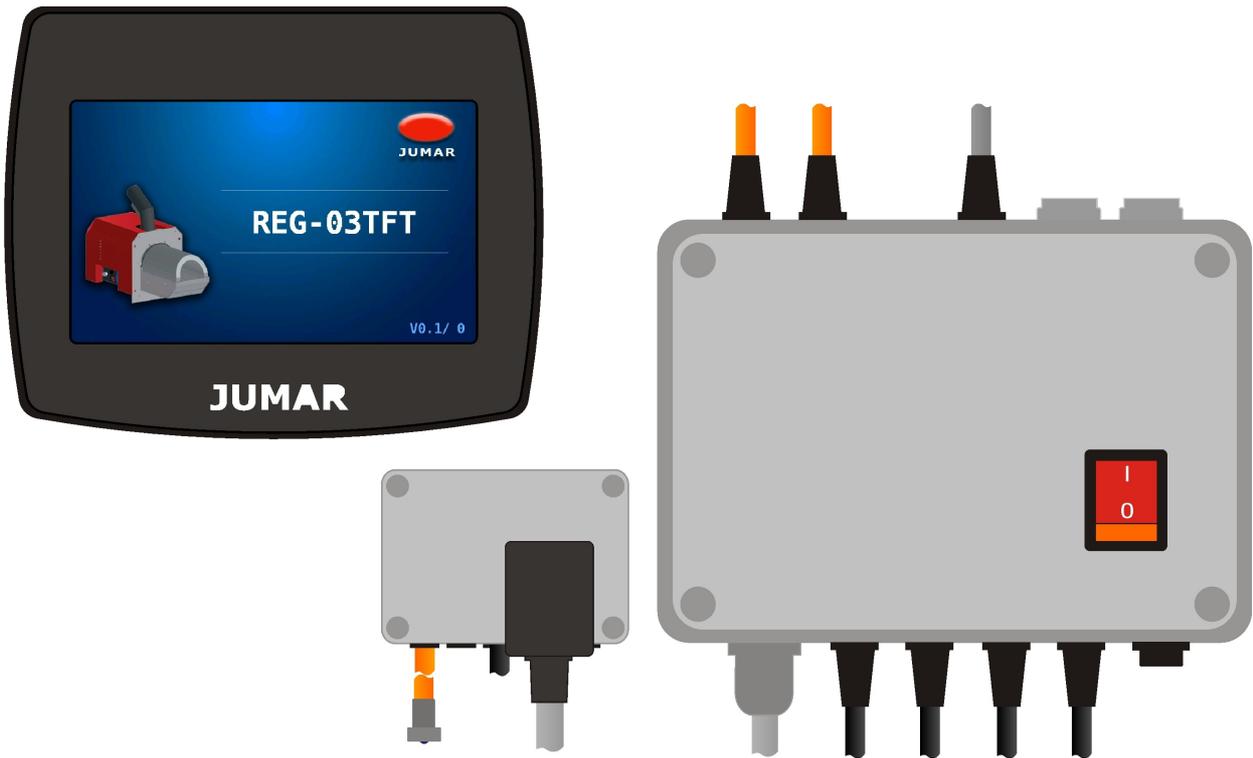


MICROPROCESSOR CONTROLLER OF THE PELLET'S BURNER

REG-03 TFT v1.0



INSTRUCTION OF INSTALLING AND THE MAINTENANCE

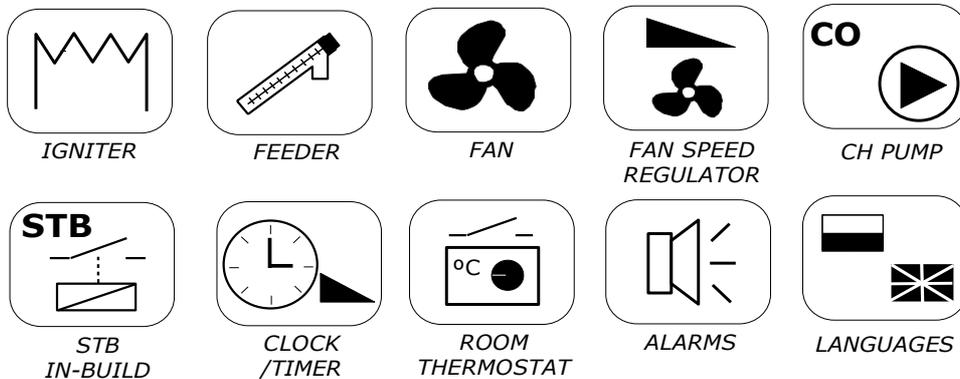


TABLE OF CONTENTS

SAFETY OF OPERATIONAL USE	5
INSTALLATION GUIDANCE	5
TECHNICAL DATA	6
THE IMPLEMENTATION	7
THE PRICIPLE OF WORKING	7
THE CONNECTION DIAGRAM	8
THE DRIVER'S HANDLING	12
OPERATION CONTROLLER	14
ALARMS.....	16
WORKING MODES.....	18
MENU STRUCTURE.....	20
CENTRAL HEATING TEMPERATURE SETTINGS.....	21
WARM USAGE WATER TEMPERATURE SETTINGS (optional).....	21
SETTINGS' TABLES.....	22
PARAMETERS	24
MENU HEATING.....	24
MENU WUW.....	25
MENU BURNER.....	26
MENU TIMER.....	28
MENU CLOCK.....	30
MENU DEVICE.....	31
MENU SERVICE.....	31
SYSTEM LOGS.....	32
TERMS OF WARRANTY	33
NOTES	35

Thanks you for choosing our product.

This instruction should make the installation of the driver easier and make you accustomed to the maintenance and the safe using of the device.

Before installing please read the instruction carefully and get to know the functioning of the driver.

Any questions occur, contact with the JUMAR company.

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SAFETY OF OPERATIONAL USE

- ◆ Before using read carefully the instruction.
- ◆ Installing and connecting the regulator should be done by a professional staff. All available safety requirements should be taken into consideration.
- ◆ Before switching the regulator on, the accuracy of all connections ought to be checked.
- ◆ Guarantee proper working conditions according to the device's specification.



INSTALLATION GUIDANCE

- ◆ Do not power the device from the same source of power as others devices of high power without appropriate net filters.
- ◆ Avoid putting signal wires in a direct contiguity and in parallel to energetic and powering wires.
- ◆ Avoid closeness of remotely-controlled devices, loads of high power devices with a group or phase regulation of power and other devices producing large interference of impulses.
- ◆ When switching on the feed mechanism, remember that in the installation of a building a breaker or a circuit breaker should exist. This part ought to be near the device, easy to reach by the operator and marked as a device disconnecting the mechanism.
- ◆ For problems caused by disobeying the instruction, the manufacturer is not responsible for.

TECHNICAL DATA

Burner handling:	to 500kW *
Sensors:	KTY / PT1000 / NTC *
Measurement range:	-30 – 120°C / -30 – 400°C / -30 – 250°C *
Measurement resolution:	0.1 °C
Time of measurements:	1 s
Data's reading:	TFT display with touch screen 3" or 5" *
Control outputs:	
• Igniter (relay):	~230V 3A (2A)
• Feeder (triac):	~230V 2A (0.8A)
• Feeder 2 (triac):	~230V 2A (0.8A) *
• Air Fan (triac):	~230V 2A (0.8A)
• CH Pump (relay):	~230V 2A (0.8A)
• HUW Pump (relay/triac):	~230V 2A (0.8A) *
• Cleaning system (relay):	~230V 2A (0.8A) *
Protection:	
• Temperature (build-in)	STB (80°C-400°C)
• Electric (external)	Fuse 4A
Inputs:	
• Room thermostat:	Open contact
• External control:	Open contact *
• Fire sensor:	Opto element
• Heating sensor:	KTY / PT1000 / NTC *
• Burner feeder sensor:	Bimetal 75°C
• STB sensor:	Bimetal (95°C-400°C) *
• Chimney sensor:	PT1000 *
Visual signalling:	
• LCD screen:	Messages, measurements, settings
• Sound:	Alarms
Power supply:	~110-230 V 50/60Hz 5VA / 10VA *
Working temperature:	5°C - 50°C

* *Optional*

THE IMPLEMENTATION

REG – 03TFT controller is a modern microprocessor device controlling the work of the pellet's burner. Implementation of advanced driver's algorithm and the flame sensor ensures the simplicity of maintenance and the full automatization of the burning process. The usage of a graphic display with touch screen assures an easy and clear interaction between the use and the device. The driver is adapted also to working with the central heatings pump and warm usage water pump (optional). Thanks to these functions, the device can be used in expanded installations of the central heating without using additional steering devices. The regulator is also equipped with an output of room thermostat which enables the change of the furnace's working parameter after reaching a particular temperature in the room. To controller added timer functions – now user can set heating time.

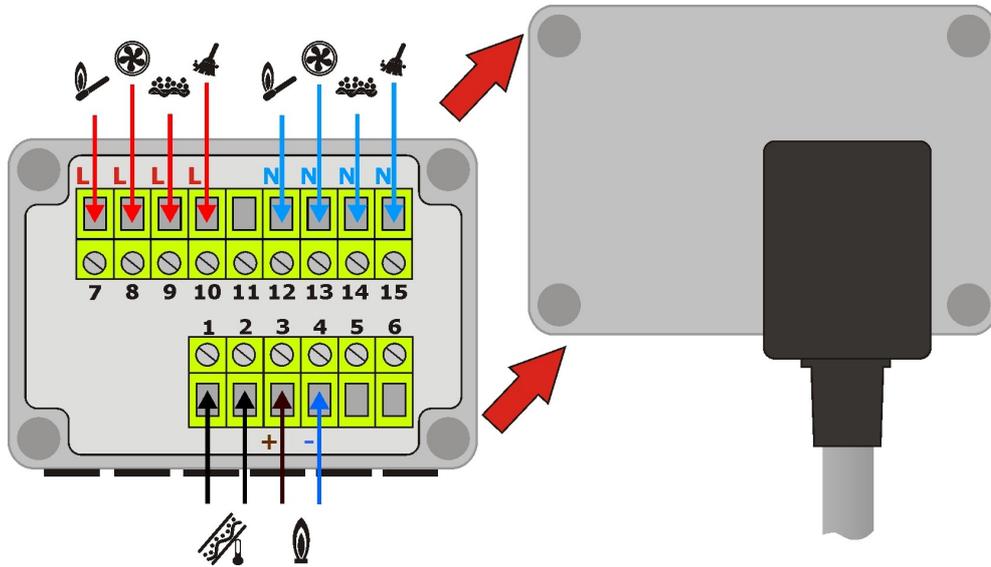
THE PRICIPLE OF WORKING

The device's work is based on providing fuel via steering the feeder appropriately and the work of a fan which steers the burning process. After reaching a particular temperature of the heating water, the driver goes into the mode of sustaining the temperature or switches the burner completely off. The ignition of fuel starts automatically with the help of igniter which is connected to this driver. The driver enables the control of the furnace's work thanks to the room thermostat. It is possible to steer the heating in relation to the actual temperature in the room. The regulator is also equipped with the self-control systems (detecting the malfunction of the temperature's sensors) and mechanisms monitoring the furnace's work preventing from going beyond the range of safety for the installation of the central heating (STB).

CONNECTION DESCRIPTION

Terminal No.	Designation	Input/Output	Description
1 2	N L	input input	Power supply connector
3 4	F1 F2	input input	Main fuse connector 4A
5 6	L N	output output	Igniter connector
7 8	L N	output output	Central heating pump connector
9 10	L x	output x	Cleaning system connector * Warm usage water pump connector *
11 12	L N	output output	
13 14	L N	output output	Feeder connector
15 16	L N	output output	Internal feeder connector * Cleaning system connector * Warm usage water pump connector *
17 18	S1 GND	input input	Warm Usage Water sensor connector * Chimney sensor connector *
19 20	BSTB GND	input input	Burner feeder sensor connector (bimetal 75°C - 90°C)
21 22	PL (+) GND (-)	input input	Fire sensor connector (opto element)
23 24	CH GND	input input	Central heating sensor connector
25 26	S1 GND	input input	Room thermostat connector * External control connector * Chimney sensor connector *

* depend a hardware configuration



Terminal No.	Designation	Input/Output	Description
1 2	BSTB GND	input input	Burner feeder sensor connector (bimetal 75°C - 90°C)
3 4	PL (+) GND (-)	input input	
5 6	x x		
7	L	output	Igniter connector
8	L	output	Air fan connector
9	L	output	Internal feeder connector *
10	L	output	Cleaning system connector *
11	x		
12	N	output	Igniter connector
13	N	output	Air fan connector
14	N	output	Internal feeder connector *
15	N	output	Cleaning system connector *

* depend a hardware configuration

Fire sensor (polarity):

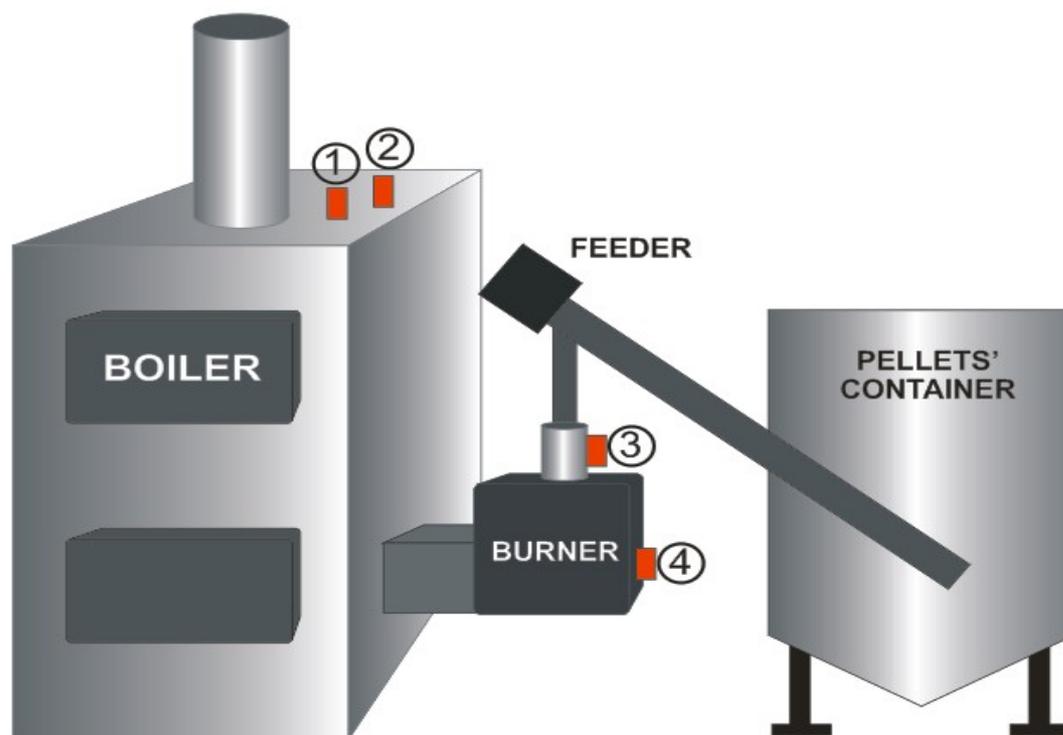


CAUTION!!

Bad connection of the sensor causes the weak response of the sensor to the flame/fire.

In the picture below, illustrates an example of placing sensors:

Sensor No.	Designation	Name	Description
1	STB	STB Sensor	STB sensor (securing sensor) has to be places in the boiler along with the CH sensor.
2	CH	CH Sensor	Central heating water sensor (CH).
3	FEED	Burner Sensor	The sensor protects the burner against excessive temperature growth. Bimetal sensor has to selected according to the burner.
4	FIRE	Fire Sensor	The flame sensor has to be placed so that it could detect flame and heat in the furnace/boiler. You should not subject it to high temperatures. When connecting, you have to take note of polarization of the sensor (+/-).



THE DRIVER'S HANDLING

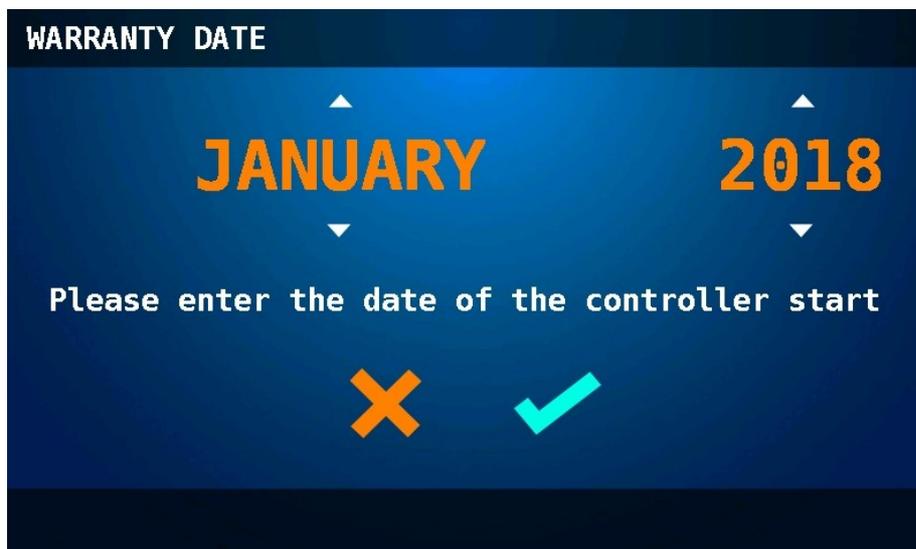
After switching the driver on, on the LCD screen appears the programme's logo defining the type of the driver and the manufacturer's logo.



After a few seconds controller show measurement panel. The following figure shows an example of the appearance of LCD screens.



Additionally, the user is required to set the date of the burner on the first start. From that moment, the warranty of the control device is counted.



If some problems with the device or configuration will be appear, please contact with service. Manufacturer's data can be found on the service screen by clicking on the manufacturer's logo.

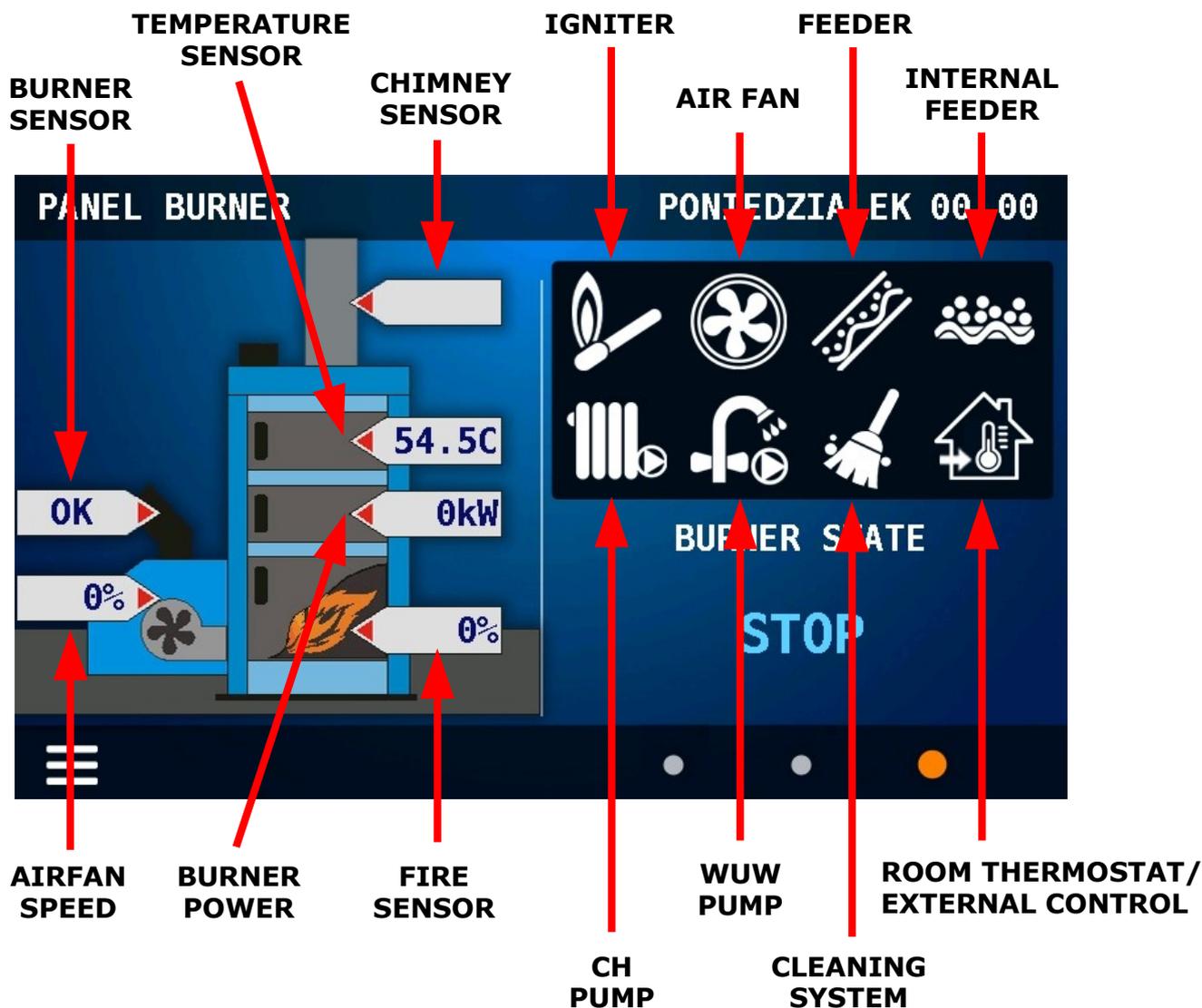


OPERATION CONTROLLER

The main screen is divided into panels: **HEATING PANEL**, **HUW PANEL**, **BURNER PANEL**. The figure below shows how to switch between panels.



The last panel shows the operation of boiler elements and the burner: fan, igniter, feeder, pump, values from sensors.



The icons can have three different colours symbolizing the work of the element, e.g.

Icon	Description
	Function disable.
	Function enable, device is working.
	Function enable, device is not working.

ALARMS

If the sensor is damaged or it is not connected, the temperature display will show a "--" image along with giving sound alarm. The alarm is switched off automatically after failure removal (connecting the sensor or replacing it with a new one). The figure below visualized an exemplary screen informing about missing sensor or sensor damage:



The alarm will be also activated, if the temperature exceeds safe value (90°C). Exceeding the temperature causes the burner to stop and switch into damping mode. The burner's operation is blocked. The display will show the following message:



STB alarm has to be reseted manually after decreasing the temperature blow critical value.

The controller also monitors the temperature of burner's case. If the temperature will exceed above pre-set value, the controller will launch the burner protection procedures and display a message:



The burner's operation is blocked during alarm. After decreasing the temperature below critical, the controller automatically returns into previous state.

WORKING MODES

The controller may work in two working modes („**ON**“, „**OFF**“). The „**OFF**“ mode activates procedures connected with the burner's putting out i.e. burning off and cleaning. .

FUNCTIONS NAME	FUNCTION DESCRIPTION
STOP	Burner stopped.
FILLING	Filling the feeder. Filling stops automatically after about 10 minutes.
IGNITION	Ignition of pellet. The mode would be automatically changed after detecting a flame by the sensor.
CLEANING	The cleaning of the burner from he left ashes. The cleaning function also as a blow down before ignition.
COMPRESSOR	Compressor cleaning a burner (optional).
WORK	Heating the boiler up to the set temperature. Showing the actual power of the burner.
PAUSE	Sustaining the set temperature (if the burner's working mode is in the mode of continuous work)
BURNING OFF	Putting off the burner. Active in the STOP mode or in the temporal working mode of the burner.
STANDBY	Standby of the burner for the decline of the temperature of a hysteresis (if the burner's working mode is in the temporal mode).
NO PELLETT	The driver carries out three trials of ignition of the pellet. The lack of flame may be caused by: the lack of the pellet in the container, when the big feeder was not filled with the pellets, the flame's sensor is dirty or broken.
BURNER ALARM	If the temperature of burner rises over the maximum value, the driver would activate the procedures of the burner's protection.
STB ALARM	Boiler overheat alarm. Burner will be stop. Alarm should be RESET by user.

While activating the driver for the first time, the „**OFF**“ mode is activated. Every next time, its status is saved in the regulator's non-volatile memory. Activating the driver again, automatically causes switching on of the lately used working mode.

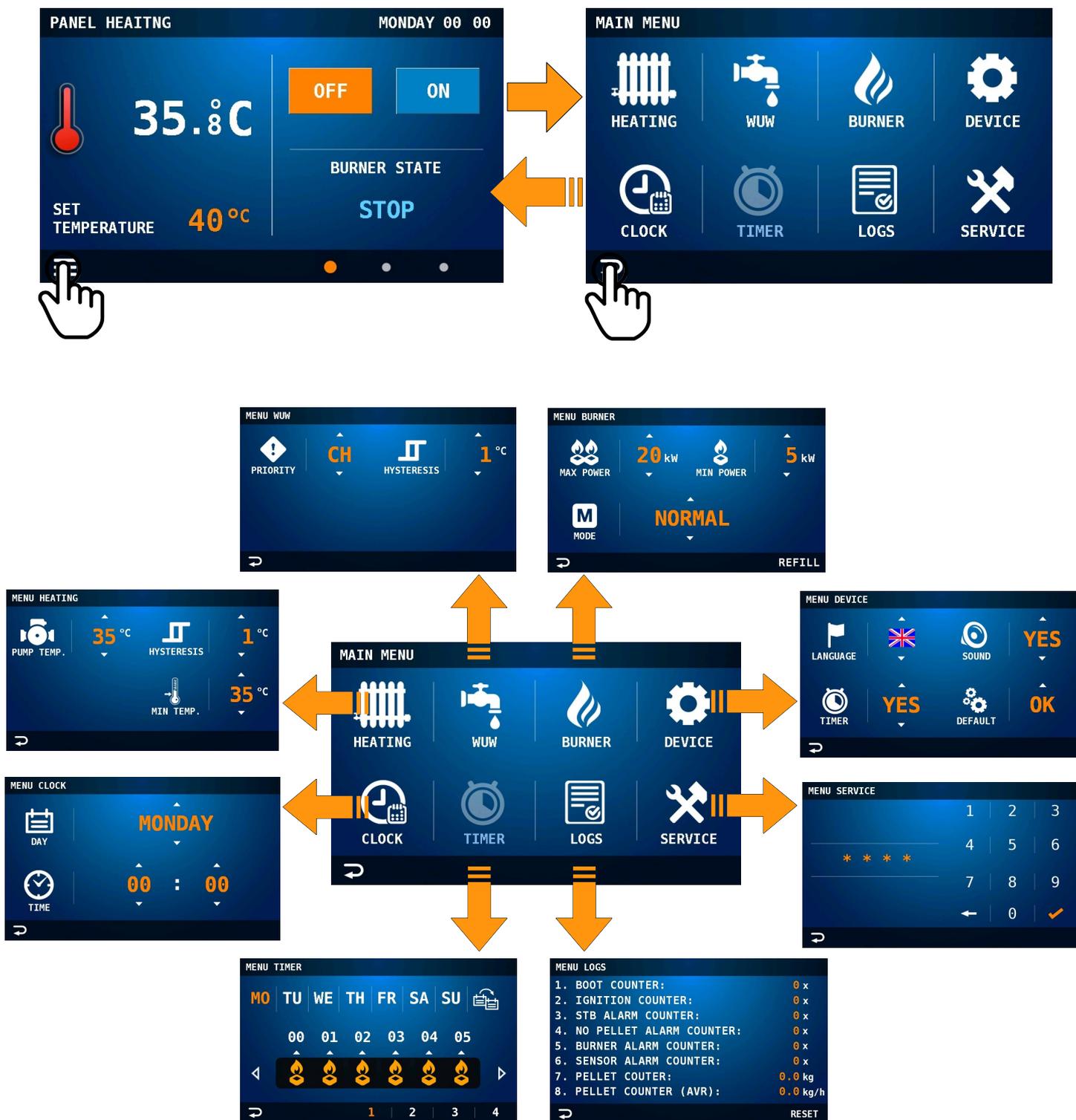
In the picture, the way of moving between the particular driver's modes. In the „**ON**“ mode, the regulator steers the functions automatically and depends on the parameters set by the user. In this mode the status of the flame is constantly monitored. The decline of the flame activates functions linked to the ignition of the pellet (if the particular burner's function requires it). The driver carries out three trials of ignition of the pellet. The lack of flame may be caused by: the lack of the pellet in the container, when the big feeder was not filled with the pellets, the flame's sensor is dirty or broken.

CAUTION!!

The flame's sensor should be cleared regularly. The smudge of dirt may be the reason of false interpretation of the burner's status, causing for example, a higher fuel consumption without full burning of the pellet.

MENU STRUCTURE

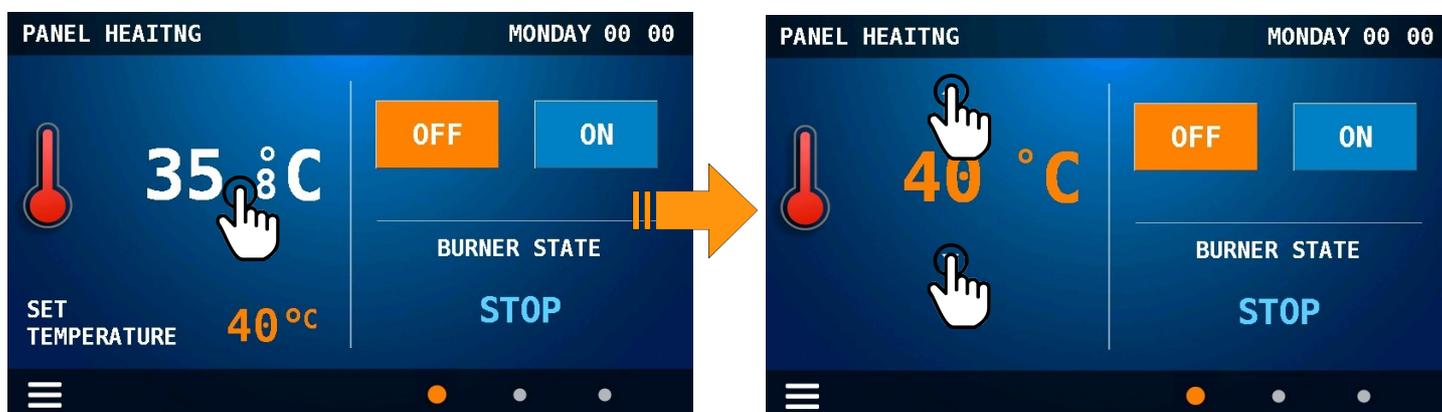
The controller menu is divided into eight groups: „HEATING“, „HUW“, „BURNER“, „DEVICE“, „CLOCK“, „TIMER“, „LOGS“, „SERVICE“. The following figures show how to navigate between menus.



CENTRAL HEATING TEMPERATURE SETTING

The controller has an ability to set heating temperature in the range of minimum temperature to 85°C (**KTY** sensor) or to 350°C (**PT1000** sensor) or to 250°C (**NTC** sensor). After reaching the set temperature, the controller switches into maintain/pause mode or completely turns the burner off. Decreasing the temperature below the set value (Heating water temperature - CH boiler hysteresis) activates the burner function. If there is no flame in the burner, it will be ignited again.

In the picture below, illustrates how change a value of temperature:



WARM USAGE WATER TEMPERATURE SETTING (optional)

The controller has an ability to set warm usage water temperature in the range of 30 to 85°C. There are two types of heating a warm usage water: with or without priority.

In the picture below, illustrates how change a value of temperature:



SETTINGS' TABLES

➤ HEATING SETTINGS:

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	CH PUMP TEMPERATURE	°C	20 - 80/200/300°C *	35°C
2	CH HYSTERESIS	°C	1 - 30/50/100°C *	2°C
3	MINIMUM CH TEMPERATURE	°C	15 - 60°C	35°C

➤ WUW SETTINGS:

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	WUW PRIORITY	---	CH / WUW	CH
2	WUW HYSTERESIS	°C	1 - 25°C	10°C

➤ BURNER SETTINGS:

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	MAX BURNER POWER	kW	10 - 500kW *	35kW
2	MIN BURNER POWER	kW	2 - 90kW *	3kW
3	WORKING MODE	---	normal / stop&go /	normal
4	FEEDER FILLING	---	---	---

➤ DRIVER SETTINGS:

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	LANGUAGE	---	PL / EN	PL
2	SOUND	---	ON / OFF	ON
3	TIMER STATE	---	ON / OFF	ON
4	DEFAULT SETTINGS	---	OK	---

➤ CLOCK SETTINGS:

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	CURRENT DAY	DAY	MO — SU	---
2	CURRENT HOUR	HOUR	00 — 23	---
3	CURRENT MINUTES	MINUTES	00 — 59	---

* depend a hardware configuration

➤ **TIMER SETTINGS:**

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	TIMERS SETTINGS	DAY / HOURS / STATE	MO – SU / 00 – 23 / 1/2/3	---

➤ **SYSTEM LOGS:**

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	BOOTING	---	---	---
2	IGNITIONS	---	---	---
3	NO FUEL	---	---	---
4	STB ALARM	---	---	---
5	BURNER ALARM	---	---	---
6	SENSOR ALARM	---	---	---
7	AVERAGE CONSUMPTION	---	---	---
8	TOTAL CONSUMPTION	---	---	---

➤ **SERVICE SETTINGS:**

PARAMETER NO.	PARAMETER NAME	UNIT	SETTING RANGE	DEFAULT VALUE
1	SERVICE CODE	---	---	---

CAUTION!!

The manufacturer's settings are only the suggestions. All values depend on the kind of solid fuel, installation, the user's requirements, etc.

The producer of the controller reserves the changes of the ranges of the settings in next versions of the firmware.

PARAMETERS

MENU HEATING

In this group of adjustments, the user has the ability to set the adjustments related to temperature. Given below are the parameters you can change.



Parameter's description:

No	Parameter name	Description
1	CH PUMP TEMPERATURE	The threshold temperature of starting the pump of the central heating (CH pump). The pump works according to the user's settings if the input of the room thermostat is contact. The pump is also automatically switched on if one of the emergency status appears (e.g. overheating of the furnace, malfunction of the sensor, reaching the protection temperature of the furnace etc.).
2	CH HYSTERESIS	The value of the furnace's temperature has to decline to start the working mode of the boiler or ignite the pellets again. Setting the hysteresis more than 5°C is reasonable only when heating the central heating buffer.
3	MINIMALNA TEMPERATURA	Minimal temperature of the furnace which can be set by the user. The activity of the room thermostat or timer causes the setting of the boiler into this parameter.

MENU WUW

In this menu, the user sets the temperature of the warm water usage. Given below are the parameters you can change.



Parameter's description:

No	Parameter name	Description
1	WUW PRIORITY	If the priority is set on "CH" the boiler heats the heating water and simultaneously the useful warm water. If the pre-set temperature of the useful warm water is larger than the previously set temperature of the heating water, the regulator heats the WUW buffer only up to the pre-set temperature of the heating water. However, setting the priority on "WUW" heats the WUW buffer first to the temperature which was set for the WUW buffer and the excess of the WUW pump (if the furnace's temperature is lower than the pre-set temperature of the WUW buffer), then lowers the temperature of the boiler up to the chosen value and heats the heating water.
2	WUW HYSTERESIS	The value of the warm usage water temperature has to decline to start the heating again.

MENU BURNER

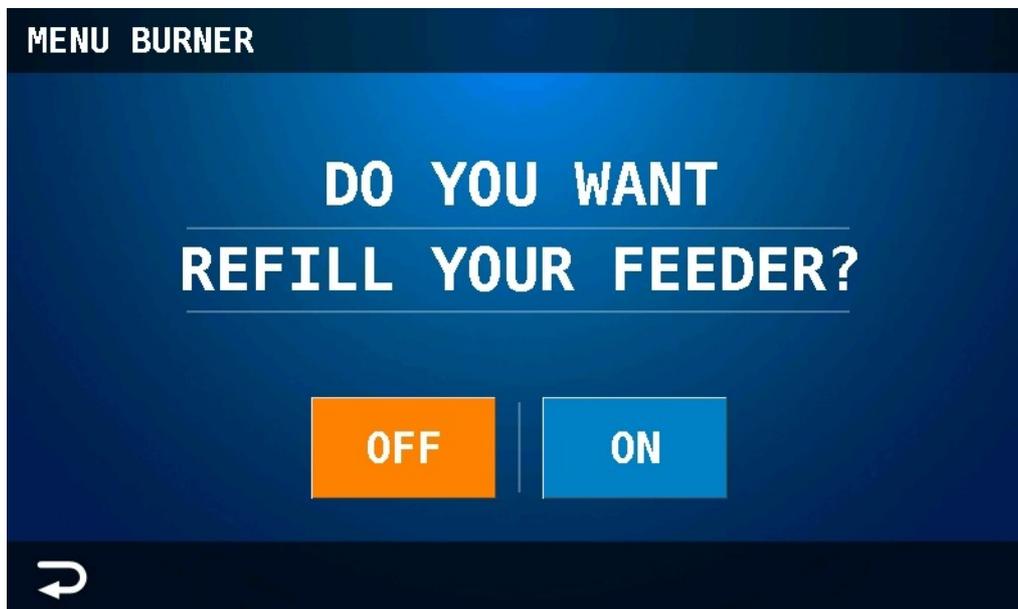
In this group of adjustments, the user has the ability to set the adjustments related to the burner. Given below are the parameters you can change.



Parameter's description:

No	Parameter name	Description
1	MAX POWER (WORKING)	The power of the burner in the working function (the temperature of the heating water is lower than the pre-set). The burner's power is a visual value depending on the quality of the applied pellet. The power should be chosen as if the full burning of the pellet took place and there would be no decline of the embers in the burner.
2	MIN POWER (MAINTAIN)	The power of the burner in the function of maintain (the temperature of the heating water is higher than the pre-set.). The chosen power of the burner is a visual value depending on the quality of the applied pellet. The power should be chosen as if there was no decline of the embers in the burner and there was no further increase of the boiler's temperature.
3	BURNER MODE	The burner may work in a NORMAL MODE (after reaching the pre-set temperature, the power is lowered according to the parameter Burner power (pause)) or in the STOP&GO MODE (after reaching the pre-set temperature, the burner is put out). This mode is recommended for heating the central heating buffer and the hysteresis of the CH boiler over 5°C.
4	FEEDER FILLING	Switch on or off feeder filling pipe. Function only active when controller is in STOP MODE .

During the first start-up of the burner or when detecting a lack of fuel, it is necessary to backfill the feeder pipe. The "**FILL**" function is used in the BURNER menu. This function works only in "**STOP**" mode.



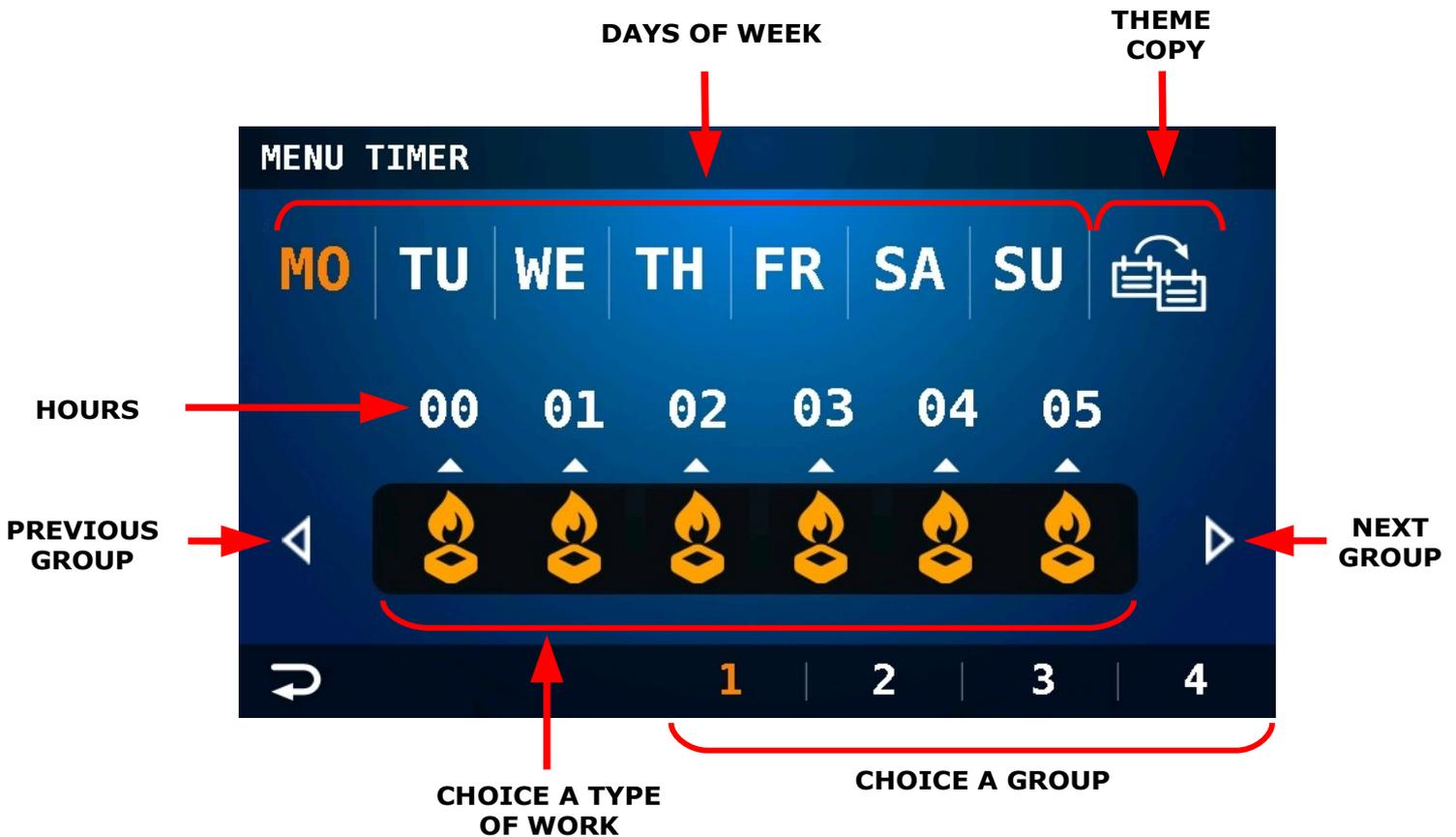
MENU TIMER

In this group of adjustments, the user has the ability to set the time programs determining the burner's operation time.



For correct operation of the timer, it is necessary to set the current day of the week and the current time in the "CLOCK" menu.

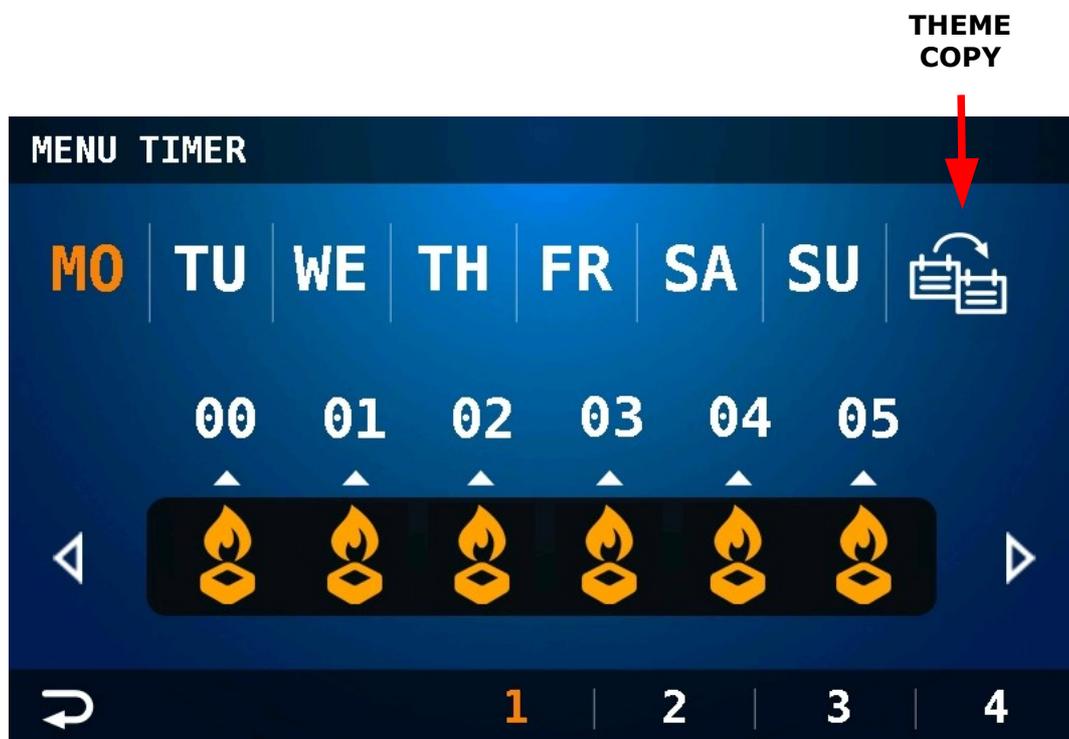
The following figure shows a detailed description of the menu:



Different types of burner operation can be set for each hour. The following variants are available:

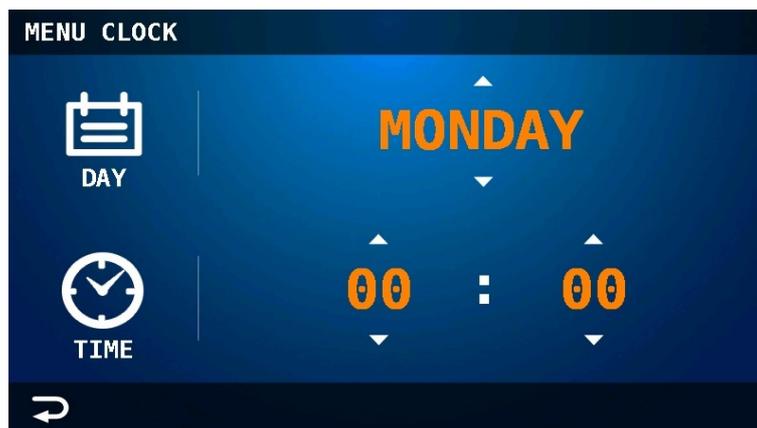
Icon	Description
	<p>The burner is working normally.</p>
	<p>Burner is switched off. The burner automatically switches to BURNING OFF mode and next to the STANDBY mode.</p>
	<p>Lowering the central heating temperature to the minimum temperature set on HEATING menu.</p>

For each day of the week, you can set a separate operating schedule for the burner. It is also possible to use a given scheme for all days of the week (from Monday to Sunday). You must first set the desired time schedule, and then click the copy icon:



MENU CLOCK

In this group of settings, the user has ability to set current day of the week and time. It is very important to set these parameters, e.g. in order to ensure correct function of time programs. Data and time are kept after lack of power for approx. 48 hours. After this time it is necessary to check the timer adjustments again.



Parameter's description:

No	Parameter name	Description
1	CURRENT DAY	Setting of current day of week.
2	CURRENT HOUR	Setting of current hour.
3	CURRENT MINUTES	Setting of current minutes.

MENU DEVICE

In this group of adjustments, the user has ability to change the parameters of controller's function.



Parameter's description:

No	Parameter name	Description
1	CHOICE LANGUAGE	Changing the menu language.
2	SOUND	Enable/disable screen touch sounds.
3	TIMER	Enable/disable timer function.
4	DEFAULT SETTINGS	Return to factory settings.

MENU SERVICE

Controller service settings are available in this group, selected once when fitting the controller to the device. These settings are not deleted when restoring default (factory) settings.



SYSTEM LOGS

Counters for errors and alarms generated by the controller are available in this group. Saved errors are kept in the non-volatile memory of the controller and one can delete them using service codes only. Only device's manufacturer or service technician have access to them.

MENU LOGS		
1.	BOOT COUNTER:	0 x
2.	IGNITION COUNTER:	0 x
3.	STB ALARM COUNTER:	0 x
4.	NO PELLETT ALARM COUNTER:	0 x
5.	BURNER ALARM COUNTER:	0 x
6.	SENSOR ALARM COUNTER:	0 x
7.	PELLET COUNTER:	0.0 kg
8.	PELLET COUNTER (AVR):	0.0 kg/h
		RESET

Parameter's description:

No	Parameter name	Description
1	BOOT COUNTER	Controller booting counter (x)
2	IGNITION COUNTER	Ignitions counter (x)
3	STB ALARM COUNTER	STB alarms counter (x)
4	NO PELLETT ALARM COUNTER	No fuel alarms counter (x)
5	BURNER ALARM COUNTER	Burner's feeder alarm counter (x)
6	SENSOR ALARM COUNTER	Sensors alarm (x)
7	PELLET COUNTER	Pellets total consumption (kg)
8	PELLET COUNTER (AVERAGE)	Pellets average consumption (kg/h)

TERMS OF WARRANTY

Dear User,

First of all, we would like to thank you for choosing our product. We are sure that you will be satisfied with this choice. We design our devices in order to meet your requirements and guarantee future trouble-free use. We ensure correct hardware function, provided that it is used according to its purpose and rules contained in the attached instruction manual. **JUMAR** gives warranty in case of all sorts of manufacturing defects and obliges to repair or replace faulty device (depending on **JUMAR's** decision). Warranty period is:

24 months from purchase date

Rights resulting from the warranty are granted only when the following terms of obtaining warranty services are met.

Terms of acknowledging the warranty claims:

1. The warranty is valid only when the user can provide an original invoice or purchase receipt for this device.
2. The faulty product should be delivered to the service in appropriate packaging, protecting it against damages during transport. **JUMAR** will cover transport costs when returning the repaired or replaced product only if the device was damaged due to manufacturer's fault.
3. **JUMAR** will repair or replace equipment in possibly short time, appropriate to the damage complication degree (maximum of 14 working days or 31 if this requires shipping of hardly available parts).
4. The warranty does not cover damages caused by modifications or improvements in the product, unless doing so was permitted by **JUMAR** in written form.
5. Replacements of the device or its parts does not cause extension of the warranty.

The warranty does not cover:

1. Damages resulting from excessive component wear caused by improper use. The product should be used according to the attached instruction manual.
2. Damages caused by incorrect setup or product use not in accordance with technical or safety standards.
3. Damages caused by attempted repair performed by third parties or attempted repair provided by oneself.
4. Damages caused during transport, due to inappropriate packaging.
5. Damages caused by mechanical impact, being struck by lightning, flooding, fire, over-voltage or other causes independent of the manufacturer.
6. In order to avoid unnecessary complications and inconveniences, prior to contacting the service, we suggest reading the **INSTRUCTION MANUAL** carefully or contacting **JUMAR**.

JUMAR's responsibility is limited to the value equalling the price of faulty product.

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