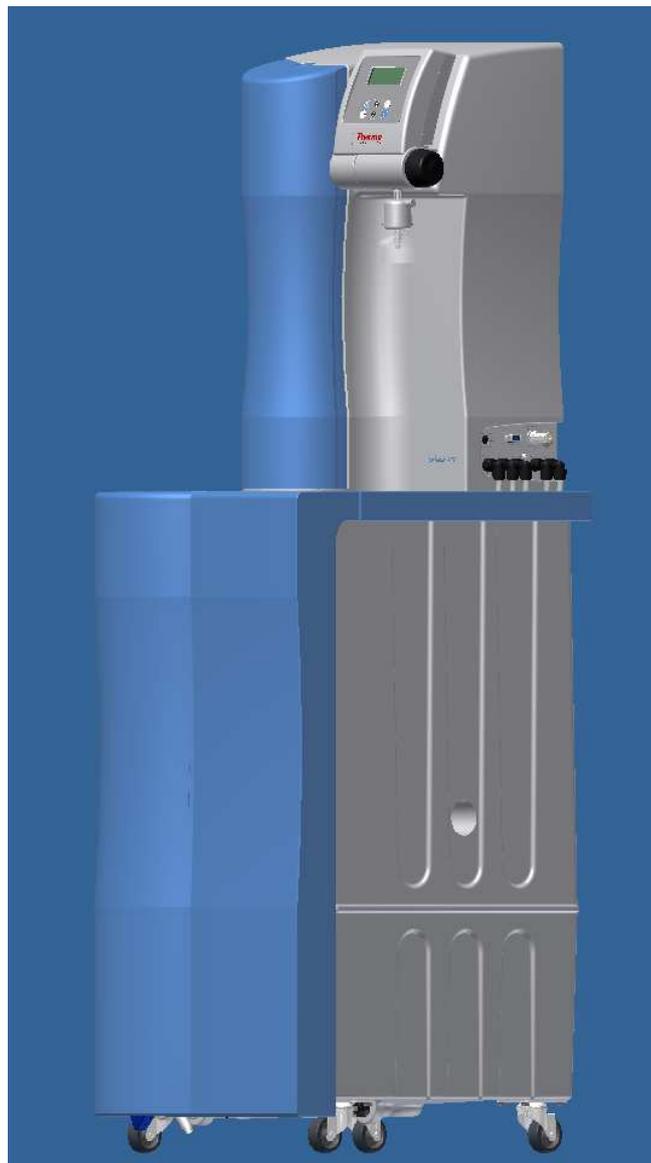


**Operating Instructions
Thermo Scientific Barnstead LabTower AFT
Water Purification System**

[] Art. no.: 50135466 AFT 20

[] Art. no.: 50135467 AFT 40



Serial number:

Be sure to read these Operating Instructions prior to installing and operating the system!

50135464, Stand: 01.13 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 it's 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This declaration is no longer valid if the machine is modified without our consent.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 AFT
article number: 50135466, 50135467

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 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 type **LabTower AFT** 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 on how it is to be properly installed and operated that is given in these Operating Instructions.

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

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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

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 LabTower AFT 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 damage could nevertheless occur during transport.

3.1 Examination on receipt

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



Is the packaging damaged ?

- Examine the system for damage.

3.2 Complaints

Should the system have been damaged during transport:

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

3.3 Packaging and return shipment

If possible, use the original packaging and materials.

Should these no longer be available:

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



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

4. Safety precautions



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

- Your LabTower AFT 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 +5° C and must not exceed +40° 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. Extent of delivery

The LabTower AFT pure water system consists of:

1 x	LabTower AFT Basic unit	Article no. 5013xxxx__
1 x	Assembly kit LabTower AFT 20 or	Article no. 50135461
1 x	Assembly kit LabTower AFT 40 consisting of:	Article no. 50135462
1 x	Prefilter cartridge 5µm + hardness stabilization, 10"	Article no. 06.5204
1 x	Fine filter 1µm-10"	Artikel no. 06.5101
1 x	Ion exchanger DI 2800 S	Article no. 02.2850- RDS
1 x	Connecting kit	Article no. 25.0085
1 x	Operating Instructions	Article no. 50135464
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 AFT 40)	Article no.: 50134184
1x	Universal adapter	Articel no.: 21.1006
1x	Universal holder	Articel no.: 21.1007
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
1 x	Screw connector, d8-1/4"	Article no.: 14.0075



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

6. Intended use

The LabTower AFT 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 AFT 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

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 AFT
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 AFT 20	
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
Protection Class	Class II (external SMPS certified as Class I)

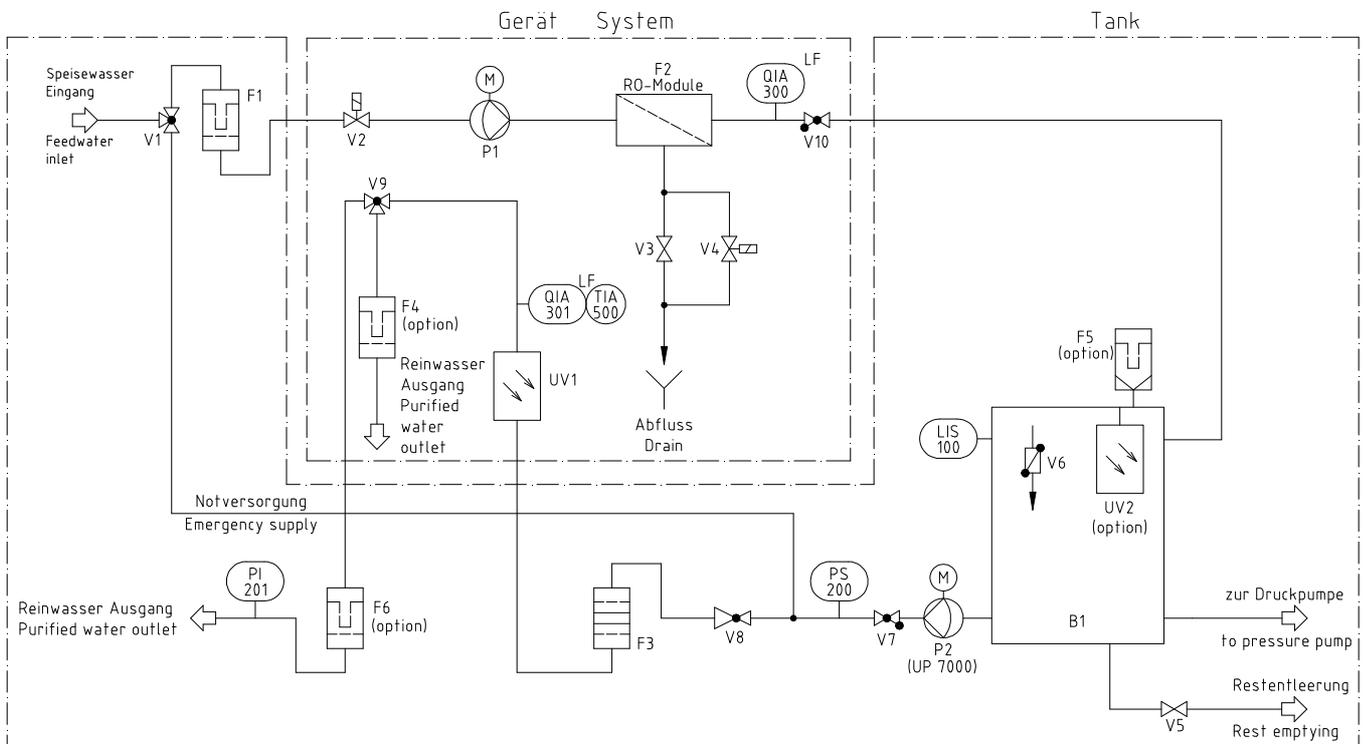
Electrical connections / external switched mode power supply AFT 40	
Input voltage	AC 100 – 250 V, 50 – 60 Hz, 4 – 2.5 A
Output voltage	DC 48 V, 2.5 A
System connection	DC 48 V, 120 W
Serial interface	RS 232
Protection Class	Class II (external SMPS certified as Class I)

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 stabilizer: (storage tank inlet) | Prevents the penetration of particles > 5µm
Stabilizes calcium and magnesium. |
| F2 RO-Module: | Semipermeable, thin-film, composite, spiral wound membrane. |
| F3 Ion exchanger: | Removes inorganic ions and traces of dissolved organic substances. |
| F4 Sterile filter (option) | Retains particles > 0,2µm. |
| F5 Sterile vent filter: (option) | Prevents the penetration of airborne bacteria and particles > 0,2 µm. |
| F6 Sterile filter or fine filter: (option) | Retains particles > 0,2µm.
Retains particles > 1µm. |
| LIS 100 Float switch: | Determines the filling level in the tank. |

P1 Booster pump:	Increases the input pressure to the required operating pressure.
P2 Booster pump:	On withdrawal, pumps pure water through dispensing valve (V9) and sterile filter (F4) to the pure water outlet, as well as over the filter (F6) to the consumer.
PS200 Pressure switch:	Switches booster pump (P2) on when pure water is withdrawn from tank (B1), and switches the pump off dispensing valve (V9) is closed.
QIA300 Pure water conductivity measuring cell:	Measuring device for the determination of the conductivity (after RO) as parameter for the pure water quality.
QIA301 Pure water conductivity measuring cell:	Measuring device for the determination of the conductivity (after filter cartridge) as parameter for the pure water quality.
TIA500 Temperature sensor:	Measures the temperature for temperature compensation.
UV1 UV-Disinfection:	Reduces the germ respectively bacteria content.
UV2 UV-Disinfection: (option)	Reduces the germ respectively bacteria content.
V1 3 way ball valve:	To switching normal operation to emergency supply.
V2 Feedwater solenoid valve:	Is closed during stand-by and standstills. It prevents water from flowing into the system when it is not in operation.
V3 Pressure hold valve:	Serves to adjust the operating pressure and the WCF-rate.
V4 Rinsing solenoid valve:	Opens for cleaning of the membrane prior to pure water-production, after pure water production and at least every 12 hours.
V5 Residual water drainage:	For complete emptying of the storage tank.
V6 Sterile overflow: (option)	Prevents the penetration of bacteria and other microorganisms.
V7 Check valve:	Prevents pure water from flowing back into the tank.
V8 Pressure reducer:	For adjustment of the pure water pressure in the system.
V9 Dispensing valve:	Allows pure water to be withdrawn from the tank.
V10 Check valve	Prevents permeate from flowing back into the device

8.1 How the system functions

When the ON/OFF key is pressed, the system starts running either in the operating mode or in the stand-by mode, according to the float switch.

The feed water flows with a maximum pressure of 6 bar into the system.

Feedwater solenoid valve (V2) is closed when the system is at stand-by or at a standstill. This prevents feedwater from flowing into the system when it is not in operation and so protects storage tank (B1) from overflowing.

Semi-permeable membrane (F2) retains all salts dissolved in the water up to the specified retention quota. The molecular size of the membrane pores is so small, that 99% of bacteria, pyrogens and particles are also removed from the feedwater.

The pure water flows past pure water probe (QIA300) and into the storage tank. The retained feedwater constituents are led away with the rest of the concentrate.

Booster pump (P2) pumps the pure water in storage tank (B1) through pressure reducer (V8) and ion exchanger (F3) and on past the special conductivity measurement probe (QIA301) with temperature compensation (TIA500) to dispensing valve (V9). The conductivity measuring probe determines the conductivity and the temperature of the pure water subsequent to UV-disinfection* (UV1).

The measured values can be called in the microprocessor system control.

* Option



Valve (V3) has been pre-adjusted at the factory. A change in the adjustment of this valve can result in damage to the reverse osmosis module! Because of fluctuations in the feedwater temperature and pressure, the adjustment of the pressure hold valve and the concentrate flow that it governs must be checked, and readjusted if necessary, on putting the system into operation and at regular intervals thereafter.

The measured values must be recorded in the maintenance record.

Concentrate flow for LabTower AFT			
Check and adjust at least 1x monthly			
System	Permeate-flow [l/h]	Concentrate-flow [l/h]	adjustable up to [%]
LabTower 20 AFT	20	60	40
LabTower 40 AFT	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 (V4) is opened and the strong flow of water across reverse osmosis module (F2) then flushes 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 - +40° C.
- ⇒ The surface that your pure water system is to be stood on must be strong enough to support it (for weight, see chapter „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 chapter „Technical Specifications“).
- ⇒ Position the system so that there is no difficulty in separating the device from the electric mains.
- ⇒ Ensure that there is sufficient working room around the system.
- ⇒ An R 3/4" R male thread tap water connection which can be shut off must be installed in the direct vicinity of the system. Easy access to this must be ensured.

10. Installation

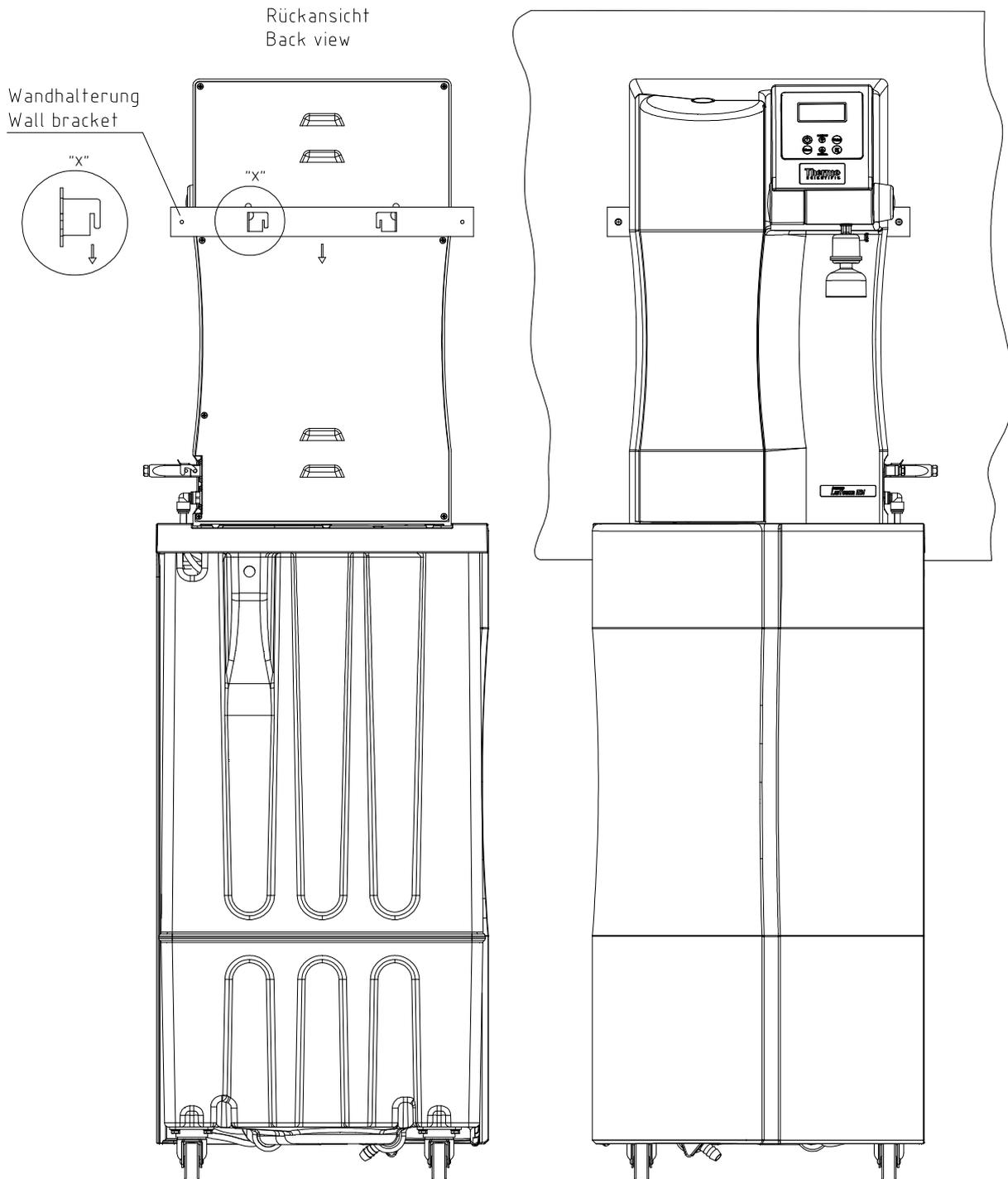
- Before the pure water system can be put into operation, it must be moved to the back of designated wall with screws.

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

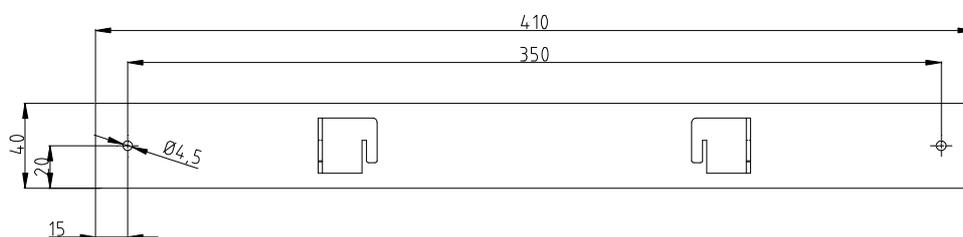
- Use the assembling kit available in wall bracket, the 2 screws 4x40 mm and the 2 dowels (Ø 6 mm)
- Plug the wall bracket into the backside of the pure water attachment, as shown graphically on the following page.

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

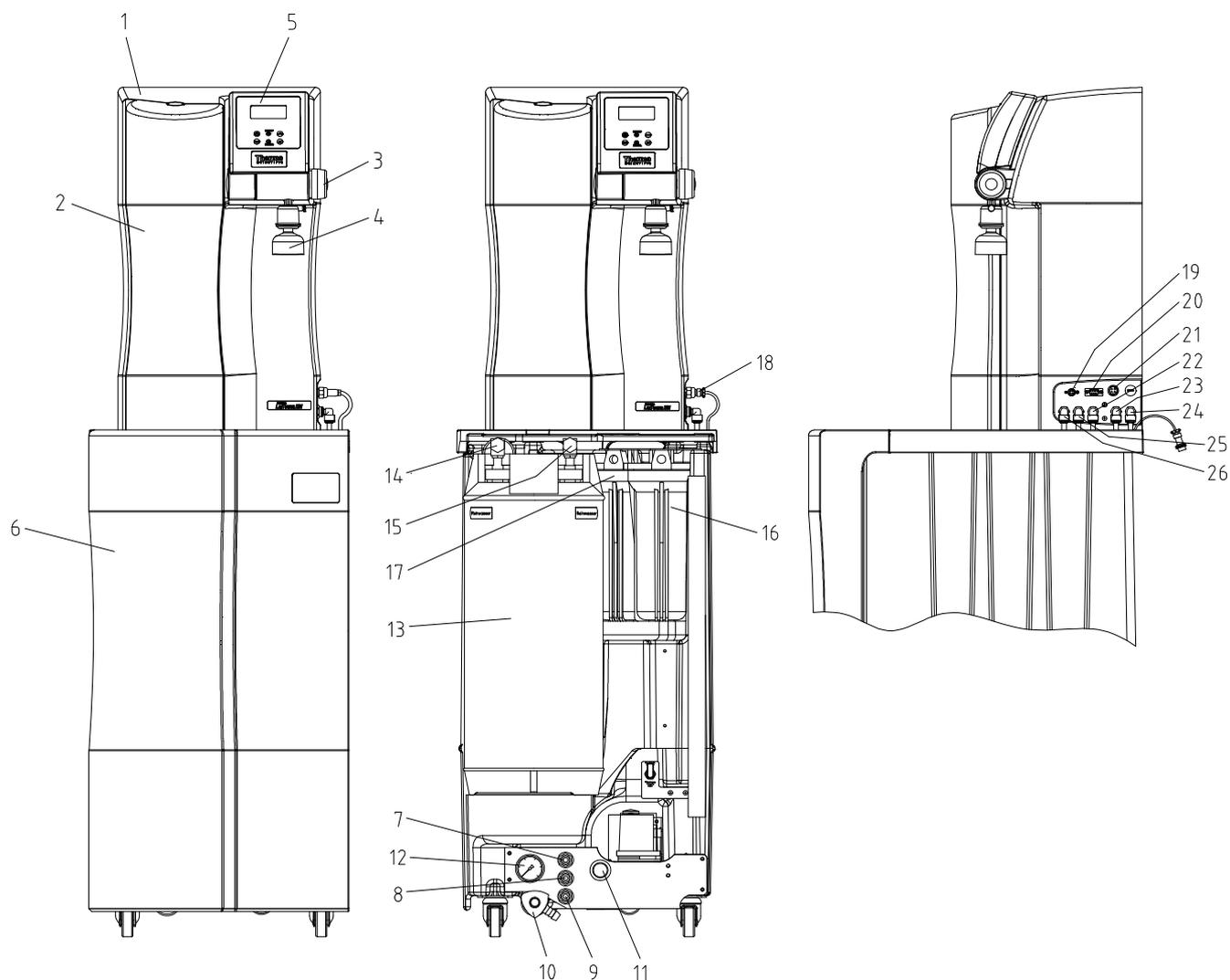
- Now position the pure water system at the proposed wall and attach it with the dowels and screws.



Wandhalterung / Maße
Wall bracket / dimensions



11. Putting the system into operation



- | | | | |
|-----|---------------------------------------|-----|---|
| 1) | LabTower AFT pure water system | 15) | Pure water connector/ion exchanger |
| 2) | Front hood, removable | 16) | Prefiltration |
| 3) | Rotary knob for pure water dispensing | 17) | Sterile filter or fine filter (option) |
| 4) | Sterile capsule filter (option) | 18) | Power supply for booster pump/tank, connector level control |
| 5) | Operating unit | 19) | Power supply 24/48V |
| 6) | Front cover, storage tank | 20) | Printer connection |
| 7) | Feedwater inlet | 21) | connector level control |
| 8) | Concentrate outlet | 22) | Pure water connector, (from storage tank), Ø8 mm |
| 9) | Pure water outlet | 23) | Permeate connector, Ø8 mm |
| 10) | Residual water drainage | 24) | Raw water connector, Ø8 mm |
| 11) | Pressure reducer | 25) | Concentrate connector, Ø8 mm |
| 12) | Pressure gauge, pure water pressure | 26) | Pure water connector, (to consumer), Ø8 mm |
| 13) | Ion exchanger | | |
| 14) | Feedwater connector/ion exchanger | | |

1. Place the pure water system on the table of the storage tank. Connect the hoses positioned at the table by putting the connectors in with the appropriate connections (21-25) at the equipment (see „Views and connectors “, side view).
2. Remove the covering hood (2) of the storage tank.
3. Turn the filter housing of the pre-treatment (16) loosely. Insert the pre-treatment unit contained when assembling (pre-filter + hardness stabilization) into the filterhousing and screw this again firmly (see chapter „Change of the pre-treatment “).
4. In the case of use of the optional sterile or fine filter you turn the filter housing (17) loosely. Insert the filter into the filter housing and bolt this on again.
5. Connect the Ø8 – ¾“ female thread feedwater hose supplied with feedwater inlet (7) of the storage tanks and a water tap that can be turned off. The connecting hose is marked with „Rawwater“.
6. Connect Ø8 concentrate hose supplied with concentrate outlet (8) of the storage tank and to the drain provided on-site. The concentrate hose is marked with „Concentrate“. The drain to the sewer must be max. Are 1 m above the rinsing water connector of the unit.
Caution! Concentrate must be able to flow under free gravity fall to the drain!
7. Place the ion exchanger (13) into the hollow of the storage tank.
8. Press the quick-connector of the raw water hose (14) on connection of your ion exchanger, marked with „Rawwater“.
9. Press now the quick-connector of the pure water hose (15) on connection (of your ion exchanger marked with „Purewater“.
The quick-connector must engage audibly.



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

10. Plug the 4-pin plug of the level control system (storage tank), marked with „Niveau“, in the 4-pin socket (20) of the pure water systems and screw the milled nut of the plug. tight.
11. Screw the sterile filter capsule (4) into the withdrawal tap G1/4 “.
12. Now fit the hose of the Ø8 mm sterile overflow in the overflow on the back of the tank and connect it with the drain.
13. Ensure that residual water drainage (12) is turned closed.
14. Check the feedwater pressure; it must be within the permissible pressure range (see chapter „Technical specifications“).
15. Open the feedwater tap.
16. Plug the line plug in.



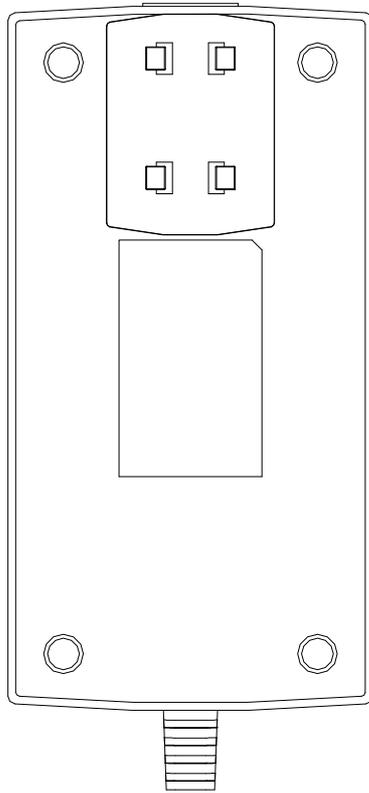
Before you now switch the system on, read through the rinsing out procedure for reverse osmosis membranes packed with preserving agent in the „Rinsing the membrane“ section!

17. Switch the pure water system on with the on/off key on the operating unit.
18. Check that all connections are leak-tight.
19. Bleed the cartridge (see chapter „Venting the cartridge”).
20. Replace the covering hood on the storage tank.

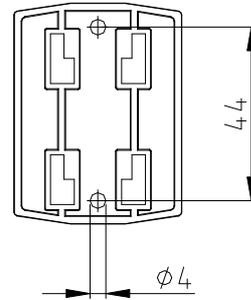
The system is now ready for use.

11.1 Mounting the power pack (voltage supply)

Rückseite / Netzteil
Back side / power supply



Universaladapter
Universal adapter



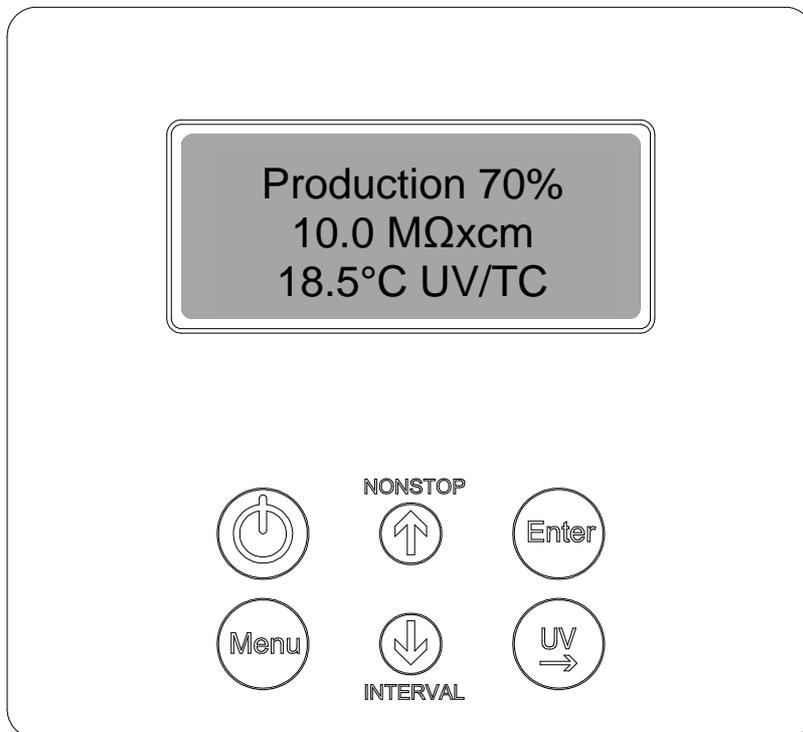
Befestigung
mit Schrauben
Fixing with screws

- 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. 19).
- 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 system starts running either in the operating mode or in the stand-by mode, according to 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 of 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 a numerical value that you wish to change. The arrow-keys can then be used to set a number from 0-9 at this 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 point LF 2)

Limiting value setting range: 0.1 – 150.0 μ S/cm

Basic setting: 0.020 M Ω xcm

Settings above 150.0 μ S/cm result in the limiting value being switched off. The word "Off" appears in the display.

The display shows:

Permeate 0.083 M Ω xcm Lim.val.permeate 50.0 μ S/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 point LF 1).

Limiting value setting range: 0.055 – 9.999 μ S/cm

Basic setting: 0.50 M Ω xcn

Settings above 9.999 μ S/cm result in the limiting value being switched off. The word "*Off*" appears in the display.

The display shows:

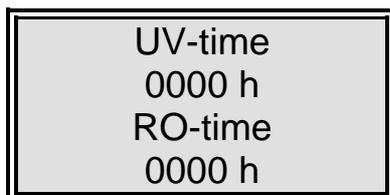


Lim.val.ultrapure
2.0 μ S/cm

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. The operating hours of the reverse osmosis pump does not have a limiting value.

The display shows:



UV-time
0000 h
RO-time
0000 h

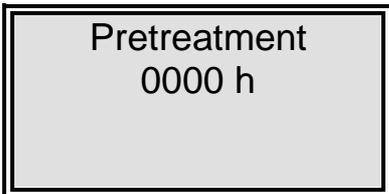
14.1.4 Pretreatment operating hours:

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

The limiting value for his operating time 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 when 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).

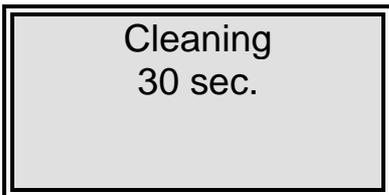
The remaining cleaning time is displayed during cleaning.

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 inquiry. 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:



Fault storage
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. The 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-Punkt F:



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

Assignment Table for code numbers allowing 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. Using the arrow keys now allows a number from 0 to 9 to be entered at that position.

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

The OEM menu prompt display shows:



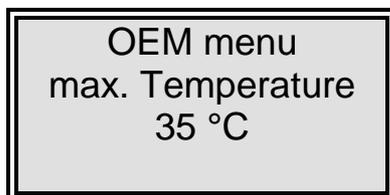
12.2.1 Maximum temperature:

A single press on the menu-key:

The maximum temperature to which the system can be exposed 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

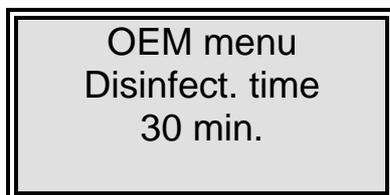
The display shows:



14.2.2 Disinfection time:

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

The display shows:



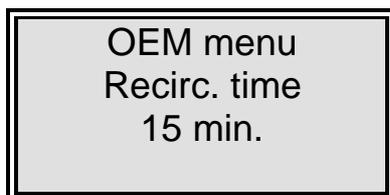
14.2.3 Recirculation time:

A third press on the menu-key:

The recirculation time is shown in this menu.

Basic setting: 15 min.
Setting range: 1 - 30 min.

The display shows:



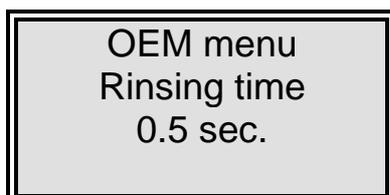
14.2.4 Rinsing time:

A fourth press on the menu-key:

The rinsing time is set in this menu.

Basic setting: 0.5 sec.
Setting range: 0.1 - 30 sec.

The display shows:

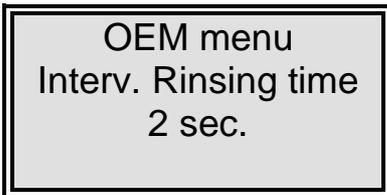


14.2.5 Interval rinse time:**A fifth press on the menu-key:**

The interval rinse time is set in this menu. Rinsing is 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:



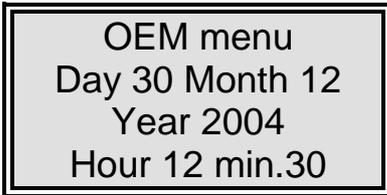
OEM menu
Interv. Rinsing time
2 sec.

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

The real-time clock is set in this menu.

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

The display shows:



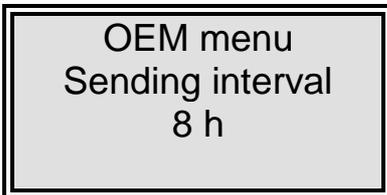
OEM menu
Day 30 Month 12
Year 2004
Hour 12 min.30

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 is set.

Basic setting: 8 hours**Setting range:** 0.5 - 12 hours

The display shows:



OEM menu
Sending interval
8 h

14.2.8 Language:

An eighth press on the menu-key:

The language in which texts are displayed is set in this menu. Choice of English, German or French.

Basic setting: German

The display shows:



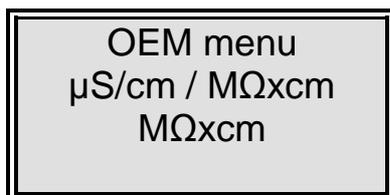
14.2.9 Switching units:

A ninth press on the menu-key:

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

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

The display shows:

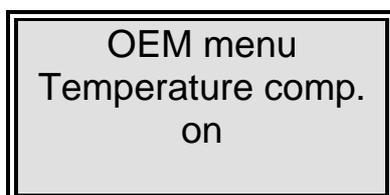


14.2.10 Switch off of temperature compensation:

A tenth press on the menu-key:

Basic setting: on
Setting range: on, off

The display shows:



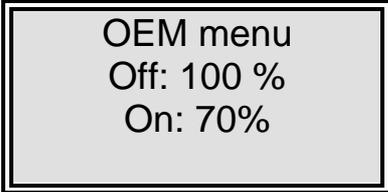
14.2.11 Adjusting the circuit hysteresis of the float switch: An eleventh press on the menu-key:

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 therefore 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 grade of the equipping of the system can be set in this menu to differentiate between UPW and PW versions.

Basic setting: TII UV

The display shows:

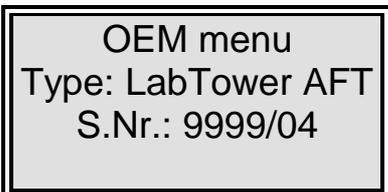


OEM menu
Equipping grade
TII UV

14.2.13 Entering the type and serial number of the system:

In this menu, the type and serial number of the system can be entered. They are then printed as headline on every print-out. The following types of system can be entered:
LabTower RO / LabTower TII / LabTower TII UV / LabTower AFT

The display shows:



OEM menu
Type: LabTower AFT
S.Nr.: 9999/04

14.3 Printer output

The printer allows various parameters to be recorded. There are 3 different kinds of message:

- Standard message
- Code message
- Fault message

14.3.1 Standard message:

Here a record of all measured values is printed out in dependence on the sending interval. Such a complete data set is also printed out during NONSTOP operation.

Print out:

```
e.g.:          01.06.07 09:39
                LabTower AFT
                S.No. 9999/04
                TC on UV off
                LF1= 16.130 MΩxcm
                LF2=  0.109 MΩxcm
                Temp.= 11.5 °C
```

14.3.2 Code message:

Whenever a code number is entered in the controls and confirmed with the Enter-key, then the code input is immediately printed out. For code identification, see the „Assignment Table for code numbers allowing the system to be unlocked“.

Print-out:

```
e.g.:          01.03.07 10:17
                LabTower AFT
                S.No. 9999/04
                Code 0001
```

14.3.3 Fault message:

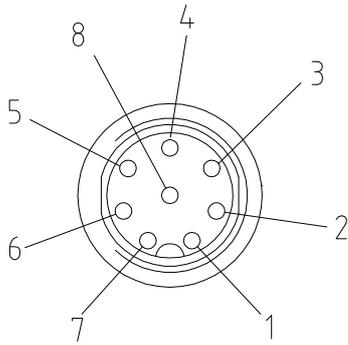
Should a fault message be shown in the display, e.g. the ultrapure water limiting value, then the fault message is printed out at the end of the sending interval.

Print-out:

```
e.g.:          01.03.07 16:15
                LabTower AFT
                S.No. 9999/04
                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	F1	06.5201	6 Months
Hardness stabilization		06.5452	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:

According to the mode of delivery, the system may be supplied filled with a solution containing a preservative. Should this be the case, it is important that the permeate be run to drain for at least 3 – 4 hours when the system is first put into operation and switched to production. To do this, each time the tank has been filled, open the dispensing tap where your water is withdrawn and lead the pure water that flows out 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 and optimal purified water quality.

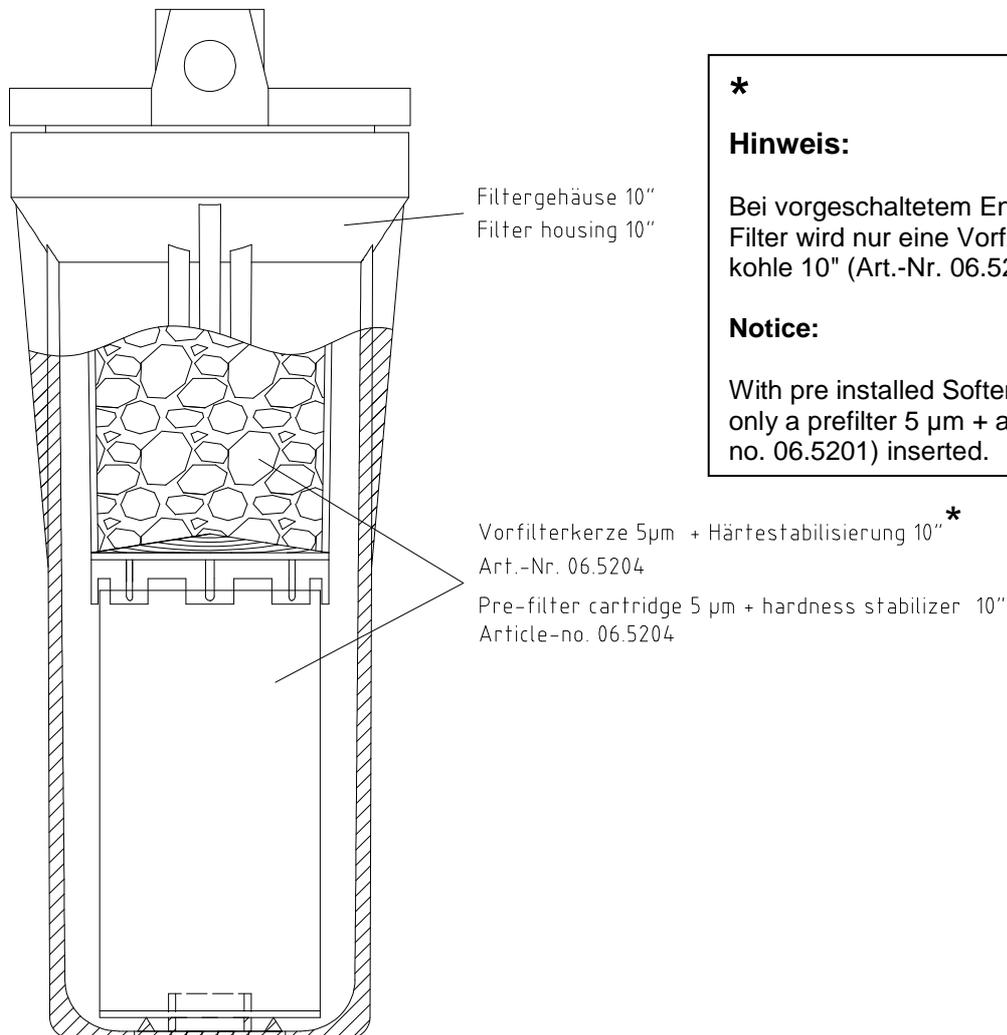


Leave your pure water system on over the weekend and during holiday times. Only then can the 12-hourly rinse operate and ensure that your reverse osmosis module is not subject to bacterial growth during standstill periods.

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 Change of the pre-treatment



Hinweis:

Bei vorgeschaltetem Enthärter oder Mix Multi Filter wird nur eine Vorfilterkerze 5 µm + Aktivkohle 10" (Art.-Nr. 06.5201) eingesetzt.

Notice:

With pre installed Softeners or Mix Multi filter is only a prefilter 5 µm + active carbon 10" (Article-no. 06.5201) inserted.

1. Remove the covering hood of the storage tank.
2. Open the residual water drainage on the storage tank, see chapter „Views and connectors“, till the system starts running.
3. Close the feedwater tap.
4. Switch the pure water system off with the on/off key on the operating unit.
5. Close the residual water drainage again.
6. Unscrew the filter housing from the pre-treatment, see chapter „View and connectors“. Caution! The filter housing is filled with water.
7. Change the used pre-treatment unit.
8. Plug the new pre-filter cartridge and hardness stabilizer with the connector together, see drawing.

9. Screw the filter housing back on.
10. Open the feedwater supply of the system.
11. Check the filter housing is leak-proof.
12. Switch the pure water system on.
13. Replace the covering hood on the storage tank.

The system is now ready for use.

15.4 Replacing the ion exchanger

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



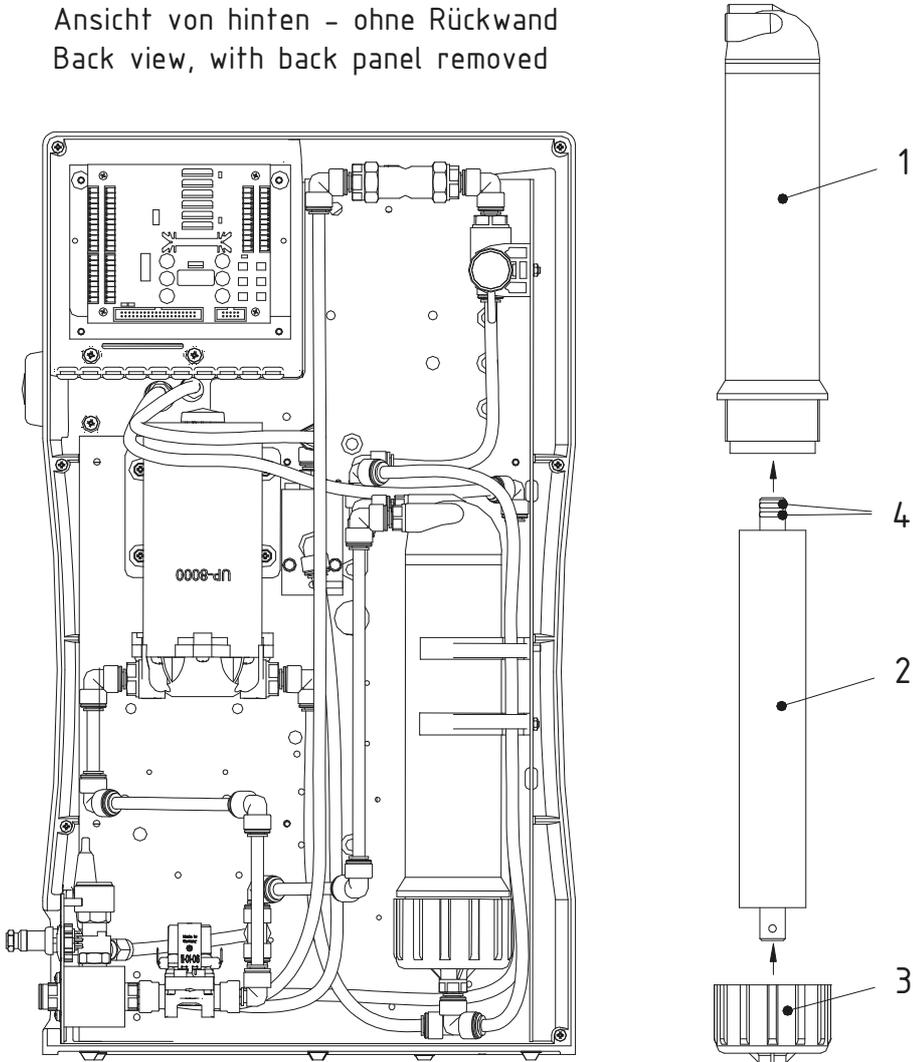
Before taking off the quick connectors (12, 13) from the ion exchanger (11), the pressure in this must first be released by switching the system off so that no water flows out.

1. 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 membrane

LabTower 20 - 40 AFT: 2 RO-Membranes

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



- Remove the line plug from the mains socket.
- Undo all hose connections to the RO-module pressure tube (1).
- Remove the pressure tube from the holding sleeves.
- Open the cap nut (3) on the pressure tube and remove the RO-membrane (2).
- Insert the new RO-membrane in the pressure tube (1) with the two O-rings (4) on the permeate tube of the RO-module in the direction shown by the arrows.



Inserting the RO-membrane the wrong way round would result in certain destruction of the membrane!

15.6 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 MICRO-Chlor Granulate, article no. 09.2202 as disinfectant (Europe only), or Cleaning Solution, article no. 50129891 (US-market only).



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

2. The pure water system must be in the “Stand by” operating mode. The storage tank must be filled.
3. Switch the system off and unplug the power supply from the pure water system.
4. Turn off the feedwater supply to the system.
5. Open the dispensing valve to bleed the pure water system completely and then close it again.
6. Remove the covering hood from the storage tank.
7. 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).
8. Lift the system from the storage tank and put it aside.
9. Remove the table by removing the 3 screws.
10. Open the lid of the storage tank, pour the contents of a MICRO-Chlor container or the disinfectant Cleaning Solution in the water-filled tank and then close the lid.
11. 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.

14. Now open the residual drainage of the storage tank and discard all of the water. Close the residual drainage.
15. Screw the table back to the storage tank.
16. 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.
17. Open the feedwater supply to the system.
18. Switch the pure water system on.
19. 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.
20. Finally replace the covering hood on the storage tank.
21. 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 power supply 	<ul style="list-style-type: none"> - Connect to power supply
No dispensing possible	<ul style="list-style-type: none"> - Feedwater tap is closed - Feedwater and rinse water connections the wrong way round - Feedwater pressure < 1,5 bar 	<ul style="list-style-type: none"> - Open feedwater tap - Reverse the connections - Increase feedwater pressure
Conductivity too high	<ul style="list-style-type: none"> - Ion exchanger capacity is exhausted 	<ul style="list-style-type: none"> - Replace ion exchanger
System control no longer reacts	<ul style="list-style-type: none"> - Improper operation 	<ul style="list-style-type: none"> - Remove line plug for 5 seconds
Water flows out	<ul style="list-style-type: none"> - Leaky hose connection - Feedwater pressure > 6 bar 	<ul style="list-style-type: none"> - Check and hose connection and stop the leak - Install a pressure reducer, possibly operate via the emergency supply
Permeate flow too low (-15%)	<ul style="list-style-type: none"> - Blocked membrane - Precompression too low - Internal pressure too low - Feedwater temperature fluctuates 	<ul style="list-style-type: none"> - Clean the membrane - Increase precompression - Reset the pressure reducer, possibly operate via the emergency supply
Wrong time or date	<ul style="list-style-type: none"> - Time zone Summer/Winter time 	<ul style="list-style-type: none"> - Reset time and date

Wrong language	- Wrong language set	- Set wanted language
Fault message: <i>Lim.val.permeate"</i>	- The conductivity of the permeate is too high - The limiting value is set too low	- Check the pretreatment - Check and re-adjust the limiting value setting
Fault message: <i>"Lim,value.ultrapure"</i>	- The limiting value is set too low	- Check and re-adjust the limiting value setting
Fault message: <i>"UV-time"</i>	- The operating hours of the UV-lamp have been exceeded	- Replace the UV-Lamp (art.-no. 09.4002) and set back the operating hours counter
Fault message: <i>"Measuring cell LF1"</i>	- Cable break at the measuring cell - System control defect - Ultrapure water conductivity outside of measuring range	- Replace the measuring cell - Replace the system control - see "Resistance < 18,2 MΩxcm"
Fault message: <i>"Measuring cell LF2"</i>	- Cable break at the measuring cell - System control defect - Feedwater conductivity outside of measuring range	- Replace the measuring cell - Replace the system control - see Feedwater limiting value
Fault message: <i>"Measuring cell Temp."</i>	- Cable break at the measuring cell - System control defect	- 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:**

Thermo Scientific
275 Aiken Road
Asheville, NC 28804
USA

Enquiries from USA/Canada

Sales: +1 866 984 3766

Service: +1 800 438 4851

Enquiries from Latin America

Sales: +1 866 984 3766

Service: +1 866 984 3766

Enquiries from Asia:**China**

Sales: +86 10 8419 3588

Service: Toll free 8008105118

Support Mobile 4006505118 or +86 10 8419 3588

India

Sales: +91 22 6716 2200

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

Japan

Sales: +81 45 453 9220

Service: +81 45 453 9224

Enquiries from the Rest of Asia/Australia/New Zealand

Sales: +852 2885 4613

Service: +65 6872 9720

Enquiries from Countries not listed / Rest of EMEA

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

Service: +49 6184 90 6940

Enquiries from Europe:**Austria**

Sales: +43 1 801 40 0

Service: +43 1 801 40 0

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

Thermo Electron LED GmbH

Robert-Bosch-Straße 1

D – 63505 Langenselbold

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

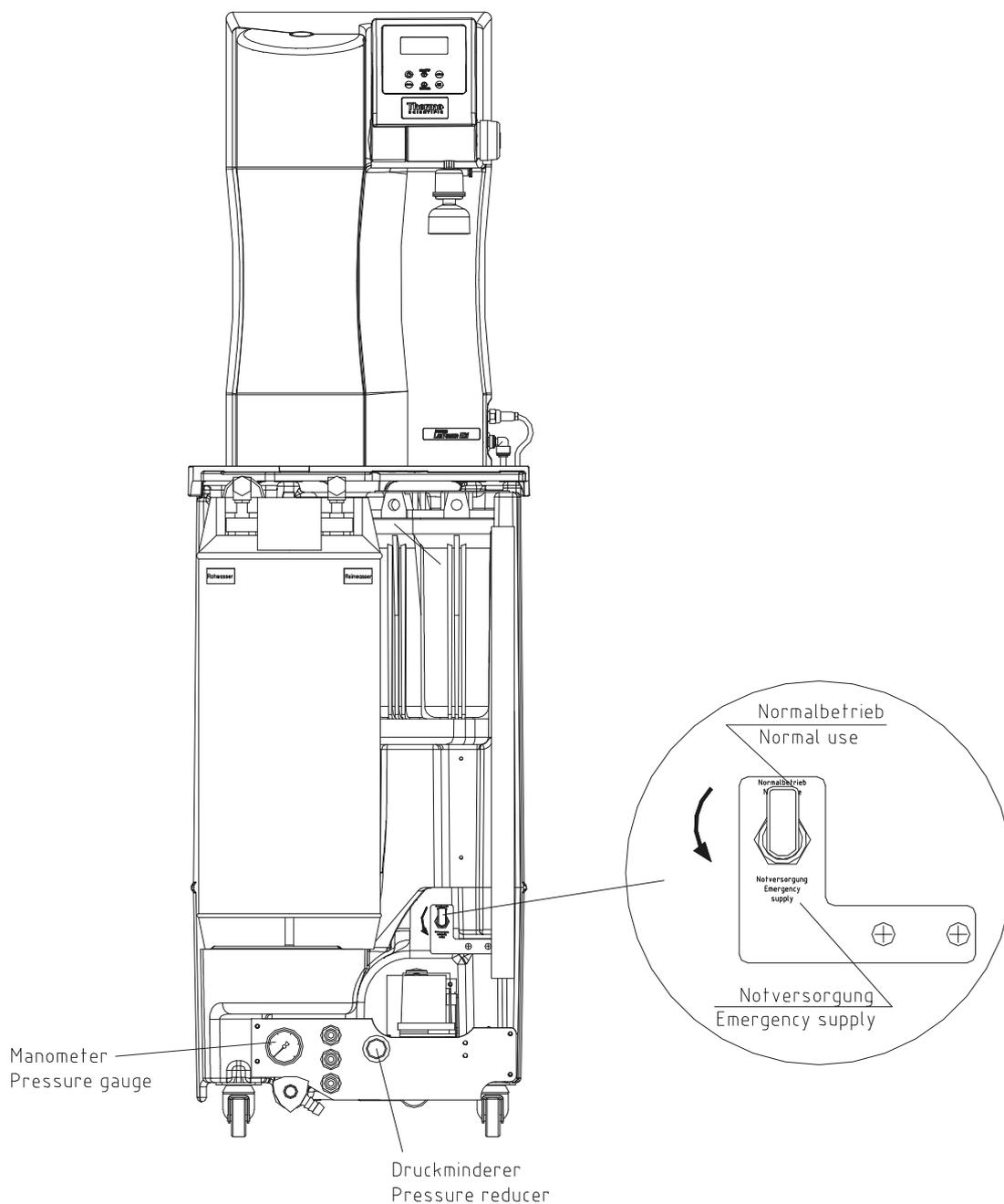
or +49 6184 90 6940

Service: Toll free 0800 1 112110

or +49 6184 90 6940

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

18. Emergency supply



If the system or the tank show a fault, then the water supply can be maintained by changing the 3-Way ball tap over to „emergency supply “.

1. Turn the 3-Way ball tap for the emergency supply on the position „Emergency supply“.
2. Adjust the pressure reducer to the permissible pure water pressure of the consumer, (2 bar).

3. Pull out the adjusting knob of the pressure reducer. The pure water pressure is reduced by turning this knob anti-clockwise and increased by turning it clockwise. The pressure change can be read off from the manometer.
4. After having adjusted the pure water pressure, press in the adjusting knob of the pressure reducer to lock it.



After return to „Normal use“ the pressure reducer is to be adjusted likewise again.

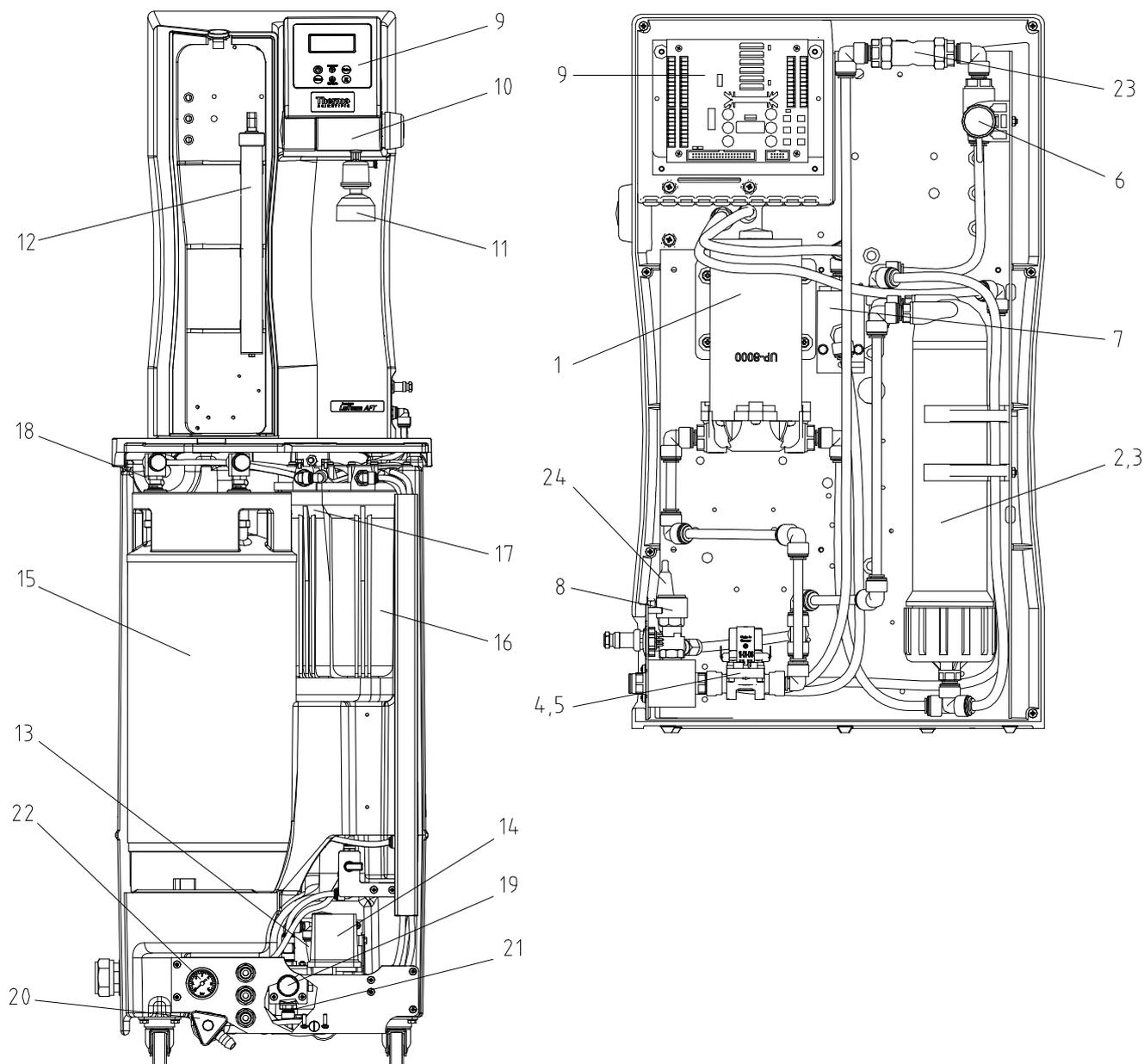
The system can only be used for a limited time in emergency mode, i.e. until the capacity of the ion exchanger is exhausted.

One ion exchanger should always be kept available as reserve.

Please inform Service immediately when you switch your system to emergency supply.

The address to contact should you need service: see chapter „Trouble shooting“.

19. List of replacement parts



No.	R+I Nr.	Description of the article	Art.-no.
1	P1	Booster pump RO	19.0050*
2,3	F2	RO-Modul for LabTower AFT 20 consisting of: RO Membrane, pack of 2 Module pressure tube, pack of 2 RO Modul for LabTower AFT 40 consisting of: RO Membrane pack of 2 Module pressure tube, pack of 2	22.0046* 50133990 22.0087* 50133990
4	V2	Inlet solenoid valve	15.0103*
5	V4	Rinsing solenoid valve	15.0103*
6	QIA300	Measuring cell Permeate	16.0126
7	QIA301 TIA500	Measuring cell pure water	50133992

8	V3	Pressure hold valve	15.0060
9		Microprocessor-control, complete	26.0023
10	V9	Dispensing valve	25.0068
11	F4	Sterile filter capsule (option)	09.1003
12	UV1	Replacement UV-lamp	50134462
13	P2	Booster pump	19.0046*
14	PS200	Pressure switch	15.0058*
15	F3	Ion exchanger	02.2850-LAB
16	F1	Pre-filter, consisting of: Pre-filter cartridge 5 µm + hardness stabilizer 10"	06.5204
		With pre installed Softener or Mix Multi filter Prefilter cartridge 5µm + Activated carbon, 10"	06.5201
17		Sterile filter 0,1 µm-10" (option) or Finefilter 1µm-10" (option)	06.5557
			06.5101
18	F5	Sterile vent filter 0,2µm (option)	06.5003
19	V8	Pressure reducer	15.0072
20	V5	Dispensing valve	14.0250
21	V7	Check valve	14.0441
22	PI201	Pressure gauge, 0-6 bar	15.0077
23	V10	Check valve	15.0009
24		Glas tube fuse holder, 5x20 mm	50131759
		Glas tube fuse, 5x20 mm, 3.15A, slow	50131758
		Glas tube fuse 5x20 mm, 2A, nimble (only AFT 40)	50134191
		Table power unit 24V DC (not shown)	50134196
		Table power unit 48V DC (not shown, only AFT 40)	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.

20. Accessories

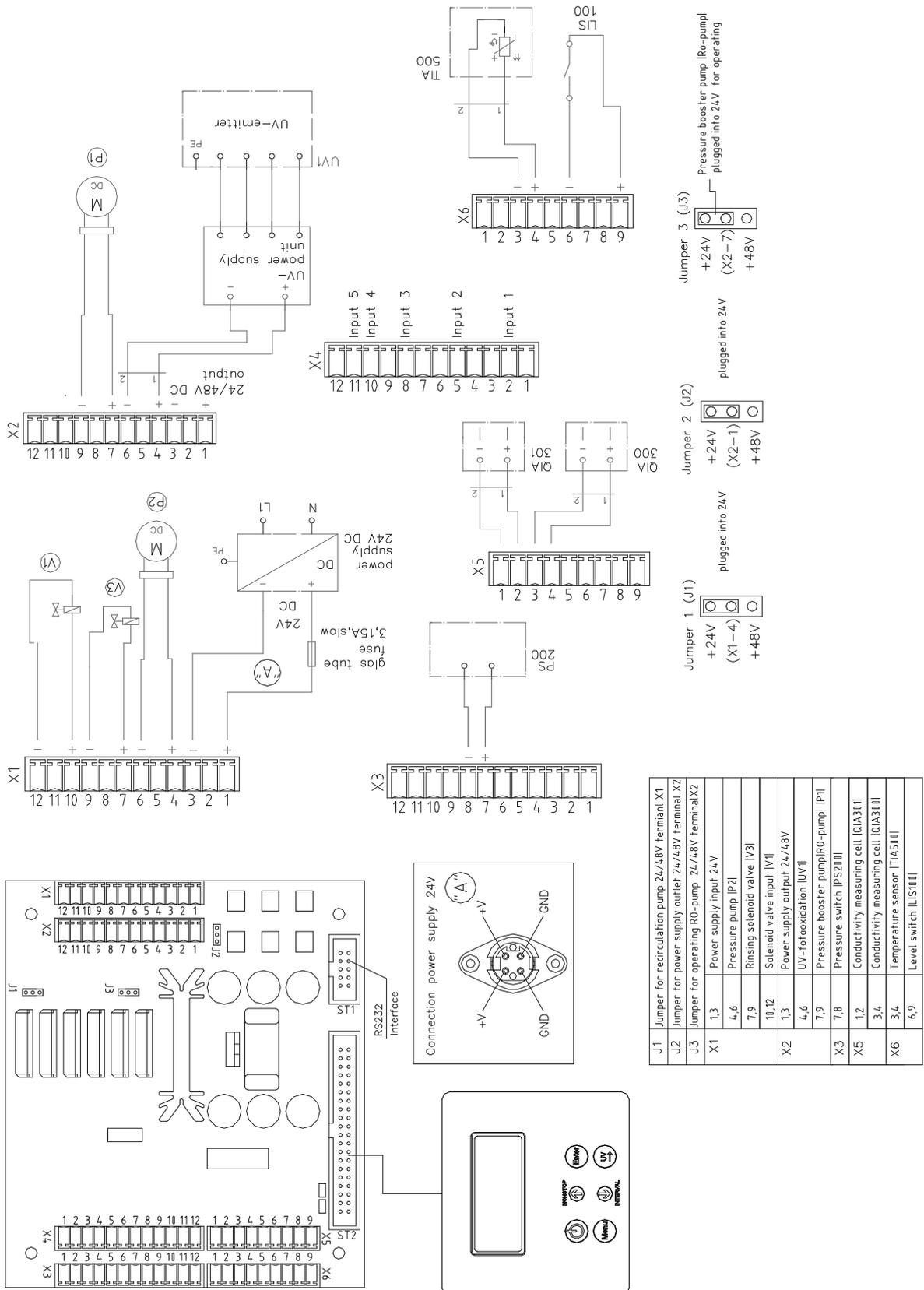
Description of the article	Art.-no.
UV- emitter (in the storage tank)	06.5006
Sterile filter capsule	09.1003
Sterile venting filter	06.5003
Sterile overflow	50132714
Sterile filter cartridge, 0,1 µm- 10"	06.5557
Disinfection agent, MICRO-Chlor (pack of 12 cans, Europe only)	09.2202
Disinfection agent, Cleaning Solution (US-market only)	50129891
Pressure pump MQ3 - 35, 110V	50135134
Pressure pump MQ3 – 45, 110V	50135135

21 Consumables

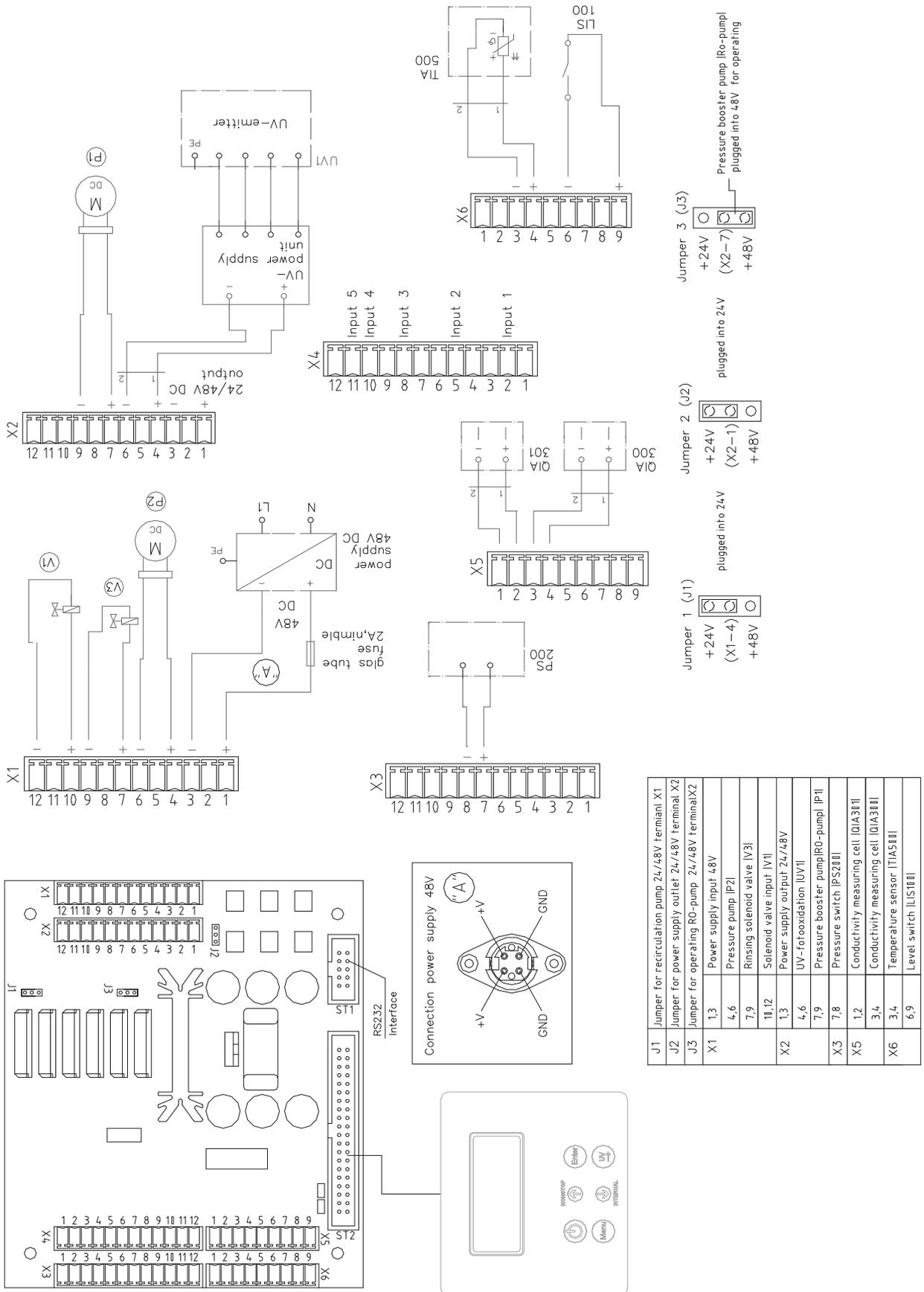
Bezeichnung	Artikel - Nr.
<u>Pre-treatment</u>	
Pre-filter cartridge 5 µm + hardness stabilizer 10"	06.5204
Sterile filter capsule	09.1003
Sterile venting filter	06.5003
Sterile filter cartridge 1µm-10"	06.5557
Fine filter 1µm-10"	06.5101
Ion exchanger DI 2800 S	02.2850-LAB
<u>UV-Reactor/pure water system</u>	50131981
Replacement UV-Lamp	50134462
Submergible pipe	50134463
<u>UV-Reactor/storage tank: (option)</u>	
Replacement UV-Lamp	22.0095
Submergible pipe	22.0096

22. Terminal assignment

22.1 LabTower AFT 20 (24V)



22.2 LabTower AFT 40 (48V)



Contact Information Thermo Scientific

North America:

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

Europe:

Austria +43 1 801 40 0, Belgium +32 53 73 42 41, France +33 2 2803 2180,

Germany national toll free 08001-536 376,

Germany international +49 6184 90 6940, Italy +39 02 95059 448,

Netherlands +31 76 579 55 55, Nordic/Baltic/CIS countries +358 9 329 10200,

Russia +7 812 703 42 15, Spain/Portugal +34 93 223 09 18,

Switzerland +41 44 454 12 12, UK/Ireland +44 870 609 9203

Asia:

Australia +61 39757 4300, China +86 21 6865 4588 or +86 10 8419 3588,

India toll free 1800 22 8374, India +91 22 6716 2200,

Japan +81 45 453 9220, New Zealand +64 9 980 6700,

Other Asian countries +852 2885 4613

Countries not listed: +49 6184 90 6940