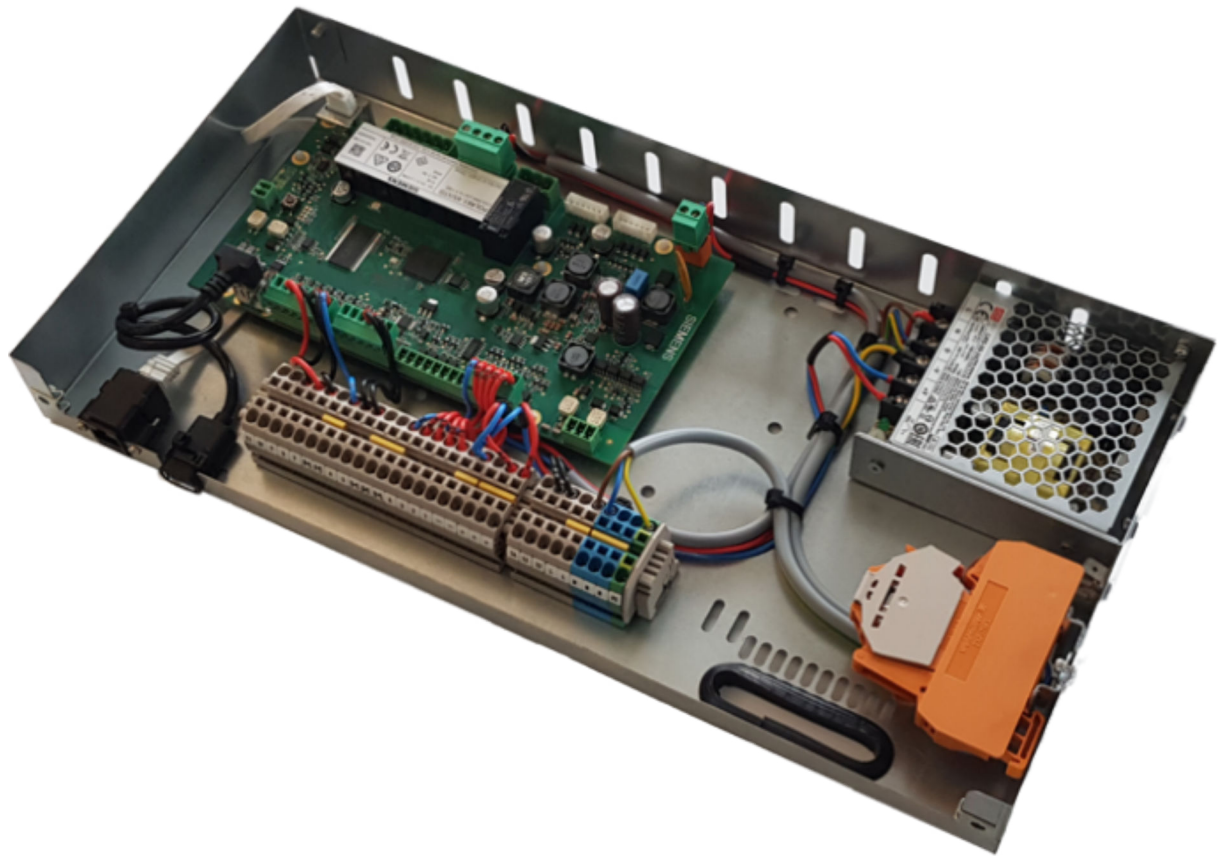


TACOCONTROL Z1 S

HEAT INTERFACE UNIT CONTROLLER



OPERATING INSTRUCTIONS

Taconova Group AG
Neubrunnenstrasse 40
8050 Zürich
Switzerland
Telephone: +41 44 735 55 55
Fax: +41 44 735 55 02
Email: group@taconova.com
Internet: www.taconova.com
Translation of the original operating instructions
212425, 2, en_GB

Taconova GmbH
Rudolf-Diesel-Strasse 8
78224 Singen
Germany
Telephone: +49 7731 9828 80
Fax: +49 7731 9828 88
Email: deutschland@taconova.com
© Taconova Group AG 2019

Table of contents

1	Introduction.....	5
1.1	Information on the operating instructions.....	5
1.2	Other applicable documents.....	5
1.3	Glossary and abbreviations.....	5
2	Safety.....	7
2.1	Symbols in these instructions.....	7
2.2	Proper use.....	8
2.3	Residual risks.....	9
2.3.1	Electric current.....	10
2.3.2	High temperatures.....	10
2.3.3	Danger due to legionella outbreak.....	11
2.4	Operator's responsibilities.....	11
2.5	Personnel requirements.....	12
2.6	Environmental protection.....	14
3	Overview.....	15
3.1	Functional principle.....	15
3.2	Connection points.....	15
3.3	Components of the controller.....	16
3.4	Human machine interface (HMI).....	17
4	Functional description.....	19
4.1	Operating modes.....	19
4.2	Drinking hot water control.....	20
4.3	Heating control.....	20
4.4	Special functions.....	21
4.5	Password protection.....	21
4.6	Data recording.....	21
5	Installation.....	22
6	Commissioning and operation.....	24
6.1	Connecting the HMI.....	24
6.2	Setting parameters.....	24
6.2.1	Setting parameters on the HMI.....	24
6.2.2	Saving changes.....	25
6.3	Setting the operating mode.....	25
7	Parameter settings and display values.....	26
8	Maintenance.....	29
8.1	Safety during maintenance.....	29
8.2	Overview of maintenance work.....	29
9	Faults.....	31
9.1	Safety instructions when repairing faults.....	31
9.2	Fault display.....	31
9.3	Fault repair.....	31

9.3.1	Viewing an error message.....	31
9.3.2	Fault table.....	32
9.4	Work required for repairing faults.....	35
9.4.1	Work required for repairing faults on the heat inter- face unit.....	35
9.4.2	Replacing the circuit board.....	35
10	Decommissioning and restarting.....	36
10.1	Decommissioning.....	36
10.2	Restarting.....	36
11	Disassembly, disposal.....	37
11.1	Safety instructions for disassembly/disposal.....	37
11.2	Disassembling the controller.....	37
11.3	Disposing of the controller.....	37
12	Technical data.....	39
12.1	Design and operating data.....	39
12.2	Connection values.....	39
12.3	Type plate.....	39
13	Declaration of conformity.....	40
14	Index.....	41
	Appendix.....	43
A	Appendix for service personnel.....	45

1 Introduction

1.1 Information on the operating instructions

These instructions ensure safe and efficient use of the heat interface unit controller. These instructions are a component of the product and must be kept in the immediate vicinity of the heat interface unit, where they are readily accessible for service personnel.

The service personnel must have carefully read and understood these instructions before starting any work. Compliance with all the safety warnings and instructions provided in this manual is a basic prerequisite for working safely.

In addition, the local occupational health and safety regulations and the general safety guidelines for the area of use of the controller apply.

1.2 Other applicable documents

Document	Remark
Sanitary and heating installation plans	
Wiring diagram	
Climatix HMI-TM operating instructions	Available from the website
Operating instructions for the heat interface unit	

1.3 Glossary and abbreviations

Abbreviation	Meaning
FR	Flow rate
dT	Difference in temperature
HMI	Human machine interface
HTG	Heating
Man.	Manual
Max.	Maximum
Min.	Minimum
PP	Prepaid
T	Temperature
Ctrl	Controller/control
SPL	Supply
KWF	Keep warm function

Abbreviation	Meaning
DHW	Domestic hot water
Circ.	Circulation

2 Safety

2.1 Symbols in these instructions

Categories and symbols for the safety warnings

Safety warnings are indicated by symbols in these instructions. The safety warnings are introduced by signal words that indicate the extent of the danger.



DANGER!

This combination of symbol and signal word indicates an immediate, dangerous situation that can result in death or severe injury if it is not avoided.



WARNING!

This combination of symbol and signal word indicates a potentially dangerous situation that can result in death or severe injury if it is not avoided.



NOTICE!

This combination of symbol and signal word indicates a potentially dangerous situation that can result in property damage if it is not avoided.



ENVIRONMENT!

This combination of symbol and signal word indicates potential dangers for the environment.

Safety warnings in instructions

Safety warnings may refer to specific, individual instructions. Safety warnings like this are embedded in the instructions to ensure they do not distract the reader when performing the activity. The signal words described above are used.

Example:

1. ➔ Release the screw.

2. ➔



WARNING!




Risk of injury on sharp edges!

Close the cover carefully.


3. ➔ Tighten the screw.

Special safety warnings

To draw attention to special dangers, the following symbols are used in safety warnings:





Warning signs	Type of danger
	Warning – high-voltage.
	Warning – hot surface.
	Warning – danger zone.

Tips and recommendations

 *This symbol highlights useful tips and recommendations, as well as information for efficient and fault-free operation.*

Other symbols

Instructions, outcomes, lists, references and other elements are highlighted in these instructions by the following symbols:

Symbol	Explanation
	Step-by-step instructions
	Outcomes of instructions
	References to sections of these instructions and to other applicable documents
	List without a specific order
<i>[Button]</i>	Operating element (e.g. button, switch), display element (e.g. indicator lamps)
<i>'Display'</i>	Screen elements (e.g. buttons, function key allocation)

2.2 Proper use

The TacoControl Z1S controller is a component of the heat interface unit and is only intended for use for controlling heat interface units and for verifying the current measurements.

Proper use also includes compliance with all information in these instructions.

Any use extending beyond, or use other than, proper use is considered improper use.

**WARNING!****Danger in the event of improper use!**

Improper use of the controller may result in dangerous situations.

- Never connect the controller directly to a source of heat (e.g. boiler or solar circuit).
- Never use the controller in one of the following areas:
 - Outdoors
 - Rooms susceptible to moisture
 - Rooms in which the use of electrical units is prohibited
- Only allow trained personnel to install the controller.

2.3 Residual risks

The controller complies with all current safety requirements. However, there are residual risks that make caution necessary when using the station. The residual risks and the practices and measures they result in are listed in the following section.

2.3.1 Electric current

Electric power

**DANGER!****Danger to life due to electric power!**

There is an immediate risk of fatal electric shock if live components are touched. Damage to the insulation of the individual components can be fatal.

- Have all work on the electrical equipment performed by skilled electricians.
- In the event of damage to the insulation, cut off the power supply immediately and initiate repairs.
- Before working on live components of electrical systems and equipment, de-energise these components and secure them in this state for the duration of the work. Adhere to the following safety rules in this regard:
 - Disconnect.
 - Secure against restart.
 - Verify that components have been de-energised.
 - Ground and short-circuit.
 - Cover or shield any adjacent live components.
- Never bypass or disable any fuses. Comply with the correct amperage specification when replacing fuses.
- Keep moisture away from all live components. This may lead to short circuits.

2.3.2 High temperatures

Hot surfaces

**WARNING!****Danger of injury due to hot surfaces!**

Surfaces on components may become very hot during operation. Contact between the skin and hot surfaces can cause severe burns to the skin.

- When working near hot surfaces, always wear heatproof protective clothing and protective gloves.
- Before opening the controller box, ensure that all surfaces have cooled down to ambient temperature.

2.3.3 Danger due to legionella outbreak

Proliferation of legionellae



WARNING!

Proliferation of legionellae due to stagnant water!

If the unit is not used for an extended period, there is a risk of the proliferation of legionellae due to stagnant water.

- Upon restarting, set the operating mode to “Thermal disinfection” (Legio) to flush the drinking water lines with hot water (↪ *Chapter 6.3 ‘Setting the operating mode’ on page 25*).



Legionellae are bacteria of which one species is harmful to humans. Legionellae can easily proliferate in pipes with warm, stagnant water. Flushing the pipes with water at a temperature of at least 55 °C kills the legionellae.

2.4 Operator's responsibilities

Operating company

The operating company is the person who operates the heat interface unit with the integrated controller for commercial or economic purposes, or allows a third party to use/employ the system, and who assumes the legal product liability for protecting the user, personnel or third parties during operation.

Operating company responsibilities

The heat interface unit with the integrated controller may be used for commercial purposes. The operating company of the heat interface unit is therefore subject to the legal obligation to ensure occupational safety.

Along with the safety instructions in these instructions, the applicable occupational health and safety regulations and environmental protection regulations must be complied with in the area of use of the controller.

The following applies in particular:

- The operating company must be informed about the applicable occupational safety regulations and must identify additional dangers resulting from the specific working conditions at the site at which the heat interface unit is used in a hazard assessment. This must be implemented in the form of operating instructions for operation of the controller.
- The operating company must check whether the operating instructions created by the operating company correspond to the current status of regulations, and modify them, if applicable, over the full term of use of the controller.

- The operating company must clearly assign and define responsibilities for installation, operation, troubleshooting, maintenance and cleaning.
- The operating company must ensure that all persons who work with the controller have read and understood these instructions.

Furthermore, the operating company is responsible for ensuring the controller remains in a technically flawless condition. The following therefore applies:

- The operating company must ensure that the maintenance intervals described in these instructions are complied with.
- The operating company must ensure that the electrical circuit is equipped with fuses in compliance with local regulations. Furthermore, an electrical fuse must be provided exclusively for the heat interface unit. This fuse must be clearly labelled. An easily visible description of the location of the fuse must be affixed to the heat interface unit.

2.5 Personnel requirements



WARNING!

Danger of injury due to insufficient personnel qualification!

If unqualified personnel perform work on the controller, this will result in dangers that can cause injury and property damage.

- All activities may only be performed by personnel qualified for the activities.

The personnel qualifications listed in the following are specified for the different areas of activity in these instructions:

Electrician

An electrician, due to professional training, knowledge and experience, as well as knowledge of the relevant standards and regulations, is able to perform work on electrical systems and identify and avoid potential dangers of their own accord.

The electrician is trained for the specific work environment in which work is carried out and is familiar with the relevant standards and regulations.

Heating and sanitary technician

The heating and sanitary technician is trained and certified for the specific area of activity in which he/she works and is familiar with the applicable standards and regulations.

The heating and sanitary technician is able to perform work on all heating and water heating systems due to his/her professional training and experience, and can identify and avoid potential dangers of his/her own accord.

Furthermore, the technician must provide proof of his/her professional qualification that certifies his/her ability to perform work on heating systems and water heating systems.

The heating and sanitary technician must have read and understood these instructions.

The skills the heating and sanitary technician must demonstrate include:

- Understanding of technical relationships
- Reading and understanding technical drawings and diagrams
- Installation of system components
- Installation and connection of heating pipes
- Performing maintenance work
- Disassembly and repair or replacement of system components when a problem occurs

Operator

The operator is the person who operates the unit or allows a third party to use/employ the system and who assumes the legal product liability for protecting the user or third parties during operation.

The operator is also responsible for adhering to the maintenance intervals.

The operator has been trained by manufacturer and sub-contractors in use of the unit and its components, and can identify potential dangers of their own accord and avoid dangerous situations.

Essential requirements

Only persons who can be expected to perform their work reliably may be approved as service personnel. Persons with an impaired ability to react, e.g. due to drugs, alcohol or medication, are not approved as service personnel.

Observe the age-related and vocation-specific regulations applicable at the site of use when choosing personnel.

Unauthorised persons



WARNING!

Danger to life for unauthorised persons due to dangers in the work area!

Unauthorised persons who do not satisfy the requirements described here are not aware of dangers in the work area. This is why there is a danger of severe injuries or even death for unauthorised persons.

- Keep unauthorised persons away from the danger and work area.
- If in doubt, speak to the persons and instruct them to leave the danger and work area.
- Stop work as long as unauthorised persons are in the danger and work zone.

2.6 Environmental protection

Danger to the environment



ENVIRONMENT!

Danger to the environment due to incorrect use of substances hazardous to the environment!

Considerable damage to the environment can occur in the event of incorrect use of substances hazardous to the environment, and in particular in the event of disposal.

- If substances hazardous to the environment are accidentally released into the environment, take suitable measures immediately. If in doubt, inform the responsible local authorities about the damage and ask about suitable measures to take.
- Do not allow circuit boards and the HMI to enter water bodies, the sewerage system, the ground or household waste collection, and instead have them recycled or disposed of by a specialist company.

3 Overview

3.1 Functional principle

Function of the controller

The controller is a component of the heat interface unit. This controls the heat interface unit and verifies the current measurements. The domestic hot water control cycle is comprised of a controllable valve, a temperature sensor on both the primary and secondary sides, and a flow rate sensor. The temperature sensor in the heating supply and a controllable valve are used as a basis to control the heating supply.

Operation

An HMI is connected to the circuit board for the operation of the controller (↪ *Chapter 6.1 'Connecting the HMI' on page 24*). Parameters are setting using this HMI (↪ *Chapter 6.2.1 'Setting parameters on the HMI' on page 24*).

3.2 Connection points

USB connection

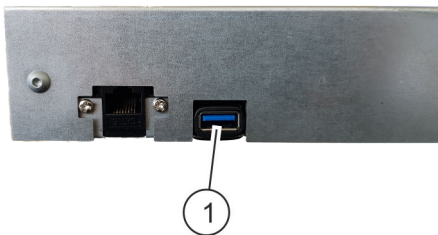


Fig. 1: USB connection

The USB connection is used to load and save parameters and software onto the controller. The USB connection is also used for saving data.

LAN connection

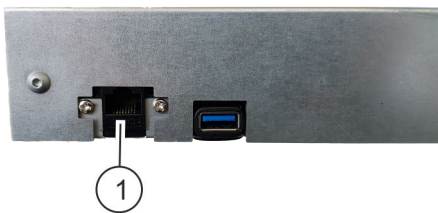


Fig. 2: LAN connection

The LAN connection is used to connect the HMI to the circuit board and allows operation of the controller.

Terminals

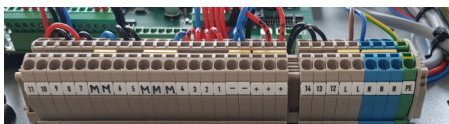


Fig. 3: Terminal block

All components that are managed by the controller are connected to the terminals on the terminal block.

The following components are connected to the terminals:

- Sensors (↪ *'Sensors' on page 16*)
- Circulation pump
- Mixer valves for hot water und heating control
- Valve for keep warm module

Sensors

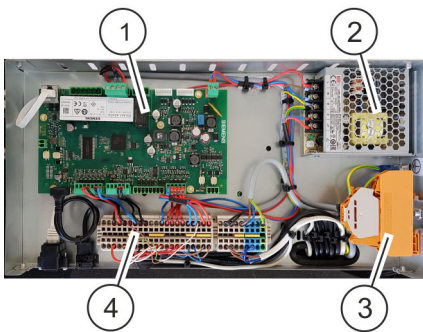
The sensors send the current values to the controller. The sensors are plugged into the terminal block.

Provision is made for the following sensors:

- Fresh water flow rate sensor
- Domestic hot water temperature sensor
- Heating supply temperature sensor
- Storage water temperature sensor

3.3 Components of the controller

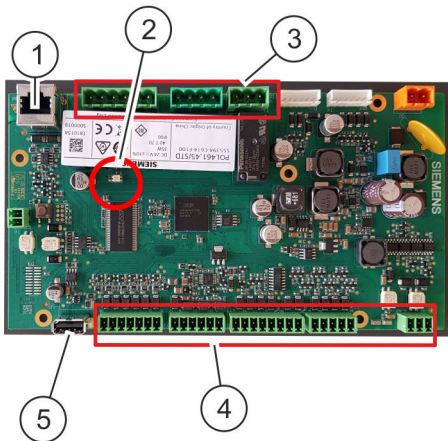
Controller box



The controller box (Fig. 4) is integrated in the heating interface unit. The controller box contains the circuit boards (Fig. 4/1), the voltage transformer (Fig. 4/2), the fuse (Fig. 4/3) and the terminal block (Fig. 4/4).

Fig. 4: Controller box

Circuit board



- 1 LAN connection
- 2 LED status display
- 3 Relay
- 4 Terminal strips for sensor inputs and control signals
- 5 USB connection

The circuit board features potential-free contacts (Fig. 5/2) to which the terminal block is connected. The LAN connection (Fig. 5/1) is used to connect the HMI to the circuit board in order to enter settings and operate the controller. The USB connection (Fig. 5/4) is used to load and save settings and software. The saved settings are retained even after a power failure.

The LED status display (Fig. 5/2) indicates the status of the controller.

The following status are displayed:

Fig. 5: Circuit board

Signal	Description
Continuous light, green	Controller operating
Flashing light, green	Controller starting
Continuous light, red	Controller stopped

Voltage transformer

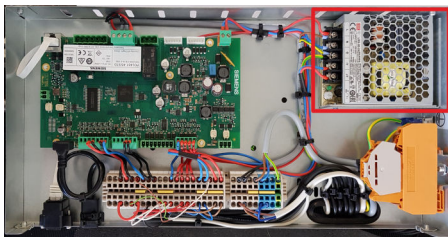


Fig. 6: Voltage transformer

The voltage transformer supplies the circuit board with 24V. Components running with 24V are supplied via the circuit boards.

Fuse

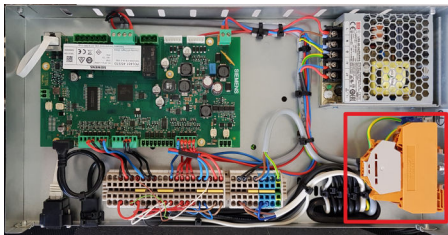


Fig. 7: Fuse

The current consumption by the controller is limited to a maximum of 2.5 A by the integral fuse.

Terminal block

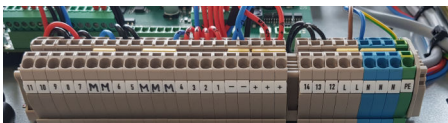


Fig. 8: Terminal block

The sensors are connected to the terminal block. The terminal block is connected to the circuit board and sends the sensor data to the circuit board.

The terminal block is prewired. Only the wiring of the power supply has to be filled ex-works. Further details are shown on the wiring scheme of the HIU.

3.4 Human machine interface (HMI)

The controller is operated using a human machine interface (HMI) that is connected to the LAN socket. The HMI is operated using the buttons. A number of buttons perform a different function when they are pressed and held (for more than 2 seconds). The HMI is used to display the data. Data is only saved to the circuit board.

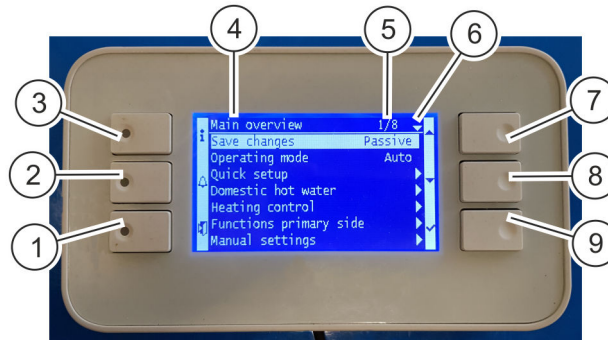


Fig. 9: Buttons

Position	Element	Description
1	[ESC]	Exits a parameter setting without saving any changes made. Returns to the previous page. When a measurement is activated and [ESC] is pressed and held, a trend recording starts on the display.
2	[ALARM]	Flashes red as soon as there is a new error message. Jumps directly to the current error message, or to the full list of alarms.
3	[INFO]	Jumps to the start page.
4	Heading	Describes the page being displayed.
5	Row selected/ number of rows	Indicates how many rows there are on the page, and which row is currently activated.
6		Indicates which user level is active: <ul style="list-style-type: none"> ■ No key = not logged in ■ = User ■ = Service ■ = Factory
7	[UP]	Moves one row up in the list. Counts upwards when numbers are displayed. Counts upwards faster when pressed and held.
8	[DOWN]	Moves one row down in the list. Counts downwards when numbers are displayed. Counts downwards faster when pressed and held.
9	[ENTER]	Selects an element. Confirms the selection. The log-in page is opened when pressed and held.

4 Functional description

4.1 Operating modes

Automatic mode (Auto)

The heat interface unit operates using the standard controller function in automatic mode. Measurements can be viewed, and setpoints can be entered.

Manual mode (Man)

The signals for the heat interface unit are determined manually in manual mode. The setpoints for the parameter settings are ignored when manual mode is active. A switchover to automatic mode occurs after a predefined period of time.

The following components are controlled in manual mode:

- Valve for domestic hot water
- Valve for heating supply
- Heating circulation pump
- Valve for keep warm function

Thermal disinfection (Legio)

Legionellae are killed off by thermal disinfection in this operating mode. The lines are flushed at a water temperature of at least 55 °C over a preset period. Once this preset period has elapsed, a switchover back to automatic mode occurs.



WARNING!

Proliferation of legionellae due to stagnant water!

If the unit is not used for an extended period, there is a risk of the proliferation of legionellae due to stagnant water.

- Upon restarting, set the operating mode to “Thermal disinfection” (Legio) to flush the drinking water lines with hot water (↪ Chapter 6.3 ‘Setting the operating mode’ on page 25).



Legionellae are bacteria of which one species is harmful to humans. Legionellae can easily proliferate in pipes with warm, stagnant water. Flushing the pipes at a water temperature of at least 55 °C kills off the legionellae.

Test procedure (Test)

All components of the system are activated to test their function for approx. 1 min. in an automated process in this operating mode. Once this time has elapsed, a switchover back to automatic mode occurs.

4.2 Drinking hot water control

As soon as a flow is detected in the domestic hot water, the corresponding control valve is used to make adjustments to the set nominal temperature.

The following functions for automatic adjustment of the specified setpoint prevent excessive heat from being drawn from the heat network.

Setpoint reduction

If the temperature in the supply from the heat network is too low to allow the specified setpoint to be reached, then the controller automatically reduces the nominal temperature to a value that can be reached. As soon as the temperature from the heat network is sufficient again, then the set nominal temperature is used again.

Setpoint reduction to actual value

If the current nominal temperature is not reached for an extended period, then the controller reduces the setpoint to the hot water temperature currently reached for a few minutes.

Maximum domestic hot water temperature

If the domestic hot water temperature exceeds a specified maximum temperature, then the drinking water control switches off until the temperature has cooled down again (this setting can only be made by service personnel).

4.3 Heating control

If there is a heat request from the room thermostat (potential free contact closed), then the heating supply is adjusted to the specified setpoint by means of the corresponding control valve.

The following functions for automatic adjustment of the specified setpoint prevent excessive heat from being drawn from the heat network.

Setpoint reduction

If the temperature in the supply from the heat network is too low to allow the specified setpoint to be reached, then the controller automatically reduces the nominal temperature to a value that can be reached. As soon as the temperature from the heat network is sufficient again, then the set nominal temperature is used again.

Setpoint reduction to actual value

If the current nominal temperature is not reached for an extended period, then the controller reduces the setpoint to the temperature of the heating supply currently reached for a few minutes.

Maximum supply temperature

If the temperature of the heating supply exceeds a specified maximum temperature, then the heating control switches off until the temperature has cooled down again (this setting can only be made by service personnel).

Frost protection

If the supply temperature is approaching freezing point, the control is activated. The circulation pump starts and the valve makes adjustments to set a minimum setpoint. When the supply temperature reaches 8 °C, the control continues operating for a number of minutes before switching off again. This prevents water from freezing in the pipes.

Anti-lock protection

If the pump does not operate for several days, then the pump is briefly moved without opening the valve. This prevents the pump from locking up mechanically.

4.4 Special functions

Remote off

There is the option of equipping the controller circuit board with remote off. Remote off also overrides manual mode and frost protection. The shutoff function is inactive, which is why the contact on the corresponding terminals is open.

Keep warm function

A valve in the primary supply keeps the supply line to the unit warm for fast hot water preparation. The keep warm function keeps the supply line at a temperature between the parameter settings for ON level KWF and Off level KWF.

4.5 Password protection

Only basic values are available in the HMI if no log-in as service personnel has occurred by entering the corresponding PIN. The log-in procedure and the description of potential additional settings and functions are listed in a separate appendix for the service personnel.

4.6 Data recording



The controller can continually record measured data and parameters (e.g. domestic hot water flow rate). This function can be deactivated by the service personnel by using the instructions in the corresponding appendix.

5 Installation

Electric current



DANGER!

Danger due to electric current!

When working with power cables, there is an immediate danger of severe, or even fatal, injury due to electric current.

- Ensure that the cable is not live when performing installation work.
- Only have work on electric cables performed by an electrician.
- Never connect voltage to open cables.
- Before connecting the cable to voltage, ensure that no persons are near electric cables.

Dry operation (damage to pump)



NOTICE!

Damage to the pump due to dry operation!

The controller is a component of the heat interface unit. The controller and the heat interface unit draw energy from the same connector. If the controller is connected to the mains power before filling the heat interface unit, then the pumps operate dry and will be damaged.

- Fill the heat interface unit before connecting the controller to the mains power.



The controller is prewired and ready-to-plug. The operating company only needs to produce the following connections:

- *Input HTG demand*
- *Remote off (optional)*
- *Power cable*

Installation

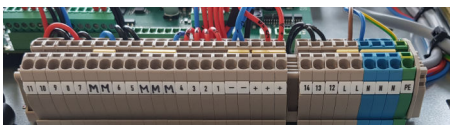


Fig. 10: Terminal block


Personnel: ■ Electrician

1. ➤ Open the controller box.
2. ➤ Connect the wiring in accordance with the terminal diagram ().



A number of connections must be potential-free ().

3. ➤ Close the controller box and screw the housing together.
4. ➤ Ensure that there is a socket available and it is protected from short circuit by means of a residual current device.

5.  Plug the connector plug for the controller into the socket provided.
 - ⇒ The heat interface unit and the controller start automatically.



As soon as the controller can draw electric current, the program starts. It can take up to 30 seconds until the controller is ready for operation.

6 Commissioning and operation

When commissioning, the parameters have already been set at the factory (↪ *Chapter 7 'Parameter settings and display values' on page 26*) and can be changed on the HMI (↪ *Chapter 6.2.1 'Setting parameters on the HMI' on page 24*).



NOTICE!

Damage to the pump due to dry operation!

The controller is a component of the heat interface unit. The controller and the heat interface unit draw energy from the same connector. If the controller is connected to the mains power before filling the heat interface unit, then the pumps operate dry and will be damaged.

- Fill the heat interface unit before connecting the controller to the mains power.

6.1 Connecting the HMI

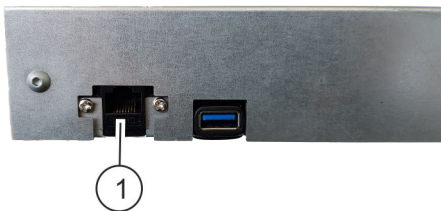


Fig. 11: LAN connection

Personnel:

- Operator
- Heating and sanitary technician

➔ Connect the HMI plug to the LAN connection (Fig. 11/1).

- ⇒ The HMI lights up. The operating software and the current data are loaded onto the HMI from the controller. The main overview appears.

6.2 Setting parameters

6.2.1 Setting parameters on the HMI

Personnel:

- Heating and sanitary technician

Prerequisite:

- The HMI has been connected

➔ Set parameters using the buttons (↪ *Chapter 3.4 'Human machine interface (HMI)' on page 17*).



Lists with parameters and setting ranges can be found in ↪ *Chapter 7 'Parameter settings and display values' on page 26*.

6.2.2 Saving changes



NOTICE!

The set parameters are retained even when they have not been saved. However, they will be lost in the event of a power failure. To ensure the set parameters are retained after a power failure, they must be saved actively.

Personnel: Operator
 Heating and sanitary technician

1. ➔ On the main page, select 'Save settings'.
2. ➔ Press [ENTER].

6.3 Setting the operating mode



The controller automatically starts in automatic mode, and its control function starts straight away.

Personnel: Operator
 Heating and sanitary technician

1. ➔ On the main page, open 'Operating mode'.
2. ➔ Select 'Automatic', 'Manual', 'Legio' or 'Test'.



The operating modes "Manual mode" (Manual), "Thermal disinfection" (Legio) and "Test procedure" (Test) switch back to automatic mode (Automatic) after a preset time.

7 Parameter settings and display values



The values without a value range correspond to the display values of sensors, control signals or software statuses. Values with value ranges are parameter settings.

To delete the value ranges, see the appendix.

Main overview

HMI text	Description	Value range
Save changes	Saves changes to the settings to ensure they are not lost in the event of a power failure. The parameter automatically resets to "Passive".	Active Passive
Operating mode	Setting the operating mode: Automatic: Normal control Manual: The unit is operated using the manual settings (see section on Manual control). Legio: The setpoint of the domestic hot water is raised to a higher temperature for a specific period for thermal disinfection (see DHW parameters section). Test: Valves and pumps are activated briefly to test that activation is correct. (All modes are automatically switched over to Automatic after a specific time.)	Auto Man Legio Test

Main overview ► Quick setup

HMI text	Description	Value range
Setpoint DHW	Setpoint for the domestic hot water preparation	25 – 90 °C
Setpoint HTG supply	Setpoint for the supply temperature of the heating water	15 – 70 °C
Save changes	Saves changes to the settings to ensure they are not lost in the event of a power failure. The parameter automatically resets to "Passive".	Active Passive

Main overview ► Domestic hot water

HMI text	Description	Value range
DHW temperature	Temperature of the domestic hot water	
Current flow DHW	Current flow rate of the domestic hot water	
Setpoint DHW	Setpoint for the domestic hot water preparation	25 – 90 °C

HMI text	Description	Value range
Setpoint th. disinfection	Setpoint of domestic hot water heating during thermal disinfection	55 – 90 °C
Duration th. disinfection	Duration of “Disinfection” operating mode. Once this time has elapsed, a switchover to Automatic occurs automatically.	0 – 240 min

Main overview ► Heating control

HMI text	Description	Value range
HTG supply temperature	Supply temperature of the heating water	
Setpoint HTG supply	Setpoint for the supply temperature of the heating water	15 – 70 °C

Main overview ► Functions primary side

HMI text	Description	Value range
Heat supply temperature	Temperature of the water from the heat network	
On level KWF	If the temperature on the primary side (supply from the heat network) falls below this level, then the keep warm function is switched to active.	10 – 70 °C
Off level KWF	If the temperature on the primary side (supply from the heat network) exceeds this level, then the keep warm function is deactivated.	10 – 70 °C

Main overview ► Manual settings

HMI text	Description	Value range
DHW valve (Man.)	Control value for the valve for domestic hot water control when manual operating mode is used (100% = valve fully open)	0 – 100%
HTG Valve (Man.)	Control value for the valve for heating water control when manual operating mode is used (100% = valve fully open)	0 – 100%
HTG Pump (Man.)	Activation of the circulation pump for the heating circuit in manual operating mode: Off: Pump not operating On: Pump operating	Off On
Bypass valve (Man.)	Activation of the valve for the keep warm function on the primary side when manual operation is used: Off: Valve is closed On: Valve is open (Note: Return temperature to the heat network may increase considerably!)	Off On
Heat Demand (Man.)	Manual heat request for the activation of the heating water control when manual operating mode is used (instead of the room thermostats) Off: no heat request On: Heat request	Off On

Main overview ► System

HMI text	Description	Value range
Language	Language selection	English German
Imperial unit sys.	Switchover between imperial and metric system of units Passive: metric system of units Active: imperial system of units	Passive Active

Main overview ► System ► Versions

HMI text	Description	Value range
BSP version	Version of the operating system	
GUID application	Software version	
GUID HMI	Version of the operating screen on the HMI	
GUID OBH	Version of configurations supported (e.g. languages)	
Controller board	Controller board version	

8 Maintenance

8.1 Safety during maintenance

Electric current

**DANGER!****Danger due to electric current!**

When working with power cables, there is an immediate danger of severe, or even fatal, injury due to electric current.

- Ensure that the cable is not live when performing installation work.
- Only have work on electric cables performed by an electrician.
- Never connect voltage to open cables.
- Before connecting the cable to voltage, ensure that no persons are near electric cables.

Hot surfaces

**WARNING!****Danger of injury due to hot surfaces!**

Surfaces on components may become very hot during operation. Contact between the skin and hot surfaces can cause severe burns to the skin.

- When working near hot surfaces, always wear heatproof protective clothing and protective gloves.
- Before opening the controller box, ensure that all surfaces have cooled down to ambient temperature.

8.2 Overview of maintenance work

The following tables list the maintenance work that is necessary to ensure optimal and fault-free operation of the controller.

If increased wear is identified during regular inspections, shorten the required maintenance intervals to correspond to the actual signs of wear. Should you have any questions regarding the maintenance work and intervals, contact Customer Service (see page 3 for the contact details).

Interval	Maintenance work	Personnel
Every year	Check the date and time, and adjust if necessary.	Heating and sanitary technician
	Appraise evaluations and check for plausibility.	Heating and sanitary technician
	Check current measurements and check for plausibility.	Heating and sanitary technician
	Check the error memory.	Heating and sanitary technician
	Check the switch outputs and consumption in manual operating mode.	Heating and sanitary technician
	Optimise the set parameters.	Heating and sanitary technician

9 Faults

9.1 Safety instructions when repairing faults

Securing against a restart



WARNING!

Danger to life due to unauthorised restart!

An unauthorised restart of the power supply when repairing faults presents a danger of severe injuries or even death for persons in the danger zone.

- Before starting any work, shut off all power supplies and secure them against a restart.

9.2 Fault display

LED on the circuit board.

The LED on the circuit board lights up red when the software is not able to run correctly. For further information about the error, connect the HMI (↪ *Chapter 6.1 'Connecting the HMI' on page 24*) and observe the alarm message (↪ *Chapter 9.3.2 'Fault table' on page 32*).

LED on the HMI

The LED in the *[ALARM]* button flashes red as soon as an error occurs. Pressing the button allows details about the alarm (↪ *'Faults with error message' on page 32*) to be viewed.

LEDs on the valve

The LEDs on the valve flash in alternation as soon as a fault occurs on the valve. For further information about the fault, connect the HMI (↪ *Chapter 6.1 'Connecting the HMI' on page 24*) and observe the alarm message (↪ *Chapter 9.3.2 'Fault table' on page 32*), and repair the fault on the valve in accordance with the documentation for the valve.


9.3 Fault repair

9.3.1 Viewing an error message

The last error message and the error list containing all faults can be viewed on the HMI.

Pressing the *[ALARM]* button several times toggles between the following overviews:

- Error details of the last current error
- List of all current errors. The selection button can be used to select a specific error message and open the corresponding details page.
- List of all previous errors (history)
- Select the current error list or the history

 The error message also indicates the priority level of the error. Depending on the priority level, the unit is switched off:

- Critical (A) = unit is switched off, because there is an error that is critical for the installation.
- Low (B) = parts of the unit are switched off.
- Warning (C) = unit continues operating.

9.3.2 Fault table

Faults with error message

The following sections describe faults and work required to repair them, which are displayed on the HMI.

Fault description	Cause	Remedy	Personnel
01 Supply temperature: noSensor Signal fault on the heat network supply temperature sensor. Valves are closed, circulation pump is off.	Sensor incorrect or not connected.	Check the wiring and reconnect the sensor, if necessary.	Electrician Heating and sanitary technician
	Sensor defective.	Replace the sensor.	Electrician Heating and sanitary technician
10 Supply temperature too high: Active Temperature of the heat network supply higher than the defined maximum value. DHW valve is closed.	Water temperature in the supply is higher than allowed.	Check the heat supply.	Heating and sanitary technician
20 DHW temperature; no Sensor Signal fault on the domestic hot water sensor. DHW valve is closed.	Sensor incorrect or not connected.	Check the wiring and reconnect the sensor, if necessary.	Electrician Heating and sanitary technician
	Sensor defective.	Replace the sensor.	Electrician Heating and sanitary technician
21 DHW temperature too high: Active Temperature of the domestic hot water higher than the defined maximum value.	Control valve defective.	Replace the control valve.	Heating and sanitary technician
	A setpoint that is too high has been saved.	Correct the setpoint.	Heating and sanitary technician
30 DHW setpoint reduction: Active Setpoint reduction for domestic hot water is active.	Temperature of supply heat network insufficient for the setpoint saved.	Increase the temperature of the supply heat network. Reduce the nominal temperature for the domestic hot water.	Heating and sanitary technician

Fault description	Cause	Remedy	Personnel
<p>31 DHW setpoint unreached Domestic hot water temperature not reached for 3 minutes. Setpoint reduction to actual value.</p>	Domestic hot water requirements too high.	Reduce domestic hot water requirements.	Operator
	Calcination in the heat exchanger or strainer dirty.	Check the water quality and, if necessary, take appropriate measures to comply with country-specific regulations regarding water quality.	Heating and sanitary technician
	Control valve defective.	Replace the control valve.	Heating and sanitary technician
<p>32 DHW flow too high: Active Flow rate is higher than the defined maximum flow rate.</p>	Increased domestic hot water requirements.	Reduce domestic hot water requirements.	Operator
<p>40 Temperature HTG supply: noSensor Signal fault on the heating supply temperature sensor. HTG valve is closed, circulation pump is off.</p>	Sensor incorrect or not connected.	Check the wiring and reconnect the sensor, if necessary.	Electrician Heating and sanitary technician
	Sensor defective.	Replace the sensor.	Electrician Heating and sanitary technician
<p>41 Htg supply temperature too high: Active Heating supply temperature higher than the defined maximum value. HTG valve is closed, circulation pump is off.</p>	Control valve defective.	Replace the control valve.	Heating and sanitary technician
	A setpoint that is too high has been saved.	Correct the setpoint.	Heating and sanitary technician
<p>50 HTG setpoint reduction: Active Setpoint reduction for heating active.</p>	Temperature of supply heat network insufficient for the setpoint saved.	Increase the temperature of the supply heat network. Reduce the heating setpoint.	Heating and sanitary technician
<p>51 HTG setpoint unreached: Active Heating supply temperature not reached for 3 minutes. Setpoint reduction to actual value.</p>	Domestic hot water requirements too high.	Reduce domestic hot water requirements.	Operator
	Heat exchanger or strainer dirty.	Check the water quality and, if necessary, take appropriate measures to comply with country-specific regulations regarding water quality.	Heating and sanitary technician

Fault description	Cause	Remedy	Personnel
51 HTG setpoint unreached: Active Heating supply temperature not reached for 3 minutes. Setpoint reduction to actual value.	Control valve defective.	Replace the control valve.	Heating and sanitary technician
80 Input remote-off: Active Remote off is active. The entire control is inactive.	Heat interface unit was switched off externally.	Switch on the heat interface unit again using an external signal.	Operator

Faults without an error message

The following sections describe faults that are not displayed on the HMI, and how to repair them.

Fault description	Cause	Remedy	Personnel
Domestic hot water or heating supply is cold.	Supply heat network is cold.	Check the installation and values on the HMI.	Operator
	No flow on the primary side.	Check the installation and values on the HMI. Proceed in the same way as you would for the "No flow on the primary side" fault, if necessary.	Heating and sanitary technician
No flow on the primary side.	Strainer blocked.	Replace the strainer.	Heating and sanitary technician
	Valves closed or defective.	Open or replace the valves.	Heating and sanitary technician
	Flow sensor is dirty or defective.	Clean or replace the flow sensor.	Electrician
	Prior installation faulty.	Check the installation of the heat interface unit.	Heating and sanitary technician
	Air in the system.	Remove the air from the system.	Heating and sanitary technician
HMI does not display any information about the heat interface unit.	HMI not correctly connected.	Reconnect the HMI (<i>↪ Chapter 6.1 'Connecting the HMI' on page 24</i>).	Operator
	HMI defective.	Replace the HMI. A new HMI can be sourced from the supplier.	Operator
	Circuit board defective.	Replace the circuit board (<i>↪ Chapter 9.4.2 'Replacing the circuit board' on page 35</i>).	Electrician
	Internal wiring of the LAN connection faulty.	Open the controller and check the wiring, and replace it, if necessary.	Electrician

Fault description	Cause	Remedy	Personnel
Flow rate is not measured, although fresh water is flowing.	Flow sensor for fresh water is dirty or defective.	Clean or replace the flow sensor.	Electrician
	Circuit board defective.	Replace the circuit board (↪ Chapter 9.4.2 'Replacing the circuit board' on page 35).	Electrician
	Wiring faulty.	Check the wiring and replace it, if necessary.	Electrician

9.4 Work required for repairing faults

9.4.1 Work required for repairing faults on the heat interface unit



When performing work required to repair faults affecting the heat interface unit, observe the operating instructions for the heat interface unit ([↪ Chapter 1.2 'Other applicable documents' on page 5](#)).

9.4.2 Replacing the circuit board

Personnel: Electrician

- 1.** [▶](#) Save the set parameters externally (service personnel only).
- 2.** [▶](#) Disconnect the connector from the socket.
- 3.** [▶](#) Unplug the LAN cable and USB cable.
- 4.** [▶](#) Remove the screws in the controller box to open the controller box.
- 5.** [▶](#) Unplug the terminal plugs from the terminal strips on the circuit board.
- 6.** [▶](#) Remove the circuit board.
- 7.** [▶](#) Insert a new circuit board and click it into place.
- 8.** [▶](#) Plug the terminal plugs into the terminal strips on the circuit board.
- 9.** [▶](#) Close the controller box and screw it together.
- 10.** [▶](#) Connect the HMI to the controller ([↪ Chapter 6.1 'Connecting the HMI' on page 24](#)).
- 11.** [▶](#) Connect the connector to the socket.
- 12.** [▶](#) Reset the parameters ([↪ Chapter 6.2.1 'Setting parameters on the HMI' on page 24](#)) or load them using a USB stick (service personnel only).

10 Decommissioning and restarting

10.1 Decommissioning



When decommissioning, observe the instructions for the heat interface unit (↪ Chapter 1.2 'Other applicable documents' on page 5).

10.2 Restarting

Proliferation of legionellae



WARNING!

Proliferation of legionellae due to stagnant water!

If the unit is not used for an extended period, there is a risk of the proliferation of legionellae due to stagnant water.

- Upon restarting, set the operating mode to "Thermal disinfection" (2 = Legio) to flush the drinking water lines with hot water (↪ Chapter 6.3 'Setting the operating mode' on page 25).



Legionellae are bacteria of which one species is harmful to humans. Legionellae can easily proliferate in pipes with warm, stagnant water. Flushing the pipes at a water temperature of at least 55 °C kills off the legionellae.

Restarting



Restart the controller in accordance with ↪ Chapter 6 'Commissioning and operation' on page 24.

11 Disassembly, disposal

11.1 Safety instructions for disassembly/disposal

Electrical installation

**DANGER!****Danger due to electric current!**

Danger to life in the event of contact with live components. Electrical components may make unchecked movements when switched on and cause severe injuries.

- Switch off the power supply before starting disassembly, and disconnect it for good.

11.2 Disassembling the controller

Personnel: ■ Heating and sanitary technician

1. ➤ Disconnect the connector from the socket.
2. ➤ Disconnect the LAN cable for the HMI, if installed.
3. ➤ Unplug the terminals on the terminal block.
4. ➤ Release the screws.
5. ➤ Remove the circuit board.
6. ➤ Remove operating materials and resources and dispose of them in an environmentally friendly manner.
7. ➤ Dismantle subassemblies and components in accordance with the applicable local occupational health and safety regulations and environmental regulations.

11.3 Disposing of the controller

**ENVIRONMENT!****Danger to the environment due to incorrect disposal!**

Incorrect disposal can cause a hazard for the environment.

- Have electrical scrap, electronic components, lubricants and other resources disposed of by a certified specialist company.
- If in doubt, obtain information about environmentally responsible disposal from the local authorities or specialised disposal companies.

If no agreement covering return and disposal was made, then dispose of dismantled components by recycling them:

- Scrap metals.
- Give plastic elements to a recycling company.
- Dispose of other components after sorting them by material.

12 Technical data

12.1 Design and operating data



Observe the supplementary design and operating data in the data sheet (Chapter 1.2 'Other applicable documents' on page 5).

12.2 Connection values

Electrical

Data	Value	Unit
Voltage	230 ± 10%	VAC
Power consumption, maximum	120	W
Grid frequency	50/60	Hz
IP code	IP 20	
Protection class	I	
Internal fuse (20 mm/2.5 A/F)	2.5	A

12.3 Type plate

The type plate can be found on the front of the controller box.

13 Declaration of conformity



CE KONFORMITÄTSERKLÄRUNG DECLARATION OF CONFORMITY DECLARATION DE CONFORMITE

Wir
We Taconova Group AG
Nous
(Name des Anbieters) (supplier's name) (nom du fournisseur)

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product
declarons sous notre seule responsabilité que le produit

TacoControl Z1

Typen: S ; M ; L
Nennweiten: -

(Bezeichnung Typ oder Modell, Los-, Chargen- oder Seriennummer)
(name, type or model, lot, batch or serial number)
(nom, type ou modèle, no de lot, d'échantillon ou de série)

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en)
übereinstimmt
to which this declaration relates is in conformity with the following standard(s) or other normative
document(s)
auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s)

DIN EN 60730-1:2017-05; EN 61000-6-2; EN 61000-6-3

(Titel und/oder Nummer sowie Ausgabedatum der Norm(en) oder der anderen normativen Dokumente)
(title and/or number and date of issue of the standard(s) or other normative document(s))
(titre et/ou no et date de publication de la (des) norme(s) ou autre(s) document(s) normatif(s))

Gemäss den Bestimmungen der Richtlinie(n),
following the provisions of Directive(s),
conformement aux dispositions de(s) directive(s)
(falls zutreffend) (if applicable) (le cas échéant)

2014/30/EU ElectroMagnetic Compatibility Directive (EMCD)
2014/35/EU Low Voltage Directive (LVD)
2011/65/EU Restriction of the use of certain hazardous substances Directive (RoHs)

(Ort und Datum der Ausstellung) (Name und Unterschrift oder gleichwertige Kennzeichnung des Befugten)
(Place and date of issue) (name and signature or equivalent marking of authorized person)
(Lieu et date) (nom et signature du signataire autorisé)

Seebach, den 14.08.2019

Andrin Stump
Head Product Development

René Freudrich
Head Product Management

14 Index

A

Abbreviations	5
Anti-lock protection	21
Automatic mode	19

B

Buttons	17
-------------------	----

C

Circuit board	16
Components	
Circuit board	16
Controller box	16
HMI	17
Connecting sensors	22
Connecting the main electrical cable	22
Connecting the main supply line	22
Connection point	
LAN connection	15
Sensors	16
Terminals	15
USB connection	15
Connection values	39
Controller box	16

D

Decommissioning	36
Disassembly	37
Display	17
Disposal	37

E

Electric power	10
Electrical connection values	39
Environmental protection	14

F

Faults	
with fault message	32
without fault message	34

Frost protection	21
Functional description	15
Fuse	17

G

Glossary	5
--------------------	---

H

Hardware	16
HMI	24

I

Improper use	8
------------------------	---

K

Keep warm function	21
------------------------------	----

L

LAN connection	15
Legionellae	19
Logging in	45
Logging out	45

M

Maintenance table	29
Manual mode	19

O

Operating company	11
Operating company responsibilities	11
Operating modes	
automatic mode	19
manual mode	19
thermal disinfection	19
Other applicable documents	5

P

Parameters	
saving	25
saving externally	46
with log-in	50

without log-in	26
Personnel	12
Proliferation of legionellae	36
Proper use	8
R	
Replacing the circuit board	35
Residual risks	9
Responsibilities of the operating company	11
Responsibility of the operating company	11
S	
Safety	7
Sensors	16
Setting the operating mode	25
T	
Terminal block	17
Terminal diagram	17
Terminals	15
Thermal disinfection	19
Trends	
saving	47
U	
Unauthorised persons	13
Use	8
V	
Voltage transformer	17

Appendix

Inhaltsverzeichnis des Anhangs

A	Appendix for service personnel.....	45
---	-------------------------------------	----

A Appendix for service personnel

This appendix contains additional instructions and information that are only intended for the heating and sanitary technician.

A.1 Logging in/out



The PIN for logging in as service personnel is 1190.

Personnel: Heating and sanitary technician

1. Press and hold *[ENTER]* for min. 2 seconds.
 - ⇒ If a PIN has already been entered, a log-in window opens. Otherwise a prompt to enter the PIN will appear straight away (continue with step 3).
2. Select 'Log in'.
3. Select number using *[UP]* and *[DOWN]*.
4. Confirm using *[ENTER]*.
5. Repeat steps 3 and 4 for all numbers in the PIN.
 - ⇒ or appears on the screen. The user is logged in.



The user is automatically logged out after 10 minutes of inactivity.

A.2 Saving/loading

Resetting to factory setting



To save data, a USB stick with the FAT or FAT32 file system should be used.

Personnel: Heating and sanitary technician

1. Open 'System'.
2. Open 'Save/load'.
3. Activate 'Reset factory settings'.

Loading a new parameter set

Personnel: Heating and sanitary technician

Material: USB stick

1. Insert a USB stick with the parameter file.
2. Open 'System'.
3. Open 'Save/load'.
4. Select 'Load settings from USB'.

Saving a parameter set externally.

Personnel: Heating and sanitary technician

Material: USB stick

1. Insert a USB stick.
2. Open 'System'.
3. Open 'Save/load'.
4. Activate 'Save settings to USB'.



The data are saved in a format that can only be read using special software. The data can, however, be loaded directly onto other controllers.

Activating trend recording

The software features a range of predefined parameters that can be continuously recorded. This function must be activated for recording to be performed.

Personnel: Heating and sanitary technician

1. Open 'System'.
2. Open 'Save/load'.

3. Activate 'Activation trend recording'.



There are 4,650 data points available for each parameter. When a longer recording is made, the oldest data are continuously overwritten.



There are 3 types of recordings:

- *Recording interval **long**: Allows data to be tracked over several days.*
- *Recording interval **short**: Allows more exact data to be tracked over several hours.*
- *Recording in the event of a change (**COV**): Only makes a recording when the parameter changes, allowing recordings to be made over an extended period.*

The short and long recording intervals can be set by means of the corresponding parameter settings on the 'Save/load' page.

Saving trends



The trends cannot be displayed on the HMI. They must be copied onto a USB stick to display them on a computer. The trends are saved as a csv file.

Personnel: ■ Heating and sanitary technician

Material: ■ USB stick

1.  Log in on the HMI ( [Appendix A.1 'Logging in/out' on page 45](#)).

2.  Insert a USB stick.

3.  Open 'System'.

4.  Activate 'Save trends to USB'.

⇒ The parameter is set to "Active".



It can take several minutes to save the data. The parameter is only reset to "Passive" when data saving is complete.



If a USB stick is left inserted, a copy of the data is saved to the USB stick from the circuit board automatically once the time defined in 'Aut. trend saving interval' has expired.

Trends

Trend no.	Description	Recording interval
1	Supply temperature	long
2	Domestic hot water flow rate	long
3	Raw flow rate sensor data (domestic hot water flow rate × server pulse rate)	short
4	Domestic hot water temperature	long
5	Domestic hot water temperature	short
6	Domestic hot water valve control value	long
7	Domestic hot water valve control value	short
8	Input from room thermostat	COV
9	Heating supply temperature	long
10	Heating supply temperature	short
11	Heating valve control value	long
12	Heating valve control value	short
13	Signal at heating pump	COV
14	Signal at bypass valve for keep warm function	COV
15	On ratio of the bypass valve control	long
16	Input from remote off	COV

Loading new software

A new package for the operating system, software and operating application can be loaded by means of a USB stick. The corresponding files must be obtained from the supplier, and be copied onto the USB stick.

Personnel: ■ Electrician

Material: ■ USB stick

1. ➤ Disconnect the power supply to the controller.
2. ➤ Insert the USB stick with the corresponding data.
3. ➤ Open the controller box.

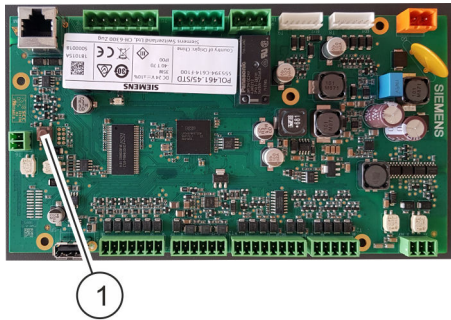


Fig. 12: Service button

4. ➤ Press and hold the service button (Fig. 12/1).
5. ➤ Switch on the power supply.



NOTICE!

Certain cables in the controller box are live with 230 V voltage.

6. ➤ Hold the service button until the LED status display slowly switches from green to red.
7. ➤ Let go of the service button and wait until the LED status display on the circuit board lights up red.



If a new operating system is being loaded, the controller will automatically restart and therefore start to flash green.

8. ➤ Disconnect the power supply to the controller.
9. ➤ Close the controller box and install it in the heat interface unit.
10. ➤ Switch on the power supply.

A.3 Parameter settings and display values for service personnel



The values without a value range correspond to the display values of sensors, control signals or software statuses. Values with value ranges are parameter settings.



*The values marked with * only appear when the log-in as service personnel has been performed using the PIN (↪ Appendix A.1 'Logging in/out' on page 45).*

Main overview

HMI text	Description	Value range
Setting Save	Saves changes to the settings to ensure they are not lost in the event of a power failure. The parameter automatically resets to "Passive".	Active Passive
Operating mode	Setting the operating mode: Automatic: Normal control Manual: The unit is operated using the manual settings (see section on Manual control). Legio: The setpoint of the domestic hot water is raised to a higher temperature for a specific period for thermal disinfection (see DHW parameters section). Test: Valves and pumps are activated briefly to test that activation is correct. (All modes are automatically switched over to Automatic after a specific time.)	Auto Man Legio Test

Main overview ► Quick setup

HMI text	Description	Value range
Setpoint DHW	Setpoint for the domestic hot water preparation	25 – 90 °C
Setpoint HTG supply	Setpoint for the supply temperature of the heating water	15 – 70 °C
Setting Save	Saves changes to the settings to ensure they are not lost in the event of a power failure. The parameter automatically resets to "Passive".	Active Passive

Main overview ► Quick setup ► Date/ time input

HMI text	Description	Value range
*Year	Current date: Year	1970 – 9999
*Month	Current date: Month	1 – 12
*Day	Current date: Day	1 – 31
*Hour	Current time: Hours	0 – 23
*Minute	Current time: Minutes	0 – 59
*Second	Current time: Seconds	0 – 59

Main overview ► Domestic hot water

HMI text	Description	Value range
DHW temperature	Temperature of the domestic hot water	
Current flow DHW	Current flow rate of the domestic hot water	
*Ctrl value DHW valve	Control value for the domestic hot water control valve	
Setpoint DHW	Setpoint for the drinking water preparation	25 – 90 °C
Setpoint th. disinfection	Setpoint of domestic hot water heating during thermal disinfection	55 – 90 °C
Duration th. disinfection	Duration of “Disinfection” operating mode. Once this time has elapsed, a switchover to automatic mode occurs automatically.	0 – 240 min

Main overview ► Domestic hot water ► Service settings DHW

HMI text	Description	Value range
*Max. DHW supply temperature	Specifies the maximum temperature allowed for the domestic hot water. If this temperature is exceeded, this will result in the valve for the domestic hot water control being closed until the temperature has fallen below this value again.	50 – 95 °C
*Max. flow DHW	Specifies the maximum flow rate for which this unit is designed. Exceeding this flow rate will result in a warning message.	5 – 60 l/min
*On-level DHW ctrl	Activation threshold for the domestic hot water control. If this flow rate is exceeded, the domestic hot water control starts.	0 – 25 l/min
*Off-level DHW ctrl	Deactivation threshold for the domestic hot water control. If the value falls below this flow rate, the valve for domestic hot water control closes.	0 – 25 l/min
*Min. dT Supply-DHW	Minimum temperature difference allowed between the supply temperature from the heat network and the nominal domestic hot water temperature. If this temperature difference is not guaranteed, then the nominal domestic hot water temperature is reduced automatically.	0 – 10 °C

Main overview ► Heating control

HMI text	Description	Value range
HTG supply temperature	Supply temperature of the heating water	
*Ctrl value HTG valve	Control value for the control valve of the heating control	
Setpoint HTG supply	Setpoint for the supply temperature of the heating water	15 – 70 °C
*Input HTG demand	Input signal from the room thermostat Passive: No heat request Active: Heat request	
*Relay heating pump	Signal at heating circulation pump 0%: No signal 100%: Pump activated	

**Main overview ► Heating control ►
Service settings Htg**

HMI text	Description	Value range
*Max. HTG supply temperature	Specifies the maximum temperature allowed in the heating supply. If this value is exceeded in the heating supply, the valve for the heating supply control closes and the circulation pump stops.	20 – 80 °C
*Min. dT Supply-T_Htg	Minimum temperature difference allowed between the supply temperature from the heat network and the setpoint for the heating supply temperature. If this temperature difference is not guaranteed, the setpoint is reduced automatically.	0 – 10 °C

Main overview ► Functions primary side

HMI text	Description	Value range
Heat supply temperature	Temperature of the water from the heat network	
*Max. heat supply temperature	Specifies the maximum temperature allowed in the heating supply.	50 – 100 °C
On level KWF	If the temperature on the primary side (supply from the heat network) falls below this level, then the keep warm function is switched to active.	10 – 70 °C
Off level KWF	If the temperature on the primary side (supply from the heat network) exceeds this level, then the keep warm function is deactivated.	10 – 70 °C
*Relay KW function	Signal for the keep warm function valve Off: Valve closed On: Valve open	
*Input remote-off	Input signal from prepaid circuit Passive: Contact open Active: Contact closed	

Main overview ► Manual settings

HMI text	Description	Value range
DHW valve (Man.)	Control value for the valve for domestic hot water control when manual operating mode is used (100% = valve fully open)	0 – 100%
HTG Valve (Man.)	Control value for the valve for heating water control when manual operating mode is used (100% = valve fully open)	0 – 100%
HTG Pump (Man.)	Activation of the circulation pump for the heating circuit in manual operating mode: Off: Pump not operating On: Pump operating	Off On
Bypass valve (Man.)	Activation of the valve for the keep warm function on the primary side when manual operation is used: Off: Valve is closed On: Valve is open (Note: Return temperature to the heat network may increase considerably!)	Off On
Heat Demand (Man.)	Manual heat request for the activation of the heating water control when manual operating mode is used (instead of the room thermostats) Off: no heat request On: Heat request	Off On
*Duration man. mode	Time after which manual operating mode is automatically switched over to Automatic again.	0.5 – 24 h

Main overview ► System

HMI text	Description	Value range
Language	Language selection	English German
Imperial unit sys.	Switchover between imperial and metric system of units Passive: metric system of units Active: imperial system of units	Passive Active

Main overview ► System ► Date/Time input

HMI text	Description	Value range
*Year	Current date: Year	1970 – 9999
*Month	Current date: Month	1 – 12
*Day	Current date: Day	1 – 31
*Hour	Current time: Hours	0 – 23
*Minute	Current time: Minutes	0 – 59
*Second	Current time: Seconds	0 – 59

Main overview ► System ► Save/load

HMI text	Description	Value range
*Reset factory settings	Resets all parameters to the delivery status ex-works	Passive Active
*Load settings from USB	Copy all settings from the USB stick (↗ <i>Appendix A.2 'Saving/loading' on page 46</i>)	Passive Active
*Save settings to USB.	Save all settings onto the USB stick (↗ <i>Appendix A.2 'Saving/loading' on page 46</i>)	Passive Active
*Activation trend recording.	Activation of the pre-programmed recording of the trend data	Passive Active
*Save trends to USB	Manual saving of the trend data to a USB stick Passive: No saving in progress Metric: Values saved in metric unit system Imperial: Values saved in imperial unit system	Passive metric Imperial
*Data interval trends long	Save interval for the pre-programmed parameters allocated to this time (↗ <i>'Trends' on page 48</i>)	2 – 3,600 s
*Data interval trends short	Save interval for the pre-programmed parameters allocated to this time (↗ <i>'Trends' on page 48</i>)	2 – 3,600 s
*Interval aut. trend save	Time interval for manual saving of the recording data to a USB stick	1 – 720 h

Main overview ► System ► Versions

HMI text	Description	Value range
BSP version	Version of the operating system	
GUID application	Software version	
GUID HMI	Version of the operating screen on the HMI	
GUID OBH	Version of configurations supported (e.g. languages)	
Controller board	Controller board version	