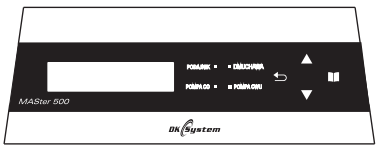
MASter 500

Operating instructions

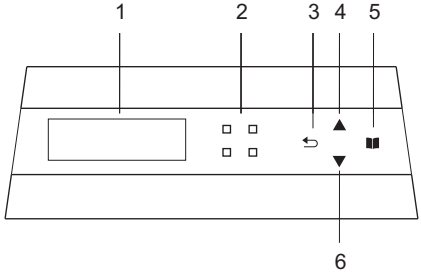
for screw feeder or piston feeder



The Master 500 controller is designed to control the boiler operation with automatic feeding of fuel, CH pump and DHW pump in central heating systems.

- maintaining the set temperature of the boiler by controlling the blower and the feeder
- ability to operate a boiler with an emergency grate
- infinitely adjustable blower operation and adjustable power
- programmable boiler blow
- adjustable damping time and automatic disabling of control when boiler no fuel is available
- controlling the central heating circulating pump operation
- ability to switch hot water priority on and off
- control of the domestic hot water heater charging pump depending on the required temperature
- ability to operate the boiler and the DHW pump under one of several weekly programs installed in the Master 500 controller
- COMFORT SYSTEM function, which protects the pump against limescale
- protection system – TERMIK thermal fuse
- function protecting the system against freezing and overheating of the boiler
- temperature sensor failure alarm
- adjustable display brightness – increased during adjustment of settings
- ability to connect remote control with a sound alarm system
- ability to connect a room thermostat

1 Description of the controller components



1. Display
2. Signal LEDs:
   - FEEDER
   - FAN
   - CH PUMP
   - DHW PUMP
3. The back button
4. Adjust setting UP button (+)
5. MENU button
6. Adjust setting DOWN button (-)

Fig.1 Description of the controller components

Operating screen description

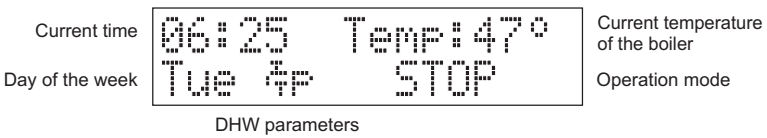


Fig.2 Description of the operating screen

2 Installation Recommendations

- The controller is designed for use with boilers with automatic feeding of fuel.
- The controller must be installed by an authorized person.
- The controller must be connected to a socket with a protective contact.
- It is required that the boiler had its own safeguards against excessive temperature rise of the boiler caused e.g. boiler controller or related equipment malfunction.
- The controller should be placed in a location that prevents its heating to a temperature higher than 40°C.
- The controller must not be exposed to water and conditions causing condensation (e.g. sudden changes in ambient temperature).
- The device should be installed and operated as described in the assembly description and rules for electrical equipment.
- A blown fuse due to bad wiring or a short circuit in the electrical system does not constitute grounds for a warranty repair.
- Before starting the controller, you should check the electrical connections.
- The controller is protected with two 5A fuses.
- Connection of the power cord and fuse replacement should be made with the controller powered off (the controller power plug must be disconnected from the mains). Connection of the receiving devices and replacement of fuses with the mains plug of the controller plugged in creates an electric shock hazard.
- The connection cables of the controller can be replaced only by the manufacturer or their authorized service establishment.
- You must not use a damaged controller.

3 Electrical connection and sensors diagram

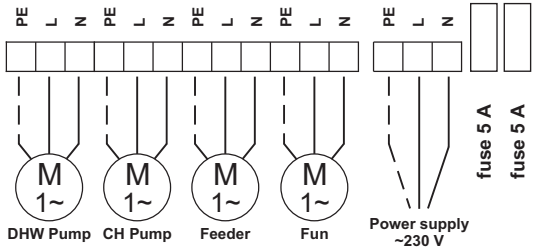


Fig.3 Wiring diagram to connect power cables

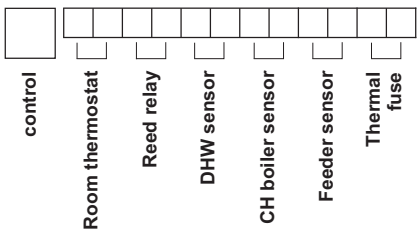


Fig.4 Wiring diagram to connect sensors

4 Controller installation

1. The controller is designed to be mounted on the boiler.
2. Using the provided template for positioning of the controller.
3. Install a screw in the boiler housing in the place indicated on the template.
4. Decide on the method of routing the cable from the controller (rear, bottom) and remove the corresponding caps from the housing.
5. Slide the controller onto the fixed screw, use the other two screws to fasten it to the boiler housing.
6. Install the optional cables at the appropriate connectors and put them through the holes in the housing.
7. Protect the installed cables against pulling out, fixing then to the housing in special sockets using the provided brackets and screws.
8. Install the controller door.

Connection of the controller to the electrical system

1. Connect the fan, pump and feeder with the appropriate power cables (see - Figure 3).
2. Install all necessary sensors (and reed relay for the piston feeder) acc. to Fig.4 and Fig.6.
3. Put the plug of the controller power supply cable in a ~ 230 V socket.
4. Switch the controller on, using the power switch.

Note: If after the controller is switched on, the display is not lit up, check whether there is voltage in the mains socket, then check the fuses and replace if damaged with new ones 2 x 5 A. If, after the replacement of fuses the display remains dark, please contact the maintenance provider.

Note: Always replace fuses with the unit switched off and the plug removed from the socket.

5 Fan, feeder and pumps wiring diagrams

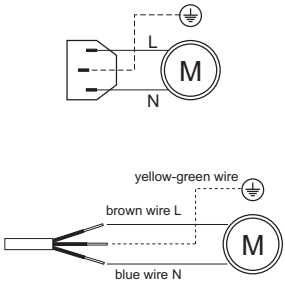


Fig.5 Power supply cable wiring diagrams for the fan, feeder, pump, etc. (Depending on the version of the controller).

6 Controller to hydraulic system connection diagram

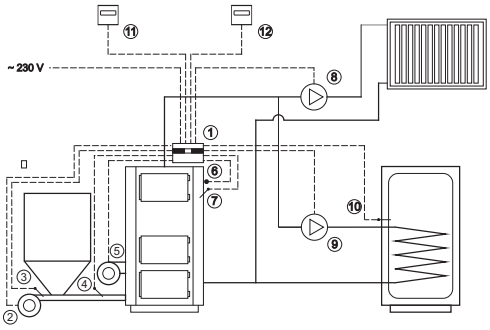


Fig.6 Master 500 wiring diagram

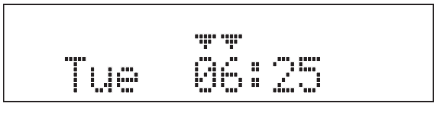
1. Master 500 controller
2. Feeder motor
3. Reed relay
4. Feeder temperature sensor
5. CH boiler fan
6. TERMIK thermal fuse
7. CH boiler temperature sensor
8. Central heating pump
9. DHW pump
10. DHW heater sensor
11. Remote control
12. Room thermostat

7 First start

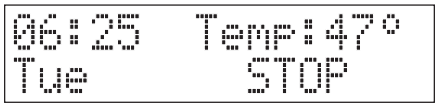
When you first run the controller, the display flashes the clock and day of the week.

To set the correct time and date, press , and then use the "+", "-" keys to set the desired day of the week and approve .

Proceed in the same way by setting the current time, and then the minute.



After finishing the settings and double-pressing of ⮌, you will be taken to the main screen.



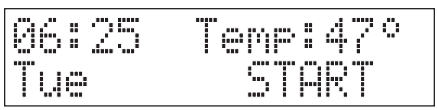
8 Starting the boiler and setting the operating parameters

1. Open the ash pit door.

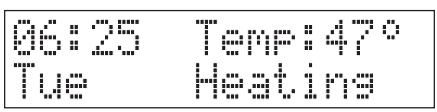
2. Start the feeder manually (see **Manual operation - Testing outputs**) and wait until coal shows at the level of the blow holes.

3. Turn off the feeder and then ignite the coal in the furnace chamber.

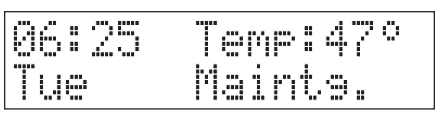
4. After obtaining a stable flame, start automatic operation of the controller by holding down for three seconds the ⮌, the display shows START, the controller will start regular dosing fuel and will control the fan in order to obtain the desired temperature in the boiler.



When the boiler temperature rises to the level specified by the "dt" parameter, the controller switches to HEATING mode.

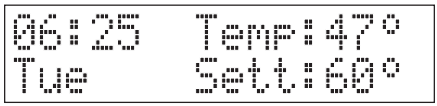


After reaching the required temperature, the controller will switch to the MAINTAINING mode, until the temperature drops below the hysteresis – to find out more, see **Operating parameters - HYSTERESIS**.



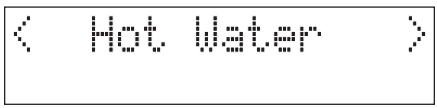
Setting the parameters of the boiler

When you press the ▲ or ▼ button, the SETT symbol will show to inform about the currently set temperature. Set the required value, using the same buttons: ▲ to increase the setting or ▼ to reduce it.



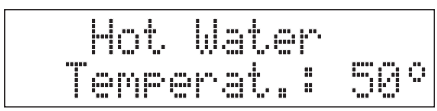
9 DHW heater operating parameters setting

During operation of the controller press the button 📖 ; the HOT WATER display will be shown.



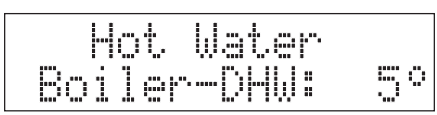
Setting the temperature of the domestic hot water heater.

Pressing again 📖 will take you to the desired temperature setting for the boiler. Set the required temperature, using the buttons: ▲ to increase the setting or ▼ to reduce it. Change range: from 40 °C to 70 °C.



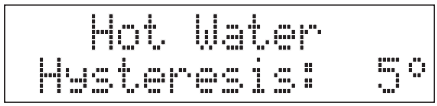
The temperature difference between the boiler and heater

The parameter that specifies the minimum measured temperature difference between the boiler and the domestic hot water heater that must occur for the heating of domestic hot water to be cost effective and the domestic hot water pump to be turned on. If this difference is less than the set point, the DHW pump will not switch on (regardless of whether priority of hot water is turned on or not). Change range: from 2 °C to 20 °C.



Hysteresis of the DHW pump

A parameter that specifies the number of degrees Celsius by which the temperature must fall on the domestic hot water heater below the set point for the domestic hot water pump to turn on. Change range: from 2 °C to 9 °C.

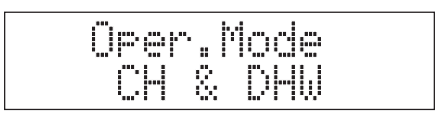


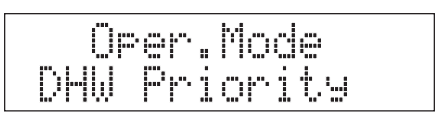
10 Selecting or changing the CH and DHW operating mode

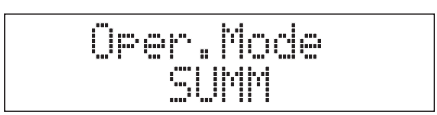
You can choose the mode in which the controller operates. The mode determines whether the DHW pump is to be operated and whether it must run in the DHW priority mode.

To access the controller operation mode selection menu, press the ▮▮ ; the display will show HOT WATER. Then use the ▲ or ▼ button to select the OPER. MODE option and confirm with ▮▮ .

Selecting the desired mode using the ▲ or ▼ buttons. Change range: only CH / CH&DHW / DHW Priority / SUMM.







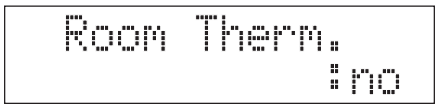
Note: SUMMER mode, indicated by the ☼ symbol on the screen means that outside of the heating season the heating pump will not operate and all the heat generated by the boiler is designed to heat domestic hot water.

11 ON / OFF. Operation of room thermostat

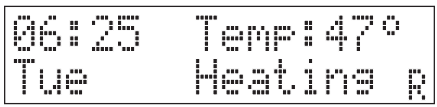
You can connect a room thermostat (see Fig. 4) that controls the operation of the central heating pump, depending on the room temperature. In order to operate the pump the boiler must also reach its corresponding minimum temperature.

To access the room thermostat menu, press the button ▮▮; the display will show HOT WATER. Then use the ▲ or ▼ button to select the ROOM THERMOSTAT and confirm with ▮▮ .

Use the ▲ or ▼ buttons to select the desired setting. Change range: no / yes



The activated room thermostat function is indicated with the R symbol on the display.



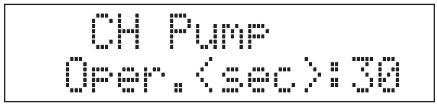
Pressing again ▮▮ takes you to the next setting.

In order to improve thermal comfort, the controller will periodically run the CH pump when the room temperature is at a preset level.

In order to determine the conditions of this operation, set the operation time and pause time for the central heating pump.

Central heating pump - operation time

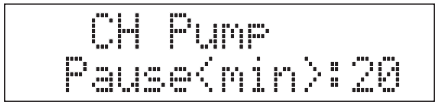
A parameter that specifies the CH pump operation time (calculated in seconds) when interoperability with the room thermostat. Change range: from 0 s to 240 s.



Pressing again takes you to the next setting.

Central heating pump - break time

This parameter specifies the time interval in the operation of the CH PUMP (calculated in minutes) when interoperability with the room thermostat. Change range: from 5 min to 60 min.



12 Shutting down the boiler

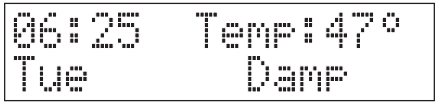
The boiler may be shut down due to lack of fuel, the completion of the damping process or manually switching to the STOP mode.

When there is no fuel, EMPTY BUNK will be displayed.

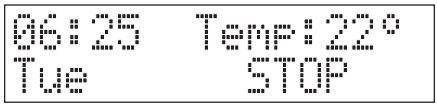
DAMPING mode

When the boiler is operating in HEATING or MAINTAINING mode, you can switch it to the DAMPING mode - during which the fan and the feeder is not working.

To switch on the DAMPING mode, press and hold for a few seconds the ⮌ - the screen will show DAMP.



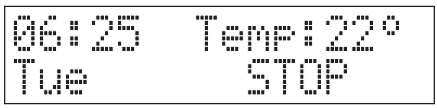
When the temperature in the boiler drops below "dt damp", countdown to damping will start (see - **Adjustment of damping time**), and then the boiler will shut down - which will be indicated by the STOP message.



STOP mode

You can manually shut down the boiler and go to STOP mode.

To do this, press and hold for a few seconds the ⮌ - the display will show STOP. If the message is different (e.g. START / HEATING / MAINTAINING), then repeat the action until STOP is displayed.



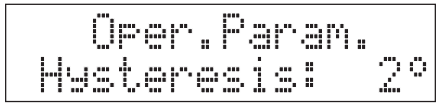
13 Operating parameters

The OPERATING PARAMETERS functionality makes it possible to set the operating parameters for the boiler, feeder, fan and CH pump.

To enter the operating parameters menu, press the button 🕮 ; the display will show HOT WATER. Then use the ▲ or ▼ buttons, select the OPER.PARAM. options and confirm with 🕮 .

Operating parameters - HYSTERESIS

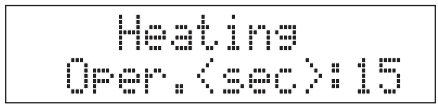
The parameter defines the number of degrees Celsius by which the temperature must fall below the setpoint, at which the controller will resume the HEATING mode – at this point the feeder will start regular operation as set by the parameters **Operating parameters - HEATING - feeder operation** and **Operating parameters - HEATING - feeder pause**) ,fan will be switch on and will keep running until the boiler reaches the required temperature. Change range: from 1 °C to 9 °C.



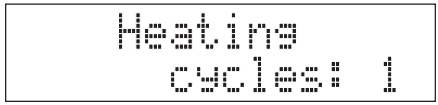
Pressing again 📖 takes you to the next setting.

Operating parameters - HEATING - feeder operation

The parameter defines the time (in seconds) of the duration of fuel feeding (feeder operation) in the START and HEATING mode. Change range: from 1 s to 250 s.



If a piston feeder is used, feeding of fuel into the furnace will be performed in cycles (i.e. stroke of the fuel drawer and its return). Change range: from 1 to 20.



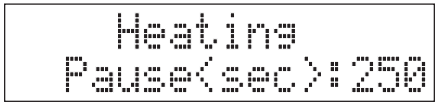
Pressing again 📖 takes you to the next setting.

Operating parameters - HEATING- feeder pause

This parameter specifies the time (in seconds) of the interval between cyclic fuel delivery (feeder operation) in START and HEATING mode. Change range: from 1s to 250 s.

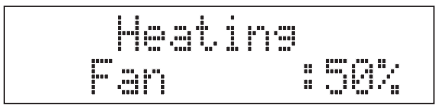
Pressing again 📖 takes you to the next setting.

In the case of the piston feeder the scope and factory setting is changed. Change range: from 10 s to 900 s.



Operating parameters - HEATING - blowing power

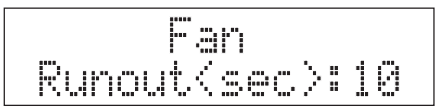
This parameter allows you to set the maximum power at which the fan will operate during HEATING mode. Change range: from 1 % to 100 % of maximum fan power, set in the maintenance menu - see **Adjusting the maximum fan power**.



Pressing again takes you to the next setting.

Operating parameters - FAN - run-out

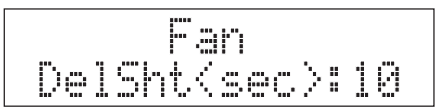
This parameter allows you to set the time (in seconds) of earlier switching on of the fan relative to the switching on of the feeder.



Pressing again takes you to the next setting.

Operating parameters - FAN - delayed switch-off of the fan

This parameter allows you to set the time (in seconds) to delay the switching off of the fan until the feeder is switched off.

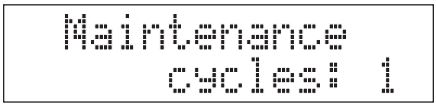


Pressing again takes you to the next setting.

Operating parameters - MAINTAINING - feeder operation

This parameter specifies the time (in seconds) of the duration fuel feeding (feeder operation) in the MAINTAINING mode. Change range: from 1s to 250 s.

If the piston feeder is used, its time of operation in maintaining mode will be defined by the number of cycles and not by seconds. Change range: from 1 to 20.



Pressing again 📖 takes you to the next setting.

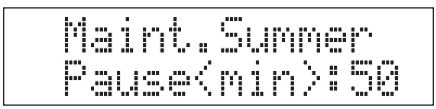
Operating parameters - MAINTAINING - feeder pause

This parameter specifies the time (in seconds) of the interval between cyclic fuel delivery (feeder operation) in the MAINTAINING mode. Change range: from 1 min to 240 min.

Pressing again 📖 takes you to the next setting.

Operating parameters - MAINT. SUMMER - feeder pause

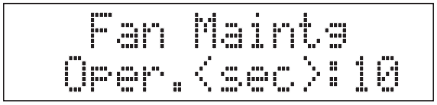
This parameter specifies the time (in seconds) of the interval between cyclic fuel delivery (feeder operation) in the MAINTAINING mode during summer. Change range: from 5 min to 240 min.



Pressing again 📖 takes you to the next setting.

Operating parameters - MAINTAINING - fan operation

This parameter defines the time of operation of the fan (in seconds) in the MAINTAINING mode. Change range: from 0 s to 90 s.



Pressing again 📖 takes you to the next setting.

Note: In the MAINTAINING mode the fan starts at the same time as the feeder.

Operating parameters - MAINTAINING - fan pause

This parameter defines the time of interval in the operation of the fan (in seconds) in the MAINTAINING mode. Change range: from 5 min to 240 min.

Pressing again 📖 takes you to the next setting.

Operating parameters - MAINTAINING - blowing power

This parameter allows you to set the power at which the fan will operate during the MAINTAINING mode. Change range: from 1 % to 100 % of maximum fan power, set in the maintenance menu - see **Adjusting the maximum fan power.**

Pressing again 📖 takes you to the next setting.

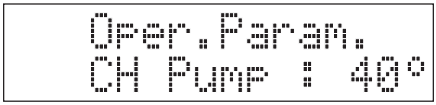
Fan - smooth operation

The parameter enabling or disabling smooth operation of the fan. The principle of smooth operation is that the fan progressively reduces its speed when the temperature of the boiler approaches the desired setpoint. Change range: yes / no.

Pressing again 📖 takes you to the next setting.

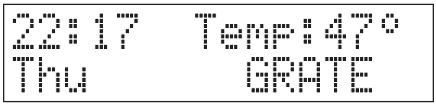
Operating parameters - CH pump oper. threshold control

A parameter that specifies the temperature above which the central heating pump turns on and operates continuously. If the temperature of the boiler falls below this setting, the pump is switched off. Change range: from 30 °C to 70 °C.



14 Emergency grate

The controller allows you to control the boiler also when it is burning fuel using the emergency grate instead of the retort furnace. Boiler operation in this mode is indicated by the GRATE message, displayed on the screen.



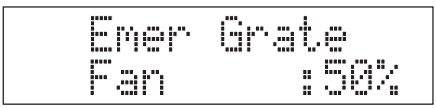
To access the menu of the emergency grate, press the 📖 ; the display will show HOT WATER. Then use the ▲ or ▼ button to select the EMER. GRATE option and confirm with 📖 .

Use the ▲ or ▼ buttons to select the desired setting. Change range: no / yes

Pressing again 📖 takes you to the next setting.

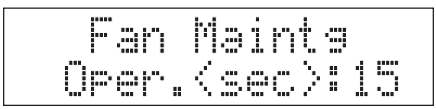
Emergency grate - blowing power

This parameter allows you to set the maximum power at which the fan will operate when the emergency grate is used. Change range: from 1 % to 100 % of maximum fan power, set in the maintenance menu - see **Adjusting the maximum fan power**.



Emergency grate - MAINTAINING - fan operation

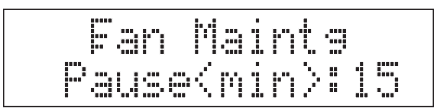
This parameter defines the time of operation of the fan (in seconds) in the MAINTAINING mode. Change range: from 0 s to 90 s.



Pressing again 📖 takes you to the next setting.

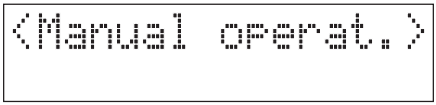
Emergency grate - MAINTAINING - fan pause

This parameter defines the time of interval in the operation of the fan (in seconds) in the MAINTAINING mode. Change range: from 1 min to 60 min.



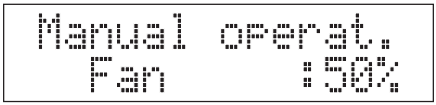
15 Manual operation

This function is used testing the correctness of the connected equipment. To enter the manual operation menu, press the button 📖 ; the display will show HOT WATER. Then use the ▲ or ▼ buttons to select the MANUAL OPERATION option and confirm with 📖 .



Manual operation - blowing power

This parameter allows you to set the power at which the fan is to operate in manual mode (testing). Change range: from 1% to 100% of maximum fan power, set in the maintenance menu - see **Adjusting the maximum fan power**.

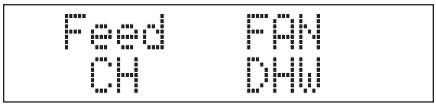


Pressing again 📖 takes you to the next setting.

Manual operation - testing outputs

A window allowing testing the correctness of operation of individual outputs (feeder, fan, CH pump, DHW pump).

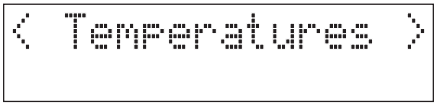
Select the tested output with the button 📖 , and to enable/disable it press the ▲ or ▼ button. The output currently being checked is indicated by a blinking symbol on the screen and lighting up the appropriate LED.



16 Temperatures

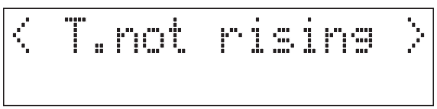
A window indicating the currently measured temperature of the boiler (temperature), the hot water heater (DHW), the feeder (Feed).

In order to enter the temperatures window, press the button 📖 the display will show HOT WATER. Then use the ▲ or ▼ button to select the TEMPERATURES option and confirm 📖 .

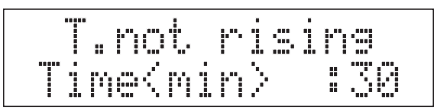


17 No temperature rise

This parameter defines the time (calculated in seconds), during which it is expected that the temperature will rise during operation in the HEATING mode. To access the no temperature rise menu, press the button 📖 ; the display will show HOT WATER. Then use the ▲ or ▼ button and select the T NOT RISING option and confirm 📖 . If the after specified time the temperature does not increase by 2 °C, then the message EMPTY BUNKER will be displayed.



Use the ▲ or ▼ buttons to set the desired value and confirm with 📖 . Change range: from 10 min to 240 min.



18 Clock

The CLOCK function allows you to change the set time and day of the week, as described in the Section Getting Started. To enter the time setting menu, press and hold the button 📖 , the display will show HOT WATER Then use the ▲ or ▼ buttons to select the CLOCK and confirm with 📖 .

19 Weekly program

The WEEKLY PROGRAM functionality enables boiler and DHW pump operation according to one of several programs. To enter the weekly program menu, press the button 📖 the display will show HOT WATER. Then use the ▲ or ▼ button to select the WEEKLY PROGRAM and confirm with 📖 .

Weekly program - enabling

This parameter determines whether the weekly program applies to central heating or hot water. Change range: disabled / only CH / only DHW / CH and DHW

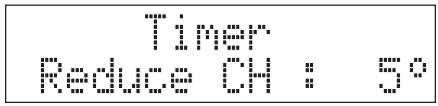
Note: Starting the weekly program for CH will have the effect that in the scopes indicated by the program the boiler operates according to set temperature and outside of these ranges -it operates at reduced temperature - see **Weekly program - reduction of boiler temperature**.

Note: Starting the weekly program for DHW is indicated with the T symbol.

Pressing again 📖 takes you to the next setting.

Weekly program - reduction of boiler temperature

This parameter determines the level of the boiler temperature reduction during the running of the weekly program for CH. Change range: from 5 °C to 30 °C.



Pressing again takes you to the next setting.

Weekly program - program selection

This parameter allows you to select one of the available weekly programs. Change range: family / work / senior / custom.

The parameters of available programs

Family program

Sun	07:00 - 22:00
Mon	05:30 - 22:00
Tue	05:30 - 22:00
Wed	05:30 - 22:00
Thu	05:30 - 22:00
Fri	05:30 - 23:00
Sat	06:30 - 23:30

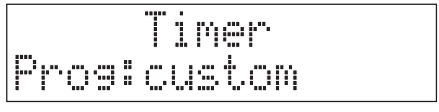
Work program

Sun	08:00 - 22:00
Mon	06:00 - 08:00, 16:00 - 22:00
Tue	06:00 - 08:00, 16:00 - 22:00
Wed	06:00 - 08:00, 16:00 - 22:00
Thu	06:00 - 08:00, 16:00 - 22:00
Fri	06:00 - 08:00, 15:00 - 23:00
Sat	07:00 - 23:30

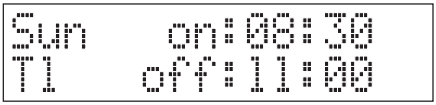
Senior program

Sun	05:30 - 22:00
Mon	05:30 - 22:00
Tue	05:30 - 22:00
Wed	05:30 - 22:00
Thu	05:30 - 22:00
Fri	05:30 - 22:00
Sat	05:30 - 22:00

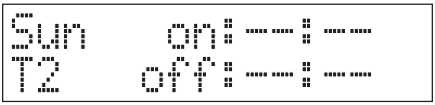
Selection of the CUSTOM program makes it possible to create an individual program - for each day of the week it is possible to set two time intervals.



Make the changes with the ▲▼ keys, and approve each setting with 📖.

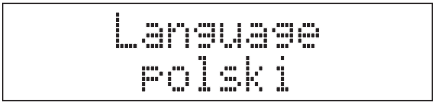


Setting the ON/OFF parameters to "--:--" means that in a specific period the pump ON and OFF time was not set.



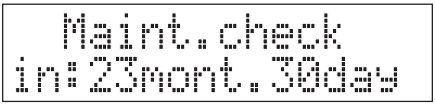
20 Language

Nthis setting is used to set the language for displaying of messages. To enter the language setting menu, press and hold the button 📖, the display will show HOT WATER Then use the ▲ or ▼ buttons to select the LANGUAGE option and approve 📖.



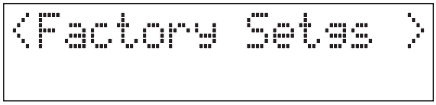
21 Next maintenance

This parameter informs the user of the time remaining until the next maintenance inspection of the controller. To call up the screen with this information, press the button 📖; the display will show HOT WATER. Then use the ▲ or ▼ to select the MAINT. INSP. option and confirm with 📖.

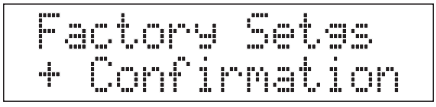


22 Factory settings

This function is used to remove the parameters set by the user and return to the factory settings. To access the factory settings menu, press the 📖 ; the display will show HOT WATER. Then use the ▲ or ▼ to select the FACT. SETGS. option and confirm with 📖 .



Confirmation of parameters change to factory settings is done with the ▲ button.



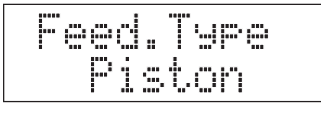
23 Maintenance parameters

In this menu the maintenance technician can set specific parameters of the equipment operation as regards the fan and feeder.

To enter the maintenance parameters menu, press and hold the button 📖 ; the display will show MAINT.PARAM. Confirm selection by repeated pressing 📖 .

Enabling the piston feeder mode

This parameter switches the controller to work with the piston feeder. Change range: yes/no.

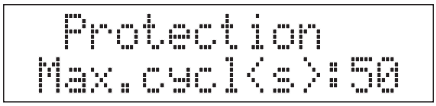


Note: In the piston feeder mode, be sure to connect the reed relay to the appropriate connector (see Fig. 4).

Pressing again 📖 takes you to the next setting.

Emergency stop of the piston feeder

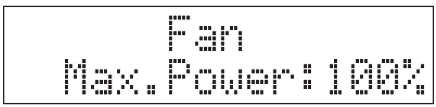
The parameter defines the time (in seconds) ensuring a full cycle of the feeder drawer. If, for some reasons, it is jammed, then, after that time the feeder and the fan will be stopped in emergency mode, and the screen will indicate a feeder fault - see more **Alarms - piston feeder drawer fault**. Change range: from 10 s to 200 s.



Pressing again 📖 takes you to the next setting.

Adjusting the maximum fan power

This parameter allows you to set the maximum operating power of the fan. Change range: from 40 % to 100 %.



Pressing again 📖 takes you to the next setting.

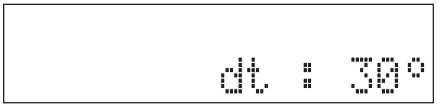
Adjustment of damping time

This parameter allows you to set the fan operating time during damping, i.e. after the temperature drop at the boiler by the "dt" parameter. Change range: from 0 min to 45 min.

Pressing again 📖 takes you to the next setting.

Starting the DAMPING process

A parameter that specifies at how many degrees Celsius below the temperature set on the boiler for the damping countdown to start, and then to shut the boiler down, see **Adjustment of damping time**. Change range: from 10 °C to 30 °C.



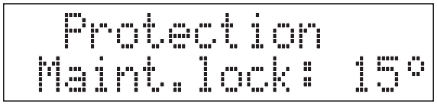
Example:
- the temperature set on the boiler: 50 °C
- “dt”: 10 °C

During burning out of the boiler, when the temperature drops to the level of 40°C (50°C-10°C), the controller will start counting the time set - see item **Adjustment of damping time** - and then the fan will stop running.

Pressing again takes you to the next setting.

Feeder and fan locking in the MAINTAINING mode

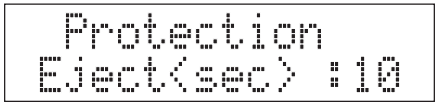
A parameter that specifies the boiler temperature rise above which the feeder and fan operation will be locked in the MAINTAINING mode. Change range: from 5 °C to 20 °C.



Pressing again takes you to the next setting.

Ejection of fuel into the furnace in a critical situation

Parameter specifying the time (counted in minutes), during which the feeder will press the fuel into the furnacein a situation when the temperature in the feeder reaches a critical level - for more information see **Alarm – feeder temperature**. Change range: from 1 min to 50 min.

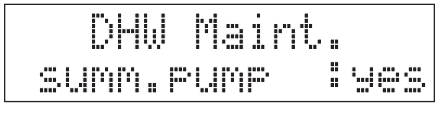


24 DHW - maintenance

The effect of this parameter is that when the controller is in SUMMER mode, the domestic hot water heater pump is working despite reaching the desired temperature for domestic hot water. It is done to protect the boiler from rapid temperature increases.

To enter the DHW maintenance parameters menu, press and hold the button 📖 ; the display will show MAINT.PARAM then use the ▲ or ▼ buttons to select the DHW MAINT option and confirm with 📖 .

Select the desired setting using the ▲ or ▼ buttons. Change range: yes / no.



Note: The prerequisite for the pump to start is maintaining minimum temperature difference between the temperature measured on the DHW heater and that measured on the boiler.

25 Maintenance menu - Alarm

The menu has settings for triggering the alarm for excessive temperature on the boiler.The menu has settings for triggering the alarm for excessive temperature on the boiler.

To access the alarm menu, press and hold for a few seconds the 📖 button, the screen displays MAINT PARAM Then press ▲ or ▼ to select ALARM and confirm with 📖.

Alarm - pump temperature

This parameter allows you to set the temperature above which both pumps will start in emergency mode (hot water pump starts, provided that the controller will operate in the domestic hot water mode). Change range: from 80 °C to 99 °C.

Pressing again 📖 takes you to the next setting.

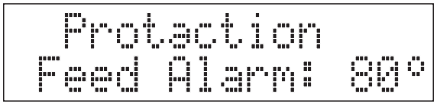
Alarm - boiler temperature

This parameter allows you to set the temperature above which an alarm is triggered. Change range: from 80 °C to 99 °C.

Pressing again 📖 takes you to the next setting.

Alarm - feeder temperature

This parameter allows you to set the temperature above which an alarm is triggered. Change range: from 30 °C to 99 °C.



Pressing again 📖 takes you to the next setting.

Alarm - no temperature rise

Parameter allowing enabling or disabling the boiler temperature rise monitoring functionality **No temperature rise**. Change range: Yes / No.

Pressing again 📖 takes you to the next setting.

Alarm - sound

This parameter allows you to enable or disable the alarm sounds. Change range: yes / no.

26 Maintenance check

Parameter to reset and change the countdown time to the next maintenance check.

To enter the maintenance check menu, press and hold for a few seconds the button 📖 ; the display will show MAINT.PARAM then use the ▲ or ▼ buttons to select the MAINT CHECK option and confirm wiyh 📖 .

The controller will prompt you to enter the access code.

Use the ▲ ▼ buttons to set the access code and confirm with 📖.

Note: The access code is known only to the maintenance technician.

A screen will be displayed for setting the number of months until the next maintenance check Make the change using the ▲ ▼ buttons; and confirm the selection 📖.

27 The COMFORT SYSTEM function

The COMFORT SYSTEM built-in in the controller prevents pump blockage by deposition of scale between the rotor and stator of the pump. The controller automatically switches the pump on for 30 seconds every 24 hours from its last run. Pump operation in this mode is indicated by the blinking PUMP LED The function takes effect after 24 hours from turning the controller on.

Note: For the COMFORT SYSTEM function to be active after the end of the heating season, leave the controller plugged in.

28 The protection against freezing function

The controller protects the heating system from freezing, both pumps running all the time when the temperature of water falls to 4 °C or lower (DHW pump will start, provided that the controller runs in the DHW mode).

29 Remote control - optional

The controller is designed for remote control (see Fig. 4), which enables control of the current temperature of the boiler, changing the set temperature of the boiler and a number of other features which improve user comfort. Built-in beeper emits a sound when the temperature rises to a dangerous level specified by the user.

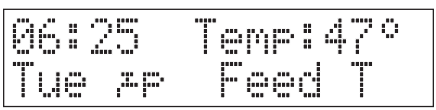
30 Alarms - description

Over temperature on the boiler

When the temperature in the boiler exceeds the value set in **Alarm - boiler temperature**, the display will show **Boiler T** and an intermittent beep will be generated (as long as it is turned on - see **Alarm - sounds**).

Over temperature on the feeder

When the temperature in the feeder exceeds the value set in **Alarm - feeder temperature**, the display will show **Feeder T** and an intermittent beep will be generated (as long as it is turned on - see **Alarm - sounds**).



Damaged boiler temperature sensor

When the boiler temperature sensor is damaged, the display shows **Boil.Sens.** (the fan stops working), instead of the boiler temperature -- will be shown and a continuous sound will be generated (as long as it is turned on - see **Alarm - sound**).

Feeder sensor damaged

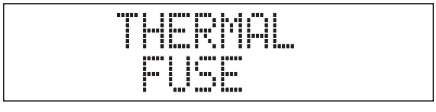
When the feeder temperature sensor is damaged, the display shows **Feed Sens** (fan operation will stop and the feeder will continue for the time set in item **Ejection of fuel into the furnace in a critical situation**), instead of the temperature -- will be displayed and a continuous sound will be generated (as long as this option is enabled - see **Alarm - sound**).

Damaged DHW temperature sensor

When the DHW temperature sensor is damaged, the display shows **DHW Sens**. (DHW stops working), instead of the DHW temperature -- will be shown and a continuous sound will be generated (as long as it is turned on - see **Alarm - sound**).

Thermal fuse

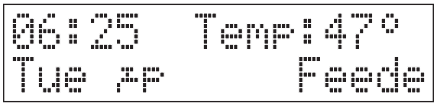
In the event of an overrun on the boiler temperature above 90 °C, the fan will be disabled in emergency mode. At the same time the display will show THERMAL FUSE, and an intermittent beep will be generated (as long as it is turned on - see **Alarm - sound**).



When the temperature drops below 90 °C, the thermal protection system is "off" and the controller returns to normal operation.

Piston feeder drawer fault

When there is a fault / jamming of the piston feeder mechanism (the drawer will not move), then the screen will show **Feeder** (the feeder and fan will be stopped) and a continuous sound will be generated (as long as this option is enabled - see **Alarm - sound**).



Additional notes

Note: Pressing the ▲ or ▼ buttons when the sound is generated will cause it to turn off.

Note: When the fault is removed, press the ⮌ - the error message will be cleared from the screen.

31 Specifications

Measured temperature range	from - 9 °C to + 120 °C
Boiler temperature setting range	from + 45 °C to + 80 °C
Hot water heater temperature range	from + 40 °C to + 70 °C
Temperature setting range for the CH pump	from + 30 °C to + 70 °C
Smooth start of the fan	yes
Adjustable maximum fan power	40 - 100 %
Fan hysteresis (difference between ON - OFF)	from 1 °C to 9 °C
DHW pump hysteresis (difference between ON - OFF)	from 2 °C to 9 °C
Blowing control (option to completely disable blowing)	operation: 0 - 90 seconds break: 1 - 60 minutes
Adjustable boiler damping time	0 - 45 minutes
Allowable load on outputs	fan: 100 VA (W) / 230 V feeder: 200 VA (W) / 230 V CH pump: 100 VA (W) / 230 V DHW pump: 100 VA (W) / 230 V
Rated supply voltage	~ 230 V, 50 Hz
Electrical protection	2 x 5 A
Air relative humidity	< 95 %
Enclosure protection grade	IP 20
Ambient temperature	from 0 °C to + 40 °C
Software class	A
Operation type	fan: 1Y feeder: 1B CH pump: 1B DHW pump: 1B

Note: Depending on the software version, some setting ranges may differ from the above

INFORMATION ON WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT

Disposal of Waste Electrical and Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems).

This symbol on the product or its packaging (pursuant to the Act of July 29, 2005 on Waste Electrical and Electronic Equipment) states that this product may not be treated as household waste. It should be handed over to a facility for collection of waste electrical and electronic equipment. By ensuring proper storage of this product, you will help prevent negative consequences for the environment and human health. Recycling helps conserve natural resources. For more detailed information about recycling of this product, information about the set up system to receive and collect waste electrical and electronic equipment and a list of treatment facilities, please contact our office or our distributors.

Manufacturer:

DK System

ul.Przyjaźni 141
53-030 Wrocław, Poland
Phone (+48) 71 333 73 88, 71 333 74 36
fax. (+48) 71 333 73 31
biuro@dksystem.pl
Maint.
Phone (+48) 71 333 73 88

Made in Poland