RT520 THERMOSTAT - FULL USER MANUAL

SALUS CONTROLS

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1. Introduction

1.1 Product Compliance

This product complies with the essential requirements and other relevant provisions of Directives 2014/53/EU and 2011/65/EU. The full text of the EU Declaration of Conformity is available at the following internet address: www.saluslegal.com.

1.2 Safety Informations

• Before starting installation work and before using the product, read the entire manual.
• The information contained in the instructions is essential for proper functioning.
• To avoid accidents resulting in personal injury and material damage, please follow all safety precautions, specified in this manual.
• The device should not be used by people with limited mental, sensory or mental abilities, without experience, of insufficient knowledge as well as children.
• Do not use an unassembled device (eg without a cover).
• The device may only be opened by a qualified person.
• Keep electrical devices out of the reach of children and ensure that they do not play with it. Children should not be left unattended. If necessary, disconnect the control system for the entire room.
• Do not leave the packaging, cabinet, or any loose parts of the device unattended, as they pose a risk to children.

WARNING!
• Installation must be carried out by a qualified person with appropriate electrical qualifications in accordance with standards and regulations in force in the given country and in the EU.
• Never try to connect the device other than as described in the manual.
• Before assembly, repair or maintenance as well as during any connection works it is absolutely necessary disconnect the mains supply and make sure that the terminals and electric wires are not live.
• The device may not be exposed to extreme temperatures, strong vibrations or subjected to mechanical shock.
• The device should not be used in unfavorable environmental conditions or in rooms where there is a concentration of flammable gases, fumes or dust.

WARNING!
• There may be additional protection requirements for the entire installation that the installer is responsible for maintaining.

Care for the natural environment is of paramount importance to us. The awareness that we manufacture electronic devices obliges us to dispose of used electronic components and devices safely. Therefore the company has received a registration number issued by the Chief Inspector for Environmental Protection. The crossed out symbol the trash can on the product means that the product must not be disposed of with ordinary waste containers. Sorting waste for recycling helps to protect the environment. It is the user's responsibility to surrender used equipment to a designated collection point for recycling waste from electrical and electronic equipment.

2. Product Overview

The RT520 room thermostat simply switches the heating system on and off as necessary. It works by sensing the air temperature, switching on the heating when the air temperature falls below the thermostat setting, and switching it off once this set temperature has been reached.

Turning a room thermostat to a higher setting will not make the room heat up any faster. How quickly the room heats up depends on the design of the heating system, for example, the size of boiler and radiators. Neither does the setting affect how quickly the room cools down. Turning a room thermostat to a lower setting will result in the room being controlled at a lower temperature, and saves energy.

The heating system will not work if a time switch or programmer has switched it off.

The way to set and use your room thermostat is to find the lowest temperature setting that you are comfortable with, and then leave it alone to do its job. The best way to do this is to set the room thermostat to a low temperature – say 18^{0}C – and then turn it up by one degree each day until you are comfortable with the temperature.

You won't have to adjust the thermostat further. Any adjustment above this setting will waste energy and cost you more money.

If your heating system is a boiler with radiators, there will usually be only one room thermostat to control the whole house. But you can have different temperatures in individual rooms by installing thermostatic radiator valves (TRVs) on individual radiators. If you don't have TRVs, you should choose a temperature that is reasonable for the whole house. If you do have TRVs, you can choose a slightly higher setting to make sure that even the coldest room is comfortable, then prevent any overheating in other rooms by adjusting the TRVs.

Room thermostats need a free flow of air to sense the temperature, so they must not be covered by curtains or blocked by furniture. Nearby electric fires, televisions, wall or table lamps may prevent the thermostat from working properly.

Thermostat is compatibile with OpenTherm OT+ 4.0 version.
The OpenTherm protocol is an open standard communication protocol used in central heating systems for two-way communication between a central heating boiler and a room thermostat. Thanks to the communication protocol, the boiler power is modulated, which can significantly increase the energy efficiency of the heating system while maintaining the set temperature in the room. OpenTherm modulation, compared to standard communication (ON / OFF), occurs by setting the desired temperature of water from the boiler (boiler power), and not by its cyclical switching on and off.

PLEASE NOTE!

Make sure your gas combi boiler is compatible with OT + 4.0 communication protocol.
The list of compatible boilers is on the next page.

Product advantages:

- automatically detects OT + 4.0 protocol and regulates hot water temperature
- possibility to choose Hysteresis or built-in TPI algorithm for all types of heating
- works with time schedules
- service mode protected by a PIN code
- maximum / minimum temperature limitation
- can temporarily change the temperature (overwriting until the next program change)

2.1 Example of boilers compatible with the OpenTherm OT+ 4.0 protocol

COMPANY	MODEL
Alpha Heating	E-Tec S E-tec Plus E-tec Evoke Intec GS
Atag	iC iC Economiser iS
Baxi	100 Combi 200 Combi 400 Combi 600 Combi
Daikin	D2CND 24Kw D2CND 28kw D2CND 35kw
Ferroli	i25 Condensing Combination Boiler i29 Condensing Combination Boiler
Ideal	Independent + Combi Independent Combi Independent System Logic Combi+ Combi C Logic Combi C24, C30, C35 (via a separate bundle set) Logic Code Combi (via a separate bundle set) I-mini C24, c30 (via a separate bundle set) Vogue Combi C26,C32, C40 Logic + System Logic + Heat
Intergas	Intergas Rapid Intergas Rapid Plus Combi Compact, Compact Range ECO RF Xtreme Xclusive
Main	Eco Compact Combi 25-30
Navien	Navien NCB
Ravenheat	Avanta, Quinta Ace Quinta Pro Gas 110 Eco
Vokera	Evolve C Evolve S Linea One (przez OpenTherm Kit Part_1221179) Vision Combi (requires a control interface 294501430 Compact A (requires a control interface 29450143) Verve (only heating mode) Mynute I (only heating mode) Vision System (only heating mode) Unica I Vibe Vision C

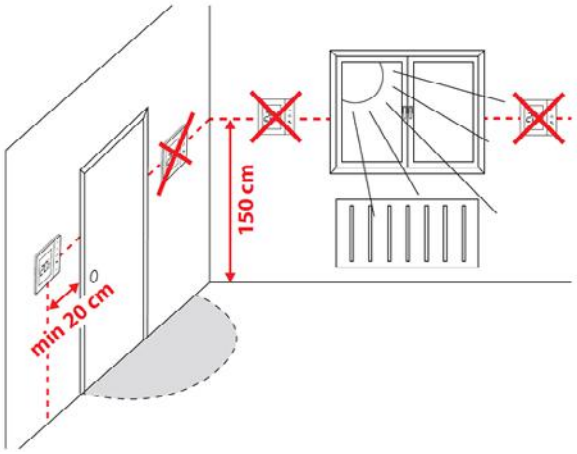
COMPANY	MODEL
Vokera	Linea HE Mynute A Mynute HE Unica HE
Viessmann	Vitodens 100W Typ WB1A (Connection: X3.3 and X3.4) Vitodens 100W Typ WB1B (Connection: X21.1 and X21.2) Vitodens 100W Typ WB1C (Connection: X21.1 and X21.2) Vitodens 200-W WB2B 26+ 35 kW (via Expansion Module OT and OT-A8 + _Terminal -10 and +10 are on the extension of the A8 boiler) Vitodens 200-W WB2C, B2HA,B2JA, B2LA (via icm Expander OpenTherm)
Vaillant (via Vaillant VR33 module)	Ecotec Pro Ecotec Plus Ecotec Exclusive Ecofit Pure
Worcester Bosch (via Nefit EMS-OT OpenTherm converter)	EMS capable boilers Greenstar i Greenstar i Junior (Made in July 2013) Greenstar Si Compact Greenstar CDi Compact Greenstar CDi Classic (Made after 16.01.2007 with CF12.10 software version and newer) Greenstar Highflow CDi Greenstar 12i System – 24i System (On condition that an optional integrated diverter valve manufactured after February 2011 is installed) Greenstar 27i System – 30i System (Provided the optional Integrated Changeover Valve is installed Greenstar CDi Classic System (provided the optional Integrated Changeover Valve manufactured after 02/16/2007 with software version CF12.10 and above is installed))

2.2 Montage

2.3 Package content

1) RT520 thermostat
2) Back housing
3) 2x AA batteries
4) Short instruction
5) Mounting screws

2.4 Proper thermostat location



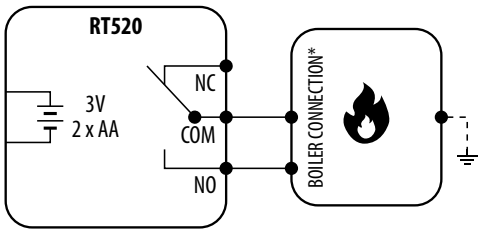
Please note:

The ideal position to thermostat mounting is about 1,5m under floor level far from heating or cooling sources. Thermostat can't be exposed to sunlight or any extreme conditions like for example draft.

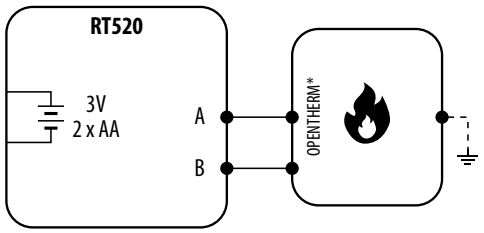
Because of fire and explosion risk there is not allowed to use thermostat in atmosphere of explosive gases and flammable liquids (eg coal dust). In case if any of listed dangers occur you have to use additional protection measures – anti-dust and explosive gases (tight cover) or prevent their formation. Furthermore, thermostat can't be used in condensation of water vapor conditions and be exposed to water action.

2.5 Connection description

I A - Boiler connection

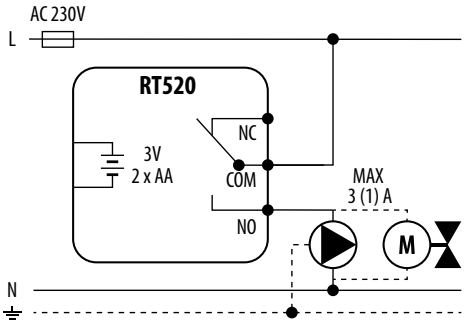


(ON / OFF)

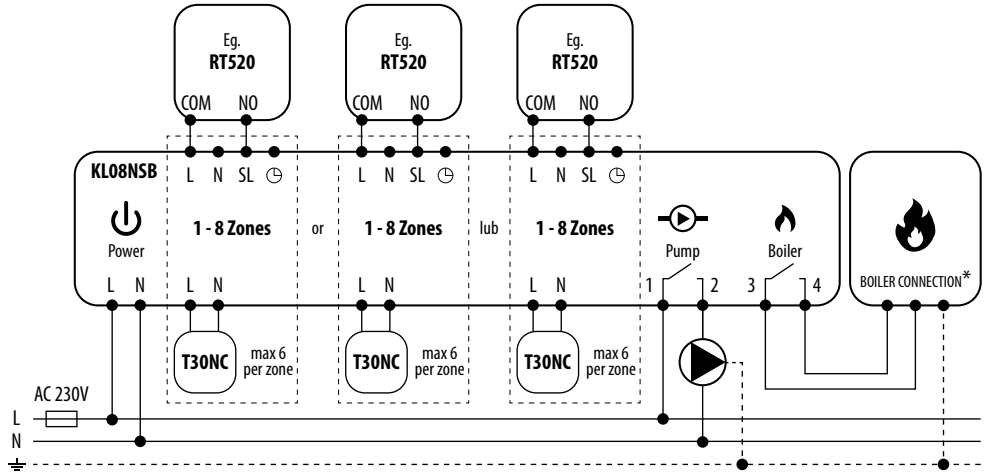


OpenTherm

I B - Pump / Valve connection



I C - KL08NSB underfloor heating wiring center connection



Legend:

Boiler - Boiler connection* - Boiler's contacts for ON/OFF thermostat (according to the boiler's instructions)

Pump

Valve

Symbols explanation:

L, N - power supply 230V

NO, COM, NC - voltage-free output

A, B - OpenTherm Communication Wire

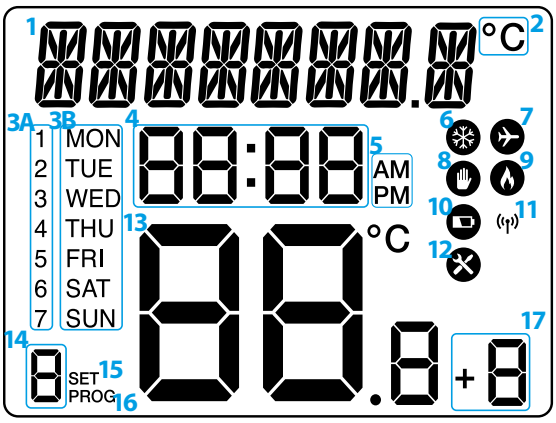
SL - 230V AC voltage output

- NSB function

- fuse

3. Before you start (first power up)

3.1 LCD icon description



1. Text Bar
2. Temperature Unit
3A. Day of the week (numeric)
3B. Day of the week (alphabetic)
4. Clock
5. AM / PM
6. Cooling Mode On
7. Holiday Mode On
8. Manual Mode On
9. Heating Mode On
10. Low battery status
11. Wireless connection with the receiver
12. Service Mode On
13. Temperature measured / set
14. Program number
15. Settings
16. Program indicator
17. Boost function

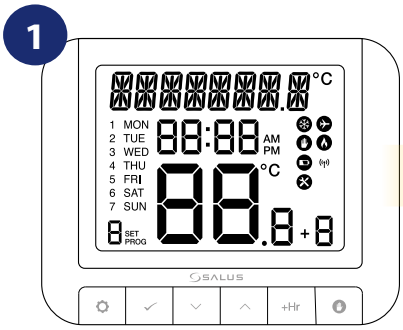
3.2 Button description

1. MENU / RETURN - enter the menu options, press and hold for 3 sec to return to main screen or to deactivate Boost or Manual modes.
2. SELECT - confirm changes and enter menus.
3. DOWN - decrease the temperature and move through the menus.
4. UP - increase the temperature and move through menus.
5. BOOST - activate Boost Mode.
6. MANUAL - press once to activate / press and hold for 3 sec to deactivate Manual Mode.

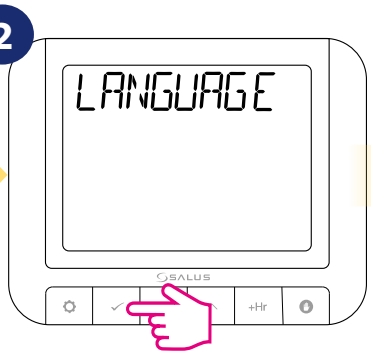
PLEASE NOTE! The LCD screen can be activated by using any button.

3.3 First power up sequence and configuration

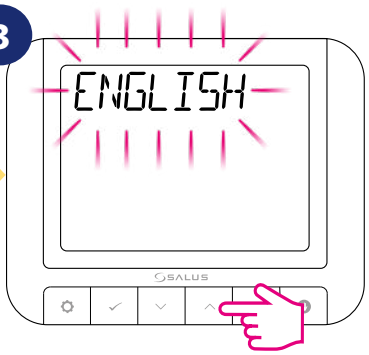
Please make the receiver connections and power the receiver before inserting the batteries into the thermostat.



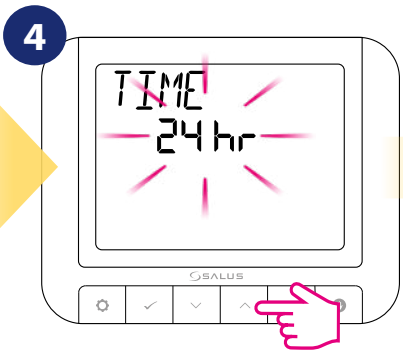
After inserting the batteries, the thermostat will power up.



Press .

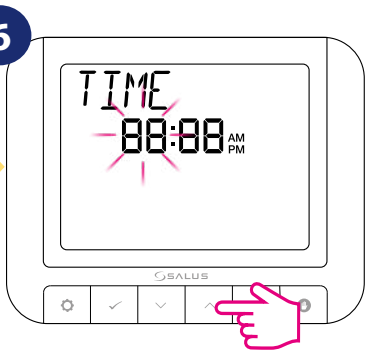


Using or , choose your language and then press .

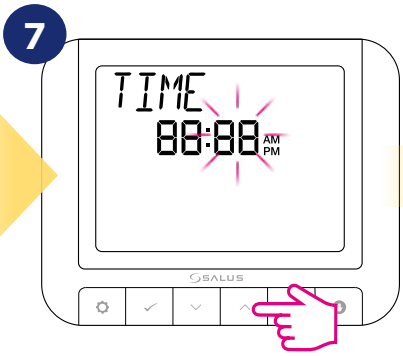


Using or , choose the time format.

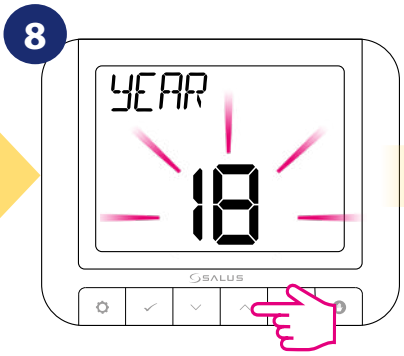
Press to confirm.



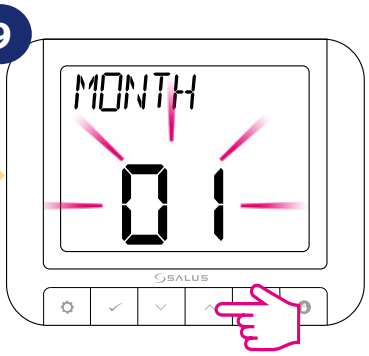
Using or , set the hour and then press .



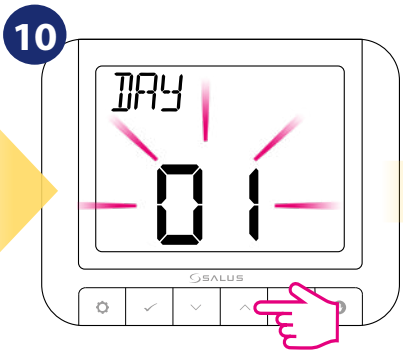
Using or , set the minutes and then press .



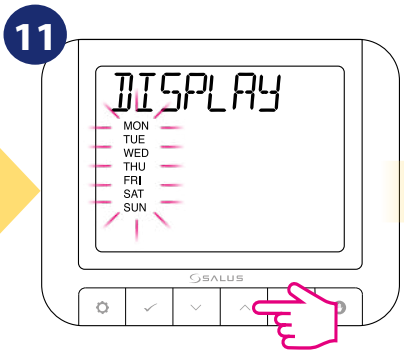
Using or , set the year and then press .



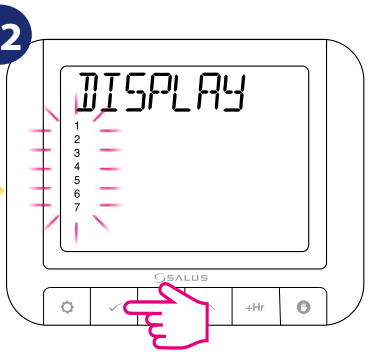
Using or , set the month and then press .



Using or , set the day and then press .



Using or , select the week format.

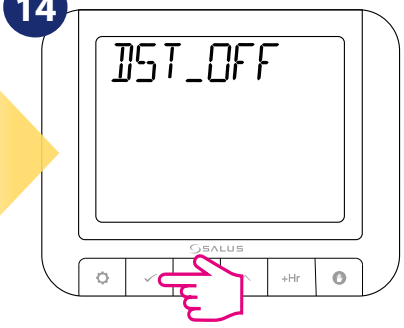


Press to confirm.

13

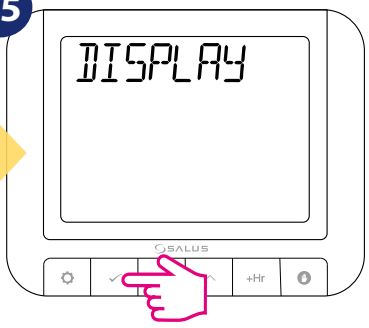
Using ^ or v, enable or disable DST (Daylight Saving Time).

14



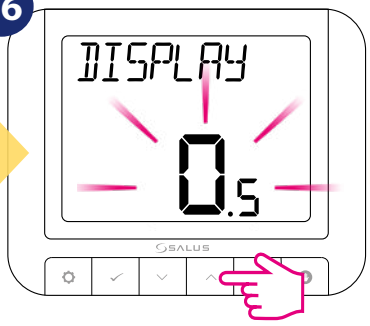
Press ✓ to confirm.

15



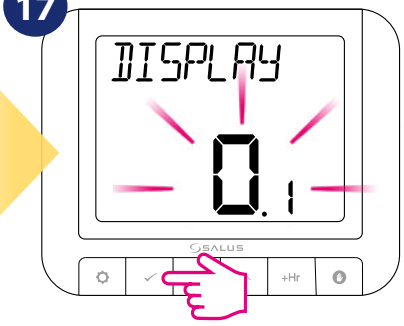
Press ✓.

16



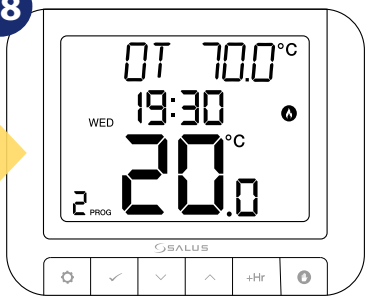
Using ^ or v, select your temperature accuracy.

17



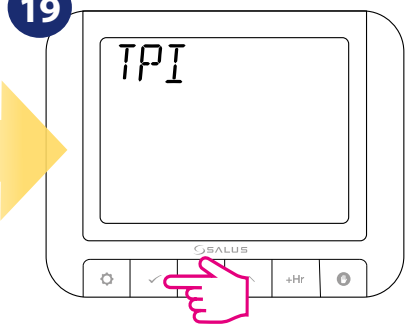
Press ✓ to confirm.

18



When OpenTherm is connected, the device software will automatically adjust to the OpenTherm settings.

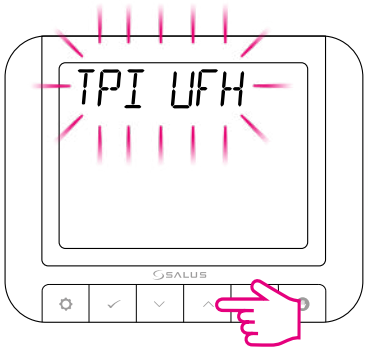
19



TPI (Time Proportional & Integral) is a self-learning, time-proportional algorithm. TPI type of regulation ensures economical system operation through more accurate temperature maintenance during controlling process and limits overload conditions. In addition to the exact and stable room temperature, the advantage of this system is the minimization of energy consumption and significant savings. RT520 offers 3 types of TPI control: 1. for radiator (6CPH); 2. for underfloor heating (3CPH); 3. for electric heating (9CPH).

Press [✓].

20



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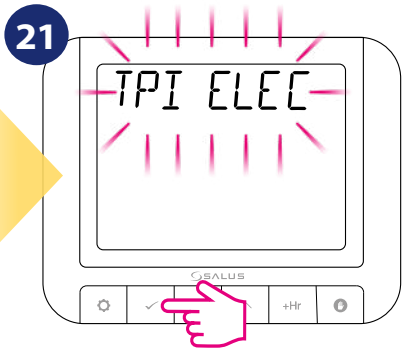
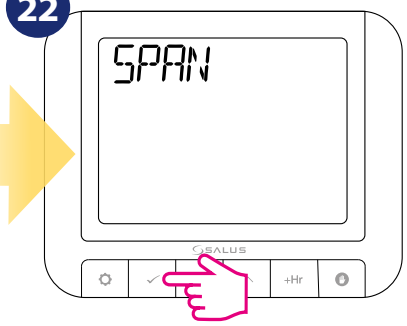


Using [∧] or [∨], select the TPI type you want to use.

Press [✓] to confirm.

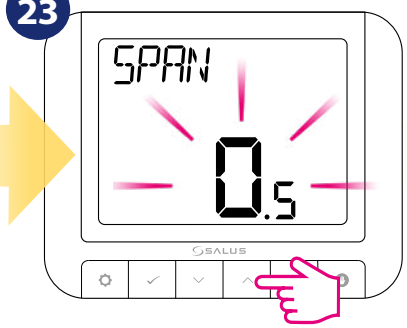
22



Span is the difference between the measured temperature and the set temperature.

Press [✓].

23



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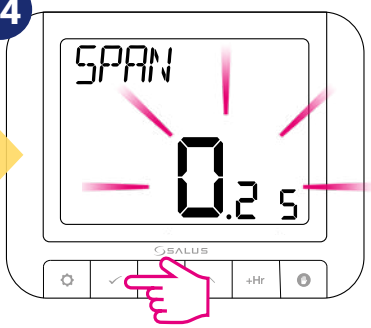
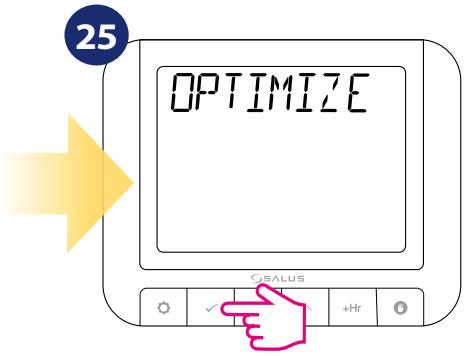


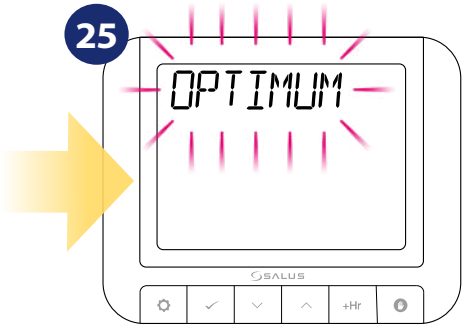
Using [∧] or [∨], select the Span value.

Press [✓] to confirm.

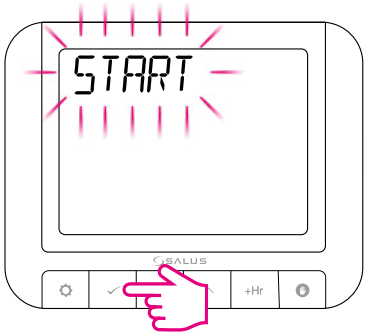


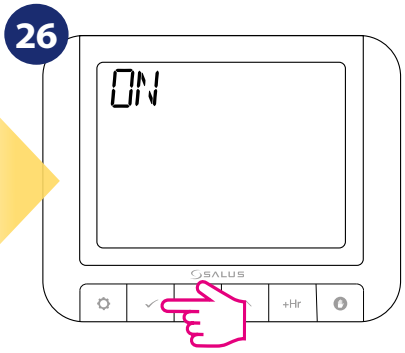
Press [✓].

The optimization function is an energy-saving algorithm used for efficient control of the heating device, ensuring better thermal comfort at certain times of the day. When the OPTIMUM START function is active, the thermostat sends a heating signal to the heat source beforehand so that the preset temperature in the room is reached at the time specified in the schedule.

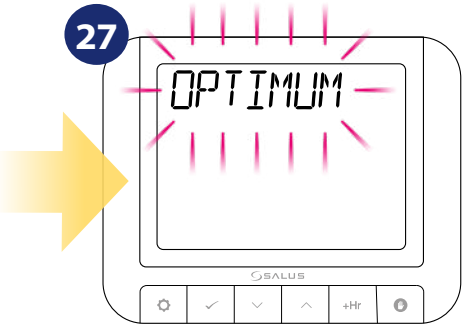


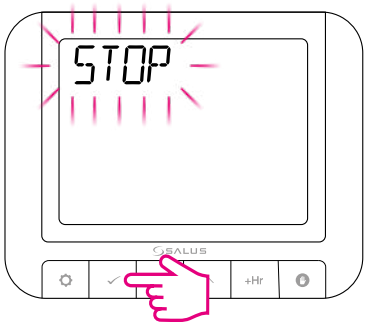
Press [✓].





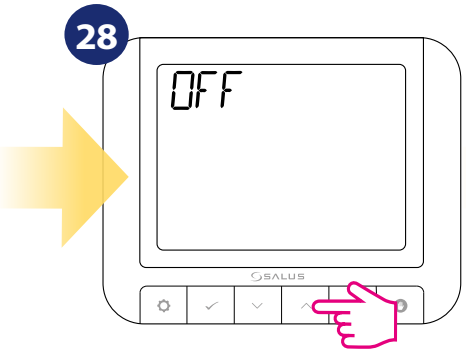
Using [∧] or [∨], select ON or OFF.
Press [✓] to confirm.



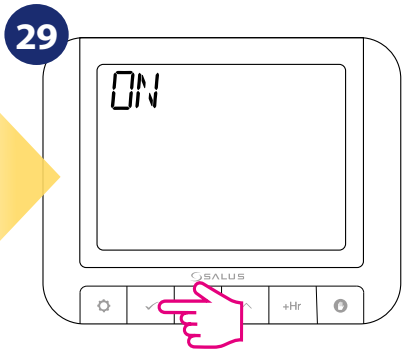


Press [✓].

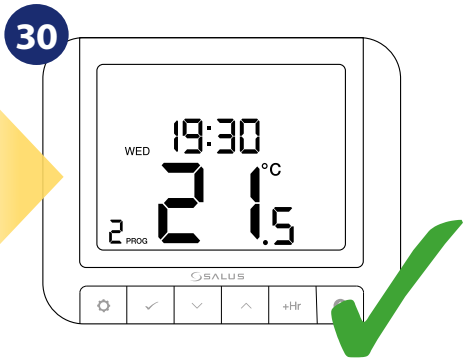
When the OPTIMUM STOP function is active, the thermostat, taking into account the inertia of the system, switches off the heat source earlier, keeping the temperature set in the schedule.



Using [∧] or [∨], select ON or OFF.



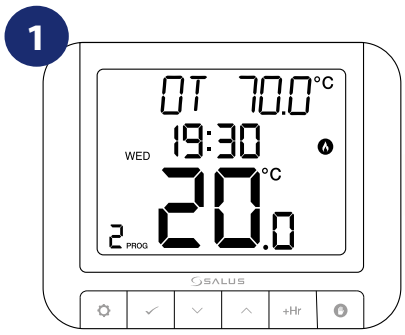
Press [✓] to confirm.



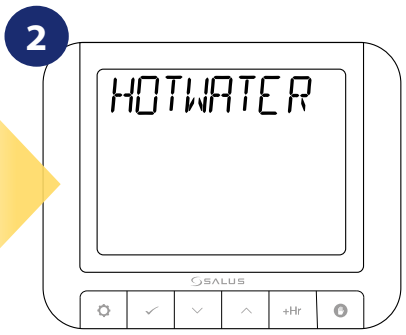
The thermostat will go to the main screen.

3.4 OpenTherm - Hot Water configuration

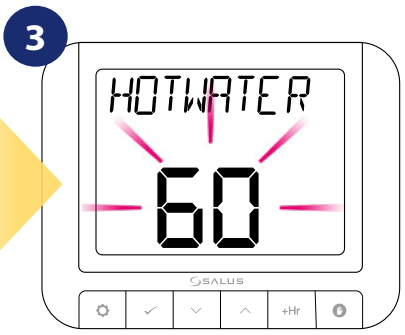
RT520 can be configured in Hot Water OPENTHERM system. To configure it follow steps below:



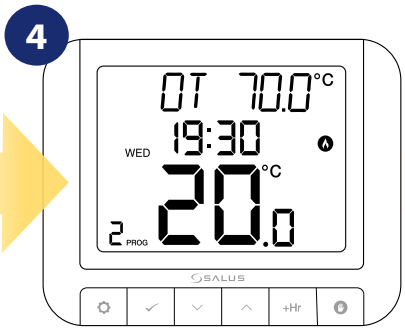
Press [⚙].



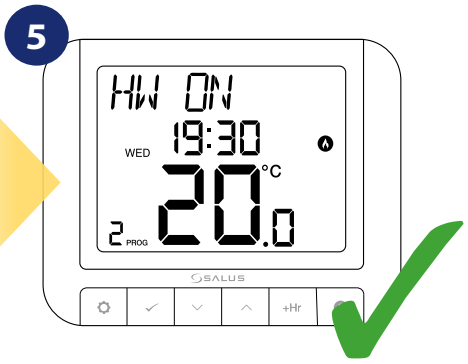
Using [∧] or [∨], navigate to Hot Water submenu and press [✓].



Using [∧] or [∨], adjust the temperature and then press [✓].



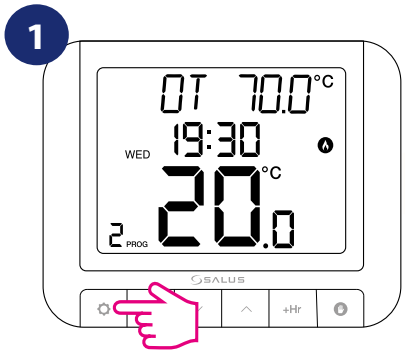
The thermostat will return to the main screen. Press any button.



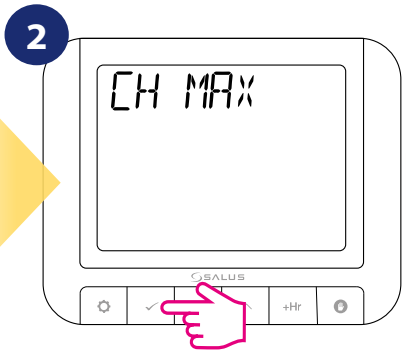
The text bar indicates that hot water is in operation.

3.5 Max boiler temperature settings

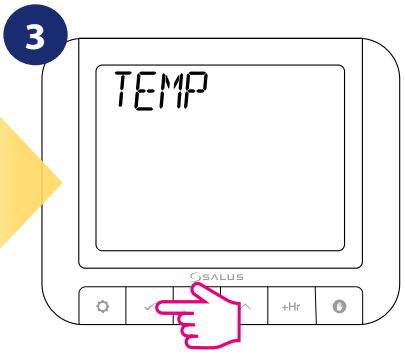
In this chapter you will learn how to set max temperature for connected boiler. Follow steps below:



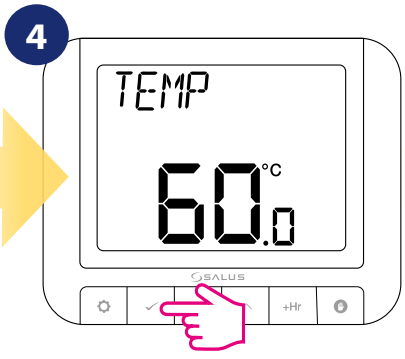
Press [⚙].



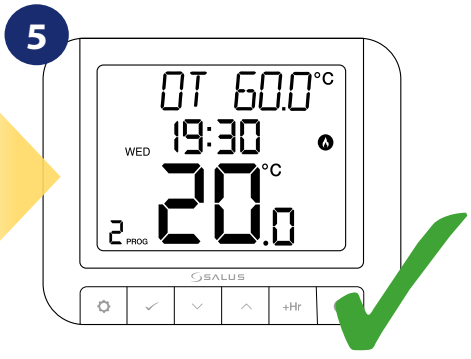
Using [∧] or [∨], navigate to CH MAX submenu and press [✓].



Confirm by [✓] button.



Using [∧] or [∨], set MAX temperature for boiler. Confirm by [✓] button.

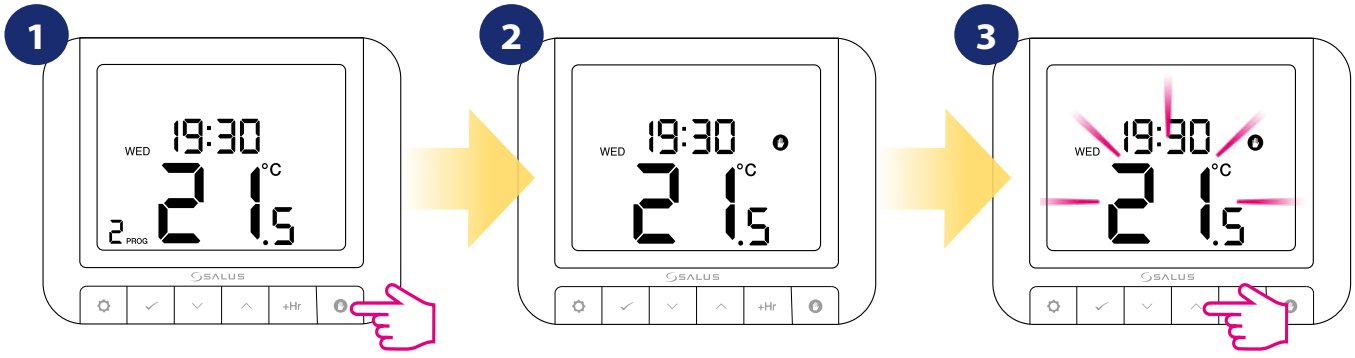


Thermostat will go back to the main screen with saving all settings.

4. User settings

4.1 Manual mode

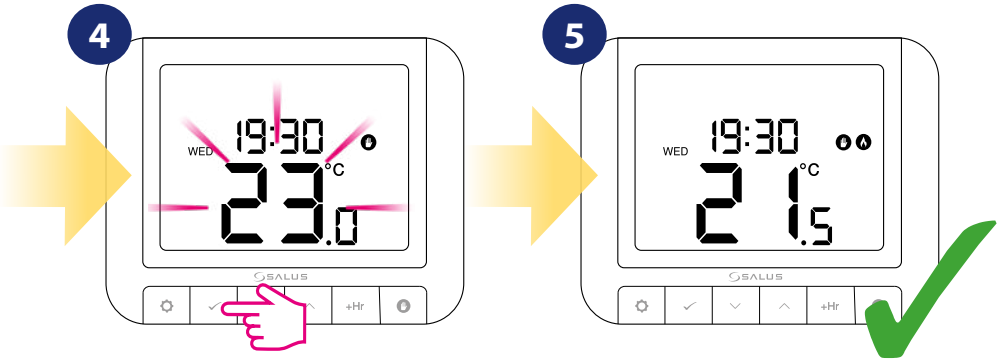
In manual mode, the thermostat maintains a constant temperature set by the user. To exit mode, press and hold button for 3 seconds. A hand icon is displayed when manual mode is active.



Press button.

A hand icon will appear, which means that thermostat is in manual mode.

To set temperature use or button.

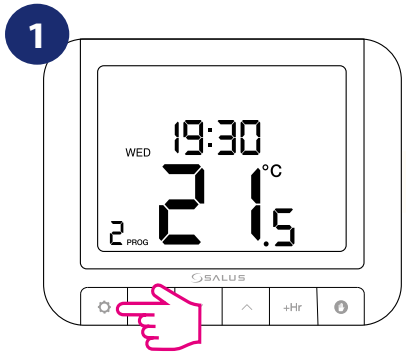


Confirm your choice using button.

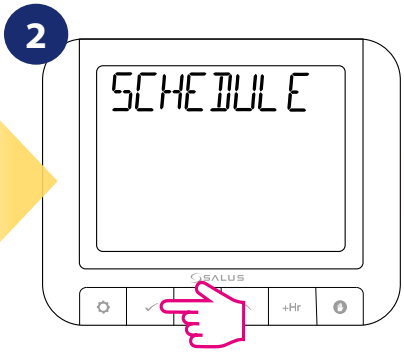
Thermostat will maintain the temperature until manual change or manual mode exit (press and hold button for 3 seconds).

4.2 Schedule mode - programming schedule

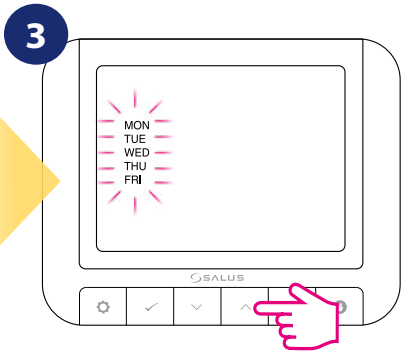
In this mode, user can set the schedules for thermostat (temperature setpoints for specific periods of time). Programmed schedules should use all time periods.



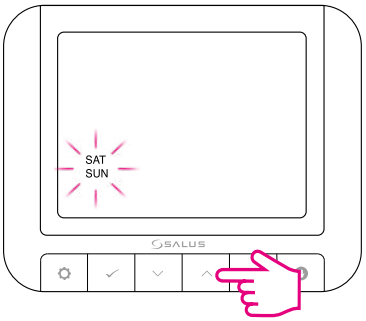
Press [☼].



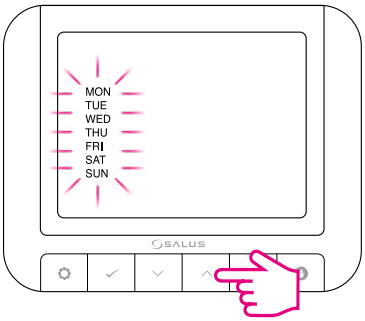
Press [✓].



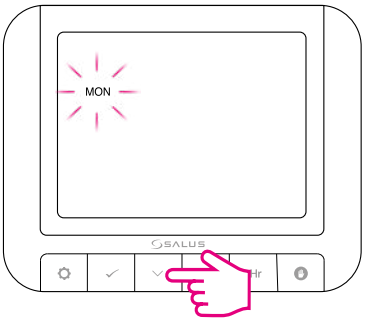
Using [∧] or [∨], select the program type between: **5**



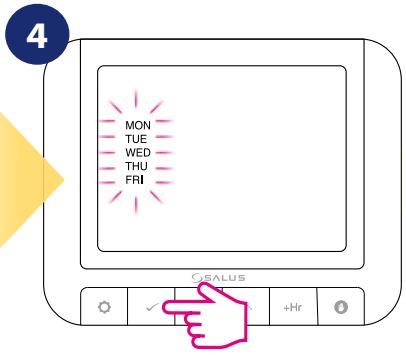
+2 (schedule for the working days and for the weekend)



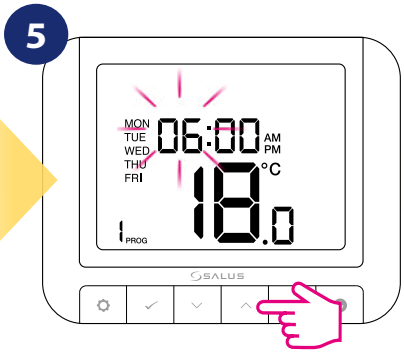
All (set one schedule for the entire week)



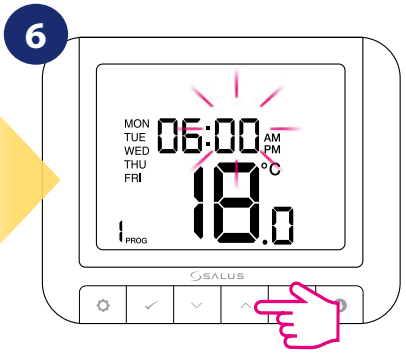
Individual (set a daily schedule).



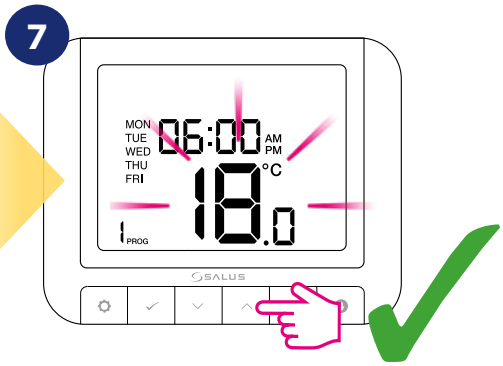
Press [✓] to confirm.



Using [∧] or [∨], set the hour and then press [✓].



Using [∧] or [∨], set the minutes and then press [✓].

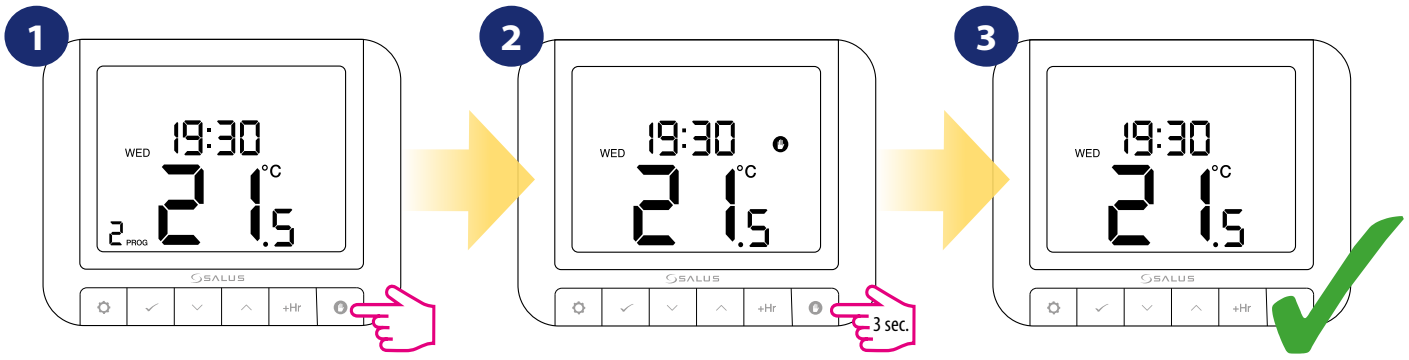


Using [∧] or [∨], set the temperature and then press [✓].

Repeat the process for all time periods.

4.3 Switching between manual and schedule mode

In this option, user can switch between manual and schedule mode by using button. To do that please follow steps below:



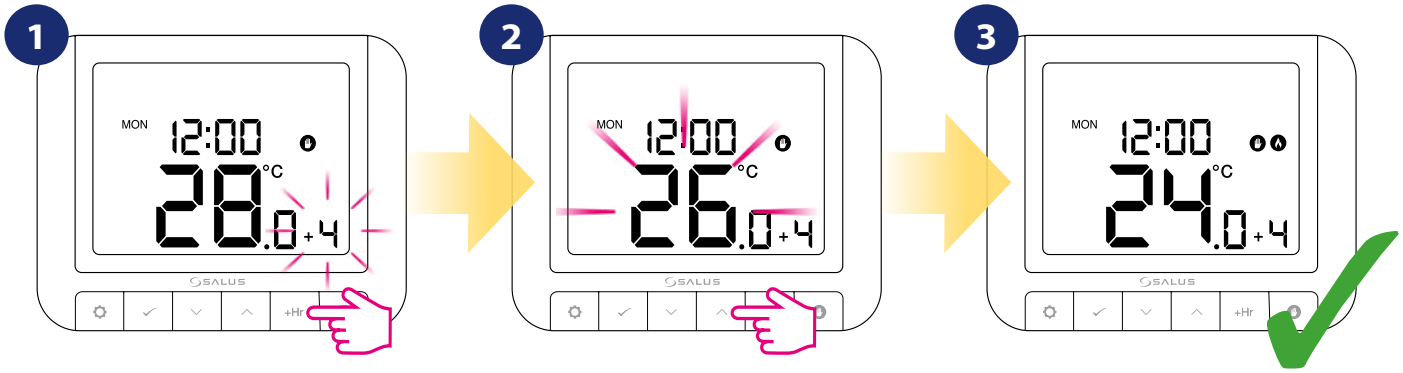
Press button.

A hand icon will appear, which means that thermostat is in manual mode. Now press and hold button.

Thermostat is in the shedule mode again.

4.4 BOOST mode - hourly temperature override (+Hr)

The function is available in automatic and manual mode. Used to change the temperature to the desired value for a specified number of hours (up to 9 hours). After the elapsed time, the thermostat returns to the previous operating mode.

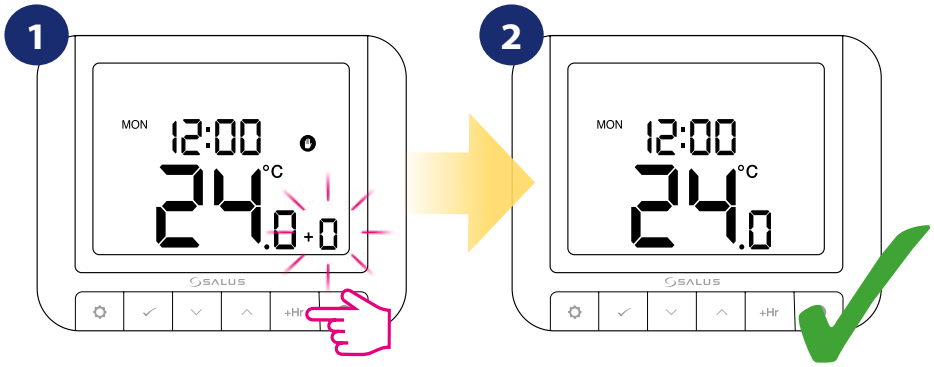


Press +Hr button to set hour for temporary override (eg. 4 hours = 4 times button pressing). Confirm by ✓ button.

Using ∧ or ∨ buttons set the temperature for BOOST mode. Confirm by ✓ button.

Thermostat is working in BOOST mode for 4 hours and it will maintain temperature setpoint for 4 hours.

How to stop BOOST mode:

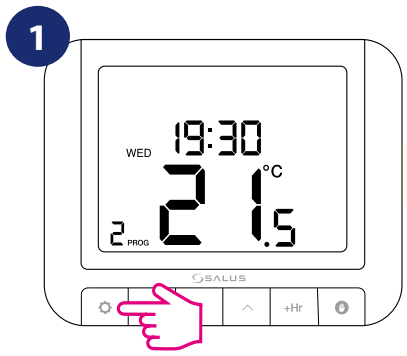


Hold ☼ button for 3 seconds or press +Hr button several times until "+0" will appear and confirm by ✓ button.

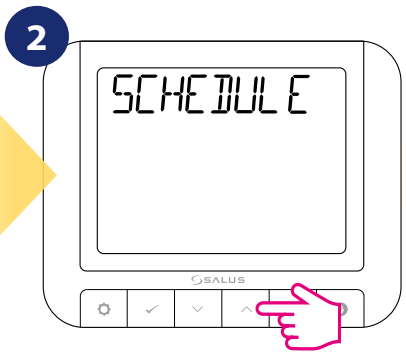
Thermostat will go back to main screen and previous work mode.

4.5 Control and Heat/Cool settings

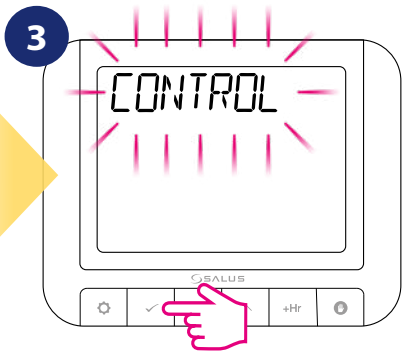
In this option user can set control algorithm (TPI, SPAN or Optimize) and set Heat / Cool mode. Please follow the steps below:



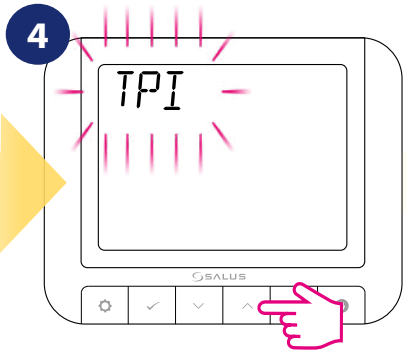
Press [☼].



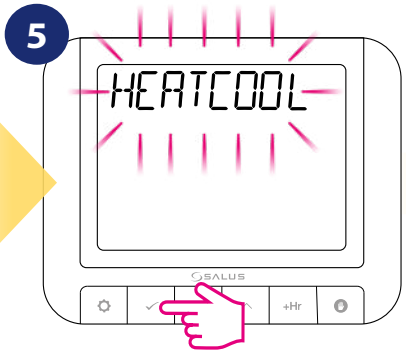
Using [^] or [v] move between parameters.



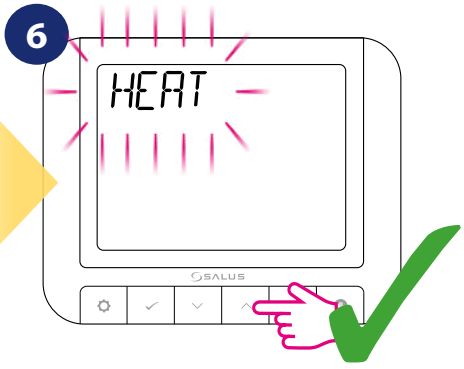
Enter using [✓] button.



Using [^] or [v] move between parameters.



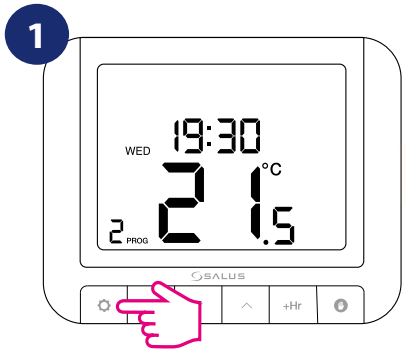
Confirm HEAT / COOL option using [✓] button.



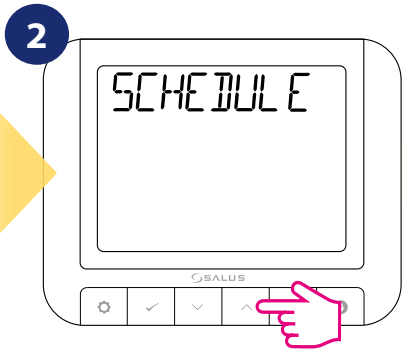
Using [^] or [v] move between parameters. Confirm your choice by [✓] button.

4.6 OFFSET temperature calibration

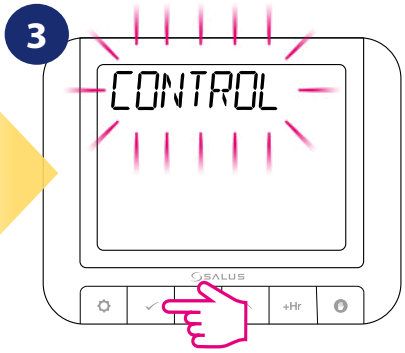
In this chapter you will learn how to properly calibrate the temperature in the RT520 thermostat. Calibration is possible in the range from -3.5°C to 3.5°C (in steps of 0.5°C). To calibrate temperature please follow steps below:



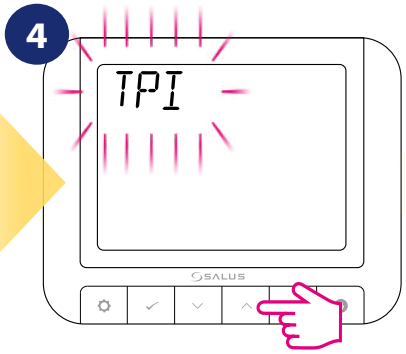
Press [⚙].



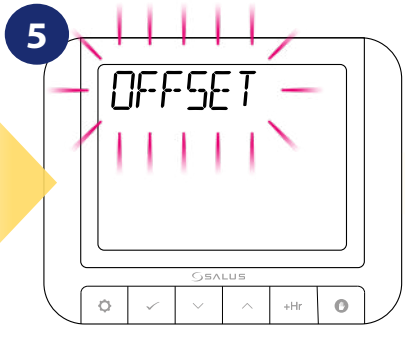
Using [∧] or [∨] move between parameters.



Enter using [✓] button.



Using [∧] or [∨] move between parameters.



Confirm OFFSET option using [✓] button.

Using [∧] or [∨] calibrate temperature. Calibration is possible in the range from -3.5°C to 3.5°C (in steps of 0.5°C) Confirm your choice by [✓] button.

4.7 Landlord settings

Landlord settings is a pin code protected feature that allows the landlord to set a service reminder on the thermostat that will warn the tenant when the boiler is due its annual service.

1

Press [☼].

2

Using [∧] or [∨], navigate to Landlord submenu and press [✓].

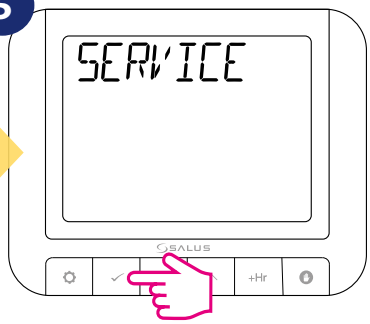
3

Using [∧] or [∨], enter the PIN code number. Press [✓] to confirm every digit. **Note:** The first PIN code entry is also the setting of a NEW PIN CODE which must be entered each time to enter the LANDLORD (Admin) menu.

4

Please remember to write down your pin code so that you can use the Landlord menu later without any hassle from losing it.

5



Press [✓].

6

Using [∧] or [∨], select ON and press [✓].

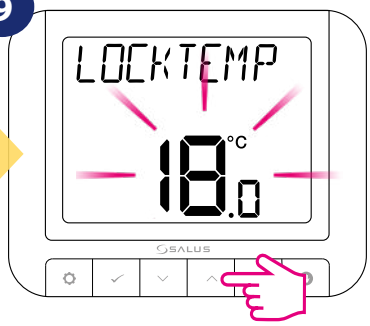
7

Using [∧] or [∨], select the due date and then press [✓].

8

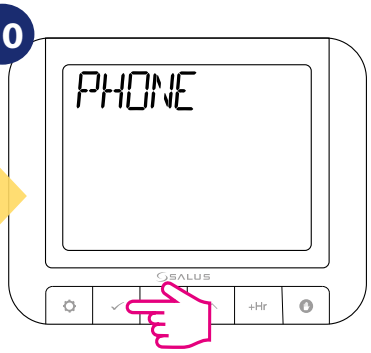
Using [∧] or [∨], select the warning period and then press [✓].

9



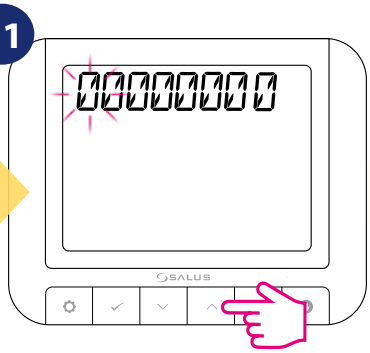
Using [∧] or [∨], select the lock temperature and then press [✓].

10



Press [✓].

11



Using [∧] or [∨], enter the phone number. Press [✓] to confirm every digit.

12

To confirm and exit this option use [☼] button. Then use [∧] or [∨] buttons again to move to the next LANDLORD options (look at the next steps).

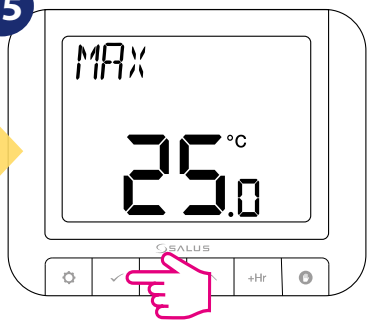
13

Using [^] or [v], move to the next option.

14

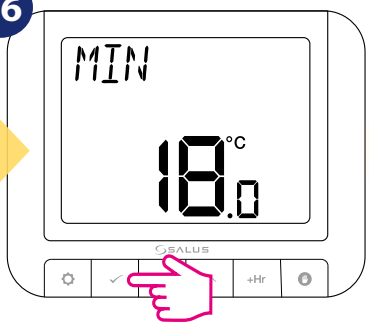
Press [✓].

15



Using [^] or [v], select correct MAX temperature setpoint value. Confirm by [✓].

16

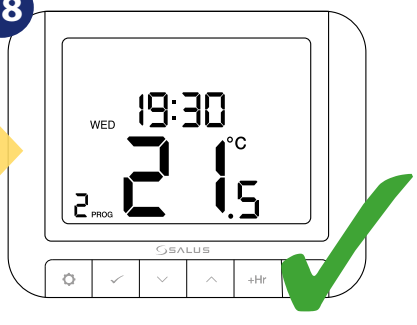


Now, using [^] or [v], select correct MIN temperature setpoint value. Confirm by [✓].

17

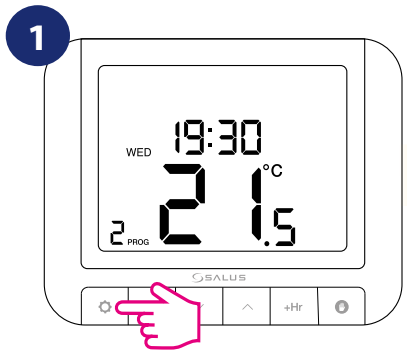
Thermostat will go back to SERVICE option. To go back to the main screen wait 10 seconds or press [☼] button as long as main screen will be displayed.

18

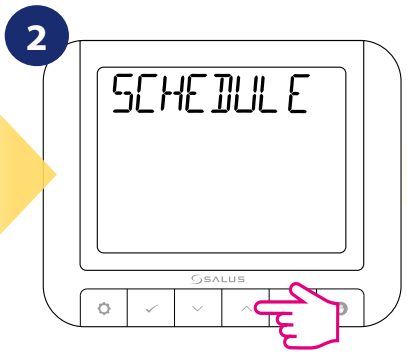


4.8 Time/Date

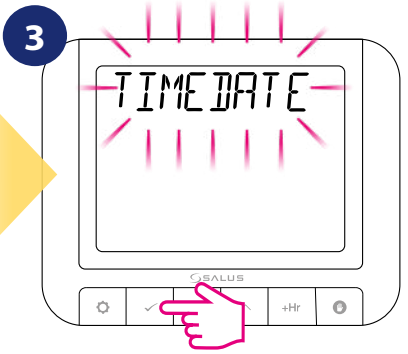
To set time/date follow steps below:



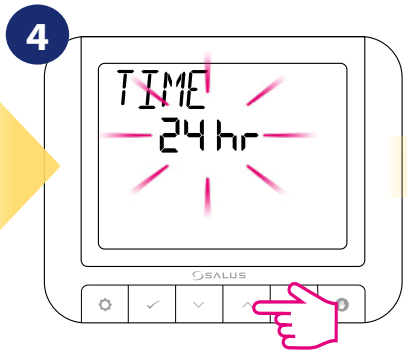
Press [⚙].



Using [∧] or [∨] move between parameters.

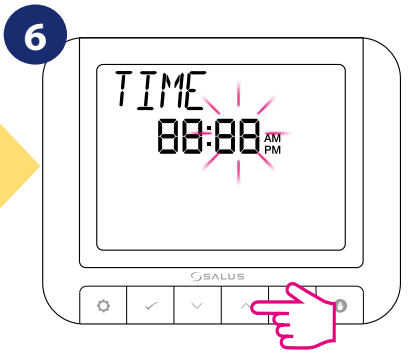


Press [✓] to enter Time/Date settings.

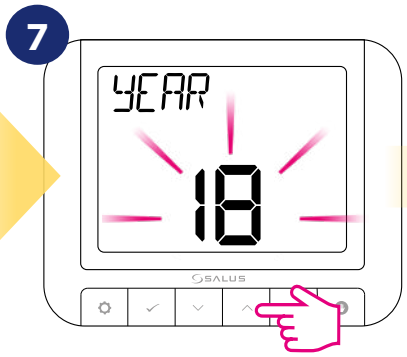


Using [∧] or [∨], choose the time format. Press [✓] to confirm.

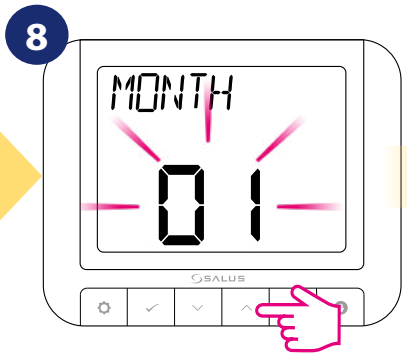
Using [∧] or [∨], set the hour and then press [✓].



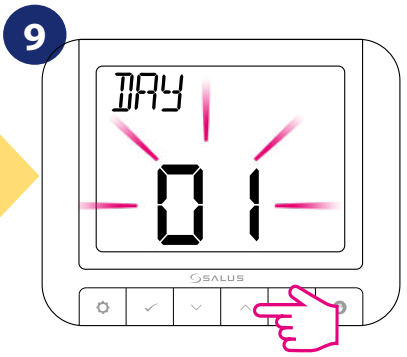
Using [∧] or [∨], set the minutes and then press [✓].



Using [∧] or [∨], set the year and then press [✓].

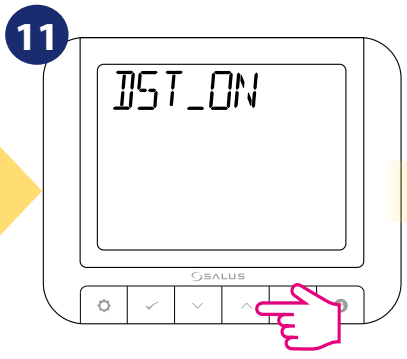


Using [∧] or [∨], set the month and then press [✓].

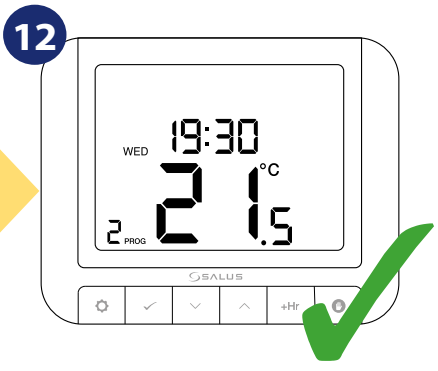


Using [∧] or [∨], set the day and then press [✓].

Using [∧] or [∨], select the week format. Press [✓] to confirm.



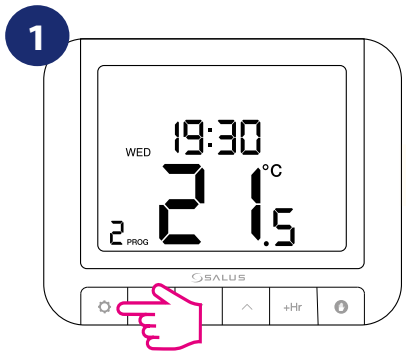
Using [∧] or [∨], enable or disable DST (Daylight Saving Time). Press [✓] to confirm.



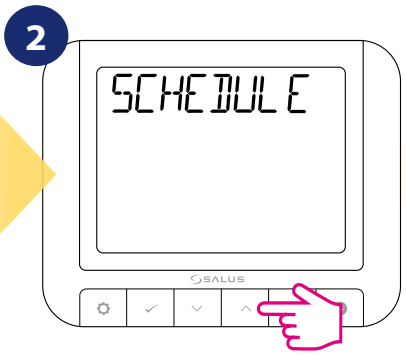
Thermostat will go to the main screen with saving all the settings.

4.9 Holiday mode

Holiday mode is a special program temperature setpoint which thermostat will maintain for specified days. How to set **HOLIDAY MODE:**

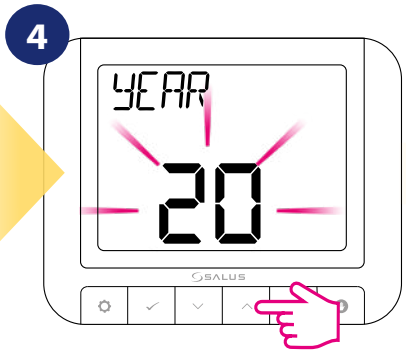


Press ☼.

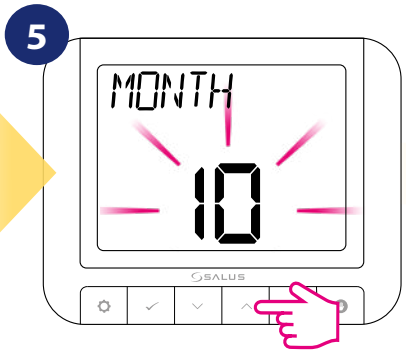


Using ∧ or ∨ move between parameters.

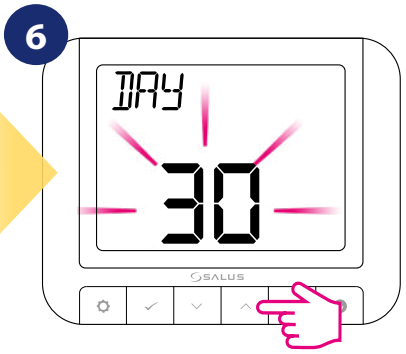
Press ✓ to enter holiday mode settings.



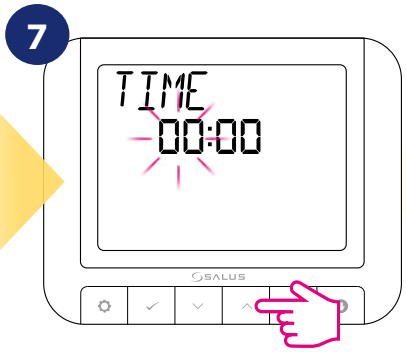
Using ∧ or ∨, set the year and then press ✓.



Using ∧ or ∨, set the month and then press ✓.



Using ∧ or ∨, set the day and then press ✓.

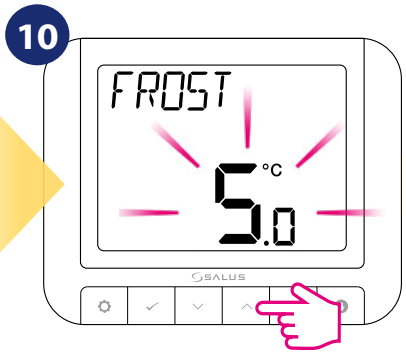


Using ∧ or ∨, set the hour and then press ✓.

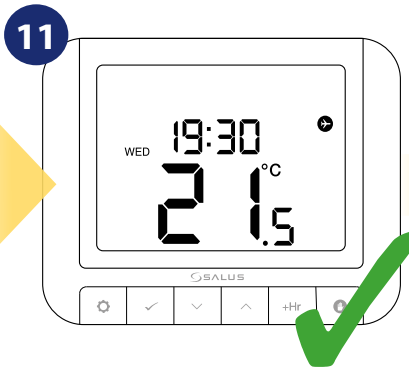
Using ∧ or ∨, set the minutes and then press ✓.

9

Now do the same steps to set holiday mode's final day.



Using ∧ or ∨, set the temperature which should be maintaned during holiday mode and then press ✓.



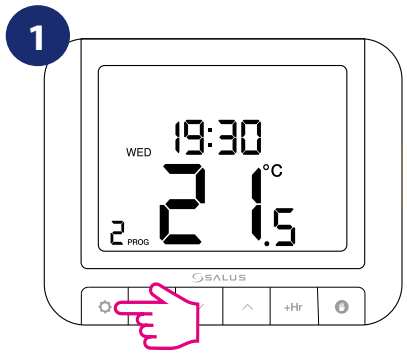
According to set period of time the plane icon will appear on the main screen and thermostat is working in holiday mode.

12

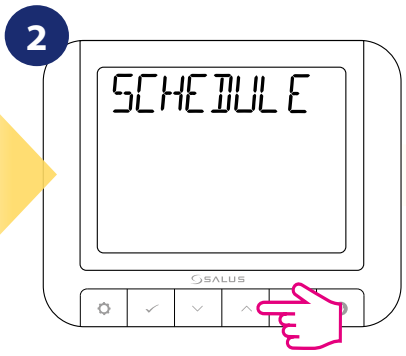
To abort holiday mode just press any button and then confirm HOLIDAY STOP by ✓ button. Plane icon will disappear and thermostat will go back to previous work mode.

4.10 Language

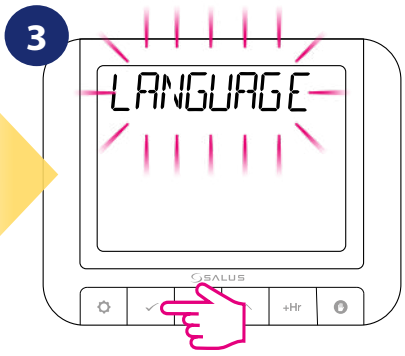
To choose language follow steps below:



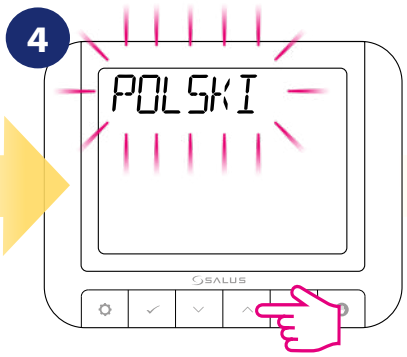
Press [⚙].



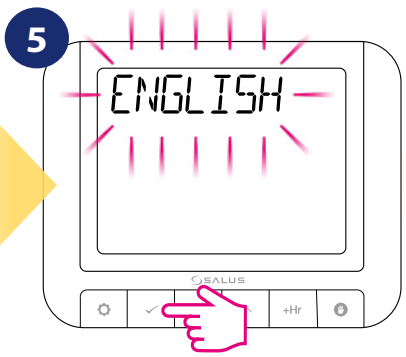
Using [∧] or [∨] move between parameters.



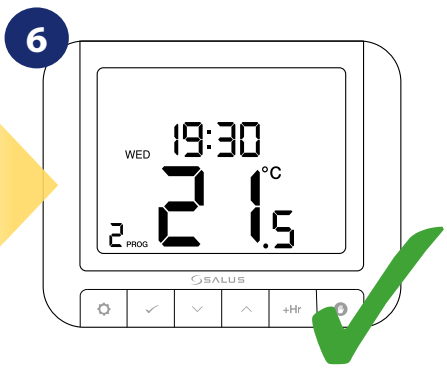
Press [✓] to enter language settings.



Using [∧] or [∨] choose your language.



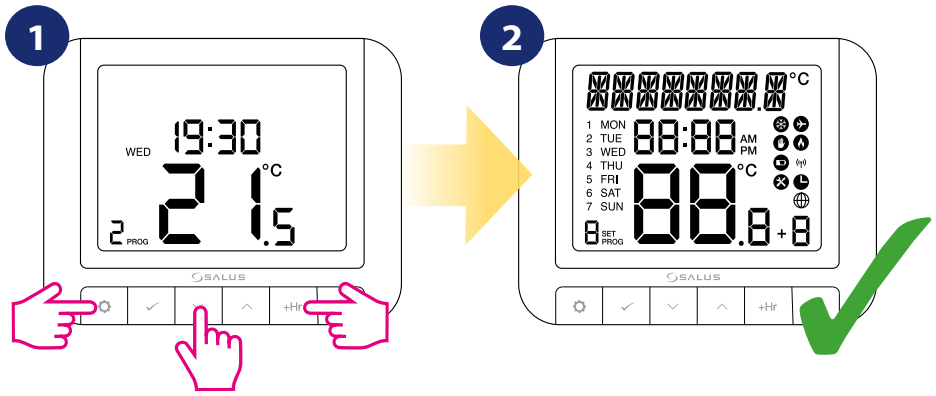
Press [✓] to confirm.



Thermostat will go to the main screen with saving the changes.

5. Factory Reset

To RESET RT520 thermostat to it's factory default settings please follow steps below:



To reset the thermostat press and hold together ☼ + ⌄ + +Hr buttons for 5 seconds.

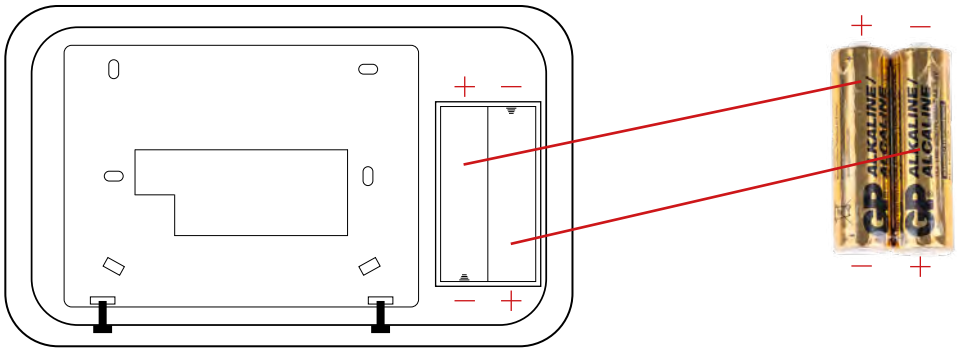
Thermostat has been reseted.
PLEASE NOTE: User settings will not be deleted.

6. Error codes

Thermostat will display errors only when it's connected to the boiler by OPENTHERM terminals (A / B). Please refer then to boiler manual. Each boiler can have different error codes.

7. Battery change

Turn the thermostat over so that the back is in front of you. Now look at the picture below:



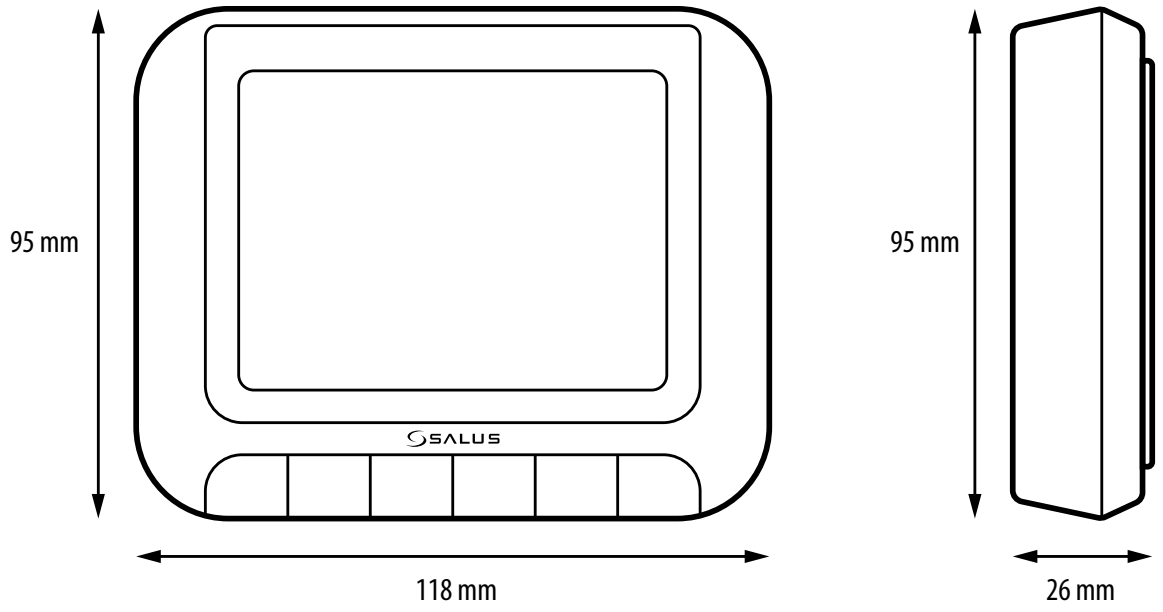
INSERT THE BATTERIES, PAYING ATTENTION TO THEIR POLARITY!

8. Cleaning and Maintenance

The **RT520 thermostat** requires no special maintenance. Periodically, the outer casing can be wiped clean using a dry cloth (please DO NOT use solvents, polishes, detergents or abrasive cleaners, as these can damage the thermostat). There are no user serviceable parts within the unit; any servicing or repairs could only be carried out by **Salus Controls** or their appointed agents.

9. Technical Informations

Power supply	2 x AA batteries
Rating max	3 (1) A
Output signal	OpenTherm (A / B) or voltage free relay (NC / COM / NO)
Temperature range	5 - 33.5°C
Display temperature accuracy	0.1°C or 0.5°C
Control algorithm	TPI or Hysteresis: ±0.25°C or ±0.5°C
Communication	Wired
Dimension [mm]	95 x 118 x 26



10. Warranty

SALUS CONTROLS warrants this product to be free from any defects in material or workmanship and to perform as specified for a period of five years from the date of installation. SALUS CONTROLS reserves the sole responsibility for breach of this warranty by repairing or replacing the defective product. This product includes software that matches the distributor's identification at the time of sale. The manufacturer / distributor provides a guarantee covering all functions and specifics of the product in accordance with this marking. The distributor's warranty does not cover the correct operation of the functions and features available as a result of a product software update.
The full warranty conditions are available at www.salus-controls.eu

Customer Name: .....

Customer Address: .....

..... **Post Code:** .....

Tel No: ..... **Email:** .....

Company Name: .....

Tel No: ..... **Email:** .....

Installation Date: .....

Installer Name: .....

Installer Signature: .....

PRODUCER:
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Rotherham S60 1SD, United Kingdom

Computime

www.saluscontrols.com

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