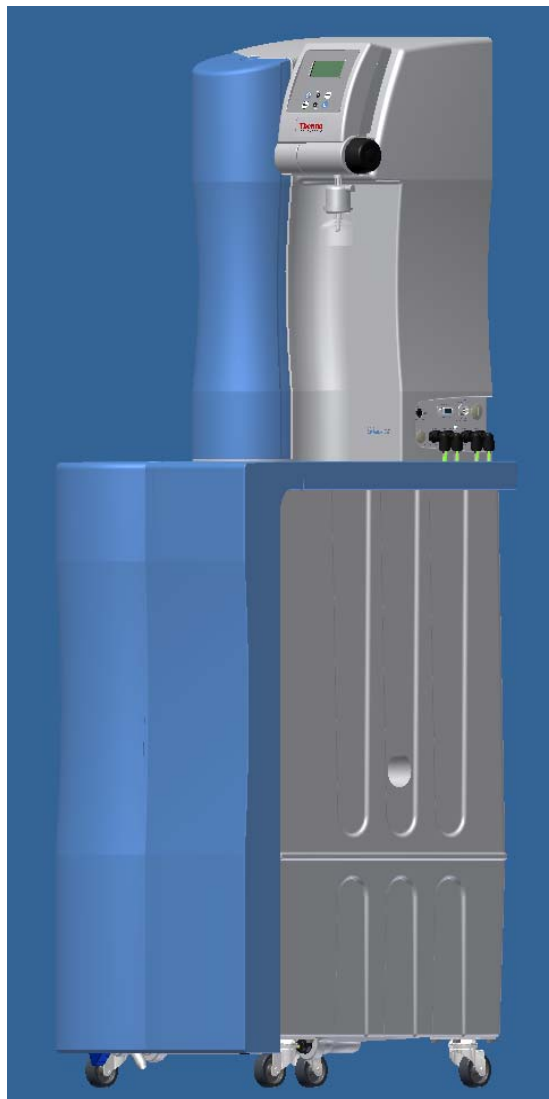


Operating Instructions
Thermo Scientific Barnstead LabTower TII
Water Purification System

- [] Art. no.: 50132191 TII 20
- [] Art. no.: 50132193 TII 20 UV

- [] Art. no.: 50132196 TII 40
- [] Art. no.: 50132141 TII 40 UV



Serial no.:

These Operating Instructions must be read prior to installing and starting the system!

50132160, Stand: 10.12 Rights to technical changes reserved!



EC-Declaration of Conformity

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

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

This declaration is no longer valid if the machine is modified without our consent.

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

Description of the machine:

function: Pure water system
type: LabTower TII
article number: 50132191, 50132196, 50132193, 50132141

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

EMC Directive (2004/108/EC)

Reference to the harmonised standards:

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

Authorized person for the technical documentation:

Detlef Opp
Stockland3
D-56412 Niederelbert

Niederelbert, 1. April 2010

Detlef Opp, Head of Technical documentation



Signature

Preface

Dear Sir or Madam,

In deciding to purchase a pure water system of the type **LabTower TII** you have selected a high-quality product.

Thank you for the confidence you have placed in us.

Before you start to install and operate your pure water system, please carefully read the information given in these Operating Instructions on how installation and operation are to be properly carried out.

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

Niederelbert, 01.04.2010

1. Contents

Preface.....	3
1. Contents.....	4
2. Explanatory notes on the operating instructions	6
3. Transport and packaging	7
3.1 Examination on receipt.....	7
3.2 Complaints	7
3.3 Packaging and return shipment.....	7
4. Safety precautions	8
5. Intended use	9
6. Extent of delivery	10
7. Technical specifications	11
8. Flow chart	13
8.1 How the system functions	15
9. The installation area.....	16
10. Installation.....	17
11. Putting the system into operation.....	19
11.1 Mounting the power pack (voltage supply).....	22
12. Venting the ion exchanger:	24
13. Operating elements.....	25
14. System control	26
14.1 User menu.....	26
14.1.1 Permeate conductivity:	26
14.1.2 Ultrapure water limiting value:	27
14.1.3 Operating hours:	27
14.1.4 Pretreatment operating hours:	28
14.1.5 Cleaning:.....	28
14.1.6 Disinfection:	29
14.1.7 Fault storage:.....	29
14.1.8 Unlocking the system:.....	30

14.2 OEM Menu	32
14.2.1 Maximum temperature:	32
14.2.2 Disinfection time:.....	33
14.2.3 Recirculation time:.....	33
14.2.4 Rinsing time:	33
14.2.5 Interval rinse time:.....	34
14.2.6 Real-time clock:.....	34
14.2.7 Sending interval:	34
14.2.8 Language:	35
14.2.9 Switching units:	35
14.2.10 Switch off temperature compensation:.....	35
14.2.11 Adjusting the float switch circuit hysteresis:.....	36
14.2.12 Programme choice TII UV, RO:	36
14.2.13 Entering the system type and serial number:.....	36
14.3 Printer output	37
14.3.1 Standard messages:.....	37
14.3.2 Code messages:.....	37
14.3.3 Fault messages:.....	37
14.4 PIN Assignment/ 8 pin socket	38
15. Maintenance.....	39
15.1 Maintenance intervals	40
15.2 Rinsing the membrane	40
15.3 Replacing the pretreatment.....	41
15.4 Replacing the ion exchanger.....	42
15.5 Replacing the RO-membranes.....	43
15.6 Changing the filter cartridge	44
15.7 Disinfection	45
16. Waste disposal	47
17. Trouble shooting.....	48
18. List of replacement parts	52
19. Accessories	54
20. Consumable materials.....	54
21. Terminal assignment	55
21.1 LabTower TII 20/TII 20 UV (24V DC).....	55
21.2 LabTower TII 40/TII 40 UV (48V DC).....	56
22. Maintenance record.....	57

2. Explanatory notes on the operating instructions



EU Mark of Conformity



CSA - admission



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

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 LabTower TII system in the space provided on the front page.

* Read the serial number of your 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

Pure water systems are carefully checked and packed prior to shipment, but there is nevertheless always a possibility that damage to them could occur during shipment.

3.1 Examination on receipt

- Check the completeness of the delivery against the shipping papers.



Is the packaging damaged?

- Check the system for damage.

3.2 Complaints

Should the system have been damaged during transport:

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

3.3 Packaging and return shipment

Whenever possible, use the original packaging and packing materials.

Should these no longer be available:

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



*** Complaints are only valid for 6 days after the receipt of the goods. When this time has elapsed, then the right to claim for damages expires.**

4. Safety precautions



For your own safety, please observe the above safety precautions!

- Your LabTower TII system is a modularly constructed, pure water system that serves exclusively for the purification of tap water.
- Do not put the system into operation until you have taken notice of all of the appropriate information that is given in these Operating Instructions.
- Lifting and carrying the pure water system, e.g. to the installation location, should be carried out by two people. To lift it, each takes hold of it under the base plate at two corners.
- Note that the manufacturer is freed of all liability for damages that result from improper operation of the system, or from use of it for other than the intended purpose.
- The CE-Mark becomes invalidated should constructional changes be made to the system or products of other manufacturers be installed in it.
- Protect the system from frost. The temperature in the area in which the system is installed must be at least +2°C and must not exceed + 35°C.
- Observe all regulations and requirements, including current accident regulations, that are applicable and appropriate at the installation area, including those for the statics of the flooring (see weight under „Technical specifications“).
- The raw water pressure must be at least 2 bar and at most 6 bar, should it be higher, then an additional pressure reducer must be installed.
- DIN EN 1717 requires that water purification systems be equipped with a safety device that protects against contamination of the drinking water piping.
- A grounded 100-250V / 50/60Hz socket must be available..
- The installation area must have a drain at floor level with at least DN 50 pipe, otherwise the manufacturer will not accept any liability for water damage. Should no such drain be available, then a water watcher (240V only) (article no. 16.0129) must be installed.
- Gravity fall to the waste drain must be ensured.
- After long standstill periods (e.g. holidays), the system must be subjected to rinsing and, if appropriate, disinfection. Refer to the section on "Cleaning and disinfection" for details.
- When selecting the installation area and installing the system, make sure that there is sufficient working area around the system for convenient operation of it.
- Never look directly into a switched-on UV-lamp, as UV-light is dangerous to eyesight. The UV-lamp is only to be replaced by authorized person to do this.
- The guarantee is valid for a period of 12 months.

5. Intended use

The LabTower TII pure water system is a reaction to the continually increasing requirements that water of pure quality must fulfil, the increasingly strict demands resulting from technological advances and the need for user-friendly systems and complete solutions.

LabTower TII systems have been solely and specifically designed to excel in the intended use, which is to produce sterile filtered pure water free of particles, salts and organic compounds.

To benefit from the long possible service lives of the high-quality purification media, feed the pure water system with water which has been subjected to an upstream pre-treatment step (reverse osmosis, ion exchange or distillation),

- 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**tom ic **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

6. Extent of delivery

The LabTower TII pure water system consists of:

1 x	LabTower TII / TII UV	Article no.: 5013xxxx
1 x	Assembly kit (TII 20/TII 20 UV) or Assembly kit (TII 40/TII 40 UV) consisting of:	Article no.: 50132145 Article no.: 50134370
1 x	Prefilter cartridge 5µm + hardness stabilizer 10"	Article no.: 06.5204
1 x	Fine filter 1µm-10"	Article no.: 06.5101
1 x	Ion exchanger, DI 2800 S	Article no.: 02.2850- RDS
1 x	Sterile filter capsule	Article no.: 09.1003
1 x	Connecting kit consisting of:	Article no.: 25.0085
3 x	Connecting hose, PE, Ø8/Ø6 x 3m	Article no.: 18.0036
2 x	POM Insert	Article no.: 14.0189
2 x	Gasket 3/4"	Article no.: 21.5008
2 x	Union nut, R 3/4"	Article no.: 14.0003
2 x	Screw connector, d8-1/4"	Article no.: 14.0075
1 x	Operating Instructions	Article no.: 50132160
1x	Connecting cord (rubber connector to nema plug connector)	Article no.: 50132200
1x	Connecting cord (rubber connector to british ST plug connector)	Article no.: 50132203
1x	Connecting cord (rubber connector to euro plug connector)	Article no.: 50132215
1x	Table power unit 24V DC	Article no.: 50134196
1x	Table power unit 48V DC (only TII 40/TII 40 UV)	Article no.: 50134184
1x	Universal adapter	Articel no.: 21.1006
1x	Universal holder	Articel no.: 21.1007



Please check the parts supplied against this list. Contact the manufacturer should a part be missing.

7. Technical specifications

Demands made on the raw water	
Source	Potable tap water softened or hardness stabilized.
Blocking index (SDI)	< 3, with higher values, an upstream pretreatment (article no. 09.4000) is to be installed.
Resistance	>0.001 MΩxcm
Prefiltration	5µm + hardness stabilization
Free chlorine	< 0.1 mg/Litre
Manganese content	< 0.05 mg/Litre
Iron content	< 0.05 mg/Litre
Colloid index	< 3
ph-Range	4 – 11
Temperature	2 – 35 °C
Pressure	2 – 6 bar

Pure water quality	
	LabTower TII / TII UV
Retention quota, salts	Ø 98 %
Retention quota, bacteria and particles	99 %
Performance	20 – 40 L/h, acc. To the version

Dimensions	
Height	1500 mm
Width	450 mm
Depth	580 mm
Weight, empty	66 kg
Operational weight (with full tank)	166 kg

Cell constants of the measuring cells	
Conductivity, permeate	0.16 cm ⁻¹
Conductivity, pure water	0.01 cm ⁻¹

Water connections	
Raw water inlet	Hose, 8 mm od
Concentrate outlet	Hose, 8 mm od
Pure water outlet	Hose, 8 mm od

Electrical connections / external switched mode power supply	
Input voltage	AC 100 – 240 V, 50 – 60 Hz, 5 – 3.8 A
Output voltage	DC 24 V, 3.8 A
System connection	DC 24 V, 80 W
Serial interface	RS 232

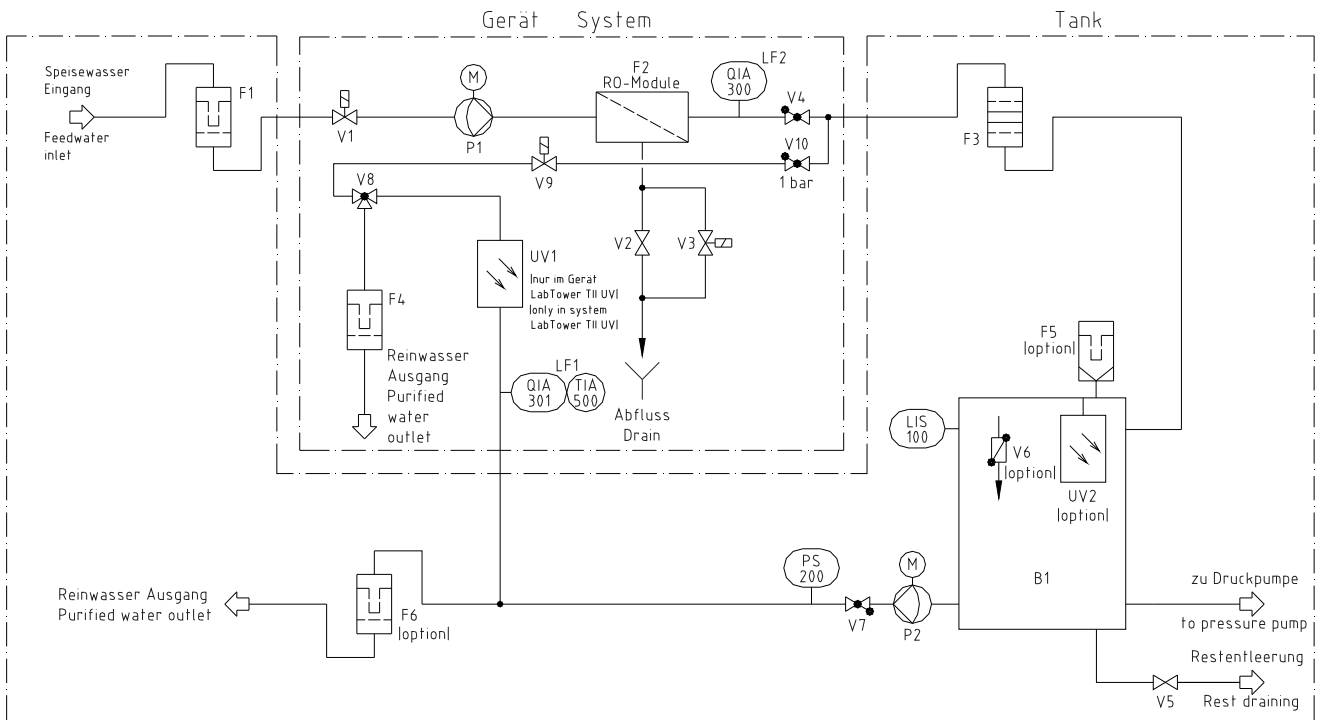
Electrical connections / external switched mode power supply	
Input voltage	AC 100 – 250 V, 50 – 60 Hz, 4 – 2.5 A
Output voltage	DC 48 V, 2.5 A
System connection	DC 48 V, 120 W
Serial interface	RS 232

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

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

Materials of parts that contact water	
Pump head	Nylon with glass fibre
Filter cartridge	PP
Rinsing solenoid valve	PA
Conductivity measuring cell	POM, stainless steel
Distribution block	POM
Connectors	POM
Hoses	PE
Gaskets	EPDM

8. Flow chart



- | | |
|---|--|
| B1 Storage tank: | Stores the pure water produced. |
| F1 Prefilter 5µm +
and hardness stabilization: | Prevents particles > 5µm from penetrating into the system.
Stabilizes calcium and magnesium. |
| F2 RO-Module: | Semipermeable thin-film composite spiral wound membrane. |
| F3 Ion exchanger: | Remover inorganic ions and traces of dissolved organic substances. |
| F4 Sterile filter capsule: | Retains particles > 0.2 µm. |
| F5 Sterile vent filter:
(option) | Prevents the entry of bacteria and particles > 0.2 µm with ambient air. |
| F6 Sterile filter:
(option) | Retains particles > 0.2µm. |
| LIS100 Float switch: | Determines the filling level in the storage tank. |
| P1 Pressure booster pump: | Increases the inlet pressure to the operating pressure required. |
| P2 Pressure booster pump:: | On withdrawal of pure water, pumps the water through dispensing valve (V8) and sterile filter (F4) to the pure water outlet, as well as via filter (F6) to a user. |

PS200 Pressure switch:	Switches pressure pump (P2) on when pure water is to be withdrawn from storage tank (B1) and switches it off when dispensing valve (V8) is closed.
QIA300 Permeate conductivity measuring cell:	Measuring device for determination of the conductivity (after RO), as a pure water quality parameter.
QIA301 Pure water conductivity cell:	Measuring device for determination of the conductivity (after ion exchanger F3), as a pure water quality parameter.
TIA500 Temperature sensor:	Measures the pure water temperature for temperature compensation.
UV1 UV-Disinfection: (only in TII UV version)	Reduces the germ and bacteria content.
UV2 UV-Disinfection: (option)	Reduces the germ and bacteria content.
V1 Raw water solenoid valve:	Is closed in stand-by and during standstills. It prevents water from flowing into the system when it is not in operation.
V2 Pressure hold valve:	Serves for adjustment of the operating pressure and WCF.
V3 Rinsing solenoid valve:	Opens for cleaning of the membranes prior to pure water production, after pure water production and at least every 12 hours.
V4 Check valve:	Prevents measuring cell (QIA300) from running dry.
V5 Residual drainage valve:	For complete emptying of storage tank (B1).
V6 Sterile overflow: (option)	Prevents the penetration of bacteria and germs into storage tank (B1).
V7 Check valve:	Prevents backflow of pure water into storage tank (B1).
V8 Dispensing valve:	For dispensing pure water from the system.
V9 Recirculation solenoid valve:	Opens for recirculation.
V10 Check valve:	Prevents pure water from flowing back into the system.

8.1 How the system functions

After switching the ON/OFF-key to on, the system starts either in the production mode or stand-by mode, according to the filling level in storage tank (B1).

Feedwater flows into the system under a maximum pressure of 6 bar.

Raw water solenoid valve (V1) is closed in stand-by mode and during standstills. It prevents raw water from flowing into the system when the system is not in operation and so prevents overflowing of storage tank (B1).

The semi-permeable membranes (F2) retain all salts that are dissolved in the water according to their given retention quota. In addition, because of the molecular size of the membrane pores, an average 99% retention of bacteria, pyrogens and particles is also effected.

The permeate from the membranes flows on across pure water measuring probe (QIA 300) into storage tank (B1). Bacteria and germs are destroyed by UV-disinfection (UV2) (option). Feedwater constituents retained by the membranes are led off in the concentrate that remains.

Pressure pump (P2) pumps the pure water in storage tank (B1) through check valve (V7) and ion exchanger (F3), across the special conductivity measuring probe (QIA301) with temperature compensation (TIA500) to UV-disinfection (UV1), where bacteria and germs are destroyed. Following this, the pure water flows to dispensing valve (V8). The conductivity and the temperature are determined in the conductivity measuring probe.

These values can be called in the menu of the microprocessor system control.



Valve V2 has been pre-adjusted in the factory. A change in the adjustment of this valve could result in damage to the reverse osmosis module! Because of fluctuations in the feed water temperature and pressure, the adjustment of the pressure hold valve and the concentrate flow that it governs must be checked and, if necessary, re-adjusted, when the system is put into operation and at regular intervals thereafter. The measured values must be recorded in the maintenance record.

Concentrate flow, LabTower TII / TII UV			
Check and adjust at least 1x monthly			
System:	Permeate flow [L/h]	Concentrate flow [L/h]	adjustable up to [%]
LabTower TII / TII UV 20	20	60	40
LabTower TII / TII UV 40	40	60	40

Your pure water system is equipped with automatic flushing. Flushing is carried out when the system is switched on, at the end of each production, and also every 12 hours. For this, rinsing solenoid valve (V3) is opened and the strong flow of water across reverse osmosis module (F2) sweeps coarse particles and other contaminants away from the surface of the membranes and carries them with it to drain.

This automatic flushing has a positive effect on the service life of the reverse osmosis module.

An additional advantage of automatic flushing is that it prevents bacterial growth from occurring in the reverse osmosis module when the system is at a standstill for a long time. For this reason, we highly recommend that you leave the system switched on over the weekend and during holiday times, so that the 12 hour flush can effectively guard against bacterial growth.

9. The installation area

The following criteria must be taken into consideration when choosing the installation area.

- ⇒ Minimum temperature in the installation area: + 2°C - +35°C.
- ⇒ The surface that your pure water system is to be stood on must be strong enough to support it (for weight, see "Technical specifications").
- ⇒ A floor drain with waste pipe of DN 50 size (38.5 mm i.d.) is required. Should this not be available, then a water watcher (article no.: 16.0129) must be installed to protect against damage from water flooding!
- ⇒ An unrestricted gravity flow of concentrate to the floor drain is obligatory.
- ⇒ An electrical socket appropriate to the voltage given on the type plate of the system must be positioned directly alongside the system. The safety fuse must be appropriate for the power required (see "Technical specifications").
- ⇒ There must be sufficient working room around the system.
- ⇒ An R ¾"R male thread tap water connection which can be shut off must be installed in the direct vicinity of the system.
- ⇒ Easy access must be ensured.

10. Installation

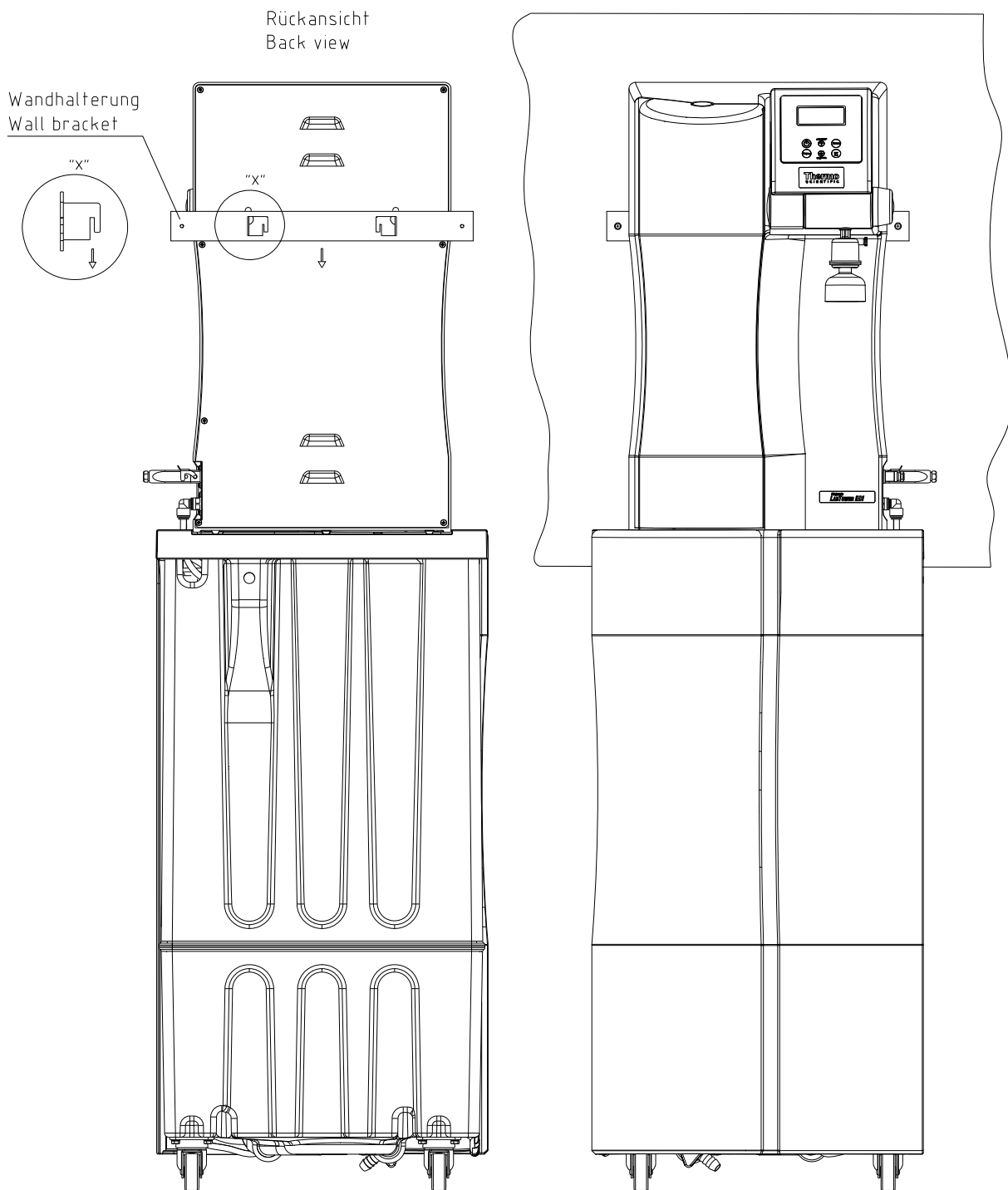
- Before the pure water system can be put into operation, it must be moved to the back of designated wall with screws.

Note: The distance from the pure water system to the wall is 20 mm.

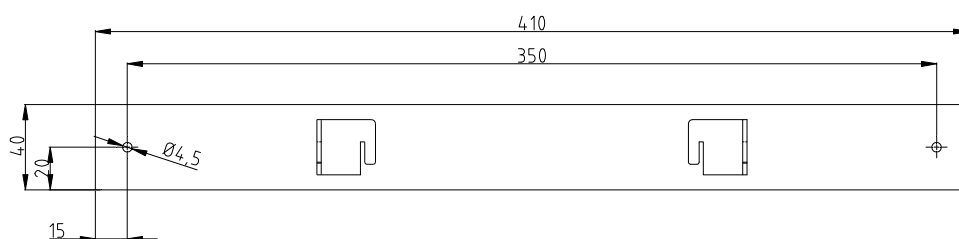
- Use the assembling kit available in wall bracket, the 2 screws 4x40 mm and the 2 dowels (Ø 6 mm)
- Plug the wall bracket into the backside of the pure water attachment, as shown graphically on the following page.

The wall bracket must be shown with the notches (see position "X") down.

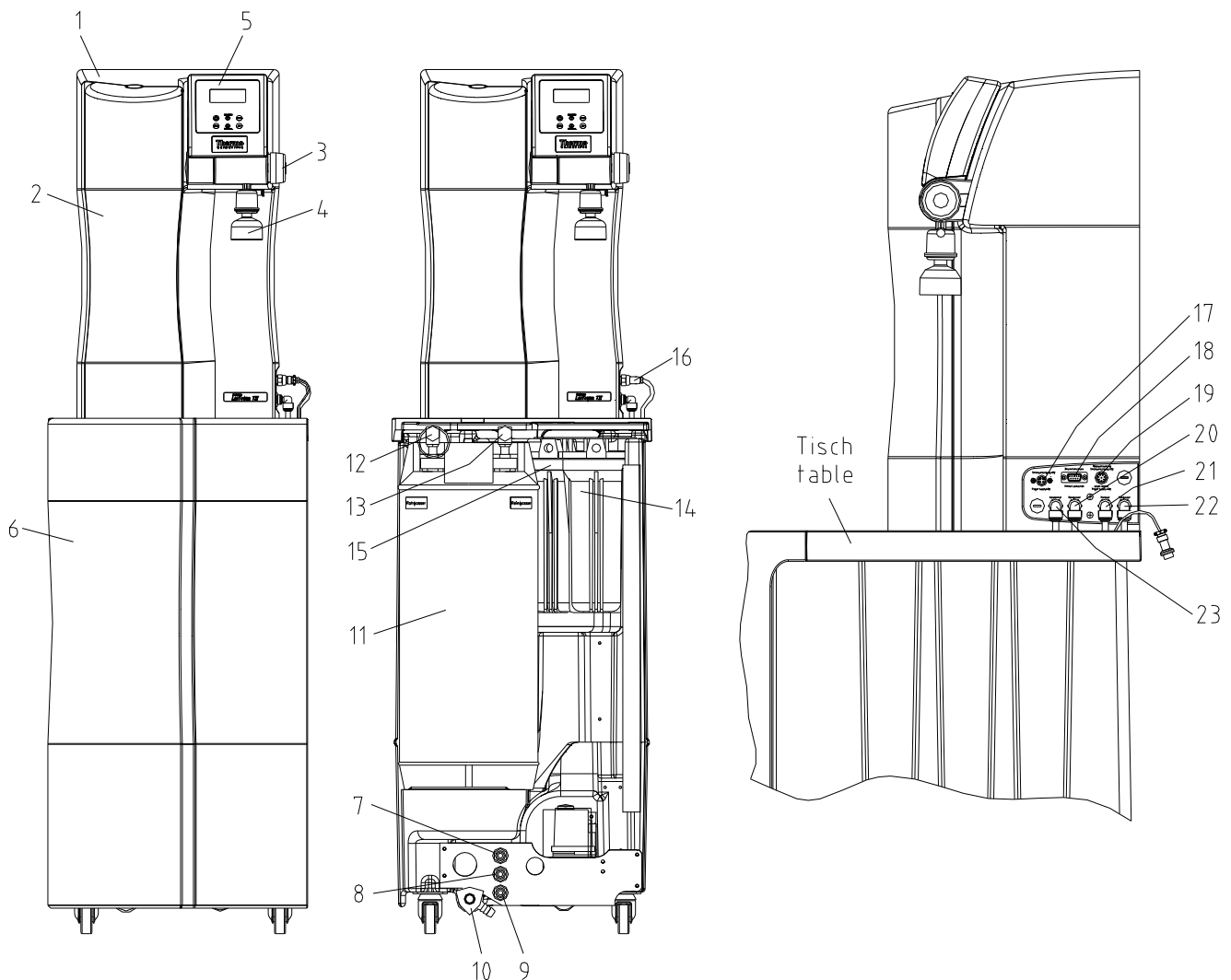
- Now position the pure water system at the proposed wall and attach it with the dowels and screws.



Wandhalterung / Maße
Wall bracket / dimensions



11. Putting the system into operation



- 1) Pure water system TII / TII UV
- 2) Front cover, removable
- 3) Rotary knob for pure water dispensing
- 4) Sterile filter capsule
- 5) Operating unit
- 6) Front cover / storage tank
- 7) Raw water inlet, Ø8
- 8) Concentrate outlet, Ø8
- 9) Pure water outlet, Ø8
- 10) Residual water drainage
- 11) Ion exchanger
- 12) Feedwater connector / ion exchanger

- 13) Pure water connector / ion exchanger
- 14) Pretreatment
- 15) Sterile filter (option)
- 16) 8-pin plug / float switch, pressure pump storage tank
- 17) Power supply, 24/48V DC
- 18) Printer connector
- 19) 8-pin socket / float switch, pressure pump storage tank
- 20) Pure water connector (inlet) from storage tank
- 21) Permeate connector
- 22) Raw water connector
- 23) Concentrate connector

1. Place the pure water system on the storage tank table. Use the angle connectors to connect the hoses positioned on the table with the corresponding connectors (20-23) of the system.
2. Take off the front cover (6) from the storage tank.
3. Screw open the pretreatment housing (14). Insert the pretreatment unit (pre-filter + hardness stabilization, supplied in the assembly kit) in the filter housing and screw the housing tightly closed (refer to the section "Replacing the pretreatment").
4. When an optional sterile filter is to be used, screw open the filter housing (15), insert the sterile filter in the housing and screw the housing tightly closed.
5. Connect the Ø8 – 3/4" id hose supplied in the connector kit to raw water inlet (7) and to a water tap that that be turned off. The connector is marked "Raw water".
6. Connect the Ø8 hose to concentrate outlet (8) and lead it to the drain made available on-site. The connector is marked "Concentrate". The drain to the sewer must be max. Are 1 m above the rinsing water connector of the unit.

Caution! The concentrate must be able to flow to drain under gravity fall!

7. Stand the ion exchanger (11) in the depression in the storage tank.
8. Now press the quick connectors raw water hose(12) and (13) pure water hose onto the ion exchanger (11) connectors marked "raw water" and "pure water".

The quick connectors must click audibly into position.



Do not get the raw water and pure water hoses mixed up!

9. Connect the 8-pin plug (16) to the 8-pin socket (19) of the pure water system and screw the milled screw of the plug tight.
10. Screw the sterile filter capsule (4) in the G1/4" dispensing valve outlet.
11. Now fasten the Ø8 mm hose for the sterile overflow (option) to the overflow connector at the back of the tank and to the drain.
12. Check that the residual water drainage (10) is closed.
13. Check the raw water pressure; it must be within the permissible pressure range (refer to "Technical specifications").
14. Open the raw water tap.
15. Plug the mains plug in.



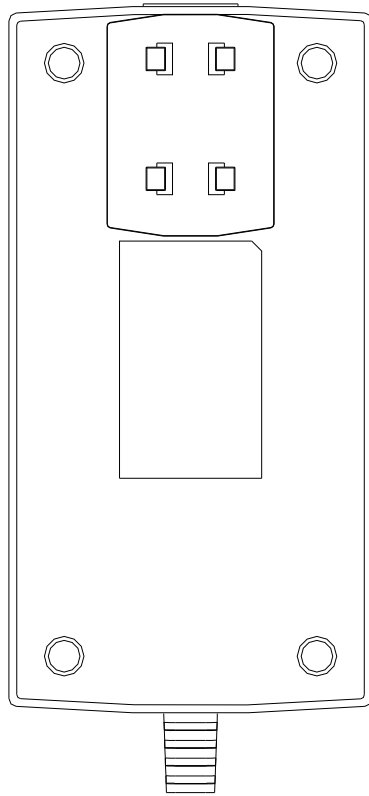
Before you now switch the system on, read through the instructions for the rinsing out procedure for reverse osmosis membranes supplied filled with preserving agent in the "Rinsing and disinfecting" section!

16. Switch the pure water system on with the On/Off-key of the operating unit (5).
17. Check that all connections are perfectly leak-proof.
18. Vent ion exchanger (11), (refer to the following section on „Venting the ion exchanger“).
19. Fit the front cover (6) back on the storage tank.

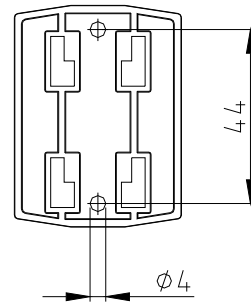
The system is now ready for use.

11.1 Mounting the power pack (voltage supply)

Rückseite / Netzteil
Back side / power supply



Universaladapter
Universal adapter



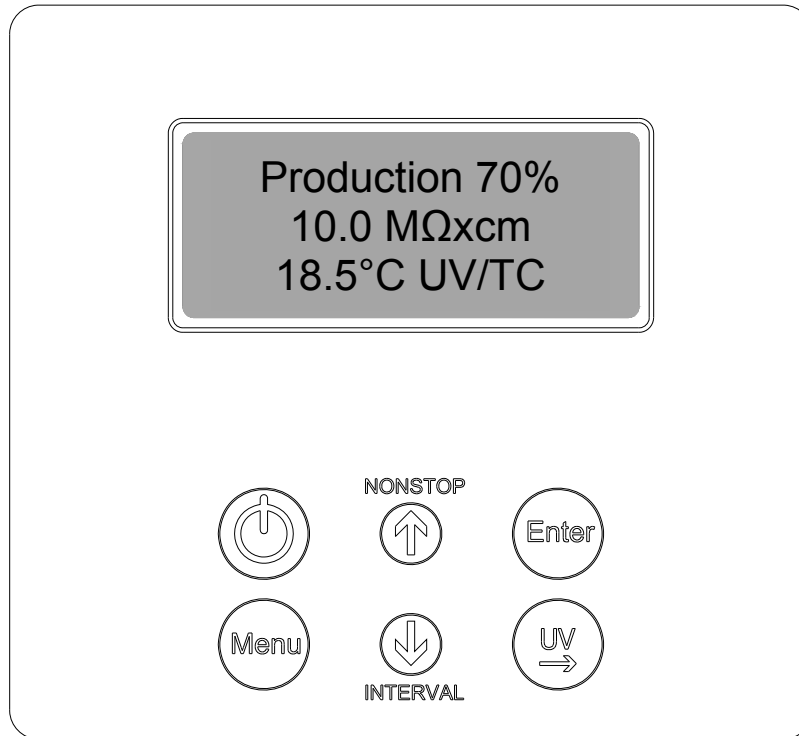
Befestigung
mit Schrauben
Fixing with screws

- Whenever possible, mount the power pack on the wall to the left or right of the 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.
- Connect the power pack to the pure water system (24/48V DC 4-pin power supply connector, pos. 17).
- The system is now ready for use.

12. Venting the ion exchanger:

- Remove the front cover (6) from the storage tank.
- Open the vent valve on the central closing lid of the ion exchanger (11) by turning it anti-clockwise.
- Open the raw water tap and wait until water emerges from the vent valve.
- Close the vent valve by turning it clockwise.
- Replace the front cover (6) on the storage tank.

13. Operating elements



Switches the system on or off

NONSTOP



Increases a value on display



Confirms the value shown in a menu point



Switches the menu to the next menu point



Decreases a value on display

INTERVAL



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

14. System control

General information

When the ON/OFF key is pressed, the pure water system starts running either in the operating mode or in the stand-by mode, i.e. as governed by the float switch.

The operating mode and the volume contained in the tank are shown in line 1 of the display and the measured value for the permeate is shown in line 2.

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

14.1 User menu

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

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

Settings can be changed with the arrow keys and, when the appropriate value has been set, be confirmed by pressing the Enter-key, which also takes you to the next menu prompt.

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

14.1.1 Permeate conductivity:

A single press on the menu-key allows the permeate conductivity to be read and the limiting value for the permeate conductivity to be set. Should this limiting value be exceeded, then the "*Lim.val.permeate*" fault message is displayed flashing in the 4th line of the display.

(Measuring prompt LF 2)

Limiting value setting range: 0.1 – 150.0 $\mu\text{S}/\text{cm}$

Basic setting: 0.020 $\text{M}\Omega\text{xcm}$

Settings above 150.0 $\mu\text{S}/\text{cm}$ result in the limiting value being switched off. The word "*Off*" appears in the display.

The display shows:

Permeate 0.083 $\text{M}\Omega\text{xcm}$ Lim.val.permeate 50.0 $\mu\text{S}/\text{cm}$
--

14.1.2 Ultrapure water limiting value:

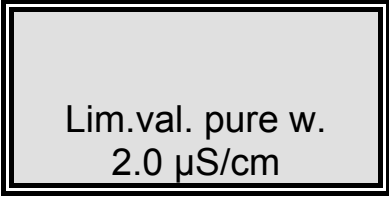
A second press on the menu-key in this menu allows the ultrapure water limiting value to be set. Should this limiting value be exceeded, then the “*Lim.val.ultrapure*” fault message is shown (Measuring prompt LF 1).

Limiting value setting range: 0.055 – 9.999 $\mu\text{S/cm}$

Basic setting: 0.50 $\text{M}\Omega\text{cm}$

Settings above 9.999 $\mu\text{S/cm}$ result in the limiting value being switched off. The word “*Off*” appears in the display.

The display shows:

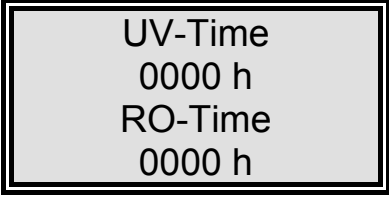


Lim.val. pure w.
2.0 $\mu\text{S/cm}$

14.1.3 Operating hours:

A third press on the menu-key in this menu allows the operating hours of the UV-lamp and the reverse osmosis pump to be displayed. The operating hours counter for the UV-lamp registers the total length of time for which the lamp was switched on. When the maximum operating time is reached, the “*UV-time*” fault message is triggered. The limiting value is set in the OEM menu. There is no limiting value for the reverse osmosis pump.

The display shows:



UV-Time
0000 h
RO-Time
0000 h

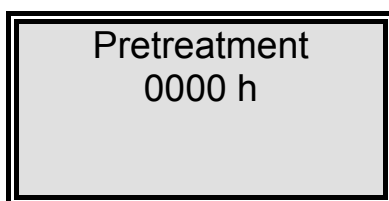
14.1.4 Pretreatment operating hours:

A fourth press on the menu-key in this menu brings the operating hours of the pre-treatment cartridge to display.

This operating time has a limiting value, which is set in the UV menu. The fault message that is displayed when the limiting value is exceeded is "Pretreatment".

The operating hours of the pretreatment are counted whenever the reverse osmosis pump is running.

The display shows:



Pretreatment
0000 h

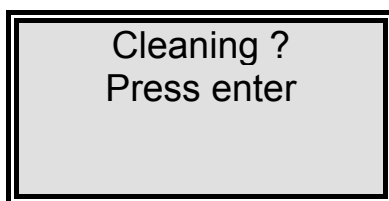
14.1.5 Cleaning:

A fifth press on the menu-key in this menu allows cleaning to be carried out should there is a need for it. The cleaning process is triggered by pressing the Enter-key. The pump then starts and the inlet solenoid valve and the rinsing solenoid valve open for a period of 60 seconds.

During cleaning, no faults or measured values are displayed. When the cleaning process has finished, the system is in the last operating mode (operating or stand-by).

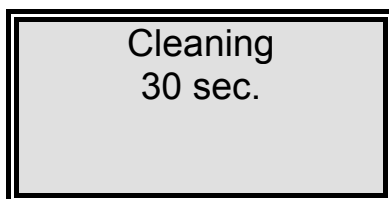
The remaining cleaning time is displayed during cleaning.

The display shows:



Cleaning ?
Press enter

During cleaning, the display shows:



Cleaning
30 sec.

14.1.6 Disinfection:
(not active in this version)

The display shows:



Disinfection
Press enter

14.1.7 Fault storage:

A seventh press on the menu-key in this menu calls the fault storage prompt. Confirmation of this with the Enter-key allows the fault storage to be looked through. The display can show two faults at once, each with time and date. Pressing an arrow key allows previous or following faults to be displayed.

Pressing the menu-key or the Enter-key returns the system to the last operating mode.

The display shows:



Error history
Press enter

The fault storage display shows:



14.03.04 14.30
Lim.val.permeate
14.03.04 15.30
Pretreatment

14.1.8 Unlocking the system:

An eighth press on the menu-key in this menu brings you to the "Code" menu. To prevent unauthorized access to the settings in the system control, changes to the settings can only be carried out when the correct code from the Assignment Table that follows is entered and confirmed with the Enter-key. Unlocking remains active for 5 minutes. Each access via the code is typed out by the printer (RS 232), complete with date, time and abbreviated code number ("Code 0001" corresponds to code 150, "Code 0002" to code 250 etc.).

The display shows menu prompt F:



Code numbers can be assigned to individual persons according to the Assignment Table that follows on page 25. Remove that page from the Operating Instructions and store it where it is safe from unauthorized viewing.

Assignment Table for code numbers that allow the system to be unlocked

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

14.2 OEM Menu

Basic settings and limiting values can be changed in this menu.

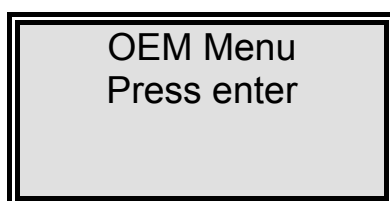
To make changes in the OEM menu, the system control must previously be unlocked (see 12.1.8).

Calling the OEM menu:

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

A press on the menu-key takes you to the next menu prompt.

The OEM menu prompt display shows:



14.2.1 Maximum temperature:

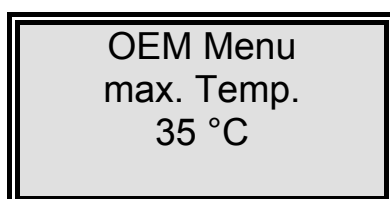
A single press on the menu-key:

The maximum temperature which the system can be allowed to reach can be set in this menu. When this temperature is exceeded, the “*max. Temperature*” fault message is triggered. Settings above 50 °C cause the limiting value to be suppressed and the word „*off*“ appears in the display. It is shown in the 4th line of the display.

Basic setting: 50 °C

Setting range: 1 – 50 °C

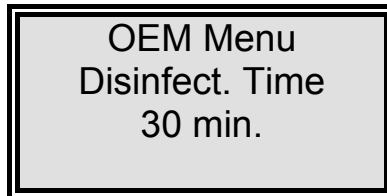
The display shows:



14.2.2 Disinfection time:

**A second press on the menu-key:
(not active in this version)**

The display shows:

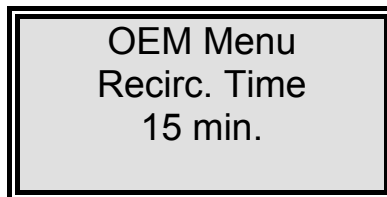
**14.2.3 Recirculation time:**

**A third press on the menu-key:
(not active in this version)**

The recirculation time can be set in this menu.

**Basic setting: 15 min.
Setting range: 1 – 30 min.**

The display shows:

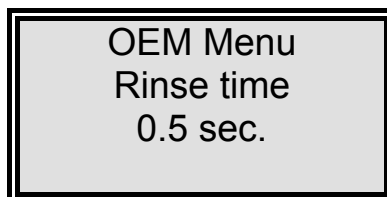
**14.2.4 Rinsing time:**

A fourth press on the menu-key:

The rinsing time can be set in this menu.

**Basic setting: 0.5 sec.
Setting range: 0.1 – 30 sec.**

The display shows:



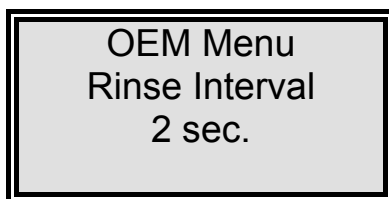
14.2.5 Interval rinse time:**A fifth press on the menu-key**

The interval rinse time can be set in this menu. Rinsing is then carried out for this time period when the operating mode is changed, between stand-by and operation and every 12 hours.

Basic setting: 2 sec.

Setting range: 1 – 30 sec.

The display shows:



OEM Menu
Rinse Interval
2 sec.

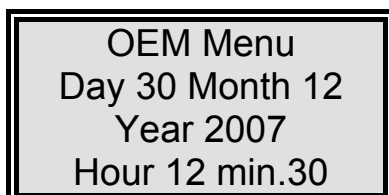
14.2.6 Real-time clock:**A sixth press on the menu-key**

The real time clock can be put right in this menu.

Basic setting: The actual date

Setting range: Month 1 – 12, day 1 – 31, hour 0 – 24, minutes 0 – 60

The display shows:



OEM Menu
Day 30 Month 12
Year 2007
Hour 12 min.30

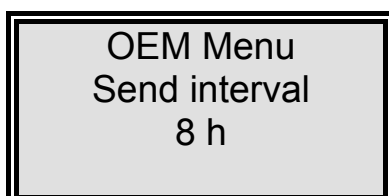
14.2.7 Sending interval:**A seventh press on the menu-key**

In this menu, the sending interval for transmissions of measured values and fault messages to the RS 232 interface can be set.

Basic setting: 8 hours

Setting range: 0.5 – 12 hours

The display shows:



OEM Menu
Send interval
8 h

14.2.8 Language:
An eighth press on the menu-key

The language used for the texts which are displayed is set in this menu.
The choice is of English, German or French.

Basic setting: English

The display shows:



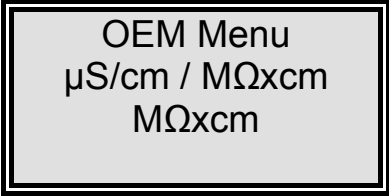
OEM Menu
Language
English

14.2.9 Switching units:
A ninth press on the menu-key

In this menu, a choice can be made as to which unit is to be displayed, specific electric resistance or conductivity.

Basic setting: Resistance $M\Omega\text{cm}$
Setting range: Resistance $M\Omega\text{cm}$,
Specific electric resistance $M\Omega\text{ cm}$

The display shows:

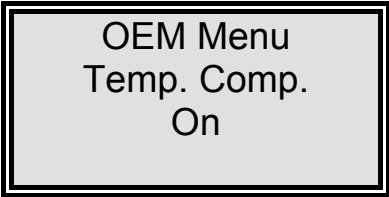


OEM Menu
 $\mu\text{S/cm}$ / $M\Omega\text{cm}$
 $M\Omega\text{cm}$

14.2.10 Switch off temperature compensation:
A tenth press on the menu-key

Basic setting: on
Setting range: on, off

The display shows:



OEM Menu
Temp. Comp.
On

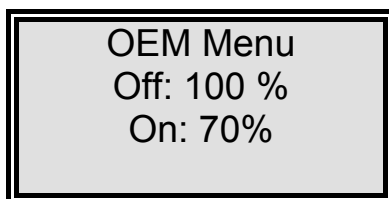
14.2.11 Adjusting the float switch circuit hysteresis: An eleventh press on the menu-key:

Basic setting: Off: 100 %
 On: 70 %

Setting range: Off: 25 – 100 %
 On: 0 – 70 %

With a setting over 100 % for the upper switching point, the display of the tank level is switched off, so that this setting shows whether an analogue or a digital float switch is installed.

The display shows:



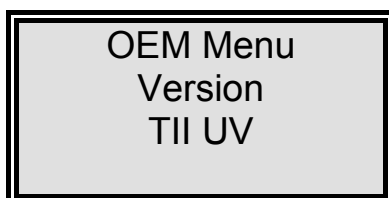
OEM Menu
Off: 100 %
On: 70%

14.2.12 Programme choice TII UV, RO: A twelfth press on the menu-key

The equipping grade of the system can be set in this menu so that a differentiation can be made between TII UV and RO versions.

Basic setting: TII UV

The display shows:

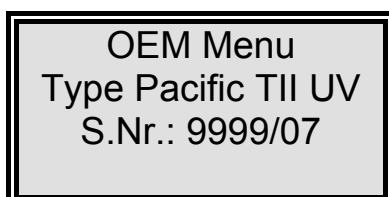


OEM Menu
Version
TII UV

14.2.13 Entering the system type and serial number:

The system type and serial number can be entered in this menu. They are both then printed as headline on every print-out. The following types of system can be entered:
Pacific RO / Pacific TII / Pacific TII UV / Pacific AFS

The display shows:



OEM Menu
Type Pacific TII UV
S.Nr.: 9999/07

14.3 Printer output

The printer allows various parameters to be recorded. A differentiation is made between three different types of messages:

- Standard messages
- Code messages
- Fault messages

14.3.1 Standard messages:

Here a record of all measured values is printed out according to the set sending interval.

Print-out:

```
e.g.:          03.12.07 09:39
                Pacific TII UV
                S.No. 9999/07
                TC on UV off
                LF1= 16.130 MΩxcm
                LF2= 0.109 MΩxcm
                Temp.= 11.5 °C
```

14.3.2 Code messages:

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

For code identification, see the „Assignment Table for code numbers that allow the system to be unlocked“.

Print-out:

```
e.g.:          03.12.07 10:17
                Pacific TII UV
                S.No. 9999/07
                Code 0001
```

14.3.3 Fault messages:

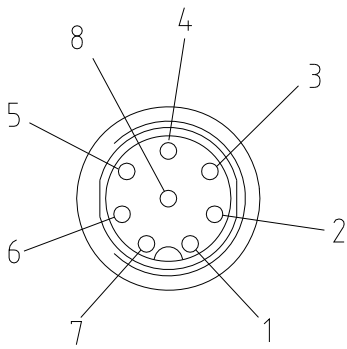
Should a fault message be shown in the display, e.g. for the pure water limiting value, then this fault message is printed out after the sending interval.

Print-out:

```
e.g.:          03.12.07 16:15
                Pacific TII UV
                S.No. 9999/07
                Lim.value.ultrapure
```

14.4 PIN Assignment/ 8 pin socket

The PIN assignment of the system 8-pin socket is as follows:



- 1 = Pressure pump/storage tank 24V +
- 2 = Pressure pump/storage tank 24V -
- 3, 4 = Float switch/storage tank
- 5, 6 = free
- 7, 8 = free

15. Maintenance

Your system requires regular, proper and professional maintenance.

We recommend that you secure a service contract to ensure that the necessary maintenance work is carried out.

You then have the certainty of a high operational safety and reliability.

The service protocol appended to the service contract serves for certification that maintenance work specified in the contract has been carried out by authorized service company.

To ensure 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!

Any maintenance work which should become necessary during the validity of the guarantee is only to be carried out by a service professional which is expressly authorized to do such work.

The operating-staff assigned is committed to carry out daily/weekly checks.

During the agreed term of validity of the guarantee, maintenance is to be carried out weekly according to the maintenance record sheet supplied with the Operating Instructions.

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

Cleaning and disinfection of supply 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 be cleaned and disinfected whenever algae or slime are detected inside them or at least once yearly.



Checks or maintenance work on electrical equipment are only to be carried out after the system has been completely separated from the electrical supply by unplugging the mains plug and ensuring that it will not be inadvertently plugged back in. Such work is only to be carried out by qualified electricians.

15.1 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*
Pretreatment 09.4001 Prefilter/Hardness stabilization	F1	06.5204	6 Months
Pretreatment 09.4000 Prefilter Hardness stabilization	F1	06.5201 06.5452	6 Months 6 Months
Filter cartridge	F3	09.4011/09.4012	12 Months

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

15.2 Rinsing the membrane

Rinsing out preservative solution:

According to the mode of delivery, the system may be supplied filled with a solution containing a preservative. When putting the system into operation, it is important to run the permeate produced to drain for at least 3 – 4 hours after switching to production.

To do this, after each filling of the tank, open the permeate outlet and empty the tank by allowing the permeate to run to drain.

Cleaning the membrane:

Automatic rinsing lengthens the service life of your reverse osmosis module. Coarse particles and other contaminants are swept away from the membrane surface during this rinsing process. The rinsing phases so ensure the longest service life and optimal purified water quality.

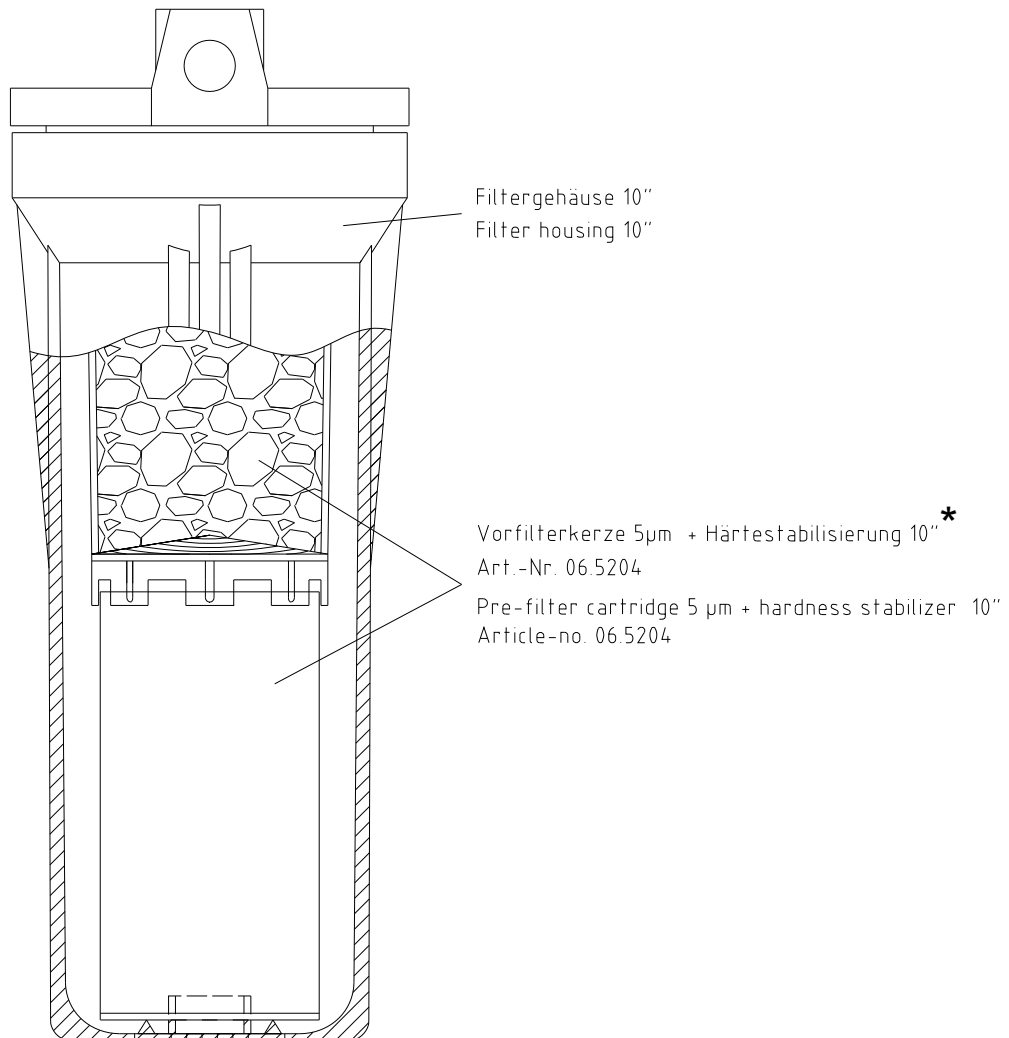


Leave your pure water system on over the weekend and during holiday times. Only then can the 12-hourly rinse operate and ensure that your reverse osmosis module is not subject to bacterial growth during standstill periods.

Should the performance of your module drop because operation of the system without appropriate pretreatment has resulted in blockage of the membrane, it may well be that your module can be reconditioned.

Reconditioning and disinfection of the module is only to be carried out by authorized service personnel on-site or by sending the module to the manufacturer of your system, whereby exposure to frost must be avoided.

15.3 Replacing the pretreatment



2. Remove the front cover from the storage tank.
2. Open the residual drainage on the storage tank. Keep it open until the pure water system starts to operate.
3. Close the supply of raw water to the pure water system.
4. Switch the system off.
5. Turn the residual drainage to close it.
6. Screw off the pretreatment filter housing.
Caution! The filter housing is still full of water.
7. Change the spent pretreatment unit.

8. Screw the filter housing back in position.
9. Open the supply of raw water to the system.
10. Check that the filter housing does not leak.
11. Switch the pure water system on again.
12. Replace the front cover on the storage tank.

Your pure water system is now again ready for use.

15.4 Replacing the ion exchanger

(see the „Putting the system into operation“ section)



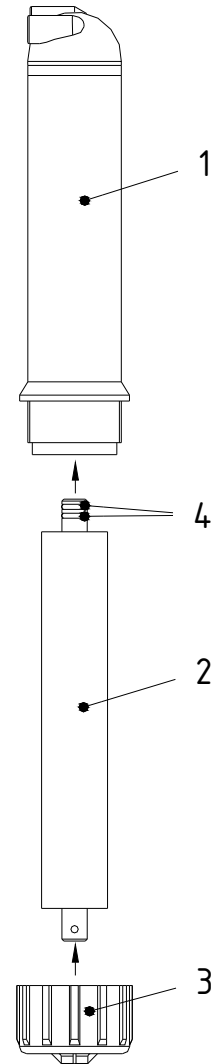
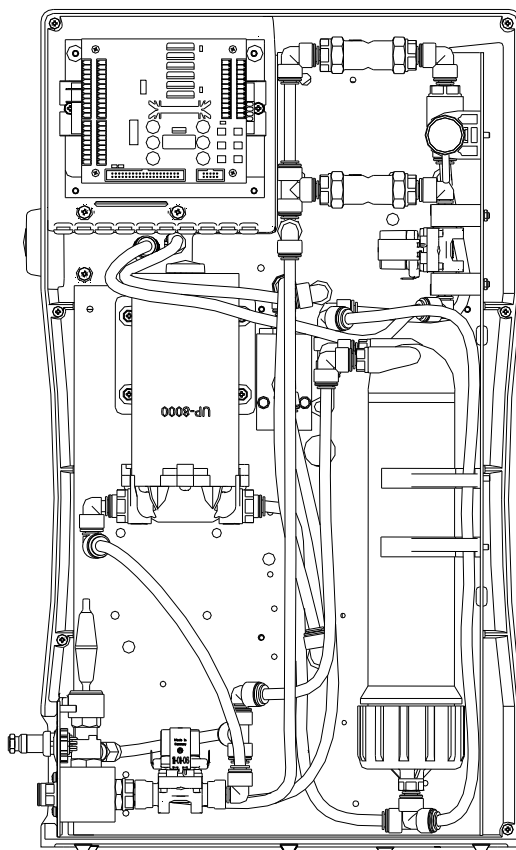
Before taking off the quick connectors (12, 13) from the ion exchanger (11), the pressure in this must first be released by switching the system off so that no water flows out.

3. Switch the system off at the operating unit (5).
2. Remove the front cover (6) from the storage tank.
3. Take off the quick connectors for raw water (12) and pure water (13) from the ion exchanger (11).
4. Remove the exhausted ion exchanger (11) from the storage tank depression and exchange it for a new ion exchanger.
5. Plug the raw water and pure water quick connects (12, 13) back on the ion exchanger (11).
Do not mix up the the quick connectors! Make sure that they audibly click into position!
6. Switch the system back on again at the operating unit (5).
7. Vent the ion exchanger (see the "Venting the ion exchanger" section).
8. Check that the quick connects do not leak.
9. Replace the front cover (6) on the storage tank.
10. The system is now ready to use.

15.5 Replacing the RO-membranes

LabTower 20 – 40 TII / TII UV: 2 RO Membranes

Ansicht von hinten - ohne Rückwand
Back view, with back panel removed

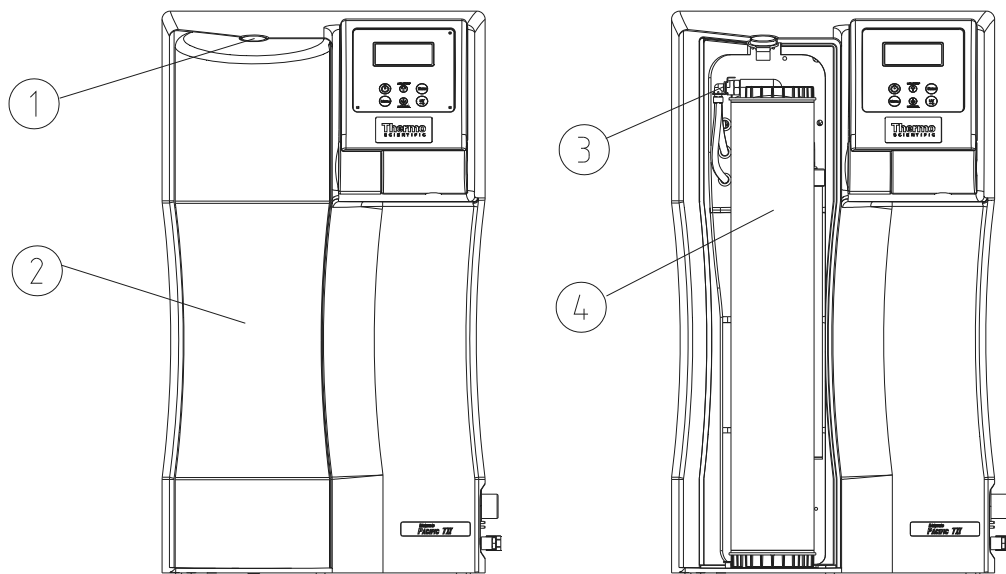


- Unplug the mains plug.
- Remove the back panel.
- Release all hose connections to the pressure tube (1) of the RO-module.
- Take the pressure tube out of the holding sleeves.
- Open the pressure tube cap nut (3) and remove the membrane unit (2).
- Insert the new membrane unit with the two O-rings (4) on the permeate tube in the direction of the arrow pointing to the pressure tube.



Insertion of RO-membranes the wrong way round would lead to certain destruction of them!

15.6 Changing the filter cartridge



For changing the filter cartridge, proceed as follows:

1. Switch off your device and turn off the feedwater supply.
2. Press pressure knob (1) to unlock and remove cover (2).
3. Release filter cartridge (4) quick connect coupling (3).
4. Remove exhausted filter cartridge (4) and replace it with a new one.
5. Fit the quick connect coupling (3) back onto the new filter cartridge (4).
6. Replace the cover (2) and listen to ensure it clicks on pressure knob (1).
7. Turn on the feedwater supply and switch your device on again.
8. Your device is now ready for operation

15.7 Disinfection

Disinfection of storage tank



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

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!

1. The pure water system must be in the “Stand by” operating mode. The storage tank must be filled.
2. Switch the system off and unplug the power supply from the pure water system.
3. Turn off the feedwater supply to the system.
4. Open the dispensing valve to bleed the pure water system completely and then close it again.
5. Remove the covering hood from the storage tank.
6. Remove the four connectors from the pure water system to the storage tank and pull the 8 pin connector (float switch, pressure pump, (see Chapter 11. Putting the system into operation).
7. Lift the system from the storage tank and put it aside.
8. Remove the table by removing the 3 screws.
9. Open the lid of the storage tank, pour the contents of a box respectively a syringe of then cleaning solution in the water-filled tank and then close the lid.
10. Leave the disinfectant for 1 hour in the storage tank..



Do not take any water from the dispensing valve or the storage tank during disinfection.

11. Now open the residual drainage of the storage tank and discard all of the water. Close the residual drainage.
12. Screw the table back to the storage tank.
13. Replace the pure water system back to the storage tank and connect the four connectors for power supply and the 8 pin connector (float switch, pressure pump) to the storage tank.
14. Open the feedwater supply to the system.
15. Switch the pure water system on.
16. Fill the storage tank until the “Stand by” operating mode has been reached and empty the tank as in 11. Repeat this process a second time.
17. Finally replace the covering hood on the storage tank.
18. The pure water system is now again at your availability to produce pure water.

16. Waste disposal

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

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

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

Thermo Electron LED GmbH
Stockland 3
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.

17. Trouble shooting

Fault	Cause	Remedy
The system does not start	<ul style="list-style-type: none"> - No supply of power 	<ul style="list-style-type: none"> - Supply power
No dispensing possible	<ul style="list-style-type: none"> - Feedwater tap is closed - Feedwater and rinse water connections mixed up - Feedwater pressure < 1.5 bar 	<ul style="list-style-type: none"> - Open the feedwater tap - Make correct connections - Increase feedwater pressure
Conductivity is too high	<ul style="list-style-type: none"> - Ion exchange capacity is exhausted 	<ul style="list-style-type: none"> - Replace spent ion exchanger with a new one
System control no longer reacts	<ul style="list-style-type: none"> - Improper operation 	<ul style="list-style-type: none"> - Unplug the mains plug for 5 seconds
Water leaks out	<ul style="list-style-type: none"> - Leaky hose connection - Feedwater pressure > 6 bar 	<ul style="list-style-type: none"> - Check hose connection, find and stop the leak - Install a pressure reducer
Permeate flow is too low (-15%)	<ul style="list-style-type: none"> - Clogged membrane - Too low a pre-pressure - Feedwater temperature fluctuates 	<ul style="list-style-type: none"> - Clean the membrane - Increase pre-pressure
Time or date is wrong	<ul style="list-style-type: none"> - Time zone - Summer/winter time 	<ul style="list-style-type: none"> - Set to correct time and date
Wrong language	<ul style="list-style-type: none"> - Wrong language is set 	<ul style="list-style-type: none"> - Set to correct language setting

<p>Fault message: "Lim.val.permeate"</p>	<ul style="list-style-type: none"> - The permeate conductivity is too high - The limiting value is set too low - The membrane is clogged 	<ul style="list-style-type: none"> - Check the pretreatment - Check and re-adjust the limiting value setting - Replace the membrane
<p>Fault message: „Lim.val.ultrapure“</p>	<ul style="list-style-type: none"> - The limiting value is set too low 	<ul style="list-style-type: none"> - Check and re-adjust the limiting value setting
<p>Fault message: „UV-time“</p>	<ul style="list-style-type: none"> - The operating hours of the UV-lamp have been exceeded 	<ul style="list-style-type: none"> - Replace the UV-lamp (article no. 09.4002) and return the operating hours counter to zero
<p>Fault message „Pretreatment“</p>	<ul style="list-style-type: none"> - The operating hours of the pretreatment have been exceeded 	<ul style="list-style-type: none"> - Replace the pretreatment and return the operating hours counter to zero
<p>Fault message: "Measuring cell LF1"</p>	<ul style="list-style-type: none"> - Break in the measuring cell cable - System control is defect - Conductivity of the pure water is outside the measuring range 	<ul style="list-style-type: none"> - Replace the measuring cell - Replace the system control - see "Conductivity too high"
<p>Fault message: "Measuring cell LF2"</p>	<ul style="list-style-type: none"> - Break in the measuring cell cable - System control is defect - Feedwater conductivity is outside the measuring range 	<ul style="list-style-type: none"> - Replace the measuring cell - Replace the system control - Refer to feedwater limiting value
<p>Fault message: "Measuring cell Temp."</p>	<ul style="list-style-type: none"> - Measuring cell cable break - System control is defect 	<ul style="list-style-type: none"> - Replace the measuring cell - Replace the system control

The address to contact when you need service:**Overview of Thermo Scientific International Sales Organization****Postal address USA:**

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Enquiries from Asia:**China**

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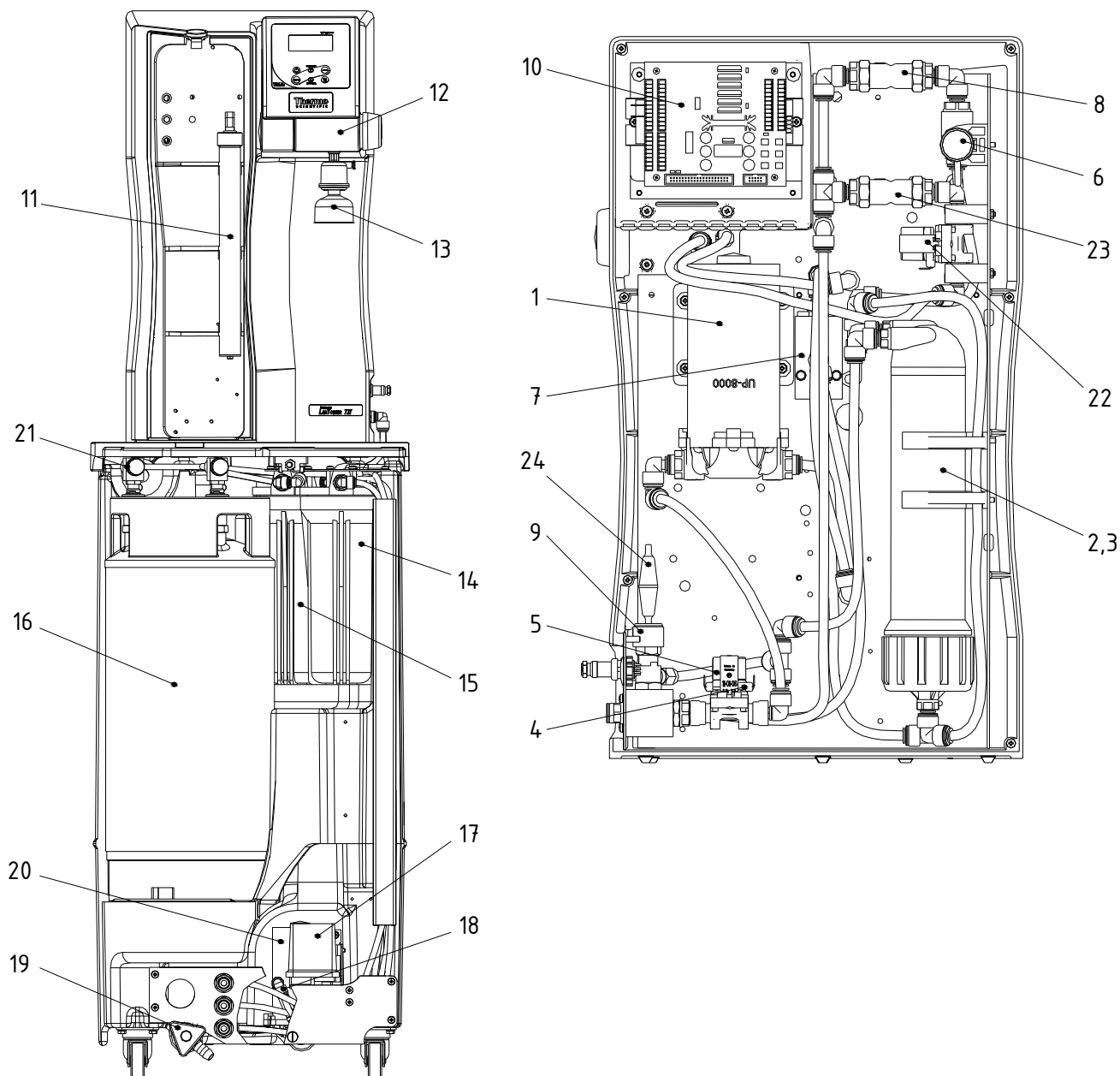
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18. List of replacement parts



Pos.	R+I no.	Article designation	Article no.
1	P1	Pressure booster pump RO for 20 L/h system Pressure booster pump RO for 40 L/h system	19.0046* 19.0050*
2,3	F2	RO Module for 20 L/h system, consisting of: 2x RO membrane 2x Pressure tube RO Module for 40 L/h system, consisting of: 2x RO membrane 2x Pressure tube	22.0046* 50133990 22.0087* 50133990
4	V1	Inlet solenoid valve	50131190*
5	V3	Rinsing solenoid valve	50131190*
6	QIA300	Permeate measuring cell	16.0126

7	QIA301 TIA500	Pure water measuring cell	50133992
8	V4	Check valve	15.0009
9	V2	Pressure hold valve	15.0060
10		Microprocessor system control, complete	50132019
11	UV1	UV Replacement lamp (only for TII UV systems)	09.4002
12	V8	Dispensing valve	50133988
13	F4	Sterile filter capsule, 0.2µm	09.1003
14	F1	Pretreatment, consisting of: Prefilter cartridge 5µm + hardness stabilizer 10"	06.5204
15	F6	Sterile filter, 0.1µm, 10" (option)	06.5557
16	F3	Ion exchanger	02.2850-LAB
17	PS200	Pressure switch	15.0058*
18	V7	Check valve	14.0441
19	V5	Dispensing tap	14.0250
20	P2	Pressure pump	19.0046*
21	F5	Sterile vent filter, 0.2µm (option)	06.5003
22	V9	Recirculation solenoid valve	50131190*
23	V10	Check valve	15.0019
	LIS100	Float switch	16.0355
	V6	Sterile overflow (option)	15.0009
	UV2	UV-Disinfection (option): UV Replacement lamp Immersion tube	09.5002 22.0096
24		Fuse holder for glas tube fuse 5x20mm Glas tube fuse 5x20mm, 3,15A, slow Glas tube fuse 5x20mm, 2 A, nimble (only TII 40/TII 40 UV)	50133979 50131758 50134191
		Table power unit 24V DC (not shown)	50134196
		Table power unit 48V DC (not shown, only TII 40/TII 40 UV)	50134184

* Wearing part



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

19. Accessories

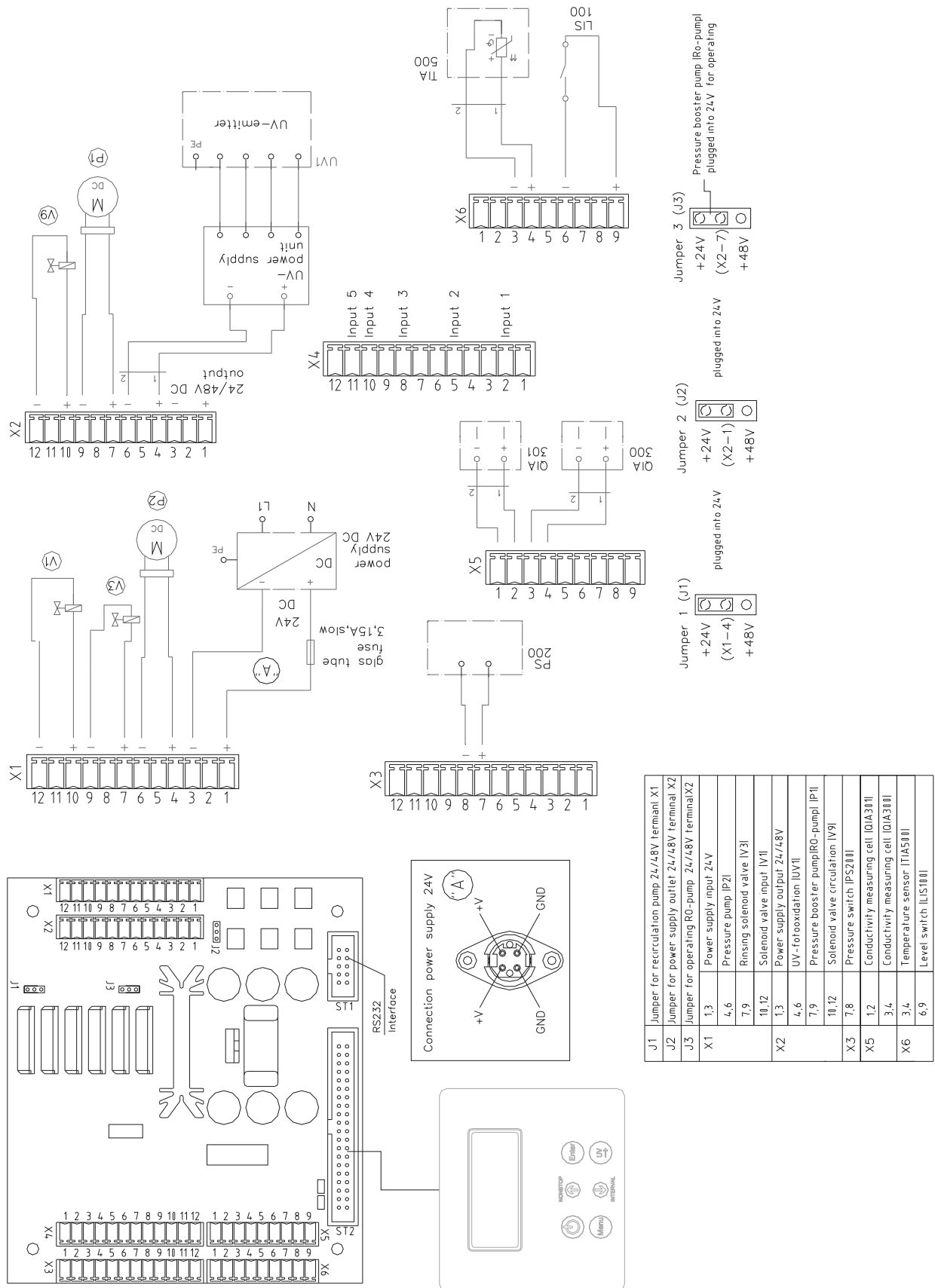
Article designation	Article no.
UV-Lamp (in the storage tank)	06.5006
Sterile vent filter	06.5003
Sterile overflow	50132714
Sterile filter cartridge, 10"	06.5557
Pretreatment, consisting of: 1x activated carbon combi cartridge 5µm, 10" 1x hardness stabilizing cartridge 10"	09.4000
Pretreatment, consisting of: 1x activated carbon combi cartridge 5µm, 5" 1x hardness stabilizing cartridge 5"	09.4001
Disinfection agent, MICRO-Chlor (pack of 12 cans, Europe only)	09.2202
Cleaning Solution, 1 syringe (US-market only)	CMX25
Pressure pump MQ3 – 35, 110V	50135134
Pressure pump MQ3 – 45, 110V	50135135
Qualification Manuals IQ, OQ	IOQDOCE50134156

20. Consumable materials

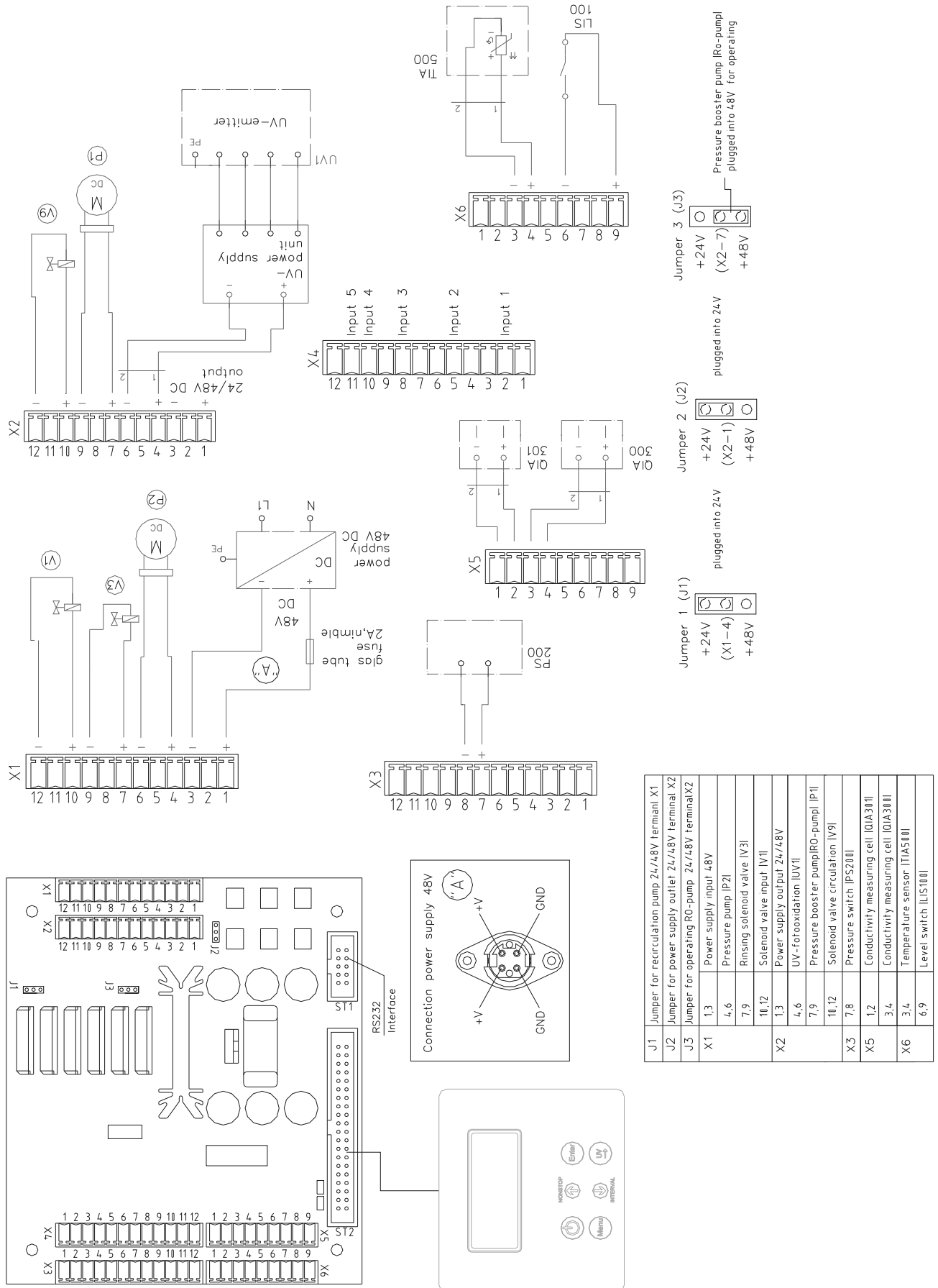
Article designation	Article no.
<u>Pretreatment, consisting of:</u>	
Prefilter cartridge, 5µm + hardness stabilizer 10"	06.5204
2x RO Membrane for 20 L/h system	22.0046
2x RO Membrane, for 40 L/h system	22.0087
Sterile filter capsule	09.1003
Sterile vent filter (option)	06.5003
Sterile filter cartridge, 1µm-10" (option)	06.5557
Fine filter 1µm-10"	06.5101
Ion exchanger, DI 2800 S	02.2850-LAB
<u>UV-Lamp (TII UV system)</u>	
UV Replacement lamp	09.4002
<u>UV-Lamp (storage tank) (option)</u>	
UV Replacement lamp	09.5002
Immersion tube	22.0096

21. Terminal assignment

21.1 LabTower TII 20/TII 20 UV (24V DC)



21.2 LabTower TII 40/TII 40 UV (48V DC)



J1	Jumper for recirculation pump 24/48V terminal X1
J2	Jumper for power supply outlet 24/48V terminal X2
J3	Jumper for operating RO-pump 24/48V terminal X2
X1	1.3 Power supply input 48V
	4.6 Pressure pump IP21
	7.9 Rinsing solenoid valve IV31
X2	10.12 Solenoid valve input IV11
	1.3 Power supply output 24/48V
	4.6 UV-fotooxidation IUV11
	7.9 Pressure booster pump/RO-pump IP11
X3	10.12 Solenoid valve circulation IV91
	7.8 Pressure switch IPS2101
X5	1.2 Conductivity measuring cell IQIA3011
	3.4 Conductivity measuring cell IQIA3011
X6	3.4 Temperature sensor ITIA5011
	6.9 Level switch ILIS1101

22. Maintenance record

(Please note that correct keeping of this record is a guarantee condition)

Customer address:	Location:	System type:	
_____	_____	_____	_____
_____	_____	Serial no.:	_____
_____	_____	Year made:	_____

Date	Resistance IES [MΩxcm]	Resistance Permeate [MΩxcm]	Prefilter replacement Yes/No	Hardness stabilization replacement Yes/No	Ion exchanger replacement Yes/No	Temperature C°	Signature

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

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

- Record measured values **1 x** each week,

Contact Information Thermo Scientific

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