

GECO®



***INSTRUCTIONS FOR
OPERATION OF THE***

GH22PC

***CONTROLLER FOR
AIR FIREPLACES
WITH PELLETT
FEEDERS***

USER INSTRUCTIONS

Program v01h (g)

*Please, read the manual very carefully before connecting
and starting any of our devices. In case of any doubts, please contact us during working hours
(8 am to 4 pm)*

Table of Contents

1.	CONTROLLER DESCRIPTION.....	3
2.	TECHNICAL DATA	3
3.	REQUIREMENTS REGARDING THE ELECTRICAL SYSTEM.....	4
4.	GRAPHICAL AND TEXTUAL DESCRIPTION OF THE CONTROLLER'S CONNECTION	4
5.	CONTROLLER OPERATION MODES.....	6
5.1	STANDBY MODE.....	6
5.2	AUTOMATIC MODE – FIRING UP.....	7
5.3	AUTOMATIC MODE – HEATING	7
5.4	AUTOMATIC MODE — SUSTAIN	7
5.5	MANUAL MODE.....	8
5.6	ALARM STATUS.....	8
5.7	EXTINCTION MODE.....	8
6.	CONTROLLER USAGE.....	9
6.1	FRONT FILM OF THE CONTROLLER.....	9
6.2	STARTING THE CONTROLLER — MAIN SCREEN	10
6.3	VIEW OF THE SYSTEM'S OPERATION.....	11
6.4	HELP BUTTON	11
6.5	MANUAL OPERATION MODE.....	11
6.6	THE CONTROLLER'S MENU — GRAPHIC TREE	13
6.6.1	USER SETTINGS.....	14
6.6.2	SYSTEM SETTINGS.....	15
6.6.4	PANEL SETTINGS.....	17
7.	DESCRIPTION OF ADDITIONAL FUNCTIONS.....	17
7.1	SET ROOM TEMPERATURE — DAILY PROGRAMME.....	17
7.2	SET ROOM TEMPERATURE — WEEKLY PROGRAMME.....	18
7.3	FIREPLACE BURNOUT DETECTION.....	19
7.4	ANTI-STOP FUNCTION.....	19
7.5	REGULATION MODE — STANDARD.....	19
7.6	REGULATION MODE — GRID.....	19
7.7	OPERATION HISTORY	20
8.	ALGORITHMS FOR CONTROL OF PROCESS DEVICES IN THE AUTOMATIC MODE.....	20
8.1	FIRING UP.....	20
8.2	THE FAN IN HEATING MODE.....	21
8.3	HEATING MODE — FEEDER.....	21
8.4	SUSTAIN MODE — FAN AND FEEDER.....	21
9.	ALARM STATUSES.....	22
10.	TEMPERATURE LIMITER (STB).....	23
11.	LOSS OF POWER.....	24
12.	INFORMATION ON MARKING AND COLLECTION OF WASTE ELECTRIC AND ELECTRONIC EQUIPMENT.....	25

1. Controller description.

The GH22PC controller is a microprocessor-based device manufactured using Surface Mount Technology (SMT).

This controller is a device serving to control the process of air burning in a pellet fireplace. Control parameters can be adjusted to the current operating conditions and type of the fireplace. The controller includes a system protecting it from power outages and various other disturbances. After identification by the controller, each failure is signalled visually and audibly through a specific alarm status assigned to it. The controller allows automatic operation of the air heating installation, and the parameters stored in it adjust the fireplace's operation to the user's individual needs.

2. Technical data

Power supply	230V AC +10% -15%	
Operating temperature range	from +5°C to +40°C	
Humidity	20% to 80% RH	
Fan protection	3.15A	
Sensor type	NTC 2.2kΩ; PT1000	
Operating range of the temperature sensor	NTC:	0°C–100°C
	PT1000:	0°C–400°C

Output	Maximum continuous load	
Fan*	1A	250W
Feeder*	1A	250W
Igniter	3A	750W

NTC sensor resistance characteristics	
Temp. °C	Resistance Ω
0	7174.89
10	4374.83
20	2747.10
30	1774.91
40	1172.09
50	795.08
60	547.95
70	384.62
80	275.86
90	202.37
100	149.16

PT1000 sensor resistance characteristics	
Temp. °C	Resistance Ω
0	1000.00
50	1194.00
100	1385.10
150	1573.30
200	1758.60
250	1941.00
300	2120.50
350	2297.20
400	2470.90



****In the case of connection of a contactor or intermediary relay, a dedicated (e.g. varistor) suppression system should be used for it. Omitting such a safeguard may result in incorrect operation or damage to the controller's output.***

3. Requirements regarding the electrical system.

NOTE!

Wiring of the controller and connection of process devices can be performed by a person having valid qualifications to perform electrical work. It is recommended that such work be conducted by a qualified installer.

The basic requirements concerning the electrical system supplying power to the controller are given below:

1. Any repairs, maintenance, or other work on the system can only be performed with the power supply voltage disconnected from the main safeguard.
2. The room where the controller is installed should be equipped with a 230V/50Hz electrical system, according to the applicable regulations.
3. The controller should be powered from a dedicated circuit of a 230VAC/50Hz power grid, protected by a circuit breaker.
4. In terms of mechanical endurance, the controller's power cable should have a cross section of at least 1.5 [mm²].
5. The cable should be protected against mechanical damage by routing in a tray or conduit.

4. Graphical and textual description of the controller's connection

After preparing the wiring, connection of the controller's power supply and of temperature sensors and external devices can begin:

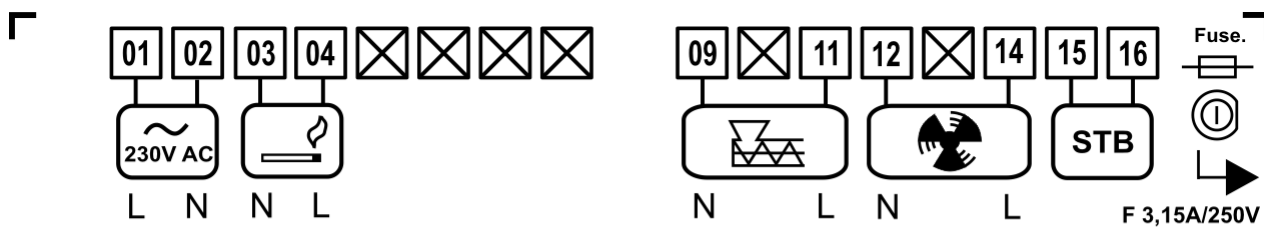
- Connect the 230V mains power to the controller at the terminals marked with the symbol "L, N".
- Connect the NTC2k2 and PT1000 temperature sensors to the inputs per the tables located below.
- Connect process devices (fan, feeder, and igniter) to outputs as per the tables below.

A description of the inputs' parameters is presented in the following table:

Description of the controller's inputs — Temperature sensors		
Temperature Sensor	Type of input	Marking on controller
Room	NTC2k2	50-51
Exhaust	PT1000	54-55

A description of the outputs' parameters is presented in the following table:

Description of the controller's outputs — Technical devices		
System Device	Type of output	Marking on controller
Lighter	relay	03-04
Feeder	triac	09-11
Fan	triac	12-14



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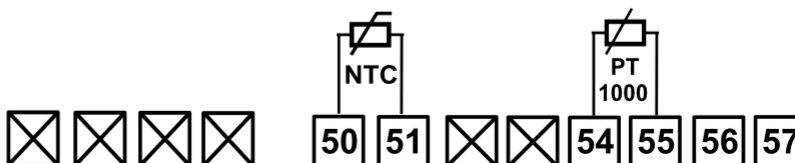
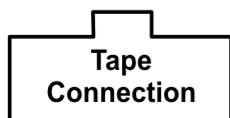
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www.geco.pl e-mail:geco@geco.pl

01-02 - Power
03-04 - Lighter
09-11 - Feeder
12-14 - Fan
15-16 - STB

Un=250V, 50Hz
Imax=10A

50-51 - Room temperature sensor
54-55 - Flue gas temp. sensor

Made in Poland



**CONNECTION OF THE DEVICES TO THE GH22PC
CONTROLLER CAN BE PERFORMED ONLY BY A
PERSON WITH QUALIFICATIONS TO CARRY OUT
ELECTRICAL WORK.**

5. Controller Operation Modes.



The controller can operate in five modes:

- **standby** – transition to the state present before the loss of power. The control algorithm is not run, but the real time clock operates and the previous settings and the selected system schematic are remembered.
- **automatic** - has three sub-modes: firing up, heating, and sustain.
Firing up – this is the first stage of the automatic mode preceding the heating mode.
Heating – in this mode, one of the algorithms for the selected type of regulation is carried out depending on the type of fuel and the heating system's requirements.
Sustain - the controller transitions to this operation mode when the room temperature achieves the set value. In this mode, an individual algorithm for sustaining temperature, prepared for each type of regulation, is run.
Blocked – this is a temporary mode activated in accordance with the room temperature settings. The controller switches to this mode as set in the time settings of the daily program edited by the user. In the lock mode the fireplace hearth is automatically put out, and then automatically lit when the controller switches to the day and night temperature program.
- **manual** – this mode serves only to verify the correct operation (activation / shutdown) of particular process devices of the system.
- **alarm status** – indicated by the occurrence of an alarm which prevents further operation.
- **extinction** – in this mode, only the fan works for the time set in service parameter S56. The controller then enters the manual mode. The mode is activated upon transition from the automatic mode to the manual mode.

5.1 Standby mode.

After performing the installation activities described in the preceding chapters, the GH22PC controller will be activated in the standby mode. In this mode, a text will be displayed with an instruction of how to put the controller into the manual operation mode.



When the controller is in the standby mode, it can be put into the manual operation mode with the  button. During normal operation of the controller, it is possible to put it into the standby mode again at any time by pressing the  button. In the standby mode, all outputs and audio signalling of alarms are turned off.

5.2 Automatic mode – Firing up

The first stage of the automatic mode is firing up. Firing up consists of controlling the feeder, the fan, and the igniter to switch to the automatic operation mode unattended (if S34=0, then the igniter element activation cycle is skipped – the controller is without igniter support), igniting a flame in the retort.

An unsuccessful process of lighting the fireplace, comprised of a number of lighting attempts (cycles) – the number of attempts is configured in the S58 parameter – is signalled by activation of alarm 14 – lighting failure. **The lighting mode is active only with the standard control set.**

The controller's operation in the “Firing up” automatic mode is signalled by text information in the upper part of the screen: **FIRING UP**.

5.3 Automatic mode – Heating

In the automatic mode, the controller runs the control algorithm for the selected heating schematic and the selected type of regulation. Basic information concerning the system — current and set minimum temperatures in the room and the current operation mode — is displayed on the main screen. The user also has an option to select the regulation mode from two options in the MENU: Standard — recommended — and Grid Mode.



The controller's operation in the “Heating” automatic mode is signalled by text information in the upper part of the screen:

HEATING — when the standard mode is set,

GRID MODE H— when the “Grid mode” regulation mode is set

5.4 Automatic mode — Sustain

The controller switches into this mode when the room temperature reaches the value set by the user in the menu parameter.

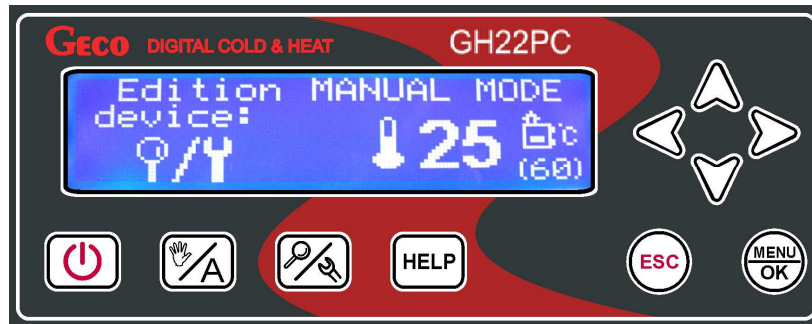
The controller exits the SUSTAIN mode and returns to the HEATING mode, if the room temperature drops to the value equal to: (*Room temperature* - *Room temp. hysteresis*). The room temperature hysteresis setting can be edited by the user and is available in the menu. The controller's operation in the “Sustain” automatic mode is signalled by text information in the upper part of the screen:

SUSTAIN — when the standard regulation mode is set,

GRID MODE S — when the “Grid mode” regulation mode is set

5.5 Manual mode.

In the manual mode, the controller does not run the automatic control algorithm, and the rate and type of process devices activated are dependent on the user, who takes responsibility for their operation. The set and current room temperature are always displayed on the main screen. The selected type of regulation has no effect on the system's operation in the manual mode. In this case, the user independently decides which device is activated by the controller.



After entering the manual mode, the operation of all devices is automatically halted. The controller's operation in this mode is signalled by the text information "MANUAL MODE" in the upper part of the screen.

5.6 Alarm status.

The alarm status is characterised by an alarm which prevents further operation of the system and allows conditional operation.

Alarm — The controller enters the alarm mode when at least one of the sensors essential for operation does not work correctly. For safety reasons, the device's operation is halted. After removing the fault, the controller returns to the previous mode. The controller will not enter the alarm mode once the sensor's fault is removed.

All changes to subsystems should take place with the controller turned off!

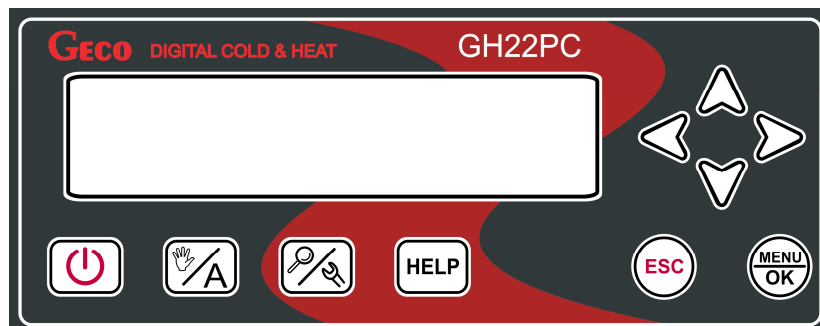
5.7 Extinguishing mode.

In the extinguishing mode the controller runs a simple fan control algorithm. After the controller switches to this mode from the heating mode, all equipment is disabled with the exception of the fan which keeps running during the time set in the S65 parameter. Then the controller switches to manual mode when the service parameter S70 = 0 or it is switched off, when S70=1. The main screen always displays the current set and actual temperature of the room. The selected type of control does not affect the operation of the system in extinguishing mode. After entering the extinguishing mode operation of all equipment apart from the fan is automatically stopped. Controller operation in this mode is indicated by a text message in the top part of the screen: "EXTINGUISHING".

6. Controller Usage


This chapter describes the means of handling of the controller: activation, use of the keyboard, view of the measurement system's operation, reading of text information and icons on the display, and editing of the parameters available to the user.

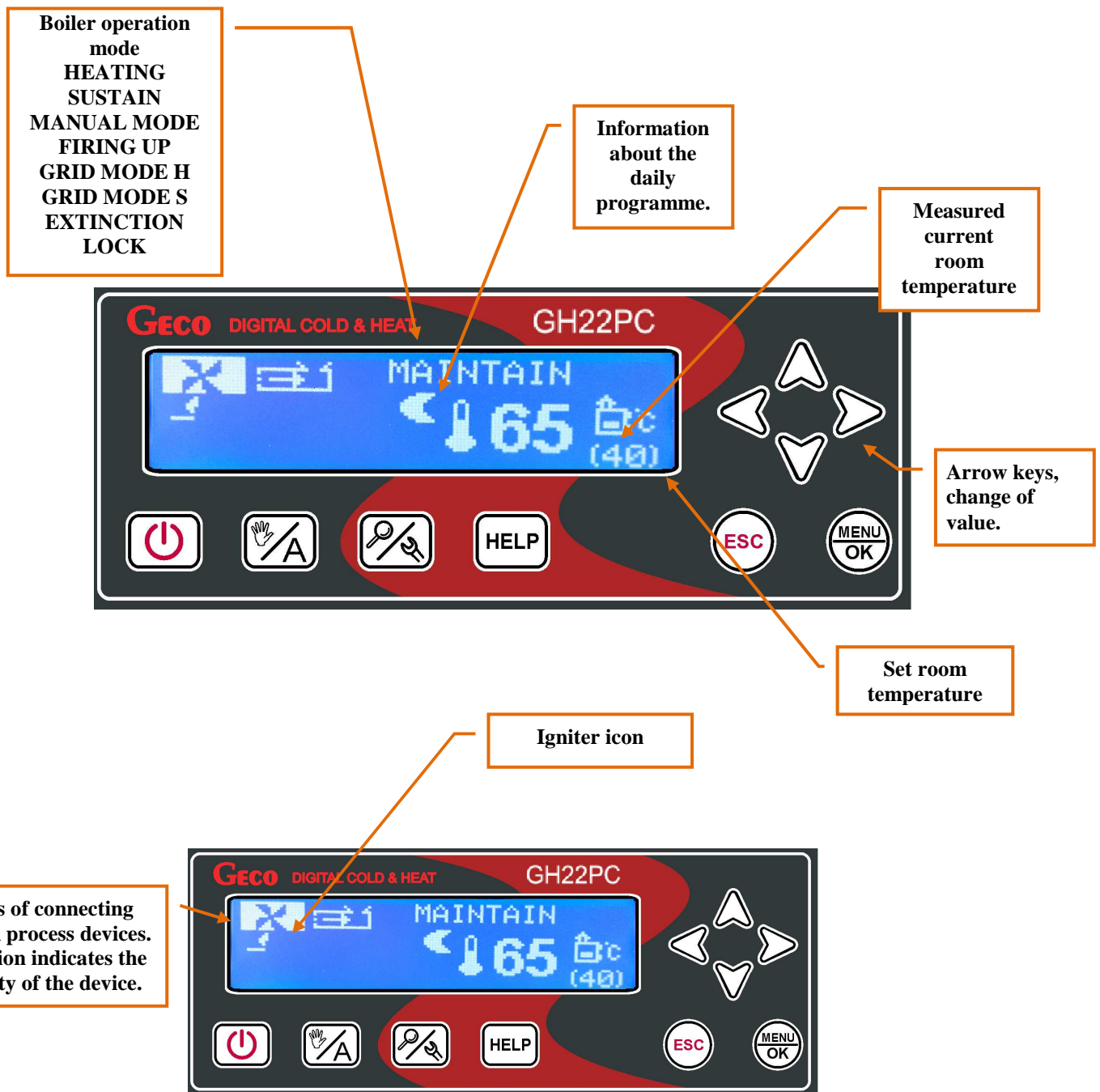
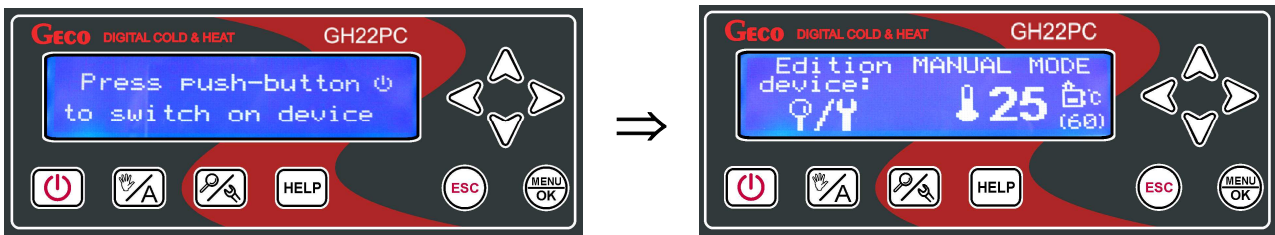
6.1 Front film of the controller.




BUTTON	DESCRIPTION	INTERACTION
	Turn the controller on/off	The main screen appears.
	Change of operation modes. Switching between modes: manual/automatic/extinguishing	A description of the active operation mode appears in the upper part of the display.
	In the automatic mode, it is possible to view the devices, temperatures, and active functions. In the manual mode, it is possible to view temperatures and activated functions, as well as devices, which can be controlled.	Screens appear showing the temperatures, external devices handled by the controller, and active functions.
	From the main screen, transition to the user help menu. From an alarm or warning, transitions to the service data.	The user help menu appears. Information about the product, programme, and the service technician's telephone data appears.
	Confirmation of a change. Enter the controller "MENU" from the main screen.	Saving of a change. From the main screen, the "MEU" screen appears.
	Exit without making changes.	Exit to the previous screen / higher level in the menu.
	Right arrow key. Transition from the main screen to quick change of the set room temperature. Editing of the daily and weekly programme.	Transition to the next column or the next position to the right. The room temperature change screen appears.
	Left arrow key. Transition from the main screen to quick change of the set room temperature. Editing of the daily and weekly programme.	Go to the next column or the next item to the left. The room temperature change screen appears.
	Up arrow key. Increase value. Transition to editing of the daily programme. Editing of daily and weekly programme.	Go to the next item up. Increase value by one step.
	Down arrow key. Decrease value. Transition to editing of the weekly programme. Editing of the daily and weekly programme.	Go to the next item down. Decrease value by one step.





6.2 Starting the controller — Main screen

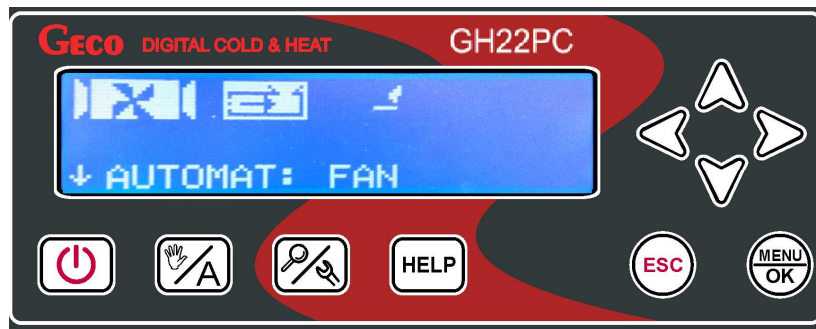
When powered for the first time, the controller turns on in the standby mode. The  function button serves to turn the controller on/off, that is, to transition it from the standby mode to the manual mode.




6.3 View of the system's operation

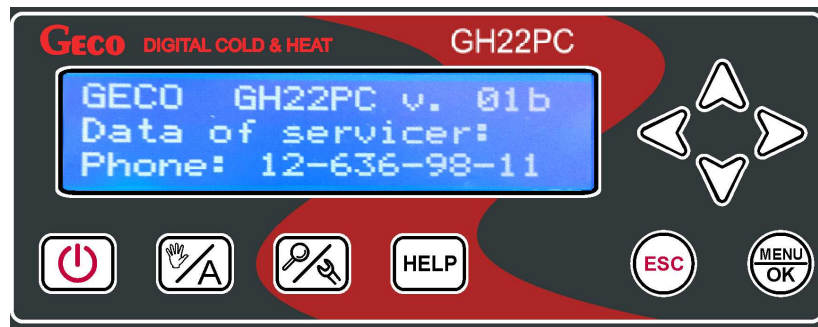
The controller has an option of a quick inspection of the system's operation. In any mode, after pressing the  button, all the most important parameters of the controller's operation can be viewed: temperatures measured by the sensors, statuses of devices' operation, and activity of the controller's functions.

All information concerning the operation of the heating system is divided into categories and located on separate screens. Transition between these screens is done using the   buttons. A text description of the given item is found at the bottom of each of the screens. Transition between items on the screens is done using the   buttons.




6.4 Help button

From the main screen, using the  button facilitates transition to the help menu, in which the user will find the service technician's data and a description of all the controller's icons.





The controller has a list of all icons described textually.

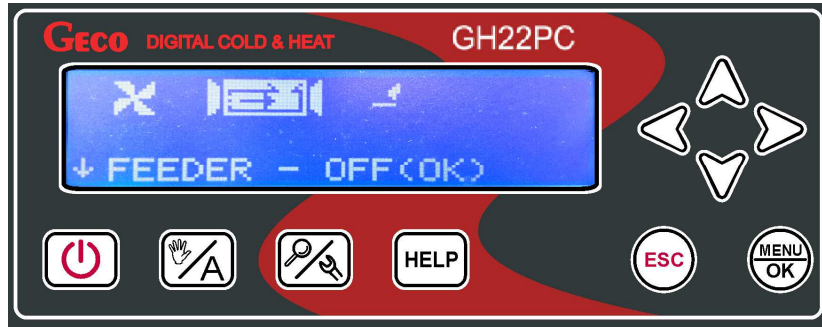



AFTER USING THE  BUTTON WHILE IN THE ALARM STATUS, TRANSITION TO THE SERVICE DATA OCCURS. INFORMATION CONCERNING THE CONTROLLER MODULE, SOFTWARE NUMBER, AND TELEPHONE DATA OF THE MANUFACTURER OR SERVICE TECHNICIAN APPEARS.

6.5 Manual operation mode

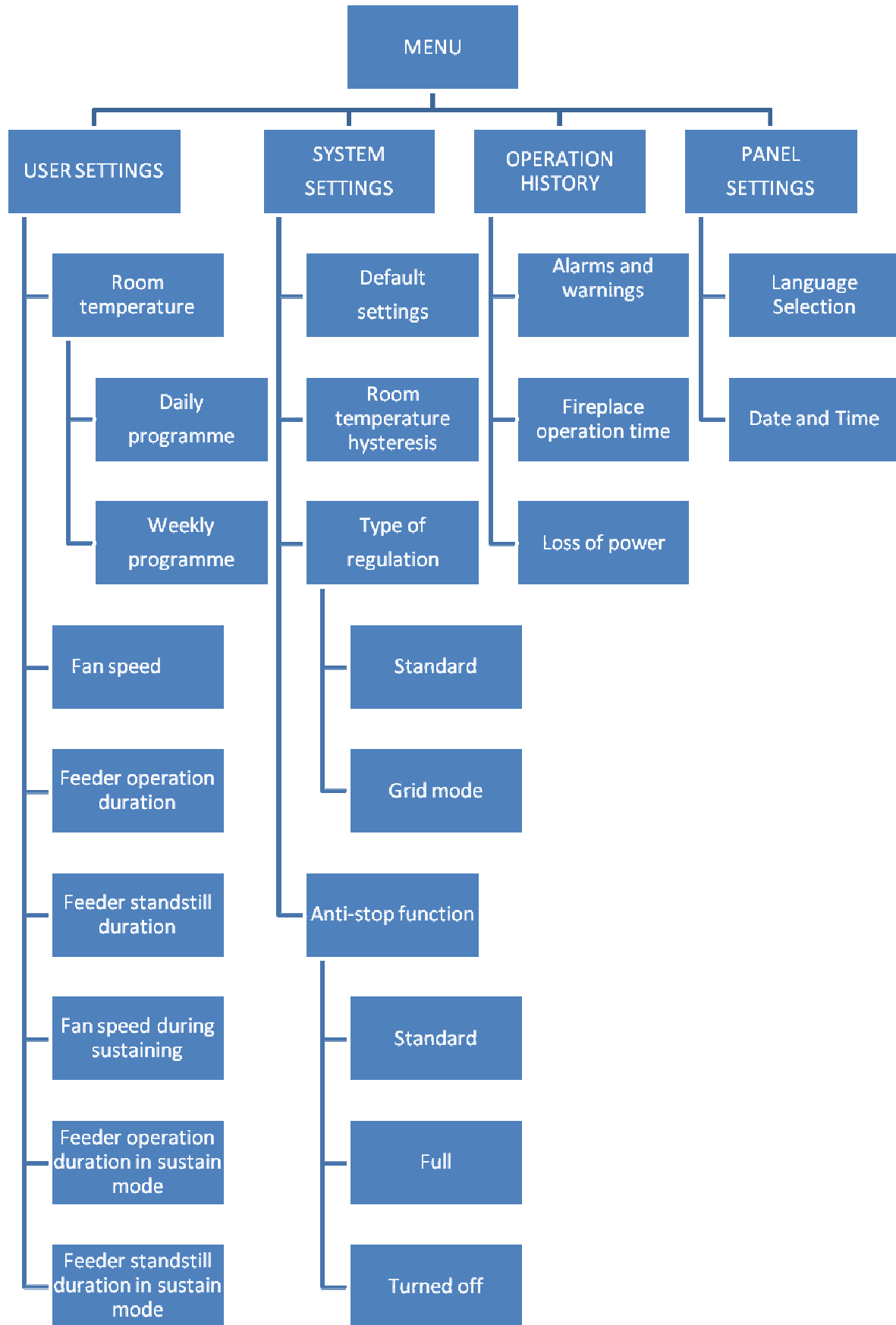
Pressing the  button in the automatic mode triggers the controller transition to the extinguishing mode and next to the manual mode, and the instantaneous halting of operation of all devices.

In this mode, there is an option to manually activate / shutdown the fan, feeder, and igniter independently of each other. To do so, go to the device editing screen using the  button.



After moving over the selected item on the screen, per the text information at the bottom the screen, the user can turn the selected device on and off using the  button. The cursor informs you of the item on the given screen. The current activation of a given device is signalled by the reverse backlighting of the icon corresponding to that device.

6.6 The controller's menu — graphic tree



6.6.1 User settings.

Parameter	Description	Min.	Max.	Step	Factory setting
U0	Set room temperature.	'S3'	'S4'	1°C	21°C
U1	Feeder operation duration in the heating mode	2	250	1s	45s
U2	Feeder standstill duration in the heating mode	5	250	1s	6s
U3	Feeder standstill duration in the sustain mode	5	900	1s	42s
U4	Fan speed in the heating mode	1	10	1	10
S20	Feeder operation duration in the sustain mode	2	250	1s	19s
S32	Fan speed in the sustain mode	1	10	1	4

- **Set room temperature** — The Room temperature that the fireplace will attempt to achieve. The temperature change range is within the values of parameters S3 and S4. The temperature is defined in the daily and weekly program.

In the daily program the user sets the night temperature, day temperature and the extinguishing period, the “lock mode” in 15 minute steps. There are 9 daily programs available, the last six of which are freely editable by the user. There also is a weekly schedule available, where the user can choose a different program for a specific day of the week.

- **Fan speed during heating** — This parameter specifies the resultant value of the fan's rotational speed, the amount of air delivered in the heating mode. It allows adjustment of the fan speed according to the type and quality of the fuel used. The possible gears range from 1 to 10.
- **Feeder operation duration during heating** — This parameter informs how long the fuel feeder will be activated in the HEATING mode for a standard regulation. It can be changed within the range from 2s to 250s. It applies to the standard regulation only.
- **Feeder standstill duration during heating** — This is the duration of a break between successive feedings of fuel to the fireplace in the HEATING mode. It can be changed to values in the range from 5s to 250s. It applies to the standard regulation only.
- **Fan speed during sustaining** — This parameter specifies the resultant value of the fan's rotational speed, the amount of air delivered in the sustain mode. It allows adjusting the fan speed according to the type and quality of the fuel used. The possible gears range from 1 to 10.
- **Feeder operation duration during sustaining** — This parameter informs how long the fuel feeder will be activated during sustaining for a standard regulation. It can be changed to values in the range from 2s to 250s. It applies to the standard regulation only.
- **Feeder standstill duration during sustaining** — This is the duration of a break between successive feedings of fuel to the fireplace in the sustaining mode. It can be changed to values in the range from 5s to 250s. It applies to the standard regulation only.

6.6.2 System settings.

Description of system parameters	Min.	Min.	Factory settings
Default settings	OK	ESC	-
Room temperature hysteresis	2	10	3°C
Type of regulation: (1) — Standard (2) — Grid Mode	1	2	1
Anti-Stop Function: (1) — Standard (2) — Full (3) — Off	1	3	1

- **Default settings** - restore all user and service parameters in the controller.
- **Room temperature hysteresis** — value of the room temperature hysteresis of the fireplace at which the sustaining mode is exited and HEATING mode reentered;
- **Type of regulation** — Option to adjust the algorithm of the system's operation to the current type of fuel and the technical combustion capacity. Description of the function in part 7;
- **Anti-Stop Function** — Option to enable the function protecting process devices against prolonged inactivity in summertime. Description of the function in part 7;

6.6.3 Operation history

The operation history is a collection of information about the controller's operation and all nonstandard behaviour of the system. All failures and irregularities identified by the programme are recorded and archived in the form of alarms or warnings, depending on the type of threat. Operation history menu:

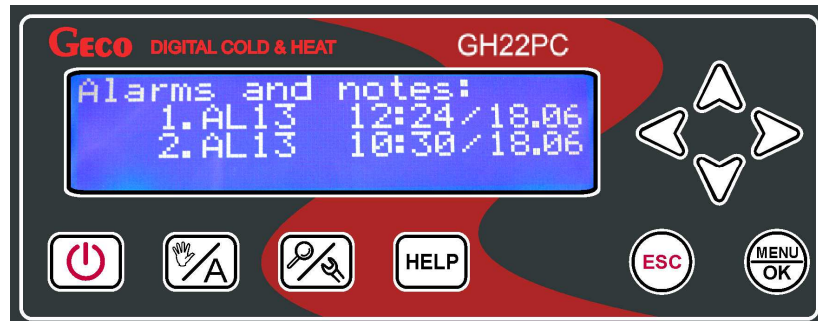


The type of data archived in the operation history consists of:

Alarms — The controller is able to archive the last 7 alarm statuses detected by the controller. The alarms are displayed in the form of a chronological list in which new reports always appear at the top. An alarm is marked with an AL symbol in the report. Information

about the alarm includes the alarm status' symbol (informing about the type of a threat that has occurred), the date of its occurrence, and the exact time.

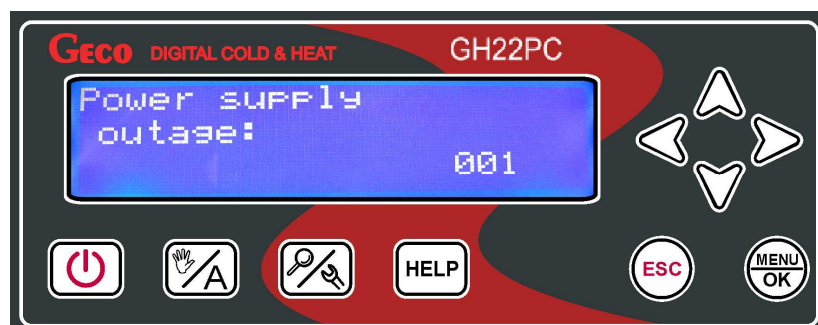
All new alarm statuses appear in the operation history list along with an envelope informing of a need for viewing by the heating system's user's or service technician. The envelope disappears after the message about the alarm status has been viewed.



Fireplace operation duration — The operation duration statistic is presented on the screen in the automatic mode, divided into sustaining and heating. The measurement unit is hours [h].



Loss of power — A statistic of the number of power outages in the controller is displayed on the screen. The controller gives the number of outages.

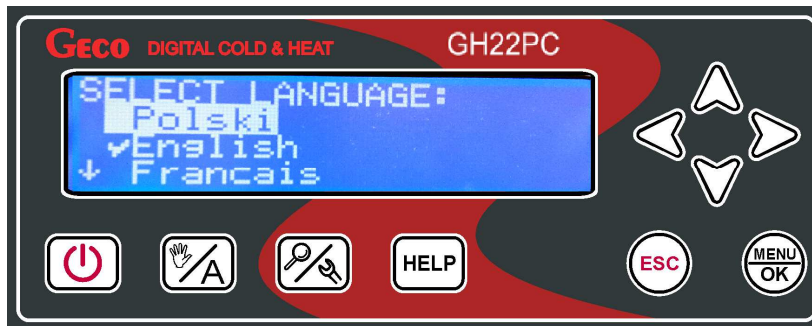


6.6.4 Panel settings.

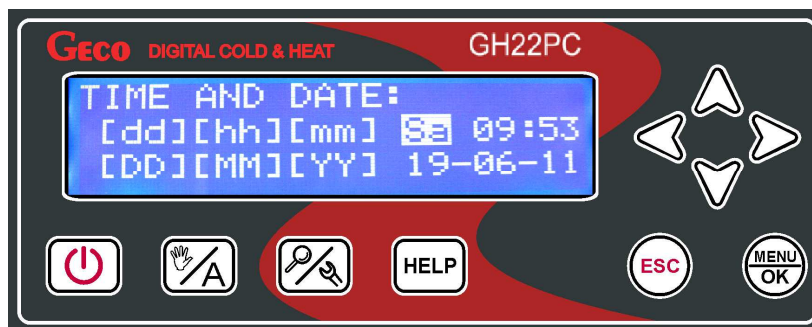
All settings concerning the operation of the controller itself not affecting the operation of the entire heating system are found in the panel settings.



Language selection — The controller is equipped with a choice of one of several language versions, including English, French, German, Italian, and Polish. English is set by default.




Date and time — So that all the controller's functions work correctly and optimally, remember to correctly set the current date and time.

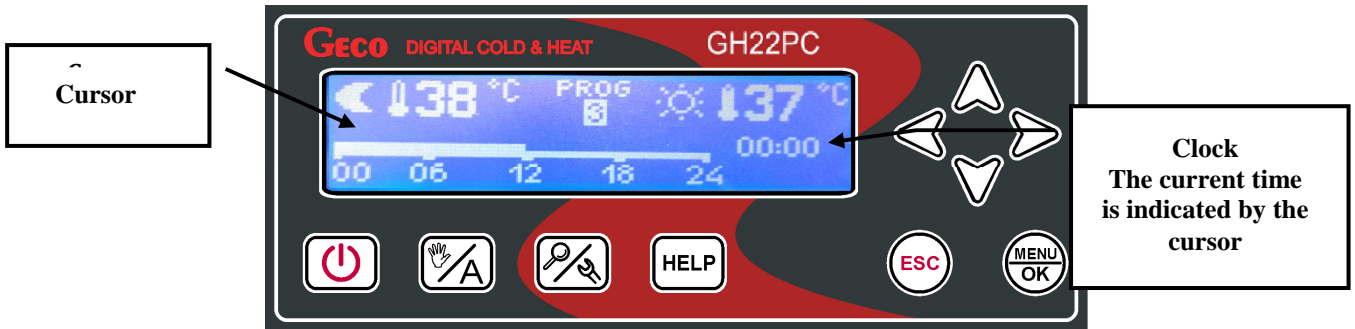











7. Description of additional functions.

7.1 Set room temperature — Daily programme


Access to the daily zone is effected by entering user settings in the controller menu or from a main screen item, by pressing the . The user has 9 daily programs available.

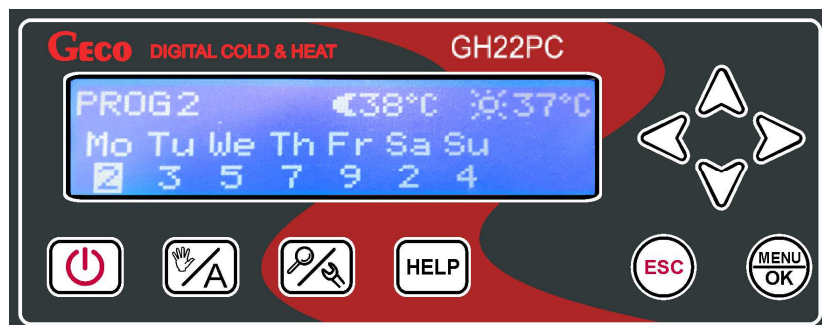
The first two programs are not editable, while the other six programs can be freely configured by the user.







The element to edit (programme number, “day” or “night” temperature, or editing of the daily cycle) is chosen using the  buttons. The edited element is then backlit; in case of editing of the daily zone, the readiness for editing is indicated by flashing of the cursor. The  and  buttons serve to change the value of the selected element. Movement along the daily time zone strip is accomplished with the  and  buttons. The time unit by which the cursor moves is 15min., while the exact position of the cursor is indicated by the clock. Editing of this strip, taking into account the division between day and night heating modes is accomplished by using the  button for day temperature and the  button whose use outlines the time of the night temperature. Introducing the day heating mode for the selected time is signalled by a horizontal line for the corresponding pixel, while the night mode is signalled by its absence. The entered changes are confirmed, and the screen exited, using the  button. Return to a higher level of the menu without confirming the changes are accomplished by using the  button. If the daily zones were accessed from the main screen using the quick access key, then the return leads directly to the main screen.

7.2 Set room temperature — Weekly programme

The daily zone can be accessed by entering the user settings in the controller menu or from the main screen by pressing the  button. In this point, the programmes assigned to specific days of the week are selected. A different programme can be selected for each day of the week.



Movement between successive days, with saving of current one, is accomplished using the  button, while the programme number is changed using the  and  buttons. The displayed heating temperature values (day and night) correspond to the settings for the programme indicated by the cursor. The heating temperatures change with the programme. Movement between days of the week occurs in a loop. Return to a higher level without confirming changes are accomplished by using the  button. If the weekly zones were accessed from the main screen using the quick access key, then the return leads directly to the main screen.

7.3 Fireplace burnout detection.

If, during operation in heating mode, for a time set in parameter **S55**, the temperature in the chimney is below the value set in parameter **S54**, then the controller concludes that the fire has burned out.

7.4 Anti-stop function.

In the GH22PC, it is possible to enable the ANTI-STOP function, which protects the process devices from prolonged inactivity during the summertime. The function activates the devices once per week for several minutes, ensuring that they are in working order all year round. The controller differentiates three settings of the function's activity:

- Standard — fan;
- Full — fan and feeder;
- Off — the function is not active;

The ANTI-STOP function is active only in the controller's manual mode. During its activity, the user does not have the option to independently activate devices in the system. The option of manual control of external devices is enabled by the programme only when the function is disabled.

7.5 Regulation mode — Standard.

The GH22PC controller has an automatic mode factory-set to the “Standard Mode.” This algorithm is adapted to control of pellet fireplaces using an exhaust sensor.

The current mode is indicated in text form on the main screen: “HEATING” in operation mode or “SUSTAIN” indicating the stage of sustaining the achieved temperature.

7.6 Regulation mode — Grid.

In the GH22PC controller, it is possible to change the regulation algorithm to the “Grid Mode.” In this mode, the feeder and igniter are not supported. It is normally used when the type of fuel used is changed, such as when it is necessary to burn wood or ecological paper waste. The controller behaves like a wood fireplace, operating the fan only.

The current mode is indicated in text form on the main screen: “GRID MODE H” in the heating mode or “GRID MODE S” indicating sustaining.

Firing up mode is not active in the grid regulation mode!

7.7 Operation history

This function is a collection of information about incorrect operation of the controller and all nonstandard behaviour by the system. All failures and irregularities identified by the programme are recorded and archived in the form of alarms, depending on the type of a threat. In addition, the function collects information supporting verification of warranty services by the manufacturer after assessment of the system's correct operation.

8. Algorithms for control of process devices in the automatic mode.

After starting the controller and switching to automatic mode, the controller starts the flame absence detection insensitivity function which consists in starting the fan for the time entered in the S69 service parameter. The fan runs with the rpm set for operation in heating mode. When the function is active, the feeder does not work. The purpose of the function is to refresh flue gas temperature, enabling correct flame detection in subsequent stages of the fireplace operation.

8.1 Firing up

This mode indicates the operation of the controller with a text message in the top part of the screen: “LIGHTING”. Lighting consists in controlling the feeder, fan and ignition for unattended switching to the fireplace heating mode (if S34=0, then the ignition ON cycle is bypassed – the controller skips the second phase of lighting).


The first firing attempt (cycle) is comprised of three stages: fuel feeding in the first phase, second phase (when S34>0) and phase three. During the second attempt (cycle) of firing the first phase is bypassed, and it consists only of the last two phases: the second and third one, and each subsequent lighting attempt (cycle) is a repetition of the third phase only.

Equipment operating parameters during the second phase of lighting remain unchanged both during the first and during the second lighting attempt.

In the third phase of lighting the parameters responsible for fan and feeder operation change as early as the second attempt and remain the same for all subsequent attempts.

Feeding of fuel in the first stage continues during the time set in the S35 service parameter.

The fan runs during the first and second phase at the rate set in the S36 parameter, and then in the third phase of firing at the rate set in the S61 parameter. At the end of the first phase after feeding the fuel the flue gas temperature is stored to be used in detection of temperature for the completion of lighting.

Starting the ignition and its operation is indicated with the match icon in inverted colour (negative) in the controller operation view screen (after pressing the  button). The ignition starts only in the second phase of lighting which continues for the time set in S34.

The second phase of lighting follows after feeding fuel to the retort. During the phase the feeder is off, only the fan is active.

The third phase of lighting starts automatically after the second phase and continues for the time set in the S37 service parameter.

After the first lighting attempt (cycle) in the third phase the fan and the feeder run in sequence with the following settings **S61** (fan), **S63** and **S62** (fuel feeder), ignition remains off. After the second and each subsequent attempt (cycle) in the third phase the fan and the feeder run in sequence with the following settings: **S65** (fan), **S66** and **S67** (fuel feeder), ignition remains off.

LIGHTING is automatically ended, when during the third phase after the time of **S37** the flue gas temperature reaches the value of “**flue gas temperature stored at the end of phase one**” + **S60**. The upper value of the flue gas temperature read during the start of the lighting process is limited with the S64 parameter. The S64 parameter represents the maximum value of flue gas temperature adopted for the lighting algorithm.

If during the time set in the S37 parameter the flue gas temperature does not reach the value of the “flue gas temperature read at the start of lighting” + S60, then phase 2 of lighting is started again (when S34>0). After several unsuccessful attempts, the number of which is defined in the S58 service parameter, alarm 14 is returned.

If the flue gas sensor is damaged and the alarm condition is set, lighting is not active!

Lighting is active only under standard control conditions!

8.2 The fan in heating mode.

The fan runs at the rpm set in the: “Fan rpm during heating” parameter. When the chimney sensor support is enabled (**'S11'** > 0), if the flue gas temperature value exceeds the value of **'S42'**°C, the blowing power is reduced. The reduction is directly proportional to the overshooting of the flue gas temperature above the **'S42'**°C value, until the complete stop of the fan above **'S42'+50**°C.


8.3 Heating mode — Feeder.

The feeder works in accordance with the settings in the parameters: “Feeder operation duration during heating” and “Feeder standstill duration during heating”.

8.4 Sustain Mode — Fan and Feeder.

The controller switches into this mode when the room temperature reaches the value set by the user in the parameter “Set room temperature.” The fan operates with the fan speed set in the parameter: “Fan speed during sustaining” The feeder works in accordance with the settings in the parameters: “Feeder operation duration during sustaining” and “Feeder standstill duration during sustaining”.


9. Alarm statuses

The controller differentiates four alarm statuses that halt the controller's operation for safety reasons. In each of the alarm statuses, the alarm number and text information describing the alarm are displayed, and an audible alarm signal activated. In case several alarm conditions occur simultaneously, their numbers are displayed in sequence. An alarm status can only be exited after pressing the  button.

Types of alarms:


- **AL1** → STB activated or fuse blown;
- **AL2** → Room temperature sensor failure;
- **AL7** → Exhaust temperature sensor failure;
- **AL14** → Burnout when firing up;

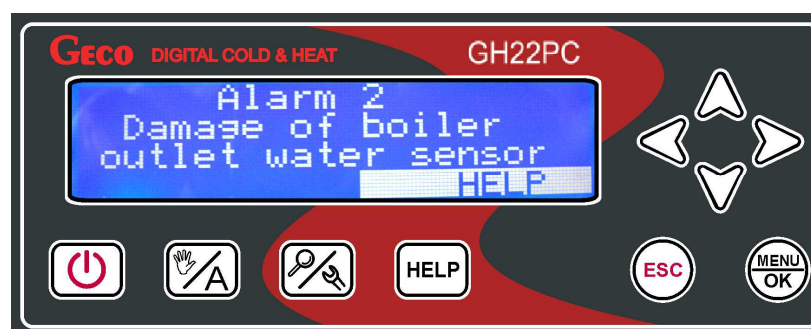
Alarm 1 — STB activated or fuse blown;

An alarm is reported when there is a lack of signal of detection of zero-crossing by the grid power for two seconds — which may be caused by activation of STB or the blowing of the fuse. Using the  button brings up the service technician's data. The controller's operation is blocked.



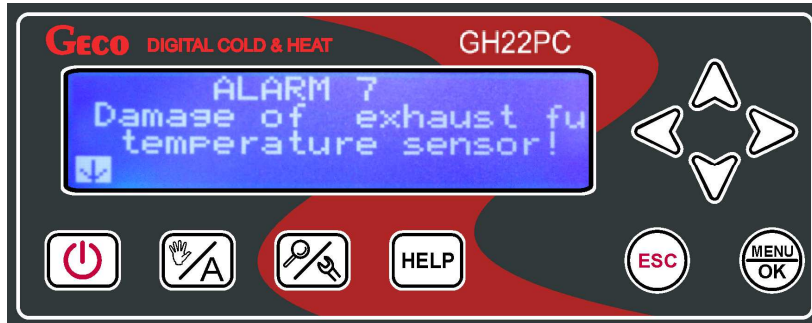
Alarm 2 — Room temperature sensor failure;

An alarm is reported when the NTC2k2 sensor for measurement of room temperature from the fireplace is damaged or incorrectly connected. The  button brings up the service technician's data; the controller's operation is blocked.



Alarm 7 — Exhaust temperature sensor failure;

An alarm status is reported when the PT1000 sensor for measurement of exhaust temperature is damaged or incorrectly connected. The **HELP** button brings up the service technician's data; the controller's operation is blocked.



Alarm 14 — Burnout during firing up;

The alarm informs you of the end of an unsuccessful attempt at the firing up process. After several unsuccessful firing up phases in the fireplace in the "Firing up" mode, the controller transitions to Alarm 14. The number of firing up attempts is specified in service parameter S58.



10. Temperature limiter (STB).

The GH22PC controller is equipped with an additional protective mechanism, independent from the automatics that is called the safety temperature limiter (STB).

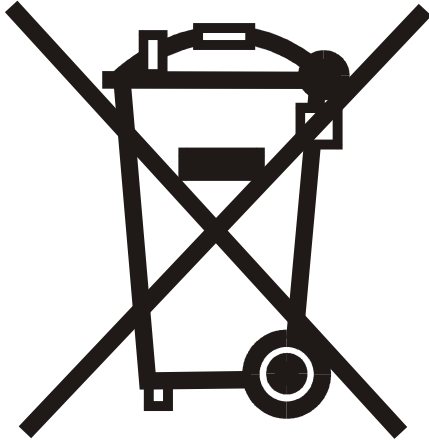
If the chimney's exchanger achieves the boundary temperature, the temperature limiter acts automatically and interrupts the flow of fuel and the supply of air to the combustion chamber (it turns off the fuel feeder and fan).

11. Loss of power.

After a power outage, the controller resumes operation according to the previous status it has been in before the power outage, meaning:

- if it has been off, then it remains off.
- if it has been in a status of automatic operation, then it returns to the automatic status with the programmed parameters.
- if it has been in a status of manual operation, then it returns to the manual operation status with the programmed parameters.
- if it has been in an ALARM status, then it returns to the off status, except for Alarm 14, to which it returns after the power's return.

12. Information on Marking and Collection of Waste Electric and Electronic Equipment.



NOTE!

The symbol placed on a product or on its packaging indicates that it is subject to selective collection of waste electric and electronic equipment. This means that the product should not be discarded with other household waste. Appropriate removal of old and waste electric and electronic equipment will prevent potentially harmful effects on the environment and human health.

An obligation of selective equipment collection rests on the user who should deliver the equipment to a collection point.



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