

TECH TECH CONTROLLERS

USER MANUAL EU-3910 SIGMA

EN



TABLE OF CONTENTS

1	Safety	3
2	Device description.....	4
3	How to install the controller	4
4	How to use the controller	6
5	Main screen description.....	7
6	Principle of operation – stages of controller operation.....	7
6.1	Fire-up	7
6.2	Operation	7
6.3	Supervision.....	7
6.4	Extinguishing	8
7	Main menu	8
7.1	Block diagram - main menu	8
7.2	Fire-up (throttle on/off)	9
7.3	Manual mode	9
7.4	Settings.....	9
1.1.	Use voltage-free contact	9
1.2.	Temperature of contact deactivation.....	9
1.3.	Pre-set room temperature	9
7.5	Throttle calibration	9
7.6	Language	10
7.7	Screen settings	10
7.8	Protections	10
7.9	Factory settings	10
7.10	Fitter’s menu	10
7.11	Service menu.....	10
8	Fitter’s menu.....	11
8.1	internet module	11
8.2	Selecting temperature sensor	11
8.3	Sensor calibration.....	11
8.4	Software update.....	11
8.5	Sensor registration	12
8.6	List of sensors.....	12
8.7	Sensor removal	12
8.8	Semi-automatic mode.....	12
8.9	Software version	12
9	Controlling the system via eModul app	12
10	Technical data	14
11	Protections and alarms	14

PS, 19.01.2022

1 SAFETY

Before using the device for the first time the user should read the following regulations carefully. Not obeying the rules included in this manual may lead to controller damage. In order to avoid accidents and errors, it should be ensured that every person using the device has familiarized themselves with the principle of operation as well as security functions of the controller. If the device is to be put in a different place, make sure that the user manual is stored with the device so that any potential user has access to essential information about the device. The manufacturer does not accept responsibility for any injuries or damage resulting from negligence; therefore, users are obliged to take the necessary safety measures listed in this manual to protect their lives and property.



WARNING

- **A live electrical device.** Make sure the regulator is disconnected from the mains before performing any activities involving the power supply (plugging cables, installing the device etc.)
- The device should be installed by a qualified electrician.
- The device is not intended to be operated by children.



WARNING

- The device may be damaged if struck by a lightning. During a thunderstorm, disconnect it from the power supply by taking the plug out of the power socket.
- Any use other than specified by the manufacturer is forbidden.
- Before and during the heating season, the controller should be checked for condition of its cables. The user should also check if the controller is properly mounted and clean it if dusty or dirty.

Changes in the products described in the manual may have been introduced subsequent to its completion on 19th January 2022. The manufacturer retains the right to introduce changes to the design. The illustrations may include additional equipment. Print technology may result in differences in the colours shown.



We are committed to protecting the environment. Manufacturing electronic devices imposes an obligation of providing for environmentally safe disposal of used electronic components and devices. Hence, we have been entered into a register kept by the Inspection for Environmental Protection. The crossed-out bin symbol on a product means that the product may not be disposed of to household waste containers. Recycling of waste helps to protect the environment. The user is obliged to transfer their used equipment to a collection point where all electric and electronic components will be recycled.

2 DEVICE DESCRIPTION

The EU-3910 SIGMA temperature regulator with a throttle is intended for controlling the burning process in a home air fireplace. The regulator enables the user to control an additional device via a voltage-free contact.

Controller functions:

- Control of a throttle
- Control of a voltage-free contactor
- SIGMA algorithm
- Compatible with ST-505 or WiFi RS
- Control via a mobile app - eModul.eu

Controller equipment:

- 2,8" colour display
- Built-in room temperature sensor
- Throttle
- C-mini wireless sensor

3 HOW TO INSTALL THE CONTROLLER

The controller should be installed by a qualified person.



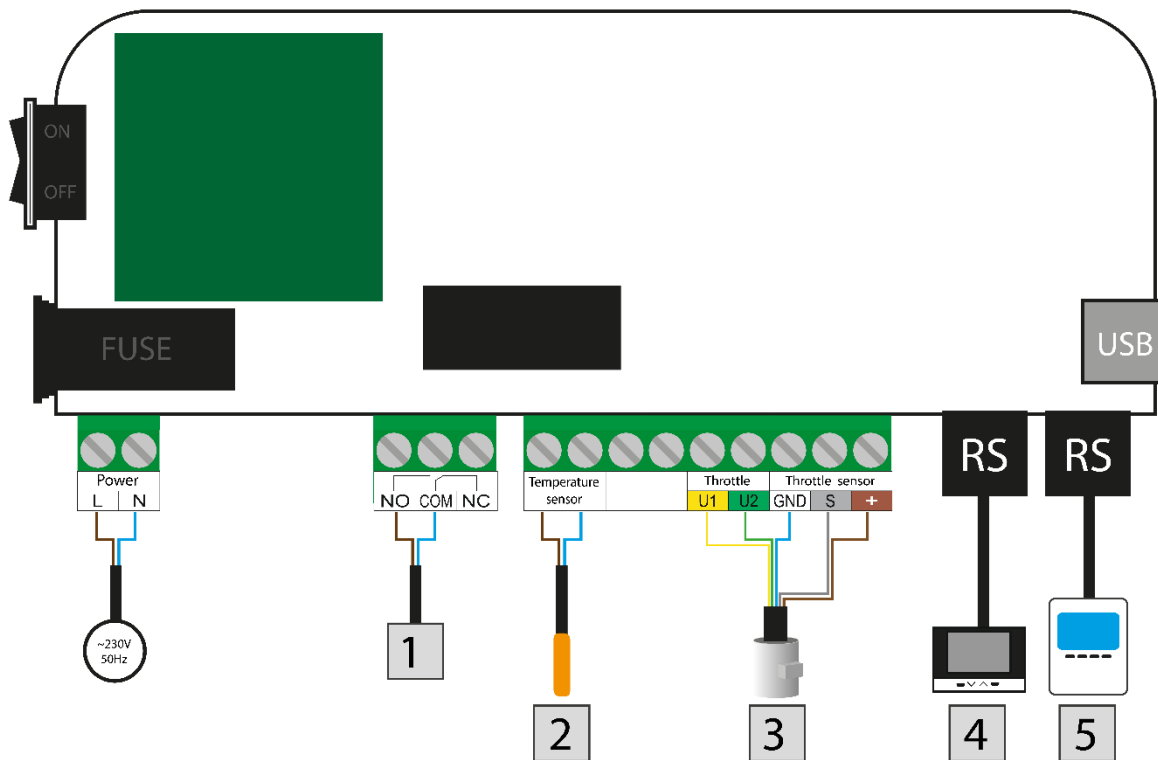
WARNING

Risk of fatal electric shock from touching live connections. Before working on the controller switch off the power supply and prevent it from being accidentally switched on.



WARNING

Incorrect connection of wires may lead to controller damage.

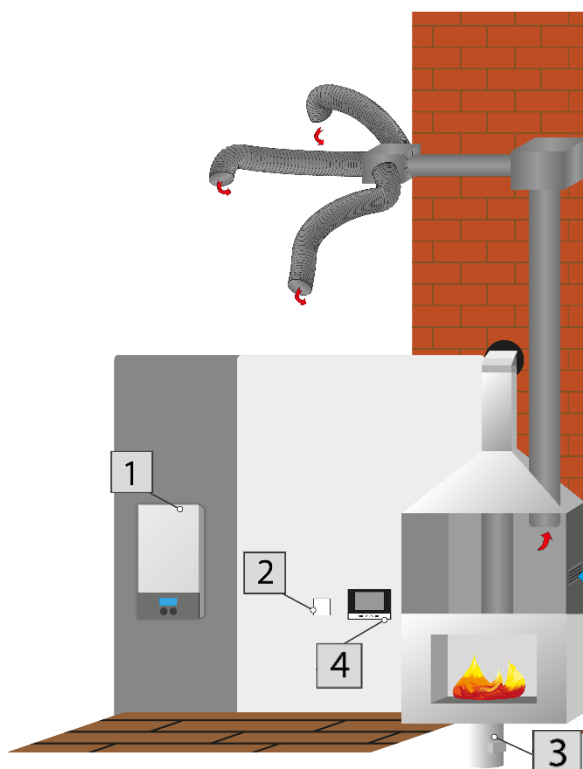


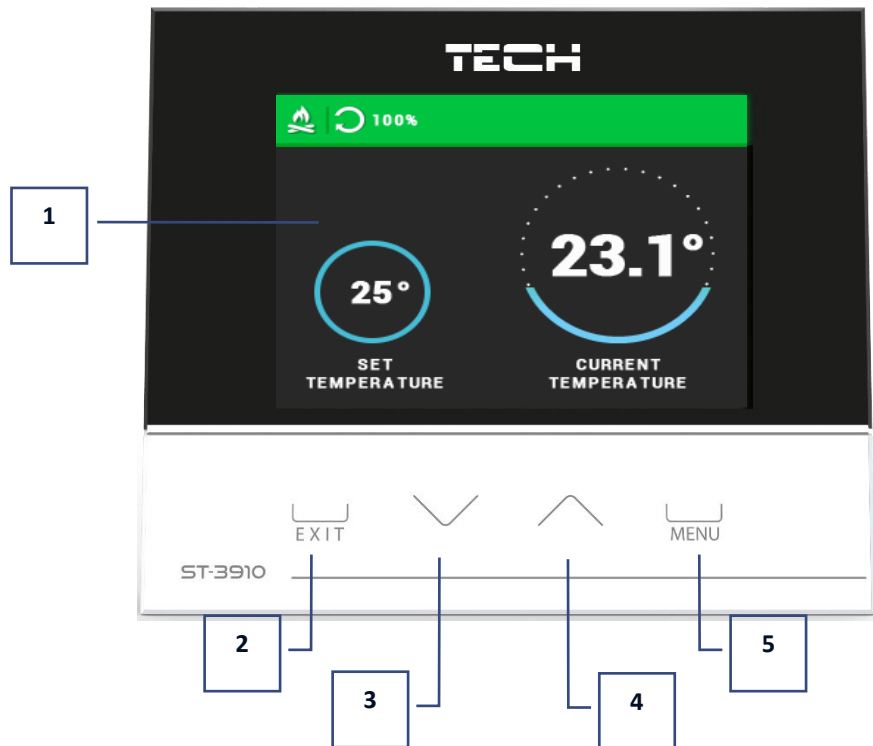
Connection diagram:

1. Voltage-free contact
2. Temperature sensor
3. Throttle
4. Control panel
5. Internet module

Pictorial diagram - controller operation:

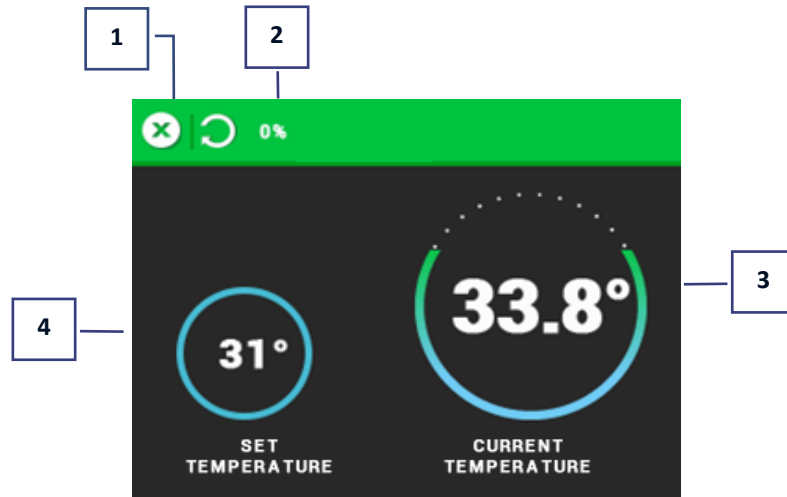
1. Voltage-free contact
2. Temperature sensor
3. Throttle
4. Control panel





1. Controller display
2. **EXIT** – in the controller menu the button is used to exit the menu or cancel the settings.
3. **▼** – in the main screen view it is used to decrease the pre-set temperature. In the controller menu it is used to navigate through menu options and decrease the edited value.
4. **▲** – in the main screen view it is used to increase the pre-set temperature. In the menu it is used to navigate through menu options and increase the edited value.
5. **MENU** – it is used to enter the menu and confirm the settings.

5 MAIN SCREEN DESCRIPTION



1. Controller operation mode (x – extinguished)
2. Opening degree of throttle
3. Current room temperature
4. Pre-set room temperature

6 PRINCIPLE OF OPERATION — STAGES OF CONTROLLER OPERATION

The user starts the fire-up function by pressing a corresponding icon. The other modes start automatically, depending on the stage of the controller operation.

6.1 FIRE-UP

This stage starts when the fire-up function is selected in the controller menu, and lasts until CH temperature reaches the pre-set value, provided that the temperature does not drop below this value for a pre-set period of time (default setting: 5 minutes). If these conditions are met, the controller enters operation mode. If the controller fails to reach proper parameters to enter operation mode within the pre-defined time, an icon indicating fire-up failure is displayed in the upper left corner of the screen. In such a case, the fire-up process must be started again.

6.2 OPERATION

Once the fire-up process is completed, the controller enters operation mode. It is the primary mode of controller functioning when the throttle operation is regulated with SIGMA algorithm, oscillating around the pre-set temperature defined by the user. Instead of Fire-up function, Throttle ON/OFF appears in the user menu. The throttle may be disabled if necessary (e.g. while adding fuel) - then the throttle closes completely.

6.3 SUPERVISION

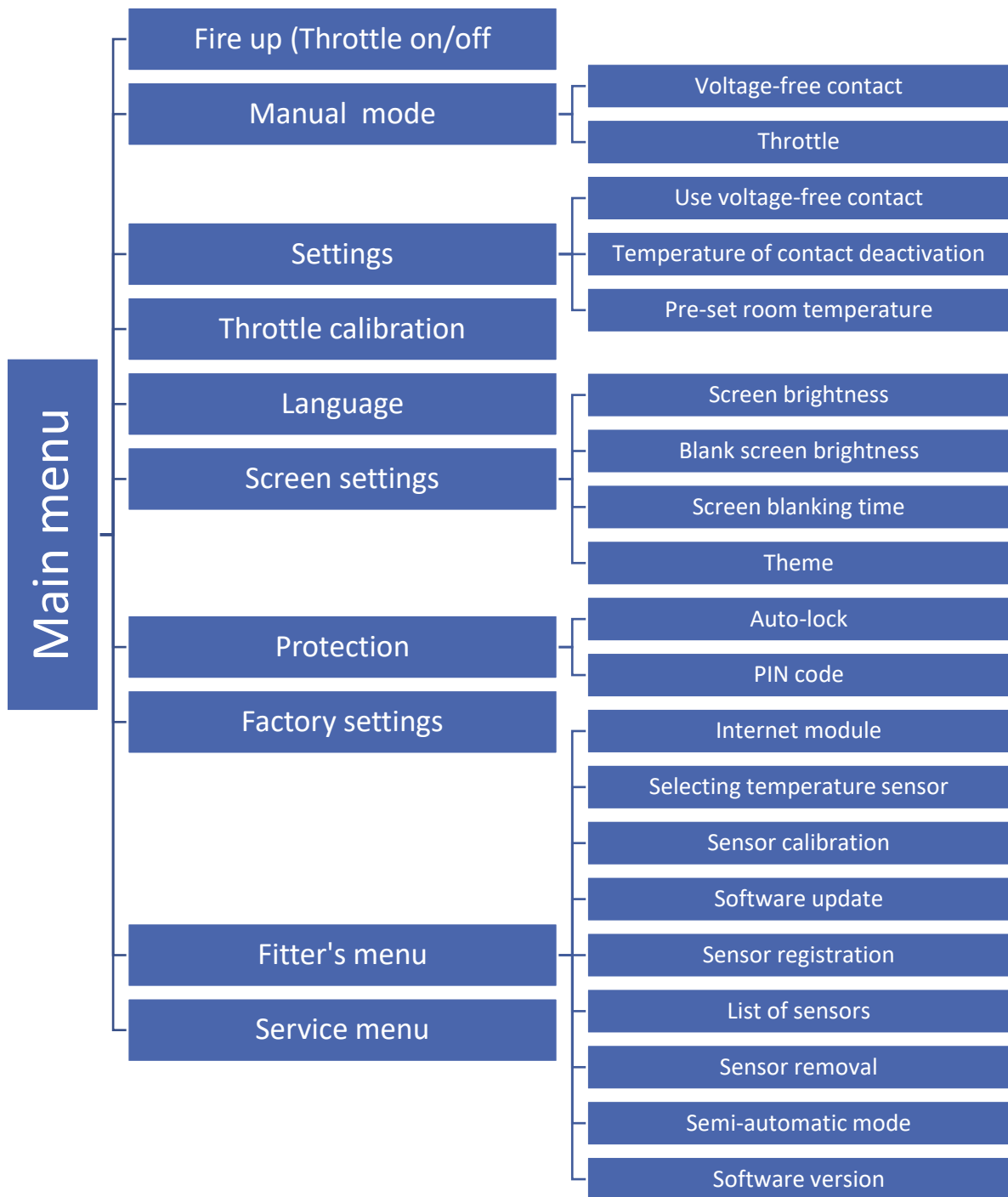
This mode is activated automatically when the pre-set temperature is reached in operation mode. In such a case, the controller closes the throttle completely to reduce the temperature.

6.4 EXTINGUISHING

During blow-by stage, the throttle closes and opens at pre-defined intervals (Service menu). After blow-by stage, the controller status switches to *extinguished*. The extinguishing process may also be activated by disabling the throttle in the main menu.

7 MAIN MENU

7.1 BLOCK DIAGRAM - MAIN MENU



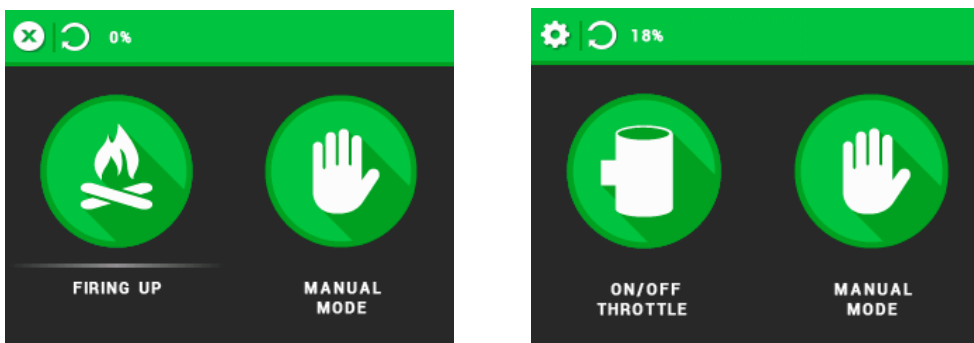
7.2 FIRE-UP (THROTTLE ON/OFF)

The aim of this function is to achieve optimum flame in the shortest time possible. The fire-up effectiveness is enhanced by throttle operation. This stage lasts until room temperature reaches a pre-defined value required to enter the operation mode.

Once the controller enters operation mode, instead of *Fire-up* function, *Throttle ON/OFF* appears in the menu. The throttle may be disabled if necessary (e.g. while adding fuel) - then the throttle closes completely. The extinguishing process may also be initiated by disabling the throttle.

7.3 MANUAL MODE

The regulator offers manual mode function. In this function, the voltage-free contact may be activated and deactivated. Additionally, the throttle position may be adjusted manually by changing the degree of opening (%). The throttle will start changing its position about 2 seconds after the change has been introduced.



7.4 SETTINGS

1.1. USE VOLTAGE-FREE CONTACT

The controller has a voltage-free contact output, whose task is to open/close the contact when the room temperature reaches the value set by the user.

A voltage-free contact can be used e.g. to switch on an external heating device or as a signal to fire up a pellet boiler.



NOTE

The voltage-free contact operation depends on the reading from the room temperature sensor.

1.2. TEMPERATURE OF CONTACT DEACTIVATION

It is the threshold temperature value at which the contact will be disabled. The contact operates continuously until it reaches the deactivation temperature.

1.3. PRE-SET ROOM TEMPERATURE

When the current room temperature exceeds the pre-set temperature value, the throttle will start closing.

7.5 THROTTLE CALIBRATION

Throttle calibration is performed automatically every few hours to ensure its proper position. This function is used to activate throttle calibration manually. Once this option is selected, the throttle moves slightly above its current position, reaches 0 position and moves back to its original position.



NOTE

Check regularly if the throttle is unobstructed. An obstructed throttle may have negative impact on combustion process. Mechanical damage caused by dirt or foreign matter entering the air duct, which may lead to throttle blocking, is not covered by warranty repair.

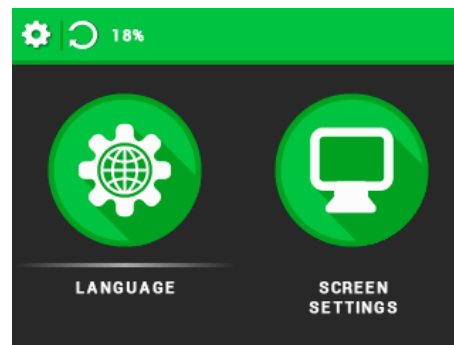
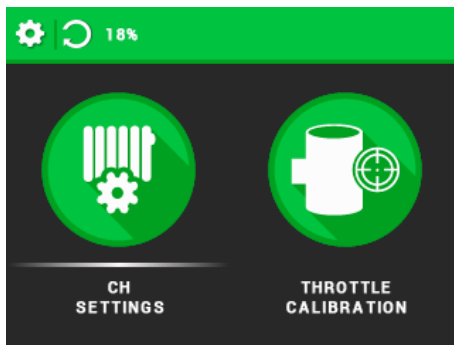
7.6 LANGUAGE

This function enables the user to change the language version of the controller.

7.7 SCREEN SETTINGS

These parameters are used to adjust the screen layout.

- **Screen brightness** – This parameter is used to adjust screen brightness during operation.
- **Blank screen brightness** – This parameter is used to adjust screen brightness after some time (30 seconds) of inactivity.
- **Screen blanking time** – This parameter is used to define the time after which the screen goes blank.
- **Theme** – This submenu enables the user to choose the display colour.



7.8 PROTECTIONS

This function enables the user to set up menu access protection. Once Auto-lock function is selected, access to the menu is possible only after entering a 4 digit PIN code - 0000. The PIN code may be changed by the user in the PIN code submenu.

7.9 FACTORY SETTINGS

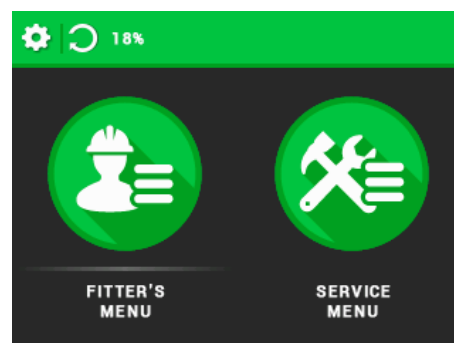
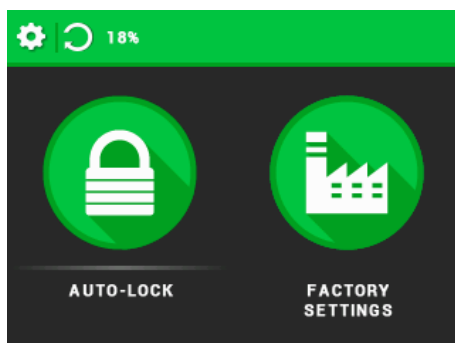
This option enables the user to restore factory settings.

7.10 FITTER'S MENU

Fitter's menu is described in detail in section VIII.

7.11 SERVICE MENU

This submenu includes advanced controller settings. These functions should be configured by a qualified fitter and the submenu is secured with a 4-digit code.



8 FITTER'S MENU

8.1 INTERNET MODULE

Internet module is a device enabling the user remote control of the heating system. The user can control the status of all system devices on the screen of a home computer, tablet or mobile phone. In addition to the possibility of viewing the temperature of each sensor, the user has the option of changing the temperature values.

After switching the module on and selecting DHCP option, the controller automatically downloads such parameters as IP address, IP mask, gateway address and DNS address from the local network. If any problems arise when downloading the network parameters, they may be set manually. The procedure of obtaining these parameters is described in detail in the instruction manual of the Internet Module.



NOTE

This type of control is possible after buying and connecting an additional control module ST-505 or WiFi RS, which is not included in the standard controller set.

8.2 SELECTING TEMPERATURE SENSOR

- **Executive module temperature** - the controller reads the temperature from the sensor connected to the module via a terminal block.
- **Display temperature** – the controller reads the temperature from the sensor built into the display. This function is useful when the screen is placed far from the fireplace.
- **Wireless sensor** – the controller reads the temperature from a wireless sensor.



NOTE

If several sensors are connected to the device, the controller will read the average temperature from them.

8.3 SENSOR CALIBRATION

Sensor correction should be performed during installation or after a longer period of using the regulator when the temperature measured by the sensor is different from actual temperature. Range of regulation is -10°C to $+10^{\circ}\text{C}$ with the accuracy of $0,1^{\circ}\text{C}$.

The user can calibrate the module sensor, the display sensor and the registered radio sensors.

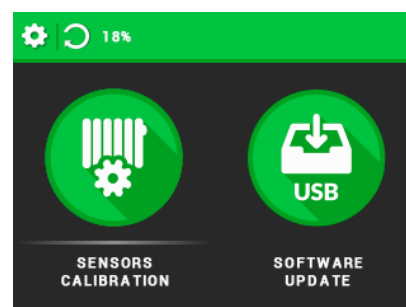
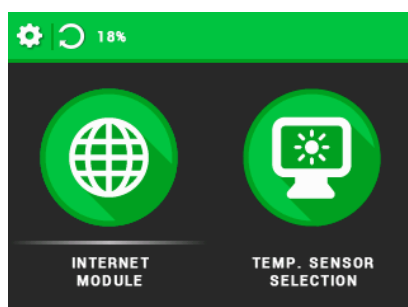
8.4 SOFTWARE UPDATE

To upload new software, disconnect the controller from the power supply. Insert the USB flash drive with the new software into the USB port. Then connect the controller to the power supply. A single sound signal means that the upload of new software has started.



NOTE

The process of uploading new software to the controller may only be carried out by a qualified fitter. After the software has been changed, it is not possible to restore the previous settings.



8.5 SENSOR REGISTRATION

The function allows the user to register an additional sensor. To register, select this function and press the registration (communication) button on the sensor.



NOTE

Up to 8 additional sensors can be registered to the controller.

8.6 LIST OF SENSORS

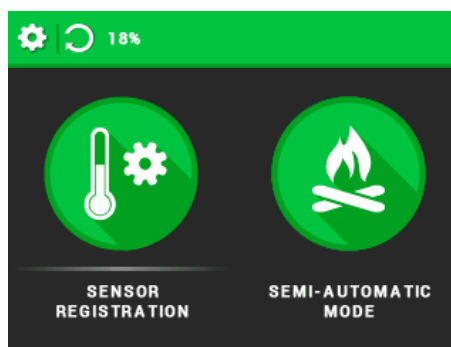
By selecting this function, the user can view the registered sensors.

8.7 SENSOR REMOVAL

This option enables the user to remove a registered sensor.

8.8 SEMI-AUTOMATIC MODE

After the pre-set temperature has been reached, the semi-automatic mode allows the user to sustain the heating process by moving the throttle from 0 to 40% until the temperature drops to the pre-set temperature reduced by hysteresis. Then the fireplace will switch back to operation mode.



8.9 SOFTWARE VERSION

Activate this function and the manufacturer's logo will appear on the display along with the controller software version.



NOTE

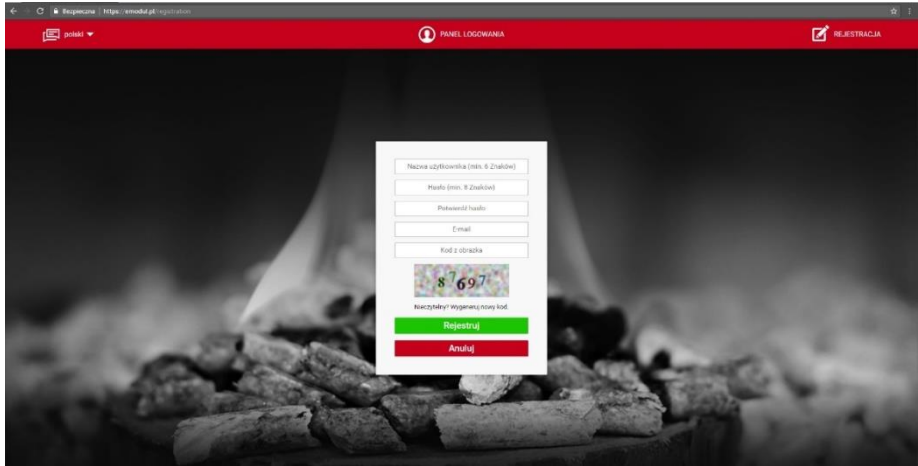
The controller software version number is necessary when contacting TECH service staff.

9 CONTROLLING THE SYSTEM VIA eMODUL APP

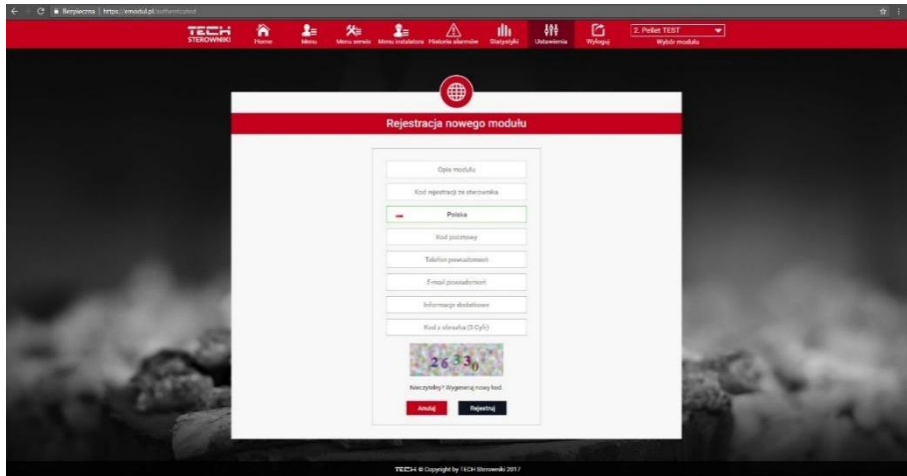
The Internet module is a device which allows remote control of the heating system via the Internet. Using the emodul.eu website, the user controls the status of the system devices and other parameters, e.g. temperature of sensors on the screen of a computer, tablet or smartphone. By tapping on the parameters, it is possible to change their operating settings.

⇒ Before registering the module, it is necessary to create user's account on emodul.pl (if you do not have one).

- ⇒ Once the module has been connected properly, select *Module ON*.



- ⇒ Next, select *Registration*. The controller will generate a code.
- ⇒ Log on emodul.pl, go to *Settings* tab and enter the code which appeared on the controller screen.
- ⇒ It is possible to assign a name or description to the module as well as provide phone number and e-mail address to which the notifications will be sent.
- ⇒ Once generated, the code should be entered within 60 minutes. Otherwise, it will become invalid and it will be necessary to generate a new one.



- ⇒ Internet module parameters such as IP address, IP mask, gate address etc. may be set manually or by selecting DHCP option.

10 TECHNICAL DATA

Specification	Value
Power supply	230V ± 10% / 50Hz
Maximum power consumption	6W
Potential-free cont. nom. out. load	230V AC / 0,5A (AC1) * 24V DC / 0,5A (DC1) **
Ambient temperature	5°C ÷ 50°C
Thermal resistance of NTC sensor	-30°C ÷ 50°C
Fuse	3,15 A

* AC1 load category: single-phase, resistive or slightly inductive AC load.

** DC1 load category: direct current, resistive or slightly inductive load.

C-mini sensor

Specification	Value
Power supply	CR2032 battery
Range of temperature measurement	-30°C ÷ 50°C
Accuracy of measurement	± 0,5°C
Frequency	868MHz

11 PROTECTIONS AND ALARMS

In the event of an alarm, a sound signal is activated and an appropriate message appears on the display.

Alarm	Possible cause	How to fix it
Temperature sensor error	The internal sensor in the controller is damaged.	Call the service
Throttle error	- Wiring is damaged. - The blade movement has been blocked.	- Check the condition of wires - Remove the foreign matter from the throttle
Fire-up failure	The pre-set room temperature has not been reached in the pre-defined time.	Activate the fire-up function again.



EU DECLARATION OF CONFORMITY

Hereby, we declare under our sole responsibility that **EU-3910 SIGMA** manufactured by TECH, head-quartered in Wieprz Biała Droga 31, 34-122 Wieprz, is compliant with Directive **2014/35/EU** of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of Member States relating to **the making available on the market of electrical equipment designed for use within certain voltage limits** (EU OJ L 96, of 29.03.2014, p. 357), **Directive 2014/30/EU** of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of Member States relating to **electromagnetic compatibility** (EU OJ L 96 of 29.03.2014, p.79), Directive **2009/125/EC** establishing a framework for the setting of ecodesign requirements for energy-related products as well as the regulation by the **MINISTRY OF ENTREPRENEURSHIP AND TECHNOLOGY** of 24 June 2019 amending the regulation concerning the essential requirements as regards the restriction of the use of certain hazardous substances in electrical and electronic equipment, implementing provisions of Directive (EU) 2017/2102 of the European Parliament and of the Council of 15 November 2017 amending Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ L 305, 21.11.2017, p. 8).

For compliance assessment, harmonized standards were used:

PN-EN IEC 60730-2-9:2019-06, PN-EN 60730-1:2016-10.


PAWEŁ JURA


JANUSZ MASTER

Wieprz, **19.01.2022**

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