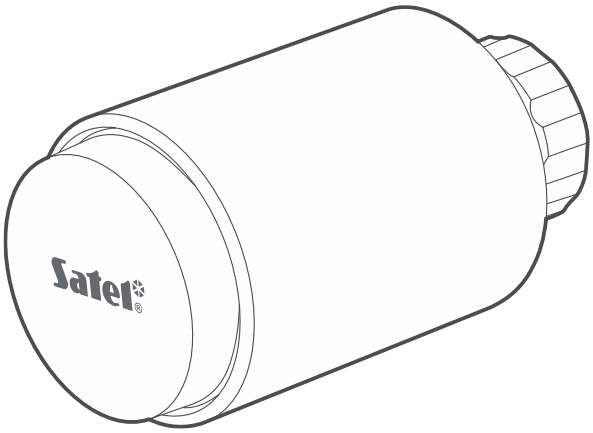
Smart Thermostat

ART-210

EN

Firmware version 1.01



CE

art-210_BW_en 01/26

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IMPORTANT

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

Description of symbols on the device:

The device meets the requirements of the applicable EU directives.

The device must not be disposed of with other municipal waste. It should be disposed of in accordance with the existing rules for environment protection (the device was placed on the market after 13 August 2005).

The device is designed for indoor installation.

SATEL aims to continually improve the quality of its products, which may result in changes in their technical specifications and software. Current information about the changes being introduced is available on our website.
Please visit us at:
https://support.satel.pl

Hereby, SATEL sp. z o.o. declares that the radio equipment type ART-210 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.satel.pl/ce

Signs in this manual

Caution – information on the safety of users, devices, etc.

Note – suggestion or additional information.

CONTENTS

The ART-210 radiator thermostat (Smart Thermostat) is used to maintain the set room temperature by regulating the flow of warm water to the radiator. It helps reducing the heating costs. The thermostat is fitted for most radiator valves on the market. The manual applies to the thermostat installed in the BE WAVE system.

1. Features

- Control of the radiator valve to regulate the room temperature.
- Temperature setting in the range from 5°C to 30°C.
- Several operating modes.
- Remote control or manual control.
- Boost Heat.
- Capability to close the valve manually.
- Anti-scale function.
- Open window detection.
- Anti-freeze protection.
- Child Lock.
- Operation in the 868 MHz frequency band.
- AES encrypted two-way radio communication.
- Transmission channel diversity – 4 channels for automatic selection of the one that will enable transmission without interference with other signals.
- Remote settings programming.
- Remote firmware update.
- Built-in temperature sensor (measuring range: -10°C...+55°C).
- LED display for easier control and configuration.
- Capability to rotate the messages on display by 180°.
- Powered by two LR6 AA 1.5 V batteries.
- Battery status control.
- Installation on valves with the M30x1.5mm threaded connection.
- Capability to install on Danfoss RA, Danfoss RAV and Danfoss RAVL valves (adapters provided).
- Reducer ring provided for easier installation on valves with smaller diameter.

2. Description

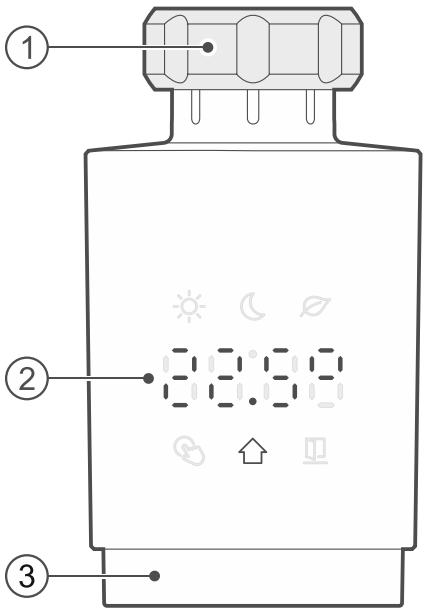
Figure 1 shows the radiator thermostat.

① union nut.

② LED display.

③ knob.

1



2.1 LED display

Normally, the display is off. Touch the knob (Fig. 2) to turn on the display.

After turning on, the display shows temperature in degrees Celsius from the selected sensor (Fig. 1). Symbols and messages are also displayed.

The display will be turned off after 20 seconds since your last activity using the knob.

2.1.1 Symbols on the display

- temperature set for the day is displayed.
- temperature set for the night is displayed.
- temperature set for the *ECO* operating mode is displayed.
- temperature set manually is displayed.
- temperature from the sensor is displayed.
- open window has been detected and the valve is closed – see: “Open window detection” p. 5.

2.1.2 Messages on the display

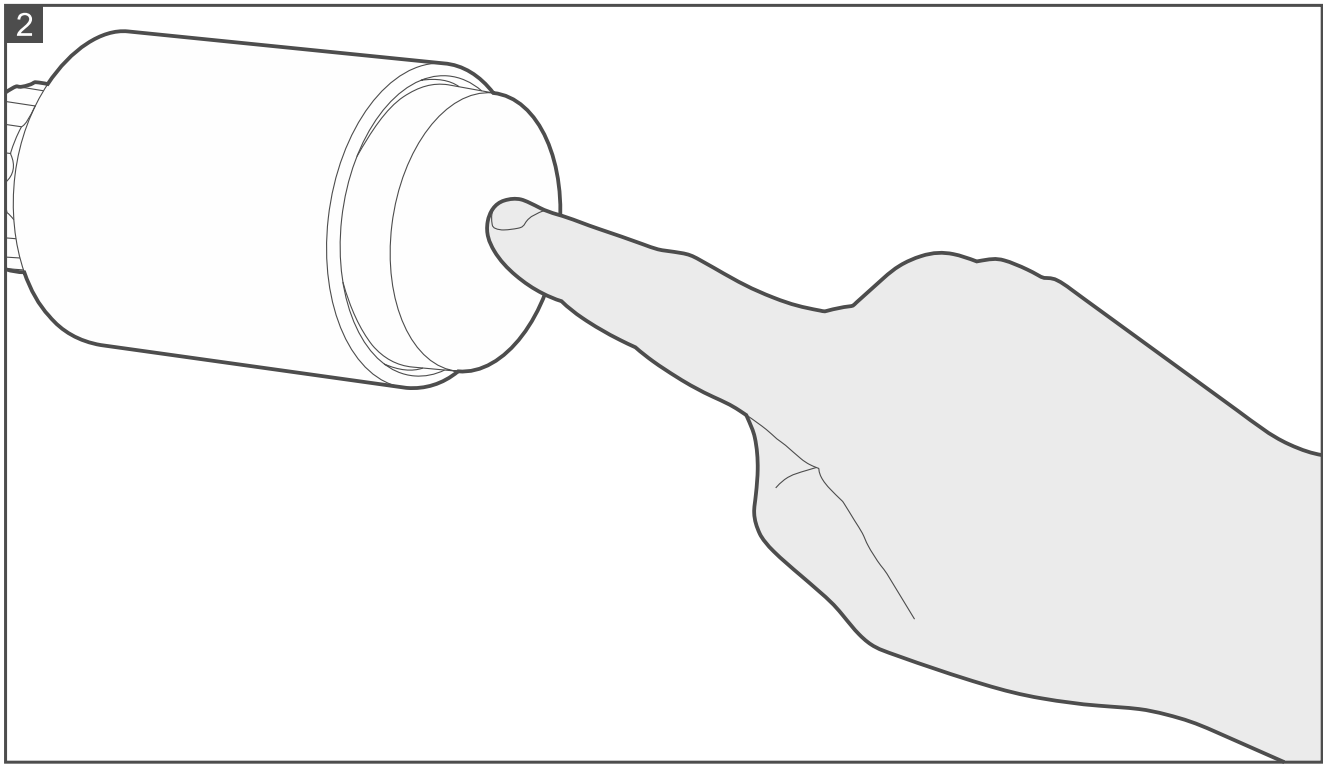
- thermostat ready for calibration to be started – see: “Thermostat calibration” p. 5. Press the knob to start the calibration.
- thermostat adaptation in progress – see: “Thermostat adaptation” p. 5.
- the knob is blocked – see: “Child Lock” p. 6.
- low batteries (battery voltage dropped below 2.3 V). Replace the batteries.
- anti-freeze protection is enabled – see: “Anti-freeze protection” p. 5.
- Boost Heat is enabled (number at the end is the minutes remaining until the end of the function) – see: “Boost Heat” p. 5.
- valve is closed. Press or turn the knob to open the valve.
- trouble with changing the valve position. Make sure the thermostat is mounted correctly on the valve and check the valve operation or restart the thermostat (remove the batteries and insert them again).

- incorrect operating range of the thermostat (calibration failure). Make sure the thermostat is mounted correctly on the valve or restart the thermostat (remove the batteries and insert them again).
- valve control disabled to protect against complete battery discharge (battery voltage dropped below 2.2 V). The valve is set in the 25% open position. Replace the batteries.
- problem with the knob.
- motor error.
- internal error.
- unable to fully close the valve (calibration failure). Make sure the thermostat is mounted correctly on the valve or restart the thermostat (remove the batteries and insert them again).

2.1.3 Rotating the temperature / messages on the display by 180°

1. Remove the thermostat cover (Fig. 3).
2. Remove the batteries.
3. Install the batteries again. The message will be displayed.
4. Press and hold the knob for 5 seconds (Fig. 2). The message on the display will be rotated by 180°.
5. Replace the thermostat cover. The marks on the body and cover will help you replace the cover correctly (Fig. 4).

2.2 Knob



Press (Fig. 2) – turn on the display / change the operating mode / confirm new temperature settings.

Press and hold for 3 seconds – block the knob / unblock the knob / edit temperature for the selected operating mode / stop the Boost Heat.

Press and hold for 10 seconds – restart the thermostat.

Turn right – temperature up.

Turn left – temperature down.

Press and turn right – start the Boost Heat.

Press and turn left – fully close the valve.

2.3 Functions

2.3.1 Thermostat calibration

When calibrating, the thermostat adjusts its actuator stroke to the radiator valve stroke. During calibration, the thermostat operating range is defined (the valve end positions from valve fully closed to valve fully open). The thermostat must be calibrated after it is mounted on the valve and each time after batteries are replaced. The CAL message will be shown on the LED display when calibration is required.

2.3.2 Thermostat adaptation

After it is started, the thermostat will analyze which valve position is optimal to heat the room to set temperature. If the valve was not open enough, heating up the room would take too long. If the valve was open too much, the room would heat up fast but the temperature would continue to rise beyond the set value and the room would be too hot. This is repeated whenever the thermostat detects that the conditions in the room have changed in a way that can affect its operation. During adaptation, whenever the knob is pressed, the ADAPT message will be displayed alternately with the temperature registered by the sensor.

2.3.3 Anti-scale protection

Scale can build up inside the valve when it remains unused for a long time. To prevent it, the thermostat will fully open the valve once every two weeks.

2.3.4 Open window detection

The thermostat can detect a sudden drop in temperature. It is interpreted as an open window. The radiator valve will then be closed for 30 minutes or until the thermostat detects a rise in temperature. When an open window is detected and the valve is closed, it will indicated by the  symbol on the LED display.

2.3.5 Anti-freeze protection

When temperature drops below 5°C, the thermostat will open the valve to prevent the radiator from freezing. The valve will remain open until the thermostat operating mode is changed or temperature rises to 8°C. When the protection is activated, the H - F - message will be displayed.

2.3.6 Boost Heat

If the room temperature is too low and uncomfortable, you can enable the Boost Heat function to heat the room faster – see: “Starting the Boost Heat function” p. 11. The valve will be fully open for 15 minutes. When this function is enabled, whenever the knob is pressed, the countdown to the end of the function will be displayed alternately with the temperature registered by the sensor.

The Boost Heat function has the highest priority. When it is enabled, other functions and settings are ignored.

2.3.7 Child Lock

The knob can be disabled to prevent the settings from being accidentally changed, e.g. by children. You can disable the knob:

- manually – see: “Disabling the knob manually (child lock)” p. 11,
- remotely – enable the *Child Lock* option in the Be Wave app / BE WAVE Soft program.

When the knob is disabled, the LOC message will be displayed after it is pressed.

If the knob has been disabled manually, you can enable it manually – see: „Enabling the knob manually” p. 12.

If the *Child Lock* option is enabled for the thermostat, then knob cannot be disabled manually. To enable the knob, you must disable the *Child Lock* option.

3. Installation

There is a danger of battery explosion when using a different battery than recommended by the manufacturer, or handling the battery improperly.

Do not crush the battery, cut it or expose it to high temperatures (throw it into the fire, put it in the oven, etc.).

Do not expose the battery to very low pressure due to the risk of battery explosion or leakage of flammable liquid or gas.

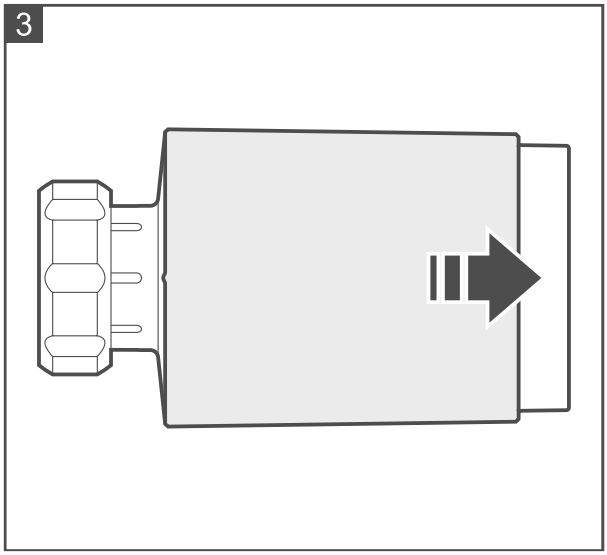
Be particularly careful during installation and replacement of the battery. The manufacturer is not liable for the consequences of incorrect installation of the battery.

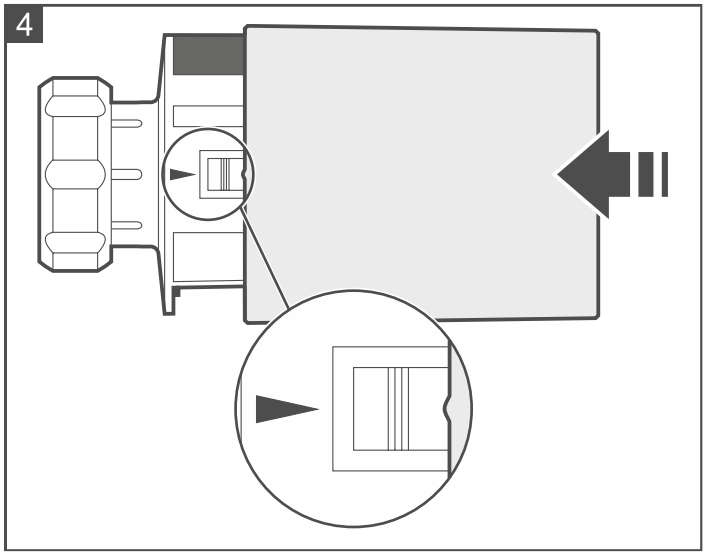
3.1 Tips for installation

- The thermostat should be installed indoors, in spaces with normal air humidity.
- When selecting a place of installation, consider the radio communication range.
- Thick walls, metal partitions, etc. reduce the range of the radio signal.
- The thermostat is fitted for radiator valves with the M30 x 1.5 mm threaded connection. It is compatible with most radiator valves on the market.
- In order to install the thermostat on the Danfoss RA, Danfoss RA or Danfoss RAVL valve, use one of the provided adapters.
- The thermostat should be installed in such a way to ensure display visibility and accessibility of the knob.
- You do not need any special tools to install the thermostat. Draining the heating system is not required.
- Before you remove the old thermostatic head, make sure to turn it several times from minimum to maximum position and back. Unscrew the old thermostat when it is in the maximum position. When the thermostat is removed, the valve pin should be fully extended.

3.2 Mounting

1. Remove the thermostat cover (Fig. 3).





2. Add the thermostat to the system (see the manual for the BE WAVE system controller or the BE WAVE Hybrid system control panel). When a request to turn on the device will be displayed, install two LR6 AA 1.5 V alkaline batteries (they are not supplied with the thermostat).

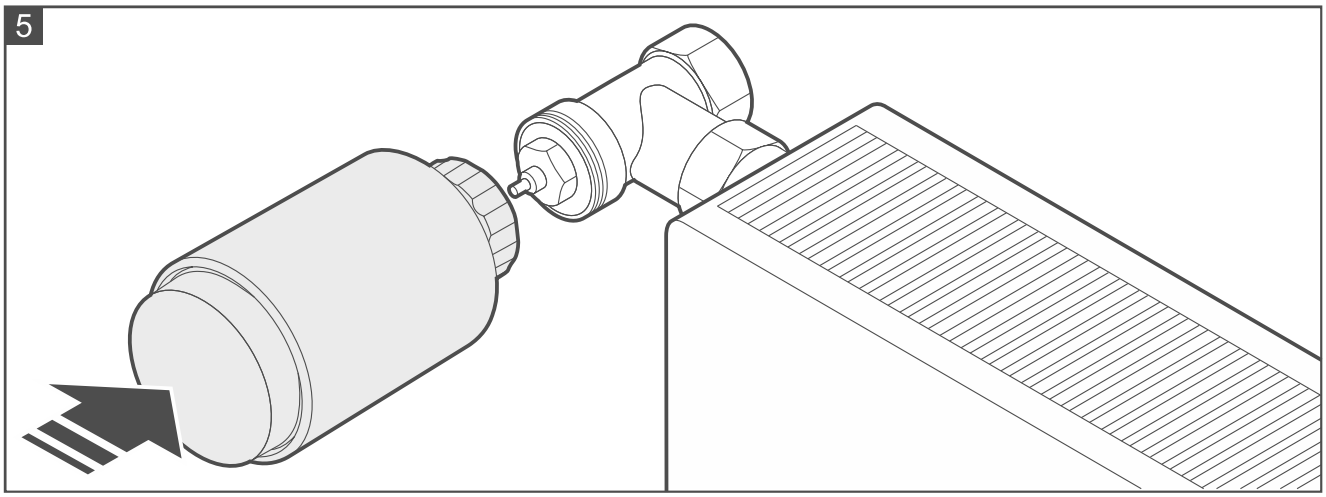
i *When the batteries are installed, the actuator rod that moves the valve pin is completely withheld inside the thermostat cover. If the actuator rod is not completely withheld inside the cover, remove the batteries and install them again.*

After the thermostat has started, the CAL *message will be displayed. The message indicates that the thermostat is ready for calibration.*

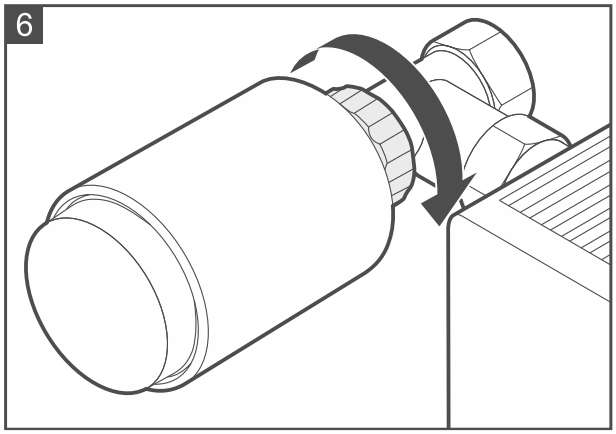
3. Replace the thermostat cover. The marks on the body and cover will help you replace the cover correctly (Fig. 4).
4. Mount the thermostat on the valve (see: “Mounting on M30x1.5 mm valve”, “Mounting on Danfoss RA valve”, “Mounting on Danfoss RAV valve” or “Mounting on Danfoss RAVL valve”).
5. Press the knob (Fig. 2). The thermostat will be calibrated.

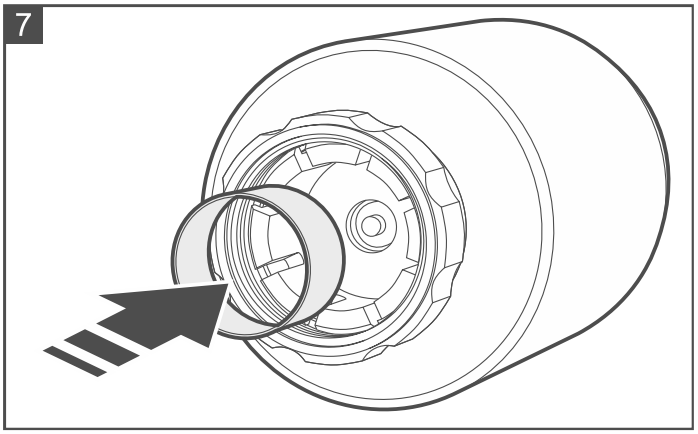
3.2.1 Mounting on M30x1.5 mm valve

1. Place the thermostat on the valve (Fig. 5).



2. Tighten the thermostat on the valve (Fig. 6).

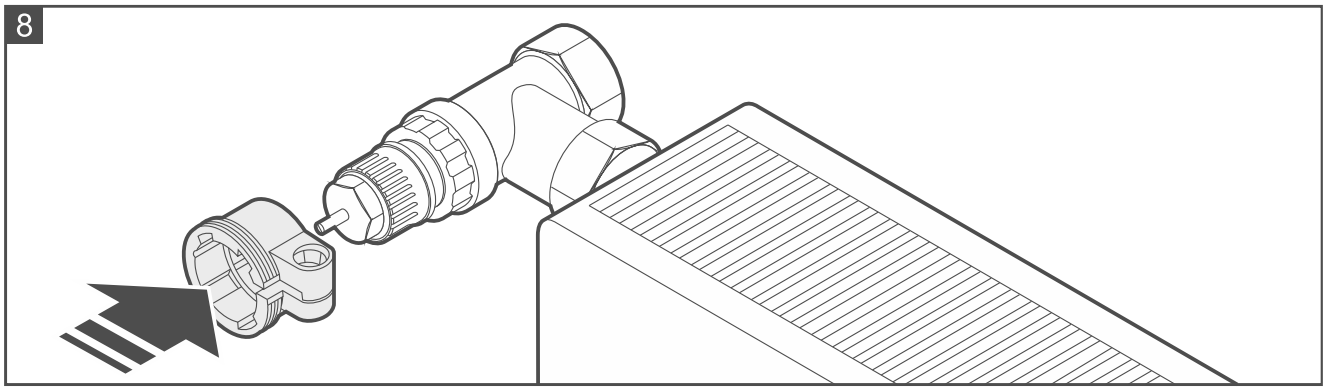


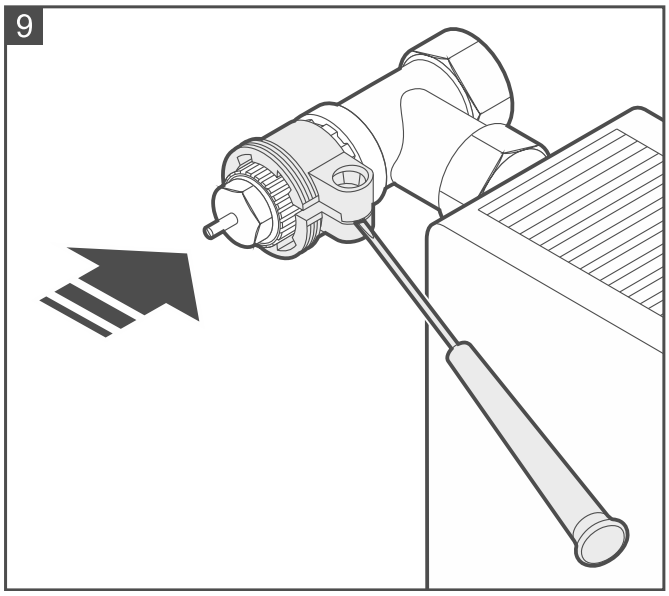


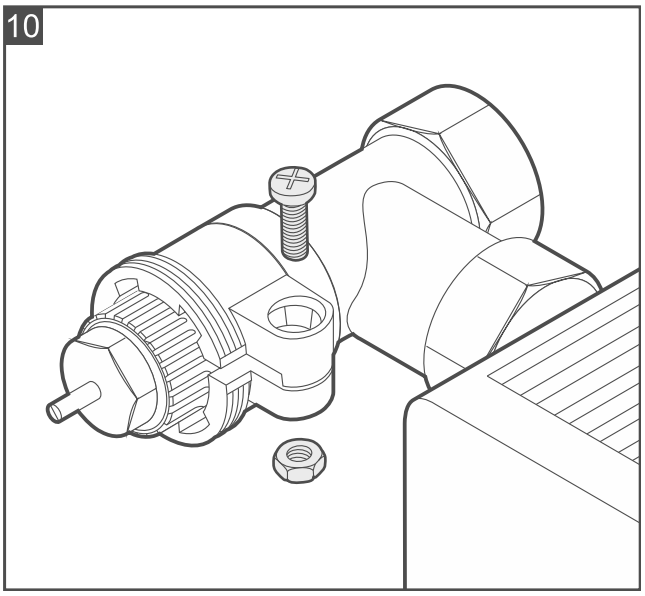
3. If the thermostat is seated loosely on the valve, use the reducer ring. Unscrew the thermostat, place the reducer ring inside its flange (Fig. 7), then repeat points 1 and 2.

3.2.2 Mounting on Danfoss RA valve

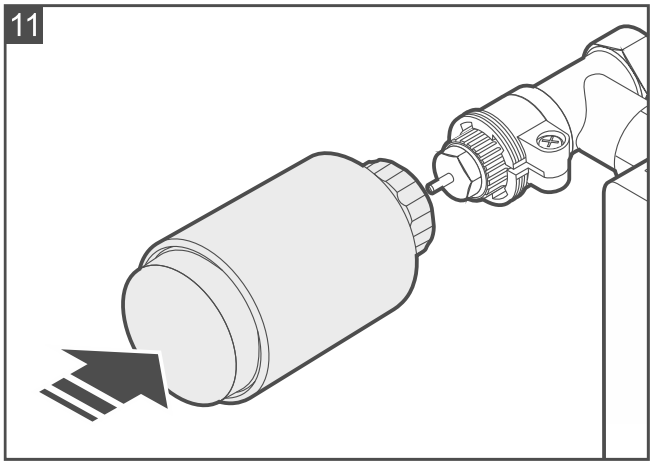
1. Fasten the adapter on the valve.
   1.1. Place the adapter on the valve (Fig. 8).
   1.2. Bend open the adapter clamp with a screwdriver and press the adapter against the valve flange (Fig. 9). Make sure the bumps inside the adapter line up with the notches on the valve body.
   1.3. Secure the adapter clamp with a screw (Fig. 10).

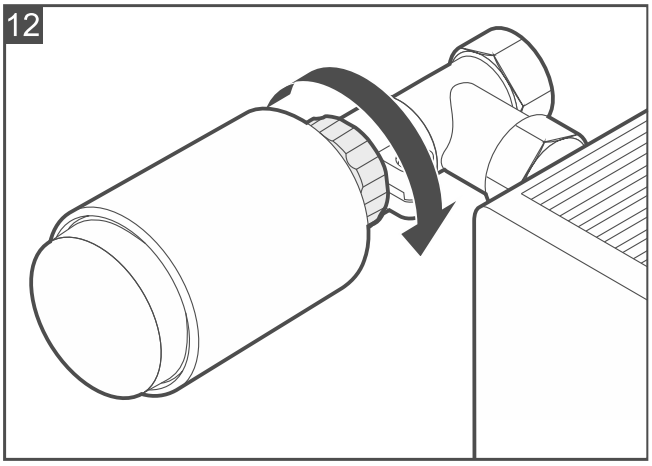






2. Place the thermostat on the valve (Fig. 11).

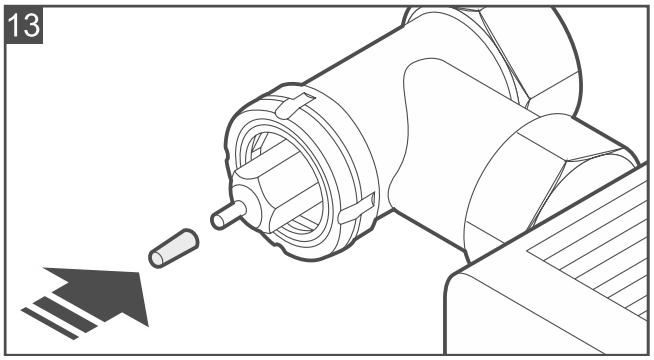


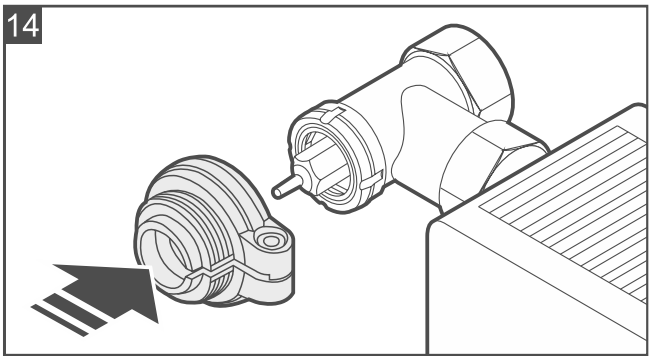


3. Tighten the thermostat on the adapter (Fig. 12).
4. If the thermostat is seated loosely on the valve, use the reducer ring. Unscrew the thermostat, place the reducer ring inside its flange (Fig. 7), then repeat points 2 and 3.

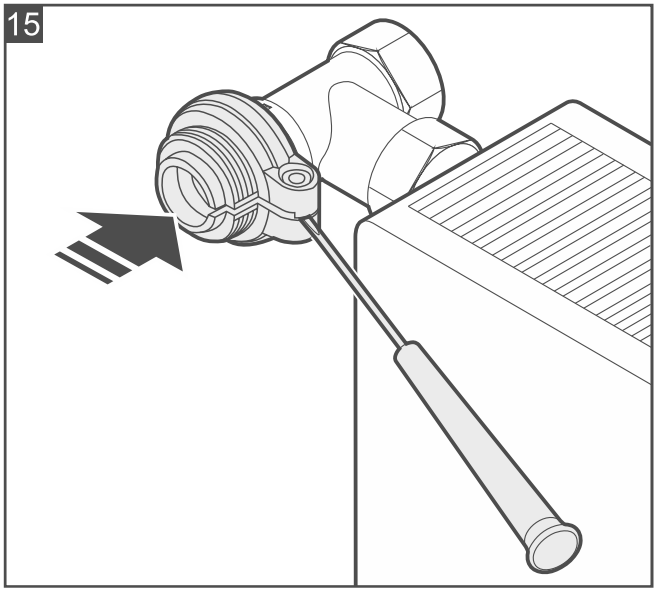
3.2.3 Mounting on Danfoss RAV valve

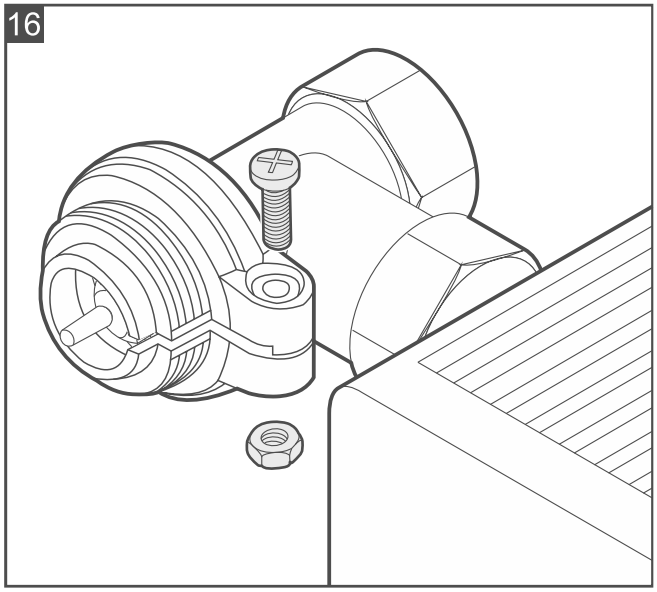
1. Place the cap on the valve pin (Fig. 13).



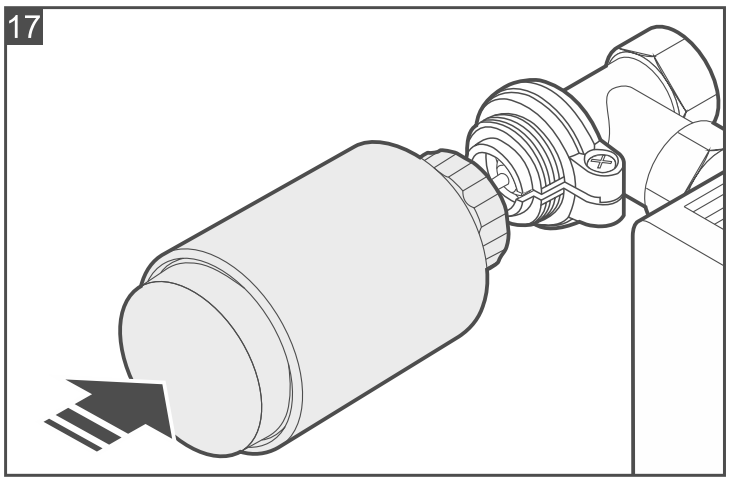


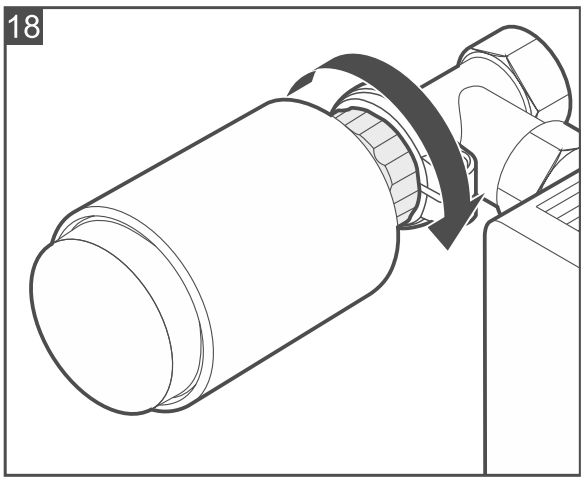
2. Fasten the adapter on the valve.
   2.1. Place the adapter on the valve (Fig. 14).
   2.2. Bend open the adapter clamp with a screwdriver and press the adapter against the valve flange face (Fig. 15).
   2.3. Secure the adapter clamp with a screw (Fig. 16).





3. Place the thermostat on the valve (Fig. 17).

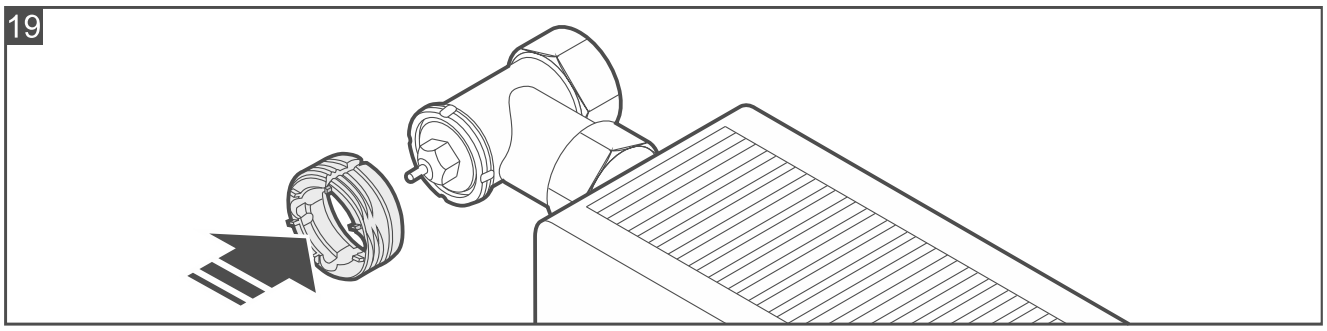




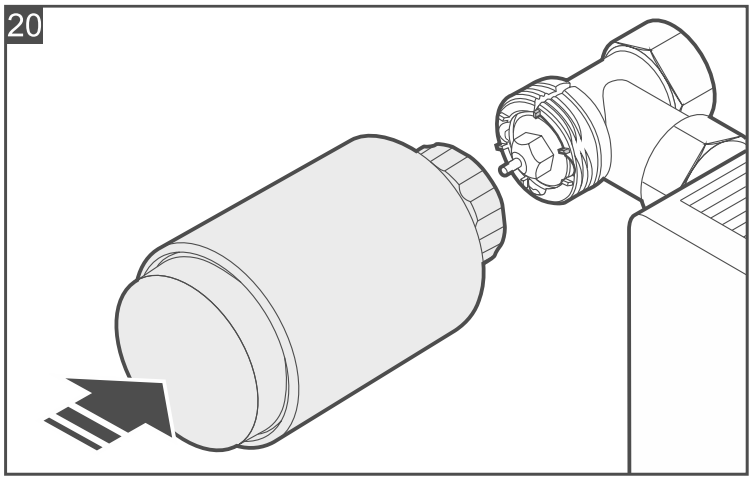
4. Tighten the thermostat on the adapter (Fig. 18).
5. If the thermostat is seated loosely on the valve, use the reducer ring. Unscrew the thermostat, place the reducer ring inside its flange (Fig. 7), then repeat points 3 and 4.

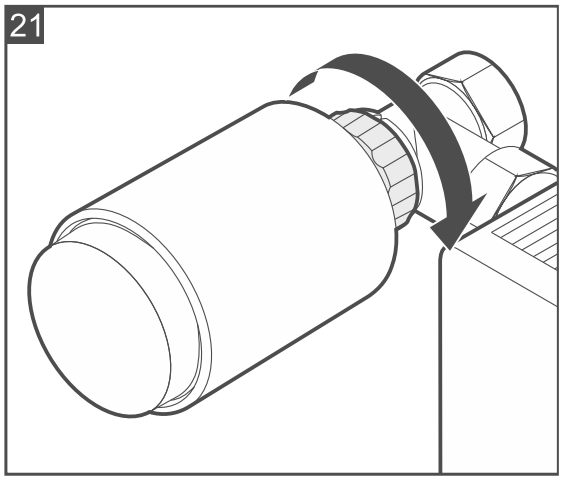
3.2.4 Mounting on Danfoss RAVL valve

1. Mount the adapter on the valve. Press it against the valve flange face (Fig. 19).



2. Place the thermostat on the valve (Fig. 20).





3. Tighten the thermostat on the adapter (Fig. 21).
4. If the thermostat is seated loosely on the valve, use the reducer ring. Unscrew the thermostat, place the reducer ring inside its flange (Fig. 7), then repeat points 2 and 3.

4. Manual control

4.1 Changing the operating mode manually

1. Press the knob to turn on the display.
2. Keep pressing the knob until the temperature for the operating mode you want to enable is displayed.
3. Wait 10 seconds. The temperature from the sensor will be displayed.

4.2 Temporarily setting other temperature

This temporary temperature will be used until the operating mode is changed.

This function is not available when the ECO operating mode is enabled. First change the operating mode, then change the temperature.

1. Press the knob to turn on the display.
2. Press the knob to display the currently set temperature.
3. Turn the knob to set the new temperature.
4. Press the knob to confirm the change.

4.3 Changing the temperature setting for the selected operating mode

1. Press the knob to turn on the display.
2. Keep pressing the knob until the temperature for the operating mode you want to edit is displayed.
3. Press and hold the knob for 3 seconds. The temperature on the display will start flashing.
4. Turn the knob to set the new temperature.
5. Press the knob to confirm the change.
6. Keep pressing the knob until the temperature for the operating mode you want to enable is displayed.

4.4 Starting the Boost Heat function

Press the knob and turn it right. The message will be shown on the display. The number at the end is the number of minutes until the end of the function.

4.5 Stopping the Boost Heat

If you want to stop the Boost Heat before the end of 15 minutes, press the knob and hold for 3 seconds.

4.6 Closing the valve manually

Press the knob and turn it left. The message will be shown on the display.

4.7 Disabling the knob manually (child lock)

You can disable the knob when the display shows temperature from the sensor (⌂ symbol).

Press and hold the knob for 3 seconds. The message will be shown on the display.

4.8 Enabling the knob manually

Press and hold the knob for 3 seconds. The temperature from the sensor will be shown on the display.

4.9 Restarting the thermostat

Press the knob and hold for 10 seconds. When the thermostat restarts, the temperature from the sensor will be shown on the display.

5. Restoring the default settings

1. Remove the thermostat cover (Fig. 3).
2. Remove the batteries.
3. Press and hold the knob.
4. While holding the knob, install the batteries. The LED display test will be started (the LEDs on the display will be turned on and off).
5. Release the knob and wait until the test is complete (the display will turn off).
6. Press the knob.
7. Remove the batteries.
8. Install the batteries again. The message will be shown on the display.
9. Replace the thermostat cover. The marks on the body and cover will help you replace the cover correctly (Fig. 4).

6. Battery replacement

The used batteries must not be discarded, but should be disposed of in accordance with the existing rules for environment protection.

When the thermostat batteries are low:

- one of the messages is shown on the display: (battery voltage dropped below 2.3 V) or (battery voltage dropped below 2.2 V),
- the Be Wave app will indicate that the thermostat batteries are low.

The low batteries should be replaced as soon as possible.

1. Remove the thermostat cover (Fig. 3).
2. Remove the low batteries.
3. Wait 1 minute.
4. Install the new batteries. The message will be displayed.
5. Replace the thermostat cover. The marks on the body and cover will help you replace the cover correctly (Fig. 4).
6. Press the knob (Fig. 2). The thermostat will be calibrated.

7. Specifications

Operating frequency band ..... 868.0 MHz ÷ 868.6 MHz
Radio communication range (in open area) ..... up to 1000 m
Batteries ..... 2 x LR6 AA 1.5 V
Battery life expectancy ..... up to 2 years

Standby current consumption	74 µA
Low battery voltage threshold	2.3 V
Temperature measurement range	-10°C...+50°C
Temperature measurement accuracy	±0.1°C
Temperature adjustment range	5°C...30°C
Temperature adjustment accuracy	±0.5°C
Operating temperature range	-10°C...+50°C
Maximum humidity	93±3%
Enclosure dimensions	ø56 x 97 mm
Weight	166 g