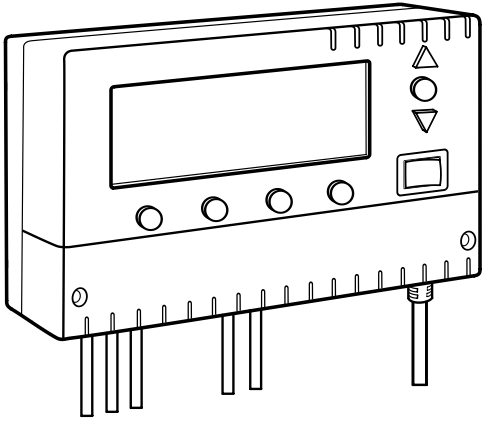
AURATON®

USER MANUAL EN

# 1111 Multi



# AURATON 1111 Multi

*AURATON 1111 Multi* is a modern, processor-based controller designed for C.H. and D.H.W. circulation pumps. It can also be used for a hydronic fireplace heating system in the C.H.

In addition, the *AURATON 1111 Multi* can be used with forced-draft coal- and pulverized coal-fired C.H. boilers.

# 1. Display

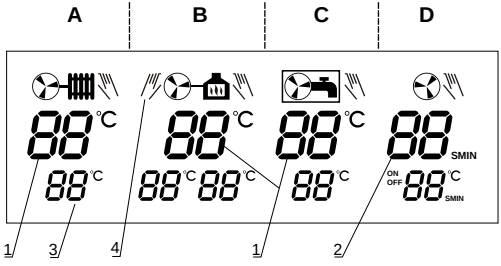
The display of the AURATON 1111 MULTI controller divided into four part, each controlling a separate device.

Part **A**:
controls the central heating pump "C.H."

Part **B**:
controls the central heating pump "C.H." and the three-way valve "Z" or the second central heating pump (fireplace heating system).

Part **C**:
controls the domestic hot water pump "D.H.W"

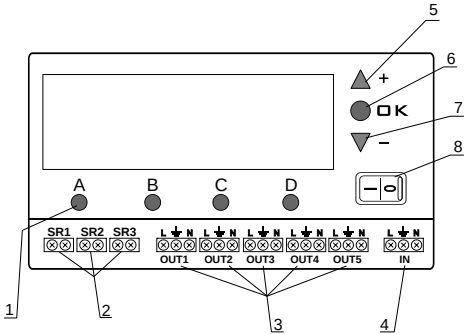
Part **D**:
controls the fan (blower).




1. Display of the temperature measured by individual sensors.
2. Fan operation time and time between blow-downs
3. User-defined setting
4. Manual operation indicator

## 2. Controls and terminals

**Warning:** unscrew plastic cover for terminals.



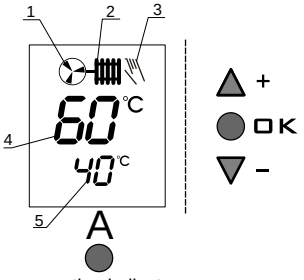

1. A, B, C, D buttons to define individual settings
2. Temperature sensors terminals (SR1, …., Sr3)
3. Actuators terminals (OUT1, …, OUT5)
4. Power supply terminals
5. “+” (plus) button - increase the temperature settings
6. “OK” button - activate the manual mode and accept
7. “-” (minus) button - decrease the temperature settings
8. Main power switch

### 2.1 General

1. Before cabling the controller remove the protecting plugs by cutting off.
2. The supplied kit includes only one sensor (about 2.5 m). If it is necessary to increase the controller functionality, buy an optional temperature sensor (about 2.5 m).

   If the length does not fit, a 15-metre sensor can be purchased.

## 3. Controller in the C.H. mode
**(part A of the display)**




1. C.H. pump operation indicator
2. C.H. pump sensor indicator
3. manual operation indicator
4. Current C.H. sensor temperature (Sr1)
5. Temperature setting

The pump-controller unit forces the water flow in the C.H. system with a coal- or gas-fired boiler without the punt controlling circuit. The controller's sensor measures the water temperature o the supply line to the C.H. system.

In the C.H. system with a coal-fired boiler, the controller will witch off the circulation pump when the flame in the boiler is extinguished. Water pumping with the flame off is not recommended as then the water in the boiler would cool faster than in the radiators. The optimum temperature can be set on the controller (most often 40oC)

In the C.H. system with a gas-fired boiler, the temperature must be lower than the temperature set on the C.H. boiler thermostat. Setting the temperature above the dew point prevents "sweating" of the boiler while the water in the C.H. system is heating up.

The controller features also the *GUARD*, function to prevent seizure of the pump impeller when the pump is not used. After the heating season, an additional processor starts the pump automatically every 14 days for 30 seconds. To make sure the system activates after the heating season, leave the controller on.

## 3.1 Installation

### 3.1.1) Mounting the controller

Mount the controller on the wall or a bracket with two screws (expansion plugs with screws are included in the controller kit). Fix the conductors from the controller on the wall with holders.

### 3.1.2) Mounting the sensor

Before wring cut off the protective plugs. Connect the temperature sensor to the **SR1** terminals on the controller. Then, install the sensor on an uncovered outlet pipe from the boiler (as close to the boiler as possible).

**NOTE**: If the coal- and gas-fired boilers are used for the same C.H. system, the sensor should be installed where the two outlets join and then insulated.

### 3.1.3) Connecting the pump

Connect the pump to the **OUT1** terminals on the controller. Connect the green or yellow-green conductor to the terminal ⏚ (protective earth or protective earth and neutral), connect the blue conductor to the "**N**" terminal, and the brown one to the terminal "**L**".

### 3.1.4) Checking the wiring correctness

Check if the wiring is correct and fasten the terminal box cover with screws.

### 3.1.5) Connecting the power supply to the controller

When the conductors are secured against accidental breaking, connect the power cable to the **IN** terminals (L, ⏚, N). Then plug into a 230 VAC/50 Hz socket with an earthing pin.

**NOTE:** the ambient temperature in the controller location should not exceed 40oC

## 3.2 Operation of the controller

### 3.2.1) Starting the controller

Put the switch  in position “I”. The display will show the symbol "  ", current temperature on the sensor (4) and the temperature setting (5).

### 3.2.2) Display description

The indicator in the upper part of the display (4) shows the current sensor temperature, and the indication in the lower part (5) shows the temperature setting. Moving blades on the indicator (1) indicate that the C.H. pump is in operation.

### 3.2.3) Changing the temperature settings

Press the “**A**” button below the temperature settings - the digits will blink and still indicate the current setting. Use the “**+**” (increase) or “**-**“ (decrease) buttons to set the required temperature. Then confirm by pressing “**OK**” within 10 seconds. Otherwise, the new set value will not be stored in the memory and the controller will return to the previous setting.

### 3.2.4) Automatic operation

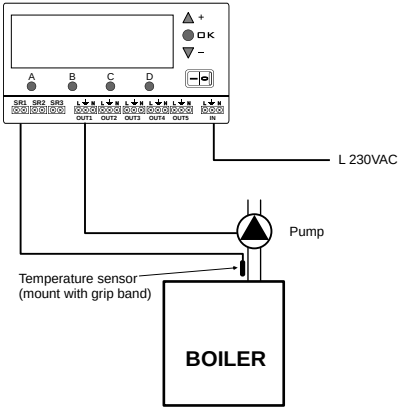
When the settings are made, the controller switches the pump on and off depending on the set temperature. In the C.H. system, the pump is activated when the temperature in the sensor location exceeds the setting by 2oC and is deactivated when the temperature drops 2oC below the value set on the controller.

### 3.2.5) Manual operation - continuous

To activate the C.H. pump manually (irrespective of the temperature on the SR1 sensor, press and hold the “**OK**” button and briefly depress the button “**A**”. The hand symbol  (3) will appear on the display. To switch off the pump manually, again press and hold the “**OK**” button and briefly depress the button “**A**”.

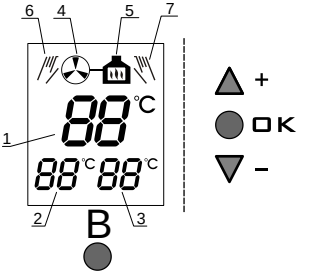
**NOTE**: When only the SR1 sensor is connected, the remaining functions of the controller are not active, i.e. the C.H. pump in the fireplace heating system, D.H.W. pump, and the fan operation are not indicated.

### 3.3 Wiring diagram




## 4. Controller operating with C.H. pump and three-way valve “Z” (or the other C.H. pump (- fireplace heating system)

**(part B of the display)**




1. Current C.H. sensor temperature (SR2)
2. C.H. temperature setting in the fireplace heating system

3. temperature setting of three-way valve or the other C.H. pump
4. C.H. pump operation indicator
5. operation indicator - three-way valve or the other C.H. pump
6. C.H. pump in manual
7. three-way valve or the other C.H. pump in manual

When operating with a hydronic fireplace, the *AURATON 1111 MULTI* uses two controlling outputs:

- to the water pump of the fireplace circuit
- to the valve with an actuator or to the other pump which is necessary for correct cooperation of the hydronic fireplace and the C.H. system.

When the controller is energized, the digital sensor measures the temperature of the water in the fireplace system and it is possible to divide the water into two independent channels.

Depending on the water temperature in the fireplace system, the controller automatically switches on or off the fireplace C.H. water pump and activates the valve or the other pump.

The *AURATON 1111 Multi* features also the *GUARD*, function to prevent seizure of the pump impeller when the pump is not used. After the heating season, an additional processor starts the pump automatically every 14 days for 30 seconds. To make sure the system activates after the heating season, leave the controller on.

## 4.1 Installation

### 4.1.1) Mounting the controller

Mount the controller on the wall or a bracket with two screws (expansion plugs with screws are included in the controller kit). Fix the conductors from the controller on the wall with holders.

### 4.1.2) Mounting the sensor

Before wring cut off the protective plugs. Connect the temperature sensor to the **SR2** terminals on the controller. Then, install the sensor on an uncovered outlet pipe from the boiler (as close to the boiler as possible). The sensor shall not be immersed in liquids or placed in combustion gases outlets to the chimney.

#### 4.1.3) Connecting the C.H. pump

Connect the pump to the **OUT2** terminals on the controller (L, ⏚, N). Connect the green or yellow-green conductor to the terminal "⏚" (protective earth or protective earth and neutral), connect the blue conductor to the "**N**" terminal, and the brown one to the terminal "**L**".

#### 4.1.4) Connecting the valve

Connect the pump to the **OUT3** 2 terminals on the controller (L, ⏚, N). Connect the green or yellow-green conductor to the terminal "¤" (protective earth or protective earth and neutral), connect the blue conductor to the "**N**" terminal, and the brown one to the terminal "**L**".

#### 4.1.5) Connecting the power supply to the controller

When the conductors are secured against accidental breaking, connect the power cable to the **IN** terminals (L, ⏚, N). Then plug into a 230 VAC/50 Hz socket with an earthing pin.

**NOTE**: the ambient temperature in the controller location should not exceed 40°C

## 4.2 Operation of the controller

#### 4.2.1) Starting the controlle

Put the switch  in position "I". All display segments will light up for about 2 seconds. Then, the display will show the current temperature on the sensor.

#### 4.2.2) Settings range

The temperature (from 0°C do 99°C) is measured by the SR2 sensor. The C.H. pump is controlled by means of the OUT 2 output. The three-way valve or the other C.H. pump are controlled by means of the OUT 3 output. The settings range for the C.H. pumps and the three-way valve (or the other C.H. pump) is 10°C do 90°C, the hysteresis (temperature difference between the activation and deactivation) is 4°C.

#### 4.2.3) Changing the temperature settings

Press the "**B**" button below the temperature settings - the temperature setting indicator for the fireplace heating system will start to blink. Then, use the "**+**" (increase) or "**-**" (decrease) buttons to set the required temperature.

Confirm by pressing "**OK**" within 10 seconds. Otherwise, the new set value will not be stored in the memory and the controller will return to the previous setting.

**4.2.4) Automatic operation**

When the settings are made, the controller switches the pump on and off depending on the set temperature. In the C.H. system, the pump and the valve are activated when the temperature in the sensor location exceeds the setting by 2ɔC, and are deactivated when the temperature drops 2ɔC below the value set on the controller.

**4.2.5 Manual operation - continuous**

*Step 1*:
To activate the C.H. pump manually (irrespective of the temperature on the SR2 sensor), press and hold the "**OK**" button and briefly depress the button "**B**". The hand symbol (3) will appear on the display (to the left of the C.H. pump operation pictogram in the fireplace heating mode).

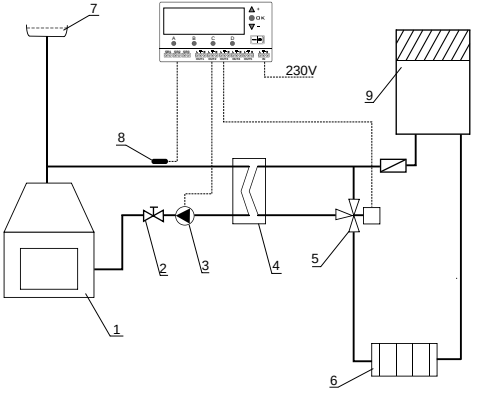
*Step 2*:
If within 2 seconds the "**B**" button is pressed again (with the "**OK**" depressed), the manual mode " " for the C.H. pump will be deactivated, and simultaneously the manual mode for the tree-way valve (or the other C.H. pump) will be activated - the hand symbol to the right.

*Step 3*:
If within the following 2 seconds the "**B**" button is pressed again (with the "**OK**" depressed), the manual mode will be activated for the C.H. pump, the tree-way valve (or the other C.H. pump) in the fireplace heating system (" " and " ").

*Step 4*:
If within the following 2 seconds the "**B**" button is pressed again (with the "**OK**" depressed), the manual mode will be deactivated for the C.H. pump, the tree-way valve (or the other C.H. pump) in the fireplace heating system.

## 4.5 Wiring diagram

Typical wiring diagram. The diagram below is simplified ad does not include all components necessary for the correct operation of the system.

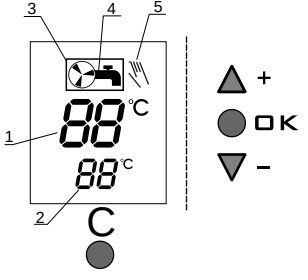



1. Hydronic fireplace
2. Cut-off valve
3. pump
4. exchanger
5. three-way valve with actuator
6. heat receiver/ radiator
7. compensating vessel
8. temperature sensor
9. C.H. boiler

**NOTE:** When only the SR2 sensor is connected, the remaining functions of the controller are not active, i.e. the C.H. pump, D.H.W. pump, and the fan operation are not indicated.

## 5. Controller in the D.H.W. mode

**(part C of the display)**




1. Current C.H. sensor temperature (Sr3)
2. D.H.W. temperature setting
3. D.H.W. over C.H. priority indicator (frame)
4. D.H.W. pump operation indicator
5. D.H.W. manual pump operation indicator

The electronic pump controller AURATON 1111 MULTI can also be used for automatic control of the circulation pump in the domestic hot water system (D.H.W.).

In the D.H.W. system the user maintains the constant temperature of the water in the storage vessel or in the D.H.W. circuit. If the “C” button is pressed for about 2 seconds, the :frame” (3) (priority of D.H.W. over C.H.) will be activated.

If the “C” button is pressed for about 2 seconds, the frame will be deactivated (no priority of D.H.W. over C.H.).

**NOTE**:the priority of D.H.W. over C.H. is active only in the manual operation of the D.H.W. pump (indicator 5).

## 5.1 Operation with deactivated priority of D.H.W. over C.H.

Operation with deactivated priority of D.H.W. over C.H.
If the priority of D.H.W. over C.H. is deactivated, the start of the pump in ten domestic hot water system depends only on the setting and the temperature on the **SR3** sensor which is installed in they storage vessel.

### 5.1.1) Settings range

The temperature (from 0ɑC do 99ɑC) is measured by the SR3 sensor. The C.H. pump is controlled by means of the **OUT 4** output.

The three-way valve or the other C.H. pump are controlled by means of the OUT 3 output. The settings range for the D.H.W. pump is 10ɑC do 90ɑC. the hysteresis (temperature difference between the activation and deactivation) is 3ɑC.

### 5.1.2) Programming the D.H.W. functions

Press once briefly the "**C**'" button - the factory setting 60ɑC will start to blink. Then use the "**+**" or "**-**" buttons to set the required temperature.

confirm by pressing "**OK**" within 10 seconds. Otherwise, the new set value will not be stored in the memory and the controller will return to the previous setting. When new settings are stored in the memory, the controller exits the settings mode and enter the normal operation mode (the blinking of the temperature settings stops).
The controller will deactivate the D.H.W. pump (**OUT4**) if the temperature on the SR3 sensor exceeds the set value by 1ɑC and will activate the pump if the temperature drops by 2ɑC below the setting.

### 5.1.3) Manual operation - continuous

To activate the C.H. pump manually (irrespective of the temperature on the SR3 D.H.W. sensor), press and hold the "**OK**" button and briefly depress the button "**C**". The hand symbol will appear on the display. To switch off the D.H.W. pump manually, again press and hold the "OK" button and briefly depress the button "**C**".

**NOTE**: If the temperature on the T3 sensor (RS3) exceeds 90ɑC, the D.H.W. pump will switch off, preventing excessive temperature of the water in the tank.

## 5.2 Operation with activated priority of D.H.W. over C.H.

If the priority of D.H.W. over C.H. is activated, the start of the pump in ten domestic hot water system depends not only on the setting and the temperature on the SR3 sensor which is installed in they storage vessel, but also on the temperature on the SR3 sensor (C.H.).

If the priority of D.H.W. over C.H. is activated, and the situation commands that both the D.H.W. and C.H. pumps should operate simultaneously, (provided the SR1 sensor and the power supply to the C.H. pump [OUT1] are connected), the D.H.W. pump has the priority.

Operation: the domestic hot water pump is activated forts and runs until the required temperature is achieved. Then, the C.H. pump is activated. The next function of the priority of D.H.W. over C.H. is that if the temperature on the SR1 (C.H.) sensor is lower than the temperature on the SR3 sensor (D.H.W.), the D.H.W. pump will not start to protect the water in the D.H.W. tank from excessive cooling.

### 5.2.1) Manual operation - continuous

To activate the circulation pump manually (irrespective of the temperature on the SR3 D.H.W. sensor), first deactivate the priority function and then follow the instructions given in 5.1.3.

## 5.3 Installation

### 5.3.1) Mounting the controller

Mount the controller on the wall or a bracket with two screws (expansion plugs with screws are included in the controller kit). Fix the conductors from the controller on the wall with holders.

### 5.3.2) Mounting the sensor

Connect the temperature sensor to the **SR3** terminals on the controller. Then, install the sensor in the domestic hot water storage vessel. The sensor shall not be immersed in liquids or placed in combustion gases outlets to the chimney. Maximum temperature measurement: 99oC.

### 5.3.3) Connecting the D.H.W. pump

Connect the pump to the **OUT4** terminals on the controller (L, ⏚, N). Connect the green or yellow-green conductor to the terminal "⏚" (protective earth or protective earth and neutral), connect the blue conductor to the "**N**" terminal, and the brown one to the terminal "**L**".

### 5.3.4) Connecting the power supply to the controller

When the conductors are secured against accidental breaking, connect the power cable to the **IN** terminals (L, ⏚, N). Then plug into a 230 VAC/50 Hz socket with an earthing pin.

**NOTE:** the ambient temperature in the controller location should not exceed 40oC.

## 5.4 Operation of the controller

### 5.4.1) Starting the controller

Put the switch  in position "**I**". All display segments will light up for about 2 seconds.

Then, the display will show the current temperature on the sensor.

### 5.4.2) Changing the temperature settings

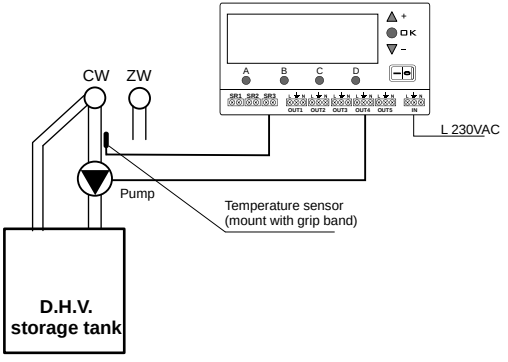
Press the "**C**" button briefly - the temperature setting indicator D.H.W. will start to blink.

Then, use the "**+**" (increase) or "**-**" (decrease) buttons to set the required temperature.

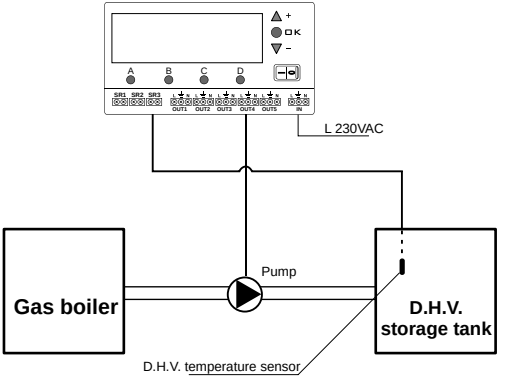
Confirm by pressing "**OK**" within 10 seconds. Otherwise, the new set value will not be stored in the memory and the controller will return to the previous setting.

## 5.5 Wiring diagram

### 5.5.1) In the D.H.W. circuit

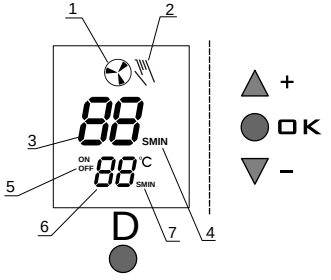



### 5.5.2) with the D.H.W. storage tank




**NOTE:** When only the SR3 sensor is connected, the remaining functions of the controller are not active, i.e. the C.H. pump (SR1), C.H. pump and the three-way valve, and the fan operation are not indicated.

## 6. Fan control
**(part D of the display)**




1. Fan operation indicator
2. Manual fan operation indicator
3. Fan operation counter and blow-down intervals, and the “HI”, “LO” and “EE” signalling
4. Time units (S = seconds, MIN = minutes)
5. Fan operation (ON) and intervals between blow-downs (OFF).
6. Temperature setting below which the fan operation is triggered
7. Time units

*AURATON 1111 MULTI* , is a modern, processor-based controller which can also be used with forced-draft coal- and pulverized coal-fired C.H. boilers. Depending on the water temperature in the boiler, the controller automatically switches on or off the C.H. water pump and activates the blower situated over the boiler furnace.

A digital controller sensor measures the water temperature to control he pump and the blower.

The *AURATON1111 MULTI* features also the *GUARD* function to prevent seizure of the pump impeller when the pump is not used

## 6.1 Instalacja

### 6.1.1) Mounting the controller

Mount the controller on the wall or a bracket with two screws (expansion plugs with screws are included in the controller kit).

Fix the conductors from the controller on the wall with holders.

### 6.1.2) Mounting the sensor

Connect the temperature sensor to the SR1 terminals on the controller. Then, install the sensor on the specified area of the boiler.

The sensor shall not be immersed in liquids or placed in combustion gases outlets to the chimney. Maximum measured temperature is 99oC.

### 6.1.3) Connecting the pump

Connect the C.H. pump to the **OUT1** terminals on the controller. Connect the green or yellow-green conductor to the terminal "⏚" (protective earth or protective earth and neutral), connect the blue conductor to the "**N**" terminal, and the brown one to the terminal "**L**".

### 6.1.5) Connecting the power supply to the blower

Connect the blower to the **OUT5** (L, ⏚, N) terminals on the controller.

Connect the green or yellow-green conductor to the terminal "⏚" (protective earth or protective earth and neutral), connect the blue conductor to the "**N**" terminal, and the brown one to the terminal "**L**".

### 6.1.6) Connecting the power supply to the controller

When the conductors are secured against accidental breaking, connect the power cable to the **IN** terminals (L, ⏚, N). Then plug into a 230 VAC/50 Hz socket with an earthing pin.

**NOTE**: the ambient temperature in the controller location should not exceed 40oC.

## 6.2 Operation of the controller

### 6.2.1) Załączanie sterownika

Starting the controller Put the switch  in position "**I**". All display segments will light up for about 2 seconds. Then, the display will show the current temperature on the sensor.

### 6.2.2) Settings range

NTemperature settings (from 10oC do 90oC).
The operation time and blow-down interval settings: from 0 to 59 seconds, and then from 1 do 99 minutes.
The fan is controlled by means of the OUT 5 output. The set temperature refers to the temperature measured by the SR1 sensor (C.H.). The hysteresis (temperature difference between the activation and deactivation) is 4oC.

### 6.2.3) Changing the temperature settings

Press the "**D**" button briefly - the factory (default) set value of 50oC will start to blink. Then, use the "**+**" (increase) or "**-**" (decrease) buttons to set the required temperature above which the fan will be switched on and off.

Confirm by pressing "**OK**" within 10 seconds. Otherwise, the new set value will not be stored in the memory and the controller will return to the previous setting.

### 6.2.4) Changing the operation time and operation cycles

When the "**D**" button is depressed once, the fan triggering temperature will start to blink.

If the "**D**" button is depressed again within 10 seconds, you enter into the fan operation cycles programming mode (blow-down duration times, the default value is 15 seconds). Use the "**+**" (increase) or "**-**" (decrease) buttons to set the required value (when you exceed 59 seconds, the time will automatically be displayed in minutes).

If the "**D**" button is depressed again within 10 seconds, you enter into the fan operation cycles programming mode (intervals between blow-downs, the default value is 5 minutes).

se the "**+**" (increase) or "**-**" (decrease) buttons to set the required value (when you exceed 59 seconds, the time will automatically be displayed in minutes). Confirm the new settings by pressing "**OK**" within 10 seconds. Otherwise, the new set value will not be stored in the memory and the controller will return to the previous setting

**6.2.5) Manual operation - continuous**

To activate the fan manually (irrespective of the temperature on the SR1 sensor), press and hold the "**OK**" button and once briefly depress the button "**D**". The hand symbol will appear on the display next to the fan symbol). To deactivate manual pump mode, again briefly depress the "**D**" button

## 6.3 Description of functions and display

HI - the controller will display the "HI" message and will activate the fan for an undefined period of time if the temperature on the SR1 (C.H.) sensor is lower than the setting for the fan.

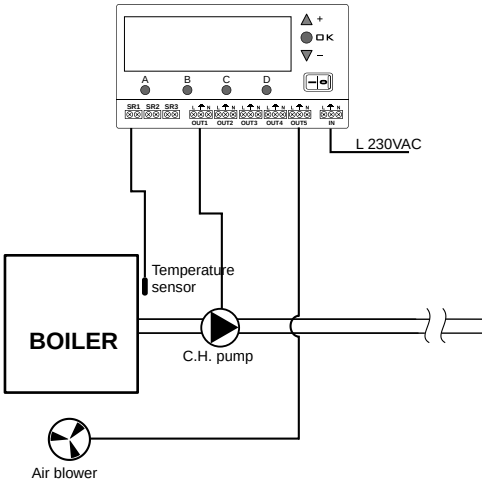
On the other hand, if the temperature on the SR1 (C.H.) sensor exceeds the temperature set for the fan, then fan will be activated in cycles as per the time settings. The display will stop shown the "HI" message and will count down the interval between blow-downs or the fan operation time (in seconds or minutes). Cyclical switching on and off of the fan will be repeated until the temperature on the SR1 sensor exceed the set temperature by 2oC and te controller will activate the fan for an undefined period of time if the temperature reading is lower than the set temperature by 2oC (the activation/deactivation hysteresis is 4oC).

LO - if the temperature on the SR1 sensor drops below 25oC for at least 30 minutes, the fan will be stoped definitively and the display will show the "LO" message. The fan will resume operation when the temperature on the SR1 sensor rises above 25oC.

EE - EE -if the temperature measured by the SR1 sensor exceeds 90oC, the cyclical operation mode of the fan will be inactive (no control and the OUT5 output), and the display will show the “EE” message., protecting against excessive burning in the boiler furnace. If the temperature measured by the SR1 sensor drops below 90oC, the controller resumes the cyclical operation of the fan, with the intervals between blow-downs according to the settings.

### 6.4 Wiring diagram: controller - fan and controller - pump

**NOTE**: When only the SR1 sensor is connected, the remaining functions of the controller are not active, i.e. the C.H. pump in the fireplace heating system, and the D.H.W. pump are not indicated.



## 7. Display backlighting

The display backlighting is activated for 10 seconds every time any key is pressed.

If you need to backlight the display permanently, press and hold the “**OK**” button for about 5 seconds.
The backlighting will switch off for about 0.5 sec and then will switch on permanently.

erform the same operation to disable permanent backlighting, i.e. press and hold the “**OK**” button for about 5 seconds.

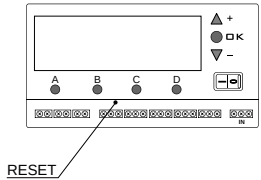
## 8. MASTER RESET

Use this function to restore the default settings.
Simultaneously depress three buttons: “**+**”, “**OK**” and “**-**“.

## 9. RESET

In extreme case (controller hangs) you can use the “**RESET**” function.

The button is located under the flap covering the terminals.



# 10.Technical specification

**A) Technical specification for the controller in C.H. mode**

Temperature setting range: 10oC ÷ 90oC

Measurement range: 0oC ÷ 99oC

Hysteresis (activation/deactivation difference): 4oC

Supply voltage: 230V / 50Hz

Maximum current load for the sum of outputs: 6A

**B) Technical specification for the controller operating with the C.H. pump and the three-way valve "Z" (or the other C.H. pump - fireplace heating system)**

Temperature setting range: 10oC ÷ 90oC

Measurement range: 0oC ÷ 99oC

Hysteresis (activation/deactivation difference): 4oC

Supply voltage: 230V / 50Hz

Maximum current load for the sum of outputs: 6A

**C) Technical specification for the controller operating with the domestic hot water D.H.W. pump**

Temperature setting range: 10oC ÷ 90oC

Measurement range: 0oC ÷ 99oC

Hysteresis (activation/deactivation difference): 3oC

Supply voltage: 230V / 50Hz

Maximum current load for the sum of outputs: 6A

**D) Technical specification for the controller in the fan mode**

Temperature setting range: 10oC ÷ 90oC

Measurement range: 0oC ÷ 99oC

Hysteresis (activation/deactivation difference): 4oC

Supply voltage: 230V / 50Hz

Maximum current load for the sum of outputs: 6A

Blow-down duration and intervals between blow-downs: 0 ÷ 59 sek. oraz 1 ÷ 99 min.