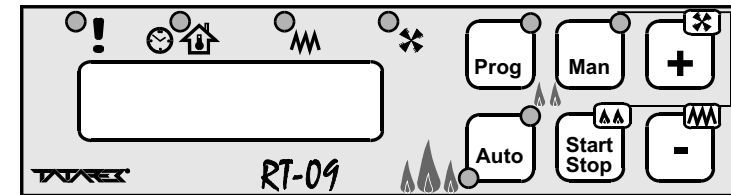


Admission date	Realization date	Signature	Remarks

***USER MANUAL***  
**RT-09/PID**  
**MICROPROCESSOR REGULATOR OF BOILER TEMPERATURE**  
**WITH THE FEEDER**  
*v 5.11 (12.05.2009 Software v5.11)*



The regulator controls the CO system (Central Heating System) with the boiler equipped with the automatic fuel feeder, in which boiler temperature changes by altering the cycles of feeding the fuel. **The applied algorithm PID enables the operation with an automatic modulation of boiler power.** **The generated heat suits what you need, thanks to that the combustion process is equal (there're no sudden temperature changes in the combustion chamber and the chimney), more efficient and guarantees much longer existence and stability of the heating system.** The regulator controls the operation of blower, circulating pump CO and loading pump CWU (warm applicable water). The regulator is equipped with the clock, which enables an automatic change of the settings at different times of the day. It can run with any room thermostat or remote control system of the TATAREK company.

**1. Basic parameters**

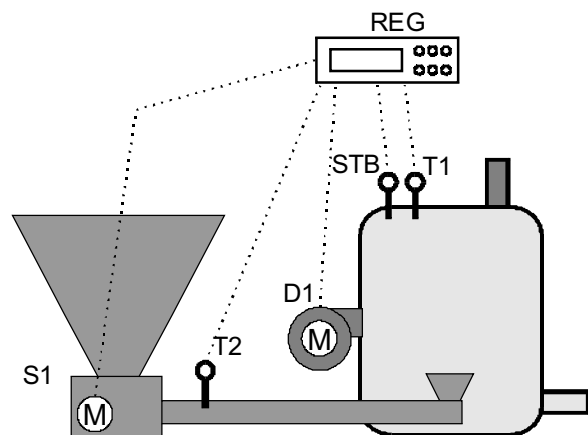
Power supply	230V/50Hz
Power consumption without load	10W
Max. connection power	1400W
Operation condition	5÷50°C, humidity 10÷80% no condensation
Housing protection class	IP30
Control output of the feeder	3A/230VAC
Control output of the blower	1A/230VAC continuous rotation regulation
Control output of the circulating pump CO	1A/230VAC
Control output of the loading pump CWU	1A/230VAC
Fuse	2*6,3A/250V
Safety thermostat of the boiler	bimetallic 95°C
Safety thermostat of the feeder	bimetallic 70°C
Temperature sensor of the boiler	KTY81 (0...+100°C)
Temperature sensor of the container CWU	KTY81 (0...+100°C)
Temp. measurement precision	2°C
Temp. measurement resolution	0,5°C
Number of the time zones	4

## 2. Operation principle

The coal boiler CO with the automatic fuel feeder runs the following cycle: firing-up, automatic operation and switching-off.

In the firing-up phase the blower and the feeder are controlled manually (manual mode "Man"). Standardly the blower only operates and after reaching the stable embers you need to activate the automatic operation.

After going over to the automatic phase the feeder makes the fuel feeding cycles whose frequency changes dependent on actual demand for heat. After burning out the fuel boiler temperature goes down. If the temperature lowers to the preset level the regulator turns off the blower and the feeder after the preset time. The automatics limits boiler temperature to 90°C and at 95°C switches off the boiler.



REG	Regulator RT-09
STB	Safety temperature sensor of the boiler
T1	Temperature sensor of the boiler
T2	Safety temperature sensor of the feeder
D1	Blower motor
S1	Feeder motor

Fig. Signals from the RT09 connected with boiler operation

### 2.1 Operation of the CO pump

An additional function of the regulator is controlling the CO circulating pump. If the boiler temperature exceeds the preset value the CO pump turns on. Turning off the pump below that value causes a faster heating of the boiler over the dew point and in effect extending the life time of the boiler. If the regulator cooperates with a room thermostat when room temperature is too high the pump runs cyclically (parameter No 41). The CO pump runs also cyclically if the PriorityCWU is set (parameter No 58) while feeding the CWU container. The regulator realizes the after-season rundown of the pump - the pump turns on for a minute if it doesn't run for a week.

## CE CONFORMITY DECLARATION

Ref. No. 57.RT.01.2007/1/B

We, **ZAKŁAD ELEKTRONICZNY TATAREK Jerzy Tatarek**  
75 Swieradowska St. , 50-559 Wroclaw

declare under our sole responsibility that

the product:

**MICROPROCESSOR REGULATOR OF BOILER TEMPERATURE WITH THE FEEDER**

model: RT-09, RT-09S, RT-09PID

is in conformity with the basic requirements included in Directive EMC 2004/108/WE of 15.12.2004 (the electromagnetic compatibility - law gazette No 82 pos. 556) and Directive LVD 2006/95/WE of 12.12.06-Directive of Economy Minister of 21.08.07 regarding the requirements for electric devices (Law Gazette No. 155 pos. 1089)

To the conformity evaluation the following harmonized standards were used:

- PN-EN 60730-2-1: 2002 - Automatic electric regulators for house usage and the like. Part 2-1: Specific requirements regarding electric regulators for electric house devices
- PN-EN 60730-1: 2002 - Automatic electric regulators for house usage and the like. Part 1: General requirements.
- PN-EN 55022: 2000 - Electromagnetic compatibility (EMC)- IT devices Characteristics of radioelectric noises. Acceptable levels and measurement methods

Complementary information:

Laboratory IASE 51-618 Wroclaw, 1 Wystawowa st.

Test report No. 26/DL/I/07 of 23.04.2007  
25/DL/I/07 of 23.04.2007

Electronic Engineering Plant TATAREK  
has initiated management system and complies with the following standard :  
ISO9001: 2000 CERTIFICATE No. 133/2004 of 01.2004  
Polish Foreign Trade Chamber

The last two digits of the year in which the CE marking was affixed: 07

Place of issue:

Wroclaw

Date of issue:

17.09.2007

Manufacturer representative:

Mirosław Ząsepa

Position:

Designer

## WARRANTY

1. Warranty is valid [24] months from the date of sale.
2. Producer does not take responsibility for any mechanical damages made by user.
3. MAKING REPAIRS OR MODIFYING THE DEVICE BY USER IS FORBIDDEN AND CAUSES WARRANTY CANCELATION
4. Warranty card is valid only with date of sale, seller's signature and stamp
5. Warranty and after-warranty repairs should be done only by producer, damaged regulators should be sent to producer in order to make all repairs needed.
6. Warranty protection involves the EU
7. Warranty does not exclude, not restrict and not suspend buyer's rights coming from the incompatibility of the article with the agreement (Laws Journal No. 141 Pos. 1176)

## WARNING !

ANY MODIFICATION OF THE REGULATOR MADE BY USER CAN BE THE CAUSE OF SAFETY CONDITIONS DETERIORATION AND CAN EXPOSE THE USER TO ELECTRIC SHOCK OR DAMAGE DEVICES SUPPLIED.

Connection cable of regulator may be replaced only by producer or his authorized service locations

### WARNING!

1. Producer does not take the responsibility for damage caused by atmospheric discharge
2. and overvoltage in the mains
3. Burnt fuses are not subject to warranty replacement

Date of sale

Seller's signature and stamp

Register No.. GIOS: E 0002240WZ

ARGO-FILM  
Recycling Plant No. 6  
180 Krakowska st., 52-015 Wrocław  
ph.: 071 794 43 01,  
0 515 122 142

Worn out electronic  
and electric devices must be transferred to  
the utilization collection place, where will  
be accepted for free



# TATAREK®

Zakład elektroniczny TATAREK Jerzy Tatarek

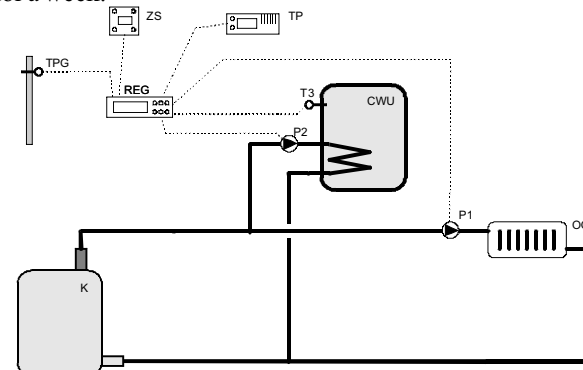
50-559 Wrocław, 75 Świeradowska st  
ph. (071) 367-21-67, 373-14-88, fax 373-14-58; tax index number 899-020-21-48;  
Bank account : BZ WBK S.A. O/WROCLAW 6910901522-0000-0000-5201-9335  
www.tatarek.com.pl.; E-mail: tatarek@tatarek.com.pl

## 2.2 Operation of the CWU pump

The regulator controls the pump feeding the CWU container as well. The CWU pump can be turned on if water temperature in the boiler is higher than the preset threshold 45°C (parameter no. 51) and higher than in the container by 3°C (parameter no. 52). The CWU pump turns on when the temperature sensor of the container indicates temperature lower than 50°C (parameter no. 53) and turns off when it indicates temperature higher by 10°C, so 60°C (parameter no. 54).

After finishing the CWU feeding the pump runs for 1 min (parameter no. 56), which prevents from increasing temperature in the fireplacejacket, especially in summer time when the C.O. pump doesn't operate.

**ATTENTION!** - in case there's no CWU sensor the container feeding takes place "in dark". The CWU pump switches on if water temperature in the boiler reaches the preset value or is higher than 50°C (parametr no. 53). The regulator realizes the after-season rundown, the pump turns on for a minute if it doesn't run for a week.



REG	Regulator RT-09
ZS	Remote programmer RT-09
TP	Room thermostat
TPG	Sensor of external temperature (for a weather regulator)
K	Boiler
T3	Temperature sensor of the CWU container
P2	CWU pump
OG1	Central Heating CO
P1	circulating CO pump

Fig. Signals from the RT-09 regulator linked to the operation of the heating system

## 2.3 Cooperation with a room thermostat

The regulator has the input to connect a room thermostat of any kind equipped with the relay non-voltage output. To the regulator you need to connect the terminals of the thermostat that short-circuit if room temperature is higher than the preset one. Till the room temperature is lower than the preset one set in the thermostat (relay contacts open) the regulator runs normally. If the room temperature exceeds the preset one set in the thermostat (relay contacts shorted) the regulator modifies its operation: the preset temperature of the boiler lowers (parameter no. 14) and the CO pump runs cyclically (parameter no. 41). If the thermostat is not mounted then the corresponding input of the regulator must be left unconnected.

The thermostat should be placed in the largest room of a building. In that room there must not be installed any near-radiator thermostatic valves. It must be mounted at the height of 1,5m off ground, away from windows and heaters. In the other rooms the thermostatic valves can be mounted.

## 2.4 CWU priority and summer mode

Parameter no. 58 "PriorityCWU" defines the way of feeding the CWU container. There are modes as follows:

**WYL** - normal operation (parallel operation of pumps) without favouring the CWU system

**ZAL** - faster reaching the readiness of CWU by limiting a heat reception of the heating system. While feeding the container the preset temperature of the boiler is automatically increased (if it's actually lower) up to the value of effectively feeding the CWU container [parameter no. 53)+54)+52) that is  $0^{\circ}\text{C}+10^{\circ}\text{C}+3^{\circ}\text{C}=63^{\circ}\text{C}$ ] and the CO pump runs cyclically. After feeding the container the normal operation of the CO pump and the actual preset temperature comes back.

**SUMMER** - switching off the heating system in summer time (the CO pump doesn't run). The CO boiler operates only in the function of CWU getting ready

## 2.5 Emergency situations

The regulator recognizes the following emergency situations:

- Exceeding the feeder temperature as an effect of moving back the flame into the feeder. The regulator turns on the feeder for a preset time (see the mounting parameters) in order to push through the fuel. The blower is turned off.
- Exceeding the maximum temperature of the boiler. The blower and feeder are turned off. The CO pump switches on to cool off the boiler.
- Activating the safety thermostat of the boiler. The blower and feeder are turned off. The CO pump switches on.
- Damaging the temperature sensor of the boiler. The blower and feeder are turned off. The CO pump switches on.

Any emergency situation is stored in the regulator (also after switching off the power), an alarm signal is generated, and on the display a corresponding info shows up. Pressing any button turns off the signal. After pressing the START/STOP button (10) the alarm is cancelled and the normal operation (if the cause of alarm disappears) comes back.

## 3. Handling the regulator

On the control panel (Fig.1) are all the controls of the regulator

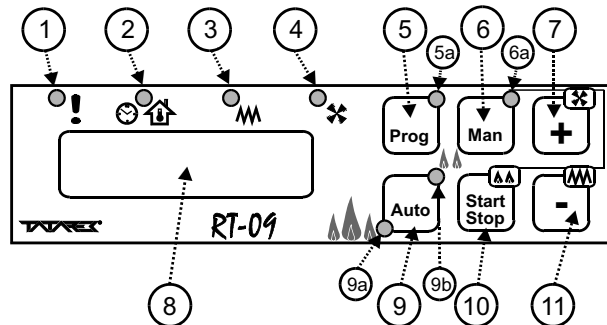


Fig.1 Control panel

## 4 Installing the regulator

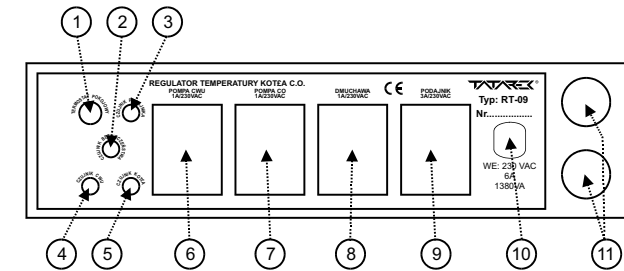
### ATTENTION!

- ! THE REGULATOR IS SUPPLIED BY 230V/50HZ. ANY MOVES REGARDING INSTALLATION SHOULD BE MADE AT THE DISCONNECTED MAINS.
- ! THE REGULATOR HAS TO BE CONNECTED TO THE MAINS WITH THE ZERO-PIN THROUGH A DIFFERENTIAL DEVICE ACC. TO THE VALID LAWS
- ! THE REGULATOR SHOULD NOT BE EXPOSED TO WATER AFFECTING. ITS ENVIRONS OUGHT TO BE CLEAN.
- ! THE PRODUCER DOESN'T TAKE ANY RESPONSIBILITY FOR DAMAGES CAUSED BY WRONG USAGE OF THE REGULATOR.

Fig.2 Back panel view

Connection of:

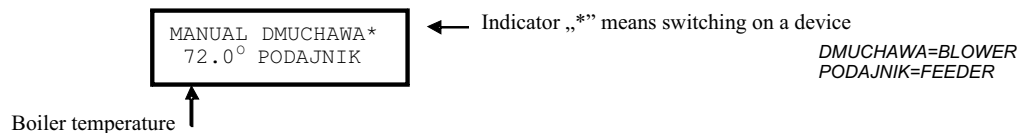
1. Room thermostat
2. Safety sensor of the boiler
3. Safety sensor of the feeder
4. Temp. sensor of the CWU container
5. Temp. sensor of the boiler
6. CWU feeding pump
7. Circulating C.O. pump
8. Blower
9. Feeder
10. Power cable
11. Fuses 6,3A/230V



## 8. Solving the problems

Problem	Possible cause	Solution
Regulator doesn't run	1. Wrong connection of the power cable 2. Damaged fuse  3. Switch SIEC turned off	1. Check power connection 2. Check the fuses, replace the damaged one- be aware of its parameters  3. Switch the SIEC button to the I position
On the emergency screen the text "CZUJNIK TEMP. KOTLA" shows up.	1. Disconnected temperature sensor 2. Damaged temperature sensor	1. Check a sensor connection 2. Go to the service
Regulator doesn't control the boiler, emergency screen	1. Emergency memory is not deleted 2. Cause of emergency still exists	1. Press START/STOP to delete the emergency memory 2. Wait till the cause stops (e.g. the feeder cools off)
CWU pump doesn't run	1. Damaged temp. CWU sensor. 2. Too little difference between boiler and CWU temperatures 3. CWU system blocked	1. Check a sensor connection 2. Increase the preset temperature of the boiler 3. Turn on the CWU system by setting the parameter no. 50
CO pump doesn't run	1. Boiler temperature too low 2. Summer mode is turned on	1. Wait till the boiler temperature exceeds the value of the parameter no. 40 2. Turn off the summer mode by changing the parameter no. 54

## Screen of the manual mode



## 5.3 Automatic mode (Auto)

The automatic mode is indicated by lighting up the LED on the AUTO button (9). In this state the regulator keeps the boiler temperature at the preset level. The feeder makes the cycles whose frequency alters depending on the current need for heat. They're the so-called operation cycles (the LED (9a) lights up) After exceeding the preset temperature the regulator realizes the so-called keeping-up cycles the aim of which is to keep up the combustion process (the LED (9b) lights up).

The preset temperature of the boiler can be changed by:

\* a user. With the PROG button you need to set the screen of the boiler operation and then with the buttons "+" and "-" you change the main temperature.

\*a time zone mechanism. At the programmed times the temperature is increased or decreased by the value of the current correction coefficient of the current time zone. During this correction the LED (2) lights up.

\*a room thermostat. If the room temperature is higher than the preset one set on the room thermostat the regulator sets minimum temperature of the boiler operation, which corresponds to the transition to the keeping-up cycles of the combustion process. This state is signalled by the LED (2) (change of the preset temperature) and blinking the LED (9b) (enforced keeping-up cycles)

\*the regulator if the feeding of the CWU container in the priority mode takes place. The boiler temperature is increased to the value of guaranteeing an efficient feeding.

If for 2 hours from the time of passing to the AUTO state, the boiler temperature doesn't reach the preset one or for 45min the temperature is lower than the switch-off temperature of the boiler, the regulator stops the feeder and the blower, passing to the stop state. From the automatic mode to the stop state you can transition by pressing the STOP button (10) and to the manual mode by pressing the MAN button (6). In order to avoid an accidental going out of the AUTO mode the button are needed to be pressed longer. If during the automatic mode the power supply is off, after its restoring the regulator returns automatically to the AUTO mode.

## 6. Switching on the boiler

The following points show the way the heating up of the boiler is undertaken:

- You press the MAN button (6) till the yellow LED (6a) lights up
- With the "-" button (11) you switch on the feeder and wait till the fuel finds in the hearth
- With the "-" button (11) you turn off the feeder
- You heat up the hearth
- With the "+" button (7) you turn on the blower
- You wait till the stable embers comes up
- You press the AUTO button (9) till the green LED lights up. The regulator takes control of the blower and the feeder in the automatic mode
- You can also correct the preset temperature with the buttons "+" and "-" (7) (11).

1. LED signals an emergency
2. LED signals an automatic change of the preset temperature as an effect of the active time zone or cooperation with a room thermostat or remote control system
3. LED signals the feeder operation
4. LED signals the blower operation
5. "PROG" button programming / choosing a parameter
- 5a. LED signals the mode of programming
6. "MAN" button - change of the operation to the manual one
- 6a. LED signals the manual operation
7. Button "+" increases the value of a chosen parameter/controlling the blower in the manual mode
8. Text display
9. "AUTO" button - change of the operation to the automatic one
- 9a. LED signals the automatic mode
- 9b. LED signals the automatic mode with a minimum power of the boiler (keeping up the combustion process)
10. "START" button - confirms a chosen parameter or "STOP" button - turns off the automatic mode
11. Button "-" decreases the value of a chosen parameter/controlling the feeder in the manual mode

The regulator condition is shown on the text display (8). The displayed screens inform about device operation, temperature of sensors, enables parameter changing and the like. The changing of the screens is done by pressing the PROG button (5).

## 3.1 Changing the parameters

Changing the parameters is done by pressing the START/STOP button (10). As a result the parameter field starts blinking. That value can be changed by "+" (7) or "-" (11) buttons. Another pressing the START/STOP button (10) confirms the changes - the field stops blinking. The changed parameter not confirmed for 60secs is not stored and the former value is valid.

## 3.2 Time zones

The regulator is equipped with the clock, which enables an automatic change of the operation at different times of the day. The day is divided into 3 zones (**\$1, \$2, \$3**) and the time span in which there's no active time zone that is STREFA 0 or BAZA. The zone is defined by the start time (OD)/(from), finish time (DO)/(till) and correction of the preset temperature (TEMP).

E.g. setting -5 °C over a night means lowering the temperature by 5 degrees to the preset main temperature. That way of setting causes that there's no need for reprogramming all the zones at changing weather conditions. It only requires controlling the main temperature.

A zone, for which the start (OD) equalling the end (DO) temperature is set or the temperature 0-correction (TEMP) is defined, is inactive, and don't change the settings of the regulator.

The time zones can overlap each other, in that situation the settings for an active zone of higher number are valid.

In the regulator the factory default settings are as follows

STREFA 1 (\$1)	OD 6.30 DO 8.00 TEMP 0 °C
STREFA 2 (\$2)	OD 14.00 DO 17.30 TEMP 0 °C
STREFA 3 (\$3)	OD 20.00 DO 6.00 TEMP 0 °C

STREFA1=ZONE1  
OD=FROM  
DO=TILL

### 3.3 Screens

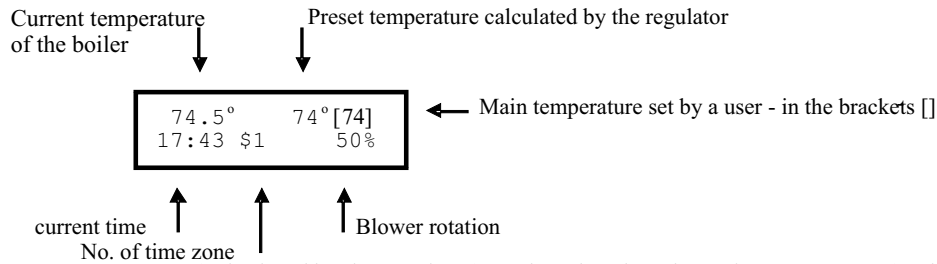
**Emergency screens** are not available until one of the following emergency situations occurs:

- \* Exceeding the feeder temperature
- \* Exceeding the maximum temperature of the boiler
- \* Activating the safety thermostat of the boiler
- \* Damaging the temperature sensor of the boiler

**ALARM!! CZUJNIK  
TEMP KOTŁA**

Emergency situation is accompanied by a broken sound signal that can be cancelled by the START/STOP button.

**Operation screen of the boiler** shows the actual temperature of the boiler, preset temperature, blower power, current time and number of time zones.



! Preset temperature (calculated by the regulator) can be other than the main temperature (set by a user) in case of:

- **limiting the maximum temperature of the boiler** - preset temperature cannot exceed the parameter 10 (90°C)
- **limiting the minimum temperature of the boiler** - preset temperature cannot exceed the parameter 11 (50°C)
- **feeding the CWU container in the priority mode** - preset temperature (if it's lower) is increased up to the value of guaranteeing an efficient feeding / parameter 52+ no.53+no.54(63°C)
- **room thermostat is active** - preset temperature is decreased to the value of the parameter no. 41 (50°C)
- **remote control system is active** - temperature is set by the remote control system RT09ZS
- **time zone is active** - temperature correction for a given time zone is valid.

It's a stable screen that is in order to change it you need to press PROG.

#### Boiler operation screen

TEMP            74  
KOTŁA

It's a stable screen that is in order to change it you need to press PROG

#### System operation screen

On the screen you find the symbols of devices:

CWU- warm applicable water container (CWU! means the CWU priority is set.

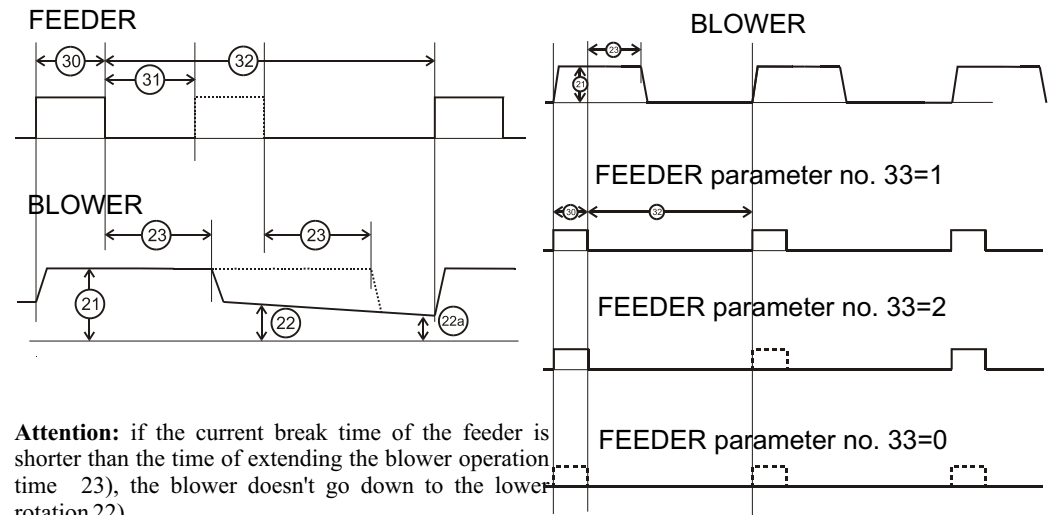
CO- central heating

K- boiler

The blinking arrows indicate the current flow of heat as a result of pumps operations:

K->CWU - feeding CWU pump is turned on

K->CO - circulating CO pump is turned on



**Attention:** if the current break time of the feeder is shorter than the time of extending the blower operation time 23), the blower doesn't go down to the lower rotation 22). (that situation is marked by the dotted lines in the figures.

**Attention:** In the keeping-up cycles of the combustion process (that is if the boiler operates with minimum power)the blower is turned off when the feeder doesn't work (parameter no. 22 takes 0 value) and the parameter no. 33 defines if the feeder turns on every time (parameter no. 33=1 in every cycle; parameter no.33=2 every second cycle etc..) The value parameter no. 33=0 means taht in the keeping-up cycles only the blower turns on.

## 5. Operation states of the regulator

The regulator can be in the stop , manual or automatic state. In every case the emergency situations is controlled.

### 5.1 Stop state

In this state the LED on the MAN button (6) doesn't light, nor does the AUTO one (9). It's a state in which the blower and the feeder are turned off. A user can browse and change the parameters. The pass to the manual state follows if the MAN button (6) is pressed  
The pass to the automatic state follows if the AUTO button (9) is pressed.

### 5.2 Manual operation(Man)

The manual operation state is indicated by lighting up the LED on the MAN button (6a). At first the blower and the feeder are turned off. A user can switch on the blower with the "+" button (7) and the feeder with the "-" button (11). Yet another pressing the buttons turns off the blower/feeder. The state of the devices and the current temperature of the boiler is indicated by the LEDs (3) and (4) and the display (8). The manual mode doesn't affect the CO and CWU pumps, which operate acc. to their settings. The manual mode enables testing the feeder and the blower, heating up the boiler and releasing the feeder.

The pass to the stop state follows if the PROG button (5) is pressed

The pass to the automatic state follows if the AUTO button (9) is pressed.

SETUP PARAMETERS					
No	Description	Range	Factory setting	Setting	FUNCTION
33	Cycles of the feeder	0...10	1		In the keeping-up cycles (see the next figure) the feeder doesn't need to turn on every time. This parameter defines what times the feeder turns on: 1- feeder turns on in every cycle, 2-every second cycle, etc..The value 0 means during the keeping-up cycles only the blower is turned on.
34	Control of the feeder temperature	WYŁ/OFF ZAL/ON	ZAL/ON		Switching off this function removes the control of the feeder temperature
35	Emergency pushing out of the fuel	1...300s	10s		Switch-on time of the feeder to push out the embers fuel during the emergency of exceeding the feeder temperature
40	Temperature of the switch-on of the CO pump	40...60 °C	42 °C		Minimum temp. of the boiler at which the CO pumps switches on.
41	Temperature of the switch-off of the CO pump	1...30min	4min		Break time of the CO pump in case if the room thermostat decides of turning off the heating. After the time the pump turns on for 30s
50	CWU container	WYŁ/OFF ZAL/ON	ZAL/ON		Value WYŁ./OFF blocks feeding the CWU container
51	Temperature of the switch-on of the CWU pump	20...80 °C	45 °C		Minimum temp. of the boiler at which the CWU pump switches on.
52	Delta CWU	1...10 °C	3 °C		Minimum temperature difference of the boiler and the CWU container needed for the CWU pump to run
53	Minimum temp. of CWU	30..100 °C	50 °C		Minimum temperature of the CWU container. Below the temperature the feeding pump turns on.
54	Max dTemp of CWU	2..15 °C	10 °C		Maximum temperature of the CWU container is the parameter (53)+54). Above the temperature the feeding pump turns off
55	Rundown time of the CWU pump	0..10min	1min		Rundown time of the CWU pump. Extending the pump operation after the end of feeding the CWU container. It prevents from a sudden temperature increase in the boiler after the end of feeding, especially in summer time when the CO pump doesn't run.
58	CWU priority	WYŁ/OFF	WYŁ/OFF		Normal operation (parallel work of the pumps) without favouring the CWU circuit.
		PRIO			
		SUMMER			
99	Diagnostics	WYŁ/OFF ZAL/ON	WYŁ/OFF		Value ZAL/ON causes adding the diagnostics screen for the service
999	Factory settings (Presets)	WYŁ/OFF ZAL/ON	WYŁ/OFF		It's not a parameter only the way for setting the parameters to the factory defaults. In order to set the factory default you need to set to ZAL/ON and then confirm with the START button.

#### 4. Adjusting the regulator to the boiler

For a proper operation of the regulator the following parameters must be determined:

- Combustion conditions of the single portion of the fuel, that is the time of the feeder operation-parameter no. 30, blow force during the feeder operation 21) and time of extending the blower operation 23)
- Shortest break time of the feeder in which there's full combustion of the feeded fuel 31) (time guaranteeing 100% power of the boiler).
- Longest break time of the feeder that won't cause going out the boiler 32) (time guaranteeing the keeping-up of the combustion process.
- Maximum air blow force 22) while the feeder doesn't run- the blow corresponding to the max power of the boiler
- Minimum air blow force 22a) while the feeder doesn't run- the blow corresponding to the minimum power of the boiler

! means setting the CWU priority

↓

```

→CWU! [ 50]
K [ 74 °] →CO

```

Screen for the activated summer mode (only CWU)

↓

```

→CWU! [ 50]
K [ 74 °] LATO

```

It's a stable screen that is in order to change it you need to press PROG.

#### Screen of the clock

```

ZEGAR $1
17:15

```

The screen shows the current time and number of a valid time zone.

Time correction is possible after pressing START/STOP (10). As a result the minute field starts blinking. The blinking value you can change with the "+" (7) or "-" (11) buttons. Pressing the PROG button (5) you go over to the hour field (you can change it as described above with "+/-"). Pressing START/STOP (10) confirms the changes (the clock field stops blinking).

#### Screen of setting the parameters

```

PoziomUstawiania
0

```

Normally the setting level is "0" which means the parameters are not available. After switching to the level 1 or 2 the following screens show the values of the parameters. The level 1 shows the most commonly used parameters, level 2 - time zones. The last screen contains the text „\*\*koniec\*\*" after which the comeback to the former screens takes place.

LEVEL 1 – BASIC					
No	DESCRIPTION	RANGE	FACTORY SETTING	SETTING	FUNCTION
21	Blower rotation during feeder operation	3...100%	100%		Blower rotation (if in the setup the continuous operation of the blower was set)if the feeder works.
30	Turning on the feeder	1...600s	25s		Time of turning on the feeder
41	Time of turning off the pump	1...30min	4min		Break time of the CO pump in case if a room thermostat decides of switching off the heating. After that time the pump turns on for 30s.
53	Minimum temp. of CWU	30..100 °C	50 °C		Minimum temperature of the CWU container. Below the temperature the feeding pump turns on.
55	Rundown time of the CWU pump	0..10min	1min		Rundown time of the CWU pump. Extending the operation time of the pump after finishing the CWU feeding. It protects against a sudden temperature increase in the boiler after finishing the feeding, especially in summer time when the CO pump doesn't run.
58	CWU Priority	OFF ON	OFF		Turning on the function causes that during feeding the CWU container the heat reception by the CO system is limited by a cyclic operation of the CO pump (the same like at turning on a room thermostat. Summer mode. Feeding the CWU container only.
		SUMMER			

LEVEL 2 – TIME ZONES					
No	DESCRIPTION	RANGE	FACTORY SETTING	SETTING	FUNCTION
\$11	Zone \$1 from	0:00...23:45	6:30		Start time of the time zone 1
\$12	Zone \$1 till	0:00...23:45	8:00		End time of the time zone 1
\$13	Zone \$1 temp	-20...+20 °C	0 °C		Temp. correction of the zone 1
\$21	Zone \$2 from	0:00...23:45	14:00		Start time of the time zone 2
\$22	Zone \$2 till	0:00...23:45	17:30		End time of the time zone 2
\$23	Zone\$2 temp	-20...+20 °C	0 °C		Temp. correction of the zone 2
\$31	Zone \$3 from	0:00...23:45	20:00		Start time of the time zone 3
\$32	Zone \$3 till	0:00...23:45	6:00		End time of the time zone 3
\$33	Zone \$3 temp	-20...+20 °C	0 °C		Temp. correction of the zone 3

**Demonstration of the 53 parameter changing "Temp. min CWU" defining water temperature in the CWU container (parameter level 1). Press as follows:**

- \* repeatedly "PROG" untill the parameter settings screen appears "Level of setting 0"
- \*\*"START" -> blinking 0
- \*\*"+ " -->blinking 1
- \* START -->1 stops blinking (the level 1 was chosen)
- \*repeatedly "PROG" till the 53 parameter screen shows up "Temp.min CWU"
- \*START -->the current value you want to change starts blinking
- \* "+, -" --> you set a new value
- \* START --> confirming the new value
- \*repeatedly untill the boiler operation screen shows up

### Screen of setting the setup parameters

**!** SETUP PARAMETERS ADJUST THE REGULATOR TO THE PROPERTIES OF THE BOILER AND THE CO SYSTEM. THEIR MODIFICATION SHOULD BE CONSULTED WITH THE BOILER PRODUCER AND DESIGNER OF THE CO SYSTEM. ILL-CONSIDERED CHANGES OF THE PARAMETERS CAN CAUSE AN UNSTABLE AND INEFFICIENT OPERATION OF THE SYSTEM

**!**SETUP PARAMETERS ALSO INCLUDE ALL THE MENTIONED PARAMETERS EXCEPT FOR THE INFORMATION ABOUT THE TIME ZONES. In order to activate the screen of setting the setup parameters you need first to press the PROG button (5) at the power off and then switch on the power. After appearing the text "KONFIGURACJA?" you need to release the PROG button and then press the START button (10). From now on the following screens show the values of the setup parameters which can be altered according to the before mentioned rules. The last screen includes the text "\*\*\*koniec\*\*\*" after which the normal operation is restored.

SETUP PARAMETERS					
No	DESCRIPTION	RANGE	FACTORY SETTING	SETTING	FUNCTION
10	Maximum setting of temp	50...90 °C	90 °C		Maximum preset temperature of the boiler ( if the settings of the time zones or room thermostat cause exceeding that value then they're restricted to that value)
11	Minimum setting of temp	25...55 °C	50 °C		Minimum preset temperature of the boiler ( if the settings of the time zones or room thermostat cause exceeding that value then they're restricted to that value)
12	Stop of the boiler	20...40 °C	35 °C		Temperature below which the switch-off of the boiler takes place in the automatic operation mode (that is a stop state). The switching off takes place if the temperature for 45min doesn't increase
13	Hysteresis	0,5..5,0 °C	1,0 °C		Temperature difference of passing between an operation state and keeping up the combustion process while the PID algorithm is not active.
14	Temperature of room thermostat	25...85 °C	50 °C		Preset temperature of the boiler at the cooperation with a room thermostat. That is the temperature to which the regulator is set in case if the room thermostat decides about turning off the heating. ATTENTION: this parameter should be greater than the switch-off temperature of the boiler.
15	PID	OFF/WYŁ ON/ZAL	ON/ZAL		WYŁ blocks the PID algorithm. The boiler works without power modulation. That is with the max power if the temperature is below the preset one, and then goes to the keeping-up state.
20	Blower control	Continuous Continuous1 on/off	Continuous Plynne		Adjusting the blower control to the type of a motor (option "Continuous1"/"Plynne1" concerns the motor - class RV 14)
21	Blower rotation during feeder operation	3...100%	100%		Blower rotation during the feeder operation (if in the setup the continuous run of the blower was set)(see the next figure)
22	Max rotation of the blower at the pause of the feeder	3...100%	50%		Max rotation of the blower when the feeder doesn't operate (see the next figure)
22a	Minimum rotation of the blower at the pause of the feeder	3...100%	30%		Minimum rotation of the blower when the feeder doesn't operate (see the next figure)
23	Switch-on of the blower	1...600sek	30sek		Time of extending the blower operation at the moment when the feeder is turned off (see the next figure)
30	Switch-on of the feeder	1...600sek	25sek		Time of switching on the feeder (see the next figure)
31	Minimum switch-off of the feeder	1...1200sek (20min)	35sek		Shortest switch-off time of the feeder - it guarantees reaching 100% power of the boiler (see the next figure)
32	Maximum switch-off of the feeder	100...1200 sek (20min)	600sek		Longest switch-off time of the feeder - it guarantees keeping up the combustion process (see the next figure)