„ELECTRONICS"

MICROPROCESSOR TEMPERATURE CONTROLLER FOR CENTRAL HEATING BOILERS AND HOT SERVICE WATER BOILERS

SP-16

LOGIC

USER MANUAL

CE

1.Front panel description

Controller view with marked functions

1. Turning on (hold ENTER button for 2 sec.).
2. LCD display.
3. Indicator lights.
4. Device control buttons.
5. Blower start up indicator.
6. Central heating pump start up indicator.
7. Hot service water pump start up indicator.
8. 3,15 A fuse.

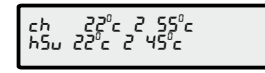
2. Application

Controller is equipped with innovative, intelligent Logic control system. This system consists in automatic adjustment of boiler power to current operating conditions. All regulation process is based on measurement of central heating temperature. Due to innovative solution enabling optimal fuel combustion in the boiler, it has the effect of reduction of harmful oxides emission into the atmosphere. With proper oxides aftercombustion and no overshoots , boiler equipped with our device can use up to 30% less fuel than standard solutions.

3. Controller operation

To start up the controller hold ENTER button. After controller start up, main page with following information is displayed on LCD:

Central heating (CH) temperatures
- current and set up
Hot service water (HSW) temperatures
- current and set



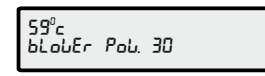
From the main page you have the access to several functions, pressing (▲) enters into central heating temperature adjusting mode, you set up desired temperature with (▼) and (▲). When temperature decreases below 35°C (--) and ENTER button is pressed, central heating pump turns off. Controller enters SUMMER MODE, with only hot service water function.

However, if (▼) is pressed as first, you enter into setting up hot service water temperature. By pressing (▲) and (▼) you set up desired temperature. When temperature decreases below 35°C (--) and ENTER button is pressed, hot service water pump turns off.

Caution!!!
If installation is not equipped wit hot service water pump you should turn off water heating function.

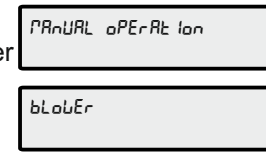
Pressing ENTER button confirms selected parameter and pressing EXIT button exits without saving previously made changes.

CH Temperature
Blower power



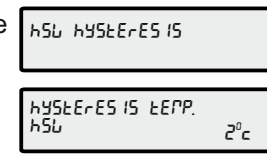
FUNCTIONS

- MANUAL OPERATION function is to fire up the boiler, it enables independent start up of controller and blower outputs.

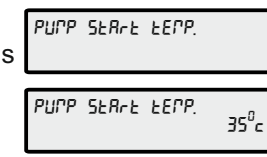


Pressing ENTER button turns on one of the outputs. With (▲) and (▼) you change output to be turned on or off. Pressing EXIT returns to set up menu.

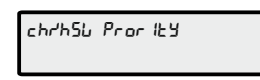
- HSW hysteresis that function is to set up service water hysteresis, it consists in delaying HSW pump start up by set up number of degrees, i.e. hystheresis 2°, set up temperature 50°C - pump shall start up when service water temperature decreases to 48°C. This function works in HSW priority and summer mode.



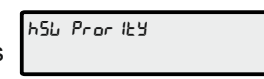
- PUMP START UP TEMPERATURE temperature at which circulation pomp starts up is PŁYNNIE adjustable within the range 30° - 5° C below temperature set up for the boiler, i.e. CH temperature is set up for 60°C, then range of pump regulation may be set between 30°C and 55°C.



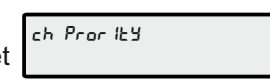
- CH/HSW PRIORITY



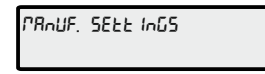
- HSW PRIORITY HSW pump starts up and works until achieves set up temperature. When services water reaches set up temperature HSW pump turns off and CH pump turns on.



- CH PRIORITY in this mode pumps start working when boiler temperature reaches temperature set up in pump start up function. (CH pump works permanently and HSW pump turns on after reaching desired temperature.) In this mode HSW temperature cannot be higher than CH temperature.



- **MANUFACTURER SETTINGS** controller is equipped with programmed settings, you may return to them at any time. However, you should remember that all personal settings will be lost.



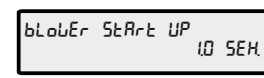
- **END OF WORK** turns the controller off. To turn It on again press and hold ENTER button.

Controller has got hidden installation menu, to get there press and hold (▲) and (▼) buttons for 3 seconds. Changes of parameters in that menu should be made by qualified person. Your changes of those parameters may cause controller misoperation.

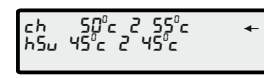
INSTALLATION MENU

- **TURN OFF TIME** function is to set time which is measured when CH temperature does not increase and maintains 5^{O}C below set temperature.

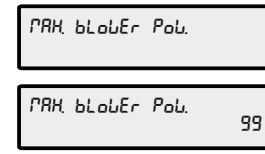
- **BLOWER START-UP** this function consists in setting 100% power of blower with time parameter (1sec. - 15 sec.) which, due to temporary loss of efficiency, has to be regulated. When you notice that the blower does not work correctly during start.



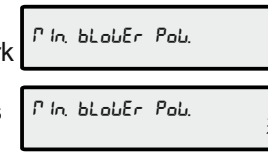
- **ROOM REGULATOR** room regulator may be connected to the controller.It controls CH circulation pump. Two-core cable is led out from room regulator that should be connected to jack input. No external power sources should be connected to the device during installation of room regulator. When function is turned on, an arrow should appear on the display (upper right area). If room regulator is not connected to the device this function should not be turned on.



- **MAX. BLOWER POWER** this function is to limit maximum blower power. Maximum power should be limited when used fuel (pellet, oat) is too light and is blown around in combustion chamber due to huge fan power.



- **MIN. BLOWER POWER** function is to set up minimum fan power. Fan should be set up to work at minimum power. However, you should remember that fans lose their factory parameters as a result of use and soil. In that situation you should increase.



4. Technical data

1. CH temperature adjustment range 35°C - 80°C.
2. HSW temperature adjustment range 35°C - 65°C.
3. Automatic blower adjustment.
4. Operation in ambient temperature 0°C - 40°C.
5. Automatic saving of settings during supply voltage decay.
6. Relative air humidity 95%.
7. I insulation class.
8. 3.15 A fuse.
9. Controller has got function preventing from premature freezing of installation, in case of temperature decrease below 6°C circulation pump starts up automatically.
10. Controller is equipped with secondary protection (emergency thermostat) which protects the boiler against overheating.

5. Use

1. Connect feeder of CH and HSW pump.
   a) yellow-green conductor to earth terminal,
   b) blue conductor to "N" terminal,
   c) brown conductor to "L" terminal.
2. After connecting the blower, pumps and after installing all sensors turn the controller on.
3. Controller technical condition should be checked periodically.
   After performing above actions the controller ensures:
   a) Maintaining constant temperature of CH boiler set up by user.
   b) Automatic start of pumps and blower.
   c) Automatic shutdown of the blower and pumps after fuel use up.
   d) Continuous readout of temperatures.

6. Error messages

Error 0 - Device failure.
Error 1 - EEPROM memory failure.
Error 2 - CH temperature sensor failure.
Error 3 - HSW temperature sensor failure.
Error 6 - Too high CH temperature.
Error 8 - Too high HSW temperature.
Error 9 - No fuel.

7. Fuse replacement

To replace the fuse disconnect the feeder from the socket.

8. Installation recommendations

1. Controller installation should be entrusted to authorized person.
2. Controller should be placed in location disabling it becoming heated above 40^{o}C.
3. Perform installation in accordance with par. 5 (Use)
4. Device should be installed and operated in accordance with rules of operating electrical devices. Controller must not be exposed to water or to conditions causing steam condensation i.e. rapid changes of ambient temperature.
5. In cases of controller misoperation first check:
   a) the fuse
   b) connections stability and technical condition of cooperating devices, that means the blower, pumps.
   c) Set the controller to manufacturer settings.
6. Boiler should have check valves installed in cycles of CH and HSW pumps.

CAUTION!!!
Perform connecting blower and circulation pumps motors only after disconnection of the controller from 230V supply network.

9. Electric parameters

1. Supply voltage	~ 230 V / 50 Hz
2. Power consumption (no ratings)	2 W
3. Output ratings:	
blower	100 W
pumps:	
CH	100 W
HSW	100 W

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