

Operating and installation instructions



Radiator thermostat

VR 50

GB, IE

Publisher/manufacturer

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 **Vaillant**

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1 Safety

1.1 Action-related warnings

Classification of action-related warnings

The action-related warnings are classified in accordance with the severity of the possible danger using the following warning signs and signal words:

Warning symbols and signal words



Danger!

Imminent danger to life or risk of severe personal injury



Danger!

Risk of death from electric shock



Warning.

Risk of minor personal injury

**Caution.**

Risk of material or environmental damage

1.2 Intended use

In the event of inappropriate or improper use, damage to the product and other property may arise.

You can use the radiator thermostat for the time-controlled regulation of common radiator valves from the following manufacturers:

- Heimeier
- MNG
- Junkers
- Landis & Gyr (Duodyr)
- Honeywell-Braukmann
- Oventrop
- Schlösser
- Comap
- Valf Sanayii
- Mertik Maxitrol



1 Safety

- Watts
- Wingenroth (Wiroflex)
- R.B.M
- Tiemme
- Jaga
- Siemens
- Idmar

Intended use includes the following:

- observance of accompanying operating, installation and servicing instructions for the product and any other system components
- installing and fitting the product in accordance with the product and system approval
- compliance with all inspection and maintenance conditions listed in the instructions.

Intended use also covers installation in accordance with the IP class.

Any other use that is not specified in these instructions, or use beyond that specified



in this document shall be considered improper use. Any direct commercial or industrial use is also deemed to be improper.

Caution.

Improper use of any kind is prohibited.

1.3 General safety information

1.3.1 Danger caused by improper operation

Improper operation may present a danger to you and others, and cause material damage.

- Carefully read the enclosed instructions and all other applicable documents, particularly the “Safety” section and the warnings.
- Only carry out the activities for which instructions are provided in these operating instructions.



1.3.2 Risk of material damage caused by frost

- ▶ Do not install the product in rooms prone to frost.

1.3.3 Risk of material damage caused by unsuitable environmental conditions.

The electronics may be damaged if you install the product in an unsuitable environment.

- ▶ Only install the product in dry, dust-free rooms.
- ▶ Ensure that the product is not exposed to constant solar or heat irradiation, vibrations or mechanical loads.

1.3.4 Regulations (directives, laws, standards)

- ▶ Observe the national regulations, standards, guidelines and laws.

2 Notes on the documentation

2.1 Observing other applicable documents

- You must observe all the operating and installation instructions included with the system components.

2.2 Storing documents

- Keep this manual and all other applicable documents safe for future use.

2.3 Validity of the instructions

These instructions apply only to:

Product	article number
VR 50	0020247920
VR 50	0020242487

3 System and product description

3.1 Component of the ambiSENSE system

The product is part of the **ambiSENSE** room climate solution and communicates with the VR 920 Internet gateway via a radio protocol. All products in the **ambiSENSE** room climate solution can be configured using the **VRC 700** app on a smartphone.

You can use the radiator thermostat for the time-controlled regulation of the target room temperature via the **VRC 700** app and adjust the heating times to suit your needs. The Boost function means that the radiator can be rapidly heated for a short period by opening the radiator valve.

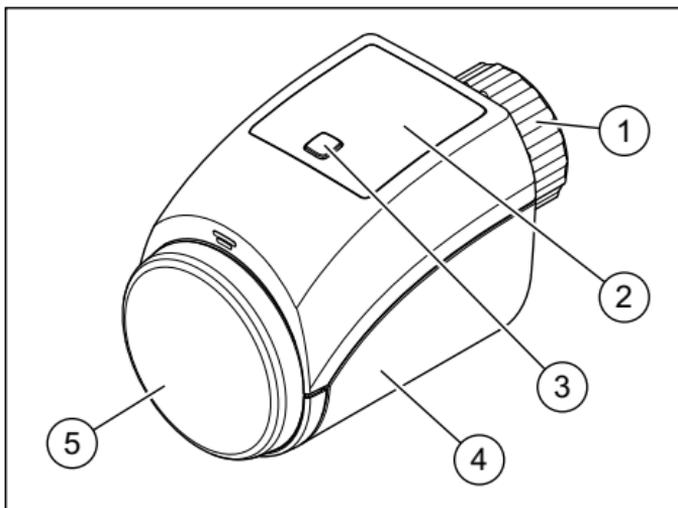
The product is paired to the VR 920 Internet gateway via the **VRC 700** app.

You manually start the pairing mode for three minutes by briefly pressing the system button.

The product is suitable for all common radiator valves with thread dimensions of M30 x 1.5 mm. Using the adapter that is included in the scope of delivery means that the product can also be installed on Danfoss RA, Danfoss RAV and Danfoss RAVL radiator valves.

The product can automatically decrease the target temperature during ventilation. To precisely control the room temperature, the optional **ambiSENSE** VR 51 room thermostat can record the actual room temperature centrally and transfer this to the radiator thermostat.

3.2 Design of the product



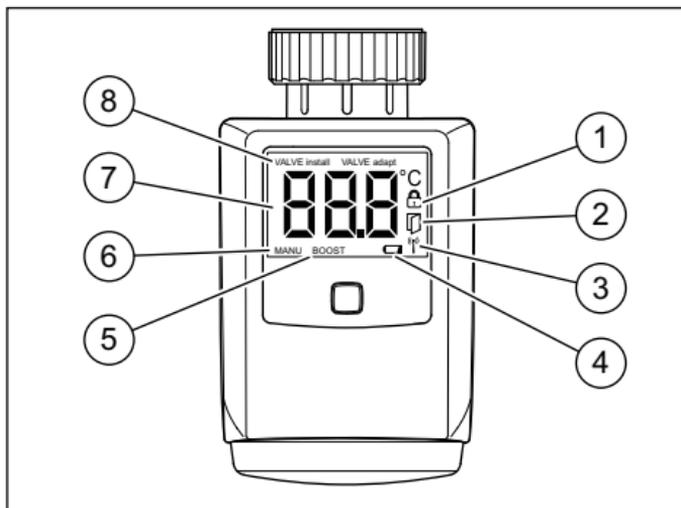
- 1 Knurled nut
- 2 Display
- 3 System button with signal LED
- 4 Battery compartment
- 5 Setting wheel

3.3 Display



Note

The background lighting for the display is switched off in Standby mode. To activate the background lighting, press the setting wheel once.



- 1 Operation lock active
- 2 Automatic decrease active

3 System and product description

- 3 Radio data transmission
- 4 Low battery charge
- 5 Boost mode active
- 6 Manual mode active
- 7 Target temperature °C
- 8 Status information for the valve

3.4 Window-opening detector

When a window is open, e.g. for ventilation, the system automatically lowers the temperature in order to save heating energy and costs. No window sensor is required for this function. This function is implemented in the **ambiSENSE** software and is activated by a measured temperature drop. After the window is closed, the product is switched back to the original operating mode. When switching to automatic mode, the temperature is brought to the desired temperature that is set in the time programme.

3.5 Radio operation

The radio signal is transmitted on a non-exclusive transmission path. Faults can therefore not be ruled out. Interferences may, for example, be caused by switching operations, electric motors or defective electrical units.

The range inside buildings may differ considerably from the range outdoors. Except for the transmission power and the reception properties of the transceivers, environmental influences (such as air humidity and structural elements) play an important role on-site.

3.6 Flashing sequence of the signal LED

Flashing sequence	Meaning	Required activity
Brief period of flashing orange	Radio transmission/ transmission attempt/data transmission	Wait until the transmission has ended.
1 x long period of lighting up green	Process confirmed	Continue with the operation.
1 x long period of lighting up red	Process failed or duty cycle limit reached	Wait for the Duty Cycle interval and try again.
Brief period of flashing orange (every 10 seconds)	Pairing mode active	Enter the digits of the unit number to confirm.

Flashing sequence	Meaning	Required activity
Brief period of lighting up orange (after a green or red reception notification)	Batteries flat	Replace the batteries.
3 x long period of flashing red	Product defective	Note the display in the App or contact the specialist dealer.
Lights up 1 x orange and 1 x green (after inserting the batteries)	Test display	Once the test display goes out, you can continue.

Flashing sequence	Meaning	Required activity
Long and brief period of flashing orange (alternating)	Update to the unit software (OTAU = Over the Air Update)	New software is transferred. (Duration: Up to 12 hours) This does not affect how the product works during this time.

3.7 Duty cycle limit

The duty cycle limit describes a legally regulated limit on the transmission time of units in the 868 MHz range. The aim of this regulation is to guarantee that all units that work in the 868 MHz range work correctly. In the frequency range 868 MHz that is used by the product, the maximum transmission time for each individual unit is 1% of an hour (i.e. 36 seconds in

1 hour). The product complies with this directive.

In normal mode, the duty cycle limit is not normally reached. In individual cases, e.g. during start-up or the new installation of a system, increased and radio-intensive pairing processes may mean that this limit is not reached. If the duty cycle limit is exceeded, the signal LED lights up red for one extended period and may indicate that a function is temporarily missing from the product. After a short time (max. one hour), the product's function is restored.

3.8 CE marking



The CE mark shows that the products comply with the basic requirements of the applicable guidelines as stated on the data plate.

The manufacturer hereby declares that the type of radio equipment that is described in these instructions complies with Directive 2014/53/EU. The complete text for the EU Declaration of Conformity is available at: <http://www.vaillant-group.com/doc/doc-radio-equipment-directive/>.

3.9 Checking the scope of delivery

- Check that the scope of delivery is complete and intact.

Number	Designation
1	Radiator thermostat
3	Danfoss adapter (RA, RAV, RAVL)
1	Danfoss RAV tappet extension
1	Support ring
1	M4 nut
1	M4 x 12 mm fillister head screw
2	LR6/Mignon/AA batteries

Number	Designation
1	Unit number sticker (SGTIN = Serialised Global Trade Item Number)
1	Operating and installation instructions

4 Integration into the ambiSENSE system

4.1 Pairing

To ensure that the product is integrated into the **ambiSENSE** system and can communicate with other **ambiSENSE** units, it must first be paired to the VR 920 Internet gateway. You should therefore first set up the VR 920 Internet gateway via the **VRC 700** app in order to be able to use **ambiSENSE** units in the system.

Pair the product via the **VRC 700** app as follows.

- Open the **VRC 700** app on the smart-phone.
- Select **Settings** on the bottom right.
- Select **ambiSENSE**
- Select **Add individual room component**.
- Follow the installation assistant.
- When the installation assistant in the app requests that you establish the power supply, open the product's battery compartment and pull the insulating strips out of the battery compartment.
 - The motor moves back to facilitate the installation. During this time, **Valve install** and the activity symbol  are displayed.
- When you are prompted to do so by the installation assistant for the app, enter the digits of the unit number (SGTIN = Serialised Global Trade Item Number) in

the app to confirm. Alternatively, use the smartphone to scan the QR code.



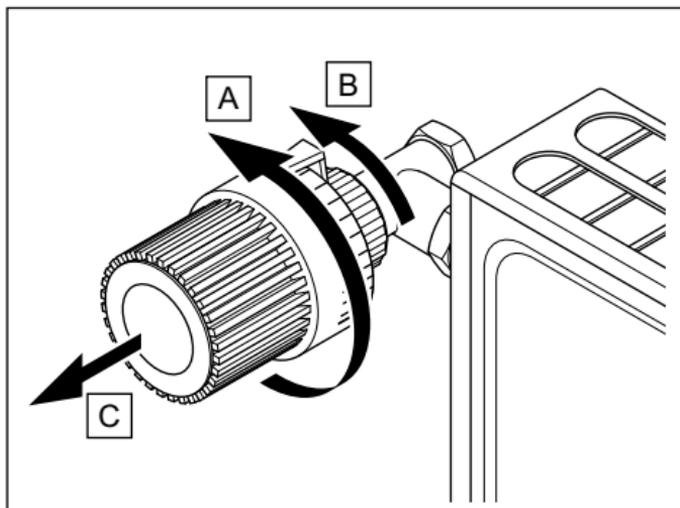
Note

You can find the unit number and the QR code on the enclosed sticker and in the product's battery compartment.

- Wait until the pairing process is complete.
 - The signal LED lights up green. The pairing process has been successfully completed.
 - The signal LED lights up red. The pairing process has failed. Try again.

5 Set-up

5.1 Installing the radiator thermostat



1. Turn the thermostat head anti-clockwise to the maximum value.
 - The thermostat head is now no longer pushing against the valve

spindle and can therefore be removed more easily.

2. Remove the thermostat head from the radiator valve.

Conditions: Fastening with union nuts

- ▶ Loosen the union nuts in an anti-clockwise direction and remove the thermostat head.

Conditions: Fastening with snap-on mounts

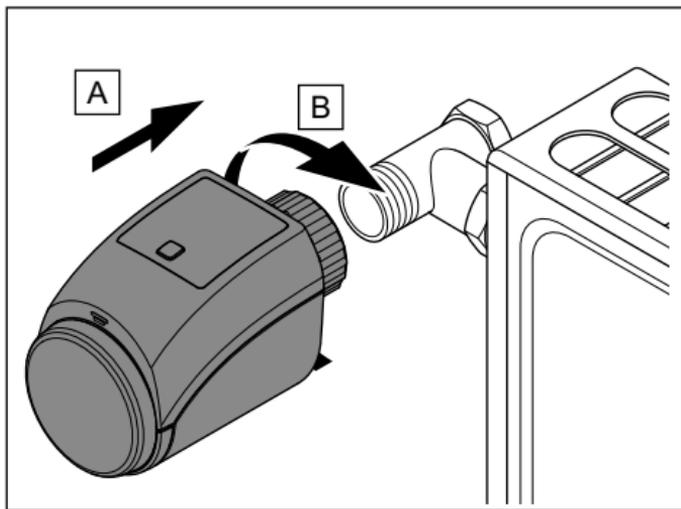
- ▶ Turn the union nuts slightly in an anti-clockwise direction and remove the thermostat head.

Conditions: Fastening with compression fittings

- ▶ Undo the screw that is used to hold together the ring fastener that secures the thermostat head. Remove the thermostat head.

Conditions: Fixing with set screws

- ▶ Undo the set screw and remove the thermostat head.
- 3. Start the pairing process in the App. (Page 4)
- 4. Install the product when you are requested to do so in the App during the pairing process.
- 5. Affix the supplied unit number sticker to the battery compartment cover.



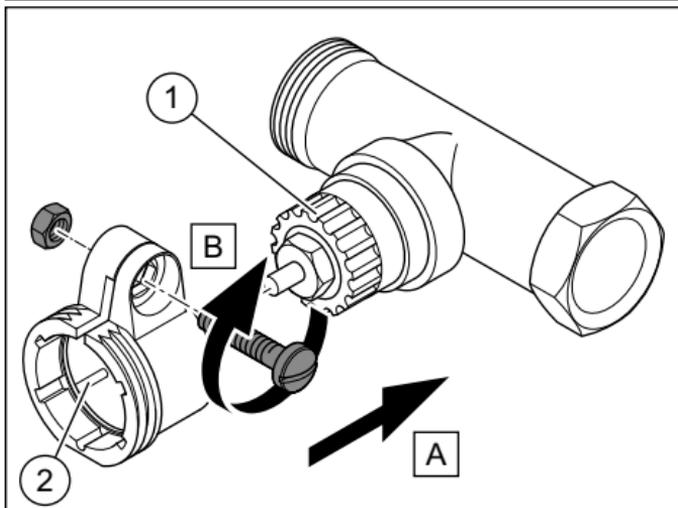
6. Use the knurled nut on the radiator valve to install the new radiator thermostat.

5.2 Installing the radiator thermostat with Danfoss adapter

1. Remove the old thermostat head from the radiator valve.

2. In each case, use the enclosed adapter for the installation on Danfoss radiator valves.

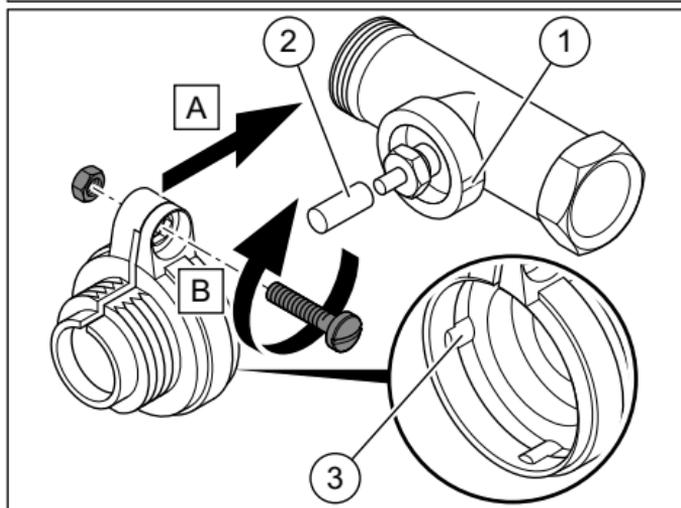
Conditions: Danfoss RA radiator valve



- ▶ During the installation, ensure that the pins inside the adapter **(2)** are congruent to the recesses **(1)** on the valve.
- ▶ Snap the adapter that is suitable for the valve fully into place.

- ▶ Use the enclosed screw and nut to secure the adapter.

Conditions: Danfoss RAV radiator valve

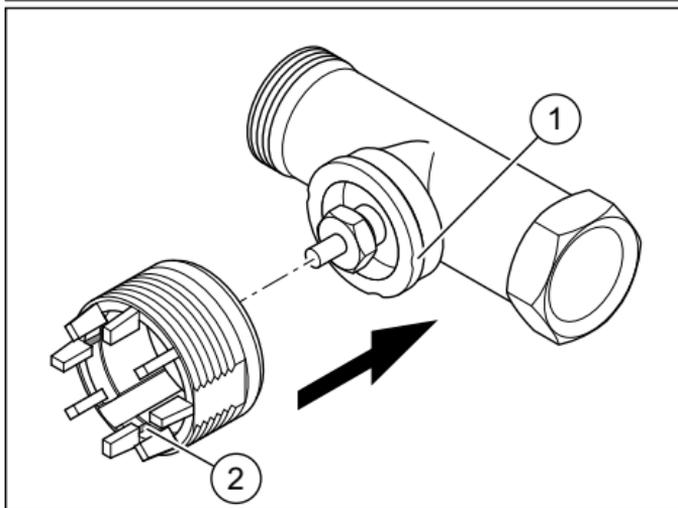


- ▶ Before the installation, mount the tap extension **(2)** onto the valve pin.
- ▶ During the installation, ensure that the pins inside the adapter **(3)** are congruent to the recesses **(1)** on the valve.

5 Set-up

- ▶ Snap the adapter that is suitable for the valve fully into place.
- ▶ Use the enclosed screw and nut to secure the adapter.

Conditions: Danfoss RAVL radiator valve



- ▶ During the installation, ensure that the pins inside the adapter **(2)** are congruent to the recesses **(1)** on the valve.

- ▶ Snap the adapter that is suitable for the valve fully into place.

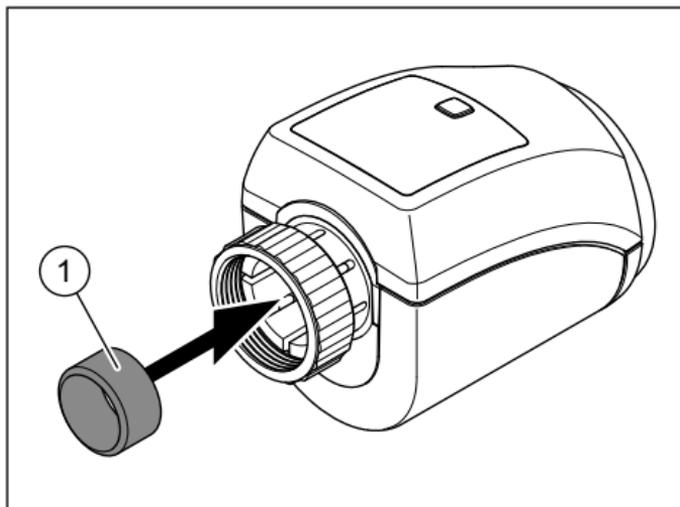


Note

The RAVL adapter is not screwed in.

3. Use the knurled nut on the adapter to install the new radiator thermostat.

5.3 Installing the radiator thermostat with support ring



- ▶ If the diameter of the part of the radiator valve that projects into the radiator thermostat is too small, place the support ring **(1)** into the flange before installation.

6 Start-up

6.1 Adaptive run

An adaptive run (**Valve adapt**) must be carried out after the installation.

- ▶ If **Valve adapt** is shown in the display, start the adaptive run by pressing the setting wheel.
 - During the adaptive run, **Valve adapt** is shown on the display.



Note

No other operation is possible during the adaptive run. After a successful adaptive run, the display switches back to the normal display.

- ▶ If the adaptive run was initiated before the installation or if a fault message (**F1**, **F2**, **F3**) is displayed, press the setting wheel.
 - The motor moves back to the **Valve install** position.

7 Operation

7.1 Changing the operating mode

Automatic mode: The heating programme that is set via the **VRC 700** app is active.

Manual mode: You can set the temperature on the product or by using the **VRC 700** app. The temperature setting is retained until the next time a manual change is implemented.

- Press and hold the setting wheel to switch between manual mode and automatic mode.

7.2 Setting the temperature

In automatic mode, the desired temperature (Quick Veto) that is manually set on the product remains for three hours. The set time programme is then reactivated. You can also use the **VRC 700** app in automatic mode to manually set a desired temperature (Quick Veto) that overwrites

the current time programme for a certain amount of time. The duration for which the manually set temperature should apply can be individually defined here.

In manual mode, the temperature is retained until the next time a manual change is implemented.

- Turn the setting wheel clockwise or anticlockwise to manually increase or decrease the temperature of the radiator.

7.3 Using the Boost function

The Boost function is used to rapidly heat up the radiator for a short period.

- Briefly press the setting wheel.
 - The Boost function is automatically terminated after 300 seconds.

7.4 Activating/deactivating the operation lock

You can use the relevant room settings in the **VRC 700** app to activate and deactivate the product's operation lock.

8 Troubleshooting

8.1 Command not confirmed

If at least one transceiver does not confirm a command, the signal LED lights up red once the incorrect transmission is completed.

The reason for the incorrect transmission may be radio interference caused by one of the following:

- Transceiver cannot be reached
- Transceiver cannot implement the command (load failure, mechanical blockage, etc.)
- Defective transceiver

8.2 Fault messages

If a fault occurs, a fault code **Fx.** is shown in the display instead of the temperature display.

Fault	Possible cause	Remedy
F1	Valve drive stiff	Check whether the tappet for the heating valve is jammed.
F2	Setting range too big	Check the fastening for the radiator thermostat.
F3	Setting range too small	Check whether the tappet for the heating valve is jammed.
	Battery voltage low	Replace the unit's batteries; see section "Changing the batteries".

 flashes	Communication fault to the Internet gateway and/or to the repeater	Check the connection to the Internet gateway and/or to the repeater.
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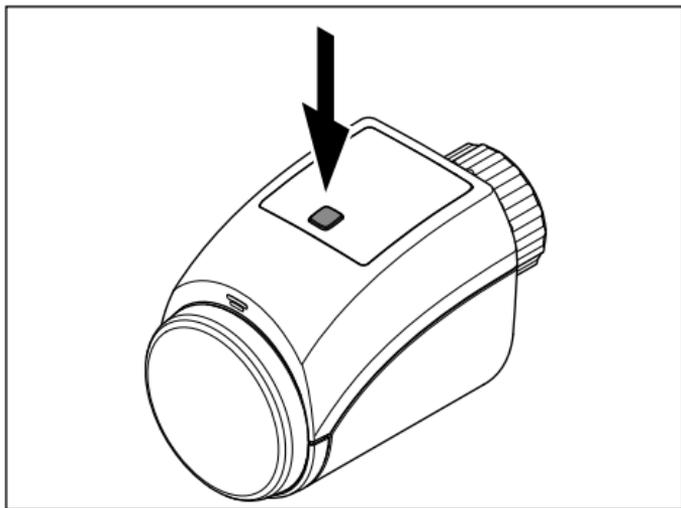
8.3 Resetting to factory setting



Note

All settings will be lost.

1. Remove the batteries. (Page 41)



2. Re-insert the batteries in accordance with the polarity markings and, at the same time, press and hold the system button for four seconds until the signal LED starts to rapidly flash in orange.
3. Release the system button.
4. Press the system button again for four seconds until the signal LED lights up green.

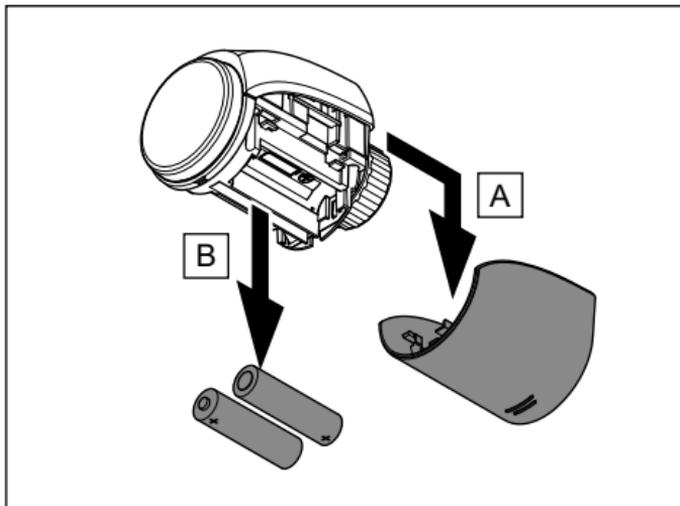
5. Release the system button.
 - The product restarts.

9 Care and maintenance

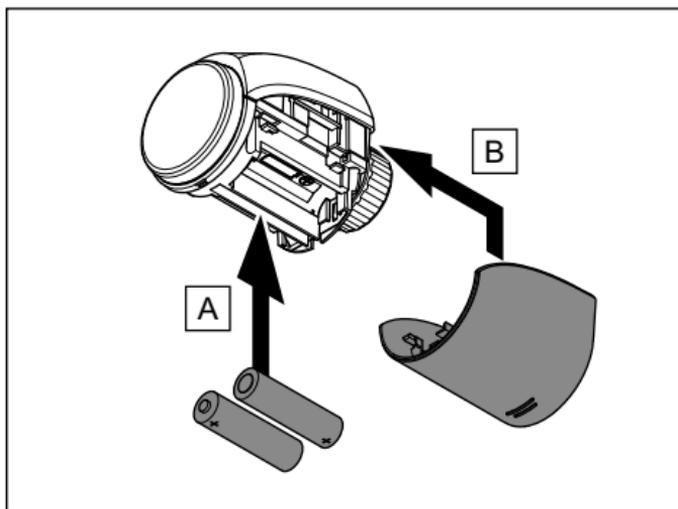
9.1 Caring for the product

- Clean the casing with a damp cloth and a little solvent-free soap.

9.2 Changing batteries



1. Open the battery compartment as shown in the figure.
2. Always change all the batteries at the same time.
 - Battery type: LR06/Mignon/AA
3. Do not use rechargeable batteries.



4. Insert the batteries, making sure that the poles are the right way round.
 - After inserting the batteries, the product runs through a self-test for approx. two seconds. Initialisation then takes place.
5. After inserting the batteries, observe the flashing sequence of the signal LED.

- Self-test successful: Signal LED lights up orange first and then green.
- Close the battery compartment.

9.2.1 Risk of death caused by unsuitable batteries



Danger!

Risk of death caused by unsuitable batteries!

If batteries are replaced with the wrong type of battery, there is a risk of explosion.

- ▶ Ensure that you use the correct battery type when replacing batteries.
- ▶ Dispose of used batteries in accordance with the instructions in this manual.

9.2.2 Leaking batteries



Danger!

Risk of chemical burns caused by leaking batteries!

If the product is not used for several weeks, the batteries may leak. The battery fluid may cause chemical burns.

- Remove the batteries if you will be away for an extended period.
- Take suitable measures to protect against chemical burns (e.g. wear protective gloves).

9.2.3 Batteries

- Note the battery type, as described in these instructions; see section “Data plate”.
- Remove and insert batteries as described in these instructions; see section “Changing the batteries”.
- Do not recharge non-rechargeable batteries.
- Remove rechargeable batteries from the product before charging them.
- Do not combine batteries with other battery types.
- Do not combine new and used batteries.

- Insert the batteries, making sure that the poles are the right way round.
- Remove the dead batteries from the product and dispose of them correctly.
- Remove the batteries if you intend to store the product and not use it for an extended period and/or to scrap it.
- Do not short-circuit the connection contacts in the product's battery compartment.

10 Decommissioning

10.1 Decommissioning the product

1. Delete the product in the **VRC 700** app.
2. Remove the product from the radiator valve.
3. Remove the batteries.

10.2 Recycling and disposal



If the product is labelled with this mark:

- In this case, do not dispose of the product with the household waste.
- Instead, hand in the product to a collection centre for old electrical or electronic appliances.



If the product contains batteries that are labelled with this mark, these batteries may contain substances that are hazardous to human health and the environment.

- In this case, dispose of the batteries at a collection point for batteries.

11 Customer service

The contact details for our customer service are provided on our website.

12 Technical data

Parameter	Value
Battery type	2 x 1.5 V LR6/ Mignon/AA
Current consumption	≤ 120 mA
Battery life	2 years
IP rating	IP 20
Degree of contamination	2
Permissible environmental temperature	0 ... 50 °C
Height	71 mm (2.80 in)
Width	58 mm (2.28 in)
Depth	97 mm (3.82 in)
Weight (incl. batteries)	205 g (7.23 oz)
Transmission frequency	868.0 - 868.6 MHz / 869.4 - 869.65 MHz

Parameter	Value
Maximum transmission power	< 25 mW
Receiver category	SRD category 2
Range outdoors	300 m (984 ft - 3 in)
Duty Cycle	< 1% per h / < 10% per h
Mode of operation	Typ 1
Connection	M30 x 1,5 mm



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