

COMPUTHERM WPR-200

Pump controller for solid fuel and multi-fuel boilers



Operating Instructions

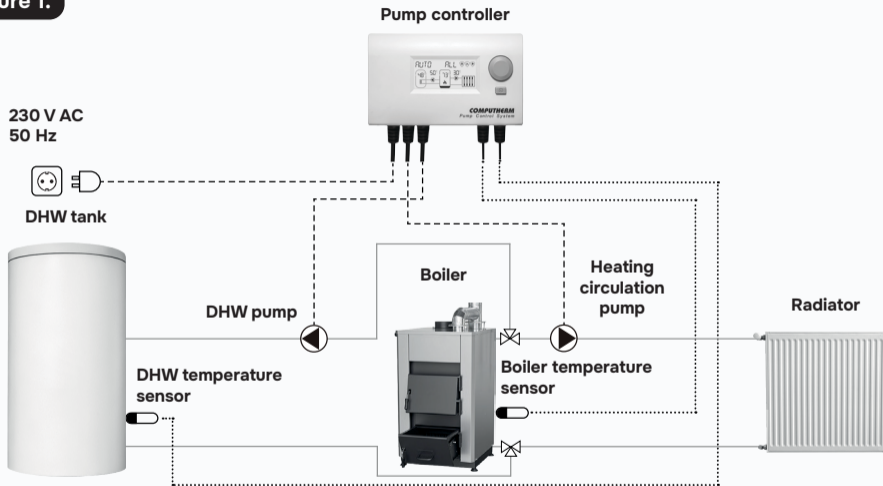
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1. General description of the pump controller

The **COMPUTHERM WPR-200** is a pump controller developed for solid fuel and multi-fuel boilers. It enables the control of pumps (heating circulation pump and domestic hot water pump), thereby increasing operational safety and comfort. The task of the pump controller is to switch the pumps on and off depending on the measured and set temperatures, ensuring that they operate only when necessary. Intermittent operation results in significant energy savings, increases the lifetime of the pumps and reduces operating costs. Its large digital display allows easy and accurate temperature measurement and adjustment, and facilitates the modification of operating modes and settings.

Figure 1.



Main functions and advantages of the pump controller:

- The switching sensitivity (hysteresis) of the boiler pump and the domestic hot water (DHW) pump can be adjusted, thereby preventing excessively frequent switching on and off of the pumps.
- The DHW temperature can be easily controlled with the help of the pump controller, which is essential for ensuring proper comfort and operational safety.
- The controller allows the DHW heating to be set as a priority. When this function is activated, heating of the DHW tank takes precedence over the heating circuit.
- By monitoring the temperature difference between the domestic hot water and the boiler, the pump controller ensures that DHW heating starts only when the boiler temperature is sufficient, thereby preventing back-cooling and unnecessary energy consumption.
- The measured temperatures can be calibrated.
- The controller can be operated in both manual and automatic modes.

Safety functions:

- Pump protection function: when activated, if no switching occurs for 24 hours, the controller automatically switches on the pumps for 1 minute to prevent them from jamming.
- Overheat protection: when activated, it prevents the boiler from overheating by switching on both pumps at temperatures above 90 °C, accompanied by audible and visual alarm signals.
- Frost protection function: when activated, it automatically switches on the pumps at temperatures below +5 °C, accompanied by audible and visual alarm signals.

2. Important warnings and safety recommendations

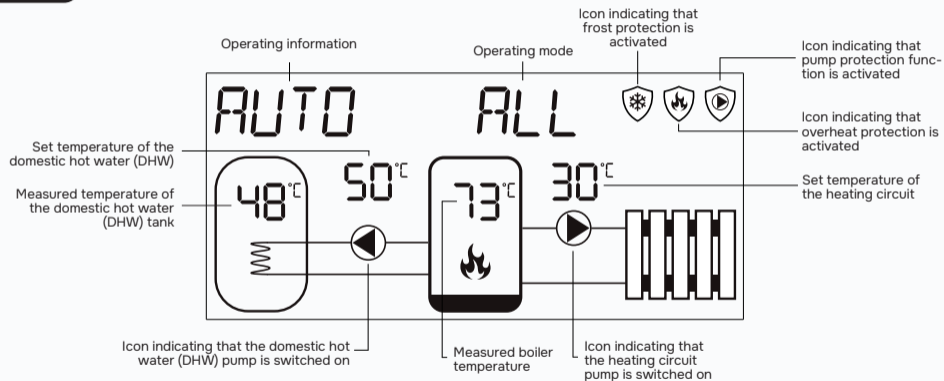
- Before putting the device into operation, carefully study the operating instructions and strictly follow the instructions described therein.
- **The device must be installed and commissioned by a qualified professional. Before commissioning, make sure that neither the pump controller nor the device to be connected thereto is connected to the 230 V mains voltage. Modifying the device involves the risk of electric shock and product failure.**
- **When switched on, 230 V mains voltage appears at the output terminals of the device. Before use, make sure that the wiring has been connected properly and that there is no risk of electric shock or short circuit. If any output is not intended to be used, make sure that the insulation at the end of the wires is in proper condition and provides safe insulation.**
- This device is designed for business or household (non-industrial) indoor use. Do not use it in wet, chemically aggressive or dusty environments.
- The manufacturer will assume no responsibility for any possible direct or indirect damages or income losses incurring during the use of the device.
- The device does not operate without power supply, but the pump controller is capable of storing

the settings. In the event of a power supply failure (power outage), after the power supply has been restored, the device continues to operate according to the previously set operating mode and settings.

- When the pump controller is under voltage, hazardous mains voltage is present on the output wires, which may cause life-threatening electric shock. During installation, pay particular attention to disconnecting the device from the power supply.

3. Information appearing on the display of the pump controller

Figure 2.



4. Installation and commissioning of the pump controller

4.1. Location of the pump controller

The pump controller should be installed in close proximity to the equipment forming the basis of the heating system control. The pump controller requires a 230 V AC mains power supply. The temperature sensors are of waterproof design; however, the central unit of the device must be protected from wet, chemically aggressive or dusty environments.

4.2. Installation and wiring of the pump controller

The pump controller must be mounted on the wall using the supplied fixing screws. The location of the mounting points and the required drilling distances are illustrated in **Figure 3**. The figure is dimensionally accurate; therefore, by placing the device against the wall, the drilling points can be marked directly.

The pump controller is equipped with two temperature sensors. One sensor is used to measure the temperature of the domestic hot water (DHW) tank, while the other sensor measures the boiler temperature. The temperature sensors must be positioned at the designated measuring points on the tank and on the boiler.

The pump controller is powered from a 230 V AC mains supply via a plug connection. The pumps must be connected using a standard three-core cable (phase, neutral and protective earth). Circulation pumps whose rated current does not exceed the maximum load capacity of the pump controller (3 (1) A) may be connected directly to the output of the pump controller.

Figure 3.



Place the template at the intended installation location of the **COMPUTHERM WPR-200**. Then, using a pencil, pierce through the centre of the circles marked with arrows and mark the positions of the drilling holes on the wall.



Warning! The device must be installed and commissioned by a qualified professional. Before commissioning, make sure that neither the pump controller nor the device to be connected thereto is connected to the 230 V AC mains supply. Modifying the device involves the risk of electric shock and product failure.

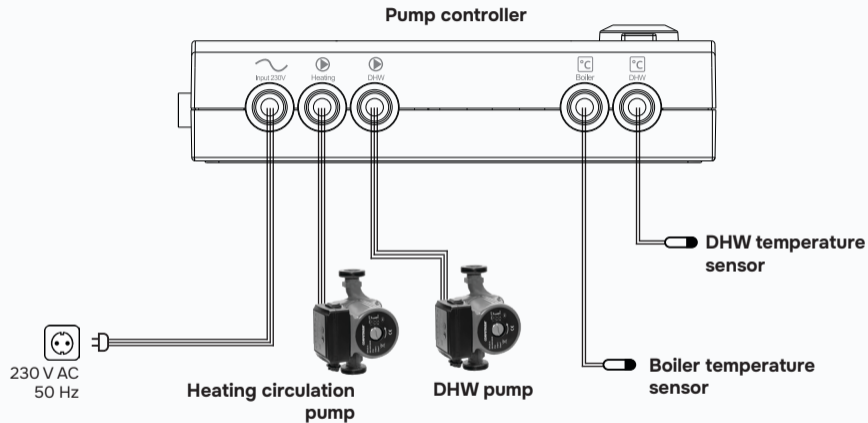
The wiring of the device must be carried out as follows:

- As a first step, route the cables of the temperature sensors, then position the sensors at the designated measuring points on the devices to be monitored. One temperature sensor must be placed at the temperature measuring point of the boiler, and the other at the measuring point of the domestic hot water (DHW) tank. The temperature sensors must be positioned at locations where the measured value accurately represents the actual operating temperature of the boiler and the DHW tank. Locations significantly affected by external heat sources (e.g. flue pipe, air flow) must be avoided. The sensor cables must be protected against mechanical damage and must not be routed parallel to high-voltage or interference-generating cables.
- Connect the three cores of the output cable of the pump controller to the pump to be controlled (according to **Figure 4**). The conductor colours comply with the European standard: brown – phase (live), blue – neutral, green/yellow – protective earth. The output wires are fitted with ferrules and provided with proper insulation; therefore, after removing the insulation, they can be connected directly to the connection terminals of the pump. During wiring, ensure correct contact and secure fastening of the conductors. The pump may be connected directly to the output of

the pump controller only if its rated power and current consumption do not exceed the maximum load capacity specified in the technical data of the device. Before performing any wiring work, the device must always be disconnected from the power supply.

- Connect the pump controller to the 230 V AC mains supply using the pre-installed plug. The connection must only be made to a properly grounded mains socket. The mains plug must remain easily accessible so that the device can be disconnected from the power supply at any time if necessary.



Figure 4.



5. Operation of the commissioned device

The pump controller continuously measures the temperature of the boiler and the domestic hot water (DHW) tank and controls the connected pumps on the basis of these measured values, taking into account the set temperatures and the switching sensitivity (factory default setting: ± 2.0 °C). This means that when the pump controller is in ALL mode (factory default setting; both pumps active), the DHW pump is set to 50 °C and the heating circulation pump is set to 30 °C, then with a switching sensitivity of ± 2.0 °C the control operates as follows:

- In the case of the DHW pump, when the temperature of the DHW tank drops below 48 °C, 230 V mains voltage appears at the controller output (the connected pump switches on) if the boiler temperature is higher than the tank temperature by at least with the domestic hot water heating temperature differential (**DHW DIFF**). When the temperature drops exceeds 52 °C, the output switches off (the connected pump switches off).
- In the case of the heating circulation pump, when the temperature exceeds 32.0 °C, 230 V mains voltage appears at the controller output (the connected pump switches on). When the temperature drops below 28.0 °C, the output switches off (the connected pump switches off).

The desired temperatures can be adjusted using the rotary knob after selecting the respective pump. The display of the device continuously shows the currently measured temperature and the set temperature, while the activated state of the outputs is indicated by the flashing  and  icons.

Temperature monitoring and control principles:


The pump controller continuously monitors the temperature of the boiler and the domestic hot water (DHW) tank and controls the operation of the heating circulation pump and the DHW circulation pump on the basis of the measured values, taking into account the set temperatures and the switching sensitivity.

DHW priority and control of the heating circulation pump:

When DHW priority is activated, the controller stops the heating circulation pump during DHW heating, ensuring that the boiler output is primarily used for the production of domestic hot water. If the DHW circulation pump is not operating, or if DHW priority is deactivated, the heating circulation pump switches on when the boiler temperature exceeds the set heating temperature, taking the selected switching sensitivity into account.

6. Operating settings

The pump controller can be switched on using the power button located on the left side of the device. The device is equipped with several functions and allows selection of the operating mode according to the characteristics of the heating system to be controlled.


You can enter the setting menu of the pump controller by pressing and holding the button  for 2 seconds. Within the menu, you can scroll between the settings to be modified by rotating the rotary knob. The selected setting can be confirmed by pressing the rotary knob and its value can be modified by turning it. The currently adjustable setting flashes on the display.

The table below shows the available setting options:

Displayed abbreviation	Description of the setting	Setting options	Factory default setting	Detailed description
HEA HYS	Switching sensitivity of the heating circulation pump	1 - 15 °C	2 °C	Chapter 6.1.
BOI CAL	Calibration of the boiler temperature sensor	-5.0 - +5.0 °C	0 °C	Chapter 6.2.
DHW HYS	Switching sensitivity of the DHW pump	1 - 15 °C	2 °C	Chapter 6.3.
DHW CAL	Calibration of the DHW temperature sensor	-5.0 - +5.0 °C	0 °C	Chapter 6.4.
DHW PRI	Domestic hot water heating priority	OFF: switched off	ON	
		ON: domestic hot water (DHW) priority activated (DHW heating takes precedence over the heating circuit)		
DHW DIF	Domestic hot water heating temperature differential	3 - 15 °C	10 °C	
FUNC	Operating mode	ALL: both pumps active	ALL	Chapter 6.5.
		HEA: only the heating circulation pump active		
		SUM: only the domestic hot water (DHW) pump active		

Displayed abbreviation	Description of the setting	Setting options	Factory default setting	Detailed description
MANUAL	Switching manual mode on and off	OFF: switched off	OFF	
		ON: switched on		
B LIGHT	Switching automatic back-light on and off	OFF: switched off	ON	
		ON: switched on		
FROST P	Switching frost protection function on and off	OFF: switched off	ON	Chapter 6.6.
		ON: switched on		
OVERHEA	Switching overheat protection on and off	OFF: switched off	ON	Chapter 6.7.
		ON: switched on		
PUMP P	Switching on and off of the pump protection function	OFF: switched off	ON	Chapter 6.8.
		ON: switched on		
RESET	Restoring factory default settings	--:aving the settings and exiting the setting menu after pressing the rotary knob	--	Chapter 6.9.
		RES: restoring factory default settings after pressing the rotary knob		

To exit the setting menu and save the settings:

- press the  button, or
- wait 30 seconds until the display of the pump controller returns to the home screen.

6.1. Switching sensitivity of the heating circulation pump (HEA HYS)

The switching sensitivity can be adjusted. By modifying this value, you can define how many degrees below/above the set temperature the device switches the connected pump on/off. The smaller this value, the more frequently the pump will switch on. The switching sensitivity does not affect the heat loss of the room (building). Care should be taken to avoid excessively frequent switching of the controlled pump, as this may reduce its efficiency and lifetime. The switching sensitivity can be set within the range of ± 1 °C to ± 15 °C. Except for special cases, the use of ± 2 °C (factory default setting) is recommended for circulation pump control.

6.2. Calibration of the boiler temperature sensor (BOI CAL)

The temperature measurement accuracy of the pump controller is ± 0.5 °C. The temperature displayed by the pump controller can be modified compared to the value measured by the temperature sensor by a maximum of ± 5.0 °C, in increments of 0.1 °C.

6.3. Switching sensitivity of the DHW pump (DHW HYS)

The switching sensitivity can be adjusted. By selecting this value, you can define how many degrees below/above the set temperature the device switches the connected pump on/off.

The smaller this value, the more frequently the pump will switch on. The switching sensitivity does not affect the heat loss of the DHW tank. Care should be taken to avoid excessively frequent switching of the controlled pump, as this may reduce its efficiency and lifetime.

The switching sensitivity can be set within the range of $\pm 1\text{ }^{\circ}\text{C}$ to $\pm 15\text{ }^{\circ}\text{C}$. Except for special cases, the use of $\pm 2\text{ }^{\circ}\text{C}$ (factory default setting) is recommended for DHW pump control.

6.4. Calibration of the DHW temperature sensor (DHW CAL)

The measurement accuracy of the DHW temperature sensor is $\pm 0.5\text{ }^{\circ}\text{C}$. The temperature displayed by the pump controller can be modified compared to the value measured by the temperature sensor by a maximum of $\pm 5.0\text{ }^{\circ}\text{C}$, in increments of $0.1\text{ }^{\circ}\text{C}$.

6.5. Operating mode (FUNC)

You may select heating pump control (**HEA**), domestic hot water pump control (**SUM**), or simultaneous control of both (**ALL**; factory default setting). At the **L** and **N** connection points of the outputs configured according to the selected mode, 230 V AC mains voltage appears when the temperature exceeds the set value (the connected pump switches on). When the temperature falls below the set value, the output switches off (the connected pump switches off), taking into account the selected switching sensitivity and other settings.

6.6. Switching the frost protection function on and off (FROST P)

Warning! The frost protection function is recommended only if, during non-heating periods, there is

at least one heating circuit section within the part of the heating system where the controlled pump is installed in which the heating medium can circulate freely at all times. Otherwise, the use of the frost protection function may result in pump damage.

When the frost protection function is activated (**ON**; factory default setting), the controller switches on the pumps if any measured temperature drops below 5 °C in order to protect the pump and the heating system. The pumps remain switched on until the measured temperature reaches 5 °C again. During operation of this function, the device provides audible and visual alarm signals.

The audible and visual alarm signals can be switched off by pressing the  button or by pressing/rotating the rotary knob.

6.7. Switching overheat protection on and off (OVERHEA)

Warning! The use of overheat protection is strongly recommended for solid fuel and multi-fuel boilers. In such boilers, the combustion process cannot be stopped immediately; therefore, heat generation may continue even after fuel supply has been discontinued. If heat dissipation is not ensured, the boiler temperature may rapidly rise to a dangerous level, potentially causing damage to the boiler, the heating system or the connected pumps.

When the overheat protection function is activated (**ON**; factory default setting), the controller automatically switches on both pumps if the measured temperature rises above 90 °C, in order to protect the pump and the heating system. The pumps remain in operation until the temperature drops below 90 °C again. During operation of this function, the device provides audible and visual alarm signals.

The audible and visual alarm signals can be switched off by pressing the  button or by pressing/rotating the rotary knob.

6.8. Switching the pump protection function on and off (PUMP P)

Warning! The pump protection function is recommended only if, during non-heating periods, there is at least one heating circuit section within the part of the heating system where the controlled pump is installed in which the heating medium can circulate freely at all times. Otherwise, the use of the pump protection function may result in pump damage.

When the pump protection function is activated (**ON**; factory default setting), in order to prevent the pump from jamming, the controller switches on the connected device for 1 minute every day if no switching has occurred on that day or on the previous day (e.g. during non-heating periods). The pump protection function operates only if the controlled device is in operable condition.

6.9. Restoring factory default settings (RESET)

This function resets all settings of the pump controller to factory default. To restore factory default settings, select the “**RES**” option under the “**RESET**” function in the setting menu and proceed with the button.

If the “**RESET**” function is left in its default state (--) the pump controller saves the settings after pressing the rotary knob, exits the menu and, after returning to the home screen, continues operation according to the previously selected operating mode.

7. Operation of backlight

By factory default, the backlight of the pump controller automatically switches on for 20 seconds after pressing any button. The automatic backlight can be switched on or off. If any button is pressed while the backlight is active, the backlight will switch off only 20 seconds after the last button has been pressed.

The automatic backlight of the pump controller can be modified as described in **Chapter 6**.

8. Technical data

- **Temperature measurement range:** -5 to +99 °C (“Lo” indication below -5 °C, “Hi” indication above +99 °C)
- **Temperature measurement accuracy:** ±0.5 °C
- **Adjustable temperature range (boiler / DHW):** +20 to +80 °C
- **Temperature calibration range:** ±5 °C (in 0.1 °C increments)
- **Selectable switching sensitivity:** 1 °C to 15 °C
- **Adjustable DHW heating temperature differential:** +3 – +15 °C (in 1 °C increments)
- **Maximum ambient temperature:** 50 °C (probe: 100 °C)
- **Protection against environmental impacts:** IP30
- **Switchable voltage:** max. 230 V AC / 50 Hz
- **Switchable current:** 3 A (1 A inductive load)
- **Supply voltage:** 230 V AC
- **Factory cable lengths:**
 - **DHW temperature sensor:** 290 cm
 - **Boiler temperature sensor:** 290 cm
 - **Heating circulation pump supply cable:** 190 cm
 - **DHW circulation pump supply cable:** 190 cm
 - **Power supply cable:** 140 cm
- **Storage temperature:** -10 °C ...+50 °C

The **COMPUTHERM WPR-200** type pump controller complies with the requirements of directives RED 2014/53/EU and RoHS 2011/65/EU.



Manufacturer:

QUANTRAX Ltd.

Thököly u. 45., Szeged, H-6726, Hungary
Phone: +36 62 424 133 • Fax: +36 62 424 672
E-mail: iroda@quantrax.hu
Web: www.quantrax.hu • www.computherm.info

Origin:

designed in the EU, manufactured in China

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