Julabo
THE TEMPERATURE CONTROL COMPANY

MAGIO™
Booster Heater

Original operating manual

1.950.1760.en.V02

04/2023

JULABO GmbH
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel.: +49 7823 51-0
Fax: +49 7823 2491
Info.de@julabo.com
www.julabo.com

Contents

1 Foreword

Congratulations!

You have made an excellent choice.

JULABO would like to thank you for the trust you have placed in our company and products.

This operating manual will help you become acquainted with the use of our units. Read the operating manual carefully. Keep the operating manual handy at all times.

2 About this manual

This manual is intended for the equipment specified on the cover page.

Read the operating manual together with the operating manual for the circulator used, and follow the safety instructions and warnings for this circulator.

NOTE

Observe the safety instructions!
Read the Safety section of this manual before using the equipment for the first time.

2.1 Original JULABO spare parts

Hassle-free continuous operation and safety also depend on the quality of the spare parts used.

Only original JULABO spare parts guarantee the highest possible quality and safety. Original JULABO spare parts are available directly from JULABO or your specialist dealer.

Please note that JULABO cannot provide a warranty service if non-original JULABO spare parts are used.

2.2 Warnings

The manual contains warnings to increase safety when using the device. Warnings must always be observed.

A warning sign displayed in signal color precedes the signal word. The signal word, highlighted in color, specifies the severity of the hazard.

DANGER

This signal word designates a danger with a high level of risk which, if it not prevented, will result in death or serious injuries.

WARNING

This signal word designates a danger with a medium level of risk which, if it not prevented, may result in death or serious injuries.

CAUTION

This signal word designates a danger with a low level of risk which, if it not prevented, may result in minor to moderate injuries.

NOTE

This signal word designates a possibly harmful situation. If it is not avoided, the system or objects in its vicinity may be damaged.

2.3 Symbols used

Various symbols are used throughout this manual to aid reading comprehension. This list describes the symbols used.

- 🛠 Tools needed for the following approach
- ► Prerequisite to be met for the following procedure
1. Numbered action steps
- ➥ Interim result for individual action steps
- ☝ Additional note for individual action steps
- ✓ Final result of a procedure
- <> Terms in angle brackets denote control menu
- [] Terms in square brackets denote keys, softkeys and buttons

3 Intended use

This section defines the purpose of the unit so that the operator can operate the unit safely and avoid misuse.

The booster heater is an auxiliary heater that can be combined with MAGIO circulators and suitable cooling machines or baths.

Only use the unit if it is in technically perfect condition and only use it in accordance with its intended use. Be aware of safety issues or hazards and comply with the operating manual! In particular, always immediately rectify malfunctions that could impair safety!

The booster heater is not suitable for direct temperature control application of food, other consumables or pharmaceutical or other medical products.

The unit must not be used outside a cooling machine or a bath.

The unit must not be used in a different circulating medium loop than the connected circulator.

The unit is not suitable for use in an explosive environment.

The unit is not intended for use in residential areas.

4 Safety

4.1 General Safety Instructions for the operating company

- The operator is responsible for the qualifications of its operating personnel.
- The operator must ensure that the operating personnel has been instructed in use of the device.
- The device operators must receive regular training about the dangers involved in their work and measures to prevent such dangers.
- The operator must ensure that persons entrusted with the operation, installation and maintenance have read and understood the operating manual.
- The device may only be configured, installed, maintained and repaired by trained personnel with appropriate qualifications.
- If hazardous substances or substances that may become hazardous are used, the device may only be used by personnel who are qualified to handle these substances and the device.
- The operator must ensure that the device is checked for safety and functionality at regular and usage-related intervals.
- The operator must ensure that the mains supply has a low impedance to prevent influencing other devices powered by the same supply.

4.2 Safety instructions

The unit is built in accordance with state of the art technology and recognized safety regulations. Despite this, its use may pose a risk to life and limb for the user or third parties.

Therefore, always read and observe the following safety instructions before using the product.

Hot surfaces!

The following parts and elements may become hot during operation:

– Bath fluid
– Heating element
– Bath lid
– Bath surface
– Connections for external application

Contact may cause severe burns or scalds to hands and arms, face and limbs.

- Keep sufficient distance from hot surfaces and fluids.
- Wear suitable protective gloves.

Electric shock from electrical system!

Touching damaged live parts can cause severe electric shocks and lead to injury or even death.

- Have damaged insulation and parts of the electrical system immediately repaired by JULABO service technicians or a qualified specialist workshop
- Immediately replace damaged power cords
- When connected with a mains plug, this mains plug must always be readily accessible

Wear personal protective equipment!

Lacking or unsuitable personal protective equipment increases the risk of health damage and injury.

Personal protective equipment includes, for example:

– Work gloves
– Safety shoes
- Protective clothing
– Breathing protection
- Hearing protection
– Face and eye protection

- Specify and provide personal protective equipment for the respective application.
- Use only personal protective equipment that is in good condition and provides effective protection.
- Adapt personal protective equipment to the person, e.g., by size.

Keep safety symbols legible!

Safety symbols on the unit warn of dangers in hazardous areas and are an important part of the unit's safety equipment. Missing safety symbols increase the risk of injury to persons.

- Clean dirty safety symbols.
- Replace damaged and unrecognizable safety symbols immediately.

Maintenance and repair work!

Improper maintenance and repair work jeopardizes operational safety. This can result in serious injury or death.

- Only carry out work described in this operating manual. Switch off the unit and disconnect it from the power supply before carrying out any work.
- All other maintenance and repair work may only be carried out by a JULABO service technician or a qualified specialist workshop.

4.3 Safety symbols

There are safety symbols included with the device, which should be attached to the device before initial operation.

	Read operating manual before switching on
	Warning of a danger zone. Note operating manual
	Warning about hot surface

4.4 Safety function

Technical protective devices provide for safe operation. If a safety function is triggered, the operator is alerted with a message on the display and an acoustic signal.

Adjustable high temperature cut-off

The high temperature cut-off prevents overheating of the heater.

- If the measured temperature rises above the set protective temperature, an error message is shown on the display. The pump and heater are switched off. A restart is required.

5 Product description

5.1 Function description

This section describes the function of the device.

The booster heater is an auxiliary heater for MAGIO circulators and consists of a heater unit with two heating elements as well as a control unit.

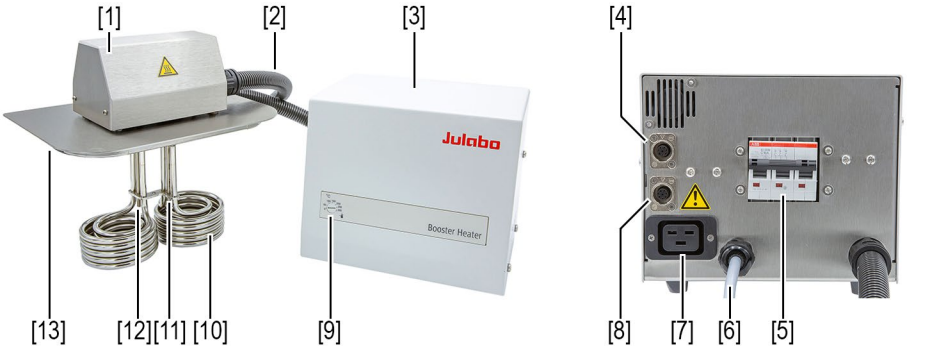
The heater unit is placed on a suitable bath or a cooling machine instead of the bath lid. The bath tank must be filled with bath fluid. An external application connected to the circulator is required, as the bath tank can no longer be used for temperature control of samples.

The control unit can be placed on or next to the circulator. The heating capacity of the booster heater is added to the heating capacity of the circulator. The booster heater communicates with the circulator via the CAN bus interface and, if necessary, with a connected cooling machine. The status of the booster heater is indicated by status symbols on the circulator display.

- At up to 33% heating capacity, only the circulator heater is enabled.
- From 33% heating capacity, the booster heater is switched on. Then both heaters are actuated equally.
- When the booster heater is active, the pump is run at a minimum of 60% rotational speed.

5.2 Operating and functional elements

The following figure shows the operating and functional elements and their position on the unit.



Control and function elements

1	Heater unit housing
2	Connection cable between control unit and heater unit
3	Control unit housing
4	CAN bus plug
5	Circuit breaker
6	Supply main
7	Mains output socket
8	CAN bus plug
9	High temperature cut-off setting
10	Heating element
11	Safety temperature sensor
12	Safety temperature sensor
13	End plate

5.3 Operating interface

5.3.1 Softkeys and status icons

This section describes the softkeys and status icons found on the operating interface.

Symbol	Description
	Booster heater is not detected by the circulator or is not connected.
	Booster heater is detected by the circulator and is enabled.
	Booster heater is detected by the circulator and is disabled.
	Booster heater is detected by the circulator and is enabled. Only the circulator is heating.
	Booster heater is detected by the circulator and is enabled. Both the circulator and booster heater are heating.
	Booster heater is detected by the circulator and is disabled. Only the circulator is heating.

5.4 Technical data

This section describes the technical data of the unit.

Grouping of the device acc. to CISPR 11:

- The device is an ISM device of group 1, which uses high frequency for internal purposes
- Class A: Use in an industrial electromagnetic environment

Classified in accordance with DIN 12876-1:

- Class II

Protection class according to EN 60 529:

- Protection class IP21

In accordance with IEC 61010-1, the device is designed for safe operation under the following ambient conditions:

- Indoor use
- Altitude up to 2000 m above sea level
- Ambient temperature +5 … +40 °C
- Maximum relative humidity 80% for temperatures up to 31 °C, decreasing linearly down to 50% relative humidity at 40 °C
- Mains voltage fluctuations up to ±10 % of the nominal voltage permissible if not otherwise specified
- Contamination level 2
- Overvoltage category II

Technical data		**Booster Heater**	
Performance values			
Working temperature range	°C	-50 … 300	
Heating capacity	kW	2 x 3	
Viscosity max.	cSt	70	
Dimensions			
Control unit (W x D x H)	cm	20 x 17 x 19	
Heater unit (W x D x H)	cm	24 x 23 x 17	
Total weight	kg	8	
Mains connection			
		208-230 V 3PPE 50/60 Hz	400 V 3PNPE 50 Hz
Current consumption	A	28	16
Mains fuse, resettable	A	30	16

6 Transport and installation

6.1 Transporting the device

This section describes how to transport the device safely.

CAUTION

Burn hazard on the heating element!
The heating element may still be hot even after the device has been switched off, and may cause burns if touched.
- Allow the device to cool down to room temperature after switching off
- Wear protective gloves

► The unit is switched off and cooled to room temperature.
1. Disconnect the power supply cable.
2. Before transport, disconnect all lines between the booster heater and the circulator or cooling machine.
3. Remove the heater unit from the bath.
4. Place the unit on the center of a transport wagon.
5. Secure the unit against falling off.
6. Place loose parts for the unit, such as cables, on the transport trolley.

✓ The unit is then ready for transport and can be safely transported to its installation location.

6.2 Install the device at the operating location

This section describes how the device is set up at the installation location.

► The unit has been transported to the operation location.
► The circulator is switched off.
1. Place the control unit on the circulator or directly next to the unit.

➥ The control unit for voltage variant 208-230V / 3PPE should only be placed next to the unit.

2. Remove the bath lid from the bath or cooling machine.
3. Place the heater unit in the bath opening with the rounded corners facing forward.
4. Make sure that the connection line between the heater unit and the control unit is laid without tension or kinks.

✓ The unit is set up at the operation location.

7 Initial operation

The operating manual of the corresponding circulator is required for initial operation of the booster heater.

7.1 Connect the device to the power supply

A load-break switch is required for the booster heater.

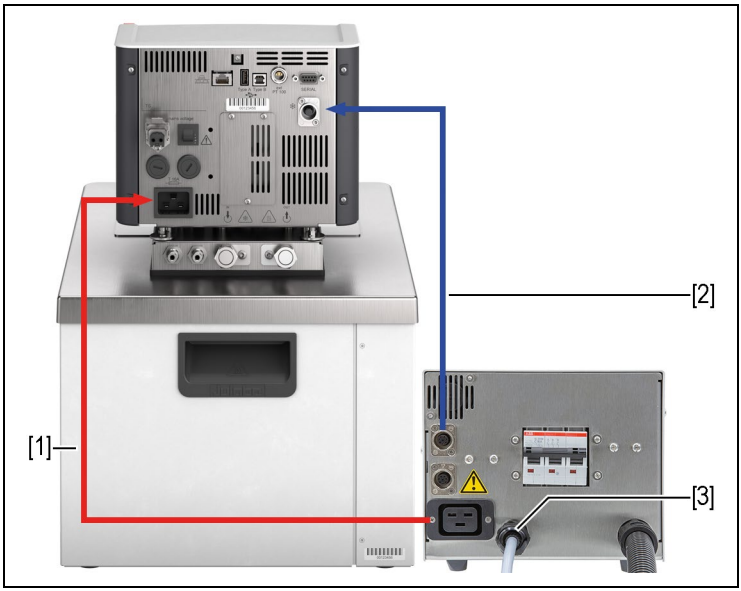
The 400V variant requires a 3x16A load-break switch. The 208–230V variant requires a 3x32A load-break switch.

In addition, the building must have a ground-fault circuit interrupter.

7.1.1 Connect bridge mounted or heating circulator

This section describes how to connect the booster heater to a bridge mounted circulator or a circulator.

- ▶ The circulator is mounted as a bridge mounted or heating circulator.
- ▶ The connection cable, mains cable and CAN bus cable are ready for use.



Back

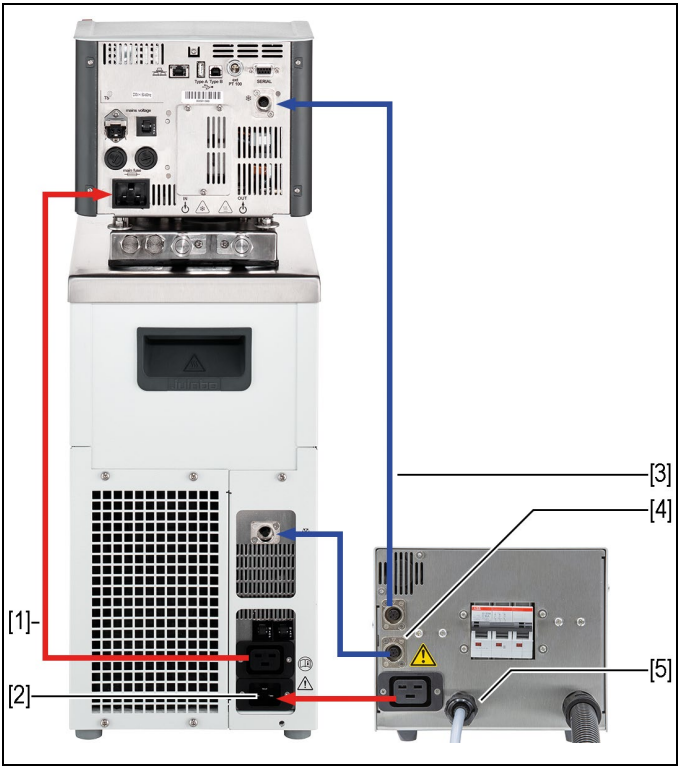
1. Connect the booster heater to the circulator using the connection cable [1].
2. Use the CAN bus cable to connect a CAN plug of the booster heater to the CAN plug of the circulator.
3. Connect the booster heater to the mains using the mains cable [3].

✓ The booster heater is connected to the circulator. Alternatively, the units can be connected to separate circuits. If necessary, the power supply must be set up in the unit setting of the circulator.

7.1.2 Connect refrigerated circulator

This section describes how to connect the booster heater to a refrigerated circulator.

- ► The unit is transported and set up.
- ► The connection cable, mains cable and CAN bus cable are ready for use.



Back

1. Connect the connection cable [1] of the circulator with the cooling machine.
2. Connect the booster heater to the cooling machine using the second connection cable [2].
3. Connect a CAN plug of the booster heater to the circulator using a CAN bus cable [3].
4. Use the second CAN bus cable [4] to connect the second CAN plug of the booster heater to the cooling machine.
5. Connect the booster heater to the mains using the mains cable [5].

✓ The booster heater is connected to the refrigerated circulator. Alternatively, all three units can be connected to separate circuits. If necessary, the power supply must be set up in the unit setting of the circulator.

7.2 Fill device

This section describes what to pay attention to when filling the bath when the booster heater is put into operation. The procedure takes into account a connected external application.

► The drain valve on the bath or cooling machine is closed.
► The circulator is switched off.
1. Switch the circulator on.

➥ The circulator indicates low liquid level alarm after starting.

2. Disable the booster heater in the menu **[Install unit]**.
3. Turn the circulator off at the mains switch.
4. Remove the heater unit.
5. Half fill the bath with bath fluid.

☝ The bath fluid expands with increasing temperature and can overflow.
☝ With decreasing temperature, the low liquid level protection can be triggered and interrupt the temperature control process.

6. Switch the circulator on.

☝ The removed heater unit must be disabled. Check the status icon on the home screen of the circulator: the two lowest dashes of the heater icon must be crossed out.

7. Start the temperature control application.

➥ The pump starts.

8. Watch the level indicator and, if necessary, adjust the level by refilling or draining.

☝ Once the working temperature has been reached and the sample inserted, the level of bath fluid in the bath tank should cover the heating coil of the heating circulator or the cooling coil of the cooling machine.

9. When the required fill level has been reached, place the heater unit in the bath opening.
10. Enable the booster heater in the menu **[Install unit]**.

✓ The unit is filled with bath fluid.

7.3 Set high temperature safety function

Before each new temperature application, the temperature must be set for the tank and internal reservoir high temperature cut-off. Set a value that is at least 25 K below the flash point of the bath fluid being used. The surface temperature of the bath fluid must not exceed the flash point at any time. An alarm is triggered when the set value is exceeded.

🛠 Slotted screwdriver, size 3

► The unit is connected and ready for operation.
1. Switch the circulator on.
2. Call up the **<Main menu>**.
3. Scroll in the submenu **<Adjust safety>** to the menu option **[High temperature cut-off Booster Heater]**.

➥ The currently set value is displayed here.

4. Use the screwdriver to adjust the high temperature cut-off on the booster heater control unit and check the indicated value.
5. Set a value that is at least 25 K under the flash point of the bath fluid being used.

➥ The set value is immediately active.

✓ The high temperature cut-off is set.

8 Operation

8.1 Enable booster heater

The booster heater is enabled via the circulator control menu.

- ▶ The circulator is switched on.
- ▶ The booster heater is placed in the filled bath and ready for operation.

1. Call up the **<Main menu>**.
2. In the submenu **<Install unit>** press the **[Booster Heater]** button to enable or disable the booster heater.

- ✓ The enabled booster heater heats up if required. On the home screen, the current status of the booster heater is indicated by an icon.

8.2 Manual refilling of unit

In the case of low liquid level, the booster heater is disabled. An operator message appears on the display of the circulator. The bath fluid should be topped up.

CAUTION

Burn hazard on the heating element!
The heating elements of the booster heater become very hot during operation and can cause burns if touched.

- DO NOT remove the heater unit from the bath during operation.
- Only switch on the booster heater if the heater unit is placed in a filled bath.
- After switching off, allow the unit to cool down to room temperature before removing the heater unit from the bath.

- ▶ The circulator indicates low liquid level. The booster heater has been disabled by the circulator.
- ▶ An operator message prompts refilling.

1. You can acknowledge the operator message on the display with **[OK].**

- ☝ The operator message is also automatically hidden if bath fluid has been topped up.

2. Allow the unit to cool down to room temperature.
3. Remove the heater unit of the booster heater from the bath.
4. Refill the bath fluid.
5. When the required fill level has been reached, place the heater unit back into the bath opening.

➥ The unit recognizes that bath fluid has been filled up and asks on the display whether the booster heater should be enabled.
6. Confirm the query with "Yes" or "No."
➥ If "Yes," the booster heater is enabled; if "No," the booster heater remains disabled. The operator message is hidden.
☝ The booster heater can only be enabled when the minimum fill level has been reached.
✓ The unit is refilled with bath fluid.

8.3 Automatic refilling of unit

If a refilling unit is connected to the circulator and the refilling function is active, an alternative procedure is required for low liquid levels.

CAUTION

Risk of burns on the heating element when the refill function is activated!
If no refilling unit is connected while the refilling function is active, the booster heater can be enabled even though it is not in the bath. Burn hazard!
- DO NOT activate refill function when manual refill is in progress
- Only activate the refill function if a refilling unit is connected

NOTE

Risk of fire when refill function is activated!
The booster heater can be enabled when the refill function is active, even though it is not in the bath. Danger of fire!
- DO NOT activate refill function when manual refill is in progress
- Only activate the refill function if a refilling unit is connected

► A refilling unit is connected and the refilling function is active.
► The circulator indicates low liquid level. The booster heater has been disabled by the circulator.
► An operator message prompts refilling.
1. You can acknowledge the operator message on the display with **[OK].**
☝ The operator message is also automatically hidden if bath fluid has been topped up.
2. The refilling unit refills bath fluid until a non-critical fill level is reached.
➥ The unit recognizes that bath fluid has been filled up and asks on the display whether the booster heater should be enabled. A timer starts counting down.

3. Confirm the query with "Yes" or "No."

➥ If "Yes," the booster heater is enabled; if "No," the booster heater remains disabled. The operator message is hidden.

☝ The booster heater is automatically enabled after the timer has elapsed and the operator message disappears.

☝ The booster heater can only be enabled when the minimum fill level has been reached.

✓ The unit is automatically refilled.

8.4 Remote control device

The unit can be operated using interface commands. This requires the circulator to be connected to a PC and in remote control mode.

Also follow the operating manual of the circulator.

9 Maintenance

9.1 Check the functionality of high temperature cut-off

This section describes how you can test that the high temperature safety function is operational.

🛠 Slotted screwdriver, size 3

► The unit is ready for operation and enabled in the circulator operating menu.
1. Call up the **<Main menu>**.
2. Scroll in the submenu **<Adjust safety>** to the menu option **[High temperature cut-off Booster Heater]**.

➥ The currently set value is displayed here.
3. Use the screwdriver to adjust the high temperature cut-off to a temperature that is below the actual value.

➥ An acoustic signal sounds and the alarm message "Set protective temperature exceeded" is displayed. The high temperature cut-off works.
4. Then set a value that is above the actual value.
5. Turn off the circulator, wait a few seconds and then turn the circulator back on.

➥ The alarm message is deactivated.
6. Set the high temperature cut-off.

✓ The high temperature cut-off is set and its functionality tested.

9.2 Clean device

The booster heater should be cleaned from time to time.

Furthermore, this device must be properly decontaminated if hazardous substances have been spilled on it.

► The device is switched off and disconnected from the mains voltage.
1. Allow the unit to cool down to room temperature.
2. Completely drain the bath fluid.
3. Use a damp cloth to clean functional components that have been dipped into the bath fluid as well as the outside of the booster heater.

☝ Some dish detergent may also be used for cleaning. If in doubt, ask technical service for alternative cleaning mediums.

☝ It is imperative that no moisture be allowed to penetrate inside the circulator.

✓ The device has now been cleaned.

9.3 Device storage

This section describes how to store the device.

► The device is switched off and disconnected from the mains voltage.
1. Empty all system components completely.
2. Clean the device.
3. Carefully dry the device and all its system components, e.g. with compressed air.
4. Close all connections.
5. Store the device in a dust-free, dry and frost-free location.

✓ The device is protected and can be safely stored there. It can be put into operation again as needed.

9.4 Technical Service

If the unit shows faults you cannot resolve, please contact our Technical Service.

JULABO GmbH
Technical Service
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel.: +49 7823 51-66
Fax: +49 7823 51-99
Service.de@julabo.com

Before sending a device to Technical Service, the following points must be observed:

- Clean and decontaminate the device properly to avoid endangering service personnel.
- Include a brief description of the fault.
- Package the device safely for shipment.

9.5 Warranty

JULABO provides a warranty that the device will function perfectly as long as it is connected and used correctly and as described in the operating manual.

The warranty period is one year from the invoice date.

With the 1PLUS warranty, the warranty can be extended to two years free of charge.

The 1PLUS warranty gives the user a free extended warranty to 24 months, limit to a maximum of 10,000 hours of service.

A prerequisite for this is that the user registers the device at **www.julabo.com**, quoting its serial number, within four weeks of initial operation. The warranty applies from the date of JULABO GmbH's original invoice.

10 Disposal

When disposing of the device, the applicable country-specific guidelines must be observed.

1. Contact an authorized waste disposal company for disposal of the unit.

☝ Disposal of the unit in household waste, or similar facilities for the collection of domestic waste, is not permissible.

✓ The unit can be properly disposed of.

11 EC Declaration of Conformity

EG-Konformitätserklärung
EC-Declaration of Conformity

Hersteller / *Manufacturer*:

JULABO GmbH
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel: +49 7823 51-0

CE

Hiermit erklären wir, dass das nachfolgend bezeichnete Produkt
We hereby declare, that the following product

Produkt / *Product*: Zusatzheizer / *Booster Heater*

Typ / *Type*: Booster Heater **Serien-Nr. / *Serial-No.*:** siehe Typenschild / *see type label*

aufgrund seiner Konzipierung und Bauart in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheits- und Gesundheitsanforderungen der nachfolgend aufgeführten EG-Richtlinien entspricht.
due to the design and construction, as assembled and marketed by our Company – complies with fundamental safety and health requirements according to the following EC-Directives.

Niederspannungsrichtlinie 2014/35/EU; Low-Voltage Directive 2014/35/EU
EMV-Richtlinie 2014/30/EU; EMC-Directive 2014/30/EU
RoHS-Richtlinie 2011/65/EU; RoHS-Directive 2011/65/EU

Angewandte harmonisierte Normen und techn. Spezifikationen:
Applied following harmonized standards and technical specifications:

EN IEC 63000 : 2018
Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

EN ISO 12100 : 2010
Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung (ISO 12100:2010)
Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

EN 61010-1 : 2010 / A1 : 2019 / AC : 2019-04, EN 61010-1 : 2010 / A1:2019
Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte, Teil 1: Allgemeine Anforderungen
Safety requirements for electrical equiment for measurement, control, and laboratory use, Part 1: General requirements

EN IEC 61010-2-010 : 2020
Sicherheitsbestimmungen für elektrische Mess- Steuer-, Regel- und Laborgeräte Teil 2-010: Besondere Anforderungen an Laborgeräte für das Erhitzen von Stoffen
Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 2-010: Particular requirements for laboratory equipment for the heating of materials

EN 61326-1 : 2013
Elektrische Mess-, Steuer-, Regel- und Laborgeräte- EMV-Anforderungen- Teil 1: Allgemeine Anforderungen
Electrical equipment for measurement, control, and laboratory use - EMC requirements - Part 1: General requirements

Die Konformitätserklärung wurde ausgestellt
The declaration of conformity was issued and valid of

Seelbach, 27.01.2023

B. Rother

i.V. Bernd Rother, Senior Expert Products & Innovation

12 UK Declaration of Conformity

UK Office: JULABO UK Ltd., Unit 7, Casterton Road Business Park,
Old Great North Road, Little Casterton, Stamford, PE9 4EJ, United Kingdom,
Tel.: +44 1733 265892

UKCA-Declaration of Conformity

Manufacturer:

JULABO GmbH
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel: +49 7823 51-0

This declaration is issued under the sole responsibility of the product manufacturer

Product: Booster Heater

Type: Booster Heater **Serial-No.:** see type label

The object of the declaration described above is in conformity with the relevant UK Statutory Instruments and their amendments:

Electrical Equipment (Safety) Regulations 2016
Electromagnetic Compatibility Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Applied following harmonized standards and technical specifications:

EN IEC 63000 : 2018
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

EN ISO 12100 : 2010
Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

EN 61010-1 : 2010 / A1 : 2019 / AC : 2019-04, EN 61010-1 : 2010 / A1:2019
Safety requirements for electrical equiment for measurement, control, and laboratory use, Part 1: General requirements

EN IEC 61010-2-010 : 2020
Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 2-010: Particular requirements for laboratory equipment for the heating of materials

EN 61326-1 : 2013
Electrical equipment for measurement, control, and laboratory use - EMC requirements - Part 1: General requirements

Authorized representative in charge of administering technical documentation:

JULABO UK Ltd., Mr. Gary Etherington, Unit 7, Casterton Road Business Park, Little Casterton, Stamford PE9 4EJ United Kingdom, Telephone: +44 1733 265892

The declaration of conformity was issued and valid of

Seelbach, 27.01.2023

i.V. Bernd Rother, Senior Expert Products & Innovation

13 Appendix

13.1.1 IN commands

IN commands retrieve device parameters.

Unit modes	System response
in_mode_23	Returns the current operating mode of the Booster Heater: 0 = Booster Heater is disabled 1 = Booster Heater is enabled

13.1.2 OUT commands

OUT commands set device parameters. Remote control mode must be active.

Unit modes	Parameter	Setting
out_mode_23	x	Start/stop command of the unit in remote control mode: 0 = Disable Booster Heater 1 = Enable Booster Heater

13.2 Modbus TCP/IP register

13.2.1 Holding registers

Register address	Protocol address	Data type	Explanation	Adjustable range
40117	116	ushort	Start/stop the unit	0: Unit is in standby 1: Unit is started