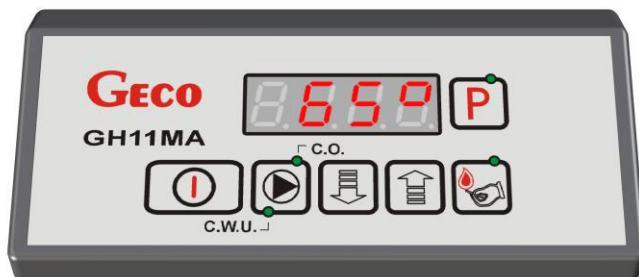




**GECO<sup>®</sup>**

**OPERATING INSTRUCTIONS  
FOR THE CONTROLLER**

***GH11MA***



**TO CONTROL  
VENTILATORS  
CENTRAL HEATING BOILERS  
FOR FINE DUST AND COAL**

***Version 01***

# ***SERVICE MANUAL***

***We strongly request that you study the instructions carefully before connecting and commissioning of each of our devices. In case of any doubt, please contact us between 8.00 a.m. and 4.00 p.m.***

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**1. INTRODUCTION**

**1.1. GRAPHIC DESIGNATIONS**

The symbols intended to signal and at the same time emphasise the importance of the text in which the information on the warning of a dangerous situation is contained have the following graphic form:

**Warning**



This symbol is used when it is necessary to follow the sequence of operations in the described instructions. If you make a mistake or do not follow the description, the device may be damaged or destroyed.

**Important!**



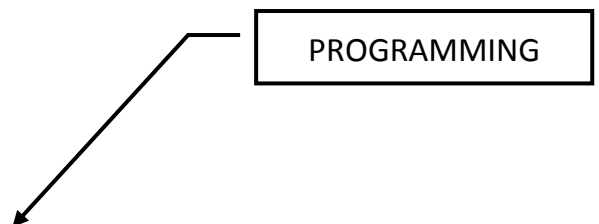
This symbol indicates information of special interest.

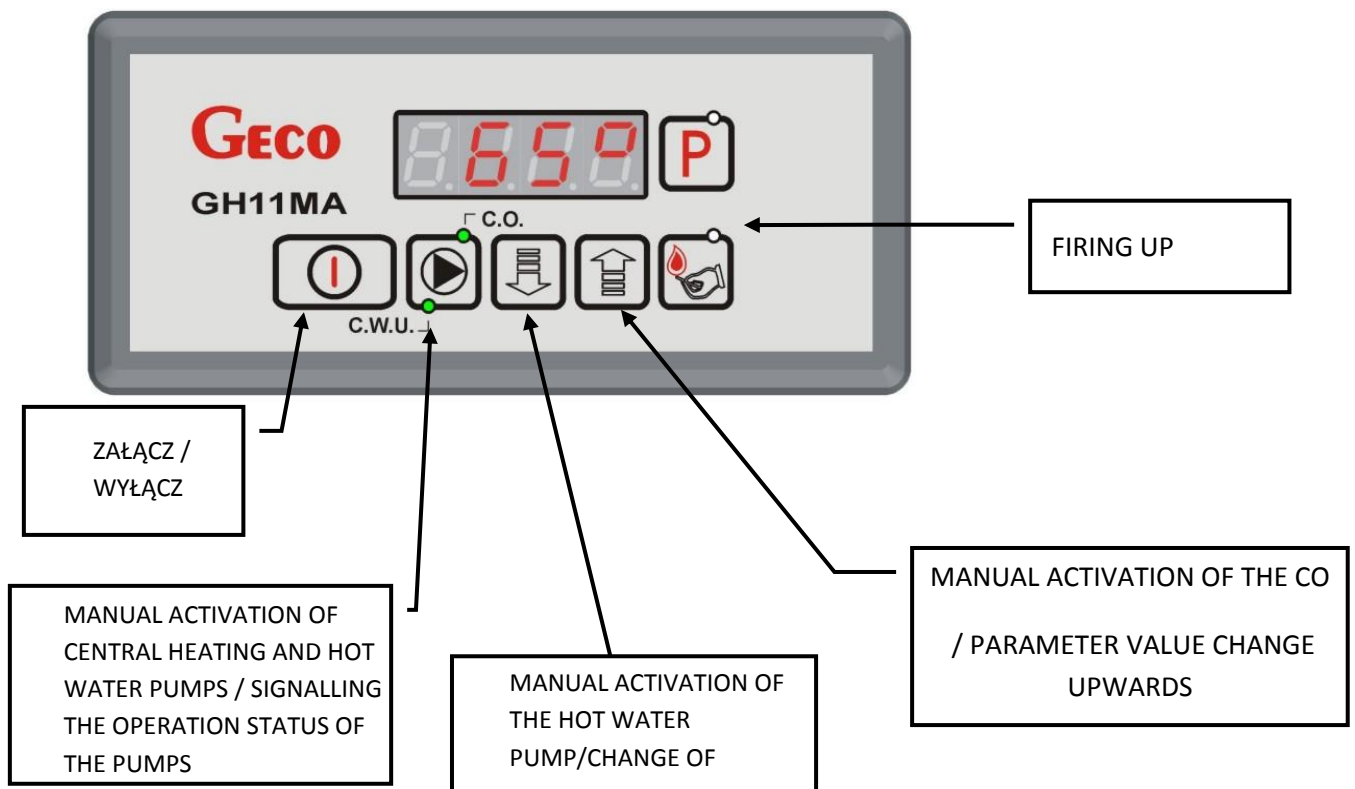
**Reference**



This symbol indicates the occurrence of additional information in the chapter.

**1.2. KEYBOARD AND FUNCTION KEYS**





## 2. GENERAL CHARACTERISTICS.

The GH11MA controller is made using microprocessor technology with automatic surface mounting.

The controller controls the process of preparation of usable hot water (DHW circuit) and enables operation of the main heating circuit (CH circuit). The control parameters can be adjusted to the current operating conditions and the type of boiler. The controller is equipped with a system of protection against the effects of power failure and various types of interference.

The GH11MA controller is equipped with:

- Outputs:
  1. to measure the temperature of the boiler outlet water (NTC type)
  2. to measure the water temperature in the DHW boiler (NTC type - optional)
  3. to measure the flue gas temperature (type PT1000 - optional)
- input (RS485) for the connection of room panel GA01HA by GECO

It also has three outputs enabling direct connection of 230V devices, i.e.: a fan, central heating circulation pump, HUW pump or a mixing pump, depending on the heating system serviced (▣ p.6.1, p.8).



**THE CONTROLLER SHOULD BE ALWAYS DISCONNECTED FROM  
THE MAIN SUPPLY DURING A STORM**

### 3. DANE TECHNICZNE

Supply voltage	230V ~ +10% -15%	
Working temperature	od +5°C do +40°C	
Moisture	od 20% do 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÷750°C

Output	Maximum continuous load	
	1A	200W
Pompa CWU / miesz.	1A	200W
Pompa CO	1A	200W
Wentylator	1A	200W

Resistance characteristics of NTC sensors	
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

Resistance characteristics of PT1000 sensors	
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
450	2641,80
500	2809,80
550	2974,90
600	3137,10
650	3296,40
700	3452,80
750	3606,40

## 4. ELECTRICAL INSTALLATION AND CONNECTION RULES

1. The boiler room should be equipped with a 230V/50Hz electrical installation in accordance with the relevant regulations.
2. The electrical installation (irrespective of its type) must be terminated with a plug socket fitted with a protective contact. The use of a socket without a protective terminal connected risks an electric shock!!!
3. The controller must be connected to a separately routed power line protected with a suitably selected fast fuse and a residual current circuit breaker (anti-shock). No other devices may be connected to this line !!!



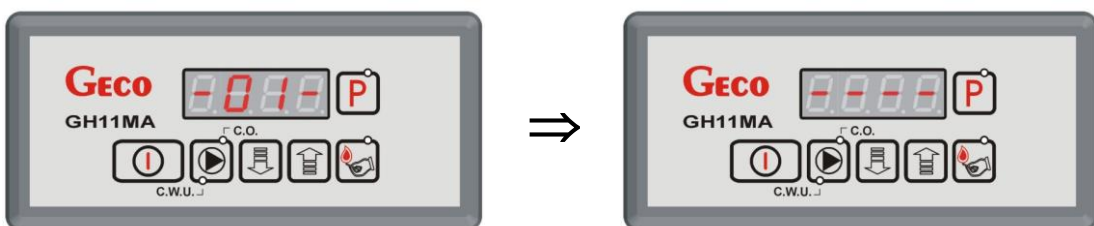
**THE REGULATOR IS POWERED FROM THE MAINS 230V/50HZ**


**ANY REPAIRS CAN ONLY BE CARRIED OUT WITH THE POWER SUPPLY  
DISCONNECTED AT THE FUSE**

## 5. QUICK START

To start the GH11MA controller, perform the following steps:

1. Connect the unit to the 230V mains supply (insert plug into the socket).



2. Switch on the controller using the button . A screen will appear:



3. Press the button . The screen will appear:



Controller will start automatic operation based on the factory-set parameters.

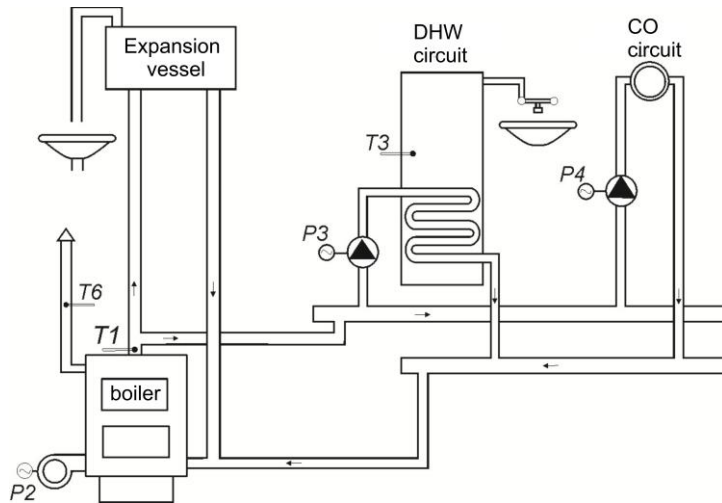
**Table 1 - Factory settings**

Parametr	Parameter description	Min	Max	Step	Factory setting
U00	Boiler setpoint temperature	'F03'	'F04'	1°C	50°C
U02	Desired DHW temperature / return	35	65	1°C	40°C
U03	Activation of the anti-legionella function	0	1	1	0

## 6. OBSŁUGA GH11MA

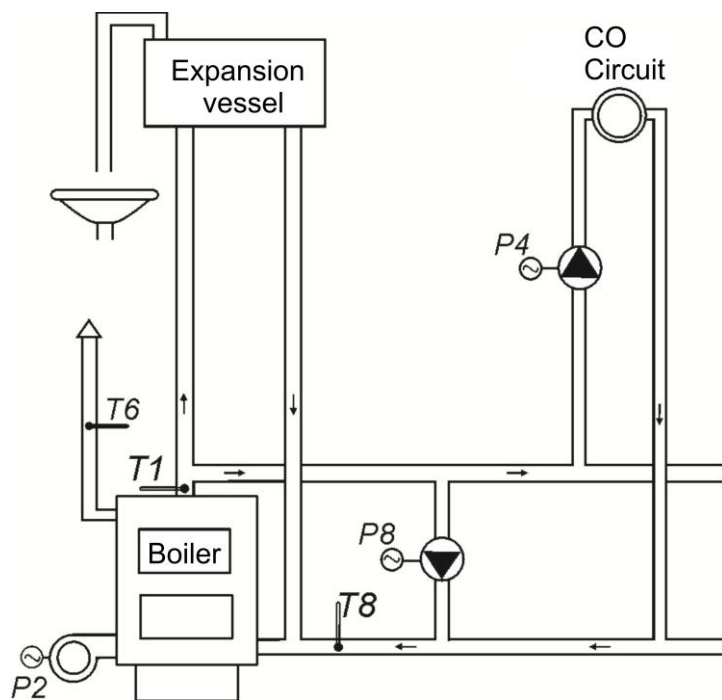
### 6.1. Heating system operated

#### 6.2.2 CH + DHW circuit



INPUTS	OUTPUTS
T1 – Boiler temp.	P2 - fan
T3 – DHW temp.	P3 – DHW pump
T6 – Exhaust gas temp.	P4 – CO pump


#### 6.2.3 CH circuit + mixing pump




INPUTS	OUTPUTS
T1 – Boiler temp.	P2 - fan
T6 – Exhaust gas temp.	P4 – CO pump
T8 – Return temp.	P8 – mixing pump




## 6.2. Automatic operation mode

Pressing the button  enters the automatic operation mode of the controller (start of firing-up).

### 6.2.4 Firing up

The first stage of automatic operation is FIRING-up, which is signalled by the upper indicator light on the button. .

FIRE-up is automatically terminated when the boiler outlet water temperature reaches U0-F29.

Completion of the firing-up process and exit from it is signalled by lighting up the upper control light on the button , which remains on during the entire period of the boiler operation in automatic mode. During the exit from kindling, the fan does not work.

Fire extinguishing during boiler firing up is signalled by displaying message AL 14 on the controller main screen (☐ p.6.5 p.11).

This alarm sounds and the firing process is stopped if, after the time set in in service parameter F45 from the moment of start of firing-up the temperature of outlet water from the boiler does not reach the value F6-4°C.



---

***If it is necessary to burn fuels other than the base fuel, remove the flue gas temperature sensor from the flue pipe.***

***(there is a possibility of damaging this sensor) !!!***

---

### 6.2.5 Fan

In FIRING-UP mode, the fan starts from the minimum speed (gear 1) and increases its speed in accordance with setting F31, until it reaches the maximum speed set in in service parameter F2.

The fan continues to run until the boiler outlet water temperature reaches the value set in service parameter F29. Once this value is reached, the fan stops and does not run for approximately 120 seconds.


When the set temperature on the boiler is reached, the fan switches to periodic purging. The duration of the purge is according to the value set in parameter F26, and the fan operates at its maximum capacity. These purges take place at intervals set in parameter F27.

Fan activation and operation is indicated by the appearance of a lower vertical line on the controller display before the temperature measurement.

---


6.2.6 CO Pump

In automatic operation mode, the CH pump switches on if the boiler water temperature is greater than or equal to the value set in service parameter F6 (factory setting is 40°C).

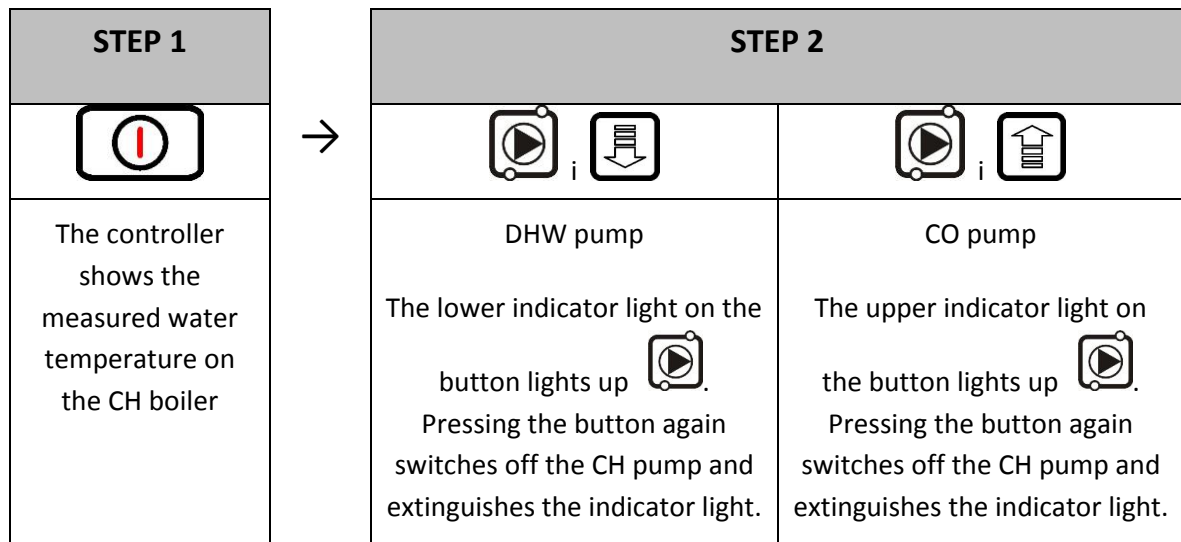
The operation of the CH pump is signalled by the upper indicator light on the button 

The controller will switch off the pump if the water temperature falls to the pump switch-on temperature minus 4°C. (If the CH pump switch-on temperature is 40°C, then CH pump switch-off temperature is 36°C).

**6.3 Manual operation mode**


Pressing the button  switches from automatic to manual operation mode of the controller and immediately stops the operation of the fan and feeder.

In this operation mode, the user can switch the CH pump and the HUW pump on and off manually and independently. To do this, follow the diagram below:




**ACTIVATION OF THE DOMESTIC HOT WATER PUMP IS ONLY POSSIBLE IF ITS OPERATION HAS BEEN SELECTED IN THE SERVICE PARAMETER (P.8.2, P.14)**

**6.4 Temperature overview**

When the button is activated  the display shows the boiler outlet water temperature. Viewing of the flue gas and DHW/return temperatures is possible in the AUTOMAT and HOLD operating modes, provided that the flue sensor operation (F11) or the auxiliary pump operation (P.8.2 p.14) is activated respectively.


To preview the flue gas temperature, press the button . Ponowne wciśnięcie przycisku powoduje wyjście z podglądu. Wyjście z podglądu następuje również samoczynnie po czasie 10s od momentu naciśnięcia przycisku.



Dla uzyskania podglądu temperatury CWU/powrotu należy wcisnąć przycisk . Pressing the button again exits the preview. Exit from the preview is also automatic 10s after pressing the button.

## 6.5 Alarms

The controller distinguishes between 7 alarm states. In each of these, the alarm number is displayed and the acoustic alarm output is activated. If several alarm states occur simultaneously, their numbers are displayed

cyclically. Exit from an alarm state is only possible by pressing the button . Types of alarms:

- AL1 → STB tripped or fuse blown
- AL2 → Failure of the boiler outlet water temperature sensor
- AL4 → Failure of the DHW/return temperature sensor
- AL7 → Flue gas temperature sensor defective
- AL12 → Flue gas temperature sensor defective
- AL13 → Expiration of the boiler
- AL14 → Firing failure (expiration in firing-up)

## 6.6 Supply voltage failure

After a power failure, the controller will take action depending on the state it was in before the power failure. The controller waits for 1 minute for the state of the power supply to stabilise and then returns to operation with the previously programmed parameter values.

During the waiting time, the display shows the time remaining in seconds

during the wait, the display indicates the time in seconds remaining and the status of the controller before the power failure:

- The flashing letter "A" corresponds to automatic operation,
- the letter "P" corresponds to sustained,
- letter 'r' of manual work.

## 6.7 Boiler expiry detection.

If, during automatic operation for the time set in parameter F9, the boiler outlet water temperature is below the value set in parameter F8, the controller considers that the boiler has expired and AL 13 is reported.

If, during automatic operation, for the time set in parameter F9, the flue temperature is below the value set in parameter F11, the controller considers the boiler extinguished and AL 13 is reported.

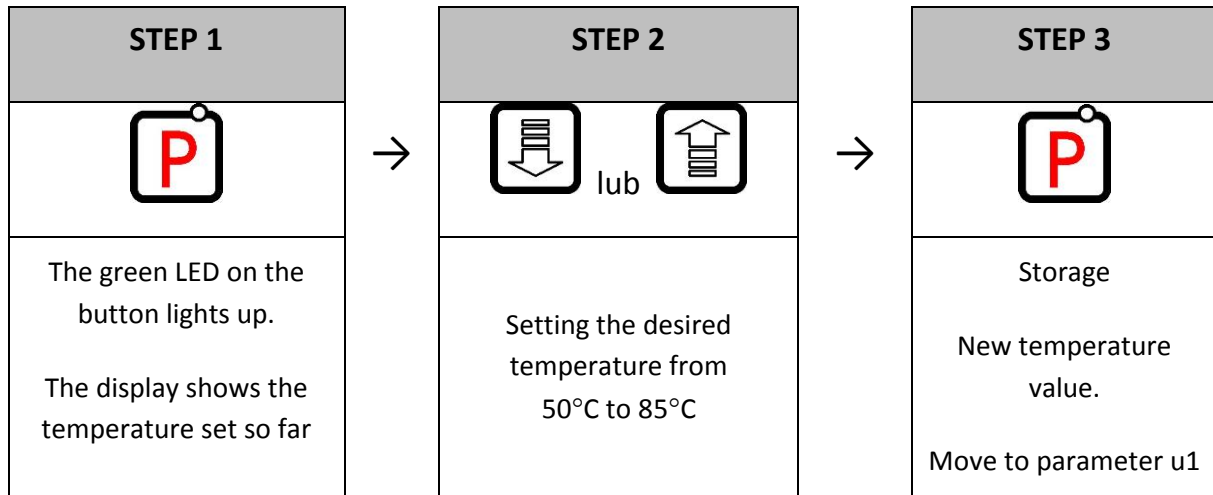
If F11=0, this detection after the chimney temperature is disabled.

---

## 7. USER SETTINGS

### 7.2 Prescribed boiler temperature (u0)

The boiler temperature setpoint is changed as follows:



***If, when setting a new temperature for 15 seconds no key is***



***pressed*** , , ,

***then the new temperature will not be memorised and the controller will exit programming mode.***

### 7.3 DHW/return setpoint temperature (u2)

This parameter is available to the user only if he/she uses the

using the domestic hot water (DHW) heating option or return temperature stabilisation option, and has configured the auxiliary pump by setting the value of service parameter F00 to "1" , "2" , "3" or "4". (p.8.2 p.14).

Modification of this parameter is carried out in the same way as described in p.7.1

and p.7.2.

### 7.4 Anti-Legionella function (u3)

The GH11MA controller is equipped with an ANTI-LEGIONELLA function to limit the growth of Legionella pneumophila bacteria in the hot water system. This function is only available to the user when parameter F00 is set to "2" , "3" or "4" (p.8.2 p.14).


Legionella bacteria thrive in an aqueous environment, with an optimum in temperatures of 38-42°C. The growth of these bacteria is also favoured by stagnant hot water in plumbing systems, hot water heaters and DHW cylinders

Legionella bacteria cause a non-specific form of pneumonia known as Legionnaires' disease, or Legionellosis. Legionellosis has been officially recognised by the Ministry of Health as an infectious disease.

The ANTI-LEGIONELLA function implemented by the GH11MA controller to ensure the creation of a conditions in the domestic hot water system (DHW tank) such that the Legionella bacteria do not find favourable living conditions.

In order to activate the ANTI-LEGIONELLA function, parameter u6 should be set to value 1.

Activation of this function and its duration is indicated by the flashing "L" on the left-hand side of the display, before the displayed temperature value.

Deactivation of this function is possible by setting the parameter u3=0 or by pressing the button . The Anti-Legionella function also stops after a power failure.

The ANTI-LEGIONELLA function is an overriding function, which means that it is performed by the controller first (priority function).

When this function is activated, the boiler water temperature is raised to 70°C

and is maintained for a period of 10 minutes.



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**ACTIVATING THE ANTI-LEGIONELLA FUNCTION INCREASES THE HOT  
WATER TEMPERATURE TO 70°C.**

**TAKE SPECIAL CARE WHEN USING HOT WATER.**

**MAY CAUSE BURNS !!!**

---

## 8. OPERATION OF THE HOT WATER BOILER

The GH11MA controller makes it possible to connect an additional pump to control the heating of domestic hot water (DHW) in the boiler.

### 8.2 Assembly and connection

If you wish to use the domestic hot water (DHW) heating option, carry out the following steps:

1. connect the boiler according to the enclosed diagram (☒ p.6.1.1 p.8).
2. place the DHW temperature sensor inside the boiler



---

***It is recommended to install the DHW temperature sensor in the measuring wells of "GECO" Ltd.***

***It is absolutely forbidden to place temperature sensors in wells with oil or other liquid !!!***

---

3. connect the HUW temperature sensor to the controller under the terminals as shown in Fig. 2.
4. configure the operation of the DHW pump (☒ p.8.2 p.14).



---

***The HUW temperature sensor is an additional sensor (option), not supplied together with the GH11MA controller.***

***It is possible to purchase the aforementioned sensor for an additional charge from the manufacturer, i.e. "GECO" Sp. z o.o.***

---

### 8.3 Configuration of auxiliary pump

This parameter enables the user to switch on the operation of an additional pump, which can be a mixing pump or a DHW pump operating with or without priority.

The HUW pump is activated when the boiler outlet water temperature is higher than 40°C

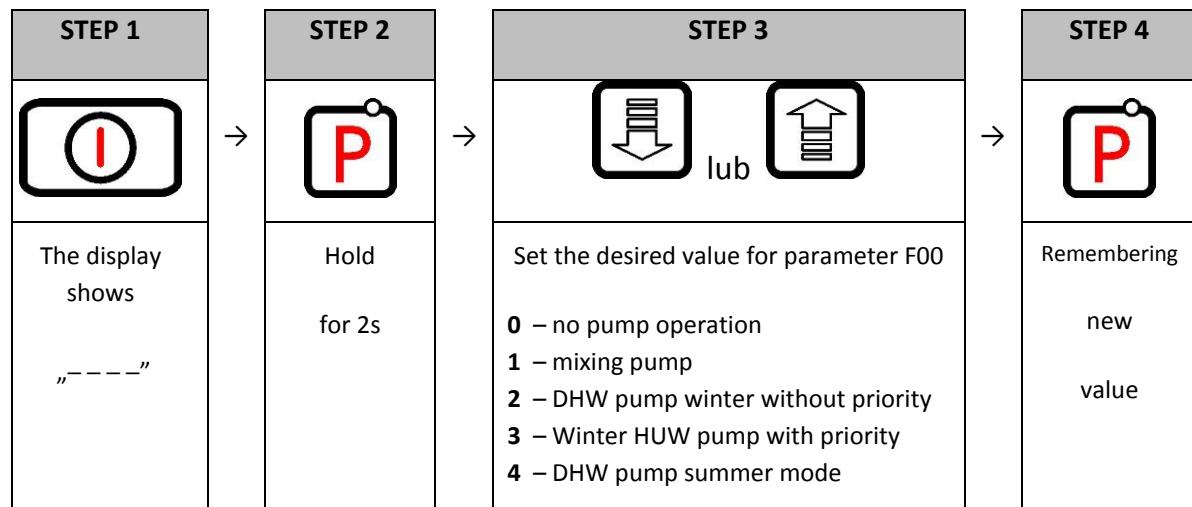
and higher than the boiler water temperature (in order not to cool down the HUW boiler), and the boiler temperature is lower than the one set by the user in parameter u2 ( p.7.3 p.12).

The pump operation is signalled by a dot next to the fan symbol on the display.

---

In the case of the boiler room configuration as presented in the diagram (p.6.1.1 p.8), the boiler controller does not have an external alarm output, but has the possibility to view the HUW boiler temperature.

Aby załączyć w sterowniku obsługę dodatkowej pompy należy postępować następująco:



### 8.4 DHW priority

It is possible to set the operation of the DHW pump in priority mode on the GH11MA controller. If you select such a mode of operation of the DHW pump, DHW heating becomes the overriding function in the controller.

To do this, set the value "3" of service parameter F00.

### 8.5 Summer mode

The GH11MA controller is equipped with the so-called SUMMER MODE, with the use of which the CH pump can be switched off for the summer period and the boiler operates only for the needs of hot utility water CWU.

To do this, set the value "4" in the F00 service parameter.

## 9. Room Panel

The GH11MA regulator has been adapted for full communication with the GA01HA room panel from GECO, enabling comfortable supervision of boiler operation from the flat.

The GA01HA room panel connected to the GH11MA controller allows:

- change of the preset boiler temperature (u0)
- change of DHW set temperature (u2)
- display of all alarms on the room panel
- view of the operating status of the boiler
- viewing the operating status of devices (fan, CH pump, DHW pump)

- preview of all measured temperatures



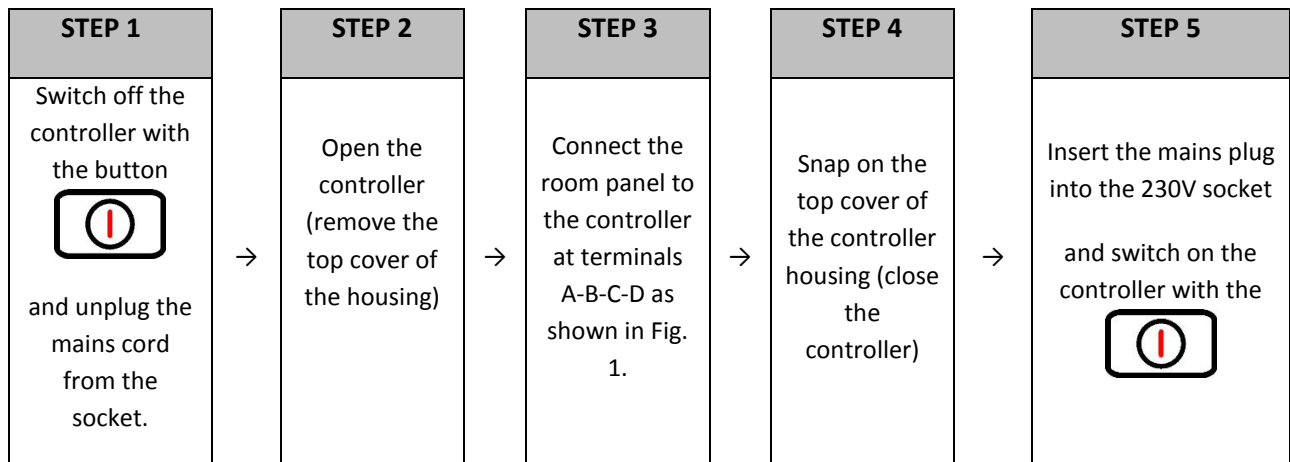
**THAT THE CONTROLLER OPERATES ACCORDING TO THE ROOM PANEL SETTINGS IS INDICATED BY THE LIGHTING OF THE DOT ON THE LAST DISPLAY**

If a GA01HA room panel is correctly connected to the GH11MA controller, it will be automatically detected by the controller and no further action or settings by the user are required.

In this situation, the controller operates according to the settings set by the room panel.

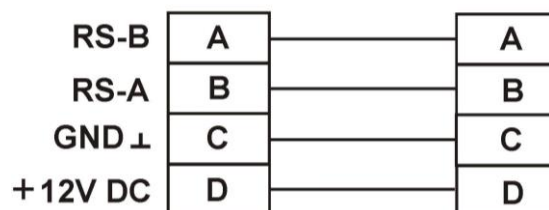
Disconnection of the room panel (interruption of communication) or damage to the cable connecting the panel with the controller is manifested by lighting of a dot on the last display after the time of 30s from the disconnection of the panel.

In order to connect the GA01HA room panel to the GH11MA controller, it is necessary to:



GH11MA

GA01HA-01



Connection diagram of room panel GA01HA to GH11MA controller



## 10. TEMPERATURE LIMITER (STB)

The GH11MA controller is equipped with an additional mechanical protection device, independent of the automation, called a safety temperature limiter (STB).

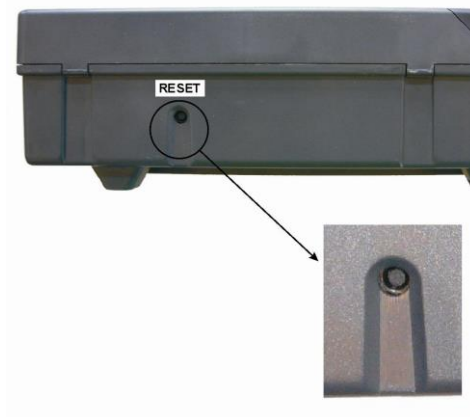
### 10.2 Mode of operation

If the heating water reaches a temperature of **95°C** the temperature limiter will operate automatically (activates the STB function) and interrupt the combustion air supply (switches off the fan).

When the temperature at the limiter drops by approximately **20°C** it will be possible to switch on the STB function again, only manually.


### 10.3 STB function reactivation (manual)

To restart the unit, press the "RESET" button located on the left side of the controller housing.




For safety reasons, the controller does not automatically revert to automatic operation.

For the controller to return to operation, press the button twice .

- First press of a button  clears the alarm and switches off the controller

- Second press of the button  restarts the controller

- Press  - the controller switches to automatic operation mode

---

***PUNCTURE OR BREAKAGE OF THE CAPILLARY INDICATES A LEAKAGE OF THE TEMPERATURE LIMITER FILLED WITH LIQUID, WHICH LEADS TO MALFUNCTION OF THE GH11MA CONTROLLER.***



***IF THE DESCRIBED MALFUNCTION IS DETECTED, THE TEMPERATURE LIMITER SHOULD BE DISCONNECTED FROM THE GH11MA CONTROLLER, REMOVED AND REPLACED WITH A NEW UNIT.***

---

## 11. DEALING WITH CONTROLLER DAMAGE

If you notice any malfunctions in the controller, it is advisable to contact the boiler supplier/manufacturer or GECO Ltd.

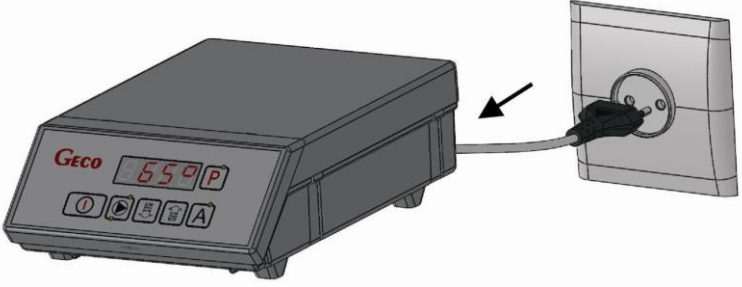
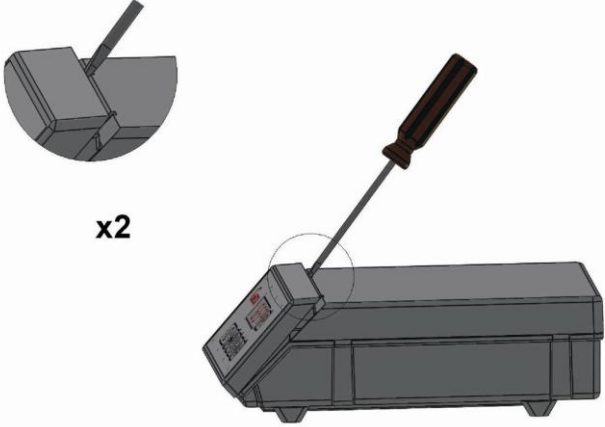
Expert technical advice will be provided there.

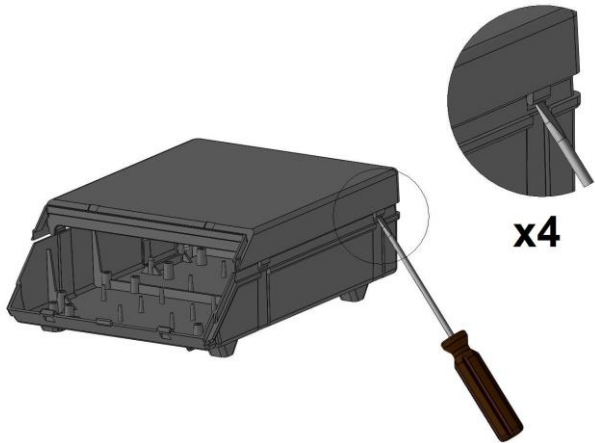
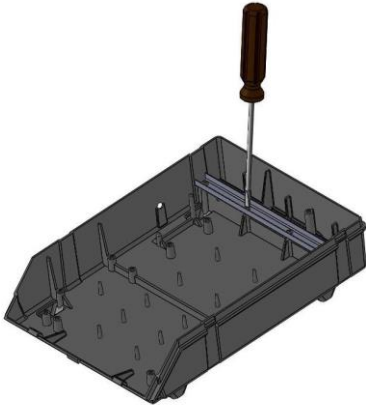
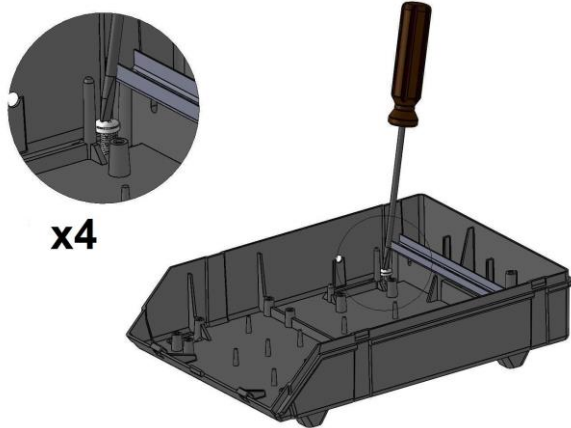
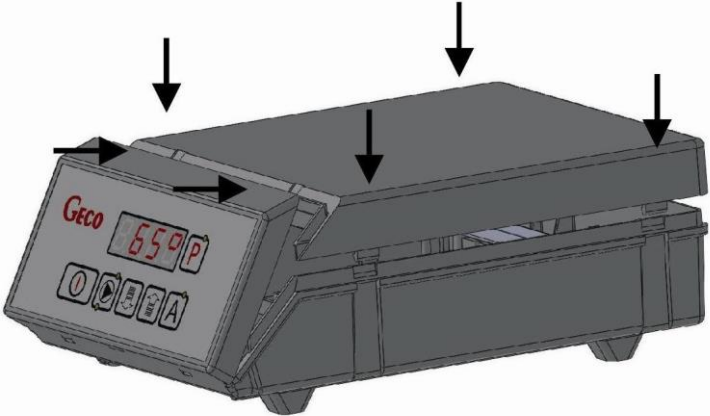
If a service action to repair the controller is required, the defective controller must be removed from the boiler and the complete controller, including the casing, sent to the address indicated.



**SENDING AN INCOMPLETE CONTROLLER TO THE SERVICE CENTRE  
AUTOMATICALLY VOIDS THE WARRANTY.**

### PREPARING THE CONTROLLER FOR SERVICE

<p><b>STEP 1</b></p> <p>Disconnect the controller from supply voltage (remove plug from socket)</p>	
<p><b>STEP 2</b></p> <p>Remove the front panel using flat screwdriver</p>	

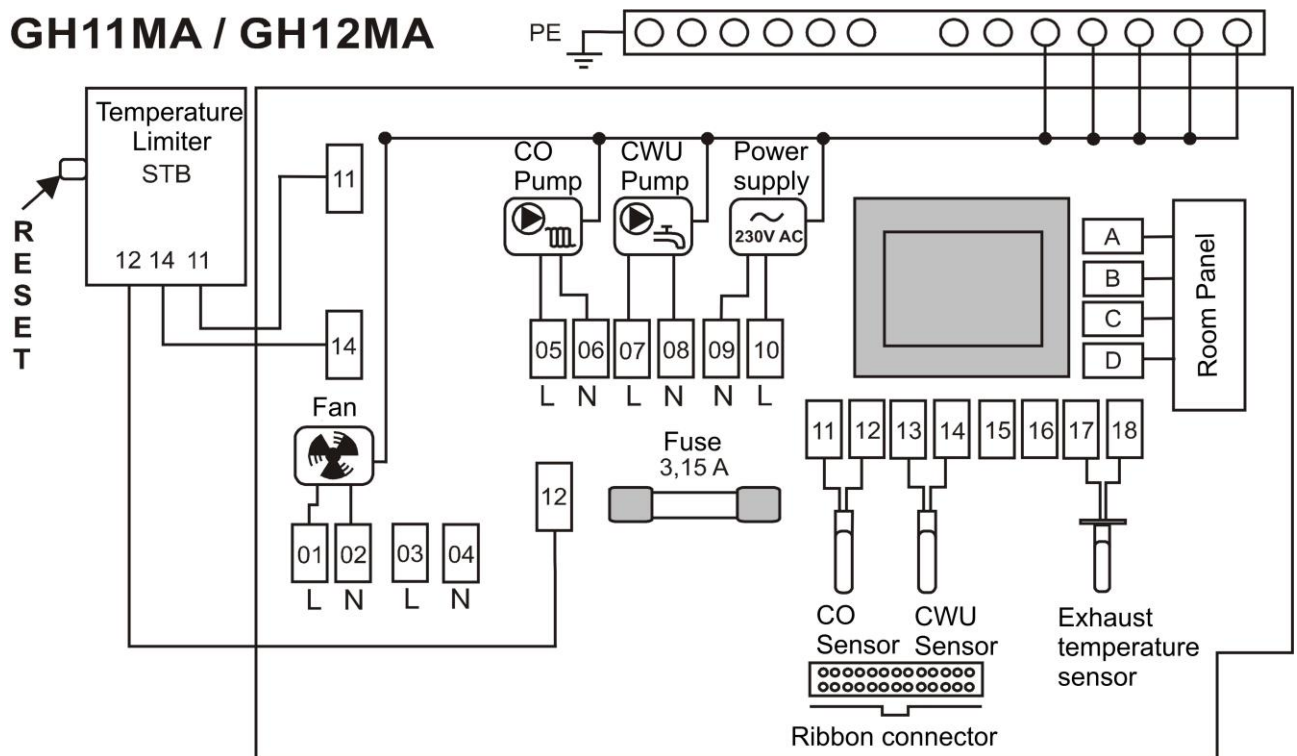
<p><b>KROK 3</b></p> <p>Remove the housing cover by undermining the latches using flat screwdriver</p>	
<p><b>KROK 4</b></p> <p>Remove the plug connectors with the connected wires from the sockets, unscrew the earth wires from the PE strip, loosen the wire clamping strip and remove all the wires outside the controller</p>	
<p><b>KROK 5</b></p> <p>Remove the controller from the boiler by unscrewing the 4 mounting screws on the lower part of the casing of the controller</p>	
<p><b>KROK 6</b></p> <p>Attach the top cover of the housing and front panel</p>	

## 12. CONNECTION OF APPLIANCES TO THE GH11MA CONTROLLER

OUTPUTS			
01	L	—	Fan (P2)
02	N	—	Fan (P2)
03	L	—	—
04	N	—	—
05	L	—	CO Pump (P4)
06	N	—	CO Pump (P4)
07	L	—	CWU / Mixing Pump/ Alarm
08	N	—	CWU / Mixing Pump/ Alarm
09	N	—	AC 230V power supply
10	L	—	AC 230V power supply

INPUTS			
11, 12	—	Boiler temperature (T1)	
13, 14	—	DHW temperature (T3) / return (T8)	
15, 16	—	—	
17, 18	—	Flue gas temperature sensor (T6)	
A	—	RS-B	Room Panel
B	—	RS-A	
C	—	GND (⊥)	GA01HA
D	—	+12V AC	

### GH11MA / GH12MA



Connection diagram for devices and sensors to the GH11MA controller.

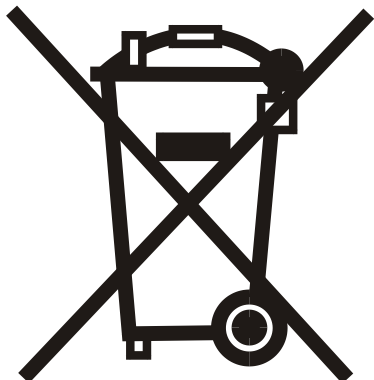
### CONNECTION OF ADDITIONAL DEVICES TO THE CONTROLLER



**THE GH11MA CONTROLLER MAY ONLY BE CONNECTED BY A PERSON**

**QUALIFIED ELECTRICIANS.**

### 13. INFORMATION ON THE MARKING AND COLLECTION OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT



#### Attention!

The symbol on the product or its packaging indicates the separate collection of waste electrical and electronic equipment

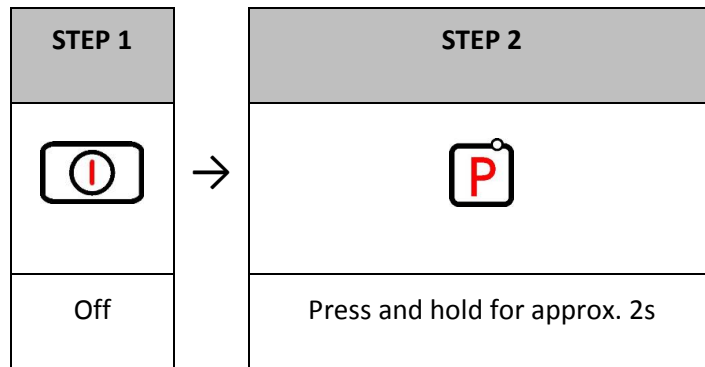
and electronic equipment. This means that the product should not be disposed of with other household waste. Proper disposal of old and used electrical and electronic equipment

and electronic equipment will help to avoid potentially adverse effects on the environment and human health.

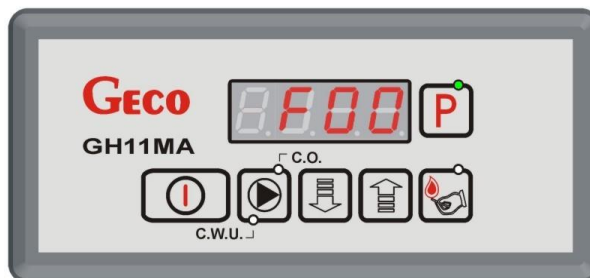
The responsibility for separate collection of used equipment lies with the user, who should return it to the waste collector.

## 14. SERVICE MODE

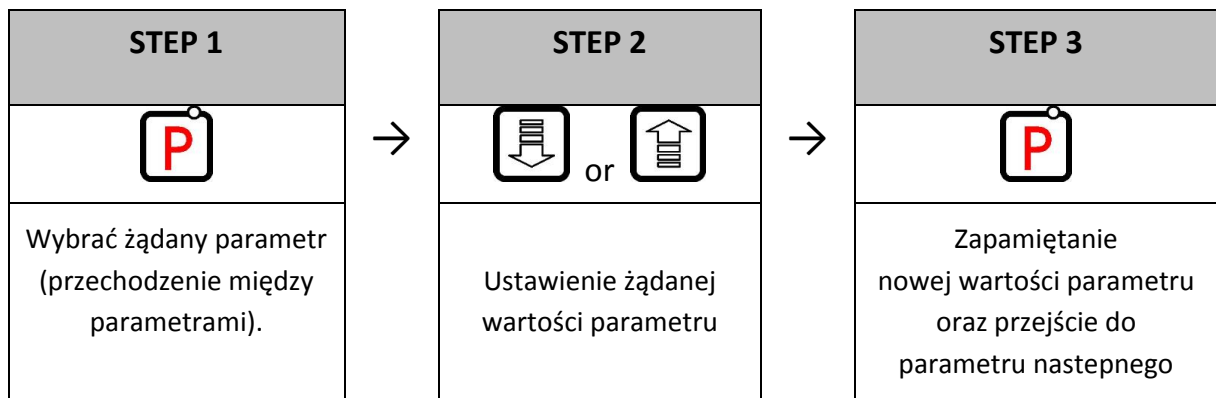
Entering the service mode is done as follows:




After entering the service mode, the controller shows the first F00 service parameter



The service parameter is modified as follows:



Exit from SERVICE MODE is only possible by pressing the button . The controller also exits service mode if there is a power failure.



**IT IS THE BOILER MANUFACTURER'S RESPONSIBILITY TO ENTER THE CORRECT SERVICE PARAMETER VALUES. THIS IS A PREREQUISITE FOR THE CORRECT OPERATION OF THE BOILER.**

**Table of service parameters**

Parameter	Parameter description	Min	Max	Step	Factory setting
F00	Configuration of auxiliary pump 0- No pump. Output 07-08 indicates an alarm condition. 1- Mixing Pump 2- DHW pump. - winter without priority 3- Hot water pump. - winter with priority 4- Hot water pump. - summer	0	4	1	0
F01	Minimum fan speed	1	100	1	50
F02	Maximum fan speed	101	200	1	150
F03	Min. temperature to be set by the customer	30	50	1°C	50°C
F04	The maximum temperature the customer will be able to set for himself	55	85	1°C	85°C
F06	Central heating pump start-up temperature.	25	80	1°C	40°C
F08	Boiler temperature for fuel burnout detection.	25	50	1°C	40°C
F09	Time after which the boiler is considered to have expired (if Temp. boiler < F08). If F09=0 then no boiler expiry detection related to fuel shortage.	0	250	1min	60min
F11	Flue gas temperature for fuel burnout detection. When F11=0 the flue sensor and this detection are missing.	0	150	1°C	60°C
F12	Time after which the acoustic alarm after furnace expiration is permanently switched off 0 - no acoustic signalling of the expiration alarm, 250 - the acoustic alarm will not be permanently switched off	0	250	1min	250
F13	Time at which the pump will switch on for 30 seconds when blocking by the room thermostat is in progress. If F13=0 the pump will not be switched on.	0	250	1min	20min
F17	Increased boiler temperature for overheating alarm.	60	99	1°C	90°C
F26	Blowout duration.	0	250	1s	5 s
F27	Standstill time between blowouts.	0	60	1min	4min
F28	Gain of the proportional flue controller for the minimum flue temperature. When F28=0 there is no control of the minimum flue gas temperature and only a limitation of the upper flue temperature.	0	30	1	24
F29	How many degrees earlier than the set outlet water temperature the firing is completed.	0	15	1	5
F30	Boiler dynamics together with the central heating system.	1	80	1	40
F31	Time every which the controller will increase the gear by 1 during a soft start.	0	30	1s	30s
F42	Flue gas temperature above which fan operation is restricted.	100	250	1°C	250°C
F45	Time counted from the moment the AUTOMAT mode is activated, after which ALARM 14 is reported when the end of firing condition is not met.	1	60	1min	30min



The logo consists of the word "Geco" in a bold, white, sans-serif font, with a registered trademark symbol (®) to the upper right of the letter "O". The logo is centered within a solid red rectangular background.

**Geco<sup>®</sup>**

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