

# TECH TECH CONTROLLERS

## USER MANUAL EU-22N SIGMA

EN





## EU DECLARATION OF CONFORMITY

Hereby, we declare under our sole responsibility that **EU-22 SIGMA** manufactured by TECH STEROWNIKI, 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, 08.02.2022

## I. 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 personal injuries or controller damage. The user's manual should be stored in a safe place for further reference. 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 sold or put in a different place, make sure that the user's manual is there 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

- **High voltage!** 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.
- Before starting the controller, the user should measure earthing resistance of the electric motors as well as the insulation resistance of the cables.
- The regulator should not be operated by children.



### WARNING

- The device may be damaged if struck by a lightning. Make sure the plug is disconnected from the power supply during storm.
- 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.

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Changes in the merchandise described in the manual may have been introduced subsequent to its completion on 08.02.2022. The manufacturer retains the right to introduce changes to the structure. The illustrations may include additional equipment. Print technology may result in differences in colours shown.

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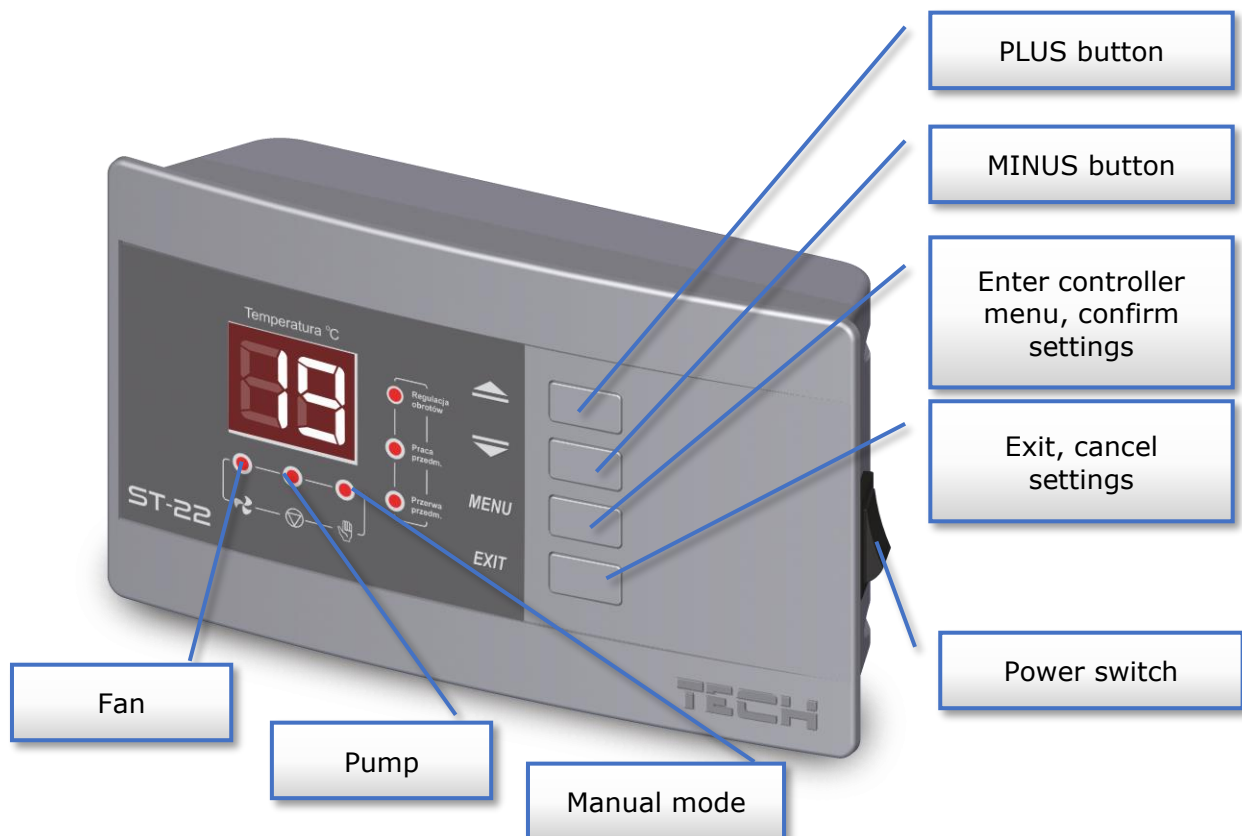


We are committed to protecting the environment. Manufacturing electronic devices imposes an obligation of providing for environmentally safe disposal of used electronic components and devices. Hence, we have been entered into a register kept by the Inspection For Environmental Protection. The crossed-out bin symbol on a product means that the product may not be disposed of to household waste containers. Recycling of wastes 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.

## **II. Principle of operation**

EU-22N SIGMA microprocessor-based controllers are intended for controlling CH boilers with a fan and CH pump. Their main task is to maintain the pre-set temperature with the use of a fan.

In order to fire-up the CH boiler (when CH boiler temperature is below 30°C), press EXIT button. As a result, the fan is enabled and the control lights indicating 'Manual mode' and 'Fan' will go on. Press the button again to deactivate the fire-up process (i.e. the manual mode). Once selected, the function remains active until CH boiler temperature reaches 30°C (it is the threshold temperature of pump activation and entering the operation mode). When the CH boiler reaches the temperature of 30°C, the controller enters operation mode. Once the pre-set temperature is reached, the controller switches to sustain mode. In this mode the controller operation involves activating blow-by at the frequency defined by the user. Blow-by operation and pause time should be adjusted to the type of fuel used.



## **III. Pre-set temperature**

Pre-set temperature is the desired temperature of the CH boiler. The value may be adjusted directly from the main screen view by pressing PLUS button (to increase the temperature) and MINUS button (to lower the temperature) while the display is flashing. After 4 seconds the display shows current CH boiler temperature.

### **Controller functions (User's menu – options)**

Speed control function may be activated by pressing OPTIONS button - 'Speed control' LED will go on. This function is used to control the fan speed. The setting range is 1-6 or 1-10, depending on the software version (the values may be regarded as fan gears). The higher the gear is, the faster the fan works. Gears may be changed using PLUS and MINUS buttons. Setting an appropriate gear prevents the fire going out and ensures effective combustion.

Once the pre-set temperature is reached, the CH boiler enters the so called sustain mode (to prevent further temperature increase). To ensure correct operation of the CH boiler, the user sets two parameters: blow-by operation time and blow-by pause time.

Blow-by operation function is activated by pressing OPTIONS button twice - 'Blow-by operation' LED will go on. The user sets the blow-by operation time (in seconds) in sustain mode.

Blow-by pause function is activated by pressing OPTIONS button three times - 'Blow-by pause' LED will go on. The user sets the blow-by pause time (in minutes) in sustain mode. The sustain mode (when the CH temperature remains above the pre-set value) prevents CH boiler damping and limits further temperature increase.

ATTENTION: Incorrect setting of both the blow-by operation time and pause time may lead to constant increase in temperature! The user should ensure above all that the blow-by pause time is not too short and the blow-by operation time is not too long.

## Automatic speed control (SIGMA)

When CH boiler temperature rises, the controller gradually lowers the fan speed until it reaches the pre-set minimum speed.

For example, when the minimum speed is set to 2<sup>nd</sup> gear, the pre-set temperature is 60°C and the CH boiler temperature is 49°C and it is rising, every 1°C the fan slows down and changes into a lower gear until the pre-set temperature minus 1°C is reached (in 2<sup>nd</sup> gear). When the temperature is reached, the fan stops and operates according to the pre-set blow-by operation and pause cycle.

When CH boiler temperature drops below the pre-set value, the fan speed gradually increases (it changes into a higher gear every 1°C) until it reaches the maximum rotational speed.

## IV. Fan START/STOP

(function availability depends on software version)

EXIT button is used to enable the fan during the fire-up process. Once the function is activated, both 'Fan' and 'Manual mode' LEDs go on. When the CH boiler temperature exceeds 30°C, 'CH pump' LED goes on instead of 'Manual mode' LED, the CH pump is enabled and the controller enters operation mode.

In operation mode of the controller, the button is used to switch the fan on/off (e.g. when adding fuel). Once the fan is disabled, "Manual mode" LED starts to flash. The function ensures safe operation of the CH boiler. When the fan is on, the CH boiler door must not be opened.

## V. CH pump operation

CH pump operation depends on the CH boiler circulation temperature. When the temperature reaches 30°C, the pump is activated. Above this value the pump operates without pausing. The pump is disabled when the temperature drops below 28°C to prevent its unnecessary operation. When the pump is active, a corresponding LED with the pump symbol is on.

## IV. Protections

In order to ensure safe operation, the controller is equipped with a range of safeguards. All errors are shown on LED display:

**E4** – CH boiler temperature has exceeded its maximum value (default: 85°C)

**E5** – temperature sensor has been damaged

In both cases the fan is disabled, the CH pump is enabled (if it was disabled) and an alarm sound appears. In the case of E4 error, the alarm may be cancelled with the use of OPTIONS button when the temperature drops to a safe level. In the case of E5 error, the sensor must be replaced (after checking that there was no short-circuit and the sensor cable was plugged in correctly).

The controller is also equipped with a bimetallic mini-sensor (thermal overload relay), which automatically disconnects the fan from the power supply when the temperature of about 85°C is reached (CH pump works all the time).

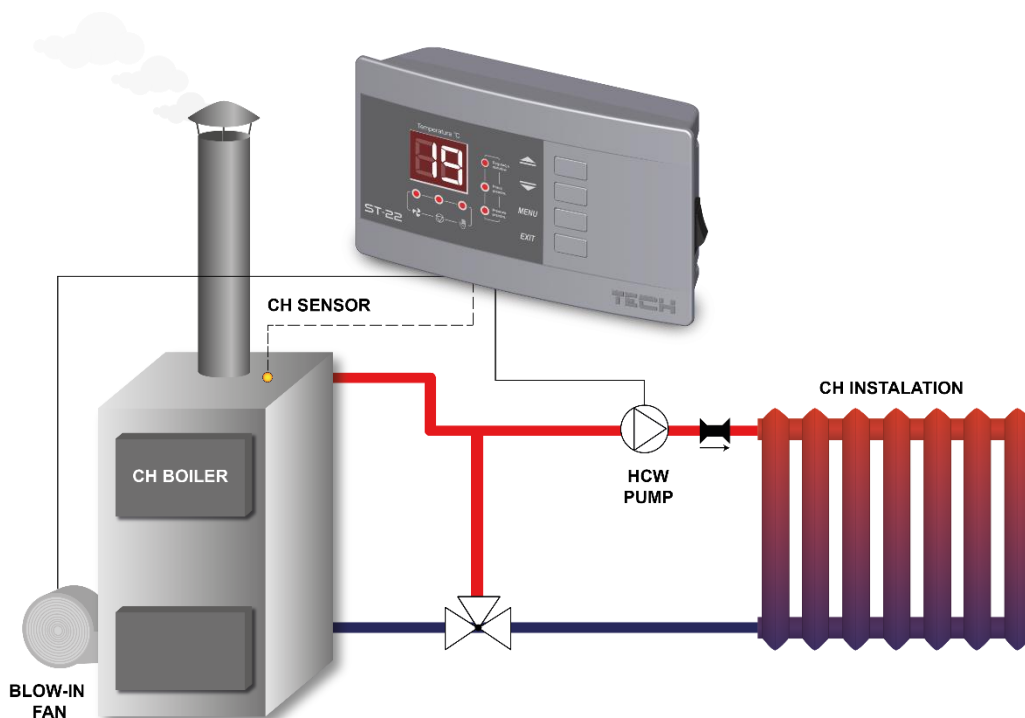
It prevents the water in the heating system from boiling in the case of CH boiler overheating or controller damage. Once the protection has been activated and the temperature has dropped to a safe level, the sensor automatically unlocks itself and the alarm is turned off. In the case when the thermal overload relay is damaged, the fan does not operate either in manual mode or in automatic operation mode.

EU-22N controllers are equipped with two WT1,6A tube fuses as a network protection. Using a higher amperage fuse may damage the controller.

Power supply	230V ±10% /50Hz
Maximum power consumption	2W
Ambient temperature	5÷50
Pump max. output load	0,5A
Fan max. output load	0,6A
Temperature measurement accuracy	1°C
Sensor thermal resistance	-30÷99°C
Fuse	1,6A

## VI. Installation and maintenance

Before and during the heating season, EU-22N 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. It is advisable to measure earthing parameters for the motors (pump and fan)



\* \* Pictorial diagram – it cannot replace CH system project. Its aim is to present how the controller may be expanded. This heating system diagram does not include protective elements which are necessary to ensure correct installation.

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