BMT
MMM Group

STERICELL®

22, 55, 55-2, 111, 111-2,
222, 222-2, 404, 404-2

Hot-Air Sterilizer – ECO line

Instructions for Use

CE 0123

Congratulations on purchase of the new medical device – the hot air sterilizer.
The air flap allows wet material drying. Thanks to use of fuzzy-logic and top-quality hardware components, high precision of temperature regulation and tempering process reliability has been reached.
The devices meet the European technical and legislative requirements and they are constructed in compliance with relevant EN standards. They are manufactured from high-quality materials using the most up-to-date technologies. Each individual unit passes a thorough output control and it is tested by testing programs.
If you will follow the below stated instructions, the device will become your reliable and powerful partner.
As from today, all these qualities are at your disposal. This device is really very easy to use thanks to intuitive control with prompts, but anyway, we recommend you to carefully read the Instructions for Use so as to be able to completely use all and any benefits of the devices and so as to get to know all you need to know for its optimal use.

CONTENTS:

1 PRODUCT NAME

Model	Name
SC kkk-n ECO	STERICELL®

where:
kkk – chamber size 22, 55, 111, 222, 404
n – continuous version (–, 2)

2 INTENDED PURPOSE

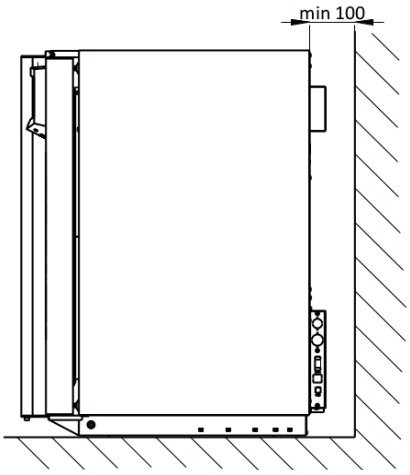
STERICELL® (SC) is a device intended for use in healthcare for the hot air / dry heat sterilization process of unpackaged and packaged medical devices, including invasive devices, intended by its manufacturers for hot air / dry heat sterilization.

2.1 IMPORTANT WARNINGS

When operating the cabinets under high temperatures in the chamber, the temperature of the external surface (the exhaust openings and their surrounding, the surrounding of the chamber sealing) may exceed the maximal allowed level of 70°C and so there is a risk of burns!

Any assemblage and dismantling of the device may be performed only after the device disconnection from the mains – pull the power supply plug out of the socket or use the main switch to switch it off! In case of using the switch the device is put into stand-by condition only, it is not disconnected from the mains!

Minimal distance of the device from the rear and side wall is 100 mm – see the figure. It is necessary to consider the fact that air from the exhaust opening may reach the temperature up to 250°C (resp. 300°C), the area is marked with the sign. The nearest walls must be non-flammable.



WARNING:

- Pursuant to the CSN EN 20857 (A 6.2.5.1) standard, if the sterilized material is not placed in a hermetic package, the Stericell should be equipped with a filter.
- The device is designed for use in interiors, within the surrounding temperature range from 5°C to 40°C, with maximal relative humidity up to 80%, up to maximal height above sea level of 3000 m.
- The person responsible for the device (operator) must arrange for all the service staff to be regularly and provably trained in service and safe use of the device.
- Install the device by connecting the power supply cable to the mains. But first of all check that the mains parameters and the connection type correspond with values specified in the type plate of the device and in chapter **7 – DEVICE PARAMETERS**. Then it is necessary to adjust the position of air flaps according to chapter 6.3.6.
- The inner surface of the chamber turns yellow when the temperature exceeds 100°C. Such a colour is not a fault of the material or the device.
- After the first switch on of the device, the heating elements and insulation burn off and a characteristic smell appears. The smell disappears after a few operation cycles, but we recommend sufficient air exchange (e.g. by ventilation or exhaustion) during the insulation burn off with temperature above 100°C due to the above stated smell.
- The exhaust opening at the rear wall of the device is protected with a plug. In the course of transport, the cover is placed in the device - at the moment of the device installation, place the plug behind the exhaust by inserting it to the vertical holes in the rear cover above and below the exhaust.
- Air filter may be connected to the suction hole – see chapter 14.6.1.

- The load capacity of the floor for the device placement must correspond to the weight of the device, taking into consideration the maximal charge weight
  7 – DEVICE PARAMETERS
- It is not allowed to place the device on a mat that may cause a risk of fire or smouldering in case of hot objects to fall out of the device.
- It is not allowed to insert into the device any flammable, explosive or poisonous substances or materials that could release such substances!
- The material may be put on trays only – not on the device bottom.
- Handle hot objects with appropriate care when moving them out.
- Before each sterilization exposure it is necessary to set the preheating time according to the material and its quantity in the charge.
- Do not put any objects on external surfaces of the device.
- The device is not designed for any liquids heating.
- The devices are not designed for environment with risk of flammable or explosive anaesthetics.
- If you do not use the device for prolonged time, disconnect it from the mains by pulling the supply cable out of the socket.
- The supply cable must not get in touch with hot parts of the device – with the exhaust opening cover.
- The protective thermostat provides protection for the heating cabinet, its surroundings and processed material against undue temperature exceeding.
- Insert the upper tray of the inner chamber in and out very carefully, taking into consideration the possibility of cutting the chamber sealing in case of non-careful handling.
- Maximal permissible load: see chapter
  7 – DEVICE PARAMETERS.
- When operating the 404 size devices at high temperatures in the chamber, the heat stress causes deformation of inner surface of the door, which makes the smooth door closing difficult. If you open the door under these conditions, close the door only after the chamber cool-down. Otherwise, there is a risk of the door mechanism damage.
- In daily intervals, make regular listening controls whether the fan runs after the cabinet start.
- The door and the discharge flap are equipped with micro – switches.

3 IMPORTANT INSTRUCTIONS

3.1 UNPACKING, CHECK, TRANSPORT

After unpacking please check whether the device and its accessories are complete and undamaged. Any possible damage must be immediately reported to the carrier.
When handling / lifting the cabinet etc. do not lift the cabinet for handle or door. Lift the 404 size cabinets using the enclosed hooks; the castors of the 404 size cabinets are designed for local movements, not for any longer transport (while being moved, the devices must be empty – without trays, shelves and charge). A standard delivery includes the heating cabinet and 2 trays

3.2 BEFORE PUTTING INTO OPERATION

- **Read the Instructions for Use carefully before starting the device operation!**
- The suitability of the process and the parameters for an individual medical device or instrument must be described in the instructions provided by the manufacturer of the medical device or instrument designed for sterilization, and also set as such.
- **The sterilization process must be validated by the user according to EN ISO 20857 standard, clause 9.4.**

4 BRIEF INSTRUCTIONS FOR USE

4.1 ONE-DOOR DEVICES

1. Insert the material designed for sterilization into the device.

2. Press the button PROGRAMS.

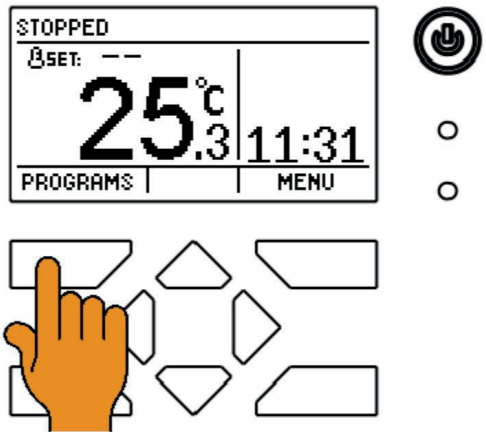


Fig 1

3. Select the program.

4. Use the START button to start the selected program.

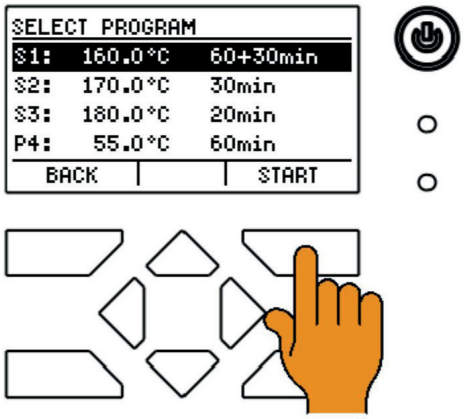


Fig 2

5. Press OK after successful termination of the program.

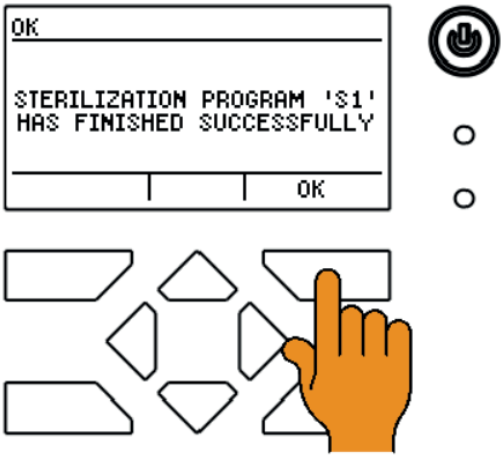


Fig 3

6. Take the sterile material out.

4.2 DOUBLE-DOOR DEVICES

1. Place the material to be sterilized from the loading side of the device.
2. On the control panel at the loading side press the button PROGRAMS.

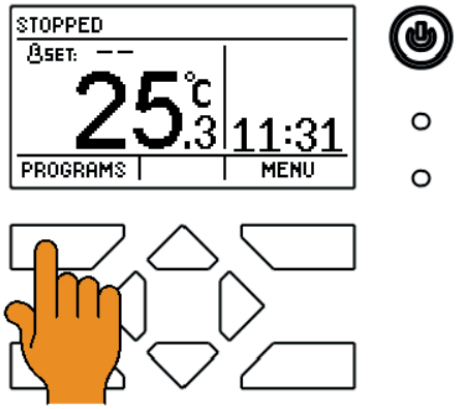


Fig 4

3. Select the program.
4. Use the START button at the loading side to start the selected program.

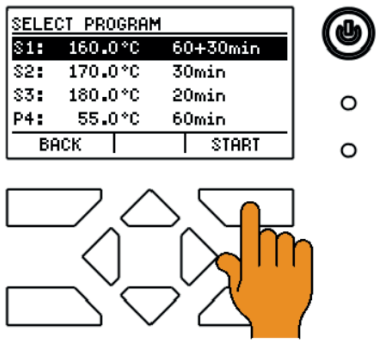


Fig. 5

5. Press OK at the unloading side after successful termination of the program (Fig. 6).

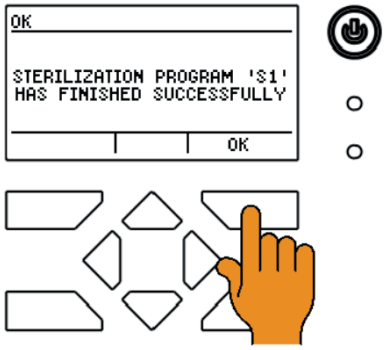


Fig. 6

6. Take the sterile material out at the unloading side of the device and press the button DONE.

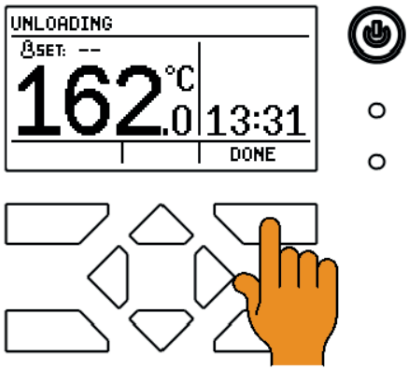


Fig. 7

4.3 DELAYED START

1. Enter the menu:
   HOME → MENU → DELAYED START

2. Set the date and time of delayed start, select the program.

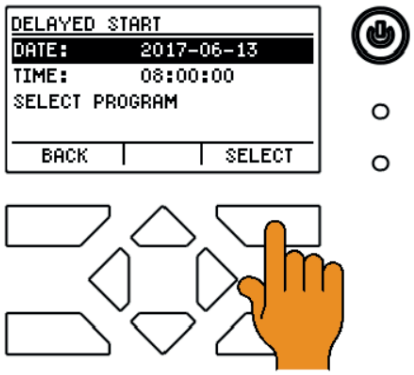


Fig. 8

3. Press the button START.

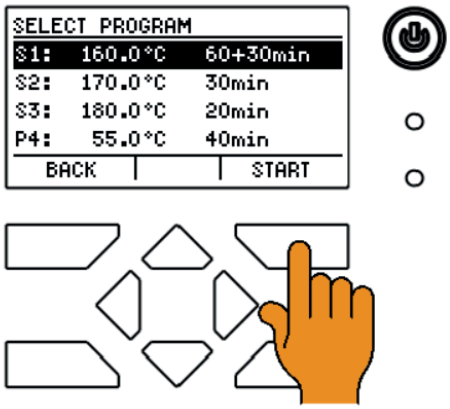


Fig. 9

4. The selected program will start at pre-set time.

5 DEVICE DESCRIPTION

5.1 GENERAL VIEW

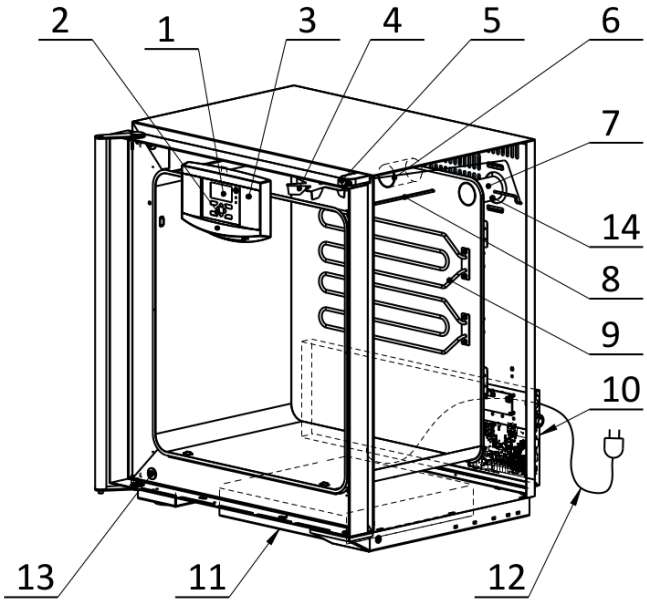


Fig. 10

1. ECO regulator panel
2. Foil keyboard
3. Plastic cover of the regulator
4. Fan
5. Air flap position control lever
6. Admission port / suction inlet with an air flap
7. Exhaust with air flap
8. PT100 temperature sensor case
9. Heating elements
10. Power section for sizes 55-222 in the rear cover of el. (for size 22 part I)
11. Power section for size 404 in central leg (for size 22 part II)
12. Power cord
13. Door sensor
14. Flap position sensor

STERICELL® 22

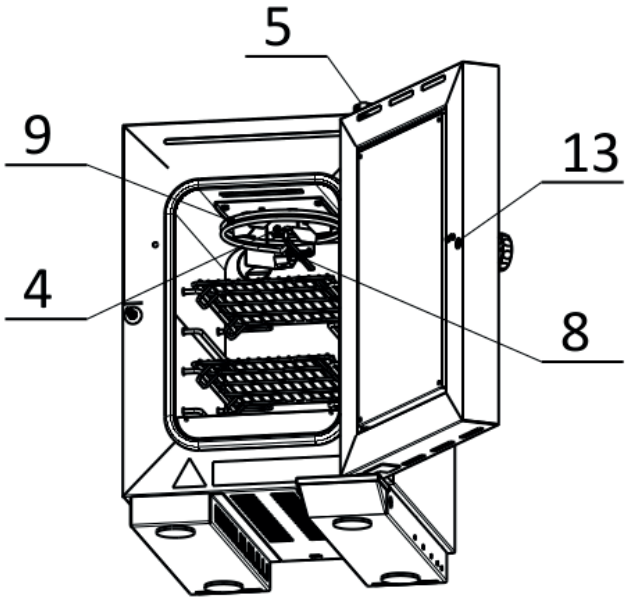


Fig. 11

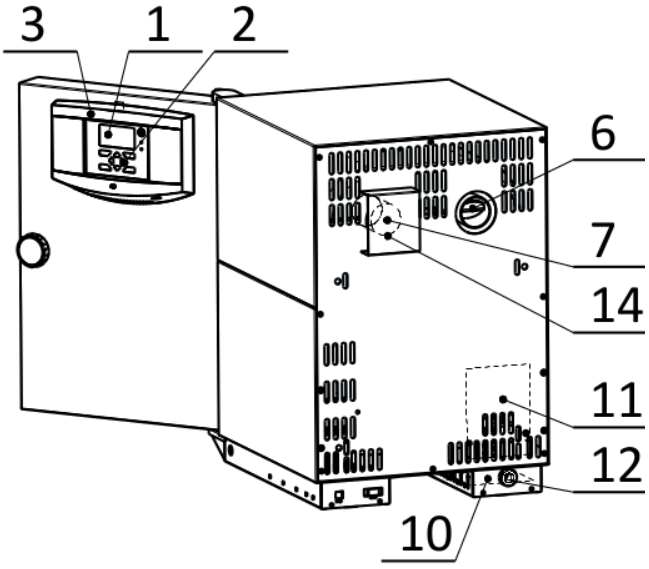


Fig. 12

5.2 USEFUL SPACE

Useful space is shown in Fig. 13. Within the space delimited with bold lines in the figure (in connection with standard DIN 12 880) there are met the temperature variations specified in Chapter 7 – Device parameters. Thin lines show the inner walls of the chamber. That means that values as per this chapter are not binding above the last upper tray.

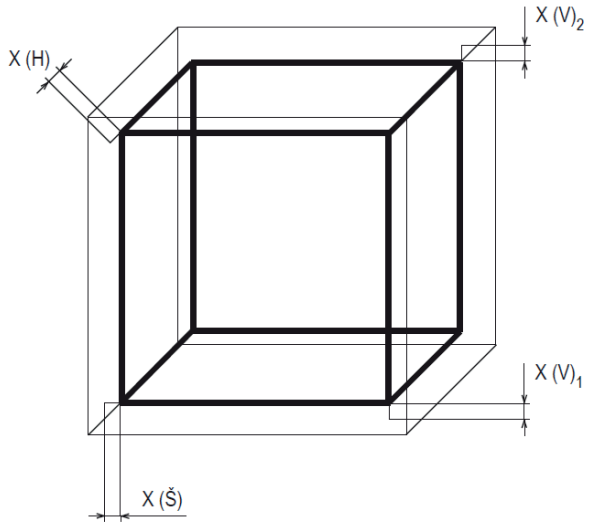


Fig. 13

X(H) – 10 % of inner chamber depth
X(Š) – 10 % of inner chamber width
$X(V)_1$ – distance between the lowest tray (shelf) and the inner chamber bottom
$X(V)_2$ – distance between the uppermost tray (shelf) and the inner chamber ceiling

5.2.1 CHARGE LAY-OUT IN THE CHAMBER

The chamber charge should be placed in such a way so as not to significantly prevent air circulation in the chamber – see Fig. 14, Fig. 15, Fig. 16 and Fig. 17. Minimal distance from the edge of inner walls of the chamber is set by 10% of the given dimension: in depth X(H) and in width X(Š).

It is always necessary to distribute the charge evenly in the chamber, not to make any groupings in one part of the chamber only.

The chamber should be filled with the charge in maximally 50% of the inner space.

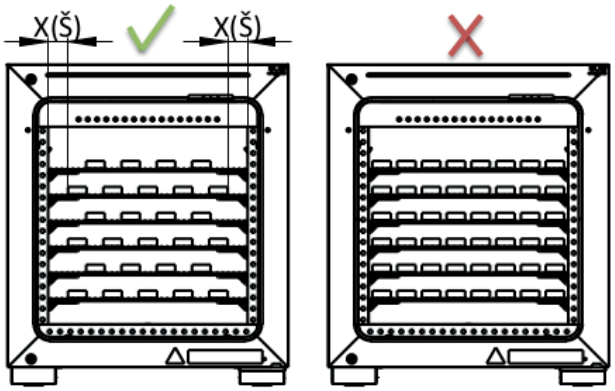


Fig. 14

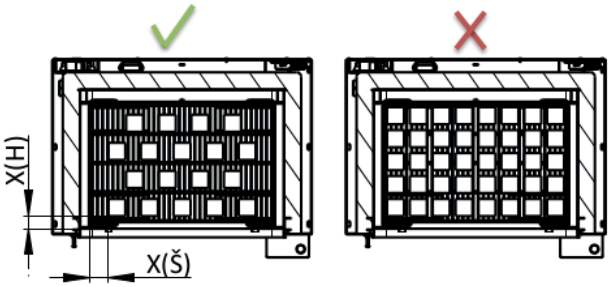


Fig. 15

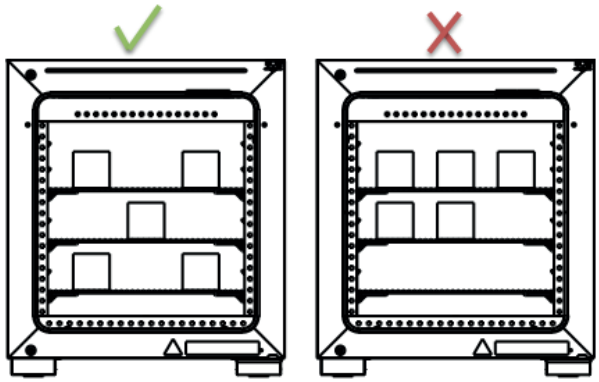


Fig. 16

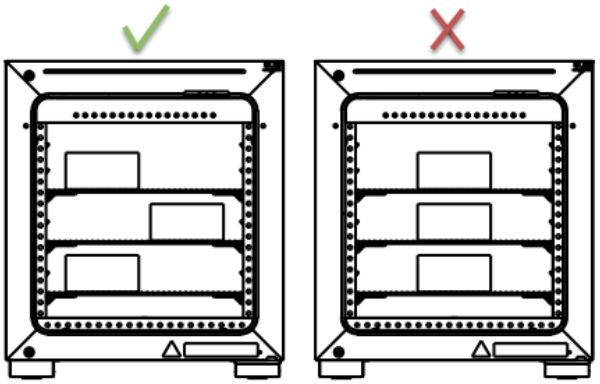


Fig. 17

5.3 MAINS CONNECTION AND CONNECTORS

Size 22

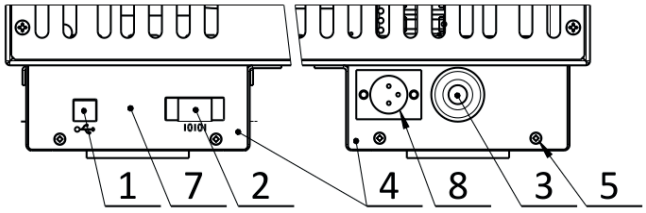


Fig. 18

Size 55–222

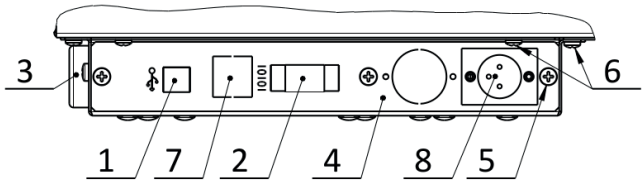


Fig. 19

Size 404

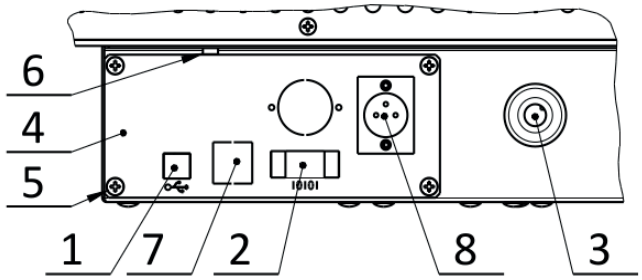


Fig. 20

1. USB connector B
2. RS-232C connector for printer (plug)
3. Mains supply
4. Communication plate with connectors
5. Screws securing the communication plate
6. Screws securing the electronics cover to the back of the device

Optional equipment:

7. LAN connector
8. Connector of potential-free contact for alarm messages

Cable connection for the EPSON T20-III printer:

Canon DE-9 Socket			Canon DB-25 Plug		
PIN	Signal		PIN	Signal	
2	RXD	Receive Data	2	TXD	Transmit Data
3	TXD	Transmit Data	3	RXD	Receive Data
4	DTR	Data Terminal Ready	6	DSR	Data Set Ready
5	GND	Signal Ground	7	GND	Signal Ground
6	DSR	Data Set Ready	20	DTR	Data Terminal Ready
	FGND	Metal / Shield	1	FGND	Frame Ground

WARNING: The devices interconnected by the connector RS-232C must meet valid regulations from the point of view of electric safety and electromagnetic compatibility.

Interface parameters: Baud 9600
Stopbit: 1
Parity: none
Databit: 8

Communication interface

- **Ethernet:** 10/100 Mbps
  interface 1 x RJ45
  standard IEEE 802.3u
  half/full duplex
- **USB host:** USB 2.0, full speed
- **USB device:** USB 2.0, full speed
- **RS232:** **Printer connection:**
  Baud: 9600
  Stopbit: 1
  Parity: none
  Databit: 8

Note:

- Ethernet and USB Host are the optional equipment of the device.

6 USE OF THE DEVICE

6.1 SWITCHING THE DEVICE ON

The device is switched on by connection of the cable to the mains; then, independent initialization occurs.

6.2 CONTROL PANEL (HMI)

6.2.1 CONTROL PANEL

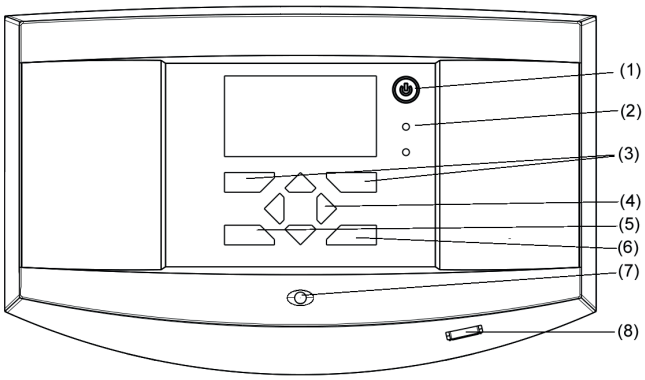


Fig. 21

(1) Push button ON/OFF
(2) LED heating
- Light on – the device heating is active.

(3) Contextual buttons
- Their meaning changes depending on the screen contents.

(4) Navigation push buttons
(5) Push button ESC
- Push button for return in one menu level back.

(6) Push button OK
- Push button for action confirmation.

(7) LED indicating the device status, see 7
- Green – OK
- Orange – warning
- Red – error

(8) USB Host – additional equipment, , see 14.11.

Note:
In the two-door (passthrough) version, only the contextual buttons are active on the control panel on the unloading side.

6.2.2 PUSH BUTTON ON/OFF AND THE DEVICE MODES

The ON/OFF push button is used with the ECO device for switching over between standard and economic modes of the device, see Table 1.

Modes of operation of the STERICELL ECO devices:

Mode	Mode description
STANDARD	• The device is ready for operation; respectively it already performs the selected program. • The control panel display is highlighted and it shows standard user interface.
ECONOMIC (Fig. 22)	• The device is in economic mode. No program is running, the fan is stopped. Electric power consumption is reduced. • The control panel display is not highlighted and it shows current time.

Table 1

Fig. 22

6.3 USER INTERFACE

6.3.1 HOME SCREEN (HOME)

6.3.1.1 HOME SCREEN IN STOPPED CONDITION

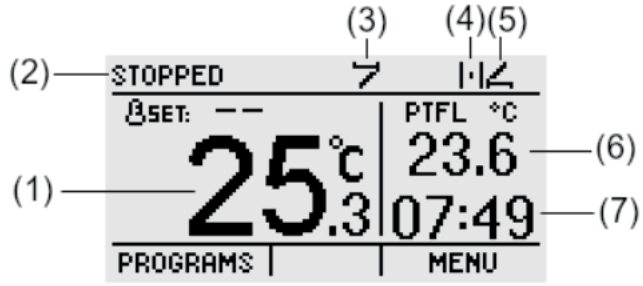


Fig. 23

(1) Current temperature in the device chamber
(2) Device status
(3) Indication of door opening
(4) Indication of flap opening
(5) Door open indication on the opposite side (only for two-door version of the device
(6) Temperature on the flexible sensor (additional equipment of the device, see 14.4)
(7) Clock – real time. Indicate by a blinking colon

6.3.1.2 HOME SCREEN WHILE THE PROGRAM IS RUNNING

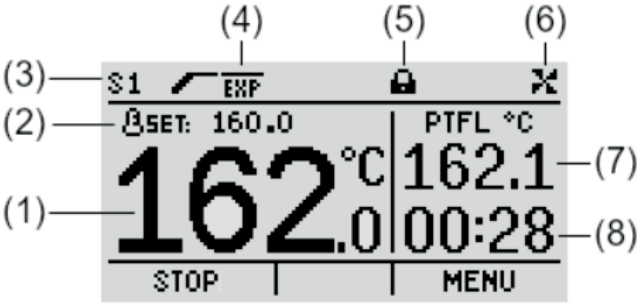


Fig. 24

(1) Current temperature in the device chamber
(2) Required temperature for the current segment of the program (see 6.3.3.1)
(3) Running program
(4) Indication of an active phase of the program (6.3.2.1.1)
(5) Indication of an active phase of the segment (additional equipment of the device, see 14.8).
(6) Indication of running fan in the given segment of the program
(7) Temperature on the flexible sensor (additional equipment of the device, see 14.4)
(8) Time data for current segment (see 6.3.1.3)

6.3.1.3 TIME DATA AND INDICATION OF CURRENT PHASE OF THE PROGRAM

Displaying the time information while the program is running:
The graphical representation of the time data on the instrument display depends on the active phase of the program, see the table below.

Active part of current segment of the program	Time information displaying	Scheme of the running program	
		Sterilization programs S1 up to S3	Drying programs P4 up to P9
Heating up rate	ELAPSED 00:02 Time is added.	„Preheating“ phase:  „Exposure“ phase: 	
„Endless“ regulation on the temperature	ELAPSED 00:02 Time is added.	–	
Regulation on the temperature	00:05 Time is counted down to zero.	„Preheating“ phase:  „Exposure“ phase: 	
Countdown up to delayed start of the program	24:58 Time is counted down to zero.	The scheme is replaced with date and time of delayed start. See 6.3.3.2.	

Table 2

6.3.2 PROGRAMS

6.3.2.1 STERILIZATION PROGRAMS S1 UP TO S3

Programs S1 up to S3 are designed for sterilization with dry heat.

6.3.2.1.1 TIME SCHEDULE OF THE STERILIZATION PROGRAM

An example of the sterilization program course is shown in Fig. 25

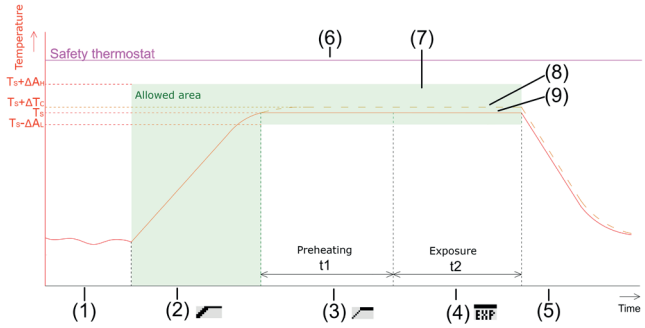


Fig. 25

Diagram legend:

Ts Set (nominal) temperature of the sterilization program (see 6.3.3.1)
ΔTc Temperature correction (see 6.3.3.4)
ΔAH/L Temperature alarms for sterilization programs (see 6.3.3.4)
t1 Duration of the preheating phase (see 6.3.3.1)
t2 Duration of the exposure phase (see 6.3.3.1)

(1) Delayed start, see 6.3.3.2
(2) Preparatory phase – heating up time – up to required temperature
(3) PREHEATING – holding the required temperature (T) for required time period (t1)
(4) EXPOSURE – holding the required temperature (T) for required time period (t2)
(5) Spontaneous cooling down after exposure termination
(6) Temperature monitored by a safety thermostat, see 6.3.3.6.
(7) Setting the limits for an alarm announcement. An alarm shall be announced when the temperature reaches out of specified zone
(8) The course of exhibitions, if ΔTc ≠ 0
(9) The course of exhibitions, if ΔTc = 0

Note:
If time t1 (hold on temperature for preheating segment) is set to t1 = 0, the preheating segment is omitted.

6.3.2.1.2 STERILIZATION CYCLE PROGRESS FOR SINGLE-DOOR DEVICES WITH DOOR LOCKING

1. Place the material to be sterilized in the device chamber, close the door.
2. Select the program, start by pressing the START button. The door is then locked.
3. After the program successfully finishes, a message is displayed (Fig. 26).

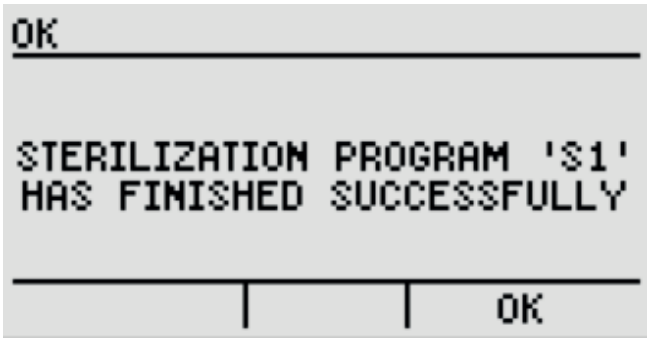


Fig. 26

4. Confirm by contextual push button OK, the door is unlocked.
5. Open the door, take the material out of the device.

Notes:
- If the device is equipped with additional equipment according to 14.8, then in some steps of the sterilization cycle the door of the device can be automatically blocked See 6.3.4.3.
- If the program runs incorrectly, the program is stopped and a message with the appropriate content is displayed (Fig. 27).

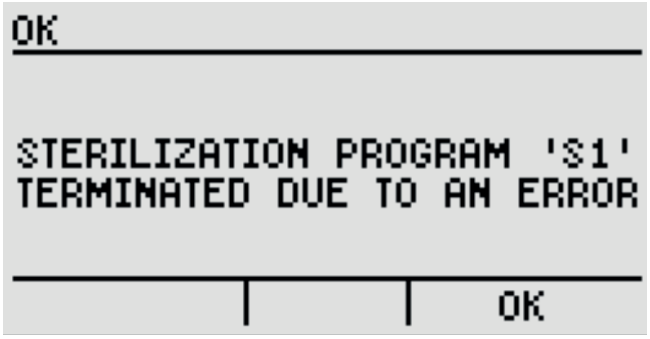


Fig. 27

6.3.2.1.3 THE COURSE OF THE STERILIZATION CYCLE FOR THE TWO-DOOR PASS-THROUGH DESIGN

See 14.9.

1. From the loading side of the device, place the material to be sterilized in the chamber and close the loading door.
2. Select the program, start with the START button.
3. After the successful completion of the program, a message is displayed on the unloading side, see Fig. 26.
4. Confirm with the OK contextual button.
5. Open the door at the unloading side and remove the sterilized material from the device.

   If the door on the unloading side is open, it is not allowed to open the ventilation flap of the device. There is a risk of contamination at the unloading side of the device!
6. A screen according to Fig. 28 is shown at the unloading side.

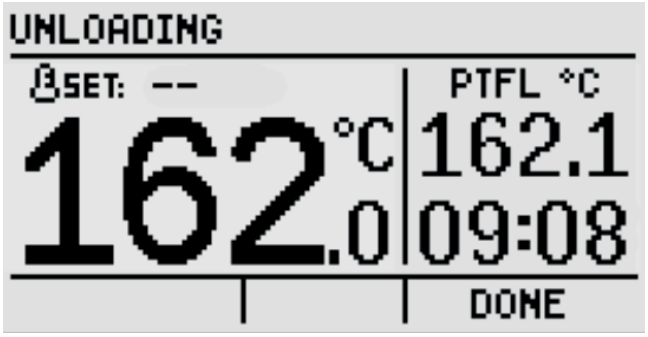


Fig. 28

7. Close the unloading door and press the DONE soft key.

Note:
If the device is equipped with additional equipment according to 14.8, then in some steps of the sterilization cycle one or the other door of the device may be automatically blocked. See 6.3.4.3.

6.3.2.1.4 START OF STERILIZATION CONTROLLED BY A FLEXIBLE SENSOR PTFL

Only devices with optional equipment according to 14.4. In case of sterilization programs S1 up to S3, the EXPOSURE phase (respectively the PRE-HEATING phase, if set) will start under the following conditions (see Fig. 25):

1. Temperature on the regulation sensor PT (T_{PT}) is within the zone specified by alarms setting (see 6.3.3.4):
   For T_{PT} therefore it must apply:
   $T_{PT} \geq (Ts - \Delta_{AL})$, and at the same time also
   $T_{PT} \leq (Ts + \Delta A_H)$

2. The temperature on the flexible sensor PTFL (T_{ptfl}) is in the zone defined by temperatures Ts and ΔTc.
   For T_{ptfl} therefore it must apply:
   $T_{ptfl} \geq Ts$, and at the same time also $T_{ptfl} \leq (Ts + \Delta Tc)$:

A program that has an overheat / exposure start controlled by a flexible sensor is indicated by a symbol in the program list ⁄. See program S1, Fig. 29.

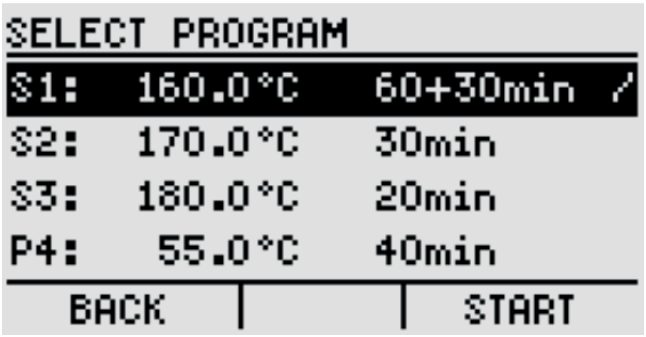


Fig. 29

6.3.2.2 DRYING PROGRAMS P4, P5

The programs P4 and P5 are not designed for hot-air sterilization.

With the pass-through version of the device, only the door on the loading side of the device can be operated! The door on the unloading side is permanently blocked!

6.3.2.2.1 TIME SCHEME OF THE DRYING PROGRAM (P4, P5)

Fig. 30 shows an example of the time course of a drying program.

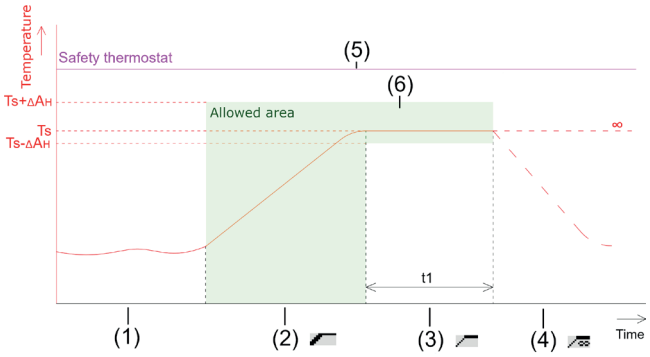


Fig. 30

Diagram legend:

Ts Set (nominal) temperature of the drying program (see 6.3.3.1)

$\Delta A_{H/L}$ Temperature alarms for drying programs (see 6.3.3.5)

t1 Drying time (see 6.3.3.1)

(1) Delayed start, see 6.3.3.2.
(2) Heating up to the required temperature.
(3) Holding the required temperature (Ts) for required time period (t1).
(4) Spontaneous cooling down after exposure termination, respectively „never ending“ regulation on the temperature
(5) Temperature monitored by a safety thermostat, see 6.3.3.5
(6) Setting the limits for an alarm announcement. An alarm shall be announced when the temperature reaches out of specified zone.

6.3.2.3 OPENING THE DOOR OF THE DEVICE

- If the door is open during the pre-heating or exposure phase of the sterilization program, the program will restart when it is closed.
- If the door is open during the sterilization program exposure phase, a warning is displayed.

Fig. 31

- If the door is opened while the drying program is running, the program continues.
- Door opening can also be indicated acoustically (see 6.3.5.2)
- During opening, the fan speed is reduced to 10%.

6.3.2.4 FLAP OPENING

- If the flap is opened during the pre-heating or exposure phase of the sterilization program, the program will be restarted when the flaps are closed.
- If the flap is open during the exposure phase of the sterilization program, a warning is displayed.
- If the flap is open while the drying program is running, the program continues.
- The flap opening can also be indicated acoustically (see 6.3.5.2).

6.3.2.5 POWER FAILURE / OUTAGE

In the event of a power failure while the program is running, all the settings of the running program are retained, and the real-time clock continues to run even during the power failure.

- If there is a power failure while the sterilization program is running (S1 up to S3), it will restart after the power is restored. A warning is displayed when the power is restored.

Fig. 32

- If there is a power failure while the drying program is running (P4, P5), after the power is restored, the program continues from the interruption time.

6.3.2.6 PROGRAM SELECTION AND START

✓ HOME → PROGRAMS

The selected program is started by pressing the right contextual START button (Fig. 33).

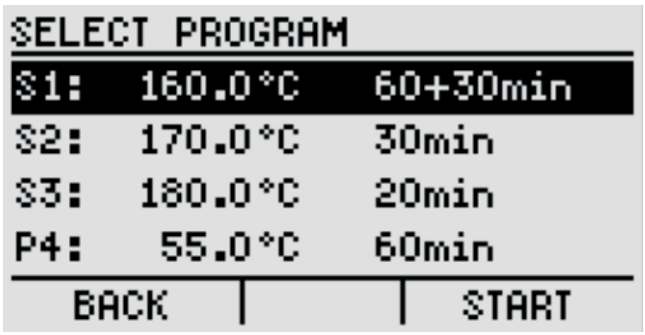


Fig. 33

6.3.3 MAIN MENU

✓ HOME → MENU

6.3.3.1 PROGRAMS EDITING

✓ HOME → MENU → PROGRAMS EDITING

In this menu it is possible to modify the parameters of individual programs of the device.

The parameters of programs designed for dry heat sterilization (S1-S3) must be adapted to local legislation and the specific type of sterilized material. Inappropriate setting of these parameters may result in insufficient efficiency of the sterilization process. The user of the device is fully responsible for setting the parameters of the sterilization programs for the sterilized material.

- Entry into the parameter editing can be conditioned by entering the password. It is possible to set a password for editing sterilization programs and a password for editing drying programs. See 6.3.4.5

Factory preset password: 0000

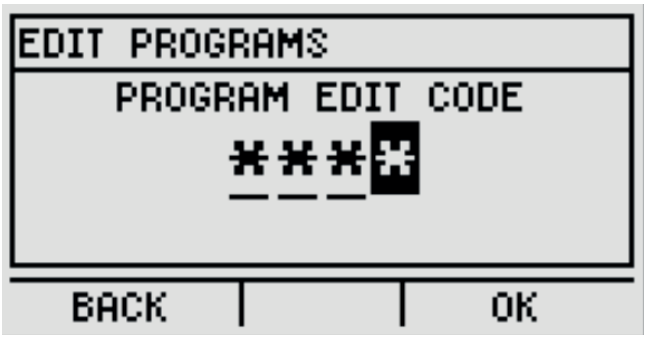


Fig. 34

Sterilization programs parameters:

Fig. 35

Drying programs parameters:

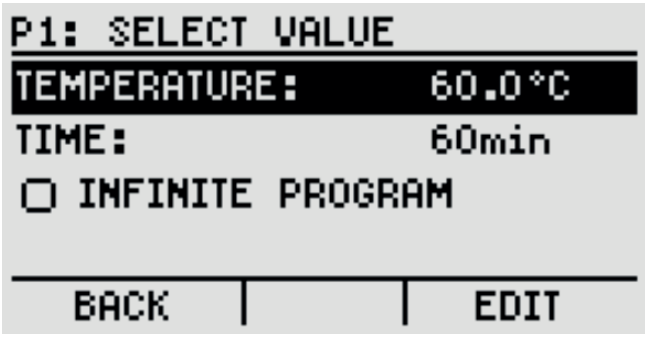


Fig. 36

Program parameters:
TEMPERATURE
Required regulation temperature Supported units: °C, °F Minimum adjustable temperature: 25°C Maximum adjustable temperature: 250°C
EXP. TIME (only sterilization programs)
The time for which the device is to maintain the desired temperature during the exposure phase. Minimal time of holding: 0 min. Maximal time of holding: 999 min.
PREHEATING TIME (only sterilization programs)
The time for which the device is to maintain the desired temperature during the preheating phase. Minimal time of holding: 0 min. Maximal time of holding: 999 min. Holding time 0 means that the preheating phase is omitted.
PTFL STARTS EXPOSURE (only programs; additional equipment)
Exposure (or preheating) is started only when the temperature on the flexible PTFL sensor reaches the allowed range, see 6.3.2.1.4. This parameter is visible only for devices that are equipped with additional equipment according to 14.4.
TIME (only drying programs)
The time for which the device is to maintain the required temperature. Minimal time of holding: 0 min. Maximal time of holding: 999 min.
ENDLESS PROGRAM (only drying programs)
Time-unlimited regulation at the required temperature.

Table 3

- Value editing:

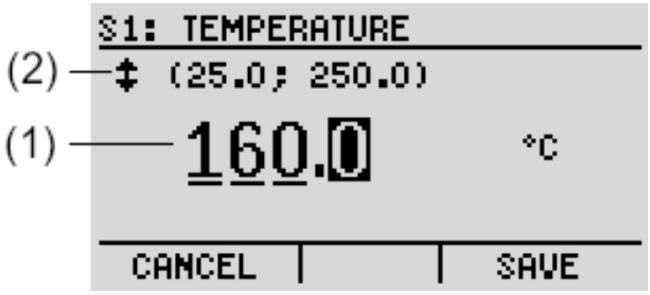


Fig. 37

(1) Edited value
(2) Range of permitted values

Note:
- The default setting of the parameters of the sterilization programs S1 to S3 (Table 4) corresponds to the directive for sterilization VYR-34 valid in the Czech Republic.

Program	Temperature (°C)	Preheating (min)	Exposure (min)
S1	160	0	60
S2	170	0	30
S3	180	0	20

Table 4

6.3.3.2 DELAYED START

✓ HOME → MENU → DELAYED START

Delayed program start allows the program to start automatically at a set time.

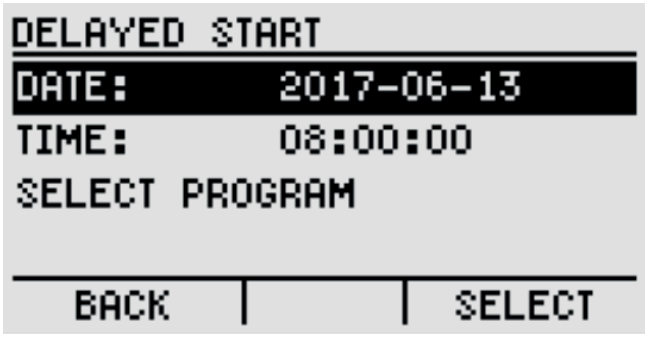


Fig. 38

✓ HOME → MENU → DELAYED START → DATE

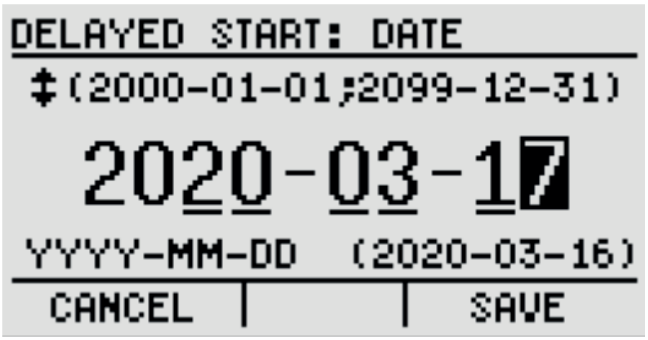


Fig. 39

✓ HOME → MENU → DELAYED START → TIME

Fig. 40

✓ HOME → MENU → DELAYED START → PROGRAM

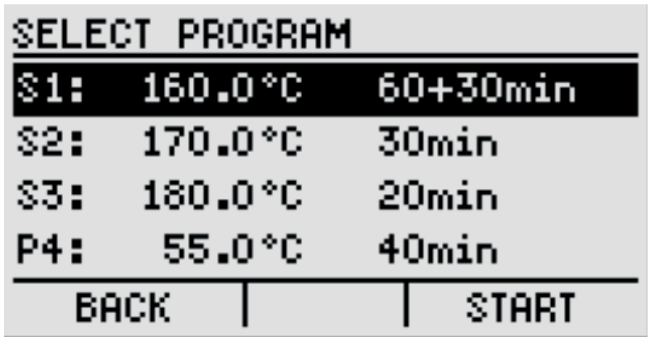


Fig. 41

After pressing the START button, the selected program is ready to start at the set time. The date and time of the delayed start are displayed in the HOME screen (Fig. 42).

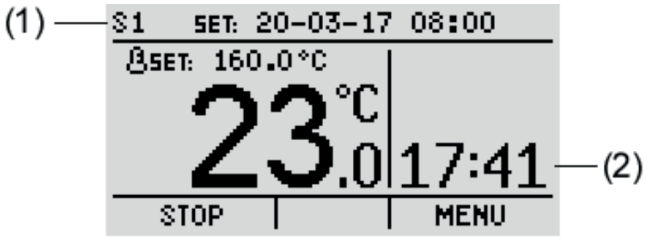


Fig. 42

(1) Date and time of delayed start
(2) Time remaining to program start

Note:
- The date and time of the delayed start will be saved even after a power failure.
- If the power failure is resumed as late as after the set delayed start time, the program will start when the power is restored.

6.3.3.3 PROTOCOLS

✓ HOME → MENU → ALARMS → PROTOCOLS

The protocol is a record of an individual program run.

The menu allows you to print logs to the printer or export them in a format that can be opened using the Printer Archive application (see 14.5.1).

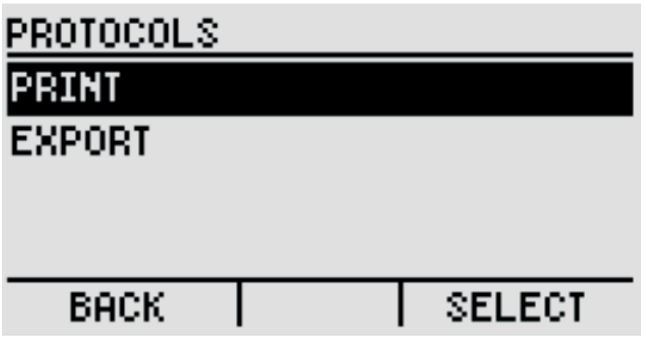


Fig. 43

6.3.3.3.1 PROCOL PRINT

✓ HOME → MENU → ALARMS → PROTOCOLS → PRINT

See 6.3.4.4.3.

The EPSON T20-III printer is used for printing.

You can print either the log from the last sterilization program or the log from the last drying program.

Fig. 44

6.3.3.3.2 PROTOCOL EXPORT

✓ HOME → MENU → ALARMS → PROTOCOLS → EXPORT

- Protocol export requires additional equipment according to 14.11.
- Insert the USB flash drive into the appropriate connector on the HMI panel. See position (8), Fig. 21.
- The exported file (* .prns) can be opened using the PRINTER ARCHIVE application, version 10.11 and later (Fig. 46).
- You can export either only the log from the last running program or the logs from the last 100 programs.

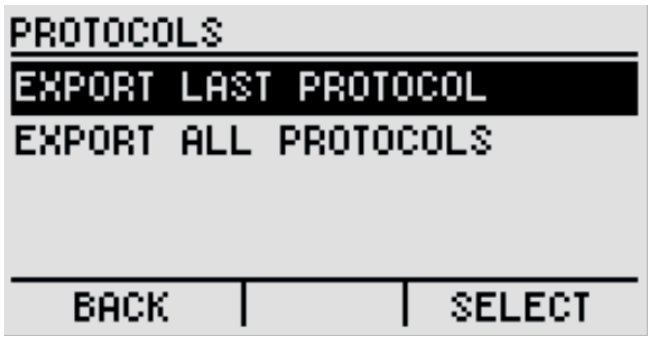


Fig. 45

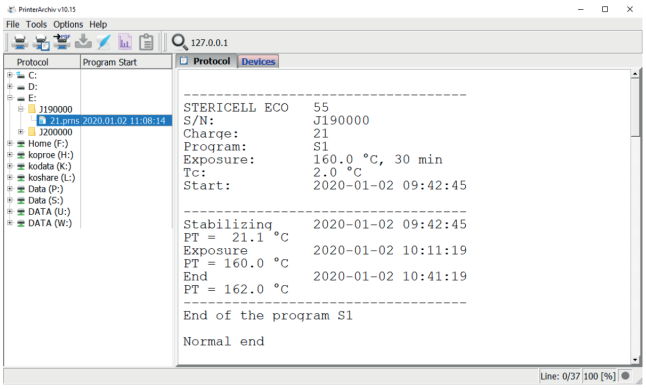


Fig. 46

6.3.3.4 ALARMS – STERILIZATION (PROGRAMS S1-S3)

✓ HOME → MENU → ALARMS – STERILIZATION

For programs S1 to S3, during the preheating and exposure segment, it is checked whether the controlled temperature is within the permitted range. The upper alarm is announced if the current temperature exceeds the desired preheat or exposure temperature by a defined value. A low alarm is announced if the current temperature drops a defined value below the desired preheat or exposure temperature.
See Fig. 25.

Improper setting of alarm limits for programs intended for dry heat sterilization (S1 to S3) may result in insufficient efficiency of the sterilization process! The user of the device is fully responsible for setting these limits.

- Access to the ALARMS – STERILIZATION menu is conditioned by entering the password (Fig. 47).

Factory default password: 0000

Fig. 47

- The parameter Tc (Fig. 48) is important for correcting the sterilization temperature (see Fig. 25). The preheating and exposure temperatures for programs S1, S2, S3 can be shifted by a defined value (0 to 10°C) above the set temperature. In this way, reliable heating of the inserted material can be achieved. The default (factory preset) correction is +2°C. For example, with program S1 (Fig. 41), with a correction of +2°C, the temperature of the preheating phase and the exposure would be increased to 162°C.

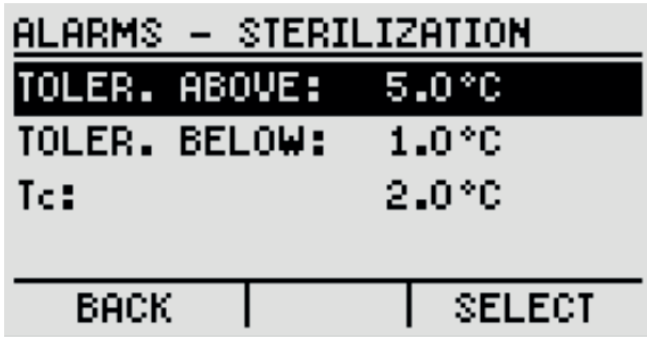


Fig. 48

Notes:
- In sections (3) and (4), Fig. 25, an alarm is announced if the deviation of the actual temperature from the required one is greater (less) than the pre-set limit for more than 10 s.
- If the conditions for announcing the alarm are met during the sterilization program, a message is shown on the device display (Fig. 49).

Fig. 49

- If the door is open during the sterilization program, the alarm is suppressed for 2 minutes after the door is closed again.
- The default setting of the limits for announcing the alarm corresponds to the sterilization directive VYR-34 valid in the Czech Republic (Table 5).

Alarm	
Lower [°C]	**Upper [°C]**
-1	+5

Table 5

6.3.3.5 ALARMS (PROGRAMS P4, P5)

✓ HOME → MENU → ALARMS

The alarms of programs P4 and P5 have a similar meaning as for sterilization programs (see 6.3.3.4). The running program can be stopped when an alarm occurs.

Note:
The alarm is sounded if the temperature in the chamber deviates outside the alarm tolerance range for more than 1 min.

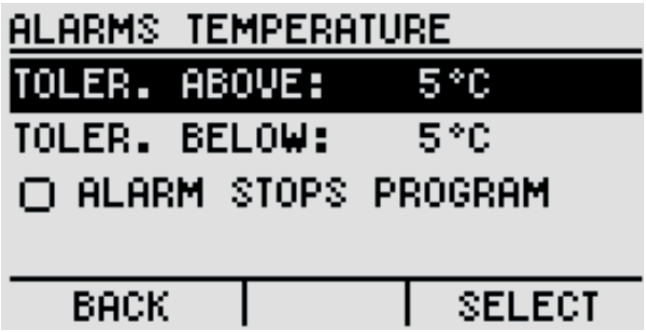


Fig. 50

6.3.3.6 SAFETY THERMOSTAT

✓ HOME → MENU → SAFETY THERMOSTAT

The safety thermostat is used to protect the exposed material, the device itself and its surroundings in the event of an unexpected course of regulation or failure.
The temperature in the chamber is measured and evaluated by an independent control block.

When the limits of the safety thermostat are exceeded, the heating elements are disconnected from the mains voltage and the heating of the cabinet is stopped.

Entering the SAFETY THERMOSTAT menu is conditioned by entering the input password (Fig. 51).

Factory default password: 0000

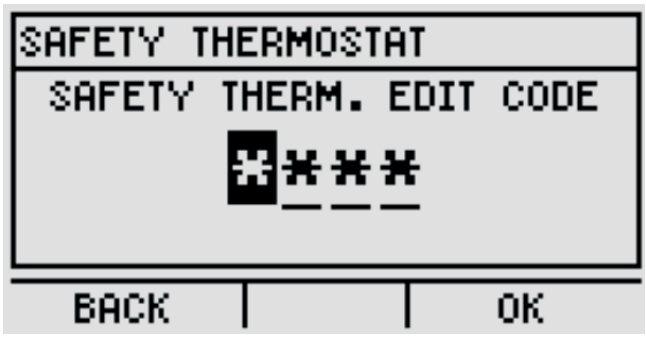


Fig. 51

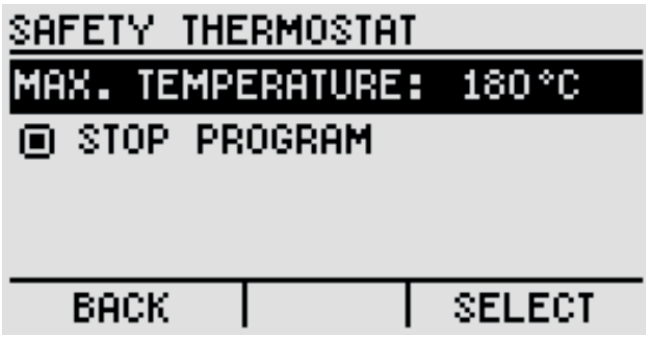


Fig. 52

The meaning of the STOP PROGRAM option is described in the table below:

Stop the program	Actions when temperature limits are exceeded
▣	Disconnecting the heating elements. Exceeding the limits will cause an error to be issued (see 7). If the situation occurs while the program is running, the program immediately stops.
▢	Disconnecting the heating elements. Exceeding the limits will cause a warning to be issued. If the situation occurs while the program is running, the program continues even if the elements are blocked. After the spontaneous return of the temperature to the allowed range, the temperature control is also restored according to the program settings.

Table 6

6.3.3.7 SYSTEM INFORMATION

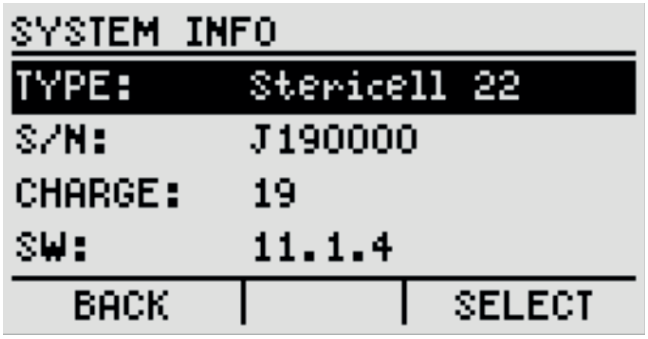


Fig. 53

- **TYPE** – device type
- **S/N** – SERIAL NUMBER
- **CHARGE** – number of programs passed
- **SW** – firmware version
- **HW** – firmware version

6.3.4 MENU SETTINGS

✓ HOME → MENU → SETTINGS

Access to the SETTINGS menu is conditioned by entering the password (Fig. 54).

Fig. 54

6.3.4.1 DATE AND TIME

✓ HOME → MENU → SETTINGS → DATE AND TIME

The settings are retained even after the device is disconnected from the mains.

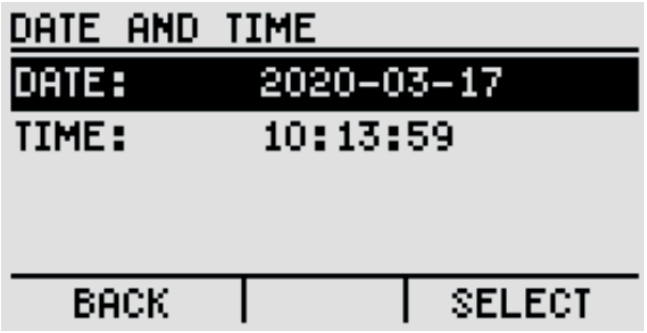


Fig. 55

✓ HOME → MENU → SETTING → DATE AND TIME → DATE

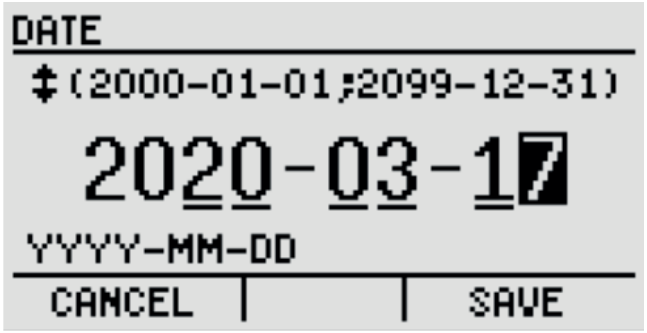


Fig. 56

✓ HOME → MENU → SETTING → DATE AND TIME → TIME

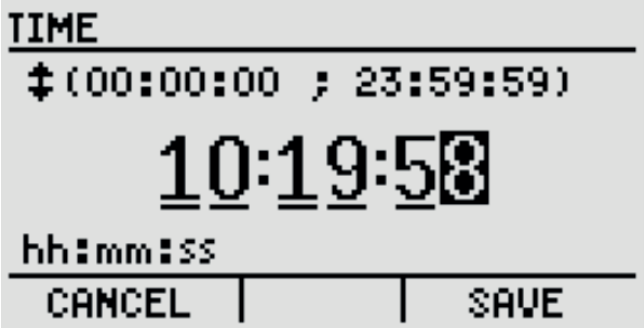


Fig. 57

6.3.4.2 SETTING THE FAN IN THE DEVICE CHAMBER

✓ HOME → MENU → SETTINGS → FAN

The menu is used for setting the program behaviour after the program termination.

Fig. 58

- **KEEP LAST STATE**
  - At the end of the program, the fan continues to run.
- **STOP IMMEDIATELY**
  - The fan is stopped at the end of the program.
- **STOP AFTER DOOR OPENED**
  - The fan is stopped after the end of the program and the door is opened.
- **STOP BELOW TEMPERATURE**
  - The fan stops when the program ends and the temperature drops below the set limit.

6.3.4.3 DOOR LOCK

✓ HOME → MENU → SETTINGS → DOOR LOCK

It applies to pass-through devices and single-door devices equipped with an electromagnetic door locking mechanism (see 14.8). The door locking is indicated on the display by the icon .

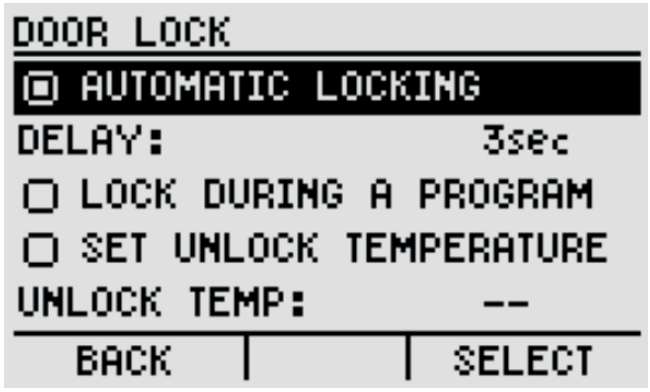


Fig. 59

- **AUTOMATIC LOCKING**
  - After the door is closed, it is locked automatically after the pre-set delay time (3 to 9 s).
  - In case of the pass-through version of the device, this behaviour is applied only to the door on the loading side.
- **LOCK DURING A PROGRAM**
  - The door is locked automatically when the program starts. They are automatically unlocked after the successful completion of the program.
  - In the pass-through version of the device, this behavior is only applied to the door on the loading side.
- **SET UNLOCK TEMPERATURE**
  - The door will be unlocked after the temperature drops below a pre-set limit.

Note:

- The locked door can be unlocked from the HMI control panel by simultaneously pressing and holding the ↓ and ↑ buttons.

6.3.4.3.1 DOOR LOCK – PASS-THROUGH VERSION

The behaviour of the door lock on the loading and unloading side of the pass-through version of the device during the sterilization cycle is shown in Fig. 60. The logic of the door lock is set so that under no circumstances can the space on the unloading side of the machine be contaminated.

The locked door on the loading and unloading side of the device can be unlocked (locked) from the HMI control panel by pressing and holding the buttons ↓ and ↑ in certain parts of the sterilization cycle. See „Keypad door lock“ Fig. 60.

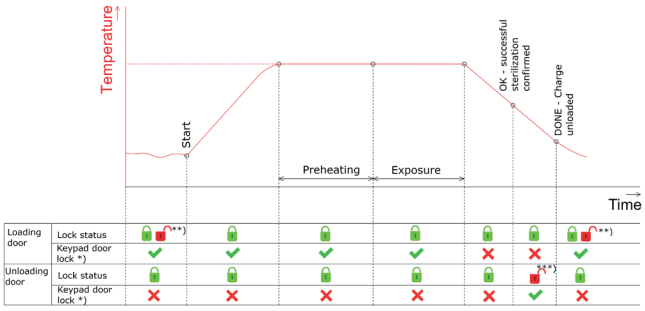


Fig. 60

*) The door can be unlocked (or locked) on the relevant side of the device by simultaneously pressing and holding the ↓ and ↑ buttons on the control panel.

**) The lock status depends on the set lock mode.

***) If the TEMPERATURE BARRIER mode is selected, the door on the unloading side will remain locked until the temperature in the appliance chamber falls below the set temperature.

6.3.4.4 COMMUNICATION

✓ HOME → MENU → SETTINGS → COMMUNICATION

The menu allows setting of communication parameters for:

- device connection to LAN
- serial port of the device (RS232)
- USB B (Device),

See Fig. 18, Fig. 19, Fig. 20.

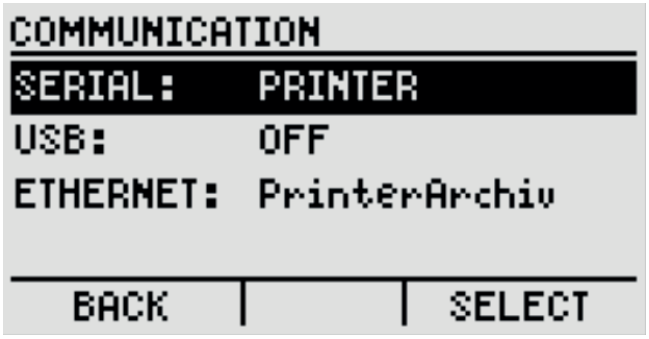


Fig. 61

6.3.4.4.1 ETHERNET

✓ HOME → MENU → SETTINGS → COMMUNICATION → ETHERNET

Only devices with optional equipment according to 14.10. For a general procedure on how to connect the device to a PC via the Ethernet network, see 6.3.8.

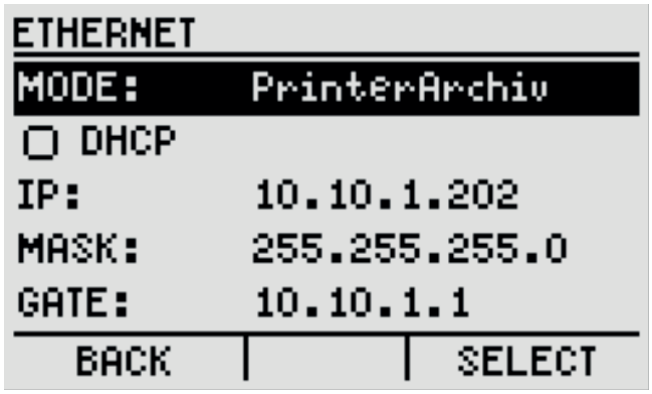


Fig. 62

- **MODE**
  - Switched off
  - PrinterArchiv – for use with the Printer Archiv application
- **DHCP**
  - The device configuration within the LAN is done automatically.
- **IP**
  - IPv4 address assigned to the device.
- **MASK**
  - IPv4 network mask
- **GATE**
  - IPv4 default gateway

6.3.4.4.2 SERIAL PORT

✓ HOME → MENU → SETTINGS → COMMUNICATION → SERIAL

Placement of the connector RS232 depends on the size of the device, see 5.3.

Fig. 63

- **OFF**
- **PRINTER**
  - For use with the printer EPSON T20-III, see 6.3.4.4.3.
- **PrinterArchiv**
  - For use with the application PrinterArchiv, see 14.5.1.

6.3.4.4.3 PRINT TO A PRINTER

The EPSON T20-III printer is used to print the protocol. Prepare the printer for operation according to the instructions for use, connect it to the device with an RS232 cable, see 5.3.

In the communication settings menu, select print on the serial port, see 6.3.4.4.2:

✓ HOME → MENU → SETTINGS → COMMUNICATION → SERIAL → PRINTER

Printout example:

```
(1)—— STERICELL ECO    55
      S/N:             J200000
      Charge:          2
      Program:         S1
(2) —— Exposure:       160,0 °C, 60 min
      Preheat:         15 min
      Tc:              2,0 °C
      Start:           2018-08-09 13:30

      --------------------------------
(3)—— Stabilizing      2018-08-09 13:30
      PT =  26,9 °C
(4)—— Preheat          2018-08-09 13:45
      PT = 160,0 °C
(5)—— Exposure         2018-08-09 14:00
      PT = 162,1 °C
(6)—— End              2018-08-09 15:00
      PT = 162,0 °C
      --------------------------------
      End of the program S1

      Normal end
(7)—— NO ERRORS

      Date, time:


      Name:


      Signature:
```

Fig. 64

(1) Program heading
(2) Sterilization parameters
(3) Preparatory phase – heating up to required sterilization temperature
(4) Pre-heating phase
(5) Exposure phase
(6) Exposure termination
(7) Extraordinary events recording

6.3.4.4.4 USB

✓ HOME → MENU → SETTINGS → COMMUNICATION → USB

The placement of the USB B (device) connector depends on the size of the device, see 5.3.

Fig. 65

- **OFF**
- **PrinterArchiv**
  – For use with the application PrinterArchiv.

6.3.4.5 SECURITY

✓ HOME → MENU → SETTINGS → SECURITY

In this menu it is possible to set passwords for:
- access to programs editing
- access to safety thermostat settings
- access to menu SETTINGS

Fig. 66

- **PROGRAM EDIT CODE**
  – Password for access to editing of the drying programs P4, P5.
- **STERIL. EDIT CODE**
  – Password for access to editing of the sterilization programs S1 up to S3.
- **SAFETY THERM. EDIT CODE**
  – Password for access to editing of the safety thermostat
- **SETTINGS MENU CODE**
  – Password for entering the menu „Settings“.

6.3.4.5.1 PASSWORD EDITING

✓ HOME → MENU → SETTINGS → SECURITY → PASSWORD…

Fig. 67

- Numeric code within the range 0 up to 9999.
- Editing by buttons "↑", "↓", "←", "→".
- Entering "------" de-activates use of a password for the given item.

6.3.4.6 AUTOMATIC FLAP

✓ HOME → MENU → SETTINGS → AUTOMATIC FLAP

Only devices with additional equipment according to 14.12. This design of the ventilation damper allows its automatic control in various modes.

The operating mode of the automatic damper can only be set for sterilization programs. For drying programs, the behavior of the automatic damper is fixed and the stated setting options do not apply to them, see Table 7.

Automatic damper operating modes:

Program	Hepa filter	Rise to temperature	Preheating	Expozition	Cooling
Sterilization	no	The flap is closed, or the inserted material can be dried, see Fig. 68.	Flap closed	Flap closed	The damper works in the mode that is set, see options AFTER STERILIZATION, Fig. 68.
Drying	N/A	Flap closed	N/A	Flap open	Flap open

Table 7

Fig. 68

- **OPEN MANUALLY**
  - Selecting this item opens the flap.
  - Not possible while the program is running!
- **CLOSE MANUALLY**
  - Selecting this item closes the flap.
  - Not possible while the program is running!
- **DRYING TIME**
  - Can be used to dry objects before exposure.
  - When the temperature starts to reach 80°C, the flap is open for the time set in the DRYING TIME item.
- **AFTER STERILIZATION – CLOSE**
  - At the end of the sterilization program, the flap remains closed.
- **AFTER STERILIZATION – OPEN**
  - See 6.3.4.6.1
  - At the end of the program, the flap remains open.
  - The flap can then be closed again. The flap closes when the cooling temperature set in item is reached **CLOSE BELOW TEMPERATURE** → **CLOSE TEMPERATURE**

6.3.4.6.1 AUTOMATIC FLAP AND RISK OF CONTAMINATION OF EXPOSED MATERIAL

If the flap is left open after the end of the exposure, there is an increased risk of contamination of sterile material with ambient air! Setting the automatic damper operating mode is the responsibility of the user!

For devices equipped with a HEPA filter, in order to ensure its effectiveness, it is necessary that if the automatic damper is open, the fan in the device chamber runs at the same time. To set the operating mode of the chamber fan, see 6.3.4.2. The correct setting of the operating mode of the automatic damper and the fan in the chamber is the responsibility of the user with these devices!

6.3.5 USER SETTINGS

✓ HOME → MENU → SETTINGS → USER SETTINGS

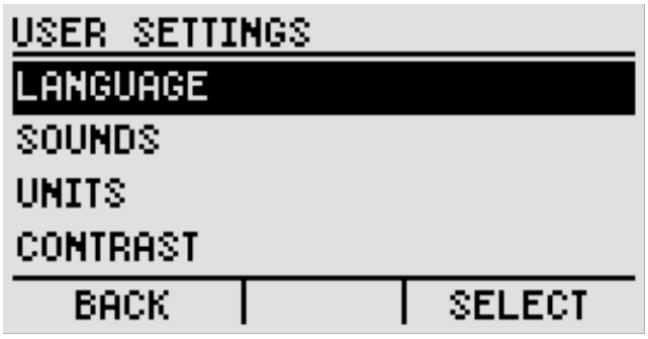


Fig. 69

6.3.5.1 LANGUAGE

✓ HOME → MENU → SETTINGS → USER SETTINGS → LANGUAGE

Fig. 70

6.3.5.2 SOUNDS

✓ HOME → MENU → SETTINGS → USER SETTINGS → SOUNDS

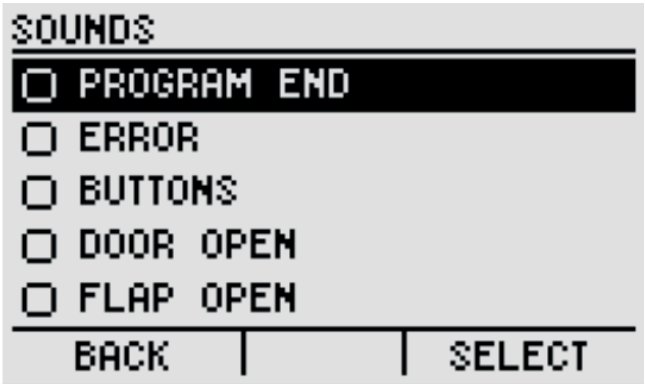


Fig. 71

- **PROGRAM END**
  - Acoustic indication of the program end.
- **ERROR**
  - Acoustic indication of an error.
  - It can be cancelled by pressing any button.
- **BUTTONS**
  - Acoustic indication of a button pressing.
- **DOOR OPEN**
  - Acoustic indication of door opening while the sterilisation program is running.
  - It can be cancelled by pressing any button.
- **FLAP OPEN**
  - Acoustic indication of ventilation flap opening while the sterilistaion program is running.
  - It can be cancelled by pressing any button.

6.3.5.3 UNITS

• HOME → MENU → SETTINGS → USER SETTINGS → UNITS

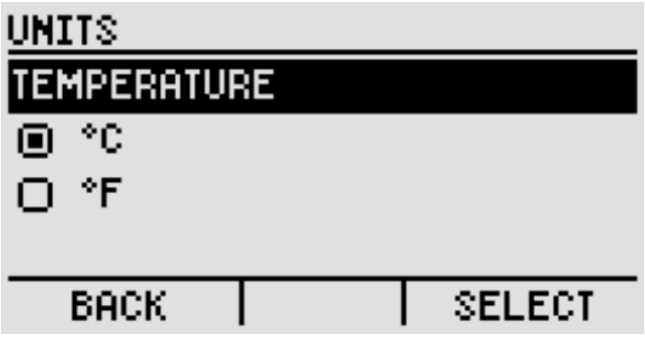


Fig. 72

6.3.5.4 DISPLAY CONTRAST

• HOME → MENU → SETTINGS → USER SETTINGS → CONTRAST

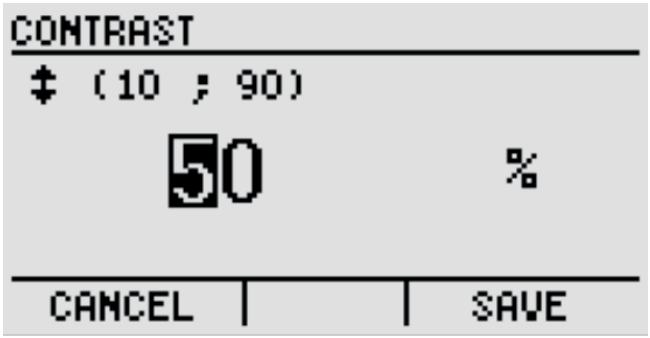


Fig. 73

6.3.5.5 SENZORS

• HOME → MENU → SETTINGS → USER SETTINGS → SENSORS

The menu displays the current values of temperatures measured by the electronics of the device. Both offset and non-offset values can be displayed. The offset values include corrections made by the manufacturer during the manufacture of the device.

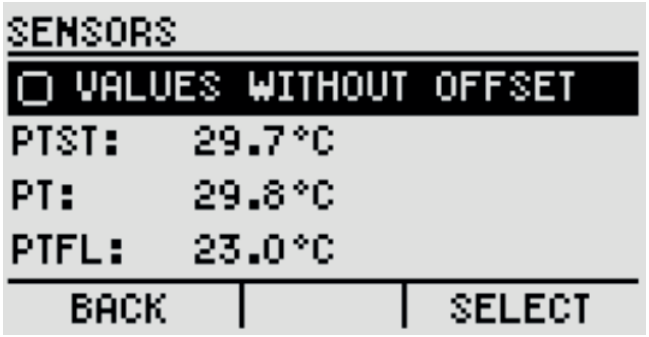


Fig. 74

- **VALUES WITHOUT OFFSET**
  - Displays non-offset values of the below stated items.
- **PTST**
  - Current temperature measured by the safety thermostat sensor.
- **PT**
  - Current temperature measured by the regulation sensor.
- **PTFL**
  - Current temperature measured by the flexible sensor (additional equipment, see 14.4)

6.3.6 AIR FLAP ADJUSTMENT AND FUNCTION

Function description:
The air flap is used to ventilate the chamber of the device, e.g. when drying damp material.

Flap adjustment:
The air flap is adjusted when the device is installed.
The air flap control lever is set to the closed position and the flap in the exhaust opening on the rear wall of the device is manually adjusted to completely close the ventilation opening. The flap shaft is held by the pliers because of rotation. In addition to the exhaust flap, the intake flap must be adjusted in the same way.

Flap control:
If wet material is inserted into the devices in order to dry it before tempering, it is necessary set the flap to the open position so that the steam can escape freely during drying. After the material has been dried, the flap must be set to the closed position.

Note:
When operating the devices with the air flap open and when the wet material is not being dried, the electricity consumption increases unnecessarily and, in addition, the required temperatures in the chamber may not be reached.

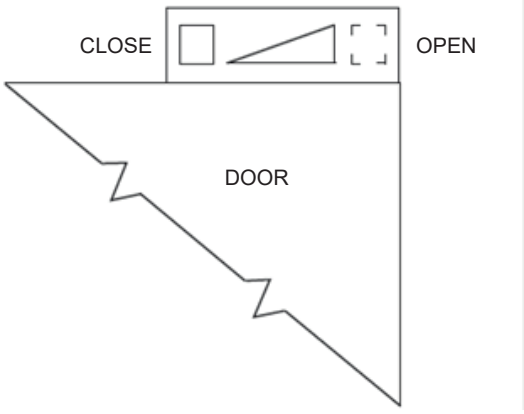


Fig. 75

6.3.7 REPLACEMENT OF DOOR SEALING AND DOOR ADJUSTMENT

Remove the entire sealing, starting at the bottom centre. Attach the new seal to the curved edge of the chamber, starting at the bottom centre. The seal snaps between the chamber and the outer cover.

To check for leaks, clamp a piece of paper between the door and the chamber when closing the door. Pull it out slowly, you should notice a stronger resistance.

The door is adjustable in all four places:
- top left bolts with nut – position 3
- bottom left bolts with nut – position 4
- top right with hexagon socket screw – position 2
- bottom right, loosening the hexagon socket screw allows for antero-posterior movement door hinge – sketch of position 1.

For volume 22, there is only one adjustable screw on the door closure side.

Adjust the door so that after closing it, the rubber seal of the chamber is pressed all the way to the plate of the floating door. To check, before closing the door completely, insert a sheet of paper between the seal and the floating door plate, which can be pulled out against the low resistance after closing the door.

STERICELL® 111

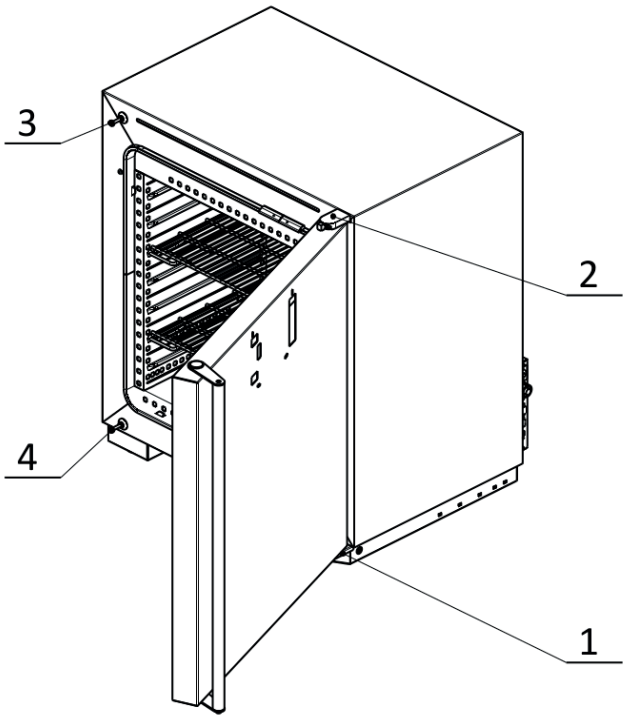


Fig. 76

STERICELL® 22

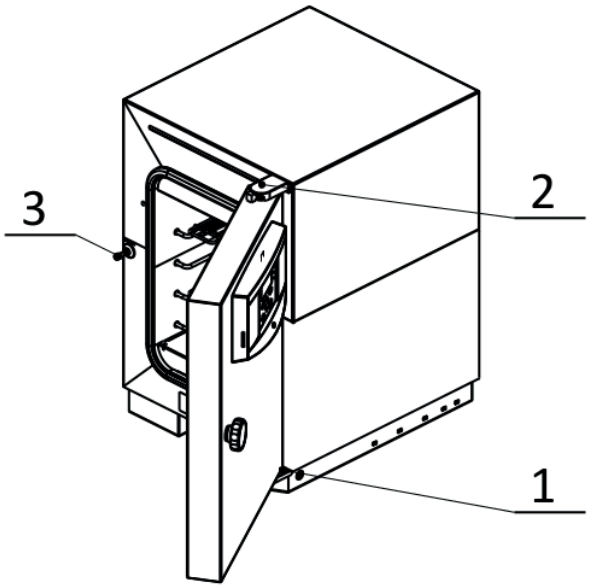


Fig. 77

6.3.8 CONNECTING THE DEVICE VIA ETHERNET

If the device is equipped with additional equipment according to 14.10, then it is possible to connect it to a PC via the Ethernet network.

To successfully connect the device via Ethernet, you need to perform the following steps:

- Set the required communication mode of the device and the necessary IPv4 parameters. See 6.3.4.4.1.
- Install the "CPR Manager" utility on the target PC (to which the device is to be connected). See 6.3.8.2.1.
- Connect the device and the target PC via the Ethernet network. Verify that the device is visible and accessible from the target PC through the Ethernet network. See 6.3.8.1.
- Make the necessary configuration for the newly connected device in the "CPR Manager" utility. See 6.3.8.2.2.
- Add a newly connected device in the user's PC application. See the Instructions or help for the relevant PC application.

6.3.8.1 VERIFYING THE AVAILABILITY OF DEVICES THROUGH ETHERNET

1. Mark the IPv4 address of the device.
2. Open a command prompt (cmd.exe) on the target PC.
3. Type at the command prompt **`ping xxx.yyy.zzz.qqq.`** ("xxx.yyy.zzz.qqq" represents the IPv4 address of the device)
4. Confirm by pressing the ENTER button.
5. View the result. If the instrument is available, then the result looks similar to Fig. 78. This is the desired state.
6. If the device is not available, then the result looks similar to Fig. 79. This is an undesirable condition.
   Common causes of this condition are:
   a) The device or the target PC is not connected to the Ethernet network correctly. (Defective cables, defective connectors, connectors not pushed into the sockets).
   b) The IPv4 protocol parameters are incorrectly set in the device (see 6.3.4.4.1).
   c) The device and the target PC are each connected to a different computer network, and these networks are not allowed to make contact with each other.
   d) The connection to the device is blocked by a firewall in Windows or by one of the network elements of the local network (switches, routers).

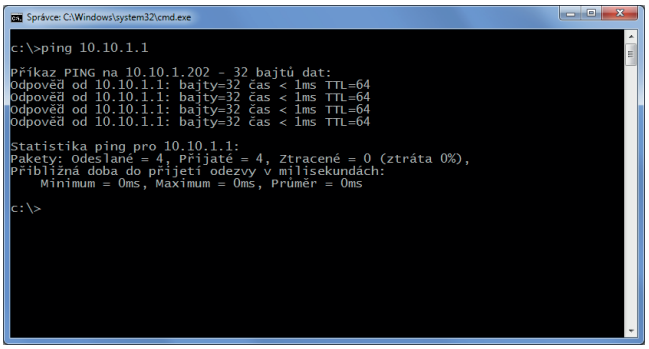


Fig. 78: The device is available. All right.

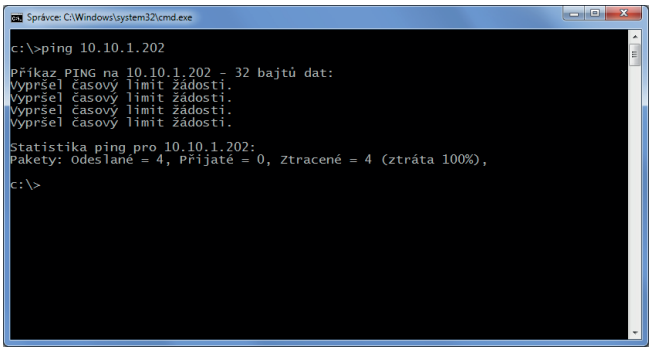


Fig. 79: The device is not available.
There is a problem somewhere.

6.3.8.2 AUXILIARY PROGRAM „CPR MANAGER“

Auxiliary program from Lantronix Inc.

6.3.8.2.1 INSTALLATION

The program can be downloaded at:
https://www.sterilizers-bmt.com/eco-line-support

Alternatively, the program can be obtained directly from the manufacturer's website ("Download Software" section):
https://www.lantronix.com/products/com-port-redirector/

It is recommended to perform the installation on the required PC in the administrator mode (administrator mode).

If the "CPR Manager" program from Lantronix is already installed on the required PC, then there is no need to reinstall this program.

If the "CPR Manager" program from Lantronix is already installed on the required PC and it is still necessary to reinstall or update this program, then the program manufacturer recommends to manually uninstall the previous version of the program using the standard Windows "Add or Remove Programs" panel. (In Windows 10, the "Programs and Features" panel is used for this). Only then is it appropriate to install a new version of the program.

6.3.8.2.2 USE

Lantronix Inc. provides a manual to the basic use of "CPR Manager".

The manual is in english only.

The manual can be downloaded at:
https://www.sterilizers-bmt.com/eco-line-support

Alternatively, the manual is available on the manufacturer's website ("Documentation / Firmware" section):
https://www.lantronix.com/products/com-port-redirector/

The "CPR Manager" program is used to create a virtual COM port, which is associated with the respective device. Through this virtual COM port, user PC applications can then communicate with the device.

The program must be turned on and used only if you need to add or remove a virtual COM port, or if you need to change the properties of virtual COM ports. It is not necessary to switch on this program during normal operation of the devices.

It is recommended to always run this program on the target PC in administrator mode (administrator mode).

Simple instructions on how to create a virtual COM port:

1. The device must be accessible via Ethernet from the target PC (see 6.3.8.1).
2. Open the program „CPR Manager“. See Fig. 80.
   All detectable COM ports of the target PC are displayed in the main overview ("Com Port List"). If the COM port is written "Inaccessible", then it means that such a COM port is already used for other purposes and therefore cannot be used for the needs of the "CPR Manager" program.

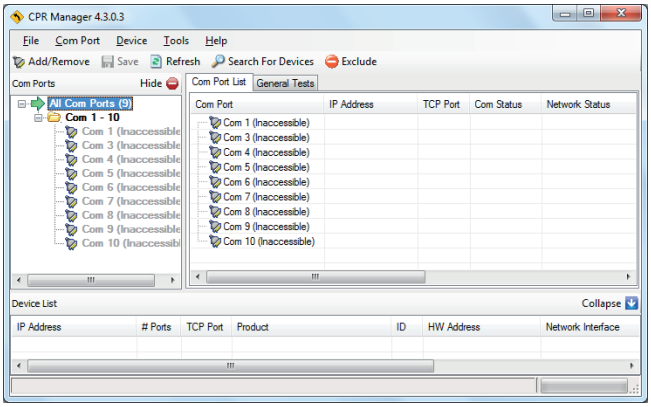


Fig. 80

3. In the "CPR Manager" program, click on the item Search For Devices. See Fig. 80.
   "CPR Manager" will try to search for all devices that are detectable on the Ethernet network.

Fig. 81

4. The list of found devices is displayed at the bottom of the "CPR Manager" program, on the "Device List" tab.
   See Fig. 82
   - The required device can be identified by its IP address. To find out the IP address of the device, see 6.3.4.4.1.
   - If the required device is not in the list of found devices, then it is necessary to check the availability of the device from the target PC. See 6.3.8.1.

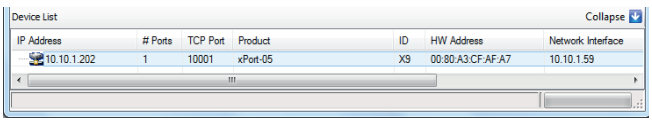


Fig. 82

5. In the "CPR Manager" program, click on the item "Add / Remove". See Fig. 83.

   A dialog box will open. See Fig. 84.

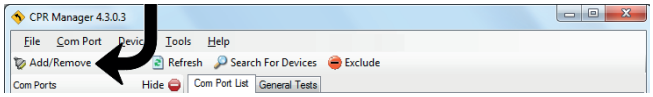


Fig. 83

6. In the dialog box (see Fig. 84) it is possible to check which COM ports on the target computer are to be used by the "CPR Manager" program as virtual COM ports for the devices. After checking the required COM ports, it is necessary to confirm the selection with the OK button.

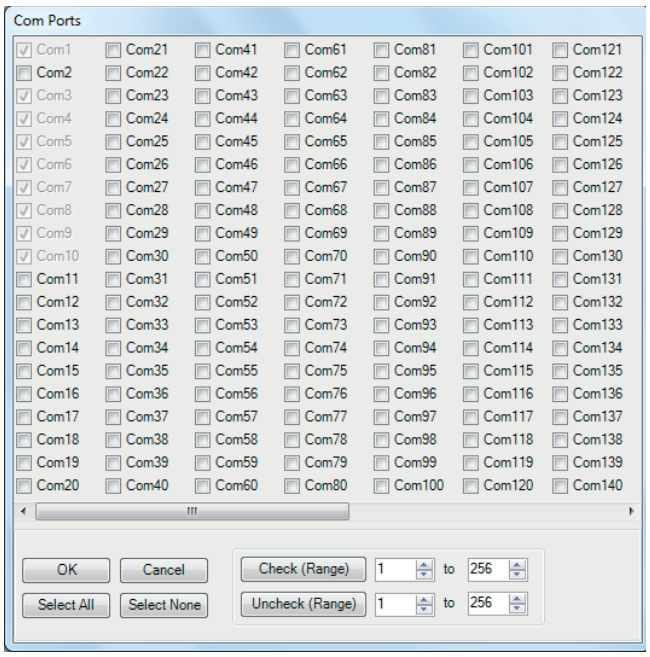


Fig. 84

7. Newly usable COM ports are specially highlighted in the list of detected COM ports in the "CPR Manager" program. By clicking on the appropriate COM port, the settings of the given virtual COM port are displayed. See Fig. 85.

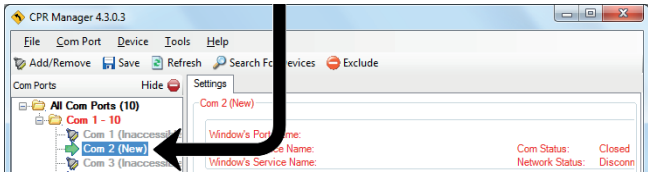


Fig. 85

8. In the settings of the respective virtual COM port, enter the relevant information about the device to be operated through the given virtual COM port in the "Service-Host-TCP Port" table. The required information is available in the "Device List". See Fig. 86.

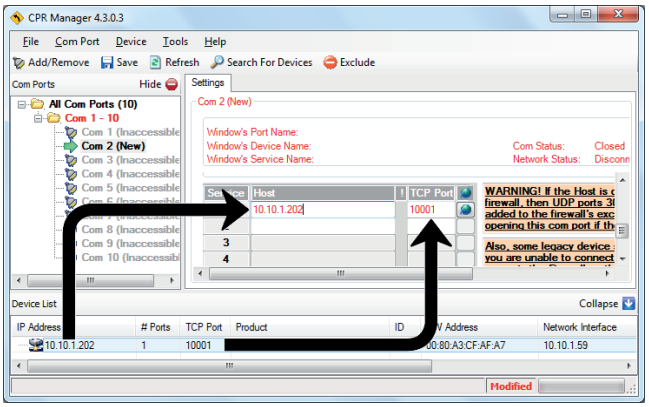


Fig. 86

9. The changes made must be saved using the "Save" button. See Fig. 87.

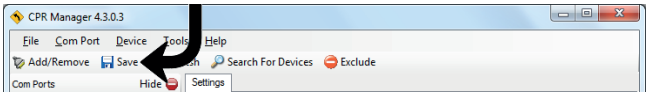


Fig. 87

10. After saving, it can be seen that there is now a new virtual COM port, which is assigned to a specific device (IP address of the device).

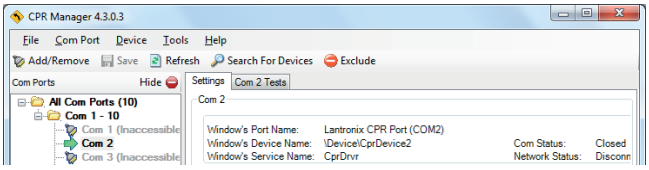


Fig. 88

11. This completes the process of adding a new virtual COM port. It is possible to close the "CPR Manager" program. Saved changes will be retained.

7 ERROR MESSAGES

7.1 GENERAL INFORMATION

If the control logic detects a problem in the device that affects its proper operation, a warning or error is issued depending on the severity. The indication LED on the control panel is used for a quick overview of the device status. See the table below.

Errors and warnings are also shown on the display (Fig. 89). Each displayed error or warning must be acknowledged by pressing the OK button.

Indication LED and statuses of the device:

Indication LED colour	Meaning	Description
GREEN	OK	The device is OK. No errors have been detected.
ORANGE	WARNING	There has been detected a problem which does not significantly affect the main activity of the device. If a program is running, it will continue to run.
RED	ERROR	There has been detected a serious problem which significantly affects safety or the main activity of the device. If a program is running, it will be automatically stopped. LED is lighting until the cause of the error is eliminated and the OK push button pressed (Fig. 89).

Table 7

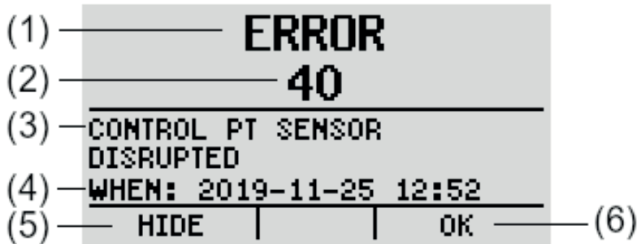


Fig. 89

(1) Seriousness – ERROR or WARNING
(2) Identification number
(3) Brief description
(4) Time of detection
(5) Contextual button for suppressing an error message – pressing this button hides the message. The message can be displayed again with the OK button, see (6) Fig. 21.
(6) Confirming button. After removing the cause of the error, it is necessary to press this button, only then is the error considered to have been eliminated.

Classification of error messages:

Identification number of the error message	Seriousness	Problem type in general
from 1 to 500	ERROR	Error in PLC (in the regulation board of the device).
from 501 to 1000	ERROR	Error in HMI (in the control panel of the device).
507, 508	USER-SELECTABLE	Exceeding the temperature limits of the safety protection thermostat.
from 1001 to 1500	WARNING	Warning from PLC.
1009, 1010, 1011, 1012 1026, 1027, 1028, 1029	USER-SELECTABLE	Exceeding the limits for alarms of individual monitored physical quantities in the device chamber.
from 1501 to 2000	WARNING	Warning from HMI.

Table 8

7.2 ELIMINATION OF ERROR / WARNING

7.2.1 GENERAL PROCEDURE IN CASE OF OCCURRENCE OF EVENTS WITH SEVERITY ERROR

- Switch the device off and on again (disconnect / connect to the mains).
- If the error is reported repeatedly or if the device behaves in an unstable way even after a restart, contact the authorized service centre.

7.2.2 GENERAL PROCEDURE IN CASE OF OCCURRENCE OF EVENTS WITH SEVERITY WARNING

- Read the description of the displayed warning and, if possible, eliminate the causes that caused the warning, confirm with OK.
- If the causes have been eliminated but the warning is still being issued, switch the device off and on again (disconnect / connect to the mains).
- If the warning is being issued even after eliminating possible causes, contact the authorized service centre.

7.2.3 SPECIFIC PROCEDURE WHEN SOLVING THE SELECTED ERROR MESSAGES

Number	Description	
507	**HIGH TEMPERATURE OF SAFETY THERMOSTAT**	
	Part:	HMI
	Seriousness:	User – selectable in the menu SAFETY THERMOSTAT, see 6.3.3.6.
	Cause:	The temperature in the chamber of the device has exceeded the set upper limit of the safety thermostat.
	Solution:	1. Check the safety thermostat setting. If the set temperature of the safety thermostat is too low for the parameters of the operated program, set it higher. 2. If the safety thermostat is set with sufficient margin in relation to the parameters of the operated program and has been activated anyway, contact an authorized service centre.
1011	**LOW TEMPERATURE IN THE CHAMBER**	
	Part:	PLC
	Seriousness:	User-selectable in the ALARMS menu. If the alarm is to stop the program run, seriousness is ERROR. If the alarm is only intended to alert you when the limit is exceeded, seriousness is WARNING.
	Cause:	The temperature in the chamber of the device has fallen below the lower temperature alarm set in the ALARMS menu for that segment.
	Solution:	1. Check that the door of the device is correctly closed. 2. Check the alarm lower limit setting for the temperature in the ALARMS menu, adjust if necessary according to the technical parameters of the device (see 8). 3. If the problem persists, contact authorized service.
1012	**HIGH TEMPERATURE IN THE CHAMBER**	
	Part:	PLC
	Seriousness:	User-selectable in the ALARMS menu. If the alarm is to stop the program run, seriousness is ERROR. If the alarm is only intended to alert you when the limit is exceeded, seriousness is WARNING.
	Cause:	The temperature in the chamber of the device has exceeded the upper alarm for the temperature set in the ALARMS menu in the segment.
	Solution:	1. Check the alarm upper limit setting for the temperature in the ALARMS menu, adjust if necessary according to the technical parameters of the device (see 8). 2. If the problem persists, contact authorized service.

Table 9

8 DEVICE PARAMETERS

STERICELL® (SC)								
Technical parameters								
Inner space	**volume**	**l**	**22**	**55**	**55-2**	**111**	**111-2**	
	width	mm	240	400	400	540	540	
	depth	mm	320	370	370	370	370	
	height	mm	300	350	350	530	530	
External dimensions (including door and handle, feet N or castors K and the distribution box R)	width	max. mm	406	620	620/870 R	760	760/1010 R	
	depth	max. mm	560	680	660	680	660	
	height	max. mm	610 N	680 N	680 N	860 N	860 N	
	ventilation neck diameter outer/inner	mm	52/49	52/49	52/49	52/49	52/49	
Package – basic package	width	approx. mm	500	700	—	830	—	
	depth	approx. mm	720	760	—	750	—	
	height (including palette)	approx. mm	810	880	—	1060	—	
Package – case	width	approx. mm	730	800	940	830	1330	
	depth	approx. mm	780	840	960	910	1010	
	height (including palette)	approx. mm	855	900	1310	1085	1575	
Trays / shelves	maximal number	pcs	4	4	4	7	7	
	standard equipment	pcs	2	2	2	2	2	
	minimal distance between trays	mm	60	70	70	70	70	
	useful surface	mm	185 × 265	380 × 335	380 × 335	520 × 335	520 × 335	
Maximal allowed load of trays*)	per 1 tray	kg	10	20	20	20	20	
	per shelf	kg	10	20	20	20	20	
	in total – inside the device	kg	25	50	50	50	50	
Number of external metal door		pcs	1	1	2	1	2	
Weight	net	approx. kg	31	55	60	75	80	
	brut (basic package)	approx. kg	36	66	71	87	92	
Electric data – network 50/60 Hz	max. power	kW	0.96	1.3	1.9	1.9	2.5	
	Power in stand by [stand by]	W	5	5	5	5	5	
	current for voltage **)	A	4.2	5.6	8.3	8.3	10.6	
		V	230	230	230	230	230	
	current for voltage **)	A	8.4	11.3	16.6	16.6	21.2	
		V	115	115	115	115	115	
Noise level		dB	<55	<55	<55	<55	<55	
Protective system			IP20	IP20	IP20	IP20	IP20	

Temperature data								
	volume	**l**	**22**	**55**	**55-2**	**111**	**111-2**	
Operation temperature	from 10°C above ambient temperature	up to °C	250	250	250	250	250	
Variations from operation temperature with closed flap and door (DIN 12 880 part 2)	space	°C	-1/+5	-1/+5	-1/+5	-1/+5	-1/+5	
	time	± °C	4	4	4	4	4	
Max. deviation of real temperature from pre-set temperature 160 up to 180°C ***)		°C	-1/+5	-1/+5	-1/+5	-1/+5	-1/+5	
Number of air exchanges at the temperature of	250°C	h^{-1}	45	45	45	49	49	
Heat emission	250°C	W	420	590	590	760	760	

Table 10

	222	222-2	404	404-2
	540	540	540	540
	520	520	520	520
	760	760	1415	1415
	760	760 / 1010 R	760	760 / 1010 R
	830	810	790	810
	1090 N	1110 N	1910 K	1910K
	52/49	52/49	52/49	52/49
	820	—	830	—
	890	—	860	—
	1260	—	2085	—
	940	1330	910	1330
	960	1010	970	1010
	1310	1575	2125	2125
	10	10	19	19
	2	2	2	2
	70	70	70	70
	520 × 485	520 × 485	520 × 485	520 × 485
	30	30	30	30
	30	30	30	30
	70	70	100	100
	1	2	1	2
	100	105	150	160
	116	121	175	185
	1.9	3.7	3.7	5.5
	5	5	5	5
	8.3	5.6	5.6	8.3
	230	400 / 3NPE	400 / 3NPE	400 / 3NPE
	16.6	19	19	28
	115	115 / 3PE	115 / 3PE	115 / 3PE
	<55	<55	<58	<58
	IP20	IP20	IP20	IP20

	222	222-2	404	404-2
	250	250	250	250
	-1/+5	-1/+5	-1/+5	-1/+5
	4	4	4	4
	-1/+5	-1/+5	-1/+5	-1/+5
	24	24	18	18
	990	990	1940	1940

Note:
All the technical data apply to ambient temperature of 22°C and ± 10% voltage oscillation (unless stated otherwise).
For other parameters see chapter 8.1 – Electric Connection.

*) Trays may be covered up to approximately 50% of their area and if possible in such a way so as uniform air flowing inside the chamber space is possible.

**) Mains voltage is specified on the type plate of the device.

***) Applies when the flap on the door is closed and for the useful space defined in chapter 5.2, two-door design – see chapter 14.9.

8.1 ELECTRIC CONNECTION

Electrical installation and other conditions	
Voltage system:	**230 V / 50 (60) Hz** **400 V / 50 (60) Hz, 3NPE;** 115 V / 50 (60) Hz 115 V / 50 (60) Hz, 3PE
(standard manufactured versions are marked with bold font)	
Voltage oscillations:	±10 %
Class of protection against dangerous contact:	I
External circuits separation: – double insulation	
Coverage according to EN 60529:	**IP20**
Over-voltage category according to (IEC 664 – EN 61010):	
– II with pollution degree 2	
Fuses used:	According to corresponding schemes in Service Instructions
For three-phase devices, the electric connection for the device must be equipped with a switch or a circuit breaker as a means for disconnection which must be: – a part of the building installation, – placed in immediate vicinity of the device and easily reachable by users, – marked as an appropriate means of the device, – correctly dimensioned and corresponding to requirements of standards IEC 60947-1 and IEC 60947-3.	
Ambient conditions:	
– ambient temperature: – max. relative humidity: – max. altitude:	+5°C up to +40°C 80% at the temperature up to 31°C 3000 m

Table 11

9 DEVICE CLEANING AND DECONTAMINATION

Cleaning must always be performed after the device cool down and after disconnection from the mains. Clean the inner walls of the chamber and the device surface with water and detergent, respectively suitable chemical means. Abrasive cleaning means may cause scratching of sheets.

If you want to clean the outer shell of the chamber as well, remove the inner walls of the chamber as follows:

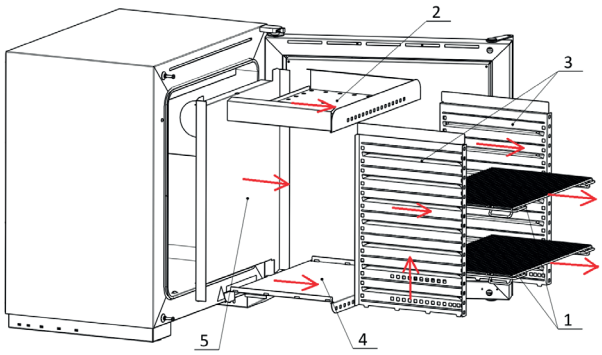


Fig. 90

Put the trays (1) and the upper wall (2) of the chamber out of the device, remove the side walls (3), the bottom (4) and the rear wall (5). Clean it and assemble the device in reverse order, taking care for the bottom and the side walls to be put behind the four projections in the front part of the chamber.

In case of contaminated material leakage to the chamber, the user is responsible for appropriate decontamination of all the contaminated surfaces with a suitable and approved disinfection means.

Cabinets with the volume 22:
Screw out the screws in the rear part of ceiling and bottom of the chamber. Run it out towards the wall door, release and pull it out of the device (after loosening the bottom screw, open the rear panel). When assembling the ceiling insert the rear part on the sensor holder, put the front bent of the ceiling on the ceiling holder and fix it with a screw. When installing the ceiling, slide the rear part onto the sensor holder, slide the front bend of the ceiling onto the ceiling holder and secure with the screw.

Before using any other method of cleaning or decontamination than the methods recommended by us it is required for the user to check with the manufacturer that the considered method cannot damage the device.

10 DEVICE MAINTENANCE

10.1 MAINTENANCE UNDER STANDARD OPERATION

When using the device, check its normal operation continuously. If any defect or malfunction is suspected in violation of the Instructions for Use, contact an authorized BMT Service.

During normal operation, the following operations are performed:
- check of the door seal and its replacement if necessary, see chapter 6.3.7
- check of the door adjustment see chapter 6.3.7
- check of the fan operation see chapter 6.3.4.2
- check of the function of the protective thermostat, see chapter 6.3.3.5
- check of the function of the door and flap micro-switches, see chapters 6.3.2.3 and 6.3.2.4
- check of functionality, parameters
- temperature monitoring by multiple sensors in the useful area of the internal compartment of the instrument [the temperature must be everywhere ≥ (T_{SET}-1)]
- sterilization test in the useful area of the chamber's useful area by chemical indicators of the sterilization exposure
- approx. once a year replacement of the HEPA filter if used on the device.

10.2 MAINTENANCE PERFORMED BY THE AUTHORIZED BMT SERVICE

Acts arranged by a service employee that should be performed in one-year intervals:
- PT 100 calibration – see Service Instructions
- check of temperature offsets, possibly their correction – see Service Instructions
- possibly also the acts necessary for fulfilment of locally valid regulations.

10.3 ELECTRICAL SAFETY CONTROL

The heating technology cabinets are designed for basic / normal environment, the manufacturer recommends the revision period of 1 year, unless stated otherwise by local regulations.

Inspections:
- Inspection of electrical installations, especially supply, connection terminals and protective terminals (integrity of conductor insulation, eg due to abrasion, burns, etc., and fixed connection of conductors in the terminals).

– protective connection resistance measurement <0.1 Ohm (supply resistance is not included)
– measurement of contact (leakage) current.

If the cabinet is located in another environment, the inspection must be carried out in accordance with local regulations.

11 GUARANTEE AND SERVICE

The warranty period is agreed in the purchase contract. The guarantee applies to production faults or used material faults under condition that:

- the product was installed and used in compliance with Instructions for Use.
- The fault was not caused by insufficient maintenance, unprofessional intervention to the device or damage by external influences.

The guarantee does not apply to natural wear and tear of material and to expandable supplies, like e.g. door sealing, material for recording devices, accumulators, etc.

In the event of a defect, it is necessary to claim the warranty from the seller. State the name and type of the device, its serial number and the fault features (error message, print-out record). Based on fulfilment of guarantee conditions you will be provided – at the option of the service centre – with free repair or replacement of the faulty part. BMT guarantees that for the period of 10 years as from the date of launching of the device to the market, it will have available all and any technical documentation and spare parts so as to be able to arrange safe and operable conditions of the device for the above stated period.

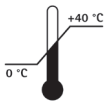
After termination of the above stated time period, BMT will be able to arrange safe and operable conditions of the device only on the basis of other contractual arrangements. The company BMT is responsible – in compliance with EU Regulation No. 85/374/EEC – for possible damages caused by a fault of the product in the course of 10 years as from the date of the product launching in the market.

12 TRANSPORT AND STORAGE

The authorised person will prepare the device for transport. The device must be transported and stored in its original package. If you send the device back to the manufacturer (e.g. for repair or replacement within the scope of a claim), use the original package. Otherwise you become responsible for possible damage during transport and the manufacturer will exact from you some compensation for necessary related repairs. If the device has already been used, it must be dried before shipping or storage, including all the components.

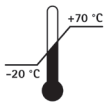
12.1 LONG-TERM STORAGE

The device may be stored in temperatures from 0°C up to 40°C..



12.2 TRANSPORT

The device can be transported in the temperature range from -20 to +70°C. The transport time should be reduced to the necessary time. (Long-term exposure to limit temperatures may shorten the life of some components).



13 METHOD OF LIQUIDATION OF THE PACKAGE AND SCRAPPED DEVICE

Palette: liquidation in the incineration plant
Cartoon: recyclable waste

Scrapped device:

For EU countries:

Any product that the user stops to use and it becomes unnecessary for him and which is equipped with the label:

cannot be put into communal waste and it is subject to the WEEE regulation (Waste Electric and Electronic Equipment).

For correct liquidation of electric and electronic devices ask for detailed information at your device seller or contractor.

For non-EU countries:
The above stated symbol applies in the EU countries only. For correct liquidation of electric and electronic devices ask for detailed information in responsible administrative offices or at your device seller.

14 ADDITIONAL EQUIPMENT

Warning: Cables supplied together with the device for connection of electric equipment in the chamber or related to the equipment must be replaced in case of a failure with new cables manufactured by BMT Medical Technology s.r.o. as spare parts.

14.1 PORTS WITH DIAMETER 25, 50 AND 100 MM

Standard placement of ports is approximately in the centre of the side (right or left) wall of the chamber. The ports are made of metal, closed with a special plastic plug from the outside – it allows passing of conductors, etc. from the outside to the inner space of the chamber.

Recommendation: the device used should be equipped with a port of appropriate dimensions if the user wants to measure temperature inside the chamber using the sensors connected by conductors with external independent measuring gauges; the user pulls the conductors through the port.

Cabinets with the volume 22 are equipped with the 25 and 50 port only.

14.2 LOCKABLE DOOR

The lock is placed on the upper front surface of the door, close to the closing mechanism.

14.3 LEFT-HINGED DOOR

Mirror – symmetric version of the door. The door opens to the other side.

14.4 FLEXIBLE SENSOR PT100

Flexible movable sensor is used for measuring the material temperature directly in the chamber. It is possible to connect one flexible sensor. The display shows the data on temperature of the sensor.

14.5 SUPPORTING SW FOR PC

14.5.1 RECORDING SW FOR PRINTING – PRINTER ARCHIV – FOR PC WINDOWS

The program Printer Archive is designed for recording the printing output of the device. It serves as a direct substitute of a printer. The recording is performed into the file on the PC disc and it offers wide possibilities for handling the recorded protocol including archiving or printing on a table PC printer. Data collection is arranged by the PrinterArchiv Service running on the background.

Hardware requirements are met by a standard PC with operation software Windows XP and higher. Each connected device requires one free port RS 232 (COM). Maximal length of the connection cable is 15 m. For detailed requirements towards HW contact your dealer.

14.6 HEPA FILTER

14.6.1 HEPA FILTER PLACEMENT, FILTER DIMENSIONS AND FILTRATION CHARACTERISTICS OF THE AIR FILTER

STERICELL® 111

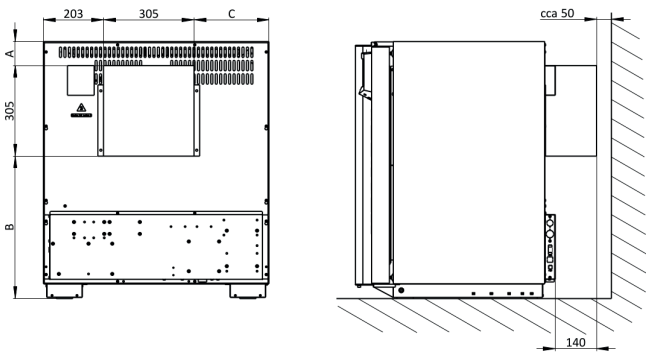


Fig. 91

Dimension in mm	Type			
	55	111	222	404
A	82	82	80	130
B	299	479	710	1476
C	112,6	252,5	252,5	252,6
Height A + B + 305	686	866	1095	1911

Note: Minimal distance of the filter from the wall is 50 mm

Table 12

STERICELL® 22

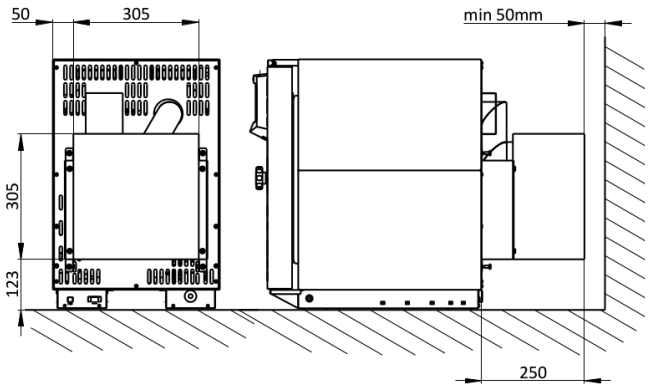


Fig. 92

The air filter is a part of optional equipment; it is installed when the device is cooled down by forced air circulation. The filter class according to DIN 24 184 is S, according to EUROVENT it is EU 12, according to EN 1822 it is H13. Insert nuts for HEPA filter fixation to the four rectangular openings in the rear cover of the device. Put two rubber rings on the edge of the suction chimney. Put the HEPA filter tube on the chimney. While moving on, take care for the rings not to be moved away by the HEPA filter tube, but they must be pushed to the space among the tubes. Fasten the slipped HEPA filter with four screws.

HEPA filter assemblage to the 22-size device:

– put supplied nuts to the holes in rear wall (1/13)
– put 2 pieces of O-rings to the end of the suction chimney
– put the air conduit on the suction chimney (2)
– put 2 pieces of O-rings to the air conduit
– put the whole HEPA filter on the air conduit and place it in the right position
– use the screw (1/12) and the washer (1/15) to fix it to the rear

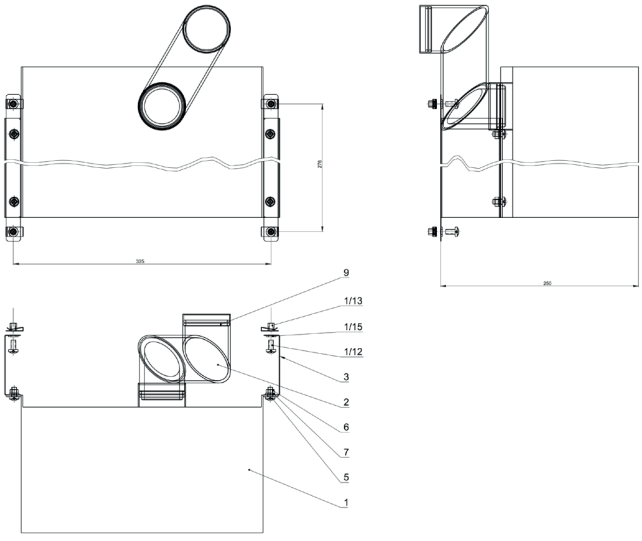


Fig. 93

14.7 POTENTIAL-FREE CONTACT FOR ALARM MESSAGES

The potential-free contact leads to the connector in the rear leg. It can be connected to voltage up to 24 V/1 A. It serves for realization of remote alarm (also referred to as BMS relay – Building Management System relay) – i.e. long-distance lead interrupted by a potential-free contact relay, transferring information on a failure to other premises than those where the cabinet is placed. Under standard conditions, the relay is connected (1-2). When an error occurs, the relay disconnects (2-3). The relay is disconnected in all the error statuses reported on the display.

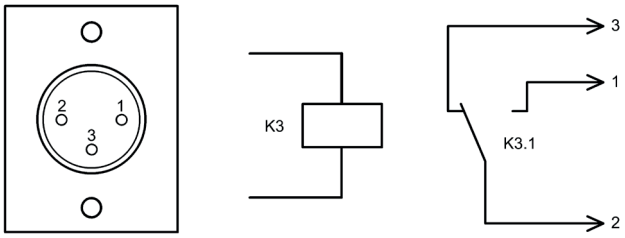


Fig. 94

14.8 DEVICES WITH DOOR BLOCKING

This version uses the electrically controlled mechanism, preventing from undesirable door opening. The mechanism remains in its position even in case of the device switch off. Description of behaviour of a device with door blocking – see 6.3.4.3.

WARNING: It is not allowed to open blocked door by force. It could cause mechanical damage of the blocking system. If it is necessary to open the door on emergency basis (e.g. in case of a blackout), proceed in compliance with the appendix 15 – EMERGENCY DOOR OPENING.

14.9 DOUBLE-DOOR PASS-THROUGH VERSION

It is available for sizes 55 up to 404. It allows material loading in one space and its take off after heat processing in another space (e.g. insertion in non-sterile – „dirty“ – space and take off after sterilization in the sterile – „clean“ – space).

In case of the passthrough device of the size 222 and 404 it is possible to supply a version with transport and loading cart.

ATTENTION! When using the pass-through variant of the device (except for cleaning and maintenance), only one door must be open at a time. Do not open the door on the clean side unless the material is sterilized. Otherwise there is a risk of contamination of clean rooms!

14.9.1 STERICELL® 55-2 – INSTALLATION DATA

1) Power: 1900 W
2) electric installation – device connection:
– plug CEE-7/VII, IEC-83/CH,16 A/250 V
– power from the electro cabinet min. 3 x 1,5 mm^2 Cu; protection by a circuit breaker 16 A – if it is not possible to use the main switch on the electro cabinet, place the main switch in the device vicinity. The device may be placed on the floor or on an individual pedestal of the client.

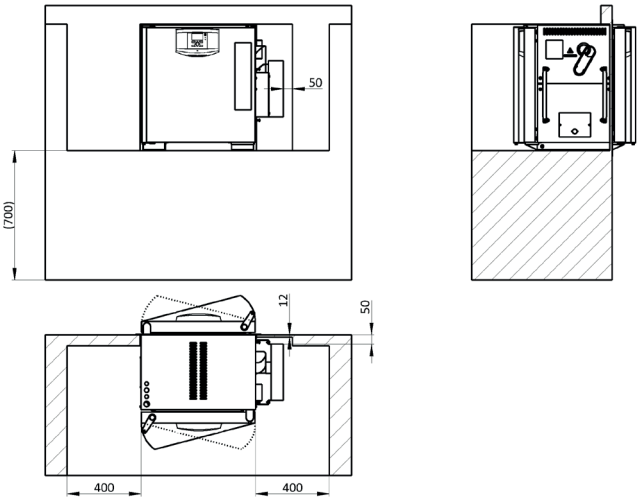


Fig. 95

14.9.2 STERICELL® 111-2 – INSTALLATION DATA

1) Power: 2500 W
2) electric installation – device connection:
– plug CEE-7/VII, IEC-83/CH,16 A/250 V
– power from the electro cabinet min. 3 x 1,5 mm² Cu; protection by a circuit breaker 16 A – if it is not possible to use the main switch on the electro cabinet, place the main switch in the device vicinity. The device may be placed on the floor or on an individual pedestal of the client

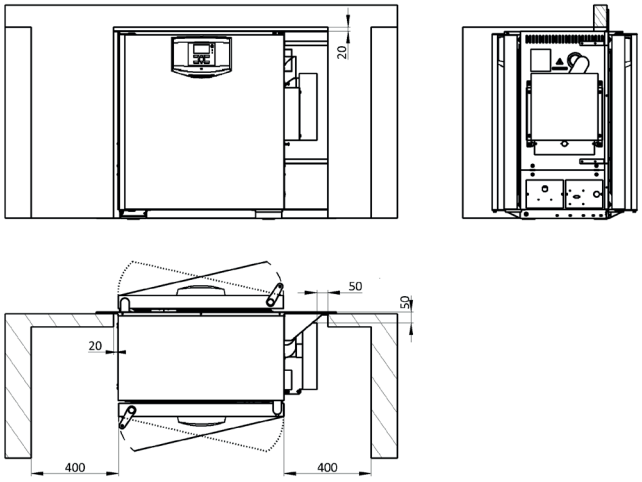


Fig. 96

14.9.3 STERICELL® 222-2 – INSTALLATION DATA

1) Power: 3700 W
2) electric installation – device connection:
– plug VDE 0623, DIN 4962/63, CEE 17, IEC 309, 3P + N + PE, 16 A/380-415 VAC
– power from the electro cabinet 5 x 2,5 mm² Cu; protection by a circuit breaker 16 A – if it is not possible to use the main switch on the electro cabinet, place the main switch in the device vicinity.

The basic dimensions are the same as in case of the following SC 404-2 – different dimensions are shown in brackets in the illustration. The device may be placed on the floor or on an individual pedestal of the client.

14.9.4 STERICELL® 404-2 – INSTALLATION DATA

1) Power: 5500 W
2) electric installation – device connection:
– fork VDE 0623, DIN 4962/63, CEE 17, IEC 309, 3P + N + PE, 16 A/380-415 VAC
– power from the electro cabinet 5 x 2,5 mm² Cu; protection by a circuit breaker 16 A – if it is not possible to use the main switch on the electro cabinet, place the main switch in the device vicinity.

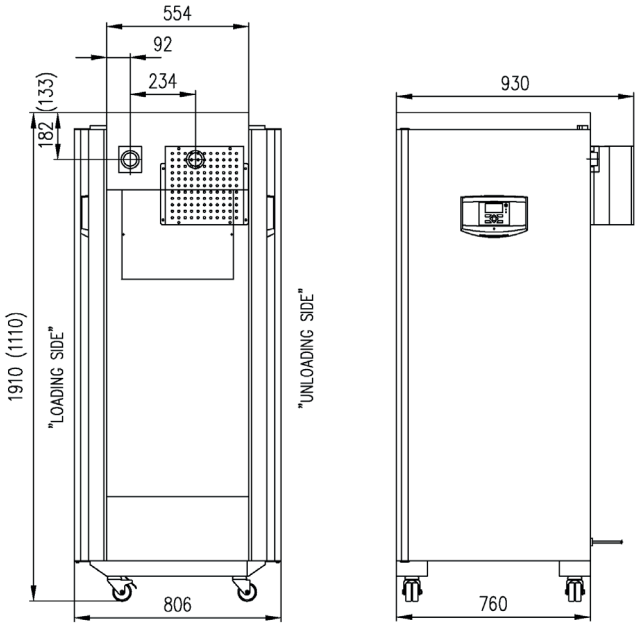
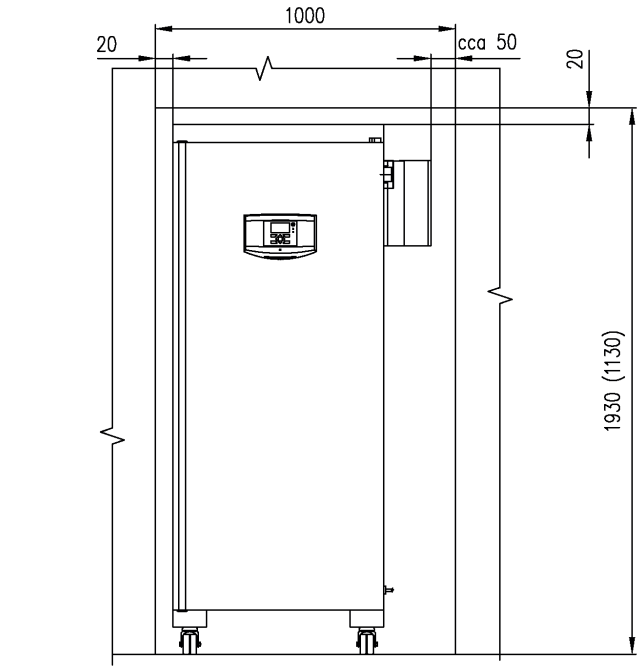


Fig. 97



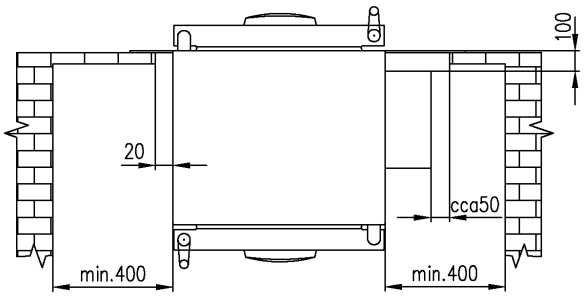


Fig. 98

COVER SHEET (CLOSING PANEL):

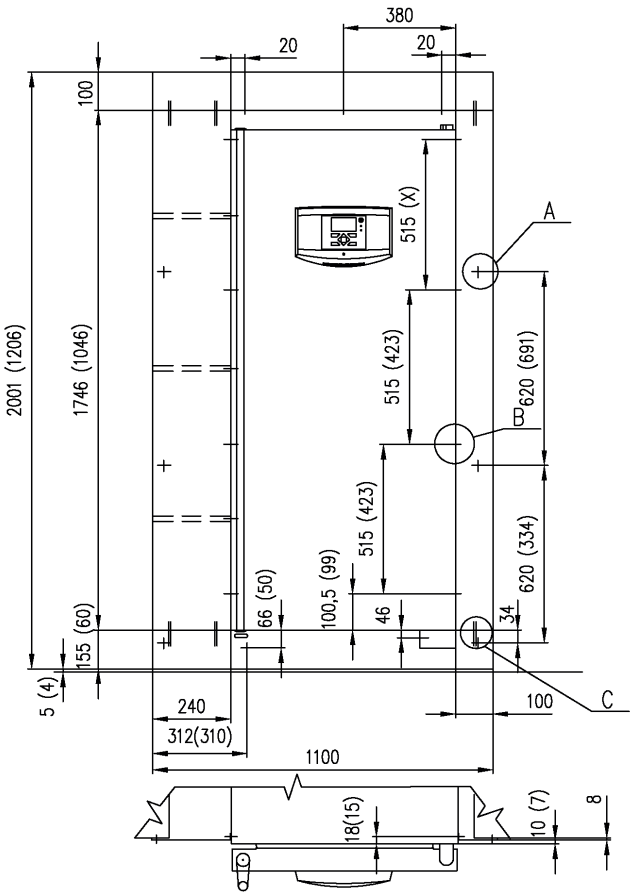


Fig. 99

14.10 CONNECTION TO LAN

See 6.3.4.4.1 and follow-up monitoring with PrinterArchiv for the device design that enables its integration into the local computer network.

14.11 USB HOST

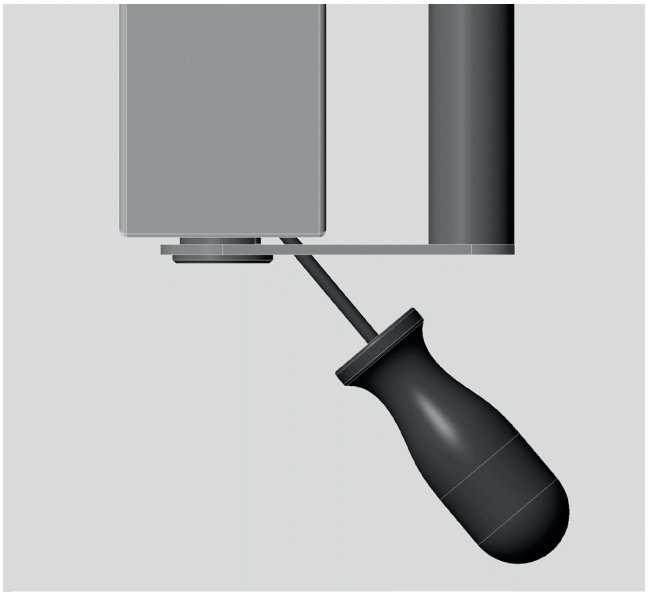
The USB HOST interface is used to connect a USB flash drive that can be used for exporting protocols. Supported file systems are FAT16 and FAT32.

14.12 AUTOMATIC FLAP

Allows you to programmatically close and open the flap of the ventilation openings of the device.

15 EMERGENCY DOOR OPENING

1. Insert a thin object (screwdriver, stick, etc.) through the ventilation opening of the door (in the lower surface of the door) under the angle of approximately 45° in the distance of approximately 90 mm from the door edge inside.



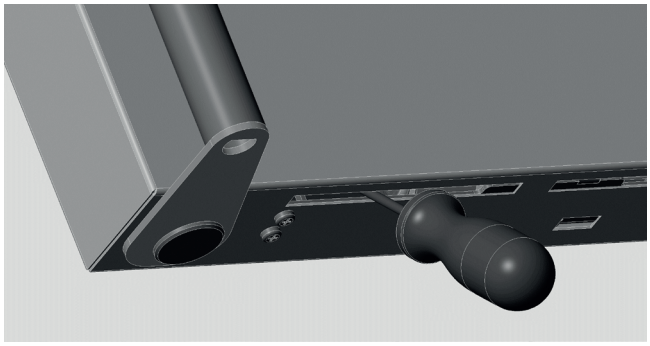
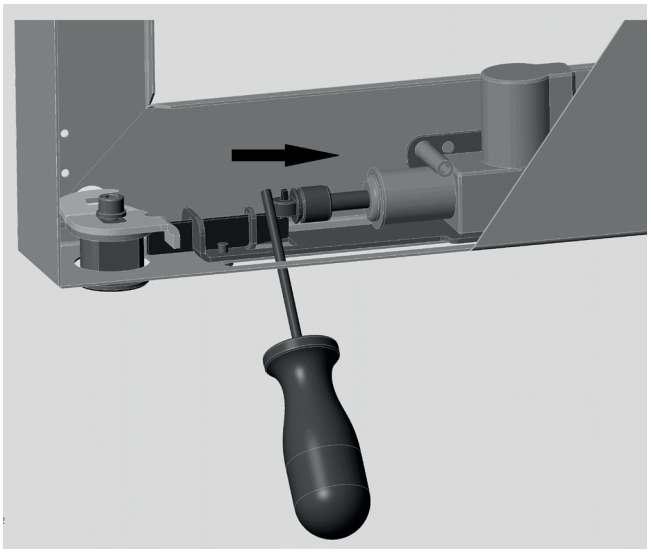


Fig. 100

2. Press in the direction of the arrow and move the blocking stick in this way (10-15 mm is enough). In case of standard version – the right door in the arrow direction, in case of non-standard version – the left door it is just in the opposite (always in the direction from the handle to the door hinges).



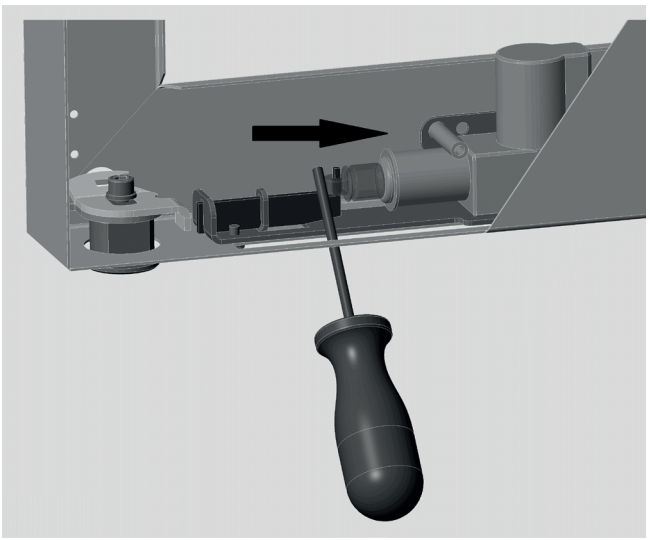


Fig. 101

3. Use the door handle to open the door. If it is not possible to move away the blocking stick (see above), then it is necessary to screw off the whole blocking mechanism from the bottom (4x M4 screw) and to push it away as a whole. A service intervention is needed after such a procedure (re-assemblage of the blocking set).

... excellence

in medical, laboratory and pharmaceutical engineering

Manufacturer:

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