

**Operating Instructions**  
**Thermo Scientific Barnstead GenPure xCAD plus**  
**Water Purification System**

**Bench version**

- Art. no.: 50136149 (Standard)
- Art. no.: 50136150 (UF)
- Art. no.: 50136151 (UV/UF)
- Art. no.: 50136152 (UV)
- Art. no.: 50136153 (UV-TOC)
- Art. no.: 50136146 (UV-TOC/UF)

**Wall version**

- Art. no.: 50136165 (Standard)
- Art. no.: 50136167 (UF)
- Art. no.: 50136169 (UV/UF)
- Art. no.: 50136170 (UV)
- Art. no.: 50136171 (UV-TOC)
- Art. no.: 50136172 (UV-TOC/UF)



Serial no.: .....

**Read these operating instructions before installing and operating the system!**

50136421; Stand: 11.12 Right to technical changes reserved



## EC Declaration of Conformity

according to EC Machines Directive 2006/42/EC, Appendix II A

We herewith declare that the design and construction of the machines named below, and the versions of it that we have introduced into the market, conform to the fundamental safety and health requirements of EC Directive 2006/42/EC.

This declaration is invalidated when changes which were not agreed to by us are made to the machine.

**Manufacturer:** Thermo Electron LED GmbH  
Stockland 3  
56412 Niederelbert, Germany

### Description of the machine:

Function: Ultra pure water system

Versions: GenPure standard xCAD plus, GenPure UV xCAD plus,  
GenPure UF xCAD plus, GenPure UV/UF xCAD plus,  
GenPure UV-TOC xCAD plus,  
GenPure UV-TOC/UF xCAD plus

Article numbers: Bench version: 50136149, 50136150, 50136151, 50136152,  
5013613, 50136146  
Wall version: 50136165, 50136167, 50136169, 50136170  
50136171, 50136172

### We also declare that the machine complies with the following further appropriate Guidelines/Directives:

EMV Directive (2004/108/EC)

### Harmonised standards applied:

DIN EN ISO 12100-1 Safety of machines, Part 1: Principles  
DIN EN ISO 12100-2 Safety of machines, Part 2: Technical Guidelines  
DIN EN ISO 14121-1 Safety of machines, Part 1: Risk assessment  
DIN EN 61326-1

### Person authorized for documentation:

Detlef Opp  
Stockland3  
D-56412 Niederelbert

Niederelbert, 30 July 2012

Detlef Opp, Head of Technical Documentation

  
Signature

## Preface

Dear Sir or Madam

In deciding to purchase an ultra pure water system from the **GenPure xCAD plus** 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 ultra pure 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 the system or from use of it for other than the specified purpose.

Niederelbert, 06.08.2012

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## 2. Explanatory notes on the operating instructions



**EU Mark of Conformity**



**CSA Approval**



**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 GenPure xCAD plus system in the space provided on the front page.**

\* Read the serial number of your ultra pure 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

Ultra pure 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.



#### Is the packaging damage?

- Check the system for damage.

#### 3.2 Complaints

Should damage have occurred to the goods during transport:

- Immediately contact the post, railway or forwarding agent \*.
- Keep the packaging, including the cardboard box, for a possible inspection and/ or return shipment.

#### 3.3 Packing and return shipment

Whenever possible, use the original box and packaging material.

Should these no longer be available:

- Pack the system in packing film and then in a strong cardboard box so that it is held shock-proof..



**\* Complaints are only valid for 6 days (after receipt of the goods).  
After this time, the right to claim for damages expires.**



## 4. Extent of delivery

GenPure xCAD plus ultra pure water systems are available in the following versions:

### 4.1 Extent of delivery, bench version

50136149	GenPure standard xCAD plus	(Basic system)
50136150	GenPure UF xCAD plus	(Basic system + ultrafiltration module) ,
50136152	GenPure UV xCAD plus	(Basic system + UV-photooxidation)
50136151	GenPure UV/UF xCAD plus	(Basic system + UV-photooxidation + ultrafiltration)
50136153	GenPure UV-TOC xCAD plus	(Basic system + UV-photooxidation with TOC measurement)
50136146	GenPure UV-TOC/UF xCAD plus	(Basic system + UV-photooxidation with TOC measurement + ultrafiltration module)

### 4.2 Extent of delivery, wall version

50136165	GenPure standard xCAD plus	(Basic system )
50136167	GenPure UF xCAD plus	(Basic system + ultrafiltration module)
50136170	GenPure UV xCAD plus	(Basic system + UV-photooxidation)
50136169	GenPure UV/UF xCAD plus	(Basic system + UV-photooxidation + ultrafiltration)
50136171	GenPure UV-TOC xCAD plus	(Basic system + UV-photooxidation with TOC measurement)
50136172	GenPure UV-TOC/UF xCAD plus	(Basic system + UV-photooxidation with TOC measurement + ultrafiltration module)

(Please check that your system corresponds to the article number given on the delivery note.)

1x GenPure xCAD (complete article number acc. to version)	Article no. 5013xx
Including Assembly kit consisting of:	Article no. 50136423
Filter cartridge for ultra pure water systems	Article no. 09.2005
Sterile filter capsule 0.2 µm	Article no. 09.1003
PE hose, 8 x 1 mm, 19 m	Article no. 18.0036
Table top power unit	Article no. 50134184
SUB-D extension cable 25-pin, 5 m	Article no. 16.0375
Screw, 4 x 40 mm	Article no. 21.0001
Dowel, 6 mm	Article no. 21.0002
Dowel, 8 mm	Article no. 21.0035
Screw hook, 5.2 x 50	Article no. 21.0057
Operating instructions	Article no. 50137064
Connecting cord (appliance connector to Nema plug connector)	Article no. 50132200
Connecting cord (appliance connector to British ST plug connector)	Article no. 50132203
Connecting cord (appliance connector to Euro plug connector)	Article no. 50132215
Universal adapter	Article no. 21.1006
Universal holder	Article no. 21.1007
Feedwater connection kit consisting of:	Article no. 25.0075
Union nut R 3/4 "	Article no. 14.0003
Insert R 1/4 "	Article no. 14.0189
Screwed connector, R 1/4 "	Article no. 14.0075
Gasket, R 3/4 "	Article no. 21.5008
PE-Hose, 8 mm o.d, 2 m	Article no. 18.0036
MS-Dirt trap sieve for union nut, R 3/4 "	Article no. 14.0390

1x xCAD Client (complete article number acc. to version)	Article no. 5013xx
Including Assembly kit consisting of:	
Sterile filter capsule 0.2 µm	Article no. 09.1003
PE-hose, 8 x 1 mm, 12 m	Article no. 18.0036
SUB-D extension cable 9-pin, 3 m	Article no. 16.0397
Screw, 4 x 40 mm	Article no. 21.0001
Dowel, 8 mm	Article no. 21.0035

## 5. Safety precautions



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

- GenPure xCAD plus series systems are modern ultra pure water systems that are intended exclusively for the purification of tap water of drinking quality that has been previously treated by reverse osmosis, ion exchange or distillation.
- Do not install the system and operate it until you have read through the appropriate information that is given in these Operating Instructions.
- Lifting and carrying the ultra pure water system, e.g. to the installation location must be performed two people, each of whom takes hold the system under the base plate at two corners (take care not to pinch fingers).
- The CE-Mark becomes invalidated when constructional changes are made to the system or when products of other manufacturers are installed in it.
- Protect the system from frost. The temperature at the installation area must be at least +2°C.
- Observe all general requirements and current technical and accident prevention regulations that are applicable at the ultra pure water system installation area.
- The feedwater pressure must be at least 0.1 bar and at most 6 bar. Should the feedwater pressure be higher, then an additional pressure reducer must be installed.
- Water purification systems must have a safety device acc. to DIN EN 1717 to protect the tap water from contamination.
- A grounded 100 - 240V/ 50/60Hz socket must be available.
- The installation area must be equipped with a free-flowing floor drain with at least DN 50 pipe (40 mm o.d.).
- When the system is to be wall-mounted, first check the statics of the wall. It must have sufficient load-bearing capacity (for weights, see the technical specifications).
- The maximum operating temperature is +35°C.
- Proceed as follows when the system will be at a standstill for a longer period (e.g. long holidays):
  - **Switch the system off.**
  - **Close the supply of feedwater to the ultrapure water system.**
 Damage to the pump will occur should the supply of feedwater be turned off with the system still on. The manufacturer does not accept liability should such damage occur.
- When planning the installation of the system, ensure that there will be sufficient working room for convenient operation of the system and for maintenance such as changing the filter cartridge and opening, breaking and checking connections.

- The term of the guarantee is 12 months!
- Never look directly at a switched-on UV-lamp, because UV light endangers eyesight!

Never switch the UV-lamp on when it has been taken out of the metal cylinder!  
Only expressly authorized personnel are to carry out UV-lamp replacement.

## 6. Intended use

The continuous increase in ultra pure water quality requirements due to technologies that are increasingly more sophisticated, detection limits in laboratories that are continually lowered and the need of for user-friendly systems and complete solutions drove the development of our novel ultra pure water systems that we call GenPure xCAD plus.

GenPure xCAD plus has been specifically developed for the production of ultra pure water that is salts-free, organically pure, particle-free and sterile filtered.

The long service lives of the high-quality purification media contained in this type of ultra pure water system require feedwater that has passed through appropriate upstream pre-purification steps (reverse osmosis, ion exchange, distillation).

### 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**tomic **A**bsorption **S**pectrophotometry )
- TOC Analysis ( **T**otal **O**rganic **C**arbon )
- DNA Research
- etc.

#### - Reagent and solution preparation:

- Cell culture media
- Tissue culture media
- Make-up water for reagents for on-line analytical systems

#### - Water for high-purity rinse processes on a laboratory scale

## 7. Technical specifications

Demands the feedwater must fulfil	
Source	Potable tap water, pretreated by reverse osmosis, ion exchange or distillation.
SDI (blocking rate)	max. 1 for all versions. A 1 µm membrane prefilter is recommended for water not pretreated by reverse osmosis.
Feedwater conductivity	>0.5 MΩxcm
Free chlorine	max. 0.05 ppm
TOC	max. 50 ppb
Bacteria count	< 100 CFU/ml
Turbidity	< 1.0 NTU
Carbon dioxide (CO <sub>2</sub> )	max. 30 ppm
Silicate	max. 2 ppm
Particles	Filtration to 0.2 µm is recommended for protection of the internal filter / final filter.
Temperature	2 - 35 °C
Pressure	0.1 - 6 bar

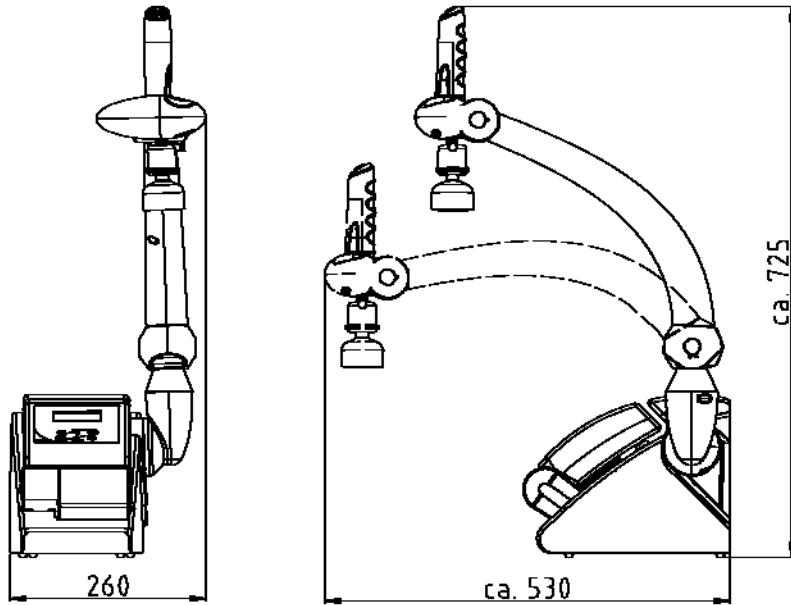
Product water quality							
		Standard	UV	UF	UV/UF	UV-TOC	UV-TOC/UF
<b>Resistance</b> (Reference temp. 25°C)	<b>MΩxcm</b>	18.2	18.2	18.2	18.2	18.2	18.2
<b>TOC</b>	<b>ppb</b>	5 - 10	1 - 5	5 - 10	1 - 5	1 - 5	1 - 5
<b>Bacteria</b>	<b>CFU/ml</b>	< 1	< 1	< 1	< 1	< 1	< 1
<b>Bacterial endotoxins</b>	<b>EU/ml</b>	--	--	< 0.001*	< 0.001*	--	< 0.001*
<b>Particles</b>	<b>&gt; 0,2 µm</b>	< 1/ml	< 1/ml	< 1/ml	< 1/ml	< 1/ml	< 1/ml
<b>Performance</b>	<b>l/min**</b>	1.2	1.2	1.2	1.2	1.2	1.2

\* Depends on the feedwater and disinfection

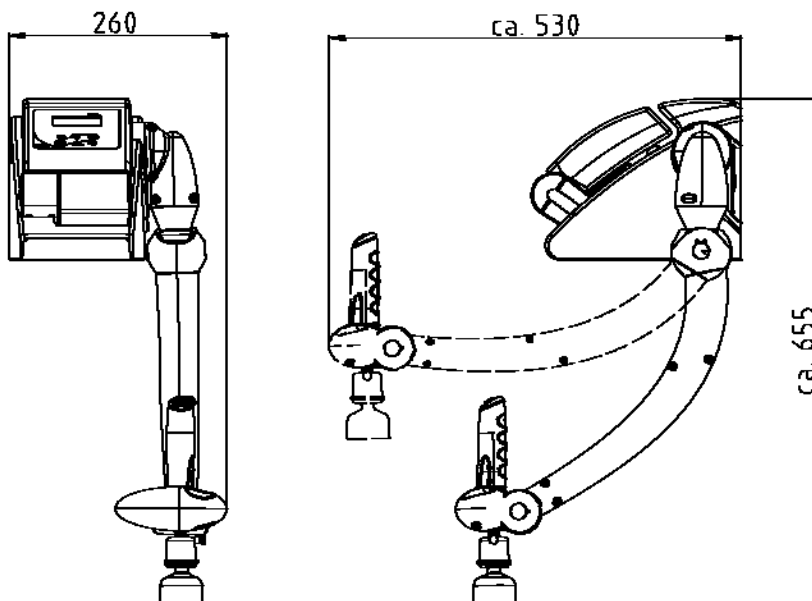
\*\* Depends on the feedwater pressure

Dimensions GenPure	
Height	615 mm
Width	372 mm
Depth	330 mm
Weight:	
GenPure Standard	22 kg
GenPure UF	23 kg
GenPure UV	24 kg
GenPure UV/UF	24 kg
GenPure UV-TOC	24 kg
GenPure UV-TOC/UF	25 kg

Dimensions xCAD/Server, xCAD Client (bench version)	
Height	approx. 725 mm
Width	260 mm
Depth	approx. 530 mm
Weight	12 kg



Dimensions xCAD Server, xCAD Client (wall version)	
Height	approx. 655 mm
Width	260 mm
Depth	approx. 530 mm
Weight	5 kg



Cell constants of the measuring cells	
Feedwater conductivity	0.16 cm <sup>-1</sup>
Conductivity after UV oxidation	0.01 cm <sup>-1</sup>
Ultra pure water conductivity	0.01 cm <sup>-1</sup>

Connectors for water GenPure	
Feed water	Hose, 8 mm o.d.
Rinse water	Hose, 8 mm o.d.
xCAD inflow	Hose, 8 mm o.d.
xCAD return flow	Hose, 8 mm o.d.

Connectors for water xCAD/Server	
xCAD inflow	Hose, 8 mm o.d.
xCAD return flow	Hose, 8 mm o.d.
Ultra pure water / outlet	R 1/4"
Sterile filter outlet	Hose, 8 - 10 mm o.d.

Connectors for water xCAD/Client	
xCAD inflow	Hose, 8 mm o.d.
xCAD return flow	Hose, 8 mm o.d.
Ultra pure water / outlet	R 1/4"
Sterile filter outlet	Hose, 8 - 10 mm o.d.

Electrical connections / external power supply	
Input voltage	AC 100 – 240 V, 50/60 Hz, 2 – 1 A
Output voltage	DC 48 V, 2,5 A
Device connection	DC 48 V, 120 W
Serial interface	RS 232
Protection class	Class II (SMPS external, certified as Class I)

Electrical connections xCAD/Server	
1x SUB-D socket	25. pin
2x SUB-D socket	9. pin

Electrical connections xCAD/Client	
2x SUB-D socket	9. pin

Airborne sound emission	
Sound-pressure level	49 db(A)



Ambient conditions (DIN EN 61010-1 (VDE 0411-1):2011-02)	
Usage	Indoor rooms
Altitude	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 overvoltage	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

Materials of parts which contact water	
Pressure reducer	NBR
Pump head	Nylon with glass fibre
UV-Lamp	High-purity quartz
UV Housing	Stainless steel
Filter cartridge	PP
UF Housing	Polycarbonate
Rinsing solenoid valve	PA
Dispensing valve	PVDF
Conductivity measuring cells	POM, stainless steel
Distributor block	POM
Connectors	POM
Hoses	PE
O-Rings	EPDM

## 8. Description of how the systems function

GenPure xCAD plus versions: Standard, UV, UF, UV/UF

Tap water that has been pretreated upstream by reverse osmosis, ion exchange or distillation passes through a pressure reducer and into the GenPure xCAD plus ultra pure water system, where the conductivity is monitored. A pump forces this feedwater through UV-photooxidation (only with GenPure UV and GenPure UV/UF xCAD plus) and the filter cartridge, from where it flows through an ultrafiltration module (only with GenPure UF xCAD plus and GenPure UV/UF xCAD plus), subsequent to which the conductivity is measured by a special conductivity measuring cell (with temperature compensation).

When ultra pure water is taken from the system, it flows through a sterile filter before reaching the dispensing outlet. During interval operation, the water is circulated around an internal circuit at regular intervals.

GenPure xCAD plus versions: UV-TOC, UV-TOC/UF

Tap water that has been pre-treated upstream by reverse osmosis, ion exchange or distillation passes through a pressure reducer and into the GenPure xCAD plus ultra pure water system, where the conductivity is monitored. A pump forces this feedwater through UV-photooxidation, following which the conductivity is again measured to determine the TOC-value.

The TOC value is calculated from the difference between the conductivity values measured by the measuring cells QIA300 and QI302.

The measurement range is 0 - 30 ppb.

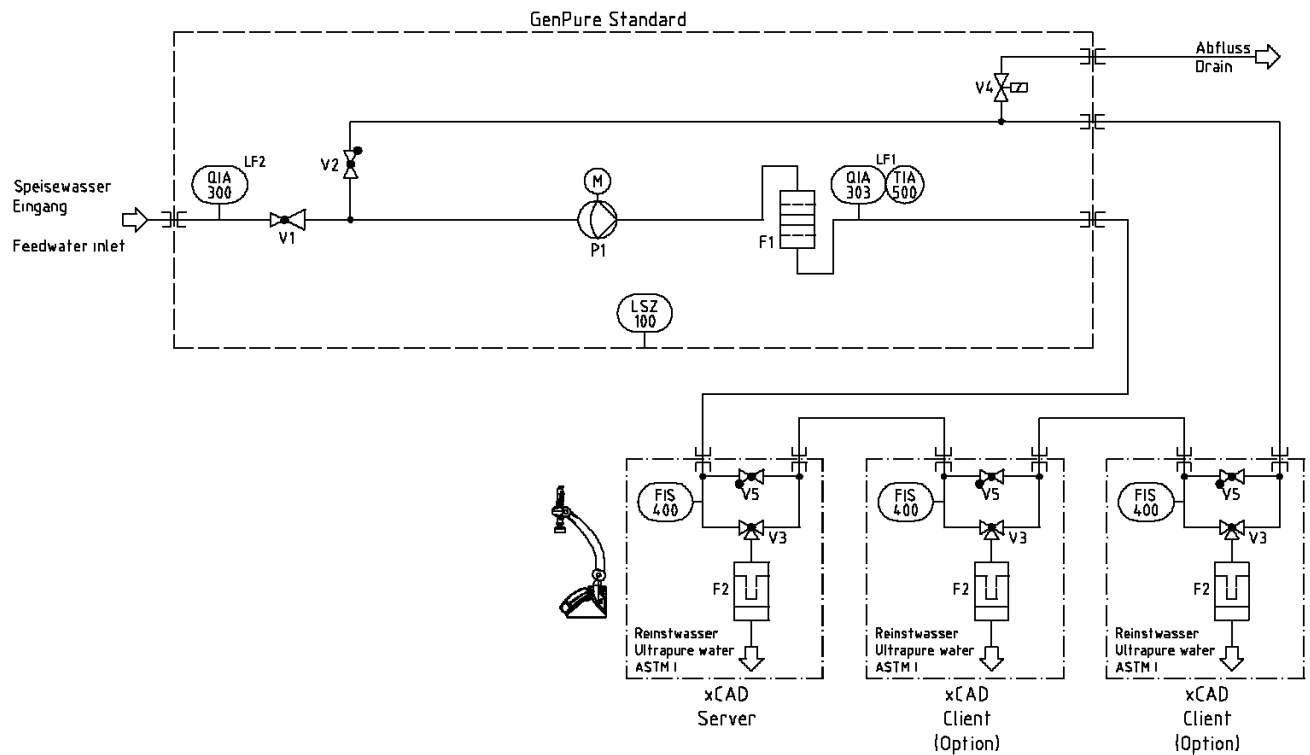
When this measurement range is exceeded, the number 99 is shown in the display instead of the measured value.

In Stand-by operation, "\_\_\_" is shown instead of the measured value.

The water then flows through the filter cartridge and an ultrafiltration module (only with GenPure UF-TOC/UF xCAD plus), after which the conductivity of it is measured by a special conductivity measuring cell (with temperature compensation)

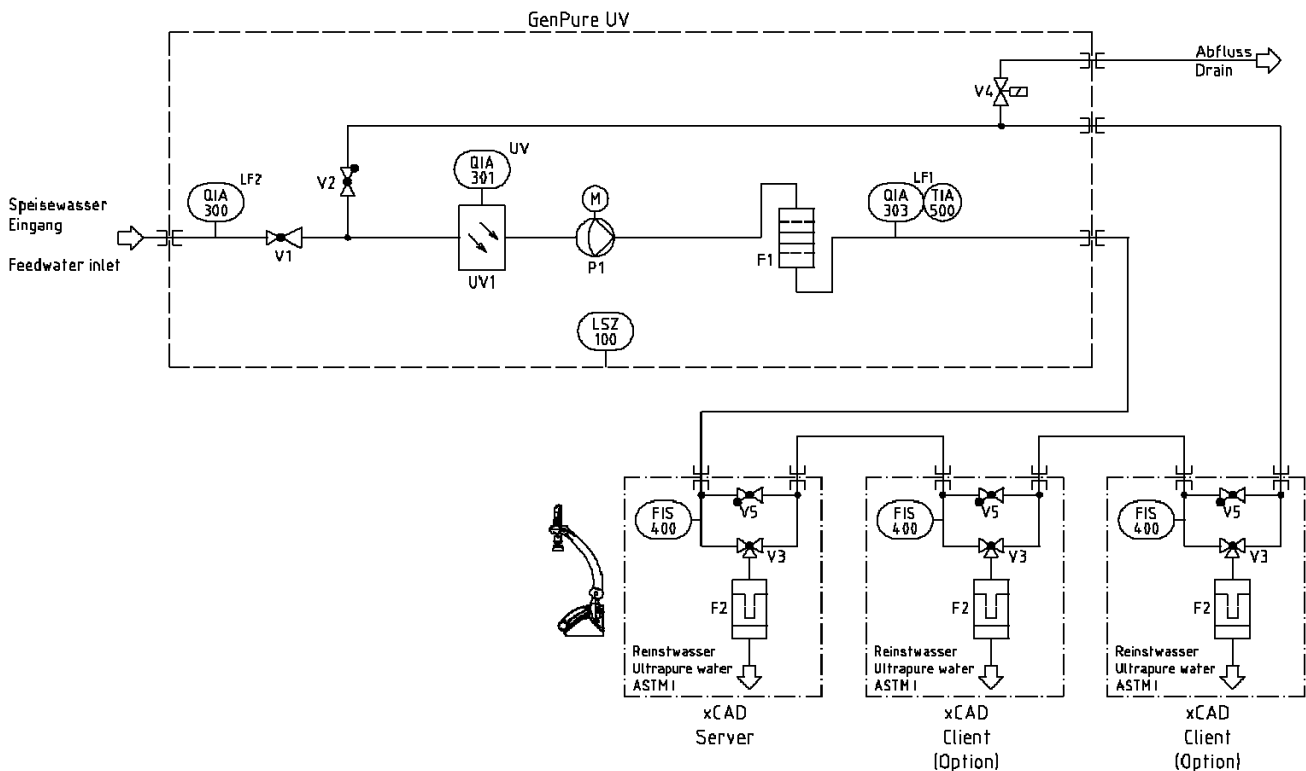
When ultra pure water is taken from the system, it flows through a sterile filter before reaching the dispensing outlet. During interval operation, the water is circulated around an internal circuit at regular intervals.

### 8.1 Flow chart GenPure standard xCAD plus



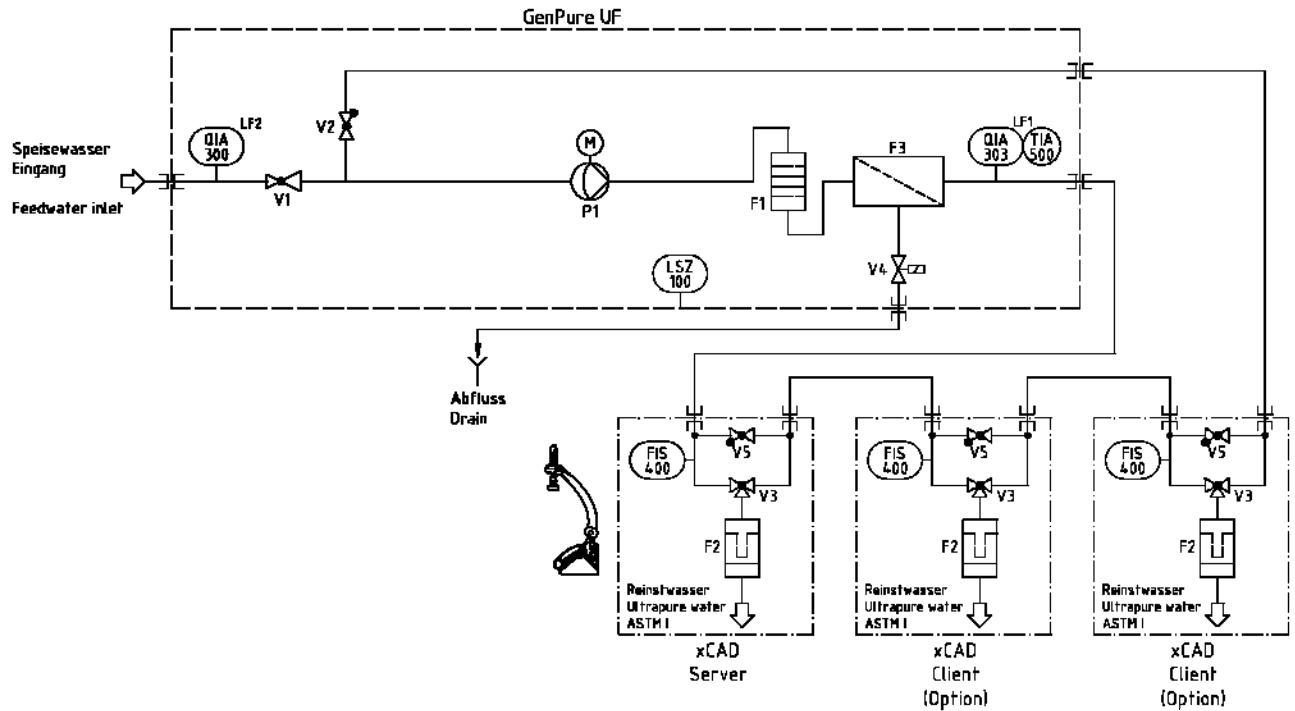
- F1 Filter cartridge
- F2 Sterile filter
- LSZ 100 Leakage sensor
- P1 Circulation pump
- FIS400 Digital flow meter
- QIA300 Feedwater conductivity
- QIA303 Ultra pure water conductivity
- TIA500 Temperature sensor
- V1 Pressure reducer
- V2 Check valve 1 bar
- V3 Dispensing valve
- V4 Rinsing solenoid valve
- V5 Check valve

## 8.2 Flow chart GenPure UV xCAD plus



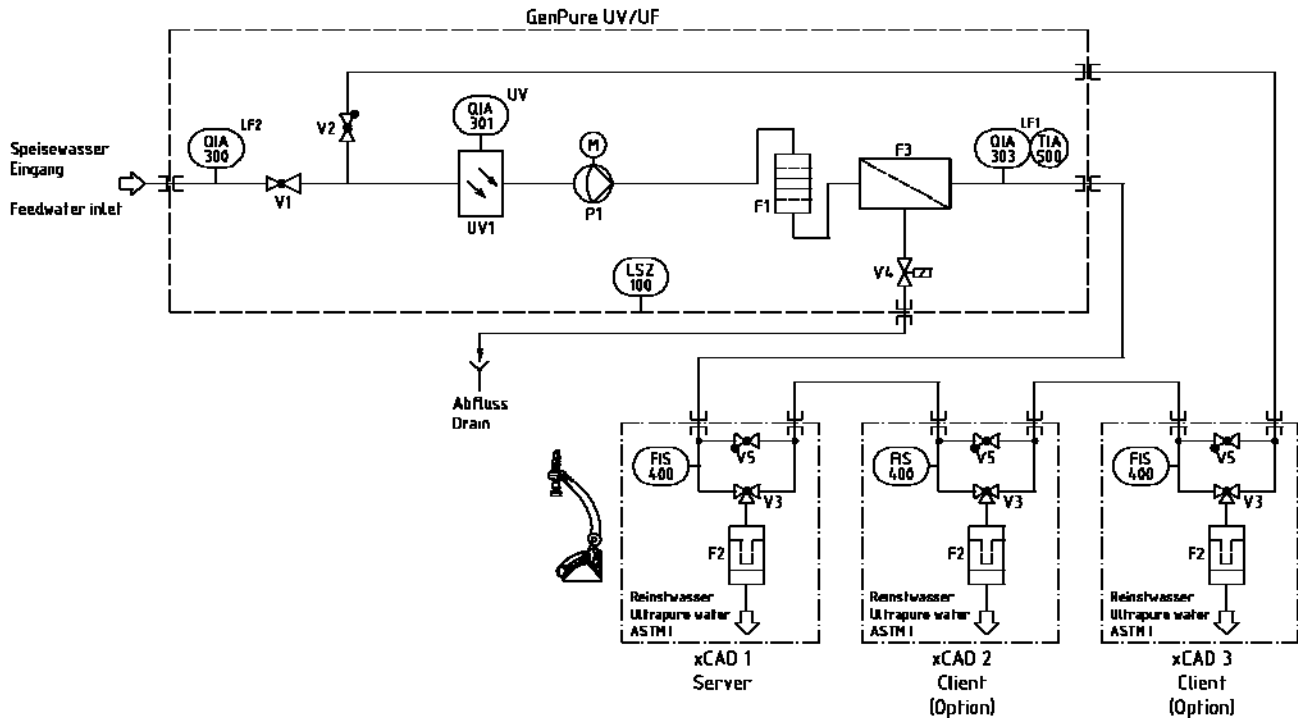
F1	Filter cartridge
F2	Sterile filter
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-Photooxidation
QIA 300	Feedwater conductivity
QIA 301	UV-Intensity
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

### 8.3 Flow chart GenPure UF xCAD plus



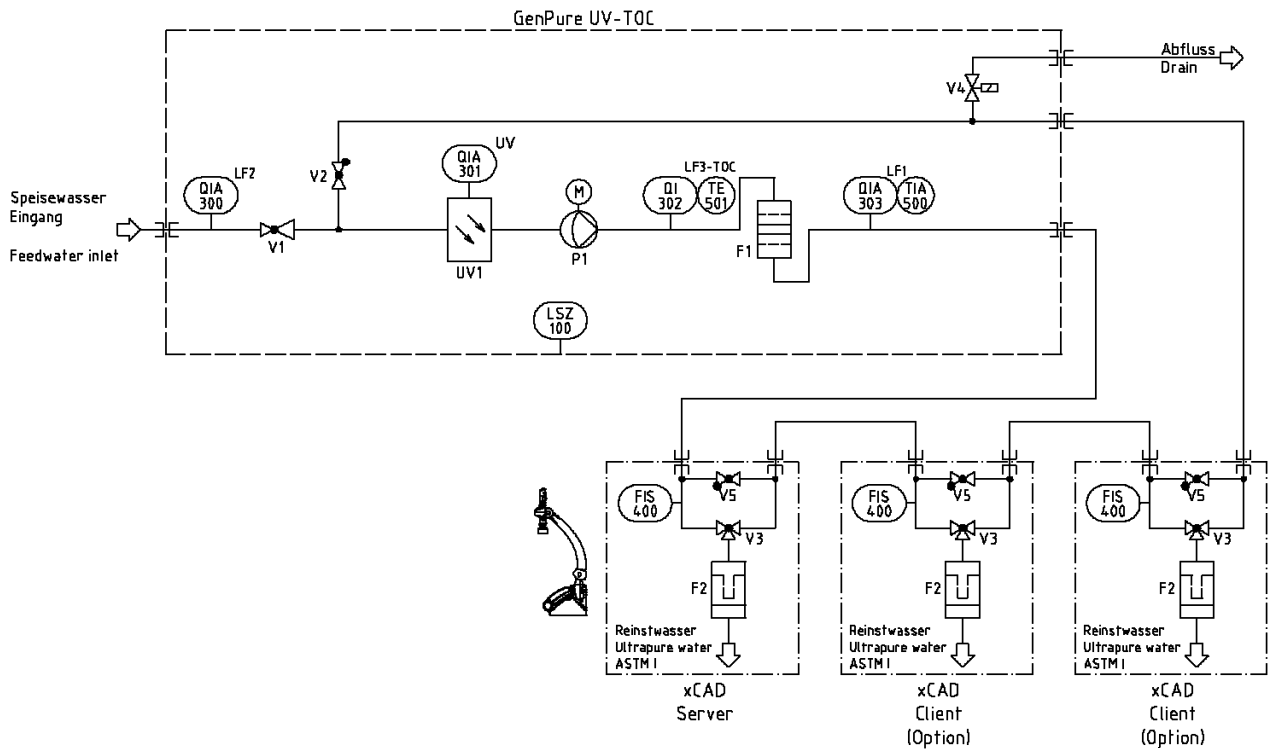
- F1 Filter cartridge
- F2 Sterile filter
- F3 Ultrafiltration module
- FIS 400 Digital flow meter
- LSZ 100 Leakage sensor
- P1 Circulation pump
- QIA 300 Feedwater conductivity
- QIA 303 Ultra pure water conductivity
- TIA 500 Temperature sensor
- V1 Pressure reducer
- V2 Check valve 1 bar
- V3 Dispensing valve
- V4 Rinsing solenoid valve
- V5 Check valve

### 8.4 Flow chart GenPure UV/UF xCAD plus



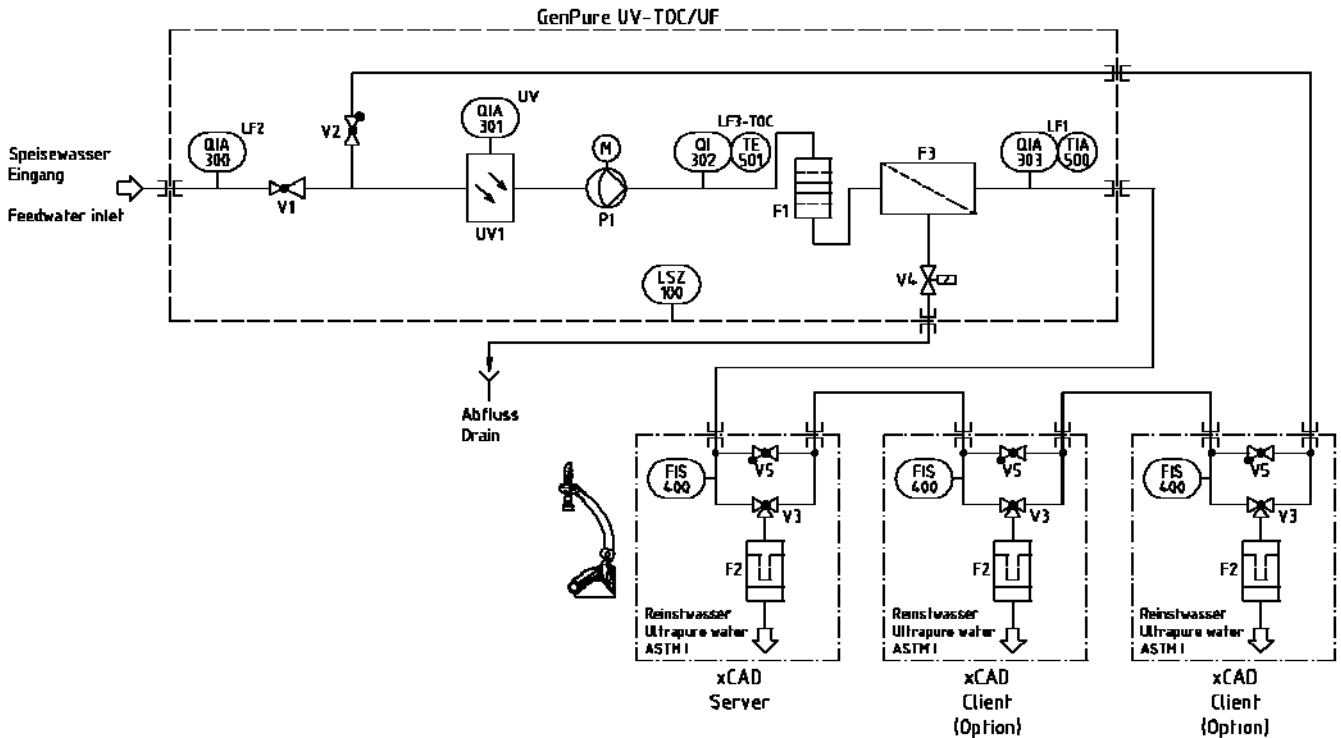
- F1 Filter cartridge
- F2 Sterile filter
- F3 Ultrafiltration module
- FIS 400 Digital flow meter
- LSZ 100 Leakage sensor
- P1 Circulation pump
- UV1 UV-Photooxidation
- QIA 300 Feedwater conductivity
- QIA 301 UV-Intensity
- QIA 303 Ultra pure water conductivity
- TIA 500 Temperature sensor
- V1 Pressure reducer
- V2 Check valve 1 bar
- V3 Dispensing valve
- V4 Rinsing solenoid valve
- V5 Check valve

## 8.5 Flow chart GenPure UV-TOC xCAD plus



F1	Filter cartridge
F2	Sterile filter
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-Photooxidation
QIA 300	Feedwater conductivity
QIA 301	UV-Intensity
QI 302	TOC conductivity measurement
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
TE 501	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve

## 8.6 Flow chart GenPure UV-TOC/UF xCAD plus



F1	Filter cartridge
F2	Sterile filter
F3	Ultrafiltration module
FIS 400	Digital flow meter
LSZ 100	Leakage sensor
P1	Circulation pump
UV1	UV-Phototoxidation
QIA 300	Feedwater conductivity
QIA 301	UV-Intensity
QI 302	TOC conductivity measurement
QIA 303	Ultra pure water conductivity
TIA 500	Temperature sensor
TE 501	Temperature sensor
V1	Pressure reducer
V2	Check valve 1 bar
V3	Dispensing valve
V4	Rinsing solenoid valve
V5	Check valve



## 9. Installation area

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

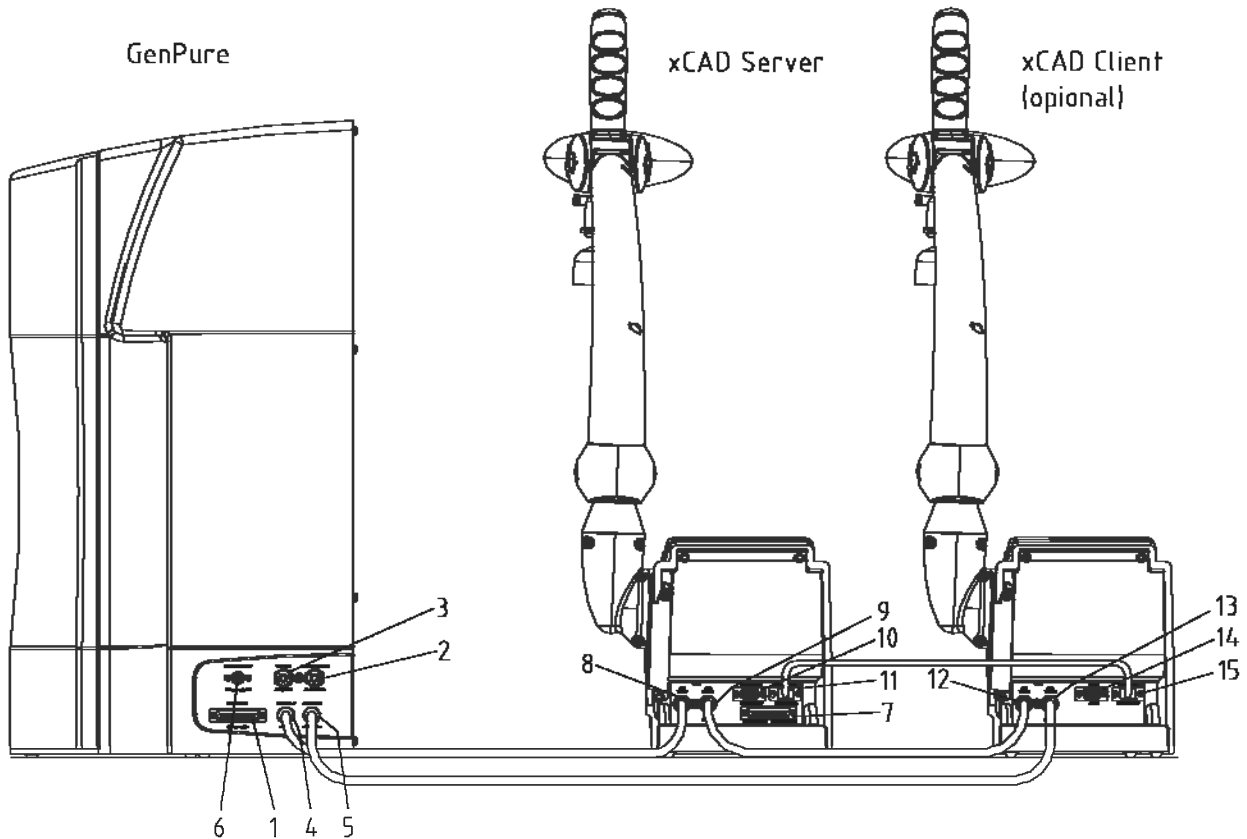
- Feedwater pressure at least 0,1 bar, at most 6 bar
- Lowest temperature +2°C
- Level standing surface
- A smooth wall is required when the system is to be wall-mounted and the statics of the wall must be checked to have sufficient load carrying ability (for weight, see Technical specifications)
- Floor drain, DN 50
- Free gravity fall to drain.  
For safety reasons, a water watcher (article no. 16.0129) must be installed if no such floor drain is available!



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

- Safety socket, 100 - 240V, 50/60Hz
- Sufficient working space around the system (filter replacement, etc.)
- It must be easy to operate and monitor the system
- R 3/4" Tap water connector

## 10. Installation - Putting into operation



### GenPure Connectors:

- 1) Connector for 25-pin plug/extension cable (control)
- 2) Feedwater connector, 8 mm o.d.
- 3) Rinse water connector, 8 mm o.d.
- 4) Ultra pure water connector, 8 mm o.d. (to xCAD inflow)
- 5) Ultra pure water connector 8 mm o.d. (to xCAD return flow)
- 6) Voltage supply, 48 DC

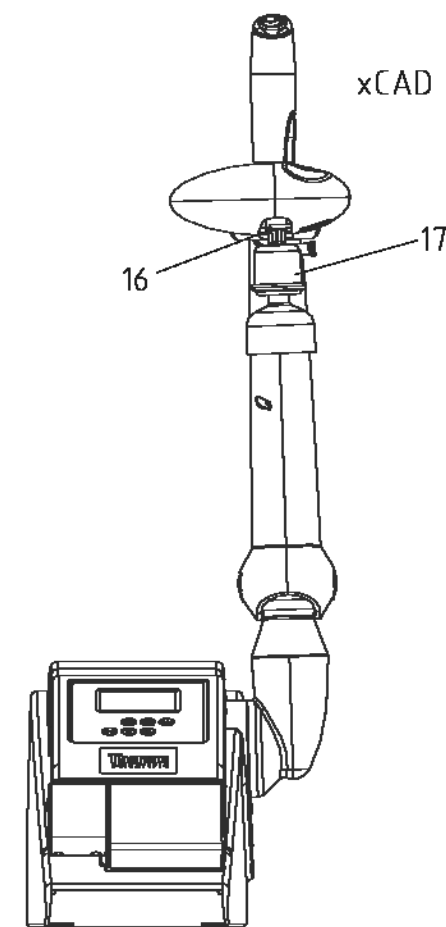
### xCAD/Server Connectors:

- 7) Connector for 25-pin plug/extension cable (control), only with server
- 8) Ultra pure water connector, 8 mm o.d. (to GenPure inflow)
- 9) Ultra pure water connector, 8 mm o.d. (to GenPure return flow or to client)
- 10) Connector for optional printer, 9-pin (article no.: 09.2207)
- 11) Connector for further xCAD (Client), 9-pin
- 16) Outlet at dispensing valve, R 1/4" female thread
- 17) Sterile filter capsule, 0.2 µm

### xCAD/Client Connectors:

- 12) Ultra pure water connector, 8 mm o.d. (to xCAD/Server inlet flow)
- 13) Ultra pure water connector, 8 mm o.d. (to GenPure return flow or to Client)
- 14) Connection for further xCAD (client) 9-pin

- 15) Connection for further x CAD (client) 9-pin
- 16) Outlet on dispensing valve, R 1/4" female thread
- 17) Sterile filter capsule, 0.2 µm



## 10.1 Installation xCAD Server/ Client bench version

**Proceed as follows to install your GenPure xCAD plus ultra pure water system in bench version:**

Stand the GenPure and the xCAD where they are to be installed.

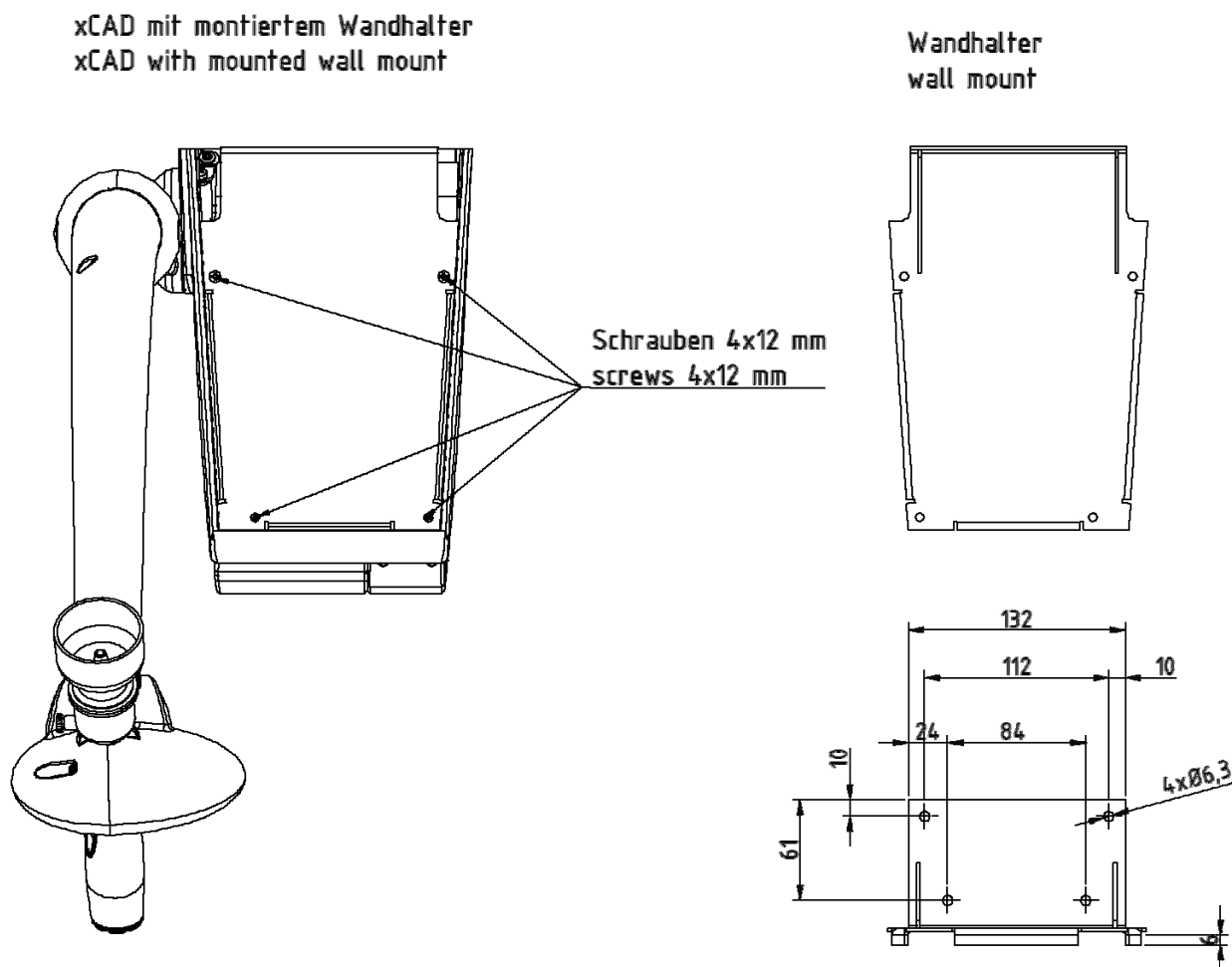
- 1) Take the cartridge cover off of GenPure.
- 2) Remove the stoppers from the filter cartridge and save them.
- 3) Fit the filter cartridge in the guide, plug the quick-connect couplings on the cartridge connectors so that they audibly snap into position and fit the cover back on.
- 4) Connect the 8 mm o.d. hose which is supplied in the connector kit to GenPure feedwater connector (2).

- 5) Use the 8 mm o.d. rinse water hose to make a pressureless connection from the system (connector 3) to the waste drain. The drain to the sewer must be max. 1m above the rinsing water connector of the Unit.
- 6) Fit the 25-pin plug of the extension cable in GenPure socket (1) and screw it tight. Now connect the hoses by fitting them in GenPure connectors (4) and (5).
- 7) Lead the 25-pin plug/extension cable and the hoses to the xCAD (Server) and use the 25-pin plug to make connection from GenPure socket (1) to xCAD (Server) socket (7).
- 8) Fit the 8 mm o.d. hoses in xCAD (Server) hose connectors (8) and (9).
- 9) When a further xCAD (C client) is to be added, connect it to the other as follows:  
  
Use the 9-pin plug extension cable to connect xCAD (Server) socket (11) to xCAD (Client) socket (15).  
Provide for the supply of water by using the 8 mm o.d. hose to connect xCAD (Server) connector (9) to xCAD (Client) connector (12). Provide for flow back to GenPure connector (5) by connecting this to xCAD (Client) connector (13).
- 10) When the sterile filter (17) which is standardly supplied is to be used, screw it into the R 1/4" female thread of dispenser valve (16) at the xCAD (Server) or xCAD (Client).
- 11) Connect the power supply the GenPure device (refer to the "Mounting the power pack" (voltage supply) section.
- 12) Open the supply of feedwater.
- 13) Check the seal-tightness of all connections.

## 10.2 Installation, xCAD Server/Client wall version

Proceed as follows to install your GenPure xCAD plus ultra pure water system in wall version:

View from below



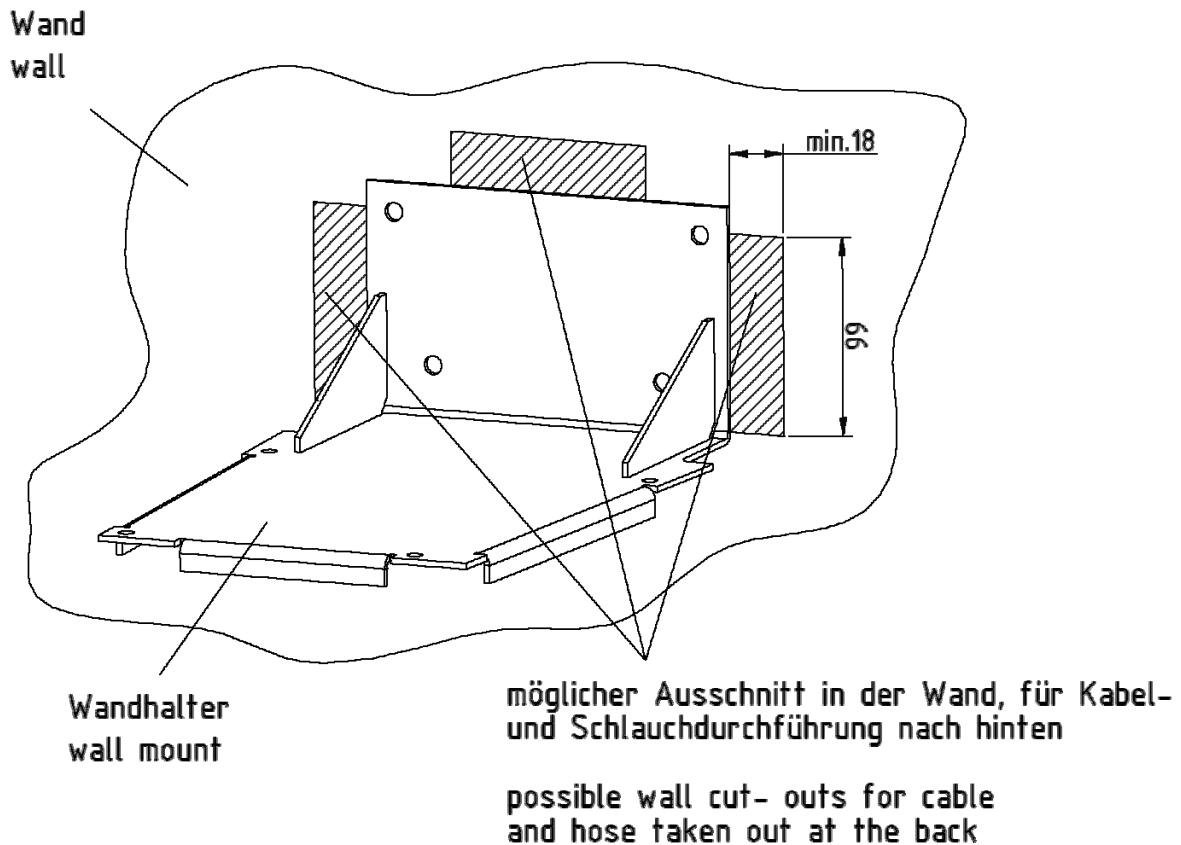
- 1) Unscrew the four 4x12 mm screws shown in the diagram from the underside of the xCAD so that the wall mount can be taken off.

**Caution:** Check the bearing capacity of the wall before you start preparations for wall mounting (see “Technical specifications”).

The 25-pin plug/control cable and the two 8 mm o.d. hoses can be optionally led down the wall at the side or led in from behind through the wall. The three positioning possibilities for the cut-out which is required for cable and hoses are shown in the diagram that follows.

**Note:** Only one wall cut-out is required (see the next page).

- 2) Hold the wall mount against the wall at the chosen mounting position and mark where the three holes for the screws are to be bored.



- 3) Bore the holes for the three 6 mm dowels and make the cut-out.
- 4) Fix the wall mount in position with the standardly supplied dowels and screws.

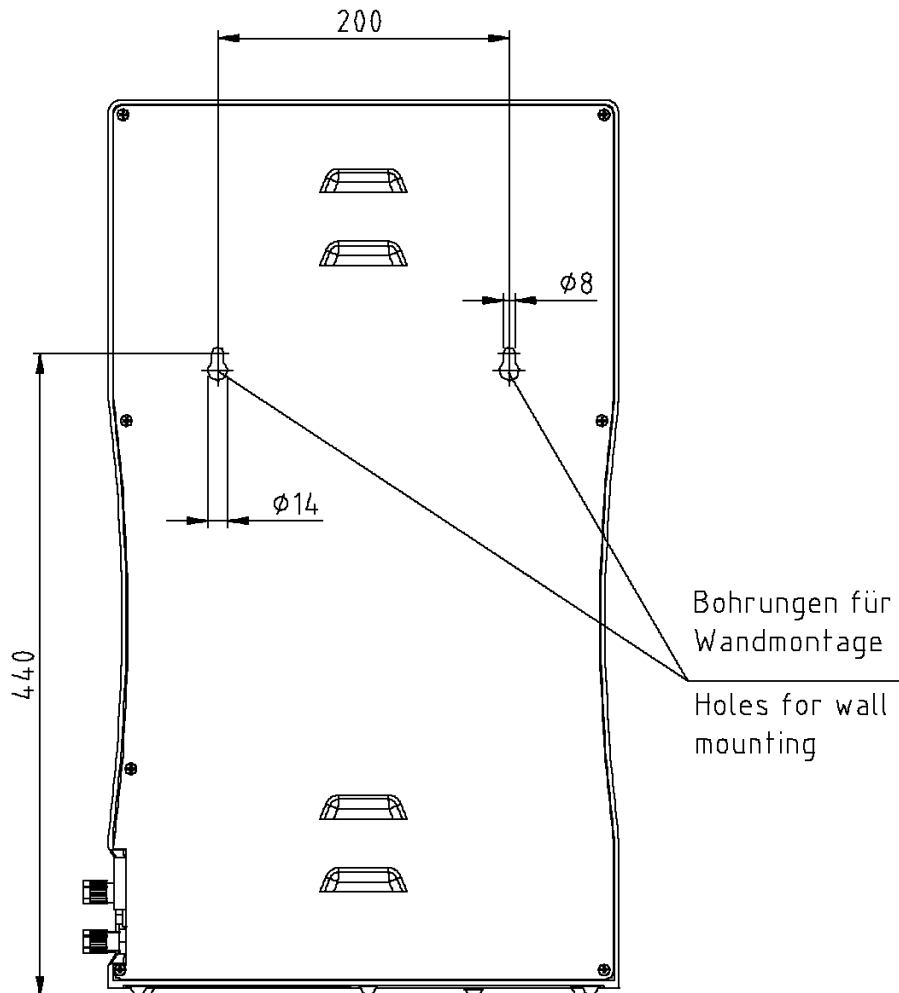
Lead the 25 mm plug/extension cable (for the xCAD Server only) and the 8 mm hoses through the wall to the xCAD. Plug the 25 mm plug in to make connection between GenPure socket (1) and xCAD (Server) socket (7).

- 5) Plug the 8 mm o.d. hose from GenPure in the hose connections (8) and (9) of the xCAD (Server) or from the xCAD (Server) in the terminals (12) and (13) of the xCAD (Client).

- 6) Carefully position the xCAD on the wall mount and screw it tightly to the wall mount with the four 4 x 12 mm screws.
- 7) Place GenPure at the intended standing position.
- 8) Take the cartridge cover of it off.
- 9) Remove the stoppers from the filter cartridge and save them.
- 10) Fit the filter cartridge in the guide, plug the quick-connect couplings on the cartridge connectors so that they audibly snap into position. Fit the cover back on.
- 11) Connect the 8 mm o.d. hose supplied in the connecting kit to the GenPure feed water connector (2).
- 12) Use the 8 mm o.d. hose to allow free gravity fall from system connector (3) to drain. The drain to the sewer must be max. Are 1m above the rinsing water connector of the Unit.
- 13) Plug the 25-pin plug of the control cable into GenPure socket (1) and screw the plug on tight.
- 14) When a further xCAD (Client) is to be used, connect the two of these together as follows:
- 15) Use the 9-pin plug extension cable to connect xCAD (Server) socket (11) to xCAD (Client) socket (15).
- 16) Connect a piece of 8 mm hose to the xCAD (Server) connector (9) and the xCAD (Client) connector (12 ) for connection of the water supply. Make return flow connection the Gen-Pure connector (5) to the xCAD (Client) connector (13).
- 17) When the sterile filter (17) which is standardly supplied is to be used on the xCAD (Server) or xCAD (Client), screw it into the R 1/4" female thread of dispensing valve (16).
- 18) Put the power supply to device of GenPure in (refer to the "Mounting the power pack" (voltage supply) section.
- 19) Turn the supply of feedwater on.
- 20) Check the seal-tightness of all connections.

### 10.3 Wall mounting GenPure xCAD plus system

Ansicht von hinten  
View back side

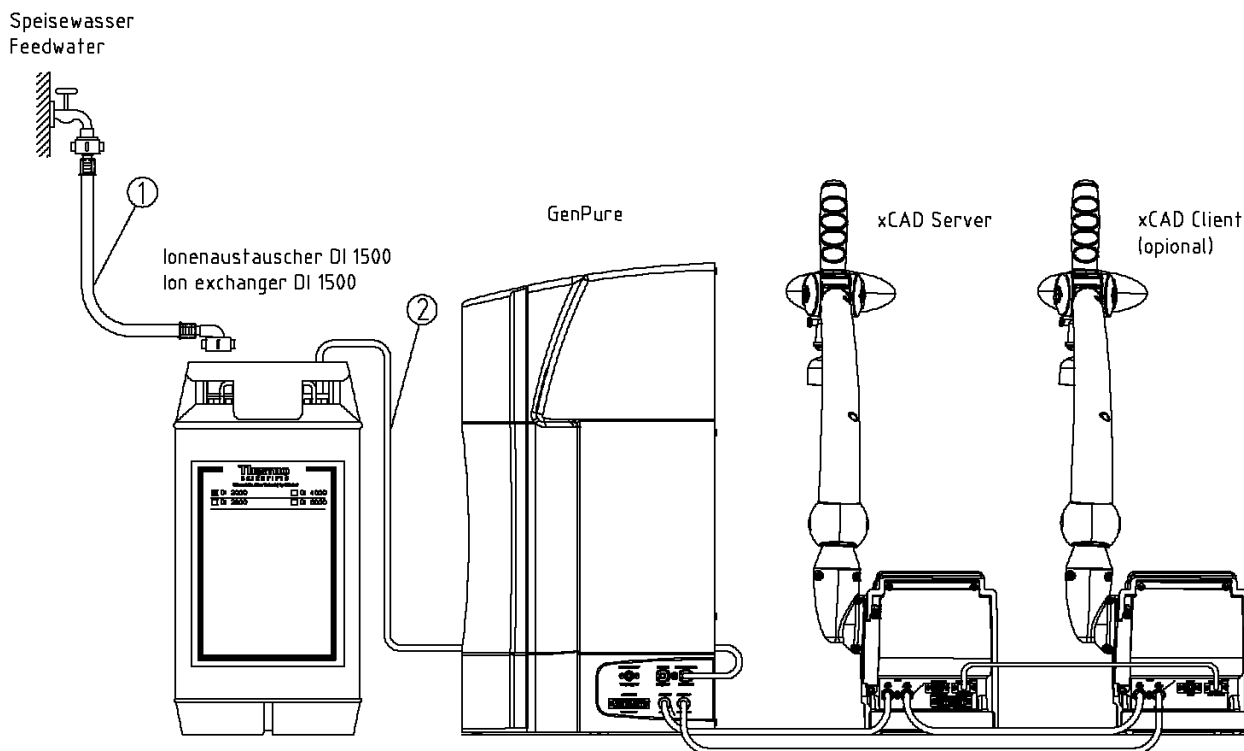


**Proceed as follows to mount your GenPure xCAD plus to a wall:**

- 1) Use a twist drill (8mm or 5/16 inch) to make the two holes in the wall that are required as shown in the diagram above.
- 2) Plug the nylon S8 dowels that are supplied in the assembly kit in the holes. Screw the 5.2 x 50 mm screw hooks that are also supplied in the assembly kit in the dowels.
- 3) Lift the GenPure xCAD plus system (2 people are required for this) and hang the back side of it on the scfew hooks.



## 10.4 Mounting example GenPure xCAD plus with Ion exchanger DI 1500 (option)

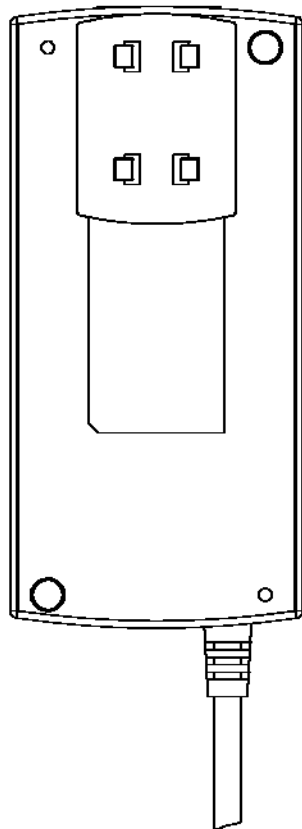


Proceed as follows to connect an ion exchanger to the upstream side of the GenPure xCAD plus system:

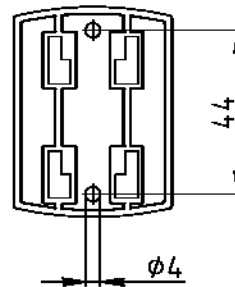
- 1) Connect the hose which has a R3/4 union nut (1) from the raw water tap to the R3/4" input of the ion exchanger.
- 2) Make connection from the R3/4 output of the ion exchanger to the feedwater Connector of the GenPure xCAD plus system by using the feedwater connector kit (2) that is contained in the assembly kit (article no. 50136423)

## 10.5 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 ultra pure 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.
- Make connection from the power supply to the ultrapure water system GenPure xCAD plus (refer to the "Installation" section, GenPure connector, item 6) and a power socket 100 - 240V, 50/60Hz.
- The ultra pure water system is now ready for use.

## 10.6 Putting into operation



The system must have cooled down, or warmed up, to room temperature before you put it into operation.



Check that all connections have been made as detailed in the installation section.



Press this button to switch the system on. After a compulsory rinse, the system switches to the last used operating mode.



Vent the system by switching it to “Rinsing” three times in succession and, during this whole procedure, withdraw approximately 5 litres of water and discard it. The ultra pure water limiting value may be exceeded during this procedure.

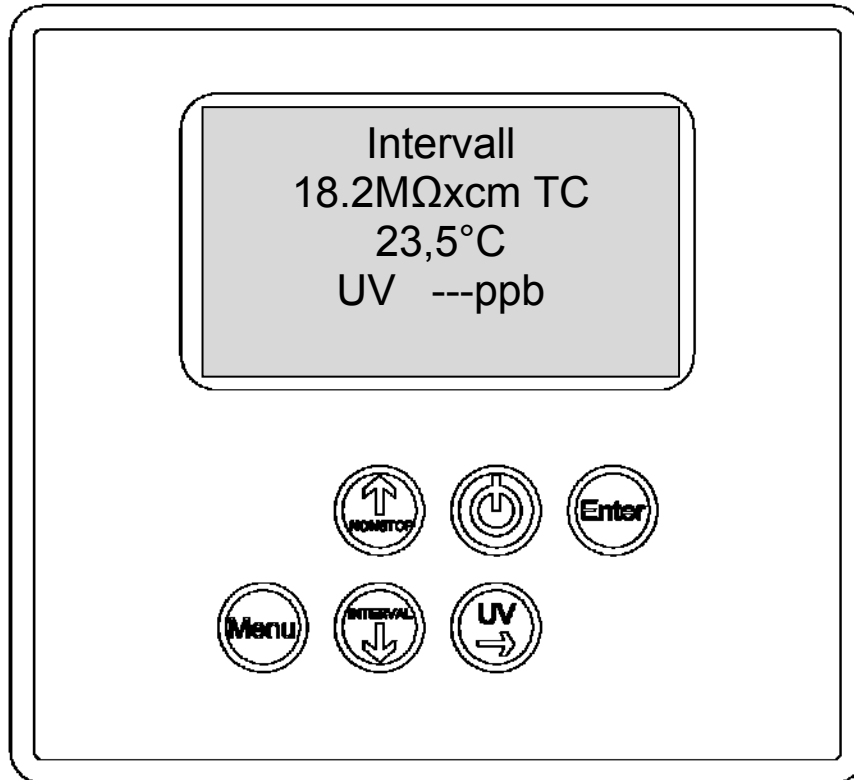


Use the “NONSTOP” button to switch the system to the “Nonstop” operating mode.



When the system successfully produces the ultra pure water quality that you require, press this button to return the system to the “Interval” mode.

## 11. Operating elements



Switches the system on or off



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



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. Server operating unit control

### 12.1 General information

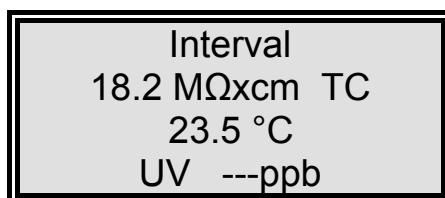
The software structure consists of five operating modes and four menus, which are described in more detail in the following. Measured values are continually shown in the display and/or in the menus. The displayed TOC value is calculated from the difference in the values measured by the ultra pure water measuring cell and the TOC-measurement measuring cell. When a fault occurs, the potential-free outlet is set, the display backlighting changes from green to red and the fault message is shown in clear text in the first line of the display in alternation with the operating mode message.

### 12.2 Operating modes

#### 12.2.1 Interval operating mode after switching on

Following a press on the ON/OFF button, system control first brings the system version, the system serial number and the software version number to display for 3 seconds. The system then automatically goes to the Interval operating mode (see Interval mode), whereby the green backlighting of the display is switched on and remains on until system control is switched off via the ON/OFF-button. The "UV" text message is displayed when the UV-lamp is switched on. The "TC" message is displayed when measured values are set to be subject to temperature compensation. Further to these, the measured values for ultra pure water (measuring cell LF1) and temperature are also displayed. The displays of messages and measured values are independent of the operating mode. The TOC value is not shown in Interval mode.


The display shows:



#### 12.2.2 Nonstop mode

A press on the "N/S" button switches the system to the Nonstop mode. The circulation pump starts to run and the (UF) rinsing solenoid valve opens for the set "Intv.rinse time". Nonstop operation can be stopped by a press on the "Int" button. If Nonstop operation is not ended manually, the system automatically switches to Interval operation after it has been running for 2 hours. The message UV is shown in the display when the UV-lamp is switched on. It can only be switched on in Nonstop mode (see UV-lamp). The TOC value is additionally shown in the display whenever the UV-lamp is switched on.

The display shows:

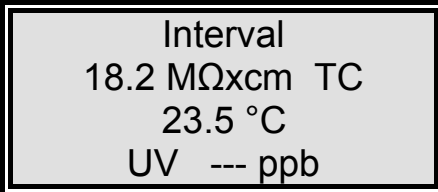


Nonstop  
18.2 MΩxcm TC  
23.5 °C  
UV 3 ppb

### 12.2.3 Interval operation

The system is in the Interval mode when the system is switched on with the ON/OFF button and when called by a press on the Interval button. The pump runs for the set interval pump time and the rinsing solenoid valve (UF rinse) opens for the set "Intv.rinse time". When the interval pump time has expired, the pump is switched off until the end of the standstill time. The standstill time is given by the difference between half an hour and the interval pump time, so that the pump and the solenoid valve are actuated in a half-hourly rhythm. The TOC value is not shown in this operating mode.

The display shows:



Interval  
18.2 MΩxcm TC  
23.5 °C  
UV --- ppb

### 12.2.4 UV-Lamp

A press on the UV-button brings *UV* to view in the display. The UV-lamp is only switched on, however, when the system is in Nonstop operation or when the system circulates. The UV-lamp is switched off at the end of Nonstop operation (settable). When Nonstop operation is manually ended by a press on the "NT" button, the UV-lamp is switched off after it has been burning for 0.5 hours. During the time that the UV-lamp is burning, the UV light intensity is monitored and is displayed in Menu. Should the limiting value for the UV-intensity (OEM menu / Menu) be gone below, the potential free output is set and the "UV Intensity" fault message is displayed.

The operating time of the UV-lamp is also recorded and the "*UV time*" fault message is brought to display when the limiting value set for this time is exceeded. TOC measurement is also carried out during the time that the UV-lamp is burning.

The display shows:

<p>Nonstop 18.2 MΩxcm TC 23.5 °C 1,00L UV 3 ppb</p>
---

### 12.2.5 Water dispensing via volume control

Ultra pure water systems which are equipped with the volume control option can dispense a preset volume of water.

As soon as Nonstop-mode is selected, a litre volume is shown in line 2 of the display. This is the volume of ultra pure water that was last dispensed.

A single press on the Enter-key enables this volume value to be changed within the range from 0.01 to 65.5 litres by means of the arrow-keys. The UV-key can be used to position the cursor at the particular number that you wish to change.

A second press on the Enter-key causes the volume of water that has been set to be dispensed. The litre volume shown in the display is the actual volume dispensed. Dispensing stops as soon as the set volume is reached.

Dispensing can be stopped at any time by a further press on the Enter-key. This enables small volumes to be dispensed by two successive presses on the Enter-key. One press starts dispensing and, when the wanted amount has been dispensed, a second press stops dispensing. The button on the dispenser has the same function as the Enter-key.

Volume control is supported in all programme versions.

The display shows:

<p>Nonstop 18.2 MΩxcm TC 23.5 °C 1.00L UV 3 ppb</p>
---

### 12.2.6 OFF mode

A second press on the ON/Off-button causes the display to go dark and all text output on the display to be extinguished. No outputs are now switched.

## 12.3 User menu

All measured values, operating times and limiting values which 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 on the Enter-key, you are taken to the next menu prompt. Settings can only be made when system control has been previously unlocked by entering a valid code number.

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

### 12.3.1 Feedwater measured value and limiting value

Under this menu prompt, the feedwater conductivity can be read and the limiting value for it can be set (LF2). The fault message "*Limit value feed*" is shown flashing in line 1 of the display when the feedwater limiting value is exceeded. Should several fault messages occur simultaneously, then they are alternately shown.

Measurement range, feedwater: **10.0 – 0.010 MΩxcm**  
 Setting range, limiting value: **0.1- 49.9 μS/cm**  
**Basic setting: 0.50 MΩxcm**

Set the limiting value using the arrow keys (see Settings with the arrow keys).  
 With settings above 50 μS/cm, the limiting value is switched off and the word *off* appears in the display.

The display shows:

Feedwater  
 3.12 MΩxcm  
 Limit value feed  
 2.00 μS/cm

### 12.3.2 Ultra pure water limiting value

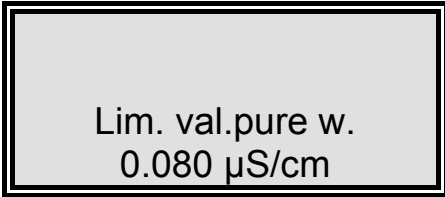
The limiting value for the ultra pure water conductivity can be set here. When the entered limiting value is exceeded, "*Lim. val.pure w.*" is displayed (LF1).

Setting range for the limiting value: 0.055- 5.000 μS/cm

Set the limiting value using the arrow keys (see Settings with the arrow keys).  
 With settings above 5.000 μS/cm, the limiting value is switched off and "*Off*" is shown in the display.



The display shows:

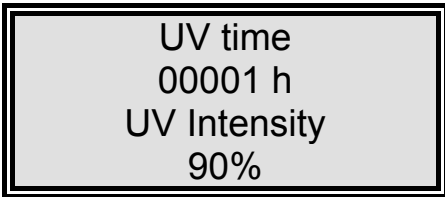


Lim. val.pure w.  
0.080 µS/cm

### 12.3.3 UV Intensity and operating time

In this menu, the UV-lamp operating time is displayed and the UV-sensor input is evaluated. The UV-lamp operating time counter counts the hours that the UV-lamp has been burning. The "UV-time" fault message is triggered when the maximum operating time is reached. The UV-sensor measures the actual intensity of the UV-lamp. The display shows the % of this compared to the maximum value. The *UV-Intensity* fault message is issued when the limiting value is gone below. The limiting value is set in the OEM-menu. The fault message for the UV intensity is first displayed after a settable fault time to avoid fault message display during the start-up phase.

The display shows:



UV time  
00001 h  
UV Intensity  
90%

### 12.3.4 Filter cartridge serial number

The operating time counter for the filter cartridge is set back on entry of a valid serial number.

The display shows:



Seri. no.:  
cartridge  
Press enter  
12345/12

### 12.3.5 Rinsing the ultrafilter

In this menu, a press on the Enter-key allows rinsing to be carried out whenever it is necessary. The pump is started and the rinsing solenoid valve (UF) is opened for the rinsing time set in the OEM-menu.

Neither fault messages nor measured values are displayed during rinsing.

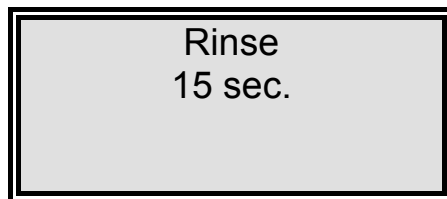
When rinsing has finished, the system returns to the last operating mode (Interval or Non-stop)

The remaining rinsing time is counted down and displayed during rinsing.

The display shows:



During rinsing, the display shows:



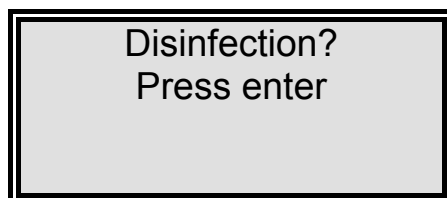
### 12.3.6 Disinfection

In this menu prompt, you are asked if there is a need for disinfection. Confirmation with Enter brings the *Disinfection cartridge. Install one* prompt to display. When this is also confirmed with Enter, disinfection begins and the pump runs for the whole of the disinfection time. When half of the disinfection time has expired, the rinsing solenoid valve (UF) is additionally opened until the end of disinfection. When disinfection has been completed, the *New filter cartridge. Install one* message is shown.


Confirmation with Enter returns system control to the last used operating mode. The disinfection time can be set in the OEM-menu.

The remaining disinfection time is counted down and displayed during disinfection.

The display shows:

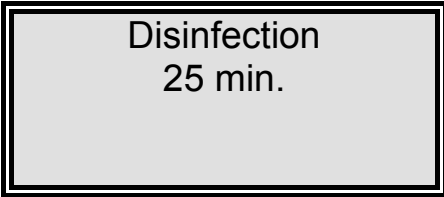


After confirmation with Enter, the display shows:



Disinfection  
cartridge  
Press enter

During disinfection, the display shows:



Disinfection  
25 min.

After disinfection, the display shows:



New  
filterset  
Press enter

### 12.3.7 Fault storage

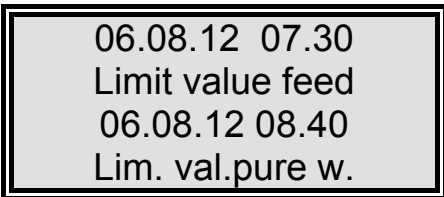
Confirmation of this prompt with Enter allows the fault storage to be looked through. Two faults, each with date and time, are shown in the display. Pressing the arrow keys takes you successively through preceding or following faults. Press the menu-key to end the fault display. This takes you to the next menu prompt.

The display shows:



Error history  
Press enter

The fault storage display shows:



06.08.12 07.30  
Limit value feed  
06.08.12 08.40  
Lim. val.pure w.

### 12.3.8 Registering the station

In this menu, external dispenser units can be registered at the server.

The display shows:



### 12.3.9 Entering a code number

To prevent unauthorized access to system control, settings can only be changed when a valid code number is entered and confirmed with Enter in this menu. Each code access is issued to the printer (RS 232) with date, time and code number.

The display shows:



## 12.4 OEM Menu

Basic settings and limiting values can be changed in this menu. To be able to make changes in the OEM menu, system control must be previously unlocked by entering a code number.

Calling the OEM menu.

After system control has been unlocked, simultaneous presses on the Enter-key and the Nonstop-key call the OEM menu. Following this, the "OEM menu Press Enter" prompt is displayed. When this is confirmed with Enter, the first menu prompt can be worked on. To simplify changing settings, press the UV-key to select the individual number in the 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.

### 12.4.1 Language selection

The language can be changed in this menu.  
The choice is between English, French and German.  
The setting can be changed with the arrow keys.

**Basic setting: English**

The display shows:



OEM-Menu  
Language  
English

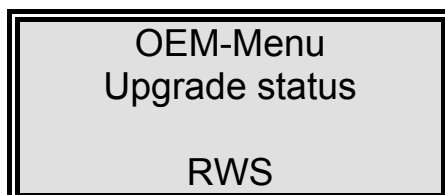
### 12.4.2 Programme selection

The programme according to which system control operates is set in this menu.,  
The following possibilities are given:

RWS+RO+EDI or RWS

**Basic setting: RWS**

The display shows:



OEM-Menu  
Upgrade status  
RWS

### 12.4.3 Entering system version and serial number

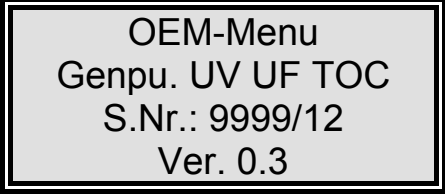
The system version and system serial number can be entered in this menu. The two are then printed out as header on each print-out. Use the arrow keys to enter the settings. The number of the software version is given in the bottom line of the display.

The following system versions can be set here:

GenPure Standard, GenPure UV, GenPure UF, GenPure UV/UF, GenPure UV/TOC, GenPure UV/TOC/UF, LabTower EDI, LabTower UPW, LabTower UP.

The serial number consists of six numerals and a slash. Use the arrow keys to enter the settings, as for other settings.

The display shows:



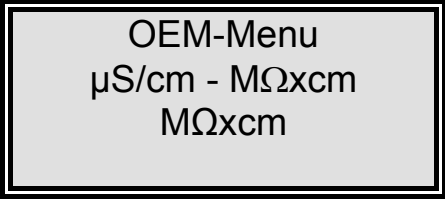
OEM-Menu  
Genpu. UV UF TOC  
S.Nr.: 9999/12  
Ver. 0.3

### 12.4.4 Switching units

In this menu, a choice is given as to whether measured values are to be displayed in the unit for conductivity unit or that for the specific electric resistance.

#### **Basic setting: Conductivity**

The display shows:



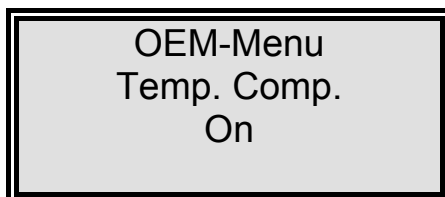
OEM-Menu  
 $\mu\text{S/cm}$  -  $\text{M}\Omega\text{cm}$   
 $\text{M}\Omega\text{cm}$

### 12.4.5 Switching temperature compensation off

Temperature compensation can be switched off or on in this menu. TC is shown in the display when it is switched on, NTC is shown when it is switched off.

**Basic setting: Temperature compensation on**

The display shows:



**12.4.6 Setting the limiting value for temperature**

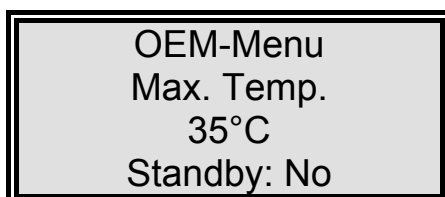
The maximum temperature which the system is to be allowed to reach is set in this menu. The *max. Temp.* fault message is triggered when this limiting value is exceeded. A setting can also be made here to have the system automatically switched over to the Stand-by operating mode to avoid further heating up.

Setting range: 1- 50 °C

**Basic setting: 50 °C**

**Basic setting: Standby: No**

The display shows:



**12.4.7 Rinsing time**

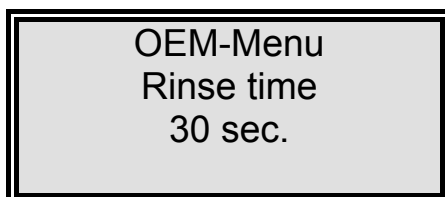
The rinsing time can be set in this menu.

Step width: 1

Setting range: 10 - 60 sec.

**Basic setting: 30 sec.**

The display shows:



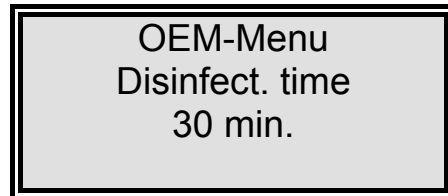
### 12.4.8 Changing the disinfection time

The disinfection time can be set in this menu.

Setting range: 15- 90 min.

**Basic setting: 30 min.**

The display shows:



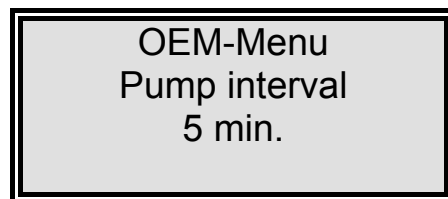
### 12.4.9 Setting the interval pump time

The interval pump time can be set in this menu.

Setting range: 1- 30 min.

**Basic setting: 5 min.**

The display shows:



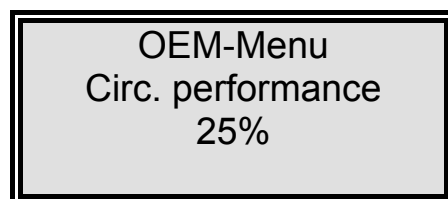
### 12.4.10 Circulating pump performance

In this menu, the setting is made for the performance which the pump is to have in Interval operation and the duration of the start-up ramp for volume control.

Specification of the voltage in % of the maximum supply voltage value.  
Setting range: 25%- 100%

**Basic setting: 25%**

The display shows:





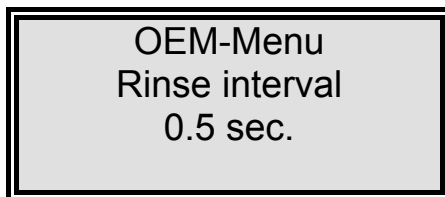
### 12.4.11 Setting the interval rinse time

In this menu, setting can be made of the time for which the rinsing solenoid valve is opened for ultrafilter rinsing at each start of the Interval cycle or on changing from Interval to Non-stop.

Setting range: 0.1- 2 sec.

**Basic setting: 0.5 sec.**

The display shows :



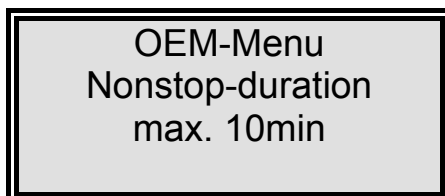
### 12.4.12 Nonstop duration

In this menu, the length of time for Nonstop operation can be set. With settings above 120 min. the system is switched to continuous operation. The display shows *Nonstop* operation.

Setting range: 10- 120 min.

**Basic setting: 10 min.**

The display shows:



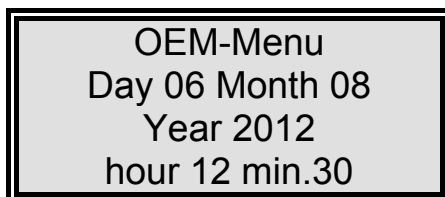
### 12.4.13 Setting the real-time clock

The real time clock can be set in this menu.

Setting range: 1-12 Month, 1-31 Day, 0-24 h, 0-60 min.

**Basic setting: The actual date**

The display shows:



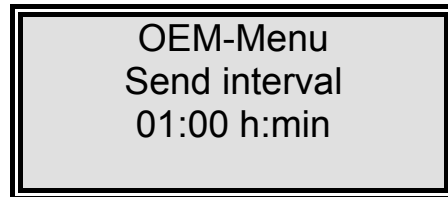
### 12.4.14 Setting the sending interval

In this menu the sending interval between transmissions of measured values and fault messages to the RS 232 is set.

Setting range: 0.5-12 hours

**Basic setting: 1 hour**

The display shows:



## 12.5 Data transmission via the RS 232 interface

All measured values are issued to the interface complete with date and time in the rhythm of the set sending interval. Should a fault occur, this is issued to the interface as text with date and time. Each unlocking of system control is also registered by issue to the printer with date, time and the abbreviated code number.

In Nonstop operation, a set of data is issued to the printer once only.

The interface has a transmission rate of 9600 bits/sec., 8 data bits, 1 stop bit and no parity.

The SUB-D socket assignment is:

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

## 12.6 Printer output

Various parameters are documented by the printer. It differentiates between three types of message:

- **Standard message**
- **Code message**
- **Fault message**

### 12.6.1 Standard message:

A record of all measured values is printed out according to the sending interval. A print out is also made of a complete set of data in Nonstop operation.

Print-out:

e.g.:

```
06.08.12 10:38
GenPure Standard
S.No. 9876/12
Interv. TC on UV off
LF1= 18.2 MΩxcm
LF2= 10.0 MΩxcm
LF3= 0.000 MΩxcm
Temp.= 16.8 °C
TOC= 0 ppb
UV Intens.= 0%
```

The standard record documents all measured values. With systems without TOC measurement and UV-intensity, 0 is entered in place of measured values for these functions!

**12.6.2 Code message:**

Whenever a code number is entered in system control and confirmed with Enter, the code input is immediately printed out.

Code identification (see the “Assignment Table for code numbers which unlock the system”).

Print-out:

```
06.08.12 10:38
GenPure Standard
S.No. 9876/12
Code 0002
```

**12.6.3 Fault message:**

When a fault message is shown in the display, e.g. for the ultra pure water limiting value, then the fault message is printed out when the sending interval has expired.

Print-out:

```
06.08.12 10:38
GenPure Standard
S.No. 9876/12
Reinst.grenzwert
```

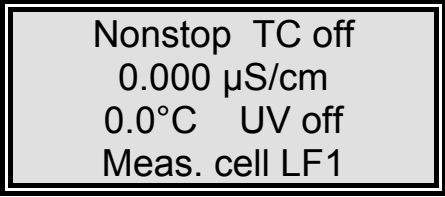
## 12.7 Measuring cell fault recognition

Minimum and maximum limiting values for each of the conductivity measuring cells and the temperature sensor are fixed in the programme. Should measured values go below or above these respectively, then it must be assumed that a cable break has occurred. The appropriate fault message "Measuring cell LF1", "Measuring cell LF2", "Measuring cell LF3" or "Measuring cell Temp" is then issued in line 1.

When resistances are in a region below 50M $\Omega$  or above 20M $\Omega$ , then a cable break or a short-circuit can be assumed.

These basic settings cannot be changed in any menu.

The display shows:



Nonstop TC off  
0.000  $\mu$ S/cm  
0.0 $^{\circ}$ C UV off  
Meas. cell LF1

## 12.8 Code lock

To prevent unauthorized access to system control settings, changes to these settings can only be carried out when a correct code number has been entered and confirmed with Enter.

In deviation to existing programmes, control release can be given at three levels. Only the menu is released for changes at the first level. Both the menu and the OEM menu are released at the second level. All menus are released at the third level.

Code numbers:

No.	Menu	No.	Menu+OEM-menu	No.	All levels
1	150	4	450	7	750
2	250	5	550	8	850
3	350	6	650	9	950

Each access via the code is printed out by the printer (RS 232) complete with date, time and the code number used.

The display shows:



Code numbers can be assigned to individual persons in the Assignment Table on the following page.  
Please remove this page from these operating instructions and keep it where it is safe from unauthorized viewing.

## 13. xCAD Client operating unit control

### 13.1 General information

The functions of the Client operator unit are limited to the reading of measured values, the operation of volume control and switching between the individual operating modes. When a new client is connected to an existing system, the operating unit must be registered before it can be used (see "Register server menu station").

A display which glows yellow is shown if the client operating unit is not registered.

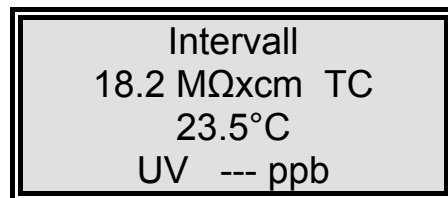
When a fault occurs, the potential-free output is set, the display backlighting changes from green to red and the fault message is shown in clear text in the first line of the display, in alternation with the operating mode.

### 13.2 Operating modes

#### 13.2.1 The *Interval* operating mode after switching on

Following a press on the ON/OFF button, the system first runs in the Interval operating mode (see Interval mode). The backlighting of the display is switched on and remains on until system control is switched off via the ON/OFF-button. The "UV" text message is displayed when the UV-lamp is switched on. The "TC" message is displayed when measured values are subject to temperature compensation. In addition, the measured values for ultra pure water (measuring cell LF1) and temperature are also displayed. The displays of the two messages and the measured values are independent of the operating mode.

The display shows:



#### 13.2.2 Nonstop operation

A press on the "N/S" button switches the system to the Nonstop mode. The circulation pump runs, the rinsing solenoid valve opens for the set "Intv.rinse time". Nonstop operation can be stopped by a press on the "Int" button. If Nonstop operation is not ended manually, the system automatically switches to Interval operation after it has been running for 2 hours. The message *UV* is shown in the display when the UV-lamp is switched on, but it can only be switched on in the Nonstop operating mode.

The display shows:

<p>Nonstop 18.2 MΩxcm TC 23.5°C 1.00L UV 3 ppb</p>
--

### 13.2.3 Interval operation

The system is in the Interval mode when the system is switched on with the ON/OFF button and when called by a press on the Interval button. The pump runs for the set interval pump time and the solenoid valve opens for the set "Intv.rinse time". When the interval pump time has expired, the pump is switched off until the end of the standstill time. The standstill time is given by the difference between half an hour and the interval pump time, so that the pump and the solenoid valve are actuated in a half-hourly rhythm.

The display shows:

<p>Intervall 18.2 MΩxcm TC 23.5°C UV --- ppb</p>
--

### 13.2.4 UV-Lamp

A press on the UV-button brings *UV* to view in the display. The UV-lamp is only switched on, however, when the system is in Nonstop operation. The UV-lamp is switched off at the end of Nonstop operation (settable). When Nonstop operation is manually ended by a press on the "NT" button, the UV-lamp is switched off after it has been burning for 0.5 hours.

During the time that the UV-lamp is burning, the UV light intensity is monitored and the measured value is displayed in Menu. Should the limiting value for the UV-intensity (OEM menu / Menu) be gone below, the potential free output is set and the "UV Intensity" fault message is displayed. The operating time of the UV-lamp is also recorded and the "UV time" fault message is brought to display when the limiting value set for this time is exceeded. TOC measurement is also carried out during the time that the UV-lamp is burning.

The display shows:

<p>Nonstop 18.2 MΩxcm TC 23.5°C 1.00L UV 3 ppb</p>
--

### 13.2.5 Water dispensing via volume control:

In ultra pure water systems which are equipped with the volume control option, volume control can be activated and calibrated in the calibration menu. Water can then be dispensed via volume control.

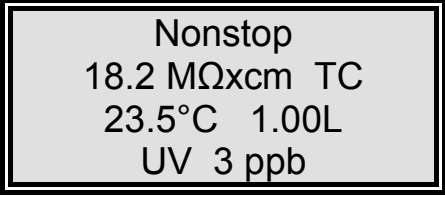
As soon as the Nonstop-mode is selected, a litre volume is shown in line 2 of the display. This is the volume of ultra pure water that was last dispensed. A single press on the Enter-key enables this volume value to be changed within the range from 0.01 to 65.5 litres by means of the arrow-keys. The UV-key can be used to position the cursor at the particular number that you wish to change.

A second press on the Enter-key causes the volume of water that has been set to be dispensed. The litre volume shown in the display shows the actual volume dispensed. Dispensing stops as soon as the set volume is reached.

Dispensing can be stopped at any time by a further press on the Enter-key. This enables small volumes to be dispensed by two successive presses on the Enter-key. One press starts dispensing and, when the wanted amount has been dispensed, a second press stops dispensing.

The button on the dispenser has the same function as the Enter-key.

The display shows:



Nonstop  
18.2 MΩxcm TC  
23.5°C 1.00L  
UV 3 ppb

### 13.2.6 Off mode

A second press on the ON/Off-button causes the display to go dark and all text output on the display to be extinguished. No outputs are now switched.



## 13.3 User menu

All measured values, operating times and limiting values which 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.

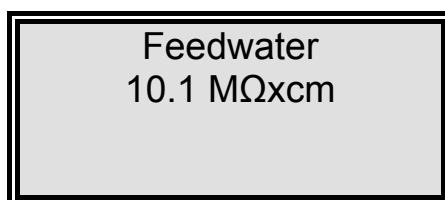
Settings can be changed with the arrow keys. When you confirm a value by pressing on the Enter-key, you are taken to the next menu prompt. Settings can only be made when system control has been previously unlocked by entering a valid code number.

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

### 13.3.1 Feedwater measured value

The feedwater conductivity can be read under this menu prompt (LF2).

The display shows:

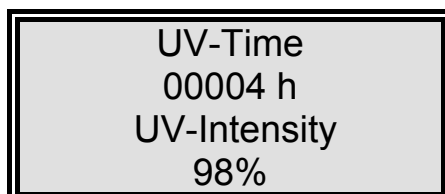


Feedwater  
10.1 MΩxcm

### 13.3.2 UV Intensity and operating time

The operating time of the UV-lamp and the value measured by the UV-sensor are displayed in this menu.

The display shows:



UV-Time  
00004 h  
UV-Intensity  
98%

### 13.3.3 Entering a code number

To prevent unauthorized access to system control, settings can only be changed when a valid code number is entered and confirmed with Enter in this menu. Each code access is issued to the printer (RS 232) with date, time and code number.

The display shows:



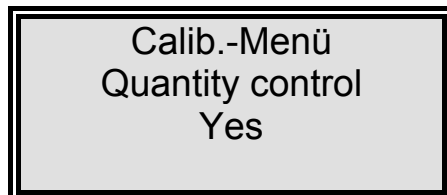
### 13.3.4 Client calibration menu

Only the client volume control can be set and calibrated in this client calibration menu. Simultaneous presses on the UV-key and Interval-key call this calibration menu. To move to the next menu prompt, press on the menu-key. Values can only be changed after system control has been unlocked.

### 13.3.5 Volume control:

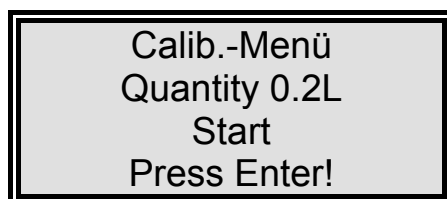
The volume control option can be selected in this menu.

The display shows:



As soon as volume control is confirmed with the enter-key, the display switches to the calibration mode for the volume. A graduated vessel is used to measure out a one litre volume in several steps. Position the graduated vessel under the dispenser and start dispensing of water with a press on the enter-key. Each time a shown volume is reached, press the enter-key again. Following this, the system goes to Stand-by mode and the volume control has been calibrated.

The display shows:



## 14. Maintenance

Regular maintenance of your system maintains the value of it. We recommend that you close a service contract with your service company for the maintenance required twice a year. You then have the certainty of high operational safety and reliability.

To ensure that your 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.

Please observe that, in accordance with the General Terms and Conditions of Business which are the basis for both parties, the guarantee loses its validity when the system is improperly installed, maintained, repaired, used or altered by the customer or a third party, or is operated in an environment which does not fulfil the specified installation conditions.

Any maintenance work that is necessary during the validity of the guarantee is only to be carried out by a service professional expressly authorized to do this work.

The staff who are trained on and operate the system are committed to carry out daily/weekly checks.

During the term of the guarantee, the maintenance work specified on the maintenance record supplied with these Operating Instructions is to be carried out weekly.

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

Calibration of the conductivity display is only to be carried out and recorded by customer service.

Cleaning and disinfection of storage tanks, piping, filter housings etc. is performed for reasons of hygiene and has no effect on the technical condition of the system. These components must only be cleaned and disinfected whenever algae or slime is detected inside them or at least once yearly.



Checks or maintenance work on electrical equipment are only to be made after turning the system off at the mains switch to make it currentless and ensuring that it will not be inadvertently turned back on. Such work is only to be carried out by qualified electricians

### 14.1 Maintenance intervals

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

Material	Flow chart no.	Article no.	Interval*
Filter cartridge	F1	09.2005	12 months
Sterile filter capsule	F2	09.1003	12 months
Ultrafiltration membrane	F3	22.0079	24 months

\*Replacement could be required at shorter intervals according to the quality of the feedwater.

## 14.2 Replacing the filter cartridge



The filter cartridge is to be replaced when the maximum limiting value that you have set for the ultra pure water is exceeded or when the "New Filter cartridge" message is shown in the display.

Proceed as follows to replace the filter cartridge:

1. Shut off the supply of feedwater.
2. Press the press button on the xCAD for water to flow out until no more water emerges, then push it again to stop the emptying process.
3. Switch the system off.
4. Remove the cartridge cover.
5. Take the quick-connects off of the feed and ultra pure water sides of the filter cartridge and close the connectors with the stoppers you have saved.
6. Draw the spent filter cartridge out from the guide and push the new filter cartridge in.
7. Remove the stoppers from the new filter cartridge and save them.
8. Fit the quick connects to the filter cartridge so that they audibly click into position.
9. Replace the cartridge cover.
10. Open the supply of feedwater.
11. Switch the system on.
12. Dispense and discard at least 5 litres of water.
13. To set the operating time counter of the filter cartridge back to zero, enter the serial number that is given on the filter cartridge as is described in "Filter cartridge operating time counter" section.

**Caution:** To do this, the system must be unlocked, as is described in the "Unlocking the system" section.



Switch the system to the "Rinsing" operating mode to vent air out of it.

## 14.3 Disinfection



**Disinfection must be regularly carried out, at the latest when the filter cartridge is replaced.**

A disinfection cartridge, article no. 09.2201, is required for disinfection of the system.

Use cleaning solutions as follows:

MICRO-Chlor Granulate, 1 box, article no. 09.2202 (Europe only)

Cleaning Solution, 1 syringe, article no. CMX 25 (US-market only).



**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:**

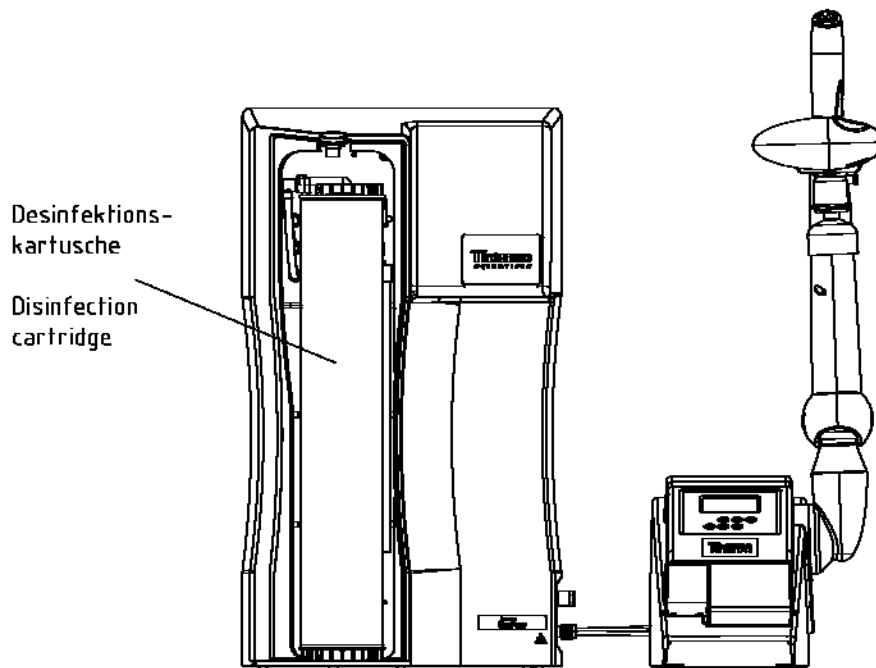
1. Switch the GenPure system off.
2. Shut off the supply of feedwater to the system and open the dispensing valve so that pressure in the system is completely released.
3. Remove the filter cartridge (as under "Changing the filter cartridge" in the Operating Instructions for the system).
4. Unscrew the stopper from the disinfectant cartridge, fill the cartridge with water then empty the contents of a box respectively a syringe of the cleaning solution into the water.

**Important! For effective disinfection the cartridge must be completely filled with water.**

5. Screw the stopper back on the disinfectant cartridge and connect the cartridge in the system (as under "Changing the filter cartridge" in the Operating Instructions for the system).
6. Re-open the feedwater supply.
7. Switch the system on and select the "Disinfection" prompt in the menu. The disinfection programme takes about 30 minutes.
8. Switch the system off.
9. Shut off the supply of feedwater to the system.
10. Remove the disinfectant cartridge (as under "Changing the filter cartridge" in the Operating Instructions for the system).
11. Connect the new filter cartridge in the system (as under "Changing the filter cartridge" in the Operating Instructions for the system).



**Before dispensing water from the system, let water run out for approx. 15 minutes. The system is then ready for use.**



## 15. 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. You can return the system 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  
D-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.

## 16. Trouble shooting

Fault	Cause	Remedy
The system does not start	<ul style="list-style-type: none"> <li>- No supply of power</li> </ul>	<ul style="list-style-type: none"> <li>- Provide power</li> </ul>
Dispensing not possible	<ul style="list-style-type: none"> <li>- Feedwater tap is closed</li> <li>- Feedwater and rinse water connections are mixed up</li> <li>- Feedwater pressure &lt; 0.1 bar</li> </ul>	<ul style="list-style-type: none"> <li>- Open the feedwater tap</li> <li>- Correct the connections</li> <li>- Increase the feedwater pressure</li> </ul>
Conductivity < 18.2 MΩxcm	<ul style="list-style-type: none"> <li>- System has a UF-module (higher conductivity possible)</li> <li>- Ion exchange capacity is exhausted</li> </ul>	<ul style="list-style-type: none"> <li>- Replace filter cartridge with a new one</li> </ul>
System control no longer reacts	<ul style="list-style-type: none"> <li>- Improper operation</li> </ul>	<ul style="list-style-type: none"> <li>- Unplug the mains plug for 5 seconds</li> </ul>
Water flows out	<ul style="list-style-type: none"> <li>- Leaky hose connection</li> <li>- Feedwater pressure &gt; 6 bar</li> </ul>	<ul style="list-style-type: none"> <li>- Check and seal the hose connection</li> <li>- Install a pressure reducer</li> </ul>
Dispensed amount is too small	<ul style="list-style-type: none"> <li>- UF-Module blocked</li> <li>- Pre-pressure too low</li> <li>- Internal pressure too low</li> </ul>	<ul style="list-style-type: none"> <li>- Replace UF-module</li> <li>- Increase the pre-pressure</li> <li>- Readjust pressure reducer</li> </ul>
Wrong time or date	<ul style="list-style-type: none"> <li>- Time zone</li> <li>- Summer/winter time</li> </ul>	<ul style="list-style-type: none"> <li>- Reset time and date</li> </ul>
Wrong language	<ul style="list-style-type: none"> <li>- Wrong language set</li> </ul>	<ul style="list-style-type: none"> <li>- Correct the language setting</li> </ul>
Fault message: <i>"Limit value feed"</i>	<ul style="list-style-type: none"> <li>- Feedwater conductivity too high</li> <li>- Limiting value set too low</li> </ul>	<ul style="list-style-type: none"> <li>- Check the pretreatment</li> <li>- Check and suit the limiting value setting</li> </ul>



<p>Fault message: <i>"Lim. va.pure w."</i></p>	<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>
<p>Fault message: <i>"UV-time"</i></p>	<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). Re-set the operating time counter</li> </ul>
<p>Fault message: <i>"UV-intensity"</i></p>	<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>
<p>Fault message: <i>"max.Temperature"</i></p>	<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>
<p>Fault message: <i>"Measuring cell LF1"</i></p>	<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 &lt; 18.2 MΩxcm "</li> </ul>
<p>Fault message: <i>"Measuring cell LF2"</i></p>	<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>
<p>Fault message: <i>"Measuring cell LF3"</i></p>	<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: "Temp. meas. cell"	- Measuring cell cable break - System control defect	- Replace the measuring cell - Replace system control
Fault message: "New filter set"	- Expiry of filter cartridge operating time	- Replace with new filter cartridge (art.-no.: 09.2005)

**The address to contact when your system requires service:**

**Overview of Thermo Scientific International Sales Organization**

**Enquiries from USA/Canada**

**APS Water** : +1 818 786-0600

**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**

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Service: +33 825 800 119

**Germany:****Postal Address Germany:**

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**Phone**

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Service: Toll free 0800 1 112110

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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**

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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

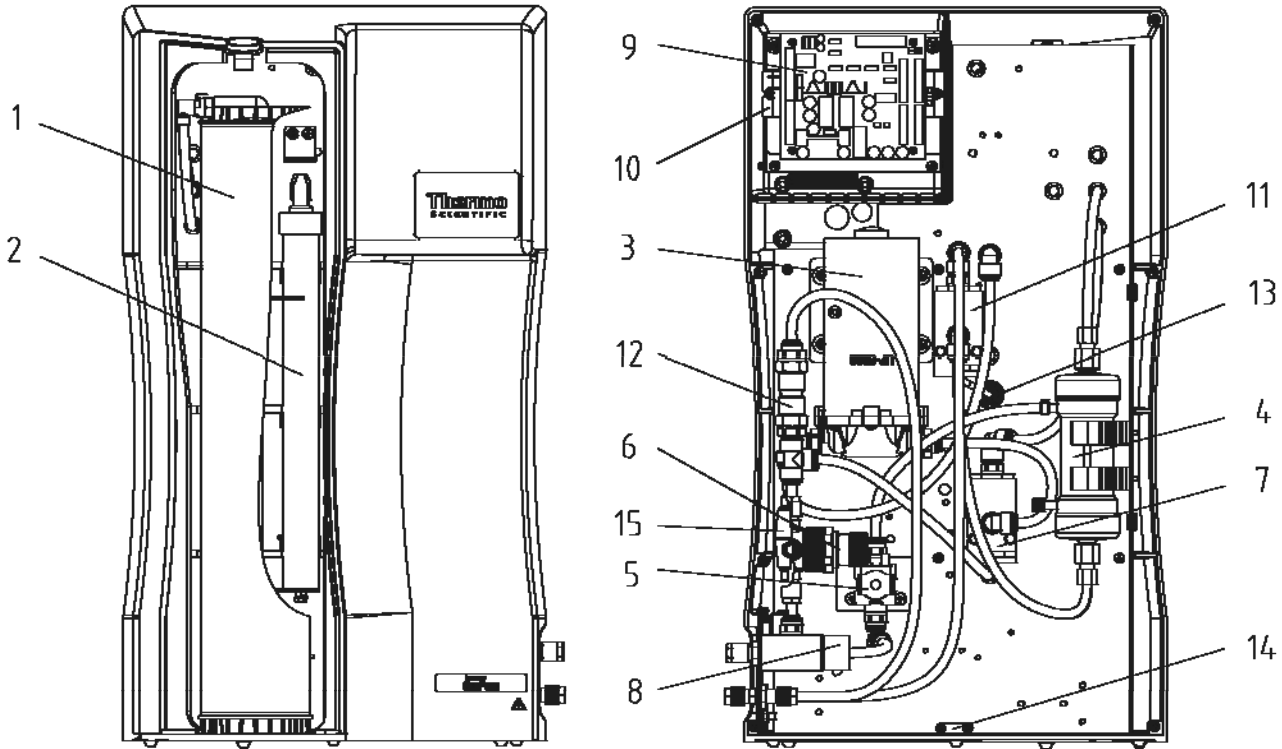
**UK/Ireland**

Service: +44 870 609 9203

Sales: +44 870 609 9203

## 17. Replacement parts

### 17.1 GenPure

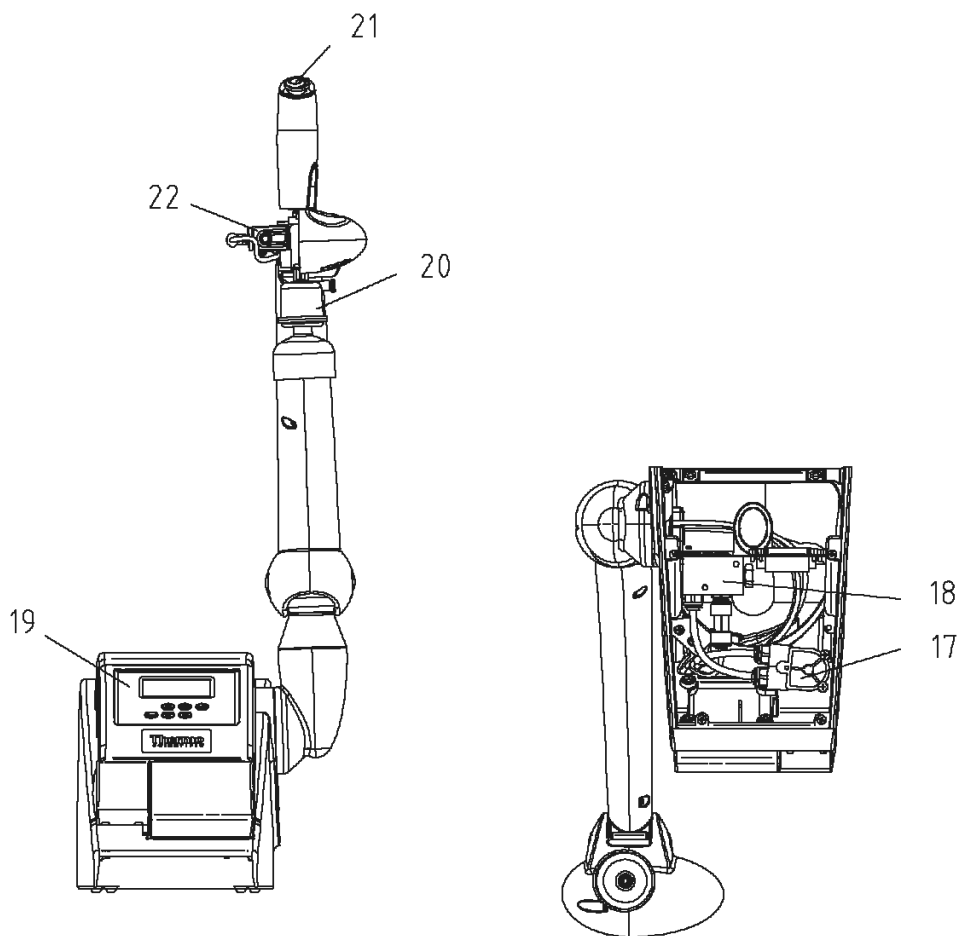


Parts marked with an "x" are wear parts.

Pos.	Flow chart no.	Designation	Article no.	
1	F1	Filter cartridge	09.2005	
2	UV1	UV-Lamp complete Replacement UV-lamp	26.0063 09.2002	
3	P1	Circulation pump	19.0050	x
4	F3	Ultrafiltration module (only UF)	22.0079	
5	V4	Rinsing solenoid valve	15.0062	x
6	V1	Pressure reducer	15.0109	
7	QI302 TIA501	TOC conductivity measuring cell Temperature sensor (only UV - TOC)	26.0014	
8	QIA300	Feedwater conductivity measuring cell	16.0126	
9		Interface board	16.0408	
10		UV Ballast unit (only UV)	22.0088	
11	QIA303 TIA500	TOC conductivity measuring cell Temperature sensor	26.0014	
12	V2	Check valve 1 bar	15.0019	
13	QIA301	UV-Intensity sensor (only UV - TOC)	16.0222	
14	LSZ 100	Leakage sensor	16.0389	
15		G fuse holder 5 x 20 mm G fuse, 5 x 20 mm, 2.0 A, fast active	50137055 50134191	
16		Table top power pack (not shown)	50134184	

17.2 xCAD Server, xCAD Client

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Parts marked with an "x" are wear parts.

Pos.	Flow chart no.	Designation	Article no.	
17	FIS400	Flow meter	15.0100	
18	V5	Check valve	15.0130	
19		Server - CPU Board with display Client - CPU Board with display	16.0409 16.0410	
20	F2	Sterile filter capsule 0,2 µm	09.1003	
21		Press button	16.0370	x
22	V3	Dispensing solenoid valve	15.0101	x
23		Extension cable SUB-D, 25-pin, GenPure / xCAD (not shown)	16.0375	
24		Extension cable SUB-D, 9-pin, xCAD / Printer (not shown)	16.0378	



**We ask for your understanding that our guarantee for this system is invalidated when replacement parts, accessories or consumable materials from other manufacturers are used in or for the system, as we have no influence on their composition or quality.**

## 18. Consumable materials

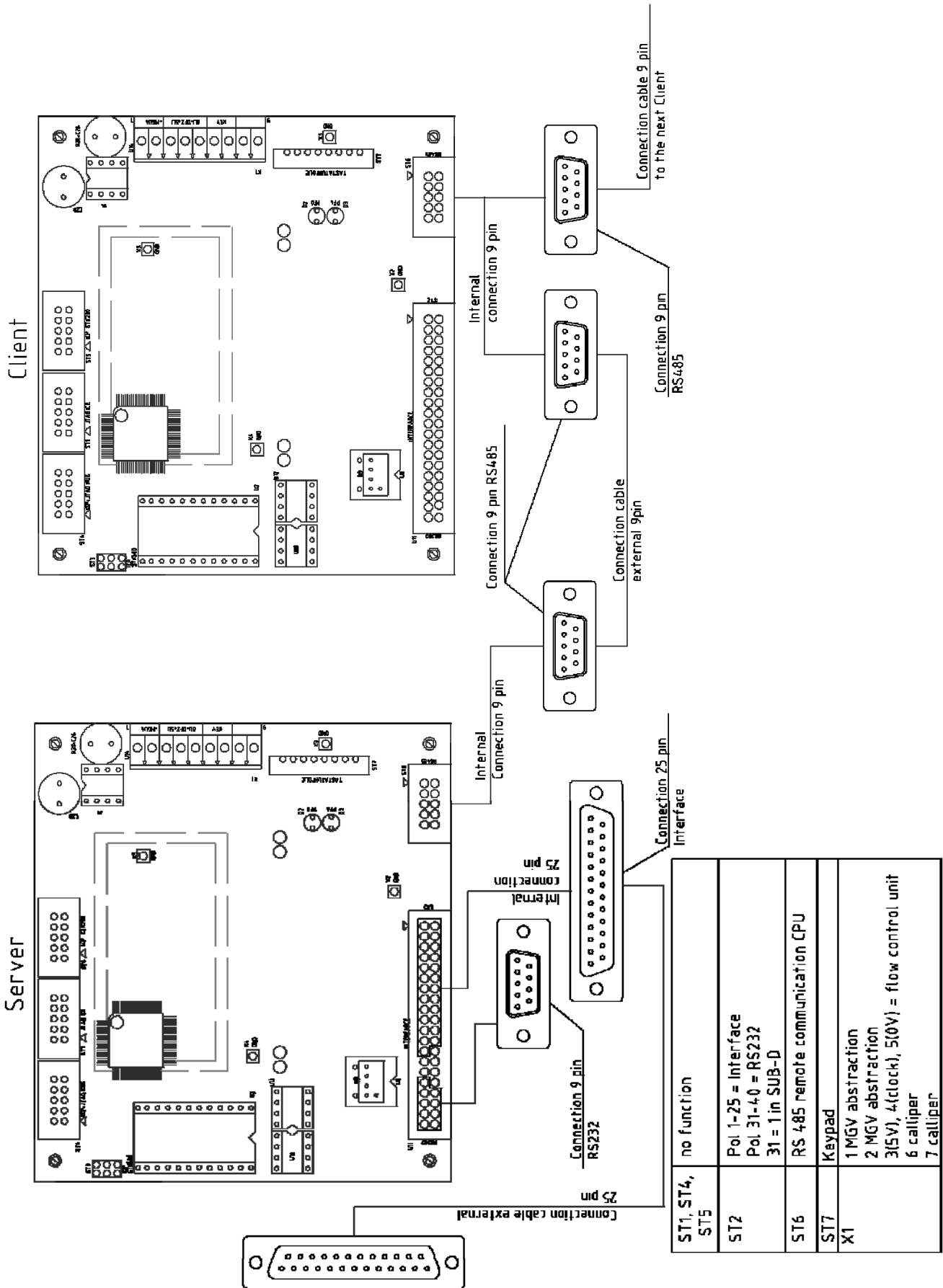
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Designation	Article no.
Filter cartridge	09.2005
UV-Lamp	09.2002
Ultrafiltration module	22.0079
Sterile filter capsule	09.1003

## 19. Accessories

Designation	Article no.
Disinfection cartridge	09.2201
MICRO-Chlor disinfection agent (pack of 12 cans, Europe only)	09.2202
Cleaning Solution, 1 syringe (US market only)	CMX25
Printer	09.2207
xCAD (Client) bench version	50136494
xCAD (Client) wall version	50136505
Ion exchanger DI 1500	02.1500







## 21. Maintenance record

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

**Customer address:** \_\_\_\_\_ **Location:** \_\_\_\_\_

\_\_\_\_\_ **System type:** \_\_\_\_\_

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

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

Date	Feedwater conductivity [MΩxcm]	Ultra pure water conductivity [MΩxcm]	Temperature [°C]	TOC value [ppb]	UV-Intensity [%]	UV-Lamp operating time [h]

Ultra pure water flow rate [l/h]	Last filter cartridge replacement	Last cleaning, disinfection	Remarks	Signature

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

The following are necessary for proper maintenance of the quality provided by the system:

- 1x weekly, acquire measured values.



Check and replace the pretreatment at regular intervals to ensure the optimal ultra pure water quality.

**Distributed and Supported By**

**APS Water Services Corp**

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