

ecoMAX360I

controller for heating
and cooling system

**operating
and installation**



issue: 1.3_EN





ELECTRIC DEVICE UNDER VOLTAGE!

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

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

The controller can't be used in steam condensation conditions and can't be exposed to water.

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1 Recommendations regarding safety

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



- The controller can be assembled only by qualified installer and in accordance with currently valid standards and regulations.
- Before 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 no electrical wires are energized.
- After turning off the controller 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 DHW system against the results of controller failure or software errors. Particularly control automatics which reduce DHW temperature in order to protect users against burns.
- Values of programmed parameters must be set in accordance with a particular building and hydraulic system.
- The controller is not an intrinsically safe device. It means that in case of failure it can be a source of sparks or high temperature which surrounded by ashes or flammable gases can cause fire or explosion.
- 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 consists of two components: control panel and main module. Replaced component must be compatible.
- Keep children away from the controller.

2 General information

The ecoMAX360I1 controller is intended for controlling a central heating system and heat source e.g. a gas, oil, pellet boiler and heat pump.

3 Information about documentation

The controller manual is divided into two parts: for user and fitter. Yet, both parts contain important information, significant for safety issues, hence the user should read both parts of the manual.

We are not responsible for any damages caused by failure to observe these instructions.

4 Storage of documentation

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.

5 Applied symbols

In this manual the following symbols are used:



- useful information and tips,



- important information, failure to observe these can cause damage of property, threat for human and household animal health and life.

Caution: the symbols indicate important information, in order to make the manual more lucid. Yet, this does not exempt the user from the obligation to comply with requirements which are not marked with symbol.

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.

USER SETTINGS

ecoMAX360I

7 The controller support

When configuring the controller for the first time, it is recommended to use the *System configuration assistant* in the service menu, point 14

7.1 The controller control

The controller is operated using a touch screen. Parameters are edited by touching the selected symbol on the panel screen. An example of the heat circuit screen is shown below.



On the main screen and other screens, the symbols meaning:

- heat circuits settings,
- DHW tank settings (the symbol is not visible when there is no DHW support),
- time schedules for heat circuits, DHW tank, heat source,
- *User settings* menu and *Service settings* menu,
- currently selected screen and available screens,
- list of active alarms,
- symbol for heat source on (boiler),
- active connection to the www.econet24.com website.

7.2 The controller operation

Main heat source.

The controller controls the operation of the main heat source by activating or deactivating heat source it according to demand for heating or cooling of the heat circuits.

Domestic hot water.

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

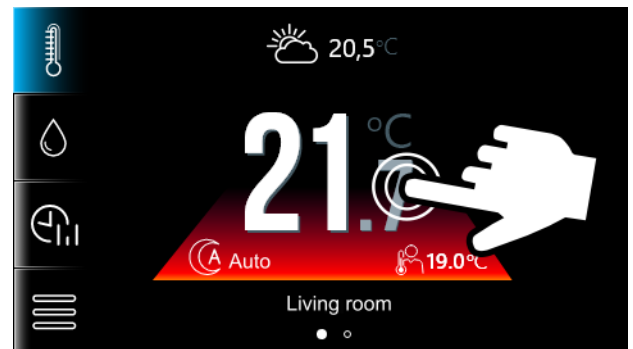
Heat circuits.

The controller controls the operation of one non-adjustable heat circuit and two adjustable heat circuits. Water temperature in circuits is set by weather, i.e. water temperature in the circuit is calculated in accordance with a temperature from the external temperature sensor. Due to this, despite of varying outside temperature, a room temperature in heated rooms is kept on a set level.

- Dependent circuits – the controller touch panel can be a common room thermostat for many circuits. For example, room temperature readings on a panel installed in the living room affect operation of both radiator and floor circuit.
- Independent circuit – there is a possibility of connecting control panels measuring room temperature independently and affecting assigned circuits. It is the way to obtain independency of the circuits, e.g. in case when one part of the building is used for the whole year and the second part is used periodically, e.g. for rent.

7.3 Preset temperature settings

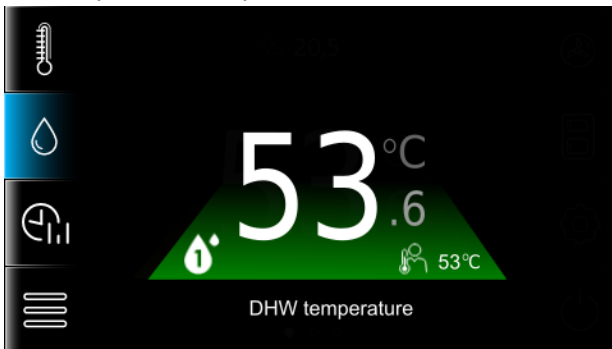
The preset temperature of the circuit and the DHW tank is set by pressing the screen on the value of the temperature of the circuit and the DHW tank.



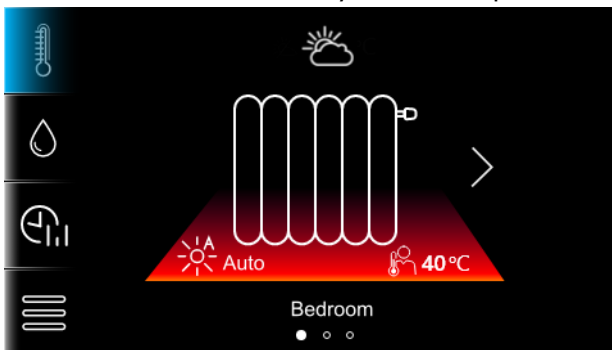


The set preset temperature is shown on the screen next to the symbol .

Tip: the color change indicates whether heating circuit or HUW tank temperature is below (blue), above (red) or the same (green) as the preset temperature.



Tip: if the radiator icon is displayed at the circuit temperature display place, then the circuit is not controlled by the room panel.



The value of the outside temperature is displayed next to the symbol  provided that the support of the outside temperature sensor has been enabled in the service settings.

7.4 Circuit settings

Pressing the  symbol displays the parameters:

- *Circuit name* - own name of the circuit, e.g. "Living room".

- *Hysteresis* - the circuit will be charged to the preset temperature. After the water temperature in the circuit drops by the value of Hysteresis, the circuit will be switched on again. The parameter is visible only when the circuit is regulated by the thermostat and its operation is enabled.
- *Preset day temperature* - circuit temperature for Day mode. The parameter is visible only when the circuit is regulated by the thermostat and its operation is enabled.
- *Preset night temperature* - circuit temperature for Night mode. The parameter is visible only when the circuit is regulated by the thermostat and its operation is enabled.
- *Constant preset water temperature* - the main heat source is turned off when the value in this parameter is reached. The parameter is not available when the circuit is controlled by the outdoor temperature.

<i>Preset day temperature</i>	Optimal temperature in the room that provides the best thermal comfort for the user, e.g. during the day.
<i>Preset night temperature</i>	The temperature to which the room temperature will be reduced, e.g. at night or when the user leaves the room.

Pressing the  symbol allows to *Select circuit thermostat*. The options are: *None*, *Control panel*, *Wired thermostat*, *Wireless thermostat* (parameter visible only when the ISM radio module is connected to the controller).

7.5 DHW settings

Pressing the  symbol displays the parameters:

- *DHW hysteresis* - DHW tank will be loaded up to the preset temperature. When temperature of water inside the DHW tank drops by *DHW hysteresis* value, pump loading will be enabled and the DHW tank will be loaded again.

- *DHW work extension* – after loading the DHW tank and disabling the DHW pump, a risk of heat pump overheat can occur. In order to cool the heat pump, the operation of DHW pump can be extended by a period of extended operation of DHW pump. The parameter is not available when the main heat source is a heat pump.
- *DHW priority* – the *On* means that the DHW tank is being charged when the circuits are off, *Off* means that the DHW tank is being charged when the circuits are turned on (simultaneously). The parameter is not available when the main heat source is a heat pump.

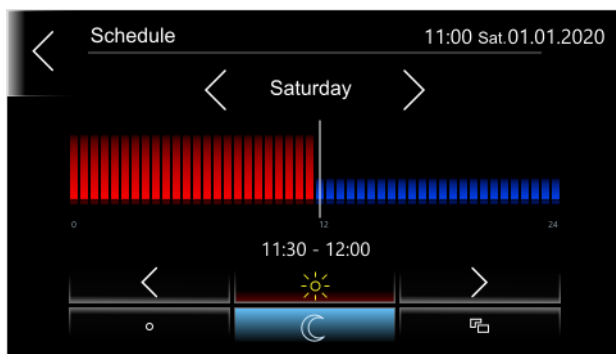


DHW tank charging is only active after connecting the DHW tank temperature sensor and enabling DHW support in service settings.

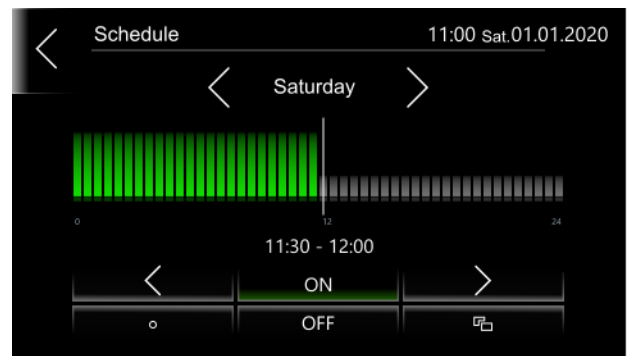
7.6 Time schedules

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

Time schedules for decrease preset temperature are defined separately for circuits and circulation pump. Time schedules can be set separately for each day of the week.



The ON/OFF time schedule is defined separately for main heat source and DHW tank. Time schedule can be set separately for each day of the week.



The symbols meaning:



- weekday selection and time period selection. The 24-hour interval is set every 30 minutes.



- copying the currently set time period to any day of the week.



- the preset room temperature is set to

the value *Preset night temperature*  for circuits. The DHW tank and circulation pump are switched off.



- the preset room temperature is set to

the value *Preset day temperature*  for circuits. The DHW tank is loaded to the *Preset DHW temperature*. The DHW circulation pump is turned on for *Circulation operation time* and turned off for *Circulation pause time*.

ON – main heat source is ON.

OFF – main heat source is OFF.

7.7 Operation modes settings

Operation mode of the circuit and the DHW tank, which will suit the user's preferences, is

selected by the  symbol and the  symbol on the screen in the place where the preset temperature of the circuit and the DHW tank is changed. Additional operation mode can be selected separately for each circuit and DHW tank. In case when many circuits are assigned to a mutual control panel, operation mode change is global and applies to all circuits simultaneously.

Operation mode	
 Day	Preset room temperature is constant and corresponds to the entered <i>Preset day temperature</i> value. DHW tank maintains constant preset temperature.
 Day schedule	Preset room temperature is maintained at the same set time periods as the <i>Preset day temperature</i> . This mode can't be selected for the DHW tank.
 Night	Preset room temperature is constant and corresponds to the entered <i>Preset night temperature</i> value. This mode cannot be selected for the DHW tank.
 Night schedule	Preset room temperature is maintained at the set time periods as the <i>Preset night temperature</i> . This mode can't be selected for the DHW tank.
 Off	Controller switches the circuit or DHW tank off.
 Schedule	Preset room temperature is switched between <i>Preset day temperature</i> and <i>Preset night temperature</i> depending on clock indications and defined time programs for particular days of the week.
 On	DHW mode is On.
 Off	DHW mode is Off.
 1 x loading	Enables a single DHW load in situation when DHW tank heat energy saving mode is active.
 Schedule	DHW tank operation mode according to the set schedule.

User can select main mode for DHW tank as

 and, if necessary, activate an additional

 mode in order to save heat energy resulting from stoppage losses of DHW tank. The additional operation mode of the circuit is selected by pressing the currently displayed symbol on the main screen in the place where the value of the outside temperature is

displayed, usually it is the  symbol.

Additional operation mode	
 Auto	Automatically switches on or off the heating-cooling mode, depending on the external (weather) temperature. Automatic switch to Auto mode is possible only with connected external temperature sensor and when its operation is enabled and when the main heat source is the heat pump (can also unlock the cooling function of the heat source and circuits).
 Summer	Adjustable circuit performs the cooling function.
 Winter	Adjustable circuit performs the heating function. No cooling mode in case of non-adjustable circuit.

7.8 User settings

The controller settings, according to user preference. Pressing the  symbol displays the parameters:

- *Hour* – setting time. Time synchronization function with other connected room panels was applied.

 Time synchronization will occur at the time difference between the room panel and the controller min. 10 sec.

- *Date* – setting date. Day of the week will be set automatically after setting date.
- *Panel address* – enables setting individual ModBus address of room panel in case of connecting more room panels to the controller.



For the controller to work properly, individual room panels must have different and subsequent addresses from the 100...132 pool set.

- *Language* – menu language selection.
- *Parental lock* – settings of parental control. The lock activates automatically after 5 minutes of inactivity. Unlocking the screen is possible after pressing the screen (about 4 sec., open padlock animation).
- *Brightness screen* – screen brightness intensity.
- *Screen saver* – screen saver selection: *None, Empty screen, Clock, Clock and temperature*.
- *Time to screen save* – time to start the screen saver after the time of inactivity.
- *Brightness of the screen save* – screen brightness when the screen saver is active.
- *Alarm sound* – turn on or off the alarm sound.
- *Key sound* – turning on or off sound of keys when pressed on the screen.
- *Panel temperature correction* – correction of the room temperature value measured by the room panel. The temperature in the room should be measured with an additional temperature sensor and the difference between this measurement and the temperature value displayed by the room panel should be entered into the value of this parameter.

Pressing the  symbol displays the parameters:

- *ecoNET300 configuration wizard* – go further to start configuring the ecoNET300 Web module.



- *ecoNET status - LAN* – information on the Wi-Fi and the Webserver www.econet24.com connection status.
- *Wi-Fi settings* – configuration of controller Wi-Fi connection, with ecoNET300 module connected. Connection of Web module and its configuration is described in manual for this module. Parameters should be set: *SSID, Security type, network access Password*.

Pressing the  symbol displays: *Diagnostic info* about the operation of the controller, *Alarms list, Software version* (e.g. serial number, UID, ISM). Selecting *Software update* allows to update the controller's software.

7.9 Cooperation with the Web module

Internet module ecoNET300 enables remote maintenance of the heat pump via Wi-Fi or LAN network through www.econet24.com website. By using computer or mobile device with installed internet browser, user can remotely monitor and modify operation parameters of the controller. In case of mobile system a free and convenient application can be used ecoNET.apk and ecoNET.app, to be downloaded via QR code.

ecoNET.apk



ecoNET.app

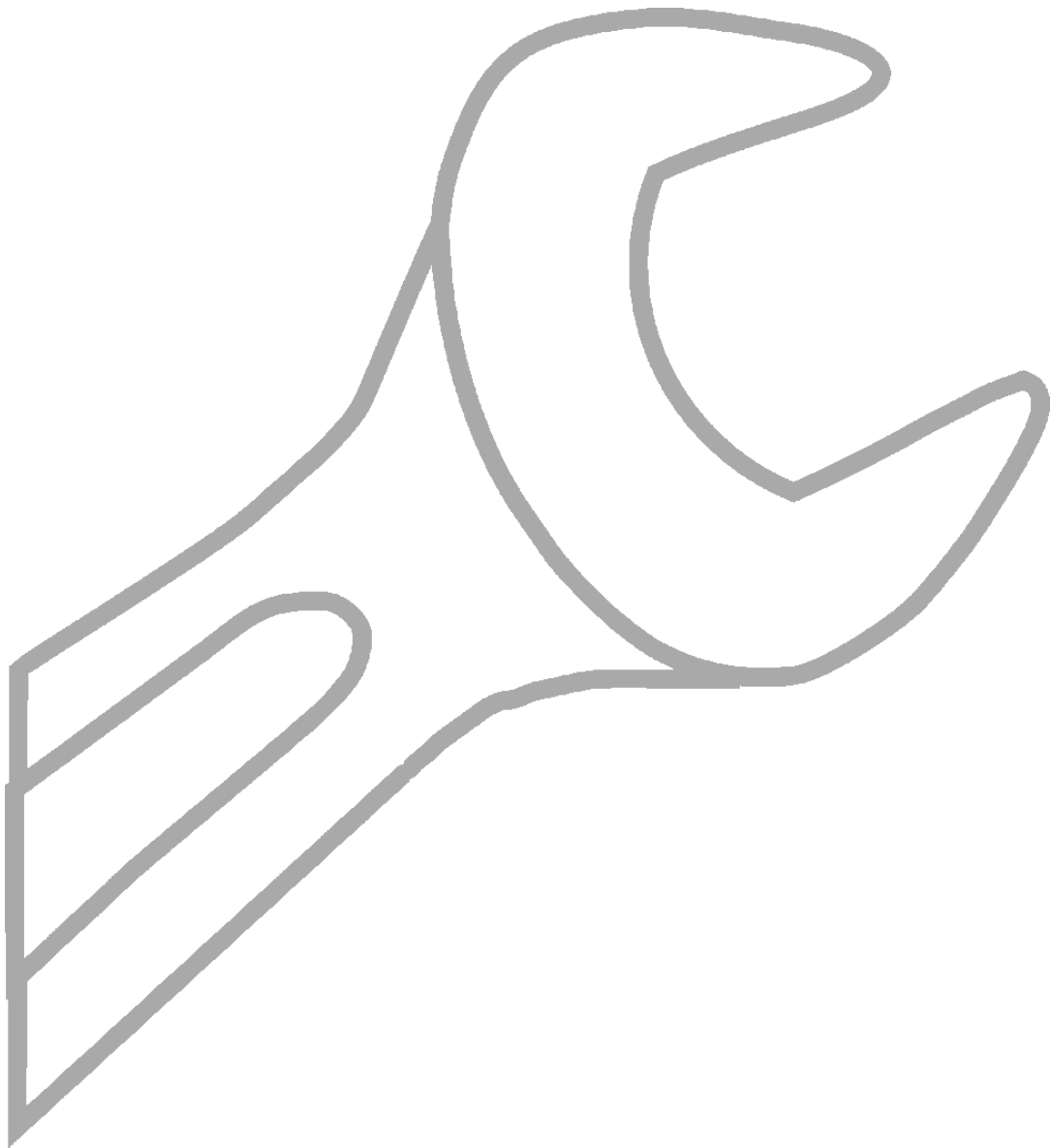


7.10 Cooperation with additional devices

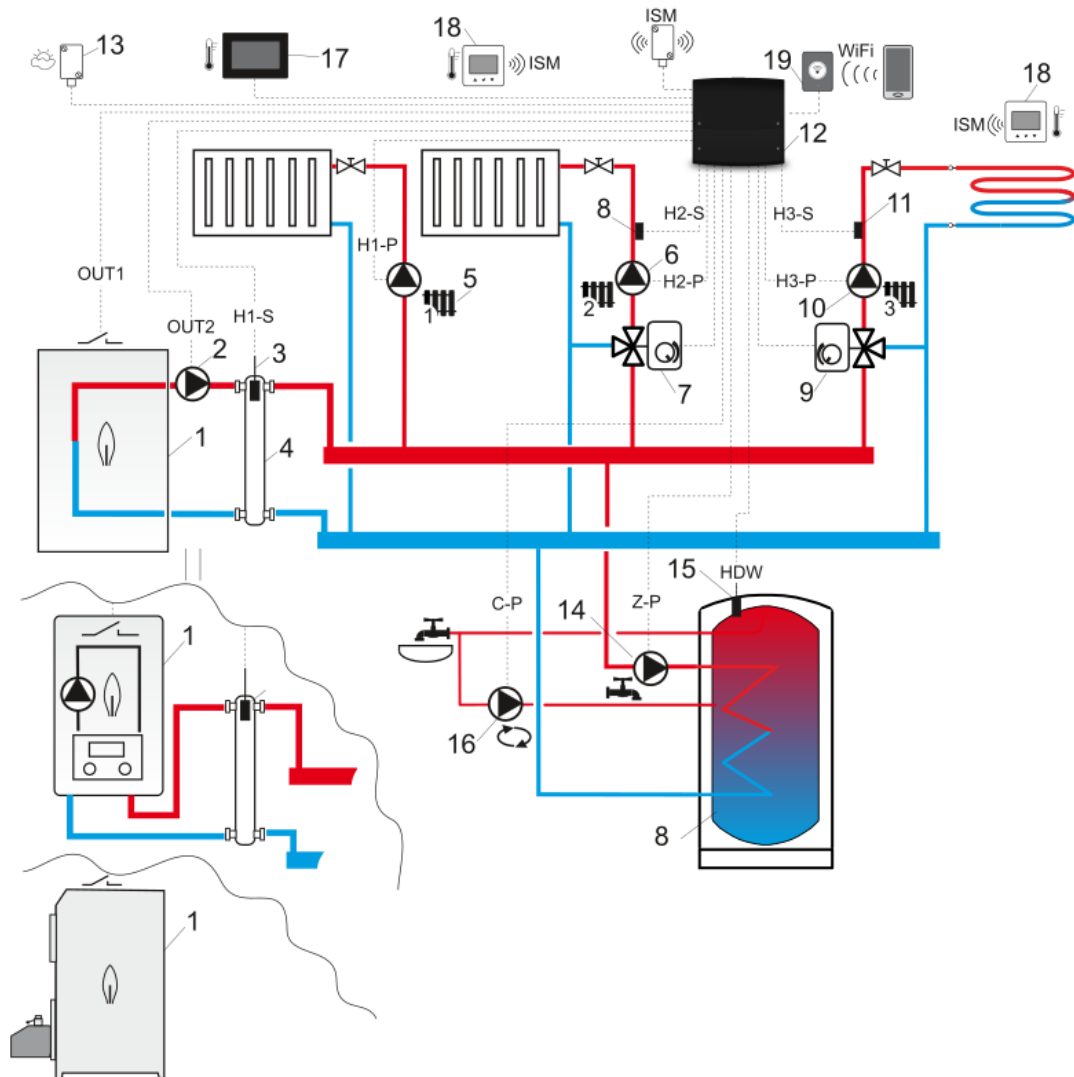
The controller cooperates with additional system devices, which are optionally offered by the controller manufacturer.

 eSTER_x40	Wireless room thermostat.
 eSTER_x20	Wireless room temperature sensor.
 ecoSTER90	Room panel with a room thermostat function. It can act as the main control panel.
 ecoMAX360B1	Additional module - support for additional heating circuits.
 ecoNET300	Web module.

ecoMAX360I



8 Hydraulic schemes

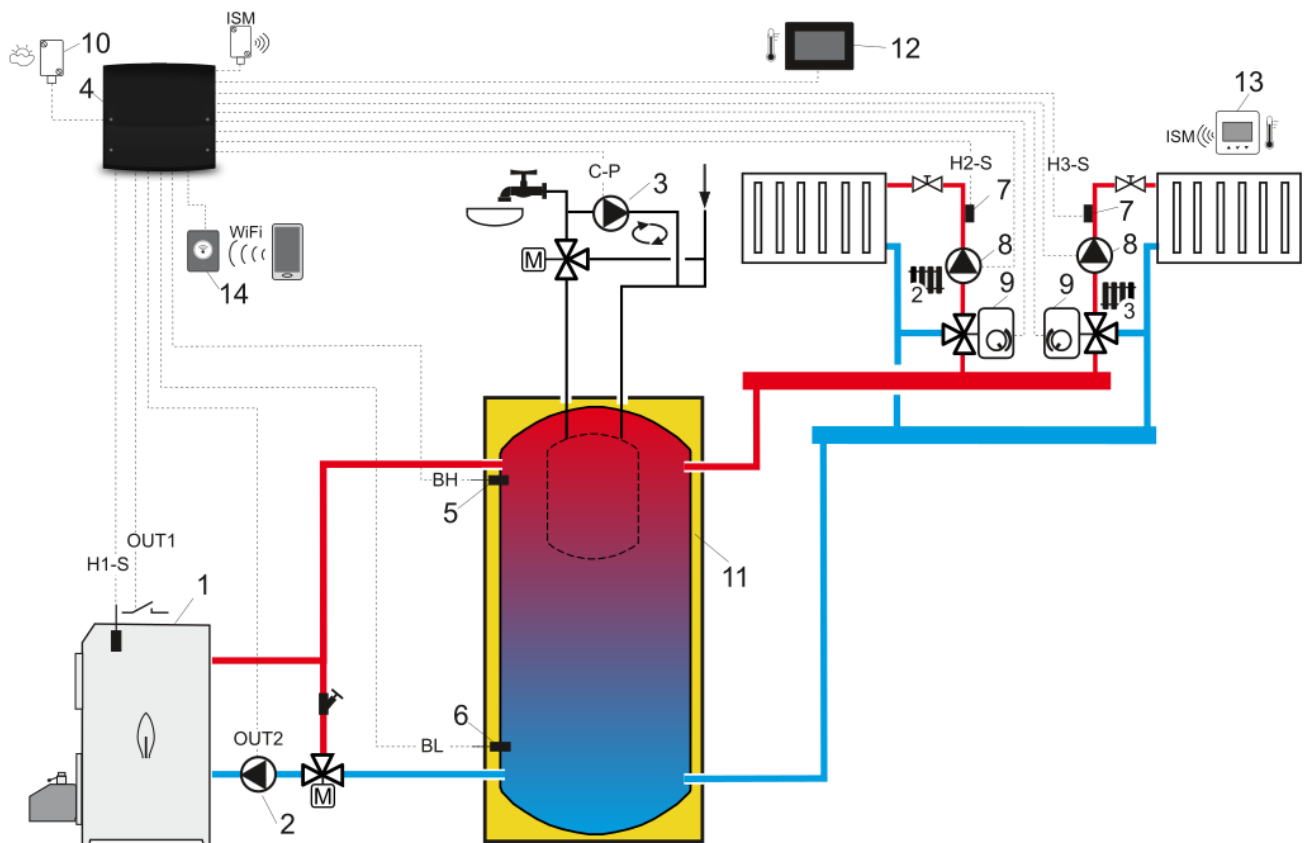


Basic scheme¹: 1 – heat source, 2 – heat source pump, 3 – circuit 1 temp. sensor, 4- hydraulic coupling, 5- circuit 1 pump, 6 - circuit 2 pump, 7 – circuit 2 mixer, 8 – circuit 2 temp. sensor, 9 – circuit 2 mixer, 10 – circuit 3 pump, 11 – circuit 3 temp. sensor, 12 – controller, 13 – outside temp. sensor, 14 – HUW tank pump, 15 – HUW tank temp. sensor, 16 – HUW circulation pump, 17 – control panel with room thermostat function, 18 – wireless room thermostat, 19 – Web module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	MENU
	Heat source support	Gas boiler, Pellet boiler	Installation control → Main heat source
	External temp. sensor support	YES	Installation control → Weather sensor
	Circuit support	YES	Installation control → 1 Circuit
	Thermostat	Control panel	Installation control → 1 Circuit
	Circuit support	YES	Installation control → 2 Circuit
	Thermostat	Heater	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 2 Circuit
	Maximum temperature	80°C	Installation control → 2 Circuit
	Circuit support	YES	Installation control → 3 Circuit
	Thermostat	Floor heating	Installation control → 3 Circuit
	Thermostat	Wireless thermostat	Installation control → 3 Circuit
	Maximum temperature	55°C	Installation control → 3 Circuit
	DHW support	YES	Installation control → HUW settings
	DHW max. preset temp.	80°C	Installation control → HUW settings
	Circulation support	YES	Installation control → Circulation settings

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

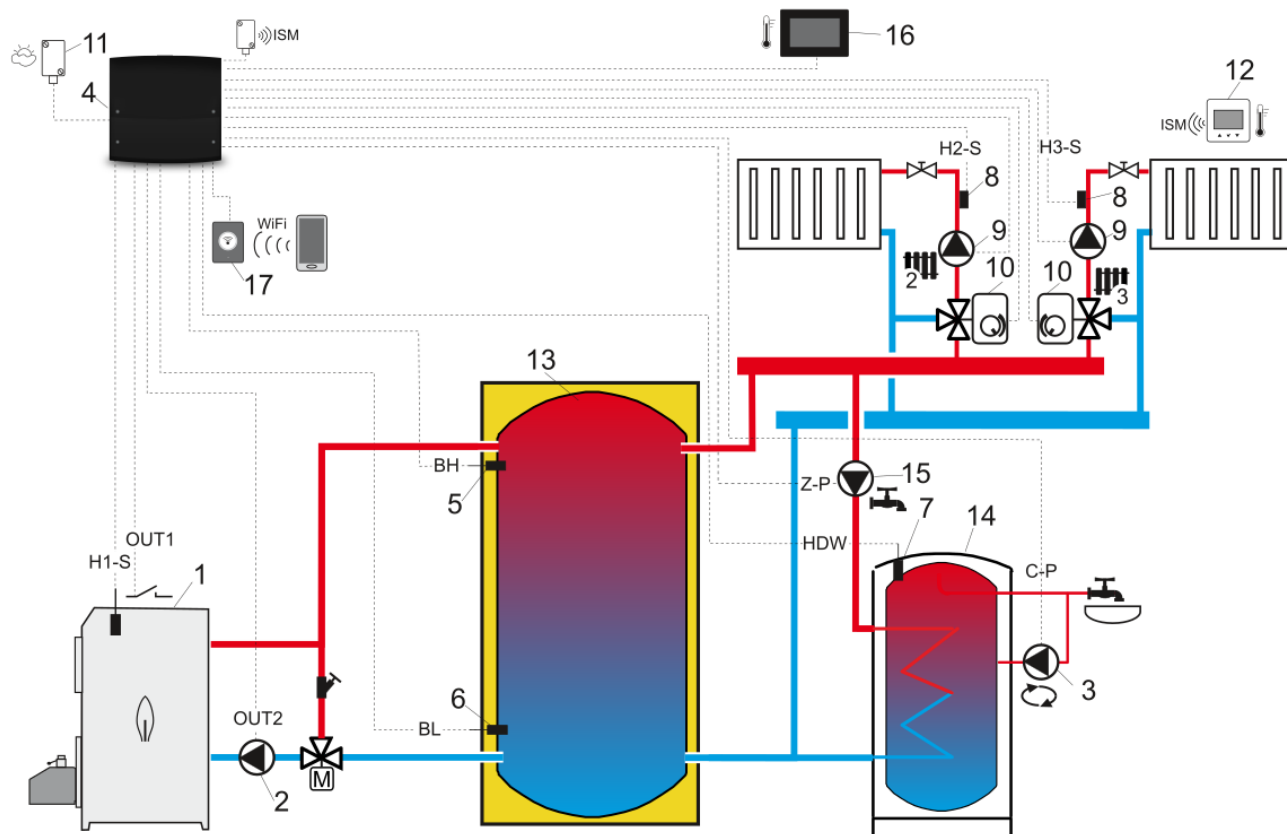


Scheme with heat buffer²: 1 – heat source, 2 – heat source pump, 3 – circulation pump, 4- controller, 5 – upper buffer temp. sensor, 6 – lower buffer temp. sensor, 7 – circuit 2 and 3 temp. sensor, 8 – circuit 2 and 3 pump, 9 – circuit 2 and 3 mixer, 10 – outside temp. sensor, 11 – heat buffer, 12 – control panel with room thermostat function, 13 – wireless room thermostat, 14 – Web module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	MENU
	Heat source support	Pellet boiler	Installation control → Main heat source
	External temp. sensor support	YES	Installation control → Weather sensor
	Minimum temperature	25°C	Installation control → Main heat source
	Boiler cooling temperature	92°C	Installation control → Main heat source
	Buffer support	YES	Installation control → Buffer settings
	Buffer work mode	Two sensors	Installation control → Buffer settings
1	Circuit support	NO	Installation control → 1 Circuit
2	Circuit support	YES	Installation control → 2 Circuit
	Circuit selection	Heater	Installation control → 2 Circuit
	Control method	Weather	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 2 Circuit
	Maximum temperature	80°C	Installation control → 2 Circuit
3	Circuit support	YES	Installation control → 3 Circuit
	Circuit selection	Heater	Installation control → 3 Circuit
	Control method	Weather	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 3 Circuit
	Maximum temperature	80°C	Installation control → 3 Circuit
	Circulation support	YES	Installation control → Circulation settings

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

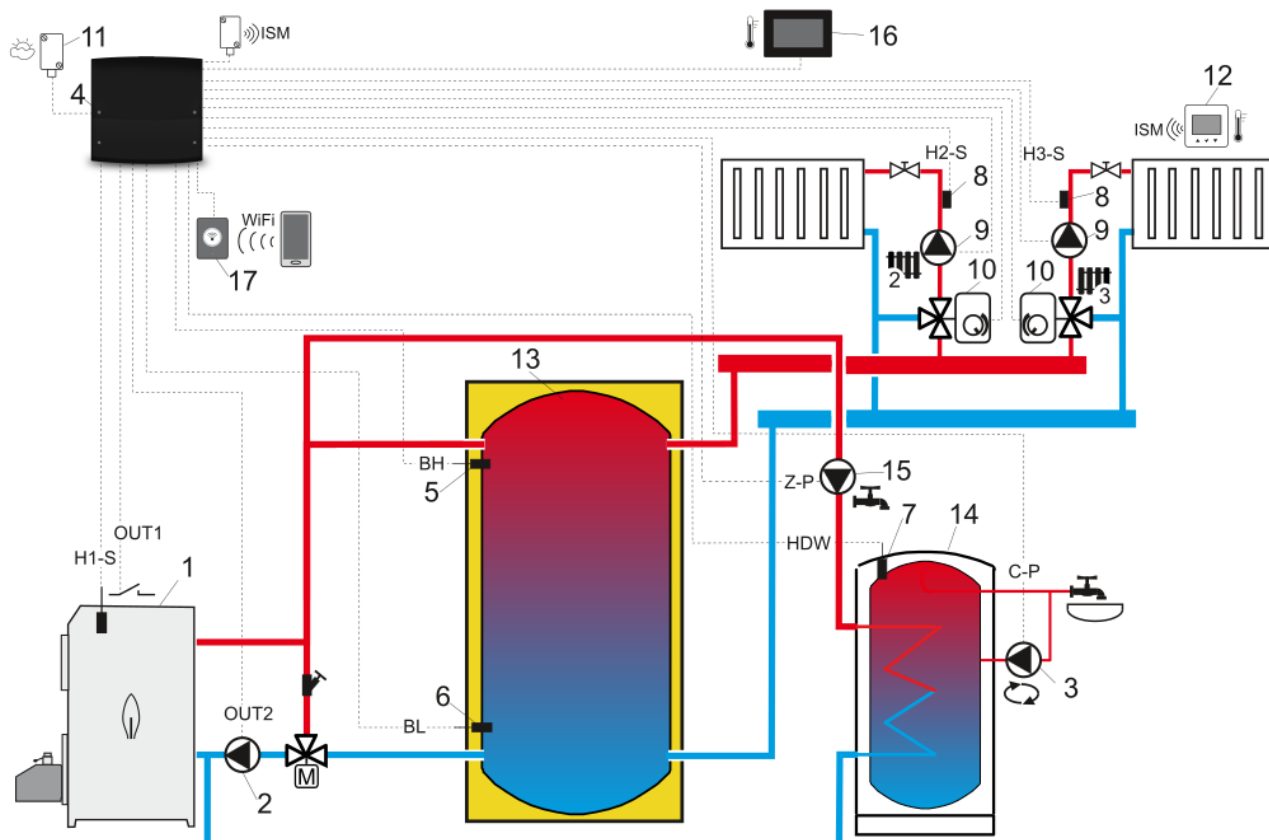


Scheme with heat buffer and HUW tank³: 1 – heat source, 2 – heat source pump, 3- circulation pump, 4 – controller, 5 – upper buffer temp. sensor, 6 – lower buffer temp. sensor, 7 – HUW tank temp. sensor, 8 – circuit 2 and 3 temp. sensor, 9 – circuit 2 and 3 pump, 10- circuit 2 and 2 mixer, 11 – outside temp. sensor, 12 – wireless room thermostat, 13 – heat buffer, 14 – HUW tank, 15 – HUW tank pump, 16 – control panel with room thermostat function, 17 – Web module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	MENU
	Heat source support	Pellet boiler	Installation control → Main heat source
	External temp. sensor support	YES	Installation control → Weather sensor
	Minimum temperature	25°C	Installation control → Main heat source
	Boiler cooling temperature	92°C	Installation control → Main heat source
	Buffer support	YES	Installation control → Buffer settings
	Buffer work mode	Two sensors	Installation control → Buffer settings
	Circuit support	NO	Installation control → 1 Circuit
	Circuit support	YES	Installation control → 2 Circuit
	Circuit selection	Heater	Installation control → 2 Circuit
	Control method	Weather	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 2 Circuit
	Maximum temperature	80°C	Installation control → 2 Circuit
	Circuit support	YES	Installation control → 3 Circuit
	Circuit selection	Heater	Installation control → 3 Circuit
	Control method	Weather	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 3 Circuit
	Maximum temperature	80°C	Installation control → 3 Circuit
	DHW support	YES	Installation control → HUW settings
	Heat source	Buffer	Installation control → HUW settings
	DHW max. preset temp.	80°C	Installation control → HUW settings
	Circulation support	YES	Installation control → Circulation settings

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

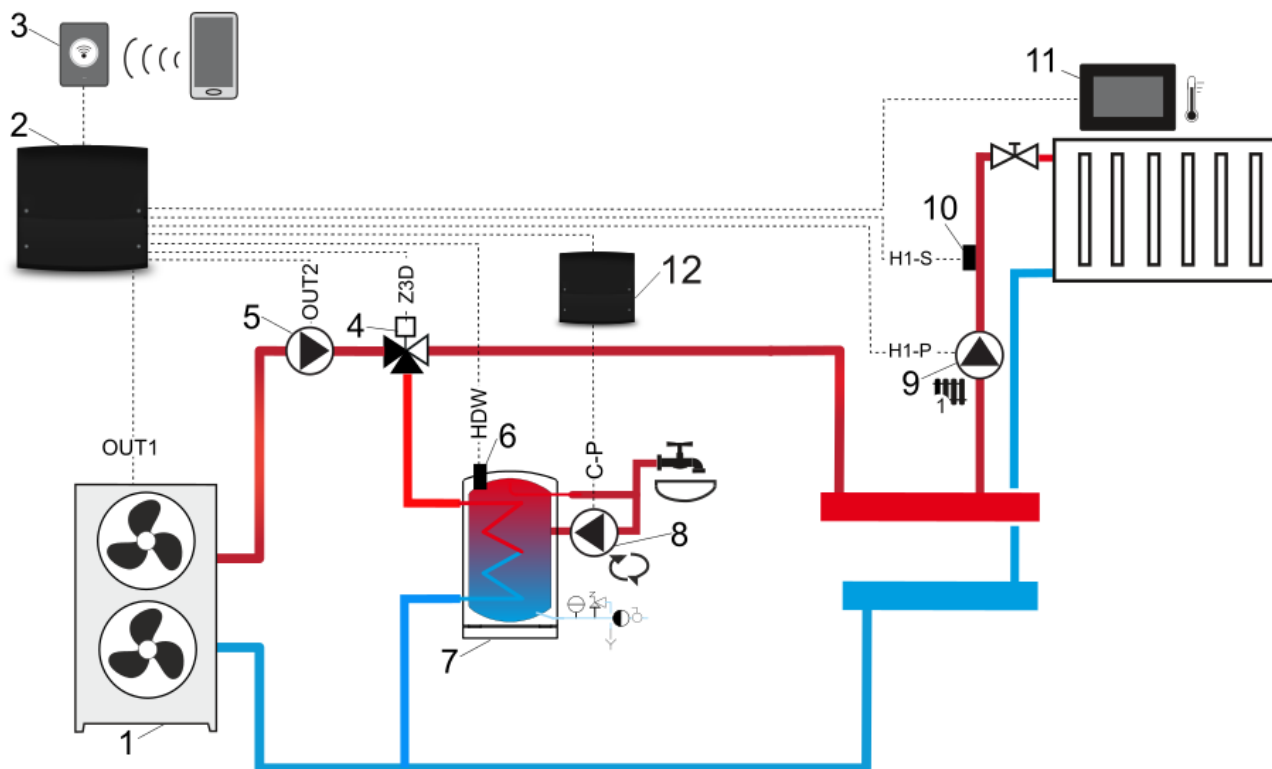


Scheme with heat buffer and HUW tank⁴: 1 – heat source, 2 – heat source pump, 3- circulation pump, 4 – controller, 5 – upper buffer temp. sensor, 6 – lower buffer temp. sensor, 7 – HUW tank temp. sensor, 8 – circuit 2 and 3 temp. sensor, 9 – circuit 2 and 3 pump, 10- circuit 2 and 3 mixer, 11 – outside temp. sensor, 12 - wireless room thermostat, 13 – heat buffer, 14 – HUW tank, 15 – HUW tank pump, 16 – control panel with room thermostat function, 17 – Web module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	MENU
	Heat source support	Pellet boiler	Installation control → Main heat source
	External temp. sensor support	YES	Installation control → Weather sensor
	Minimum temperature	25°C	Installation control → Main heat source
	Boiler cooling temperature	92°C	Installation control → Main heat source
	Buffer support	YES	Installation control → Buffer settings
	Buffer work mode	Two sensors	Installation control → Buffer settings
1	Circuit support	NO	Installation control → 1 Circuit
2	Circuit support	YES	Installation control → 2 Circuit
	Circuit selection	Heater	Installation control → 2 Circuit
	Control method	Weather	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 2 Circuit
	Maximum temperature	80°C	Installation control → 2 Circuit
3	Circuit support	YES	Installation control → 3 Circuit
	Circuit selection	Heater	Installation control → 3 Circuit
	Control method	Weather	Installation control → 2 Circuit
	Thermostat	Wireless thermostat	Installation control → 3 Circuit
	Maximum temperature	80°C	Installation control → 3 Circuit
	DHW support	YES	Installation control → HUW settings
	Heat source	Pellet boiler	Installation control → HUW settings
	DHW max. preset temp.	80°C	Installation control → HUW settings
	Circulation support	YES	Installation control → Circulation settings

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

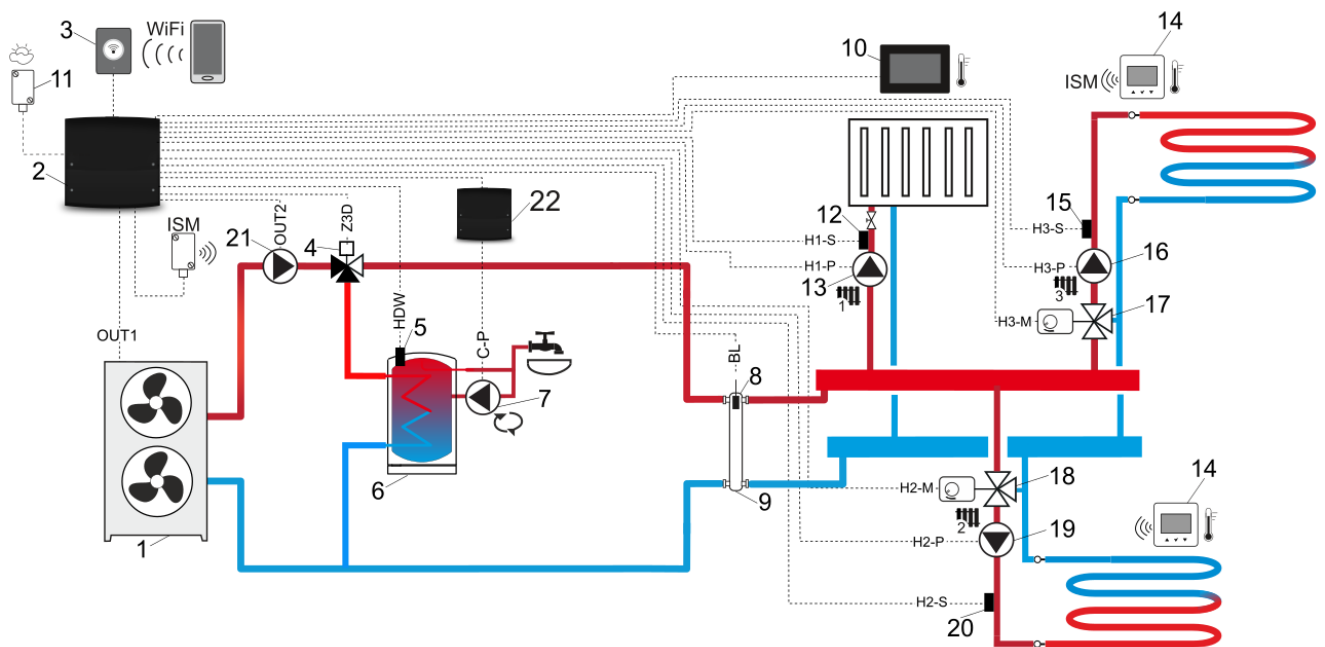


Scheme with one non-adjustable circuit⁵: 1 – heat pump, 2 – controller, 3 – Web module, 4 - 3-way valve, 5 – DHW pump, 6 – DHW tank temp. sensor, 7 – DHW tank, 8 – circulation pump, 9 – circuit 1 pump, 10 – circuit 1 temp. sensor, 11 – control panel with room thermostat function, 12 – additional B module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	Service settings
	Heat source support	Heat pump	Installation control → Main heat source
	Circuit support	YES	Installation control → Circuit 1
	Circuit type	Heater	Installation control → Circuit 1
	DHW support	YES	Installation control → DHW settings
	Circulation support	YES	Installation control → Circulation settings

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

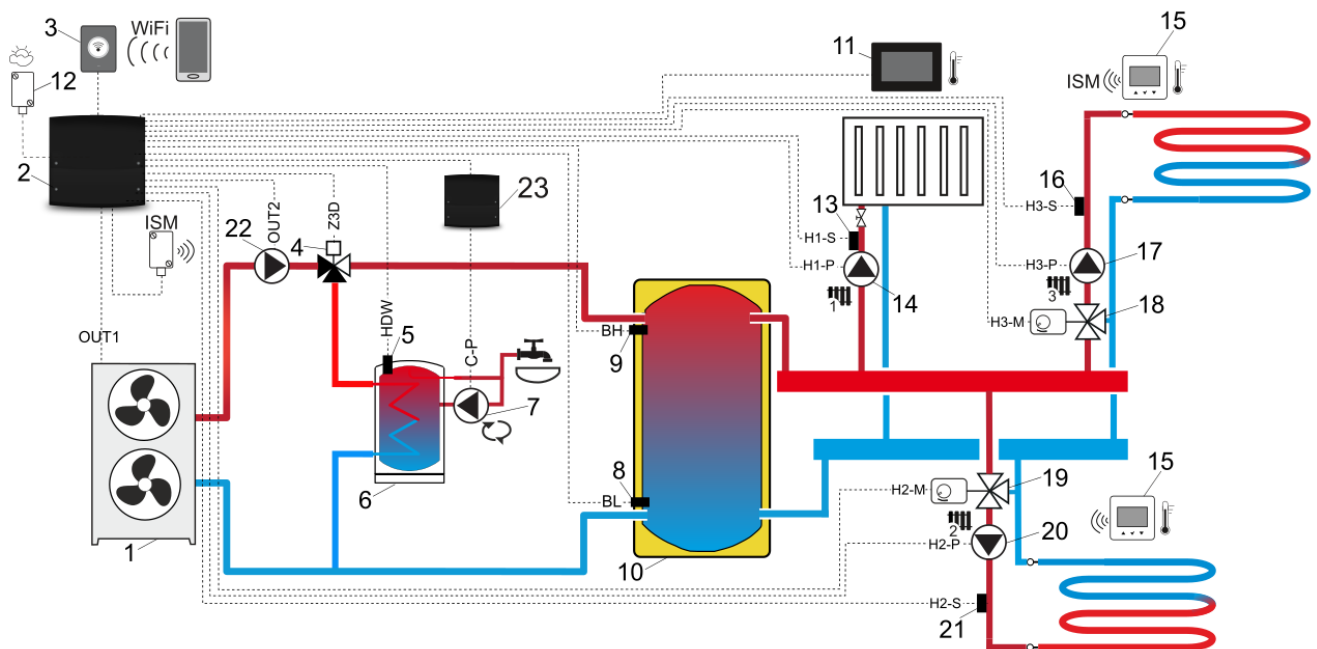


Scheme with hydraulic clutch and DHW tank⁶: 1 – heat pump, 2 – controller, 3 – Web module, 4 - 3-way valve, 5 – DHW tank temp. sensor, 6 – DHW tank, 7 – circulation pump, 8 – hydraulic clutch temp. sensor, 9 – hydraulic clutch, 10 – panel control with room thermostat function, 11 - weather temp. sensor, 12 – circuit 1 temp. sensor, 13 – circuit 1 pump, 14 – wireless room thermostat, 15 – circuit 3 temp. sensor, 16 – circuit 3 pump, 17 – circuit 3 mixer, 18 – circuit 2 mixer, 19 – circuit 2 pump, 20 – circuit 2 temp. sensor, 21 – DHW pump, 22 – additional B module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	Service settings
	Heat source support	Heat pump	Installation control → Main heat source
	Buffer work mode	One sensors	Installation control → Buffer settings
1	Circuit support	YES	Installation control → Circuit 1
	Circuit type	Heater	Installation control → Circuit 1
	Regulation method	Weather	Installation control → Circuit 1
2	Circuit support	YES	Installation control → Circuit 2
	Circuit type	Floor heating	Installation control → Circuit 2
	Regulation method	Weather	Installation control → Circuit 2
	Thermostat	Wireless thermostat	Installation control → Circuit 2
	Maximum temperature	55°C	Installation control → Circuit 2
3	Circuit support	YES	Installation control → Circuit 3
	Circuit type	Floor heating	Installation control → Circuit 3
	Regulation method	Weather	Installation control → Circuit 3
	Thermostat	Wireless thermostat	Installation control → Circuit 3
	Maximum temperature	55°C	Installation control → Circuit 3
	DHW support	YES	Installation control → DHW settings
	Circulation support	YES	Installation control → Circulation settings

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

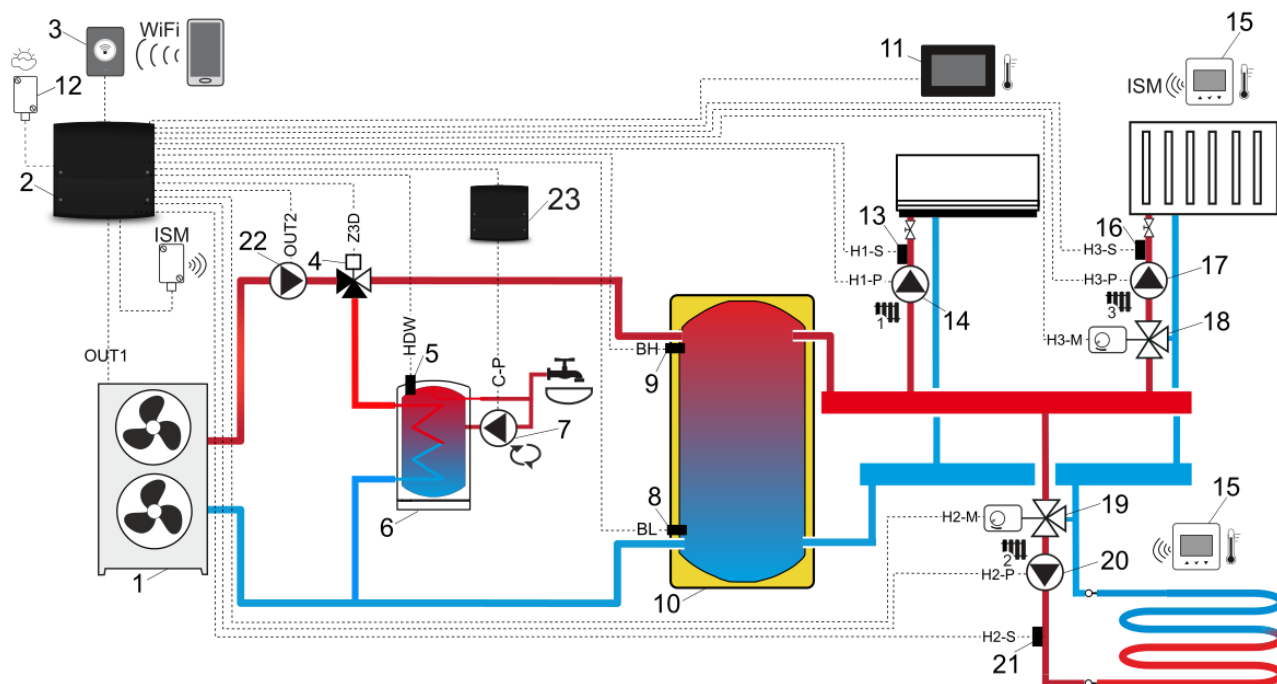


Scheme with buffer and DHW tank⁷: 1 – heat pump, 2 – controller, 3 – Web module, 4 - 3-way valve, 5 – DHW tank temp. sensor, 6 – DHW tank, 7 – circulation pump, 8 – lower buffer temp. sensor, 9 – upper buffer temp. sensor, 10 - buffer, 11 – panel control with room thermostat function, 12 - weather temp. sensor, 13 – circuit 1 temp. sensor, 14 – circuit 1 pump, 15 – wireless room thermostat, 16 – circuit 3 temp. sensor, 17 – circuit 3 pump, 18 – circuit 3 mixer, 19 – circuit 2 mixer, 20 – circuit 2 pump, 21 – circuit 2 temp. sensor, 22 – DHW pump, 23 – additional B module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	Service settings
	Heat source support	Heat pump	Installation control → Main heat source
	Buffer support	YES	Installation control → Buffer settings
	Buffer work mode	Two sensors	Installation control → Buffer settings
	Circuit support	YES	Installation control → Circuit 1
	Circuit type	Heater	Installation control → Circuit 1
	Circuit support	YES	Installation control → Circuit 2
	Circuit type	Floor heating	Installation control → Circuit 2
	Regulation method	Weather	Installation control → Circuit 2
	Thermostat	Wireless thermostat	Installation control → Circuit 2
	Maximum temperature	55°C	Installation control → Circuit 2
	Circuit support	YES	Installation control → Circuit 3
	Circuit type	Floor heating	Installation control → Circuit 3
	Regulation method	Weather	Installation control → Circuit 3
	Thermostat	Wireless thermostat	Installation control → Circuit 3
	DHW support	YES	Installation control → DHW settings
	Circulation support	YES	Installation control → Circulation settings

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



Scheme with buffer and DHW tank⁸ (cooling function): 1 – heat pump, 2 – controller, 3 – Web module, 4 – 3-way valve, 5 – DHW tank temp. sensor, 6 – DHW tank, 7 – circulation pump, 8 – lower buffer temp. sensor, 9 – upper buffer temp. sensor, 10 – buffer, 11 – panel control with room thermostat function, 12 – weather temp. sensor, 13 – circuit 1 temp. sensor, 14 – circuit 1 pump, 15 – wireless room thermostat, 16 – circuit 3 temp. sensor, 17 – circuit 3 pump, 18 – circuit 3 mixer, 19 – circuit 2 mixer, 20 – circuit 2 pump, 21 – circuit 2 temp. sensor, 22 – DHW pump, 23 – additional B module.

PROPOSED SETTINGS:

Circuit	Parameter	Settings	Service settings
	Heat source support	Heat pump	Installation control → Main heat source
	Buffer support	YES	Installation control → Buffer settings
	Buffer work mode	Two sensors	Installation control → Buffer settings
	Buffer cooling	YES	Installation control → Buffer settings
	Buffer heating	NO	Installation control → Buffer settings
	Circuit support	YES	Installation control → Circuit 1
	Circuit type	Fan coil	Installation control → Circuit 1
	Regulation method	Weather	Installation control → Circuit 1
	Thermostat	Wireless thermostat	Installation control → Circuit 1
	Circuit support	YES	Installation control → Circuit 2
	Circuit type	Floor heating	Installation control → Circuit 2
	Regulation method	Weather	Installation control → Circuit 2
	Thermostat	Wireless thermostat	Installation control → Circuit 2
	Circuit support	YES	Installation control → Circuit 3
	Circuit type	Heater	Installation control → Circuit 3
	Regulation method	Weather	Installation control → Circuit 3
	Thermostat	Wireless thermostat	Installation control → Circuit 3
	DHW support	YES	Installation control → DHW settings
	DHW heating	YES	Installation control → DHW settings
	DHW cooling	NO	Installation control → DHW settings
	DHW heating	NO	Installation control → DHW settings
	Circulation support	YES	Installation control → Circulation settings
	Circulation heating	YES	Installation control → Circulation settings

In cooling function the circuit mixers are closed to prevent cold water from entering the heater and floor heating.

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

9 Technical data

Controller	
Power supply	230 VAC, 50 Hz
Current consumption	0,4 A ⁹
Maximum rated current	6 (6) A
Protection class	IP 20 ¹⁰
Ambient temperature	0...50°C
Storage temperature	0...65°C
Relative humidity	5...85%, without water vapor condensation.
CT-10 sensor temperature measurement range	0...100°C
CT6-P sensor temperature measurement range	-40°C...+40°C
Temp. measurement accuracy	±2°C
Connectors	Screw terminals at supply voltage side – 0.75...2.5 mm ² . Screw terminals at control voltage side – 0.14...1.0 mm ²
Module dimensions	234x225x64 mm
Weight	1.0 Kg
Standards	EN 60730-2-9 EN 60730-1
Software class	A, acc. to EN 60730-1
Protection class.	I class
Pollution degree.	2-nd pollution degree acc to PN-EN 60730-2-9
Installation method	On the wall
Control panel	
Power supply	12 VDC
Current consumption	0.15 A (12 VDC)
Display	Touch screen, graphical 480x272 pix.
Protection class	IP 20
Ambient temperature	0..50°C
Storage temperature	0..65°C
Relative humidity	5...85%, without water vapor condensation.
Connectors	Screw terminals at supply voltage side: 0.15...1,5 mm ²
Dimensions	144x97x20 mm
Weight	0.2 Kg
Standards	EN 60730-2-9 EN 60730-1
Software class	A, acc. to EN 60730-1
Installation method	On the wall or stand

10 Conditions of storage and transport

The controller cannot be exposed to direct effects of weather, i.e. rain and sunlight. During transport, the device cannot be exposed to vibrations greater than typical for normal road transport.

11 The controller installation

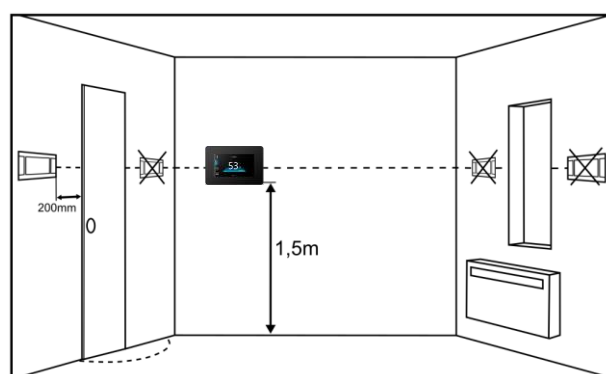
11.1 Installation requirements

⁹ It is a current consumed only by the controller. Overall current consumption depends on number of devices connected to the controller.

The controller should be installed by a qualified and authorized installer, in accordance with the applicable norms and regulations. The manufacturer bears no responsibility for damages caused by failure to follow this manual. The controller cannot be used as a stand-alone device. The temperature of the ambient and the fitting surface cannot exceed the range of 0...50°C.

11.2 Installation of control panel

The control panel is designed for mounting on the wall, inside the room. It cannot be used under steam condensation conditions, must be protected against water. The control panel should be mounted at a height allowing comfortable operation, typically 1.5 m above the floor.



To reduce measurement disturbances avoid locations exposed to strong sunlight, with poor air circulation, near heating equipment, and directly at the door and windows, typically 0.2 m from the edge of the door.

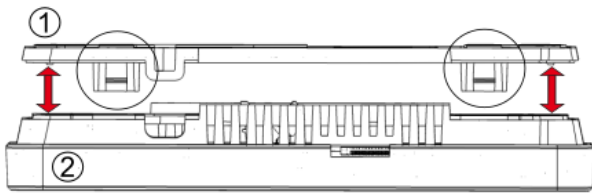


When selecting the cable connecting panel with the controller the following rule must be applied: use a cable where single wire has a resistance lower than 8 Ω and the total length of the cable does not exceed 100 m.

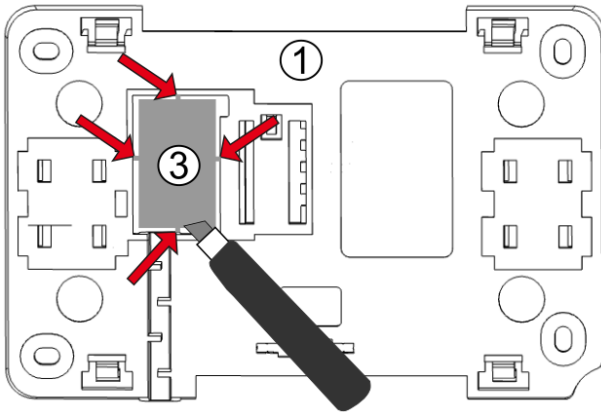
The control panel installation should be done according to the following guidelines:

Disconnect the mounting frame (1) from the back of control panel housing (2). The frame is attached to the panel housing with latches. Use a flat screwdriver to detach the frame.

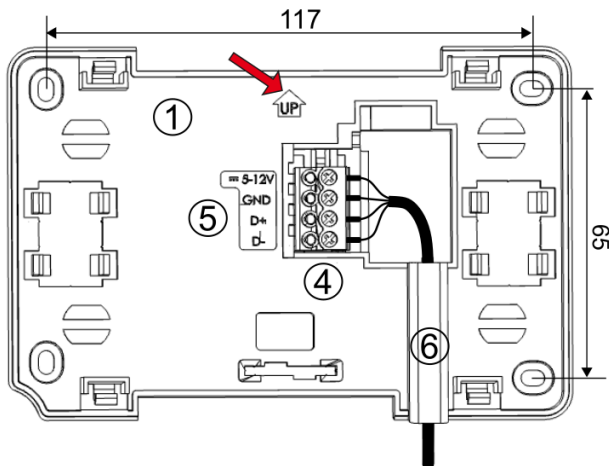
¹⁰ After installing all cable clamps.



Using sharp tool cut out holes in four places of the cover (3) for the screw terminals.



Connect transmission cable, connecting panel with the controller, to the screw terminal (4), as described on the plate (5). The cable connecting panel with the controller can be recessed in the wall or it can run over its surface - in this case the cable should be additionally placed in the cable channel (6). The connection cable cannot be conducted along with the cables of the building mains. The cable should not be routed near devices emitting strong electromagnetic field.



Drill holes in the wall and use screws to fix the mounting frame in the chosen place of the wall, maintaining its proper position (UP). Then attach the panel to the mounting frame using latches.

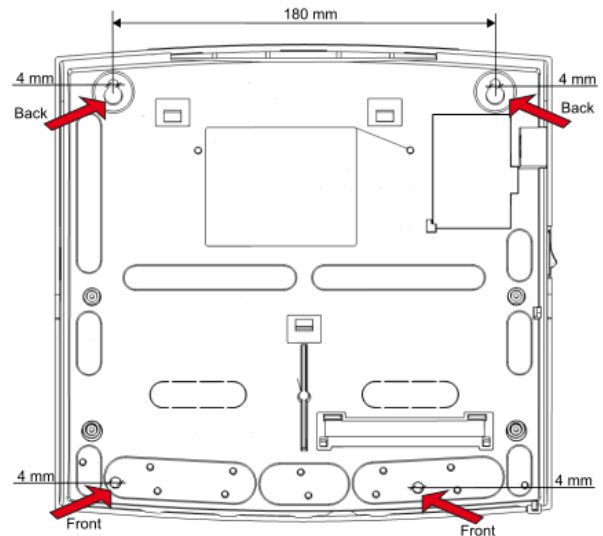
11.3 Installation of module

The controller should be located closest to the electrical devices included in the central heating system.



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

The controller should be screwed on to the flat surface, e.g. wall. To screw on the controller use mounting holes and proper screws. Location and spacing of mounting holes is shown in the figure below.



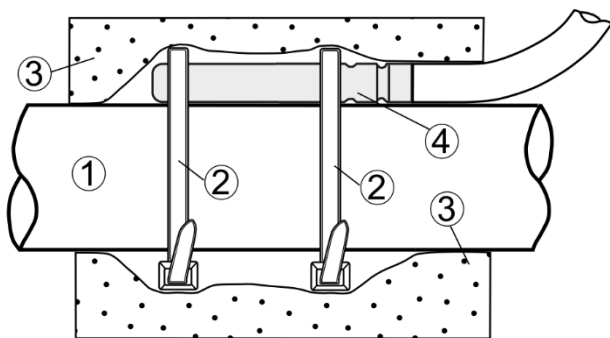
After installation make sure that the device is properly mounted and it is impossible to detach it from the mounting surface.

11.4 Temperature sensors installation

The controller works only with CT-10 and CT6-P temperature sensors. Using other sensor types is prohibited. Connecting the wrong sensor type will cause the controller malfunction. At least one circuit temperature sensor is necessary to activate the controller.

Circuit temperature sensors.

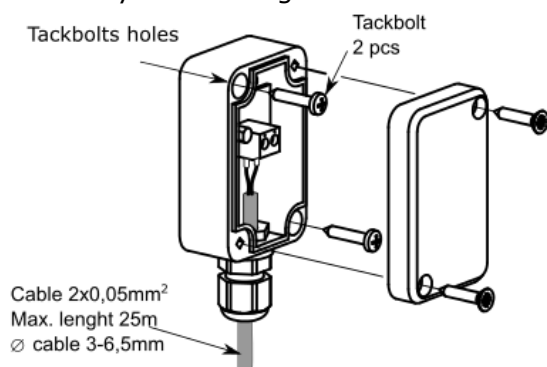
Direct circuit temperature sensor type CT-10 should be installed to a supplying pipe coming out from the heat source. Temperature sensor of the adjustable circuit type CT-10 should be installed on a pipe behind the circuit pump. Insulate the sensors affixed to the external surface of the pipe with using thermal insulation covering the sensor together with the pipe.



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

External temperature sensor.

The controller cooperates only with external (weather) temperature sensor type CT6-P. Temperature sensor should be fixed to a coldest wall in the building. Usually it is a north wall under the roof. Sensor should not be exposed to direct solar radiation or rain. Sensor should be fixed on a minimum height of 2 m above the ground and in a distance of at least 1.5 m from windows, chimneys and other heat sources which could interrupt the temperature measurement. Use a connecting cable with a cross section of at least 0.5 mm² and length of 25 m. Polarity of wires is not important. Fix the sensor to the wall with the screws. Holes containing fixing screws can be accessed by unscrewing a sensor cover.



11.5 Temperature sensors check

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

CT-10 (NTC 10K)	
Ambient temp. [°C]	Rated [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

CT6-P (Pt1000)			
Ambient temp. [°C]	Min. [Ω]	Rated [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

11.6 Connecting pumps

Make electrical connections of the circuit pumps to the controller according to the electric scheme.

11.7 Connecting mixer servo

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

11.8 Connection of heat source

Make electrical connections between the controller and heat source. The heat source contact can be potential-free or can be energized with voltage not exceeding 230 VAC.

Connection to heat source e.g. gas boiler should be done by a qualified installer, according to technical data of this boiler.

11.9 Connection of room panel

In order to stabilize room temperature, settings concerning room thermostat or room panel should be made. Room thermostat or room panel complements weather control and corrects water temperature in the circuit in case room temperature is still improper. It is

recommended to use the control panel as a room thermostat. Room thermostat or room panel should be assigned to each circuit.



The control panel can operate as a room panel.

Wireless connection.

Connection of the eSTER_x40 room thermostat requires connection to the G1 socket controller of the ISM_xSMART radio module, according to the electric scheme and pairing between this module and thermostat.

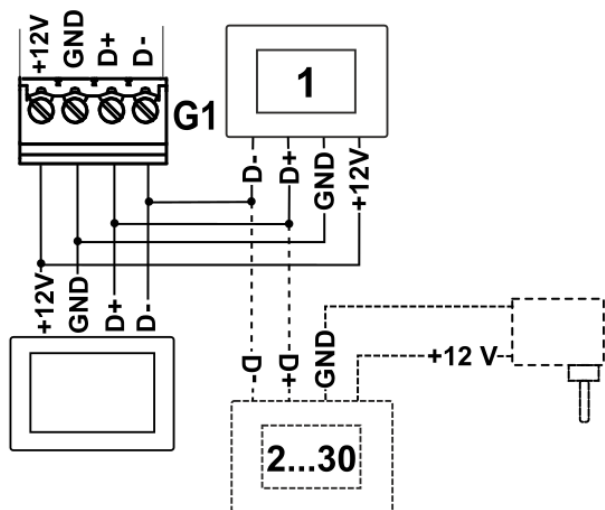
To do this, enter the menu:

User settings → *Radio settings* → *Connect to ecoSTER* and confirm with *Yes* to activate pairing function.

Description of eSTER_x40 operation is included in device manual.

Wired connection.

Attention: Directly to the G1 controller socket only one room panel can be connected. Connecting the additional room panels (max. 32 panels) to the controller requires the use of an external power supply 12 VDC with a min. current = number of panels x 0.15 A. The controller can support maximum up to 30 room panels.

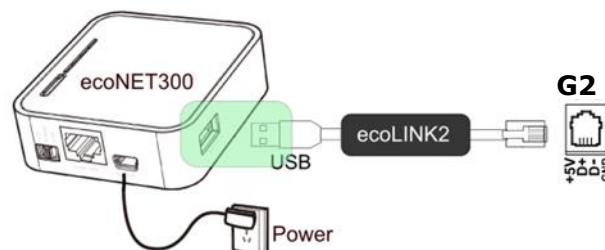


Cross-section area of wires used to connect room panel should be 0,5 mm².

Max. length of wires should not exceed 30 m. This length may be longer if the wires used have cross-section exceeding 0.5 mm².

11.10 Connecting the Web module

The ecoNET300 Web module should be connected using the ecoLINK2 interface to G2 socket of the controller. Then enter the menu: *User settings* → *ecoNET300 configuration wizar* or *ecoNET settings* and configure the module connection to the Wi-Fi network by entering the network SSID, password and choosing the type of security. The connection status of the module to the Wi-Fi network and econet24 server can be checked in the information: *ecoNET status - LAN*, *ecoNET WiFi status - Wi-Fi*.



Description of ecoNET300 operation and Web service www.econet24.com is included in device manual.

11.11 Circuit control settings

Settings for the circuit without weather sensor.

Should disable the external temperature sensor and then it is necessary to manually set the required water temperature in the circuit using parameter *Fixed preset water temperature*, e.g. at a value of 50°C. The value should allow to obtain the required room temperature.

After connecting room panel, it is necessary to set a value of decrease in the *Decreasing fixed water temperature* parameter, e.g. at 5°C. This value should be selected by trial and error. Upon activation of the room panel, the preset circuit temperature will be decreased, which, if proper decrease value is selected, will stop growth of temperature in the heated room.

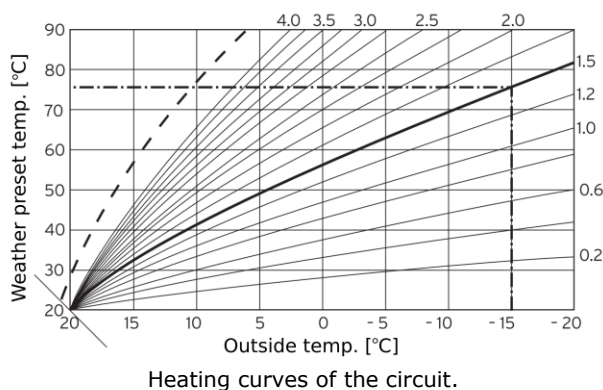
Settings for circuit with weather sensor.

Shouldn't disable the external temperature sensor. Using parameter *Heating curve shift*, set preset room temperature following the formula: Preset room temperature = 20°C + heating curve shift.

In this setup, it is possible to connect a room panel which will equalize the inaccuracy of selecting heating curve, if the selected heating curve value is too high. In such case, it is necessary to set the value of parameter *Decreasing fixed water temperature*, e.g. at 2°C. Upon activation of the room panel, the preset circuit temperature will be decreased, which, if proper decrease value is selected, will stop growth of temperature in the heated room.

Weather control.

For the circuit can be turned on weather control, which requires the connection of external temperature sensor. It should enable the external temperature sensor and select *Regulation method = Weather*. The 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 circuit is. This relation is shown in the controller in the form of heating curve.



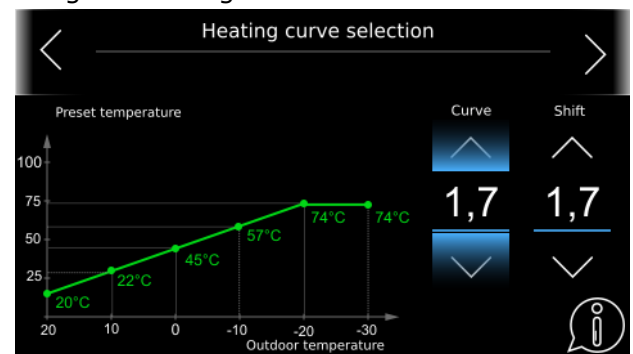
The heating curve can be changed in the service menu of controller, within the range for the weather preset temperature and it is a reflection of the thermal characteristics of the building. If the building is less insulated then the heating curve should be greater. Heating curve should be selected experimentally 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 room thermostat on regulator operation (regardless of whether the room thermostat is connected or not), by selecting *Circuit → Thermostat = Off*.

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 the outdoor temperature drops, and the room temperature increases, the selected heating curve value is too high,
- if the outdoor temperature drops, and the room temperature drops as well, the selected heating curve value is too low,
- if during frosty weather the room temperature is proper, but when it gets warmer - it is too low, it is recommended to increase the *Heating curve shift* and to select a lower heating curve,
- if during frosty weather the room temperature is too low, and when it gets warmer - it is too high, it is recommended to decrease the *Heating curve shift* and to select a higher heating curve.



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

The controller can increase or decrease the preset temperature, calculated in accordance with the heating curve, if it exceeds the temperature range for the given circuit set in controller service menu.

12 Heat source output modulation

The 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...10 VDC.

ΔT	control selection		
	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 = preset temperature heat source minus temperature measured at sensor H1-S.

13 Connecting electrical system

The controller is designed to be fed with 230 VAC, 50 Hz voltage. The electrical system should be:

- three core, with protective wire PE,
- in accordance with applicable regulations, equipped with a residual current protection device (RCD) with inrush current $I_{\Delta n} \leq 30$ mA, protecting against the effects of electric shock and limiting damage to the controller, including protection against fire,
- protected with an inverter, which ensures the correct time course of the controller supply power, if there are or may occur undesirable disturbances of this voltage in the installation, e.g. by power supply from a generator, which may damage the controller.



After the controller is turned off, dangerous voltage on terminals might occur. Before starting any assembly works, disconnect the mains supply and make sure that there is no dangerous voltage on terminals and the leads.



All peripherals may be connected only by qualified persons in accordance with applicable regulations. Keep safety precautions to prevent electrocution. The controller should

be equipped with a set of pins connected to the 230 VAC mains.



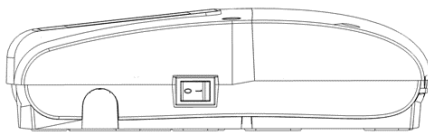
For safety reasons, the controller must be absolutely connected to the 230 VAC power grid, with the sequence of connecting the phase (L) and neutral (N) wires. Make sure that the L and N conductors are not replaced within the building's electrical system, e.g. in an electrical socket or in an electrical socket junction box.

13.1 Connecting the wires

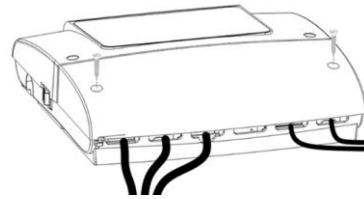
Before connecting the wires, remove the terminal cover from the controller's housing.



Disconnect power supply before unscrewing the terminal cover of the controller.

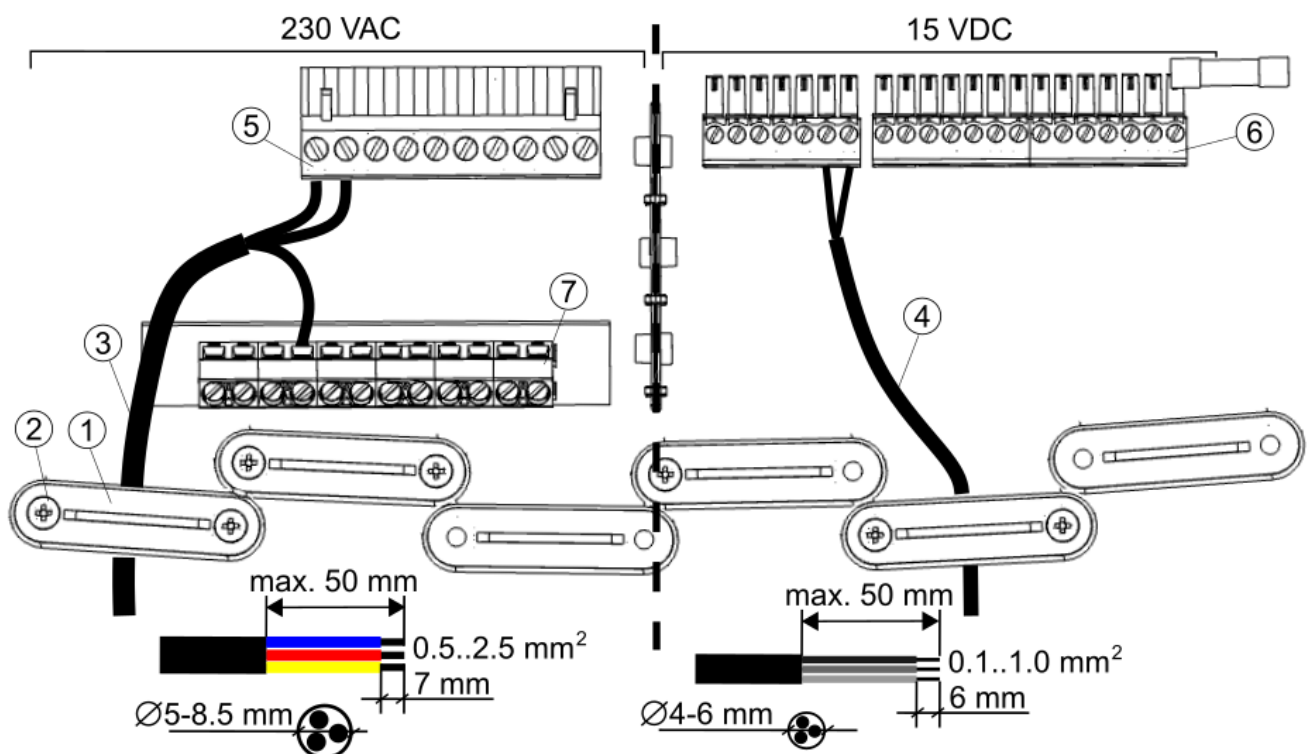


Power switch.



The controller terminals cover.

Cables should be connected to screw terminals of the (5 and 6) connector. The wires should be secured against pulling out using cable clamps (1). Tighten the cable clamp screws (2) with a force to prevent tearing or loosening wires from terminals due to mechanical stress. Protection lead of the power supply cable and protection leads of connected devices should be connected to the (7) protective strip placed inside the controller's housing.



Connecting wires to the controller: 1 - cable clamps, 2 - cable clamp screws, 3 - voltage cables (mains 230 VAC), 4 - safe voltage cables (signal, below 15 VDC), 5 - mains cable connector 230 VAC, 6 - signal wires connector, 7 - protective wires connector.



Due to protection class IP20, all cable clamps (1) must be fitted, even if not all clamps are needed.

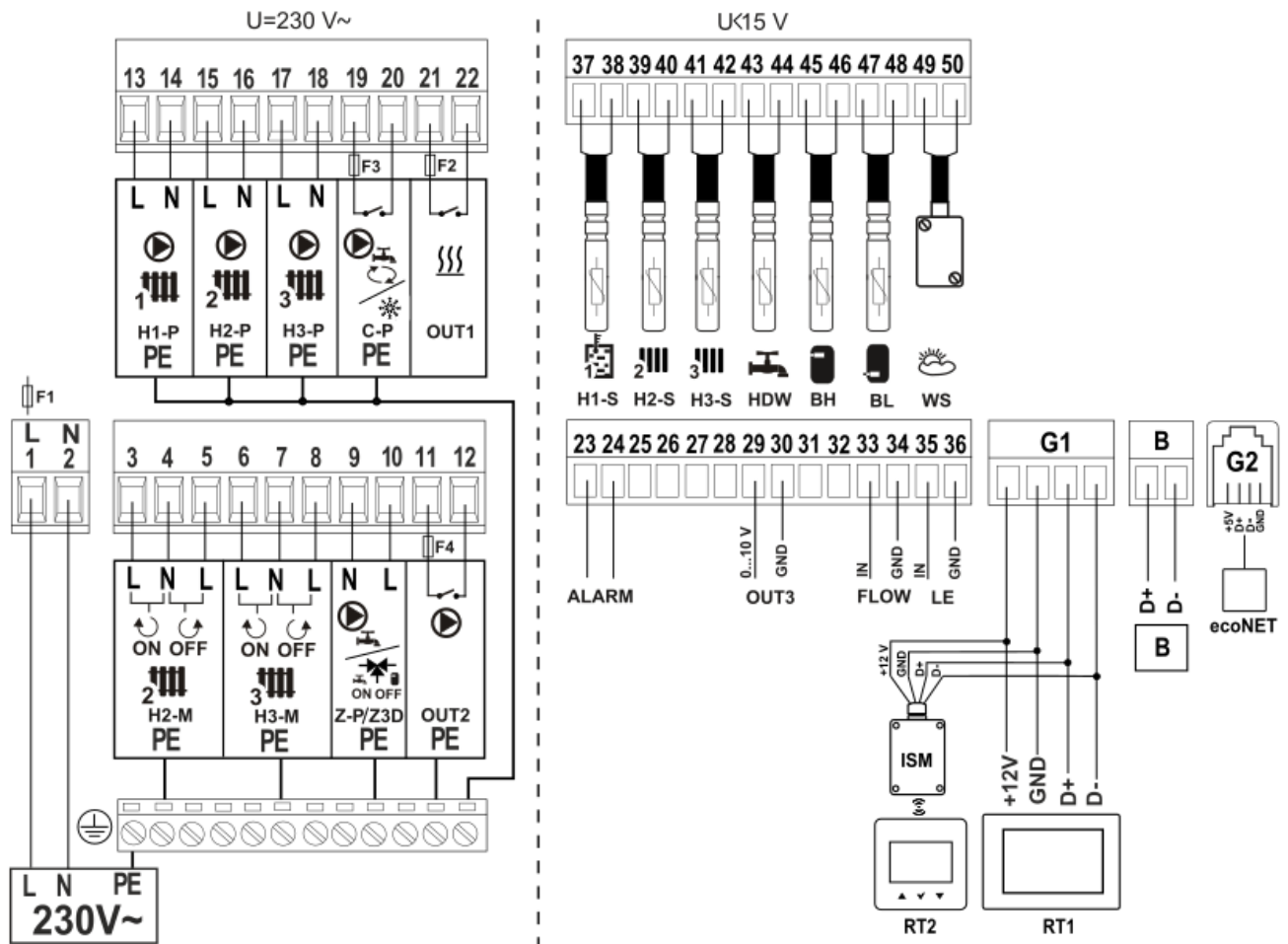


When the cables connection is done place the connectors back in place. Before screwing the controller terminal cover, arrange the wires to prevent damaging the insulation by cutting it with cover edges or screws securing the cover. The maximum length of the external tire insulation cannot exceed 50 mm. Connection cables should not have contact with surfaces temperature of which exceeds cables nominal operating temperature.



The connectors cover should always be screwed on to the controller's housing.

13.2 Electrical scheme



Scheme of electrical connections to the controller.

L N PE - power supply 230 VAC, 50 Hz,

F1 - main fuse installed inside the controller,

H2-M - adjustable 2 circuit servo,

H3-M - adjustable 3 circuit servo,

Z3D - 3-way valve buffer/DHW tank (only heat pump),

Z-P - DHW pump,

OUT2 - main heat source pump (no-voltage contact and must be protected by external fuse **F4** - max. value 3.15 A),

H1-P - direct (non-adjustable) circuit water pump,

H2-P - adjustable 2 circuit water pump,

H3-P - adjustable 3 circuit water pump,

C-P - circulation pump or cooling circuit (only heat pump), (no-voltage contact and must be protected by external fuse **F3** - max. value 3.15 A),

OUT1 - turning on the main heat source or turning on heating of the circuit but only for the heat pump - no-voltage contact and must be protected by external fuse **F2** - max. value 3.15 A,

H1-S - direct circuit water temperature sensor type CT10,

H2-S - water temperature sensor of adjustable 2 circuit type CT10,

H3-S - water temperature sensor of adjustable 3 circuit type CT10,

HDW - DHW temperature sensor type CT10,

BH - upper buffer temperature sensor type CT10,

BL - lower buffer temperature sensor/hydraulic clutch temperature sensor type CT10,

WS - weather temperature sensor type CT6-P,

ALARM - heat pump alarm detection (NO-NC contact),

OUT3 - output for heat source output modulation/connection of heat pump compressor,

FLOW - flow meter,

LE - electric energy meter,

RT1 - control panel with room thermostat function,

RT2 - eSTER_x40 wireless room thermostat or eSTER_x20 wireless room temp. sensor (ISM_xSMART radio module),

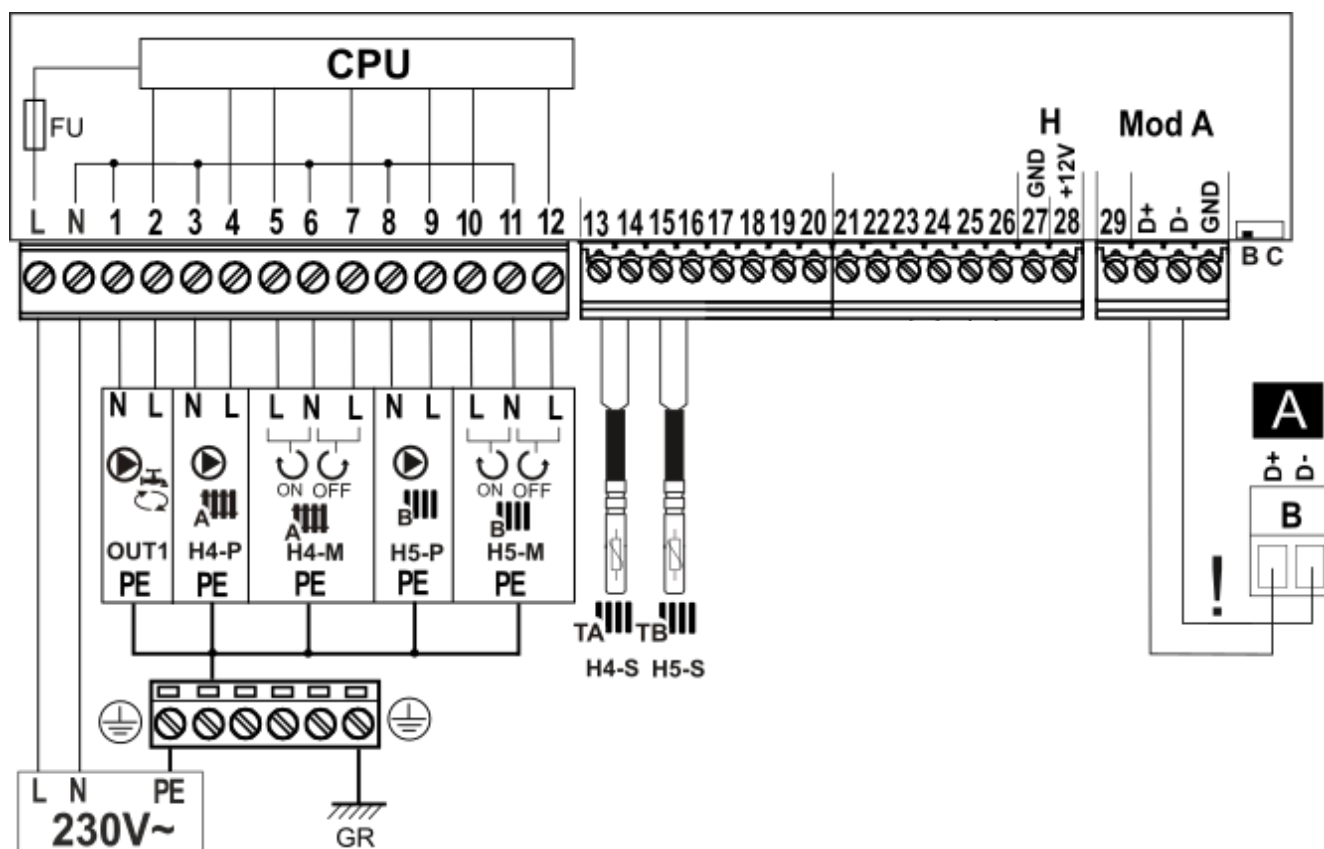
B - additional module (additional adjustable circuits),

ecoNET - ecoNET300 web module (optional).



Terminals 1-22 are designed to connect devices supplied by the mains 230 VAC voltage. Terminals 23-50 are designed to work with low-voltage devices (< 15 VDC). Connection of the 230 VAC mains voltage to terminals 23-50 or to transmission terminals G1, G2, B results in the regulator damage and poses a threat of electrocution.

13.3 Electric scheme additional module



Scheme of electrical connections to the ecoMAX360B1 additional module (B module).

L N PE - power supply 230 VAC, 50 Hz,

FU - fuse,

GR - grounding strip,

OUT1 - DHW circulation pump (only heat pump),

H4-P - adjustable 4 circuit water pump,

H5-P - adjustable 5 circuit water pump,

H4-M - adjustable 4 circuit electrical servo,

H5-M - adjustable 5 circuit electrical servo,

H4-S - water temperature sensor of adjustable 4 circuit type CT4,

H5-S - water temperature sensor of adjustable 5 circuit type CT4,

A - main controller,

! - connect exclusively with two wires (do not connect with four wires, as it may lead to damage of the module and main controller).

Switch in position **B** - expansion module is used as module B (support for adjustable circuits 4 and 5), in position **C** - expansion module is used as module (support for adjustable circuits 6 and 7).

14 Service menu – structure



Entering the menu requires entering the service password. Default password [0000].



When configuring the controller for the first time, it is recommended to use the *System configuration assistant*.

Service settings
System configuration assistant
Installation control
Alarm list

Installation control
Manual control
Weather sensor
Main heat source
Buffer settings
Additional modules *
DHW settings
Circulation settings
Circuit 1-3*
Alarm detection – digital input*
No flow detection*
Power consumption meter
Default settings

Weather sensor
External temp. sensor support
SUMMER mode activation temperature
WINTER mode activation temperature

Main heat source
Heat source support
Heat transfer
Heat pump settings**
Cooling support**
Output analog control
Set temp. increase.
Source activation hysteresis
Source deactivation hysteresis
Minimum set temperature
Maximum set temperature
Minimum heating temperature
Boiler cooling temperature
Pump work extension
Pump overrun**
Min. supply temperature**

Heat pump settings**
Keep min. times for the compressor
Min. pump work time
Min. pump break time
Heating/cooling switching time
Setpoint when outside is -10°C
Setpoint when outside is 0°C
Setpoint when outside is 10°C

DHW correction temp.
Buffer and circuit correction temp. - heating
Buffer and circuit correction temp. – cooling*
Support min. external temp. for compressor
Compressor min. external work temp.

Buffer settings
Buffer work mode
Cooling buffer**
Preset temperature
Preset temperature hysteresis
Heating installation start temp.
Heating installation stop hyst.
Cooling installation start temp.**
Ice water temperature**
Ice water temp. hysteresis**

DHW settings
DHW support
DHW heat source
DHW min. preset temperature
DHW max. preset temperature*
Disinfection support

Circulation settings*
Circulation support
Circulation operation time
Circulation pause time
Start temperature
Pump start temp.

Circuit 1 (no-adjustable)
Circuit support
Circuit name
Circuit type
Regulation method
Operation mode
Circuit heating
Fixed preset water temperature*
Decreasing fixed water temperature
Heating curve*
• Heating curve shift
Thermostat
Thermostat pump blockade*
Ignore summer mode*

Circuit 2-3 (adjustable)
Circuit support
Circuit name
Circuit type
Pump only
Regulation method
Operation mode
Circuit heating

Circuit cooling*
Fixed preset water temperature*
Fixed preset water temperature – cooling*
Decreasing fixed water temperature
Heating curve*
Heating curve shift*
Minimum temperature
Minimum temperature – cooling*
Maximum temperature
Maximum temperature – cooling*
Thermostat
Valve opening time
Thermostat pump blockade*
Mixer input dead zone
Proportionality range
Constant for integration time
Operation in SUMMER mode*

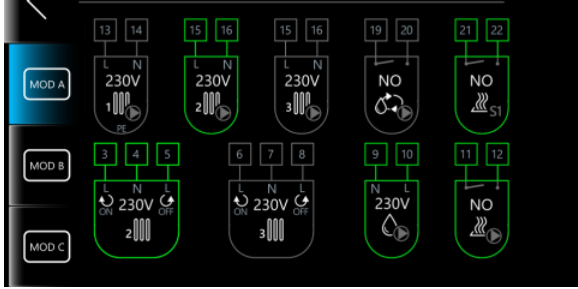
* item unavailable if no appropriate sensor is connected or another parameter setting has hidden this item or requires the cooling function to be activated.

** item only available when *Main heat source* = *Heat pump* is selected.

15 Description of service parameters



During the first configuration of the controller has disabled support for all heating circuits, DHW tank, buffer, and circulation pump. Depending on the hydraulic system used, these circuits must be turned on.

Parameters	Description
System configuration assistant	The assistant allows you to configure the parameters of the controller the first time you turn on the controller immediately after connecting the central heating system. Parameters to be set during configuration are displayed in the form of questions. Depending on the choice of the answer to the currently asked question, subsequent questions about the parameters may be different. Note: if the configuration of parameters is interrupted, the next time you enter the assistant, confirm the selection for earlier parameters from the beginning. Tip: All parameters in the system configuration assistant are available in the service menu.
Installation control	Menu enables turning on particular heating system elements separately and conducting operation correctness tests of selected device. Turning on or off particular selected device is done by pressing the symbol on the screen.  Note: the controller does not check automation elements protection logics, so this menu should be used prudently and with awareness of starting outputs in order to avoid damaging the controller and devices connected to its terminals. Long and uncontrolled operation of devices e.g. pumps, may result in damage.
Weather sensor	The menu contains settings for an weather external sensor. <i>External temp. sensor support</i> - enabling or disabling support for the external (weather) temperature sensor. <i>SUMMER mode activation temperature</i> - weather temperature at which summer mode is activated. <i>WINTER mode activation temperature</i> - weather temperature at which summer mode is deactivated. The parameters are not visible when the heat pump is the main heat source. For the heat pump, the operation of the weather sensor is constantly enabled.
Main heat source	The menu contains settings related to the main heat source. <i>Heat source support</i> - selecting the main heat source support: <i>No source</i>, <i>Gas boiler</i>, <i>Heat pump</i>, <i>Pellet boiler</i>, <i>Electric boiler</i>, <i>Gas boiler</i>. The controller switches the main heat source on or off depending on the heat demand. <i>Heat transfer</i> - selection of the method of heat transfer from the main source: <i>Direct</i>, <i>Heat buffer</i>, <i>Heat exchanger</i>. <i>Cooling support</i> - activating the circuit cooling function by a heat source. Cooling support is only available when the heat pump is the primary heat source. <i>Output analog control</i> - main heat source output modulation. Setting it to <i>OFF</i> causes the main heat source to work without modulation, settings to <i>5K</i>, <i>10K</i>, <i>20K</i> causes the main heat source to work with output modulation. <i>Set temp. increase.</i> - the parameter determines by how many degrees the preset temperature of the heat source will be increased, to load the HUW tank and circuits. Temperature is increased only when temperature of heat source is lower than rest of preset temperature. Note: the preset temperature of the main heat source is also the preset temperature of the nonadjustable circuit. <i>Source activation hysteresis</i> - heat source off hysteresis. The heat source shuts off when the temperature rises by the hysteresis value above the preset temperature. <i>Source off hysteresis</i> - heat source off hysteresis. The heat source shuts off when the temperature rises by the hysteresis value above the preset temperature. <i>Minimum set temperature</i> - minimum set temperature of the heat source that can be set by the user. <i>Maximum set temperature</i> - the maximum set temperature of the heat source that can be set by the user. <i>Minimum heating temperature</i> - heat source minimum temperature is also minimal temperature for nonadjustable circuit. <i>Boiler cooling temperature</i> - above temperature, measured by H1-S sensor, heat source will be turned off and circuits will be on to cooling it.

	• <i>Pump work extension</i> - boiler pump operation is extension after switching off the main heat source. • <i>Pump overrun</i> - time for which to start the circuit pump before turning on the main heat source. This is the time during which only the circuit pump will work. The parameter is available only when the main heat source is a heat pump or an electric boiler. • <i>Min. supply temperature</i> - the minimum flow temperature that allows hydraulic circuits to operate. Below this temperature, the circuits will stop working to avoid excessive cooling.
• Heat pump settings	Heater pump settings according to the heat pump manufacturer's manual. • <i>Keep min. times for the compressor</i> – keeping the minimum working times and compressor break times. Enabling this function minimizes the number of compressor on and off cycles. • <i>Min. pump work time</i> – the minimum time the heat pump's compressor will run continuously when it is turned on. The safety algorithms have a higher priority than <i>Minimum pump work time</i>. • <i>Min. pump break time</i> – the minimum pause time of the heat pump compressor when it is turned on. The safety algorithms have a higher priority than the <i>Minimum pump break time</i>. • <i>Heating/cooling switching time</i> – time of switching the main heat source between the heating function and the cooling function of the circuit. • <i>Setpoint when outside is -10°C</i> – the preset temperature of heating the circuit for the external temperature -10°C. • <i>Setpoint when outside is 0°C</i> – the preset temperature of heating the circuit for the external temperature 0°C. • <i>Setpoint when outside is 10°C</i> – the preset temperature of heating the circuit for the external temperature 10°C. • <i>DHW correction temp.</i> - decrease of the maximum allowed value of the DHW preset temperature in relation to the maximum temperature of the heat pump. • <i>Buffer and circuit correction temp. - heating</i> – decrease of the maximum allowed value of the buffer and circuit preset temperature in relation to the maximum temperature of the heat pump in heating mode. • <i>Buffer and circuit correction temp. – cooling</i> - decrease of the maximum allowed value of the buffer and circuit preset temperature in relation to the maximum temperature of the heat pump in cooling mode. • <i>Support min. external temp. for compressor</i> - enabling the operation of the compressor permit from the minimum value of the external temperature set in the <i>Compressor min. external work temp.</i> parameter.
• Buffer settings	The menu contains settings for the heat buffer. • <i>Buffer work mode</i> - selection of the number of sensors with which the buffer will work. To choose from: <i>One sensor</i>, <i>Two sensors</i>. • <i>Cooling buffer</i> - enabling the cooling function of the circuit by generating ice water in the buffer. • <i>Preset temperature</i> - preset buffer temperature value. • <i>Preset temperature hysteresis</i> - if the current temperature of the buffer drops to the preset temperature minus the hysteresis in this parameter, the buffer will be heated. • <i>Heating installation start temp.</i> - the circuit pumps will be switched on when the buffer temperature rises above this parameter. • <i>Heating installation stop hysteresis</i> – the circulation pumps will be turned off if the buffer temperature drops below <i>Heating installation start temp</i> by the hysteresis value in this parameter. • <i>Cooling installation start temp.</i> – the circuit pumps will be switched on when the buffer temperature drops below this parameter. • <i>Ice water temperature</i> – preset ice water temperature. Parameter available only with circuit cooling function on. • <i>Ice water temp. hysteresis</i> - if the ice water temperature exceeds the <i>Ice water temperature</i> by the <i>Ice water temp. hysteresis</i> value, the heat pump will stop generating ice water. Parameter available only with circuit cooling function on.
• Additional modules	The menu enables checking the correctness of the controller communication with the B and C additional module. Additional modules extend the controller operation with additional regulated circuits 4-5 (module B) and 6-7 (module C). If the support for B and C additional module is enabled without an additional module connected, the controller will report an alarm about the lack of communication with B and C module. The settings of the regulated circuit 4-7 are analogous to the settings for the regulated circuit 2.
• DHW settings	The menu contains settings related to the support of the DHW tank. • <i>DHW support</i> – enable/disable DHW tank support. • <i>DHW heat source</i> - selection of the heat source for the DHW tank: <i>Main source</i>, <i>Buffer</i>. • <i>DHW min. preset temperature</i> - minimum preset water temperature in the DHW tank. This parameter can be used to prevent the user from setting too low preset DHW temperature. • <i>DHW max. preset temperature</i> - maximum preset water temperature in the DHW tank. This parameter can be used to prevent the user from setting too high preset DHW temperature. • <i>Disinfection support</i> – enable/disable DHW tank disinfection function.

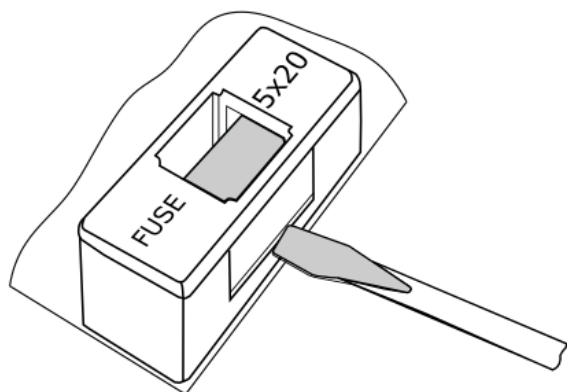
➤ Disinfection settings	Settings related to the DHW tank disinfection function. Disinfection is activated from Sunday to Monday at 02:00 am. Note: Users must be informed about activating the function, due to the risk of scalding with hot utility water. • <i>Preset temperature</i> – preset DHW tank temperature during disinfection. • <i>Start time</i> - time at which disinfection function will activate. • <i>Start of disinfection</i> - day of the week to activate the disinfection function. Note: it is necessary to inform the household members that the function has been enabled, because there is a risk of scalding with hot utility water.
• Circulation settings	The menu contains parameters related to the operation of the circulation pump. • <i>Circulation support</i> - turn on/off circulation support. • <i>Circulation operation time</i> - the DHW circulation pump operation time. It determines the working time after a break in the circulation pump operation. The DHW circulation pump operates periodically. • <i>Circulation pause time</i> - the DHW circulation pump pause time. Defines the time interval between activations of the circulation pump. The DHW circulation pump operates periodically. The parameter is not available when the main heat source is a heat pump. • <i>Start from temperature</i> - activation or deactivation of the circulation pump operation depending on the DHW tank temperature. • <i>Pump start temp.</i> - in order to save energy, the circulation pump will be turned off when the temperature of the DHW tank is lower than the <i>Pump start temp.</i>
• Circuit 1	Menu related to operating a non-adjustable circuit. The non-adjustable circuit 1 preset temperature will be automatically increased in order to guarantee heat for 2 and 3 adjustable circuits. • <i>Circuit support</i> - turn on or off circuit support. • <i>Circuit name</i> - name of the circuit set by user. • <i>Circuit heating</i> - switching on the heating function of the circuit. • <i>Fixed preset water temperature</i> - when <i>Regulation method</i> = <i>Fixed</i> main heat source is disabled when <i>Fixed preset water temperature</i> is reached. Parameter is not available if <i>Regulation method</i> = <i>Weather</i>. • <i>Decreasing fixed water temperature</i> - when <i>Regulation method</i> = <i>Fixed</i>, then a constant set temperature of water in the circuit is decreased for operation modes: <i>Day</i>, <i>Night</i>, <i>Auto</i>. • <i>Heating curve</i> - shows heat characteristic of building, the higher curve the higher water temperature in heat circuit. The parameter applies when <i>Regulation method</i> = <i>Weather</i>. - <i>Heating curve shift</i> - this parameter enables adjusting the heating curve. If room temp. is correct during cold weather and too low during warmer weather then it is recommended to turn up curve shift parallel and cut heat curve, similarly in otherwise. The parameter applies when <i>Regulation method</i> = <i>Weather</i>. • <i>Thermostat</i> - activation or deactivation of the room thermostat influence on the circuit operation and selecting the room thermostat for circuit: <i>Room panel</i>, <i>Wireless thermostat</i>, <i>Wired thermostat</i>. • <i>Ignore summer mode</i> - outside the heating season the controller can be switched to Summer mode. The summer mode it enables to deactivate heating circuits such as radiators or floor heating and maintain operation of DHW tank loading function. When the parameter is set to Yes, in Summer mode, the heating circuit is still working. The parameter is not available when the cooling function is on.
➤ Circuit type	Selecting the type of a non-adjustable circuit. To choose are: • <i>Heater</i> – the circuit is on and loading radiator heating. • <i>Fan coil</i> - the circuit can operate in cooling or heating mode for the circuit. When selecting <i>Fan coil</i> and setting the additional operating mode to: - <i>Summer</i> - the circuit performs the cooling function. - <i>Winter</i> - the circuit performs the heating function. - <i>Auto</i> - the circuit performs the heating or cooling function depending on the outside temperature. Note: selecting any circuit as Fan convector, with the active additional Summer mode, will always result in the other circuit not being heated. Cooling has a higher priority.
➤ Regulation method	Selecting the control method for non-adjustable circuit. • <i>Fixed</i> – constant set temperature of water in the non-adjustable circuit is maintained. • <i>Weather</i> – water temperature is relate to outside temperature sensor. The parameter is invisible when no outside temperature sensor is connected.
➤ Operation mode	Selecting the circuit operation mode. • <i>OFF</i> – the circuit is off. • <i>Day</i> – setting higher preset circuit temperature. • <i>Night</i> – setting lower preset circuit temperature. • <i>Schedule</i> – <i>Day</i> or <i>Night</i> mode is set depending on the time schedule.
➤ Thermostat blockade pump	The circuit pump is blocked when the room thermostat is active for the circuit. Available selection: • <i>OFF</i> – when the preset temperature in the room is exceeded, the circuit pump is not blocked. • <i>ON</i> – when the preset room temperature is exceeded, the circuit pump is blocked.
• Circuit 2-3	Menu related to operating an adjustable circuit. Note: description is the same as for circuit 1 – additionally: • <i>Circuit cooling</i> - switching on the cooling function of the circuit.

	• <i>Fixed preset water temperature - cooling</i> - when <i>Regulation method</i> = <i>Fixed</i> and the cooling function is switching on, main heat source is disabled when <i>Fixed preset water temperature</i> is reached. Parameter is not available if <i>Regulation method</i> = <i>Weather</i>. • <i>Minimum temperature</i> - minimum preset water temperature in the adjustable circuit. • <i>Minimum temperature – cooling</i> - minimum preset water temperature in the adjustable circuit during circuit cooling. • <i>Maximum temperature</i> - maximum preset water temperature in the adjustable circuit. If set the e.g. <i>Maximum temperature</i> > 55°C and <i>Circuit type</i> = <i>Floor heating</i>, the controller will take 55°C as a maximum value in order to avoid the risk of scalding. • <i>Maximum temperature - cooling</i> - maximum preset water temperature in the adjustable circuit during circuit cooling. • <i>Mixer input dead zone</i> – determines the value of temperature insensitivity (dead zone) of the mixer control system. The controller controls the mixer so that the measured temperature in the mixer circuit sensor is equal to the preset temperature. In order to avoid frequent actuator movements which can wear it down unnecessarily, the parameter should only be regulated when the measured temperature of the mixer circuit is lower or higher than the set temperature by a value exceeding the <i>Mixer input dead zone</i>. • <i>Proportionality range</i> – parameter affects the movement of the mixer actuator. Increasing this value results in the mixer reaching the preset temperature faster. Setting this parameter to excessive values causes deregulation of the temperature and unnecessary actuator movement. The proper values is set experimentally. • <i>Constant for integration time</i> - the greater the value of this parameter, the slower is the actuator reaction for temperature deviation. Setting too lower values can lead to unnecessary actuator movements, too high value extending the time needed to find set value of the temperature. The right value is being edited according to research results. • <i>Valve opening time</i> - enter total valve opening time. Usually the time value is in the nameplate on mixing valve servo cover. • <i>Operation in SUMMER mode</i> - parameter enables to enable the heating circuit outside a heating season despite turning on summer mode. 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. The parameter is not available when the cooling function is on.
• Circuit type	Selecting the type of a non-adjustable circuit. To choose are: • <i>Heater</i> – the circuit is on and loading radiator heating. • <i>Floor heating</i> – the circuit is on and loading floor heating. For this setting, the controller ensures that the limit temperature in the floor circuit is not exceeded. High temperatures in the floor circuit can damage the floor structure and burn users. • <i>Fan coil</i> - the circuit can operate in cooling or heating mode for the circuit. When selecting <i>Fan coil</i> and setting the additional operating mode to: - <i>Summer</i> - the circuit performs the cooling function. - <i>Winter</i> - the circuit performs the heating function. - <i>Auto</i> - the circuit performs the heating or cooling function depending on the outside temperature. Note: selecting any circuit as Fan convector, with the active additional Summer mode, will always result in the other circuit not being heated. Cooling has a higher priority.
➤ Pump only	• <i>No</i> – the circuit pump is not blocked when the preset room temperature is exceeded. • <i>Yes</i> – when the preset temperature in the room is exceeded, the circuit pump is blocked and the mixer servo stops.
Alarm detection – digital input	Enabling or disabling alarm detection from heat pump on 23-24 controller terminals. Select the logic state of the digital input: <i>Normally Open</i> , <i>Normally Closed</i> .
No flow detection	No flow detection method: <i>No heaters</i> , <i>Digital flowmeter</i> , <i>Imp. flowmeter</i> .
Power consumption meter	Selection of the current measurement method depending on the type of connected meter: <i>No heaters</i> , <i>Pulse</i> , <i>Time</i> .
Default settings	Setting <i>Restore default settings</i> to Yes removes all changes introduced to parameter values in the controller panel or controller module, and restores default (factory) settings.
Alarm list	List of alarms reported by the controller.

16 Replacing components

16.1 Mains fuse replacement

The fuse is located under the controller cover, next to the terminals at high-voltage side. Use 230 VAC fuses, anti-surge, made of porcelain: 5 mm x 20 mm. Output circuit fuses should be selected depending on the load. Standard current for the fuse is 6.3 A. A smaller fuse is allowed if the total load on the circuits is lower. A spare fuse is located under the cover of the controller housing, at the low-voltage terminals.



Fuse replacement.

In order to remove fuse lift fuse holder with flat-blade screwdriver and pull out the fuse.

16.2 Control panel replacement

When replacing the control panel make sure that its software is compatible with software in controller's module. The compatibility is kept if the first number of software in the control panel and module is the same.



Incompatibility between the software in panel and controller may cause unexpected errors. The Manufacturer is not responsible for malfunctions caused as a result of using incompatible software by the end-user.

16.3 Executive module replacement

Requirements are analogous to the control panel.

17 Firmware update

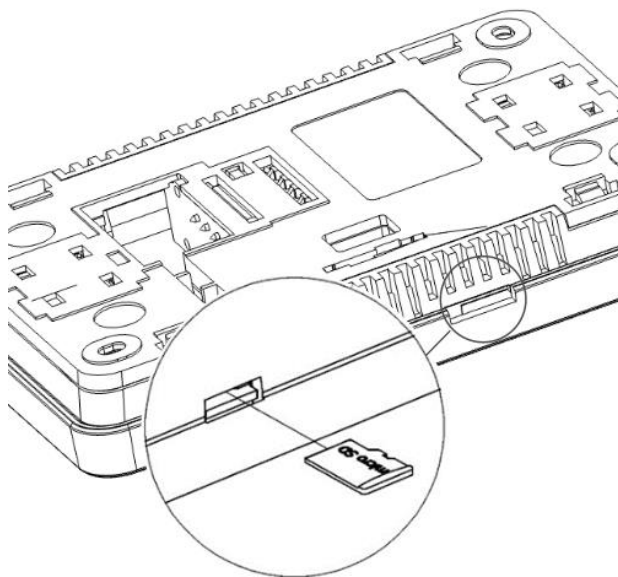
Firmware update can be performed using only microSDHC memory card (max. 32 GB, FAT32 file format). In order to make firmware update

the controller's power supply must be disconnected.



Before starting firmware update all peripheral devices operating with the central must be disconnected from electric power supply.

Insert memory card into the indicated socket.



Control panel memory card socket location.

The memory card should contain new firmware in *.pfc format for the panel and *.pfi format for the controller module. New firmware should be placed directly on memory card with no folders or sub-folders. Next, connect the electric power supply to the controller, then enter into user menu and install new firmware in the controller module and in the control panel.

18 Additional functions of the controller

18.1 Power stoppage

In case of power stoppage the controller returns to operation mode in which it was before stoppage.

18.2 Prevention cooling

The function tries to cool down the heat source before switching the regulator into the alarm state of overheat of the heat source.

18.3 Pump anti standstill function

The controller performs the function of protecting pump from anti standstill. It involves the periodic switching (which 167 h for a few seconds). This protects the pump

against immobilization due to scaling. Therefore, during a break in the use of the controller, the controller power supply should be connected.

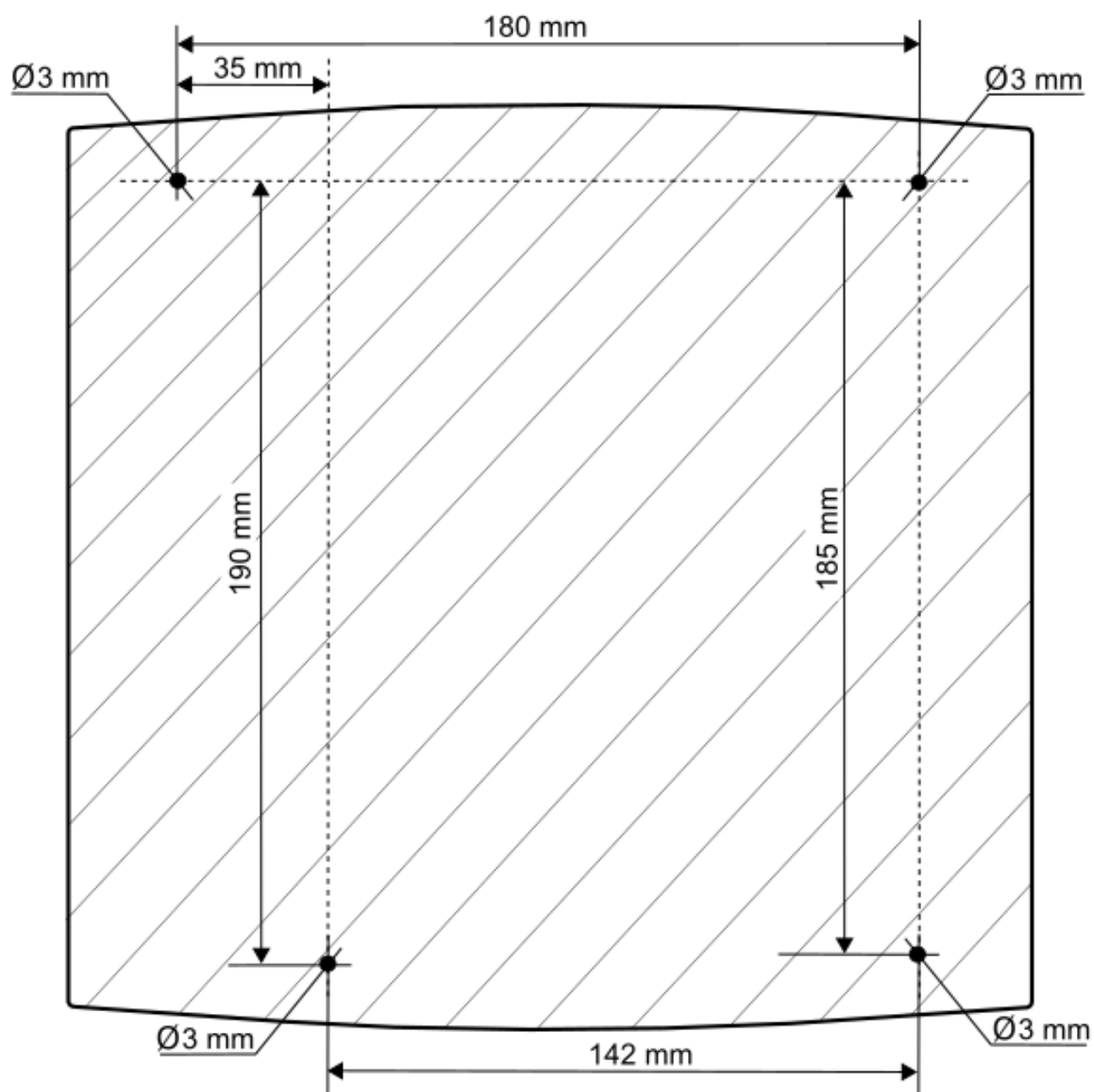
19 Alarms

The controller reports alarms on the main screen with the  symbol. Pressing the symbol will display the list of active alarms.

Changes record:



The manufacturer reserves a right to make improvements and modifications of the products.



Installing the module.



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