

Technical data

Parameter description	Parameter value			
Product name	Laboratory incubator			
Model	SBS-LI-210	SBS-LI-125	SBS-LI-65	SBS-LI-43
Supply voltage [VAC] / Frequency [Hz]	230/50			
Power rating [W]	750	640	500	400
Protection class	I			
Dimensions (Width x Depth x Height) (mm)	775x710x870	675x580x820	575x480x720	525x480x620
Incubation chamber dimensions [cm]	60x58x60	50x45x55	40x35x45	35x35x35
Weight [kg]	58	32		27
Capacity [L]	210	125	65	45
Temperature control range vs. ambient temperature ¹ [°C]	5 to 70			
Temperature variation [°C]	1			
Maximum shelf load, ea. [kg]	15			
Maximum no. of shelves [pcs.]	14	13	9	7
The number of shelves in the set [pcs.]	2			
Shelf-to-shelf spacing [mm]	35			

¹ This product does not feature cooling. This means the lowest internal temperature achievable for the product is the ambient temperature around the product.







1. General overview

This manual is intended to assist you in safe and reliable use. The product is designed and manufactured strictly according to technical specifications using the latest technology and components, and maintaining the highest quality standards.

READ THE MANUAL CAREFULLY AND UNDERSTAND IT BEFORE USE.

To ensure long and reliable operation of the product, operate and maintain it correctly and strictly in compliance with this manual. The technical data and specifications in this manual are up-to-date. The manufacturer reserves the right to modifications for the purpose of quality improvement.

Explanation of symbols

	The product meets the requirements of relevant safety standards.
	Read the manual before use.
	Recyclable product.
	CAUTION! or WARNING! or REMEMBER! indicates a specific instruction (general warning sign).
	CAUTION! Risk of electric shock!
	CAUTION! The product surface can reach high temperatures. Do not touch with bare hands while the product is in operation – risk of burns!



CAUTION! The figures in this manual are illustrative only and may vary in some details from the actual appearance of the product.

The original version of the manual is in German language. Other language versions are translations from German.

2. Operating safety



CAUTION! Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury or death.

The term “appliance” or “product” in the warnings and instructions refers to the LABORATORY INCUBATOR.

2.1. Electrical safety

- a) The appliance power cord plug must fit into the mains outlet. Do not modify the plug in any way. Original power cord plugs and matching mains outlets reduce the risk of electric shock.
- b) Avoid touching earthed objects, like piping, radiators, heaters, and refrigerators. There is an increased risk of electric shock if your body is earthed and touching the appliance exposed to direct rain, a wet floor or while operating in a humid environment. If water penetrates into the appliance, there is an increased risk of damage to the appliance and electric shock.
- c) Do not touch the appliance with wet or moist hands.
- d) Do not use the power cord in any unintended way. Never use it to carry the appliance or to unplug it from the mains outlet. Keep the power cord away from sources of heat, oil, sharp edges or moving parts. Damaged or tangled cords increase the risk of electric shock.
- e) If you cannot avoid using the appliance in a wet environment, use a residual current device (RCD) to connect the appliance to electrical mains. Using an RCD reduces the risk of electric shock.
- f) Do not use the appliance if the power cord is damaged or shows evidence of wear. Have a damaged power cord replaced by a qualified electrician or the manufacturer’s technical service.
- g) To avoid electric shock, do not immerse the power cable, its plug or the appliance itself in water or other liquid. Do not use the appliance on wet surfaces.

2.2. Workplace safety

- a) Keep the workplace tidy and well lit.

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- b) If in doubt as to whether the appliance is working, contact the manufacturer's technical service.
 - c) Repairs to the appliance may only be carried out by the manufacturer's service.
Do not attempt to repair the product on your own!
 - d) In the event of ignition or a fire, use dry powder or CO₂ extinguishers only to suppress the fire of the appliance if live with electrical voltage.
 - e) No children or unauthorised individuals shall be allowed at the workplace.
 - f) Use the appliance in a well-ventilated room.
 - g) In the event of a hazard to health or life, an emergency, or a failure, stop the appliance by operating the power switch!
 - h) Check the condition of the safety warning stickers regularly. Replace them if they are illegible.
 - i) Keep this manual for future reference. If the product is to be handed over to a third party, hand it over with this user manual.
 - j) Keep packaging components and small installation parts out of the reach of children.
 - k) Keep the appliance away from children and animals.
 - l) When operating this appliance together with other appliances, follow each of their user manuals.

2.3. Personal safety

- a) Do not operate the product if you are tired, ill or under the influence of alcohol, drugs or medication which might significantly impair your ability to operate the product.
- b) The product is not intended to be used by individuals (including children) with reduced mental, sensory or intellectual capacity or lack of experience and/or knowledge, unless they are supervised by an individual responsible for their safety or have been given instructions by the responsible individual on how to operate the product.
- c) The appliance may only be operated by individuals who are physically fit, capable of handling the appliance and who have been adequately trained, have read this manual and have received training in health and safety.
- d) Be careful and use common sense when operating the product. Even a brief moment of distraction during operation may lead to serious injury.
- e) To prevent accidental operation, make sure the power switch is OFF before connecting the appliance to mains power.
- f) The appliance is not a toy. Children must be supervised to ensure that they do not play with it.

2.4. Safe use of the product

- a) Do not use the appliance if the power switch does not function properly (does not switch on or off).
- b) Unplug the appliance from the mains before adjustment, cleaning or maintenance. This safety precaution reduces the risk of accidental operation.
- c) Keep unused appliances out of the reach of children and anyone unfamiliar with the appliance or this manual. Appliances are dangerous in the hands of inexperienced users.
- d) Keep the product in good working order.
- e) Keep the product out of the reach of children.
- f) The product shall be repaired and maintained by qualified personnel using original spare parts only. This will ensure safe operation of the product.
- g) To ensure the designed operational integrity of the product, do not remove the factory-installed covers or loosen any bolts.
- h) Clean the appliance regularly to prevent permanent deposits of dirt.
- i) The appliance is not a toy. Cleaning and maintenance shall not be performed by children without adult supervision.
- j) Never attempt to tamper with the appliance to change its parameters or structure.
- k) Keep the appliance away from sources of fire and heat.
- l) Do not cover the vents of the appliance!
- m) Do not use flammable or explosive organic solvents while operating the appliance.
- n) Do not place any volatile substances inside of the appliance in operation.
- o) Do not apply mechanical pressure to the appliance or expose it to shock or fall.
- p) Do not keep any objects on top of the appliance.
- q) Do not move the appliance with any samples inside of it. If the appliance must be moved, first disconnect it from its power supply and use both hands to relocate the incubator while holding it level.
- r) If any function fails, immediately stop the incubation process. Incorrect operating conditions may result in harmful action of the sample contents.



CAUTION!

Although the appliance has been designed to be safe and has been provided with adequate safeguards, and despite the use of additional safety measures, there is still a low, residual risk of accident or injury during its operation. Caution and common sense are advised when using the product.

3. Rules of use

This product is intended for incubation and reproduction of living organisms in stable temperatures.

The user is responsible for any damage caused by non-intended use.

3.1. Appliance overview





1. Incubation chamber
2. Door handle
3. Display control panel
4. Second display panel
5. Air exhaust flap
6. Run mode indicator (on when the appliance is in operating mode; off when the appliance is in the setting mode)
7. Time countdown indicator (on, when the time has been set and is counted down)
8. Time display
9. The measured temperature display
10. The desired temperature display
11. Backlighting indicator
12. Fan run indicator (on when the fan is running)
13. "Light" button: turns the backlight on and off (press to switch over)
14. "Fan" button: turns the fan on and off (press to switch over)
15. "UV" button: starts the UV-light sterilisation process (press and hold for 6 s to enable the process)
16. Setting button
17. Left arrow

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18. Down arrow
 19. Up arrow
 20. Power switch (switched ON – turns on the appliance; switched OFF – turns off the appliance)
 21. Temperature limit display
 22. Up arrow
 23. Down arrow

3.2. Preparations for operation

POSITIONING THE APPLIANCE

The maximum ambient temperature and relative humidity limits not to be exceeded are +40°C and 85% RH, respectively. Position the appliance where good air circulation is ensured. Maintain a minimum clearance of 20-30 cm from all sides of the appliance. Keep the appliance away from any hot surfaces. Always operate the appliance on a level, firm, clean, fireproof, and dry surface and out of the reach of children and individuals with reduced mental, sensory and intellectual capacities. Position the appliance where the mains plug can be reached at any time. Make sure that the mains power ratings match the data on the rating plate!

Clean, dry, and leave the incubation chamber to vent before the first use.

3.3. Operating the appliance

3.3.1. PARAMETER SETTINGS:

1. Connect the device to the power supply.
2. Turn the power switch [20] to “I” (ON) – the appliance turns on. The middle [9] and bottom [10] displays read the appliance details and the readings will be cleared after several seconds.
3. Set the operating temperature of the appliance:
 - (a) Press the Setting button [16].
 - (b) The panel displays “SP”. The bottom display [10] reads the temperature setting value to be modified with the buttons [18] and [19].
 - (c) Once the settings have been entered, press the Setting button [16] to save the changes and leave the setting menu.
4. Set the operating time of the appliance:

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- (a) Press the Setting button [16].
 - (b) The panel displays “SP”. The bottom [10] displays read the temperature set value.
 - (c) Press the button [17].
 - (d) Operate the buttons [18] and [19] to set the time value read by the time display [8] at the top. The panel displays “ST”.
 - (e) Press the Setting button [16] to save the changes and leave the setting menu.
 - (f) If no time is set, the appliance will operate non-stop.
5. The appliance will start operating according to the settings entered. The time unit “H” or “M” begins flashing on the display [8].
 6. Wait for the temperature to stabilise and load the samples into the chamber. Keep the samples spaced enough to ensure proper air circulation.
 7. The time display [8] will be counting down from the time set.
 8. Once the set time counts down to zero, the time display [8] reads “End” and the appliance beeps.
 9. To repeat the operation of the appliance with the temperature and time settings entered previously, press and hold the button [18] for 3 seconds.
 10. After incubation is complete, remove the samples, turn the switch to the "O" position, disconnect the device from the power source and open the door.

3.3.2. AUTO PID CONTROL:

* The PID routine of the appliance is designed to eliminate control errors by reading a group of parameters settings (proportional, integral, and differential); when the auto PID control is done, the appliance will store the parameter setting values and revert to normal operating mode.

1. Press and hold the button [17] for a few seconds.
2. The panel displays “AT”, and the bottom display [10] reads “0”.
3. Press the button [19]. “1” appears on the display.
4. Press the Setting button [16]. “AT” starts flashing on the display.
5. During the auto PID control process, no setting can be modified. If the overtemperature alarm is indicated, the thermal relay of the appliance will automatically trip to cut off the supply voltage. To stop the auto PID control process, press and hold the button [17] for 6 seconds.

3.3.3. INTERNAL PARAMETER SETTING:

Press and hold the Setting button [16] for 3 seconds. The display reads “Lc”, prompting the user to input the access password. There are 4 passwords and each

accesses one of the 4 setting menus. Confirm by pressing the button [16]. If the password entered is invalid, the appliance will revert to normal operation.

PASSWORD = 3

Displayed message	Parameter designation	Function	(setting range) Factory setting
ALH	Temperature deviation: upper temperature limit alarm	The alarm is triggered if the actual temperature value measured exceeds the total of the temperature setting and temperature variation.	(0 – 100°C) 5°C
ALL	Temperature deviation: lower temperature limit alarm	The alarm is triggered if the actual temperature value measured is below the difference of the temperature setting and temperature variation.	(0 – 100°C) 0°C
P	PID control proportional parameter	Parameter auto control	(0.1 – 300°C) 10°C
I	PID control integral parameter		(1 – 2000)
d	PID control differential parameter		(0 – 1000)
T	Control cycle	The time interval between the heating system control cycles	(1 – 30) seconds
Pb	Temperature deviation control	Usually used to offset low temperature deviations Pb = actual temperature – measured temperature	(-50 – 50°C) 0°C
PL	Temperature fall offset	Usually used to offset high temperature deviations PL = 1000 x (actual temperature – measured temperature) / measured temperature	(-999 – 999) 0
Addr	Address number		(1 – 32) 1

Loc	Parameter setting lockout	0 – parameter setting lockout disabled 1 – parameter setting lockout enabled	(0 – 1) 0
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PASSWORD = 9

Displayed message	Parameter designation	Function	(setting range) Factory setting
ndA	Alarm mode	0 – alarms applicable to high temperature only 1 – alarms applicable to high and low temperature	(0 – 1) 0
ndC	Temperature control mode	0 – auto PID control 1 – bit value control	(0 – 1) 0
dE1	Bit value control of high temperature deviation	If the actual temperature value measured exceeds the total of the temperature setting and value dE1, the appliance stops the heater.	(0 – 100°C) 0°C
dE2	Bit value control of low temperature deviation	If the actual temperature value measured is below the total of the temperature setting and value dE2, the heater is on.	
ndT	Time mode	0 – time setting disabled 1 – hold the temperature 2 – time countdown	(0 – 2) 1
Hn	Time units	0 – minutes 1 – hours	(0 – 1) 0
SPd	Steady temperature deviation	If the actual temperature measured is higher than value SPd or equal to the temperature setting, the appliance starts holding the temperature.	(0.1 – 100°C) 0.5°C
SPT	Temperature holding time	SPT = 9999 – continuous	(0 – 9999 s) 0
EST	Alarm duration		(0 – 9999 s) 60

EH	Temperature holding past counted down time	0 – the appliance stops the heater once the time counts down 1 – the heater stays on once the time counts down	(0 – 1) 0
oPn	Adjusting temperature with the door open	When the door is open, the device needs more power to maintain/reach the desired temperature	(0 – disabled, 1 – abled) 1
nP	Heater output duty		(0 – 100 %) 100%
Co	Heater off	If the actual temperature value exceeds the total of the temperature setting and value Co, the appliance stops the heater (this parameter applies to the auto PID control).	(0 – 100°C) 50°C
SPH	Maximum attainable temperature		(0 – 100°C) 100°C

PASSWORD = 27

Displayed message	Parameter designation	Function	(setting range) Factory setting
Fc	Temperature units	0 – degrees Celsius 1 – degrees Fahrenheit	(0 – 1) 0

PASSWORD = 567

Displayed message	Parameter designation	Function	(setting range) Factory setting
rST	Default to factory settings	0 – disabled 1 – defaults to factory setting	(0 – 1) 0

3.3.4. BOTTOM PANEL [4] FUNCTIONS:

1. The display on the panel [4] reads the temperature limit which triggers the alarm.
2. Operate the buttons [22] and [23] to set the temperature.
3. After several seconds of no interaction by the user, the appliance will save the settings and revert to normal operation.
4. Press and hold the button [22] and [23] together for 3 seconds to read the actual temperature measured. To revert to normal operation, briefly press the button [22] or [23].
5. If the panel [4] display reads “ – A – ” with the temperature limit value, the actual temperature has reached the limit and the alarm is triggered. The appliance beeps and stops the heater.
6. Press and hold the button [22] and [23] together for 6 seconds to enter the internal settings menu for the temperature limit. Enter the password “3”. Press the button [23] to confirm.

USER-MODIFIABLE PARAMETERS:

Displayed message	Parameter designation	Function	(setting range) Factory setting
Pb	Temperature variation offset	Applicable to low temperature deviations $Pb = \text{actual temperature} - PV$	(-50 – 50°C) 0°C
PL	Temperature fall offset	Applicable to high temperature deviations $PL = 1000 \times (\text{actual value} - PV) / PV$	(-199 – 199) 0
SPH	Maximum attainable value		(0 – 400) 400

3.4. Cleaning and maintenance

- a) Before cleaning and when the appliance is not in use, unplug it from the mains.
- b) Use non-corrosive agents only for cleaning the surfaces.
- c) After each cleaning, dry all components well before the appliance is used again.
- d) Store the appliance in a dry and cool place, protected from moisture and direct sunlight.
- e) Do not spray the appliance with a stream of water and do not immerse it in water.
- f) Ensure that water will not enter through the ventilation ports in the housing.
- g) Regularly inspect the appliance for technical defects and damage.
- h) Use a soft, damp cloth for cleaning.
- i) Do not clean with any sharp and/or metal implements (e.g. a wire brush or a metal scraper) as these may damage the surface of the appliance.
- j) Do not clean the appliance with acidic substances, medical products, thinners, fuel, oil or other chemicals as they may damage it.
- k) Do not keep the appliance near corrosive gases or in direct sunlight.
- l) After each incubation run, disinfect, clean, and dry the incubation chamber.

DISPOSAL OF WASTE APPLIANCES

At the end of its service life, this product must not be disposed of with mixed household waste; return it to a collector/recycler of waste electrical and electronic equipment. This is shown by the symbol placed on the product, the user manual or the packaging. The materials used in the appliance can be reused according to their classification identifications. By reuse, recycling or applying other forms of use of waste appliances, you make a significant contribution to the protection of our environment.

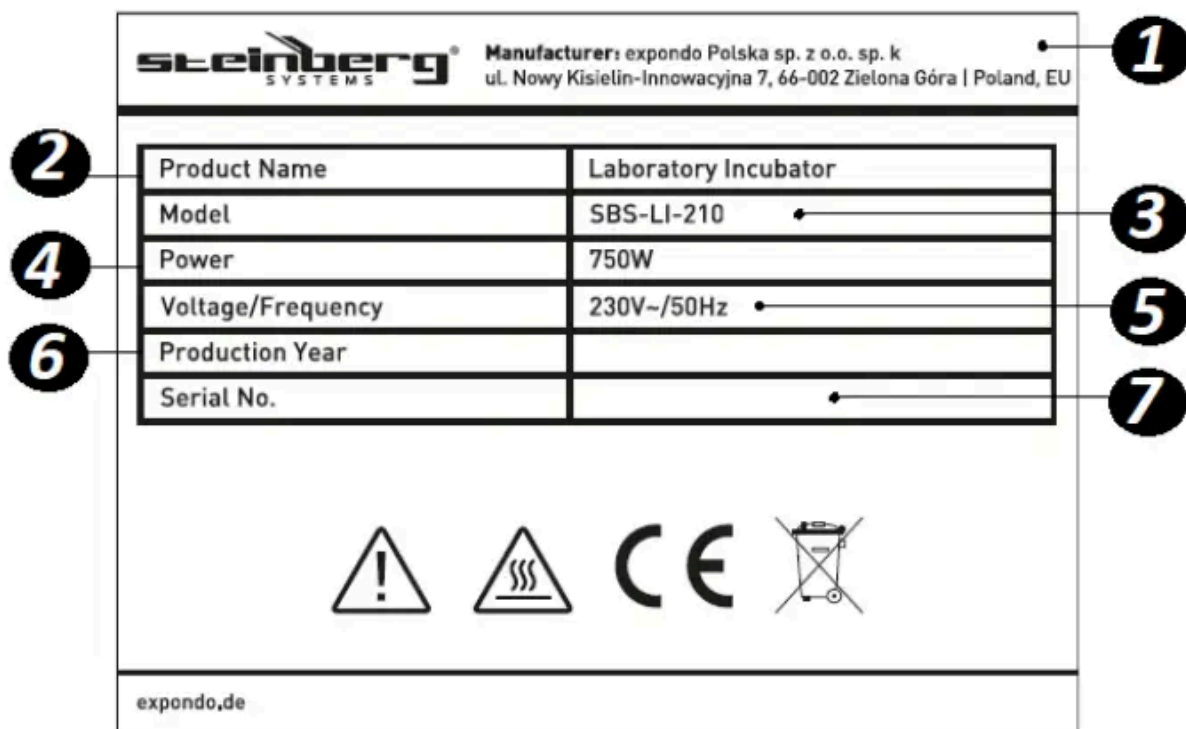
Local administration will provide you with the information about the nearest disposal locations for the appliance.

3.5. Troubleshooting

Problem	Possible cause	Action
The display reads “----” or “0000”.	1. Temperature sensor failure. 2. Temperature sensor connection fault. 3. Temperature controller failure.	1/3. Check and replace as required. 2. Inspect and reconnect correctly.

Uncontrolled temperature rise.	Temperature controller connection PCB failure.	Replace.
The fan does not run properly and/or makes abnormal sounds.	1. Motor failure. 2. Temperature controller connection PCB failure. 3. Fan blade damaged.	Replace.
The temperature is not rising.	1. Heater failure. 2. Incorrect temperature setting on the panel [4].	1. Replace. 2. Correct the temperature limit (increase the setting).
Temperature overregulation.	Wrong parameter settings in Internal Parameters.	Readjust as appropriate.
Unsatisfactory sample incubation results.	The samples were poorly laid out inside of the chamber, e.g. too close to one another or the load of samples was too large.	Load the samples with enough spacing between them. The maximum load should not be higher than 80 % of the chamber volume capacity.

3.6. Nameplate overview



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SYSTEMS

Manufacturer: expondo Polska sp. z o.o. sp. k
ul. Nowy Kisielin-Innowacyjna 7, 66-002 Zielona Góra | Poland, EU

Product Name	Laboratory Incubator
Model	SBS-LI-125
Power	640W
Voltage/Frequency	230V~/50Hz
Production Year	
Serial No.	



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steinberg
SYSTEMS

Manufacturer: expondo Polska sp. z o.o. sp. k
ul. Nowy Kisielin-Innowacyjna 7, 66-002 Zielona Góra | Poland, EU

Product Name	Laboratory Incubator
Model	SBS-LI-65
Power	500W
Voltage/Frequency	230V~/50Hz
Production Year	
Serial No.	



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 Manufacturer: expondo Polska sp. z o.o. sp. k ul. Nowy Kisielin-Innowacyjna 7, 66-002 Zielona Góra Poland, EU		1	
2	Product Name	Laboratory Incubator	
	Model	SBS-LI-43	3
4	Power	400W	
	Voltage/Frequency	230V~/50Hz	5
6	Production Year		
	Serial No.		7
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1. Manufacturer's address
2. Product name
3. Model
4. Power rating
5. Supply voltage / frequency
6. Year of production
7. Serial number