TECH CONTROLLERS

USER MANUAL

EU-L-12

EN

www.tech-controllers.com

TABLE OF CONTENTS

JG. 26.05.2023

The pictures and diagrams are for illustration purposes only.
The manufacturer reserves the right to introduce some changes.

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 put in a different place, make sure that the user's 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

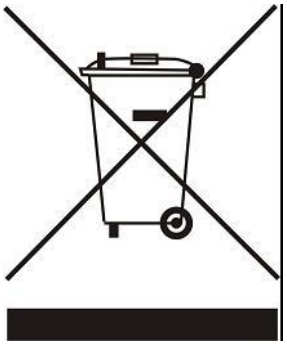
- **High voltage!** Make sure the regulator is disconnected from the mains before performing any activities involving the power supply (plugging cables, installing the device etc.)
- The device should be installed by a qualified electrician.
- Before starting the controller, the user should measure earthing 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.

Changes in the products described in the manual may have been introduced subsequent to its completion on 26.05.2023. The manufacturer retains the right to introduce changes to the structure or colours. 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. SYSTEM DESCRIPTION

The EU-L-12 external controller is the heart of an extensive heating control system. It has wireless and RS 485 wired communication. Its primary function is to maintain the pre-set temperature in each zone. It is the main unit which, together with all peripheral devices such as the EU-ML-12 slave controllers (max 4), the EU-M-12 control panel, room sensors, room regulators, floor sensors, an outdoor sensor, window sensors, thermoelectric actuators, signal repeaters and Internet modules form the whole integrated system. The EU-L-12 external controller is therefore an indispensable element of the entire heating system, while the remaining slave units increase the functionality of this system.

Thanks to advanced software, the EU-L-12 controller may fulfil a range of functions:

- controlling up to 4 slave controllers EU-ML-12
- possibility of connecting the EU-M-12 control panel
- controlling dedicated wired regulators EU-R-12b, EU-R-12s, EU-F-12b, EU-R-X
- controlling wireless regulators: EU-R-8X, EU-R-8b, EU-R-8b Plus, EU-R-8s Plus, EU-F-8z or sensors: EU-C-8r, EU-C-mini, EU-CL-mini
- possibility of connecting an Internet module EU-505, EU-WiFi RS or EU-WiFi L (included with the controller) to control the system online
- compatible with a floor temperature sensor
- compatible with an outdoor temperature sensor (weather-based control function)
- compatible with wireless window sensors (6 sensors per zone)
- possibility of controlling wireless actuators STT-868 or STT-869, EU-G-X (6 actuators per zone)
- possibility of controlling thermoelectric actuators
- possibility of controlling a mixing valve (after connecting a valve module EU-i-1 or EU-i-1m
- controlling a heating or cooling device using a potential-free contact
- one 230V output for a pump
- possibility of setting individual operation schedules for each zone
- software update via USB
- Open Therm communication

Devices for the expansion of the system are updated on an ongoing basis on our website www.tech-controllers.com.

III. HOW TO INSTALL

The EU-L-12 controller should be installed by a qualified person.

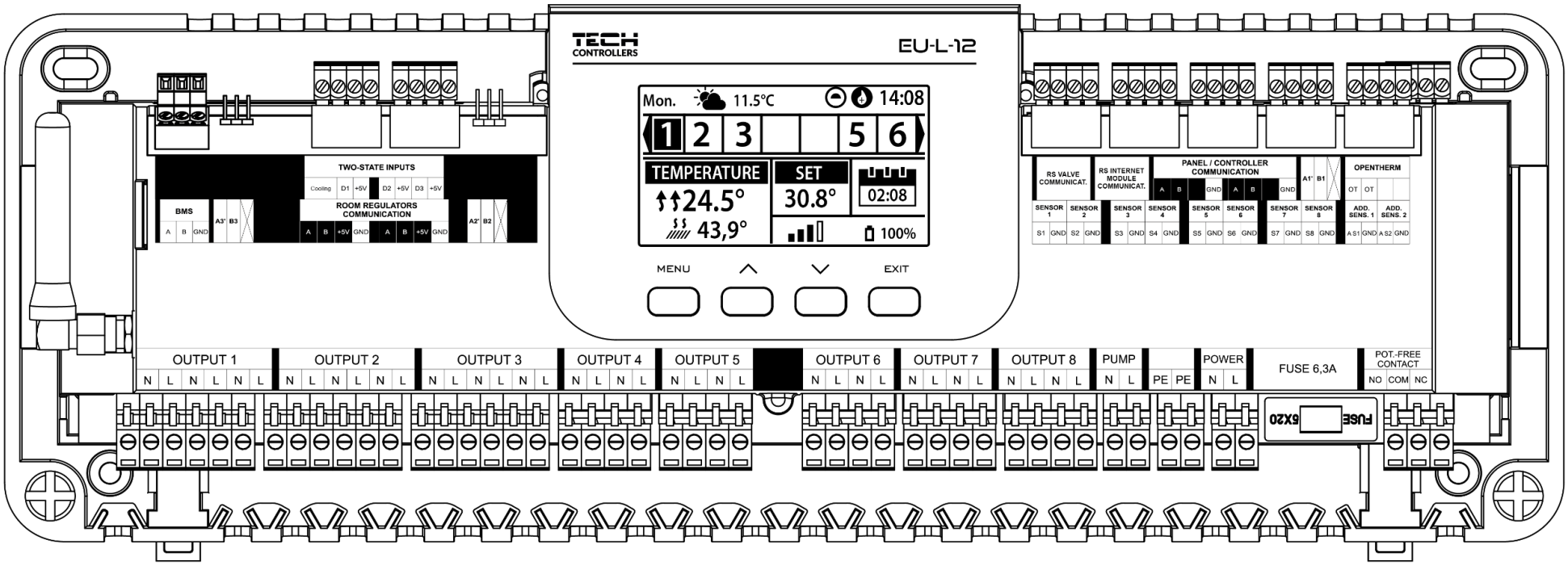
WARNING

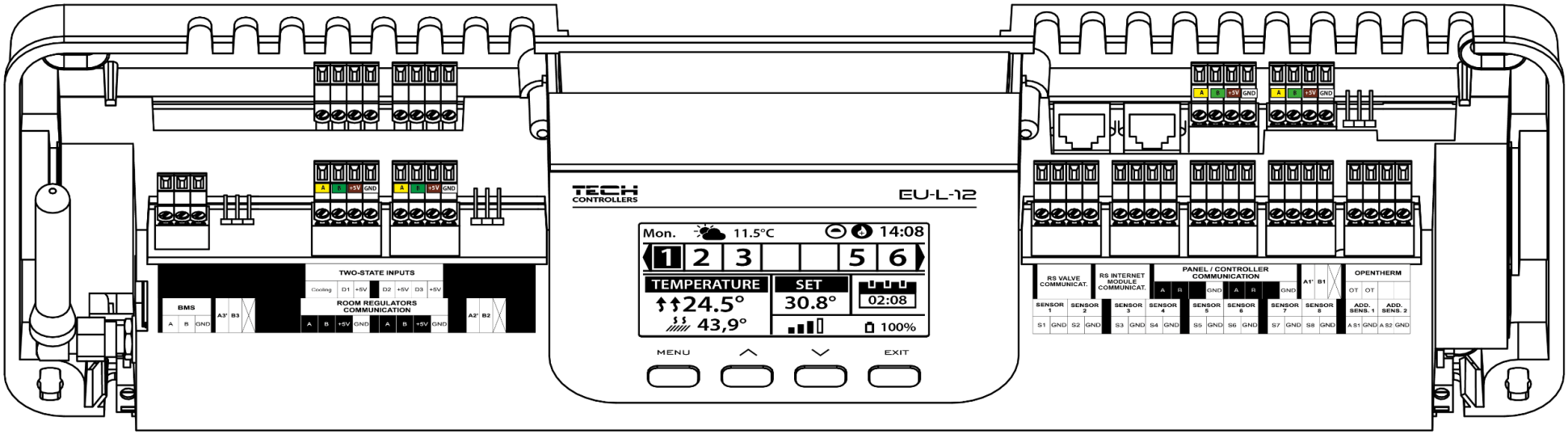
- It is impossible to connect two or more EU-L-12 controllers.
- Risk of fatal electric shock from touching live connections. Before working on the controller switch off the power supply and prevent it from being accidentally switched on.
- Incorrect connection of wires may damage the controller.

WARNING

If pump manufacturer requires an external main switch, power supply fuse or additional residual current device selective for distorted currents it is recomemnded not to connect pumps directly to pump control outputs.

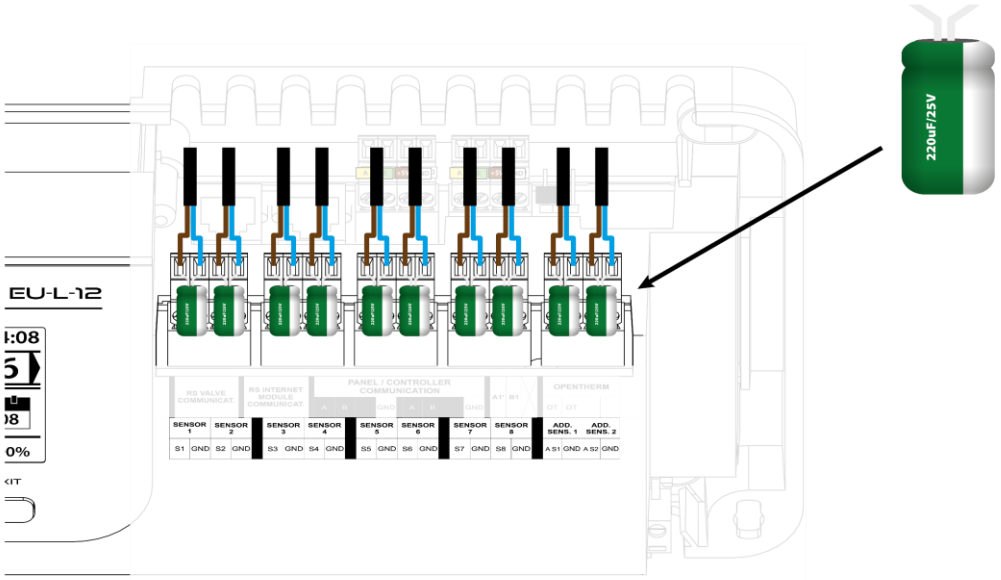
To avoid damaging to the device, an additional safety circuit must be used between the regulator and the pump. The manufacturer recommends the ZP-01 pump adapter, which must be purchased separately.


TECH CONTROLLERS
EU-L-12
Mon. 11.5°C 14:08
1 2 3 5 6
TEMPERATURE
24.5°
43,9°
SET
30.8°
02:08
100%
MENU
EXIT
TWO-STATE INPUTS
Cooling D1 +5V D2 +5V D3 +5V
BMS
A B GND
A3* B3
ROOM REGULATORS COMMUNICATION
A B +5V GND A B +5V GND
A2* B2
RS VALVE COMMUNICAT.
RS INTERNET MODULE COMMUNICAT.
PANEL / CONTROLLER COMMUNICATION
A1* B1
OPENTHERM
OT OT
SENSOR 1
SENSOR 2
SENSOR 3
SENSOR 4
SENSOR 5
SENSOR 6
SENSOR 7
SENSOR 8
ADD. SENS. 1
ADD. SENS. 2
S1 GND S2 GND S3 GND S4 GND S5 GND S6 GND S7 GND S8 GND A S1 GND A S2 GND
OUTPUT 1
OUTPUT 2
OUTPUT 3
OUTPUT 4
OUTPUT 5
OUTPUT 6
OUTPUT 7
OUTPUT 8
PUMP
POWER
FUSE 6,3A
POT.-FREE CONTACT
N L
PE PE
NO COM NC
FUSE 6X20


TECH CONTROLLERS
EU-L-12
Mon. 11.5°C 14:08
1 2 3 5 6
TEMPERATURE
24.5°
43,9°
SET
30.8°
02:08
100%
MENU
EXIT
TWO-STATE INPUTS
BMS
ROOM REGULATORS COMMUNICATION
RS VALVE COMMUNICAT.
RS INTERNET MODULE COMMUNICAT.
PANEL / CONTROLLER COMMUNICATION
OPENTHERM

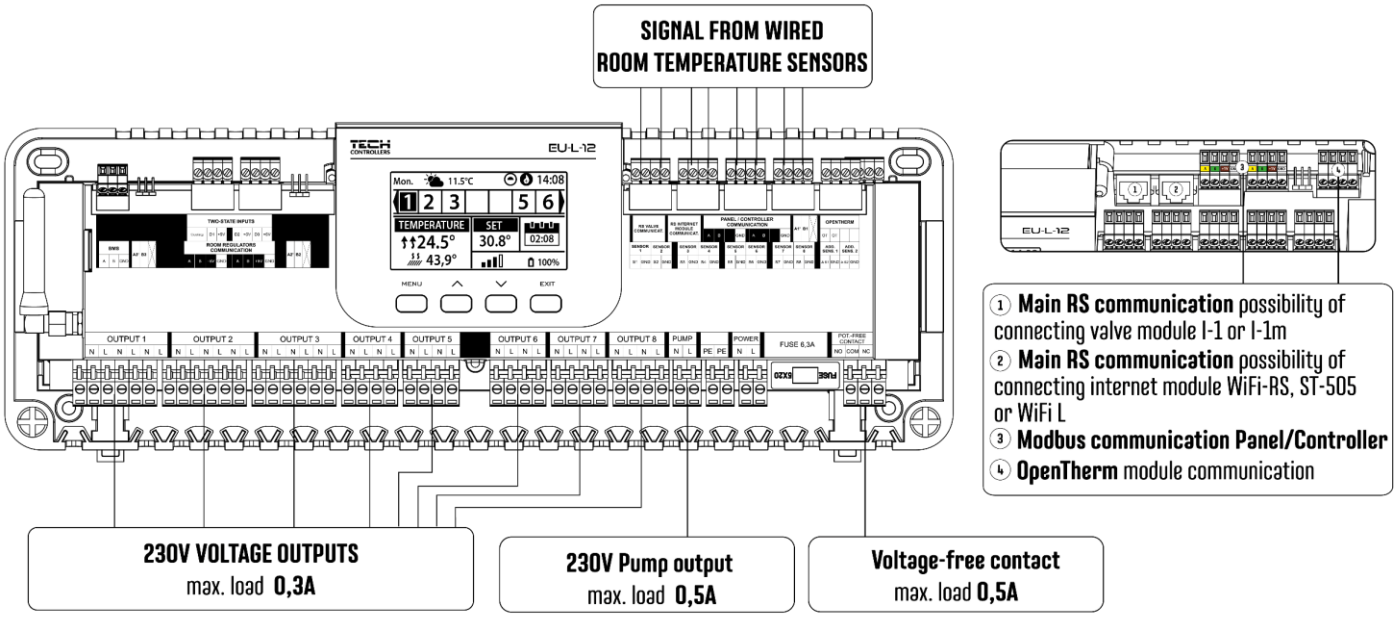
Mounting electrolytic capacitors

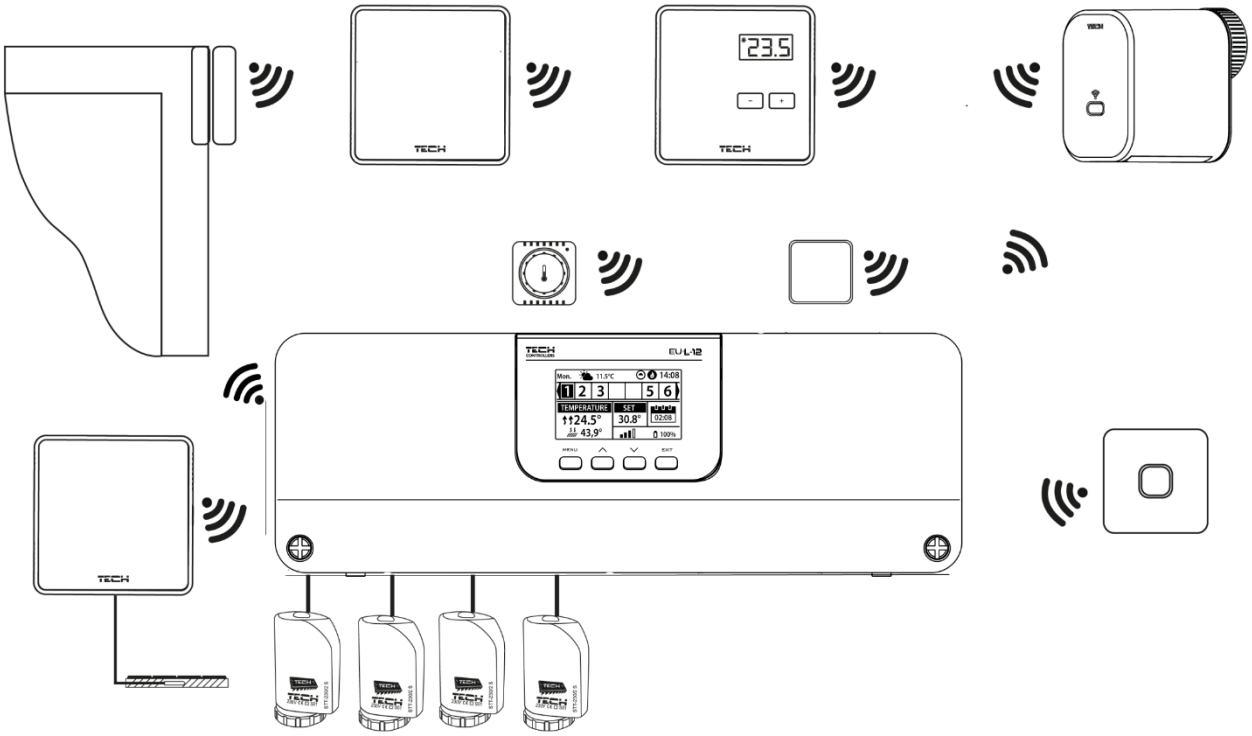
In order to reduce the phenomenon of fluctuation in the temperature read from the zone sensor, use a 220uF / 25V low impedance electrolytic capacitor connected parallel to the sensor cable. When installing a capacitor, pay special attention to polarization. The ground of the element marked with a white stripe should be screwed into the right-hand side terminal of the sensor connector (looking at it from the front of the controller), which can be seen in the attached photographs. The second terminal of the capacitor should be screwed into the left-hand side terminal of the connector. So far the application of this solution has eliminated completely the occurring disturbances. It is worth noting, however, that the basic principle is proper connection of wires to avoid disruption. The cable should not be placed close to the sources of the electromagnetic field, but if this is the case, it is necessary to use a filter in the form of a capacitor.

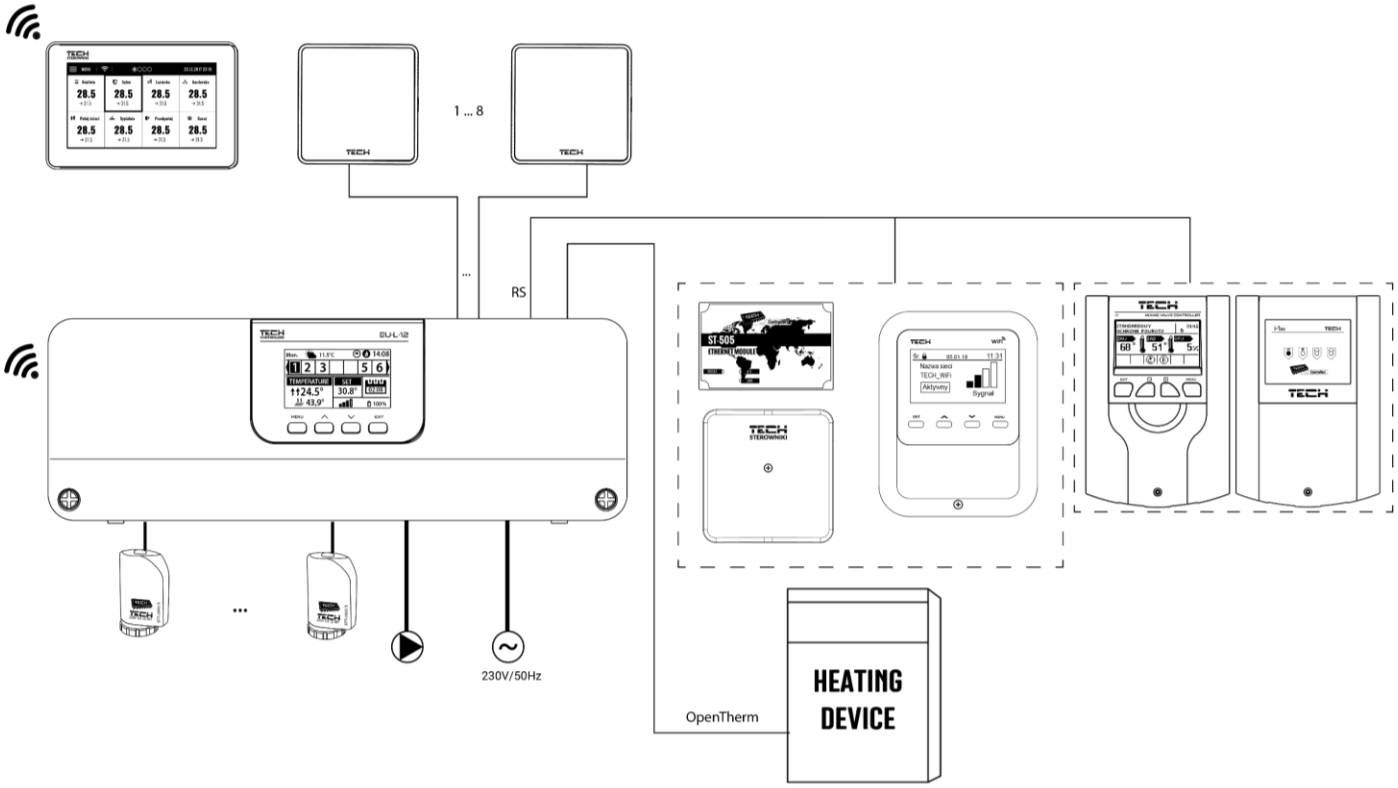


220uF/25V low impedance electrolytic capacitor

Pictorial diagram presenting wiring and communication with other devices in the system:



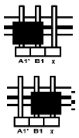



1 ... 8
RS
230V/50Hz
OpenTherm
HEATING DEVICE

Connecting external controllers

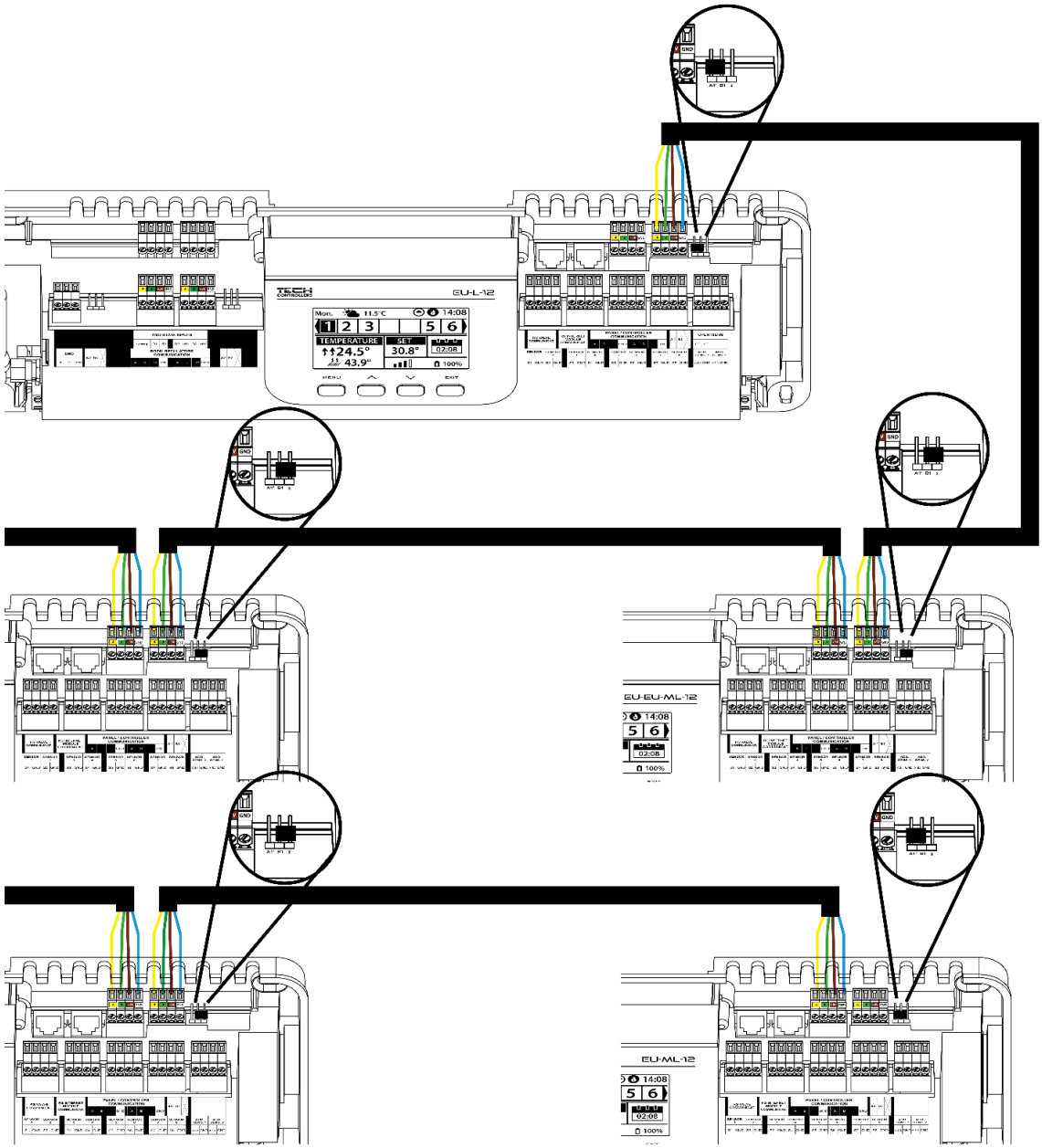
In the case of a wired connection between devices: external controllers (EU-L-12 and EU-ML-12), regulators and the panel, termination resistors (jumpers) should be used **at the beginning and at the end** of the transmission line. The external controllers have a built-in termination resistor, which should be set in the appropriate position:

- A, B – termination resistor ON (the first and the last controller)
- B, X – neutral position (factory setting)



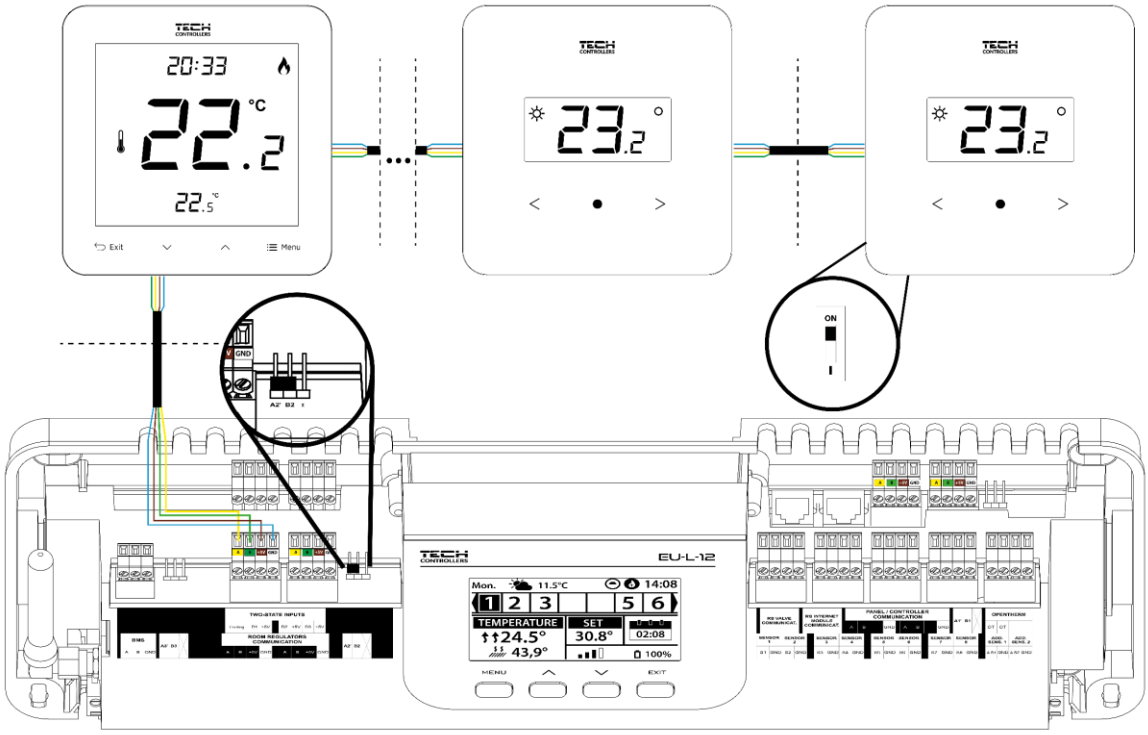
NOTE

The order of external controllers in the case of a terminating connection does not matter.

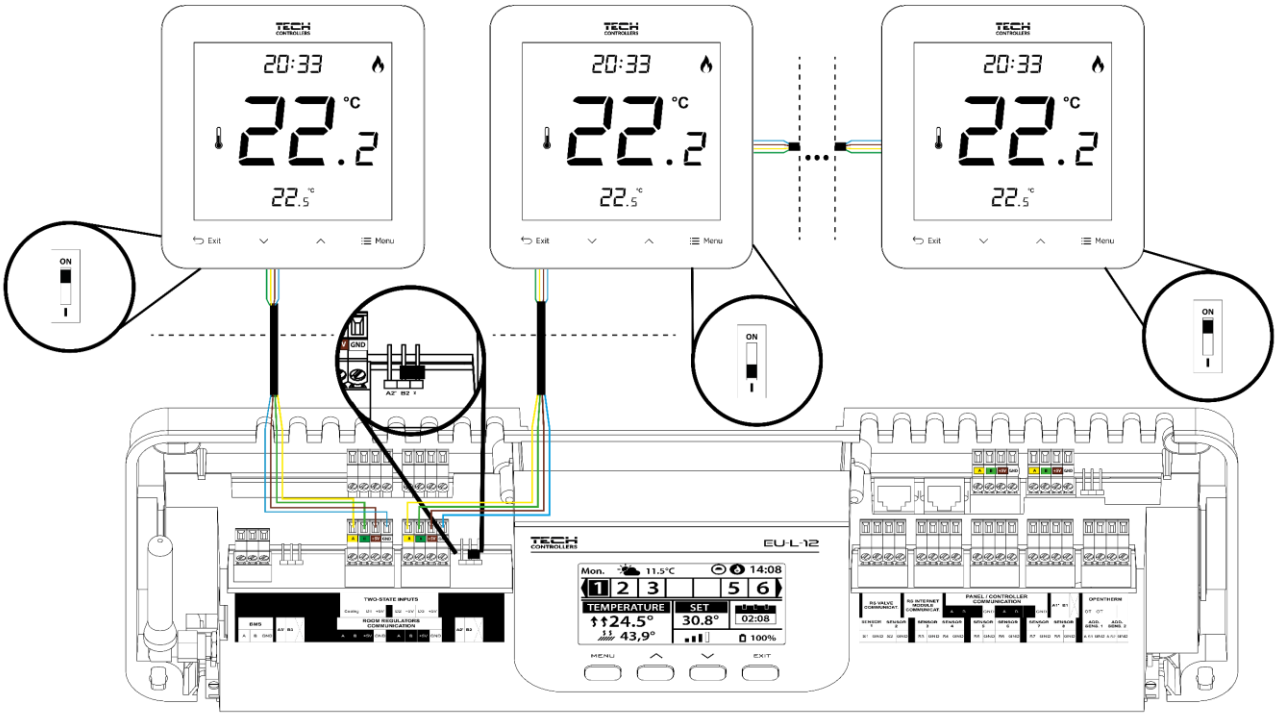


Connection between external controller and regulators

In the case of connecting the regulators to **the first external controller**, the jumper should be switched to the ON position in **the external controller and the last regulator**.



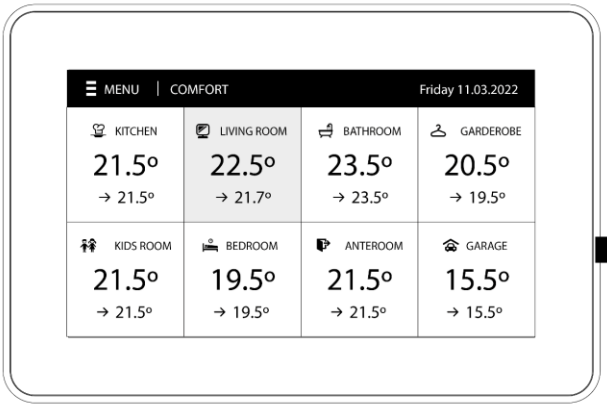
In the case of connecting the regulators to the external controller placed **in the middle** of the transmission line, the jumper should be switched to the ON position in **the first and the last regulator.**

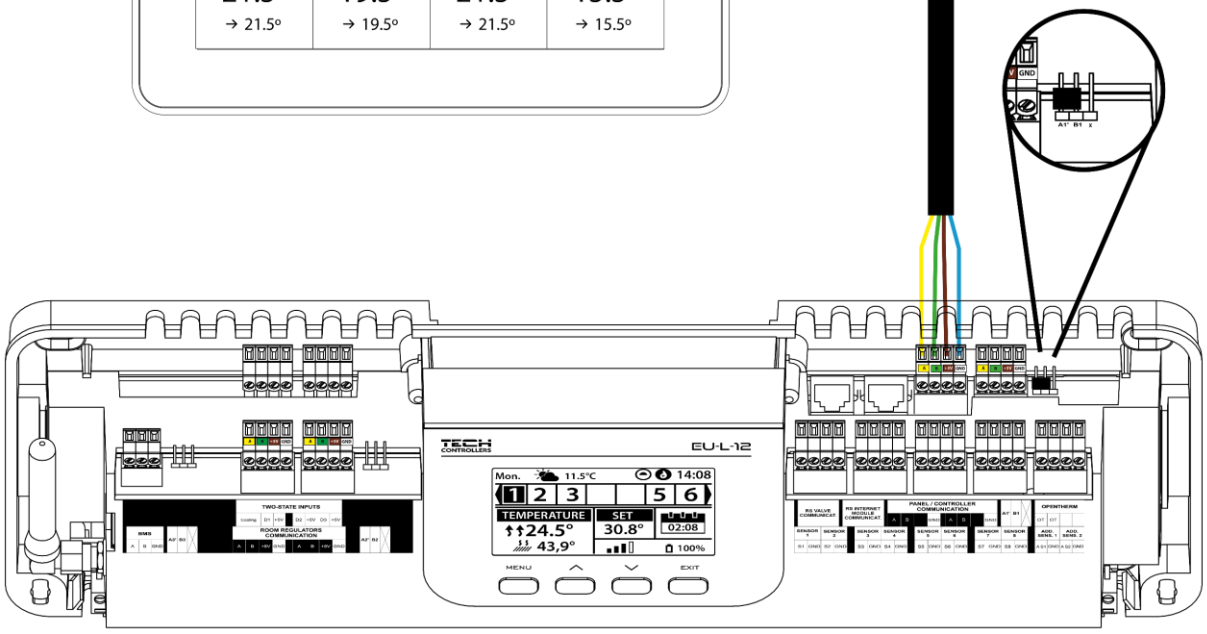


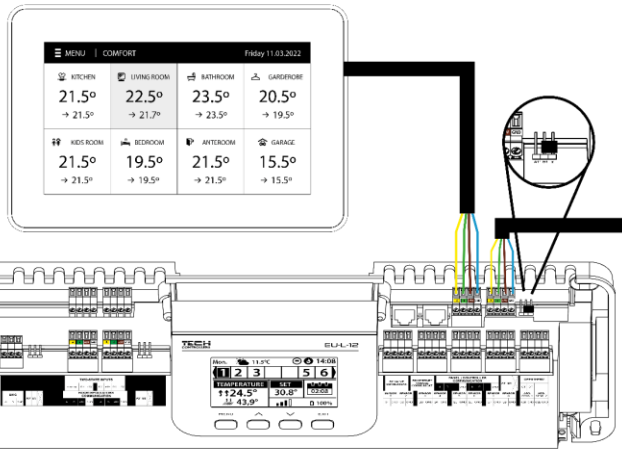
Connection between external controller and panel

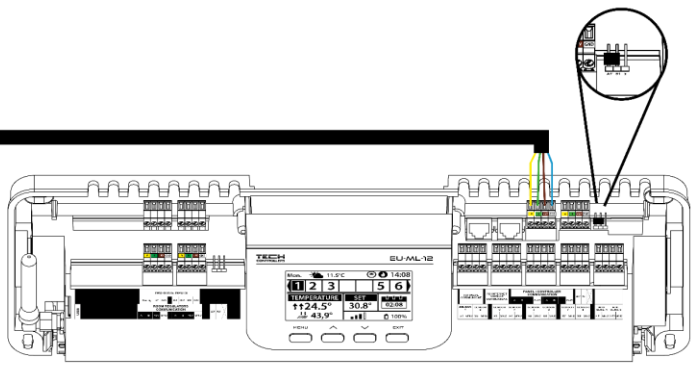
NOTE

The panel should be connected to **the first or last** external controller due to the fact that the panel does not use a termination resistor.









IV. FIRST START-UP

In order for the controller to operate correctly, the user must follow these steps when starting the device for the first time:

Step 1. Connect the EU-L-12 controller with all the devices to be controlled

Remove the controller's cover and connect the wires following the clues on the connectors and the diagrams below.

Step 2. Switch on the power supply and check if the devices work

Once all the devices have been connected, switch on the power supply.

Go to ***Menu → Fitter's menu → Manual mode*** to check if each device works - use the buttons ∨ ∧ to select a device and press MENU button - the device should switch on. Follow this procedure to check all the devices.

Step 3. Set time and date

In order to set current time and date, go to ***Menu→ Controller settings → Time settings***.

NOTE

If the EU-505, EU-WiFi RS or EU-WiFi L module is used, the current time may be downloaded from the network automatically.

Step 4. Configure the settings for temperature sensors and room regulators

In order to enable the EU-L-12 to control a given zone, it is necessary to provide it with current temperature value. The easiest way is to use a wired or wireless temperature sensor (EU-C-7p, EU-C-mini, EU-CL-mini, EU-C-8r). If the user wants to be able to change the pre-set temperature value directly from the zone, it is advisable to use EU-R-8X, EU-R-8b, EU-R-8z, EU-R-8b Plus room regulators or dedicated regulators EU-R-12b, EU-R-12s, EU-F-12b or EU-R-X. In order to pair a sensor with the external controller, go to ***Menu → Fitter's menu → Main module/Additional modules → Zones → Zone… → Room sensor → Sensor selection.***

Step 5. Configure the control panel EU-M-12 and additional controllers EU-ML-12

The EU-L-12 controller may cooperate with the EU-M-12 control panel. It serves as a master controller enabling the user to change the pre-set temperatures in different zones, change the settings of local and global weekly schedules etc. Only one room regulator of this type may be installed in the heating system. It is necessary to register such a device in ***Menu → Fitter's menu → Control panel.***

It is possible to expand the number of controlled zones using additional controllers EU-ML-12 (up to 4 in one system). Each controller needs to be registered separately in the EU-L-12 controller (***Menu → Fitter's menu → Additional modules → Module 1..4).***

Step 6. Configure the remaining devices

The EU-L-12 controller can also work with other devices:

- Internet module EU-505, EU-WiFi RS or EU-WiFi L

After connecting the Internet module, the user can control the system via the Internet through the emodul.eu application. A detailed description of the configuration can be found in the manual of the given module.

- mixing valve module EU-i-1, EU-i-1m

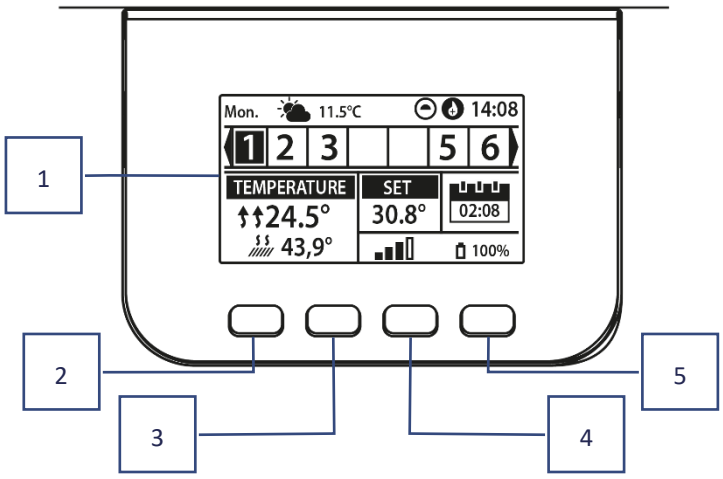
- additional contacts, e.g. EU-MW-1 (6 contacts per controller)

NOTE

If the user wants to use such devices in the system, they need to be connected and/or registered.

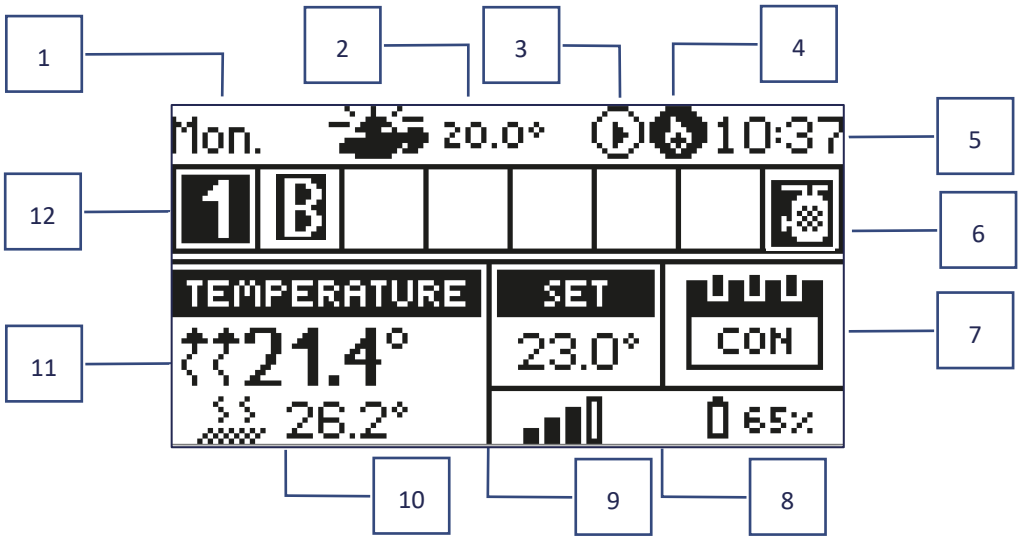
V. MAIN SCREEN DESCRIPTION

The user navigates in the menu structure using the buttons located below the display.



1. Display
2. **MENU button** - enter the controller menu, confirm the settings
3. ∨ - it is used to view the menu options and decrease the value while editing parameters. During standard operation the button is used to switch between parameters of different zones.
4. ∧ - it is used to view the menu options and increase the value while editing parameters. During standard operation the button is used to switch between parameters of different zones.
5. **EXIT** button – it is used to exit the menu, cancel the settings, select the screen view (zones, zone).

AN EXAMPLE SCREEN VIEW – ZONES



1. Current day of the week
2. Outdoor temperature
3. Pump ON

4. Potential-free contact ON

	zone heating ON		zone cooling ON

5. Current time
6. DHW function active
7. Current operation mode/schedule in a given zone

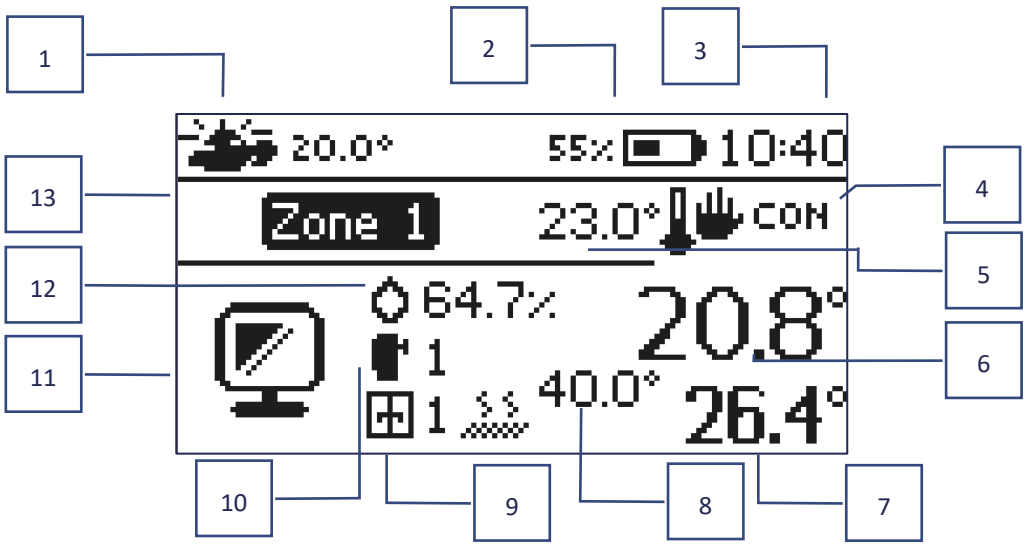
L	local schedule	**CON**	constant temperature
G-1….G-5	global schedule 1-5	**02:08**	with time limit

8. Signal strength and battery level in the room sensor
9. Pre-set temperature in a given zone
10. Current floor temperature
11. Current temperature in a given zone

	zone heating		zone cooling

12. Zone information. The digit displayed indicates the room sensor which provides current temperature information from a given zone. If the zone is currently being heated or cooled (depending on the selected mode), the digit flashes. In the event of a zone alarm, an exclamation mark is displayed instead of the digit. In order to view the operation parameters of a given zone, select its number using the buttons ∨∧.
    - active bypass function in the zone – see VI. 4.17. Heat pump

AN EXAMPLE SCREEN VIEW – ZONE



1. Outdoor temperature
2. Battery level
3. Current time
4. Current operation mode in the given zone
5. Pre-set temperature in the given zone
6. Current temperature in the given zone
7. Current floor temperature
8. Maximum floor temperature

9. Number of window sensors registered in the given zone
10. Number of actuators registered in the given zone
11. Icon of the given zone
12. Current humidity level in the given zone
13. Zone name

VI. CONTROLLER FUNCTIONS

Menu	Operation mode
	Zones
	Controller settings
	Fitter's menu
	Service menu
	Factory settings
	Software update

1. OPERATION MODE

This function enables the user to activate one of the operation modes available:

- **Normal mode** – pre-set temperature depends on the selected schedule.
- **Holiday mode** – pre-set temperature depends on the mode settings

Menu → Fitter's menu → Main module → Zones > Zone 1-8 → Settings > Temperature settings > Holiday mode

- **Economical mode** – pre-set temperature depends on the mode settings

Menu → Fitter's menu → Main module → Zones > Zone 1-8 → Settings > Temperature settings > Economical mode

- **Comfort mode** – pre-set temperature depends on the mode settings

Menu → Fitter's menu → Main module → Zones > Zone 1-8 → Settings > Temperature settings > Comfort mode

NOTE

- Changing the mode to holiday, economical or comfort mode involves all the zones. The user may only adjust the pre-set temperature of the given mode a particular zone.
- In the operation mode other than normal mode, it is not possible to change the pre-set temperature from the level of the regulator.

2. ZONES

2.1. ON

In order for a given zone to be displayed on the screen as an active zone, a sensor must be registered in it (see: Fitter's menu). This function enables the user to deactivate the zone and hide the parameters from the main screen view.

2.2. PRE-SET TEMPERATURE

The pre-set zone temperature depends on the current zone operation mode, i.e a weekly schedule. However, this function enables the user to deactivate the schedule and set the temperature value separately for a pre-defined period of time. When the time elapses, the pre-set temperature will depend on the previous mode again. The value of the pre-set temperature along with the time left before the next temperature change is displayed on the main screen on an ongoing basis.

NOTE
If the duration of a given pre-set temperature value is set as CON, this temperature will apply for an indefinite period of time (constant temperature).

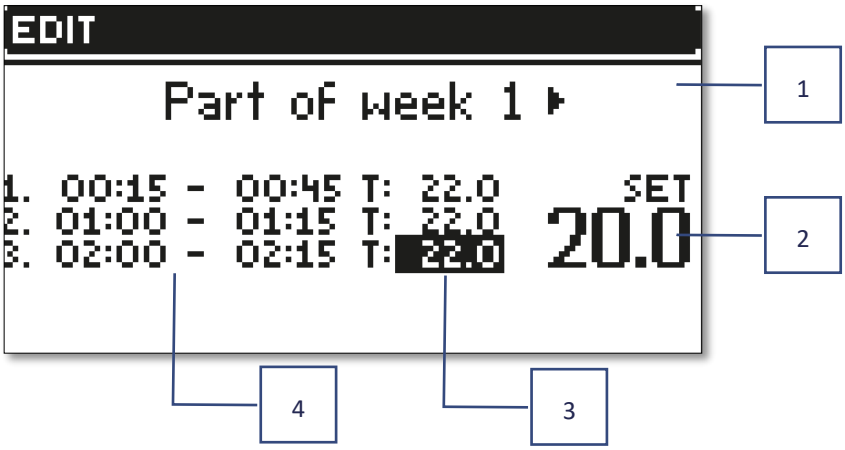
2.3. OPERATION MODE

This submenu enables the user to view, edit and configure the operation mode in a given zone.

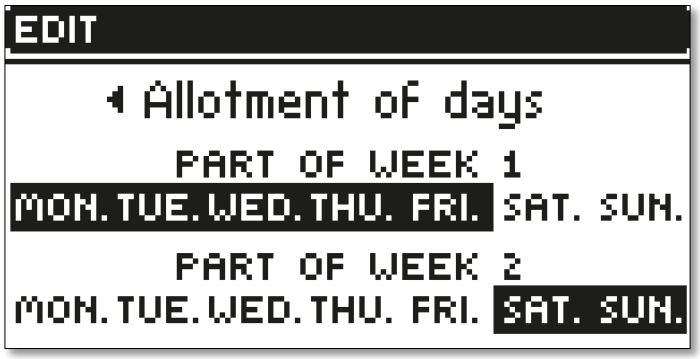
- **Local schedule** – it is a weekly schedule assigned to a given zone only
- **Global schedule 1-5** – the settings of these schedules apply in all the zones where the schedule has been selected.
- **Constant temperature (CON)** – this function enables the user to define the pre-set temperature which will apply in a given zone regardless of the time of the day.
- **Temperature with time limit** – this function enables the user to define the pre-set temperature which will apply for a specified period of time. When the time is over, the temperature will depend on the previous mode (schedule or constant temperature without time limit).

2.3.1. HOW TO EDIT SCHEDULES

Menu → Zones→ Main module → Zone 1-8 → Operation mode → Schedule… → Edit



1. Days when the above settings apply
2. Pre-set temperature outside the time periods
3. Pre-set temperatures for the time periods
4. Time periods



Follow these steps to configure a schedule:

- Use the arrows ∨ ∧ to select the part of the week when the schedule will apply (week part 1 or week part 2).
- Use the MENU button to go to the pre-set temperature settings, which will apply outside the time periods - set the temperature using arrows and confirm by pressing the MENU button.
- Press the MENU button to go to the settings of time periods and use the arrows to set the temperature which will apply in a given time period. Confirm by pressing the MENU button.

- Next, go on to edit the days which will be assigned to the first or the second part of the week. Active days are displayed in white. Use the MENU button to confirm and the arrows to move between the days.

Once the schedule for all days has been set, press the EXIT button and select ***Confirm*** by pressing the MENU button.

NOTE

The user may set up to 3 time periods in a given schedule (with the accuracy of 15 minutes).

3. CONTROLLER SETTINGS

3.1. TIME SETTINGS

The current time and date may be automatically downloaded from the network if the Internet module is connected and the automatic mode is on. The user may also set the time and date manually if the automatic mode does not work properly.

3.2. SCREEN SETTINGS

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

3.3. BUTTON SOUNDS

This option is used to enable the sound which will be heard when pressing the buttons.

4. FITTER'S MENU

The fitter's menu is the most extensive controller menu offering a wide range of functions to maximize the controller capabilities.

Fitter's menu
Main module
Additional modules
External sensor
Control panel
Repeater configuration
Internet module
Manual mode
Heating stopping
Potential-free contact
Pump
Heating - cooling
Anti - stop settings
Maximum humidity
OpenTherm
Language
DHW settings
Heat pump
Factory settings

4.1. MAIN MODULE

The EU-L-12 controller is treated as the main module offering the user access to 8 zones which may be freely configured.

4.1.1.ZONES

Menu → Fitter's menu → Main module → **Zones**

Zones 1-8
Room sensor
ON
Pre-set temperature
Operation mode
Outputs configuration
Settings
Actuators
Window sensors
Underfloor heating

In order for a given zone to be active on the controller display, a sensor must be registered/activated in it, and then this zone must be turned on.

Menu → Fitter's menu → **Main module**

4.1.1.1. ROOM SENSOR

The user may register/activate any type of sensor: a wired NTC sensor or a wireless RS sensor.

- **Hysteresis** - it introduces tolerance of the pre-set room temperature, within the range of 0,1 ÷ 5°C, at which heating/cooling is enabled.

  Example:
  Pre-set room temperature: 23°C
  Hysteresis: 1°C

  The room sensor will indicate that the room temperature is too low when the temperature drops to 22°C.

- **Calibration** - room sensor calibration should be performed while mounting or after it has been used for a long time, if the external temperature displayed differs from the actual temperature. Calibration setting range is from -10^{O}C to +10^{O}C with the accuracy of 0,1^{O}C.

4.1.1.2. PRE-SET TEMPERATURE

This function is described in section ***Menu → Zones*****.**

4.1.1.3. OPERATION MODE

This function is described in section ***Menu → Zones*****.**

4.1.1.4. OUTPUTS CONFIGURATION

The option is used to control the outputs: floor pump, potential-free contact and outputs of sensors 1-8 (NTC for temperature control in the zone or floor sensor for floor temperature control). The outputs of sensors 1-8 are assigned to zones 1-8 respectively.

The sensor type selected here will appear by default in the following options: ***Menu → Fitter's menu → Main module → Zones → Zones 1-8 → Room sensor → Sensor selection*** (for a temperature sensor) and ***Menu → Fitter's menu → Main module → Zones → Zones 1-8 → Underfloor heating → Floor sensor → Sensor selection*** (for a floor sensor).

The outputs of both sensors are used to register the zone through wires.

The function also allows the user to switch off the pump and the contact in a given zone. Such a zone, despite the need for heating, will not be involved in the control.

4.1.1.5. SETTINGS

- **Weather-based control** - the user may enable or disable weather-based control.

NOTE
Weather-based control works if the ***Weather-based control*** option is selected in ***Menu → Fitter's menu → External sensor.***

- **Heating** – this option is used to enable / disable the heating function. The user may also select a schedule which will apply in the zone during heating and edit a separate constant temperature.

- **Cooling** - this option is used to enable / disable the cooling function. The user may also select a schedule which will apply in the zone during cooling and edit a separate constant temperature.

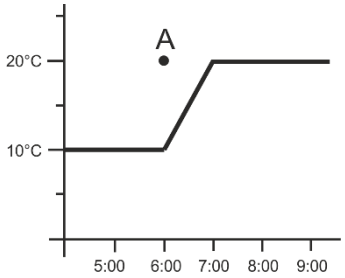
- **Temperature settings** – this option is used to set the desired temperature for three operating modes (Holiday mode, Economical mode, Comfort mode).

- **Optimum start**

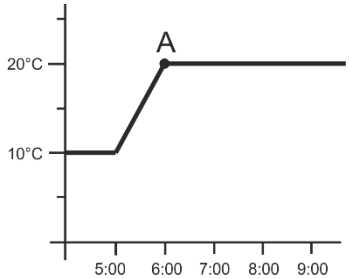
  Optimum start is an intelligent system controlling the heating process. It involves constant monitoring of the heating system efficiency and using the information to activate the heating process in advance in order to reach the pre-set temperatures.

  The system requires no user intervention. It precisely reacts to any changes that affect the efficiency of the heating system. If, for example, some changes have been introduced to the heating system and the house heats up faster than before, the Optimum start system will recognize the changes at the next pre-programmed temperature change and in the next cycle the heating system activation will be adequately delayed, reducing the time needed to reach the desired temperature.

Room temperature - OPTIMUM START switched off:



Room temperature - OPTIMUM START switched on:



A – pre-programmed change from economical temperature to comfort temperature

Activating this function means that at the time of a pre-programmed change of the pre-set temperature from comfort to economical or the other way round, the current room temperature is close to the desired value.

NOTE

The Optimum start function works only in the heating mode.

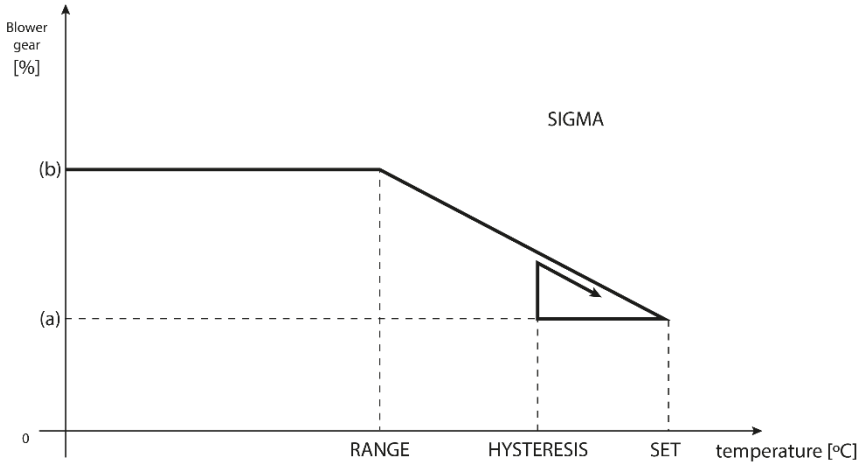
4.1.1.6. ACTUATORS

- **Settings**

  - **SIGMA** - this function allows for smooth control of the thermoelectric valve. The user may also define **the minimum and maximum level of valve opening**. It means that the level of valve opening and closing will never exceed these values. Moreover, the user adjusts the **Range** parameter which specifies the room temperature at which the valve starts opening and closing.

NOTE

The Sigma function is available only for the radiator actuators.



(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 example above, the thermoelectric valve starts closing at the temperature of 18˚C (pre-set value minus Range). The minimum opening is reached when the zone temperature reaches the pre-set value.

After reaching the pre-set value, the temperature starts falling. At the temperature of 21˚C (pre-set value minus hysteresis) the valve starts opening. The maximum opening is reached at the temperature of 18˚C.

- **Protection** - when this function has been selected, the controller starts monitoring the temperature. If the pre-set temperature is exceeded by the number of degrees specified in the ***Range*** parameter, all actuators in a given zone will be closed (0% opening). This function works only when the SIGMA function is enabled.
- **Emergency mode** – This allows for manual actuator opening alteration in case an alarm is triggered in the respective zone (e.g. by sensor failure or room regulator communication error). If the regulator does not operate correctly, setting the actuator opening will be possible via the master controller or the mobile (Internet) app.
  If the regulator operates correctly, this mode does not affect the operation of actuators, as it is the controller that sets their opening on the basis of setpoint temperature. In case of loss of power in the master controller, the actuators will be switched to their default position, as set in the main parameters.

➢ **Actuators 1-6** - this option enables the user to register a wireless actuator. In order to do it, select ***Register*** and press briefly the communication button on the actuator. If the registration process has been successful, a new function called ***Information*** appears, allowing the user to view the actuator parameters e.g. battery level, range etc. It is also possible to remove an actuator or all of them at the same time.

4.1.1.7. WINDOW SENSORS

➢ **Settings**

- **ON** – this function is used to activate window sensor control in a given zone (it is possible after the sensor has been registered).

- **Delay time** – this function is used to set the delay time. After a pre-set delay time, the main controller will react to window opening by disabling heating or cooling in a given zone.

  Example: Delay time is set at 10 minutes. When the window is opened, the sensor sends the information to the main controller. The window status is updated on an ongoing basis. If the window is still open after 10 minutes, the main controller will force the actuators to close and disable the heating in the given zone.

NOTE

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

➢ **Wireless** – this option enables the user to register window sensors (1-6 per zone). In order to do it, select ***Register*** and press briefly the communication button on the actuator. If the registration process has been successful, a new function called ***Information*** appears, allowing the user to view the sensor parameters e.g. battery level, range etc. It is also possible to remove a sensor or all of them at the same time.

4.1.1.8. UNDERFLOOR HEATING

FLOOR SENSOR

➢ **Sensor selection** - this option is used to connect (wired) or register (wireless) a floor sensor. In the case of a wireless sensor, it must be registered by additionally pressing the communication button on the sensor.

➢ **Hysteresis** – it defines tolerance of the pre-set temperature, within the range of 0,1 ÷ 5°C, at which heating/cooling is activated.

Example:
Maximum floor temperature: 45°C
Hysteresis: 2°C

The controller will switch off the contact after the floor sensor exceeds the value of 45 °C. If the temperature starts to drop, the contact will be switched on again after the temperature on the floor sensor drops to 43°C (unless the room temperature has been reached).

- **Calibration** – floor sensor calibration should be performed while mounting or after it has been used for a long time, if the floor temperature displayed differs from the actual temperature. Calibration setting range is from -10°C to +10°C with the accuracy of 0,1°C.

NOTE
The floor sensor is not used in the cooling mode.

OPERATION MODES

- **OFF** – select this option to disable underfloor heating mode. In this mode, ***Floor protection*** and ***Comfort mode*** are not active.

- **Floor protection** – this function serves to maintain the floor temperature below the maximum temperature value in order to protect the system against overheating. When the floor temperature reaches the maximum temperature, the zone heating is disabled.

- **Comfort profile** – this function serves to maintain comfort floor temperature. The controller monitors the floor temperature and disables the zone heating when zone temperature reaches the maximum temperature in order to prevent overheating. When the floor temperature drops below the pre-set minimum temperature, the zone heating will be enabled.

MINIMUM TEMPERATURE

This function enables the user to define the minimum temperature in order to prevent the floor from cooling down. When the floor temperature drops below the pre-set minimum temperature, the zone heating will be enabled. This function is available only in ***Comfort mode***.

MAXIMUM TEMPERATURE

Maximum floor temperature is a threshold value of floor temperature. If this value is exceeded, the controller will disable heating regardless of the current room temperature. This function protects the system against overheating.

4.1.2. ADDITIONAL CONTACTS

Menu → Fitter's menu → Main menu → **Additional contacts**

This option enables the user to control additional contacts. First, register a contact (1-6 contacts) by selecting ***Registration*** and pressing briefly the communication button on the device e.g. EU-MW-1.

Once the device has been registered and switched on, the following functions will appear:

- **Information** - the controller screen displays information about the contact status, operation mode and range

- **ON** - this option allows you to enable / disable the contact Operation

- **Operation mode** - the user can choose the operation mode for the contact

- **Time mode** - the function allows the user to set the contact operation time for a specific time
  The user can change the contact status by selecting/deselecting ***Active*** and set the mode ***Duration***

- **Constant mode** - the function allows the user to set the contact operation permanently. It is possible to change the contact status by selecting/deselecting ***Active***

- **Relays** - the contact operates in accordance with the zones to which it has been assigned

- **Drying** - if the ***Maximum humidity*** in a given zone has been exceeded, this option allows the user to start the air-drying device

- **Schedule settings** - the function allows the user to set a separate schedule for the contact operation (regardless of the status of the external controller's zones).

NOTE

Drying *is only available in* ***Cooling mode.***

- **Remove** – this option is used to remove a given contact

4.1.3. MIXING VALVE

Menu → Fitter's menu → Main module → **Mixing valve**

The EU-L-12 controller may control an additional valve using a valve module (e.g. EU-i-1m). This valve offers RS communication, but it is necessary to carry out the registration process, which requires the module number (found on the back of the module casing or in the software version screen). After correct registration, it is possible to set individual parameters of the additional valve.

- **Information** - this function is used to view the valve parameters.

- **Register** - After entering the code found on the back of the valve or in ***Menu → Software version***, you can register the valve in the main controller.

- **Manual mode** – the user has the option of manually stopping the valve, opening / closing the valve and switching the pump on and off in order to check if these devices work properly.

- **Version** - the function is used to display the valve software version number. Such information is necessary while contacting the service staff.

- **Valve removal** - the function is used to completely remove the valve. It is used e.g. while disassembling the valve or replacing the module (re-registration of a new module is necessary).

- **ON** – this option is used to enable the valve or disable it temporarily.

- **Pre-set valve temperature** – this parameter enables the user to define the pre-set valve temperature

- **Summer mode** – when the summer mode is selected, the valve closes so as not to heat the house unnecessarily. If the CH boiler temperature is too high (*CH boiler protection* must be switched on), the valve will open as an emergency procedure. This mode is not active in the ***Return protection*** mode.

- **Calibration** - this function enables the user to calibrate the built-in valve at any time e.g. after using it for a long time. During this process, the valve is restored to its safe position – in the case of CH valve and the ***Return protection*** type it is fully open whereas in the case of floor valve and the ***Cooling*** type it is closed.

- **Single stroke** - this is a maximum single stroke (opening or closing) that the valve may make during one temperature sampling. If the temperature is close to the pre-set value, the stroke is calculated on the basis of the ***Proportionality coefficient*** parameter value. The smaller the single stroke, the more precisely the set temperature can be achieved. However, it takes longer for the set temperature to be reached.

- **Minimum opening** - the parameter determines the smallest valve opening. Thanks to this parameter, the valve may be opened minimally, to maintain the smallest flow.

NOTE

If the minimum opening is set to 0% (completely closed), the pump will not work when the valve is closed.

- **Opening time** - this parameter defines the time needed for the valve actuator to open the valve from 0% to 100% position. This value should be set in accordance with the specification given on the actuator rating plate.

- **Measurement pause** - this parameter determines the frequency of water temperature measurement (control) downstream of the CH valve. If the sensor indicates a change in temperature (deviation from the pre-set value), the electric valve will open or close by the pre-set stroke, in order to return to the pre-set temperature.

- **Valve hysteresis** - this option is used to set the hysteresis of the pre-set valve temperature. It is the difference between the pre-set temperature and the temperature at which the valve starts to close or open.

  Example:
  Pre-set valve temperature: 50°C
  Hysteresis: 2°C
  Valve stops at: 50°C
  Valve opens at: 48°C
  Valve closes at: 52°C

  When the pre-set temperature is 50°C and the hysteresis is set to 2°C, the valve will stop in one position after reaching the temperature of 50 °C. When the temperature drops to 48 °C, it will start to open. After reaching 52°C, the valve will start closing in order to lower the temperature.

Type of valve – with this option the user chooses the type of valve to be controlled:

- **CH** - select if you want to control the temperature of the CH circuit with the use of a valve sensor. The valve sensor should be installed downstream of the mixing valve on the supply pipe.

- **Floor** - select if you want to control the temperature of the underfloor heating circuit. It protects the underfloor heating system against dangerous temperature. If the user selects CH as the valve type and connects it to the underfloor heating system, the fragile floor installation may be damaged.

- **Return protection** - select when you want to control the system return temperature with the use of a return sensor. In this type of valve, only the return sensor and the CH boiler sensors are active; the valve sensor is not connected to the controller. In this configuration, the valve protects the CH boiler return against low temperature as a priority, and if the ***CH boiler protection*** function is selected, it also protects the CH boiler against overheating. If the valve is closed (0% opening), water flows only in the short circuit, while full valve opening (100%) means that the short circuit is closed and water flows through the entire heating system.

UWAGA

If ***CH boiler protection*** is switched off, the CH temperature does not affect the valve opening. In extreme cases, the CH boiler may overheat, so it is recommended to configure the CH boiler protection settings.

Information concerning this type of valve is included in the ***Return protection screen***.

- **Cooling** - select when you want to control the temperature of the cooling system (the valve opens when the pre-set temperature is lower than the valve sensor temperature). With this type of valve the following functions do not work: ***CH boiler protection***, ***Return protection***. This type of valve works despite ***Summer mode*** being active, whereas the pump operation is based on deactivation threshold. In addition, this type of valve has a separate heating curve for the ***Weather-based control*** function.

➢ **Opening in calibration** – if this function has been selected, the valve starts its calibration from opening. This function is available only if ***CH valve*** has been selected as the vale type.

➢ **Underfloor heating - summer** – this function is available when ***Floor valve*** has been selected as the valve type. If this function has been selected, the floor valve operates in ***Summer mode***.

➢ **Weather-based control** – in order for the weather-based control function to be active, the external sensor mustn't be exposed to sunlight or influenced by weather conditions. After the sensor has been installed and connected , ***Weather-based control*** needs to be activated in the controller menu.

NOTE

This setting is not available in ***Cooling*** or ***Return protection*** modes.

Heating curve - it is a curve according to which the pre-set controller temperature is determined, on the basis of outside temperature. In order for the valve to work properly, the pre-set temperature (downstream of the valve) is defined for four intermediate outside temperatures: -20 °C, -10 °C, 0 °C and 10 °C. There is a separate heating curve for ***Cooling*** mode. It is set for the following intermediate outside temperatures: 10 °C, 20 °C, 30 °C, 40 °C.

➢ **Room regulator**

- **Type of regulator**

  → **Control without room regulator** – when this option is active, the room regulator does not influence the valve operation.

  → **RS regulator decrease** – this option should be selected if the valve will be controlled by a room regulator with RS communication. When this function is active, the regulator works according to the ***Room reg. temp. lower*** parameter.

  → **RS proportional regulator** – activating this room regulator enables the user to monitor current temperature of CH boiler, water tank and the valves. When this type of room regulator is selected, the valve is controlled according to ***Change of pre-set valve temp***. and ***Room temperature difference*** parameters.

  → **Standard regulator** – this option should be selected if the valve will be controlled by a two-state room regulator (without RS communication). When this function is active, the regulator works according to the ***Room reg. temp. lower*** parameter.

- **Room reg. temp. lower** - the user defines the temperature value by which the pre-set valve temperature will be reduced when the pre-set room regulator temperature is reached.

NOTE

This parameter concerns the valve ***Standard regulator*** and ***RS regulator decrease*** functions.

- **Room temperature difference** - this setting defines a single unit change in the current room temperature (with the accuracy of 0.1°C) at which a predefined change in the pre-set temperature of the valve will be introduced.

- **Change of pre-set temperature** - this setting determines by how many degrees the valve temperature is to increase or decrease with a single unit change in room temperature (see: ***Room temperature difference***) This function is active only with RS room regulator and it is closely related to the ***Room temperature difference*** parameter.

  Example: Room temperature difference: 0,5°C
  Change in the set temp.: 1°C
  Pre-set valve temperature: 40°C
  Pre-set temperature of room regulator: 23°C

  If the room temperature rises to 23,5ºC (0,5ºC above the pre-set room temperature), the valve closes until 39ºC is reached (1ºC change).

NOTE
This parameter concerns the ***RS proportional regulator*** function.

- **Room regulator function** - this function enables the user to decide if the valve will close (***Closing***) or the temperature will drop (***Room reg. temp. lower***) when the pre-set temperature is reached.

- **Proportionality coefficient** – proportionality coefficient is used for defining the valve stroke. The closer to the pre-set temperature, the smaller the stroke. If the coefficient value is high, the valve takes less time to open but at the same time the opening degree is less accurate.

  The following formula is used to calculate the percent of a single opening:

  (PRE-SET TEMP. - SENSOR TEMP.) x (PROP. COEFFICIENT /10)

- **Maximum floor temperature** – the function determines the maximum temperature which the valve sensor can reach (if *Floor* valve type has been selected). When this value is reached, the valve closes, the pump is turned off and information about the floor overheating is displayed on the main screen of the controller.

NOTE
This option is available only if the ***Floor*** valve type has been selected.

- **Opening direction** – if it turns out after connecting the valve to the controller that it has been connected the wrong way round, the power supply cables do not have to be switched. Instead, it is enough to change the opening direction in this parameter: Left or Right.

- **Sensor selection** – this option applies to the return sensor and the external sensor and it allows the user to determine whether the valve module's ***Own sensors*** or ***Main controller sensors*** will be taken into account in the additional valve control. (Only in Subordinate mode).

- **CH boiler protection** – protection against too high CH temperature is intended to prevent a dangerous increase in the CH boiler temperature. The user sets the maximum acceptable temperature of the CH boiler. In the event of a dangerous increase in temperature, the valve begins to open in order to cool the CH boiler down. The user also sets the maximum acceptable CH temperature, at which the valve will open.

NOTE

This function is not active when the ***Cooling*** or ***Floor*** valve type has been selected.

- **Return protection** – this function allows setting up CH boiler protection against too cool water returning from the main circulation, which could cause low-temperature boiler corrosion. The return protection involves closing the valve when the temperature is too low, until the short circuit of the boiler reaches the appropriate temperature.

NOTE

This function is not available when the ***Cooling*** valve type has been selected.

- **Valve pump**

  - **Pump operation mode** – this function enables the user to choose the pump operation mode:
    - → **Always ON** – the pump operates all the time, regardless of temperatures.
    - → **Always OFF** – the pump is switched off permanently and the regulator controls only the valve operation.
    - → **ON above threshold** – the pump is activated above the switch-on temperature. If the pump is to be activated above the threshold, the user should also define the threshold pump switch-on temperature. The controller uses the readings from CH temperature sensor.

  - **Switch-on temperature** - this option concerns the pump activated above threshold. The valve pump will be activated when the CH boiler sensor reaches the pump switch-on temperature.

  - **Pump anti-stop** - when this function is active (ON), the pump is activated every 10 days for 2 minutes. It prevents stagnant water in the heating system outside the heating season.

  - **Closing below temperature threshold** - when this function is active (ON), the valve remains closed until the CH boiler sensor reaches the pump switch-on temperature.

    NOTE

    If the additional valve module is the EU-i-1, it is possible to set the *pump anti-stop* and *closing below threshold* functions directly from the module submenu.

  - **Room regulator valve pump** - when this option is active, the room regulator disables the pump when the pre-set temperature is reached.

  - **Only pump** - when this function is active, the controller controls only the pump whereas the valve is not controlled.

- **External sensor calibration** – this function is used to calibrate the external sensor. Sensor calibration should be performed while mounting or after it has been used for a long time, if the outside temperature displayed differs from the actual temperature. Calibration setting range is from -10°C to +10°C with the accuracy of 0,1°C.

- **Closing** – This parameter determines the valve reaction in CH mode after it has been switched off. If this option is selected, the valve will close. If it is deselected, the valve will open.

- **Valve weekly control** – this function enables the user to program daily changes of the pre-set valve temperature for particular time and day of the week. The temperature deviation range is +/-10^{o}C.

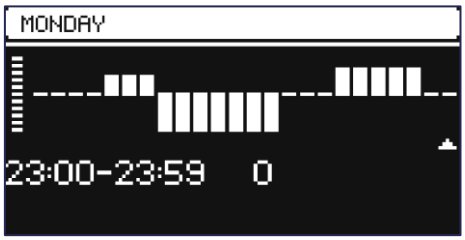
  In order to configure weekly control function, select ***Mode 1*** or ***Mode 2***. Detailed settings of these modes may be found in ***Set mode 1*** and ***Set mode 2***.

NOTE
To ensure that this function works properly, it is necessary to set current time and date.

MODE 1 – the user sets the temperature deviations for **each day of the week separately.** In order to do it, follow these steps:

→ Select ***Set mode***
→ Select the day of the week to be edited.
→ Use the buttons ∨∧ to select the hour for which the temperature will be edited and confirm by pressing the MENU button.
→ Options appear at the bottom - select CHANGE by pressing the MENU button when it is highlighted in white.
→ Decrease or increase the temperature by the selected value and confirm.
→ If you want to apply the same change to the next hours, press the MENU button after selecting the setting. Options will appear at the bottom of the screen - select COPY and copy the setting to the next or previous hour using the buttons ∨∧. Confirm by pressing MENU.

Example:



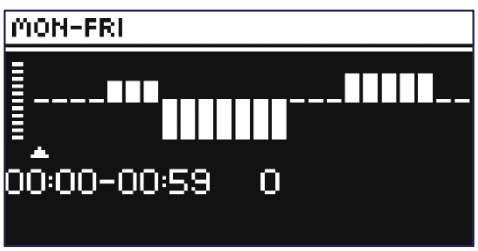
	Time	Temperature - **weekly control setting**
Monday		
PRE-SET	4^{00} - 7^{00}	+5°C
	7^{00} - 14^{00}	-10°C
	17^{00} - 22^{00}	+7°C

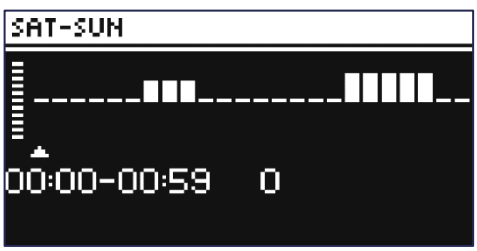
If the pre-set valve temperature is 50°C, on Mondays between 4^{00} and 7^{00} it will increase by 5°C to reach 55°C; between 7^{00} and 14^{00} it will drop by 10°C, to reach 40°C, and between 17^{00} and 22^{00} it will increase to reach 57°C.

MODE 2 – the user sets the temperature deviations for all **working days** (Monday-Friday) and for **the weekend** (Saturday-Sunday) separately. In order to do it, follow these steps:

→ Select: ***Set mode 2***.
→ Select the part of the week to be edited.
→ Follow the same procedure as in the case of ***Mode 1***.

Example:





	Time	Temperature - **weekly control setting**
Monday - Friday		
PRE-SET	4^{00} - 7^{00}	+5°C
	7^{00} - 14^{00}	-10°C
	17^{00} - 22^{00}	+7°C
Saturday - Sunday		
PRE-SET	6^{00} - 9^{00}	+5°C
	17^{00} - 22^{00}	+7°C

If the pre-set CH boiler temperature is 50°C, from Monday to Friday between 4^{00} and 7^{00} the CH boiler will increase by 5°C to reach 55°C; between 7^{00} and 14^{00} it will drop by 10°C, to reach 40°C, and between 17^{00} and 22^{00} it will increase to reach 57°C.
At the weekend, between 6^{00} and 9^{00} the temperature will increase by 5°C to reach 55°C, and between 17^{00} and 22^{00} it will increase to reach 57°C.

- **Factory settings** – this parameter enables the user to restore the valve parameters saved by the manufacturer. When the factory settings are restored. the valve type changes to CH valve.

4.2. ADDITIONAL MODULES

Menu → Fitter's menu → **Additional modules**

After registering the additional module EU-ML-12, the user can control the operation of additional zones supported by the EU-ML-12 module using the main EU-L-12 controller and online. Each EU-ML-12 controller allows the user to control another 8 zones. The system can control up to 40 zones.

NOTE

This function enables the user to register up to 4 EU-ML-12 controllers.

Detailed description of how to register the EU-ML-12 modules may be found in the device manual.

NOTE

Registration will only be successful if the system versions * of the registered devices are compatible with each other.

* system version - version of the communication protocol between devices

After registration of the EU-ML-12 additional module, it is possible to change the parameters of this module using the EU-L-12 external controller in the option: Menu → Fitter's menu → Additional modules → Module 1..4. The description of individual functions is described in the EU-ML-12 manual. In addition, the Information screen allows you to view the parameters of additional modules and the current version of the software.

4.3. EXTERNAL SENSOR

Menu → Fitter's menu → **External sensor**

An external temperature sensor can be connected to the EU-L-12 controller, which enables weather-based control function to be activated. The system allows only one to be registered in the main module (EU-L-12), and the current value of the outside temperature is displayed on the main screen and sent to other devices (EU-ML-12 and EU-M-12).

- **Sensor selection** - you can choose the NTC and OpenTherm wired sensor or the EU-C-8zr wireless sensor. The wireless sensor requires registration.

- **ON** - in order to use the weather-based control function, it is necessary turn on the selected sensor.

- **Weather-based control** - after activating the external sensor, the outside temperature will be displayed on the main screen, while the average outside temperature will be displayed in the controller menu.

  The function, on the basis of the outside temperature, allows you to determine the average temperature, which will operate according to the temperature threshold. If the average temperature exceeds the specified temperature threshold, the controller will disable heating in the zone in which the weather-based control function is active.

  - **Averaging time** – the user sets the time on the basis of which the average outside temperature will be calculated. The setting range is from 6 to 24 hours.

  - **Temperature threshold** – it is a function which protects against excessive heating of a given zone. The zone in which the weather-based control has been activated will not be heated if the average daily outside temperature exceeds the set threshold temperature. For example: when the temperatures increase in spring, the controller will prevent unnecessary heating of the rooms.

- **Calibration** - Calibration should be performed while mounting or after the sensor has been used for a long time if the temperature measured by the sensor differs from the actual temperature. Calibration setting range is from -- from 10°C to +10°C with the accuracy of 0,1°C.

In the case of a wireless sensor, the following parameters concern the range and the battery level.

4.4. CONTROL PANEL

Menu → Fitter's menu → **Control panel**

The EU-M-12 control panel is a device which enables the user to view and edit the settings of particular devices in the system. In order to make it possible, the panel must be registered in the EU-L-12 controller.

- Connect the panel to the EU-L-12 controller and connect both devices to the power supply.

- In the EU-L-12 controller, select ***Menu → Fitter's menu → Control panel → Type of device***
  The panel can be registered as a wired or a wireless device, depending on its type.

- Click ***Registration*** on the EU-M-12 panel screen.

After successful registration, data synchronization is carried out and the panel is ready for operation.

4.5. REPEATER CONFIGURATION

Menu → Fitter's menu → **Repeater configuration**

In order to be able to use the repeater between the EU-L-12, EU-ML-12 and EU-M-12 controllers, it must first be configured. Activate the ***Repeater configuration*** function in the EU-L-12 controller by selecting ***Menu → Fitter's menu***, and then hold the registration button on the repeater for 5 seconds.
Successful configuration of the repeater will be indicated by all LEDs flashing simultaneously.

4.6. INTERNET MODULE

Menu → Fitter's menu → **Internet module**

Internet module is a device enabling the user remote control of the CH boiler via the Internet. The **emodul.eu** application enables the user to control the status of all the system devices as well as adjust certain parameters.

After registering and 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.

The internet module can be connected to the controller via an RS cable. A detailed description of registration is described in the user manual of the internet module.

NOTE

Such online control is possible only after connecting an EU WiFi L (included with the controller) or after purchasing and connecting an additional module EU-505, EU-WiFi RS, which are not included in the standard controller set.

4.7. MANUAL MODE

Menu → Fitter's menu → **Manual mode**

This function enables the user to activate particular devices (pump, potential-free contact and particular valve actuators) independently of the others in order to check if they operate properly. It is advisable to check the devices using this procedure at the first start-up.

4.8. HEATING STOPPING

Function to prevent actuators from turning on at specified time intervals.

- **Date settings**

- **Heating deactivation** – Set the date from which the heating will be switched off
- **Heating activation** - setting the date from which the heating will be switched on

- **Weather control** - When the external sensor is connected, the main screen will display the external temperature and the controller menu will display the mean external temperature.

The function based on the outside temperature allows determining the mean temperature, which will work on the basis of the temperature threshold. If the mean temperature exceeds the specified temperature threshold, the controller will switch off the heating of the zone in which the weather control function is active.

- **ON** – to use the weather control, the selected sensor must be enabled
- **Averaging time** – the user sets the time on the basis of which the mean outside temperature will be calculated. Setting range is from 6 to 24 hours.
- **Temperature threshold** – this is a function protecting against excessive heating of the given zone. The zone in which the weather control is switched on will be blocked from overheating if the mean daily outdoor temperature exceeds the set threshold temperature. For example, when temperatures rise in the spring, the controller will block unnecessary room heating.
- **Average external temperature** – temperature value calculated on the basis of the ***Averaging time***

4.9. POTENTIAL-FREE CONTACT

Menu → Fitter's menu → **Potential-free contact**

The EU-L-12 controller will activate the potential- free contact (after the delay time has elapsed) when any of the zones has not reached the pre-set temperature (heating - when the zone temperature is too low, cooling - when the zone temperature is too high). The controller disconnects the contact when the pre-set temperature has been reached.

- **Manual mode** - this function enables the user to switch on the contact from the level of a subordinate controller (additional module EU-ML-12) registered in the EU-L-12 main controller.
- **Operation delay** - this function enables the user to set the delay time of the potential-free contact activation after the temperature drops below the pre-set value in any of the zones.

4.10. PUMP

Menu → Fitter's menu → **Pump**

EU-L-12 controls the pump operation - it enables the pump (after the pre-defined delay time) if any of the zones has not reached the pre-set temperature and the floor pump operation option has been activated in the given zone. When all the zones reach the pre-set temperature, the pump is disabled.

- **Remote operation** - this function enables the user to switch on the pump from the level of a subordinate controller (additional module EU-ML-12) registered in the EU-L-12 main controller.

- **Operation delay** - this function enables the user to define the delay time for pump activation after the temperature drops below the pre-set value in any of the zones. Pump activation delay is used to ensure enough time for the actuator to open.

4.11. HEATING - COOLING

Menu → Fitter's menu → **Heating - Cooling**

This function enables the user to select the operation mode:

- **Remote operation** - this function enables the user to activate an operation mode from the level of a subordinate controller (additional module EU-ML-12) registered in the EU-L-12 main controller.

- **Heating** – all the zones are heated

- **Cooling** – all the zones are cooled

- **Automatic** – a two-state intput is used to switch between heating and cooling

4.12. ANTI-STOP SETTINGS

Menu → Fitter's menu → **Anti-stop settings**

This function forces pump operation and prevents scale deposit outside the heating season when the pump inactivity periods are long. When this function is active, the pump is enabled at a pre-defined frequency (e.g. every 10 days for 5 minutes).

4.13. MAXIMUM HUMIDITY

Menu → Fitter's menu → **Maximum humidity**

If the current humidity level is higher than the maximum humidity, cooling will be disabled in a given zone.

NOTE

This function is available in the ***Cooling*** mode when a humidity sensor is registered in the zone.

4.14. OPENTHERM

Menu → Fitter's menu → **OpenTherm**

- **ON** – this function is used to enable/disable the OpenTherm communication with gas boilers.
- **Weather-based control**:
  - **On -** the function allows the user to turn on the weather-based control. In order do this, install the external sensor in a place not exposed to weather conditions.
  - **Heating curve** - it is a curve that is used to determine the pre-set gas boiler temperature on the basis of the outside temperature. In the controller, the curve is constructed on the basis of four set temperature values for respective outside temperatures.
  - **Minimum temperature** - this option allows the user to set the minimum boiler temperature.
  - **Maximum temperature** - this option allows you to set the maximum boiler temperature.
- **Pre-set CH temp.** – this option is used to define the pre-set CH temperature at which heating will be disabled.
- **DHW settings**
  - **Operation mode** - this function enables the user to choose between schedule, time mode and constant mode. If the constant or time mode is:
    - **Active** – the pre-set DHW temperature applies
    - **Inactive** – decrease temperature applies
  - **Pre-set temperature** – this option enables the user to define the pre-set DHW temperature at which the pump will be disabled (it applies when ***Active*** mode is selected)
  - **Decrease temperature** - this option enables the user to define the pre-set DHW and it applies when ***Inactive*** mode is selected.
  - **Schedule settings** - the function allows the user to configure the schedule, i.e. the time and days when a specific pre-set DHW temperature will apply.

4.15. LANGUAGE

Menu → Fitter's menu → **Language**

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

4.16. DHW SETTINGS

Menu → Fitter's menu → **DHW settings**

- **ON** – the relay output of zone 8 is used as a DHW output
- **Operation mode** – this function is used to select the mode: schedule, time mode or constant mode.
- **Settings:**
  - **Schedule** - the function allows the user to set the schedule, i.e. the time and days when the pre-set temperature will apply.
  - **Time mode** - the pre-set temperature will be apply only for the pre-defined time. The user can change the contact status by selecting/deselecting the ***Active*** option and setting the ***Duration*** of this mode.
  - **Constant mode** - the pre-set temperature will apply permanently. It is possible to change the contact status by selecting/deselecting the ***Active*** option.
  - **DHW hysteresis** - the DHW hysteresis is the difference between the pump activation and deactivation temperature (DHW output) in order to achieve the pre-set temperature.

Example: Pre-set temperature: 60°C
Hysteresis: 3°C

The pump will turn on when the pre-set temperature drops below 57°C. It will turn off after reaching the pre-set temperature of 60°C.

NOTE
The activated DHW function replaces zone 8 (the icon  in place of the zone) and the current water temperature is read from the NTC sensor connected as **Sensor 8** in the main controller.

4.17. HEAT PUMP

Dedicated mode for the installation operating with a heat pump, allowing for optimal use of its capabilities.

- **Energy saving mode** – ticking the option will start the mode and more options will appear
- **Minimum pause time** – a parameter limiting the number of compressor switches, which allows to extend the life of the compressor.
  Regardless of the need to reheat a given zone, the compressor will start only after the time counted from the end of the previous work cycle has elapsed.
- **Bypass** – an option needed in the absence of a buffer, providing the heat pump with an appropriate heat capacity. It relies on sequential opening of subsequent zones every specified time.
  - **Floor pump** – activate/deactivate floor pump
  - **Cycle time** – time for which the selected zone will be opened

4.18. FACTORY SETTINGS

Menu → Fitter's menu → **Factory settings**

This parameter enables the user to restore the Fitter's menu settings saved by the manufacturer.

5. SERVICE MENU

The parameters available in the service menu should be configured only by authorized persons and access to this menu is secured with a code (provided by TECH Sterowniki)

6. FACTORY SETTINGS

This parameter enables the user to restore the controller settings saved by the manufacturer.

7. SOFTWARE VERSION

When this option is selected, the display shows the logo of the manufacturer and the controller software version number. The software version number is necessary while contacting TECH Sterowniki service staff.

VII. ALARM LIST

Alarm	Possible cause	How to fix it
Sensor damaged (room sensor, floor sensor)	Sensor shorted or damaged	- Check the connection with the sensor - Replace the sensor with a new one or contact the service staff if necessary.
No communication with sensor / wireless regulator	- No range - No battery - Flat battery	- Put the sensor/regulator in a different place - Insert batteries in the sensor/regulator The alarm deactivates automatically when communication is established.
No communication with module / control panel / wireless contact	No range	- Put the device in a different place or use a repeater to extend the range. The alarm deactivates automatically when communication is established.
No Open Therm communication	- Communication cable damaged - Gas boiler switched off or damaged	Check the connection with the gas boiler. Contact the service staff if necessary.
Software update	System communication versions in the two devices are not compatible	Update the software to the latest version.
STT-868 actuator alarm		
ERROR #0	Flat battery in the actuator	Replace the batteries
ERROR #1	Some mechanical or electronic parts have been damaged	Contact the service staff
ERROR #2	- 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

ERROR #3	- 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
ERROR #4	- No range - No batteries	- Check the distance between the actuator and the controller - Insert batteries into the actuator After the communication is re-established, the alarm is deactivated automatically.
STT-869 actuator alarm		
ERROR #1 - Calibration error 1 – Moving the screw to the mounting position	- The limit switch sensor is damaged	- Calibrate actuator again by holding the communication button until the third flash of green light - Call the service staff
ERROR #2 - Calibration error 2 – The screw is maximally pulled out. No resistance while pulling out	- The actuator has not been screwed to the valve or has not been screwed completely - The valve stroke is too big or the valve dimensions are not typical - Actuator current sensor is damaged	- Check if the controller has been installed properly - Replace the batteries - Calibrate actuator again by holding the communication button until the third flash of green light - Call the service staff
ERROR #3 - Calibration error 3 - The screw has not been pulled out enough - the screw meets resistance too early	- The valve stroke is too small or the valve dimensions are not typical - Actuator current sensor is damaged - Low battery level	- Replace the batteries - Call the service staff
ERROR #4 - No feedback	- The master controller is switched off - Poor range or no range to connect with the master controller - Radio module in the actuator is damaged	- Check if the master controller is on - Reduce the distance from the master controller - Call the service staff
ERROR #5 - Low battery level	The battery is flat	- Replace the batteries
ERROR #6 - Encoder is locked	The encoder is damaged	- Calibrate actuator again by holding the communication button until the third flash of green light - Call the service staff
ERROR #7 - To high voltage	- Unevenness of the screw, the thread etc. may cause excessive resistance - Too high resistance of gear or motor - Current sensor is damaged	
ERROR #8 - Limit switch sensor error	Limit switch sensor damaged	
EU-G-X actuator alarm		
ERROR #1 - Calibration error 1	Bolt retraction to mounting position took too long.	Locked/damaged actuator piston. Check the assembly and recalibrate the actuator.
ERROR #2 - Calibration error 2	Bolt maximally extended as it did not meet any resistance during extension.	• actuator was not screwed properly onto the valve

		• the actuator was not fully tightened onto the valve • actuator movement was excessive, or non-standard valve encountered • motor load measurement failure occurred Check the assembly and recalibrate the actuator.
ERROR #3 - Calibration error 3	Bolt extension too short. The bolt met resistance too early during the calibration process.	• valve movement was too small, or a non-standard valve encountered • motor load measurement failure • motor load measurement inaccurate due to low battery charge Check the assembly and recalibrate the actuator.
ERROR #4 - Actuator feedback communication error.	For the last x minutes, the actuator did not receive a data package via wireless communication. After this error is triggered, the actuator will set itself to 50% opening. The error will reset after a data package is received.	• master controller disabled • poor signal or no signal originating from the master controller • defective RC module in the actuator
ERROR #5 - Battery low	The actuator will detect battery replacement after voltage rises and launch calibration	• battery depleted
ERROR #6	-	-
ERROR #7 - Actuator blocked		• while changing the opening of the valve, excessive load was encountered Recalibrate the actuator.

VIII. SOFTWARE UPDATE

In order to install new software, disconnect the controller from the power supply. Insert a flash drive with new software into the USB port. Next, connect the controller to the power supply holding EXIT at the same time until a single sound signal is heard. It indicates that the software installing process has started. After successful update, the controller will reset automatically.

NOTE

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

NOTE

Do not switch off the controller during software update.

IX. TECHNICAL DATA

Power supply	230V ± 10% / 50 Hz
Maximum power consumption	4W
Ambient temperature	5 ÷ 50°C
Maximum load of potential outputs 1-8	0,3A
Maximum load of pump	0,5A
Potential-free cont. nom. out. load	230V AC / 0,5A (AC1) * 24V DC / 0,5A (DC1) **
Thermal resistance of NTC sensor	-30 ÷ 50°C
Operation frequency	868MHz
Fuse	6,3A

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

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

EU DECLARATION OF CONFORMITY

Hereby, we declare under our sole responsibility that **EU-L-12** manufactured by TECH STEROWNIKI II Sp. z o.o., headquartered 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 par. 3.1a Safety of use

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

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

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

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

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

PN EN IEC 63000:2019-01 RoHS.

Wieprz, 26.05.2023

Paweł Jura Janusz Master

Prezesi firmy

TECH
CONTROLLERS

Central headquarters:
ul. Biała Droga 31, 34-122 Wieprz

Service:
ul. Skotnica 120, 32-652 Bulowice

phone: **+48 33 875 93 80**
e-mail: **serwis@techsterowniki.pl**