Operating Manual

LabStar
100, 150, 200, 430, 560

Translation of the Original operating manual

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Content

1 Forward

1.1 Notes on the manual

This operating manual contains behavioural instructions from the manufacturer for the owner of the device and for everyone involved in set-up, operation, maintenance and repair.

The photos in this operating manual may differ from the specifics of your device.

In this operating manual, the term “product” is used for products not yet sterilized, and the term “sterile materials” for products that have already been sterilized.

This operating manual describes the Laboratory Table Autoclave LabStar 100, 150, 200, 430 and 560. The devices are essentially the same and differ only in the size of the usable space and in their equipment.

This operating manual describes all possible equipment. It is therefore possible that it describes equipment that is not on your device. The possible equipment is listed in the “Device equipment” chapter, see page 14.

Your device’s equipment can be found in the contract specification of your order.

1.2 Symbols in the text

The device is built to the current state of the art and is safe to operate. Nonetheless, the device may pose unpreventable hazards.

This operating manual uses the following symbols to designate hazards when working with the device or to give information on handling the device:


CAUTION
This symbol — along with the signal word CAUTION — indicates a death or health hazard to personnel. The text that follows explains the hazard and its effects and provides instructions for preventing the hazard. Failure to heed the instructions can cause health problems or death.


ATTENTION
This symbol — along with the signal word ATTENTION — indicates a hazard to the device or parts thereof. The text that follows explains the hazard and its effects and provides instructions for preventing the hazard. Failure to heed the instructions can cause severe damage to the device.


NOTE
This symbol appears above paragraphs that give useful or important information on properly handling the device. This information helps prevent problems and makes handling the device easier.
Moreover, this operating manual uses safety symbols in accordance with DIN 4844 and BGV A8 (the implementation of EC directive 2006/42/EC).

1.3 Responsibility of the owner

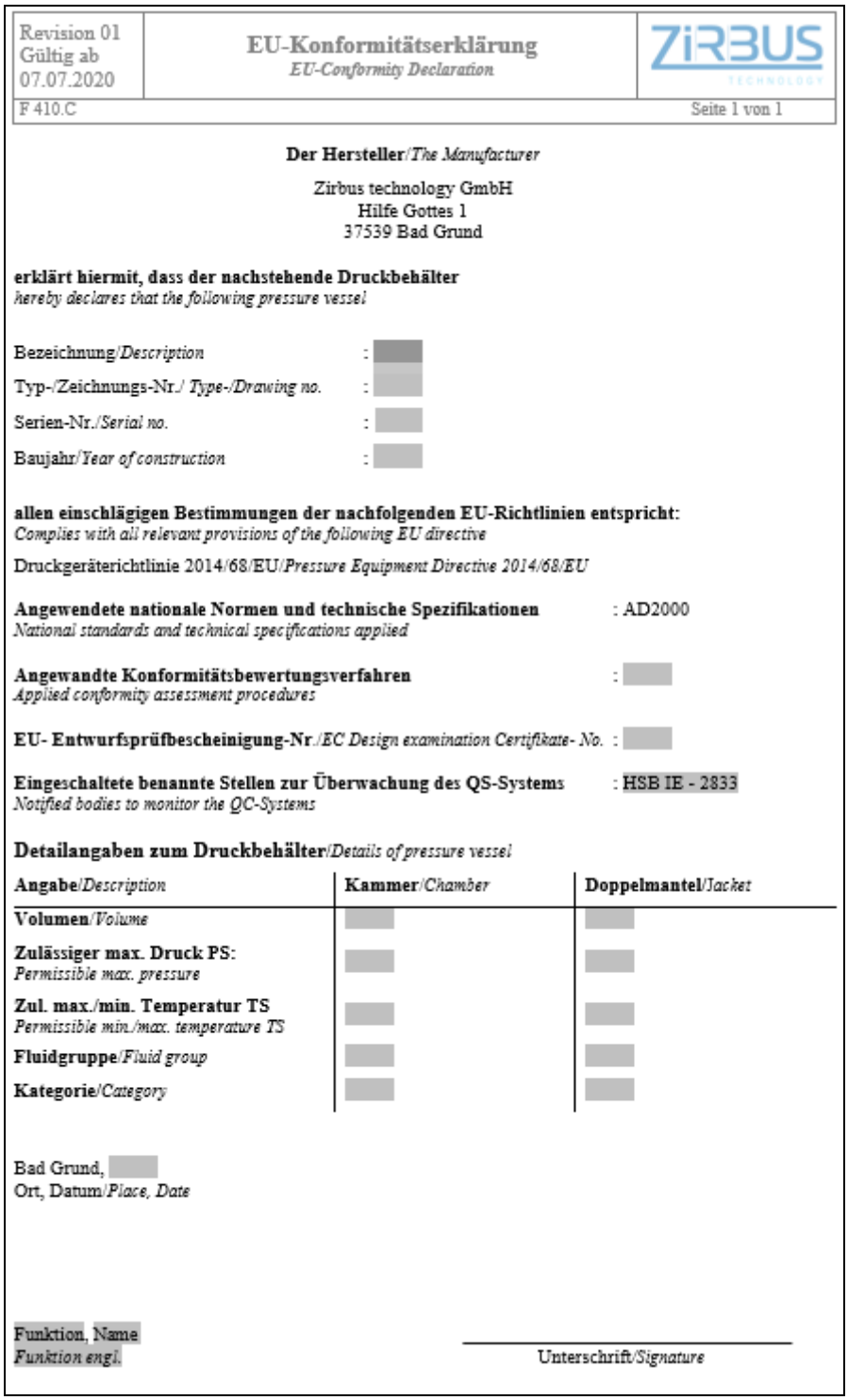
The device is built to the current state of the art and is safe to operate. Nonetheless, the device may pose hazards that cannot be prevented through design.
For safe operation, the owner must ensure that:

- Everyone involved in the set-up, operation, maintenance or repair of the device is familiar with the device's safety equipment and knows what to do when there is a malfunction.
- Everyone involved with the set-up, operation, maintenance or repair of the device wears personal safety equipment (safety goggles, close-fitting safety clothing, safety shoes, safety gloves, etc.).
- Everyone involved with set-up, operation, maintenance or repair of the device has read the relevant portions of the operating manual and understands them.
- The operating manual is always stored within reach.
- Only those people work on the device who are familiar with the fundamental work safety and accident prevention regulations, are trained in handling the device and are authorized for their respective activity.
- When the machine is being operated, qualified first-aid technicians can be called in and can perform any necessary first aid.
- All procedures, authorities and responsibilities in the area of the device are unmistakably specified.
- The personnel’s safety-conscious work is regularly checked.
- The device is always in operational condition.
- The device and entire work area are always clean and tidy.
- All safety equipment is operational.
- All prescribed maintenance/inspections are performed at the specified intervals.
- No modifications, additions or conversions are made to the device without the manufacturer’s consent. This also applies to changes to the software in the programmable control systems.
- All laws, regulations and accident prevention rules that apply to the device are adhered to — even if they are not explicitly stated here.

NOTE
When in doubt, or if further questions arise, please contact our service department

1.4 EC declaration of conformity

Here you can see an example of the declaration of conformity. The original declaration is present in the documentation of the autoclave.



Revision 01 Gültig ab 07.07.2020	**EU-Konformitätserklärung** *EU-Conformity Declaration*	ZIRBUS TECHNOLOGY
F 410.C		Seite 1 von 1

Der Hersteller/*The Manufacturer*

Zirbus technology GmbH
Hilfe Gottes 1
37539 Bad Grund

erklärt hiermit, dass der nachstehende Druckbehälter
hereby declares that the following pressure vessel

Bezeichnung/*Description* :
Typ-/Zeichnungs-Nr./ *Type-/Drawing no.* :
Serien-Nr./*Serial no.* :
Baujahr/*Year of construction* :

allen einschlägigen Bestimmungen der nachfolgenden EU-Richtlinien entspricht:
Complies with all relevant provisions of the following EU directive

Druckgeräterichtlinie 2014/68/EU/*Pressure Equipment Directive 2014/68/EU*

Angewendete nationale Normen und technische Spezifikationen : AD2000
National standards and technical specifications applied

Angewandte Konformitätsbewertungsverfahren :
Applied conformity assessment procedures

EU- Entwurfsprüfbescheinigung-Nr./*EC Design examination Certifikate- No.* :

Eingeschaltete benannte Stellen zur Überwachung des QS-Systems : HSB IE - 2833
Notified bodies to monitor the QC-Systems

Detailangaben zum Druckbehälter/*Details of pressure vessel*

Angabe/*Description*	**Kammer**/*Chamber*	**Doppelmantel**/*Jacket*
Volumen/*Volume*		
Zulässiger max. Druck PS: *Permissible max. pressure*		
Zul. max./min. Temperatur TS *Permissible min./max. temperature TS*		
Fluidgruppe/*Fluid group*		
Kategorie/*Category*		

Bad Grund,
Ort, Datum/*Place, Date*

Funktion, Name
Funktion engl.

Unterschrift/*Signature*

Revision 05 Gültig ab 06.07.2020	**EU-Konformitätserklärung** *EU-Conformity Declaration*	ZIRBUS TECHNOLOGY
F 410.D		Seite 1 von 1

Der Hersteller/*The Manufacturer*

Zirbus technology GmbH
Hilfe Gottes 1
37539 Bad Grund

erklärt hiermit, dass die nachstehende Baugruppe
hereby declares that assembly below

Bezeichnung/*Description* :
Modell/*Model* :
Serien-Nr./*Serial no.* :
Baujahr/*Year of construction* :

allen einschlägigen Bestimmungen der nachfolgenden EU-Richtlinien entspricht:
Complies with all relevant provisions of the following EU directives

Druckgeräterichtlinie 2014/68/EU/*Pressure Equipment Directive 2014/68/EU*

Angewandte Konformitätsbewertungsverfahren : Modul
Applied conformity assessment procedures

Angewendete nationale Normen und technische Spezifikationen :
National standards and technical specifications applied

Eingeschaltete benannte Stellen zur Überwachung des QS-Systems : HSB IE - 2833
Notified bodies to monitor the QC-System

Detailangaben zur Baugruppe/*Details of assembly*

Zubehör *Accessories*	Hersteller *Manufacturer*	Anzahl *Number*	Serien-Nr. *Serial no.*	Typ-/Zeichnungs-Nr. *Type-/Drawing no.*	Kategorie/Modul *Category/Module*

Bad Grund,
Ort, Datum/*Place, Date*

Funktion, Name
Funktion engl.

Unterschrift/*Signature*

2 Information of the device

Device-type:	Autoclave
Device-description:	Labstar 100
Serial number:	5396
Chamber volume:	100L (useful chamber volume)
Max. working pressure:	4 bar absolute
Max. working temperature:	140°C

For details about the equipment, please refer to the order confirmation with the no.2001670.

2.1 Dimensions and weights

LabStar	Usable space(Ø x D) [mm]	Chamber volume [litres]	External dimensions (w) x (h) x (d) [mm]
100	500 x 500	100	750 x 900 x 1000
150	500 x 750	150	750 x 900 x 1000
200	500 x 1000	200	750 x 900 x 1250
430	750 x 1000	430	950 x 1750 x 1468
560	750 x 1270	560	950 x 1750 x 1768

2.2 Connection data

Medium	Description
Discharge	3/4", maximum height 200 mm
Electrical connection	3-phase 400 V, 50/60 Hz, 16 A Ceekon socket, distance1.5 metres (US connection data: 3-phase 208 V, 60 Hz, 25 A Ceekon socket, distance 1.5 metres)
De-ionised water	3/4” shut-off valve external thread, pressure 0.5–2.5 bar per DIN EN 205, appendix B, table B1
Cold water	3/4” shut-off valve external thread, pressure 2.5–5.0 bar maximum hardness 10° German hardness / 1.783 mmoL/L
Compressed air	3/8” shut-off valve internal thread, pressure 5.0–7.0 bar Water-, dust- and oil-free (DIN ISO 8573-1:2010, Class 4)
Coolant feed	3/4” shut-off valve external thread, pressure 2.5–5.0 bar maximum hardness 10° German hardness / 1.783 mmoL/L Temperature 6°C–10°C
Coolant return	3/4” shut-off valve external thread, pressure 2.5–5.0 bar, Δ 0.5 bar Temperature 12 °C-16 °C

The connections vary depending on the device´s equipment

2.3 Device Equipment

This operating manual describes the Laboratory Table Autoclave LabStar 100, LabStar 150, LabStar 200, Labstar 430 and Labstar 560. The devices are essentially the same and differ only in the size of the usable space and in their equipment.
This operating manual describes all optional device equipment.
Your device's equipment can be found in the contract specification of your order.
The seven standard equipment levels are described below.

BASIC LAB For simple solid or liquid products without dry removal.	• Steam generator
DRY LAB For non-infected solid products that require intense subsequent drying.	• Steam generator • Water ring vacuum pump
QUICK LAB • BASIC For large quantities of liquid products.	• Steam generator • Rapid water re-cooling system with air-circulating fan
QUICK LAB For non-infected solid or liquid products that require intense subsequent drying — not suitable for liquids in closed containers.	• Steam generator • Water ring vacuum pump • Rapid water re-cooling system with air-circulating fan
QUICK LAB • ADVANCED For non-infected solid or liquid products that require intense subsequent drying — suitable for liquids in closed containers	• Steam generator • Water ring vacuum pump • Rapid water re-cooling system with air-circulating fan • Steam / Air Mixture Method (DLGV)
SAFE LAB For use in S2 laboratory For infected solid products that require intense subsequent drying.	• Steam generator • Water ring vacuum pump • Exhaust Air Filtration (ALF)
COMPLETE LAB For use in S2 laboratory For infected solid and liquid products that require intense subsequent drying.	• Steam generator • Water ring vacuum pump • Exhaust Air Filtration (ALF) • Rapid water re-cooling system with air-circulating fan

3 Usage

3.1 Intendet use

CAUTION
INJURY HAZARD! DAMAGE TO DEVICE!
The device must be operated only by trained, authorized personnel. Improper operation of the device can cause severe injury and damage the device.

The device is intended solely for sterilizing or heating solid materials or liquids depending on the device's equipment.

Any other or added use is considered unintended. ZIRBUS TECHNOLOGY GmbH is not liable for harm to people or equipment due to unintended use of the device.

Intended use means that:

- All safety instructions in this operating manual are followed.
- Inspection and maintenance instructions are adhered to.
- General, national and company safety regulations are observed.

Examples of unintended use may include:

- Working with explosive products,
- Working with products that contain acids,
- Working with chemicals,
- Heating edible products in the device or keeping them warm,
- "Disinfecting" living things in the device,
- Filling the chamber with loose products,
- Sterilizing solid and liquid products together,
- Modifying the device's electrical components,
- Installing replacement parts that do not meet required specifications.

3.2 Product requirements

- Liquids in open or closed containers
- Solids
- Goods with open cavities
- Empty glassware
- Non-infectious waste bags and goods
- Infectious waste bags and goods (S2 or higher)
- Fermenters
- Infected or non-infected mixed waste
- Infected or non-infected waste bag with liquid contents

3.3 Improper use

CAUTION
INJURY HAZARD! DAMAGE TO DEVICE!

- The device must be operated only by trained, authorized personnel. Improper use of the device can cause severe injury and damage the device.
- Before each program launch, make sure that the products in the chamber are suitable for sterilisation with the device.
- Before launching the program, make sure that a program is being used that matches the products in the chamber.
- If you are not 100% sure, do not launch the program!

Avoid misapplication: Especially be sure of the following points:

- Make sure that the set temperature can be used for the product.
- Make sure that the selected program can be used for the product.

  Example:

  A liquid product is to be sterilized. A program for solid products is selected. The liquid product boils over when the pressure is relieved.
- Make sure that no loose products are filled into the chamber. The products must always be in pails or baskets.
- Make sure that solid and liquid products are not sterilized together.
- Make sure that the product temperature sensor during sterilisation of liquid products is in a reference vessel with the correct level of liquid. The reference vessel must reflect the highest individual volume.
- Make sure that when sterilizing liquids with a temperature greater than 30°C, the gravitation process is selected for air elimination.

4 Safety

4.1 General safety instructions

This chapter familiarizes you with the safety equipment on the device. It informs you about proper handling of the device and points to possible hazards.

The device is built to the current state of the art and is safe to operate. Nonetheless, the device may pose hazards to people and property if it is used improperly or not as intended, or if the safety instructions are not followed.

To eliminate hazards to personnel as much as possible, dangerous areas of the device must be protected with reasonable safety equipment.


CAUTION
INJURY HAZARD! DAMAGE TO DEVICE!
Safety equipment is not to be modified, removed or disabled. Unprotected parts of the device can cause injury or death.

Before work is done on electrical components, they must be drained of electricity. Observe the relevant safety regulations when, for operational reasons, you need to work with the power on.

- The owner is responsible for safe operation of the device.
- The general, national and company safety regulations, such as wearing safety goggles, close-fitting safety clothing, safety gloves, etc., must be followed.
- The device must be operated only in technically perfect conditions. Any change to the device must immediately be reported to the nearest supervisor.
- The responsibilities for operation, maintenance and repair must be unambiguously regulated and adhered to, so that there is no unclear authority when it comes to safety.
- The safety instructions in the individual chapters of this operating manual and in the suppliers' operating manuals must be observed.

4.2 Impermissible operating conditions

It is forbidden to operate the device if:

- Faults or damage are detected.
- Maintenance intervals have been exceeded or not observed.
- Safety equipment has been removed or does not work.
- Mechanical or electrical functions do not run properly.
- Something is unclear about the product to be sterilized or the associated program.

4.3 Qualification of personnel

Only trained, qualified personnel are to work with the device. The personnel must be familiar with the device, its specifications and the programs available.

Moreover, the personnel must be able to judge which solid and liquid products are allowed to be sterilized or heated in which containers.

The owner of the device must unambiguously specify personnel responsibility for operation, maintenance and repair.

Work on the device's electrical system must be done only by a qualified electrical expert or by a person specially trained according to the electro-technical rules.

4.4 Warning signs on the device

Dangerous places on the device are marked with warning signs according to DIN 4844.

Mandatory signs are attached to the device to indicate necessary actions.

Warning signs, mandatory signs and other instructional signs on the device must always be clearly legible. Illegible or damaged warning signs must be replaced immediately.

The following warning signs, mandatory signs and instructional signs are attached to the device.

Warning of hot surfaces!

Warning / notice to switch off the voltage before opening the device

4.5 Safety equipment

 CAUTION
INJURY HAZARD!
Safety equipment is not to be modified, removed or disabled. Unprotected parts of the device can cause injury or death.

Safety functions of the cover
The cover lock must be released from the controls to open the cover. Conditions:
Temperature below 80°C, pressure 980 mbar.

Chamber safety valve
If overpressure arises in the chamber, the safety valve opens and relieves the overpressure in a controlled manner and then closes again.
Condition: Chamber pressure above 2.8 bar rel.

Temperature limiter for steam generator
If the steam generator heater overheats due to a malfunction, the temperature limiter shuts off the heater.
Condition: Heater temperature above 180°C.

Chamber safety pressure switch:
The cover lock must be released by the safety pressure switch to open the cover.
Condition: Chamber pressure below 1200 mbar.

4.6 Residual hazards

The safety equipment on the device protects from injury. Nonetheless, some activities still pose an injury hazard.

ATTENTION
INJURY HAZARD!

- Residual hazards can be avoided only through proper behaviour.
- Always stay an adequate distance from the hazard locations and keep the following residual hazards in mind.

Parts that carry current when the device is shut off

- The cable to the ON/OFF switch always carries voltage.
- Even if the ON/OFF switch is shut off, individual components in the electrical cabinet carry voltage.
- Current-carrying parts are safe to touch with fingers. However, it is still hazardous to touch current-carrying parts with tools.

Hot components of the device

- If the device has not cooled, its surfaces pose a burn hazard, especially in the chamber and the inside of the cover.
- Check the temperature before touching: Wear proper safety equipment.

Hot sterile materials

- When the cover is opened, a cloud of vapour may escape from the chamber.
- Stay a safe distance away.
- When the cover lock is released, the sterile materials and baskets or pails may be very hot.
- Check the temperature before touching: Wear proper safety equipment.

Hazards from the product

- Products to be sterilized may pose hazards.
- It must be ensured that the product can be sterilized safely. If you are not 100% sure, do not launch the program!
- It must be ensured that the product can be sterilized with the selected program. If you are not 100% sure, do not launch the program!

5 Transport, set-up and connection

5.1 Transporting the device

The device is delivered packed onto a pallet and can be transported to the set-up location with a lift truck.
The device must be lifted from the pallet with suitable, tested lifting equipment.
Depending on the model and equipment, the device weighs up to 230 kg.
During transport, lifting and movement, all relevant and company-internal safety regulations must be observed. Only suitable, tested lifting equipment is to be used.

 ATTENTION
INJURY HAZARD! DAMAGE TO DEVICE!

- There is a tilting hazard when the lift truck transports the device.
- The lift truck must cover the entire frame of the device — use only suitable lift trucks.
- Be sure to stabilized the device. Transport must be done slowly and cautiously, especially when manoeuvring on curves.

5.2 Evironmental conditions

For optimal operation of the device, the following environmental conditions must be maintained.

Temperature	+10°C…+30°C
Air humidity	max. 75%
Air pressure	700 hPa…1060hPA

5.3 Connecting the device

5.3.1 Electrical connection


CAUTION
DEATH HAZARD!
For permanently wired devices without plugs, the electrical connection is to be made only by a trained electrical technician.

Specification:

- 3-phase 400 V, 50/60 Hz, 16 A
  (USA: 3-phase 208 V, 60 Hz, 25 A)
- Ceekon socket


NOTE
The arrangement of the connections may vary depending on the device's type and equipment. Each connection is clearly marked with asticker.

5.3.2 Compressed air connection

Specification:

- 3/8" shut-off valve internal thread
- Pressure 5.0 - 7.0 bar
- According to DIN ISO 8573-1:2010, Class 4


NOTE
The arrangement of the connections may vary depending on the device's type and equipment. Each connection is clearly marked with a sticker

5.3.3 Water connection

Cold water

Specification:

- 3/4" external thread with shut-off valve
- Pressure 2.5 - 5.0 bar,
- Maximum hardness 10° German hardness / 1.783 mmoL/L
- < 20°C water temperature

NOTE
The arrangement of the connections may vary depending on the device's type and equipment. Each connection is clearly marked with a sticker.

De-ionised water

Specification:

- 3/4" external thread with shut-off valve
- Pressure 0.5 - 2.5 bar
- DIN EN 205, appendix B, table B1
- De-ionised water quality:
  0.2 µS/cm - 5 µS/cm
  The device is adjusted to the de-ionised water quality of 0.5 µS/cm on site. If the de-ionised water quality is worse than 2 µS/cm, a trained person must read-just the fill level of the steam generator.

NOTE
The arrangement of the connections may vary depending on the device's type and equipment. Each connection is clearly marked with a sticker.

Discharge

Specification:

- 3/4"
- Maximum height 200 mm
- The temperature of the discharge water is at least 60°C, and if there is a malfunction up to 100°C. The discharge hose must be designed for these temperatures.

CAUTION

The temperature of the discharge water can be up to 100°C if there is a malfunction.

- Check the temperature before releasing the discharge hose.
- Let the discharge water cool before loosening the discharge water hose.

NOTE

The arrangement of the connections may vary depending on the device's type and equipment. Each connection is clearly marked with a sticker.

6 Operating elements and displays

6.1 ON/OFF switch

The toggle switch turns the device on and off.

- Up position “O”
  Device off
- Bottom position “I”
  Device on

6.2 Touchscreen

The device's major functions are controlled from the touchscreen and the visualization.

The current device status is also shown.

The touchscreen is operated by touching with a finger or an entry stylus.

NOTE

Complete information on the visualization can be found in Chapter 11 “Touchscreen and visualization” starting on page

6.3 USB/Ethernet interface (option)

The device is equipped with a USB interface or an Ethernet interface.

- USB interface
  When a USB stick is inserted, after a program is launched, the process is recorded to the USB stick. If the program DataLog (see page 125) is installed on a PC, the recorded program processes can be viewed as diagrams.
- Ethernet interface
  When the LAN cable is plugged in and the SteriLog software is launched, after a program is launched the process is recorded on the internal company network.
  If the SteriLog program (see page 114) is installed on a PC, in the company network, the program processes can be recorded and saved.

NOTE

The programs DataLog and SteriLog run on Windows PCs. The programs are delivered on a CD with the device.

6.4 Log printer (option)

When activated in the visualization, the log printer prints a log after every production run.

NOTE
Information on configuring the log printer can be found in Chapter 10 “Touchscreen and visualization” on page

6.5 Reset button for steam generator

When the steam generator’s temperature is too high, overheat protection activates and the steam generator is deactivated.

A corresponding error message appears on the touchscreen.

Firmly press the reset button to reset the triggered overheat protection.

The error message must be dismissed on the touchscreen.

NOTE
If the overheat protection cannot be reset with the RESET button, there is an error that requires maintenance or repair.

6.6 Thermostat discharge temperature

The thermostat is for setting which discharge temperature active cooling starts at. Factory setting: 40°C

7 Commissioning, decommissioning

7.1 Commissioning

The device is usually commissioned by trained service technicians from ZIRBUS TECHNOLOGY GmbH.

If commissioning is done in Germany without ZIRBUS TECHNOLOGY GmbH, the owner must:

- announce the device's commissioning to the workers' compensation board.
- have an inspection made according to the Industrial Safety Ordinance by a notified body (TÜV, Dekra, etc.).

If the device is not commissioned in Germany, the owner must ensure adherence to the laws, regulations and guidelines that apply to autoclaves in his country.

NOTE
It makes sense to have the future operator take part in the commissioning. This promotes understanding of the new device and allows questions to be answered.

7.2 Decommissioning

7.2.1 Decommissioning

If the device is out of operation for more than a week, perform the following work steps:

- Turn the device off.
- Empty the chamber (discharge valve)
- Clean the chamber.
- Close or clamp off the supply lines (electricity, water compressed air).
- Clean the entire device.
- Let the vacuum pump dry and apply corrosion protection; see the manufacturer's documentation.
- Empty the de-ionised water tank (discharge valve).
- Empty the steam generator (discharge valve).
- Protect the entire device from moisture and dust.
- Take suitable corrosion protection measures.
- Prepare a decommissioning log and file it with the device documentation. This will make re-commissioning easier.

7.2.2 Storage conditions

If the device is taken out of operation and stored, it must be carefully covered and stored under the following environmental conditions.

 ATTENTION

DAMAGE TO THE DEVICE!

The storage conditions listed below must absolutely be observed. Failure to do so can cause considerable damage to the device.

If the device is temporarily stored before commissioning or during conversions, rebuilds, etc., the following environmental conditions must be observed:

Temperature	+10°C…+40°C
Air humidity	max. 95%
Air pressure	500 hPa…1060hPA

7.2.3 Disposal

The device must be disposed of according to the applicable disposal guidelines.

After careful cleaning by the customer, the device will be dismantled, transported away and properly disposed of by Zirbus mechanics at customer request and at calculated cost.

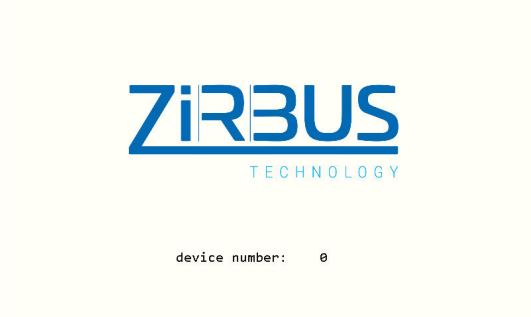
 NOTE

If the device or parts of it are contaminated (irreparably contaminated), Zirbus will not perform the disposal. In that case, the device's owner is responsible for disposal.

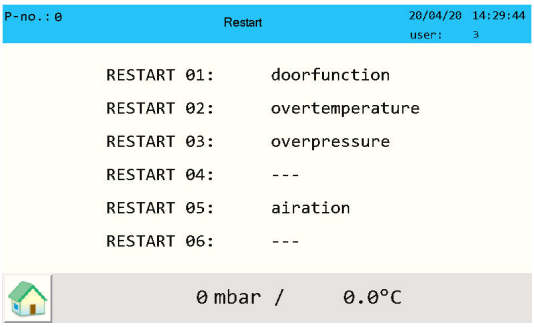
8 Switching off and on

8.1 Switching on

1. Put the ON/OFF switch in “I” position.
    - The controls launch.
    - A blue progress bar appears.
    - A “Start screen” with the device type and number appears briefly.



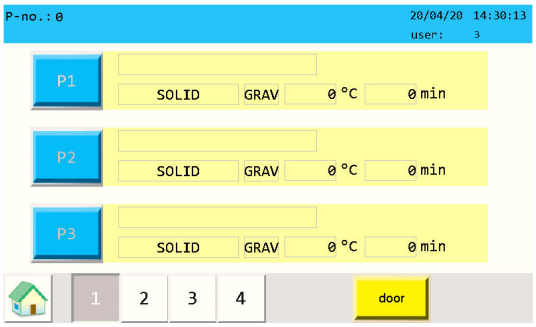
- A system check takes place.



- If there is an error, the “Restart” control screen appears.
- At the highlighted step, the start conditions are not met, e.g. if readings are not yet below the limit values.

2. In regard to the highlighted message, wait until the device has eliminated the reason for the message, see page 64. If the device does not take the possible measures, there is a defect, and Zirbus service must be contacted.

• The “Program selection” control screen appears.



• The control screen is launched. No user is logged on.

8.2 Switching on after a power failure

If a power failure has interrupted a running program, after the controls boot up, the control screen “Power failure” appears on the touchscreen.
The interrupted program can be restarted or the cover opened.

If no running program was interrupted by the power failure, no action needs to be taken.

8.3 Switching off

1. Wait until the program has quit or cancel the program.

NOTE
When cancelling a program, check whether the sterilisation process has not completed and needs to be repeated.

2. Put the ON/OFF switch in “0” position.

3. Based on company specifications, close the supply lines, if necessary.

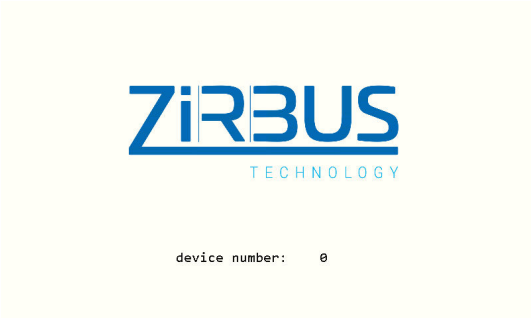
9 Working with the device

CAUTION
INJURY HAZARD! DAMAGE TO DEVICE!

- The device must be operated only by trained, authorized personnel. Improper use of the device can cause severe injury and damage the device.
- Before each program launch, make sure that the products in the chamber are suitable for sterilisation with the device.
- Before launching the program, make sure that a program is being used that is suitable for the products in the chamber.
- If you are not 100% sure, do not launch the program!
- Never sterilize solid and liquid products together.
- Load the device with products only in the baskets or pails provided. Never fill the chamber with loose products.
- After the program ends, the chamber and sterile materials are still very hot. There is a burn hazard!
- After the program ends, when the cover is opened, a cloud of vapour may escape from the chamber. Stay a safe distance away.

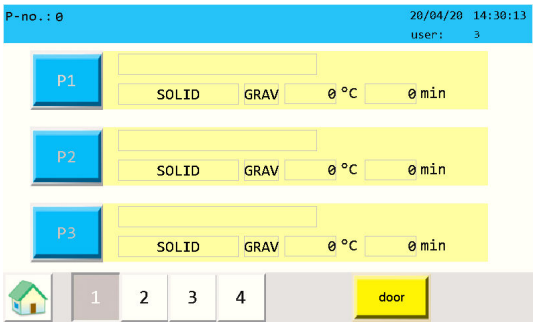
9.1 Loading the device

1. Put the ON/OFF switch in “I” position.
   - The controls launch.
   - A blue progress bar appears.
   - A “Start screen” with the device type and number appears briefly.



   - A system check takes place.

• After the system check is over (with no errors), the “Program selection” control screen appears.



2. Tap the DOOR button.

• The cover lock opens.

3. Open the cover!

ATTENTION
Load the device with products only on the base frame, transport trolley, baskets or pails provided. Never fill the chamber with loose products without the basic frame. Never sterilize solid and liquid products together.

4. Load the chamber according to the equipment, specification and company-internal regulations.

5. Position the product temperature sensor.

- When sterilizing liquid media, position the product temperature sensor in a reference vessel. The reference vessel must match the largest individual volume.
- When sterilizing solid goods, position the product temperature sensor in the middle of the products.

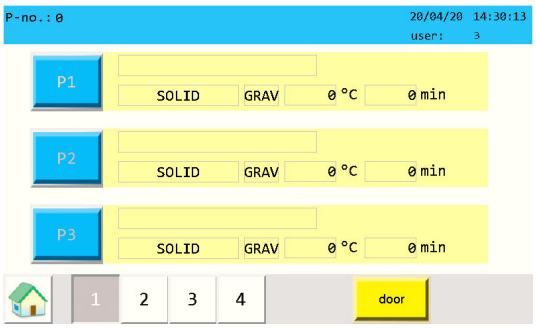
6. Check the surface of the cover seal for cleanliness. Clean the seal surface, if necessary.

7. Close the cover.

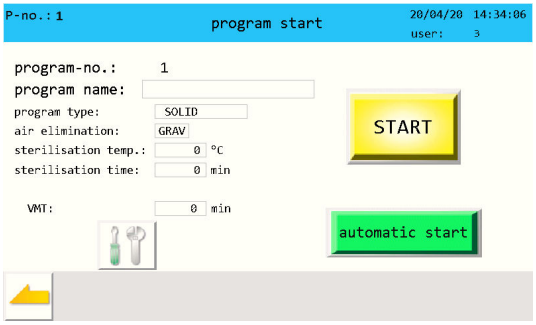
• The cover locks automatically when it is closed.

9.2 Program sequence

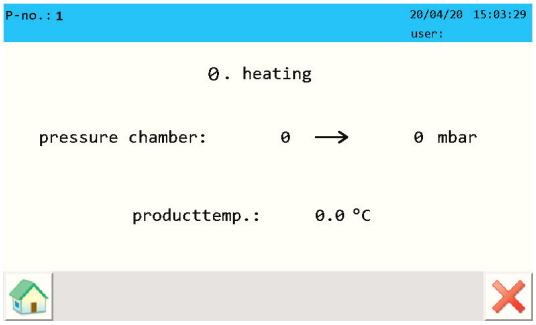
1. In the “Program selection” control screen, tap the button (P1 to P10) for the suitable program.



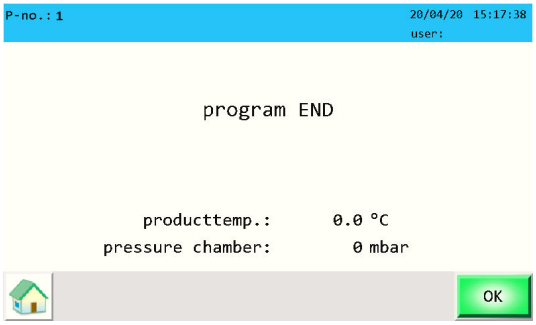
- The “Launch program” control screen appears.



2. Tap the START button.
   - Sterilization with the selected program starts.
   - The “Program sequence” control screens are shown.
   - The program-specific sterilization steps are performed.
   - On the touchscreen, the sterilization steps and the relevant actual values are shown.

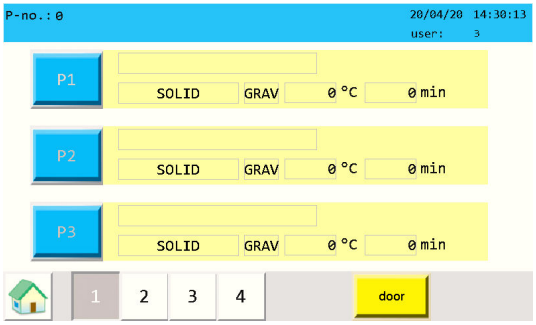


• After the program has run, the “End of program” control screen appears.



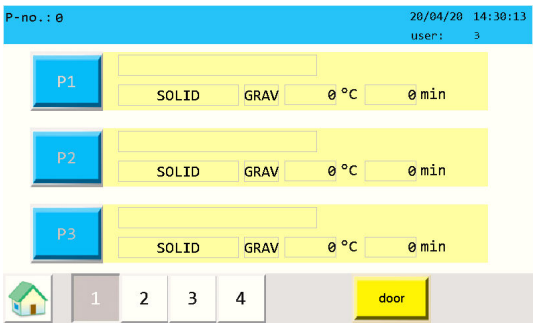
3. Tap the OK button.

• The “Program selection” control screen appears.



9.3 Removing the sterile materials

1. Tap the DOOR button.



• The cover lock opens.

CAUTION
INJURY HAZARD!

- After the program ends, the chamber and sterile materials are still very hot. There is a burn hazard!
- When the cover is opened, a cloud of vapour may escape from the chamber. Keep a safe distance away.

2. Open the cover.
3. Remove the product temperature sensor from the sterile materials and wind it in the cover.
4. Remove the sterile materials from the chamber.

10 Touchscreen and visualization

The device is controlled from the touchscreen. All necessary settings can be made from the touchscreen.

All entries are made by touching the touchscreen with a finger or with an entry stylus suitable for touch-sensitive operating panels.

ATTENTION
DAMAGE TO THE TOUCHSCREEN!

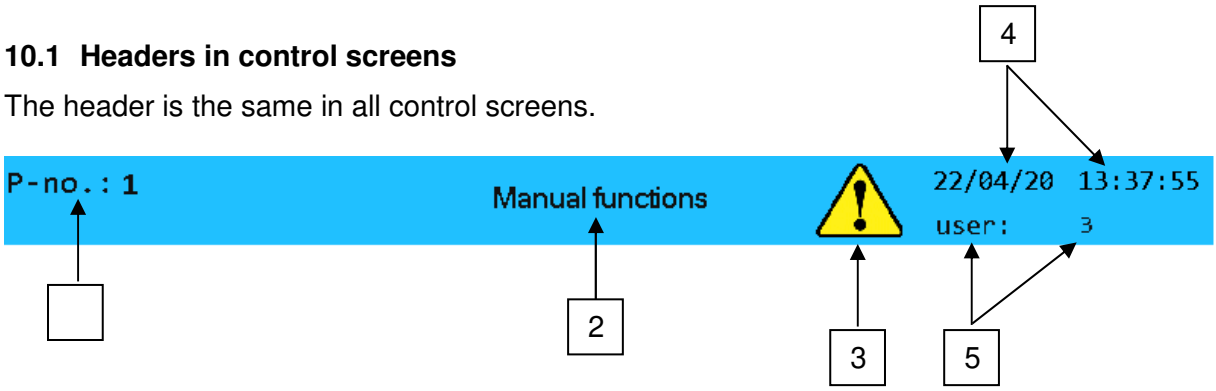
Use of pointed, sharp or acidic objects for operating the touchscreen can cause irreparable damage to the surface.

- Operate the touchscreen with a finger or with a suitable entry stylus.
- There are protective films for the touchscreen. The film prevents the touchscreen from being scratched or soiled. A protective film should always be adhered.

NOTE
The control screens are adapted to the device's equipment and therefore show only the functions and settings possible on your device.
This chapter describes all possible control content. It is therefore possible that the chapter contains content that does not apply to your device.
The control screens shown can therefore differ from those of your device.

10.1 Headers in control screens

The header is the same in all control screens.



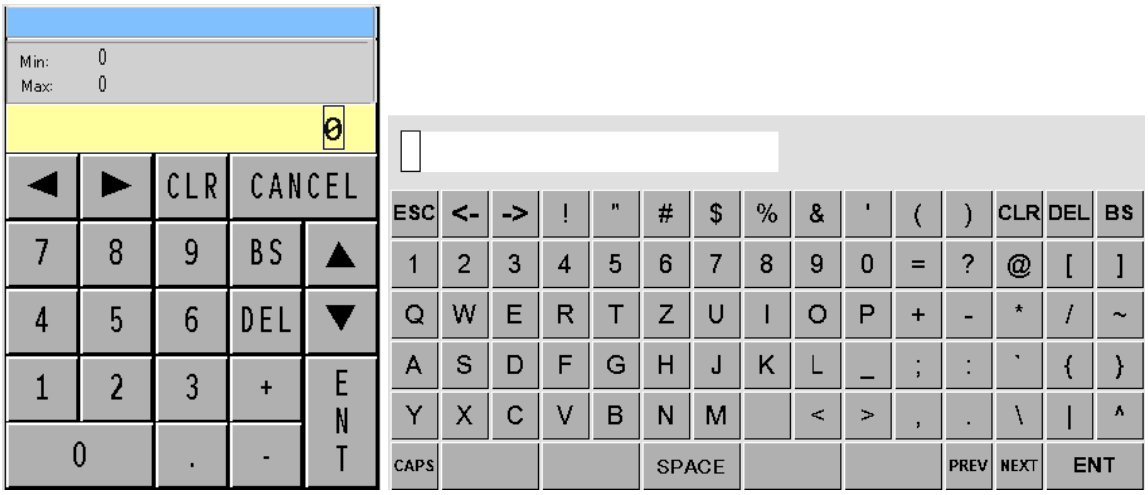
Pos.	Designation
1	Number of the last selected program.
2	Name of the control screen.
3	Warning symbol: If a malfunction occurs, the warning symbol is shown. • Tapping the warning symbol shows the "Alarm list" control screen,
4	Current date and time.
5	Logged-in user. • If no number is shown, no user is logged in. • If no user is logged in, only the present programs can be started.

10.2 Entering text and numbers

When needed, one of the virtual keyboards is shown for entering text or numbers.

- The upper area of the numeric keypad shows the range of possible values. Entries beyond the defined value range are not adopted by the controls.
- After the text or numbers have been entered, and the ENTER key has been tapped, the virtual keyboard goes away.

The following keybords can be present:

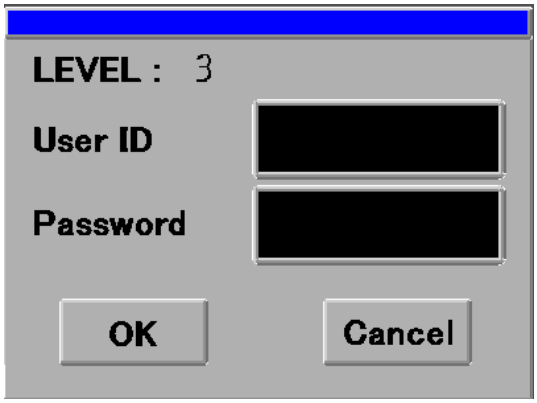


10.3 Pasword-protected areas / user Login

Showing some control screens or calling up certain functions requires specific user rights.

These areas are password protected.

If calling up a specific function requires the user to log in, the user login screen appears.
In the user login, the top line shows the necessary user level.



After the correct user ID (with the required user level) and the correct user level are entered, the relevant functions are allowed.

The passwords are preset in user administration.

Standard passwords

Level	Password
1	255
3	9200
5	9222
7	Available in consul-tation with ZIRBUS TECHNOLOGY GmbH

10.4 Control screens

10.4.1 “Program selection” control screen

After the device is turned on from the ON/OFF switch, the “Program selection” control screen appears on the touchscreen.

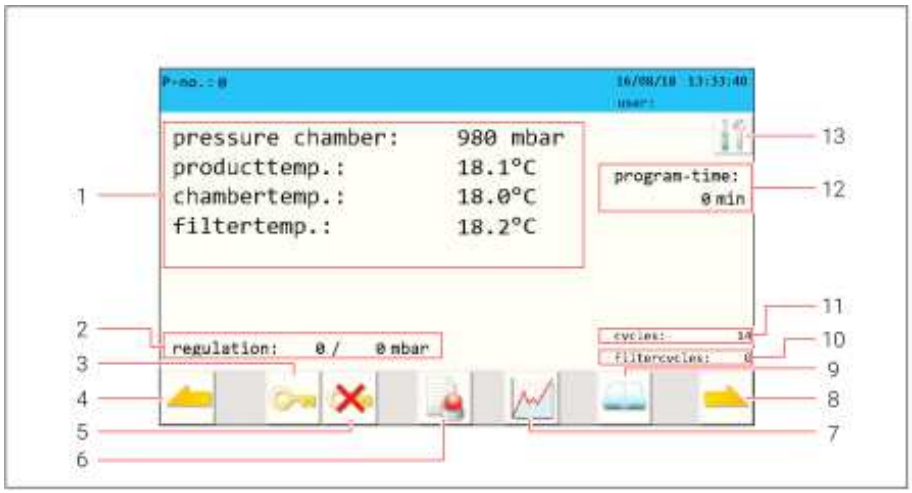
Explanation of the control screen

Pos.	description
1	Editable program name
2	The “Launch program” control screen for the selected program is called up. • A program must be released to be started.
3	Program's type
4	The control screen “Actual values” is called up.
5	The control screens “Program selection 2-4” are called up. In the controls, 10 programs can be created. The programs P1 to P7 are pre-set, but can be changed. Programs 11 and 12 are fixed and cannot be changed. • P11: Bowie-Dick test • P12: Vacuum air test
6	The cover lock opens.
7	Type of air elimination in this program
8	Sterilisation time (STt) in this program
9	Sterilisation temperature (STT) in this program

10.4.2 „Actual values“ control screen

This control screen shows the actual values and offers access to the submenus and other control screens.
From the “Program selection” control screen, the following buttons must be clicked to get to this control screen:

Explanation of the control screen



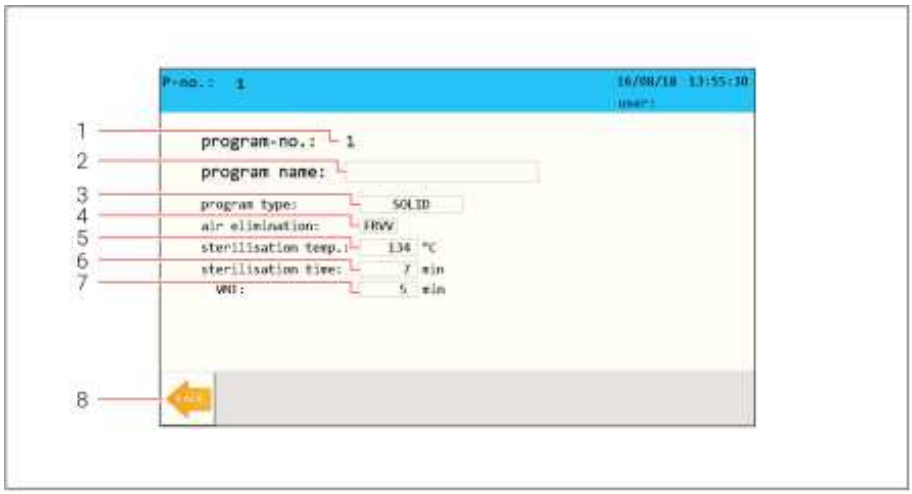
Pos.	description
1	Display of actual values • Which actual values are shown depends on the device's equipment.
2	As the program runs, it shows the target pressure value of the pressure control band of the current program step.
3	The “User login” control screen appears.
4	The previous control screen appears.
5	The user is logged off.
6	The “Alarm list” control screen appears.
7	The “Process” control screen appears.
8	The “Flowchart” control screen appears.
9	The “Current program” control screen appears.
10	Filtering cycle counter (option with Complete Lab and Safe Lab equipment packages) • Counts each launch of a program of the “Waste solid” or “Waste liquid” type.
11	Cycle counter Counts every program launch.
12	Runtime of the current program
13	The “Functions” pop-up window appears.

10.4.3 “Current program” control screen

The control screen shows the parameters for the current program. The parameters cannot be edited here.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen

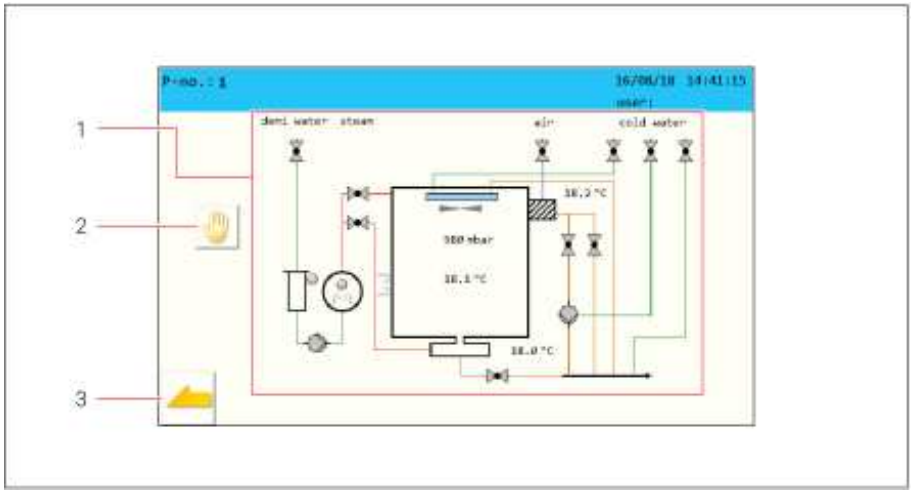


Pos.	description
1	Number of the program.
2	Editable program name.
3	Program type
4	Type of air elimination
5	Sterilization temperature (STT)
6	Sterilization time (STt)
7	Vacuum Drying Time (VDT)
8	The previous control screen appears

10.4.4 “Flowchart” control screen

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen

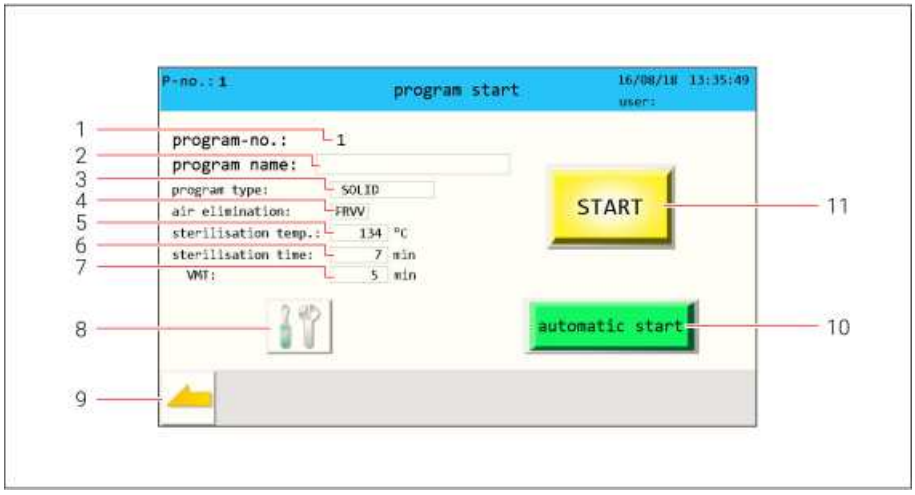


Pos.	description
1	Overview of the functional components (valves, pumps) of the device and their status. • Green: Component active. • Grey: Component not active. • Lines and steam lines drawn in red. • The flowchart differs with the device's equipment
2	Control boxes for starting the functional components are shown (password protected). • Activating the control boxes turns the functional component on and off.
3	The control screen “Actual values” is called up.

10.4.5 “Launch program” control screen

From the “Program selection” control screen, the following buttons must be clicked to get to this control screen:

Explanation of the control screen

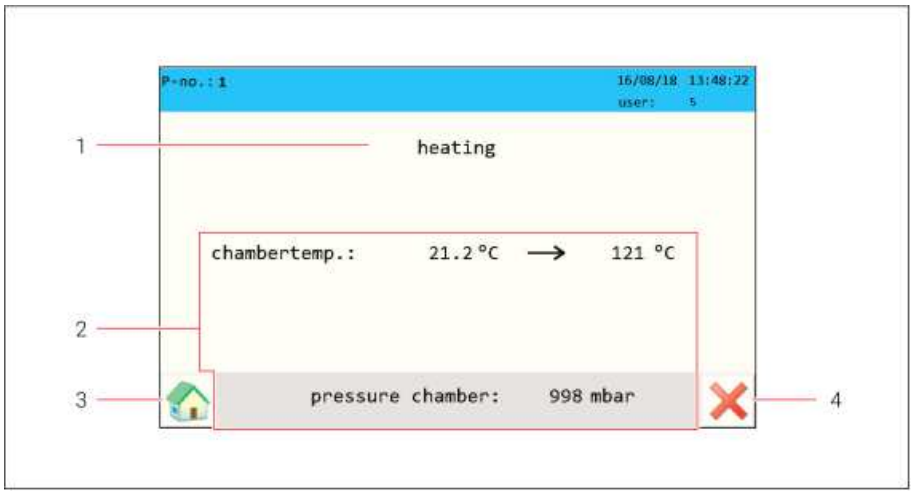


Pos.	description
1	Number of the program to be started
2	Editable program name
3	Program type
4	Type of air elimination
5	Sterilization temperature (STT)
6	Sterilization time (STt)
7	Vacuum Drying Time (VMT)
8	The “Edit program” control screen appears
9	The “Program selection” control screen appears
10	The “Automatic start” control screen appears
11	The program launches. • Depending on the program, control screens for the current status of the program procedure appear.

10.4.6 “Program procedure” control screen

The progress of the program procedure is shown in various control screens.

Explanation of the control screen

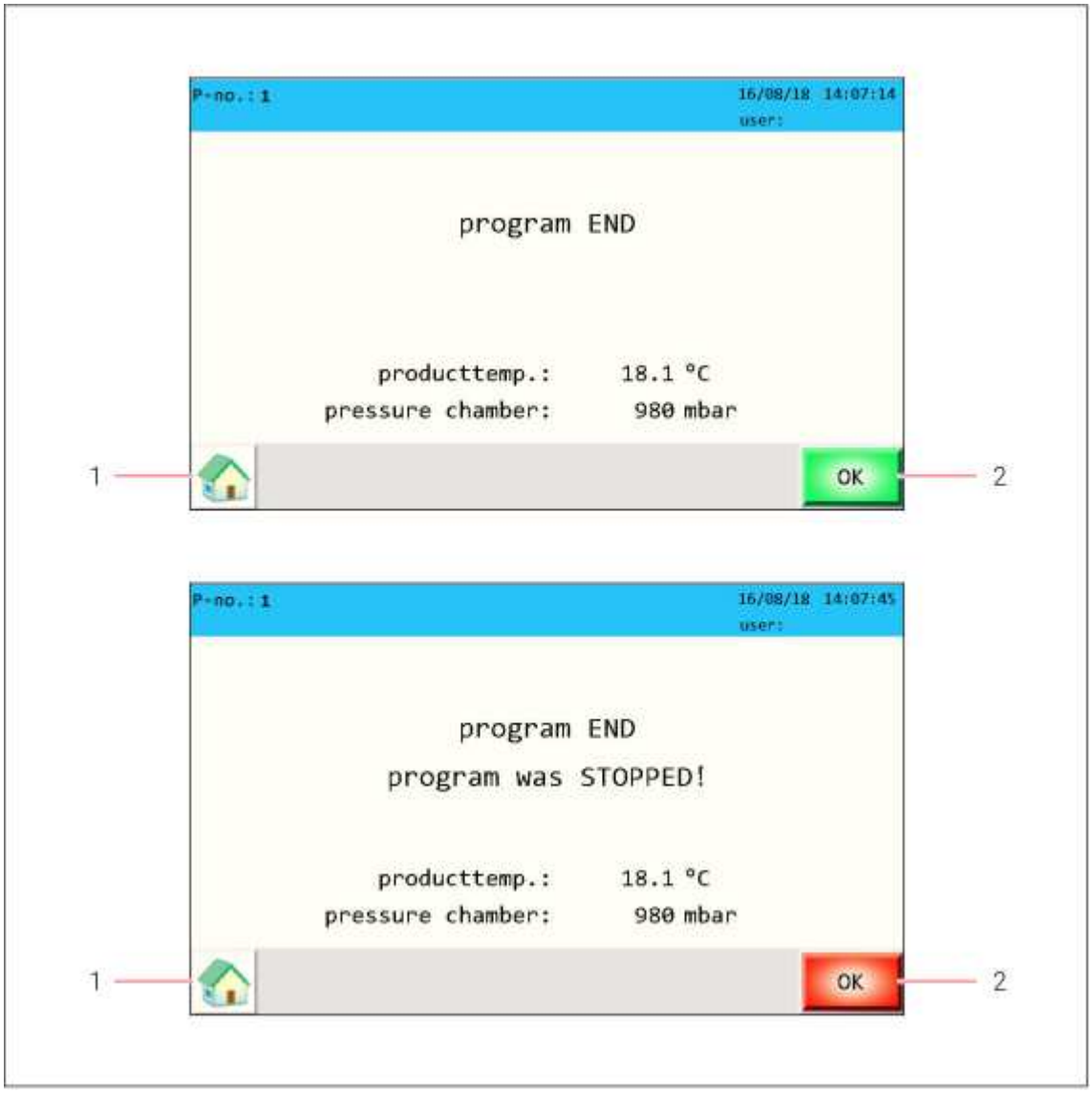


Pos.	description
1	Current program step
2	Display of the current actual and target values of the program step. • If the target value is reached, the next program step starts.
3	The control screen “Actual values” is called up.
4	Cancel program. • After a security question, the program is interrupted. • The “End program” control screen appears.

10.4.7 “End program” control screen

Depending on whether the program was executed error-free or was cancelled, various control screens are shown.

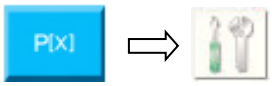
Explanation of the control screen



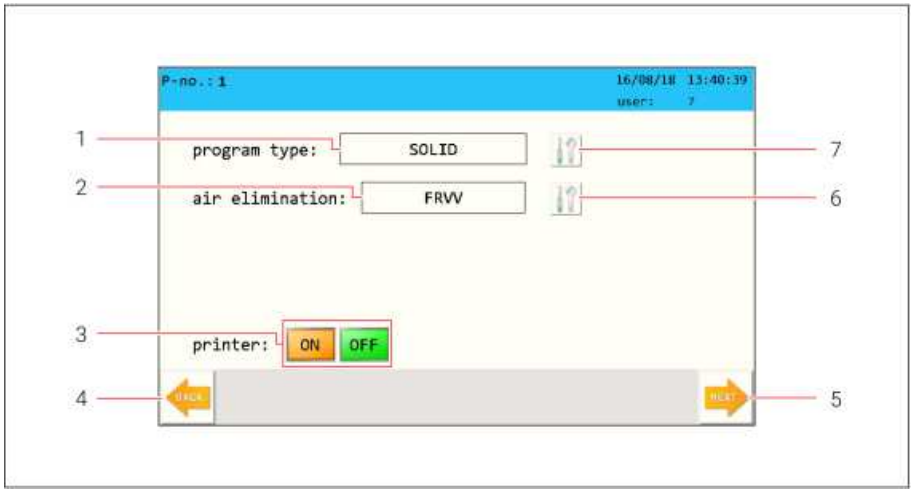
Pos.	description
1	The control screen “Actual values” is called up.
2	The “Program selection” control screen is called up.

10.4.8 “Edit program” control screen (1)

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:



Explanation of the control screen

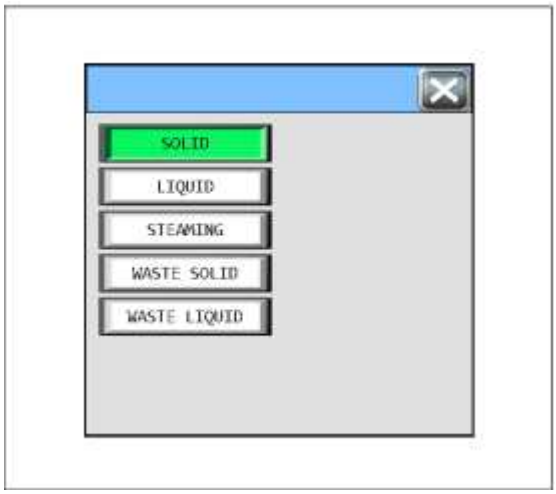


Pos.	description
1	Display of the selected program type.
2	Display of the selected air elimination. FRVV (Fractionated vacuum): • VOVV, 1st FRVV: Pressure value [mbar] for the first vacuum level • 2nd FRVV: Pressure value [mbar] for the second vacuum level • 3rd FRVV: Pressure value [mbar] for the third vacuum level • Heating up: Pressure value [mbar] is allowed into the chamber until steam. Heating occurs after every vacuum level. • Vacuum levels: Number of vacuum levels. Up to 10 vacuum levels are possible. Vacuum levels 4 to 10 are done for pressure values of 3rd FRVV. GRAV (Gravitation) VOVV (Pre-vacuum) DLGV (Steam / air mixture method)
3	The log printer is turned on or off for the program (option).
4	The “Launch program” control screen appears.

Pos.	description
5	The next program-specific control screen appears. • SOLID • LIQUID • STEAMING • WASTE SOLID • WASTE LIQUID
6	The “Air elimination” pop-up window appears.
7	The “Program type” pop-up window appears.

“Program type” pop-up window

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this pop-up window.

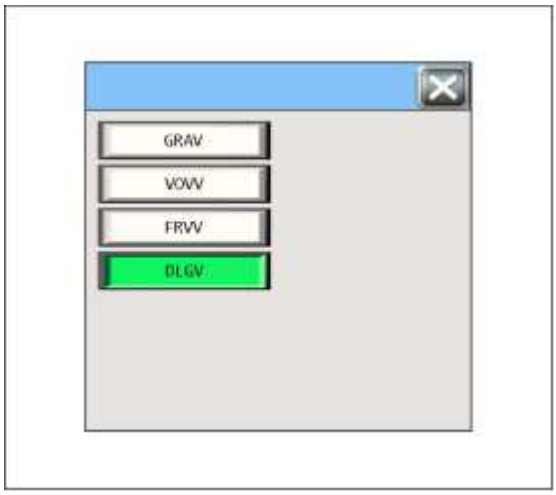


The program type is selected in the pop-up window.

- SOLID: Solids program
- LIQUID: Liquids program
- STEAMING: Warming
- WASTE SOLID: Solid waste program
- WASTE LIQUID: Liquid waste program

"Air elimination" pop-up window

From the "Program selection" control screen, the following buttons must be clicked one after the other to get to this pop-up window.



The type of air elimination is selected in the pop-up window.

- GRAV: Gravitation

  Draw air from the chamber without a vacuum, only by vapour feed.

- VOVV: Pre-vacuum

  Draw air from the chamber using a vacuum once and then by vapour feed.

- FRVV: Fractionated vacuum

  Draw air from the chamber using a vacuum more than once and then by vapour feed.

- DLGV: Steam / air mixture method:

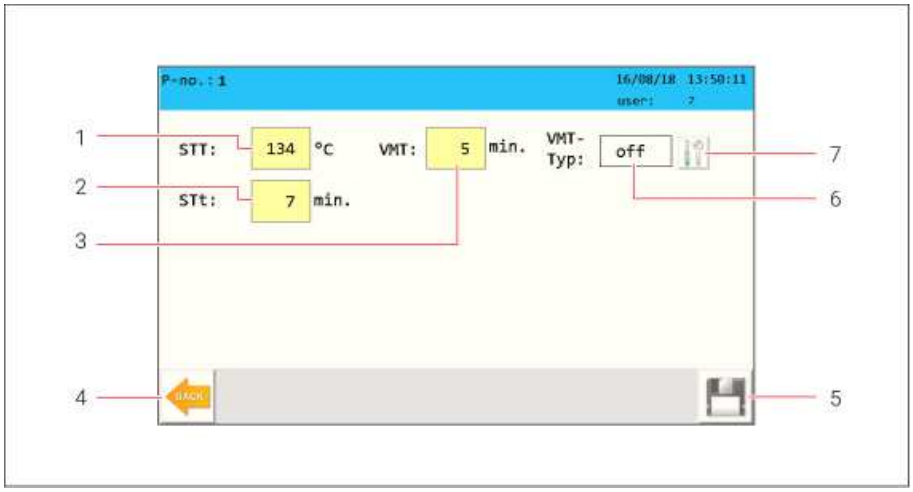
  Heating up the chamber without air elimination.

The air elimination is up to the equipment of the autoclave

10.4.9 “Edit program” control screen (2) – Program type Solid / WASTE SOLID

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

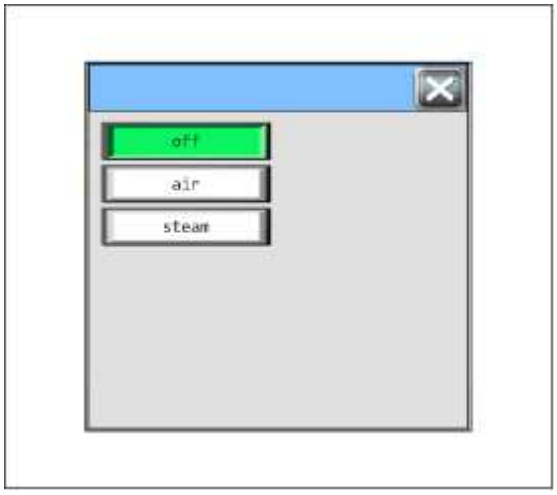
Explanation of the control screen



Pos.	description
1	Sterilization temperature • Tapping the entry field allows the temperature to be entered.
2	Sterilization time • Tapping the entry field allows the time to be entered.
3	Vacuum drying (duration) • Tapping the entry field allows the time to be entered.
4	The previous control screen appears.
5	The program is saved
6	The type of vacuum drying is shown
7	The “Vacuum drying” pop-up window appears

“Vacuum drying” pop-up window

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this pop-up window.



The type of vacuum drying is selected in the pop-up window.

- Off

  Vacuum drying without interim ventilation.

- Air

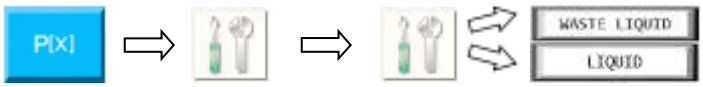
  Vacuum drying with interim ventilation (air).

- Steam

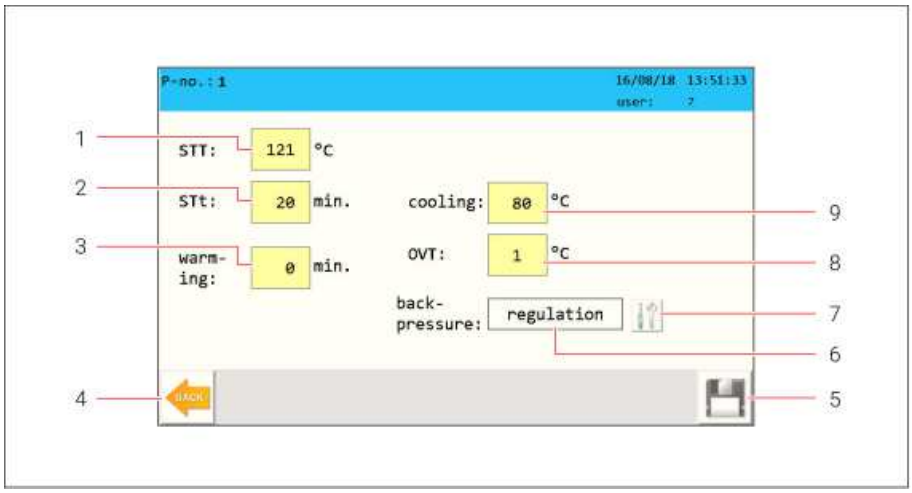
  Vacuum drying with interim ventilation (steam).

10.4.10 “Edit program” control screen (2) – Program type LIQUID / WASTE LIQUID

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:



Explanation of the control screen

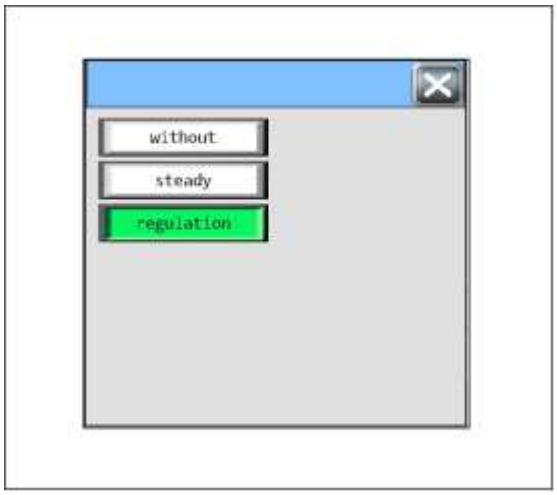


Pos.	description
1	Sterilization temperature • Tapping the entry field allows the temperature to be entered.
2	Sterilization time • Tapping the entry field allows the time to be entered.
3	Warming time • Time during which the sterile materials are kept warm after the sterilization time ends. (Fixed warming temperature: 60°C) • Tapping the entry field allows the time to be entered. • After the warming time is over, the program ends.
4	The previous control screen appears.
5	The program is saved.
6	The type of counterpressure is shown. • A counterpressure can be used to prevent liquids from over-boiling.
7	The “Counterpressure” pop-up window appears.

Pos.	description
8	Over-temperature • To achieve faster heating and to prevent heat from going below the sterilization temperature, an over-temperature can be entered. • Tapping the entry field allows the temperature to be entered.
9	Cooling • Temperature to which the product is cooled at the end of the program, before the cover can be opened. • Tapping the entry field allows the temperature to be entered.

“Counterpressure” pop-up window

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this pop-up window.



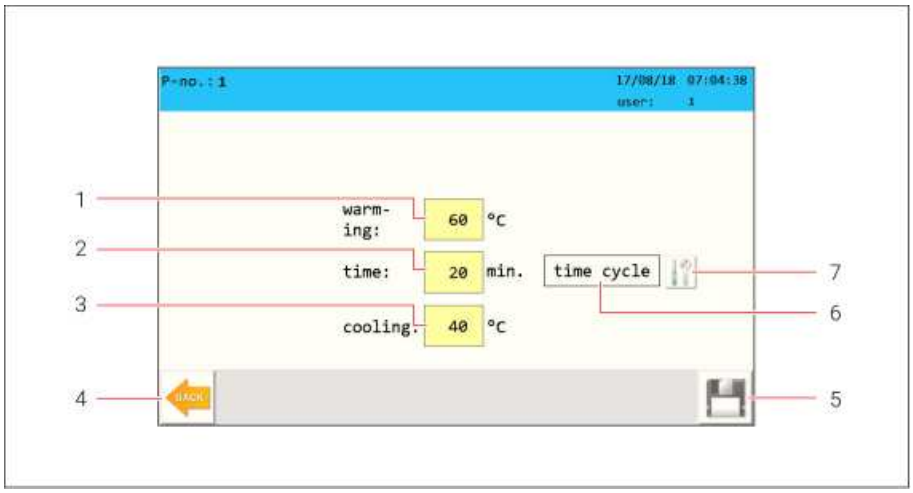
The type of counterpressure is selected in the pop-up window.

- Without
  Without counterpressure, self-cooling
- Steady
  Constant: The pressure from sterilisation with air is maintained until the cooling temperature is reached.
- Regulation
  Ramp: Dynamic counterpressure process, in which the pressure falls along with the temperature

10.4.11 „Edit program“ control creen (2) – Program type STEAMING

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

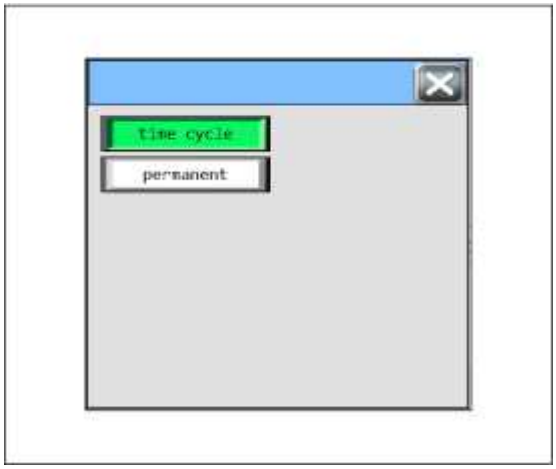
Explanation of the control screen



Pos.	description
1	Warming temperature • Tapping the entry field allows the temperature to be entered.
2	Warming time • Tapping the entry field allows the time to be entered.
3	Cooling • Temperature to which the product is cooled at the end of the program, before the cover can be opened. • Tapping the entry field allows the temperature to be entered.
4	The previous control screen appears.
5	The program is saved.
6	The warming function mode is shown.
7	The “Warming mode” pop-up window appears.

“Warming mode” pop-up window

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this pop-up window.



The warming function mode is selected in the pop-up window.

- Time cycle

  The program runs until the warming time is over.

- Permanent

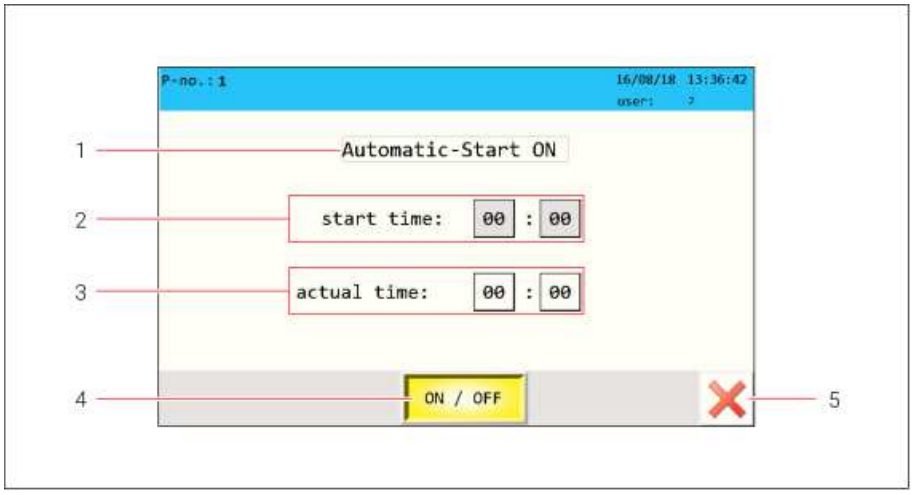
  The program runs until it is cancelled

10.4.12 “Automatic start” control screen

In this control screen, the time for automatic execution of a program can be entered.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen

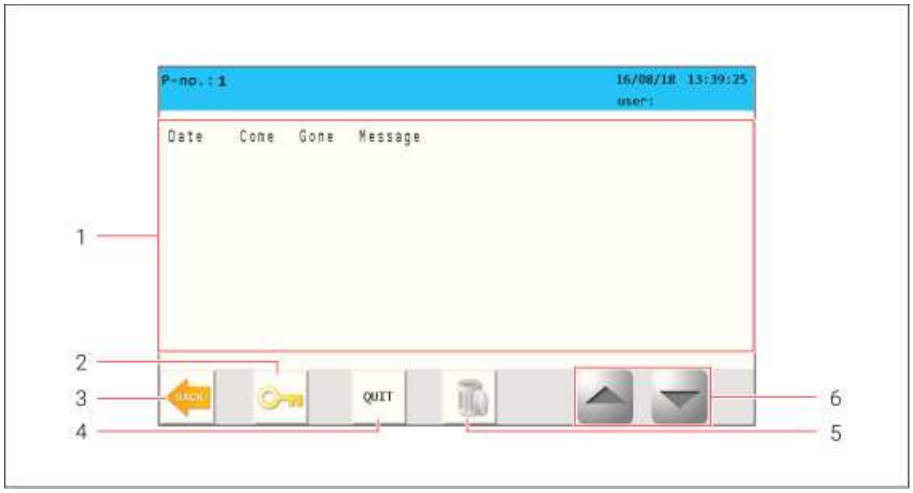


Pos.	description
1	Automatic start display turned on or off
2	Start time • Tapping the entry field allows the start time to be entered.
3	The current time is displayed.
4	Automatic start is turned on or off. • Button lights up: Automatic start is on. • Button does not light up: Automatic start is off.
5	Cancel • Entries are not adopted. No automatic start takes place. • The “Launch program” control screen appears.

10.4.13 “Alarm list” control screen

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



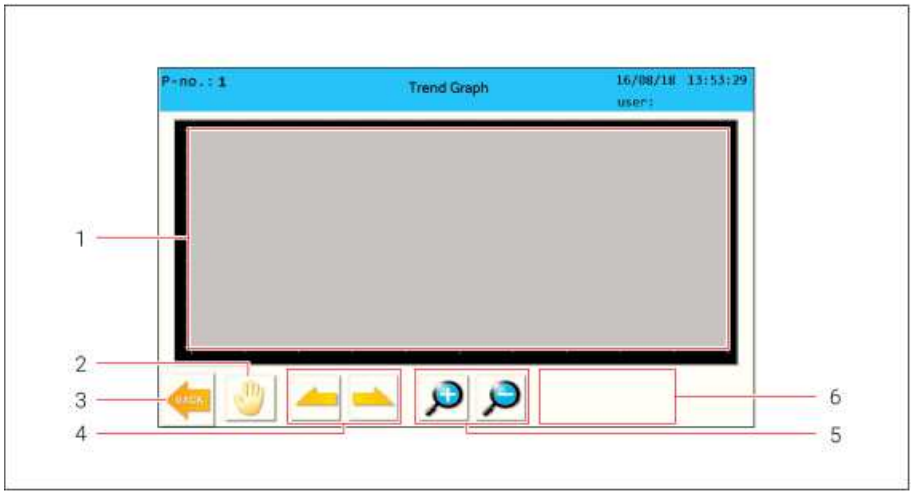
Pos.	description
1	List of messages
2	The “User login” control screen appears.
3	The previous control screen appears.
4	Remaining messages are dismissed after a recheck, if the cause of the message no longer exists.
5	Delete alarm list.
6	Arrow keys for navigating through the messages.

10.4.14 “Process” control screen

This control screen graphically displays the program process by using the parameters.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



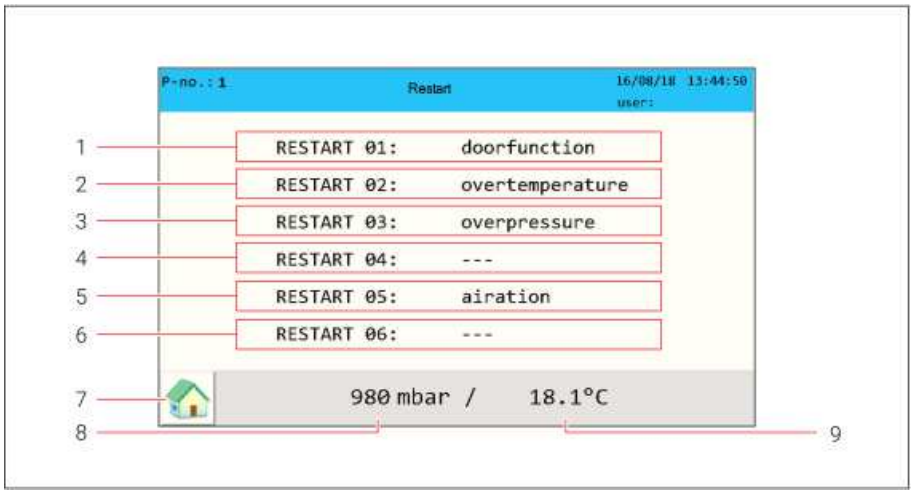
Pos.	description
1	Graphic representation of the current program process.
2	Scroll (see Pos. 4) and zoom functions (see Pos. 5) in the diagram are activated/deactivated.
3	The previous control screen appears.
4	Scroll along the diagram's time axis.
5	Graphic representation is enlarged/reduced.
6	Legend

10.4.15 “Restart” control screen

If an error is found during the system check at device start-up, it is displayed on the control screen.

Based on the message shown, the associated settings must be checked.

Explanation of the control screen



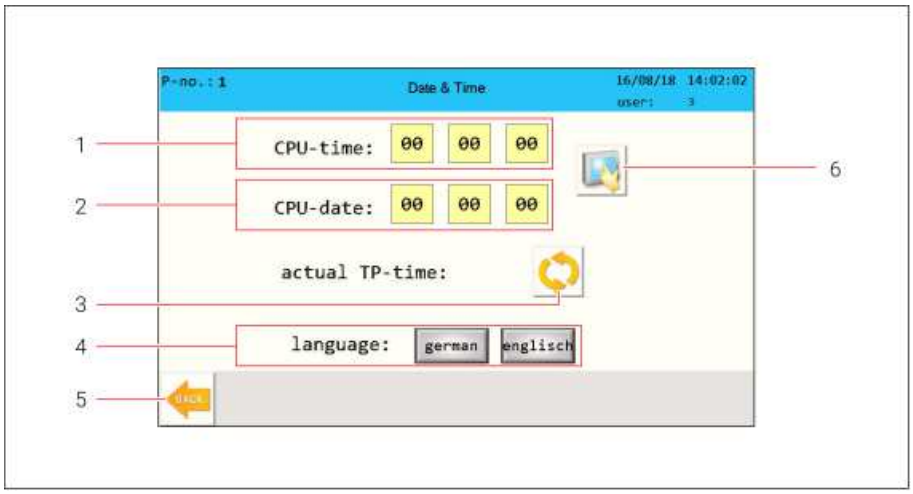
Pos.	description
1	Error in door control (cover) Possible solution: • Contact service
2	Over-temperature error: Safety temperature of 80°C exceeded Possible solution: • Wait until the device has lowered the temperature. • If the temperature does not decrease, service must be contacted
3	Over-pressure error: Chamber pressure greater than 1080 mbar. Possible solution: • Wait until the device has lowered pressure. • If the pressure does not decrease, service must be contacted
4	- Reserve -
5	Ventilation error: Chamber pressure lower than 930 mbar. Possible solution: • Wait until the device has evened out the under-pressure. • If the under-pressure does not balance out, service must be contacted
6	- Reserve -
7	The control screen “Actual values” is called up.
8	Current chamber pressure.
9	Current chamber temperature.

10.4.16 “Date & time” control screen

In this control screen, the date, time and display language of the visualization can be changed.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen

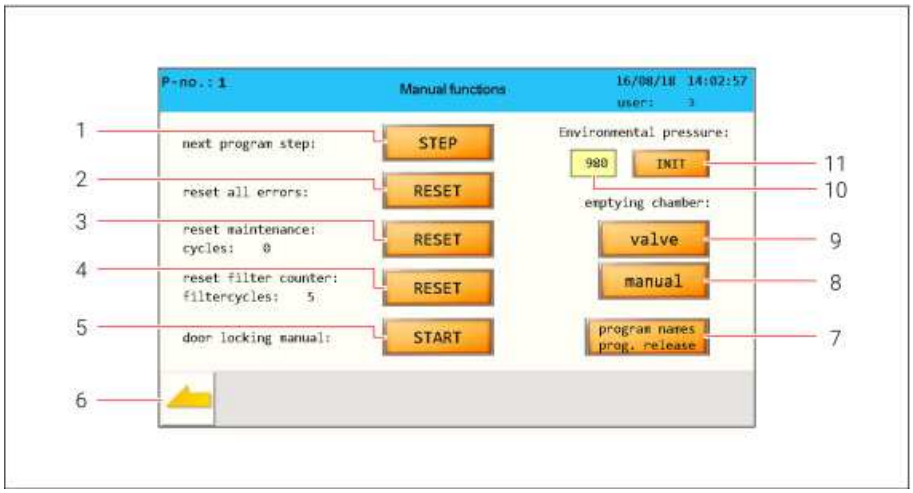


Pos.	description
1	Current PLC time. • Standard/daylight time change does not occur automatically. • To change the PLC time, first the PLC time must be stopped, see [6]. • Tapping the entry field allows the PLC time to be entered. • After the PLC time is entered, it must be restarted, see [6].
2	Current PLC date. • To change the PLC date, first the PLC time must be stopped, see [6]. • Tapping the entry field allows the PLC date to be entered. • After the PLC date is entered, it must be restarted, see [6].
3	The displayed time and date are updated in the header on the touchscreen based on the PLC time and date.
4	Switching languages • Tapping a button switches the display language of the visualization to the desired language.
5	The control screen “Actual values” is called up.
6	Stop PLC time.

10.4.17 “Manual functions” control screen

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



Pos.	description
1	The program process moves to the next step in the program.
2	Reset all errors. • Certain errors can only be reset with this button: Error No.: 121, 127, 171
3	The maintenance cycle counter is reset.
4	(Option) The cycle counter for filter maintenance is reset.
5	Door locking is opened in jog mode.
6	The control screen “Actual values” is called up.
7	The “Program names” control screen appears.
8	Discharge valve with support pressure is opened/closed to empty the chamber. • Blue: Valve is released for manual control. • The valve can only be opened if it is released for manual control, see [9].

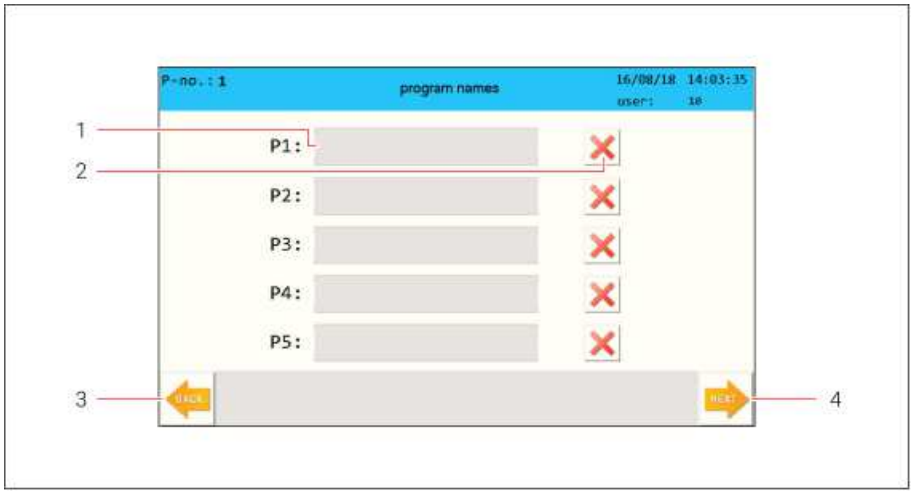
Pos.	description
9	Discharge valve with support pressure for emptying the chamber is released/locked for manual control. • Blue: Valve is released for manual control.
10	Environmental pressure • Tapping the entry field allows the environmental pressure [mbar] to be entered. The entry is not adopted by the controls until the button INIT [11] is tapped. • The environmental pressure is set once at the set-up location. If the set-up location changes, the environmental pressure may have to be adjusted.
11	Adopts the entered value of the environmental pressure [10] into the controls

10.4.18 “Program name” control screen

In this control screen, the program can be named and locked or released for execution.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



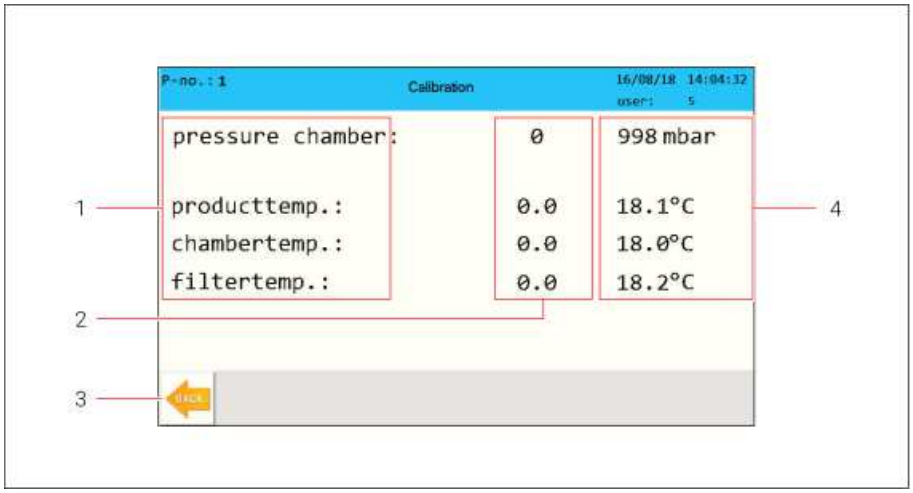
Pos.	description
1	Program name can be entered. • Tapping the entry field allows the program name to be entered.
2	Lock/release program. • Red X: Program locked. The program can no longer be selected in the “Program selection” control screen. • Green tick: Program released. The program can be selected in the “Program selection” control screen.
3	The “Manual functions” control screen is called up.
4	The “Program names (2)” control screen is called up. • In the control screen, programs P1 to P10 can be edited in the same way.

10.4.19 “Calibration” control screen”

In this control screen, the calibratable offset values parameters can be entered.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



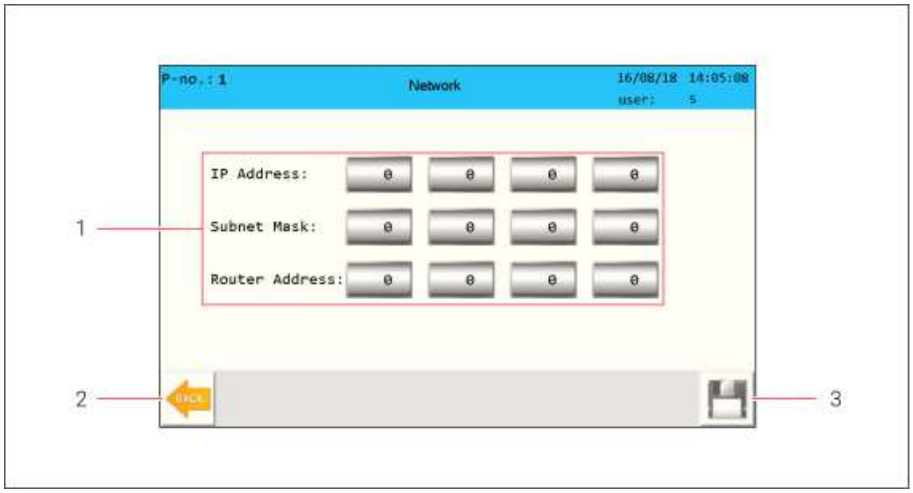
Pos.	description
1	Calibratable parameters of the device. • The parameters differ with the device's equipment.
2	Offset for the parameters • Tapping the entry field allows the offset to be entered.
3	The control screen “Actual values” is called up.
4	Measured parameter values of the device sensors.

10.4.20 “Network” control screen

This control screen is only present if an Ethernet interface is installed.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen

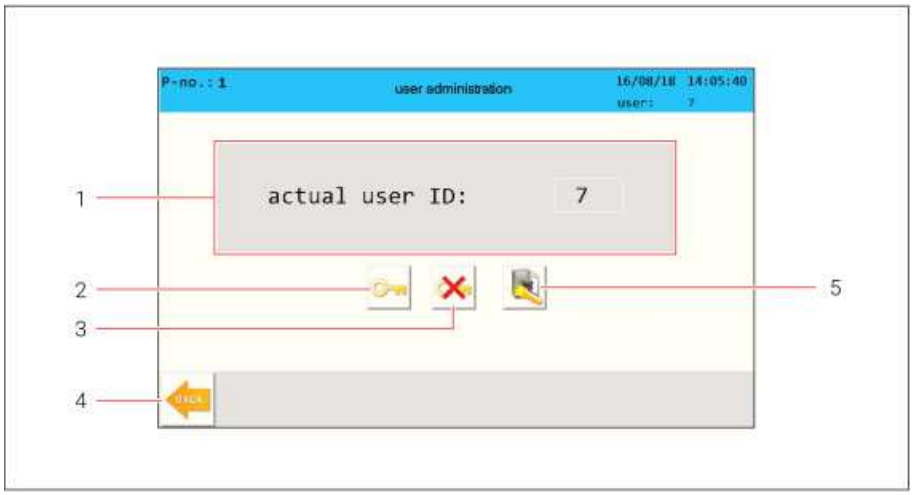


Pos.	description
1	Entry fields for network information.
2	The control screen “Actual values” is called up.
3	Save entries.

10.4.21 “User administration” control screen (1)

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



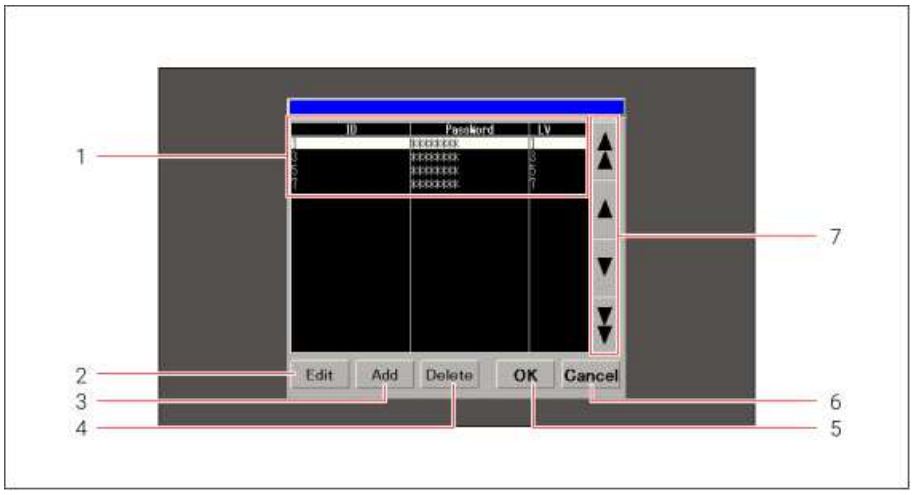
Pos.	description
1	Currently logged-in user.
2	The “User login” control screen appears.
3	The user is logged on.
4	The control screen “Actual values” is called up.
5	The “User administration" (2) control screen is called up.

10.4.22 “User administration” control screen (2)

In this control screen, users can be set up, edited and deleted.

From the “Program selection” control screen, the following buttons must be clicked one after the other to get to this control screen:

Explanation of the control screen



Pos.	description
1	Overview of the entered user with ID, password and user level. Depending on the user level, the user has various rights.
2	A highlighted user can be edited.
3	A new user can be added.
4	A highlighted user can be deleted after a security question.
5	Changes to user administration are saved. The “User administration” control screen appears.
6	Changes to user administration are not saved. The “User administration” control screen appears.
7	Buttons for scrolling through the overview.

User rights

User level	Change program	Date & time	Manual functions	Calibration	System values
1	✓	x	x	x	X
3	✓	✓	✓	x	x
5	✓	✓	✓	✓	x
7	✓	✓	✓	✓	✓

✓ access **x** no access

11 Troubleshooting


CAUTION
INJURY HAZARD! DAMAGE TO DEVICE!

- Troubleshooting is to be done only by trained, authorized personnel. Improper troubleshooting on the device can cause severe injury and damage the device.
- If the cover panels are removed and the device is not cooled, hot surfaces and lines pose a burn hazard.
- The chamber and sterile materials may be very hot. There is a burn hazard!
- When the cover is opened, a cloud of vapour may escape from the chamber. Keep a safe distance away.
- Before working, unplug the device.
- Observe the electro-technical safety rules.
- Follow the general accident prevention measures.

If an error occurs on the system or a malfunction message is present, a description of the error can be found on the display under the error messages menu. If you can localize and repair these errors yourself, make sure that all safety and accident prevention regulations are followed.

11.1 Error table

Alarm no.	Meaning	Cause	Consequence	Remedy
001	Temperature sensor product (1) regulation shows a incorrect value	temperature sensor is defective Transducer is defective Analog input is defective	temperature is incorrectly displayed. Program cannot be started.	Replacing the temperature sensor Replacing the analogue card
001.1	Temperature sensor product (1) documentation shows a incorrect value	temperature sensor is defective Transducer is defective Analog input is defective	temperature is incorrectly displayed. Program cannot be started.	Replacing the temperature sensor Replacing the analogue card
021	Temperature sensor chamber bottom regulation shows a incorrect value	temperature sensor defect transducer defect analog input defect	temperature incorrectly displayed Program cannot be started	Replacing the temperature sensor Replacing the analogue card
021.1	Temperature sensor chamber bottom documentation shows a incorrect value	temperature sensor defect transducer defect analog input defect	temperature incorrectly displayed Program cannot be started	Replacing the temperature sensor Replacing the analogue card
022	Temperature sensor chamber top regulation shows a incorrect value	temperature sensor defect transducer defect analog input defect	temperature incorrectly displayed Program cannot be started	Replacing the temperature sensor Replacing the analogue card sensor
023	Temperature sensor filter exhaust (1)	temperature sensor defect	temperature incorrectly displayed	Replacing the temperature sensor

	regulation shows a incorrect value	transducer defect analog input defect	Program cannot be started	Replacing the analogue card
061	Pressure sensor chamber regulation shows incorrect value.	Pressure sensor is defective Analog input is defective	Chamber pressure is incorrectly displayed Program cannot be started.	Replacing the pressure sensor Replacing the analogue card
091	Motor protection switch vacuum pump has triggered	Motor is defective No cooling water	Vacuum pump stop.	Check the power con-Sumption Check the voltage supply Check vacuum pump M1, and replace if necessary
121	Overheating protection steam generator has triggered	Heating temperature too high	heating of steam generator stops	Reset TA5 overheat pro-tection after the steam generator cools down. Check water level in steam generator. Test fill level sensor LC5 for operation Check heating contactor Check pressure switch PC5 Check water quality.
125	Demineralized water level too low	Water supply interrupted. Water valve defective.	Program is stopped.	Check de-ionised water Supply Check float switch LC4 for operation and replace if necessary Clean screen insert in water valve, check volt-age supply to valve, replace valve if necessary.
127	Filling steam generator too long	Air in the fill-in pump	Steam generator does not heat up	Check de-ionised water supply as under Alarm 125 Ventilate filling pump M2, loosen the connection between M2 and the valve and start the pump. 5. Check operation of the Pump Check operation of the filling valve Check operation of the check valve Check operation of the control relay
140	Safety chain chamber has triggered	In the chamber is overpressure	You can´t open the door	Check chamber seal Check the steam inlet Valve Check the support pres-sure valve Check the condensation valve
143	Control voltage	Fuse control voltage	Overloading by defect	Replace the fuse, and

	24VDC not ok	24VDC defect.	component.	analyse the short circuit, if necessary Check the power transformer
146	Vacuum setpoint not reached	Leakage in the system broken gasket	Program is cancelled.	Check water supply Visually check the door seal for damage. Check chamber sieve FI1.1 and the exhaust filter. Check the vacuum valve. Check the vacuum pump according to manufacturer specifications. Check the pipe and valve system for leaks.
171	Door motor drives too long	Door drive motor is defective or the electrical connection is interrupted. Control relay is defective. Door limit switch is set wrong or is defective.	Door can not be locked/unlock	Check the motor and electrical connection — replace motor if necessary. Check the relay, and replace if necessary. Check/adjust the door limit switch.
172	Door switch door 1 not ok	Door limit switch B2 is Defective Door limit switch B2 is set wrong Electrical connection to PLC interrupted.	Program cannot be started. Sterilization process is interrupted.	Check the motor and electrical connection — replace motor if necessary. Check the relay, and replace if necessary. Check/adjust the door limit switch.
173	Door switch door 2 not ok	Door position switch is defective or incorrectly set.	Program cannot be started. Sterilization process is interrupted.	Check operation of the door limit switch. Check settings of door limit switch
176	Gasket pressure door (1) too low	Pressure switch PCA1 Defective Door seal defective Valve Y1 defective Valve Y1, Y2 and/or check valve RV7 leaky. Compressor defective Compressed air too low	Program cannot be started. Program is cancelled.	Check the pressure switch. Visually check the door seal for damage. Check operation of the valve Check the valve and check valve for leaks. Check the compressor. Check the compressed air supply.
177	Gasket pressure door 2 too low	Compressor is defective. Pressure switch of door seal is defective	Program cannot be started. Program is cancelled.	Check the pressure switch. Visually check the door seal for damage. Check operation of the valve Check the valve and check valve for leaks. Check the compressor.

				Check the compressed air supply.
178	Gasket door (1) not tight	Door seal for door 1 is leaky. Hoses leaky. Valve seal on Y1 leaky Valve seal from Y2 leaky Check valve RV7 leaky Air elimination system doesn't work right.	Program cannot be started. Program is cancelled.	Visually check the door seal for damage. Check operation of the valve seal Check the valve seal and check valve for leaks. Check the chamber discharge valve or, for devices with exhaust filters, the discharge filter valve.
179	Gasket door 2 not tight	Gasket is defective. Pressure switch of door seal is defective	Program cannot be started. Program is cancelled.	Visually check the door seal for damage. Check operation of the valve seal Check the valve seal and check valve for leaks. Check the chamber discharge valve or, for devices with exhaust filters, the discharge filter valve.
180	Door control manually activated	both doors can be opened simultaneously	program start not possible	change to automatic mode
191	Sterilization temperature too low	Air removal system does not work correctly. Product temperature sensor shows incorrect value.	Door seal leaky. Temperature sensor TCI1 placed wrong. Program configured Wrong. Wrong program launched. Steam supply too weak. Temperature sensor TCI1.1, TC1 or TCI6 defective or shows the wrong measurement value.	Visually check the door seal for damage. Check the position of temperature sensor TCI 1 - this should not be isolated. Check program parameters, and adjust them if necessary. Check steam supply. Temperature sensor TCI1.1, TC1 or TCI6.
192	Sterilization temperature longer than 5min. too low	See Alarm 191	Sterilization process is cancelled.	Do an empty chamber run with the same program parameters
291	Manual step was pressed	STEP to STEP has been pressed	Program steps to the next step	
292	STOP is activated	Stop has been pressed	Program breaked off	Quit failure in system menu.
293	emergency stop was pressed	emergency shut down has been pressed	program stops, no functions available	quit in alarm menu
294	POWER FAILURE	Power failure	UPS is working	Check the power supply
298	Process performed successfully	Cycle was performed without any errors	Only an information	---

For all error messages we recommend consultation with customer service!

12 Care and Maintenance

CAUTION
INJURY HAZARD! DAMAGE TO DEVICE!

- Maintenance is to be done only by trained, authorized personnel. Improper maintenance on the device can cause severe injury and damage the device.
- If the cover panels are removed and the device is not cooled, hot surfaces and lines pose a burn hazard.
- The chamber and sterile materials may be very hot. There is a burn hazard!
- When the cover is opened, a cloud of vapour may escape from the chamber. Keep a safe distance away.
- Before working, unplug the device.
- Observe the electro-technical safety rules.
- Follow the general accident prevention measures.

For reliable operation over the long term, not only are the set-up location and the quality of the media important, but also care and maintenance.

NOTE
Failure to adhere to the service intervals for basic maintenance voids the warranty!

12.1 Maintenance plan

12.1.1 Basic maintenance

Basic maintenance of the system is required every 750 cycles or once a year. The number of cycles can be found in the actual values menu.
Basic maintenance should always be performed by a service technician trained by ZIRBUS TECHNOLOGY GmbH.
ZIRBUS TECHNOLOGY GmbH will be happy to provide a maintenance proposal or name an authorized service partner near you.

12.1.2 Maintenance Tasks

Designation	Interval
Bowie-Dick test, alternatively to a sterilisation run with a solids program and a maximum temperature of 134°C.	Weekly, as needed
Visual inspection of cover seal for contamination and wear	Weekly, as needed
Visual inspection of the product temperature sensor for damage	Weekly
Chamber cleaning	Weekly
Cleaning of the dirt trap in the chamber	As needed
Vacuum air test	As needed

Visual inspection of cover seal for contamination and wear, (interval: weekly, as needed)

- Inspection of the cover seal surface for dirt particles
- If necessary, wiping the cover seal and sealing surface to the chamber seal clean with a soft cloth.
  Make sure there are no glass particles on the seal or sealing surface.
- Inspection of the cover seal surface for wear or dirt.

Visual inspection of the product sensor for damage, (interval: weekly)

- Check the connection hose of the temperature sensor for damage, breakage, etc.
- Check the measuring tip of the temperature sensor for damage, breakage, etc.

Cleaning the chamber, (interval: weekly)

1. Remove coarse dirt particles with a cloth.
2. Clean the chamber with a moist sponge and a non-aggressive cleaner.
3. Lift the bottom panel and clean under it also.
4. Re-insert the bottom panel.

Cleaning of the dirt trap in the chamber (chamber sieve), (interval: as needed)

1. Remove the bottom plate from the chamber.
2. Remove the chamber sieve from the chamber by turning the sieve anti-clockwise.
3. Rinse out the chamber sieve with water and remove any remaining dirt.
4. Re-install the chamber sieve by turning it clockwise.
5. Re-insert the bottom plate.

Bowie-Dick-Test (interval: weekly, as needed)
Alternatively to a sterilisation run with a solids program and a maximum temperature of 134°C.

Vacuum-air-test (interval: as needed)

13 Service

13.1 Contact information

Zirbus service can be contacted at:

E-mail: info@zirbus.de

or

Tel.: +49 5327 83 80 10

For service queries, please always provide the device type and serial number.