

ELECTRONICS

CONTROLLERS FOR
CENTRAL HEATING BOILERS

MICROPROCESSOR
BOILER HEATER
TEMPERATURE CONTROLLER

SP44



MANUAL
WARRANTY CARD

CE

1. Front Panel Description



The view of the controller with its functionalities marked

1. Power ON (Hold the ENTER button for 2 seconds)
2. LCD Display
3. Control lights
4. Control buttons
5. Blower switch ON light.
6. Central Heating (C.H.) switch ON lamp
7. Hot Water Storage Tank (H.W.S.T.) switch ON lamp
8. Floor Heating Pump switch ON lamp
9. Conveyor switch ON lamp.

2. Usage

This device is designed to automatically manage the cauldron, turn on the pumps: the circulation pump, water pump, and floor heating pump, within the central heating installation. The controller cooperates with the auger of the cauldron. The control process is managed by the control of the liquid temperature inside the central heating cauldron.

The controller has two modes:

1. Operational mode (air temperature is lower than the temperature set).
2. Maintenance mode (air temperature is greater than the temperature set).

The controller allows keeping the temperature set at the hot air outlet.

3. Controller handling

In order to turn on the controller you need to press the ENTER button. After turning it on you will see its main page on the display, which shows the following data:

Achieved and pre-set central heating temperature
Achieved and pre-set temperature of the Hot Water Storage Tank




C.H. 22⁰°C SET 55⁰°C
H.W.T.S 22⁰°C SET 45⁰°C



The ENTER button - turn the device on, enter menu, accept change.

The EXIT button - preview of the cauldron operational state, exit without saving.



AIR TEMPERATURE
100°C

The (\triangle) button, allows menu navigation, parameter changes, change of central heating temperature, turn ON/OFF summer mode.


The (∇) button, allows menu navigation, parameter changes of the Hot Water Tank, turn ON/OFF the hot water tank.

All parameters in settings menu are individually depending on type of the installatin, and the caloric value of the fuel.

- MANUAL START - this function is used to kindle the cauldron, it allows independent star of the blower exhaust, conveyer and both pumps



MANUAL START




BLOWER

Pressing the ENTER button turns ON or OFF one of the exists. Using buttons (\triangle) and (∇) we can change exists which we intend to turn ON or OFF. With the EXIT button we can go back to settings menu.

- FUEL SUPPLY - this function is used to set the time when the fuel is supplied by the conveyer in the heating mode.



FUEL SUPPLY



FUEL SUPPLY
30 SEC.

- FUEL SUPPLY PAUSE - this function is used to set fuel supply pause time in the heating mode.



FUEL SUPPLY PAUSE



FUEL SUPPLY PAUSE
30 SEC.

- BLOWER POTENCY - this function is used to set the potency with which the blower insufflates air to the hearth.

BLOWER POTENCY

BLOWER POTENCY
70%

- SUSTAINING OPERATION

SUSTAINING
OPERATION

- SUSTAIN PAUSE - this function allows to set an intermission between turning on the blower and turning on the conveyer in sustain mode.

SUSTAIN PAUSE

SUSTAINED
PAUSE
15 MIN.

- SUSTAINED OPERATION - this function allows to set operation time of the blower and the conveyer in the suspend mode.

SUSTAINED
OPERATION

SUSTAINED
OPERATION
30 SEC.

- BLOW DELAY - this function allows to extend the blower operation time in relation to the conveyer in suspend mode.

BLOW DELAY

BLOW DELAY
10 SEC.

-H.W.S.T. HISTERESIS - this function allows setting usable water hysteresis, which creates a delay powering on the hot water storage tank by pre-defined temperature: 2°C hysteresis, expected temperature is 50°C the pump will be turned on, when the temperature of the usable water reaches 48°C

H.W.S.T.
HISTERESIS

H.W.S.T.
HYSTERESIS
2°C

- C.H. vs.H.S.W.T. PRIORITY

C.H. vs. H.W.S.T.
PRIORITY

Manual SP-44

- H.W.S.T. PRIORITY - H.W.S.T. starts working, and operates until the temperature reaches the level set. Once the usable water reaches the desired temperature the H.W.S.T. pump turns off and C.H. and floor heating turns on.

H.W.S.T. PRIORITY

- C.H. PRIORITY - in this mode all pumps start working, when the cauldron temperature reaches 35°C. The central heating pump operates constantly, and the floor heating pump and hot water storage tank pump will turn off automatically when the temperature reaches the temperature set. In this mode the H.W.S.T. temperature cannot be higher than central heating temperature

C.H. PRIORITY

- CIRCULATION + CLOCK (optional) - this function is used to set working areas and time as well as to set the time when the circulation pump turn on. The controller has three working areas: Mon-Fri and Sat-Sun. Each has three modes for power on times.

CIRCULATION
+ CLOCK

- TURN ON CIRCULATION - it is used to turn ON/OFF that functionality

TURN ON
CIRCULATION

- Mon-Fri and Sat-Sun CIRCULATION - with the ENTER button we enter the settings of turn on time ranges, with buttons we can set time, and with buttons we set zones and then confirm with ENTER button, the hour parameter start flashing. With buttons (△) (▽) we set the parameter.

MF0 06:30 - 7:30
MF1 13:00 - _:_:__

MF0 06:30 - 7:30
MF1 13:00 - _:_:__

To accept and move to next parameter we press ENTER. There is an option to turn off a particular zone, in that case we need to set pump turn off time before the pump turn ON time.

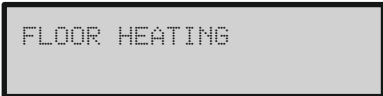
- SETTING THE CLOCK - after pressing ENTER button we enter the clock settings. Using buttons (△) (▽) we set flashing parameter, and with the ENTER button we confirm and go the next parameter.

- ECONOMICAL MODE (PI) - it is based on percentage reduction of the supplied fuel by the controller. The closer the temperature is to the temperature given, the lower is the percentage level of the fuel supplied. Control range between 0°C and 5°C, it is worth remembering, to set the economical mode gradually starting with 1°C. If the cauldron reaches the given temperature (suspension mode) we can set 2°C etc. If the cauldron won't be able to reach given temperature we need to go back to the previous settings meaning those ones when the cauldron went into suspension mode. The economical mode should be used when the controller is set optimally and accordingly to the environment, meaning the type of fuel and type of installation.



At first the blower potency should be set, we need to remember that too high power will cause the coal to slag and too low power will leave unburned coal in the ashpan. Once the blower is set, we need to set fuel supply. It has to be set in a way that allows the cauldron to reach the desired.

- FLOOR HEATING - the controller includes floor heating pump control. This controller is equipped with a power output for the floor heating pump and a temperature sensor fitted to the return part of the floor heating installation. The floor installation requires also fitting a three way valve on the way out of the cauldron in order to reduce the temperature of supply installation. This function allows temperature reading and keeping constant temperature of the floor heating system. Turning this function off happens in the same way, as for the other pumps (we need to go below the minimal temperature, then two horizontal lines will appear on the display, we need to press ENTER to accept. To restart the function we need to set desired temperature and press ENTER).



- DEFAULT SETTINGS - the controller has pre-programmed settings; we can go back to those settings at any time. However we need to remember, that all personal settings will be lost.

DEFAULT SETTINGS

DEFAULT SETTINGS
YES

- END OF WORK - turning off the controller in order to turn it on again - we need to press and hold the EXIT button.

END OF WORK

END OF WORK
YES

- INSTALLATION SETTINGS

INSTALL SETTINGS

EXTINGUISHING TIME - this function is used to set time which measured after reaching the temperature lower that the one set at extinguishing temperature point. Once the set time passes the controller shuts down the cauldron and communicates lack of fuel.

EXTINGUISH. TIME

EXTINGUISH. TIME
60 MIN

- EXTINGUISHING TEMPERATURE - this function is used to set central heating temperature below which the time set at the extinguishing time is being counted down. Once the temperature is below the temperature set and after the time passes the controller terminates operations and communicates lack of fuel."

EXTINGUISH.
TEMPERATURE

EXTINGUISH.
TEMPERATURE 35°C

Setting those settings incorretly may cause extinguishing the cauldron although the fuel has not been completly burned.


- TYPE OF THE BLOWER ENGINE

TYPE 1 - adjustable engines

TYPE 2 - un-adjustable settings



ENGINE TYPE




ENGINE TYPE 2


The controller is a universal device designed to work with all type of blowers currently available on the market. During fitting of the controller to the cauldron we need to check the type of the engine our blower has. To check the blower power we set it to 30% and then to 99%. If the fan speed remains the same it means that the blower engine is un-adjustable, in such case we set the engine type to type 2.

The Electronics Company is not responsible for choosing incorrect blower engine settings. Such damage will not be subject to the warranty.

- BLOWER STARTUP - this function is used to set 100% operational power of blower with a parameter (between 1 and 5 sec.) which has to be adjusted due to temporary power losses of the fan. If we see that the fan works incorrectly during the startup (it cannot start) we should increase the startup time.




BLOWER STARTUP




BLOWER STARTUP
10 SEC.

- ROOM CONTROLLER - it is possible to connect room controller to the main controller. It controls the central heating pump. There is a twisted pair cable coming out of the controller which needs to be connected to the mounting strip. While connecting the room controller the mounting strip no external power supply should be connected. Once the function is on, an arrow appears on the display (left upper corner). This function shouldn't be turned on unless the room controller is connected to the device.



ROOM CONTROLLER



ROOM CONTROLLER ON




C.H. 50°C SET 55°C
H.W.T.S 50°C SET 45°C

- HELIX TEMPERATURE - this function prevents the fuel in the cauldron bin from ignition. If the helix temperature goes up beyond the one set up by the user conveyer starts supplying fuel for 10 minutes to prevent the fuel in the cauldron bin from ignition.



HELIX TEMPERATURE



MAX HELIX
TEMPERATURE 60 °C

Technical specification

- Central Heating temperature regulation range 35°C - 80°C.
- Hot water tank storage temperature regulation range 35°C - 65°C.
- Floor heating temperature regulation range 20°C - 55°C.
- Blower regulation.
- Operational within outer temperature range 0°C - 40°C.
- Automatically saves setting during a power outage.
- Relative air humidity 95%.
- Isolation Class I.
- Electrical security 8A.
- The controller has a function designed to protect the cauldron from overheating over 94°C, the thermostat automatically disconnects the fan circuits.
- The controller has a fire sustain function, after reaching previously set temperature of the cauldron it turns the fan on occasionally and supplies fuel via the helix conveyer simultaneously.
- The controller has a function that prevents premature freezing of the installation, once temperature gets below 6°C the circulating pump starts automatically.
- The controller has a function that prevents the fuel from ignition inside the conveyer (Helix temperature) once the temperature rises above the temperature given the conveyer starts supplying the fuel. It prevents the cauldron from serious damage.
- The controller has a second level of thermal security (backup thermostat), which prevents the cauldron from overheating.

5. Usage

1. Connect power supply to C.H. and H.W.S.T. pums as well as to the floor heating pump:
 - a. to „grounding” clamp the green-yellow,
 - b. to „N” clamp the blue wire,
 - c. to „L” clamp the brown wire
2. After connecting controller to the mains and connecting pumps the controller is ready to work. We need to remember that the controller is provided with the default settings, and that we need to adjust it to our needs.
3. Technical condition of the controller should be checked periodically.

After performing all the above mentioned activities the controller provides:

1. Sustaining constant temperature of the central heating cauldron set by the user by automatic fuel supply and turning on the blow in to the hearth.
2. Automatic turning on of the central heating, floor heating and hot water tank storage pumps.
3. Automatic blower switch off as well as the pumps and the conveyer once all the fuel from this bin is used.
4. Constant temperature readings.

6. Error messages

- Error 0 - Device malfunction
- Error 1 - EEPROM memory malfunction
- Error 2 - Central Heating sensor malfunction
- Error 3 - Hot water storage tank sensor malfunction
- Error 4 - Helix sensor malfunction
- Error 5 - Floor heating pump malfunction
- Error 6 - Central Heating temperature too high
- Error 7 - Helix temperature too high
- Error 8 - Hot water tank storage temperature too high
- Error 9 - No fuel

7. Fuse exchange

To change the fuse it is essential to disconnect the power cable from the socket.

8. Fitting recommendations

1. The controller should be fitted by a skilled person.
2. The controller should be located in a place where it won't get warmed up over 40°C.
3. Fitting should be conducted according to point 5 (Usage).
4. The device should be fitted and used and operated in accordance with the rules of procedure with electric equipment. The controller cannot be exposed to water, or steam liquefaction e.g. rapid temperature changes.
5. If the controller works incorrectly things mentioned below should be checked:
 - The fuse at the front side of the panel,
 - Check connectons and technical condition of other devices such as the blower, pups and the conveyer,
 - Revers the controller to default settings
6. The cauldron should have reverse valves on Central Heating and hot water tank storage circuits.
7. The floor heating requires fitting a three way valve on the cauldron output in order to reduce the temperature of the installation.

ATTENTION!!!

To properly connect the pumps and the blower the controller has to be disconnected from the power supply.

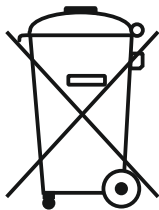
9. Electrical parameters

1. Voltage	~230V/50Hz
2. Power consumption (no-load)	2W
3. Operational temperature range	0°C - 40°C
4. Output load:	
blower:	100W
pumps:	100W
Central Heating	100W
Hot water tank storage	100W
Circulation	100W
Floor heating	100W
Conveyer max	250W

10. Warranty card

1. Manufacturer guarantees good quality of equipment, guarantee and post-guarantee services.
2. Manufacturer grants the guarantee of failure-free controller operation for the period of 24 month from purchase date.
3. Failures and damages revealed during warranty period shall be eliminated immediately, free of charge within not longer than 14 days from the day of delivering the device for repair at manufacturer location.
4. Shipment costs are incurred by the customer.
5. When making a complaint failure description should be attached.
6. Warranty does not include damages arose due to improper operation by the user or modifications and repairs performed not by service centre.
7. Seller is obliged to fill in the warranty card on the day of giving out the equipment. Warranty card which is not filled in or having any corrections or cross outs precludes exercising warranty rights.

Information on utilization of electric and electronic devices



This symbol placed on products or documentation attached to them informs that unserviceable electric or electronic devices must not be thrown away together with garbage. Proper behaviour in case of necessity of utilization, reuse or components recovery consists in handing over the device to specialized collection point where you shall not be charged. Proper utilization of the device enables preservation of valuable resources and avoidance of negative effect to the health and environment. Detailed information about the nearest collection point may be obtained from your local authorities.

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