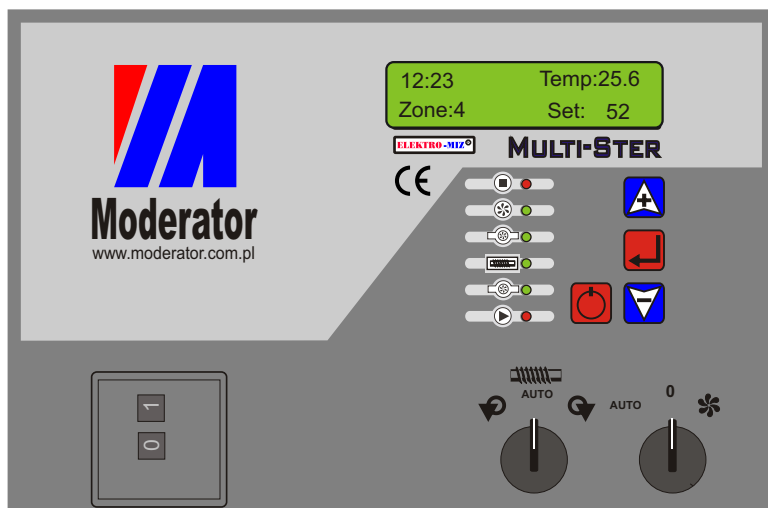




Moderator

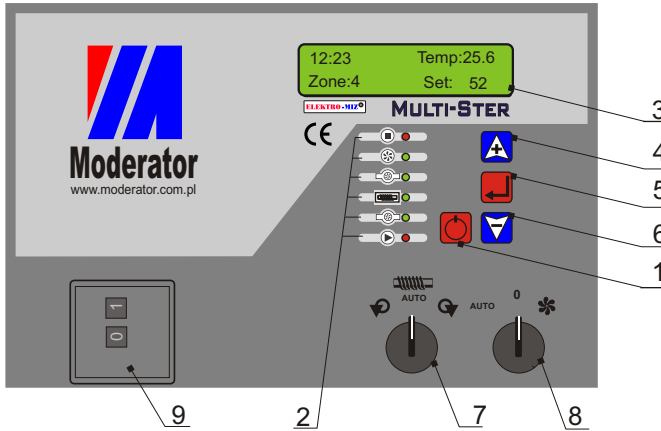
# Multi-Ster

Microprocessor Temperature Controller of central-heating boilers









## OPERATING MANUAL

## 1. Description of front panel.



1. Power button: turns the regulator off.

2. Main status lights :

-  STOP
-  ACTIVE
-  PUMP 1
-  FEEDER
-  PUMP 2
-  START

3. Alphanumeric monitor.

4, 5, 6. Control buttons:

4, 6 - use these buttons to change value of chosen parameter (light up cursor) for example: temperature. You can also use these buttons to switch between parameters in the *SETTING* mode.

5 - *STOP/START* button in normal mode. Holding if longer than 2 sec. access the *SETTING* mode. By using this buttons during the setting you can confirm choices made with buttons 4,6.

7. Switch enables manual control of the feeder. User can force right and left rotation. *AUTO* position chooses self-acting feeder mode.

8. Blower control choice between :

- manual switching on the blower
- manual switching off the blower
- blower self-acting mode

9. Emergency cutout protects feeder engine against overload. It also enables manual stop of the feeder.

## 2. Introduction.

The device is used for automatic control of the central heating boiler, which (depending on a version) may cooperate with different kind of solid fuel feeders, such as: a screw feeder, push-pull feeder, etc. There is a possibility to use an external circuit breaker, which enables to stop the mechanism of feeder in a required position. Process is being performed through the temperature control of heat factor (such as water); also it is possible to control and regulate the temperature of the circulating water and fumes. The "MULTISTER" enables to maintain the required indoor temperature controlled by control panel (room/outdoor).

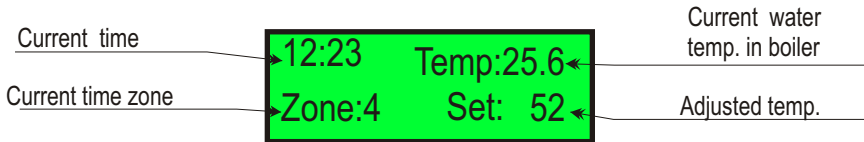
The operation algorithm gives also a possibility to define the TIME ZONES, within which the boiler should maintain the required circulation water temperature set by the user. This function enables more effective temperature regulation, for example: setting lower temperature at night and higher temperature during a day, which allows to decrease of fuel use.




## 3. Characteristic features

1. Range of temperature control 35 - 90 °C,
2. Range of hot water measurement 0 - 110 °C,
3. Range of fumes measurement : 0-600 °C (optional function) ,
4. Readable alphanumeric LCD display 2 x 16 characters.
5. Temperature which causes automatic activation of the circulation pump, is adjusted in range 10 - 70°C, Anti-freezing function which activates the pump when the temperatures get under 5°C.
6. Regulation of fire backup 0 - 90 sec., break 1-15 min.,
7. Regulator has input for external room temperature controller
8. Soft regulation of blower (activation only in service mode).
9. Max. 6 time zones in 24 hour period. Possibility to turn off not used time zones.
10. Control of fumes temperature enables economic and safe use of regulator (optional function).
11. REMOVING ASH this function controls sequentially the system of ash removal.
12. Ambient temperature 0-50° C.
13. Second degree of thermal prevention - emergency thermostat (STB-95 °C).
14. Automatic setting saving protects settings against voltage loss.

## 4. Instruction.

1. Turn on the power supply using the net switch. The monitor with the following information should appear:



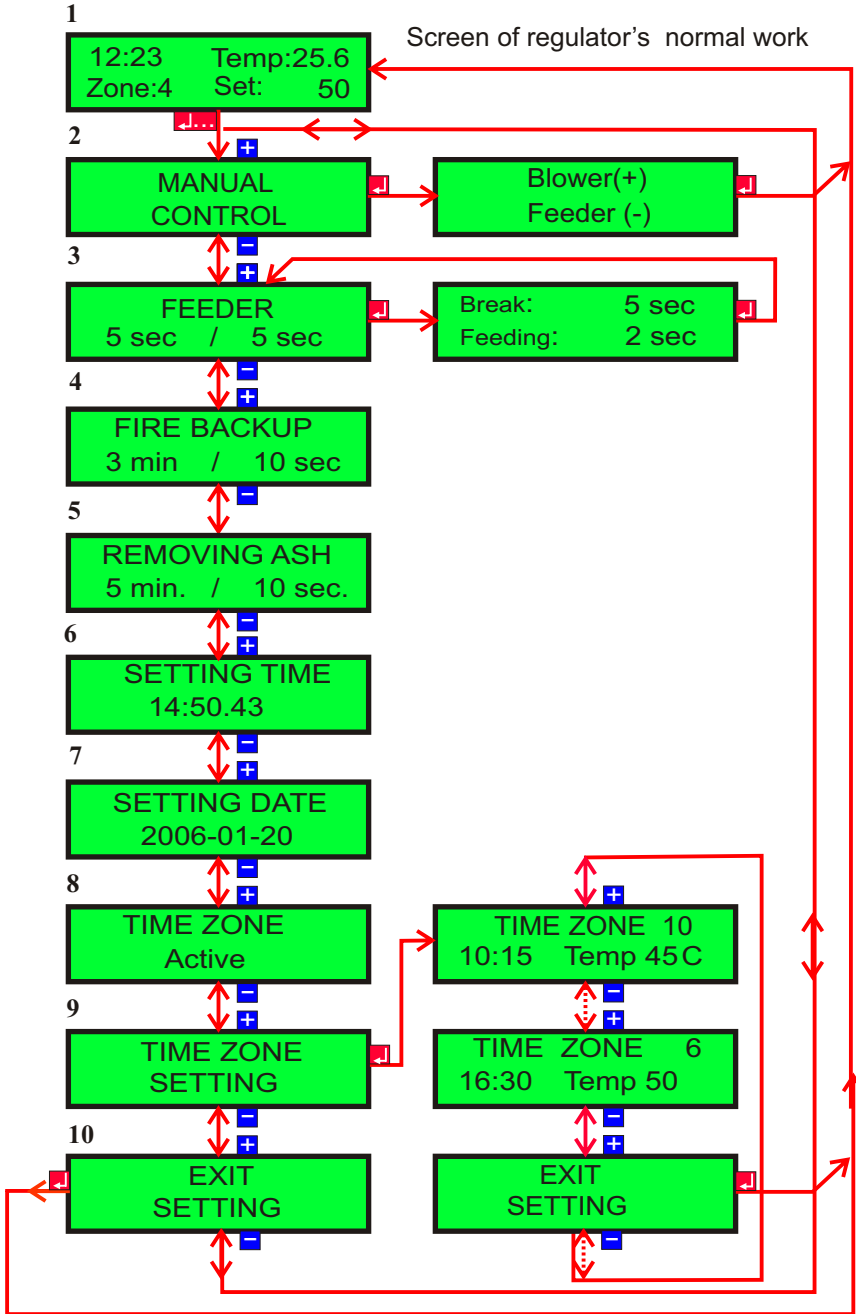
2. Turn on the START  (5). Turning on the START function switches on the blower and feeder in the C.O. boiler, when the temperature reaches required value, blower and feeder will automatically turn off. The temperature can be set manually with buttons   (4,6) at any time.

After activation controller allows to perform following functions:





1. To maintain the required temperature of boiler, set by the user through automatic turning on blower and feeder.
2. To automatic activate of the circulation pump C.O. after the temperature of boiler reaches the set value for example : 34 °C.
3. To switch off the power supply of the blower and the circulation pump automatically when the fuel ends.
4. Continuous information of C.O boiler temperature, current time, and TIME ZONE. Additionally there are status lights(2) on the front panel, which inform the user about the regulator's work:

- STOP** - indicates that the controller stopped working - turns off when the fuel ends.
- PUMP1** - signals that the circulation pump has been activated,
- ACTIVE-** signals turning on the blower ,
- FEEDER** - signals turning on the feeder,
- PUMP2** - signals that the removing ash
- START** - signals that the fire up mode of the boiler has been activated. It turns off automatically when the boiler temperature reaches the required value.





### 5. SETTINGS block scheme.











The red lines with the arrows on the scheme shows the way of moving between the *SETTING*, depending on the buttons which are used.

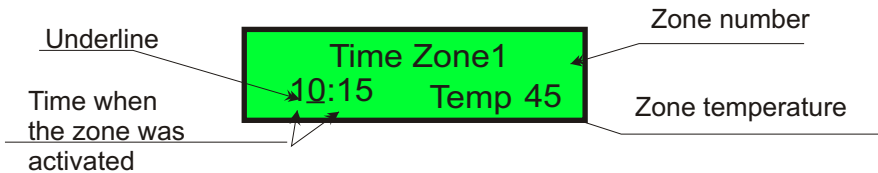
In normal operating mode of regulator **1**- push the button  (**5**) and hold it for about 2 sec.. The first function, which should appear is: *MANUAL CONTROL 2*- then the button should be released. With the buttons (**4,6**) choose a parameter, then with button  (**5**) confirm your choice. The chosen value will be underline, and it can be changed with buttons   (**4,6**)





- 2 **MANUAL CONTROL** - this function enables to turn on the feeder manually, by pressing button  (**4**), and the blower with the button  (**6**). Pressing button  (**5**) allows to exit the *MANUAL CONTROL*.
- 3 **FEEDER SETTING** - *break*: time between supplying of individual fuel doses (*range: from 1 to 15 min, type:3min*),  
*Feeding*: time during the fuel doses are being delivered (*range: from 1 to 90 .sec., type:15 sec.*).
- 4 **FIRE BACKUP** - *Break time*(*range: from 3 to 10 min, type:3min*), *Operation time* (*range: from 10 to 60 sec, type:10sec*). The time in minutes indicates the intervals between, the periods of work of blower given in seconds. These periods set the fuel doses, e.g. :3 min/10 sec, i.e.: every 3 min the blower will be turn on for 10 sec., and the next fuel dose will be supplied after next 18 work cycles of the blower.. 3min=180sec; 180:10=18.  
**Caution:** *FIRE BACKUP* will be turn off automatically after reaching 80°C.
- 5 **REMOVING ASH**, break time in minutes (*1 to 30 min*),  
operating time in seconds (*0 to 300 sec*)  
  
ATTENTION : 0 ( min) means NOT ACTIVE. System of ash removal is operable only
- 6 **TIME SETTING** - this part of *SETTING* enables to set(change)the time indicated on the clock, necessary for the work of the regulator with the *time zones*. The current hour and minutes can be set. The seconds will be reset at the moment the minutes are confirmed with the button  (**5**) .
- 7 **DATE SETTING** (yyyy-mm-dd) allows to set current date of regulator.


- 8 TIME ZONE** - (on/off) allows to turn OFF or ON the *time zones*. If the *time zone* is OFF, then temperature set by the user will stay the same. If it is ON, then regulator can maintain 6 different time zones in 24 hour period which are define by user.
- 9 TIME ZONE SETTING** -user can change the settings in certain zones by pressing button  (5)


To choose one of the zones-press buttons   (4,6) , then press  (5)  
 To set the hour-press   (4,6) and press  (5) set the minutes of the hour when the zone is to begin, press  (5) and set the zone temperature. The parameter will be underline.



- 10 EXIT SETTING**- choosing this option and confirming it will save all the changes made by the user.

During normal mode buttons   (4,6) enable to set the required temperature of the boiler. **CAUTION:** If the *time zone* are on during the temperature setting, the regulator will display the question: "Change zone?"


If the answer is YES  -it will change the setting temperature. Because one particular zone is active, the regulator will save given temperature as default for this zone.


If the answer is NO  -it will change the setting temperature, but not permanently(just for one single operation). After 24 hours(next cycle) the same zone will begin again with the initial temperature setting.

## 6. Service mode:

To change the settings during the service mode:

Turn off the regulator with the button (1)

Press the button  (5),

While holding button  (5) turn on the the power with button (1),

The monitor will display the message: -"SERVICE MODE" ,

Release the button (5),

The monitor will show the first of the parameters to set; the parameters are described below. The way of moving within the *service mode* is the same as in the *setting mode*.

### 1 Temperature activating the CO pump -

(*regulation range: from 10 to 70°C, type:35,*

### 2 Max. temeprature of fumes - "Temp:"

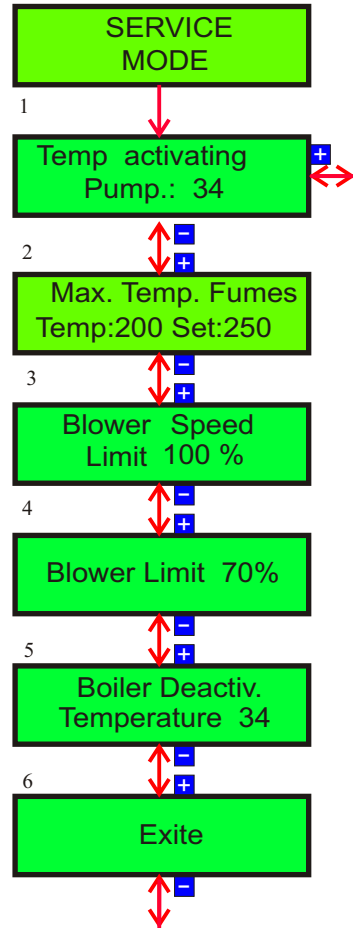
shows the temperature of the fumes in the chimney. Parameter "set:" (*range: from 100°C to 400°C, type:250°C*) enables to set the maximum temperature limit, above which the blower and the feeder will be turned off automatically..

### 3 Blower speed limit - given in [%] (*range: from 30% to 100%, type:100%*). Parameter shows teh maximum efficiency for the blowing.

### 4 Blower limit this parameter sets fan performance in function FIRE BACKUP (*range 30% to 100%, typical 70%*).

### 5 Boiler deactivation temperature- (*range: from 10 to 50 C*), when this temperature is reached, the regulator will finish the burning cycle, turn off the blower and *STOP*.

### 6 EXIT - choosing this option and confirming it with the buttons (5) enables to save all the changes made by the user during the Service mode, and return to the normal working mode.



**Caution!** Function 3 i 4 (*Mixer and Max temperture fumes*) will be available in the *SERVICE MODE* only if activated earlier, and only if the controller has relevant additional options, i.e.:additional sensor especially for the mentioned above function.If not the functions will not be available.



## 7. Error message.

**Fire in feeder** -the sensor in the feeder mechanism signals too high temperature; the boiler's work is temporarily stopped, and the feeder is being partially emptied.

**High temperature of fumes** - the sensor in the chimney signals too high temperature; the boiler's work is temporarily stopped.

**Feeder blocked** - this message appears when the feeder's engine is overheated, or if the mechanism is blocked; temporary boiler's work is temporarily stopped.

**Err -** signal damage of the temperature sensor; the boiler's work is stopped; only the C.O. Pump is working.

## 8. Connecting the regulator.

Back part view.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>O</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>O</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>L</b>	<b>N</b>	<b>L</b>	<b>N</b>			<b>L</b>	<b>N</b>	⏚	⏚	⏚	⏚	⏚	TEMP. OUT	MP. HEAD	TEMP. FUMES	FUEL LEVEL SENSOR	A+	B-						
<b>MAINS</b>				<b>FEEDER</b>				<b>ODPOPIE- LANIE</b>		<b>TEMP. PROT.</b>		<b>PUMP</b>																				

**Outcoming water temp. sensor** should be placed at warm water output.

**Head temp. sensor** should be placed at the spot indicated by the manufacturer.

**Fumes temperature sensor** should be placed at the flue.

**GSM** interface to GSM module.

## 9. Important Safety Information

1. Only qualified person should install the controller.
2. Regulator is designed for work with C.O.boilers, which are small coal supplied.
3. Avoid placing or storing the equipment in places subject to high temperature, to not overheat (under 50 °C).
4. Follow all warnings and instructions before installation..
5. Product should be installed and used with all the rules of procedure of electronic equipment. Do not allow the equipment to come into contact with water or other liquids.
6. If you have problems with the product: -check all the settings in service mode and setting mode(set everything to the basic functions which are described in the instruction)also the connections and the technical condition of the cooperating devices should be checked.

### NOTE

BEFORE CONNECTING AND REPLACING THE FUMES UNPLUG THE POWER CORD FROM THE POWER OUTLET

### CAUTION

DETECTOR HAS TO BE DRIED TO BE INSTALLED (WITHOUT OIL)!!!  
BEFORE CONNECTING THE BLOWER MOTOR AND CIRCULATION PUMP TO  
REGULATOR UNPLUG THE POWER CORD FROM THE POWER OUTLET.

## 10. Electrical Parameters.

1. Power supply ~400 V / 50Hz
2. Power consumption (without loads) 2 - 10 W
3. Temperature range during operation 0 - 50 C
4. Max. Load of the outputs:
 

blower- max	250 W,
circulation pump- max	100 W.
feeder- max	2,2 kW,
5. Regulation of the blowing efficiency 30-100%

## 11. Weight.

3 kg (without wires)

## 12. Dimensions.

