a numerical value which you want to change. Now use the arrow keys to enter the wanted number from 0 to 9 at that selected position. A press on the menu-key takes you to the next menu prompt.

The OEM menu call display shows:



### 12.2.1 Setting the limiting temperature for the system:

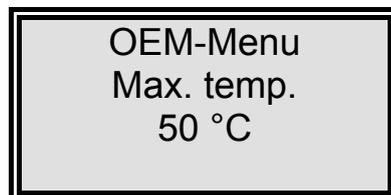
The maximum temperature which the system is to be allowed to reach can be set in this menu. The "*max. Temperature*" fault message is triggered when this temperature is exceeded.

It is shown in the 4th line of the display.

**Basic setting:**            **50 °C**

**Setting range:**        **1 - 50 °C**

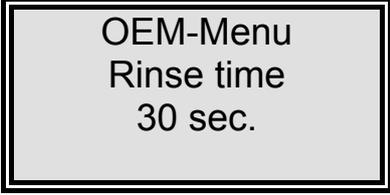
The display shows:



### 12.2.2 Setting the rinsing time:

**Basic setting:** 30 sec.  
**Setting range:** 10 - 60 sec.

The display shows:

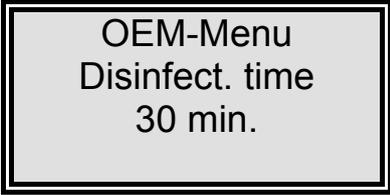


OEM-Menu  
Rinse time  
30 sec.

### 12.2.3 Changing the disinfection time:

**Basic setting:** 30 min.  
**Setting range:** 15 - 90 min.

The OEM menu prompt C display shows:

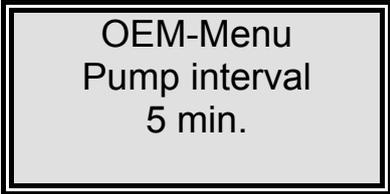


OEM-Menu  
Disinfect. time  
30 min.

### 12.2.4 Setting the interval time for the pump:

**Basic setting:** 5 min.  
**Setting range:** 1 - 30 min.

The display shows:

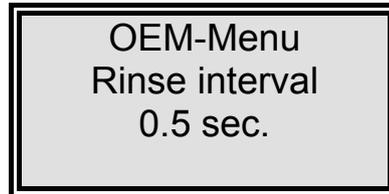


OEM-Menu  
Pump interval  
5 min.

### 12.2.5 Setting the interval rinse time:

**Basic setting:** 0.5 sec.  
**Setting range:** 0.1 - 2 sec.

The display shows:

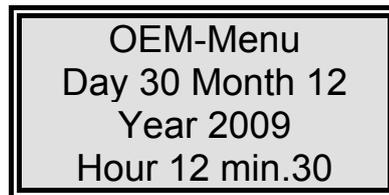


OEM-Menu  
Rinse interval  
0.5 sec.

### 12.2.6 Setting the real-time clock:

**Basic setting:** The actual date  
**Setting range:** 1 - 12 Months, 1 - 31 Days, 0 - 24 h, 0 - 60 min.

The display shows:

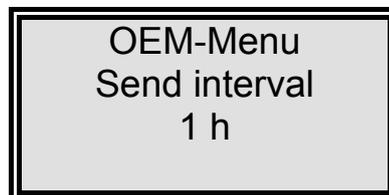


OEM-Menu  
Day 30 Month 12  
Year 2009  
Hour 12 min.30

### 12.2.7 Setting the sending interval:

Not active in this version.

The display shows:



OEM-Menu  
Send interval  
1 h

### 12.2.8 Selecting the language:

**Basic setting:** English  
**Setting range:** English, French, German

The display shows:



OEM-Menu  
 Language  
 English

### 12.2.9 Switching units:

**Basic setting:** Conductivity  $\mu\text{S}/\text{cm}$   
**Setting range:** Conductivity  $\mu\text{S}/\text{cm}$ ,  
 Specific electrical resistance  $\text{M}\Omega \text{ cm}$

The display shows:



OEM-Menu  
 $\mu\text{S}/\text{cm}$  /  $\text{M}\Omega \text{ cm}$   
 $\mu\text{S}/\text{cm}$

### 12.2.10 Switching temperature compensation on/off:

**Basic setting:** on  
**Setting range:** on, off

The display shows:



OEM-Menu  
 Temp. comp.  
 On

## 13. Maintenance

Regular maintenance of your system ensures that the value of it is maintained. We recommend that you close a service contract with a service company which has been expressly authorized. You then have the certainty of a high operational safety and reliability.

### NOTE!

To ensure that system will work reliably for a long time, it must be checked, serviced and cared for at regular time intervals in accordance with these operating instructions!  
For this reason, the operating instructions must be readily available to operating and maintenance staff at all times, and be carefully followed!

Any maintenance work which should become necessary during the validity of the guarantee is only to be carried out by an expressly authorized service company.

The operating-staff assigned is committed to carry out the weekly checks.  
During the agreed term of validity of the guarantee, the maintenance record sheet supplied in the operating instructions should be properly kept by entry of the results of weekly checks.

### CAUTION!

For perfect functioning to be ensured, the ultrafiltration membrane should be replaced every 2 years, or as soon as a drop in performance is determined.

Cleaning and disinfection of your system is performed for reasons of hygiene and has no effect on the technical condition of the system. The system must be cleaned and disinfected at least once yearly.



**Control and maintenance work on electrical systems is only to be carried out when the system has been switched to a currentless condition at the mains and the switching off has been secured against inadvertent switching back on. Such work is only to be performed by appropriately trained, skilled electricians.**

## 13.1 Maintenance intervals

Consumable materials are to be replaced at the intervals given in the following Table or when there is drop in performance:

Material	Flow chart no.	Article no.	Interval*
Pretreatment cartridge	---	09.2001	3 Months
Filter cartridge	A-F1	09.1006	3 Months
Sterile filter	A-F2	09.1003	
Ultrafiltration membrane	A-F3	22.0089	every 2 years

\*Please keep in mind that the life of your consumables is directly dependent on the quality of the feed water and the amount of water used daily. The interval is contingent on the feedwater quality so that a shorter one may be necessary.

## 13.2 Replacing the filter cartridge



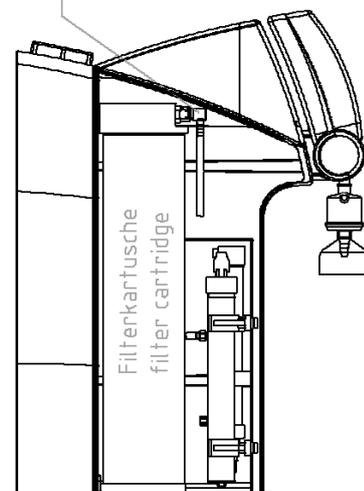
**The filter cartridge must be replaced when the limiting value that you have set for the ultrapure water is exceeded, or after the system has been subject to disinfection.**

**Proceed as follows to replace the filter cartridge:**

Remove the stoppers from the new filter cartridge and save them for later use.

1. Switch the system off.
2. Separate the system from the mains by unplugging the mains plug.
3. Open the dispensing valve until no more water flows out, then close the valve again.
4. Remove the cartridge cover.
5. Remove the quick connects from the filter cartridge feedwater inlet and purified water outlet. Close the connectors with the stoppers that you have kept for later use.
6. Draw the spent filter cartridge out of the guide and replace it with the new filter cartridge.
7. Remove the stoppers from the new filter cartridge and save them for later use.
8. Fit the quick connects properly to the new filter cartridge inlet and outlet so that they audibly lock.
9. Re-connect the system to the mains.
10. Switch the system on and check connections for leaks.
11. Put the cartridge cover back on.
12. Run off and discard the first tank filling.

Schnellverschlüsse Filterkartuschen  
 Quick connectors filter cartridges



**Use only specifically designed filter cartridges of article no. 09.1006 with this system. The use of any other type invalidates the guarantee.**



**Switch the system to the „Cleaning“ operating mode to vent air out of it.**

### 13.3 Disinfection



**Your system should be cleaned and disinfected at least once per year to kill any bacteria that are possibly in the tank. We recommend that you carry out cleaning and disinfection shortly prior to the time that the filter cartridge must be replaced.**

Use MICRO-Chlor Granulate, article no. 09.2202 as disinfectant



**Please observe the information given in the safety data sheet supplied with Micro-Chlor disinfectant to avoid possible health hazards!**

**Proceed as follows to disinfect your system:**

1. Separate the system from the power supply by unplugging the line plug.
2. Open the lid of the storage tank and pour the contents of a can of MICRO-Chlor into the water-filled tank. Close the tank with the lid.
3. Re-connect the system to the power supply, discard 1 litre of water and let it run for 1 hour in Nonstop operation for effective bactericidal effect.
4. Following this, discard two tank fillings.
5. Close the outlet valve and separate the system from the power supply.
6. Replace the filter cartridge and, if necessary, the sterile filter, as described in the previous section.
7. Re-connect the system to the power supply.
8. Fill the tank completely once and discard this tank filling.



**Prior to dispensing water for the first time, let water flow out for about 15 minutes. Following this, the system is ready to operate.**

## 14. Waste disposal

When the packaging is no longer needed, it can be disposed of as household waste.

Systems are in conformity with EEC Guideline 2002/95/EC

The system is not to be thrown away as household waste but must be properly disposed of. It can be returned to the manufacturer for safe disposal according to EEC Guideline 2002/96/EC. We therefore request our customers in Germany and other member States in the European Economic Area to contact our local service centre or our headquarters:

Thermo Electron LED GmbH  
Stockland 3  
56412 Niederelbert, Germany

WEEE-Reg.-no.: DE 12471402

In countries outside of the European Economic Area, please contact your local authorities or waste disposal company.

## 15. Trouble shooting

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
The system does not start	- No supply of power	- Provide power
Dispensing not possible	- Feedwater tap is closed - Feedwater and rinse water connections are mixed up - Feedwater pressure < 0.1 bar	- Open the feedwater tap - Correct the connections - Increase feedwater pressure
Conductivity > 0.055 $\mu$ S/cm	- System has a UF-module (higher conductivity possible) - Ion exchange capacity is exhausted	- Replace filter cartridge with a new one
System control no longer reacts	- Improper operation	- Unplug the mains plug for 5 seconds
Water flows out	- Leaky hose connection - Feedwater pressure > 6 bar	- Check and seal the hose connection - Install a pressure reducer
Dispensed amount is too small	- UF-Module blocked - Pre-pressure too low - Internal pressure too low	- Replace UF-module - Increase pre-pressure - Readjust pressure reducer
Wrong time or date	- Time zone - Summer/winter time	- Reset time and date
Wrong language	- Wrong language set	- Correct the language setting
Fault message: <i>"Limit value feed"</i>	- Feedwater conductivity too high - Limiting value set too low	- Check the pretreatment - Check and suit the limiting value setting

Fault message: <i>"Lim. va.pure w."</i>	<ul style="list-style-type: none"> <li>- Filter cartridge exhausted</li> <li>- Limiting value set too low</li> <li>- System has a UF-module (higher conductivity possible)</li> </ul>	<ul style="list-style-type: none"> <li>- Replace with new filter cartridge (art.-no.: 09.2005)</li> <li>- Check and suit the limiting value</li> </ul>
Fault message: <i>"UV-time"</i>	<ul style="list-style-type: none"> <li>- UV-Lamp operating time has been exceeded</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the UV-lamp (art.-no. 09.2002) and set the operating time counter back</li> </ul>
Fault message: <i>"UV-intensity"</i>	<ul style="list-style-type: none"> <li>- UV-Lamp intensity no longer sufficient</li> <li>- UV-Sensor is dirty</li> <li>- Limiting value set too low</li> </ul>	<ul style="list-style-type: none"> <li>- Replace and measure in a new UV-lamp</li> <li>- Clean the UV-sensor</li> <li>- Check and suit the limiting value</li> </ul>
Fault message: <i>"max. Temperature"</i>	<ul style="list-style-type: none"> <li>- The temperature in the system is too high</li> <li>- Interval pump time too long</li> <li>- Limiting value set too low</li> <li>- Feedwater temperature is too high</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce the temperature by running water off</li> <li>- Reduce interval pump time</li> <li>- Check and suit the limiting value</li> <li>- Reduce the feedwater temperature</li> </ul>
Fault message: <i>"Measuring cell LF1"</i>	<ul style="list-style-type: none"> <li>- Measuring cell cable break</li> <li>- System control defect</li> <li>- Conductivity of ultra pure water outside of the measuring range</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the measuring cell</li> <li>- Replace system control</li> <li>- see "Conductivity &gt; 0.055 <math>\mu</math>S/cm"</li> </ul>
Fault message: <i>"Measuring cell LF2"</i>	<ul style="list-style-type: none"> <li>- Measuring cell cable break</li> <li>- System control defect</li> <li>- Feedwater conductivity outside of measuring range</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the measuring cell</li> <li>- Replace system control</li> <li>- see "Limit value.feed"</li> </ul>
Fault message: <i>"Measuring cell LF3"</i>	<ul style="list-style-type: none"> <li>- Measuring cell cable break</li> <li>- System control defect</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the measuring cell</li> <li>- Replace system control</li> </ul>
Fault message: <i>"Measuring cell Temp."</i>	<ul style="list-style-type: none"> <li>- Measuring cell cable break</li> <li>- System control defect</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the measuring cell</li> <li>- Replace system control</li> </ul>
Fault message: <i>"New Filter cartridge"</i>	<ul style="list-style-type: none"> <li>- Filter cartridge operating time has expired</li> </ul>	<ul style="list-style-type: none"> <li>- cartridge (art.-no.: 09.1006)</li> </ul>

The address to contact when your system requires service:

**Overview of Thermo Scientific International Sales Organization**

**Postal address USA:**

Thermo Scientific  
275 Aiken Road  
Asheville, NC 28804  
USA

**Enquiries from USA/Canada**

**Sales:** +1 866 984 3766  
**Service:** +1 800 438 4851

**Enquiries from Latin America**

**Sales:** +1 866 984 3766  
**Service:** +1 866 984 3766

**Enquiries from Asia**

**China**

**Sales:** +86 10 8419 3588  
**Service:** Toll free 8008105118  
Support Mobile 4006505118 or +86 10 8419 3588

**India**

**Sales:** +91 22 6716 2200  
**Service:** Toll free 1 800 22 8374 or +91 22 6716 2200

**Japan**

**Sales:** +81 45 453 9220  
**Service:** +81 45 453 9224

**Enquiries from the Rest of Asia/Australia/New Zealand**

**Sales:** +852 2885 4613  
**Service:** +65 6872 9720

**Enquiries from Countries not listed / Rest of EMEA**

**Sales:** +49 6184 90 6940 or +33 2 2803 2000  
**Service:** +49 6184 90 6940

**Enquiries from Europe**

**Austria**

**Sales:** +43 1 801 40 0  
**Service:** +43 1 801 40 0

**Belgium****Sales:** +32 53 73 4241**Service:** +32 53 73 4241**Finland/Nordic/Baltic countries****Sales:** +358 9 329 100**Service:** +358 9 329 100**France****Sales:** +33 2 2803 2180**Service:** +33 825 800 119**Germany:****Postal Address Germany:**

Thermo Electron LED GmbH

Robert-Bosch-Straße 1

D - 63505 Langenselbold

**Phone****Sales:** Toll free 0800 1 536 376

or +49 6184 90 6940

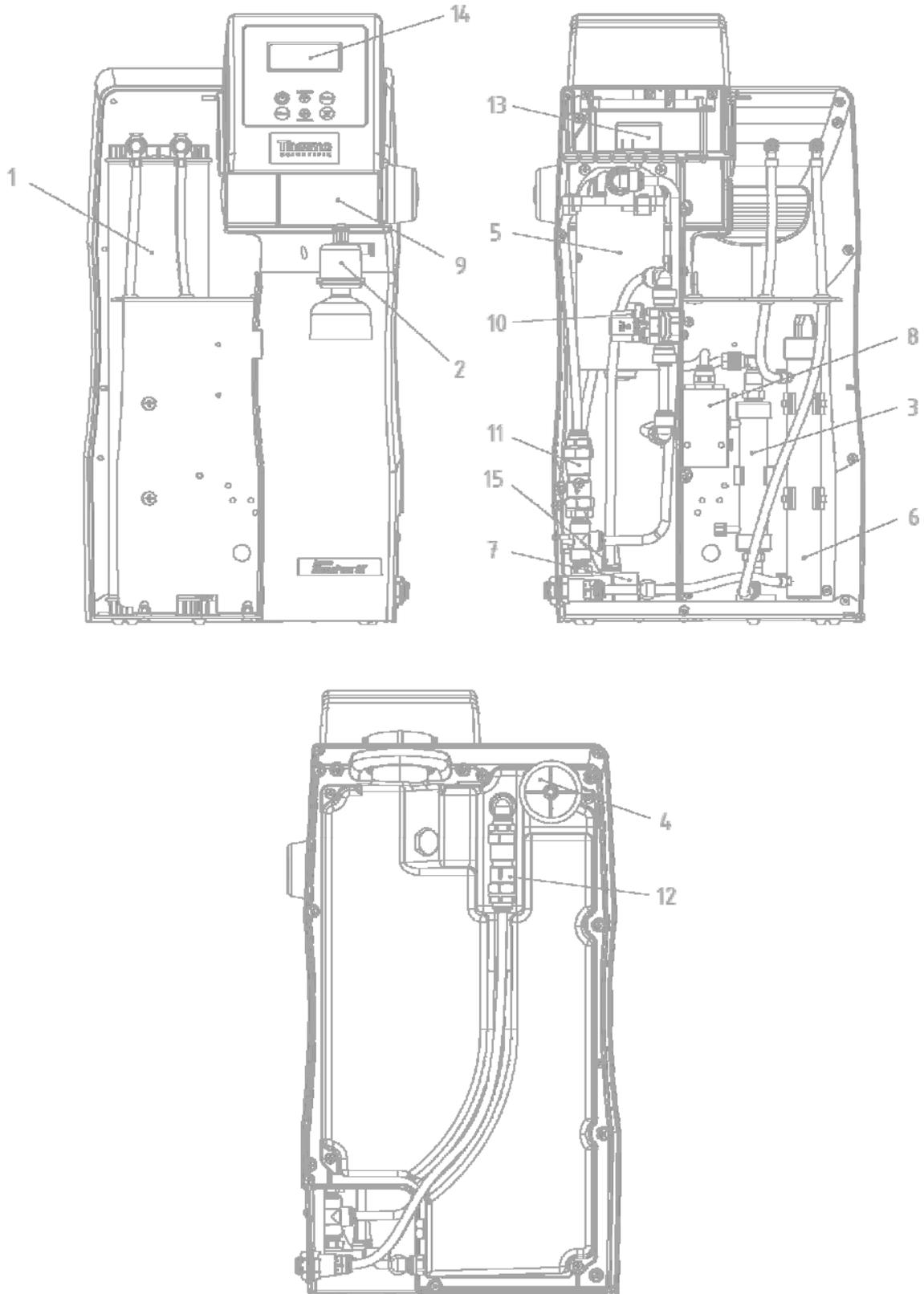
**Service:** Toll free 0800 1 112110

or +49 6184 90 6940

**E-Mail:** [info.labequipment.de@thermoftsher.com](mailto:info.labequipment.de@thermoftsher.com)**Italy****Sales:** +39 02 95059 341**Service:** +39 02 95059 250**Netherlands****Sales:** +31 76 579 5555**Service:** +31 76 579 5639**Russia/CIS****Sales:** +7 812 703 4215**Service:** +7 812 703 4215**Spain/Portugal****Sales:** +34 93 223 0918**Service:** +34 93 223 0918**Switzerland****Sales:** +41 44 454 1212**Service:** +41 44 454 1212**UK/Ireland****Service:** +44 870 609 9203**Sales:** +44 870 609 9203

## 16. Replacement parts and consumables

Rückansicht ohne Tank  
Backside without tank



Pos.	R+I Nr.	Designation	Article no.
1	A-F1	Filter cartridge	09.1006
2	A-F2	Sterile filter	09.1003
3	A-F3	Ultrafiltration module	22.0089
4	A-F4	Sterile venting filter	22.0091
5	A-P1	Circulation pump	19.0050*
6	A-UV1	Replacement UV-lamp UV-Booster	22.0039 22.0086
7	QIA 300	Feedwater conductivity measuring cell	16.0126
8	QIA 301 TIA 500	Ultrapure water conductivity measuring cell Temperature sensor	26.0014
9	V1	Ultrapure water dispensing valve	25.0068
10	V2	Rinsing solenoid valve	50131190*
11	V3	Check valve	15.0019
12	V4	Sterile overflow/Check valve	15.0009
13		Platine Interface	50131346
14		Platine CPU with LCD-display	26.0025
15		Fusholder for glas tube fuse, 5 x 20mm Glas tube fuse, 5 x 20mm, 3,15 A, slow	50131759 50131758
		Table power pack 24V DC (not shown)	50129629

\* Wearing part

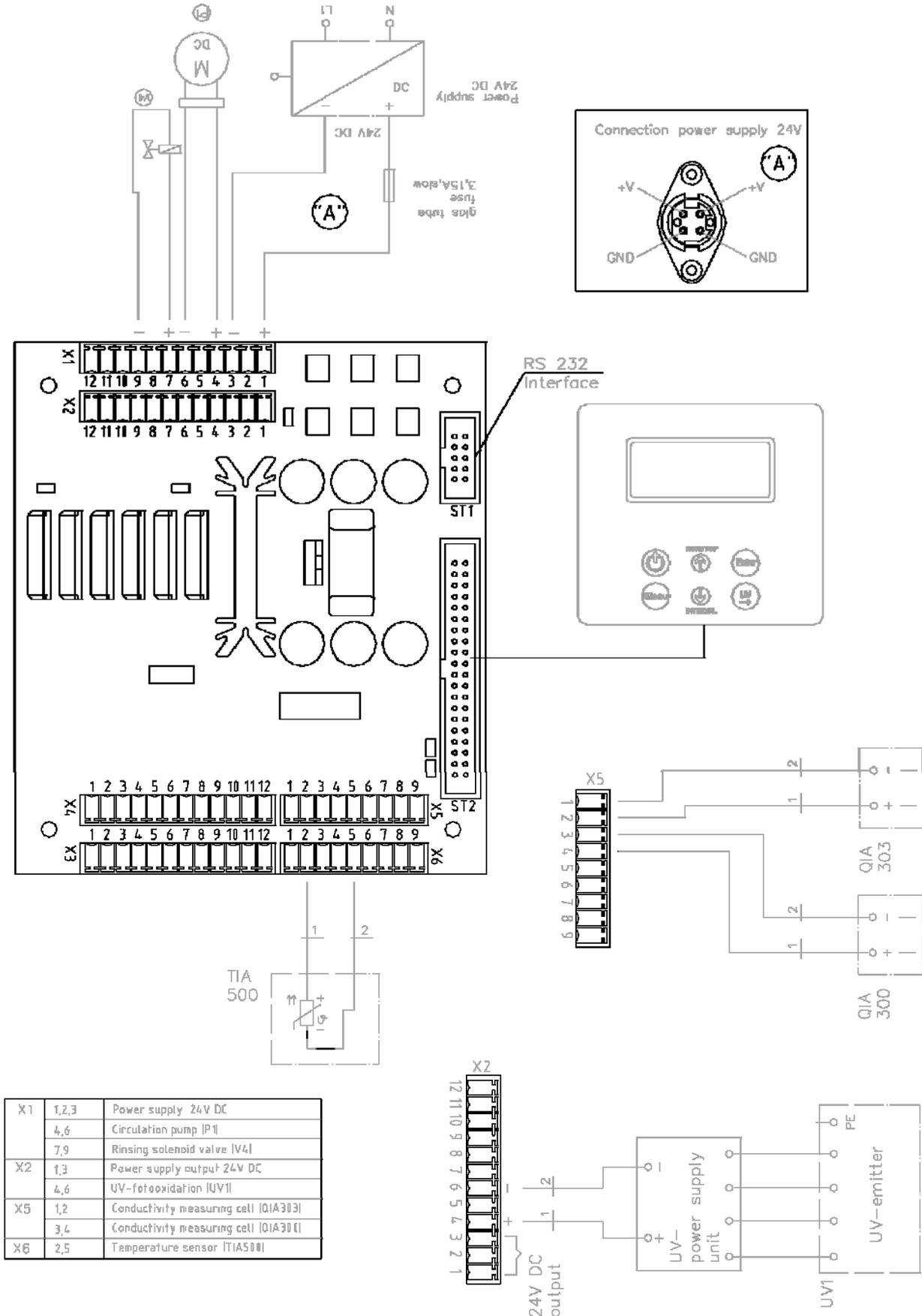


**We ask for your understanding that the guarantee that we give becomes invalidated when replacement parts, accessories or consumables from other manufacturers are used in or for the system, as we have no influence on their appropriateness, composition or quality.**

## 17. Accessories

Bezeichnung	Artikel - Nr.
Desinfection cartridge	09.1102
Disinfectant, MICRO-Chlor (Pack of 12 cans)	09.2202
Wall bracket	09.2212
Qualification Manuel IQ, OQ	IQDOCE50133914

## 18. Terminal assignment



## 19. Maintenance record

(Please keep this carefully updated, as correct keeping of this maintenance record is a condition of the guarantee)

**Address of customer:** \_\_\_\_\_ **Location:** \_\_\_\_\_

\_\_\_\_\_ **Type of system:** \_\_\_\_\_

\_\_\_\_\_ **Serial-no.:** \_\_\_\_\_

\_\_\_\_\_ **Year made:** \_\_\_\_\_

Date	Conductivity of feedwater [µS/cm]	Conductivity of ultrapure water [µS/cm]	Quantity of ultrapure water [l/h]	Temperature [°C]	UV-Lamp operating hours [h]	Last filter cartridge replacement	Last time cleaned and disinfected

Last replacement of pretreatment	Remarks	Signature

Any false entry is considered to constitute a falsification of documents.

**The following points are to be observed to assure the quality of the system:**

- 1x / Weekly, acquire measured values.

To ensure an optimal ultrapure water quality, the water pre-treatment must be regularly subjected to control and maintenance.

## Contact Information Thermo Scientific

### North America:

USA/Canada +1 866 984 3766 (866-9-THERMO)

### Europe:

Austria +43 1 801 40 0, Belgium +32 53 73 42 41, France +33 2 2803 2180,  
Germany national toll free 08001-536 376,  
Germany international +49 6184 90 6940, Italy +39 02 95059 448,  
Netherlands +31 76 579 55 55, Nordic/Baltic/CIS countries +358 9 329 10200,  
Russia +7 812 703 42 15, Spain/Portugal +34 93 223 09 18,  
Switzerland +41 44 454 12 12, UK/Ireland +44 870 609 9203

### Asia:

Australia +61 39757 4300, China +86 21 6865 4588 or +86 10 8419 3588,  
India toll free 1800 22 8374, India +91 22 6716 2200,  
Japan +81 45 453 9220, New Zealand +64 9 980 6700,  
Other Asian countries +852 2885 4613

**Countries not listed:** +49 6184 90 6940



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