

## Operating Instructions Smart2Pure Ultrapure water systems

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|---|---|
| <input type="checkbox"/> Art. no.: 08.2030 (3 Standard) | <input type="checkbox"/> Art. no.: 08.2060 (6 Standard) |
| <input type="checkbox"/> Art. no.: 08.2031 (3 UF)       | <input type="checkbox"/> Art. no.: 08.2061 (6 UF)       |
| <input type="checkbox"/> Art. no.: 08.2032 (3 UV)       | <input type="checkbox"/> Art. no.: 08.2062 (6 UV)       |
| <input type="checkbox"/> Art. no.: 08.2033 (3 UV/UF)    | <input type="checkbox"/> Art. no.: 08.2063 (6 UV/UF)    |



Serial no.: .....

**These instructions must be read prior to installing and starting the system!**

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Company  
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D-56412 Niederelbert

## EEC Declaration of Conformity

acc. to EEC-Directive 98/37/EEC  
- Machine Directive -

We hereby declare that the products named below conform in their design and construction, as well as in the versions we have brought to market, to the fundamental safety and health requirements of

EEC-Directive 98/37/EEC.

This declaration is invalidated should changes not agreed to by us are made to the machine.

Designation of the machine:	<b>Ultrapure water system</b>
Machine types:	<b>Smart2Pure Smart2Pure UV Smart2Pure UF Smart2Pure UV/UF</b>
Applicable EEC Directives:	<b>EEC Machine Directive (98/37/EEC) EEC Low Voltage Directive (2006/95/EC) EEC Electromagnetic Compatibility Directive (2004/108/EC)</b>
Standards applied:	<b>DIN EN ISO 12100-1 DIN EN ISO 12100-2 DIN EN 1050 DIN EN 60204-1 DIN EN 55011 DIN EN 50082-2</b>

Niederelbert, 15. May 2006

  
Authorized representative of the manufacturer

## Preface

Dear Sir or Madam

Thank you for the confidence you have placed in our Company in deciding to purchase an ultrapure water system from the **Smart2Pure** series.

You have selected a high-quality product, and we ask you to please read through the information given on installation and operating in these Operating Instructions before you install and start to operate it.

This is important as we, the manufacturer, cannot be held liable for any damage caused to the system by usage for other than the intended purpose or by improper operation,

Niederelbert, 15.05.2006

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## 2. Notes on the Operating Instructions



Potential hazards are marked with a warning triangle.



Particularly important notes are marked with an info-sign.

The information given in these Operating Instructions is only valid for the system with the serial number that is written on the front cover .



**Please write in the serial number\* of your Smart2Pure system on the front cover.**

\* The serial number is given on the type plate of your ultrapure water system.

It is important that you give the correct:

- **Serial number**
- **Article number**

in all correspondence on your system.

### 3. Transport and packaging

TKA Ultrapure water systems are carefully checked and packed prior to shipment but damage could nevertheless occur during transport.

#### 3.1 Examination on receipt

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



**Is the packaging damaged ?**

- Examine the system for damage.

#### 3.2 Complaints

Should the system have been damaged during transport:

- Contact the post, railway or forwarding agent immediately\*.
- Save the packaging and the outer cardboard carton (for a possible inspection and/or return shipment of the system).

#### 3.3 Packaging and return shipment

If possible, use the original packaging and materials.

Should these no longer be available:

- Pack the system in a suitable plastic bag or sheet and a strong cardboard box so that it is shock-proof.



**\* The time limit for claims is 6 days after receipt of the goods.  
After this deadline, all rights to claims for damages are invalid.**

## 4. Parts standardly supplied

Smart2Pure Ultrapure water systems are available in the following versions. Each version is available with a choice of performance, 3 l/h or 6 l/h.

08.2030	Smart2Pure 3	(Standard system)
08.2031	Smart2Pure 3 UF	(Standard system + Ultrafiltration module)
08.2032	Smart2Pure 3 UV	(Standard system + UV-photooxidation)
08.2033	Smart2Pure 3 UV/UF	(Standard system + UV-photooxidation + Ultrafiltration module)
08.2060	Smart2Pure 6	(Standard system)
08.2061	Smart2Pure 6 UF	(Standard system + Ultrafiltration module)
08.2062	Smart2Pure 6 UV	(Standard system + UV-photooxidation)
08.2063	Smart2Pure 6 UV/UF	(Standard system + UV-photooxidation + Ultrafiltration module)

(Please check that the version you have received has the same article number as that stated in the delivery note.)

1x Smart2Pure (acc. to the version, see above)	Article no. 08.20xx
incl. an installation kit consisting of:	
Pretreatment cartridge	with 3 l/h performance Article no. 09.2003 with 6 l/h performance Article no. 09.2006
Filter cartridge	Article no. 09.1020
Sterile filter capsule, 0.2 µm	Article no. 09.1003
Sterile vent filter	Article no. 22.0091
Feedwater connecting kit, R 3/4"	Article no. 25.0071
Connecting hose, 1/4" o.d., 6 m	Article no. 18.0137
Ball valve, 1/4" d	Article no. 15.0112
Table-top power supply, 100 - 240 V, 50/60 Hz	Article no. 16.0334
Connecting cable, 1.8 m	Article no. 16.0341
Operating Instructions	Article no. 29.0177



## 5. Safety precautions



### Observe the safety precautions below for your own safety!

- Your Smart2Pure is an advanced ultrapure water system and serves exclusively for the treatment of potable water.
- Do not start to install and operate the system until you have heeded the corresponding information in these Operating Instructions.
- Please note that the manufacturer is not liable for damages resulting from use other than for the intended purpose or from improper operation.
- Constructional changes, or the installation of products from other manufacturers, invalidate the CE-Mark
- Protect the system from frost. The temperature in the area in which the system is installed must be at least + 2°C.
- Observe all applicable general regulations and requirements, including accident prevention regulations, that apply at the installation area.
- The feedwater pressure must be 1 bar at least and 6 bar at most. If the feedwater pressure is higher, install an additional reducing valve.
- A suitable socket is required for the line connection (see „Technical Data“).
- The installation area must have a free running floor-level drain of at least DN 50 (38.5 i.d.). Should no such drain be available, we recommend, for safety reasons, that a water watcher (article no. 16.0129) be installed. The manufacturer is otherwise not liable for damage caused by water.
- Prior to wall-mounting the system, check the statics of the wall. It must have sufficient load-bearing capacity (weights are given in “Technical data”).
- The maximum operating temperature is 35°C.
- Should no floor-level drain or water watcher be available, proceed as follows in the case of a standstill for a longer period (e.g. overnight, weekends, holidays):
  - → **First switch the system off (unplug the line plug)**
  - → **then turn the water supply to the ultrapure water system off.**The pump will be subject to damage if the system is allowed to run when the water supply is turned off. The manufacturer will accept no liability for such damage.
- When installing the system, ensure that there is sufficient working room for convenient attendance to the system, e.g. for replacing filters, connections etc.
- The guarantee is valid for a period of 12 months!
- Never look directly at a switched-on UV-lamp, as ultraviolet light can impair eyesight! The UV-lamp is only to be changed by **TKA** or by **TKA** authorized personnel.

## 6. Intended purpose

Continually more stringent requirements on the quality of ultrapure water, increasingly sophisticated technologies and extremely low detection limits in laboratories, together with the demand for user-convenient systems and complete solutions, were the factors that were decisive for the development of the novel Smart2Pure ultrapure water systems.

Smart2Pure Ultrapure water systems have been specifically designed to produce salt-free, organically clean, particle-free and sterile-filtered ultrapure water.

### 6.1 Application areas

**- 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.

**- The preparation of reagents and solutions:**

- Cell culture media
- Tissue culture media
- In-vitro fertilisation
- Make-up water for reagents for online analyzers

**- For high purity rinsing processes in laboratories**

## 7. Technical data

Required feedwater quality	
Source	Potable water acc. to DIN 2000.
Colloid index (SDI)	max. < 3 for all versions. With higher values, a pre-treatment step must be installed upstream.
Free chlorine concentration	< 1 mg/litre
Manganese content	< 0.05 mg/litre
Iron content	< 0.05 mg/litre
pH Range	4 – 11
Temperature	2 - 35 °C
Pressure	1 - 6 bar

Product water quality ASTM Type I (dispensing valve)				
	Standard	UV	UF	UV/UF
Conductivity $\mu\text{S/cm}$	0.055	0.055	0.055	0.055
Resistance $\text{M}\Omega\text{cm at } 25^\circ\text{C}$	18.2	18.2	18.2	18.2.
TOC ppb	5 - 10	1 – 5	5 - 10	1 - 5
Bacteria KBE/ml	< 1	< 1	< 1	< 1
Bacterial endotoxines EU/ml	--	--	< 0.005*	< 0.005*
Particles > 0.2 $\mu\text{m}$	< 1/ml	< 1/ml	< 1/ml	< 1/ml
Flow rate l/min	1.0	1.0	0.6	0.6
Typical volume taken	5 litres/day			

\* Dependent on feedwater and disinfection

Product water quality ASTM Type II (tank quality)				
	Standard	UV	UF	UV/UF
Conductivity $\mu\text{S/cm}$	0.067 – 0.1	0.067 – 0.1	0.067 – 0.1	0.067 – 0.1
Resistance $\text{M}\Omega\text{cm at } 25^\circ\text{C}$	10 - 15	10 - 15	10 - 15	10 - 15
Retention quota, Bacteria and particles	Ø 99 %	Ø 99 %	Ø 99 %	Ø 99 %
Permeate performance l/h	3 or 6	3 or 6	3 or 6	3 or 6
Tank content l	approx. 6	approx. 6	approx. 6	approx. 6

Dimensions	
Height:	545 mm
Width:	305 mm
Depth:	400 mm
Weights:	
Smart2Pure Standard	22 kg
Smart2Pure UF	22 kg
Smart2Pure UV	22 kg
Smart2Pure UV/UF	22 kg

Water connectors	
Feedwater	Hose, 1/4" o.d.
Concentrate	Hose, 1/4" o.d.
Tank overflow	Hose, 1/4" o.d.
High purity water	Hose, 1/4" o.d.
Outlet/Dispensing valve	Hose, 8 - 10 mm

Electrical connections	
Voltage	100 - 240 V
Frequency	50/60 Hz
Power consumption	approx. 60 W
Serial interface	RS 232

Materials that contact water	
Pump head	Nylon with glass fibre
UV-lamp	High purity quartz
UV-housing	Edelstahl
Filter cartridge	PP
UF-housing	Polycarbonate
Feedwater solenoid valve	PA
Recirculation solenoid valve	PA
Rinsing solenoid valve	PA
Pressure hold valve	Nickel-plated brass
Dispensing valve	POM
Conductivity measuring cell	PVC, stainless steel
Connections	POM
Hoses	PE
Gaskets	EPDM
RO-Membrane	PA

## 8. How the system functions

In stand-by mode and during standstills, feedwater solenoid valve V1 is closed. This prevents feedwater from flowing into the system when it is not in operation and so protects the tank B1 from overflowing.

In normal operation, potable water flows into the system at a maximum pressure of 6 bar and pressure booster pump P1 pumps it successively through pretreatment F1 and reverse osmosis membrane F2. The latter retains salts dissolved in the water to the extent of the specified retention quota. Further to this, Ø 99% retention of bacteria, pyrogens and particles is additionally ensured because of the molecular size of the pores of the membrane.

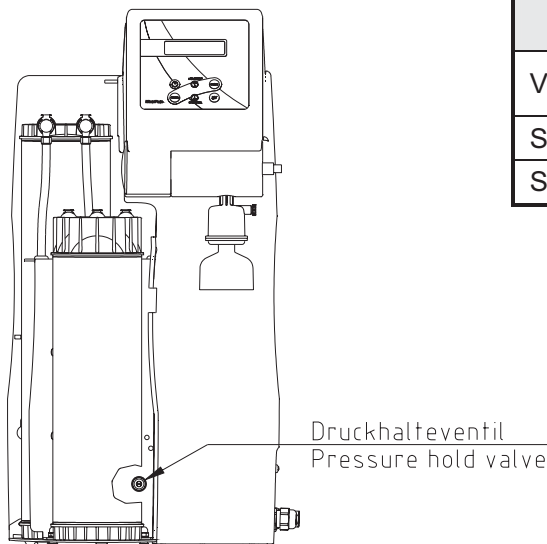
The permeate then flows through downstream purification stages such as UV-photooxidation UV1, with 185 nm and 254 nm wavelengths which reduce the content of organic compounds (Smart2Pure UV and UV/UF only), filter cartridge F3 and ultrafilter F6 with automatic flushing (Smart2Pure UF and UV/UF only) and into the tank.

The water constituents that are retained are carried away in the remaining concentrate. The special conductivity measurement sensor QISA 300 (equipped with temperature compensation) and the temperature sensor TISA 500 permanently determines the conductivity and temperature of the ultrapure water, and the measured values are shown in the display.

The water in the storage tank is recirculated through the system at regular intervals by recirculation pump P2. This ensures a constantly high water quality. Float switch LIS 100 monitors the filling level of the tank.

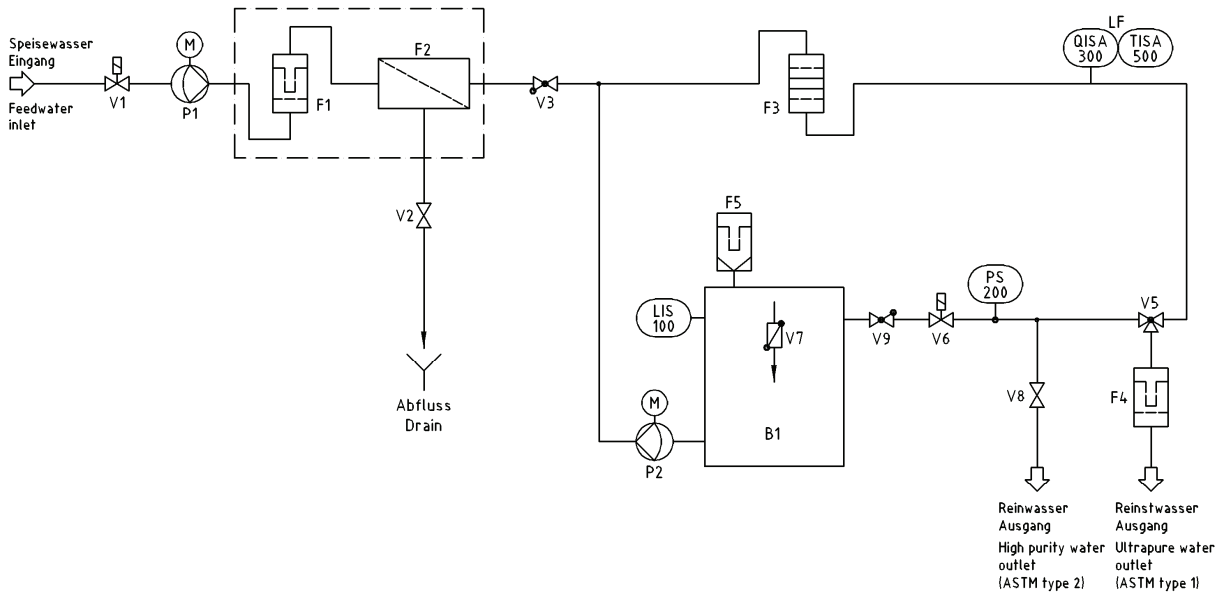


**Pressure hold valve V2 has been pre-adjusted at the factory. Changes to this adjustment could result in damage to the reverse osmosis module. Because of fluctuations in the feedwater temperature und pressure, the setting of the valve and the concentrate flow that it governs must be checked by TKA-Service or TKA authorized personnel when the system is brought into service and at regular intervals, and be reset by them if necessary.**



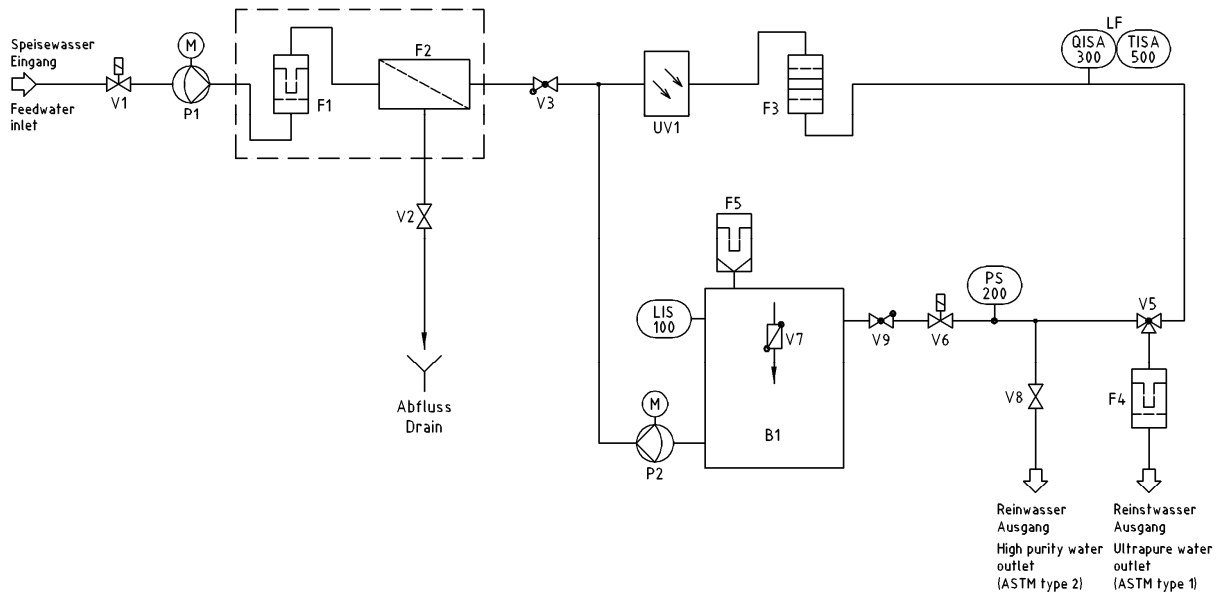
Concentrate flow for Smart2Pure to be checked and adjusted each 3 months		
Version:	Permeate flow [l/h]	Concentrate flow [l/h]
Smart2Pure 3	3	min. 50
Smart2Pure 6	6	min. 50

## 8.1 Flow chart for Smart2Pure Standard



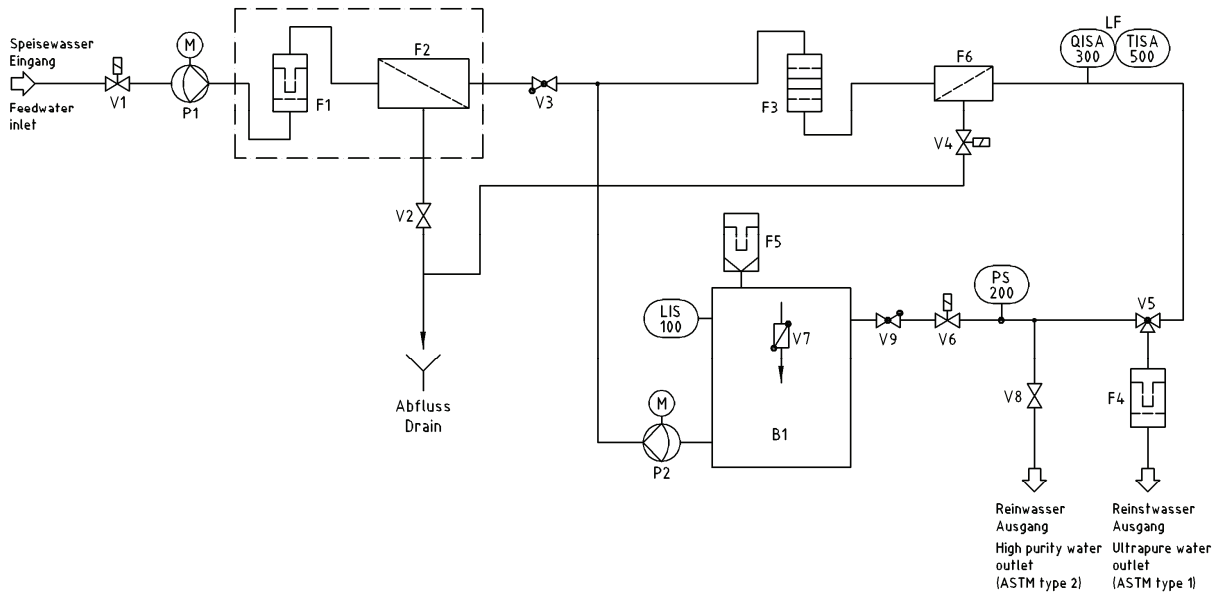
B1	Storage tank
F1	Pretreatment cartridge
F2	Reverse osmosis membrane
F3	Filter cartridge
F4	Sterile filter
F5	Sterile vent filter
LIS 100	Float switch
P1	Pressure booster pump
P2	Recirculation pump
PS 200	Pressure switch
QISA 300	Conductivity measuring cell, ultrapure water
TISA 500	Temperature sensor
V1	Feedwater solenoid valve
V2	Pressure hold valve
V3	Check valve
V5	Dispensing valve, ultrapure water
V6	Recirculation solenoid valve
V7	Sterile overflow
V8	Dispensing valve, high purity water
V9	Check valve

## 8.2 Flow chart for Smart2Pure UV



B1	Storage tank
F1	Pretreatment cartridge
F2	Reverse osmosis membrane
F3	Filter cartridge
F4	Sterile filter
F5	Sterile vent filter
LIS 100	Float switch
P1	Pressure booster pump
P2	Recirculation pump
PS 200	Pressure switch
QISA 300	Conductivity measuring cell, ultrapure water
TISA 500	Temperature sensor
UV1	UV-photoxidation
V1	Feedwater solenoid valve
V2	Pressure hold valve
V3	Check valve
V5	Dispensing valve, ultrapure water
V6	Recirculation solenoid valve
V7	Sterile overflow
V8	Dispensing valve, high purity water
V9	Check valve

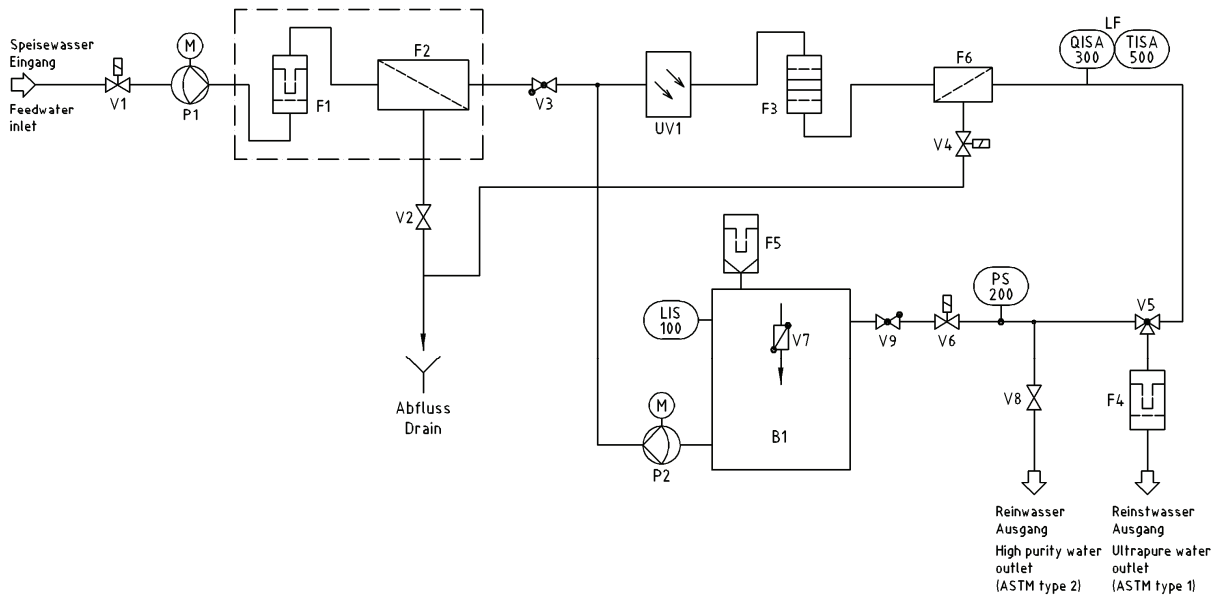
### 8.3 Flow chart for Smart2Pure UF



B1	Storage tank
F1	Pretreatment cartridge
F2	Reverse osmosis membrane
F3	Filter cartridge
F4	Sterile filter
F5	Sterile vent filter
F6	Ultrafiltration module
LIS 100	Float switch
P1	Pressure booster pump
P2	Recirculation pump
PS 200	Pressure switch
QISA 300	Conductivity measuring cell, ultrapure water
TISA 500	Temperature sensor
V1	Feedwater solenoid valve
V2	Pressure hold valve
V3	Check valve
V4	Rinsing solenoid valve
V5	Dispensing valve, ultrapure water
V6	Recirculation solenoid valve
V7	Sterile overflow
V8	Dispensing valve, high purity water
V9	Check valve



## 8.4 Flow chart for Smart2Pure UV/UF



B1	Storage tank
F1	Pretreatment cartridge
F2	Reverse osmosis membrane
F3	Filter cartridge
F4	Sterile filter
F5	Sterile vent filter
F6	Ultrafiltration module
LIS 100	Float switch
P1	Pressure booster pump
P2	Recirculation pump
PS 200	Pressure switch
QISA 300	Conductivity measuring cell, ultrapure water
TISA 500	Temperature sensor
UV1	UV-photooxidation
V1	Feedwater solenoid valve
V2	Pressure hold valve
V3	Check valve
V4	Rinsing solenoid valve
V5	Dispensing valve, ultrapure water
V6	Recirculation solenoid valve
V7	Sterile overflow
V8	Dispensing valve, high purity water
V9	Check valve

## 9. Installation

### 9.1 The installation area

The following criteria must be considered when selecting the installation area:

- Feedwater pressure at least 1 bar, max. 6 bar.



**The feedwater pressure must not exceed 6 bar. Should the pressure be higher, then a pressure reducer must be installed.**

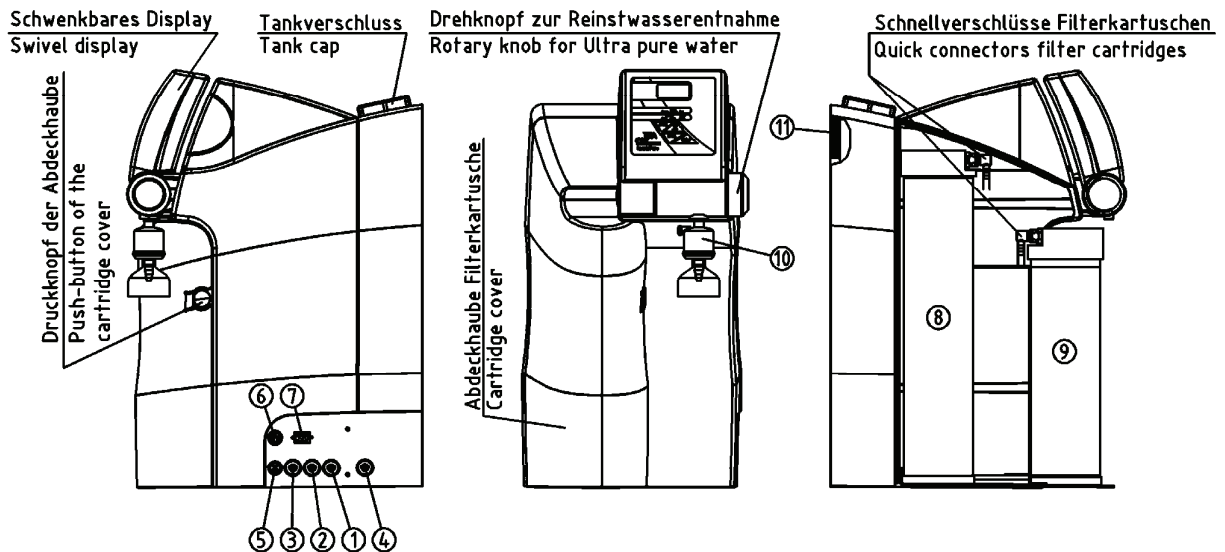
- Minimum temperature + 2°C
- Level surface for the system
- For wall mounting, a smooth wall is required. Please check that the wall-bearing capacity is sufficient to hold the system (for weights, see “Technical Data”)
- A DN 50 floor drain (38.5 mm i.d.)
- Free flow into the wastewater system.  
Should a floor drain not be available, then a Water Watcher (art.-no.: 16.0129) must be installed!



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

- A suitable electrical socket for the operation of the system (see “Technical Data”)
- Sufficient working room around the system (for replacing the filter cartridge etc.)
- The system must be so arranged that it is easy to control and operate
- R 3/4" Potable water connector

## 9.2 Installation



- |  |                 |
|--|-----------------|
| 1) Feedwater connector                     | Hose, 1/4" o.d. |
| 2) High purity water connector             | Hose, 1/4" o.d. |
| 3) Concentrate connector                   | Hose, 1/4" o.d. |
| 4) Tank overflow connector                 | Hose, 1/4" o.d. |
| 5) Power supply connector, 4-pin, 24V DC   |                 |
| 6) Potential free contact connector, 5-pin |                 |
| 7) Connector for optional printer          |                 |
| 8) Filter cartridge                        |                 |
| 9) Pretreatment cartridge                  |                 |
| 10) Sterile filter                         |                 |
| 11) Sterile vent filter                    |                 |

### Proceed as follows to install and start your Smart2Pure ultrapure water system:

- Stand the system at the selected position at the installation area or hang it on the wall with the wall mount available as accessory.
- Press the push-button of the cartridge cover to unlock the cover, then remove it..
- Remove the plugs from the filter cartridge and the pretreatment cartridge standardly supplied and keep the plugs for later use.
- Place the filter cartridge (8) in the free space at the back of the system. Fit the 2 quick-connect couplings onto the cartridge connectors so that they audible engage.
- Now place the pretreatment cartridge (9) in the free front space. Fit the 3 quick-connect couplings to the cartridge connectors so that they audibly engage.
- Use feedwater connector kit, R 3/4", to connect the feedwater connector (1) to a water tap that can be shut off. In the connector kit is a dirt filter. The dirt filter must be inserted into the screw connection of the feed water hose.
- If ASTM Type II high purity water is required, connect the dispensing valve for high purity standardly supplied to the high purity water connector (2) with a 1/4" o.d.hose.

- Make a gravity-fall connection to the system (connections 3 and 4) to the wastewater drain with 1/4" o.d. hose.
- Screw the sterile vent filter (11) at the back of the system into the G 1/8" tank thread intended for it.
- Connect the connecting cable of the table-top power unit standardly supplied to the 4-pin socket (5) of the system.
- The system is now ready to operate.
- Open the feedwater tap and check that there are no leaks in the connections.
- Remove the cartridge cover and then fit it back on, checking that the latch on the right side of the cover engages when fitting it back on.

## 10. Start-up



**The system must have cooled/warmed to room temperature prior to the first start-up.**



**Inspect all hose connections to check that they have been made as detailed in the "Installation" section.**

Switch the system on by plugging the line cord into a suitable socket..

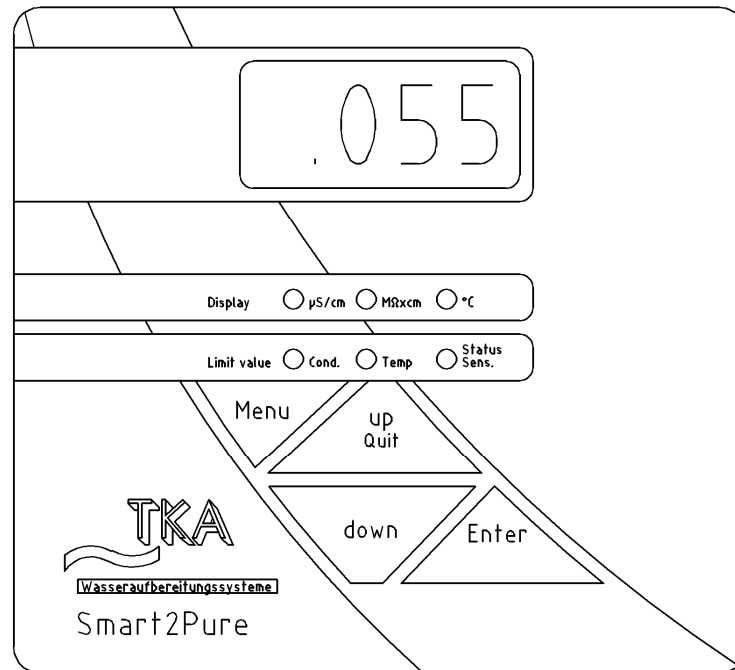
After a brief self-test of the system control, the system starts to produce ultrapure water.

Wait until the tank has been filled for the first time and discard this water. The filling of the tank can take approx. 1 or 2 hours, acc. to whether you have a 6 l/h or a 3 l/h system. Afterwards the concentrate flow must be checked and adjusted, as described in the "How the system functions" section.

Dispense at least 1 litre of water before screwing the sterile filter (10) that is standardly supplied to the outlet of the dispensing valve

Now set the wanted display mode, the limiting value for the conductivity and that for the temperature, as described in the "System control" section.

## 11. Operating elements



After switching on, all segments of the 7-segment display are shown for 3 seconds. During this time, the complete measurement cycle is run through and checked.

In the basic setting, the display shows the conductivity in  $\mu\text{S/cm}$ . The display automatically scales in the range from 0.055 to 199  $\mu\text{S/cm}$ .

The upper LED-row shows the measurement mode that the measuring instrument is in. The LED for the corresponding measurement unit,  $\mu\text{S/cm}$ ,  $\text{M}\Omega\text{cm}$  or  $^{\circ}\text{C}$  lights up green.

Should the end value of the measurement range be gone past ( $>199 \mu\text{S/cm}$  or  $>0.005 \text{M}\Omega\text{cm}$ ), then  $\div 200$  appears in the display.

Should the connection between the system and sensors be interrupted, then the red "Status Sens." LED lights up and "---" is shown in the display instead of a measured value. Should the connection to the temperature sensor be interrupted, then a buzzer is additionally activated.

### Quit-button:

When a fault occurs, the Quit/UP-button allows the acoustic alarm (buzzer) to be switched off. This acoustic alarm is then only again active when the limiting value is exceeded. The fault message is also given out via the potential free contact.

## 12. System control

### 12.1 Menu

The menu consists of three sub-menus: Switching to dual mode and selection of the unit for the conductivity measurement, the setting of the limiting value for the conductivity and the setting of the limiting value for the temperature.

#### Mono/ dual measurement mode:

Mono measurement mode: In this mode, only the conductivity is displayed.  
The temperature can be read as long as the Enter-key is pressed.

Dual measurement mode: In this mode the temperature and conductivity are alternately displayed for 2 seconds each. The LEDs for the measurement unit are switched appropriately with the display.

Press the menu-key once. The measurement mode that has just been set is displayed. The up and down keys can now be used to switch between the permanent display of the conductivity and the alternating display of conductivity/temperature. In the display, "c" is shown for conductivity or "ct" for conductivity/temperature.

In this mode, a simultaneous choice of measurement units,  $\mu\text{S}/\text{cm}$  or  $\text{M}\Omega\text{xcm}$ , can also be made. The choice must be confirmed with Enter. The measurement units are shown by the appropriate LED.

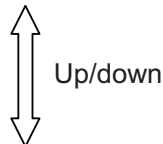
The following combinations are so possible:

ct /  $\text{M}\Omega\text{xcm}$

c /  $\text{M}\Omega\text{xcm}$

ct /  $\mu\text{S}/\text{cm}$

c /  $\mu\text{S}/\text{cm}$



### 12.2 Setting the limiting conductivity value

Setting range: 0.055 - 30  $\mu\text{S}/\text{cm}$

Basic setting: off

**Note: This limiting value can only be entered in  $\mu\text{S}/\text{cm}$ .**

To adjust the limiting value of the conductivity, press the menu-key twice (the red "Cond." LED lights up). Carry out the adjustment with the up and down keys. The particular place that is to be changed can be selected with the Enter-key and is then shown flashing in the display.

When the wanted value is reached, confirm it with the Enter-key.

Should a value of 30.1  $\mu\text{S}/\text{cm}$  be set, then the word OFF appears in the display and the evaluation of the limiting value is switched off.

When the limiting conductivity value is gone above (Limit value Conductivity), then the red "Cond." LED lights up and the fault is additionally signalled by a buzzing sound. The fault message can also be given out via an optional printer.

## 12.3 Setting the limiting value für the temperature

Setting range: 10 - 40°C

Basic setting: 35°C

To adjust the limiting value of the temperature, press the menu-key three times (the red "Temp." LED lights up). Carry out the adjustment with the up and down keys. The particular place that is to be changed can be selected with the Enter-key and is then shown flashing in the display.

When the wanted value is reached, confirm it with the Enter-key.

Should a value of 30.1  $\mu\text{S}/\text{cm}$  be set, then the word OFF appears in the display and the evaluation of the limiting value is switched off.

When the limiting temperature value is exceeded (Limit value Temperature), then the red "Temp." LED lights up and the fault is additionally signalled by a buzzing sound. The fault message can also be given out via an optional printer.

## 12.4 Communication

The RS 232 interface allows a printer to be connected for the output of measured values. The interface runs at a transmission rate of 9600 bit/sec, 8 data bits, 1 stop bit and no parity.

The conductivity in  $\mu\text{S}/\text{cm}$  and the temperature in °C are given out on the serial interface separated by a comma. The conductivity is automatically scaled to three significant figures. Output takes place once per hour.

When in operation, a press on the down key triggers a measured value print-out on the serial interface.

### Printout:

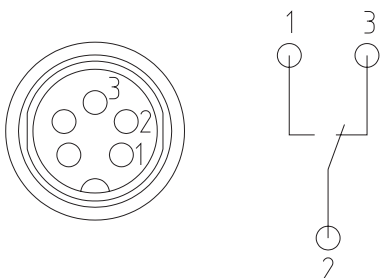
for example:      0,055  $\mu\text{S}/\text{cm}$ , 23,4 °C

The SUB-D socket has the following assignment:

- PIN 2: RXD
- PIN 3: TXD
- PIN 5: GND

## 12.5 Potential free contact

The system is equipped with a potential free contact for the control of external equipment. The PIN assignment of the 5-pin socket is as follows:



## 13. Maintenance

Regular maintenance maintains the worth of your system.

We recommend that you close a service contract with **TKA** or a service provider expressly authorized by **TKA** for the carrying out of the maintenance that is necessary. You then have the certainty of a high operational safety and reliability.

### NOTE!

When your system is to 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!

Please observe that, in accordance with the general terms and conditions of business of the **TKA** company, which are the basis for both parties, the guarantee loses its validity when the customer or a third party improperly installs, maintains, repairs, operates or alters the system, or operates it in an environment which does not fulfil the specified **TKA** installation conditions.

Any maintenance work which should become necessary during the validity of the guarantee is only to be carried out by **TKA** or a **TKA**-authorized service provider.

The operating staff assigned to work with the system is committed to carrying out the weekly checks.

During the agreed term of validity of the guarantee, the maintenance record sheet supplied with these Operating Instructions is to be up-dated weekly.

Should the maintenance record not be kept up-to-date, or be improperly, kept, i.e. without the necessary data recording, then the system is deemed to be improperly maintained and the guarantee becomes invalid.

### IMPORTANT!

To ensure flawless functioning, the ultrafiltration membrane should be changed every 2 years, or when the system performance drops.

The cleaning and disinfection of your system is performed for reasons of hygiene and has no effect on the technical condition of the system. The must be cleaned and disinfected once per year.



When inspection or maintenance work is to be carried out on electrical equipment, then the system is to be separated from the mains by unplugging the line plug and securing it against inadvertent plugging in again. Such work is only to be carried out by trained, skilled electricians.



### 13.1 Replacing der pretreatment cartridge

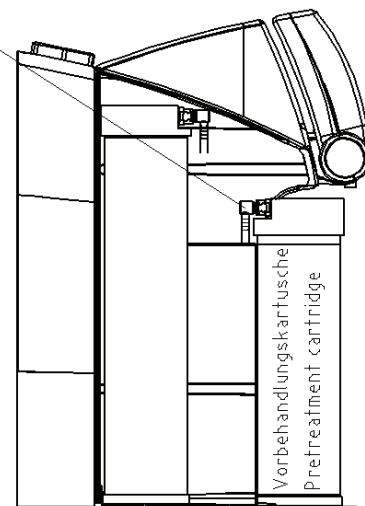


Should the specified capacity be reduced by module blockage due to operation without appropriate preconditioning, then the pretreatment cartridge must be replaced.

Proceed as follows to replace the pretreatment cartridge:

1. Empty the storage tank.
2. Separate the system from the power supply by unplugging the line plug.
3. Turn off the supply of feedwater.
4. Open the dispensing valve until no more water flows out, then close it again.
5. Remove the cartridge cover.
6. Remove the three quick-connects on the pretreatment cartridge and close the connectors with the closing caps that you have saved for later use.
7. Draw the exhausted pretreatment cartridge out from the guide and replace it with the new pretreatment cartridge.
8. Remove the closing caps from the new pretreatment cartridge and save them for later use.
9. Fit the quick-connects on the pretreatment cartridge so that they audibly engage.
10. Re-open the supply of feedwater.
11. Re-connect the system to the power supply and examine the plug connectors for leaks.
12. Fit the cartridge cover back on.
13. Discard the first tank filling.

Schnellverschlüsse Vorbehandlungskartusche  
Quick connectors pretreatment cartridge



## 13.2 Replacing the filter cartridge



The filter cartridge must be replaced as soon as the maximum limiting value that you have set is exceeded.  
The filter cartridge must also be replaced subsequent to disinfection of the system.

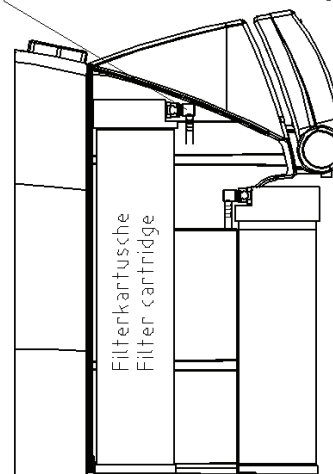
Proceed as follows to replace the filter cartridge:

1. Empty the storage tank.
2. Separate the system from the power supply by unplugging the line plug.
3. Turn off the supply of feedwater.
4. Open the dispensing valve until no more water emerges, then close it again.
5. Remove the cartridge cover.
6. Remove the two quick-connects on the feedwater and ultrapure water side of the filter cartridge and close the connectors that you saved for later use.
7. Draw the exhausted filter cartridge from the guide and replace it with the new filter cartridge.
8. Remove the closing caps from the new filter cartridge and save them for later use.
9. Fit the quick-connects onto the filter cartridge so that they audibly engage.
10. Open the supply of feedwater.
11. Connect the system with the power supply and check that the connections do not leak.
12. Fit the cartridge cover back on.
13. Discard the first tank filling.



Use only specifically designed filter cartridges of article no. 09.1020 with this system. The use of any other type invalidates the guarantee.

Schnellverschlüsse Filterkartusche  
Quick connectors filter cartridge



### 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 and let it run for 1 hour in normal 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 pretreatment cartridge and 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.



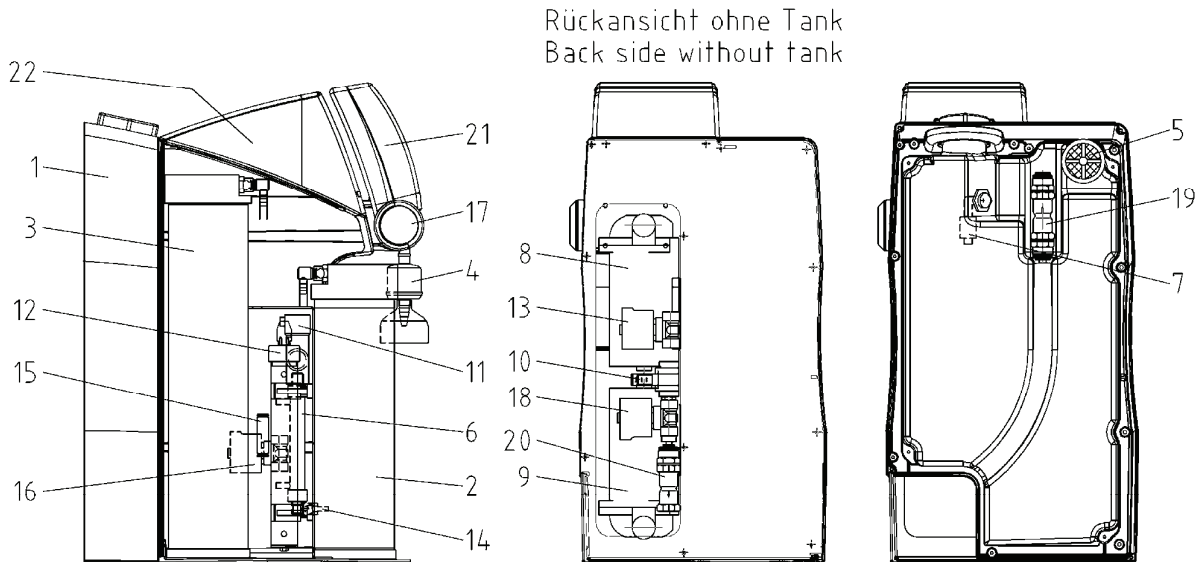
**Prior to dispensing water for the first time, let water flow out for about 15 minutes. Following this, the system is ready to operate.**

## 14. Trouble shooting

Fault	Cause	Remedy
System does not start	<ul style="list-style-type: none"> <li>- No supply of power</li> <li>- Power unit or system control defect</li> </ul>	<ul style="list-style-type: none"> <li>- Connect to electrical supply</li> <li>- Replace power unit or system control</li> </ul>
Water cannot be drawn off	<ul style="list-style-type: none"> <li>- Feedwater tap is closed</li> <li>- Feedwater and rinse water connections wrong way round</li> <li>- Feedwater pressure &lt; 1 bar</li> </ul>	<ul style="list-style-type: none"> <li>- Open the feedwater tap</li> <li>- Reverse connections</li> <li>- Increase feedwater pressure</li> </ul>
Conductivity > 0.055µS/cm	<ul style="list-style-type: none"> <li>- System has a UF-module (conductivity can be higher)</li> <li>- Air in UV-module caused by empty tank</li> <li>- Exchanger capacity is exhausted</li> </ul>	<ul style="list-style-type: none"> <li>- Please wait until the storage tank is refilled an until the system has been rinsed</li> <li>- Replace with a new filter cartridge</li> </ul>
System control does not react but LED lights up	<ul style="list-style-type: none"> <li>- Incorrect operation</li> <li>- Voltage disturbance</li> </ul>	<ul style="list-style-type: none"> <li>- Unplug the line plug for 5 seconds</li> </ul>
Water leaks out	<ul style="list-style-type: none"> <li>- Hose connection leaky</li> <li>- Feedwater pressure &gt; 6 bar</li> <li>- Defect component (e.g. UV-immersion tube)</li> </ul>	<ul style="list-style-type: none"> <li>- Check and seal hose connection</li> <li>- Install a pressure reducer</li> <li>- Replace the component</li> </ul>
Dispensing flow too low	<ul style="list-style-type: none"> <li>- UF-Module blocked</li> <li>- Sterile filter blocked</li> <li>- Air in the sterile filter</li> <li>- Tank is not yet sufficiently filled</li> </ul>	<ul style="list-style-type: none"> <li>- Replace the UF-module</li> <li>- Replace the sterile filter</li> <li>- Vent the sterile filter</li> <li>- Wait until the tank is full</li> </ul>
Fault message: The red LED lights up <i>"Limit value Cond."</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 (conductivity can be higher)</li> </ul>	<ul style="list-style-type: none"> <li>- Replace with a new filter cartridge (art.-no.: 09.1006)</li> <li>- Check and adjust the limiting value accordingly</li> </ul>

<p>Fault message: The red LED lights up <i>"Limit value Cond."</i></p>	<ul style="list-style-type: none"> <li>- The temperatur in the system is too high</li> <li>- Limiting value set too low</li> <li>- Feedwater temperature too high</li> </ul>	<ul style="list-style-type: none"> <li>- Lower the temperature by running water off</li> <li>- Check and adjust the limiting value setting accordingly</li> <li>- Reduce the feedwater temperature</li> </ul>
<p>Fault message: The red LED lights up <i>"Status Sens."</i> The display shows "---"</p>	<ul style="list-style-type: none"> <li>- Break in the connection to the conductivity measuring cell</li> <li>- Measuring cell defect</li> </ul>	<ul style="list-style-type: none"> <li>- Check the cable and plug connectors.</li> <li>- Replace the measuring cell</li> </ul>
<p>Fault message: The red LED lights up <i>"Status Sens."</i> The display shows "---", simultaneous accoustic signal via the buzzer</p>	<ul style="list-style-type: none"> <li>- Break in the connection to the temperature sensor.</li> <li>- Temperature sensor defect</li> </ul>	<ul style="list-style-type: none"> <li>- Check the cable and plug connectors.</li> <li>- Replace the temperature sensor</li> </ul>

## 15. Replacement parts und Consumables



Pos.	R+I Nr.	Designation	Article no.
1	B1	Storage tank	17.0136
2	F1 F2	Pretreatment cartridge consisting of prefilter / hardness stabilization and RO-membrane: for 3 l/h performance for 6 l/h performance	09.2003 09.2006
3	F3	Filter cartridge	09.1020
4	F4	Sterile filter	09.1003
5	F5	Sterile vent filter	22.0091
6	F6	Ultrafiltration module	22.0089
7	LIS 100	Float switch	16.0025
8	P1	Pressure booster pump	19.0066*
9	P2	Recirculation pump	19.0066*
10	PS 200	Pressure switch	15.0099*
11	QISA 300 TISA 500	Conductivity measuring cell, ultrapure water Temperature sensor	16.0229
12	UV 1	Replacement UV-lamp UV Ballast unit	09.1002 22.0088
13	V1	Feedwater solenoid valve	15.0062*
14	V2	Pressure hold valve	15.0113
15	V3	Check valve	15.0114
16	V4	Rinsing solenoid valve	15.0062*
17	V5	Dispensing valve, ultrapure water	25.0068
18	V6	Recirculation solenoid valve	15.0062*
19	V7	Sterile overflow	15.0009
20	V9	Check valve	15.0019
21		Board with display	16.0312
22		System control board	16.0337
23		Table-top power unit	16.0334

\* Wearing part



**We ask for your understanding, in that use of replacement parts, accessories or consumables from other manufacturers cause the guarantee for our system to be invalidated, as we have no control on their composition and quality.**

## 16. Accessories

Designation	Article - no.
Disinfection agent, MICRO-Chlor (pack of 12 cans)	09.2202
Water watcher	16.0129
Printer	09.2207
Wall mount	09.2212
RO-Measurement kit	09.2213
UK connection cable	16.0349

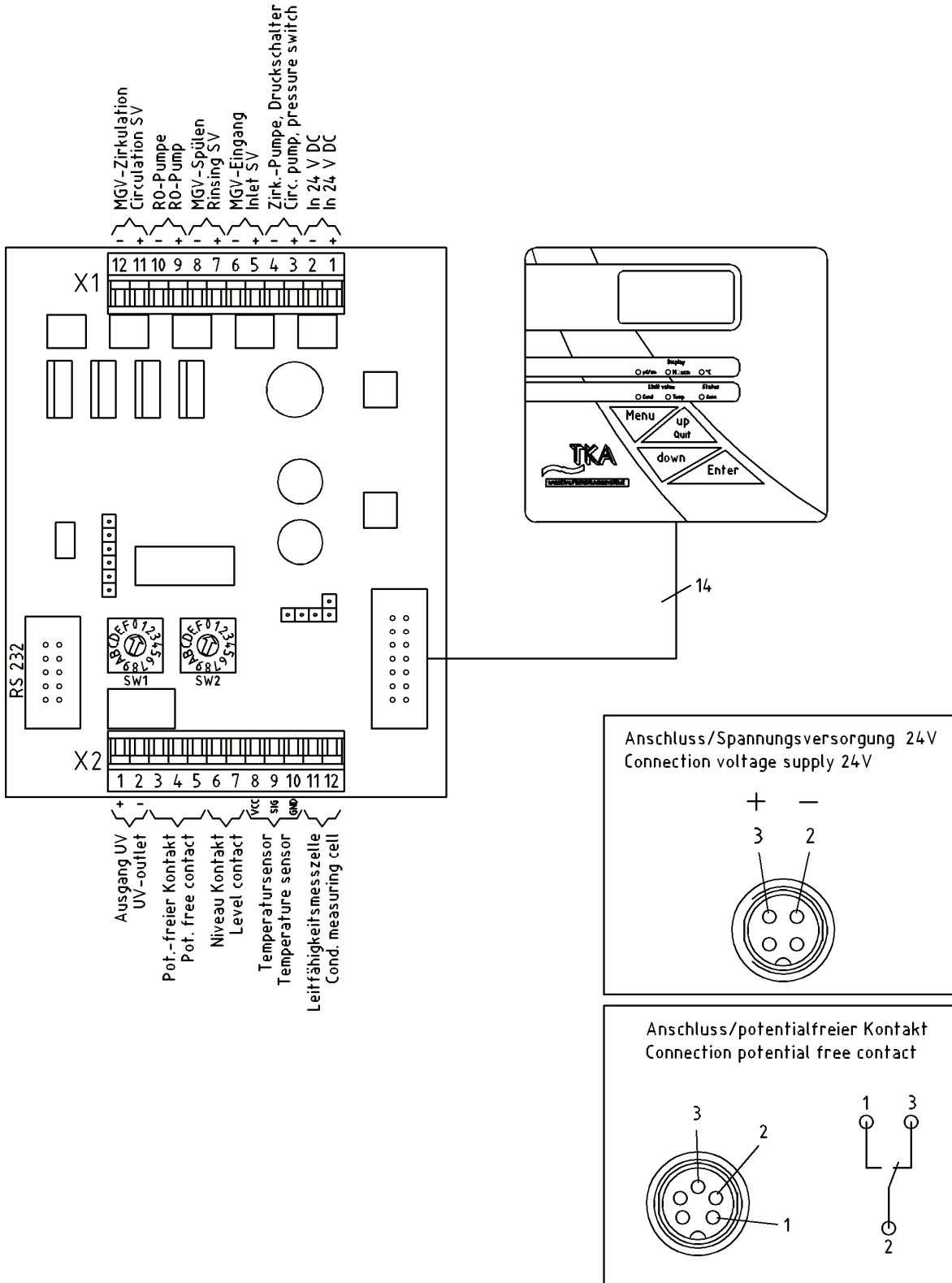
The address to contact should you need service:

**TKA Wasseraufbereitungssysteme GmbH**  
**Stockland 3**

**D-56412 Niedereibert**

Tel. Nr.: +49 (0) 26 02 1 06 99-0  
Fax-Nr.: +49 (0) 26 02 1 06 99-50  
Internet: [www.tka.de](http://www.tka.de)  
E-Mail: [info@tka.de](mailto:info@tka.de)

## 17. Terminal assignment





## 18. Maintenance record

(Please carefully keep this record up-to-dated, as this is one of the conditions of the guarantee)

Customer's address: \_\_\_\_\_ Location: \_\_\_\_\_ System type: \_\_\_\_\_  
 \_\_\_\_\_ Serial no.: \_\_\_\_\_  
 \_\_\_\_\_ Year made: \_\_\_\_\_

Date	Conductivity, ultrapure wa- ter [μS/cm]	Temperature, ultrapure wa- ter [°C]	Flow, ultrapure wa- ter, ASTM Type I [l/min]	Conductivity, permeate [μS/cm]	Flow permeate [l/h]	Flow, concentrate [l/h]

Replacement of pretreat- ment cartridge Yes/no	Replacement of filter car- tridge Yes/no	Cleaning, disinfection Yes/no	Remarks	Signature

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

**It is important for the maintenance of the quality of the system that the following points be observed:**

- 1x/ Weekly, record measured values
- 1x/ Yearly, replace the pretreatment cartridge.
- 1x/ Yearly, replace the filter.