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EN manual / DE anleitung /
RU инструкция

Installation and operating manual

Installation controller BWC 330 Pro

- Read the manual before using the device!
- Pay attention to all information regarding safety!
- Keep the installation and operating manual!

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Table of contents

1 Explanations to the installation and operating manual

Installation and operating manual is an important part of the scope of delivery. That is why we recommend:

- ▶ Read the installation and operating manual before installing the device.
- ▶ Keep the installation and operating manual for the entire life of the device.
- ▶ Hand over the installation and operating manual to any subsequent owner or user of the device.

The manufacturer accepts no liability or warranty for any damage or consequential damage resulting from failure to observe the instructions in this manual or the applicable regulations, provisions, and standards at the place of product use.

1.1 Safety messages and hazard categories

WARNING **Type and source of the hazard are shown here.**

- ▶ Precautions to take in order to avoid the hazard are shown here.

There are three different levels of warnings:

Warning	Meaning
DANGER	Immediately imminent danger! Failure to observe the information will result in death or severe injuries.
WARNING	Possibly imminent danger! Failure to observe the information may result in death or severe injuries.
CAUTION	Dangerous situation! Failure to observe the information may result in minor or moderate injuries or property damage.

1.2 Safety

DANGER

Mains voltage (230 V AC) can cause severe burns or death.

- Do not expose the controller, actuating elements (circulation pumps, electric actuators) and wires to water.
- Do not touch any live parts. Never connect or disconnect wires without turning off the power.
- Work on electrical circuits should be carried out by a person with the appropriate qualifications and with the appropriate authorizations.
- The permanent electrical installation must be fitted with appropriate safety equipment (overcurrent circuit breaker and residual current circuit breaker).
- Before starting any installation or maintenance work, disconnect the controller from the electrical power supply and protect it from being turned back on.
- Improper installation may cause a fire hazard.

WARNING

Risk of scalding.

- Do not touch the pipes or other components of the system, which can become very hot and cause scalding. .

1.3 Intended use of the device

The BWC 330 Pro installation controller is designed to control three circuits in a heating or cooling system. Each controlled circuit consists of a circulation pump and an electric actuator responsible for operating the mixing valve. Furthermore, by using additional expansion modules (max. 2), the BWC 330 Pro controller can control up to 5 circuits (5 pumps and 5 actuators).

The controller's software features built-in operating algorithms that enable it to work with any heat source: heat pump, gas/electric boiler, pellet/eco-pea coal boiler, or manual-feed boiler.

In addition, the controller can be responsible for heating the DHW tank via a dedicated circulation pump or a switching valve (depending on the selected configuration), as well as for controlling the DHW circulation pump.

The controller is fitted with two potential-free contacts: one for controlling the main heat source, and the other which can be used to control a second heat source, a cooling source or an electric heater fitted in the DHW tank.

Any other use is not intended and may lead to hazards.

Before using the product, ensure that it is suitable for the intended application. Take into account at least the following aspects:

- All applicable regulations, standards, and safety instructions at the place of use.
- All conditions and specifications stated for the product.
- The conditions related to the intended use.

Additionally, perform a risk assessment for the specific application in which the product will be used, following a recognized procedure, and implement all necessary safety measures based on the results.

Also consider the potential consequences of installing or integrating the product into a system or plant.

1.4 Quality control

Construction of BWC 330 Pro complies with the current state of the technical standards regarding safety. Each device is checked for safety before shipment.

▶ The product should only be used if it is in a qualified technical condition. Read the manual for assembly and use as well as observe the relevant safety regulations.

1.5 Personnel qualification

Installation, commissioning, maintenance and decommissioning of this product must be carried out only by a qualified professional with adequate technical training, knowledge and experience to recognize

and avoid hazards that may be caused by electricity. To avoid malfunctions and accidents, make sure that all persons using the device are familiar with its operation and Chapter 1 of this manual.

Based on their technical training, knowledge and experience, qualified personnel must be able to understand the contents of this manual and all documents pertaining to the product, and recognize possible hazards that may result from the use of the product.

Qualified personnel must be aware of all applicable regulations, standards and safety rules that must be observed during operation.

1.6 Personal protective equipment

Always use the required personal protective equipment. When working with the device, you should also take into account that there may be other hazards at the installation and use that are not directly caused by the product.

1.7 Modifications to the product

Changes and modifications carried out by unauthorized persons may cause hazards and are prohibited for safety reasons.

1.8 Usage of spare parts and accessories

Usage of unsuitable spare parts and accessories may cause damage to the product.

- ▶ Use only genuine spare parts and accessories of the manufacturer.

2 Product description

The intended use of the BWC 330 Pro controller is described in section 1.3. A detailed description of the device's construction, operating principles and configuration is provided below.

The electrical section of the BWC 330 Pro consists of removable, labelled electrical connectors to which the main power supply, actuating devices (circulation pumps, actuators), temperature sensors, room thermostats and additional devices (heat source, additional heat/cooling source) are connected. The scope of delivery includes special connectors designed to protect against accidental disconnection of cables. A label showing the electrical diagram is affixed to the cover concealing the electrical section. The scope of delivery includes all necessary temperature sensors, i.e. an outdoor temperature sensor and six PT1000 temperature sensors.

Figure 1. Construction of the BWC 330 Pro controller

2.1 Dimensions

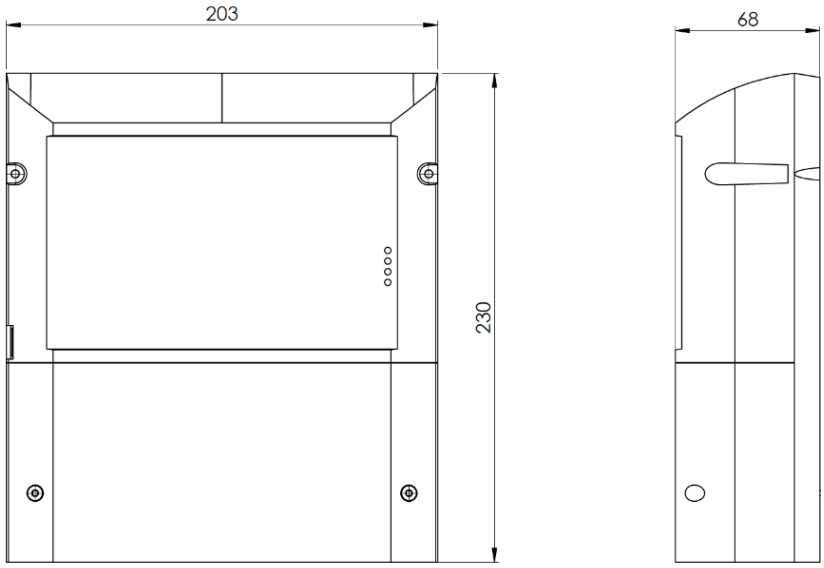

Figure 2. Dimensions of the BWC 330 Pro controller [mm]

2.2 Principle of operation and operating diagrams

The sections below describe in detail how the device works and the operating algorithms it employs.

2.2.1 Operating diagrams

The BWC 330 Pro controller has several pre-programmed operating diagrams based on which it controls the devices comprising the system accordingly. It is important to check the system before selecting the proper operating diagram, to ensure that the selected diagram corresponds to the actual configuration. Otherwise, the system may not function correctly.

In all operating diagrams, the controller does not distinguish between the heat buffer tank and the low-loss header. These are treated as a single device. The operation of the individual diagrams is discussed below. Depending on the type of heat source, the system's operation will vary slightly. The detailed operation of heat sources is described in subsection 2.2.2.

Low-loss header + heating installation (CH)

This diagram applies to all heat sources. In this diagram, the DHW tank is not charged. Only the operation of the DHW circulation pump can be controlled.

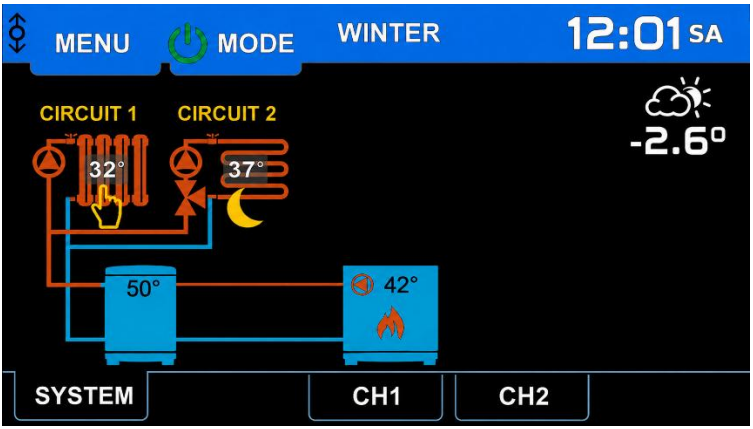

Figure 3. Example operating diagram of the system low-loss header + heating installation (CH)

Operation of a low-loss header

WINTER installation mode

The low-loss header automatically sets the highest of the setpoint temperatures for all circuits as its own setpoint.

The controller closes the main heat source contact when the temperature measured in the low-loss header is lower than the setpoint temperature. The controller opens the main contact when the temperature in the low-loss header reaches the setpoint value plus the value of the *Low-loss header hysteresis* parameter.

SUMMER installation mode

The low-loss header adopts a setpoint temperature of 0°C when all circuits are switched off. If *No* is selected for the *Circuit disable summer mode* service parameter for any circuit, the low-loss header adapts its setpoint temperature to match the circuit's setpoint and controls the heat source properly.

Operation of heating circuits

WINTER installation mode

The circuits are activated when the temperature reaches the value set in the *Min. low-loss header temperature* parameter plus 2°C. The circuits are deactivated if the temperature in the low-loss header falls below this value. The operating modes of the circuits are discussed in detail in subsection 2.2.8.

SUMMER installation mode

When the system is switched to SUMMER mode, all heating circuits are switched off. If *No* has been selected for the *Circuit disable summer mode* service parameter for a specific circuit, that circuit remains in WINTER mode and continues to operate.

Low-loss header + heating installation (CH) + DHW

This diagram applies to all heat sources.

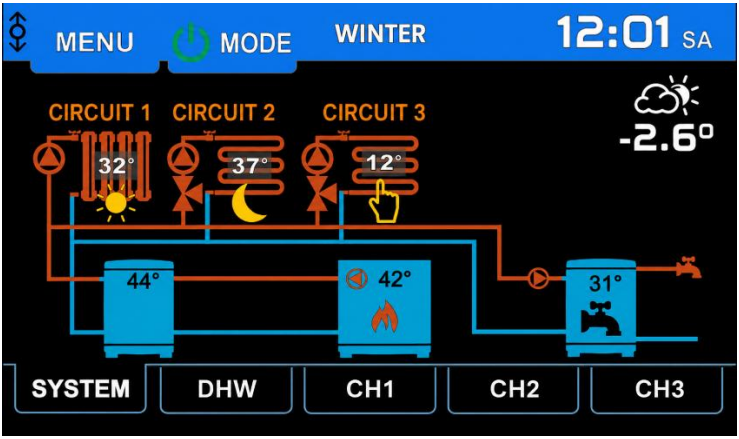

Figure 4. Example operating diagram of the system low-loss header + heating installation (CH) + DHW

Charging the DHW tank

The DHW tank begins to heat up automatically when the measured temperature in the tank falls below the setpoint minus the value specified in the *DHW hysteresis* parameter. Once this condition is met, the controller performs the following actions:

- The main heat source contact is closed if the temperature in the low-loss header is lower than the set temperature for the low-loss header during the DHW tank charging cycle. This value is obtained from the following equation: setpoint temperature of the DHW + value of the parameter *Offset at DHW charging*. The main heat source contact is opened once this temperature is reached, taking into account the parameter *Low-loss header hysteresis*.
- The DHW tank charging pump is activated when the following condition is met: current temperature in the low-loss header > current DHW temperature + *Offset at DHW charging*. If the above condition is not met throughout the entire DHW tank charging period, the DHW pump will switch off and restart once the temperature of the low-loss header rises again,

- If the DHW priority has been enabled, the circulation pumps on the heating circuits are switched off whilst the DHW tank is charging.

The DHW tank charging process ends when the temperature in the tank reaches the setpoint. Depending on the installation mode, the DHW pump is switched off and the controller adopts the setpoint temperature of the low-loss header as the highest of the setpoint temperatures for all circuits (winter mode), or the DHW pump is switched off and the main heat source contact is opened (summer mode).

CAUTION

The DHW tank's heat demand does not cause the main heat source contact to close. Heat is drawn directly from the low-loss header.

Operation of a low-loss header

Similarly, as in the diagram low-loss header + heating installation (CH)

Operation of heating circuits

Similarly, as in the diagram low-loss header + heating installation (CH)

Switching valve

This diagram applies to all heat sources.

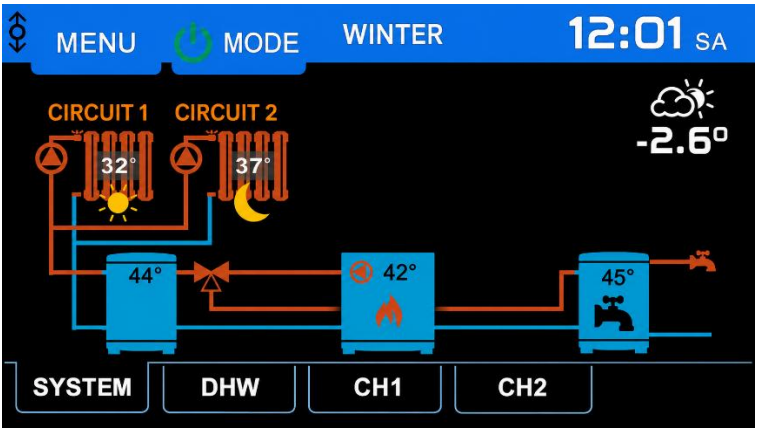

Figure 5. Example operating diagram of the system switching valve

Charging the DHW tank

The DHW tank begins to heat up when the measured temperature in the tank falls below the setpoint minus the value specified in the *DHW hysteresis* parameter. Once this condition is met, the controller performs the following operations:

- switches the flow of the medium through the switching valve (the controller supplies power to the connected actuator) to the position that directs the medium to the DHW tank,
- it closes the main heat source contact, initiating the process of heating the tank.

Once the set DHW temperature has been reached, the switching valve switches the medium flow from the source to the low-loss header (the controller stops supplying power to the actuator) and the heat source is switched off or continues to operate to charge the low-loss header, depending on the system's operating mode.

CAUTION

If the DHW tank cools down whilst the low-loss header is being heated, the controller will automatically switch the valve and begin charging the tank. Once the proper DHW temperature has been reached, the valve switches back and heating of the low-loss header continues.

Operation of a low-loss header

Similarly, as in the diagram low-loss header + heating installation (CH)

Operation of heating circuits

Similarly, as in the diagram low-loss header + heating installation (CH)

2 pumps heating installation (CH) and DHW

The operating diagram is available for the manual-feed boiler only.

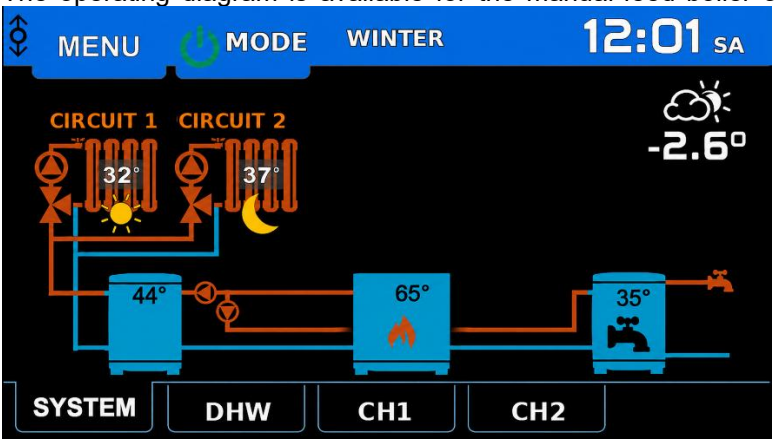

Figure 6. Example operating diagram of the system 2 pumps heating installation (CH) and DHW

Charging the DHW tank

The DHW tank begins to heat up when the measured temperature in the tank falls below the setpoint by the value specified in the *DHW hysteresis* parameter. Once this condition is met, the controller performs the following operations:

- The DHW tank charging pump is activated,
- It closes the main heat source contact, initiating the process of heating the tank,
- If the DHW priority has been activated, the pump that charges the low-loss header is switched off whilst the DHW tank is being charged.

Once the set DHW temperature has been reached, the DHW tank charging pump and the heat source are switched off or continue to operate to charge the low-loss header, depending on the installation operating mode.

Operation of a low-loss header

Similarly, as in the diagram low-loss header + heating installation (CH)

Operation of heating circuits

Similarly, as in the diagram low-loss header + heating installation (CH)

CAUTION

In the 2 circulation pump diagram, there is a built-in protection to prevent the low-loss header from cooling down. If both the low-loss header and the DHW tank are being charged simultaneously, and the boiler temperature drops below the current temperature in the low-loss header, the pump charging the low-loss header is switched off automatically. This function operates only whilst the low-loss header and the tank are being charged (without DHW priority).

2.2.2 Operation of heat sources

The BWC 330 Pro controller is pre-programmed to operate with several types of heat source. The sections below describe how each heat source operates with the controller.

Automatic heat sources

These heat sources include:

- Heat pump.
- Gas/electric boiler.
- Pellet/eco-pea coal boiler.

In a system with this type of heat source, the controller does not directly control the heat source, but instead transmits an operating enable signal via a potential-free contact, depending on the current conditions in the system. To ensure the BWC 330 Pro operates correctly with the heat source, use the proper connection specified in the heat source manufacturer's technical documentation. The controller does not in any way protect the automatic heat source before it overheats. This function is the responsibility of the heat source's own control system. The controller also has no influence on the flow temperature generated by the heat source. The setpoint temperature on the heat source should be set at a proper level to allow the entire system to heat up, depending on the configuration. Installation of a heat source sensor in a system with this type of heat source is optional. The operation of the controller in various operating states is described below.

Preheating the low-loss header

A signal to activate the heat source is sent if the controller is in winter mode and the temperature of the low-loss header falls below the setpoint. The setpoint for the low-loss header is the highest temperature of the system supply for the specific system circuit. It is adjusted automatically.

The BWC 330 Pro controller stops sending a signal when the temperature in the low-loss header exceeds the value calculated using the following formula: setpoint temperature + low-loss header hysteresis.

Charging the DHW tank

A signal to activate the heat source is sent when the following condition is met:

Current water temperature in the DHW tank < DHW setpoint – DHW hysteresis

The signal stops being sent when the water temperature in the DHW tank reaches the DHW setpoint.

In the case of a heat pump, the controller monitors the average outdoor temperature. If this temperature falls below the value set in the *Outdoor temperature HP operation blocks* parameter, the heat pump is disabled. In this situation, if the system has been configured to operate with a second heat source, the system immediately switches to the second source.

Manual heat sources

These sources include only a manual-feed boiler. In a system with such a source, the controller regulates the operation of the main circulation pump based on the settings and measured temperatures. In a system with such a source, the controller protects it against overheating. The manual-feed boiler overheating protection mode is described in detail in subsection 2.2.15. Installation of a heat source sensor is mandatory.

The operation of the controller in various operating states is described below.

Preheating the low-loss header

Low-loss header set temperature not reached (low-loss header not heated up)

The main circulation pump, which is responsible for charging the low-loss header, starts up once the boiler's minimum temperature is exceeded. This value is measured by the heat source sensor and is set to 40°C by default. The main circulation pump also starts up when the medium temperature measured in the low-loss header falls below the setpoint. The setpoint temperature of the low-loss header is the highest supply temperature of the specific system circuit. It is adjusted automatically.

Charging of the low-loss header never stops (the pump is not switched off) until the setpoint temperature of the low-loss header is reached. The pump can only be switched off when the temperature measured by the heat source sensor falls below the minimum temperature.

Low-loss header charging ends when: the low-loss header temperature is reached and the current temperature measured in the low-loss header is higher than the boiler temperature.

Low-loss header set temperature reached (low-loss header heated up)

The main circulation pump restarts when the boiler temperature > the low-loss header temperature. The low-loss header charging process ends when the low-loss header temperature > the boiler temperature.

Charging the DHW tank

DHW temperature not reached, summer mode

The DHW tank charging pump, or – depending on the selected operating diagram – the main pump and the switching valve, start up once the minimum boiler temperature is exceeded.

DHW charging only ends when the DHW temperature has been reached and the boiler temperature = the DHW temperature. If the DHW temperature is never reached due to the boiler temperature being too low, the charging pump will only switch off when the boiler temperature falls below the minimum boiler temperature.

DHW temperature reached, summer mode

The DHW tank charging pump, or—depending on the selected operating diagram—the main pump and the switching valve, will restart as soon as the Boiler temperature + Offset at DHW charging > the current DHW temperature.

DHW charging ends when the DHW temperature = boiler temperature. This procedure is designed to extract residual heat from the source to prevent it from boiling over.

DHW temperature not reached, winter mode

The DHW tank charging pump, or—depending on the selected operating diagram—the main pump and the switching valve, start immediately once the minimum boiler temperature is exceeded or if the current DHW temperature falls below the setpoint – DHW hysteresis.

DHW charging ends when the current DHW temperature = the set DHW temperature. The system then proceeds to preheat the low-loss header or, depending on the currently measured temperatures, the pump switches off.

Operating with a second heat source

Thanks to its built-in additional output, the BWC 330 Pro controller can be used in conjunction with a second heat source. The controller does not control the additional heat source, but sends an enable signal once all the proper conditions have been met:

1. Low-loss header setpoint not reached: the required temperature has not been reached within the time specified by the service parameter *Delay time to switch on boiler no. 2.*
2. Proper outdoor temperature: the average outdoor temperature is lower than the value set in the parameter *Outdoor permission temp. boiler no. 2*. If there is no outdoor temperature sensor, this parameter is inactive.
3. Enable operation with a second boiler: parameter *Operation with second boiler* setting must be set to: *Yes.*
4. Parameter *Output funct. additional* must be set to: *Boiler no. 2.*

When operating a second heat source with a manual heat source, please note that the main heat source set and connected to the controller should be the manual-feed boiler. Furthermore, when a second heat source is operating with a manual heat source, the second heat

source starts up immediately (without the switch-on delay) if the minimum boiler temperature has not been reached.

2.2.3 Cooling mode

The BWC 330 Pro controller also allows you to control circuits in cooling mode. However, in this mode, it is not possible to control circuits based on time schedules, integrate with room thermostats, or set weather compensation. In cooling mode, the cooling source can be controlled via an auxiliary contact. This is described in detail in subsection 2.2.14. To switch the circuit to cooling mode, carry out the following steps:

1. Parameter: *Permission to operate for cooling* in the service menu *System* set to: *Yes.*
2. Parameter: *Permission cooling* in the service menu CH1-CH5 set to: Yes. Each circuit intended for cooling must be configured individually.
3. Set the system operating mode to *Cooling*. A detailed description of the changes to the operating modes is provided in subsection 2.2.11.
4. The operating mode of the specific circuit(s) responsible for cooling must be set to on. A detailed description of how to change the operating modes of the circuits is provided in subsection 2.2.11.

The setpoint temperature of the medium in cooling mode can only be adjusted via the CH1–CH5 service menu, individually for the specific circuit. The factory setting is 18°C.

CAUTION

The cooling mode cannot be selected if a manual-feed boiler has been chosen as the heat source. For automatic heat sources, cooling does not operate in the ‘low-loss header + heating installation (CH) + DHW’ operating diagram.

2.2.4 Initial configurator

The BWC 330 Pro controller features an initial configurator that starts up when the device is switched on for the first time. It acts as a first-time setup assistant, guiding the user through all the key settings. Each of the values set in the configurator can be changed via the service menu. All the steps in the configurator are described below. In all steps, navigation is carried out using the arrows in the top right-hand corner of the screen — the right arrow moves forward, the left arrow returns to the previous step.

Step 1. Confirmation of the start of the configurator.

Figure 7. Step: Starting the configurator.

To proceed, select *Yes*. If you select *No*, the configurator will be skipped. The only way to restart the configurator is to restore the controller's factory settings. This can be done via the service menu.

Step 2. Selecting a language.

Figure 8. Step: Selecting language.

Please select the proper language.

Step 3. Setting the date and time.

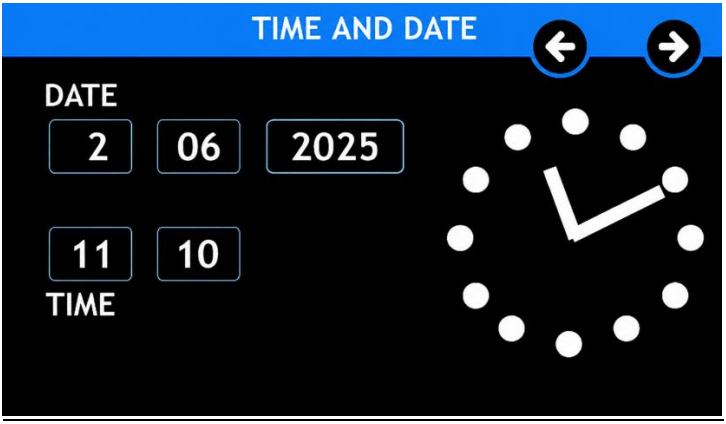

Figure 9. Step: Setting the date and time.

Set the current date and time.

Step 4. Choosing a heat source.

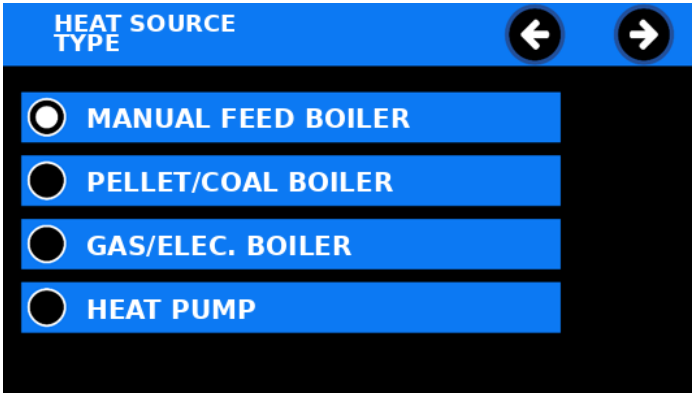

Figure 10. Step: Selecting the heat source.

Select the proper heat source for the controller to operate with.

Step 5. Choosing the installation operating diagram.

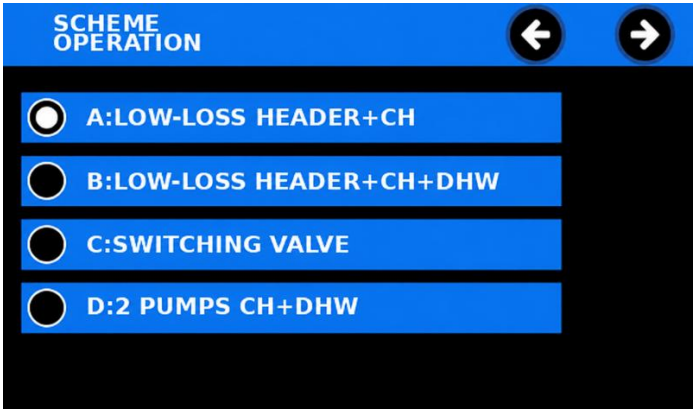

Figure 11. Selection of operating diagram.

Select the proper operating diagram of installation with which the device will operate. The operating diagrams will vary depending on the heat source selected in the previous step. If a gas/electric boiler or heat pump is selected, this step is skipped. The controller automatically sets the operating diagram to 'low-loss header + heating installation (CH)'. The operating diagram for these heat sources can be changed via the service menu. Each operating diagram is described in detail in section 2.2.1.

Step 6. Determining the set temperature for the DHW tank.

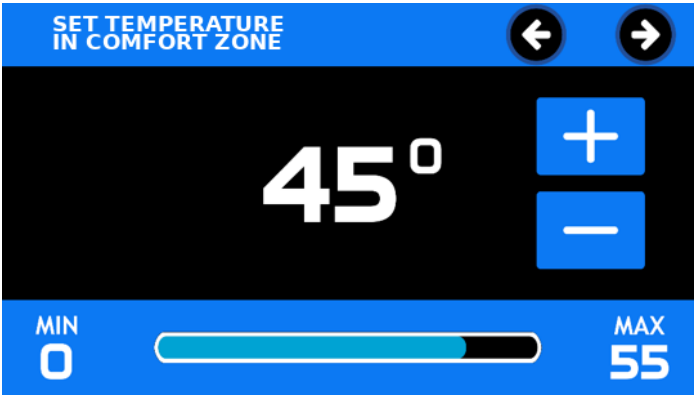

Figure 12. Determining the comfort set temperature for the DHW tank.

This step only appears if the operating mode involving DHW tank charging has been selected. You must select the water temperature

that the controller will maintain within the comfort zone. By default, the DHW tank is charged according to a schedule. This can be changed in the *DHW* menu once the configurator has finished.

Step 7. Setting the DHW recirculation.

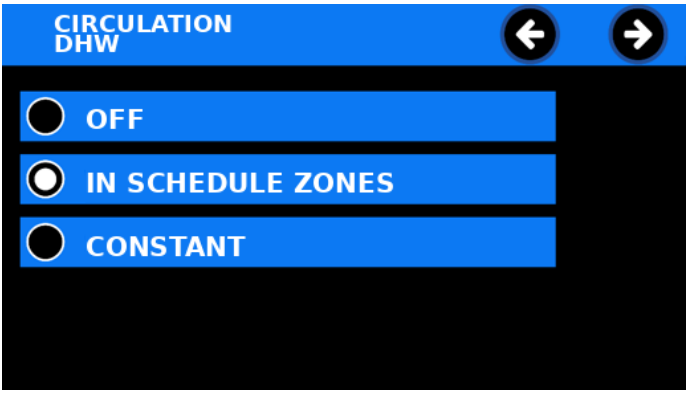

Figure 13. Step: Setting up the DHW recirculation.

Select the control method for the DHW recirculation pump. This step always appears, regardless of the operating diagram selected.

Step 8. Setting the number of circuits.

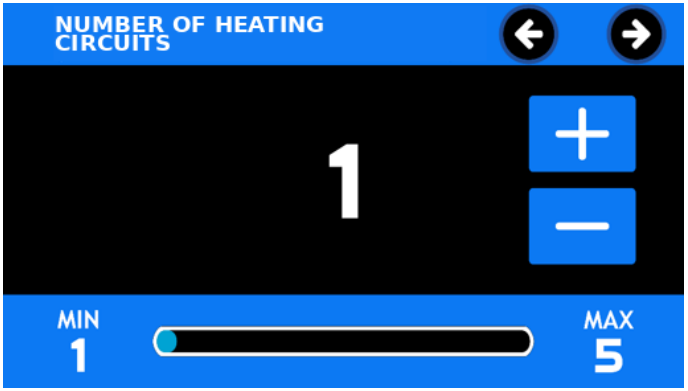

Figure 14. Step: Setting the number of circuits.

Select the number of circuits to be controlled by the BWC 330 Pro. By default, the controller can control 3 circuits. It is possible to expand this to 5 circuits by using additional extension modules.

Step 9. Setting the circuit name.

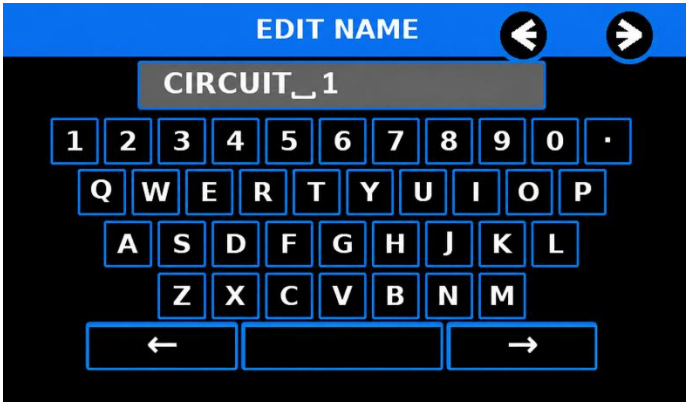

Figure 15. Step: Setting the circuit name.

Set the name for the circuit. You can set the name of up to 9 characters.

Step 10. Selecting the circuit type.

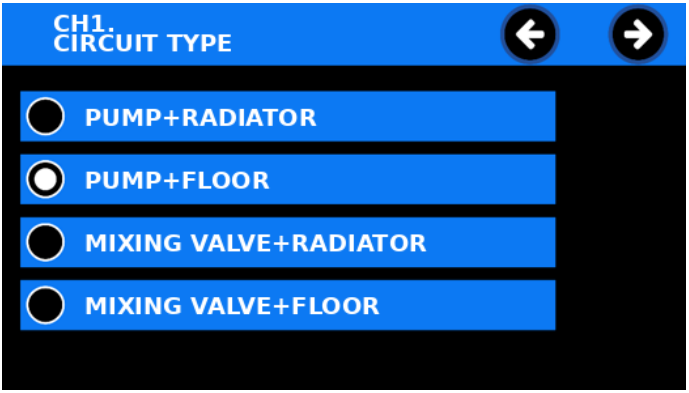

Figure 16. Step: Setting the circuit type.

Select the proper circuit type. ‘Pump + …’ circuits are direct circuits, whilst ‘Mixing valve + …’ circuits are circuits with a mixing valve and an electric actuator. The choice between a radiator system and an underfloor heating system determines the maximum temperatures and the predefined setpoints/weather curves for these circuits, which are set automatically.

Step 11. Determining the weather-compensated operation of the circuit

Figure 17. Step: Determining the weather-compensated operation of the circuit.

Select whether the specific circuit is to be controlled by weather conditions or at a constant temperature. If weather-compensated operation is selected, ensure that the outdoor temperature sensor is connected to the controller.

Step 12. Determining the set temperature for the constant-temperature circuit.

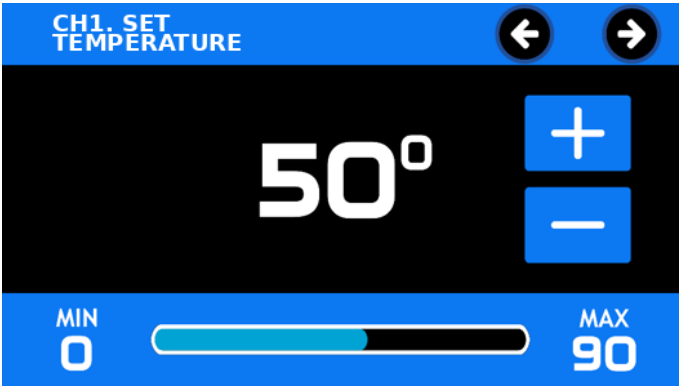

Figure 18. Step: Setting the setpoint temperature.

This step appears only if *No* was selected in the previous step. This value is predefined depending on the type of heat consumer. For radiators, the base temperature is 50°C (select from 0 to 90°C). For underfloor heating, it is 25°C (select from 0 to 45°C).

Step 13. Determining the heating curve for the weather-compensated circuit.

This step appears only if *Yes* was selected in the weather compensation step. For circuits with a mixing valve, a pre-configured weather characteristics appears depending on the type of receivers (radiators / underfloor heating):

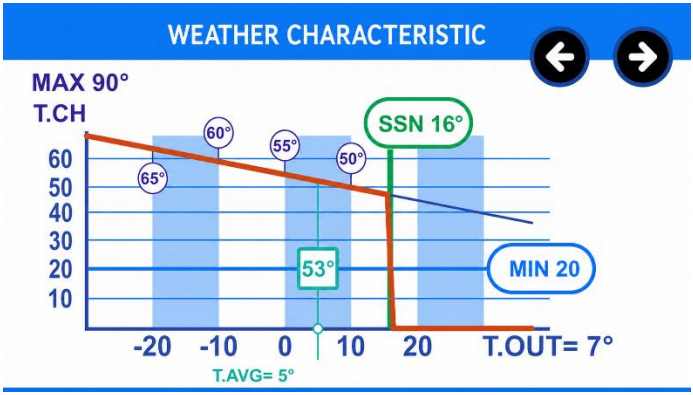

Figure 19. Predefined weather characteristics for a radiator circuit.

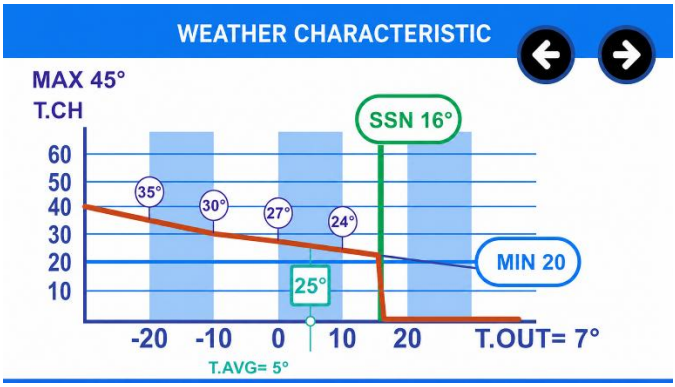

Figure 20. Predefined weather characteristics for underfloor heating.

The curve can be adjusted to suit your needs. Editing the weather characteristics is described in detail in section 2.2.10.

In the case of a circuit without a mixing valve, it is only possible to edit the start/end temperatures of the heating season. The setpoint temperature is fixed and defaults to 50°C for radiators and 25°C for underfloor heating. The value can be changed via the *CH1-CH5 circuit* menu once configuration is complete.

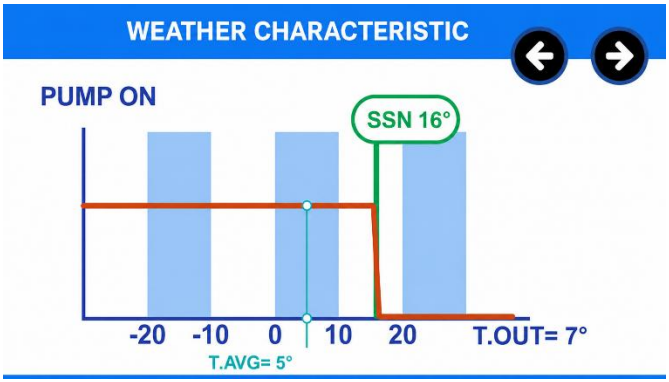

Figure 21. Weather characteristics for direct circulation.

Step 14. Determining the reduction in circuit temperature.

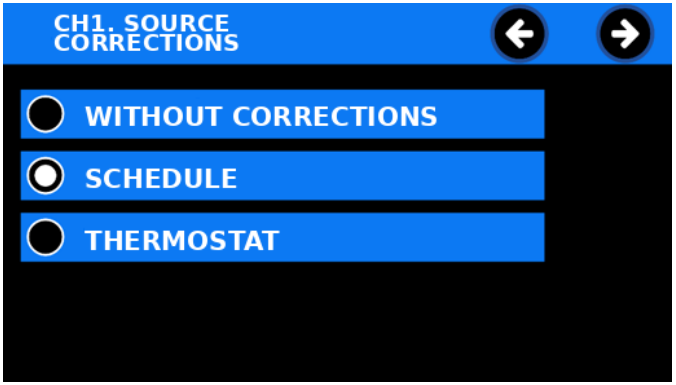

Figure 22. Step: determining the temperature reduction.

Specify whether the circuit should operate with a temperature reduction according to a schedule (lower temperature in Eco zones) or based on a signal from a room thermostat (the room thermostat must be connected to the BWC 330 Pro). The circuit can also operate without any temperature reduction – the comfort temperature is maintained at all times. In the case of a direct circuit, the reduction automatically switches off the circuit. In a circuit with a mixing valve, the supply temperature is reduced. This control method can be changed via the service menu.

Step 15. Determining the opening direction of the mixing valve.

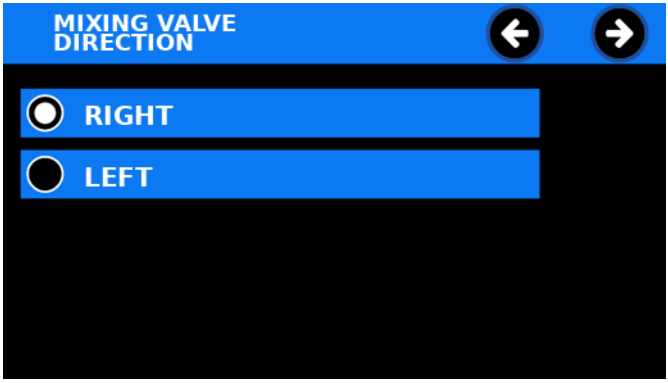

Figure 23. Step: Determining the opening direction of the mixing valve.

This step appears only if a circuit type with a mixing valve has been selected. It determines the direction in which the mixing valve actuator opens, in order to increase the temperature of the medium in the circuit. Circuits 2, 3, etc. should be set in the same way as the steps that appear.

Step 16. Determining the closing time of the mixing valve.

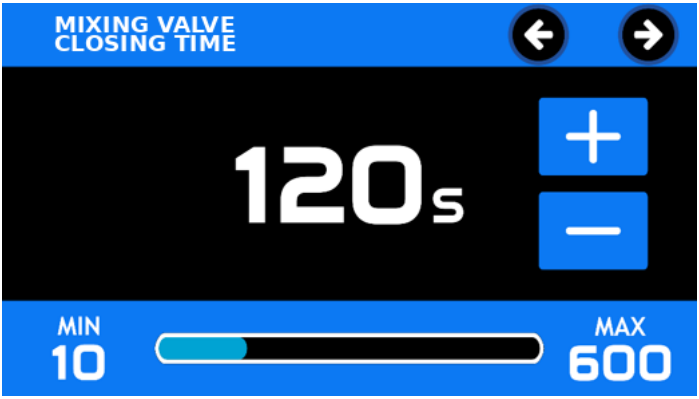

Figure 24. Step: Determining the closing time of the mixing valve.

A value common to all circuits. If several different types are installed, enter the value for the actuator with the longest rotation time.

Step 17. Determining the minimum low-loss header temperature.

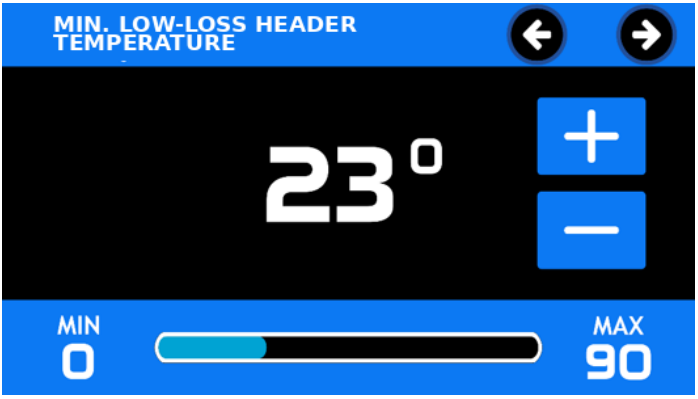

Figure 25. Step: Determining the minimum low-loss header temperature.

This parameter defines the start/stop time for the system circuits.

Step 18. Completing the configuration.

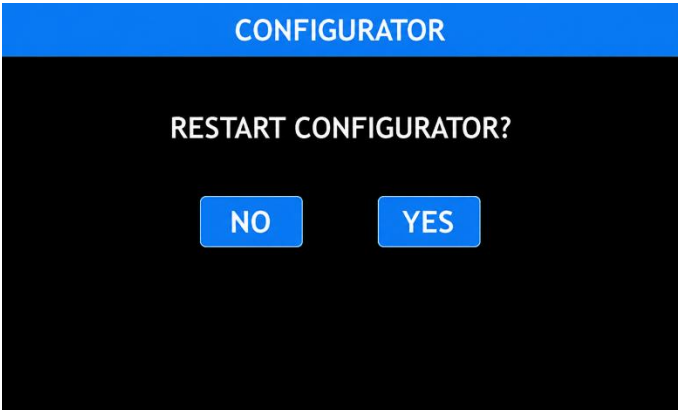

Figure 26. Final step of the configuration.

Exiting the configurator. If you are unsure about the settings, you can restart the configurator by clicking *Yes*. If you wish to complete the configuration, select *No*. After this step, test mode will start.

2.2.5 Test mode (example view)

Test mode allows you to check that the electrical connections to compatible devices are correct: circulation pumps, electric actuators, heat sources and temperature sensors. From this mode, you can start devices and force the actuators to operate by pressing the proper buttons.

It starts automatically once the configurator has finished. It can also be launched at any time from the info panel, but you must first switch the system out of main operating mode. A detailed description can be found in section 2.2.11.

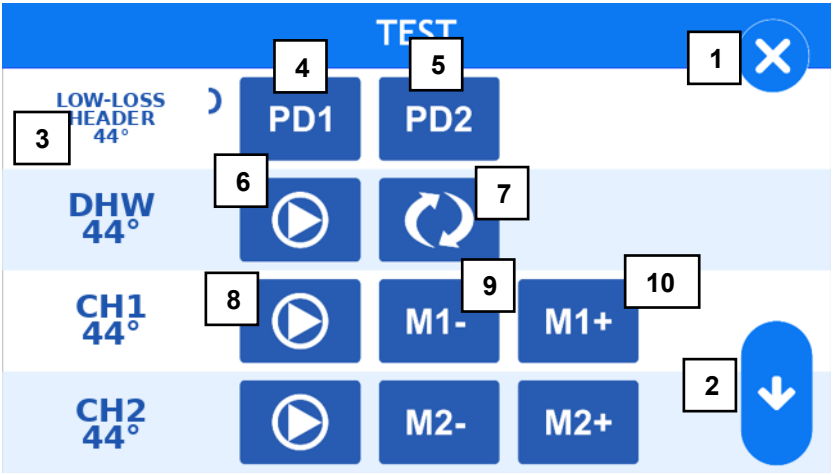

Figure 27. An example of the test mode screen.

1. Exit test. Pressing this button opens the main screen.
2. Display of parameters and buttons for subsequent circuits.
3. Name of the specific sensor and the currently measured temperature.
4. Activation of the main heat source contact.
5. Activation of the auxiliary contact.
6. Starting the DHW tank charging pump / switching valve (depending on the selected operating mode).
7. Starting the DHW recirculation pump (if selected).
8. Start-up of the circulation pump for the specific circuit (in the case shown in the photo of circuit 1).
9. Forced rotation of the actuator to reduce the medium temperature (in the case shown in the photo of circuit 1). If there is no mixing valve in the circuit, this button does not appear.

10. Force the actuator to rotate in order to increase the medium temperature (as shown in the photo of circuit 1). If there is no mixing valve in the circuit, this button does not appear.

2.2.6 Main screen (example view)

The BWC 330 Pro controller features a colour touchscreen display that allows you to navigate the device. The display always shows the currently configured system diagram.

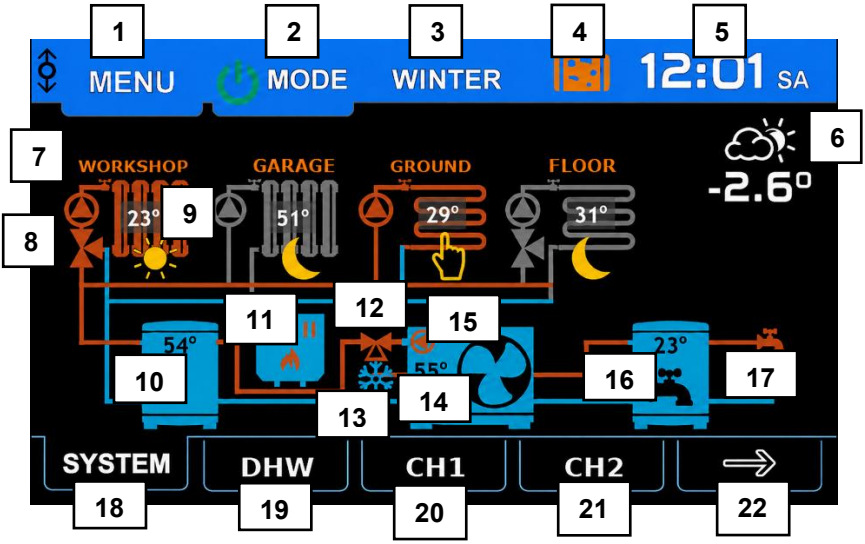

Figure 28. Example of the main screen.

1. Access the menu. See section 2.2.12.
2. Select the system operating mode. See section 2.2.11.
3. Current system operating season.
4. Information about the active vacation or holiday mode.
5. Current time and day of the week. Tapping the button takes you to the date and time settings.
6. Current outdoor temperature. Tapping the button displays a graph showing recorded outdoor temperatures over the last 24 hours.
7. Name of the specific heating circuit.
8. Diagram of the specific heating circuit. The diagram will be displayed differently depending on the selection (with or without a mixing valve, radiator or underfloor heating). Red indicates that

the circuit is active; grey indicates that it is switched off or in reduced mode. The sun/moon icon indicates whether the circuit is operating according to a specific schedule; the hand symbol indicates that the circuit is in manual mode; the word ‘stop’ indicates that the circuit has been switched off. See subsection 2.2.8.

9. Current temperature of the heating circuit.
10. Current temperature in the low-loss header.
11. Additional heat source. A red flame symbol indicates that the source is in operation.
12. Switching valve symbol (visible only when operating in switching valve mode). Filled-in fields indicate the current position. For example, in the figure above, the low-loss header is being charged.
13. Heat pump operation blocked due to excessively low outdoor temperature. Symbol visible only when the main heat source is set to the heat pump.
14. Main heat source along with the measured temperature, if a sensor is connected. Different icons are displayed depending on the selected type of heat source.
15. Circulation pump or flame. Red indicates that the pump/heat source is operating.
16. Current temperature in the DHW tank. The tank appears on the screen if we have selected a controller operating diagram with DHW tank charging.
17. A flashing pump symbol indicates that the DHW circulation pump is switched on. The icon appears only if the DHW circulation pump control option has been enabled.
18. Main tab allowing you to view and change the settings described in the previous points (1–17).
19. Tab allowing you to change the operating settings for the DHW tank or the DHW recirculation pump. The tab appears only if the operating diagram with the DHW tank and/or DHW recirculation pump control has been selected. See subsection 2.2.7.
20. Tab for changing the operating settings of the CH1 circuit. See subsection 2.2.8.
21. Tab for changing the operating settings of the CH2 circuit. See subsection 2.2.8.
22. Access to other heating circuits if more than 2 have been set.

Tapping anywhere on the diagram takes you to the info panel, where you can view all the temperatures that have been read and set.

2.2.7 DHW / DHW recirculation menu.

The DHW tab, which provides access to the menu, only appears when a system operating diagram that includes DHW tank charging has been selected, i.e.: low-loss header + heating installation (CH) + DHW; switching valve; 2 pumps for heating installation (CH) and DHW.

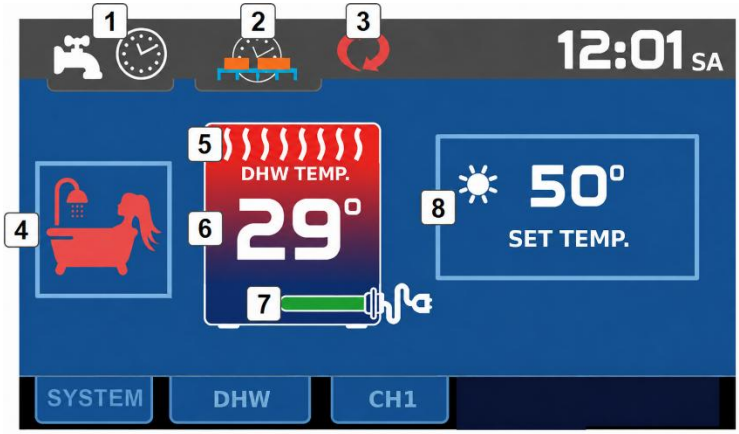

Figure 29. DHW menu.

1. Selection of DHW operating mode.
2. Schedule settings. By default, the DHW tank operates according to the time schedule.
3. DHW recirculation pump operation (if configured). When activated, the symbol will be highlighted in red.
4. DHW tank rapid charging – activates tank charging via the heat source and the DHW tank's electric heater (if fitted and enabled in the service parameters). Activating this function switches off the circulation pump (if fitted) and temporarily sets the setpoint temperature to that of the comfort zone. Once the function is deactivated or the setpoint temperature is reached, the DHW tank returns to its state prior to activating this function.

   NOTE: whilst this function is active, changing the setpoint temperature for DHW tank charging will change the setpoint temperature for the comfort zone.
5. DHW tank charging symbol. The symbol disappears once the setpoint temperature is reached.
6. Current measured DHW temperature
7. Additional DHW heater. When activated, the symbol will be highlighted in green. Additionally, the tap icon on the DHW tank in

the main diagram will flash green. A detailed description of configuring the controller with a DHW tank heater is provided in subsection 2.2.14.

8. DHW setpoint temperature settings.

DHW operating modes

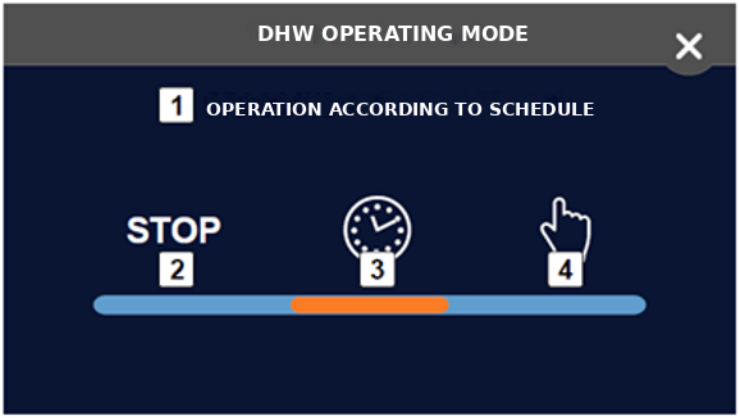

Figure 30. DHW mode screen.

1. Information regarding the selected operating mode.
2. Disabling DHW operation.
3. DHW operation according to a schedule.
4. Manual setting of the DHW tank setpoint temperature.

Setting the setpoint temperature for charging the DHW tank.

The setpoint temperature setting window appears when you press *Set temperature* in the DHW menu. The proper setpoint temperature is set depending on the selected circuit operating mode. In *Stop* mode, the option to change the temperature setting is disabled, and the controller displays a setpoint temperature of 0°C. In *Manual operation mode*, the setpoint temperature for manual operation is set.

Figure 31. The DHW temperature settings screen in manual mode.

In *Schedule* mode, the controller allows you to set the setpoint temperature for the tank in the comfort zone (sun symbol) and the value in the eco zone (moon symbol).

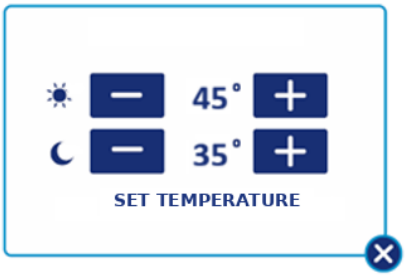

Figure 32. The DHW temperature settings screen in schedule mode.

DHW recirculation

The 'DHWC' tab will appear if a system operating diagram without a DHW tank has been selected. From this tab, you can only set the DHW recirculation schedule (if this operating mode has been selected).

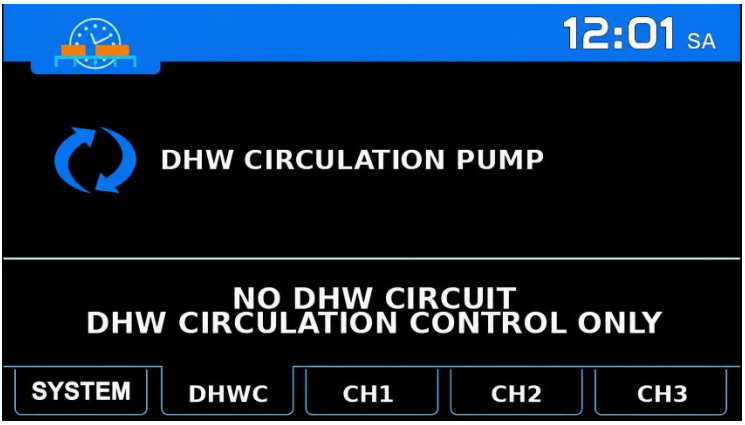

Figure 33. DHWC Menu.

The operating mode of the DHW recirculation system is set in the initial configuration or via the *Circulation DHW* service parameter. The following options are available:

1. Recirculation disabled.
2. In the schedule zones, the recirculation operates exclusively in comfort zones (sun symbol), taking into account the circulation runtime and circulation pause time parameters. The schedule can be amended via the DHW or DHWC tab (depending on the settings).
3. Constant – recirculation runs continuously, taking into account the operating time and circulation pause.

The above DHW recirculation modes are the same regardless of whether the controller is configured with or without a DHW tank. The setting of time schedules is described in section 2.2.9.

2.2.8 Circuits CH1–CH5 menu

The CH1–CH5 tabs appear on the main screen in a number corresponding to the number of circuits selected for management by the BWC 330 Pro controller.

Figure 34. Example view of the CH1 menu.

1. Selecting the heating installation (CH) circuit operating mode.
2. Weather compensation settings (if selected). The circuit can be set to operate according to the weather compensation curve via the initial configurator or the service menu.
3. Schedule settings (if configured). Setting the circuit operation according to the schedule is possible via the initial configurator and the service menu.
4. Name of the specific circuit.
5. Enter the circuit name editing section.
6. The specific installation diagram for the circuit, depending on the settings in the configurator or service menu. When operation is activated, the diagram turns red.
7. Current measured circuit temperature.
8. Circuit setpoint temperature settings. When the circuit is operating with a weather-compensated mixing valve, the current calculated setpoint temperature is displayed. To change the temperature, adjust the heating curve setting.

Circuit operation mode

The following operating modes are available for heating:

Figure 35. Circuit operating mode screen for the heating function.

1. Information regarding the selected operating mode.
2. Circuit shutdown.
3. Circuit operation in accordance with the schedule / thermostat and the weather curve (if configured).
4. Manual setting of the circuit setpoint temperature. The circuit operates at the set temperature at all times. Temperature reductions according to the schedule / thermostat and the weather curve are not taken into account. Only the deactivation of the circuit via a temperature reduction from the thermostat or a pre-set schedule (if configured to do so) is active.

Only two operating modes are available during cooling:

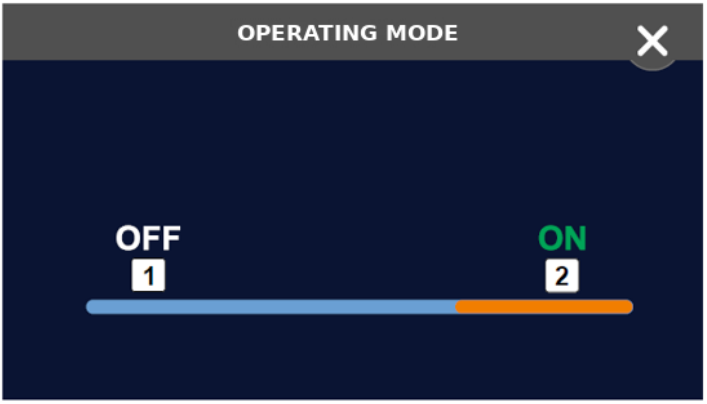

Figure 36. Circuit operating mode screen for the cooling function.

1. Circuit operation disabled.
2. Circuit operation enabled.

The cooling mode is disabled by default.

Setting the circulation temperature

In heating mode, depending on the type of circuit, the following options are available for setting the required temperature:

Constant-temperature operation of the circuit

In this case, the temperature is set in the *Set temperature* parameter in the initial configuration, in the specific circuit menu or in the service menu. When operating according to a programme without any temperature reduction, only the comfort temperature (sun symbol) is set, which remains constant at all times. The same applies in manual mode.

Figure 37. The circulation temperature settings screen in manual mode and in programme without temperature reduction.

When operating in schedule mode or room thermostat mode, you can set the temperature in the comfort zone (sun symbol) and the temperature adjustment value for the reduced/eco zones (moon symbol):

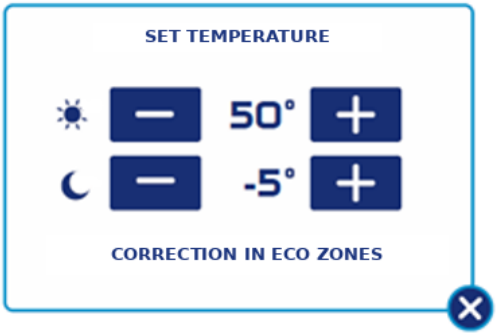

Figure 38. Screen for setting the circulation temperature in the programme according to the schedule or thermostat.

Depending on the specific schedule and the signal from the thermostat, the setpoint temperature for the circuit will vary (unless the correction value has been set to 0°C).

If the circuit has been set to switch off by reduction in the service menu, the circuit will be switched off in the Eco zone (operation according to the schedule) or based on the signal from the thermostat.

Set temperatures can be configured for both direct circuits and those with a mixing valve. This allows the maximum temperature to which the low-loss header or buffer tank is charged to be reduced during periods when heating is not required, e.g. at night. The operating algorithms are described in detail in subsection 2.2.2.

Weather-compensated circuit operation

In the case of a circuit with a mixing valve, the setpoint temperature is calculated on the basis of the selected heating curve. Depending on the current outdoor temperature, the controller calculates the proper temperature of the supply of the circuit. The procedure for setting this is described in detail in section 2.2.10. When operating according to a programme without any reduction, it is not possible to change the temperature via the *Set temperature* parameter. This parameter can only be edited when manual mode is selected. In the case of operation according to a schedule or a room thermostat, only the temperature correction value in the reduction / eco zones (moon symbol) can be set. Depending on the specific schedule and the signal from the thermostat, the setpoint temperature for the circuit will change (unless the correction value is set to 0°C). If the circuit shutdown via temperature reduction has been set in the service menu, the circuit will be switched off in the Eco zone (operation according to the schedule) or based on the signal from the thermostat.

In the case of a direct circuit, it is only possible to set the outdoor temperature for the start and end of the heating season. The set temperatures are configured in the same way as for constant-temperature circuit operation.

Operation in cooling mode

The setpoint temperature in cooling mode can only be set via the service menu. You must change the *Cooling temperature* parameter. It is not possible to set a weather curve or schedules for cooling.

2.2.9 Setting the time schedule

The BWC 330 Pro controller allows you to set schedules for working days (Monday–Friday), Saturdays, Sundays and for Holiday mode. Schedules can be set for both heating circuits and the DHW tank. The controller allows you to set two comfort zones, which are marked with a sun symbol. Between the comfort zones is the Eco zone. This is marked with a moon symbol. In the reduced temperature zone (Eco), the controller maintains a temperature reduced by the correction value set in the *Temperature correction* parameter. Additionally, if the service parameter *Circulation shutdown with correction* is set, circulation will be completely shut off in the Eco zones. In the case of a DHW tank, a different water temperature in the tank can be set for the comfort and Eco zones, which the controller will maintain. In the case of DHW recirculation, the pump operates in the comfort zones and is switched off completely in the Eco zones.

Schedule settings for each circuit are only available when the circuit is operating in 'Programmed operation with schedule' mode. To set the schedule for the selected circuit and DHW, press the icon marked with the symbol:

Next, use the sliders to set the comfort zones for the selected days. Between the comfort zones are Eco zones (temperature reduction, Eco temperature, and deactivation of the DHW circulation pump):

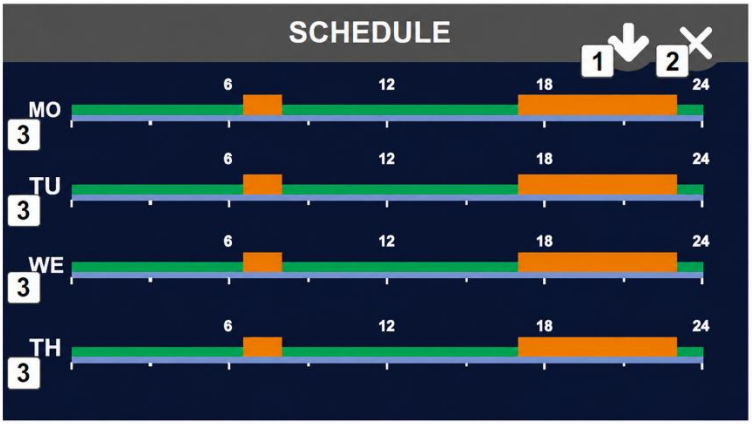

Figure 39. Factory-set schedule.

1. View the schedule for the remaining days of the week.
2. Return to the main screen.
3. Edit the schedule for individual days.

Tap the bar for the selected day on the schedule to open the edit window, where you can set the start time and duration of the comfort zone:

Figure 40. The screen for changing the schedule for a specific day of the week.

1. Schedule copy window.
2. Exit schedule editing.
3. Schedule timeline for the specific day. Orange rectangles indicate the daytime comfort zone; green rectangles indicate the Eco zone (zones where the temperature is reduced)
4. Edit the start of Comfort Zone I. The rectangle indicates the zone currently being edited.
5. Edit the end of Comfort Zone I.
6. Edit the start of Comfort Zone II.
7. Edit the end of Comfort Zone II.
8. Increase value.
9. Decrease value.

Copying schedules

To speed up and simplify the scheduling process, you can copy the settings for subsequent days of the week. Select the day of the week whose schedule you wish to copy to the subsequent days, then click the *Copy* button to copy the settings.

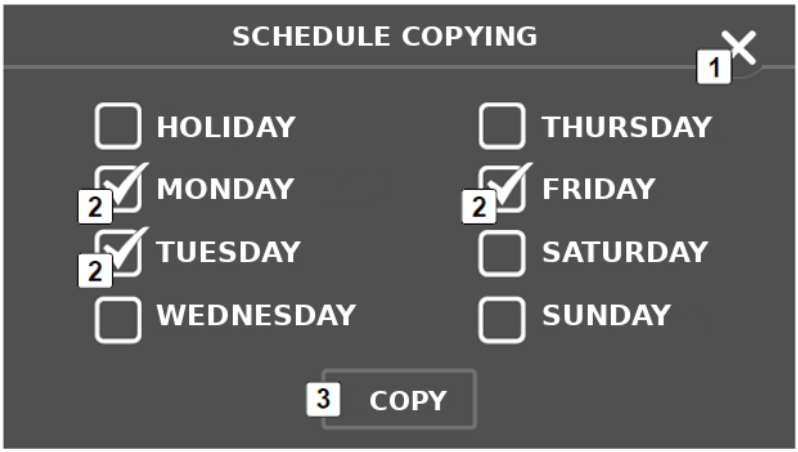

Figure 41. Schedule copying screen.

1. Exit the schedule copy window.
2. The days selected for the schedule to be copied.
3. Button to start copying.

2.2.10 Setting the weather characteristics

Depending on the type of circuit, the weather compensation settings menu will vary. For circuits with a mixing valve, four temperatures can be set to create the proper curve, along with the start and end temperatures for the heating season and the minimum circuit temperature.

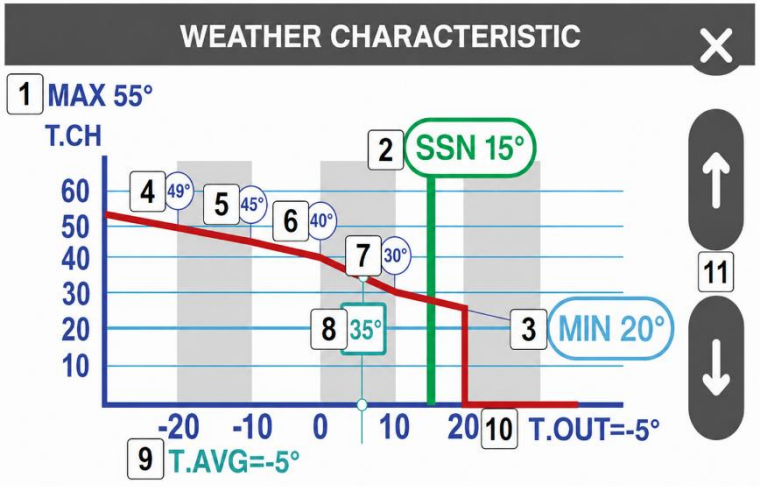

Figure 42. Example weather characteristics for a circuit with a mixing valve.

1. Maximum supply temperature for the circuit. Can be changed in the service menu.
2. Heating season start/end temperature. If the average outdoor temperature is higher than the value set in this parameter, the circuit is turned off. If the average outdoor temperature is lower than the set value, the circuit is turned on.
3. Minimum setpoint temperature for the circuit.
4. Setpoint temperature for circuit heating at an outdoor temperature of -20°C.
5. Setpoint temperature for circuit heating at an outdoor temperature of -10°C.
6. Setpoint temperature for circuit heating at an outdoor temperature of 0°C.
7. Circuit heating setpoint for an outdoor temperature of +10°C.
8. Currently calculated setpoint for the current averaged outdoor temperature.
9. Current averaged outdoor temperature.
10. Current outdoor temperature.
11. Setting the setpoints for the outdoor temperatures specified in points 4–7. Arrow symbols appear after clicking on the selected setpoint.

For circuits without a mixing valve, it is only possible to set the outdoor temperature for the start and end of the heating season.

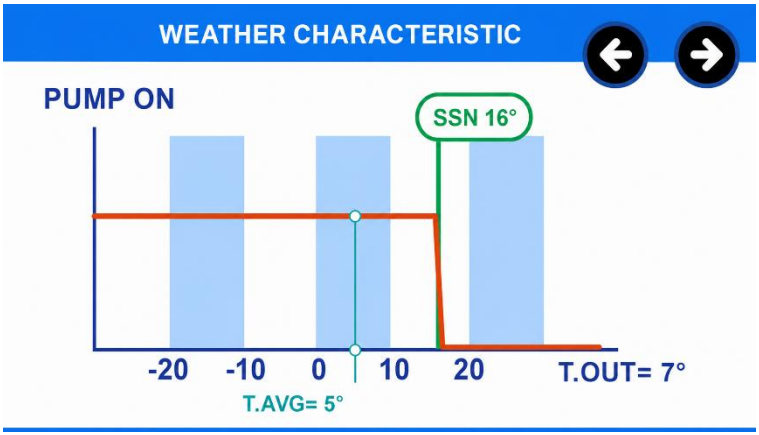

Figure 43. Example weather characteristics for a direct circuit.

2.2.11 System operating mode

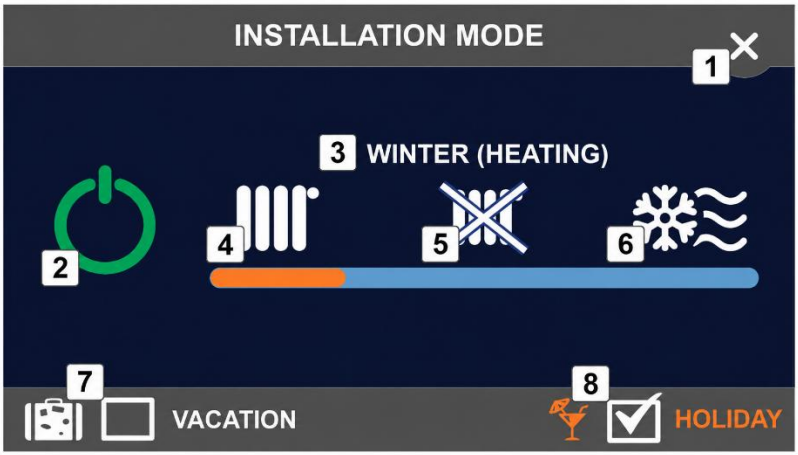

Figure 44. Installation mode screen.

1. Return to the previous screen.
2. Switch the installation on/off.
3. Currently selected operating season.
4. Winter season – by default, all circuits are switched on during this season.
5. Summer season – by default, all circuits are switched off during this season.
6. Cooling season – described in detail in sub-section 2.2.3.
7. Switch vacation mode on/off. When VACATION mode is active, the DHW tank heating and DHW recirculation are switched off.
8. Enable/disable holiday mode. Holiday mode causes the circuit/DHW tank to operate according to the holiday schedule. This occurs only when the specific circuit is set to operate according to a schedule.

In the case of weather-compensated operation, the system switches to summer mode automatically based on the outside temperature. In the case of constant-temperature operation, summer mode must be set manually.

2.2.12 Menu

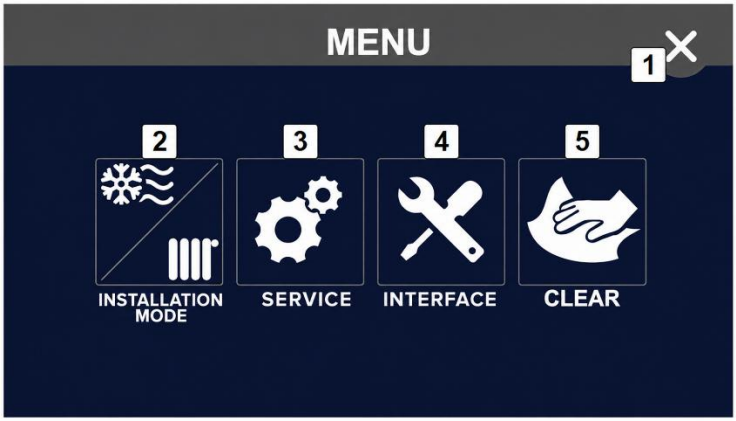

Figure 45. Main menu.

1. Return to the previous screen.
2. Installation mode menu – allows you to change the installation mode. Described in detail in section 2.2.11.
3. Service menu – allows you to change service settings. Described in detail in section 2.2.12.
4. Interface menu – allows you to change the controller language, sounds and backlight brightness.
5. Clear – a special function locks the screen for 30 seconds, allowing you to safely clear the screen without the risk of accidentally changing functions or settings on the controller.

2.2.13 Service menu

Access to the service menu is restricted by a code. The service code is 199.

General

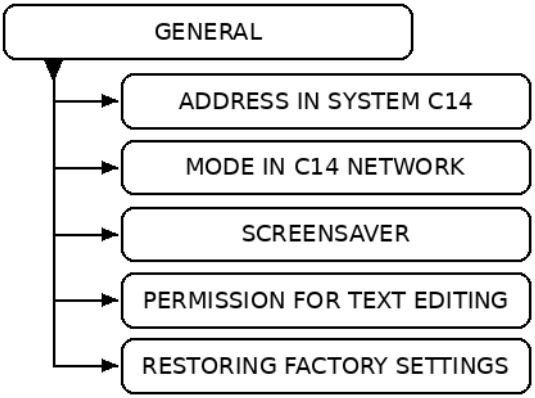

Figure 46. General menu structure.

Table 1. Service parameters in the General menu.

Parameter name	Description	Setting range	Factory setting
Adrdess in system C14	Parameter inactive	1÷127	1
Mode in C14 network	Parameter inactive	Slave Master Master Mini	Master Mini
Screensaver	Permission to turn off the screen during periods of inactivity	Yes No	No
Permission for text editing	Allow users to enter their own descriptions, e.g. of heating circuits	Yes No	Yes
Restoring factory settings	Restoring factory settings	Yes No	Yes

System

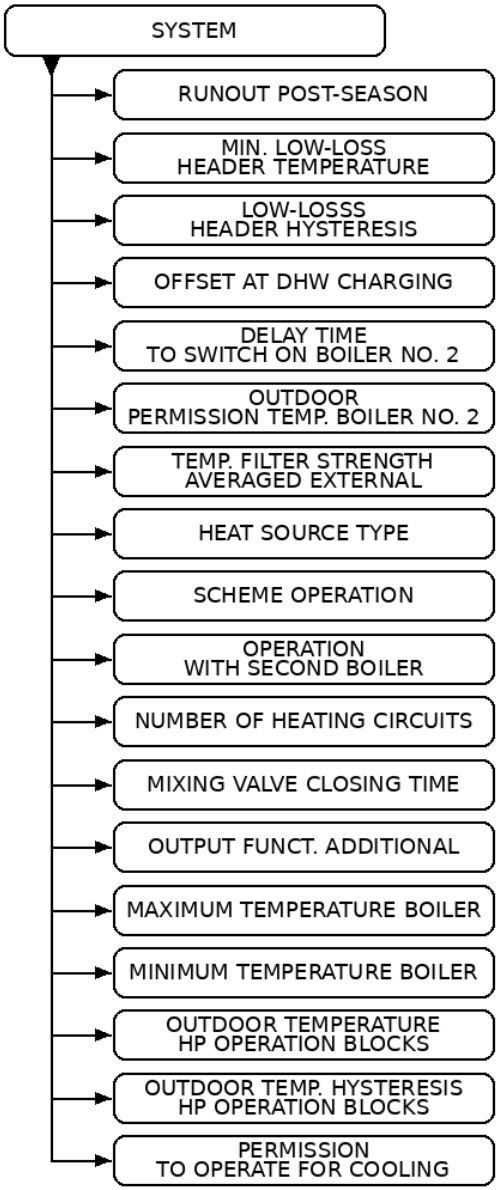

Figure 47. System menu structure.

Table 2. Service parameters in the system menu.

Parameter name	Description	Setting range	Factory setting
Runout post-season	Should the controller carry out the post-season pump runout? The runout is carried out once a week on Mondays at 12 noon during the summer and cooling seasons.	Yes No	Yes
Min. low-loss header temperature	When the temperature rises above +2°C, the pumps in the system circuits start up. When the temperature falls below this level, the pumps switch off	0÷90°C	As set in the initial configuration
Low-loss header hysteresis	This specifies the number of degrees above the setpoint temperature of the low-loss header at which the heat source should continue to operate. For a manual feed boiler, this value is permanently set to 0. It cannot be changed.	0÷10°C	0°C
Offset at DHW charging	This parameter is only relevant in the 'Low-loss header + heating installation (CH) + DHW' operating scheme with any heat source. It specifies the difference between the setpoint temperature of the low-loss header and the current temperature in the DHW tank during the heating process.	0÷20°C	5°C
Delay time to switch on boiler No. 2	If the proper temperature of the low-loss header is not reached within the time specified by this parameter, a signal will be sent to switch on the second heat source. For information on the controller's operation with the second heat source, see section 2.2.2.	1÷120 min	20 min
Outdoor permission temp. boiler No. 2	The outdoor temperature below which the second heat source can operate. For information on the controller's operation with the second heat source, see section 2.2.2. If no outdoor temperature sensor is used, this parameter is inactive.	-40÷40°C	0°C

Parameter name	Description	Setting range	Factory setting
Temp. filter strength averaged external	This specifies the rate at which the average outdoor temperature changes relative to the current outdoor temperature. The lower the value, the faster the average temperature will converge towards the current measured outdoor temperature.	1÷200	20
Heat source type	A description of the operation of heat sources can be found in section 2.2.2: Selection of the main heat source.	Manual feed boiler Pellet/coal boiler Gas/elec. boiler Heat pump	As set in the initial configuration
Scheme operation	A description of the operating diagrams can be found in section 2.2.1: Selection of the system operating diagram.	Low-loss header + CH Low-loss header + CH + DHW Switching valve 2 pumps CH + DHW	As set in the initial configuration
Operation with second boiler	It specifies whether the system includes a second heat source for the low-loss header heating process.	Yes No	No
Number of heating circuits	Specifies the number of circuits in the system. If there are more than 3 circuits, extension modules must be used. Each extension module corresponds to one circuit in the system.	1÷5	As set in the initial configuration

Parameter name	Description	Setting range	Factory setting
Mixing valve closing time	This parameter is only relevant if the system includes a mixing valve with an actuator. It represents the time required for the mixing valve to close. The parameter must be set in accordance with the documentation for the actuator used in the mixing valve. If there are several types of actuators with different rotation times, the highest value must be selected in the controller.	10÷600 s	As set in the initial configuration
Output funct. additional	Selection of the function to be performed by the auxiliary contact. For all available functions and their settings, see section 2.2.13.	Off Winter mode Boiler No. 2 DHW heater Cooling mode Buffer cooling	Off
Maximum temperature boiler	This parameter is only relevant if a manual feed boiler is selected as the heat source. Once this temperature is exceeded, the controller activates the boiler's protection against overheating.	0÷95°C	85°C
Minimum temperature boiler	This parameter is only relevant if a manual feed boiler is selected as the heat source. Once this temperature is exceeded, the controller activates the main circulation pump and the DHW tank charging pump (depending on the selected operating mode). Once the temperature drops below this value, the pump(s) are switched off.	0÷75°C	40°C
Outdoor temperature HP operation blocks	This specifies the outdoor temperature below which the heat pump is disabled.	-40÷30°C	-25°C

Parameter name	Description	Setting range	Factory setting
Outdoor temp. hysteresis HP operation blocks	This specifies by how many degrees the outdoor temperature must rise above the value set in the *Outdoor temperature HP operation blocks* parameter in order for the heat pump to be reactivated. This parameter prevents the heat pump from starting up too soon after the outdoor temperature has dropped.	1÷5°C	2°C
Permission to operate for cooling	This specifies whether the system supports cooling mode. To activate the cooling function, set this parameter to *Yes*. For details on cooling mode, see section 2.2.3.	Yes No	No

CAUTION

If you are adding further circuits manually via the service menu, select the proper circuit type and set the relevant temperatures manually in the CH1–CH5 menu. Predefined temperatures can only be set via the configurator.

DHW / DHWC

Depending on the operating scheme selected, either *DHW menu* or *DHWC menu* will appear in the service menu. The DHW menu will only appear if an operating scheme with a DHW tank has been selected (low-loss header + heating installation (CH) + DHW, switching valve and 2 pumps for heating installation (CH) and DHW). DHWC will appear in a scheme without a DHW tank (low-loss header + heating installation (CH)).

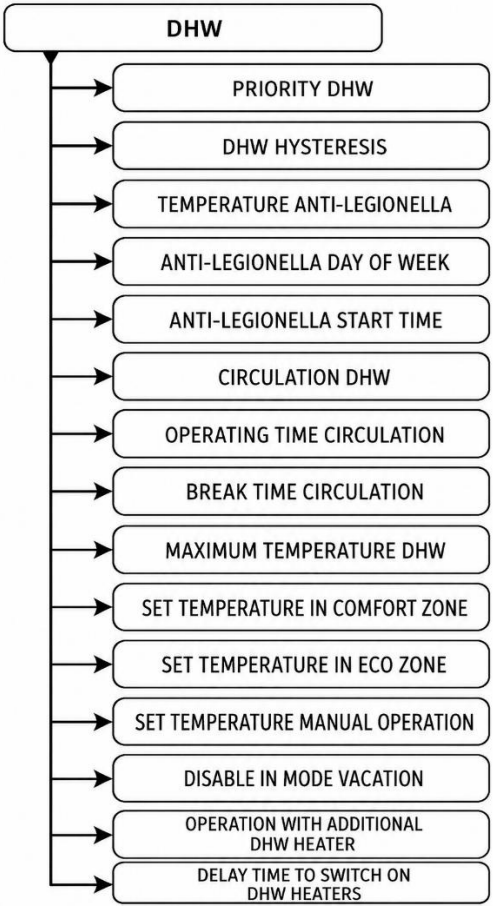

Figure 48. DHW menu structure.

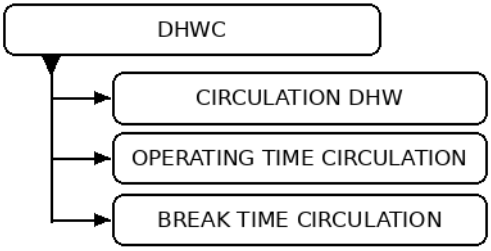

Figure 49. DHW recirculation menu structure.

Table 3. Service parameters in the DHW / DHWC menu.

Parameter name	Description	Setting range	Factory setting
Priority DHW	This parameter is relevant when operating in the 'low-loss header + heating installation (CH) + DHW' configuration and with two pumps • Yes – temporarily shuts down the heating installation (CH) circuits whilst the DHW is being charged (low-loss header + heating installation (CH) + DHW) or the deactivation of the low-loss header charging pump (2 pumps), which allows for prioritised and faster charging of the DHW tank • No – enables simultaneous operation of the heating installation (CH) and DHW systems.	Yes No	No
DHW hysteresis	This specifies the number of degrees below the set temperature the DHW tank temperature must fall before charging begins.	1÷30°C	4°C
Temperature Anti-legionella	This sets the target temperature to which the DHW tank must be heated in order to carry out thermal disinfection of the system. The 0/OFF setting disables this function. If the anti-Legionella temperature is not reached within 1 hour, the controller assumes that the disinfection has been carried out.	0/OFF÷75	0/OFF
Anti-legionella day of week	Specifies the day of the week on which the DHW tank will be sterilised to eliminate Legionella bacteria	Monday–Sunday	Tuesday
Anti-legionella start time	Specifies the time at which the DHW tank will be sterilised to eliminate Legionella bacteria	0÷23	12

Parameter name	Description	Setting range	Factory setting
Circulation DHW	This determines how the DHW recirculation pump operates: • off – circulation is switched off, • in schedule zones – circulation operates only in comfort zones, taking into account operating times and breaks, • constant – circulation operates continuously, taking into account operating times and breaks.	Off In schedule zones Constant	As set in the initial configuration
Operating time circulation	Specifies the operating time of the DHW circulation pump.	0÷60 min	20 min
Break time circulation	Specifies the interval between successive activations of the circulation pump	0÷60 min	20 min
Maximum temperature DHW	Specifies the maximum set temperature for the DHW tank	0÷80°C	55°C
Set temperature in comfort zone (sun)	Sets the DHW setpoint temperature when operating in scheduled mode in the comfort zone	0÷80°C (the maximum range value is limited by the 'Maximum temperature DHW' parameter)	As set in the initial configuration
Set temperature in eco zone (moon)	Sets the DHW setpoint temperature when operating according to the schedule in the eco zone	0÷80°C (the maximum range value is limited by the 'Maximum temperature DHW' parameter)	35°C
Set temperature manual operation	Sets the setpoint temperature for the DHW tank during manual operation.	0÷80°C (the maximum range value is limited by the 'Maximum temperature DHW' parameter)	45°C

Parameter name	Description	Setting range	Factory setting
Disable in mode vacation	Specifies how the DHW system operates in vacation mode. • Yes - DHW tank charging and DHW recirculation are switched off whilst you are on Vacation. • No - The tank operates normally, regardless of the active vacation mode.	Yes No	Yes
Operation with additional DHW heater	This specifies whether there is an additional heater in the DHW tank. For proper operation, the *Output funct.* *additional* parameter must be set to *DHW heater*.	Yes No	No
Delay time to switch on DHW heaters	This specifies the waiting time required for the main heat source to reach the set DHW temperature. Once this time has passed, the additional DHW heater is activated.	1÷120 min	20 min

CH1 - CH5

Depending on the number of circuits selected in the configurator or via the *Number of heating circuits* parameter in the system menu, the proper number of sub-sections will appear in that menu.

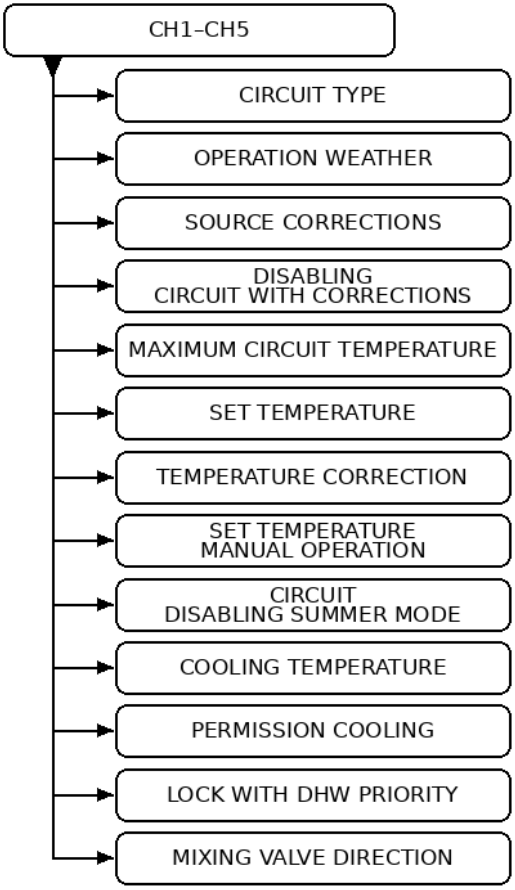

Figure 50. Menu for circuits CH1–CH5 structure.

Table 4. Service parameters in the CH1–CH5 menu.

Parameter name	Description	Setting range	Factory setting
Circuit type	Specifies the type of heating circuit: • Pump + radiator – pump control. • Pump + floor – pump control. • Mixing valve + radiator – control of the mixing valve actuator and pump • Mixing valve + floor – control of the mixing valve actuator and pump.	Pump + radiator Pump + floor Mixing valve + radiator Mixing valve + floor	As set in the initial configuration

Parameter name	Description	Setting range	Factory setting
Operation weather	Enable the specific circuit to operate in accordance with the weather characteristics. If you select *Yes*, you must connect the outdoor temperature sensor to the controller.	Yes No	No
Source corrections	This parameter applies only when the heating circuit is operating in *Program* mode. Specifies the signal sources used to reduce the setpoint temperature: • Without corrections – temperature compensation is not applied; the setpoint temperature remains constant. • With schedule – the setpoint temperature is adjusted according to a schedule. This allows you to programme automatic temperature reductions at specific time. • With thermostat – the setpoint temperature is adjusted based on a signal from an external ON/OFF room thermostat.	Without corrections With schedule With termostat	As set in the initial configuration
Disabling circuit with corrections	This setting applies only when the temperature reduction is selected according to the schedule or thermostat. Specifies whether a specific heating circuit is to be switched off completely when the set temperature is reduced.: • Yes – the heating circuit is disabled. • No – the heating circuit remains active with a reduced set temperature in accordance with the correction value.	Yes No	Yes – for direct circuits No – for circuits with a mixing valve
Maximum circuit temperature	This specifies the maximum setpoint temperature that can be set. Above this temperature, the protection against circuit overheating mode is activated.	10÷90°C (the maximum range value is limited by the maximum circuit temperature parameter)	90°C – for the radiator circuit 45°C – for the surface circuit

Parameter name	Description	Setting range	Factory setting
Set temperature	This sets the setpoint temperature for the specific circuit during constant-temperature operation. If *Operation weather* is set to Yes, the temperature value is taken from the weather curve	10÷90°C (the maximum range value is limited by the maximum circuit temperature parameter)	50°C – for the radiator circuit 25°C – for the surface circuit
Temperature correction	Specifies by how many degrees the setpoint temperature is to be reduced when a correction occurs.	-30÷0°C	-5°C
Set temperature manual operation	Sets the setpoint temperature for a specific circuit in manual mode. The temperature remains constant regardless of the weather curve, the selected correction source and the reduction value.	10÷90°C (the maximum range value is limited by the maximum circuit temperature parameter)	50°C – for the radiator circuit 25°C – for the surface circuit
Circuit disabling summer mode	Once the controller switches to summer mode, the circulation is either switched off or continues to operate.	Yes No	Yes
Cooling temperature	The setpoint temperature for a specific circuit in cooling mode.	10÷50°C	18°C
Permission cooling	Authorisation for the specific circuit to operate in cooling mode.	Yes No	No
Lock with DHW priority	This setting is only relevant in operating diagram low-loss header + heating installation (CH) + DHW, and when the DHW priority is enabled. During the charging of the DHW tank, the circuit is either switched off or remains on.	Yes No	Yes
Mixing valve direction	It determines the direction in which the mixing valve actuator opens, in order to increase the temperature of the medium in the circuit.	Right Left	As set in the initial configuration

2.2.14 Funkcje Auxiliary contact functions

The auxiliary contact built into the BWC 330 Pro controller can perform one of the following functions:

- **Off**

  The contact is normally open.

- **Boiler No. 2**

  This contact enables control of a second heat source in order to achieve a proper temperature in the low-loss header. The contact is closed once the conditions described in subsection 2.2.2 *Operation with a second heat source,* have been met.

- **DHW heater**

  The contact is closed when this function is selected and the following additional conditions are met: the service parameter *Operation with additional DHW heater* in the DHW service menu is set to *Yes*. After the time specified in the service parameter *Delay time to switch on DHW heaters* has elapsed, and if the required DHW setpoint temperature has not been reached, the heater is activated – the contact is closed.

- **Winter mode**

  The contact remains closed throughout the entire duration of winter mode. It opens when the mode is switched to summer or cooling.

- **Cooling mode**

  The contact remains closed throughout the entire cooling mode. It opens when the mode is switched to summer or winter.

- **Buffer cooling**

  The contact operates only in cooling mode. By closing or opening the contact, it controls the cooling source in order to achieve the proper setpoint temperature in the low-loss header/buffer tank. The setpoint temperature is read automatically. This is the lowest supply temperature set for the specific circuit. Cooling mode is described in detail in subsection 2.2.3.

2.2.15 Additional safety features

Protection against freezing of the medium

This function always operates regardless of the selected heat source or operating mode. If the temperature measured at the specific temperature sensor falls below 3°C, the circulation pump is activated and the mixing valve is opened (if present in the circuit).

If the temperature measured at the low-loss header sensor falls below 3°C, the heat source is activated (for automatic heat sources only) or

the main circulation pump is switched on (for manual heat sources). The protection against freezing is deactivated when the temperature measured in the circuit or at the low-loss header reaches 4°C. If, whilst protection against frost is active for any circuit, the temperature measured at the low-loss header falls below 10°C, the heat source is activated (for automatic sources only) or the main circulation pump is switched on (for manual sources). The heat source or pump is switched off if the temperature in the low-loss header reaches 10°C or before, once protection against frost for the specific circuit has been achieved. The operation described above takes place in summer mode. In winter mode, the heat source receives a signal to heat the low-loss header whenever the low-loss header temperature is lower than the setpoint.

Protection against circuit overheating

This function always operates regardless of the selected heat source or operating mode. When the temperature of a specific circuit, as measured by the proper circuit temperature sensor, exceeds the value set in the *Maximum circuit temperature* service parameter, the circulation pump will switch off and the mixing valve (if present in the circuit) will begin to close. The circuit will return to normal operation when the temperature drops and reaches the Maximum circuit temperature value.

Protection against manual feed boiler overheating

This function only applies when a manual feed boiler has been selected as the heat source. If the temperature measured by the heat source sensor exceeds the value set in the *Maximum temperature boiler* parameter, the controller will switch to protection against overheating. All heating circuits will be activated, regardless of the operating programme or mode, in order to dissipate the excess heat. The setpoint temperature for the circuits during protection against overheating will be the maximum value for the specific circuit type, as set in the service parameter *Maximum circuit temperature.* The protection function is deactivated when the temperature measured by the heat source sensor is 5°C lower than the value set in the M*aximum temperature boiler* parameter. The boiler circuits will then also return to normal operation in accordance with the set programme/mode.

CAUTION

The above functions do not work if the system has been disabled in Operating *mode* menu.

The protection against freezing does not work if any circuit is operating in cooling mode.

2.3 Scope of delivery

The BWC 330 Pro controller comes with:

- wall-mounting template,
- outdoor temperature sensor,
- six PT1000 temperature sensors, each 2 m long,
- power cable with plug,
- connectors and cable ties.

2.4 Technical data

Table 5. Technical data of the BWC 330 Pro controller

Parameter/part	Value/description
Power supply	230 V AC, 50 Hz
Power consumption	max 10,2 W
IP protection class	IP20
Safety class (EN 60730)	II
Software version	1.00
Ambient temperature	0÷55°C
Storage temperature	0÷55°C
Relative humidity	5÷80% no condensation
Output load	max 1,5 A per output
Device protection	6,3 A
Sensors characteristics	PT1000 in accordance with DIN EN 60751
Measurement range of the sensors	-39 ÷ 99°C
Temperature measurement resolution	1°C
Temperature measurement accuracy	± 1°C
Electrical cable connections	Connections 1-16 and 22-25: screw terminals 1,5 mm^2 Connections 17-21, G, 26-38, B2, A2: screw terminals 0,75 mm^2

2.5 Approvals and certificates

AFRISO Sp. z o.o. hereby declares that the product complies with:

- LVD directive: 2014/35/EU,
- EMC directive: 2014/30/EU,
- RoHS directive: 2011/65/EU.

3 Example application schemes with the required settings

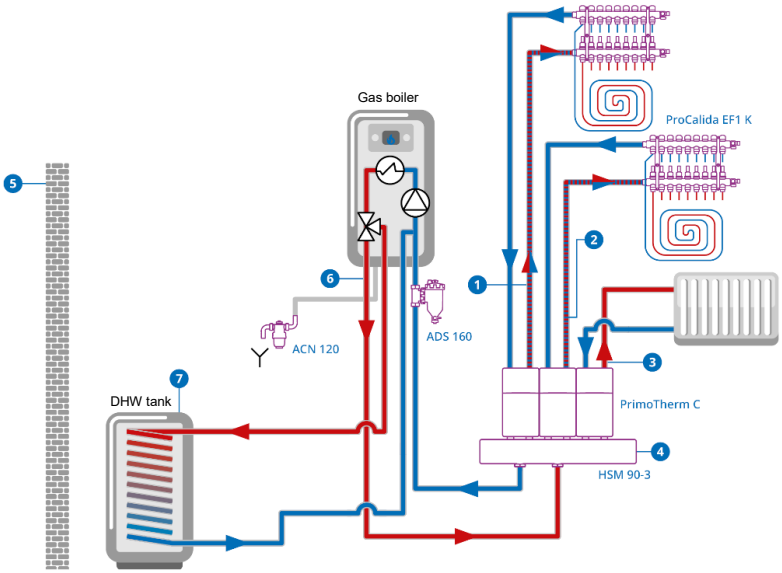

Figure 51. An example scheme of an installation with a gas boiler and three heating circuits: a radiator system and two underfloor heating circuits. In this installation, the DHW tank is filled automatically by the heat source control system.

Table 6. List of temperature sensors for an example connection to a gas boiler, as shown in Figure 51.

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
1	Circuit 1	A dedicated place or flush with the pipe after the circulation pump	Contacts G, 29	Required	-
2	Circuit 2	as above	Contacts G, 30	Required	-
3	Circuit 3	as above	Contacts G, 31	Required	-
4	Low-loss header	Pocket or surface-mounted on the housing	Contacts G, 27	Required	-
5	Weather	The external wall of the building on the north side, at least 1.5 metres above ground level	Contacts G, 26	Required / optional	Required if at least one circuit is weather-controlled
6	Source	A dedicated place at the source or flush with the	Contacts G, 32	Optional	With an automatic heat

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
		supply pipe from the source			source, a sensor is not required.
7	DHW tank	Pocket in the DHW tank	Contacts G, 28	Optional	In this operating diagram (low-loss header + heating installation (CH)), a sensor is not required.

Table 7. List of compatible devices for the example connection with a gas boiler shown in Figure 51.

Device name	Connection point at the BWC	Connection requirement	Note
Circulation pump 1	Contacts 7, 8	Required	-
Mixing valve actuator on circuit 1	Contacts 9, 10, 11	Required	-
Circulation pump 2	Contacts 12, 13	Required	-
Mixing valve actuator on circuit 2	Contacts 14, 15, 16	Required	-
Circulation pump 3	Contacts 17, 18	Required	-
Gas boiler	Contacts 22, 23	Optional	If heating is required, the BWC 330 controls the boiler. Use the proper contacts in accordance with the manufacturer's operating instructions.
Room thermostat	Circuit 1: Contacts 33, 34 Circuit 2: Contacts 35, 36 Circuit 3: Contacts 37, 38	Optional	A thermostat can be assigned to each circuit.

Table 8. Key steps in the configurator for the example connection of the BWC 330 Pro to a gas boiler, as shown in Figure 51. Some of the settings in the configurator are for illustrative purposes only.

Configurator step	Setting	Note
Type of heat source	Gas boiler	-
Number of circuits	3	-
Type of circuit 1	Mixing valve + floor	-
Determining the weather-compensated operation for circuit 1	No	-
Setting the setpoint temperature for circuit 1	25°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 1	Without corrections	-
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Type of circuit 2	Mixing valve + floor	
Determining the weather-compensated operation for circuit 2	Yes	In this case, a weather sensor must be connected.
Determining weather characteristics	Factory characteristics for underfloor heating	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 2	Schedule	Schedules should be defined by the system user.
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Type of circuit 3	Pump + radiator	-
Determining the weather-compensated operation for circuit 3	No	-
Setting the setpoint temperature for circuit 3	50°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 3	Thermostat	In this case, you should connect the room thermostat to the proper contacts.
Determining the closing time of the mixing valve	As specified on the nameplate of the actuator used. If several different actuators are used, enter the highest value.	The technical documentation provided by the actuator manufacturer should be checked.
Determining the minimum low-loss header temperature	30°C	The value should be selected properly in accordance with the flow temperature set at the source and the type of receiving installation.

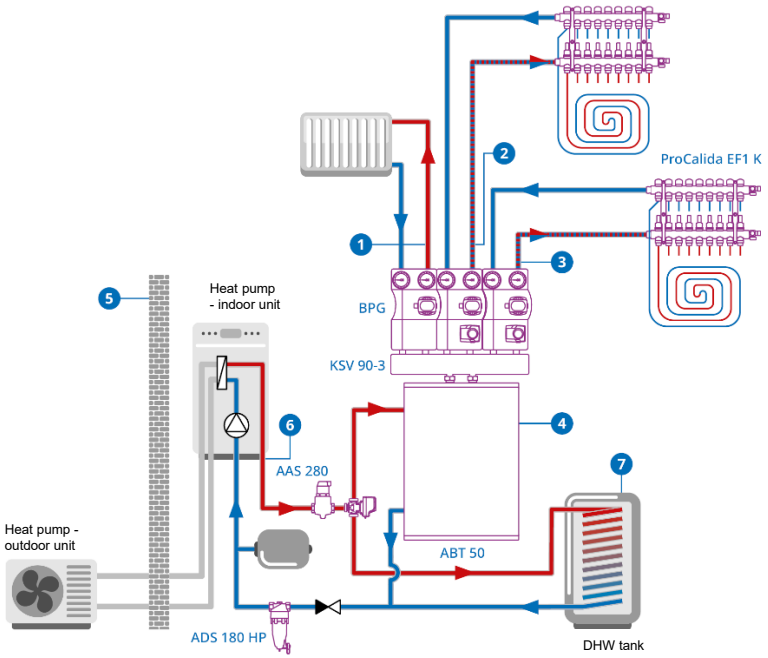

Figure 52. An example scheme of an installation with a heat pump and three heating circuits: a radiator system and two underfloor heating circuits. In this installation, the DHW tank is charged by the heat source's automatic control system.

Table 9. List of temperature sensors for the example heat pump connection shown in Figure 52.

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
1	Circuit 1	A dedicated place or flush with the pipe after the circulation pump	Contacts G, 29	Required	-
2	Circuit 2	as above	Contacts G, 30	Required	-
3	Circuit 3	as above	Contacts G, 31	Required	-
4	Low-loss header	A pocket in the buffer tank.	Contacts G, 27	Required	-
5	Weather	The external wall of the building on the north side, at least 1.5 metres above ground level	Contacts G, 26	Required / optional	Required if at least one circuit is weather-controlled
6	Source	A dedicated place at the source or flush with the	Contacts G, 32	Optional	With an automatic heat source, a

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
		supply pipe from the source			sensor is not required.
7	DHW tank	Pocket in the DHW tank	Contacts G, 28	Optional	In this operating diagram (low-loss header + heating installation (CH)), a sensor is not required.

Table 10. List of compatible devices for the example heat pump connection shown in Figure 52.

Device name	Connection point at the BWC	Connection requirement	Note
Circulation pump 1	Contacts 7, 8	Required	-
Circulation pump 2	Contacts 12, 13	Required	-
Mixing valve actuator on circuit 2	Contacts 14, 15, 16	Required	-
Circulation pump 3	Contacts 17, 18	Required	-
Mixing valve actuator on circuit 3	Contacts 19, 20, 21	Required	-
Heat pump	Contacts 22, 23	Optional	If heating is required, the BWC 330 controls the heat pump. Use the proper contacts in pump in accordance with the manufacturer's operating instructions.
Room thermostat	Circuit 1: Contacts 33, 34 Circuit 2: Contacts 35, 36 Circuit 3: Contacts 37, 38	Optional	A thermostat can be assigned to each circuit.

Table 11. Key steps in the configurator for the example connection of the BWC 330 Pro to a heat pump, as shown in Figure 52. Some of the settings in the configurator are for illustrative purposes only.

Configurator step	Setting	Note
Type of heat source	Heat pump	
Number of circuits	3	
Type of circuit 1	Pump + radiator	
Determining the weather-compensated operation for circuit 1	No	
Setting the setpoint temperature for circuit 1	50°C	The final temperature should be set by the installer or the user of the system.

Configurator step	Setting	Note
Define the temperature reduction in circuit 1	Thermostat	In this case, you should connect the room thermostat to the proper contacts.
Type of circuit 2	Mixing valve + floor	
Determining the weather-compensated operation for circuit 2	No	
Setting the setpoint temperature for circuit 2	30°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 2	Schedule	Schedules should be defined by the system user.
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Type of circuit 3	Mixing valve + floor	
Determining the weather-compensated operation for circuit 3	Yes	In this case, a weather sensor must be connected.
Determining weather characteristics	Factory characteristics for underfloor heating	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 3	Without corrections	-
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Determining the closing time of the mixing valve	As specified on the nameplate of the actuator used. If several different actuators are used, enter the highest value.	The technical documentation provided by the actuator manufacturer should be checked.
Determining the minimum low-loss header temperature	30°C	The value should be selected properly in accordance with the flow temperature set at the source and the type of receiving installation.

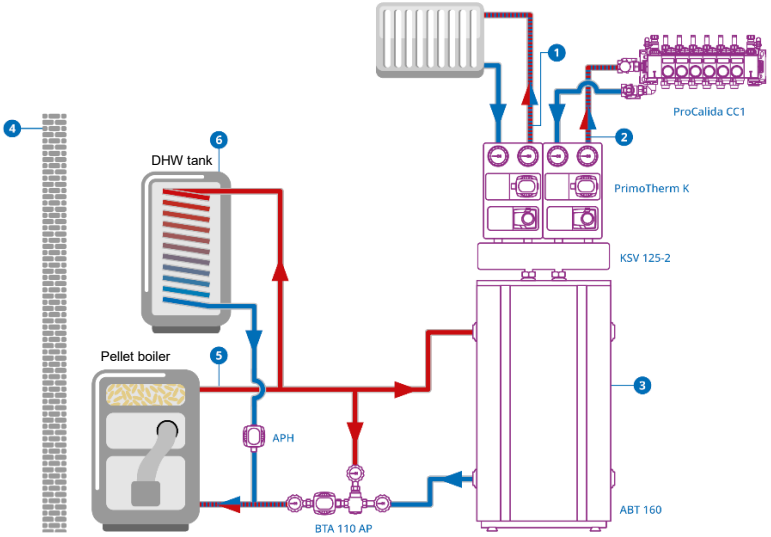

Figure 53. An example scheme of an installation with a pellet boiler and two heating circuits: a radiator system and underfloor heating. In this installation, the DHW tank is filled automatically by the heat source control system.

Table 12. List of temperature sensors for an example connection to a solid-fuel boiler as shown in Figure 53.

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
1	Circuit 1	A dedicated place or flush with the pipe after the circulation pump	Contacts G, 29	Required	-
2	Circuit 2	as above	Contacts G, 30	Required	-
3	Low-loss header	A pocket in the buffer tank.	Contacts G, 27	Required	-
4	Weather	The external wall of the building on the north side, at least 1.5 metres above ground level	Contacts G, 26	Required / optional	Required if at least one circuit is weather-controlled
5	Source	A dedicated place at the source or flush with the supply pipe from the source	Contacts G, 32	Optional	With an automatic heat source, a sensor is not required.
6	DHW tank	Pocket in the DHW tank	Contacts G, 28	Optional	In this operating diagram (low-loss header + CH), a sensor is not required.

Table 13. List of compatible devices for the example connection with a pellet boiler shown in Figure 53.

Device name	Connection point at the BWC	Connection requirement	Note
Circulation pump 1	Contacts 7, 8	Required	-
Mixing valve actuator on circuit 1	Contacts 9, 10, 11	Required	-
Circulation pump 2	Contacts 12, 13	Required	-
Mixing valve actuator on circuit 2	Contacts 14, 15, 16	Required	-
Pellet boiler	Contacts 22, 23	Optional	If the system requires heating, the BWC 330 controls the pellet boiler. The proper contacts on the boiler must be used in accordance with the manufacturer's operating instructions.
Room thermostat	Circuit 1: Contacts 33, 34 Circuit 2: Contacts 35, 36	Optional	A thermostat can be assigned to each circuit.

Table 14. Key steps in the configurator for the example connection of the BWC 330 Pro to a pellet boiler, as shown in Figure 53. Some of the settings in the configurator are for illustrative purposes only.

Configurator step	Setting	Note
Type of heat source	Pellet boiler	-
Operating diagram	Low-loss header + CH	-
Number of circuits	2	-
Type of circuit 1	Mixing valve + radiator	-
Determining the weather-compensated operation for circuit 1	Yes	In this case, a weather sensor must be connected.
Determining weather characteristics	Factory characteristics for underfloor heating	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 1	Schedule	Schedules should be defined by the system user.
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Type of circuit 2	Mixing valve + floor	
Determining the weather-compensated operation for circuit 2	Yes	In this case, a weather sensor must be connected.
Determining weather characteristics	Factory characteristics for underfloor heating	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 2	Schedule	Schedules should be defined by the system user.

Configurator step	Setting	Note
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Determining the closing time of the mixing valve	As specified on the nameplate of the actuator used. If several different actuators are used, enter the highest value.	The technical documentation provided by the actuator manufacturer should be checked.
Determining the minimum low-loss header temperature	40°C	The value should be selected properly in accordance with the flow temperature set at the source and the type of receiving installation.

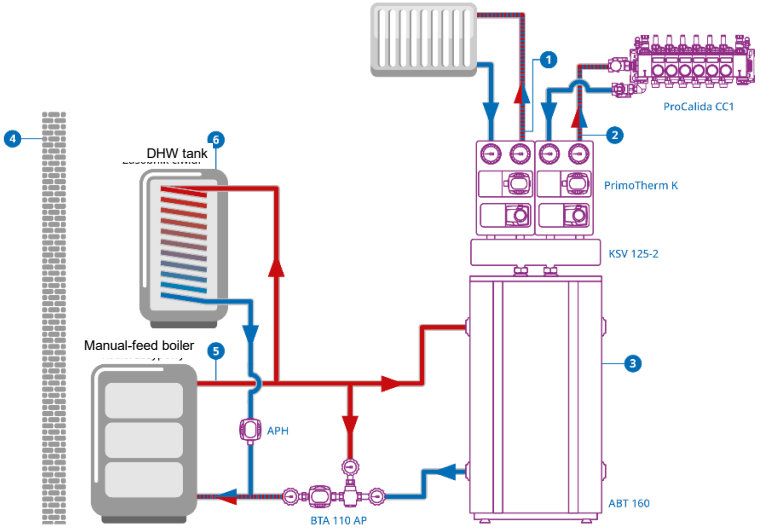

Figure 54. An example diagram of an installation with a manual-feed boiler and two heating circuits: a radiator system and underfloor heating. In this installation, the DHW tank is charged using the BWC 330 Pro controller.

Table 15. List of temperature sensors for the example connection to a manual-feed boiler, as shown in Figure 54.

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
1	Circuit 1	A dedicated place or flush with the pipe after the circulation pump	Contacts G, 29	Required	-
2	Circuit 2	as above	Contacts G, 30	Required	-
3	Low-loss header	A pocket in the buffer tank.	Contacts G, 27	Required	-

4	Weather	The external wall of the building on the north side, at least 1.5 metres above ground level	Contacts G, 26	Required / optional	Required if at least one circuit is weather-controlled
5	Source	A dedicated place at the source or flush with the supply pipe from the source	Contacts G, 32	Required	-
6	DHW tank	Pocket in the DHW tank	Contacts G, 28	Required	-

Table 16. List of compatible devices for the example connection with a manual-feed boiler shown in Figure 54.

Device name	Connection point at the BWC	Connection requirement	Note
Circulation pump 1	Contacts 7, 8	Required	-
Mixing valve actuator on circuit 1	Contacts 9, 10, 11	Required	-
Circulation pump 2	Contacts 12, 13	Required	-
Mixing valve actuator on circuit 2	Contacts 14, 15, 16	Required	-
Buffer tank charging pump (main circulation pump)	Contacts 22, 23	Required	-
DHW tank charging pump	Contacts 3, 4	Required	-
Room thermostat	Circuit 1: Contacts 33, 34 Circuit 2: Contacts 35, 36	Optional	A thermostat can be assigned to each circuit.

Table 17. Key steps in the configurator for the example connection of the BWC 330 Pro to a manual-feed boiler, as shown in Figure 54. Some of the settings in the configurator are for illustrative purposes only.

Configurator step	Setting	Note
Type of heat source	Manual-feed boiler	-
Operating diagram	2 pumps CH + DHW	-
Set temperature for DHW in the comfort zone	45°C	The final temperature should be set by the user of the system.
Number of circuits	2	-
Type of circuit 1	Mixing valve + radiator	-
Determining the weather-compensated operation for circuit 1	No	-
Setting the setpoint temperature for circuit 1	50°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 1	Thermostat	In this case, you should connect the room thermostat to the proper contacts.

Configurator step	Setting	Note
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Type of circuit 2	Mixing valve + floor	-
Determining the weather-compensated operation for circuit 2	No	-
Setting the setpoint temperature for circuit 2	30°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 2	Thermostat	In this case, you should connect the room thermostat to the proper contacts.
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Determining the closing time of the mixing valve	As specified on the nameplate of the actuator used. If several different actuators are used, enter the highest value.	The technical documentation provided by the actuator manufacturer should be checked.
Determining the minimum low-loss header temperature	45°C	The value should be selected properly in accordance with the flow temperature set at the source and the type of receiving installation.

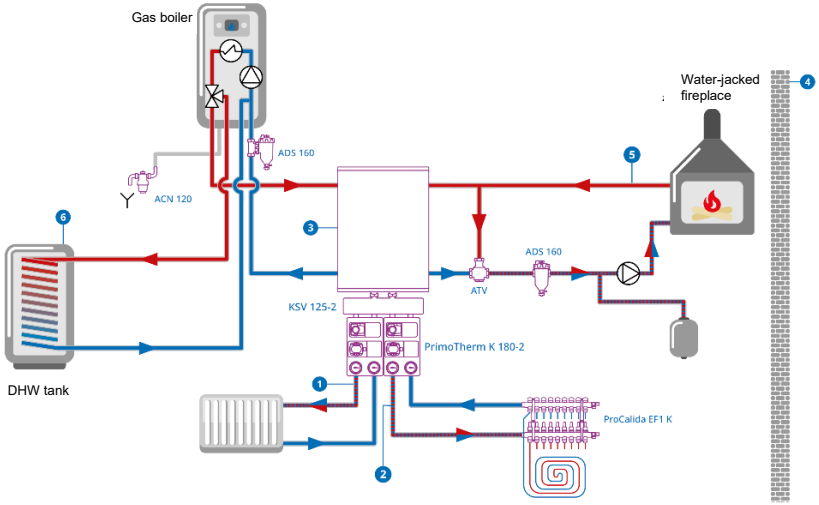

Figure 55. An example diagram of a hybrid system comprising a water-jacketed fireplace, a gas boiler and two heating circuits: a radiator system and an underfloor heating system. In this system, the DHW tank is charged by the gas boiler's automatic controls. In such a system, the BWC 330 Pro controller will be responsible for controlling the pump assembly components and the fireplace pump, given the absence of any automatic controls.

Table 18. List of temperature sensors for an example connection based on the diagram in Figure 55.

Sensor no.	Sensor name	Location on the system	Connection point at the BWC	Connection requirement	Note
1	Circuit 1	A dedicated place or flush with the pipe after the circulation pump	Contacts G, 29	Required	-
2	Circuit 2	as above	Contacts G, 30	Required	-
3	Low-loss header	A pocket in the buffer tank.	Contacts G, 27	Required	-
4	Weather	The external wall of the building on the north side, at least 1.5 metres above ground level	Contacts G, 26	Required / optional	Required if at least one circuit is weather-controlled
5	Source	Installation in a water jacket or on a supply pipe.	Contacts G, 32	Required	-
6	DHW tank	Pocket in the DHW tank.	Contacts G, 28	Optional	In this operating diagram (low-loss header + CH), a sensor is not required.

Table 19. List of compatible devices for the example connection shown in the diagram in Figure 55.

Device name	Connection point at the BWC	Connection requirement	Note
Circulation pump 1	Contacts 7, 8	Required	-
Mixing valve actuator on circuit 1	Contacts 9, 10, 11	Required	-
Circulation pump 2	Contacts 12, 13	Required	-
Mixing valve actuator on circuit 2	Contacts 14, 15, 16	Required	-
Buffer tank charging pump (main circulation pump)	Contacts 22, 23	Required	-
Gas boiler	Contacts 24, 25	Required	The proper contacts on the boiler must be used in accordance with the manufacturer's operating instructions.
Room thermostat	Circuit 1: Contacts 33, 34 Circuit 2: Contacts 35, 36	Optional	A thermostat can be assigned to each circuit.

Table 20. Key steps in the configurator for an example connection of the BWC 330 Pro, based on the diagram in Figure 55. Some of the settings in the configurator are provided for illustrative purposes only.

Configurator step	Setting	Note
Type of heat source	Manual-feed boiler	-
Operating diagram	Low-loss header + CH	-
Number of circuits	2	-
Type of circuit 1	Mixing valve + radiator	-
Determining the weather-compensated operation for circuit 1	No	-
Setting the setpoint temperature for circuit 1	50°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 1	Thermostat	In this case, you should connect the room thermostat to the proper contacts.
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Type of circuit 2	Mixing valve + floor	-
Determining the weather-compensated operation for circuit 2	No	-
Setting the setpoint temperature for circuit 2	30°C	The final temperature should be set by the installer or the user of the system.
Define the temperature reduction in circuit 2	Schedule	Schedules should be defined by the system user.
Mixing valve direction	Proper with mixing valve connection. Opening the valve should cause the temperature of the medium to rise.	Please check the connection of the supply and return pipes to the mixing valve.
Determining the closing time of the mixing valve	As specified on the nameplate of the actuator used. If several different actuators are used, enter the highest value.	The technical documentation provided by the actuator manufacturer should be checked.
Determining the minimum low-loss header temperature	45°C	The value should be selected properly in accordance with the flow temperature set at the source and the type of receiving installation.

Table 21. Service settings to be configured to ensure the BWC 330 Pro controller operates correctly with a second heat source.

Parameter name	Setting	Location	Note
Output funct. additional	Boiler no.2	System service menu	-
Operation with second boiler	Yes	System service menu	-

Outdoor permission temp. boiler no. 2	Factory setting: 0°C. See the 'Note' column.	System service menu	If the gas boiler is to start up regardless of the outside temperature, set the maximum value: 40°C.
Delay time to switch on boiler no. 2	Factory setting: 20 min. See the 'Note' column.	System service menu	If you do not want the gas boiler to switch on too early, in order to reach the proper set temperature of low-loss header, set the maximum value: 120 min.

4 Transport and storage

CAUTION

Risk of damage to the device if transported or stored incorrectly.

- ▶ Do not throw the device.
- ▶ Protect against water, dirt and dust.
- ▶ Store the device in a dry and clean room.

5 Mounting and commissioning

The mounting location for the BWC 330 Pro controller must provide protection against the weather conditions. The BWC 330 Pro must not be installed outdoors. The controller may be installed in any room where the temperature does not fall below 5°C. It is designed to be mounted on a wall in a horizontal orientation.

CAUTION

Risk of damage to existing installations

- ▶ When drilling into walls, take particular care not to damage electrical cables or other existing wiring.

5.1 Mounting

The BWC 330 Pro installation controller is designed for indoor mounting. It can be installed in a dry room where there is no condensation. The controller should be mounted on a wall. To do this, select proper wall plugs and screws depending on the type of wall, or use an alternative mounting method, e.g. double-sided adhesive tape.

5.2 Electrical connections

DANGER

Mains voltage (230 V AC) can cause serious injury or death.

- Do not expose the controller, actuating elements (circulation pumps, electric actuators) and wires to water.
- Do not touch any live parts. Never connect or disconnect wires without turning off the power.
- Work on electrical circuits should be carried out by a person with the appropriate qualifications and with the appropriate authorizations.
- The permanent electrical installation must be fitted with appropriate safety equipment (overcurrent circuit breaker and residual current circuit breaker).
- Before starting any installation or maintenance work, disconnect the controller from the electrical power supply and protect it from being turned back on.
- Improper installation may cause a fire hazard.

When connecting the electrical module to the domestic mains supply, you must comply with health and safety regulations and other relevant accident prevention regulations. You must also comply with all applicable national regulations.

When installing the controller and during future maintenance work, ensure that all connections are tightened to the proper torque to prevent the cables from becoming loose. Failure to do so may result in damage to electrical equipment and electric shock.

The controller must be powered using the cable with a plug included in the scope of delivery. All cables must be routed away from surfaces with temperatures exceeding their permissible limits. All cables must be routed through cable glands.

To secure the cables and thus prevent them from being accidentally pulled out, use the connectors and cable ties included in the controller's scope of delivery. The connection of individual actuators and other components must be carried out in accordance with the diagram in Figure 56. The same diagram is also affixed to the electrical connection cover. Chapter 10 contains a conceptual diagram of the connections.

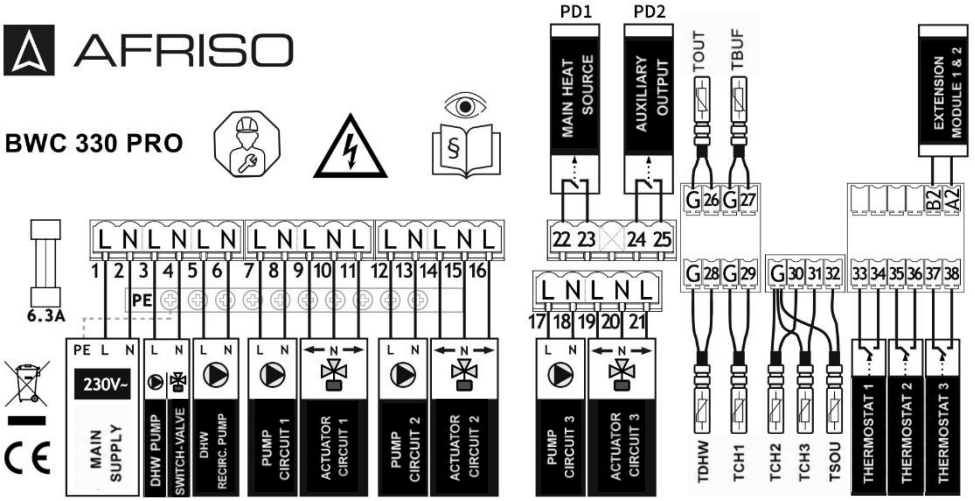

Figure 56. Wiring diagram for the BWC 330 controller.

Where:

1, 2 – main supply.

3, 4 – DHW tank charging pump or switching valve (depending on the selected diagram) *.

5, 6 – DHW recirculation pump.

7, 8 – circulation pump for circuit 1.

9, 10, 11 – actuator for the mixing valve of circuit 1.

12, 13 – circulation pump for circuit 2.

14, 15, 16 – actuator for the mixing valve of circuit 2.

17, 18 – circulation pump for circuit 3.

19, 20, 21 – actuator for the mixing valve of circuit 3.

22, 23 – potential-free contact for the main heat source.

24, 25 – potential-free contact for auxiliary output.

G, 26 – outdoor temperature sensor.

G, 27 – low-loss header/buffer tank temperature sensor.

G, 28 – DHW tank temperature sensor.

G, 29 – circuit 1 temperature sensor.

G, 30 – circuit 2 temperature sensor.

G, 31 – circuit 3 temperature sensor.

G, 32 – heat source temperature sensor.

B2, A2 – extension module for BWC 330 Pro.

33, 34 – potential-free (on-off) thermostat for circuit 1.

35, 36 – potential-free (on-off) thermostat for circuit 2.

37, 38 – potential-free (on-off) thermostat for circuit 3.

CAUTION

Connecting a 230 V AC power supply to the terminals of temperature sensors, room thermostats or the extension module will damage the controller and pose a risk of electric shock.

*- When using AFRISO AZV switching valves, connect the black signal wire from the actuator to terminal 3 and the brown wire from the actuator to terminal 1.

Recommended cable cross-section:

Actuators must be connected to the controller using their original cables. If an extension cable is required, use one with the same diameter as the original cable. However, please note the maximum diameters that will fit in the BWC 330 Pro controller's connections. The specific specifications are provided in section 2.4. When installing room thermostats or an extension module, use any two-core cable with a maximum single-core diameter not exceeding 0.75 mm^2.

5.3 Mounting temperature sensors

The temperature sensor should be fitted flush with the pipes using a cable tie or in another proper location, e.g. in a dedicated pocket. The approximate location and the need to connect the specific temperature sensor are described in detail in Chapter 3 of this operating manual.

5.4 First start-up

Before starting the controller for the first time, ensure that the system is filled and vented. Operating equipment without a heating medium, such as circulation pumps, heat sources and electric heaters, may cause damage or malfunction.

Once the power supply is connected, the BWC 330 Pro controller will launch the initial configurator. Each step of the configurator is described in detail in section 2.2.4.

6 Maintenance

The condition of the electrical components and the controller should be checked at least once a year. The tightening torque of all electrical connections should be checked. Loose connections should be tightened, and cable connectors should be checked for secure fit and tightness. Check the cables, cable connections and equipment for signs of overheating, e.g. discolouration or deformation. It is recommended that electrical measurements be carried out.

6.1 Replacing the fuse

If a fuse blows, it must be replaced. To replace the fuse, first switch off the regulator and unplug it from the mains socket. Next, remove the plastic cover from the slot and then slide the fuse out of it. Place the new fuse into the plastic cover and insert it back into the slot. The fuse used in the controller has the following specifications: I_{max} = 6,3 A, U_{max} = 250 V AC / 50 Hz, size 5 x 20 mm.

6.2 Characteristics of temperature sensors

Temperature [°C]	Resistance [Ω]	Temperature [°C]	Resistance [Ω]
-40	842,1	30	1116,7
-30	881,7	40	1155,4
-20	921,3	50	1194
-10	960,1	60	1232,4
0	1000	70	1270,7
10	1039	80	1308,9
20	1077,9	90	1347

Figure 57. Characteristics of PT1000 temperature sensors.

7 Troubleshooting

Problems that cannot be solved using the measures described in this chapter may only be resolved by the manufacturer or specialised personnel.

Table 22. Troubleshooting.

Problem	Cause	Repair
The controller does not start up	No power supply.	Check that the power supply is present and that the cables are connected correctly.
	Blown fuse.	Check the condition of the fuse; if it is faulty, replace it.
The mixing valve actuator is opening in the wrong direction	Incorrect connection of wires.	Check that the actuator cables are connected correctly, in accordance with the manufacturer's instructions.
	Incorrect opening direction.	You need to change the value of the service parameter *Mixing valve direction.*
The mixing valve actuator is not responding	Assigning the actuator to the wrong circuit.	Check which electrical connectors on the BWC 330 Pro the actuator is connected to. Connectors 9–11 correspond to the actuator in circuit 1, connectors 14–16 to circuit 2, and connectors 19–21 to circuit 3.
	Faulty actuator.	Check whether the actuator responds to the voltage supplied directly from the mains.
The circulation pump does not start	Incorrect connection of the wires.	Please check that the connection is correct.
	Faulty pump.	Check whether the pump starts when power is supplied directly from the mains.

Problem	Cause	Repair
	Assigning a pump to the wrong circuit.	Check which electrical connectors on the BWC 330 Pro the pump is connected to. In circuit 1, these are connectors 7–8; in circuit 2, connectors 12–13; and in circuit 3, connectors 17–18. For the DHW tank charging pump, the control connectors are 3–4.
The controller is not responding to signals from the room thermostat	Incorrect settings in the controller.	To ensure that a specific circuit operates with a room thermostat, set the parameter *Source corrections* to *With thermostat* in the service menu for that circuit.
	The thermostat has been connected incorrectly.	Check the connections on the thermostat terminals in accordance with the manufacturer's instructions. Check the settings on the thermostat.
	The thermostat has been assigned to the wrong circuit.	Please check which electrical terminals on the BWC 330 Pro the thermostat is connected to. In circuit 1, these are terminals 33–34; in circuit 2, terminals 35–36; and in circuit 3, terminals 37–38.
The extension module is not working properly	Incorrect connection with the BWC 330 Pro.	Check the connection between the controller and the module. The cable from connector A2 on the controller must be connected to connector A on the module. Similarly, the cable from connector B2 on the controller must be connected to connector B on the module.
	No circulation sensor connected.	Please check that a circuit temperature sensor is connected to the extension module. This is essential for proper operation of the module.

8 Decommissioning, disposal

1. Disconnect the power supply.
2. Dismount the device.
3. Dispose of the product according to local directives and guidelines. Electronic parts and batteries should not be disposed of with household waste. Return the product to the appropriate collecting point or to the manufacturer's or distributor's collecting point.

9 Warranty

Product guarantee in accordance with the general conditions of sale and delivery.

10 Conceptual electrical diagram

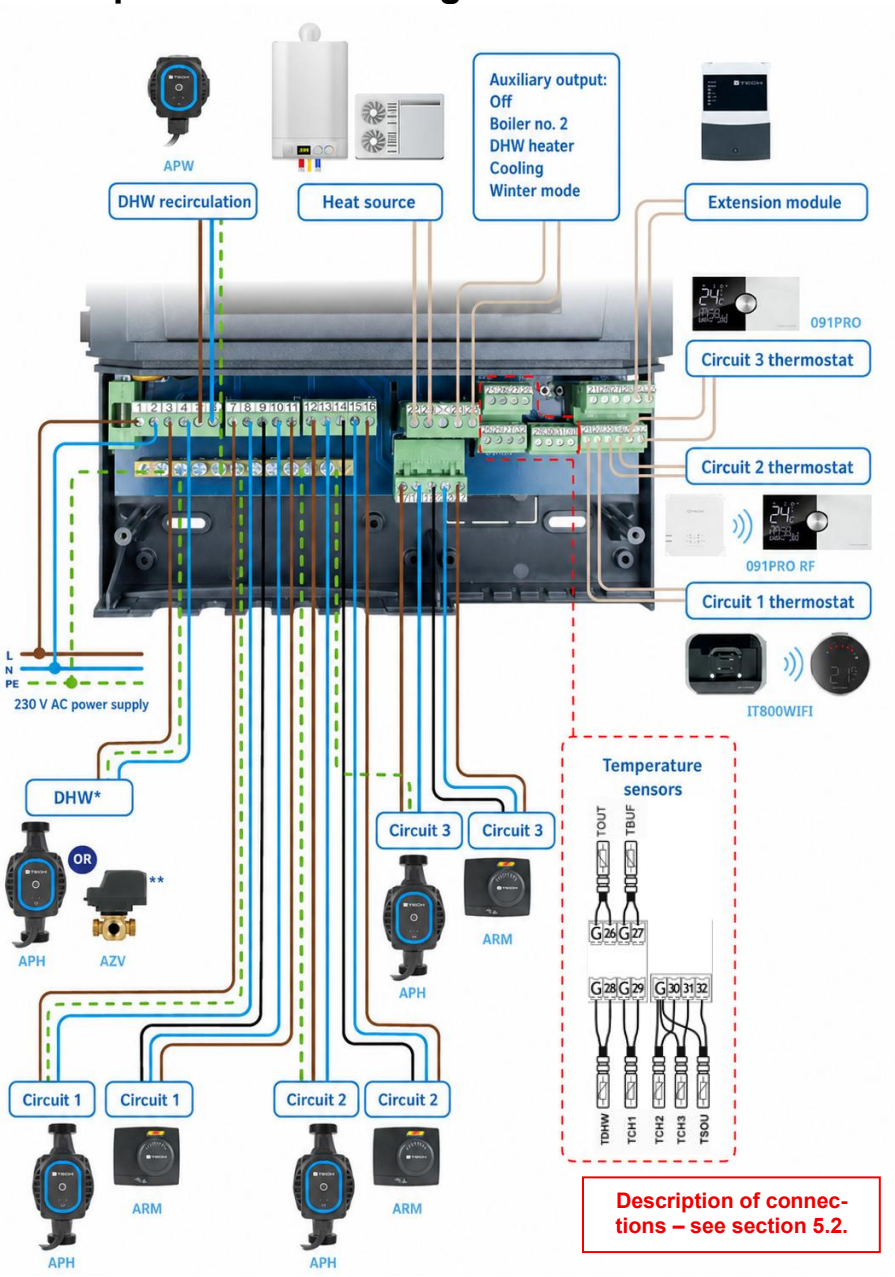

Figure 58. Conceptual electrical diagram showing the connection of the BWC 330 Pro controller to actuators and associated devices.

* Depending on the settings, the DHW tank may be charged by a circulation pump or a switching valve.

** If an AFRISO AZV switching valve is used, connect the brown actuator wire to terminal 1 and the black wire to terminal 3.

11 Declaration of Conformity

AFRISO instalacje pod kontrolą	Deklaracja zgodności UE *EU Declaration of Conformity* *EU-Konformitätserklärung*	Formularz F 33

Nazwa i adres producenta: AFRISO Sp. z o.o., Szałsza ul. Kościelna 7, 42-677 Czekanów
Manufacturer / Hersteller

Produkt/y: Sterownik instalacyjny
Product / Erzeugnis

Typ: BWC 330 Pro + rozszerzenie
Type / Typenbezeichnung

Dane techniczne: AC 230 V, 50 Hz, IP20
Techn. details / Betriebsdaten

Wymieniony powyżej produkt, objęty deklaracją, jest zgodny z wskazanymi poniżej wymaganiami unijnego prawodawstwa harmonizacyjnego:
The above-mentioned product, meets the requirements of the following European Directives:
Das bezeichnete Erzeugnis stimmt mit den Vorschriften folgender Europäischer Richtlinien überein:

- Dyrektywa niskonapięciowa (2014/35/UE)
  (Low Voltage Directive / Niederspannungsrichtlinie)
- Dyrektywa kompatybilności elektromagnetycznej (2014/30/UE)
  (Electromagnetic Compatibility Directive / Elektromagnetische Verträglichkeit)
- Dyrektywa RoHS (2011/65/UE)
  (RoHS Directive / RoHS-Richtlinie)

Zastosowane Normy techniczne:
Technical standards / Technische Richtlinien:

- PN-EN 60730-1:2012,
- PN-EN 60730-2-9:2011,
- PN-EN IEC 60300:2019-01

Wystawiona przez: Krzysztof Mainka, Dyrektor Techniczny.
Signed / Unterzeichner

W dniu: 23 września 2025 r., Szałsza, Polska
Date / Datum

Podpis:
Signature / Unterschrift

AFRISO Spółka z o.o.
SZAŁSZA, ul. Kościelna 7
42-677 CZEKANÓW
NIP 631-19-79-176, Regon 273439075

Wydanie 1	Niniejsza deklaracja zgodności zostaje wydana na wyłączną odpowiedzialność AFRISO Sp. z o.o.	str. 1/1