Zakład elektroniczny TATAREK Jerzy Tatarek

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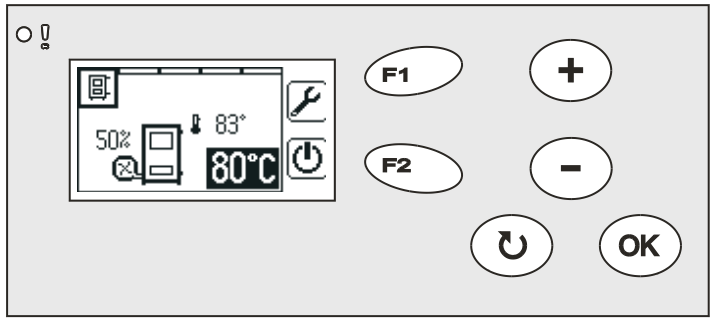
Zakład elektroniczny TATAREK Jerzy Tatarek

USER MANUAL

program version 2.1 (06.02.2014 from program v2.1)

RT-14

CONTROLLER OF HEATING SYSTEM WITH SOLID FUEL BOILER



The controller controls the heating system based on the solid fuel boiler in which by controlling the efficiency of the blower the burning process is under control. The receivers of the heat are as follows: Container of the Warm Applicable Water (WAW) and Heating System (CH). The controller cooperates with the 3-way mixing valve in the heater or floor system and safety system of the return temperature of the boiler.

1.Basic parameters

Power	230V/50Hz
Power consumption without load	4W
Max connection power	750W
Operation conditions	0-50°C, humidity10-90% no condensation
Housing protection class	IP41
Fuse	6,3A/250V
Power-carrying capacity of blower output	1,5A/230V/50Hz
Number of outputs to control pumps	3 * 200W/230V/50Hz
Number of outputs to control the valve motor	2 * 200W/230V/50Hz
Number of temperature sensors of water	3 * KTY81 (0...+100°C)
Temperature sensor of the flue gas	PT1000 (-30...+450°C)
Temp. measurement precision	+/- 1°C
Temp. measurement resolution	0,1°C
Switch-on temperature of the STB safety thermostat	94°C

! The text <xx> indicates the parameter “xx” whose detailed description is in ch. 9

2 Boiler operation

The controller regulates the central heating system with the fine coal boiler, in which by controlling the efficiency of the blower the boiler temperature is changed.

The fine coal CH boiler operates in the following cykle: firing-up - operation - damping:
Phase I/Firing - up - the controller turns on the blower. It causes firing up the fine coal and gradual increase in temperature of the boiler. Reaching <22> TempSTOP_BOILER = 35°C finishes the firing-up phase. The duration of the firing-up phase is limited up to 2 hours. If the temperature doesn’t increase the controller switches over to the damping phase.
The controller skips the firing-up phase and automatically turns on the boiler if after switching on the power the water temperature is above <22>.
In the phase II/Operation - the controller maintains the boiler temperature at the preset value. If the boiler temperature is below the preset one the blower switches on (the rotations of the blower are selected automatically). The increase in temperature above the preset one causes the blower switched off. In that state the scavenges of the boiler are carried out (acc. to the settings) in order to get rid of the combustion gas.
The temperature drop below <22> TempSTOP_BOILER=35°C starts **the phase III/Damping of the Boiler**. If for <23> TimeSTOP_BOILER=45min the temperature doesn’t increase then the blower turns off and the operation cycle of the boiler is completed.
! The given temperatures relate to the situation when the sensor of the flue gas is inactive. After connecting the flue gas sensor the transition between the operation phases depends on the temperature of the flue gas.

! Connecting the flue gas sensor opens up the following additional functions of the controller:

☒ Fast detection of the fired-up and damped state
☒ Enhancing the combustion efficiency by limiting the temperature of the flue gas.

2.1 Firing up/Damping under control of the flue gas sensor

The parameters <24>, <24d> and <25> determine the fired-up and damped conditions.
☒The controller detects the fired-up state if the flue gas temperature is above <24>+ <24d> (50 °C+30 °C=80 °C)
☒The controller detects the damped state if the flue gas temperature is below <24>=50 °C and that state remains active for the time <25>=10min
! Setting <24>=500 °C turns off that function. The transition between phases is controlled by the water temperature (<22> , <23>).

2.2 Limiting the flue gas temperature

The parameters <36> , <36d>and<37> determine the limit of the flue gas temperature.
☒ If the flue gas temperature exceeds <36>=250 °C then the blower efficiency is reduced to the value <37>=40% (if it’s higher)
☒ Temperature drop below <36>-<36d> (250 °C 20 °C=230 °C) calls back the normal operation.
! Setting<36>=500 °C turns off that function. There’s no reduction of the blower efficiency

3 Hydraulic configurations of the controller.

The following hydraulic diagrams show the possible operation configurations of the controller.

3.1 Configuration without the mixing valve

! For this configuration you set <60>(„ModeMIXER”)=OFF

Admission date	Realization date	Signature	Remarks

PRODUCENT ZASILACZY SIECIOWYCH
ISO 9001: 2000

CE CONFORMITY DECLARATION

Ref. No. 58.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: Controller of the Heating System

model: RT-14

is in conformity with the basic requirements included in Directive EMC 2004/108/WE of 15.12.2004 (the electromagnetic compatibility law of 13.04.07) and Directive LVD 2006/95/WE of 21.08.07 (Laws Journal of 2007 No. 155 pos. 1098) regarding the requirements for electric devices.

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: 2012 -	**Automatic electric regulators for house usage and the like. Part 1: General requirements.**
PN-EN 55022: 2011 -	**Electromagnetic compatibility (EMC)- IT devices Characteristics of radioelectric noises. Acceptable levels and measurement methods**

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: 12

Place of issue: **Manufacturer representative:**

Wroclaw **Mirosław Zasępa**

Date of issue: **Position:**

17.09.2012 **Electronic designer**

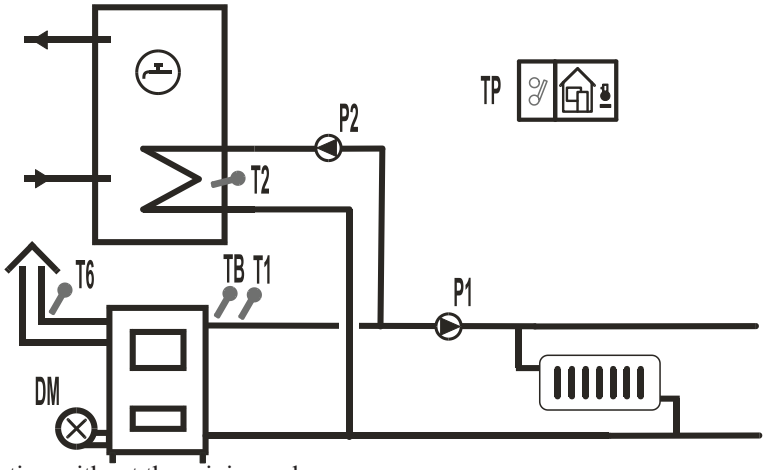


Fig.2A Operation without the mixing valve

DM-	blower	P1-	circulating pump CH
TB-	safety sensor of the boiler	P2-	pump loading the WAW container
T1-	sensor of the boiler temperature	M-	mixer drive
T2-	sensor of the WAW container temperature		
T4/TP-	room thermostat		
T6-	sensor of the flue gas temperature		

3.2 Configuration with the mixer in the safety system of the return temperature of the boiler.

! For this configuration you set <60>(„ModeMIXER”)=RETURN

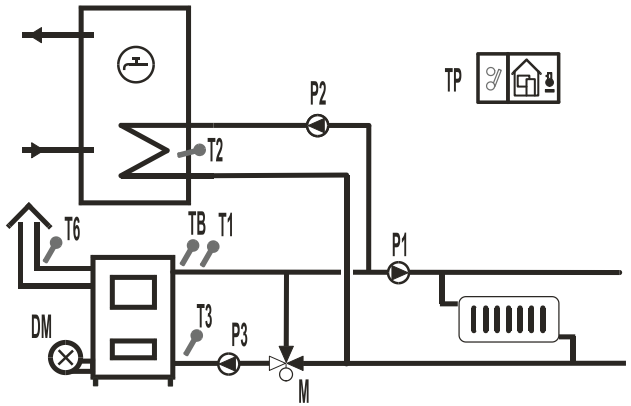
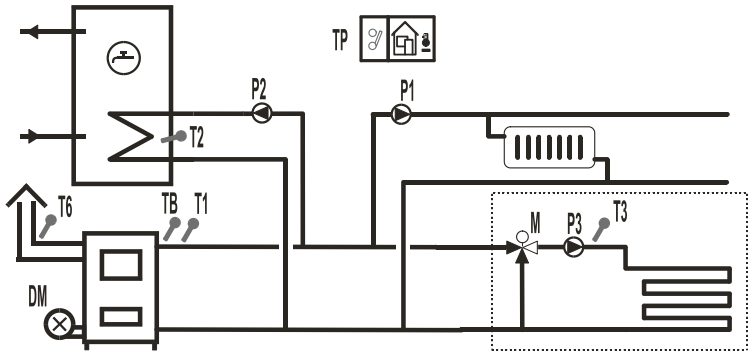


Fig.2A Operation of the controller with the 3-way mixing valve in the safety system of the return temperature of the boiler

DM-	blower	P1-	CH circulating pump
TB-	safety sensor of the boiler	P2-	pump loading the WAW container
T1-	sensor of boiler temperature	P3-	pump of the mixer
T2-	sensor of the WAW container temperature		
T3-	sensor of the return temperature	M-	drive of the mixer
T4/TP-	room thermostat		
T6-	sensor of the flue gas temperature		

3.3 Configuration with the mixer that controls the floor system

! For this configuration you set <60>(„ModeMIXER")=FLOOR



Rys.2C Controller with the 3-way mixing valve that controls the floor system

DM-	blower	T6-	sensor of the flue gas temperature
TB-	safety sensor of the boiler	P1-	CH circulating pump
T1-	sensor of the boiler temperature	P2-	pump loading the WAW container
T2-	sensor of the WAW container temperature	P3-	pump of the mixer
T3-	temperature sensor of the mixer system (floor)	M-	drive of the mixer
T4/TP-	room thermostat		

4 The blower

The controller automatically controls the efficiency of the blower. The applied PID algorithm enables the operation with modulation of boiler power- the level of generated heat is adjusted to what is needed-thanks to that the combustion process is uniform (there aren't any sudden changes of temperature in the combustion chamber and chimney), is more efficient and it guarantees longer life of the heating system. By analyzing the tendency of temperature changes the controller modifies its settings gradually coming up to the balance point.

In case if the boiler temperature is higher than the preset one, the controller turns off the blower and realizes scavenges. The scavenge parameter is defined by "*<34> TimeSCAVENGE*" and "*<33> BreakSCAVENGE*" and "*<35> EfficiencySCAVENGE*".

5 The CH pump

If boiler temperature exceeds 42°C ("*<41>T.onPumpCH*"), the CH pump turns on. Below that temperature the pumps turns off causing a faster heating of the water jacket over the dew point and in fact extending the life of the boiler.

While loading the WAW container or if the room thermostat operates the CH pump can cyclically run (restricting the heat flowing in to the CH system). The cyclical operation is based on switching on the pump for 45secs and then stopping it for 4min ("*<44> TimeStopPumpCH*").

! The controller protects the system from freezing, automatically switches on the circulating pump if the measured temperature is below 4°C.

! The controller realizes an after-season rundown of the pump. The pump turns on for a minute if it doesn't run for a week.

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 MODYFYING THE CONTROLLER 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 controllers 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 CONTROLLER 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 the controller 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

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

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

TATAREK®
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Bank account : BZ WBK S.A. O/WROCŁAW 6910901522-0000-0000-5201-9335
www.tatarek.com.pl.; E-mail: tatarek@tatarek.com.pl

POWER SUPPLY 230V/50Hz:
The controller is to be connected to the mains protected by an appropriate fuse for the used pumps and blower (typically 6,3A/230V):

L- 2 terminals L connected in the controller
N- 2 terminals N connected in the controller
PE- 2 safety terminals PE connected in the controller

OUTPUTS 230V/50Hz:

L-DM- blower (200W max)
L-P1- CH pump (200W max)
L-P2- WAW loading pump (200W max)
L-P3- mixer pump (200W max)

VALVE DRIVE OUTPUT 230V/50Hz:

L-M+ valve drive - opening (brown or black depending on the valve mounting)(200W max)
L-M- valve drive - closing (black or brown depending on the valve mounting)(200W max)
valve drive - connect the common output (blue) to N
valve drive - connect the safety cable (green-and-yellow) to PE

TEMPERATURE SENSORS:

TB- safety sensor of the boiler STB (in case of not using STB, apply the jumper)
T1- boiler sensor (KTY81)
T2- sensor of the WAW container (KTY81) (in case of not mounting the WAW, leave unconnected)
T3- sensor of the mixer (KTY81)(in case of not mounting the mixer, leave unconnected)
T4/TP- room thermostat (in case of not mounting the thermostat, leave unconnected)
T5- available
T6- temperature sensor of the flue gas (PT1000)

6. The WAW pump

The controller controls the pump loading the WAW container. The cycle of loading starts if the WAW temperature sensor indicates a temperature below 50°C (" *<52> TminWAW")* and ends if the temperature is above 60°C ("*<51> TmaxWAW*"). After finishing loading the WAW container the pump runs still for a minute ("<46> TimeRunDownPumpWAW"), which prevents the temperature in the jacket of the boiler from rising especially in summer time when the CH pump doesn't run.
The loading is restricted to 2hours if the minimal temperature has been reached <52>.
The WAW pump operation is stopped if the following requirements are not met: water temperature in the boiler is below the preset threshold 42°C ("*<42> T.onPumpWAW*") or water temperature in the boiler is not higher by 5°C than in the WAW container("*<54> DeltaWAW*").

! At the lack of the temperature sensor of the WAW container (T2) the loading is realized at a wild guess. The WAW pump switches on if water temperature in the water jacket of the stove reaches the preset value or is above 50°C ("*<52> TminWAW*").

! The controller realizes an after-season rundown of the pump. The pump switches on for a minute if it doesn't run for a week.

5.1 The WAW priority and the summer mode

The controller has different strategies for loading the WAW container as follows:

- **OFF-** the WAW pump is off. The CH pump can run.
- **SUMMER-** turning off the heating system in summer time (the CH pump doesn't run, mixer operation - see Ch.6/page 4). The fireplace operates only in the function of preparing the WAW.
- **ON**- normal operation (parallel operation of the pumps) without favoring the WAW circuit
- **PRIO** - faster reaching the readiness of the WAW container by restricting the reception of the heat by the heating system. The CH pump run cyclically. Turning off the WAW pump after loading the container causes the normal operation of the CH pump to come back.
- **SPEC-** the pumps run as in PRIO mode. Additionally during loading the container the preset temperature of the boiler is raised to 65°C ("*<53> TLoadWAW*").

7 The mixing valve (mixer)

The controller controls a typical mixing valve (drive 230V/50Hz, integrated limit switches), keeping up the preset temperature set by a user at the output of the valve.
The mixer can operate in one of the modes: off mode, floor mode and safety of the boiler return temperature mode ("*<60> ModeMIXER*"):

- **FLOOR mode** - the mixer maintains the preset temperature in the range of 20…40°C of the floor system (<62p> „*TempFLOOR*"), additionally the alarm turns on and the pump turns off after exceeding 40°C of the floor system (<61> *„TempALARM-FLOOR"*). Damage of the sensor of the mixer causes the valve closed and the pump of the mixer switches off (P3). In SUMMER mode the mixer is closed and its pump is off.
- **OFF mode** -the mixer is disabled and its pump is off.
- **RETURN mode** - the mixer controls the flow of the return water to the boiler in order to keep up the minimum return temperature set by the <62> „*TempMIXER*".parameter.

Damage of the sensor of the mixer causes the valve opened. The SUMMER mode has no effect on the operation of the mixer.

Independent of the selected mode the additional parameters (<68> and <69>) allow the behavior of the mixer drive to be individually adjusted.

! The controller realizes an after-season rundown of the pump and the drive of the mixer.
If they don't operate for a week the pump switches on for a minute and after it turns off the drive runs for a minute.

8. Cooperation with the room thermostat

The controller has an input to connect the room thermostat of any kind, equipped with an nonvoltage relay output. To the controller you connect the terminals of the thermostat which short-circuit if the room temperature is higher than the preset one. Until the room temperature is lower than the preset value in the thermostat (terminals of the relay opened) the controller operates normally. If the room temperature exceeds the preset temperature in the thermostat (terminals of the relay short-circuited), which is signalled by the icon on the display, the controller modifies its operation: the preset temperature of the boiler is lowered to 45°C („ <29> *TempTHERMOSTAT''*) and the CH pump runs cyclically.

! If the thrmostat isn't mounted then the corresponding input of the controller should be left unconnected.

! The thermostat ought to be located in the largest room of the building. In this room heater thermostatic valves must not be mounted. The thermostat is to be placed at the height of approx. 1,5m over ground, far away from windows and heaters. In the other rooms heater thermostatic valves may be mounted.

9. Handling the controller

There are elements on the control panel (fig. 8).

The operation state is presented on the graphic display (2). The screens inform about the operation of devices, temperature of sensors; they make it possible to change the parameters etc..The change of screen is done by pressing the CHOOSE button (7). If this is the screen that is able to change a parameter, press the CONFIRM button (6), which causes blinking of the parameter field to be changed. By pressing "+" (4) or "-" (5) one can alter its value.

By clicking the CONFIRM button (6) one confirms the changes - the parameter field stops blinking. The changed parameter not confirmed for 10 secs is not accepted by the controller and it recalls a previous value of the parameter. The functions of the F1 (3) and F2 (8) buttons are variable. They depend on the icons displayed in their vicinity.

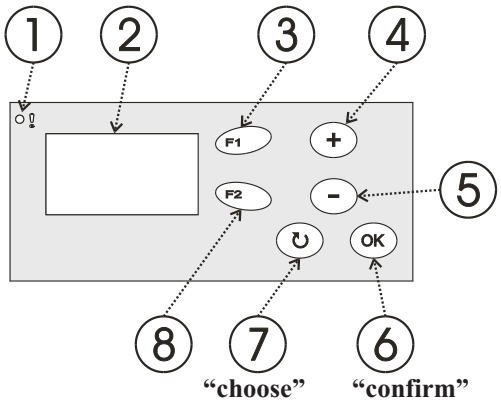


Fig.8 View of the control panel

1. the state LED diode:
   - ☞ ALARM - the red LED blinks
   - ☞ boiler at the standby - diode off
   - ☞ boiler in the firing-up/damping state - green diode blinks
   - ☞ boiler in operation- green diode on
   - ☞ temporary switch-off of the blower - green diode blinks fast
2. LCD graphic display
3. Button F1 (function defined by the icon of the LCD display
4. Increase value button
5. Decrease value button
6. Confirmation button
7. Screen change button
8. Button F2 (function defined by the icon of the LCD display)

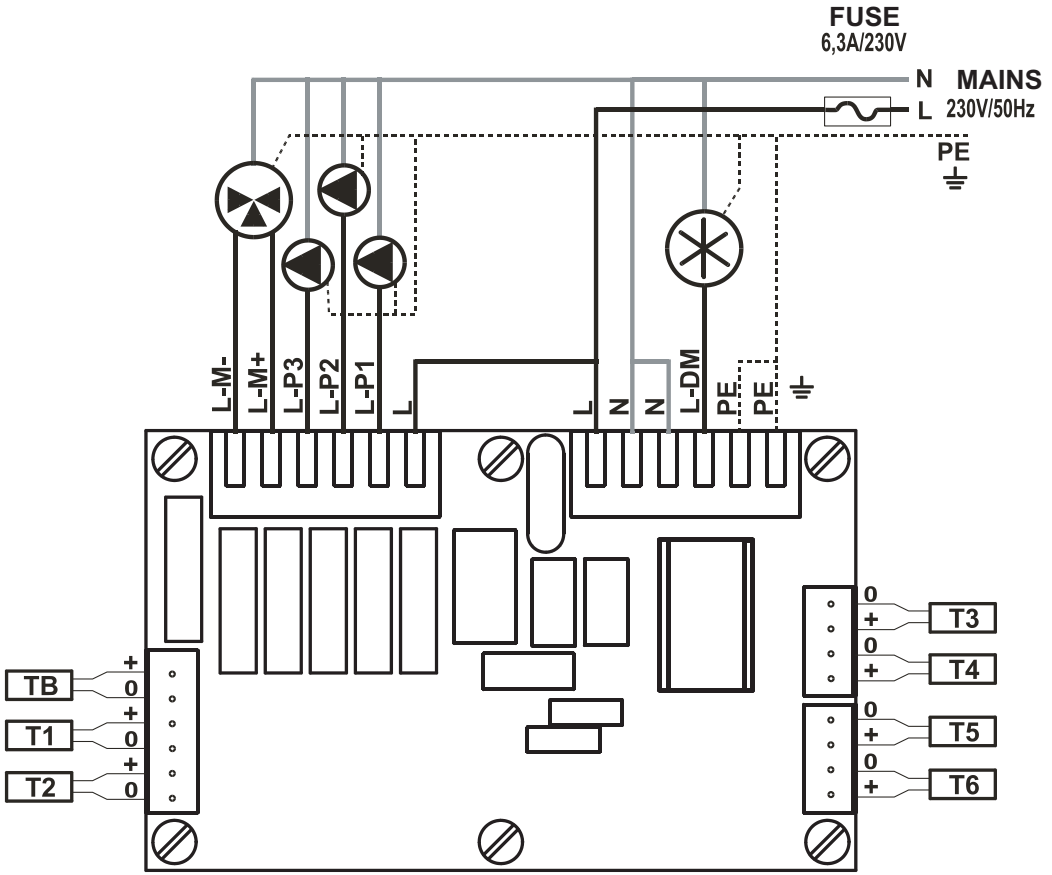


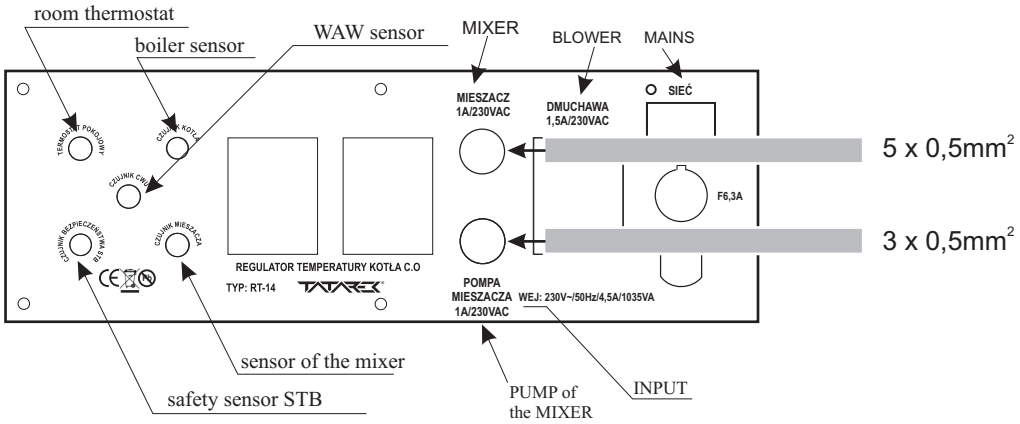
Fig.10 Wiring diagram of the controller

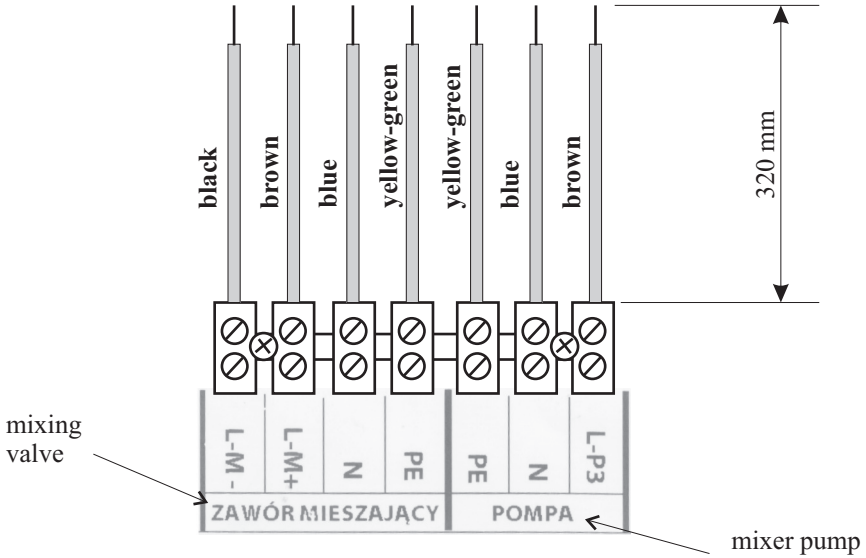
WARNING!!!

WE INFORM THAT THE RT-14 CONTROLLER MAY BE USED ONLY TO THE APPOPRIATE DEVICES.
ALL THE REQUIREMENTS IN TERMS OF TECHNICAL NORMS AND CURRENT BUILDING LAW THAT RELATES TO THE CORRECTNESS OF HEATING AND STOVE-FITTING SYSTEMS PROCESSING STOVE INPUTS MUST BE MET.

IMPROPER USE OF THE CONTROLLER MAY CAUSE THE DAMAGE OF THE CONTROLLER OR IN EXTREME CASES THE STOVE INPUT ITSELF AND THE HEATING SYSTEM HANDLED BY THE STOVE ALONG WITH THE COOPERATING DEVICES.

BACK PANEL RT - 14





Connection plate of the mixing valve and the mixer pump

9.1 Alarm screens

Alarm screens is not seen till the following alarm situation takes place:

1. Damage of the temperature sensor of the boiler (T1)
2. Damage of the temperature sensor of the WAW (T2). The alarm doesn't start if the sensor is not installed
3. Damage of the temperature sensor of the mixer (T3) if the controller is in the FLOOR mode
4. The STB safety thermostat switches on
5. Exceeding the acceptable temperature of the boiler set by the "*<21> TempALARM_BOILER*" parameter.
6. Exceeding the acceptable temperature of the floor heating set by the" *<61> TempALARM-FLOOR"* parameter if the controller is in the FLOOR mode

The alarm situation is stored in the memory of the controller (even after powering off the controller as well), sound signal is generated and the red ALARM diode blinks. Pressing the F2 button turns off the sound and the F1 button cancels alarm and if the cause of the alarm is eliminated restores the normal operation (the STB safety thermostat turns off after cooling to approx. 70°C).
Further blinking of the ALARM diode means the cause of the alarm has not been removed. During ALARM the controller lowers the boiler temperature by switching off the blower and switching

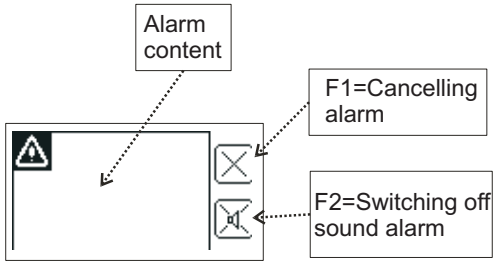


Fig.81 Alarm screen

9.2 Screen of boiler operation

The screen features current temperature of the boiler and rotation of the blower

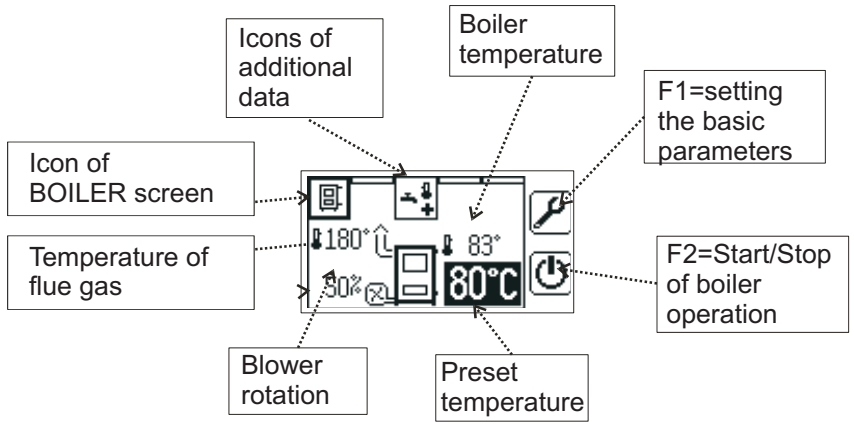


Fig.82 Screen of boiler operation

- The fine coal CH (central heating) boiler operates in the following cycle: firing-up, operation, damping:
- **Phase 1/Firing-up** is launched by pressing the F2 button. Transition to the next phases follows automatically. The controller switches on the blower. It causes the fine coal to fire up and temperature of the boiler to gradually increase. The time of the firing-up phase is restricted to 2hrs. If the temperature doesn't increase the controller goes to the damping phase. In the firing-up phase you can at any time turn off the boiler by long pressing the F2 button (2 secs at least).
- The controller skips the firing-up phase and automatically turns on the boiler if the water temperature is above 35 °C after switching on the power (<22>=35 °C) or the flue gas temperature is above <24>+<24d>=80 °C.
- **In the phase II/Operation** the controller maintains the boiler temperature at the preset value. During the operation of the boiler you can press the F2 button (longer press approx. 2 secs is required). It causes the blower to turn off for a while e.g. to clean up the furnace. The state is indicated by the fast blinking OPERATION green diode. After 30mins the controller automatically restores to the normal operation. The break in operation of the blower can be shortened by pressing again the F2 button.
- **In the damping phase** you can at any time turn off the boiler by pressing long (2secs at least) the F2 button. On the display in the field "Icons of additional data" (Fig.82) the corresponding icon shows up. It represents the current state of the boiler as follows:


Transition of the controller to the state of turning off the blower for a while


Firing-up/damping phase


Operation phase

The preset temperature of the boiler operation (Fig.82) can be changed by activating the room thermostat (-) or during loading the WAW container (+). The corresponding icon and sign +/- instead of „°C" inform about that:


The room thermostat informs about reaching a comfortable temperature.
The signal for lowering the preset temperature..


The need for increasing the preset temperature while loading the WAW (SPEC mode)

! If the preset temperature is not modified by one of the above mentioned situations then you can change it easily by pressing the CONFIRM button (6). The preset temperature begins blinking, you can alter it with "+" (4) or "-" (5). You confirm the changes by pressing again the CONFIRM button.

☞Pressing the F1 button enables the change of the basic parameters of the boiler operation:
☞<20> *„ TempBOILER"* preset temperature of the boiler
☞<29> „ *TempTHERMOSTAT"*- preset temperature of the boiler in case of the room thermostat operation

! PASSWORD „9999" HAS CONSIDERABLE MEANING. IT CAUSES THE REACTIVATION OF THE PREVIOUS PASSWORD IF PRESENT WITHOUT IT BEING DISCLOSED.
! PASSWORD OF PRODUCER'S SERVICE IS UNIQUE AND IS NOT DEPENDENT ON THE USER'S PASSWORD- IT SHOUDN'T BE DISCLOSED TO THE USER. INSTEAD OF THAT THE SERVICE CAN SET TO THE USER HIS OWN PASSWORD.

Examples of passwords:
1.The controller is installed with the unlocked password. The user can enter his own password e.g. "1234". From this moment the important parameters cannot be altered without the password being unlocked (that is, resetting the password "1234"). After changing essential parameters the user can leave the controller unlocked, set any new password or enter "9999", which activates the password "1234"

2. Producer gives the controller with the set password. The user cannot alter the important parameters. The servic can change the settings with its own secret password. At the end a serviceman enters the secret password or "9999", the user still hasn't access to the important parameters.

3. Producer gives the controller with the set password. The user cannot alter the important parameters. The servic can change the settings with its own secret password. At the end a serviceman leaves the controller unlocked, the user now has access to the important parameters. He can enter his own password like in the example No. 1.

4. Producer gives the controller with the set password. The user cannot alter the important parameters. The servic can change the settings with its own secret password. At the end a serviceman sets the password e.g. "1234" and tells it to the user, the user has access to the important parameters but without knowing the password the other persons cannot make the changes.

5. The user has the unlocked controller or his own password. Serviceman decides, the user though oughtn't have access to the important parameters. The serviceman locks the controller with his secret password, which removes the user's password and locks the controller.
6. Serviceman doesn't have to know the user's password. Always he can use his own secret password and at the end lock with the "9999", which reactivates the user's password.

11 Installing the controller

! THE CONTROLLER IS SUPPLIED BY 230V/50HZ .
ANY MOVES REGARDING INSTALLATION SHOULD BE MADE AT THE DISCONNECTED MAINS.

! THE CONTROLLER IS TO BE CONNECTED TO THE MAINS PROTECTED BY AN APPRIOPRIATE FUSE FOR THE USED PUMPS AND BLOWER (TYPICALLY 6,3V/230V)

! THE CONTROLLER HAS TO BE CONNECTED TO THE MAINS WITH THE ZERO-PIN BY WAY OF USING THE DIFFERENTIAL DEVICE OF SEPARATING THE MAINS ACC.TO THE BINDING LAW.

! THE PRODUCER DOESN'T TAKE ANY RESPONSIBILITY FOR DAMAGES CAUSED BY WRONG USEOF THE CONTROLLER.

LEVEL OF PARAMETERS 2 PARAMETERS CAN BE CHANGED AT UNLOCKED PASSWORD					
No	NAME	RANGE	DEFAULT	SETTING	FUNCTION
4X	**pumps**				
41	T.onPumpCH	30...80 °C	42 °C		Minimal boiler temperature at which the CH pump (P1) can run.
42	T.onPump-WAW	30...80 °C	42 °C		Minimal boiler temperature at which the WAW pump (P2) can run.
44	TimeStop-PumpCH	1...30min	4min		Break time of the CH pump in a mode of the cyclical run. After that time the CH pump runs for 45secs.
45	Hysteresis-PUMPS	1...10 °C	1 °C		Temperature hysteresis of turning on/off the pumps. The temperature difference between turning on and turning off the pumps. It prevents often switch-overs, especially if there's another source of heat in the heating system
46	Rundown-TimeWAW-pump	0...300s	30s		Rundown time of the WAW pump. Extending operation time of the pump after loading the WAW. It prevents sudden increase of temperature in the jacket of the boiler after loading , especially in summer time when the CH pump doesn't run.
5X	**WAW**				Minimum temperature difference between the boiler and the WAW container needed for operation of the WAW pump (P2)
54	DeltaWAW	1...10 °C	5 °C		
6X	**mixer**				The operation mode for the mixing valve: OFF- - mixer is off FLOOR - mixer controls the floor system RETURN- controls the return temp. of the boiler
60	ModeMIXER	OFF/ / FLOOR RETURN	OFF		
61p	TempALARM-FLOOR	30…50 °C	40 °C		Switching on the alarm after exceeding the temperature of floor system. The exceeding closes the mixer and turns off the pump.
68	MIXER-time	1..240	120s		Default time of the full opening of the servo
69	MIXER-dynamics	1..10	5		1- slow reaction 10 - fast reaction

LEVEL OF PARAMETERS 3 PARAMETERS CAN BE CHANGED AT UNLOCKED PASSWORD				
No	NAME	RANGE	DEFAULT	FUNCTION
90	prodNO	1…4	1	Number of parameters set = depends on the boiler producèr
91	reset	OFF/ ON	OFF	Setting to ON causes the reset of all the parameters to the default and restart of the controller
92	PASSWORD	0…9999	0000	„0000" PASSWORD DISABLED „----" PASSWORD ENABLED
99	ServiceScreen	OFF/ ON	OFF	The value ON causes adding diagnostics screen helpful to the service

Password

The changes of important parameters are possible only at unlocked password. To unlock the password you need to input proper sequence of digits with the buttons "+/-". With the CHOOSE button to change the digits position and CONFIRM button to acknowledge all and finish the procedure of changing the password. The unlocked password is set to "0000". Once again entering into the password change procedure causes a new password to be set.

9.3 Screen of the WAW pump

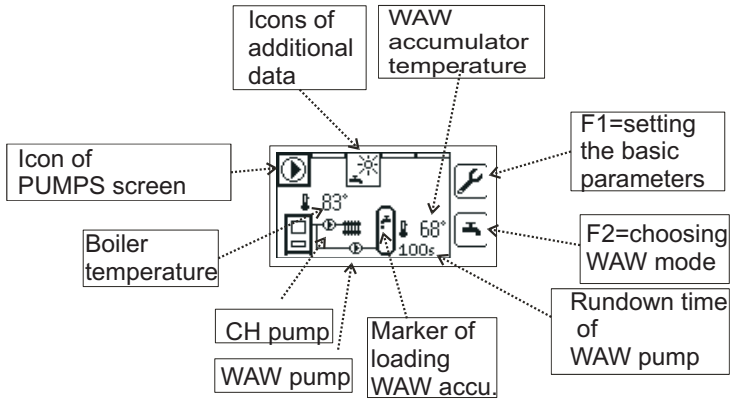


Fig.83 Screen of the pumps operation

Pressing the F1 button enables the change of the basic parameters of the WAW container :

#<51> *„TmaxWAW"* temperature of the WAW container that ends the loading cycle
#<52> *„TminWAW"* temperature of the WAW container that begins the new loading cycle
#<53> *„TloadWAW"* boiler temperature in case of loading in the SPEC mode

By pressing the F2 button you can easily change the setting <50> "*ModeWAW*" that decides about the strategy of loading the WAW container. On the display the corresponding icon shows up as follows:

OFF - WAW pump switched off. You can run the CH pump.

SUMMER - CH system switched off in summer time (Ch pump doesn't run). The boiler only works in the preparation function of the WAW

ON - normal operation (parallel operation of the pumps) without favoring the WAW circuit

PRIO - faster reaching the readiness of the WAW container by restricting the reception of heat by the heating system. The CH pump runs cyclically. Turning off the WAW pump after loading the WAW container causes normal operation of the CH pump to come back.

SPEC- pumps run like in the PRIO mode. Additionally during loading the WAW container the preset temperature of the boiler is increased to 65°C (the <*53*>*TloadWAW* parameter)

9.4 Operation screen in safety system of boiler return temperature

! The screen appears at the setting <60>(”ModeMIXER”)=RETURN

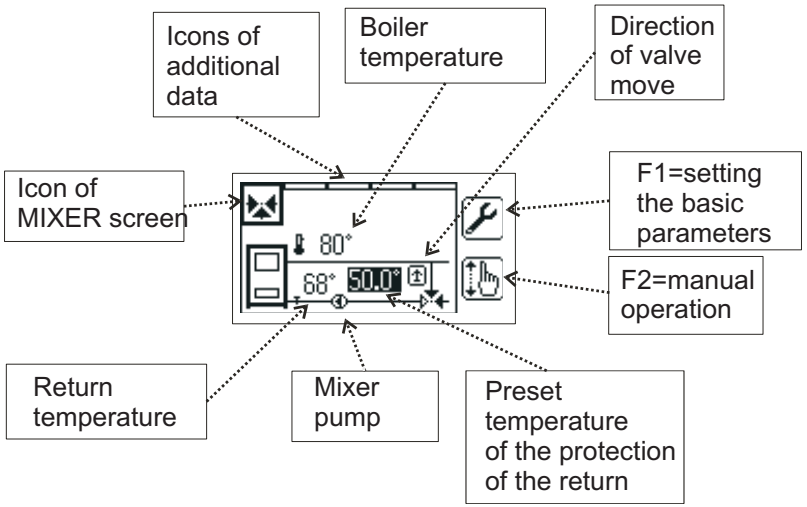


Fig.84. Screen of mixer operation (protection of the return temperature)

! ”Direction of valve movement" ↑ means opening the valve for the return water from the CH system (respectively ↓ - closing the return water and mixing it with the water from the boiler to increase the return temperature).

If the valve drive runs, the arrow blinks. Lack of the arrow means in the next cycle the valve remains motionless. Pressing the F1 button enables the change of the basic parameters of the mixer

:

<62>"TempMIXER" - preset minimum temperature of the boiler return

By pressing the F2 button you can transition to the manual operation in order to test the correctness of mounting and operation of the valve.

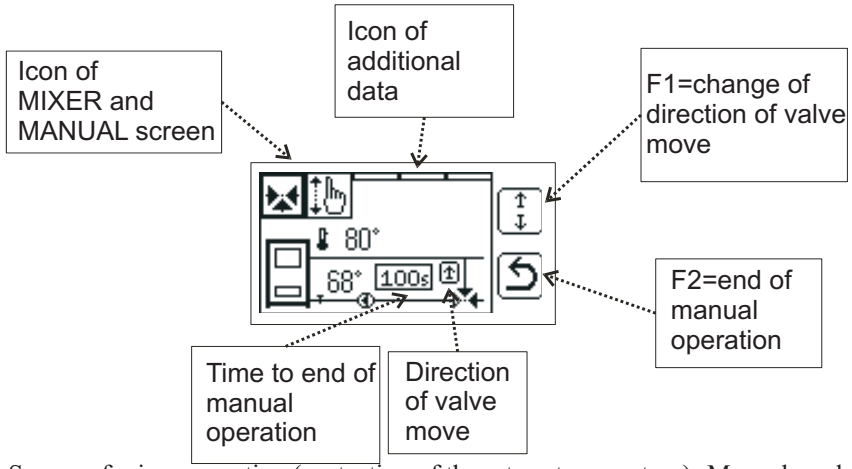


Fig.84A Screen of mixer operation (protection of the return temperature)- Manual mode

!Manual operation is restricted in time. It ends automatically after 2 mins since last pressing the F1 button

LEVEL OF PARAMETERS 2
PARAMETERS CAN BE CHANGED AT UNLOCKED PASSWORD

No	NAME	RANGE	DEFAULT	SETTING	FUNCTION
2X	**boiler**				
21	Temp-ALARM-BOILER	75...95 °C	90 °C		Boiler temperature at exceeding of which the alarm activates
22	Temp-STOP-BOILER (water)	20...45 °C	35°C		Boiler temperature below which the automatic operation is switched off, that is, the transition to the stop state occurs. The switch-off happens if for 45min (parameter <23> that state is active. Function is off with the flue gas sensor
23	Time-STOP-BOILER (water)	5...60min	45min		The time of keeping up the low boiler temperature after which 'the transition to the stop state follows.
24	Temp-STOP-BOILER (flue gas)	30... 500°C	50°C		Flue gas temperature of the damping threshold. The controller detects the damping state if the flue gas temperature is below <24> and active for the time <25> Setting <24>=500°C turns off this function- Transition between the phases is controlled by the water temperature
24d	Temp-HYSTERESIS (24)	10... 90 °C	30°C		The controller detects the fired-up state if the flue gas temperature is above <24>+<24d>
25	Time-STOP-BOILER (flue gas)	1. .90min	10min		The controller detects the damped state if the flue gas temperature is below <24> and that state is active for the time <25>
3X	**blower**				
30	Control-BLOWER	ON/OFF ADJUSTA-BLE REG1 REG2	ADJUSTABLE		Adjusting the blower control to the motor type: ON/OFF-operation without adjustable rotation ADJUSTABLE- typical motors REG1- motors type RV-14 REG2 - motors type WPA-07
31	Max-Motor-Speed	10..100%	100%		Motor rotation that defines maximum efficiency of the blower. **All the other settings regarding the blower are in relation to this value** (e.g. if <31>=85% and on the display the efficiency is 100% it means the motor reached the level <31>=85% of its maximum power.
32	Hysteresis-BLOWER	1…10 °C	2 °C		Hysteresis of turning on the blower operating without adjustable rotation, that is, at <30>=ON/OFF
36	MAXtemp. of FlueGas	100..500°C	250°C		If the flue gas temperature exceeds <36> then the blower efficiency is reduced to <37> Setting <36>=500°C turns off this function- there's no performance reduction of the blower
36d	Temp-Hysteresis (36)	10..90 °C	20 °C		Temperature drop of the flue gas below <36>-<36d> causes the return to the normal operation.
37	Blower-Rotations-Reduction	10..90%	40%		If the flue gas temperature exceeds <36> the efficiency of the blower is reduced to <37> (if it's higher)
38	ZoneOf-Control	2..10 °C	5 °C		Ranges of boiler temperature that correspond to adjustable rotation.
39	RangePID	0…100%	100%		Impact of the PID algorithm on the control of the blower. 0% means switching off the PID

10 Parameters

LEVEL OF PARAMETERS 1					
No	NAME	RANGE	DEFAULT	SETTING	FUNCTION
10	Signal	OFF / ON / ON+ ALARM	ZAŁ+ ALARM		OFF- turning off sound alarm ON - turning on the sound ON+ALARM- turning on the sound and alarms
11	Language	Polish/ English / German	Polish		Choose of language of messages
13	Backlit LCD	OFF/ ON	OFF		OFF - backlit display is active for 2mins since last pressing a button ON - backlit display is active always when the controller is on. Switching off the backlighting means it gets the value defined by the next parameter <15>
15	Minimum - backlit LCD	0…25%	10%		Minimum LCD backlighting (it's valid at the negative LCD). The value "0%" means a full switch-off
2X	**boiler**				
20	TempBOILER	40...90 °C	55 °C		Preset temperature of the boiler kept up by the controller
29	Temp-THERMOSTAT	40...85 °C	45°C		Preset temperature of the boiler with the room thermostat, that is, the temperature to which the controller swirches over the boiler in case if the room thermostat decides about switching off the heating. ATTENTION: this parameter has to be higher than the switch-off temperature of the boiler.
3X	**blower**				
33	Break- - SCAVENGE	2…10min	3min		Pause of the scavenge
34	Time-SCAVENGE	5…60s	10s		Time of the scavenge
35	Efficiency-SCAVENGE	50..100%	100%		Maximum efficiency of the blower achieved at scavenging
4X	**pumps**				
5X	**WAW**				
50	ModeWAW	OFF/ SUMMER/ ON/ PRIO/ SPEC	ON		OFF- loading the WAW container switched off SUMMER - only loading the WAW, CH pump turned off ON- normal operation of the WAW and CH pump PRIO- WAW priority (during loading the CH pump runs cyclically SPEC- like PRIO, additionally while loading increasing boiler temperature to the value of <53>
51	TmaxWAW	30...90 °C	60 °C		Maximum temperature of the WAW container Exceeding it turns off the loading pump
52	TminWAW	30...90 °C	50 °C		Minimum temperature of the WAW container Exceeding it turns on the loading pump
53	TloadWAW	40...90°C	65 °C		Preset temperature of the boiler automatically set in case of loading the WAW container in SPEC mode
6X	**mixer**				
62	Temp-MIXER	20…90 °C	40 °C		Preset temperature of the mixer operating in RETURN mode
62p	Temp-FLOOR	20…40 °C	25 °C		Preset temperature of the mixer operating in FLOOR mode

9.5 Screen of the mixer operation in the floor system

The screen appears at the setting <60>(”ModeMIXER”)=FLOOR

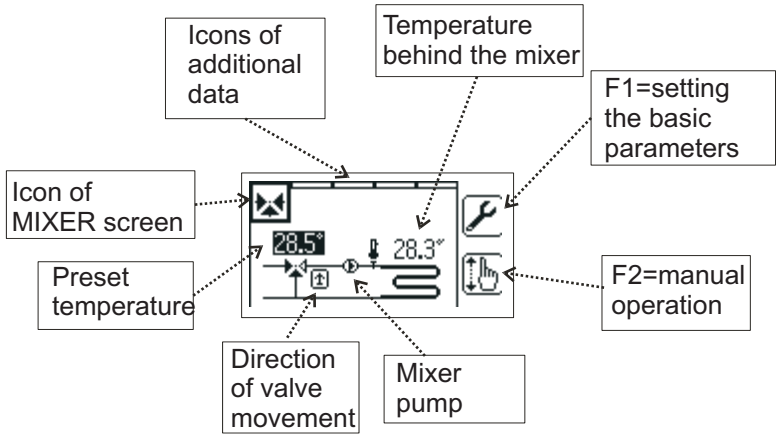


Fig.84 Screen of the mixer operation (heater, floor system)

! ”Direction of valve movement" ↑ means opening the valve in direction of increasing temperature at the output (respectively ↓ - lowering). If the valve drive runs, the arrow blinks. Lack of the arrow means in the next cycle the valve remains motionless.

! In the SUMMER mode (mixer turned off) the preset temperature doesn't show up.
Pressing the F1 button enables the change of the basic parameters of the mixer as follows:

<62p> "TempFLOOR" the preset temperature of the mixer.

By pressing the F2 button you can transition to the manual operation in order to test the correctness of mounting and operation of the valve.

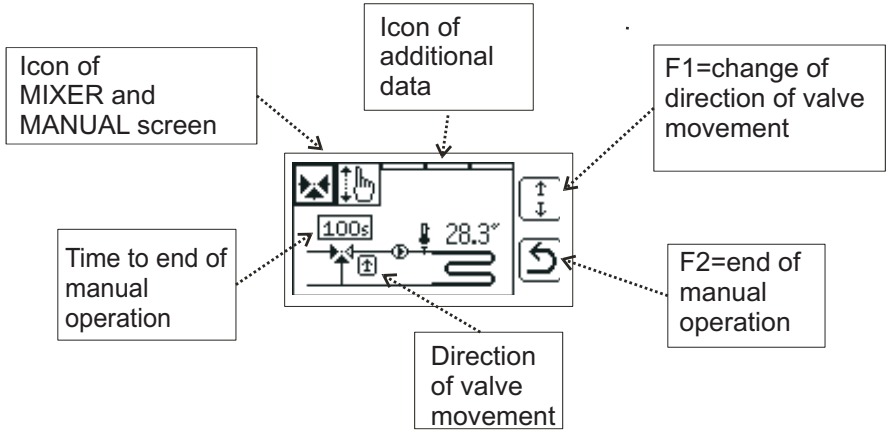


Fig.84A Screen of the mixer operation (heater, floor) in the manual mode

! Manual operation is restricted in time. It ends automatically after 2 mins since last pressing the F1 button

9.6 Screen of setting the parameters

On the first screen of the parameters the text "Level of Parameters" is shown. The text has a value of "0" that means the parameters are not available. After changing the level to "1","2" or "3" the following screens show parameter values. The last screen includes "****" after which the setting of the parameters ends and the return to the normal operation follows.

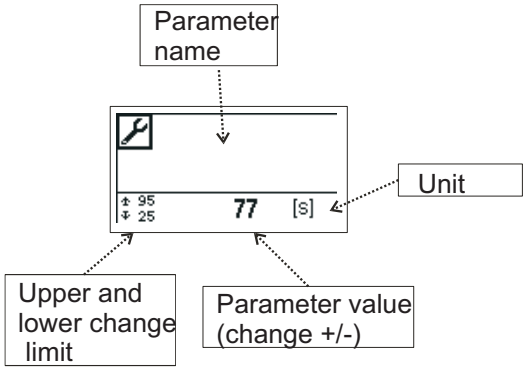


Fig.86 Screen of setting the parameters

! THE PARAMETERS ADJUST THE CONTROLLER TO THE FEATURES OF THE BOILER AND THE CH SYSTEM. THEIR CHANGE SHOULD BE CONSULTED WITH THE PRODUCER OF THE BOILER OR THE INSTALLER. INCAUTIOUS CHANGES MAY CAUSE UNSTABLE AND INEFFICIENT OPERATION OF THE SYSTEM

! The parameter number plays an additional role. It explicitly identifies the name e.g. for different language versions.

Demonstration change of the <51> "TmaxWAW" parameter that defines the maximum temperature of the WAW container(level of parameters 1).

Press:

*press repeatedly CHOOSE till the "Level of Parameters 0" parameter setting screen shows up.
*„CONFIRM" button > „0" starts blinking
* Button "+" -> „1" blinks
*„CONFIRM" button -> „1" stops blinking (Level of Parameters 1 was chosen)
*repeatedly „CHOOSE" button -> till the <51>„ TmaxWAW" parameter shows up
*„CONFIRM"button -> actual value to be changed begins blinking
*„+"/"-„ -> setting a new value
*„CONFIRM" -> confirming the new value
*repeatedly "CHOOSE" button till the „***" parameter end setting screen appears.