

WEATHER CONTROLLER

Multi-Mix

FOR CENTRAL HEATING SYSTEMS



OPERATION AND INSTALLATION MANUAL

ISSUE: 1.2_EN



ELECTRIC DEVICE UNDER VOLTAGE!

Before any action related to the power supply (cables connection, device installation etc.) check if the regulator is not connected to the mains!

Installation should be done by a person with appropriate electrical qualifications. Improper cables connection could result in the regulator damage.

The regulator cannot be used in steam condensation conditions and cannot be exposed to water.

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1 SAFETY INFORMATION

Requirements concerning safety are listed in particular sections of this instruction. Apart from them it is necessary to fulfill the following requirements.



- Controller can be assembled only by qualified installer and in accordance with currently valid standards and regulations.
- Prior to starting the assembly, repairs or maintenance and during the execution of any connection works, it is necessary to switch off the mains supply and make sure that no terminals or electrical wires are energized.
- After deactivating the controller with the use of a keyboard, terminals of the controller can be under a dangerous level of voltage.
- The controller can be utilized only in accordance with its intended use.
- Additional automatics should be used in order to protect central heating and HUW system against the results of regulator failure or software errors. Particularly control automatics which reduce HUW temperature in order to protect users against burns.
- The controller cannot be used as the only protection against frozen central heating system.
- Values of programmed parameters must be set in accordance with a particular building and hydraulic system.
- Modification of the programmed parameters should be made only by a person who read this manual.
- Use only in heat circulation system made in accordance with currently valid regulations.
- Electrical system including the controller should be 3-wired and protected with fuse selected in accordance with used loads.
- The controller cannot be used with damaged housing.
- Never make any modifications in controller structure.
- The controller is equipped with a protection against Legionella bacteria. The controller periodically heats the HUW tank up to a temperature which can cause scalding to operator. Installer should provide information whether the function is active and additional automatics protecting against scalding is installed.
- Keep children away from the controller.

2 General information

The Multi-Mix controller is a universal weather regulator made in advanced technology that allows you to manage the operation of the entire heating system, as well as the main and additional source of heat.

In the Multi-Mix standard, it controls two adjustable heating circuits, one direct circuit and the charging of the DHW tank. It is adapted to operate the solar system and can implement diagrams with a hydraulic coupling or buffer. The controller can be connected to a boiler equipped with ON-OFF type contact and control it smoothly by modulating 0-10V. The controller can control the pump and the valve switching additional heat sources, e.g. in the form of a fireplace with a water jacket.

Using the controller for other purposes than its intended use is forbidden. Manufacturer does not bear any responsibility for any loss caused by such use.

The controller can be used within the household and in small industrial buildings.

3 Information about documentation

The user's manual of the controller is a complementation of boiler documentation. In particular it is necessary to apply the boiler documentation. The user's manual of the controller is divided into two parts: for the user and for the installer. However in both parts vital information concerning safety is included. That is why the user should get acquainted with both parts of the user's manual.

We do not take responsibility for damages caused by failing to observe the following user manual.

4 Documentation storage

This assembly and operation manual, as well as any other applicable documentation, should be stored diligently, so that it was available at any time. In the case of removal or sale of the device, the attached documentation should be handed over to the new user / owner.

5 Symbols used

Following graphic symbols are used in the user manual:



- for relevant information and tips,



- for vital information related with issues of property damage, health and life risk of humans or domestic animals.

Attention: by these symbols vital information is marked. It is to allow easy understanding of the user manual. User and installer is however required to observe recommendations not expressed by graphic symbols!

Informations about other icons:



- water pump of direct circuit (nonadjustable),



x2 - water pump of adjustable circuit,



- DHW tank, charging pump,



- DHW, circulating pump,



- solar pump,



x3 - ON-OFF thermostat/room thermostat (thermostat with shorted contacts when calling for heating); or wireless temperature controller (transmitter + receiver with COM/NO contacts); or - for example - an underfloor heating system that affects the heating circuit through the COM/NO contacts of the wiring centre (COM/NO contacts are shorted when system is calling for heating),



x2 - mixing valve,



- heat source controlling by volt-free contact,



- heat buffer,



- outside temperature sensor,



- weather control,



- summer/winter mode,



- schedule,



- screed drying function.

6 Directive WEEE 2012/19/UE

Purchased product is designed and made of materials of highest quality.

The product meets the requirements of the **Directive 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE)**, according to which it is marked by the symbol of crossed-out wheeled bin (like below), meaning that product is subjected to separate collection.



Responsibilities after finishing a period of using product:

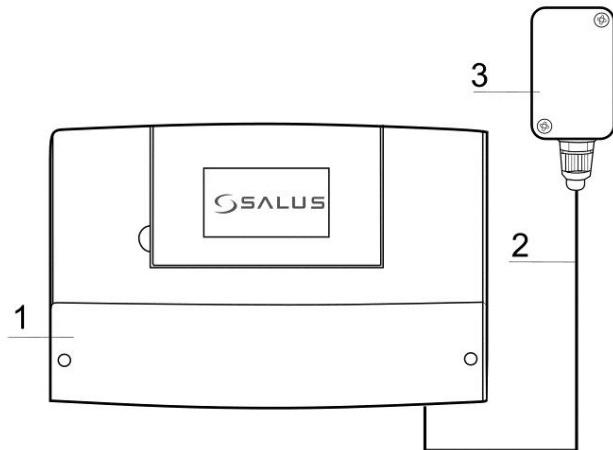
- dispose of the packaging and product at the end of their period of use in an appropriate recycling facility,
- do not dispose of the product with other unsorted waste,
- do not burn the product.

By adhering obligations of waste electrical and electronic equipment controlled disposal mentioned above, you avoid harmful effects on the environment and human health.

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7 Controller description

7.1 Controller structure



The controller (1) has a single module construction, which includes a control panel and an main module. To operate the system, an external temperature sensor (3) connected to the controller module via a cable (2) is necessary. The controller should be placed in the boiler room close to electrical devices included in the central heating system.

7.2 Controller operation

Heat source

The controller controls the operation of heat source, equipped with an ON-OFF contact, e.g. an automatic gas, oil or pellet boiler, by activating or deactivating it according to a heat demand of the central heating system. It has a 0-10V control output, which is used to modulate the heat source's power depending on the heating system's heat demand.

Hot domestic water

The controller controls the operation of DHW pump loading a hot water tank up to a user-defined temperature. Preparation of DHW can be programmed in time intervals. The controller also controls a DHW circulating pump. It enables quick transportation of DHW to a bathroom or kitchen located far away.

Heating circuits

The controller control the operation of one direct heating circuit and two adjustable heating circuits. Water temperature in heating circuits is set by weather, i.e. water temperature in the heating circuit is calculated in accordance with a temperature from the external sensor. Due to this, despite of

varying external temperature, a room temperature in heated compartments are kept on a set level.

Dependent heating circuits

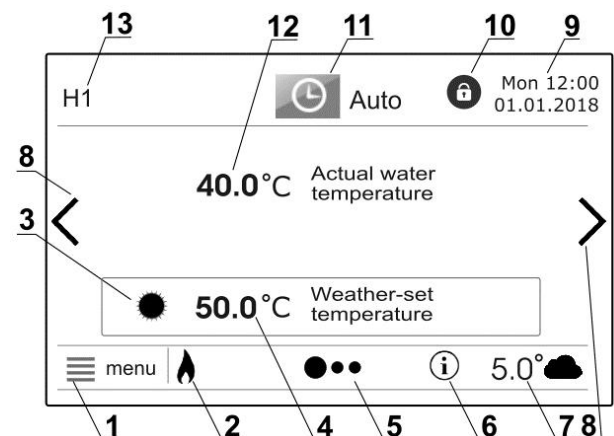
The temperature in individual heating circuits can be asked in several ways:

- weather control – with consideration to external temperature sensor readings,
- constant value – without external temperature sensor,
- with using modes of work with time schedules, without using additional room thermostats,
- with using room thermostats or other heating systems, which by means of contacts (closed) affect individual heating circuits.

Solar system

The controller controls a basic solar system heating the DHW tank. Apart from temperature sensors, no additional module is necessary to operate the solar system.

7.3 Main screen



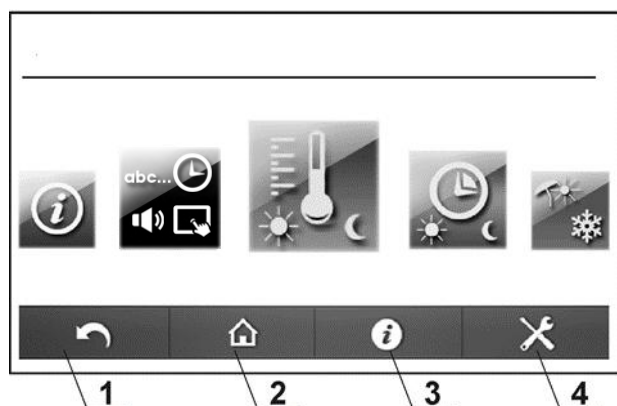
Legend:

1. **MENU** – entrance to the main menu.
2. **Heat source** – this symbol indicates that the heat source is active.
3. **Heating mode** – possible symbols:
 - ☀ - „DAY“,
 - ☾ - „NIGHT“,
 - 🔥 - screed drying activation.
4. **Preset temperature** – edit of the preset temperature of the selected heating circuit and DHW tank.

5. **Navigation bar** – indicates location of displayed screen and number of screens possible to be displayed. Screens can be changed with the use of (8) arrows.
6. **Important information** – graphical symbol appears in case of important information for user occurs.
7. **Temperature measured by external temperature sensor**
8. **Arrow for changing screen** – press this arrow in order to switch to HUW preparation screen or separate heating circuit screen.
9. **Date and hour**
10. **Parental lock symbol** - the active parental lock symbol.
11. **Current work mode** – press this symbol in order to go to work mode selection.
12. **Circulation current temperature**
13. **H1** – example name of thermostat or heating circuit.

7.4 Main menu

Press MENU (1) to display rotational main menu.



Legend:

1. Back to previous menu button.
2. Back to display main window button – menu press it to get back to main window from every menu sublevel.
3. Info button – press to obtain detailed information concerning the parameter selected on a display.
4. Press to enter service menu.

7.5 User menu

	Preset temperatures
H1, H2, H3*	
➤ Preset water temperature*	
➤ Pump lock by thermostat*	
DHW preset temperature	

	Time functions
H1, H2, H3	
DHW tank	
DHW circulation pump	

	Summer / Winter
SUMMER mode: OFF, ON, Auto	
SUMMER activation temperature*	
SUMMER deactivation temperature*	


	Basic settings
	Clock
	Date
	Screen brightness
	Parental control
	Sound
	Holiday out of house
	Language
	Change name
	Software update

	Information
	Turn off the controller
	Alarms
	Service settings

* particular menu positions can be invisible in case there is no appropriate sensor, module or setting.



8 Controller operation

8.1 Activating and deactivating

Press the switch  on the screen in order to activate the controller. "Activate controller?" message will be displayed.



Accept your choice in order to activate the controller.

To deactivate the controller, press  menu button, search for  in rotational menu and press it.



When the controller is deactivated, an anti-freeze function will not work. Therefore, it is recommended that instead of switching off the controller, set support of the heating circuits and DHW to OFF from the service menu.

8.2 Preset temperature settings Heating circuits

Preset temperature in heating circuits can be changed by clicking element no. 4 directly on the main screen. Can be also changed in the menu:

Preset temperatures → *H1...H3* → *DHW preset temperature*

The preset water temperature in the heating circuit is maintained on kept constant. In addition, when setting the parameter *Pump lock by thermostat* to *YES*, the circuit will be switched off when the preset temperature has been reached.




It is recommended to set the parameter *Pump lock by thermostat* to *YES*.



The edition of the parameter *Preset water temperature* and *Pump lock by thermostat* is possible only when selecting the method of adjustment to a *Constant value* from the service menu.

DHW tank

Preset temperature in DHW tank can be changed by clicking on a preset DHW tank temperature in DHW window. In order to enter DHW window, click  in controller main screen.

DHW preset temperature can be also entered in the menu:

Preset temperatures → *DHW preset temperature*



DHW tank loading function becomes active after connecting a tank temperature sensor.

8.3 Time programs

The controller includes a function of programming time periods. In situation when the user is outside his home or at night, the controller can decrease the amount of supplied heat energy what affects fuel consumption.

Time programs are defined separately for heating circuits, DHW tank and DHW circulation system. Time programs can be set separately for each day of the week. Time programs are entered in the menu *Time functions*.

Should be select the decreasing of the preset temperature as well as the beginning and ending of the given time interval.



In the example below, a "NIGHT" period will last from 00:00 till 06:00. "DAY" period will last between 06:00 – 09:00. From 15:00 to 22:00 the "DAY" period was entered. "NIGHT" period will last from 22:00 to 00:00.



After accepting the entered time period for a particular day, the controller will propose a possibility of saving this setting for other days

of the week. Due to this, entering time periods is quick and intuitive.

Operation within time periods for "DAY" and "NIGHT":

„DAY“ period 	
Heating circuits	The preset temperature is set as "DAY".
DHW tank	DHW tank is loaded up to <i>DHW preset temperature</i> .
DHW circulation	DHW circulating pump transports heat from the DHW tank to a distant DHW receivers.
Main heat source	Active.
„NIGHT“ period 	
Heating circuits	The preset temperature is set as "NIGHT".
DHW tank	DHW tank is switch off.
DHW circulation	Circulating pump is switch off.
Main heat source	Blockade.



The time programs are inactive when the heating circuits are controlled by thermostats (with ON-OFF contacts type). Then on the thermostats the room preset temperature is set and schedule, which affects the individual heating circuits.

8.4 Summer - winter

Outside the heating season the controller can be switched to SUMMER mode. It enables to switched off heating circuits such as radiation or floor heating and maintain operation of DHW tank loading function.

SUMMER mode can be activated manually in the menu:

Summer/Winter → *Summer mode* = ON

SUMMER mode can be also activated automatically. In order to do this, select: *Summer mode* = AUTO. The controller will enter SUMMER mode when the external temperature exceeds the *SUMMER activation temperature* parameter. The controller will deactivate SUMMER mode when the external

temperature drops below *SUMMER deactivation temperature* parameter.



In SUMMER mode, all heat receivers can be turned off, so make sure that the heat source will not overheat before switching it on.



Automatic switching into SUMMER mode is possible only when the external temperature sensor is connected.

8.5 Holiday planning

The controller is equipped with a function enabling to plan holiday, i.e. days during which the user is outside his home. The function is activated in the menu:

Basic settings → *Holiday out of house*

Enter holiday start and end date and set the *Activation* = ON.

During these days heating circuits are turned off. If frost protection mode is active, the frost protection setpoint temperature is maintained on the heating circuits. The DHW tank is not charged.

8.6 Changing names

It is possible to change a default name of the room thermostats and names of heating circuits displayed in the controller, in the menu:

Basic settings → *Change name*

8.7 Parental lock

It is possible to lock the touch screen against children. Lock is activated in the menu:

Basic settings → *Parental control*

Lock is activated automatically after a set inactivity time. In order to unlock the controller, press the screen in any place and hold it for 4s.






8.8 Screen brightness adjustment

Three screen brightness levels are available:

- „Edition“ – screen brightness for editing parameters,
- „DAY“ – screen brightness between 06:00 – 22:00,
- „NIGHT“ – screen brightness between 22:00 – 06:00.

8.9 Work mode setting

It is possible to select work mode which is suitable for user's requirements. The operating mode can be selected directly on the main window, press the mode icon.

Work mode	
OFF 	The controller switch off a particular heating circuit or DHW tank. Anti - freeze function remains active provided that is in active in service menu. Activating this mode also disables the heat source. The heat source is not switched off when the heating function of the buffer is active.
AUTO 	Preset room temperature is switched between "DAY" and "NIGHT" temperatures depending on clock indications and defined time programs for particular days of the week. DHW tank is loaded during a period corresponding to "DAY" temperature. For time programs corresponding to "NIGHT" temperature, the DHW tank is off.
DAY 	Comfort mode. In the heating circuit the preset temperature is constant or depending on the weather and corresponds the entered "DAY" value. HUW tank maintains constant preset temperature.
NIGHT 	Economy mode. In the heating circuit in "NIGHT" mode, the preset temperature is decrease by the entered value.. It is not possible to select this mode for DHW tank.
Auto-Eco 	Preset room temperature is maintained within defined time periods as "DAY" temperature. Circuit is off outside the

defined time periods. Anti - freeze function remains active provided that is in active in service menu. It is not possible to select this mode for DHW tank.

Work mode can be selected separately for each heating circuit and separately for DHW tank. *Auto-Eco* and *NIGHT* modes are not available for HUW tank.

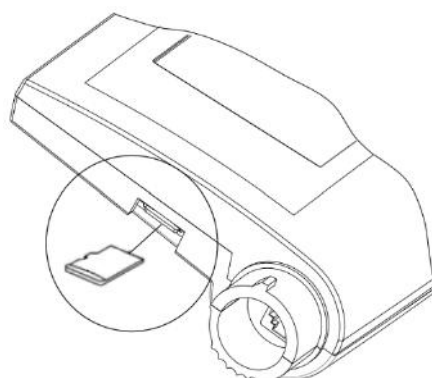


The operating modes are inactive when the heating circuits are controlled by thermostats with ON-OFF contacts, because on the thermostats set the preset temperatures, reduce of the temperatures or time schedules.

8.10 Software update

Software can be modified with the use of microSDHC memory card.

In order to change the program, insert the memory card into a slot in the control panel.



New software should be saved in *.pfc format on a memory card in a form of two files: file with a program for the control panel and file with a program for the controller A module. Save new software directly on a memory card. Do not nest data in a sub-folder.

Enter:

Basic settings → *Software update*
and exchange the program first in the controller module and then in the control panel.

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9 Controller assembly

9.1 Environmental conditions

Due to fire risk it is forbidden to use the controller in proximity of explosive gases or dust. Moreover the controller cannot be used in conditions of water steam condensation or be exposed to effects of water.

9.2 Storage and transport conditions

The controller cannot be exposed to immediate effects of atmospheric conditions i.e. rain or sunrays. Temperature of storage and transport should be within scope $-15...+65^{\circ}\text{C}$.

9.3 Mounting requirements

Regulator should be installed by qualified and authorized technician with observance of applicable standards and regulations.

The manufacturer disclaims any liability for damage caused by non-observance of instructions specified in this manual.

Ambient temperature and temperature of mounting base should be within the range of $0...50^{\circ}\text{C}$.

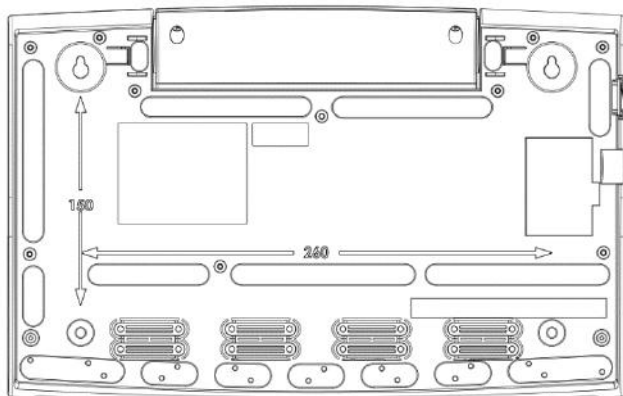
Prior to installing the controller make sure that it will properly cooperate with hydraulic and electrical system.

9.4 Module installation

The regulator should be screwed on to the flat horizontal or vertical surface (e.g. boiler housing, room wall). To screw on the regulator use mounting holes and proper screws. Location and spacing of mounting holes are shown in the picture below.



The regulator must not be used as a free-standing device.



After installation make sure that the device is properly mounted and it is impossible to detach it from the mounting surface.

The regulator casing provides the IP20 protection rating. The casing on the connectors cover side provides IP00 rating, and because of that connectors must be unconditionally covered with the cover.

If there is a need to gain an access to the terminals side, it is a must to disconnect the mains voltage and make sure there is no dangerous voltage on regulator terminals.

9.5 Temperature sensors assembly

The controller cooperates solely with temperature sensor type CT-10, CT6-P, CT6-W. The use of other sensors is prohibited.

At least one heating circuit temperature sensor and one external temperature sensor (weather sensor) are necessary to activate the controller.

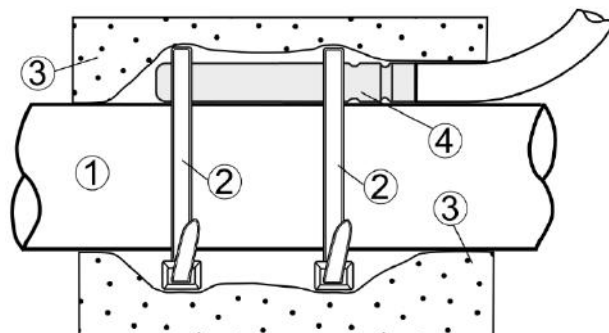


Caution: the controller is equipped with various types of temperature sensors! Connecting an inappropriate sensor will cause incorrect operation of the controller!

Sensors for heating circuits

Direct heating circuit sensor should be installed in a hydraulic coupling. If there is no hydraulic coupling in the system, it can be fixed to a supplying pipe coming out of the heat source (from boiler).

Assemble the adjustable heating circuit sensor on a pipe after the heating circuit pump. Insulate sensors affixed to the external surface of the pipe with the use of thermal insulation covering the sensor together with the pipe.

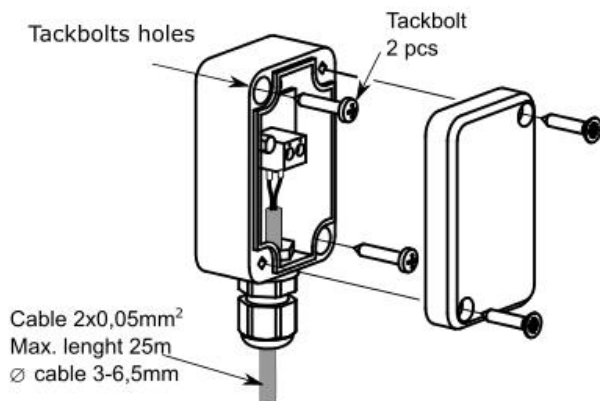


Mounting temperature sensor: 1 - pipe, 2 - clamps, 3 - thermal insulation, 4 - temperature sensor.

External temperature sensors

The controller cooperates only with a CT6-P type weather sensor.

Sensor should be fixed to a coldest wall in the building. Usually it is a north wall under the roof. Sensor should not be subjected to direct solar radiation nor rain. Sensor should be fixed on a minimum height of 2m above the ground and in a distance from windows, chimneys and other heat sources which could interrupt the temperature measurement (at least 1,5m). Use a connecting cable with a cross section of at least 0,5mm² and length of 25m. Polarity of wires is not important. Fix the sensor to the wall with the use of screws. Holes containing fixing screws can be accessed by unscrewing a sensor cover.



Connecting the CT6-P external temperature sensor.

9.6 Temperature sensors checking

Temperature sensors can be checked by measuring their resistance in given temperature. In case of big differences between measured resistance value and values in table below, the sensor should be replaced with a new one.

CT-10 (NTC 10K)	
Temp. [°C]	Nom. [Ω]
0	33620
10	20174
20	12535
30	8037
40	5301
50	3588
60	2486
70	1759
80	1270
90	933
100	697
110	529
120	407

CT-6, CT6-W, CT6-P (Pt1000)

Temp. [°C]	Min. [Ω]	Nom. [Ω]	Max. [Ω]
0	999,7	1000,0	1000,3
25	1096,9	1097,3	1097,7
50	1193,4	1194,0	1194,6
100	1384,2	1385,0	1385,8

9.7 Connecting a heat source

Make electrical connections between the controller output module and heat source, e.g. gas boiler. Boiler contact can be potential-free or can be energized with voltage not exceeding 230V~.



Caution: risk of electric shock caused by current from a heat source. Disconnect the controller and heat source electrical supply and make sure there is no dangerous voltage on terminals. Protect yourself against incidental generation of supply voltage!

9.8 Connecting pumps

Make electrical connections between heating circuit pumps and the controller in acc. Electric scheme.

9.9 Connecting servos

Electrical servo is installed only when there is an adjustable heating circuit H2 or H3. The controller cooperates only with servos of valves equipped with limit switches. Using other switches is forbidden.

9.10 Output test

Switch to the menu *Manual control* and execute tests concerning operation of all electrical receivers such as pumps or servos.

9.11 Heat source output modulation

The main heat source can work with a constant nominal power or work with output modulation. To the power of heat sources can be modulated, it must be equipped with the type 0...10V. Set the correct value of the parameter *Control mode*.

ΔT	Control mode		
	5K	10K	20K
0 K	0 V	0 V	0 V
1 K	2 V	1 V	0,5 V
2 K	4 V	2 V	1 V
3 K	6 V	3 V	1,5 V
4 K	8 V	4 V	2 V
5 K	10 V	5 V	2,5 V
6 K	10 V	6 V	3 V
7 K	10 V	7 V	3,5 V
8 K	10 V	8 V	4 V
9 K	10 V	9 V	4,5 V
10 K	10 V	10 V	5 V
15 K	10 V	10 V	7,5 V
20 K	10 V	10 V	10 V

ΔT = difference between the preset temperature of the heat source and measured at the sensor H1-S.

10 Controller functions

10.1 Information

The information menu allows you to view the temperatures and allows you to check which devices are currently turned on.

10.2 Frost protection mode



Frost protection mode is applicable only to active controller work modes *Off* or *Auto-Eco*. In *Auto-eco* mode, this function is executed only when heating circuit is turned OFF.

Description of a frost protection mode against the external temperature sensor readings.

- Direct circuit (H1)

After an external temperature drop below 3°C, the time is expected in the parameter *Frost protection - delay* e.g. 4 hours. If after this time the external temperature is still under 3°C, a direct heating circuit pump will be activated for 30 minutes, then the circulation water temperature will be checked. If the water temperature in the circuit is lower than 7°C, the controller will maintain the frost protection setpoint temperature and display a prompt on the display.

- Adjustable circuits (H2, H3)

After an external temperature drop below 3°C, the time is expected in the parameter *Frost protection - delay* e.g. 4 hours. If after this time the external temperature is still under 3°C, a direct heating circuit pump will be activated for 15 minutes, then the circulation water temperature will be checked. If it is higher than 7°C, the pump will stop. If it is lower than 7°C, the pump operation will not be interrupted and the regulator will start to maintain the frost protection setpoint temperature and will display a warning message on the display.



Do not disconnect or leave the controller in *STAND-BY* mode without frost protection functions active within a freezing hazard period.

If heating circuits have to be off during this period, activate *Off* or *Auto-eco* mode for heating circuits and DHW tank instead of turning the controller off.

Description of the frost protection mode for DHW tank.

After the DHW tank sensor temperature drops below 5°C, DHW tank will be loaded up to a *Minimum temperature* value.



Do not disconnect the controller within a freezing hazard period.

10.3 Solar

The controller operates a basic solar system which loads the DHW tank. Solar system operation requires additional temperature sensors. No additional module is required. Information concerning condition of the solar system can be found in the menu:

Information → *Solar*

or on the last screen of the display which can be accessed by clicking an arrow ➤.



Optimize preparation of DHW in order to take a full advantage of heat gains from the solar panel.

Preparation of DHW can be optimized by appropriate programming of time program for DHW tank. Set DHW tank work mode to *Auto*. Define time program for DHW tank in such way to set insolation periods as "NIGHT". Due

to this the boiler will not heat up the DHW tank. Similar effect can be obtained by setting the work mode for DHW tank to *Off* manually. Loading DHW tank can be also optimized by setting a lowest possible preset temperature of DHW tank. The lower preset temperature of HUW tank, the less often boiler will become active in order to load the tank and solar energy gain will be higher.

Installer from a service level should set the highest possible DHW tank maximum temperature. This will generate the maximum heat gain. On the other hand there is a risk of scalding with hot water and exceeding temperature limit for a particular DHW tank!

Risk of scalding with DHW!



In order to protect against scalding, install an additional protective automatics, e.g. thermostatic mixing valve.

During periods of very high insolation, there can be a situation in which the HUW tank is not able to absorb big amount of heat. In such case, a solar pump transporting heat from a solar panel to HUW tank becomes off. Due to a risk of damaging the pump, it is turned off only when the solar panel temperature drops. In practice, the solar system is turned on again the next day after the sunrise. It indicates a normal operation resulting from the fact that there is no possibility of absorbing the heat surplus.

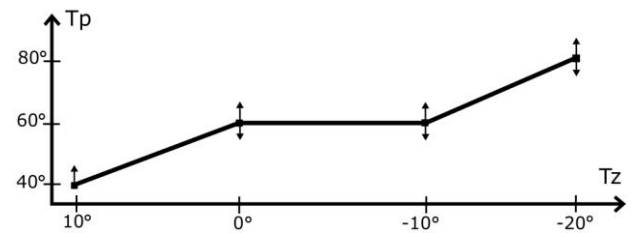
10.4 Weather control

In order for the room temperature to be stable, must be set the weather control. The weather control must be activated separately for each heating circuit. The weather control is influenced by the setting of the heating curve and the curve parallel shift.

The heating circuit water preset temperature is calculated basing on the temperature prevailing outside the building. The colder it is outside, the higher water temperature in the heating circuit is. This relation is shown in the controller in the form of heating curve.

The heating curve can be changed in a graph from the system menu, within the range for the weather preset temperature. It is a reflection of the thermal characteristics of the

building. If the building is less insulated then the heating curve should be greater.



Setting the heating curve: T_p – temperature preset by weather, T_z – external temperature.

Heating curve should be selected experimentally by changing it in a few day intervals.



During trial and error selection of appropriate heating curve, it is necessary to exclude influence of the thermostat on regulator operation (regardless of whether the thermostat is connected or not), by setting the parameter *Thermostat* = *OFF* for each heating circuit.

After choosing the proper heating curve, the *circuit preset temperature* is calculated according to the outside temperature. As a result if the heating curve is appropriate for the building, the room temperature remains constant regardless of the temperature outside.

Guidelines for selecting a proper heating curve:

- if at dropping external temperature, room temperature increases, the selected heating curve is too high,
- if at dropping external temperature, room temperature also drops, the selected heating curve is too low,

Poorly warmed buildings require setting higher heating curves. Whereas for well heating buildings, heating curve will have a smaller value.

The range of the heating curve is limited by the minimum and maximum preset water temperature.

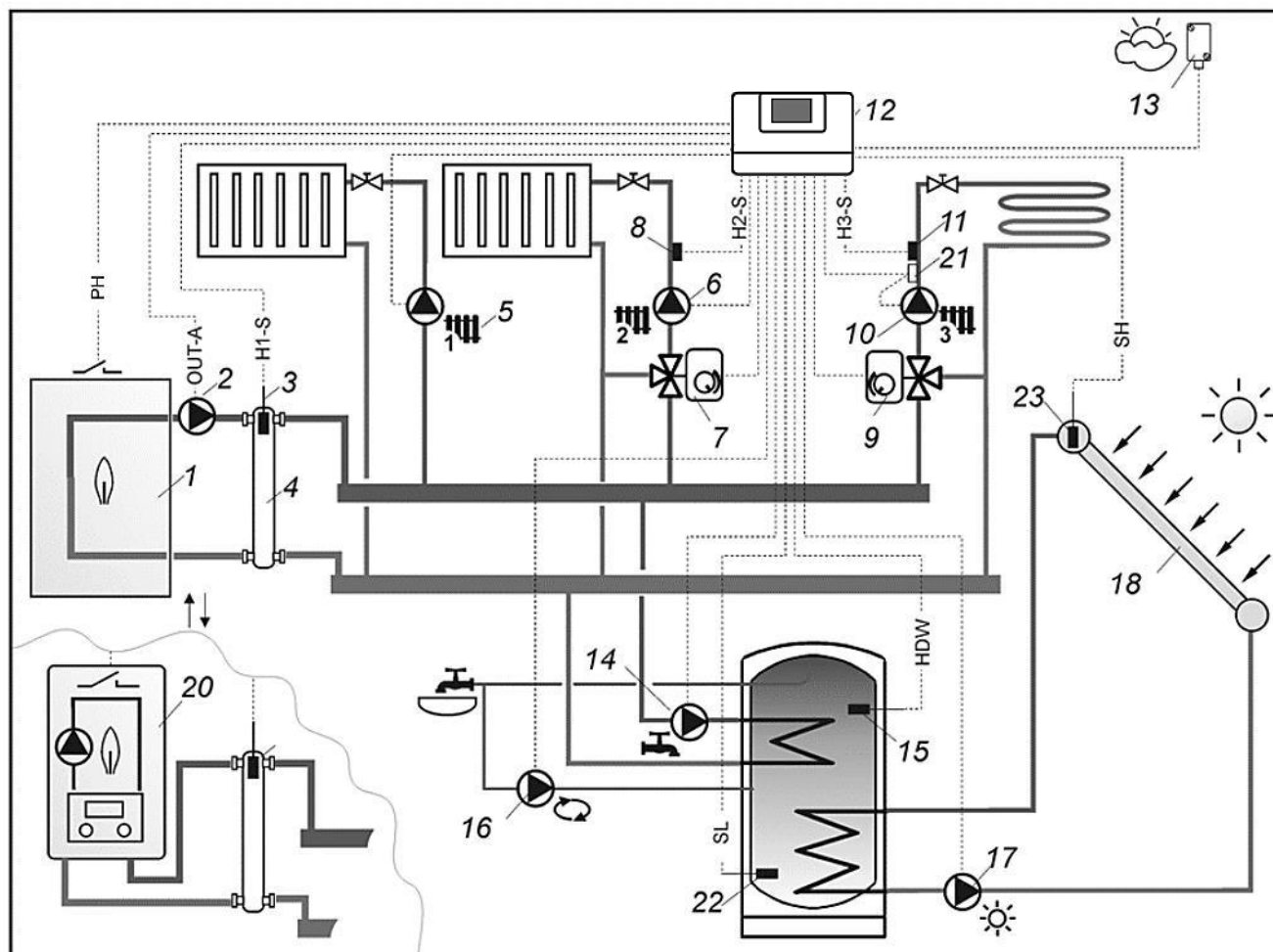
10.5 Thermostat settings

In order for the room temperature to be stable, the thermostat should be activated. The thermostat complements the weather

control and corrects the water temperature in the heating circuit if the room temperature is still inadequate.

A thermostat must be activated for each heating circuit. To do this, set the *Thermostat* = *ON*.

11 Hydraulic schemes



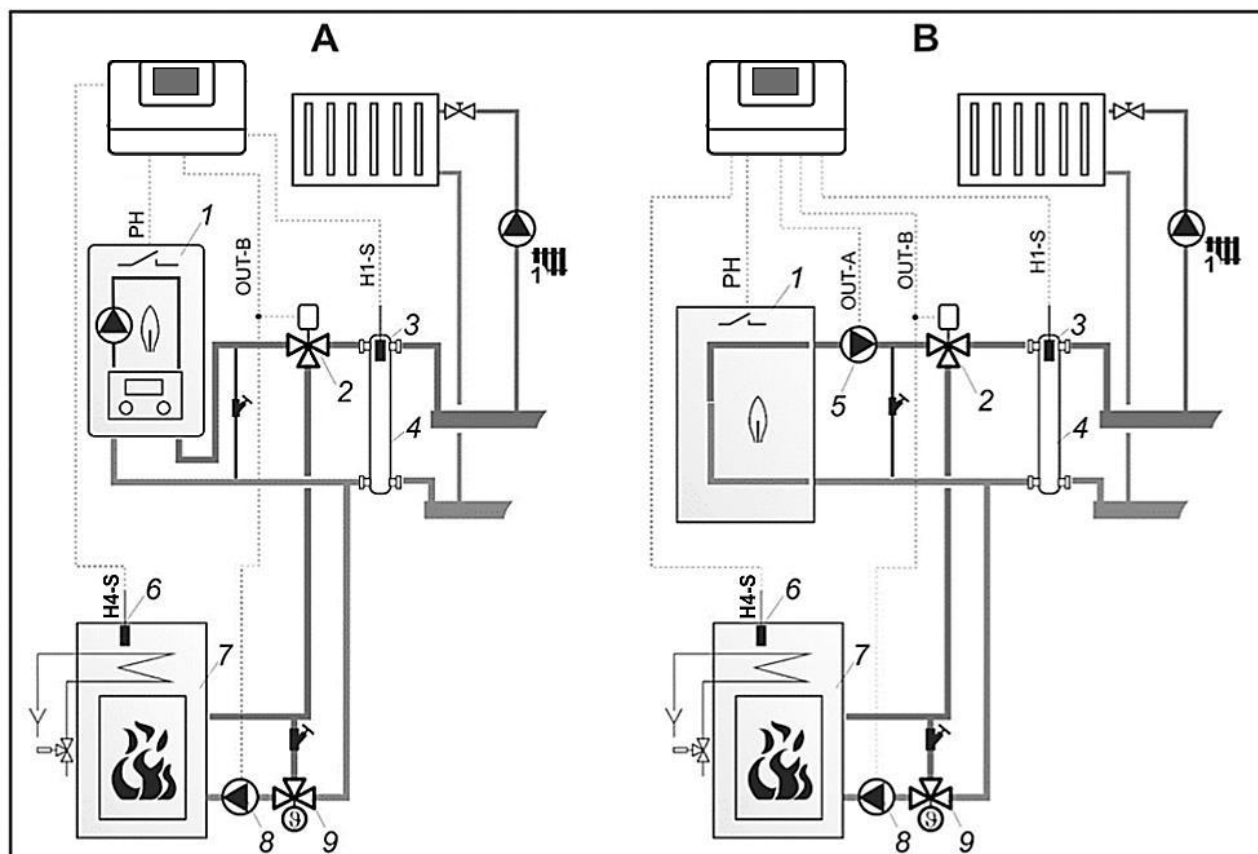
Hydraulic scheme no. 1 – basic scheme¹:

- | | |
|--|--|
| 1 – boiler without integrated pump | 12 – controller |
| 2 – boiler pump | 13 – external temperature sensor |
| 3 – direct circuit / hydraulic coupling water temperature sensor | 14 – DHW pump |
| 4 – hydraulic coupling | 15 – temperature sensor of water inside DHW tank |
| 5 – direct heating circuit pump (H1) | 16 – DHW circulating pump |
| 6 – adjustable heating circuit pump (H2) | 17 – solar pump |
| 7 – valve electrical servo of adjustable circuit (H2) | 18 – solar panel |
| 8 – water temperature sensor of adjustable circuit (H2) | 20 – boiler with integrated pump |
| 9 – valve electrical servo of adjustable circuit (H3) | 21 – mechanical protective thermostat for protecting floor circuit against excessive water temperature |
| 10 – adjustable heating circuit pump (H3) | 22 – DHW tank lower temperature sensor |
| 11 – water temperature sensor of adjustable circuit (H3) | 23 – solar collector temperature sensor. |

PROPOSED SETTINGS:

Circuit	Parameter	Setting	MENU
	Hydraulic diagram	1	menu→ service settings→ System
1	Support	ON	menu→ service settings→ H1 settings
	Thermostat	YES	menu→ service settings→ H1 settings
2	Support	ON (radiators)	menu→ service settings→ H2 settings
	Thermostat	YES	menu→ service settings→ H2 settings
	Maximum temperature	80°C	menu→ service settings→ H2 settings
3	Support	ON (floor)	menu→ service settings→ H3 settings
	Thermostat	YES	menu→ service settings→ H3 settings
	Maximum temperature	50°C	menu→ service settings→ H3 settings

¹ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



Hydraulic scheme no. 2 - connection of a fireplace with a water jacket².

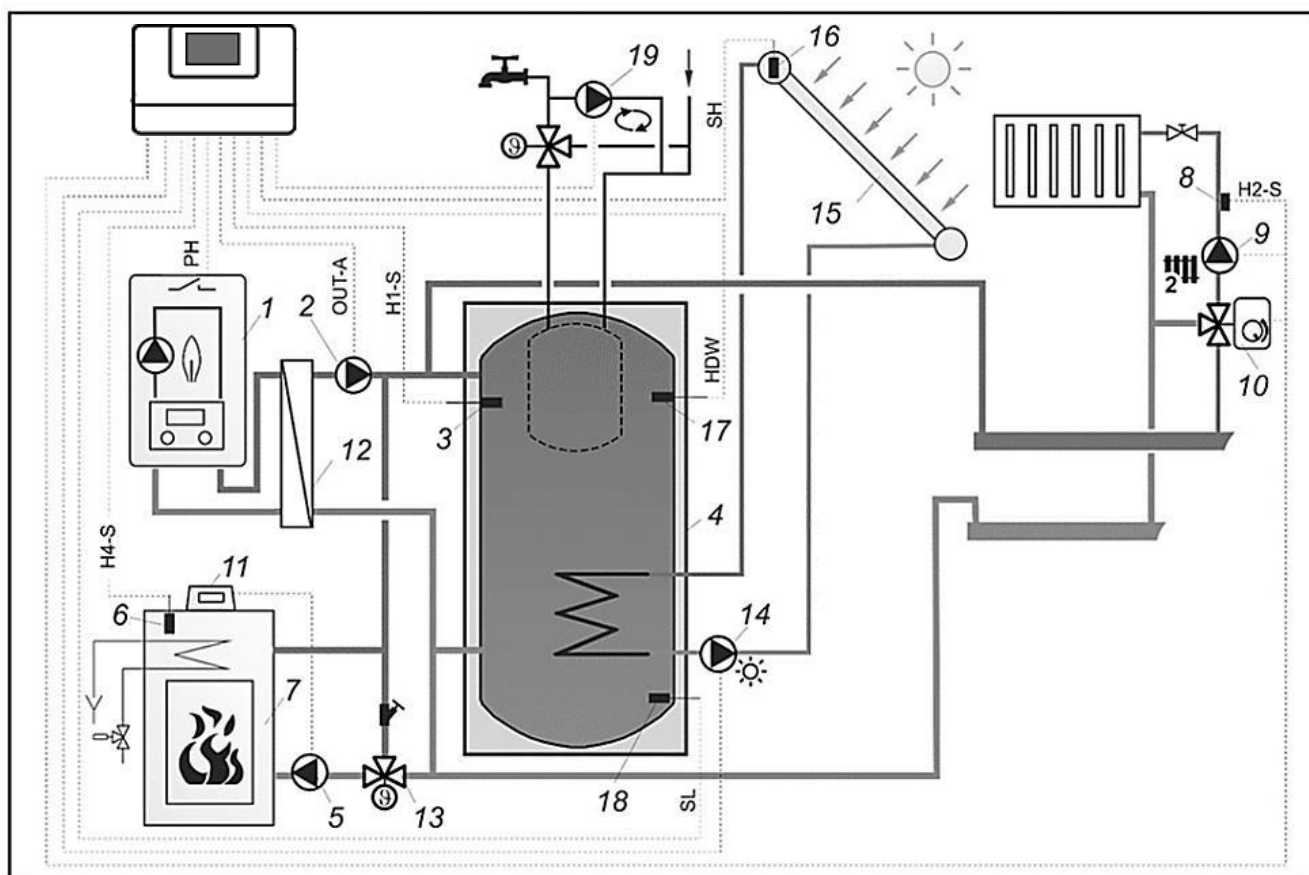
Variant A – boiler with integrated pump, variant B – boiler without an integrated pump.

- | | |
|---|---|
| 1 – boiler | 6 – temperature sensor of water inside the boiler with water jacket |
| 2 – electrical switching servo with return spring | 7 – fireplace with a water jacket |
| 3 – coupling temperature sensor | 8 – water pump of the fireplace with water jacket |
| 4 – hydraulic coupling | 9 – thermostatic valve protecting return temperature. |
| 5 – boiler pump | |

PROPOSED SETTINGS:

	Parameter	Setting	MENU
Variant A	Hydraulic diagram	2	menu→ service settings→System
	Selection	ON	menu→ service settings→System→Additional heat source
	Temp. deactivation of main heat source	35°C	menu→ service settings→System→Additional heat source
	Pump start temperature (8)	55°C	menu→ service settings→System→Additional heat source
	Cooling temperature	92°C	menu→ service settings→System→Additional heat source
Variant B	Selection	ON	menu→ service settings→System→Additional heat source
	Hydraulic diagram	2	menu→ service settings→System
	Temp. deactivation of main heat source	35°C	menu→ service settings→System→Additional heat source
	Pump start temperature (8)	55°C	menu→ service settings→System→Additional heat source
	Minimum temperature	50°C	menu→ service settings→System→Additional heat source
	Cooling temperature	92°C	menu→ service settings→System→Additional heat source
Description	<p>Variant A: After heating the fireplace sensor (6) up to a temperature (35°C) the boiler (1) is disabled along with an integrated pump. After heating the sensor (6) up to a temperature (55°C), valve (2) is switched and fireplace pump (8) is enabled. When sensor (6) exceeds 92°C, heat excess will be transferred to heat and HUW circuits.</p> <p>Variant B: When a fireplace sensor (6) is heated up to a temperature of (35°C), the boiler (1) turns off. After heating sensor (6) up to a temperature of (55°C), valve (2) switches over, pump (5) switches off and fireplace pump (8) switches on. When sensor (6) exceeds 92°C, heat excess will be transferred to heat and HUW circuits. When fireplace (7) is cold, pump (5) switches off and on in accordance with indications of temperature sensor (3) and Minimum temperature parameter settings.</p>		

² Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



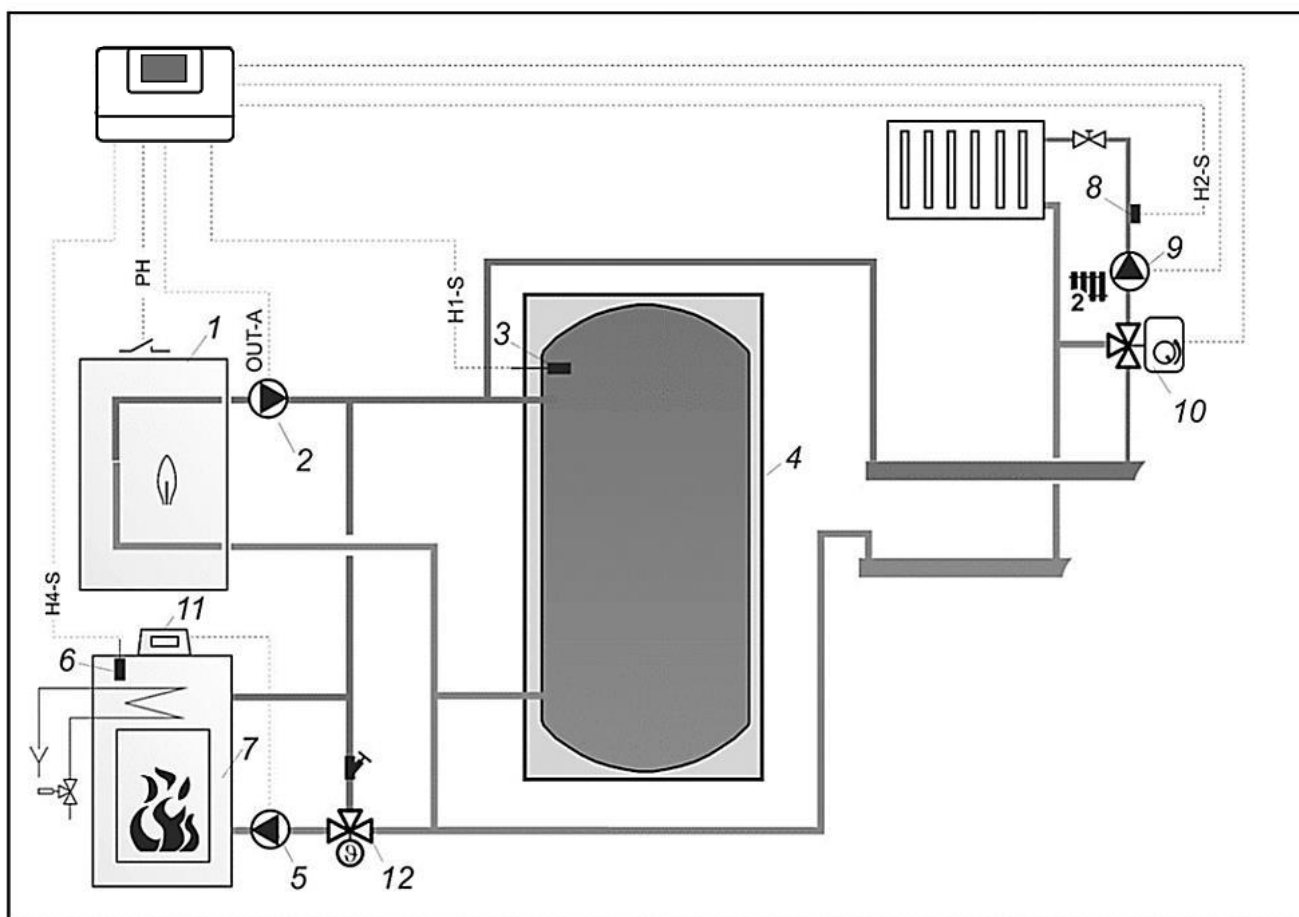
Hydraulic scheme no. 3 - diagram "A" with heat buffer³:

- | | |
|--|---|
| 1 – boiler with integrated pump | 11 – fireplace regulator |
| 2 – pump | 12 – plate heat exchanger |
| 3 – temperature sensor | 13 – thermostatic valve protecting return temperature |
| 4 – heat buffer | 14 – solar pump |
| 5 – fireplace pump controlled by fireplace regulator | 15 – solar panel |
| 6 – temperature sensor | 16 – solar collector temperature sensor |
| 7 – fireplace with water jacket | 17 – temperature sensor of water for loading the buffer with a solar pump |
| 8 – regulated circuit water temperature sensor (H2) | 18 – lower solar temperature sensor |
| 9 – circuit pump (H2) | 19 – DHW circulation pump. |
| 10 – electrical servo of H2 regulated heat circuit | |

PROPOSED SETTINGS:

Parameter	Setting	MENU
Hydraulic diagram	3	menu→ service settings→System
Selection	ON	menu→ service settings →System→Additional heat source
Temperature deactivating main heat source	35°C	menu→ service settings →System→ Additional heat source
Cooling temperature	92°C	menu→ service settings →System→ Additional heat source
Minimum temperature	25°C	menu→ service settings →System→ Additional heat source
Maximum DHW temperature	80°C	menu→ service settings → Solar
DHW priority	OFF	menu→ service settings → HUW settings
Description: Pump (2) works together with boiler (1). When boiler (1) switches off, pump (2) deactivates with 5 minute delay. After fireplace sensor (6) is heated up to a temperature of (35°C), boiler (1) and pump (2) deactivates with 5 minute delay. Pump (5) is controlled by fireplace regulator (11). When (6) exceeds 92°C, heat excess will be transferred to heat and HUW circuits. Pump (9) will switch off if temperature on sensor (3) drops below 25°C. Pump (14) switches off after exceeding 80°C.		

³ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



Hydraulic scheme no. 4 - diagram "B" with heat buffer ⁴:

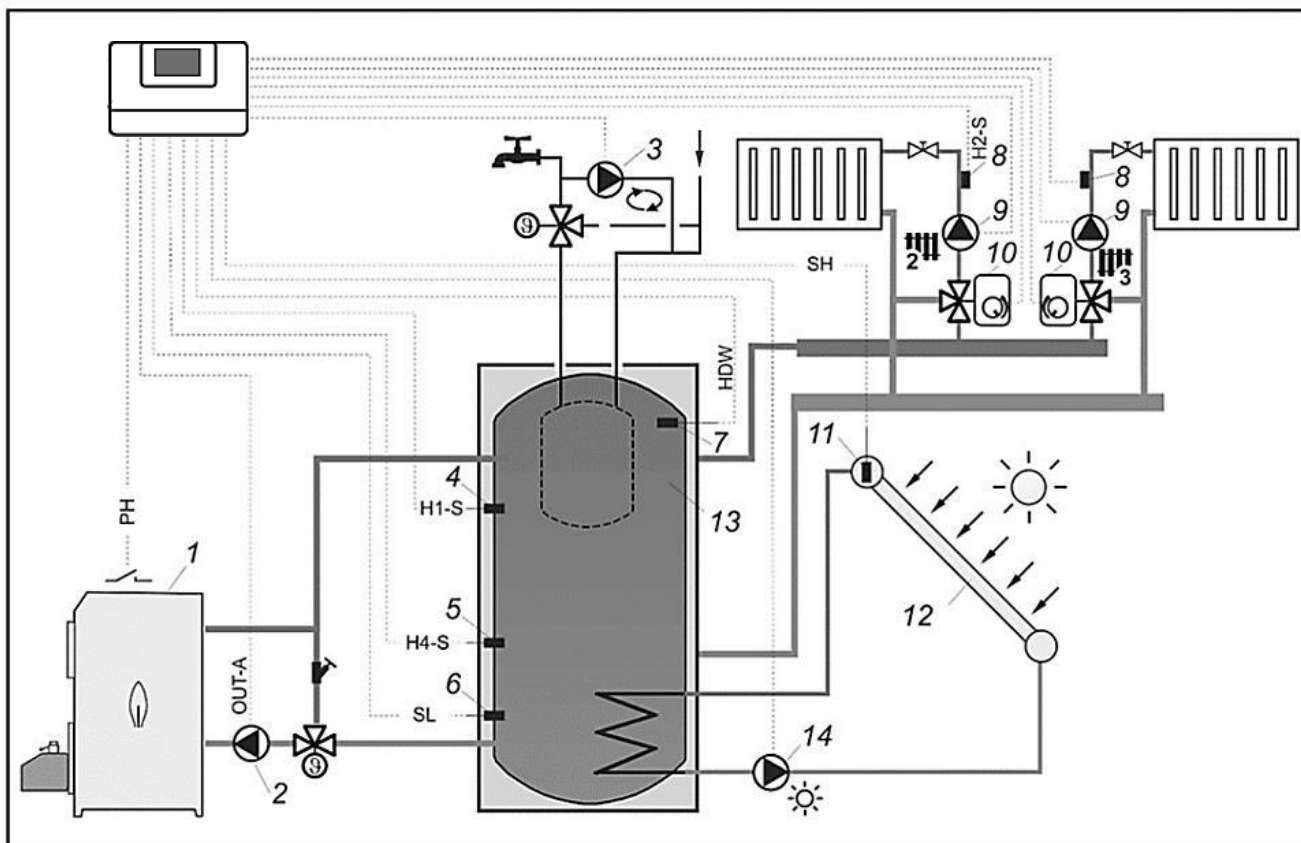
- | | |
|--|--|
| 1 – boiler | 7 – fireplace with water jacket |
| 2 – boiler pump | 8 – regulated circuit water temperature sensor (H2) |
| 3 – buffer temperature sensor | 9 – circuit pump (H2) |
| 4 – heat buffer | 10 – electrical servo of H2 regulated heat circuit |
| 5 – fireplace pump controlled by fireplace regulator | 11 – fireplace regulator |
| 6 – temperature sensor | 12 – thermostatic valve protecting return temperature. |

PROPOSED SETTINGS:

Parameter	Setting	MENU
Hydraulic diagram	4	menu→ service settings→System
Selection	ON	menu→ service settings →System→Additional heat source
Temperature deactivating main heat source	35°C	menu→ service settings →System→Additional heat source
Pump start temperature	55°C	menu→ service settings →System→Additional heat source
Cooling temperature	92°C	menu→ service settings →System→Additional heat source
Minimum temperature	25°C	menu→ service settings → System→ Main heat source

Description: Pump (2) works together with boiler (1). When boiler (1) switches off, pump (2) deactivates with 5 minute delay. After fireplace sensor (6) is heated up to a temperature of (35°C), boiler (1) and pump (2) deactivates with 5 minute delay. Pump (5) is controlled by fireplace regulator (11). When (6) exceeds 92°C, heat excess will be transferred to heat and HUW circuits. Pump (9) will switch off if temperature on sensor (3) drops below 25°C.

⁴ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



Hydraulic scheme no. 5 - diagram with pelet boiler and with heat buffer ⁵:

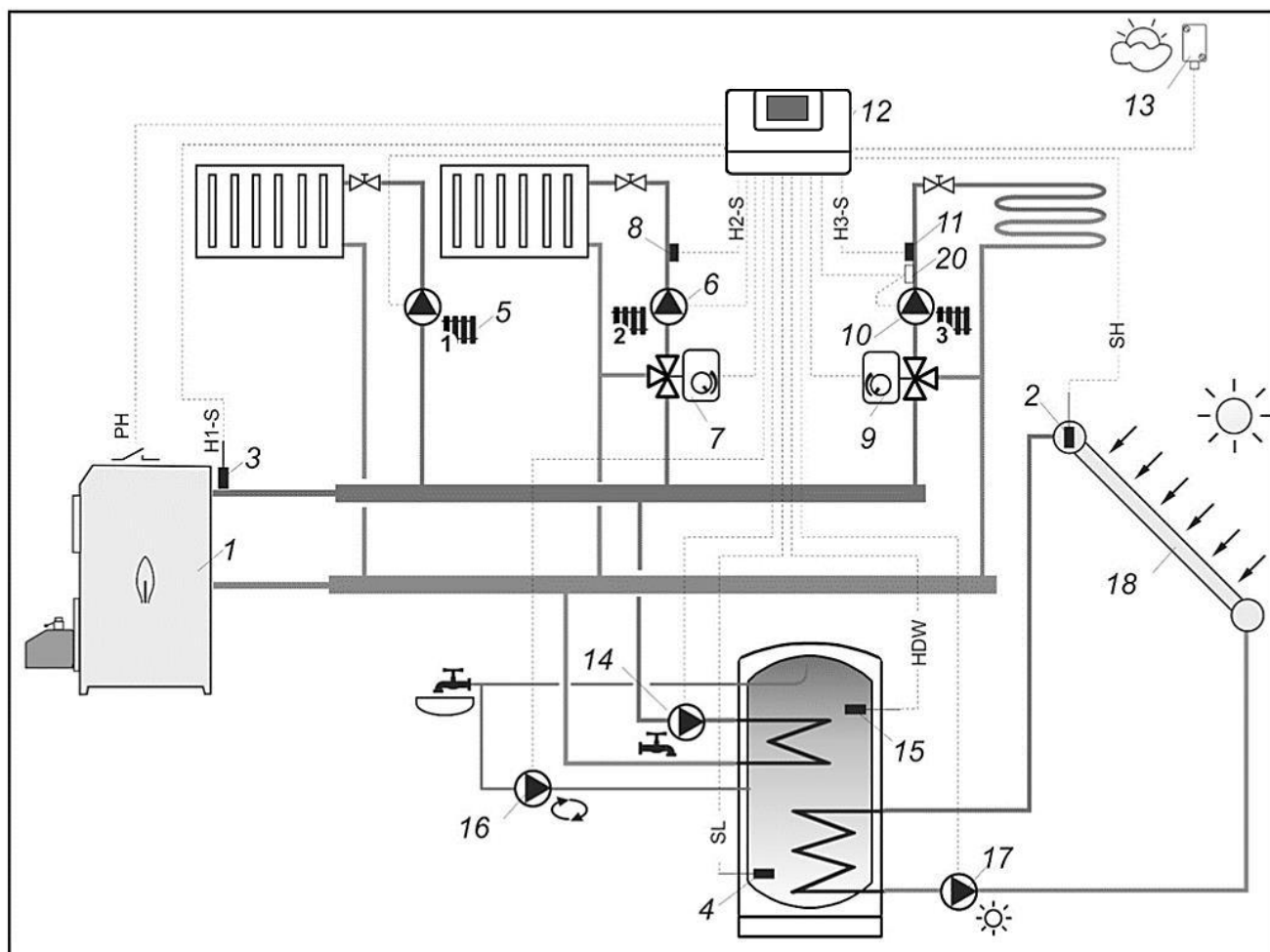
- | | |
|--|--|
| 1 – boiler | 8 – regulated circuit water temperature sensor |
| 2 – boiler pump | 9 – electrical servo of regulated heat circuit |
| 3 – DHW circulation pump | 10 – regulated heat circuit pump |
| 4 - upper sensor temperature buffer | 11 - solar collector temperature sensor |
| 5 – lower sensor temperature buffer | 12 – solar panel |
| 6 – lower sensor temperature Solara | 13 – heat buffer |
| 7 – water temperature sensor for charging buffer pump Solara | 14 – solar pump. |

PROPOSED SETTINGS:

Parameter	Setting	MENU
Hydraulic diagram	5	menu→ service settings → System
Pump start temperature	55°C	menu→ service settings → System
Minimum temperature	60°C	menu→ service settings → System→ Main heat source
Hysteresis	5°C	menu→ service settings → System→ Main heat source
Mode	ON	menu→ service settings → System→ Main heat source
Pump operation extension	5min.	menu→ service settings → System→ Main heat source
Selection	OFF	menu→ service settings → System → Additional heat source

Description: The pump (9) starts after exceeding the pump starting temperature. The boiler (1) will switch off after loading the buffer tank (13). The boiler (1) have to be equipped with security measure against cold water returning to the boiler e.g. thermostatic 3-way valve. The pump (2) starts together with the boiler (1) and turns off after turning off the boiler (1), but with 5 min. time delay.

⁵ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



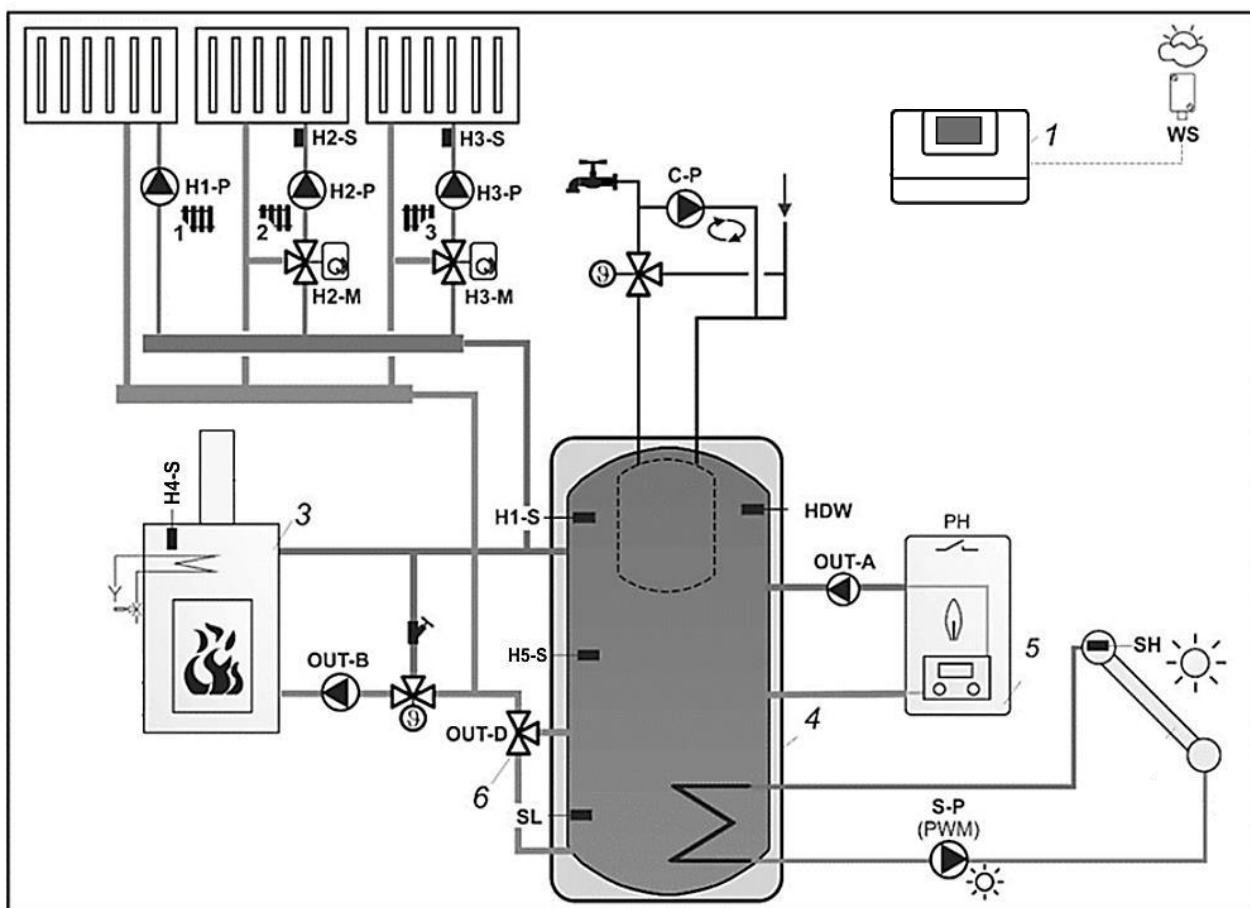
Hydraulic scheme no. 6 - diagram with pelet boiler ⁶:

- | | |
|--|---|
| 1 – boiler | 11 – water temperature sensor of adjustable circuit (H3) |
| 2 – solar collector temperature sensor | 12 – controller |
| 3 – temperature sensor for direct circuit | 13 – weather sensor |
| 4 – DHW tank lower temperature sensor (lower solar sensor) | 14 – DHW pump |
| 5 – direct heating circuit pump (H1) | 15 – DHW tank water temperature sensor |
| 6 – adjustable heating circuit pump (H2) | 16 – DHW circulating pump |
| 7 – valve electrical servo of adjustable circuit (H2) | 17 – solar pump |
| 8 – water temperature sensor of adjustable circuit (H2) | 18 – solar panel |
| 9 – valve electrical servo of adjustable circuit (H3) | 20 – mechanical protective thermostat for protecting floor circuit against excessive water temperature. |
| 10 – adjustable heating circuit pump (H3) | |

PROPOSED SETTINGS:

Parameter	Setting	MENU
Hydraulic diagram	6	menu → service setting → System
Pump start temperature	55°C	menu → service setting → System
Minimum temperature	60°C	menu → service setting → System → Main heat source
Hysteresis	5°C	menu → service setting → System → Main heat source
Selection	ON	menu → service setting → System → Main heat source

⁶ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



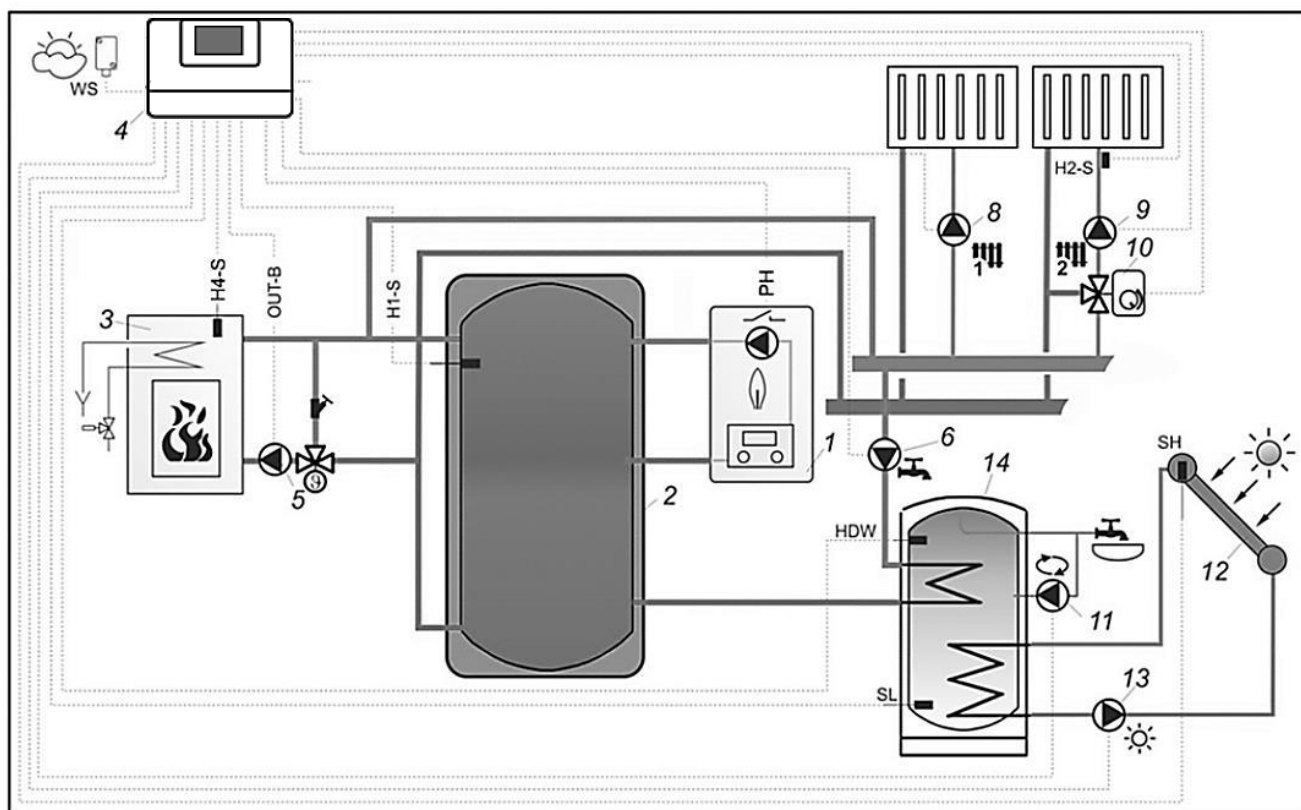
Hydraulic scheme no. 7 - diagram "A" with heat buffer with layered charging buffer ⁷:

- | | |
|------------------------------------|---|
| 1 – controller | H2-P, H3-P – adjustable heating circuit pump |
| 3 – fireplace | H2-M, H3-M – valve electrical servo of adjustable circuit |
| 4 – heat buffer | C-P – DHW circulation pump |
| 5 – automatic boiler | H1-S – upper temperature sensor buffer |
| OUT-A – boiler pump | H5-S – center sensor buffer |
| OUT-B – fireplace pump | SH – solar collector temperature sensor |
| OUT-D – diverter valve (optional) | SL – lower solar sensor |
| S-P – solar pump | WS – weather sensor |
| H1-P – direct heating circuit pump | DHW – DHW tank temperature sensor (optional). |

PROPOSED SETTINGS:

Parameter	Setting	MENU
Hydraulic diagram	7	menu→ service setting → System
Pump start temperature	50°C	menu→ service setting → System→ Main heat source
Pump stop temperature	26°C	menu→ service setting → System→ Main heat source
Mode	ON	menu→ service setting → System→ Main heat source
Off by no heat demand	YES	menu→ service setting → System→ Main heat source
Selection	ON	menu→ service setting →System→ Additional heat source
Pump start temperature	55°C	menu→ service setting →System→ Additional heat source
Description: After heating the sensor H4-S temperature (55°C) shall be attached to the pump (OUT-B). Pump (OUT-B) operates only when the temperature H4-S is greater than the temperature of H1-S. Pump H1-P, H2-P, H3-P will turn on when the temperature H4-S reaches 50°C and turn off when the temperature H1-S falls below 25°C. Boiler (5) turns on when the temperature measured on the sensor H1-S is below the preset temperature. On the valve actuator (6) is given an electrical voltage when the temperature measured on the sensor H5-S falling below 55°C (loading upper buffer). A valve actuator (6) is turned off when the temperature measured at the sensor H5-S rises above 55°C (loading throughout the volume of buffer). H5-S sensor activates an alarm if the exhaust temperature exceeds a critical value.		

⁷ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!



Hydraulic scheme no. 8 - diagram "B" with heat buffer with layered charging buffer ⁸:

- | | |
|--|--|
| 1 – boiler | 11 - DHW circulating pump |
| 2 – heat buffer | 12 - solar panel |
| 3 – additional heat source (fireplace) | 13 - solar pump |
| 4 – controller | H1-S – upper sensor temperature buffer |
| 5 – boiler pump | WS - weather sensor |
| 6 – HUW pump | DHW – DHW tank temperature sensor |
| 8 – H1 circuit pump | SH - collector solar temperature sensor |
| 9 – H2 circuit pump | SL - lower temperature sensor DHW tank (lower solar sensor). |
| 10 – valve electrical servo of adjustable circuit (H2) | |

PROPOSED SETTINGS:

Parameter	Setting	MENU
Hydraulic diagram	8	menu→ service setting → System
Pump start temperature	25°C	menu→ service setting → System
Mode	ON	menu→ service setting → System→ Main heat source
Minimum temperature	40°C	menu→ service setting → System→ Main heat source
Selection	ON	menu→ service setting → System→ Main heat source
Temperature deactivating main heat source	35°C	menu→ service setting → System→ Main heat source
Pump start temperature	55°C	menu→ service setting →System→Additional heat source
DHW mode	ON	menu→ service setting → HUW settings

⁸ Shown hydraulic diagram does not replace a central heating system and can be used only for demonstrative purposes!

12 Electrical system

The controller is designed to be supplied with 230V~, 50Hz voltage.

System features:

- three-wire (with protective wire PE),
- made in acc. with currently valid regulations.



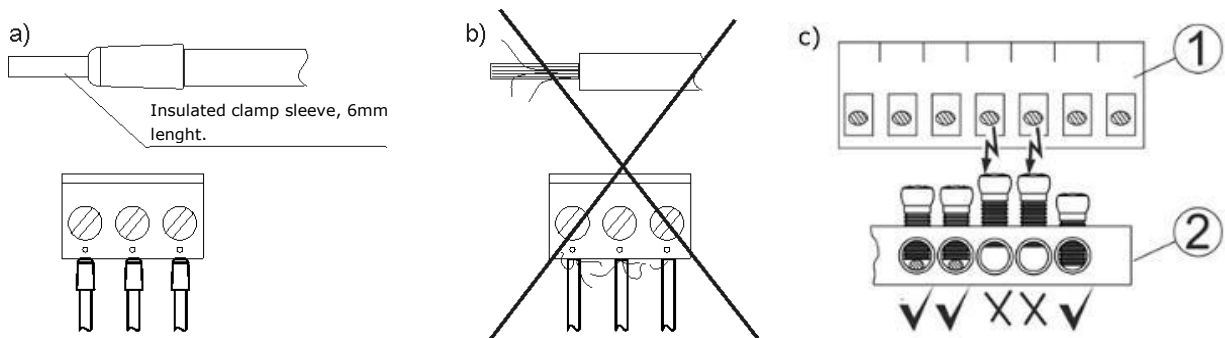
Caution: Risk of electric shock caused by current from a heat source. Disconnect the controller and heat source electrical supply and make sure there is no dangerous voltage on terminals. Protect yourself against incidental generation of supply voltage!

Connection cables should not be in contact with surfaces of temperature exceeding their nominal work temperature. Terminals 1-25 are purposed for connecting devices with mains supply of 230V~. Terminals 26-55 are purposed for cooperation with low-voltage devices (under 12V).



Connecting mains supply 230V~ to terminals 26-55 will damage the controller and may cause electric shock!

Tips of the connected wires, especially power leads, must be secured against splitting by means of insulated clamps. The terminals of the protective strip must be tightened even if there is no wire connected to the terminal.



Securing wire tips: a) – right, b) – wrong, c) - the requirement to tighten the screws of the protection strip, where: 1 – connector, 2 – protection strip.



Should be tighten all screws of the protective strip clamp and make sure that no wire core strand inserted into the terminals has an electrical contact with a metal protective strip.

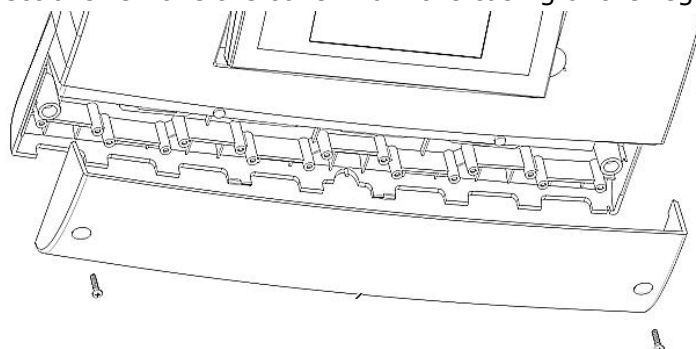


All peripherals may be connected only by qualified person in accordance with applicable regulations. Safety precautions to prevent electrocution shall be observed. Regulator shall be equipped with a set of pins connected to 230V AC mains.

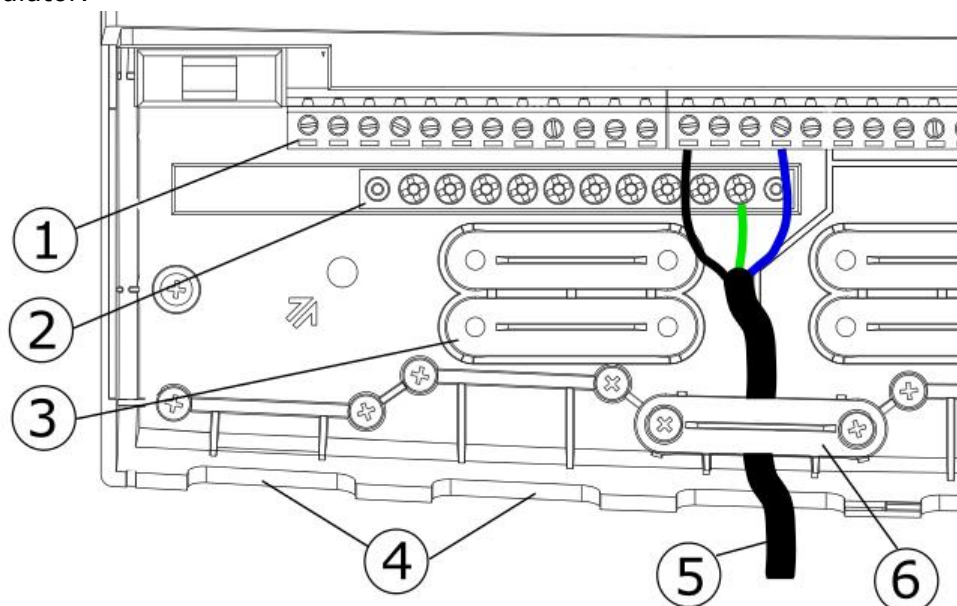
Metal mounting surface on which the controller is mounted and protection lead of the power supply cable and protection leads of connected devices should be connected to the grounding strip placed

inside the casing of the regulator marked with

Before making any connections remove the cover from the casing of the regulator as shown below.



- cables secured from splitting should be connected to screw terminals of the (6) connector.
- cables should be put through cable outlets in the casing (1) and secured from ripping or loosening by a holdfast (5) – break it out from the casing. Zabezpiecza to przewody przed wyrwaniem oraz obluzowaniem.
- it is not allowed to coil excess of the cable and to leave not connected leads inside the casing of the regulator.



Connecting wires to the controller terminals: 1 – connector, 2- protective strip, 3 - holdfasts placing (should be broken out for the casing), 4 - cable outlets, 5 - improper cable connection, 6 - holdfast of the cable.



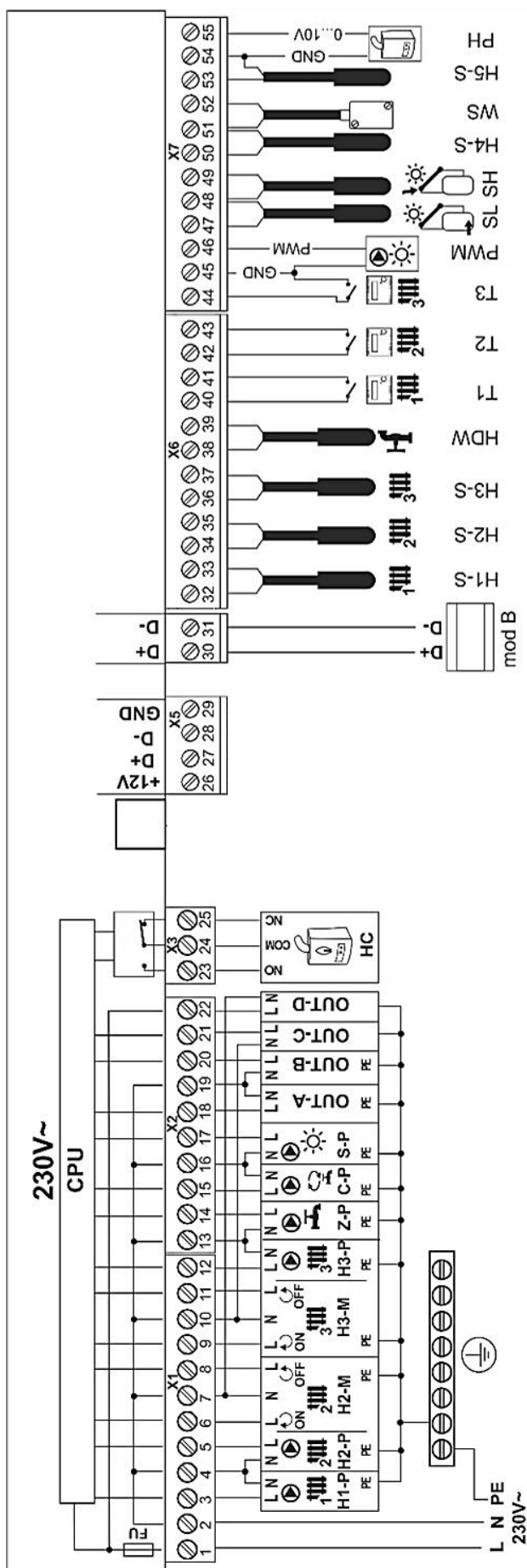
Electrical cables should be isolated from hot parts of the boiler, especially from flues.

When the cables connection is done the cover of the connectors has to be put in place.



The connectors cover should be always screwed on to the casing of the regulator. Apart from providing safety for the user, the connectors cover also protects the interior of the regulator from hazardous environmental conditions providing a proper level of the IP protection.

12.1 Electric scheme



Controller electrical connections diagram, where:

H1-S – direct circuit / hydraulic coupling water temperature sensor type CT-10,

H2-S – water temperature sensor of adjustable circuit type CT-10,

H3-S – water temperature sensor of adjustable circuit type CT-10,

DHW – temperature sensor of water inside DHW tank type CT-10,

T1, T2, T3 – room thermostats for independent heat circuits,

PWM – output for the regulation of the solar pump type PWM,

SL- solar sensor for DHW tank type CT-6,

SH – solar collector sensor type CT6-W,

H4-S – universal temperature sensor, e.g. for measuring temperature of a fireplace with water jacket type CT-10,

WS – weather temperature sensor type CT6-P,

H5-S – universal temperature sensor, e.g. for measuring temperature of heat buffer type CT-10,

PH - output for the output modulation main heat source type 0...10V,

mod B – modules for additional heating circuits (optional),

L N PE - mains supply 230V~,

FU – fuse,

CPU – control,

H1-P – direct (nonadjustable) circuit water pump,

H2-P – adjustable circuit water pump,

H3-P – adjustable circuit water pump,

H2-M – mixing valve actuator,

H3-M – mixing valve actuator,

Z-P – DHW tank loading water pump,

C-P – DHW circulating pump,

S-P – solar pump with PWM input,

OUT-A, OUT-B, OUT-C – universal voltage outputs,

HC – heat source (volt-free contact).

13 Service menu



Entering the menu requires entering a service password.

Service settings
H1, H2, H3 settings
DHW circuit settings
System
Solar
Weather sensor
Temperature corrections
Manual control
Restore default settings
Touch screen calibration

H1 settings
Mode
Control method
➤ Constant value
➤ Weather control
Weather-set temperature
➤ Heat curve
➤ Curve parallel shift
Thermostat
Preset water temperature*
Reduce constant water temperature*
Reduce water temp. by thermostat*
Pump lock by thermostat *
Circuit name

H2, H3 settings
Mode
Control method
➤ Constant value
➤ Weather control
Water setpoint temperature*
Water temperature reduction value in NIGHT mode*
Weather-control temperature
➤ Heat curve
➤ Curve parallel shift
Preset water temperature*
Reduce constant water temperature*
Thermostat
Reduce water temp. by thermostat *
Pump lock by thermostat *
Minimum temperature
Maximum temperature
Valve opening time
Operation in SUMMER
Mixer input dead zone
Proportional range
Integration time constant
Circuit name
Screed drying program*
Screed drying activation*

Ustawienia Obieg CWU
Mode
DHW minimum temperature
DHW maximum temperature
DHW priority
DHW operation extension
DHW pump circulation mode
DHW pump circulation standstill time
DHW pump circulation operation time
Circulation pump start temp.
DHW hysteresis
Legionella
Heat loss protection

System settings
Main heat source
➤ Mode
➤ Hysteresis
➤ Minimum temperature
➤ Maximum temperature
➤ Boiler cooling temperature
➤ Temperature of start pumps
➤ Increasing preset temperature
➤ Pump operation extension
➤ Start delay
➤ Off by no heat demand
➤ Control mode
Additional heat source
➤ Selection
➤ Temp. deactivation of main heat source
➤ Temperature of start pumps
➤ Boiler cooling temperature
Hydraulic scheme
Frost protection mode
Frost protection mode - delay time
Frost Protection setpoint temperature
Time automatic blocking pumps
Messages
Reaction on vacation mode
➤ Night temp stabilization
➤ Frost protection mode

Solar settings*
Mode
Delta T pump activation
Delta T pump deactivation
Minimum collector temperature
Maximum collector temperature
Collector deactivation temperature
Minimal pump rotations
Frost protection mode - solar
DHW maximum temperature
Night cooling

Temperature corrections
Weather sensor

Manual control

- H1 circuit pump
- H2 circuit pump
- Circuit H2 servo ON
- Circuit H2 servo OFF
- H3 circuit pump
- Circuit H3 servo ON
- Circuit H3 servo OFF
- DHW pump
- DHW circulation pump
- Solar pump
- OUT-A, B, C, D
- NO/COM/NC boiler

* Position is not available if appropriate sensor is not connected or other parameter setting caused that this position is hidden.

13.1 H1 circuit settings – direct, unregulated

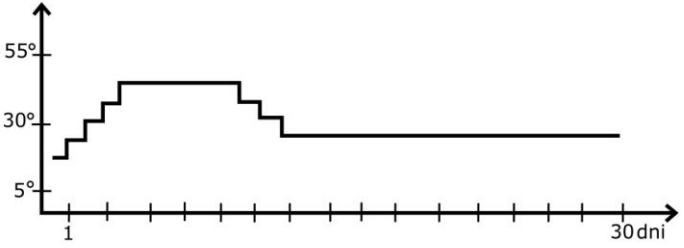
Name	Range	Settings	Description
Mode	ON (radiators), OFF	ON (radiators)	ON – enables operation of the circuit, OFF – disables operation of the circuit, then all parameters related to this circuit are invisible and inactive.
Control method	Constant value, Weather control	Weather control	<i>Constant value</i> – constant preset temperature of water in nonadjustable circuit is maintained. <i>Weather control</i> – water preset temperature of water in the circuit is set with consideration to external temperature sensor readings. Parameter is invisible if no external temperature sensor is connected. When the weather temperature sensor is defective or not connected, the setting of the <i>Control method</i> is permanently changed to <i>Constant value</i> .
Weather-set temperature			Settings related to weather control.
➤ Heat curve	The graph depends on four external temperatures		Selection in the form of a heating curve graph on which the set temperature of the heating circuit for four intermediate weather temperatures is set: 10°C, 0°C, -10°C and -20°C. To set the preset temperature, touch the corresponding point and move it up or down. The higher heating temperature, the higher temperature of water in the heating circuit. Parameter becomes available when <i>Control method</i> = <i>Weather control</i> . Detailed description can be found in point 10.4
➤ Curve parallel shift	-20...20	0°C	Parameter enables to readjust the heating curve. Parameter becomes available when <i>Control method</i> = <i>Weather control</i> .
Thermostat	NO, YES	YES	Parameter assigns a thermostat to the heating circuit. OFF – room temperature has no effect on the heating circuit, ON – the thermostat has an effect on the preset water temperature in the heating circuit, reducing it or completely switching off the heating circuit.
Preset water temperature	20...85	45°C	When <i>Control method</i> = <i>Constant value</i> , heat source is disabled when <i>Preset water temperature</i> is reached. Source is enabled again after the temperature drops by heat source <i>Hysteresis</i> value. Parameter is not available if <i>Control method</i> = <i>Weather control</i> .
Reduce constant water temperature	0...80	10°C	When <i>Control method</i> = <i>Constant value</i> , then a constant preset temperature of water in the circuit is decreased for regulation modes: NIGHT, AUTO.
Reduce water temp. by thermostat	0...80	10°C	The parameter is applicable only when <i>Thermostat</i> = ON. Exceeding a room preset temperature causes a decrease of preset temperature of water in the heating circuit <i>Reduce water temp. by thermostat</i> . Decreasing the preset temperature takes place at the moment of opening thermostat contact. The preset temperature of the water in the heating circuit is not changed when the <i>Reduce water temp. by thermostat</i> = 0. The parameter disappears when the <i>Thermostat</i> = OFF.
Pump lock by thermostat	NO, YES	YES	NO – the thermostat has no effect on the circuit operation, YES – the circuit will be switched off when the temperature preset on the thermostat is reached.
Circuit name	A...Z	H1	Enables changing name H1 circuit.



Note: H1 circuit is a nonadjustable circuit. Due to this the H1 circuit preset temperature is the same as the heating source preset temperature. Therefore settings concerning heat source have a direct effect in H1 circuit. The nonadjustable H1 circuit preset temperature will be automatically increased in order to guarantee heat for H2 and H3 adjustable circuits.

13.2 H2 and H3 circuit settings – regulated

Name	Range	Settings	Description
Mode	OFF, ON (radiators), ON (floor)	ON (radiators)	<i>OFF</i> – disables operation of the circuit, then all parameters related to this circuit are invisible and inactive. <i>ON</i> (radiators) – circuit is on and supplies radiators, <i>ON</i> (floor) – circuit is on and supplies floor heating. For this setting, the controller protects from exceeding a limit temperature in the floor circuit. High temperature in the floor circuit can cause damage to flooring and scalding to users. Screed drying function is active.
Control method	Constant value, Weather control	Weather control	<i>Constant value</i> – constant preset temperature of water in adjustable circuit is maintained, <i>Weather control</i> – water preset temperature of water in the circuit is set with consideration to external temperature sensor readings. Parameter is invisible if no external temperature sensor is connected. When the weather temperature sensor is defective or not connected, the setting of the <i>Control method</i> is permanently changed to <i>Constant value</i> .
Weather-set temperature			Settings related to weather control.
➤ Heat curve	The graph depends on four external temperatures		Selection in the form of a heating curve graph on which the set temperature of the heating circuit for four intermediate weather temperatures is set: 10°C, 0°C, -10°C and -20°C (for proper operation of the valve). To set the preset temperature, touch the corresponding point and move it up or down. The higher heating temperature, the higher temperature of water in the heating circuit. Parameter becomes available when <i>Control method</i> = <i>Weather control</i> . Detailed description can be found in point 10.4
➤ Curve parallel shift	-20...20	0°C	Parameter enables to readjust the heating curve. Parameter becomes available when <i>Control method</i> = <i>Weather control</i> .
Preset water temperature	20...85	45°C	The <i>Preset water temperature</i> can only be set when the <i>Control method</i> = <i>Constant value</i> . Then the temperature in the regulated circulation is kept constant. The parameter is not available when <i>Control method</i> = <i>Weather control</i> .
Water temperature reduction value in NIGHT mode*	0...80	10°C	When <i>Control method</i> = <i>Constant value</i> , then a constant preset temperature of water in the circuit is decreased for regulation modes: NIGHT, AUTO.
Thermostat	NO, YES	YES	Parameter assigns a thermostat to the heating circuit. <i>OFF</i> – room temperature has no effect on the heating circuit, <i>ON</i> – the thermostat has an effect on the preset water temperature in the heating circuit, reducing it or completely switching off the heating circuit.
Reduce water temp. by thermostat	0...80	10°C	The parameter is applicable only when <i>Thermostat</i> = <i>ON</i> . Exceeding a room preset temperature causes a decrease of preset temperature of water in the heating circuit <i>Reduce water temp. by thermostat</i> . Decreasing the preset temperature takes place at the moment of opening thermostat contact. The preset temperature of the water in the heating circuit is not changed when the <i>Reduce water temp. by thermostat</i> = 0. The parameter disappears when the <i>Thermostat</i> = <i>OFF</i> .
Pump lock by thermostat	NO, YES	NO	<i>NO</i> – the thermostat has no effect on the circuit operation, <i>YES</i> – the circuit will be switched off when the temperature preset on the thermostat is reached.
Minimum temperature	15...65	20°C	Minimum preset temperature of water in the heating circuit.
Maximum temperature	20...90	70°C	Maximum preset temperature in the heating circuit. In the <i>Maximum temperature</i> > 55°C and <i>Mode</i> = <i>ON</i> (floor), the controller will take 55°C as a maximum value in order to avoid the risk of scalding and the risk of damaging the floor structure.
Valve opening time	60 ... 255	140s	Read valve full opening time from a servo housing, e.g. It is usually located on a servo nameplate and within a range of 90...180s.
Operation in SUMMER	NO, YES	NO	Parameter enables to enable the heating circuit outside a heating season despite of <i>SUMMER mode</i> = <i>ON</i> setting. For instance, floor heating in a bathroom can be enabled in spring or autumn if there is no need to heat the whole building but the user wants to heat the bathroom.
Mixer input dead zone	0,0...4,0	2°C	Parameter setting defining a temperature dead zone for the adjustable circuit. The controller controls a servo in such way that the temperature measured by a circuit sensor is equal to a preset

			value. Nevertheless in order to avoid frequent servo movements which can shorten its life, adjustment is carried out only when the measured water temperature is lower or higher than the mixer dead zone.
Proportional range	1...6	3	Advanced parameter. Do not change it unless it is really necessary.
Integration time constant	0...255	160	Advanced parameter. Do not change it unless it is really necessary.
Circuit name	A...Z	H2, H3	Enables changing name H2 and H3 circulation.
Screed drying program	7 diagrams	Diagram 1	<p>Schedule of temperature changes in time is shown on the screen in the form of graphs.</p>  <p>Select the correct program for the used type of screed and environmental conditions.</p> <p>Drying is performed by a corresponding change in floor circuit temperature in the range 10..50°C in a time of 30 days. Drying can be deactivating at any time. Re-activation function makes that the drying works all over again for 30 days.</p>
Screed drying activation	NO, YES	NO	<i>Activating or Deactivating</i> the screed floor drying function (heating by floor circuit).

13.3 DHW circuit settings

Name	Range	Settings	Description
Mode	OFF, ON	ON	<i>OFF</i> – disables operation of DHW tank, <i>ON</i> – enables operation of DHW tank.
DHW minimum temperature	5...55	20°C	Minimum preset temperature of water in the DHW tank.
DHW maximum temperature	25...92	55°C	Maximum preset temperature of water in the tank. This parameter determines the maximum temperature to which the DHW tank will be heated while discharging exceeding boiler heat from a boiler or solar collector. Setting too high value can lead to the risk of scalding with DHW. Too low parameter value will eliminate a possibility of discharging heat excess to the DHW tank when the boiler is overheated. In installations including a solar system, too low value will reduce heat contacts because the solar pump loads the DHW tank to a <i>DHW maximum temperature</i> . DHW system developer should consider a possibility of the controller failure. Such failure can cause heating the water inside DHW tank up to a hazardous temperature causing a risk of scalding for users. Therefore, thermostatic valves should be used as an additional protection.
DHW priority	OFF, ON	ON	<i>OFF</i> – DHW tank loading at enabled heating circuits (simultaneously), <i>ON</i> – DHW tank loading at disabled heating circuits.
DHW operation extension	0...255	0 min.	When DHW tank is charged and DHW pump is switched off, boiler may overheat. This problem is related to work of the DHW pump in SUMMER mode (when heating circuits pumps are switched OFF). In order to cool down the boiler, work time of the DHW pump can be extended by time value from this parameter.
DHW pump circulation mode	OFF, ON	ON	<i>OFF</i> – disables the DHW circulating pump operation, <i>ON</i> – enables the DHW circulating pump operation.
DHW pump circulation standstill time	0...255	25min	Intervals between activation of circulating pump is defined with <i>DHW pump circulation standstill time</i> parameter value (recommended setting 15...40min.). Circulating pump works cyclically for a <i>DHW pump circulation operation time</i> (recommended setting 60...120 s.)
DHW pump circulation operation time	0...255	25s	
Circulation pump start temp.	0...50	25°C	In order to save electrical energy the DHW circulating pump will be disabled when the DHW temperature is lower than <i>Circulation pump start temperature</i> .
DHW hysteresis	1...15	5°C	DHW tank will be loaded up to a preset temperature. When temperature of water inside the tank drops by <i>DHW hysteresis</i>

			value, loading pump will be enabled and the tank will be loaded again.
Legionella	OFF, ON	OFF	<i>OFF</i> – disables Legionella function, <i>ON</i> – enables Legionella function. Every week, at 2:00 a.m., hot tap water will be heated to 70°C in order to disinfect the DHW tank. Note: risk of scalding from hot water!
Heat loss protection	OFF, ON	ON	Protection against reverse transfer of heat from the DHW tank to heat source/buffer. The setting <i>OFF</i> disables the comparison of temperature between the sensors H1-S and DHW.

13.4 System settings

Name	Range	Settings	Description
Main heat source			
➤ Mode	ON, OFF	ON	<i>OFF</i> – controller does not affect heat source operation, <i>ON</i> – controller enables or disables heat source acc. to a heat demand.
➤ Hysteresis	1...30	4°C	Heat source hysteresis. Heat source is activated when set water temperature – Hysteresis/2. Heat source is deactivated at set water temperature + Hysteresis/2.
➤ Minimum temperature	20...80	20°C	Minimum temperature of heat source and minimum temperature of H1 circuit (nonadjustable).
➤ Maximum temperature	20...80	20°C	Maximum temperature of heat source and maximum temperature of H1 circuit (nonadjustable).
➤ Boiler cooling temperature	40...100	95°C	Excess heat will be transferred to the heating circuits and HUW when the temperature exceeds <i>Boiler cooling temperature</i> .
➤ Temperature of start pumps	1...80	50°C	The H2 and H3 pump will be enabled when DHW temperature exceeds <i>Temperature of start pumps</i> parameter value.
➤ Increasing preset temperature	0...20	5°C	Increasing the preset temperature of heat source more than the HUW tank or heating circuit. Note: heat source preset temperature is also a H1 nonadjustable circuit preset temperature.
➤ Pump operation extension	0...20	5min	The pump boiler is extended after turning off the main source of heat.
➤ Start delay	0...24	0h	The heat source moves after a delay. Intended for installation of heat buffer loaded by the fireplace.
➤ Off by no heat demand	OFF, ON	OFF	<i>ON</i> - if the thermostat do not report need to heat - the main heat source is turns off, even though the preset temperature in water has not been reached. <i>OFF</i> - the heat source is turns off after reaching the preset temperature of water. Note: the main heat source turns on to the heating of DHW.
➤ Control mode	No modulation, Modulation 5K, Modulation 10K, Modulation 20K	No modulation	<i>No modulation</i> - the main source of heat works without output modulation. <i>Modulation 5K, Modulation 10K, Modulation 20K</i> - the main heat source operates with 0-10V output modulated. More information in point 9.11
Additional heat source			
➤ Selection	OFF, ON	OFF	<i>OFF</i> – disables operation of additional heat source. <i>ON</i> – the controller switches the additional heat source on or off depending on the heat demand.
➤ Temp. deactivation of main heat source	20...80	40°C	Heat source is deactivated when temperature exceeds this value measured on additional heat source sensor.
➤ Pump start temperature	1...80	50°C	Fireplace pump will be enabled when fireplace or automatic boiler temperature exceeds <i>Pump start temperature</i> parameter value.
➤ Boiler cooling temperature	70...100	92°C	Excess heat will be transferred to the heating circuits and DHW when the temperature sensor of additional heat source exceeds <i>Boiler cooling temperature</i> .
Hydraulic scheme	1...8	1	Parameter defines characteristic features of the hydraulic system. More information in point 11
Frost protection mode	OFF, ON	OFF	<i>OFF</i> – disables frost protection mode. <i>ON</i> – enables frost protection mode.
Frost protection delay time	1...12	4h	Delay time of activation the frost protection mode
Frost Protection setpoint temperature	3...25	7°C	Below this temperature frost protection mode is activated.

Time of the automatic blocking	0...60	0min	Function saving electricity by stopping the pump of the regulated heating circuit when the measured temperature of the circulating water is maintained for 15 minutes above the preset temperature water. Recommended setting: 15 min.
Messages	ON, OFF	ON	<i>OFF</i> – allows you to display informational messages in the main window. <i>ON</i> – does not allow the display of informational messages in the main window.
Reaction on vacation mode	Night temp stabilization, Frost protection mode	Frost protection mode	This parameter determines whether the Holiday mode and OFF mode is total off heat receiver (frost protection mode) or the temperature is maintained at night.

13.5 Solar settings

Name	Range	Settings	Description
Mode	OFF, ON	ON	<i>OFF</i> – disables operation of solar circuit, <i>ON</i> – enables operation of solar circuit.
Delta T pump activation	1,5...20	7°C	When difference between solar collector temperature and the lower DHW temperature exceeds <i>Delta T pump activation</i> parameter value, solar pump will be activated.
Delta T pump deactivation	1...19	3°C	When difference between solar collector temperature and lower DHW temperature drops below <i>Delta T pump deactivation</i> parameter value, solar pump will be deactivated.
Minimum collector temperature	4...110	10°C	Solar pump will not be enabled below this temperature. If <i>Minimum collector temperature</i> = <i>OFF</i> , function is disabled.
Maximum collector temperature	110...150	120°C	Above this temperature, solar pump will be enabled in order to cool the solar panel provided that HUI tank temperature is lower than the maximum value. If <i>Maximum collector temperature</i> = <i>OFF</i> , function is disabled.
Collector deactivation temperature	115...200	150°C	Above this temperature, solar pump will be disabled in order to prevent it against overheating. Pump will be enabled again after the solar panel is cooled down. If <i>Collector deactivation temperature</i> = <i>OFF</i> , function is disabled.
Minimal pump rotations	15...100	15%	If <i>Minimum pump rotations</i> = <i>OFF</i> , solar pump revolutions modulation function is disabled (pump always activates with 100% revolutions). If <i>Minimum pump rotations</i> > 0, solar pump revolutions modulation function is enabled. Function enables to increase reception of heat energy from the solar panel at low insolation. Solar pump decreases its revolutions when difference between temperatures between a solar collector sensor and DHW tank lower temperature drops.
Frost protection mode - solar	-15...-35	0°C	Solar panel temperature at which frost protection mode is activated. This value should be higher than freezing temperature of the agent inside a solar circuit, e.g. glycol. Solar pump is activated when solar panel temperature drops below Frost protection mode - solar parameter value. It causes heat reception from DHW tank and heating the solar panel. Caution: enabling this function can cause considerable heat energy losses. When <i>Frost protection mode – solar</i> = <i>OFF</i> , frost protection mode of the solar is disabled.
DHW maximum temperature	25...90	55°C	Maximum preset temperature of water in the tank. This parameter defines what temperature the DHW tank will be heated up to during the solar collector is loaded. It is a very important parameter because if it is too high, there could be a risk of burning with utility water. In case of installations with solar system, too low value will limit heat gains because solar pump loads the DHW tank to <i>DHW maximum temperature</i> . During designing a DHW system, a possibility of regulator fault should be taken into consideration. As a result of such failure, water inside the DHW tank can be heated up to a temperature which is dangerous for users. Therefore, additional protection should be used in a form of thermostatic valves.
Night cooling			The controller activates night cooling from 0:00 a.m. to 5:00 a.m. During this time the regulator will start the collector pump in order to discharge the DHW tank to the set temperature. Regardless of the conditions, the controller will exit the cooling mode at 5:00 a.m. and will go to normal control. Setting <i>Night cooling</i> = <i>OFF</i> disables the function.

13.6 Other parameters

Name	Range	Settings	Description
Weather sensor	ON, OFF	ON	Activation of external temperature sensor operation for weather control of the heating circuit. In case of sensor damage, the screen displays the message "External temperature sensor damage". Activation of the service will trigger additional parameters in the weather control menu.
Temperature corrections	-5...5	0°C	External sensor temperature correction - in situations when sensor is not accurate. In the case of connecting a weather sensor, for example with long cables, it is possible to additionally set a correction for the temperature of its indications. To do this, determine the exact temperature value at the sensor installation location and set the correction value with reference to the weather sensor display on the main screen.
Restore default settings	YES, NO	NO	YES - again loading all factory settings.

14 Fuse replacement

The mains fuse is located under the housing cover. It protects the regulator and other devices. In case of replacement, use fuse 6.3A, 5x20mm.

In order to take out the fuse, raise the fuse holder using flat-blade screwdriver and take out the fuse.

15 Technical data

Power	230V~, 50Hz
Current consumption by the controller	0,2 A
Max. rated current	6 (6) A
IP rating of the controller	IP20
Ambient temperature	0...50°C
Storage temperature	-15...65°C without direct sunlight
Relative humidity	5 - 85% without steam condensation
Temp. measurement range of sensors CT-10	0...100°C
Temp. measurement range of sensors CT6-P	-40...+40°C
Accuracy of temp. measurement using sensors CT-10 and CT6-P	±2°C
Connectors	Screw terminals at supply voltage side - 2.5mm ² Screw terminals at control voltage side - 1.5mm ²
Graphical display with touch panel	Display 480x272 pix.
Dimensions	340x225x60mm
Weight	1,6kg
Norms	PN-EN 60730-2-9 PN-EN 60730-1
Software class	A, wg PN-EN 60730-1
Protection class	I class
Pollution degree	2nd pollution degree, PN-EN 60730-1
Mounting	on the wall

Note:

[illegible]



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