TECH
CONTROLLERS

USER MANUAL

EU-16s WiFi
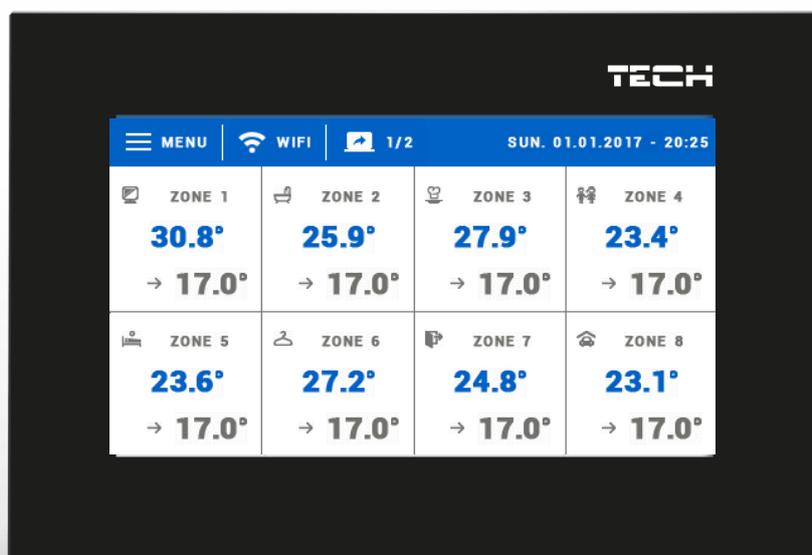
www.tech-controllers.com

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KN.11.08.2022

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.
- The regulator should not be operated by children.

NOTE

- 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 11.08.2022. 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.

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. DEVICE DESCRIPTION

It is a wireless room regulator for controlling electric actuators STT-868 on the basis of the pre-set temperature value. Its main task is to maintain stable temperature in the rooms by controlling the actuators in 16 different heating zones.

Controller functions:

- Controlling up to 16 different zones through:
  - a built-in temperature sensor
  - 6 actuators per zone
  - the possibility of connecting 16 additional wireless sensors C-8r, C-8r mini, R-8b, R-8z
- Possibility of connecting a wireless signal repeater RP-3
- Possibility of connecting 6 executive modules MW-1
- Possibility of updating the software via USB port
- Each zone may be assigned its individual operation mode (constant temperature, time limit or 6 different operation schedules).

Controller equipment:

- Front panel made of 2 mm glass
- Wireless communication
- Large, colour touch screen
- Built-in temperature sensor
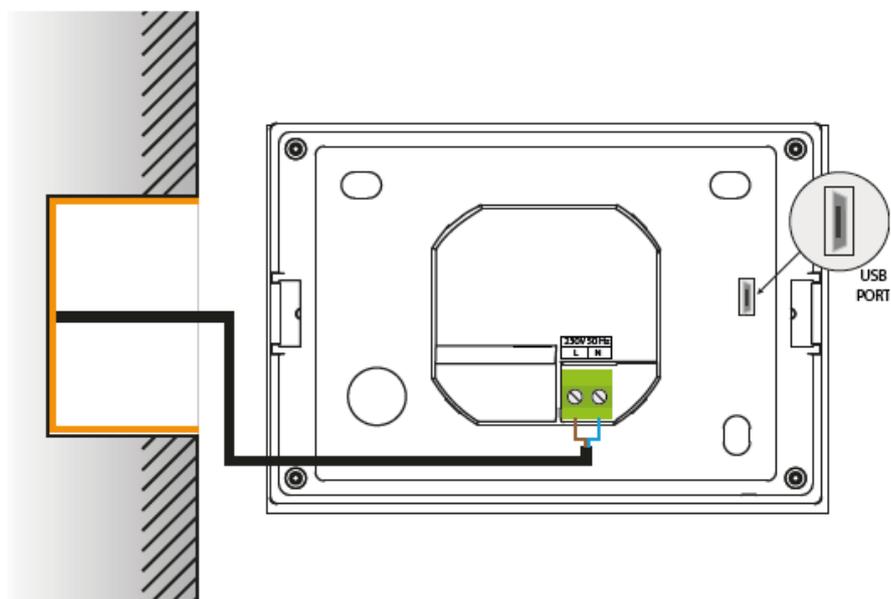- Built-in WiFi module
- Flush-mountable

III. INSTALLATION

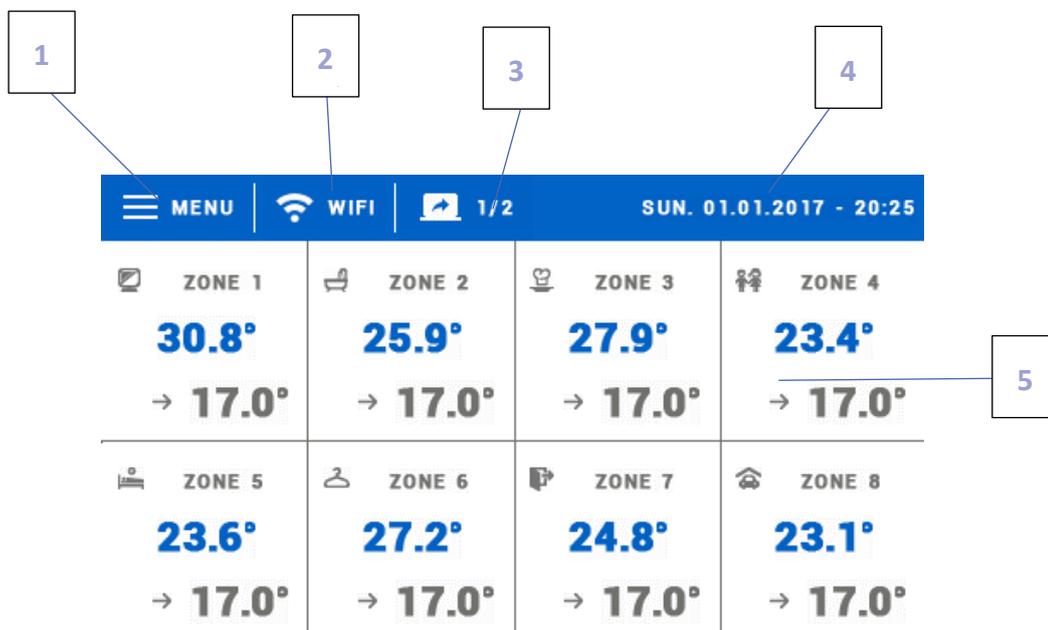The controller should be installed by a qualified person.

⚠ **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.

IV. MAIN SCREEN DESCRIPTION

Navigate through the menu using the touch screen.

1. Enter controller menu
2. WiFi signal strength– tap on this icon to enter a pop-up menu with WiFi wireless connection settings.
3. Tab change (view of the zones 9-16)
4. External temperature or current date and time (depending on whether the external sensor is switched on)
5. Information about the zones:
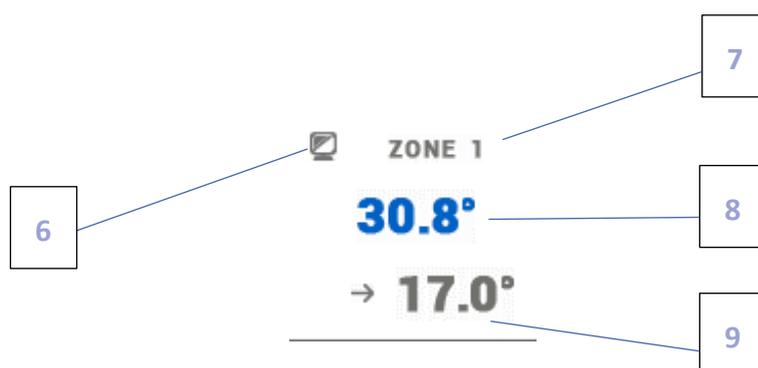
6. Zone icon (may be edited in the zone menu)
7. Zone name (may be edited in the zone menu)
8. Current zone temperature
9. Pre-set zone temperature

V. HOW TO MANAGE ZONES

EU-16s WiFi is a master room regulator – it enables the user to edit zone parameters regardless of the type of room regulator or room sensor used there.

In order to enter zone settings, tap on the part of the screen presenting zone status details. A pop-up menu will appear enabling the user to edit zone settings:
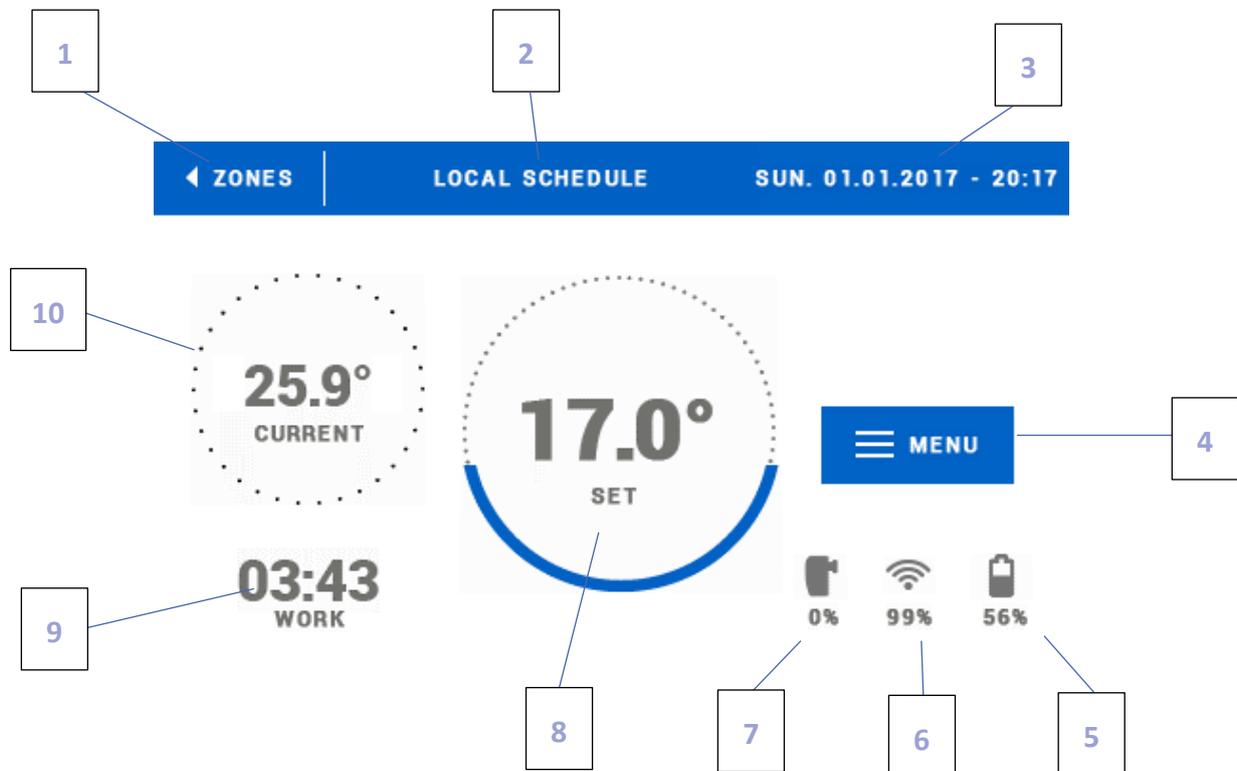
1. Icon of returning to the main menu

2. Regulator operation mode - pre-set temperature from the schedules or set manually (manual mode). Tap on the screen here to open up the schedule selection menu.

3. Current time and date

4. Enter zone menu - tap on this icon to see further menu options.

5. Battery level

6. Signal strength of the wireless sensor or room regulator

7. Percent of valve opening

8. Pre-set zone temperature - tap on the screen here to edit this value. Once the value has been changed manually, manual mode will apply in the zone.

9. Time left before the next change of the pre-set temperature or name of current schedule

10. Current zone temperature

1. SCHEDULE SETTINGS

EU-16s WiFi room regulator offers two types of schedules – local and global.

Global schedules are available in all zones – in each zone only one such schedule may be activated. If the global schedule is edited in one zone, the new settings apply automatically in all remaining zones where a given global schedule is active.

Local schedule is assigned only to the controlled zone.

After entering the schedule editing screen, the schedule may be adjusted to the user's needs. The settings may be configured for two separate groups of days – the first group marked with blue colour, the second one with grey colour. It is possible to assign up to 3 time periods with separate temperature values to each group. Outside these periods of time, a general pre-set temperature will apply (its value may also be edited by the user).
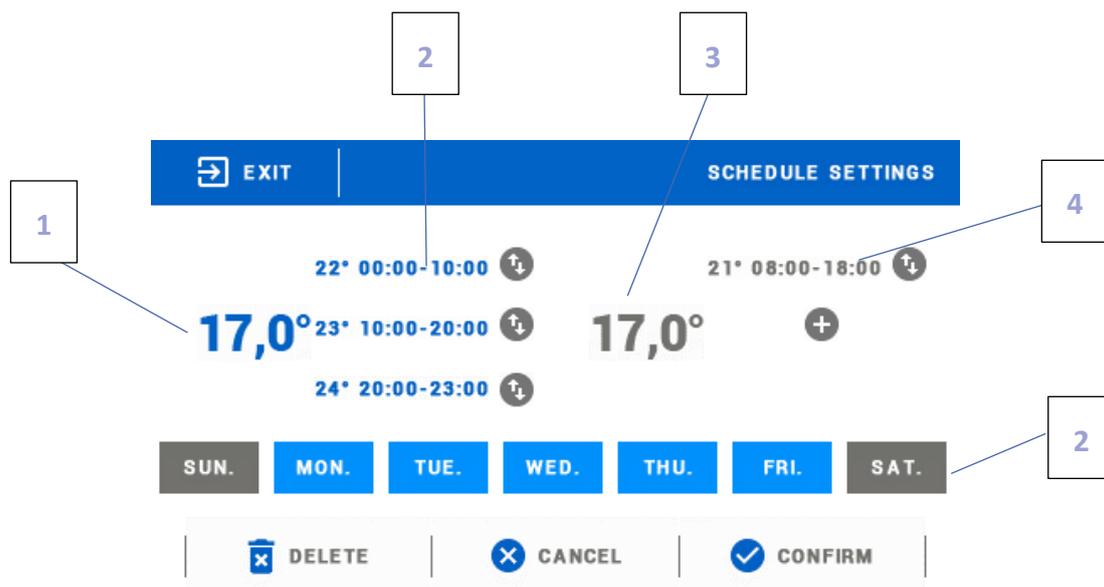
1. General pre-set temperature for the first group of days (blue colour – in the example above the colour is used to mark working days Monday-Friday). The temperature applies outside the time periods defined by the user.

2. Time periods for the first group of days – the pre-set temperature and the time limits. Tapping on a given period opens up an editing screen.

3. General pre-set temperature for the second group of days (grey colour – in the example above the colour is used to mark Saturday and Sunday).

4. Time periods for the second group of days.

5. Days of the week – blue days are assigned to the first group whereas grey days are assigned to the second one. In order to change the group, tap on a selected day.
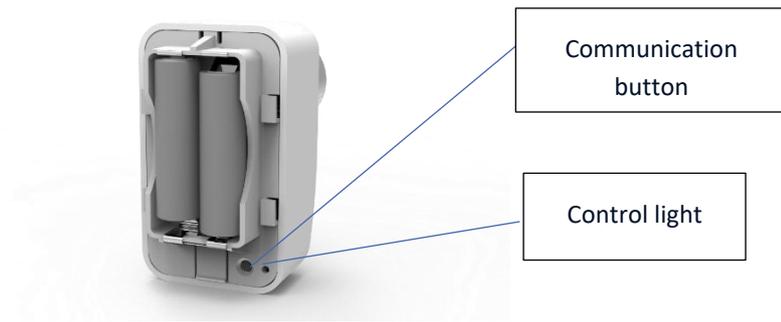
If the time periods overlap, they are marked with red colour. Such settings cannot be confirmed.
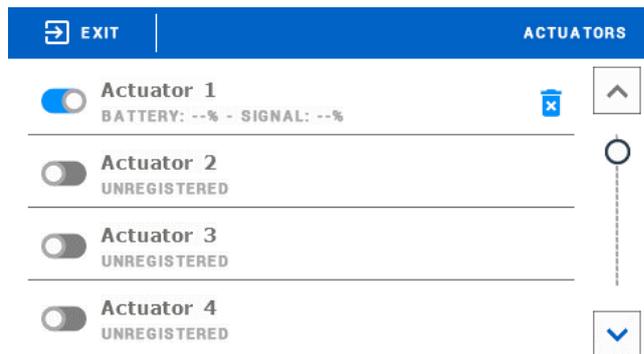
2. ACTUATORS

A) REGISTRATION

In order to register the actuator, select <Registration> in Zones -> Actuators and press quickly the communication button (found under the actuator cover). Release the button and watch the control light:

- control light flashes twice - proper communication established

- control light lights up continuously - no communication with the main controller

Communication button

Control light

B) INFORMATION

Select this option to view all the actuators.

	EXIT	ACTUATORS

Actuator 1
BATTERY: --% - SIGNAL: --%

Actuator 2
UNREGISTERED

Actuator 3
UNREGISTERED

C) ACTUATOR REMOVAL

This option enables the user to remove the actuators in a given zone.

Actuator 4
UNREGISTERED

D) SETTINGS

In this submenu the user may configure the operation of all thermostatic valves and set the maximum and minimum valve opening - these values will never be exceeded.

SIGMA function allows for smooth control of the thermostatic valve. The user may also define the minimum and the maximum level of valve closing.

Moreover, the user adjusts Range parameter which specifies the room temperature at which the valve starts opening and closing.
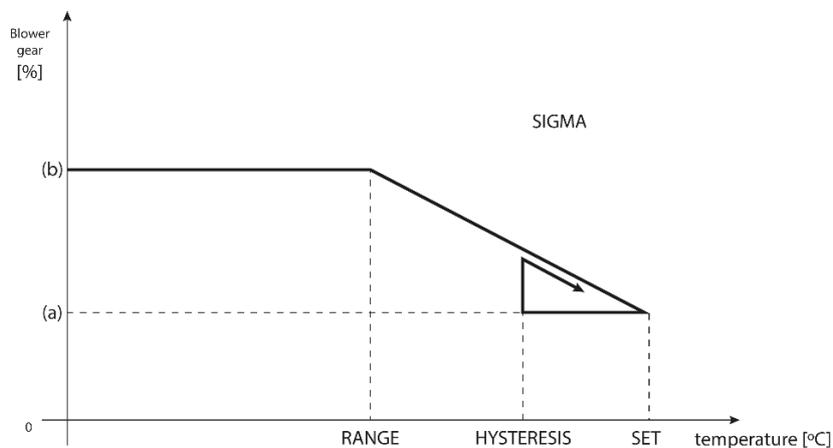
(a) - min. opening
(b) - Actuator opening
ZAD - set temperature

Example:

Pre-set zone temperature: 23˚C
Minimum opening: 30%
Maximum opening: 90%
Range: 5˚C
Hysteresis: 2˚C

In the above example, the thermostatic valve starts closing at the temperature of 18˚C (pre-set value minus Range: 23-5). The minimum opening is reached when the zone temperature reaches the pre-set value. Then, the temperature starts falling. At the temperature of 21˚C (pre-set value minus hysteresis: 23-2) the valve starts opening. The maximum opening is reached at the temperature of 18˚C.

3.   HYSTERESIS

This function is used to define tolerance of the pre-set temperature in order to prevent undesired oscillation in case of small temperature fluctuation (within the range $0,1 \div 10^o C$) with the accuracy of 0,1˚C.

Example: if the pre-set temperature is $23^o C$ and the hysteresis is $0,5^o C$, the zone temperature is considered too low when it drops to $22,5^o C$.

4.   WINDOW SENSORS

4.1.   ON

Selecting the icon activates the window sensor function (registration is necessary).

4.2.   DELAY TIME

This function is used to set the delay time. When the pre-set delay time is over, the main controller sends the information to the actuators forcing them to close. The time setting rang eis 0 – 30 minutes.

Example: Delay time is set at 10 minutes. When the window is opened, the sensor sends the information to the main controller. If the sensor sends another information that the window is open after 10 minutes, the main controller will force the actuators to close.

⚠ **NOTE**
If the delay time is set at 0 minutes, the message forcing the actuators to close will be sent immediately.

4.3.   INFORMATION

This option is available only when the sensor is registred. It enables the user to view all the sensors and check their range and battery level.

4.4.   REGISTRATION

In order to register the sensor , select „Registration" and press quickly the communication button on the window sensor. Release the button and watch the control light:

- control light flashes twice – proper communication established

- control light lights up continuosly – no communication with the main controller.

4.5. SENSOR REMOVAL

This function is used to remove the sensors in a given zone.

5. CALIBRATION

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

6. ZONE NAME

Each zone may be assigned a name e.g. bedroom, kitchen etc. (up to 12 characters). The name is displayed in the main screen view.
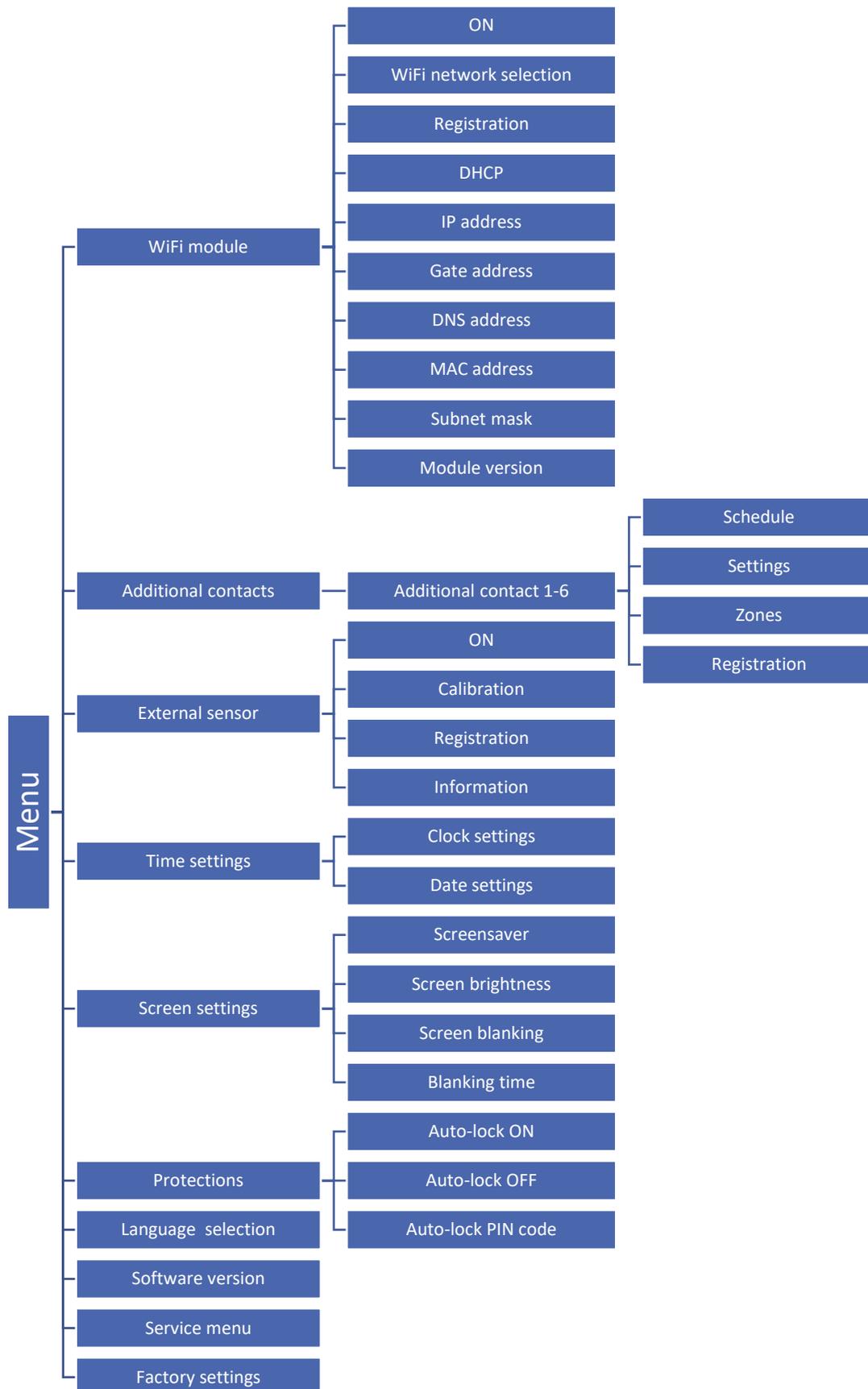
7. ZONE ICON

Each zone may be assigned an icon illustrating its use. The icon will be displayed in the main screen view and at www.emodul.eu.

8. SENSOR TYPE

In this submenu the user may choose the sensor, which will be active in a given zone (it applies to Zone 1 only).

VI. CONTROLLER MENU

1.   BLOCK DIAGRAM OF MAIN MENU

Menu

- **WiFi module**
  - ON
  - WiFi network selection
  - Registration
  - DHCP
  - IP address
  - Gate address
  - DNS address
  - MAC address
  - Subnet mask
  - Module version

- **Additional contacts**
  - Additional contact 1-6
    - Schedule
    - Settings
    - Zones
    - Registration

- **External sensor**
  - ON
  - Calibration
  - Registration
  - Information

- **Time settings**
  - Clock settings
  - Date settings

- **Screen settings**
  - Screensaver
  - Screen brightness
  - Screen blanking
  - Blanking time

- **Protections**
  - Auto-lock ON
  - Auto-lock OFF
  - Auto-lock PIN code

- **Language selection**

- **Software version**

- **Service menu**

- **Factory settings**

2. WIFI MODULE

Internet module is a device enabling the user remote control of the heating system. The user controls the status of all heating system devices on a computer screen, a tablet or a mobile phone.

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.

Controlling the system via Internet website is described in detail in section VII.

Required network settings

For the Internet module to work properly, it is necessary to connect the module to the network with a DHCP server and an open port 2000.

After connecting the Internet module to the network, go to the module settings menu (in the master controller).

If the network does not have a DHCP server, the Internet module should be configured by its administrator by entering appropriate parameters (DHCP, IP address, Gateway address, Subnet mask, DNS address).

1. Go to the **module WiFi** settings menu.
2. Select "*ON*".
3. Check if the "*DHCP*" option is selected.
4. Go to "WIFI network selection"
5. Select your WIFI network and enter the password.
1. Wait for a while (approx. 1 min) and check if an IP address has been assigned. Go to the "*IP address*" tab and check if the value is different from 0.0.0.0 / -.-.-.-.
   a) If the value is still 0.0.0.0 / -.-.-.- , check the network settings or the Ethernet connection between the Internet module and the device.
2. After the IP address has been assigned, start the module registration in order to generate a code which must be assigned to the account in the application.

3. ADDITIONAL CONTACTS

A) SCHEDULE

---
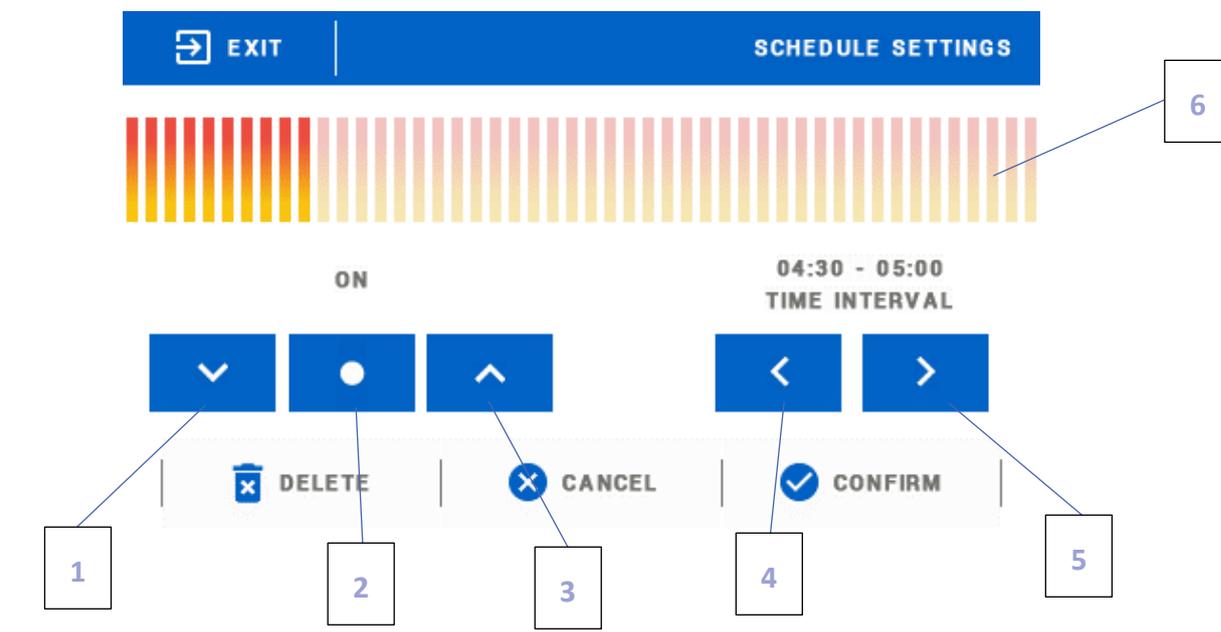
1. OFF

2. Copy the previous step

3. ON

4. Change time period backwards

5. Change time period forwards

6. Time period bar (24 hours)

Example:

In order to program the schedule for 09:00 - 13:00, the user should:

1. Select <OFF>

2. Use and set the time period: 09:00 - 09:30

3. Select <ON>

4. Use to copy the setting (the colour will change to light blue

5. Use to set the time period: 12:30 - 13:00

6. Press <Confirm>

B)   SETTINGS

In this submenu the user can:

- Switch on/off the additional contact

- Choose the operation mode:

   - schedule – the device connected to the additional contact operates according to the schedule.

   - zones – the device connected to the additional contact operates according to the settings of a given zone

- Select the type of device

   - NO – the contact closes when the zone temperature is too low and remains open when the pre-set temperature has been reached.

   - NC – the contact opens when the zone temperature is too low and remains closed when the pre-set temperature has been reache

C)   ZONES

In this submenu the user may check if a given zone is ON or OFF.

D)   REGISTRATION

In order to register the device, press the registration icon in 16 GE WiFi controller and the registration button on the device to be registered in the controller.

4. EXTERNAL SENSOR

It is possible to connect an external temperature sensor, which enables the user to monitor external temperature on the main controller screen and using emodul.eu app. Once the external sensor has been installed, in needs to be registered in 16 GE WiFi controller.

In order to register, select Registration icon (in EU-16s WiFi Main menu / External sensor / Registration) and press the communication button on the external sensor (press quickly once). After the registration the sensor will be enabled automatically. It may be disabled at any time using OFF option.

> **NOTE**
> Switching the sensor off in the controller menu only interrupts the communication (the external temperature is no longer displayed on the controller screen). It does not disable the external sensor itself – it remains active until the battery is flat.

5. TIME SETTINGS

A) CLOCK SETTINGS

This option is used to set the time displayed in the main screen view.

In order to set the time, use the icons: ▲ and ▼ next select OK to confirm the settings.

B) DATE SETTINGS

This option is used to set the date displayed in the main screen view.

In order to set the date, use the icons: ▲ and ▼ next select OK to confirm the settings.

6. SCREEN SETTINGS

Tapping on Screen settings icon in the main menu opens up a panel enabling the user to adjust the screen settings to individual needs.

The user may activate a screensaver which will appear after a pre-defined time of inactivity. In order to return to the main screen view, tap on the screen. The following screensaver settings may be configured by the user.
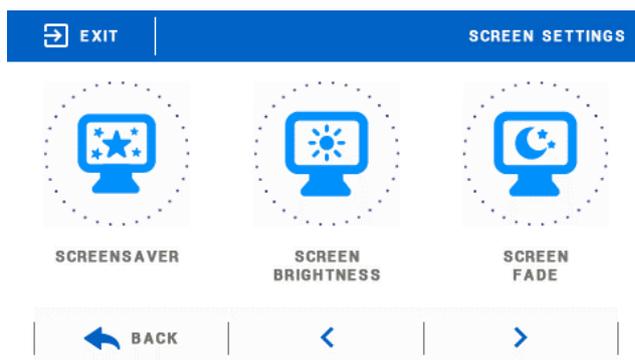
• **Screensaver selection** - After tapping on this icon, the user may deactivate the screen saver (No screensaver) or set the screensaver in the form of:

- Slide show – (this option may be activated if the photos have been uploaded first). The screen displays the photos at a user-defined frequency.

- Clock – the screen displays the clock.

- Blank – after the pre-defined time of inactivity the screen goes blank.

• **Photo upload** - Before importing the photos to the controller memory they must be processed using ImageClip (the software may be downloaded from www.techsterowniki.pl).

After the software has been installed and started, load the photos. Select the area of the photo which will be displayed on the screen. The photo may be rotated. After one photo has been edited, load the next one. When all the photos are ready, save them in the main folder of the memory stick. Next, insert the Flash drive into the USB port and activate Photo upload function in the controller menu.

It is possible to upload up to 8 photos. When uploading new photos, the old ones are automatically removed from the controller memory.

• **Slide show frequency** - This option is used to set the frequency at which the photos are displayed on the screen if the Slide show is activated.

• **Idle time** - This function is used to define the time after which the screensaver is activated.
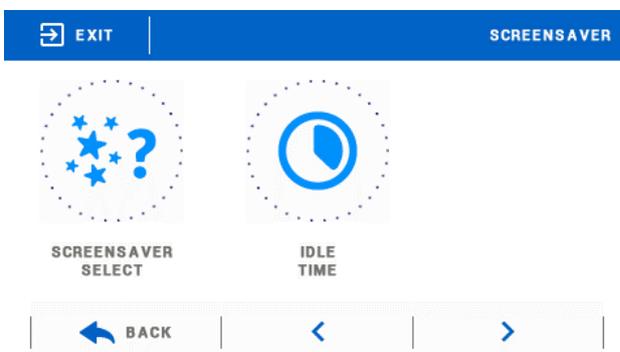
7.   PROTECTIONS

Tapping on Protections icon in the main menu opens up a screen enabling the user to configure the parental lock function. When this function is activated by selecting Auto-lock on, the user may set the PIN code necessary to access to the controller menu.
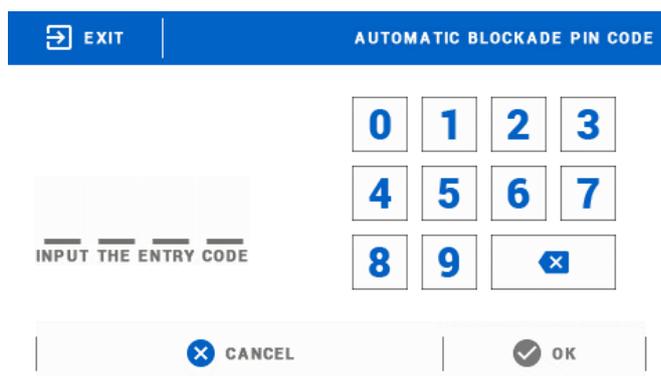
⚠ **NOTE**

Default PIN cod eis „0000".

8.   LANGUAGE

This function is used to select the language version of the controller menu.

9.   ABOUT THE SOFTWARE

This function is used to view the software version.

10.   SERVICE MENU

Functions available in the service menu should be configured only by qualified fitters and access to this menu is secured with a code.

11.   FACTORY SETTINGS

This function is used to restore factory settings of the parameters in the main menu (excluding the service menu).

VII. HOW TO CONTROL THE HEATINGSYSTEM VIA WWW.EMODUL.EU

The website offers multiple tools for controlling your heating system. In order to take full advantage of the technology, create your own account:
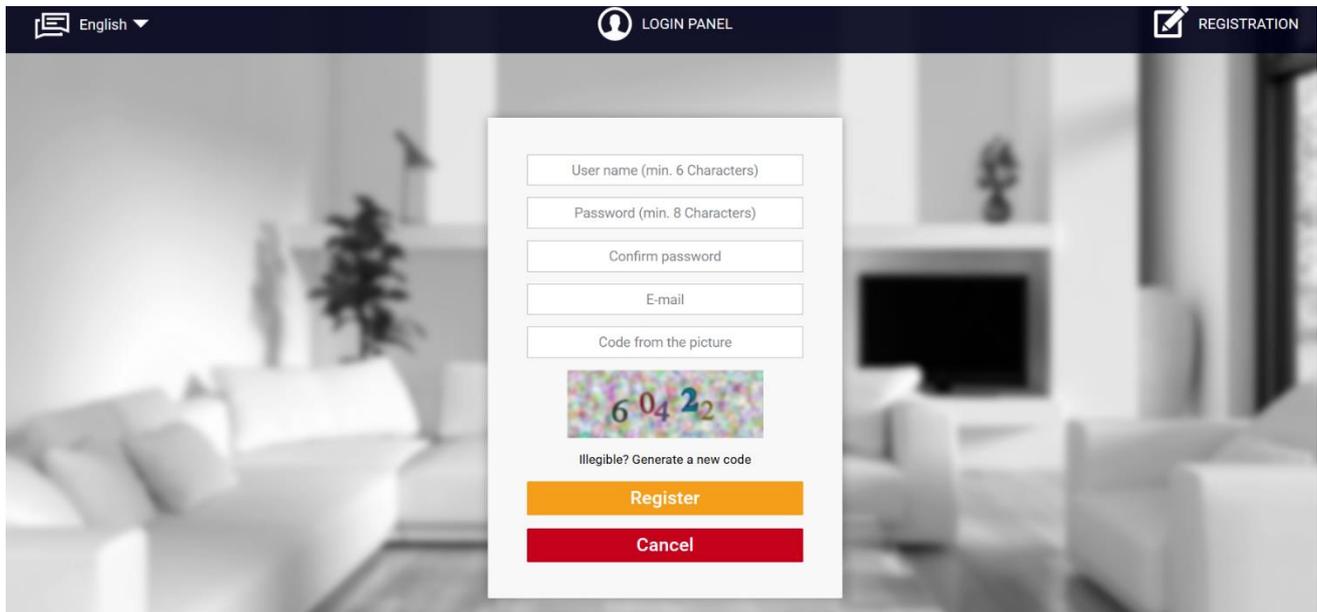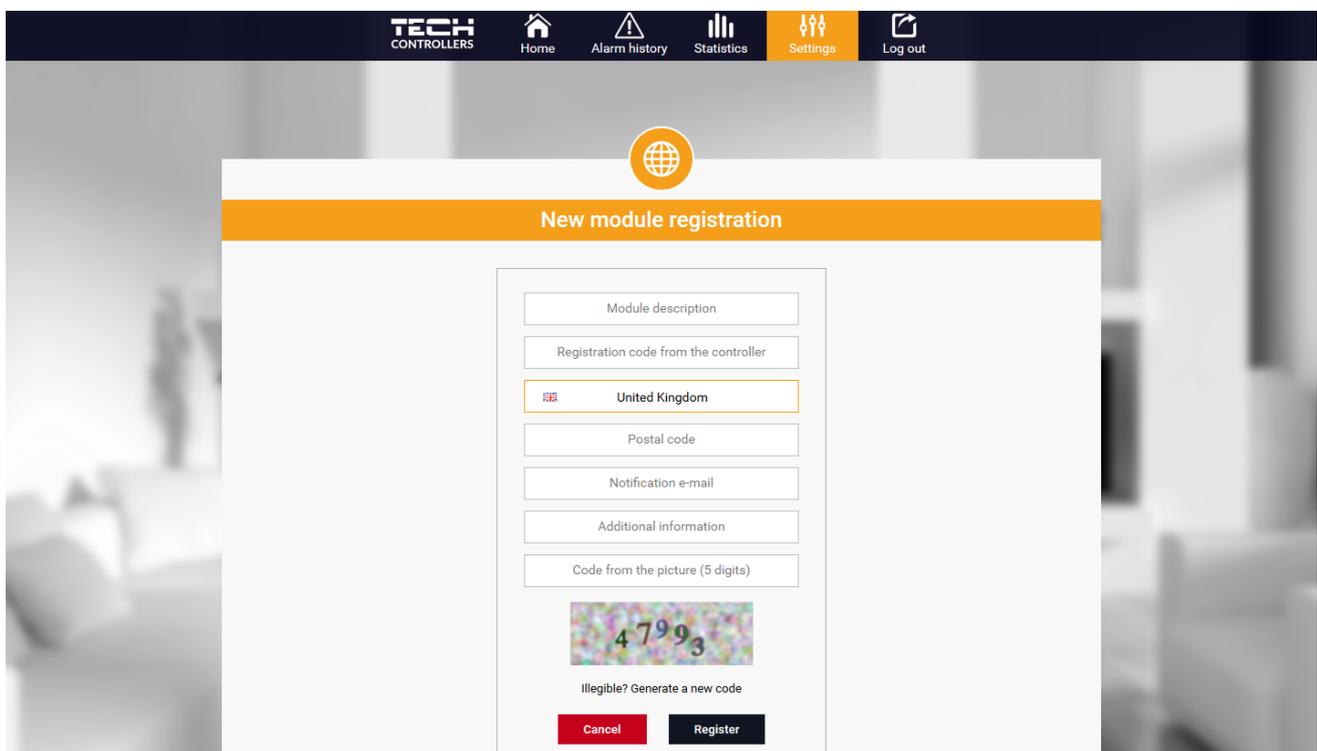

Creating a new account at emodul.eu

Once logged in, go to Settings tab and select Register module. Next, enter the code generated by the controller (to generate the code, select Registration in WiFi 8S menu). The module may be assigned a name (in the are labelled Module description):

New module registration screen

1. HOME TAB

Home tab displays the main screen with tiles illustrating the current status of particular heating system devices. Tap on the tile to adjust the operation parameters:
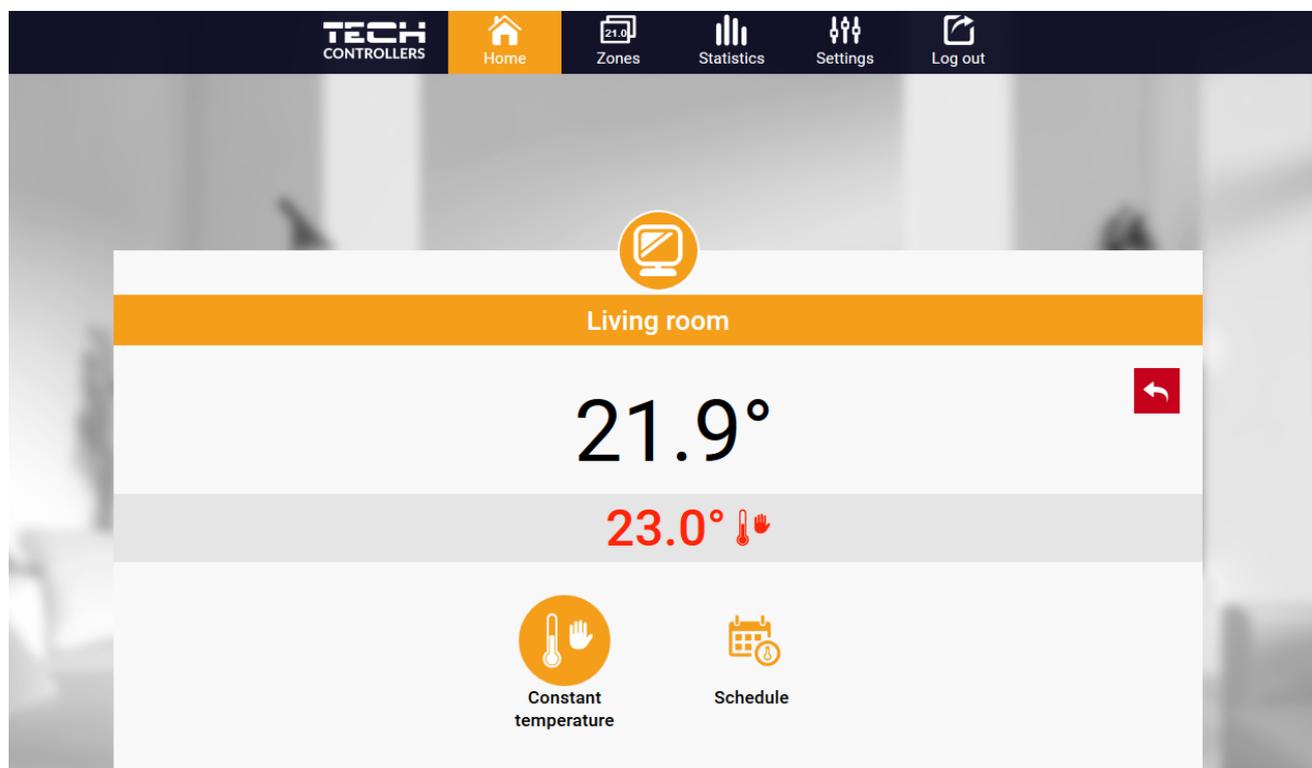

Screenshot presenting an example tab with main menu parameters

⚠️ **NOTE**

„No communication" message means that the communication with the temperature sensor in a given zone has been interrupted. The most common cause is the flat battery which needs replacing.

Tap on the tile corresponding to a given zone to edit its pre-set temperature:


Screenshot presenting an example setting change

The upper value is the current zone temperature whereas the bottom value is the pre-set temperature.

The pre-set zone temperature depends by default on the weekly schedule settings. Constant temperature mode enables the user to set a separate pre-set temperature value which will apply in the zone regardless of the time.

By selecting Constant temperature icon, the user may define the pre-set temperature which will apply for a pre-defined period of time. Once the time is up, the temperature will be set according to the previous schedule (schedule or constant temperature without time limit).
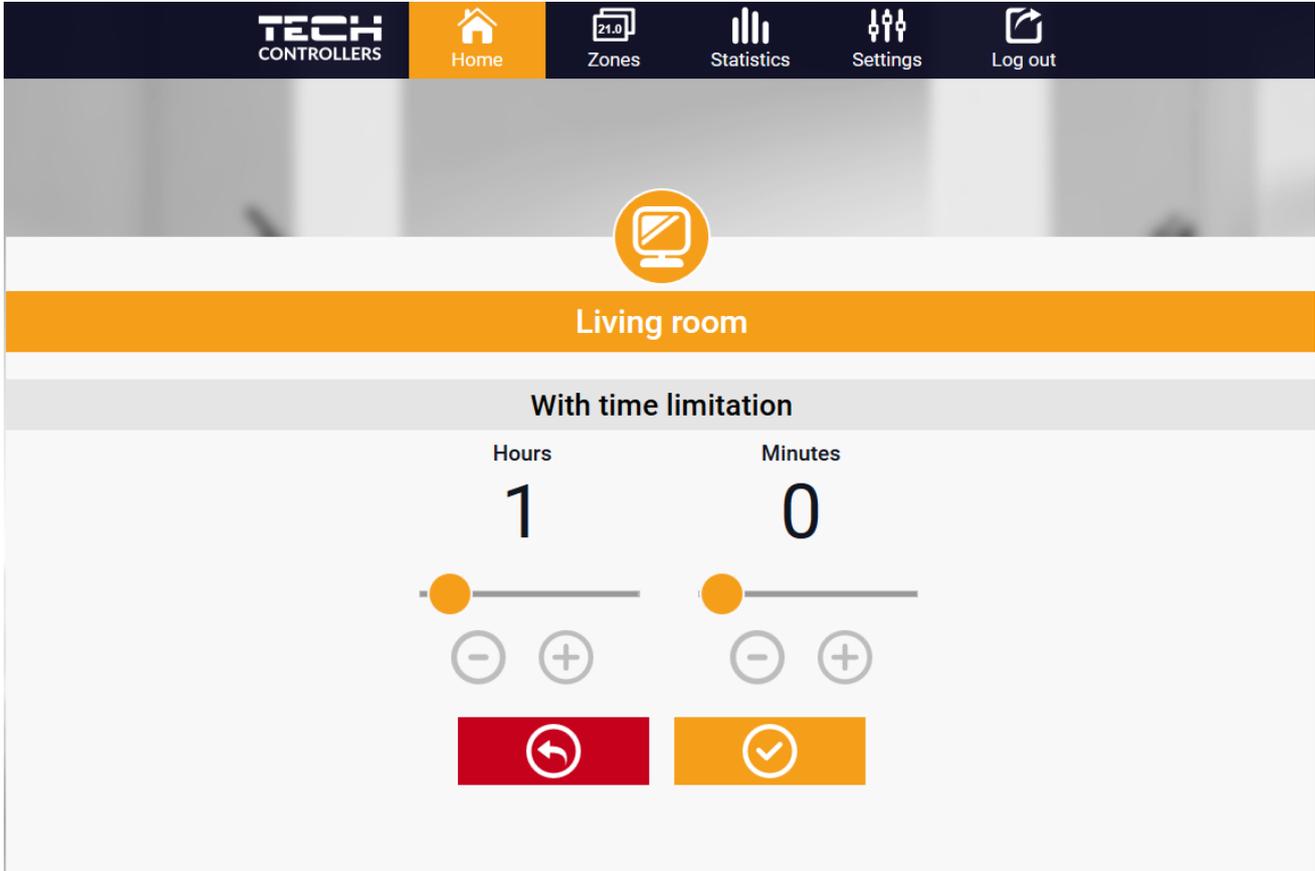
Temperature with time limit - settings

Tap on Schedule icon to open up the schedule selection screen:
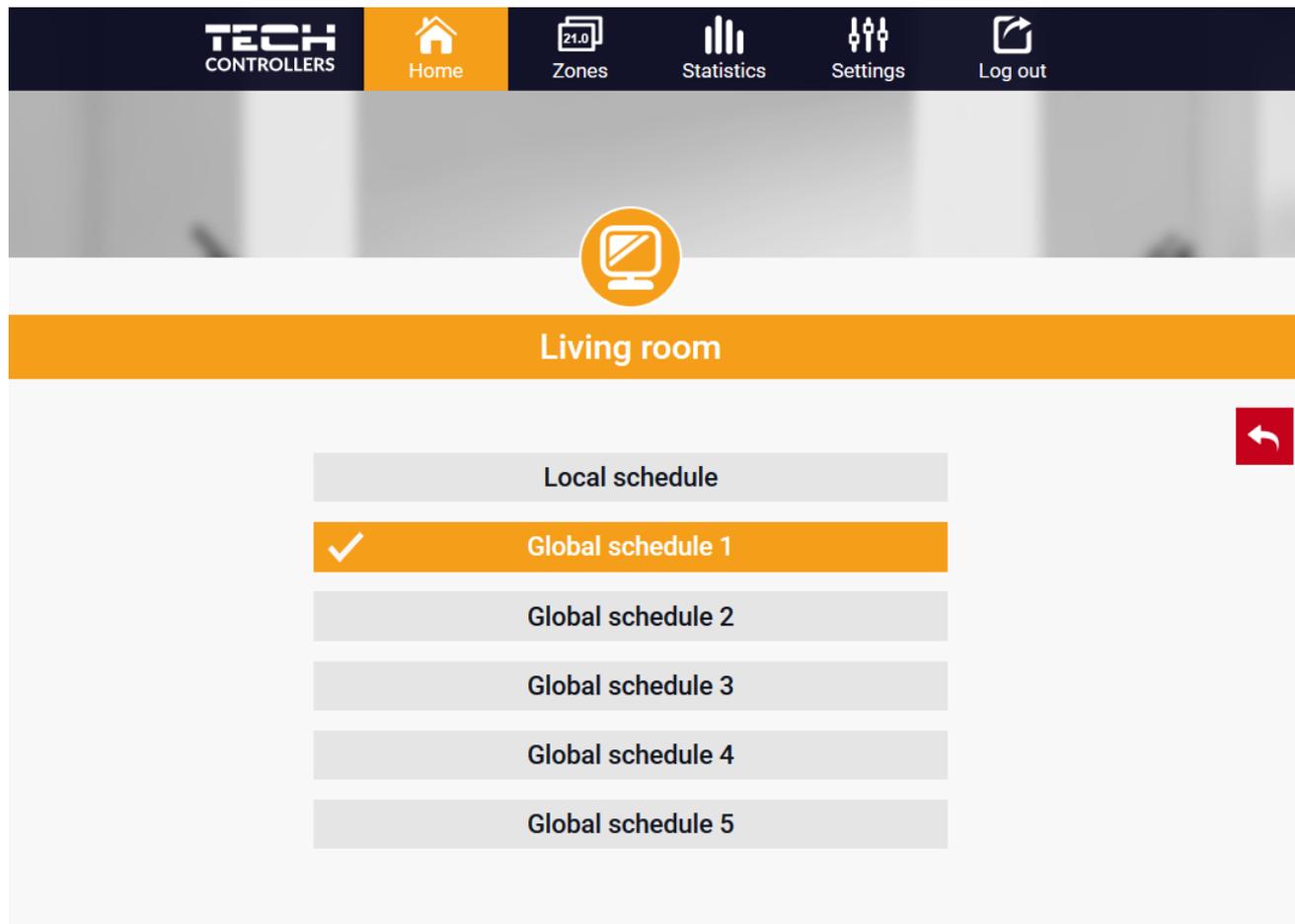
Screenshot presenting weekly schedule choice

Two types of weekly schedules are available in EU-16s WiFi controller:

1. Local schedule

It is a weekly schedule assigned to a particular zone. Once the controller detects the room sensor, the schedule is assigned automatically to the zone. It may be edited by the user.

2. Global schedule (Schedule 1-5)

Global schedule may be assigned to any number of zones. The changes introduced in the global schedule apply to all zones where the global schedule has been activated.

After selecting the schedule select OK and move on to edit the weekly schedule settings:
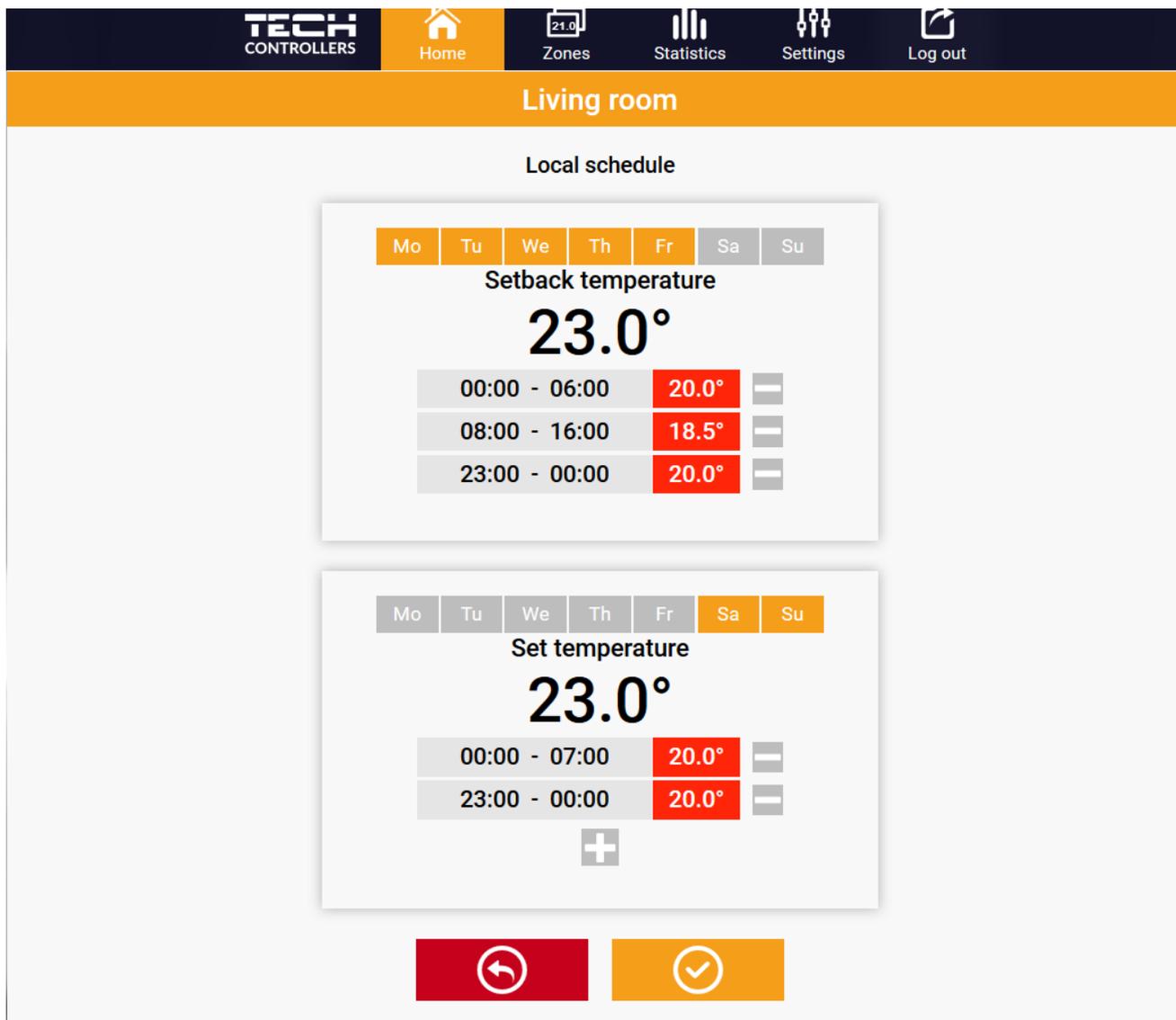
Editing enables the user to define two programs and select days when the programs will be active (e.g. from Monday to Friday and the weekend). The starting point for each program is the pre-set temperature value. For each program the user may define up to 3 time periods when the temperature will be different from the pre-set value. The time periods must not overlap.

Outside the time periods the pre-set temperature will apply. The accuracy of defining the time periods is 15 minutes.

2.   ZONES TAB

The user may customize the home page view by changing zone names and corresponding icons. In order to do it, go to Zones tab:
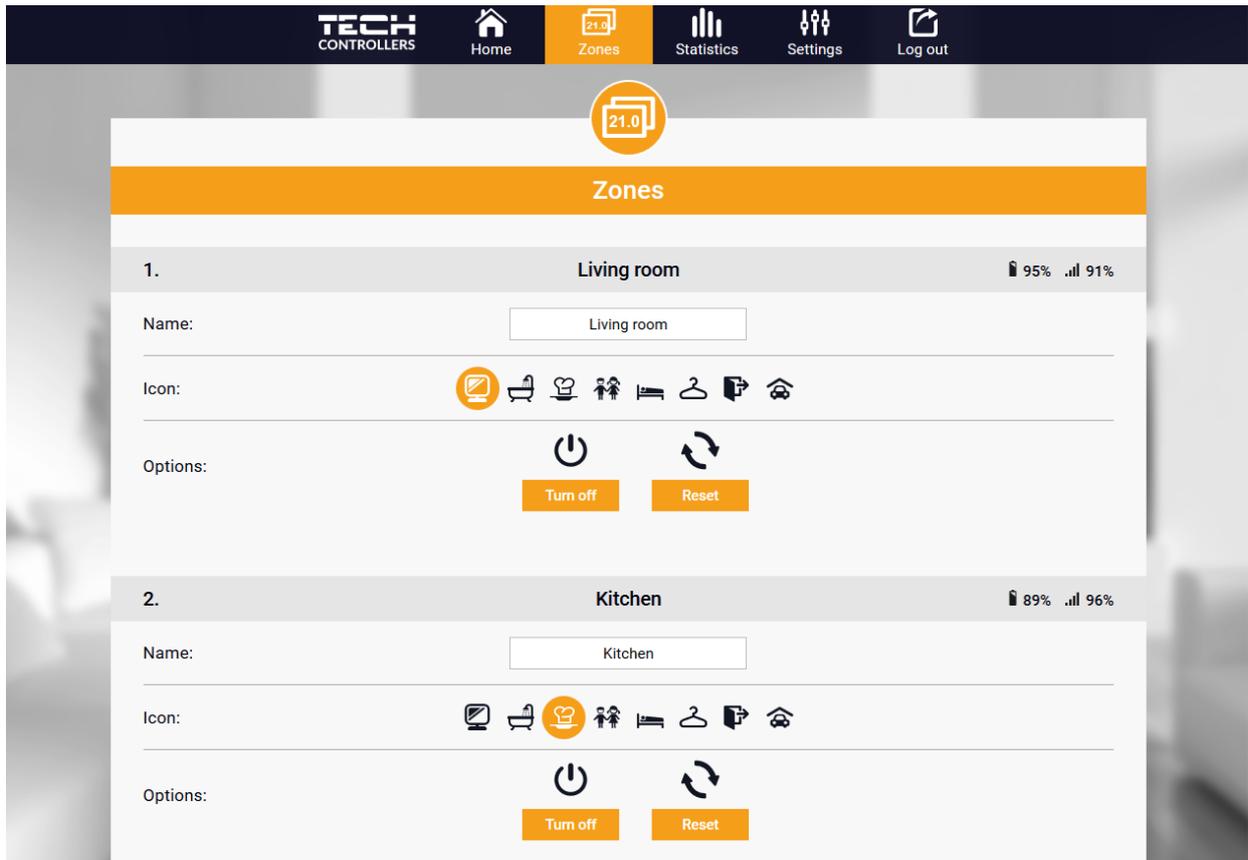
Screenshot showing the tab Zones

3.   STATISTICS

Statistics tab enables the user to view the temperature values for different time periods e.g. 24h, a week or a month. It is also possible to view the statistics for the previous months:

Settings tab enables the user to register a new module and change the e-mail address or the password:

VIII. PROTECTIONS AND ALARMS

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

Alarm type	Possible cause	How to fix it
Damaged sensor alarm (in case of internal sensor damage)	Internal sensor in the controller has been damaged	Call the service staff
No communication with the sensor / wireless room regulator	- Out of range - No battery - Battery consumption	- Put the sensor/regulator in a different place - Insert batteries into the sensor/regulator After the communication is reestablished, the alarm is deleted automatically
Low battery level in the actuator	Flat battery in the actuator	Replace the battery
Actuator alarm - ERROR #1 – possible damage of mechanical or electronic parts	Some parts have been damaged	Call the service staff
Actuator alarm - ERROR#2 – the maximum actuator stroke has been exceeded	- No piston controlling the valve - Too big stroke (movement) of the valve - The actuator has been incorrectly mounted on the radiator - Inappropriate valve on the radiator	- Install a piston controlling the actuator - Check the valve stroke - Install the actuator correctly - Replace the valve on the radiator
Actuator alarm - ERROR#3 – too little piston movement	- The valve got stuck - Inappropriate valve on the radiator - Too little stroke (movement) of the valve	- Inspect the valve operation - Replace the valve on the radiator - Check the valve stroke
Actuator alarm - ERROR #4 – no return communication (to the actuator)	- Out of range - No batteries	- The actuator i stoo far from the controller - Insert batteries into the actuator After the communication is reestablished, the alarm is deleted automatically

IX. SOFTWARE UPDATE

In order to install new software, the controller must be unplugged from the power supply. Next, insert the memory stick with the new software into the USB port. Connect the controller to the power supply at the same time holding EXIT button. It is necessary to hold EXIT button until a single sound signal is heard – it signalises that the software update process has been initiated. After it has been completed, the controller restarts automatically.

⚠ **NOTE**

Software update shall be conducted only by a qualified fitter. After the software has been updated, it is not possible to restore previous settings.

⚠ **NOTE**

Do not switch the controller off while updating the software.

X. TECHNICAL DATA

Specification	Value
Range of room temperature settings	5ºC : 40ºC
Supply voltage	230V
Power consumption	<3W
Measurement error	+/- 0,5°C
Operation temperature	5ºC : 50ºC
Frequency	868MHz
Transmission	IEEE 802.11 b/g/n

TECH CONTROLLERS

EU Declaration of conformity

Hereby, we declare under our sole responsibility that **EU-16s WiFi** manufactured by TECH STEROWNIKI II Sp. z o.o., head-quartered in Wieprz Biała Droga 31, 34-122 Wieprz, is compliant with Directive **2014/53/EU** of the European parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment, 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 art. 3.1a Safety of use

PN-EN IEC 62368-1:2020-11 art. 3.1 a Safety of use

PN-EN 62479:2011 art. 3.1 a Safety of use

ETSI EN 301 489-1 V2.2.3 (2019-11) art.3.1b Electromagnetic compatibility

ETSI EN 301 489-3 V2.1.1 (2019-03) art.3.1 b Electromagnetic compatibility

ETSI EN 301 489-17 V3.2.4 (2020-09) art.3.1b Electromagnetic compatibility

ETSI EN 300 328 V2.2.2 (2019-07) art.3.2 Effective and coherent use of radio spectrum

ETSI EN 300 220-2 V3.2.1 (2018-06) art.3.2 Effective and coherent use of radio spectrum

ETSI EN 300 220-1 V3.1.1 (2017-02) art.3.2 Effective and coherent use of radio spectrum

PN EN IEC 63000:2019-01 RoHS.

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