

EUROSTER UNI2

Weather-based heating system controller



MANUFACTURER: P.H.P.U. AS, Chumiętki 4, 63-840 Krobia

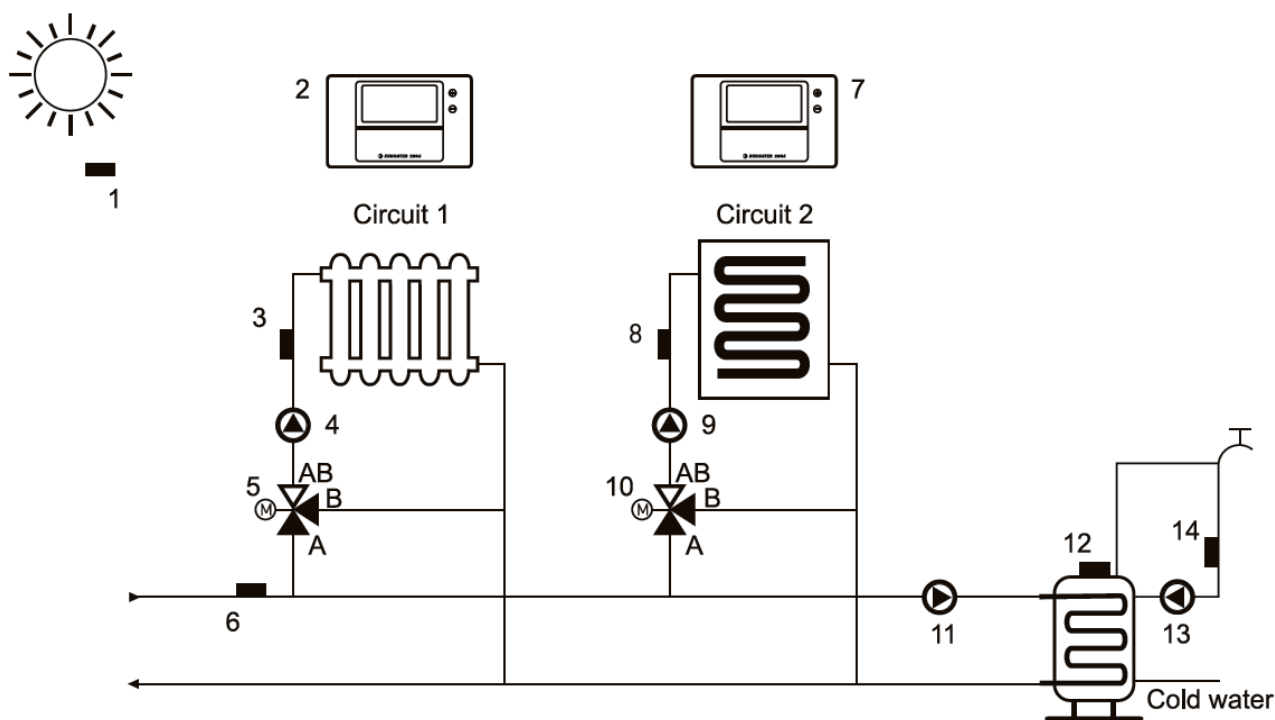
Please read the instruction manual carefully to fully use the controller potential and to ensure proper operation of central heating system.

Manual version: 14.04.2014

1. APPLICATION

UNI2 is a universal controller designed for heating systems equipped with:

- two central heating circuits with mixing valves (e.g. for heater supply and floor heating)
- domestic hot water (DHW) circuit
- DHW circulation circuit



1. External temperature sensor
2. Room control unit for circuit 1
3. Temperature sensor for circuit 1
4. Central heating pump for circuit 1
5. Mixer for circuit 1
6. Supply temperature sensor
7. Room control unit for circuit 2

8. Temperature sensor for circuit 2
9. Central heating pump for circuit 2
10. Mixer for circuit 2
11. Feed pump for DHW tank
12. Temperature sensor for DHW tank
13. DHW circulation pump
14. Temperature sensor for DHW circulation

2. FUNCTIONS

2.1. Central Heating Circuits

- independent setting of temperature and weather curve for each circuit
- independent control of each circuit with room control unit and weekly schedule
- ability to disable circuits,
- manual or automatic switching of summer/winter seasons – ability to set the start and end dates of the heating season
- selection of circuit operation: by switching the pump on and off or by lowering the temperature with a mixer when the pump is continuously switched on
- work with floor heating distributor
- ability to switch on the anti-frost mode

2.2. DHW Circuit

- control of weekly schedule
- DHW priority
- temporary limitation of DHW priority
- disinfection of DHW circuits

2.3. DHW Circulation Circuit

- control of weekly schedule
- time or temperature-based control of circulation

2.4. Communication

- possibility to combine several UNI2 and UNI3 controllers
- common weather sensor
- common supply temperature sensor
- common (one) boiler control output
- common (one) control output for audible alarm
- enabled remote reading of temperatures and status of transmitters (with the use of a special converter and software)

2.5. Utility Functions

- control of gas or other heating device using an auxiliary potential-free output (normally closed relay contact)
- alarm output (230V 50Hz output)
- event log (the controller records 100 most recent alarms or irregularities)
- language support: Polish, English, German and Czech
- ability to test each output
- overheating protection
- work with systems with high supply temperature (up to 120°C) – at customer's request
- freeze protection
- Anti-Stop algorithm – protection of pumps and valves against wear

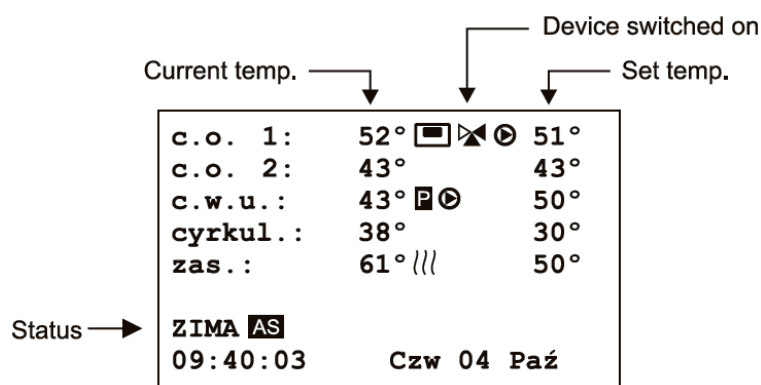
3. USER INTERFACE

3.1. Main Screen

The main screen shows the following information:

- Circuit temperatures: current and set (e.g. calculated based on the weather algorithm)
- devices switched on (pump, mixer, boiler)
- controller status (anti-stop, disinfection, heating season: WINTER/SUMMER and others)
- time and date

Example of screen with description is shown below.



The symbols shown in the controller mean the following:

- pump operation
- mixer operation
- heating switched on by room control unit
- active Anti-Stop algorithm
- error
- lack of communication
- DHW disinfection
- boiler input switched on
- DHW priority function switched on
- AF – frost protection turned on**

3.2. Multifunction Knob

The control is operated with a multifunction knob. In addition to a rotary face used to change the set value, it contains 4 buttons used for navigation (between menu items: up, down, next, previous) and a confirm button, located in the middle of the knob, which also clears the display of alarm warnings.

CAUTION! When the setting is changed, the new value is remembered after confirmation with middle or right button.

3.3. Light-emitting Diode

A light-emitting diode is located on the left-hand side of the display. Respective colors mean the following:

- green: Operation without errors
- red: Error has occurred
- blue: Active Menu
- yellow: Output test mode
- in case the communication is switched on a diode is flashing when the information are transmitted between the controllers

3.4. Reset and restoring factory settings

To restart a controller press Reset button, use e.g. a toothpick or a pen. Using reset does not delete settings.

To restore factory settings, press Reset button and hold it for at least 5 s, until "Restoring factory settings" is displayed.

After restoring factory settings language selection menu is displayed and operation parameters of the system circuits must be set up again.

3.5. List screens

The controller settings are arranged hierarchically, based on the circuit -> parameters order. Only the basic settings are available for the user. Advanced options are included in "Settings" and are protected with an access code.

3.6. Setting Screens

Selected parameters with commentaries are shown below.

3.6.1. User settings

CH1 circuit

- **schedule**
It can be used to switch off the circuit for selected time on selected days of the week.
- **circuit temperature**
It is the circuit temperature maintained with the use of the mixer. Three settings: for -20, 0, +10 for work with the weather compensator. One setting for work without the weather compensator.

CH2 circuit

- parameters identical to the CH1 circuit

DHW circuit

- **schedule**
It can be used to switch off the DHW circuit for selected time on selected days of the week.
- **DHW temperature**
It is the tank temperature to be maintained by the controller.
- **thermal cleansing of DHW**
The proper cleansing consists in heating the DHW tank to the temperature of 70°C and flushing the pipes with hot water.
Turning the thermal cleansing on enables heating of the tank to the temperature of 70°C and turning on the flow in the circulation circuit.
CAUTION! For the proper thermal cleansing, the minimum alarm temperature of the DHW should be 80°C.

DHW circulation circuit

- **schedule**
It can be used to set the time of DHW circulation circuit operation on selected days of the week.
- **circulation temperature**
The circulation pump is turned on when the temperature of the circulation sensor drops below the preset circulation temperature by the hysteresis value.
This option is active only if the temperature-based control of circulation is set.

Heating season

Turning the heating season off results in switching off CH circuits. The DHW circuits work normally.

WINTER sign is displayed to indicate activation of the heating season and SUMMER is displayed to indicate its deactivation.

- **Auto**
This function enables automatic turning on and off for the heating season according to the preset start and end dates.
Information on the date and time is used by a schedule algorithm and events log.
- **turning on/off**
This parameter enables to turn the heating season on or off manually.

Date and time

This window enables to enter a current date and time. Please remember that only correct settings enable a proper operation of the schedules and controlling algorithms as well as events log.

Settings

Entering advanced settings (installer settings).

3.6.2. Installer settings

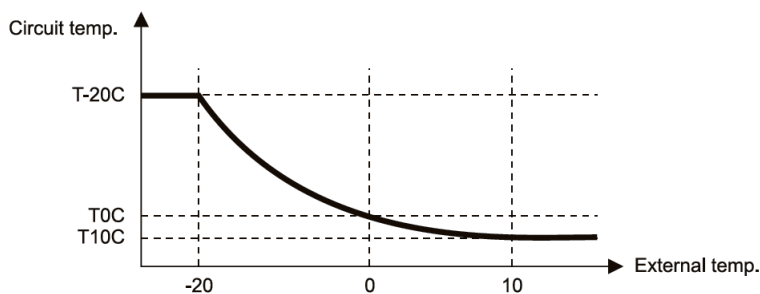
The installer settings are available after entering the access code. **The default code is "1, 2, 3".**

CAUTION! It is recommended to restore factory settings before configuring a new

controller.

Settings for CH1 heating circuit and identical ones for CH2 circuit

- **turning the circuit on/off**
This item enables to turn off the unused circuit.
- **Mixer**
 - **turning the mixer on/off**
This option enables to turn the mixer control off if it is not used in the CH circuit. In such case the (current and preset) temperatures are not displayed for the particular circuit.
When operating with turned off mixer the functions responsible for controlling the temperature and the continuous operation function are not available. The circuit overheating protection is unavailable as well.
 - **mixer dynamics**
Determines the mixer response time to changes in the circuit temperature. An excessive value may cause frequent cycling of the mixer, whereas the insufficient value may cause slowness in achieving the preset temperature.
 - **mixer hysteresis**
If the measured temperature of the circuit differs from the preset one by half of the value of the preset hysteresis, then the mixer position is not corrected.
- **alarm temperature**
CAUTION! Alarm temperatures for all circuits should be selected carefully. Incorrect setting of temperature level may cause improper operation or major failure of the system components.
The alarm temperature should be preset as the maximum safe temperature for a particular circuit.
- **room control unit**
This item enables to turn off the inputs of room control units. In such case heating will be switched on regardless of control units request.
- **continuous operation, reduction of CH temperature**
In certain cases continuous operation of the central heating pump is recommended regardless of whether the room is fully heated or not. In such case the "continuous operation" option should be activated. Heating is then switched off by reducing the temperature of the heating medium with the mixer, without switching the pump off. The circuit temperature is reduced by the value determined with the "CH temperature reduction" parameter.
When the "continuous operation" option is turned off, the pump will be turned off once the mixer is closed (when the room control unit or schedule requests the circulation turn-off).
The pumps are also switched off when the supply temperature drops below the shutdown temperature.
- **weather control unit**
The weather control allows for achieving thermal comfort, regardless of the external temperature. It is only required to connect an external temperature sensor.
Once the weather control is activated, the central heating circuit temperatures should be set for three external temperatures. On their basis the controller calculates the currently required circuit temperatures every 10 minutes.



CAUTION! Temperatures must meet the condition $T10^{\circ}\text{C} \leq T0^{\circ}\text{C} \leq T-20^{\circ}\text{C}$, otherwise the control will not work properly.

■ **frost protection, anti-frost temperature**

The anti-frost algorithm is activated when the temperature of the particular circuit sensor drops below the preset level. In such case both the boiler and the pump are activated. The schedule settings do not affect the operation of this protection.

CAUTION! The protection is disabled by default.

■ **sensor correction**

CH1 or CH2 circuit sensor correction allows to correct temperature reading errors, such as the ones resulting from improper contact between the sensor and the pipe.

■ **test**

The test option allows to switch on the connected devices manually. For safety reasons, when the selected output is being tested, all other outputs are switched off.

Settings for DHW circuit

■ **turning the circuit on/off**

This item enables to switch off the DHW circuit if it is not used.

■ **hysteresis**

It is a difference between the temperature at which the tank supplying pump is turned off and turned on.

■ **excess of DHW**

The "excess of DHW" parameter determines the value by which the temperature of the heat source must exceed the temperature of the tank. Setting a higher temperature ensures an adequate heating capacity and compensates the heat loss due to the imperfect insulation of pipes connecting the boiler and the tank.

If the temperature of the heat source is not sufficiently high, then the DHW tank supplying pump is not switched on.

■ **DHW priority**

Switching on of the DHW priority means that the controller switches off the CH circuits for the time of DHW heating in order to achieve the temperature preset for the tank as fast as possible.

In case of operation with active communication mode, the circuits to perform DHW priority must be selected in the communication menu.

■ **priority operation time, priority break time**

Time limit for the DHW priority operation prevents excessive cooling of rooms when the tank may not be properly heated in a reasonable time.

Non-zero priority break time must be set to use this function.

The DHW tank is heated for the time preset by the "priority operation time" parameter (P symbol active on the display screen), then the DHW priority is switched off for the "priority break time" (P symbol flashing on the display). Subsequently, the DHW priority is switched on again.

■ **alarm temperature**

If the tank is fed by another, additional heat source and if the tank temperature exceeds the alarm temperature, then the controller switches on the DHW pump which cools the tank. The pump is switched on only if the feeding temperature is lower than the preset alarm temperature of the DHW tank. It is indicated with an error of DHW overheating.

When using hot water special precautions must be taken in order to avoid burning.

■ **frost protection**

The anti-frost algorithm is activated when the temperature of the DHW circuit sensor drops below the preset level. In such case the boiler and the pump are switched on and "AF" symbol flashes on the display. The schedule settings do not affect the operation of this protection.

■ **sensor correction**

DHW circuit sensor correction allows to correct temperature reading errors, such as the ones resulting from improper contact between the sensor and the pipe.

■ **test**

The test option allows to switch on the connected devices manually. For safety reasons, when the selected output is being tested, all other outputs are switched off.

Settings for DHW circulation circuit

- **turning the circuit on/off**

This item enables to switch off the circulation circuit if it is not used.

- **Control**

- **temperature-based control of circulation**

Circulation may operate according to time or temperature parameters.

In case of temperature-based control, the circulation pump is running until the temperature of the circulation temperature sensor reaches the preset value.

- **operation time, circulation break time**

The parameters used only in the case of temporary control of circulation. The pump operation and idle times are preset.

- **frost protection**

It is activated if the temperature of the circulation sensor drops below the preset level. In such case the boiler and the circulation pump are switched on and "AF" symbol flashes at the display.

- **sensor correction**

Circulation circuit sensor correction allows to correct temperature reading errors, such as the ones resulting from improper contact between the sensor and the pipe.

- **test**

The test option allows to switch on the connected devices manually. For safety reasons, when the selected output is being tested, all other outputs are switched off.

Supply

- **shutdown temperature**

The controller operates only when the supply temperature is higher than the shutdown temperature. It is aimed at reducing consumption of electricity.

- **shutdown hysteresis**

It is a parameter which is added to the preset shutdown temperature in order to determine the temperature on the basis of which the controller switches on the heating circuits, e.g.

shutdown temperature – 30°C, shutdown hysteresis – 5°C, the controller turns on the heating circuits when the supply temperature reaches 35°C.

- **excess of supply**

The excess of supply parameter determines by how much the supply temperature should exceed the temperature calculated by the controller for circuits. It allows the user to set the proper temperature at the boiler (temperature item required for supply).

- **supply alarm temperature**

If the alarm temperature is exceeded at the supply, the alarm algorithm is activated to attempt to cool down the boiler.

CAUTION! The alarm algorithm heats circuits to temperatures approximate to alarm temperatures. It is important to ensure safe level of alarm temperature for each circuit.

- **Frost protection**

If the temperature of the supply sensor drops below the preset temperature, the controller switches on the transmitter, which controls the boiler, and "AF" sign flashes on the display.

- **supply sensor correction**

Supply temperature sensor correction allows to correct temperature reading errors, such as the ones resulting from improper contact between the sensor and the pipe.

Common

- **external sensor correction**

Correction allows to correct temperature reading errors, such as the ones resulting from improper location of the sensor.

- **audible alarm**

The "audible alarm" allows to switch off audible alarms generated by the controller. This does not affect the operation of the alarm output.

- **Communication**

- **switching on/off**

Enables to switch on communication control. Do not switch on communication when the controllers are not connected into a network.

■ device addresses

Enables to determine the addresses of the individual inputs and outputs.

Device addresses	Description
Proper	Physical address of the particular controller (identifier). Range from 1 to 247. For the proper functioning each controller in the network must have a unique address assigned.
Supply sensor	Identifies a controller that feeds a supply temperature. It may be a proper address or an address of another controller.
External sensor	Identifies a controller that feeds an external temperature. It may be a proper address or an address of another controller.
Boiler output	Identifies a controller with a boiler output active. It may be a proper address or an address of another controller.
Alarm output	Identifies a controller with an alarm output active. It may be a proper address or an address of another controller.

■ DHW-CH1, CH2 priority

In case of connecting UNI 2 and UNI 3 controllers and using DHW priority function, it is possible to define, which circuits are to operate the DHW tank feeding priority. The priority switched on – a particular circuit will be switched off during feeding of the DHW tank; the priority switched off – a particular circuit operates according to its settings while feeding DHW tank.

CAUTION! If only one UNI controller is operating in the system, or connection of independent supply and external sensors for each controller is not problematic, then the communication should not be switched on. Installing the controller functions as parallel to each other will improve reliability of the whole system.

Each controller in the network must have a **unique** address – identifier assigned. During the manufacturing process randomly selected addresses are assigned to each controller, however each system is different and generally requires assigning its own addresses.

Assigning an address in the field of the chosen temperature sensor indicates which controller will feed the measured temperature. It may be a proper address or an address of another controller.

More information is included in "Installation" Chapter.

■ events

The device records hazardous events. The display screen shows the following: Event number (from the time of installation), date, time, and comment, for example:

30. 19-09 14:16:38 DHW overheat

■ version

You must indicate the software version number when contacting the technical support center. These are two dates.

A: 23:07 24/4/2014 – display driver program

B: 10:08 10/2/2014 – relay driver program

4. INSTALLATION

4.1. Connection



CAUTION! Life-threatening voltage occurs at the controller and output cables. It is necessary to disconnect the plug from the power outlet before assembly. Assembly should be performed by a qualified installer. Do not install a controller with mechanical damage.



Pay careful attention to correct connection of protective conductors (PC) when connecting power cables.

Temperature sensors are not adapted to immersion in liquids.

The controller works only with actuators equipped with limit switches.

The controller should be installed in a location where the temperature does not exceed 40°C. All the necessary cables should be brought before mounting. The controller is designed for mounting on a 35mm DIN rail. It is recommended to install the controller in a protective cabinet.

Electrical conductors must be screwed to cubes in accordance with description and drawing, with proper labeling of wires. Neutral conductors should be screwed to N terminals, phase conductors to L terminals, and protective conductors to PE terminals. Conductors with cross-section of at least 0.75mm² should be used for connection.

The controller is equipped with six temperature sensors. There is no need for connecting the sensors related to circuits / functions that are switched off.

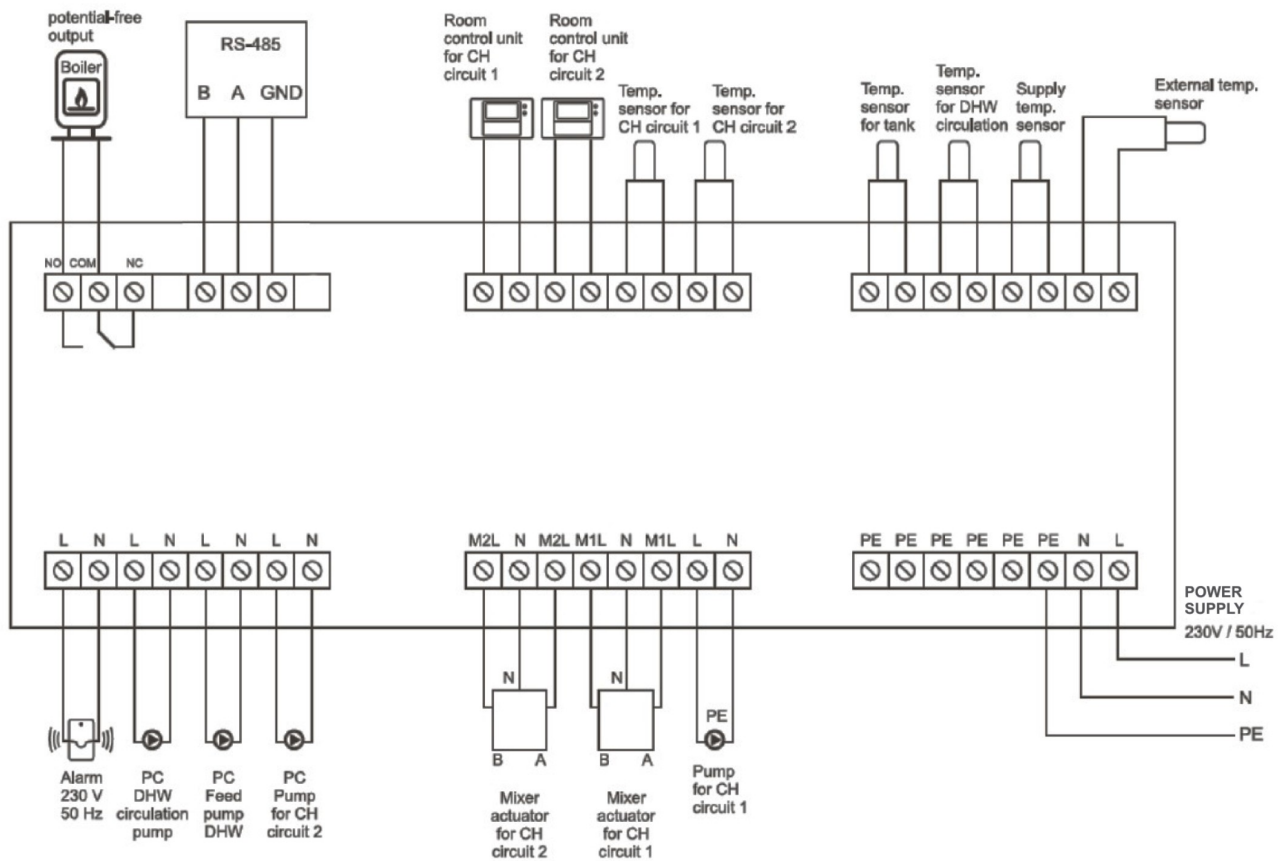
The sensors can be freely connected to the controller, without the need to maintain cable polarity. During assembly, the sensors should not be lead in parallel with electric conduits under voltage. It should also be kept in mind to ensure proper contact with the measured surfaces.

External temperature sensor should be placed in a shaded area, away from windows and doors, at a height of approximately 2 m above the ground.

Similarly, the support of room control unit may be activated or deactivated for each heating circuit. It is allowed to switch off control units with **normally open dry contact**. We recommend the use of Euroster devices.

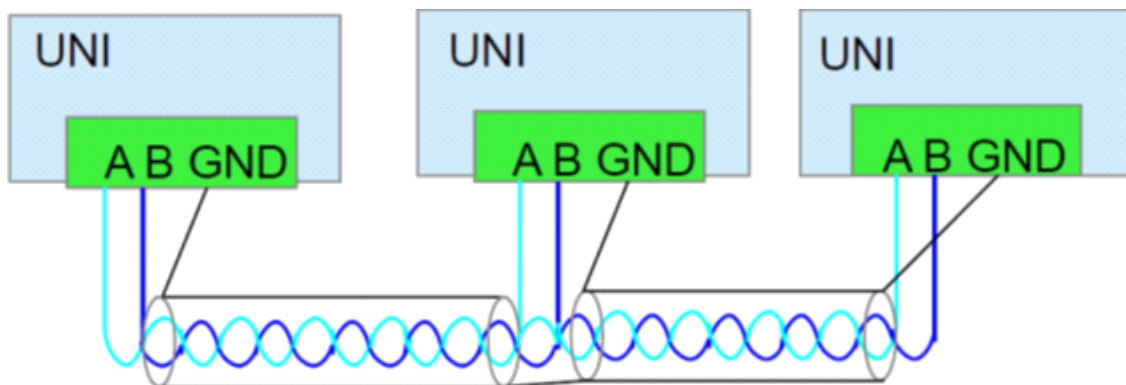
Note! Euroster Uni2 controller and the heating device connected to the "Boiler" output must be powered from the same power system phase.

The connection diagram is shown below.



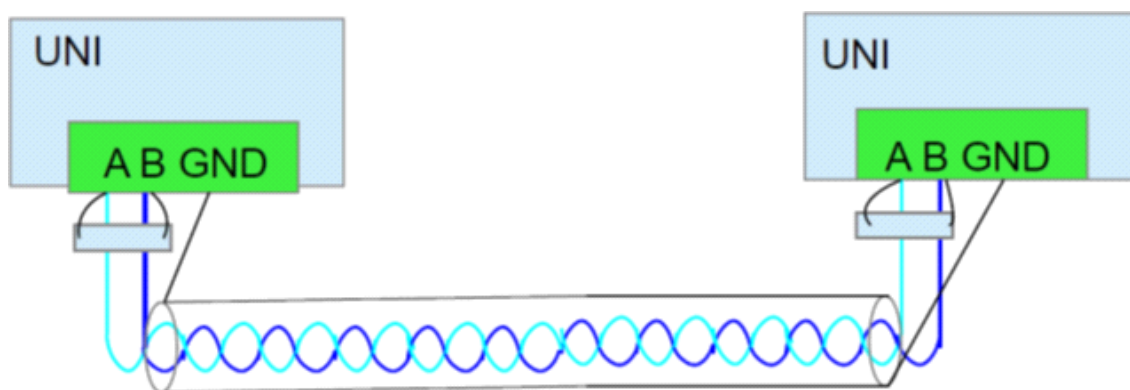
4.2. Communication

4.2.1. RS-485 connection



UNI2 controller is equipped with a possibility to communicate with use of RS-485 interface. The connection should be made with use of a shielded twisted pair in bus topology. A, B and GND terminals of the controller should be connected with A and B cables of the bus and a shield (figure).

The controllers are equipped with a linear polarization and return loss system. It is sufficiently effective in case of short connections. With connections of several hundred meters, termination resistors with resistance of 120 Ω should be placed at both ends.



4.2.2. Address allocation

After connecting a twisted pair, activate the communication and select the addresses of controllers in all connected controllers. Each of the controllers must be provided with a different address. It is advised to write down the addresses in a visible place in a boiler room, which will facilitate the configuration process.

4.2.3. Boiler control

The communication feature enables to control the boiler with the use of one controller output. The boiler will be switched on by any controller in the network.

UNI3 operates additional heat sources. This function is strictly connected with controlling the main boiler and is not operated by the communication protocol (it does not feature in UNI2). Therefore, in case of using an additional heat source, the operation of the additional heat source must also be switched on in the controller that switches on the main boiler. In other words, the main boiler must be connected to the output of the same controller, to which the sensor of the additional heat source is connected.

Moreover, in other controllers the parameter of boiler output to the address of the controller which controls the boiler should be set.

Sample configuration of UNI2 and UNI3 controllers connected to each other:

Address	UNI2	UNI3	Description
Proper	1	2	Unique address of each of the devices.
Supply sensor	1	1	A common supply sensor connected to UNI2 controller is used.
External sensor	2	2	A common supply sensor connected to UNI3 controller is used.
Boiler output	1	1	A common boiler switch-on output in UNI2 controller is used.
Alarm output	1	2	Alarm outputs are individual in each controller separately (assigned proper addresses).

5. CONTROLLER OPERATION

CAUTION! Once the controller is switched on the Anti-Stop algorithm is activated (pump and mixer outputs are switched on for 30 s). The Anti-Stop mode is repeated every two weeks, regardless of the heating season.

5.1. Supply temperature

UNI2 controller does not affect the temperature at the boiler (system supply). However, it calculates it and shows it on the display, and the user should ensure that the supply temperature exceeds the temperature currently required by the controller

(although does not exceed the alarm temperature). Otherwise, it is not possible to maintain proper temperatures in the system.

5.2. Heating Circuits

Heat in the selected circuit is activated if:

- the CH circuit is switched on
- the heating season mode is on (WINTER)
- the current time is indicated in the schedule of the selected circuit
- the room control unit is switched on or work with room control unit is off
- the DHW tank is heated or the DHW priority is off
- the supply temperature is higher than required

Normally, the circulation pump is switched on when the heating is switched on and the mixer is not closed. However, if the "continuous operation" is switched on, the pump runs continuously, while the room temperature is achieved by adjusting the circuit temperature. Details are described in Section "3.5.3. Installer Settings".

CAUTION!

The temperature set for the CH circuit is not displayed when:

- CH circuit is switched off
- the room control unit has reached the set temperature and has switched off the circuit
- break in the schedule work of the selected circuit is set
- DHW priority function is active

5.3. DHW Circuit

Heating of the DHW tank is on if:

- the DHW circuit is switched on
- the current time is indicated in the DHW schedule
- the tank temperature is too low
- the supply temperature is adequate

5.3.1. Disinfection of the DHW System

Maintaining low temperature of DHW (approximately 40°C) may lead to development of bacterial flora in the system. The following must be done in order to carry out disinfection:

- turn on disinfection at the controller
- ensure that the supply temperature is not lower than the temperature indicated by the controller – heating of tank and circulation circuit is initiated
- when the tank is properly heated the controller shows the "Disinfection complete" message
- open taps and flush the system with hot water (be careful – possible burn)

5.4. DHW Circulation

Circulation circuit is active when:

- the circulation circuit is switched on
- the current time is indicated in the circulation schedule
- the supply temperature is adequate
- and during disinfection

The circulation pump works in accordance with the set work and break times, or if the temperature of circulation sensor is too low.

5.5. Alarm Output

The alarm output is used to connect an additional, external alarm signaling device. Voltage is applied to the alarm output in the case of sensor failure, circuit overheat, or other errors.

CAUTION! The alarm signaling device must be adjusted to voltage in 230V network.

At the same, relevant information will appear on the display screen, along with the time of error.

5.6. Boiler Output

The Boiler output is used to switch on the heat source, for example gas boiler. It is equipped

with 3 contacts, marked NC, NO and COM. They are galvanically isolated from the rest of the system. They withstand a network voltage of 230V and a load of 4A.

The boiler output is switched on if it is necessary to heat any of the circuits.

CAUTION! The output status is not affected by the supply temperature.

6. POSSIBLE ERRORS IN THE CONTROLLER OPERATION

6.1. The selected circuit does not provide heat – closed valve or deactivated pump

Check:

- whether the heating season mode is activated
- whether a correct date (day of the week) and time is set
- whether heating is active in the schedule for the current day of the week and time
- in a system equipped with a weather sensor – whether indication of external temperature is correct and whether the temperatures are set correctly
- whether DHW with priority is activated
- in a system without a room control unit – whether it is deactivated in the controller
- in a system with a room control unit – whether it is activated and properly connected to the controller
- whether the mixer is not connected inversely and whether it is not jammed

6.2. The selected circuit is overheating

Check:

- whether the valve is not stuck
- whether the mixer actuator is running
- whether the actuator conduits are connected properly
- the mixer dynamics value

6.3. "Automatic reset" message

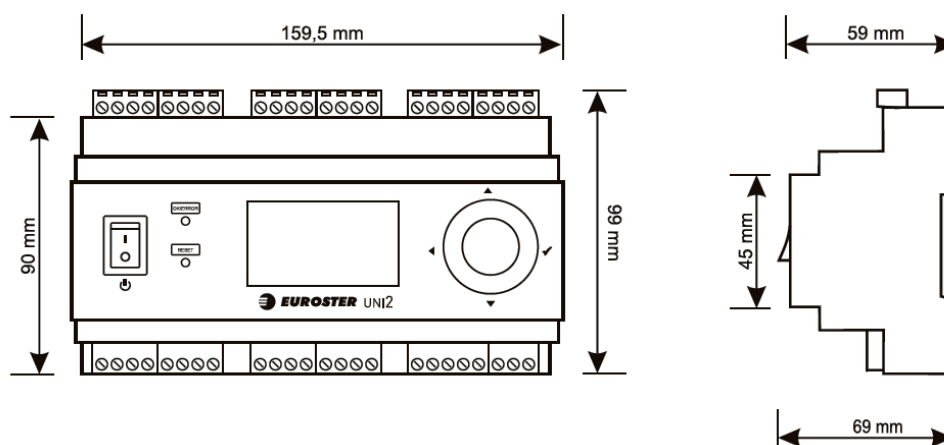
Identify the conditions under which the reset takes place. Check the software version. Contact the technical support centre.

6.4. Lack of communication (in case if communication is switched on)

Check:

- if the communication is switched on
- if there is a unique address assigned to each controller
- if the entered addresses of the sensors and outputs correspond to the addresses of the controllers
- if the voltages on A and B (RS-485) terminals in all controllers with no twisted pair connected are similar to the voltages of the twisted pair

7. DIMENSIONS



8. TECHNICAL DATA

Power supply: 230 V 50 Hz

Maximum power consumption: 4W

Maximum output load: 100W (each output)

Temperature adjustment range:

- CH circuits: 15°C to 90°C
- DHW circuit: 40°C to 75°C
- DHW circulation circuit: 20°C to 50°C

Temperature measurement range: -30°C to 120°C

Accuracy of temperature control and readings: 1°C

Work temperature range: 0-40°C

Storage temperature range: 0-55°C

Protection rating: IP20

Colour: grey, RAL7035

Assembly: on a 35mm DIN rail, in protective enclosure

Alarm output: 230 V 50 Hz

Boiler output: potential-free, normally closed, maximum load of 4A 230V 50Hz

Pump supply output: 230 V 50 Hz

Supply outputs for mixer actuators: 230 V 50 Hz

Controller weight: 545g

9. CONTENTS

UNI2 controller

External temperature sensor (5m)

Supply temperature sensor (1.5m)

Tank temperature sensor (2.5m)

Circulation temperature sensor (2.5m)

CH circuit temperature sensor (1.5m)

Sensor bands (5 pcs)

Dowels for external temperature sensor – 2 pcs

User Manual with warranty card

Power cord (1.5m)

10. STANDARDS AND CERTIFICATES

UNI2 controller meets the requirements of the following EU directives: EMC, LVD and ROHS.

CE Declaration of Conformity is available on the website: <http://www.euroster.com.pl>

11. INFORMATION ON ELECTRONIC WASTE DISPOSAL



We have made every effort to ensure that the controller is operational as long as possible.

However, the device is subject to natural wear, and if it no longer meets your requirements, please dispose it at an electronic waste collection point. Please provide the cardboard packaging for recycling.

WARRANTY CARD
EUROSTER UNI2 Controller

Warranty Terms and Conditions:

1. The warranty is provided for a period of 24 months from the date of sale.
2. A faulty controller with the warranty card should be delivered to the point of sale.
3. Claims under the warranty shall be examined within 14 working days from the date on which the manufacturer receives the device.
4. Only the manufacturer or other entity, explicitly authorized by the manufacturer, can make any repairs of the product.
5. The warranty becomes void in the case of mechanical damage, improper use and repairs by unauthorized persons.
6. The warranty on the consumer product does not exclude, limit or suspend the buyer's rights resulting from the product non-conformity.

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Date of sale	serial number/date of manufacture	company stamp and signature	technical support: tel. 65-57-12-012
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The warranty is provided by:

P.H.P.U. AS Agnieszka Szymańska-Kaczyńska, Chumiętki 4, 63-840 Krobia