

# VERANO

G L O B A L



USER MANUAL VER-24 S

I.	Safety.....	3
II.	Device description.....	4
III.	Installation.....	5
IV.	Principle of operation.....	7
V.	Main screen description.....	8
VI.	Controller operation modes.....	9
VII.	Controller functions .....	9
1.	Block diagram of main menu.....	9
2.	Profile selection .....	11
3.	Temperature settings .....	13
4.	Time settings .....	13
5.	Schedule settings.....	13
6.	Screen settings .....	14
7.	Alarm clock settings.....	14
8.	Controller settings.....	15
9.	Protections .....	16
10.	Language selection .....	16
11.	Software version.....	16
12.	Standby mode .....	16
13.	Service settings.....	17
14.	Factory settings .....	17
VIII.	Service menu .....	17
1.	Block diagram of fitter's menu .....	17
2.	Temperature settings .....	18
3.	System selection.....	18
4.	Mode selection .....	18
5.	Output configuration.....	19
6.	Fan advanced settings .....	20
7.	Factory settings .....	21
IX.	Alarms .....	22
X.	Technical data .....	22

## 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.
- 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.

---

Changes in the merchandise described in the manual may have been introduced subsequent to its completion on October 4h 2017. 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.

---

Care for the natural environment is our priority. Being aware of the fact that we manufacture electronic devices obligates us to dispose of used elements and electronic equipment in a manner which is safe for nature. As a result, the company has received a registry number assigned by the Main Inspector of Environmental Protection. The symbol of a crossed out rubbish bin on a product means that the product must not be thrown out to ordinary waste bins. By segregating waste intended for recycling, we help protect the natural environment. It is the user's responsibility to transfer waste electrical and electronic equipment to the selected collection point for recycling of waste generated from electronic and electrical equipment.



## II. DEVICE DESCRIPTION

VER-24 S regulator enables convenient control of Verano fan-coil.

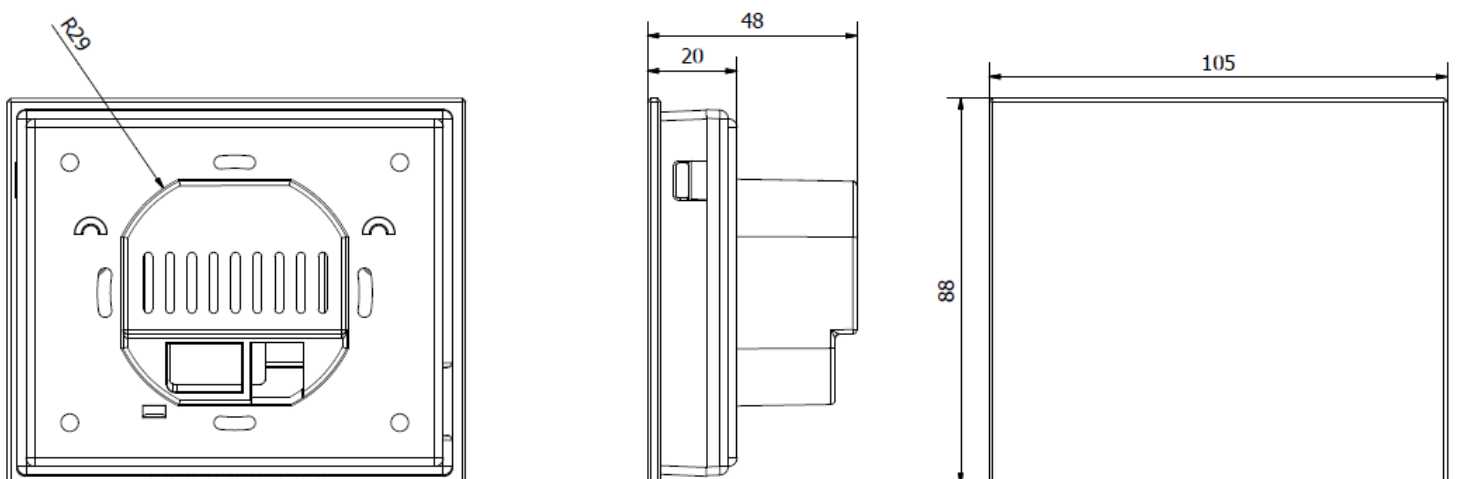
VER-24 S offers the following functions:

- Room temperature control (heating/cooling)
- Smooth control of fan speed
- Smooth control of the actuator (0-10)
- ON/OFF actuator control
- Daily schedule
- Alarm clock
- Parental lock

Controller equipment:

- Built-in temperature sensor
- Control output 0-10V DC for electronically commutated fan (EC)
- Control output 0-10V or ON/OFF (24V actuator)

VER-24S controller enables the user to disable the fan manually during operation in heating mode (when the thermostatic valve is open).



### III. INSTALLATION

The controller should be installed by a qualified person.

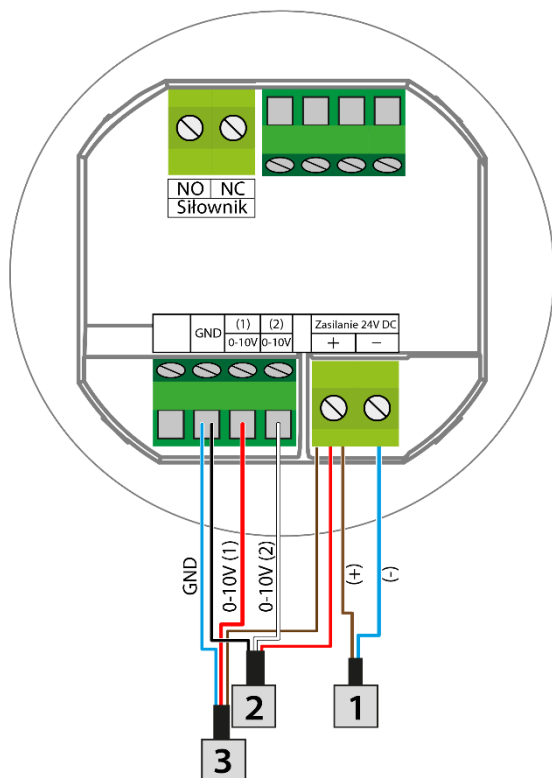


#### WARNING

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.

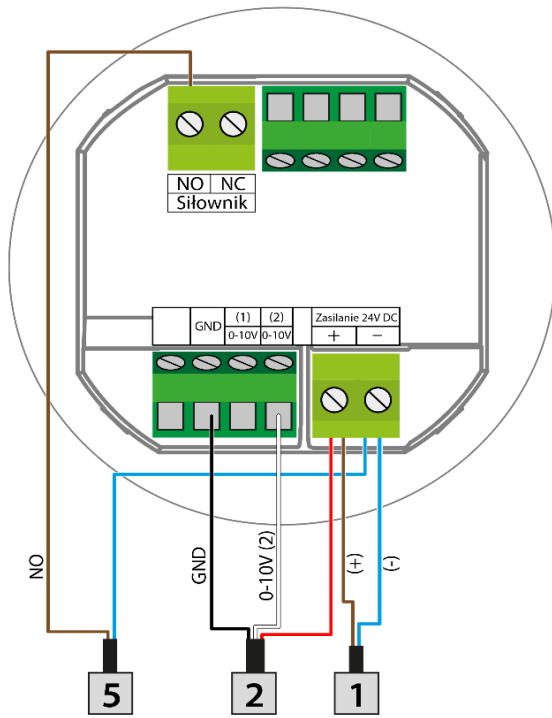
VER-24 S regulator is intended to be installed on the wall.

First, attach the back cover to the wall in the place where the room regulator in the electrical box will be installed. Next, connect the power supply wires and mount the device on the latches.



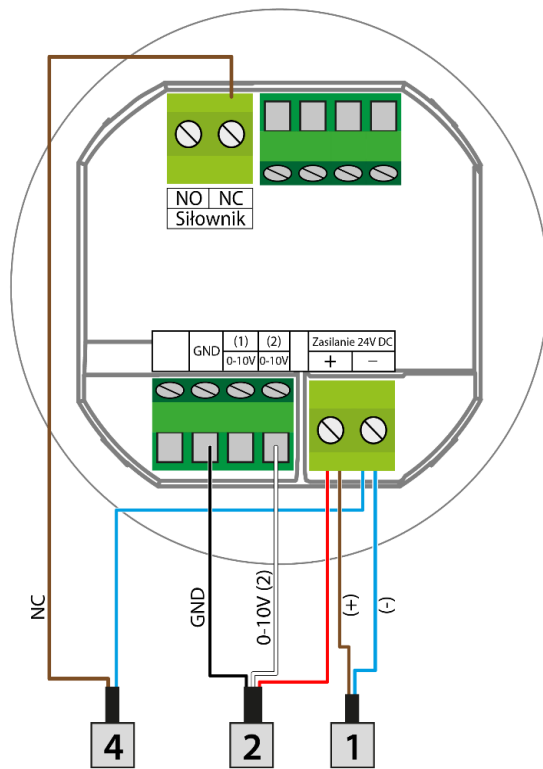
- 1 Power supply 24V
- 2 0-10V signal-controlled fan
- 3 0-10V signal-controlled actuator
- 4 NC actuator
- 5 NO actuator

#### 1. How to connect the fan and 0-10V signal controlled actuator



- 1 Power supply 24V
- 2 0-10V signal-controlled fan
- 3 0-10V signal-controlled actuator
- 4 NC actuator
- 5 NO actuator

## 2. How to connect NO actuator

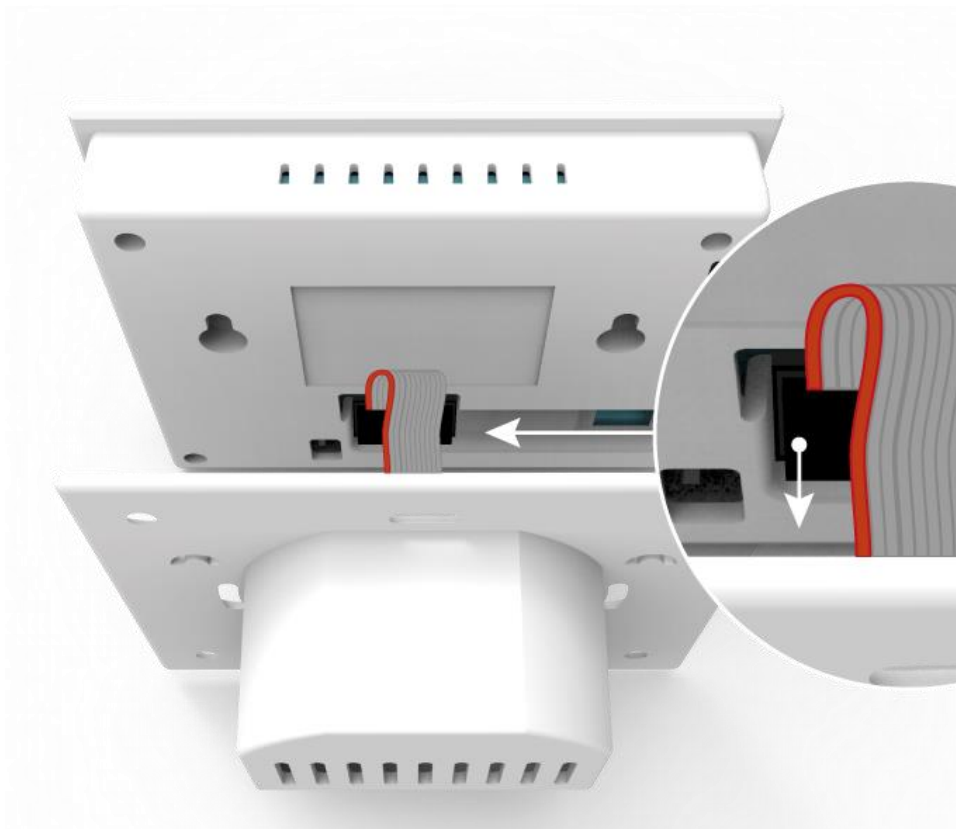


## 3. How to connect NC actuator



#### NOTE

In order to remove the back cover, disconnect the tape between the printed circuit board and the regulator.

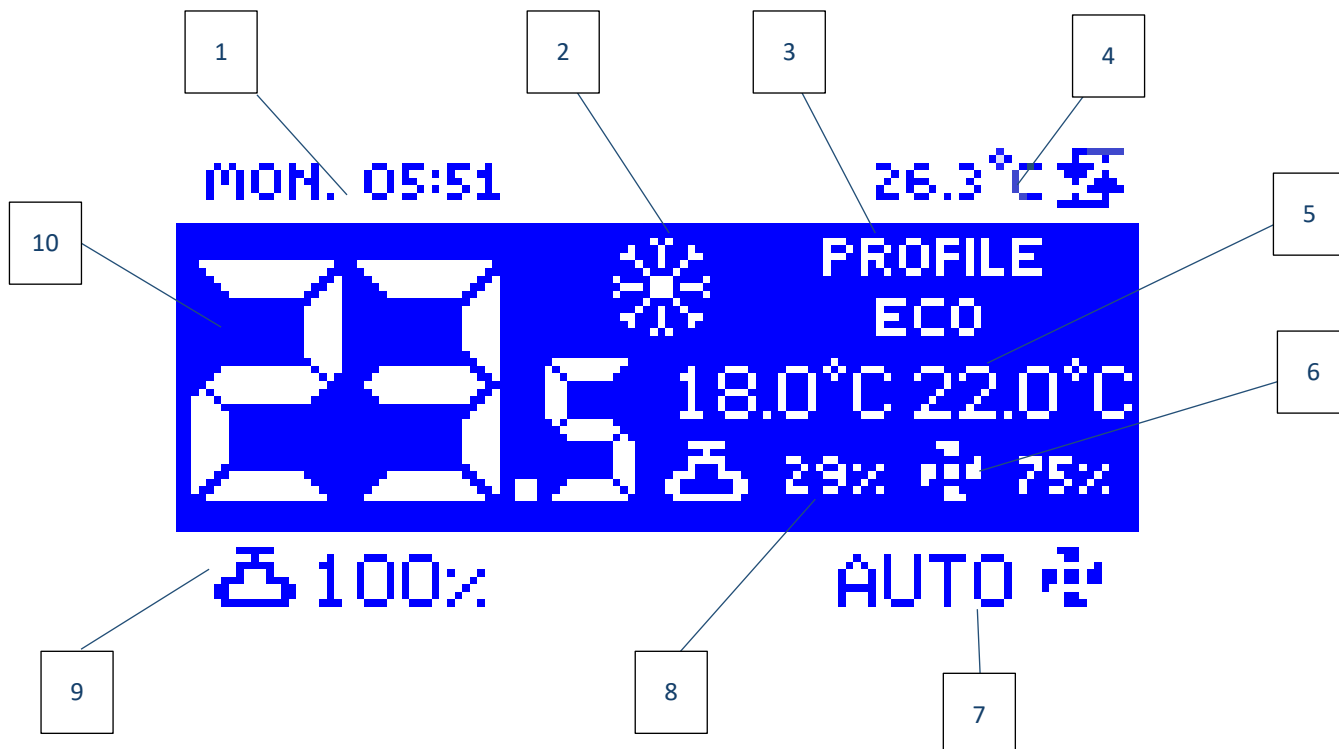


## IV. PRINCIPLE OF OPERATION

VER-24 S controls the fan and the valves in order to maintain the pre-set room temperature. Depending on selected operation mode, the device may increase the temperature (heating mode) or decrease the temperature (cooling mode). It controls smoothly the fan operation (increasing or decreasing its speed when needed) and the valve operation (increasing or decreasing the level of valve opening depending on current needs). Additionally, the device may be used to control another valve by opening it or closing as needed.

## V. MAIN SCREEN DESCRIPTION

The main screen displays current status of basic controller parameters.



1. Day of the week and time
2. Operation mode change:
  - Heating – sun icon
  - Cooling – snowflake icon



### NOTE

This function is active when **Manual heating/cooling** option is selected in the service menu, in **Mode selection** submenu. If any other mode is selected, the mode change icon is not displayed; instead the upper right-hand corner of the screen displays an icon indicating current operation mode.

3. Current controller operation profile
4. Additional sensor temperature
5. Current pre-set temperature (depending on selected profile and operation mode)
6. Fan speed
7. Fan mode change icon. The fan may operate in the following modes:
  - Automatic – fan speed is controlled with the controller operation algorithm
  - Manual – three speed levels
  - Off



### NOTE

Information about current fan operation mode is saved in the controller memory 6 seconds after the last parameter change.

8. Opening degree of a smooth control valve
9. Valve icon
10. Current room temperature



## VI. CONTROLLER OPERATION MODES

Regardless of the selected profile, the controller may operate in two modes: heating or cooling. In **Service settings/Mode selection** submenu the user configures mode selection. The user may select one operation mode - by selecting **heating** or **cooling** or allow manual mode change from the main screen view - by selecting **Manual heating/cooling**.



### NOTE

In order to unlock *Service settings* function, it is necessary to enter a four-digit PIN code: 5162.

#### Operation mode Heating

Once this mode has been selected, when the controller detects that the room temperature is lower than the pre-set value (setting in **Temperature settings** submenu), it activates the fan and the valves in order to raise the temperature. When the room temperature reaches the pre-set value minus user-defined value (setting in **Service menu/Temperature settings**), the controller gradually starts decreasing the fan speed and closing the valve.

Once the pre-set room temperature has been reached, the fan is disabled and the valves are closed ( fan automatic mode is active).

#### Operation mode Cooling

Once this mode has been selected, when the controller detects that the room temperature is higher than the pre-set value (setting in **Temperature settings** submenu), it activates the fan and opens the valves in order to decrease the temperature. When the room temperature drops to the pre-set value plus user-defined value, the controller gradually starts decreasing the fan speed and closing the valve.

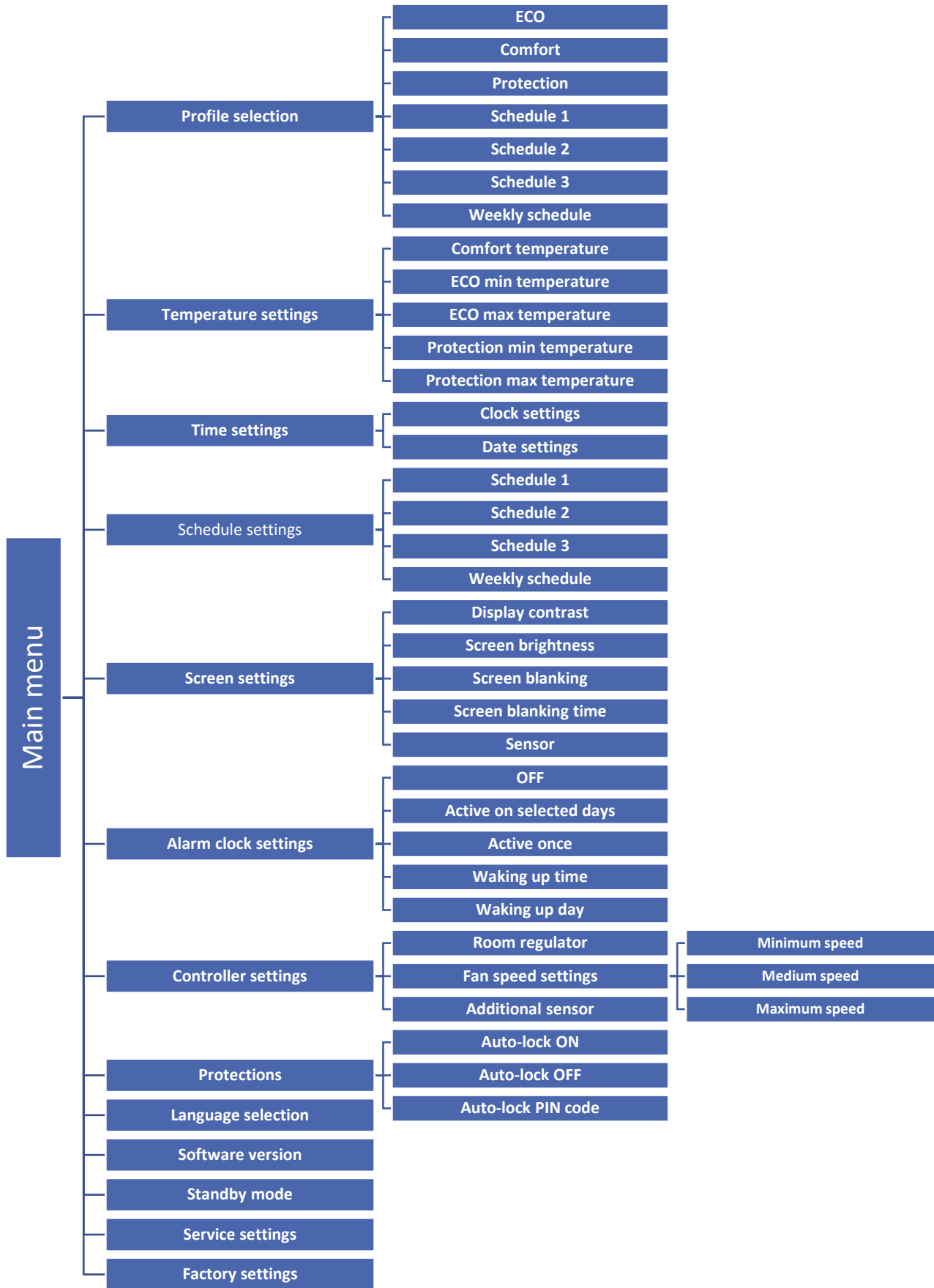
Once the pre-set room temperature has been reached, the fan is disabled and the valves are closed ( fan automatic mode is active).

## VII. CONTROLLER FUNCTIONS

During standard controller operation, the display shows the *main screen*. By pressing menu button the user may configure controller functions.

Due to controller complexity (a wide range of configurable parameters), the controller menu is divided into the main menu and the service menu secured with a 4-digit code. The main menu includes basic controller parameters such as operation mode, pre-set temperature setting, main screen view etc.

### 1. BLOCK DIAGRAM OF MAIN MENU



## 2. PROFILE SELECTION

The parameters in this submenu are used to select the controller operation profile.

The profiles offered by the controller are used to maintain the room temperature at a pre-defined level. The user may choose from 3 profiles (comfort, eco, protection), 3 daily schedules (1,2,3) and a weekly schedule.

- **COMFORT** - In this profile the user defines one pre-set temperature (SetT) in **Temperature settings**, fig.1,2. In case of room temperature decrease (**heating mode**) or increase (**cooling mode**) by 0.1 °C, the controller starts opening the valve gradually and the fan is enabled. If the temperature continues to fall (**heating mode**) or grow (**cooling mode**), the controller will gradually open the valve. Below the pre-set temperature SetT - delta (or above the pre-set temperature SetT+ delta) the valve will be completely open. Figure 1 illustrates the fan operation.

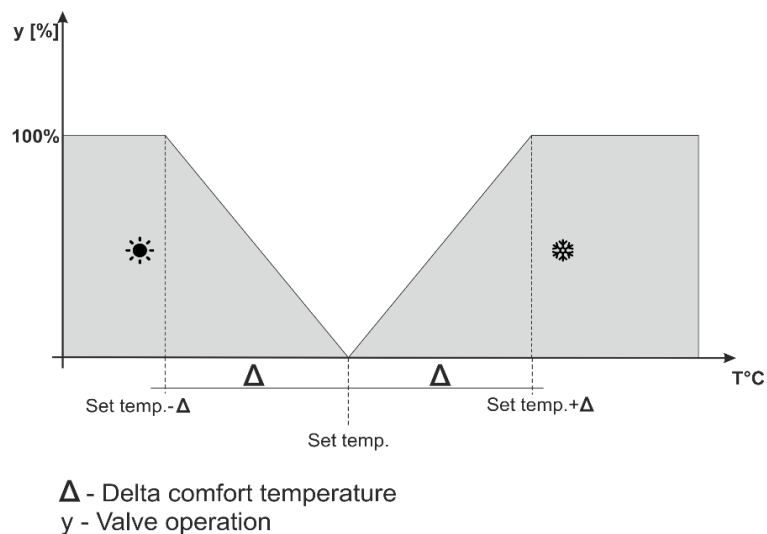


Figure 1. Chart of valve operation in the profile Comfort

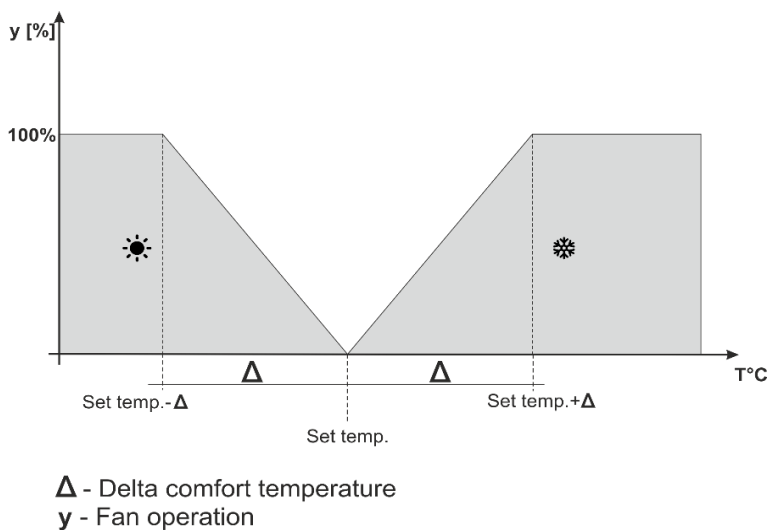


Figure 2. Chart of fan operation in the profile Comfort

**ECO, PROTECTION** - PROTECTION profile functions similarly to ECO profile. The only difference is the default pre-set temperature values:

PROTECTION min temperature < ECO min temperature

PROTECTION max temperature > ECO max temperature

PROTECTION profile is intended for maintaining optimum room parameters in order to protect the heating/cooling system against freezing or overheating.

In this profile, the user sets two temperatures (SetT\_min, SetT\_max), fig. 3.4. When the room temperature drops below SetT\_min by 0.1 °C, the controller will update the valve and fan settings (according to the settings) in order to reach the pre-set room temperature. In case of room temperature increase (**cooling mode**), the controller undertakes a similar procedure.

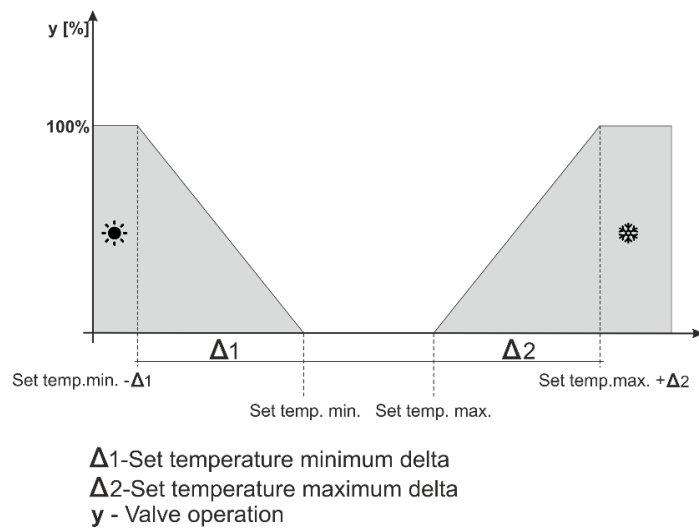


Figure 3. Chart of valve operation in the profile ECO, PROTECTION

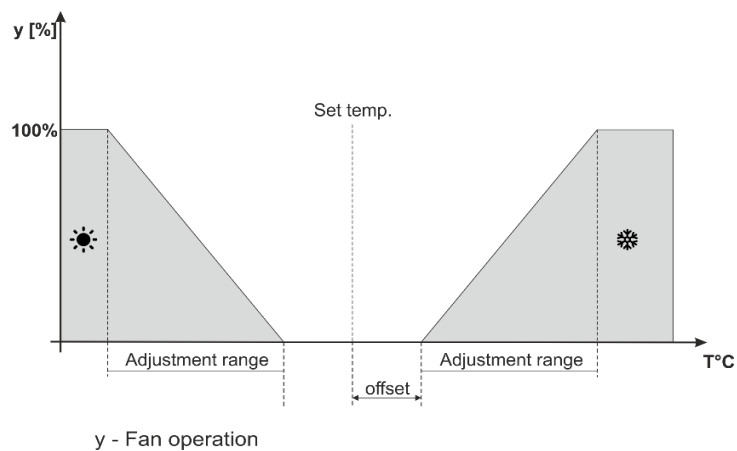


Figure 4. Chart of fan operation in the profile ECO, PROTECTION

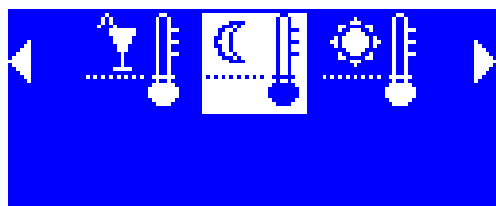
- **Schedule 1,2,3 profile** - If one of the schedules is activated, the controller functions according to pre-defined program - **Schedule settings** parameter.

Schedules enable the user to select the desired profile (comfort, eco, protection) for particular hours of the day (**Menu/Schedule settings**).

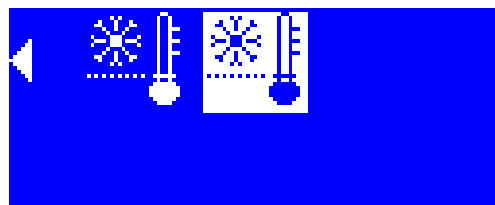
### 3. TEMPERATURE SETTINGS

These parameters enable the user to configure pre-set temperatures for particular operation profiles (see: the previous section). The user may configure the following temperatures:

- **Comfort temperature** – pre-set room temperature change (editing) in comfort profile.
- **ECO min temperature** – minimum pre-set room temperature change (editing) in ECO profile.
- **ECO max temperature** – maximum pre-set room temperature change (editing) in ECO profile.
- **Protection min temperature** – minimum pre-set room temperature change (editing) in PROTECTION profile.
- **Protection max temperature** – maximum pre-set room temperature change (editing) in PROTECTION profile.



Eco min. Temperature



Protection max. Temperature

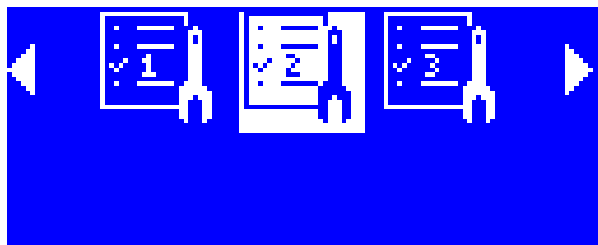
### 4. TIME SETTINGS

Once **Time settings** option has been selected, the main screen displays a panel enabling the user to configure clock and date settings.

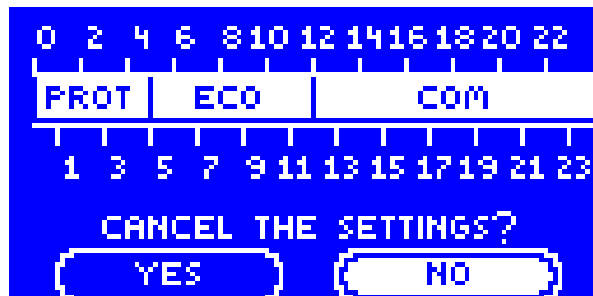
### 5. SCHEDULE SETTINGS

These parameters are used to configure particular schedules.

Once the schedule to be edited has been selected, the display shows the following settings screen:



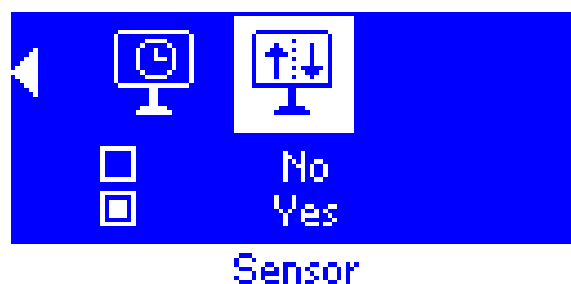
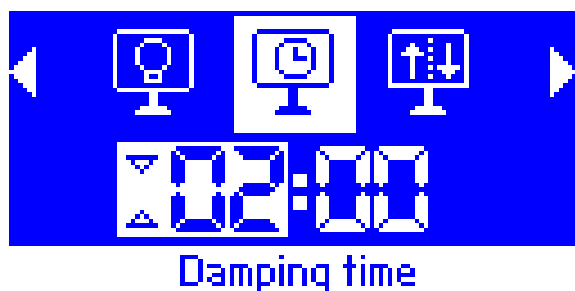
Schedule 2



## 6. SCREEN SETTINGS

This submenu enables the user to adjust the screen settings to individual needs.

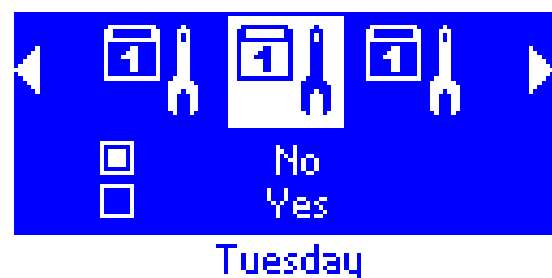
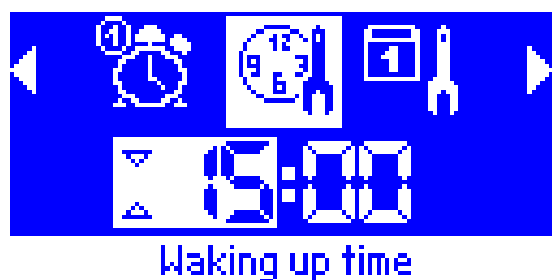
- **Display contrast** – it enables the user to adjust the screen contrast (percent).
- **Screen brightness**– it enables the user to adjust the screen brightness (percent).
- **Screen blanking** – it enables the user to adjust blank screen blanking (percent).
- **Blanking time** – it enables the user to define the time after which the screen will go blank.
- **Sensor** – Once a sensor has been activated, the controller will automatically adjust the screen brightness depending on how light the room is (the darker it gets in the room, the lower the screen brightness is).



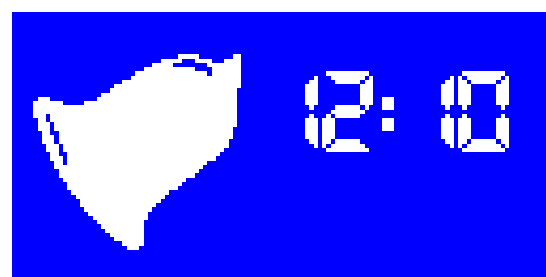
## 7. ALARM CLOCK SETTINGS

This function is used to configure alarm clock. The alarm clock may be activated on selected days of the week (active on selected days) or only once.

- Use arrows UP and DOWN to set the wake up day and time.
- If the alarm clock is to be active on selected days, it is necessary to select these days.



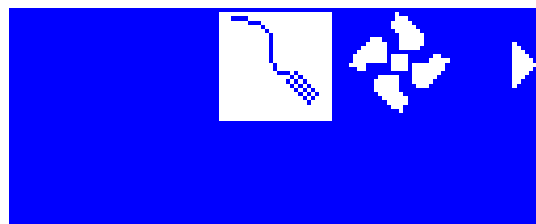
Screen view when the alarm clock goes off.



## 8. CONTROLLER SETTINGS

**Room sensor** - This submenu enables the user to calibrate the room temperature sensor.

Sensor calibration is performed while mounting or after the regulator has been used for a long time, if the room temperature displayed differs from the actual temperature. Calibration range is from  $-10^{\circ}\text{C}$  to  $+10^{\circ}\text{C}$  with the accuracy of  $0,1^{\circ}\text{C}$ .

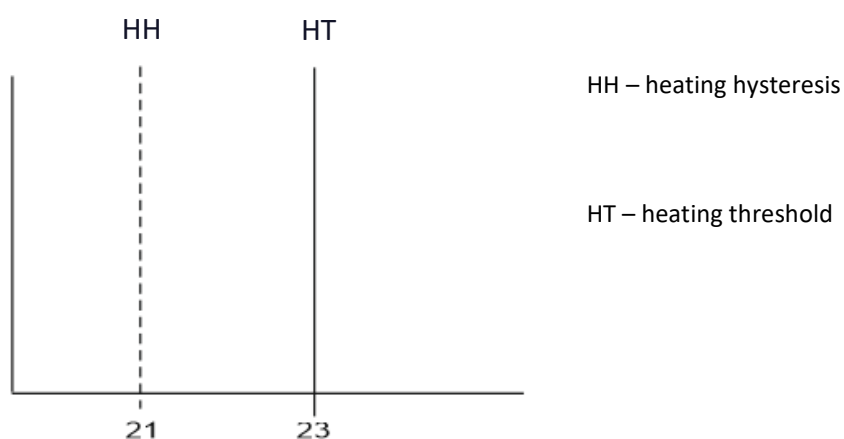


Room sensor

- **Fan speed settings** - This function enables the user to adjust the fan revolutions in manual operation mode (see: Main screen description) for particular speed levels.
- **Additional sensor** – Once the sensor has been activated, the additional sensor icon appears on the main screen. If the icon is flashing, the sensor temperature has not reached the threshold value set in the sensor menu (heating threshold, cooling threshold).

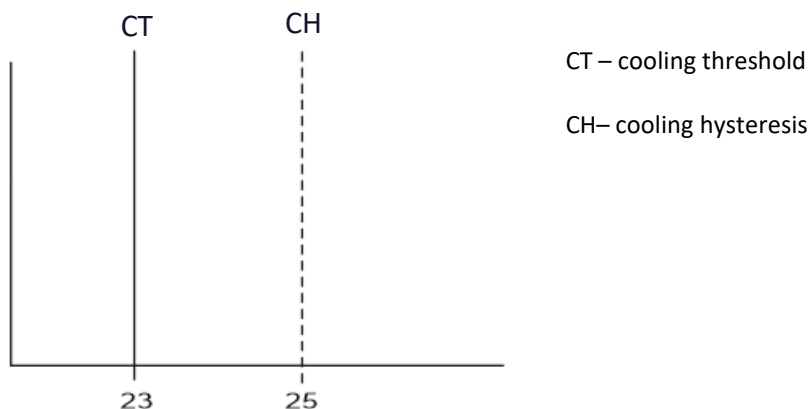
If the sensor temperature reaches the threshold value of the current operation mode (cooling threshold, heating threshold), fan control will be activated.

### Heating:



Heating: When the threshold temperature is  $23^{\circ}\text{C}$ , and the heating hysteresis is set at  $2^{\circ}\text{C}$ , the fan is enabled when the additional sensor temperature exceeds HT value. The fan is disabled when the temperature drops below  $21^{\circ}\text{C}$  (HT-HH).

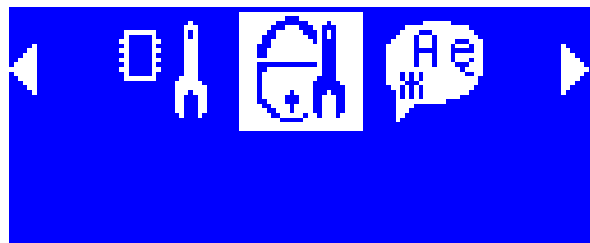
## Cooling:



When the threshold temperature is 23°C, and the cooling hysteresis is set at 2°C, the fan is enabled when the additional sensor temperature drops to CT value. The fan is disabled when the temperature exceeds 25°C (HT+HH).

## 9. PROTECTIONS

When this option is selected, it opens up a panel which enables the user to configure parental lock settings. Once the auto-lock has been activated (by selecting Auto-lock ON), changing the settings is possible only after entering a 4-digit PIN code - when the screen goes blank after a certain period of inactivity, it will be necessary to enter the code in order to view menu options.



Security

In order to set the PIN code necessary to use the regulator in case of lock activation, tap on *Auto-lock PIN code* icon.



### NOTE

The default PIN code is „0000”.

## 10. LANGUAGE SELECTION

When this option is selected, the user may choose the language version of the controller.

## 11. SOFTWARE VERSION

When this option is selected, the display shows the manufacturer’s logo and the software version.

## 12. STANDBY MODE

This function is used to activate standby mode. The controller will not control the fans and valves operation. It is an energy-saving mode.



### 13. SERVICE SETTINGS

Service settings are used to configure advanced controller parameters and this submenu should be accessed by a qualified person. Detailed description of these parameters is included in the following section. Access to this submenu is secured with a 4-digit code.

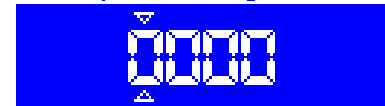
### 14. FACTORY SETTINGS

This function enables the user to restore factory settings in the main menu (excluding the service settings).

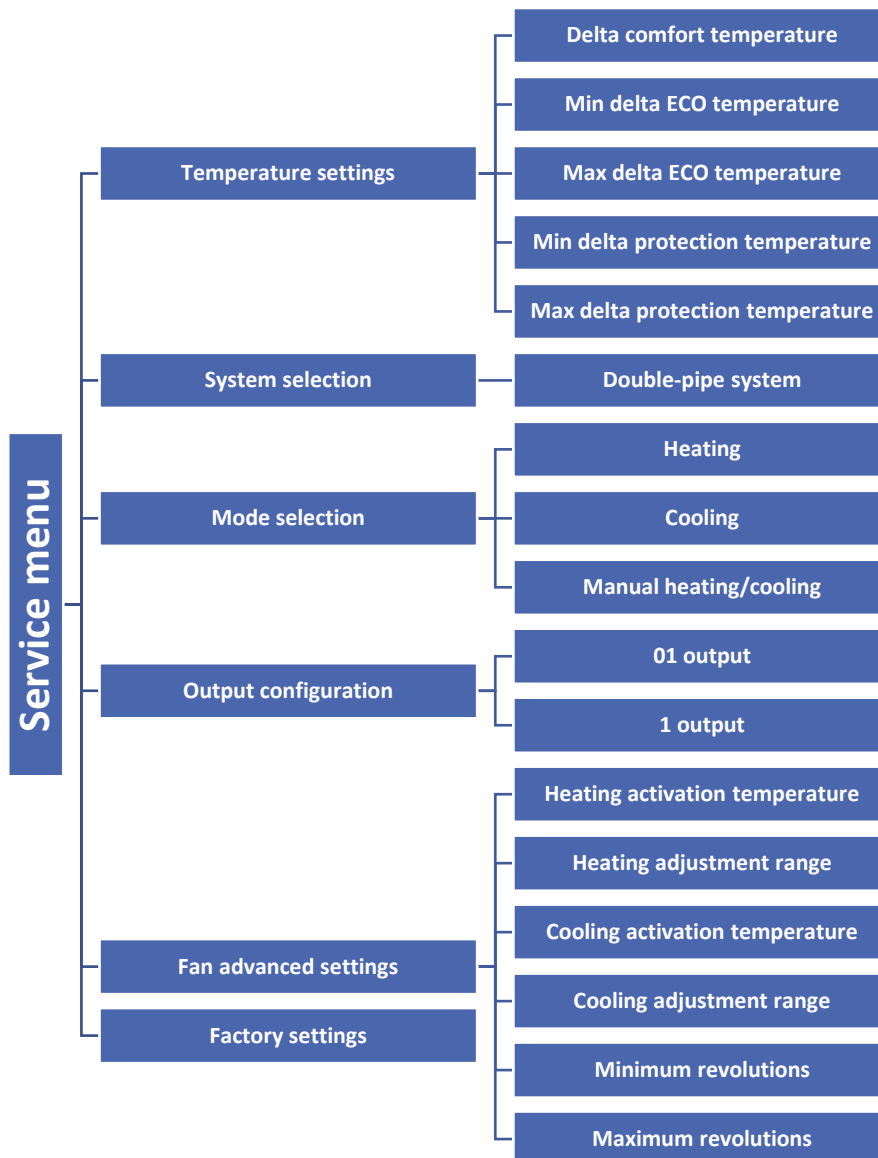
## VIII. SERVICE MENU

Service menu should be accessed by a qualified person. It includes additional functions of the controller such as pre-set temperature delta, output configuration etc.

Input the entry code



### 1. BLOCK DIAGRAM OF FITTER'S MENU



## 2. TEMPERATURE SETTINGS

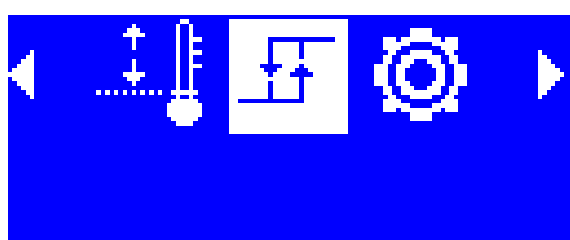
The parameters in this submenu are used to set the temperature delta value for particular operation profiles. Delta indicates the moment when the controller starts smooth control of the valve and the fan - it is described in detail in *Profile selection* section.

Delta parameters may be set for every pre-set temperature:

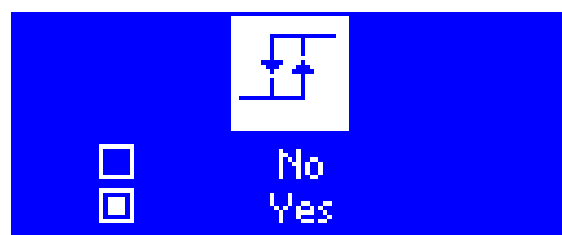
- **Delta comfort temperature** – refers to Comfort profile.
- **Min delta ECO temperature** – refers to ECO profile, the minimum pre-set temperature
- **Max delta ECO temperature** – refers to ECO profile, the maximum pre-set temperature
- **Min delta PROTECTION temperature** – refers to PROTECTION profile, the minimum pre-set temperature
- **Max delta PROTECTION temperature** – refers to PROTECTION profile, the maximum pre-set temperature

## 3. SYSTEM SELECTION

This option enables the user to choose the type of system that the controller is intended for.



Installation select

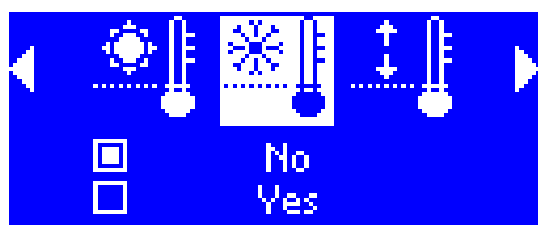


2-pipe

## 4. MODE SELECTION

These submenu enables the user to choose the operation mode of the controller.

- **Heating** – it is not possible to switch to Cooling mode from the main screen view. Select this option if the system is intended for heating.
- **Cooling** – it is not possible to switch to Heating mode from the main screen view. Select this option if the system is intended for cooling.



Cooling

When Heating or Cooling function has been selected, the mode change icon is no longer displayed in the main screen view. An icon indicating current operation mode is displayed in the upper right-hand corner of the screen. It is illustrated by the screenshot below - in this case Cooling is the current operation mode.



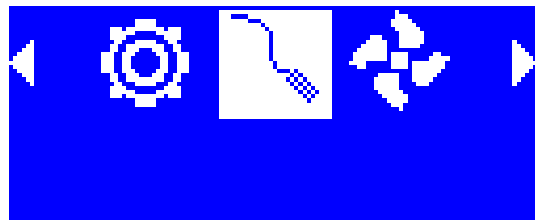
- **Manual heating/cooling** – it is possible to change the operation mode from the main screen level - by pressing EXIT button, highlight heating/cooling icon and change the mode using UP and DOWN arrows.

## 5. OUTPUT CONFIGURATION

These parameters are used to configure output functioning:

- **Output 01**

These settings concern the operation of the valve controlled via ON/OFF output.



Outputs configuration

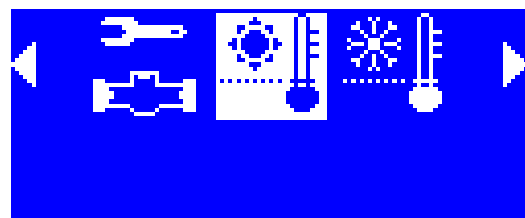
In *Output type* the user defines the function of the valve:

- **Heating** – when this option is selected, the valve controlled via ON/OFF output will operate in heating mode.
- **Cooling** – when this option is selected, the valve controlled via ON/OFF output will operate in cooling mode.
- **OFF** – when this option is selected, valve control is disabled.

Additionally, the user may adjust the following parameters:

- **Heating hysteresis** - This option is used to set the heating hysteresis, which is used in heating mode.

It is the difference between the pre-set temperature and the temperature of returning to operation mode.



Heating hysteresis

For example: the pre-set temperature is 20°C and hysteresis is set at 2°C. Once the pre-set temperature has been reached (20°C), the valve will close. It will start opening when the temperature drops to 18°C.

- **Cooling hysteresis** - This option is used to set the cooling hysteresis, which is used in cooling mode.

It is the difference between the pre-set temperature and the temperature of returning to operation mode.

For example: the pre-set temperature is 22°C and hysteresis is set at 2°C. Once the pre-set temperature has been reached (22°C), the valve will close. It will start opening when the temperature increases to 24°C.

- **Output 1**

These settings concern the valve controlled via 0-10V signal:

- **Heating** – when this option is selected, the valve controlled via 0-10V signal will operate in heating mode.
- **Cooling**– when this option is selected, the valve controlled via 0-10V signal will operate in cooling mode.
- **OFF** – when this option is selected, valve control is disabled.

## 6. FAN ADVANCED SETTINGS

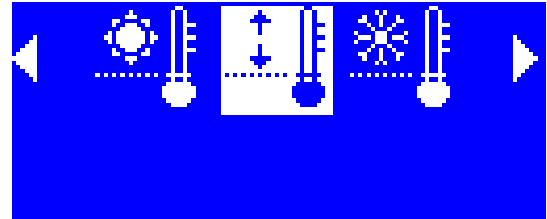
The parameters in this submenu are used to configure fan operation.

- **Heating activation temperature**

This parameter defines how the fan adjustment range will move down in relation to the pre-set temperature in heating mode.

- **Heating adjustment range**

This parameter defines the temperature range width within which the controller will smoothly adjust the fan speed in heating mode.



Heating adjustment range

Example:

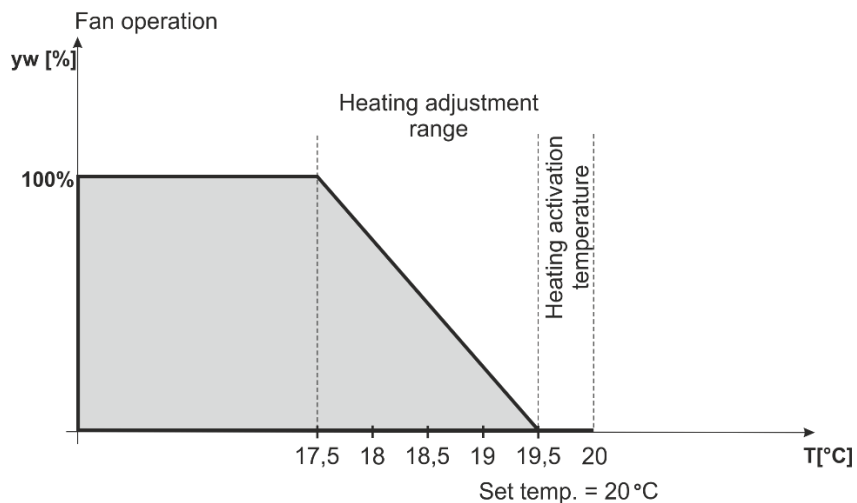
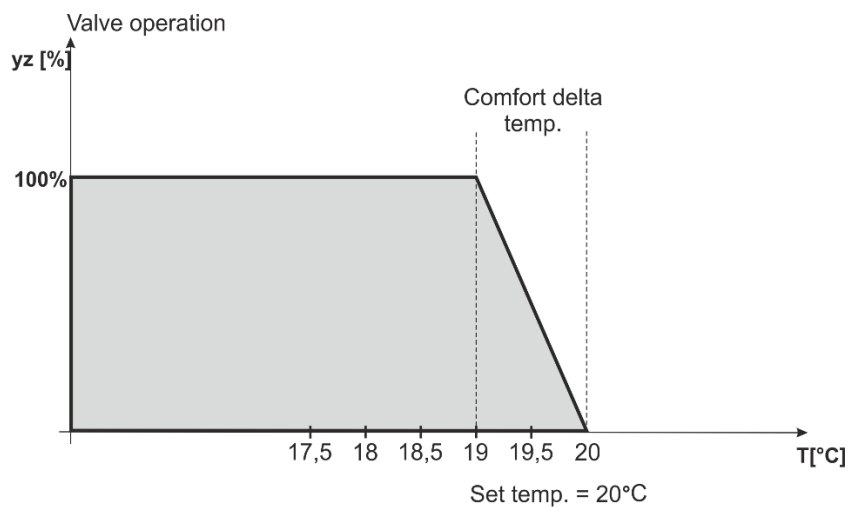
The figure below presents valve and fan operation with the following settings:

Pre-set temperature: 20°C

Delta comfort temperature: 1°C

Heating activation temperature: 0,5°C

Heating adjustment range: 2°C



In the above example, the valve will be open until the temperature of 19°C is reached in the room (SetT - comfort delta). Once this value has been reached, the valve will start closing gradually. When the pre-set room temperature is reached, the valve will close completely.

The fan will operate at full speed until the temperature of 17,5°C is reached in the room (SetT - Heating activation temperature - Heating adjustment range). Once this value has been reached, the fan will start slowing down gradually until it stops when the temperature of 19,5°C is reached (SetT - Heating activation temperature).

- **Cooling activation temperature**

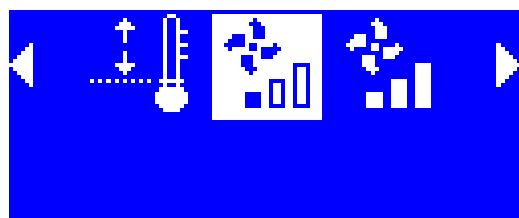
This parameter defines how the fan adjustment range will move up in relation to the pre-set temperature in cooling mode.

- **Cooling adjustment range**

This parameter defines the temperature range width within which the controller will smoothly adjust the fan speed in cooling mode.

- **Minimum revolutions**

This parameter defines the minimum fan speed.



Min. revolutions

How to calibrate the minimum fan speed:

- Select *Minimum revolutions* option in the controller menu.
- Increase the set value gradually until the fan starts moving.
- Confirm by pressing MENU button.

- **Maximum revolutions**

This parameter defines the maximum fan speed.

How to calibrate the maximum fan speed:

Select *Maximum revolutions* option in the controller menu. Increase the set value gradually until the fan reaches its maximum speed. When the fan speed does not increase any further despite increasing the set value, confirm by pressing MENU button.

## 7. FACTORY SETTINGS

This function enables the user to restore factory settings in the service menu (excluding the main settings).

## IX. ALARMS

VER-24S room temperature regulator signalises all alarms which occur in the controller. When an alarm occurs, the room regulator will send a sound signal and an appropriate message will appear on the screen. In the event of an alarm, all outputs are disabled. In the event of internal sensor damage, the following message will appear: *'Room temperature sensor damaged'*.

## X. TECHNICAL DATA

Specification	Value
Range of room temperature setting	5°C - 40°C
Supply voltage	24V
Power consumption	1,3W
Accuracy of temperature measurement	+/- 0,1°C
Operating temperature	5°C - 50°C
Maximum number of fans	12 pcs.

# EU Declaration of conformity

Hereby, we declare under our sole responsibility that **VER-24s** manufactured by TECH, headquartered in Wieprz Biała Droga 31, 34-122 Wieprz, is compliant with:

- Directive 2014/35/EU of the European Parliament and of the Council of February 26, 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 Journal of Laws L 96, of 29.03.2014, p. 357),
- Directive 2014/30/EU of the European Parliament and of the Council of February 26, 2014 on the harmonisation of the laws of Member States relating to electromagnetic compatibility (EU Journal of Laws 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,
- the regulation by the Ministry of Economy of May 8, 2013 concerning the essential requirements as regards the restriction of the use of certain hazardous substances in electrical and electronic equipment, implementing provisions of RoHS directive 2011/65/EU.

For compliance assessment, harmonized standards were used: **PN-EN 60730-2-9:2011, PN-EN 60730-1:2016-10**

  
**PAWEŁ JURA**

  
**JANUSZ MASTER**

WŁAŚCICIELE TECH SPÓŁKA Z OGRANICZONĄ ODPOWIEDZIALNOŚCIĄ SP. K.

Wieprz, 04.10.2017



VERANO

Ul. Vetterów 7a

20-277 Lublin

POLAND

Tel. +48 8144 08 330

Tel. +48 515 166 103

Fax. +48 8144 08 333

[www.v-k.pl](http://www.v-k.pl)

Regulator\_VER-24S

This instruction manual is valid from 12.07.2017

Changes may have been introduced to the products mentioned herein since this instruction manual was completed on 04.10.2017. The manufacturer reserves the right to modify the design or change the colour of the product. The illustrations may include additional equipment. Colours may differ slightly from those shown in the manual, owing to the limitations of the printing process. For up-to-date information, contact sales representatives of Verano-konwektor.