EN

R-Tronic RT B
R-Tronic RTF B
R-Tronic RTFC K
with mote 320 wireless actuator

Operating instructions

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1. General information

The original operating instructions were drafted in German.
The operating instructions in other languages have been translated from German.

1.1 Validity of the operating instruction

The operating instructions are valid for the R-Tronic RT B, R-Tronic RTF B, R-Tronic RTFC K wireless thermostat in combination with the mote 320 wireless actuator (connection thread M30 x 1.5 or squeeze connection; to be ordered separately).

1.2 Type plate

The type plate of the wireless thermostat is located on the rear wall of the casing.
The type plate of the wireless actuator is located under the casing cover.

1.3 Extent of supply

1.3.1 Extent of supply of the R-Tronic wireless thermostat

Please check your delivery for any damage caused during transit and for completeness.
Items included in the delivery:

R-tronic RT B wireless thermostat (item no.:1150680)
R-Tronic RT B wireless thermostat
Wall bracket
2x batteries
Operating instructions

R-Tronic RTF B wireless thermostat (item no.:1150681)
R-Tronic RTF B wireless thermostat
Wall bracket
2x batteries
Operating instructions

R-Tronic RTFC K wireless thermostat (item no.:1150682)
R-Tronic RTFC K wireless thermostat
Wall bracket
Flush-mounted power pack
Operating instructions

R-Tronic RTFC K wireless thermostat (item no.:1150684)
R-Tronic RTFC K wireless thermostat
Mains adaptor with table stand
Operating instructions

1.3.2 Extent of supply of the mote 320 wireless actuator

mote 320 wireless actuator with connection thread M 30 x 1.5 (item no.:1150665)	mote 320 wireless actuator with squeeze connection (item no.:1150675)
mote 320 wireless actuator	mote 320 wireless actuator
2x batteries	2x batteries
Operating instructions	Operating instructions

1.4 Contact

Contact address

OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1
59939 Olsberg
GERMANY
www.oventrop.com

Technical services

Phone: +49 (0) 29 62 82-234

1.5 Declaration of conformity

Oventrop GmbH & Co. KG hereby declares that this product complies with the basic requirements and other relevant provisions of the EU Directives concerned.
The declaration of conformity can be obtained from the manufacturer.

1.6 Symbols used

	Highlights important information and further explanations.
▶	Action required
•	List
1. 2.	Fixed order. Steps 1 to X.
▷	Result of action

2. Safety-related information

2.1 Correct use

Operating safety is only guaranteed if the product is used correctly.
Depending on the model, the following functions are available:

- The R-Tronic RT B wireless thermostat shows you the room temperature and and offers you the possibility to control the room temperature.
- The R-Tronic RTF B wireless thermostat shows you the room temperature and the relative humidity RH in % and offers you the possibility to control the room temperature.
- The R-Tronic RTFC K wireless thermostat shows you the room temperature, the relative humidity RH in % and the CO2 content in ppm in the ambient air and offers you the possibility to control the room temperature.

Any other use of the product will be considered incorrect use.
Claims of any kind against the manufacturer and/or its authorised representatives due to damage caused by incorrect use will not be accepted.
Observance of the operating instructions is part of compliance with correct use.

2.2 Warnings

Each warning contains the following elements:

Warning symbol	SIGNAL WORD
	Type and source of danger! Possible consequences if the danger occurs or the warning is ignored. ▶ Ways to avoid the danger.

The signal words identify the severity of the danger arising from a situation.

2.3 Safety notes

We have developed this product in accordance with current safety requirements. Please observe the following notes concerning safe use.

2.3.1 Danger caused by inadequately qualified personnel

Any work on this product must only be carried out by qualified tradespeople. As a result of their professional training and experience as well as their knowledge of the relevant legal regulations, qualified tradespeople are able to carry out any work on the described product professionally.

2.3.2 Availability of the operating instructions

Any person working on the product has to read and apply these operating instructions and all other valid documents (e.g. accessory manuals).
The operating instructions must be available at the installation location of the product.

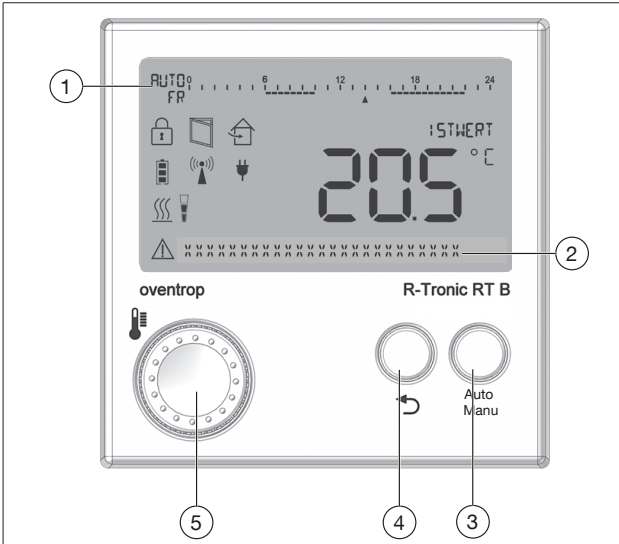
- Hand these operating instructions and all other relevant documents (e.g. accessory manuals) over to the user.

2.4 High-frequency emissions of wireless sensors

Under normal conditions (use in residential areas), the use of this product does not constitute a hazard to health. The high-frequency emissions of wireless switches and sensors with wireless technology are much lower than the emissions of conventional switches which also emit electromagnetic fields due to the contact spark. Please observe that special regulations and standards apply for electrical products which are used in the medical sector (e.g. hospitals). The R-Tronic wireless thermostat with the mote 320 wireless actuator is not suitable for the medical sector.

3. Technical description

3.1 Construction of the R-Tronic wireless thermostat



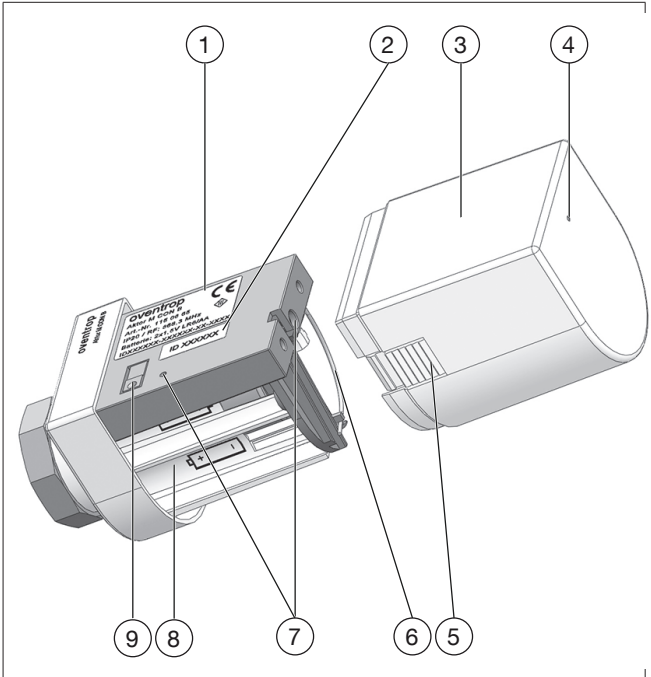
Illust. 1: Overview of the R-Tronic wireless thermostat

(1)	Display of the operating mode, time profile, day of the week and time
(2)	Text line for notes
(3)	Auto/Manu button
(4)	Back button
(5)	Menu button

The following symbols appear on the display of the R-Tronic wireless thermostat:

	Battery status (fully charged, low, empty)
	Menu lock active
	At least 1 slave is taught in
	Heating mode
	Power supply via flush-mounted power pack or mains adaptor
	Warning symbol for notes and error messages
	Heating
	Window open
	Recommendation for room ventilation

3.2 Construction of the mote 320 wireless actuator



Illust. 2: Overview of the mote 320 wireless actuator

	The wireless thermostat has to be ordered separately.

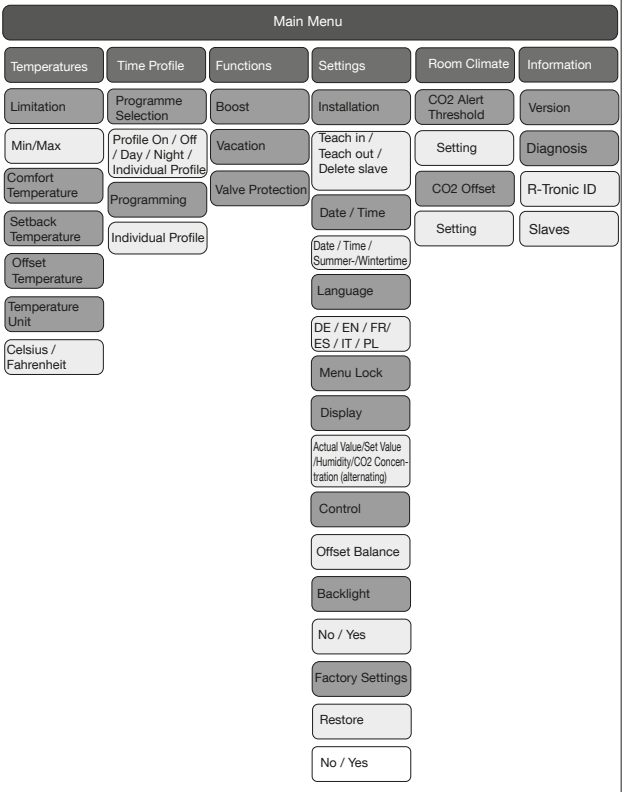
(1)	Type plate
(2)	Aktor ID
(3)	Casing cover

(4)	Info LED
(5)	Release tab
(6)	Antenna
(7)	Info LED
(8)	Battery case
(9)	Teach in/calibration button

3.3 Functional description

The R-Tronic wireless thermostat in combination with the mote 320 wireless actuator serves the radio controlled temperature control of rooms or zones in a room. Depending on the model, the R-Tronic is powered by two batteries, a flush-mounted power pack or a mains adaptor (100-240 V ~/50-60 Hz).
The communication between the wireless thermostat and the wireless actuator for the control of the radiator is carried out via radio.
The technical term "teach in" describes the establishment of a radio connection between two devices.

3.4 Menu structure



Illust. 3: Menu structure

	The boost function is only available if at least one wireless actuator has been taught in.
	Only the R-Tronic RTF and R-Tronic RTFC K wireless thermostats feature the air humidity function.
	Only the R-Tronic RTFC K wireless thermostat features the CO_2 function.
	Only the R-Tronic RTFC K wireless thermostat features the menu option “ROOM CLIMATE”.

3.5 Technical data of the R-Tronic wireless thermostat

Radio frequency	868.3 MHz
Transmission power	max. 10 mW
Radio range within the building	Depending on materials and interference sources
Transmission interval	150 seconds
Operation mode	Type 1 (EN 60730-1)
Protection	IP20 (EN 60529)
Protection class	III – Protective low voltage
Ambient temperature	+5°C to +50°C
Power supply	RTFC K with external flush-mounted power pack or mains adaptor (100-240V / 50-60hz) RT B, RTF B battery operation and optional mains operation
Battery operation	Battery type AA 1.5 V Mignon LR6
Battery life span	approx. 2 years (battery capacity > 2,600 mAh)
Display	LCD
Measuring range T (°C)	0 °C to +50 °C
Measuring range CO2 (PPM)	0 to 2000 PPM, for R-Tronic RTFC K
Measuring range RH (%)	0 to 100% RH, for R-Tronic RTF B and R-Tronic RTFC K
Accuracy at +25 °C	± 1 K
Accuracy at +25°C and 20-80 % RH	±4,5% RH
Accuracy at +25°C and 1013 mbar	< ± 50 PPM +2% of measured value
Temperature dependence	typ. 2 PPM CO2/°C (0…50 PPM)
Long-term stability	typ. 20 PPM/a

Casing	ABS (ASA), traffic white similar to RAL 9016
Casing dimensions	85 x 85 x 35 mm (W x H x D)

3.5.1 Technical data of the mote 320 wireless actuator

Radio frequency	868.3 MHz
Transmission power	max. 10 mW
Radio range within the building	Depending on materials and interference sources
Transmission interval	150 seconds
Operation mode	Type 1 (EN 60730-1)
Protection	IP20 (EN 60529)
Protection class	III – Protective low voltage
Ambient temperature	+5°C to +50°C
Power supply	Battery type AA 1,5 V Mignon LR6, Alkaline (no rechargeable batteries)
Casing	ABS (ASA), traffic white similar to RAL 9016
Casing dimensions	51 x 52 x 86 mm (W x H x D)
Connection	Connection thread M30 x 1.5 or squeeze connection
Operating power	approx. 80 N
Maximum piston stroke	4.0 mm
Weight	approx. 160 g (without batteries)

4. Operating elements

For the radio controlled temperature control of rooms, you have to use the R-Tronic wireless thermostat in combination with a mote 320 wireless actuator. The wireless actuator receives and evaluates the corresponding control commands via a radio connection.

5. Accessories and spare parts

Spare parts and accessories are available from specialist stores.
The following items are available as accessories:

Designation	Item no.
Flush-mounted power pack with wall bracket (for R-Tronic RT B and R-Tronic RTF B wireless thermostat)	1150692
Mains adaptor with table stand (for R-Tronic RT B and R-Tronic RTF B wireless thermostat)	1150694
Window contact	1153070
Cover frame	1150693
mote 320 wireless actuator	1150665, 1150675
R-Con 2P wireless receiver (1 channel) (for R-Tronic RTFC K wireless thermostat)	1150710
R-Con wireless receiver 4 channels with logic module	1150770
R-Con wireless receiver 4 channels without logic module	1150771
R-Con wireless receiver 8 channels with logic module	1150772
R-Con wireless receiver 8 channels without logic module	1150773

6. Transport and storage

Transport the product in its original packaging.
Store the product under the following conditions:

Temperature range	-10°C to +65°C
Relative air humidity	max. 70%
Particles	Store dry and free from dust
Mechanical influences	Protected from mechanical agitation
Radiation	Protected from UV rays and direct sunlight

Chemical influences	Do not store together with solvents, chemicals, acids, fuels or similar substances

7. Installation

7.1 Installation location

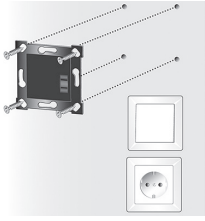
- The R-Tronic wireless thermostat should be installed at a location in the room where a good circulation of air is guaranteed.
- Mount the R-Tronic wireless thermostat onto an inner wall or a pillar at a height of 140 cm to 170 cm.
- The R-Tronic wireless thermostat must not be thermally influenced by other heat sources (such as sunlight or heating devices next to it). This is the only way to achieve a high measuring accuracy.

	As an alternative to wall attachment, you can operate the wireless thermostat with a table stand (optional accessory). The table stand should be set up freestanding, e.g. on a table and should not be covered.
	Please note that the radio range can be negatively influenced by spatial factors such as the room geometry and existing objects, materials and sources of interference. This way, so-called radio shadows may develop, e.g. behind metallic objects.

7.2 Wall attachment of the fixing plate of the R-Tronic with wall bracket (battery operation)

As standard, the power supply is provided by batteries. A flush-mounted power pack with wall bracket and a mains adaptor with table stand are available as accessories.

1. Insert two AA 1,5 V Mignon batteries into the battery case. The markings +/- indicate the position of the batteries to be inserted.
2. Screw the supplied fixing plate for the wireless thermostat horizontally onto the wall.



Illust. 4: Wall attachment of the fixing plate

3. Insert the R-Tronic wireless thermostat into the fixing plat from above.

▶ The R-Tronic wireless thermostat is now ready for the teach in process (see section 8.2.1 on page 22).

7.3 Wall attachment of the fixing plate and flush-mounted power pack

⚠ DANGER

Danger of electric shock when connecting the flush-mounted power pack to the power supply of the house
Danger to life due to contact with live components.

- ▶ Switch off the relevant electrical circuit before carrying out any work.
- ▶ Check that no voltage is present.
- ▶ The connection must only be carried out by a qualified electrician.

⚠ CAUTION

Risk of fire due to overcharging of the batteries
If batteries are inserted into the R-Tronic and it is additionally connected to the flush-mounted power pack, there is a risk of overcharging of the batteries.

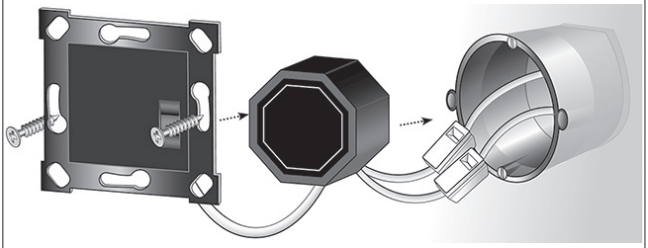
- ▶ Never insert batteries into the R-Tronic if it is connected to the flush-mounted power pack.

Mount the flush-mounted power pack so that the primary and the secondary lines cannot touch each other. If necessary, you can fix these lines, e.g. with a cable tie, to ensure local separation.

1. Establish the electrical connection between the flush-mounted power

pack and the 230 Volt connection in the flush socket.

2. Screw the fixing plate to the flush socket.
3. Switch on the electrical circuit.
4. Insert the R-Tronic into the fixing plate from above.



Illust. 5: Wall attachment of the fixing plate and flush-mounted power pack

► The R-Tronic wireless thermostat is now ready for the teach in process (see section 8.2.1 on page 22).

7.4 Installation with mains adaptor and table stand

⚠ CAUTION

Risk of fire due to overcharging of the batteries
If batteries are inserted into the R-Tronic and it is additionally connected to the mains adaptor, there is a risk of overcharging of the batteries.

► Never insert batteries into the R-Tronic if it is connected to the mains adaptor.

1. Plug the mains adaptor connected to the table stand into a shockproof socket (100-240 V ~/50-60 Hz).
2. Insert the R-Tronic wireless thermostat into the table stand from above.

► The R-Tronic wireless thermostat is now ready for the teach in process (see section 8.2.1 on page 22).

7.5 Installation of the mote 320 wireless actuator

⚠ CAUTION

Risk of scalding on a hot radiator
During the installation process, hot water may flow through the radiator as the radiator valve is open.

▶ If necessary, wear safety gloves during installation.

The mote 320 wireless actuator fits integrated valve sets and thermostatic valves with connection thread M 30 x 1.5. Oventrop offers an adapter set (item no.: 1011445) for the connection thread M 30 x 1. The mote 320 wireless actuator with squeeze connection fits without adapter to integrated distributors as well as RA valves and VHS fittings of the company Danfoss.

1. Remove the casing cover of the wireless actuator. To do this, press in the two release tabs and pull off the cover at the same time.
2. Insert two AA 1,5 V Mignon batteries into the battery case. The markings +/- indicate the position of the batteries to be inserted.
3. Remove the mounted radiator thermostat by unscrewing it from the valve (this can be done without draining off the heating water).
4. Screw the mote 320 wireless actuator onto the radiator valve without casing cover. Tighten the collar nut with slight pressure.

Please note that the mote 320 wireless actuator opens and closes the radiator valve via a mobile stem.
On delivery, the stem is in retracted position so that the wireless actuator can be fitted more easily.
If the stem is in extended position, for example because the wireless actuator has been fitted to a radiator before, press the teach in/calibration button for at least 2 seconds. This way, you may restore the installation position of the wireless actuator at any time (stem in retracted position). After this “calibration run” the info LED flashes green quickly five times.

8. Commissioning

8.1 Menu structure

To access the menu, proceed as follows:

1. Press and hold the menu button for at least 1 second to access the MAIN MENU.

	The MAIN MENU includes the following main areas: TEMPERATURES , TIME PROFILE, FUNCTIONS, SETTINGS, ROOM CLIMATE and INFORMATION.

You can navigate the R-Tronic menus and select the desired functions using the menu button (see Illust. 1 on page 9 (5)). You reach all submenus and functions by turning (navigation) and pressing (confirmation of the selection and save) the menu button. To go back one step, press the back button.

	After activation of a function, the display returns to the default view after a few seconds if no further operating steps are performed.

8.2 Initial commissioning

During initial commissioning, you must specify the language, date and time.

8.2.1 Establishment of the radio connection between the R-Tronic wireless thermostat and the mote 320 wireless actuator

To establish the radio connection between the R-Tronic wireless thermostat and the mote 320 wireless actuator, proceed as follows:

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option SETTINGS.
3. Select the menu option INSTALLATION.
4. Select the menu option TEACH IN.
5. Press the menu button to start the teach in process. The display shows a running countdown of 30 seconds.
6. During this period, press the teach in/calibration button of the wireless actuator (see Illust. 2 on page 11).

	Since the radiator or the wireless actuator is usually several meters away from the R-Tronic, this should be done by a second person. This way, you can keep an eye on the display.

7. SUCCESSFUL appears on the display. The radio symbol appears.
8. The wireless actuator now automatically carries out a calibration run.

- The radio connection between the R-Tronic and the wireless actuator is established.

8.2.2 Teaching in of further mote 320 wireless actuators

After having taught in the first mote 320 wireless actuator successfully, the message SUCCESSFUL is displayed for a few seconds.
After that the message TEACH IN appears again. If you confirm this message by pressing the menu button, you have to option to teach in further wireless actuators. Proceed as described in section 8.2.1 on page 22 to teach in further wireless actuators.

8.2.3 Calibration run

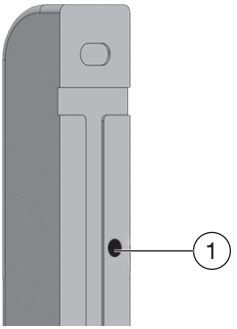
As the “Valve OPEN/Valve CLOSED” position of the radiator valves can always vary slightly, the mote 320 wireless actuator must determine the individual position of of your radiator. This automatic procedure is called “calibration run”. This calibration run takes place automatically after the wireless actuator has been taught in.
If you wish to carry out an additional calibration run, please refer to the separate operating instructions for the wireless actuator.

8.2.4 Teaching in of a window contact

	The R-Tronic wireless thermostat has to be mains operated if you want to use a window contact.
	Depending on the lighting conditions in the room, the window contact may need 2 to 3 days to build up a basic charge.

As soon as a window is open, a signal from the window contact is transmitted to the R-Tronic wireless thermostat giving the command to close all taught in mote 320 wireless actuators (in the room). This is done with a time delay. The wireless actuators continue control operation as soon as all windows are closed again.
To teach in the window contact, proceed as follows:

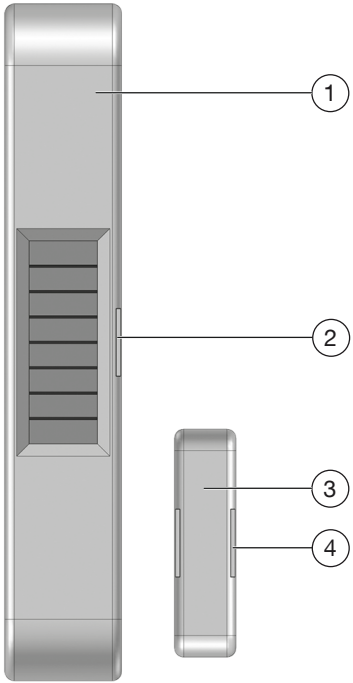
1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option SETTINGS.
3. Select the menu option INSTALLATION.
4. Select the menu option TEACH IN.
5. Press the menu button to start the teach in process. The display shows a running countdown of 30 seconds.
6. During this period, press the teach in button of the window contact



Illust. 6: Position of the teach in button on the back of the window contact

(1)	Teach in button

8.2.5 Installation of the window contact



Illust. 7: Overview of the window contact

(1)	Wireless sensor module
(2)	Notch on the wireless sensor module
(3)	Magnet
(4)	Notch on the magnet

1. Pull off the adhesive tape from the back of the wireless sensor module.
2. Align the sensor module so that the notch points inwards towards the window and attach it onto the frame. To also detect the tilting movement of the window, the sensor should be mounted in the upper quarter of the frame.
3. Pulls off the adhesive tape from the back of the magnet.
4. Align the notch of the magnet with the notch of the sensor and attach the magnet onto the frame. The sensor and magnet should be located close together (max. 5 mm), a direct contact is not necessary.

9. Operation

9.1 Temperatures

9.1.1 Limitation

With the limitation you define a temperature range within which you can select the temperatures as you wish. A temperature outside this range cannot be selected.

9.1.2 Comfort temperature

Set your personal comfort temperature.

9.1.3 Setback temperature

Set your personal setback temperature.

9.1.4 Offset temperature

With the offset temperature you can correct the temperature measurement in the wireless thermostat by ± 3 degress Celsius. This may be necessary if environmental influences such as a cold outside wall distort the control.

9.1.5 Temperature unit

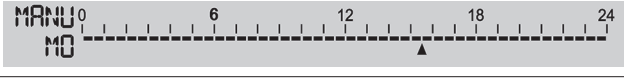
You can choose between the temperature units Celsius and Fahrenheit.

9.2 Time profiles

If you press the Auto/Manu button (see Illust. 1 on page 9), you can switch between the individual time profiles.

9.2.1 Heating profile ON

When the R-Tronic is put into operation, a default profile is always effective, which regulates the room temperature constantly to 20 °C (continuous heating mode = PROFILE ON). The R-Tronic display signalises the activation of this default profile with a continuous line below the time bar over the full 24-hour scale (display additionally shows MANU):



Illust. 8: Default heating profile

9.2.2 Heating profile OFF

If you do not wish continuous heating to a fixed temperature, switch off the default heating profile.

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option TIME PROFILE.
3. Select the menu option PROGRAMME SELECTION.
4. Select the menu option PROFILE OFF.

The R-Tronic display no longer shows the continuous line below the time bar (continuous setback temperature). The operating mode MANU remains displayed.

9.2.3 Heating profile DAY/NIGHT

The day and night heating profile allows you automatically control the temperature to fixed values at daytime (6 h to 22 h) or night time (22 h to 6 h)

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option TIME PROFILE.
3. Select the menu option PROGRAMME SELECTION.
4. Select the menu option PROFILE DAY/NIGHT.

The R-Tronic now regulates the room temperature during the day to your selected comfort temperature and at night to your selected setback temperature. Switching takes place at the a.m. times. On the R-Tronic display, a line (“comfort phase”) appears below the 24-hour scale on the time bar between the figures 6 and 22.
When the PROFILE DAY/NIGHT is activated, the operating mode display jumps from MANU to AUTO.

9.2.4 Individual profiles

Individual profiles can be defined by you. To select an individual profile, proceed as follows:

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option TIME PROFILE.
3. Select the menu option PROGRAMME SELECTION.
4. Select the menu option INDIVIDUAL PROFILE

To create an individual profile, proceed as follows:

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option TIME PROFILE.
3. Select the menu option PROGRAMMING.
4. Select the menu option INDIVIDUAL PROFILE.
5. Set the desired day, time and temperature. Three heating and setback periods per day are possible.

9.3 Functions

9.3.1 Boost

With the boost mode you can heat up your radiator to maximum for a short time. A short-term maximum heating up of the radiator can be useful in order to quickly create a pleasant feeling of warmth through the radiant heat of the radiator. The R-Tronic wireless thermostat fully opens the radiator valves for a variably adjustable period (min. 5 to max. 30 minutes in steps of 5 minutes) via all taught in mote 320 wireless actuators.

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option FUNCTIONS.
3. Select the menu option BOOST.
4. Set the duration of the boost mode.
5. Confirm your entry with ACTIVATE.

► The boost mode is activated.

Note that the message BOOST ACTIVE only appears after the next transmission interval between the R-Tronic wireless thermostat and the mote 320 wireless actuator (max. 150 seconds). Until then the text line of the display temporarily shows BOOST PENDING.

If you want to cancel the activated boost mode, e.g. because you have entered too long a boost period, press and hold the back button for 3 seconds. The current boost programming is now deactivated. At the end of the rapid

heating phase the message BOOST ACTIVE disappears.

9.3.2 Vacation

You can use the vacation mode if you are not at home for several days or weeks and want to define a lower setback temperature for a room in order to save energy.

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option FUNCTIONS.
3. Select the menu option VACATION.
4. Select the menu option PROGRAMMING.
5. Set the period of your absence and the desired setback temperature.
6. Confirm your entry with ACTIVATE.

▶ The vacation mode is activated.

You can cancel the vacation mode at any time (for example because you returned earlier). To do so, select the menu option DEACTIVATE. Alternatively, you can press and hold the back button for several seconds.

9.3.3 Valve protection

This function prevents the radiator valve from sticking during long periods of inactivity (e.g. during the summer period). For this purpose the radiator valves are fully opened and closed once a week at an adjustable time.

1. Go to the MAIN MENU (see section 8.1 on page 22).
2. Select the menu option FUNCTIONS.
3. Select the menu option VALVE PROTECTION.
4. Set the execution day and time.
5. Confirm your entry with ACTIVATE.

▶ The R-Tronic triggers a movement of the radiator valve once a week.
To cancel the valve protection, select the menu option DEACTIVATE. The lifespan of the batteries is thereby extended.

9.4 Settings

9.4.1 Adjustment of the set value

1. Press the menu button.
2. Turn the menu button to the right to increase the temperature. Turn the menu button to the left to decrease the temperature.
3. The entry is automatically saved after a few seconds.

9.4.2 Menu lock

When the menu lock is active, it is no longer possible to access the main menu (see section8.1 on page 22).

When the menu lock is active, you can still change the set valve with the help of the menu button and switch between the time profiles with the help of the Auto/Manu button.

To release the menu lock, press and hold the (+) and (-) buttons for at least 3 seconds.

9.4.3 Display of the actual value / humidity

The R-Tronic RTF B and R-Tronic RTFC K permanently measure the humidity in the room and show it as percentage value in the text line of the display. The room air humidity (unit of measurement RH = “relative humidity” in %) is an indicator of the extent to which a room absorbs water vapour. Values that are too high are disadvantageous because in the long term they lead to moisture damage and mould growth on walls.
The reference range for a “good” room climate in terms of humidity is between 30 and 65 %. Values beyond this range are perceived as “uncomfortable” by many people. If the percentage indicated in the R-Tronic display exceeds 65%, you should ventilate the room until the value returns to the reference range. Advantage: You ventilate energy efficiently, because you only need to ventilate for a limited period of time. After ventilation, you primarily heat fresh air.

9.4.4 Resetting the R-Tronic to factory settings

Proceed as follows to reset the R-Tronic to the factory settings:

1. Go to the MAIN MENU.
2. Select the menu option SETTINGS.
3. Select the menu option FACTORY SETTINGS.
4. Press the menu button. The display shows RESTORE.
5. Press the menu button.
6. Select YES or NO.
7. Press the menu button.

▶ You have reset the wireless thermostat to its factory settings and can reconfigure it.

9.5 Room climate

In addition to the types RT B and RTF B, the R-Tronic RTFC K offers a CO2 measured value logging function. The integrated sensor permanently

measures the proportion of carbon dioxide (CO2) in the room air and it is displayed if it rises above a previously defined level. In humans, excessive CO2 levels have a negative effect on the ability to concentrate and lead to fatigue.

	The R-Tronic RTFC K displays the CO2 values in PPM units. A PPM value of e.g. 1,000 corresponds to 1,000 parts (“parts per million”) CO2 per million parts of indoor air or a CO2 content of 0.1%. For comparison: outside air has an average CO2 content of 400 PPM or 0.04%.
	Values below 1,000 PPM are considered as a guide value for “good” indoor air. Therefore, the “recommendation for room ventilation” symbol (see position 3 on page 9) appears in the R-Tronic display if this value is exceeded.

To shift the alert threshold for the recommendation for room ventilation, proceed as follows:

1. Go to the MAIN MENU.
2. Select the menu option ROOM CLIMATE.
3. Select the menu option CO2 ALERT THRESHOLD.
4. Select a PPM value between 450 and 2000.
5. Press the menu button to confirm your entry.

▶ From now on, the R-Tronic display shows the ventilation recommendation as soon as your individual CO2 threshold value is exceeded. The symbol disappears as soon as the PPM value is 10% or more below the set threshold value.

9.6 Information

Via the menu INFORMATION you can call up general identification data on the R-Tronic wireless thermostat used and on the mote 320 wireless actuator. The version number refers to the R-Tronic type used. Please have this number ready when you contact our technical hotline for any queries.
The menu option DIAGNOSIS informs you about the respective IDs of the R-Tronic and all taught in slaves. In addition, any error messages and the battery status of the wireless actuator are displayed here.

If the R-Tronic display shows the warning signal (see section 3.1 on page 9), an error or fault has occurred. Important notes are additionally indicated in the text line (default view). For all other errors, go to the DIAGNOSIS submenu for further details.

10. Malfunctions

10.1 Teach in and calibration process failed

If the teach in process has failed, the LEDs of the mote 320 wireless actuator flash red three times (see separate operating instructions of the wireless actuator). This can have the following reasons:

- The radio connection is disturbed or the radio range is limited, e.g. due to unfavourable spatial conditions. Turn the casing of the mounted actuator to realign the radio antenna. A new installation location for the R-Tronic can also help.

If the calibration has failed, the LEDs of the wireless actuator also flash red three times. This can have the following reasons:

- The closing dimension of the valve does not match, because < 11 mm.
- The valve is blocked or stiff.

10.2 Error messages of the R-Tronic wireless thermostat

The following error messages are shown in the R-Tronic display.

Error message	Cause
BATTERY EMPTY	
REPLACE BATTERIES	
INIT ERROR	An initialisation error has occurred.
MEMORY DEFECT	Error in the electronic memory.
T-SENSOR DEFECT	Temperature sensor defective.
NO SLAVE CONNECTED	No taught in slave (e.g. wireless actuator).
SLAVE LIST FULL	Max. number of slaves has been reached.
SLAVE UNKNOWN	Teach out process launched for a slave which has not been taught in before.
CALIBRATION REQUIRED	Calibration run has not been carried out or stem in retracted position.
CALIBRATION ERROR	Calibration run was not successful.
STIFF VALVE	Possible mechanical defect of the radiator valve.

MOTOR BLOCKED	Stem (motor operated) of the mote 320 actuator blocked.
MOTOR DEFECT	Drive motor defective.
POWER SUPPLY DEFECT	Temporary poor power supply.
TIME PROFILE INVALID	Incorrect programming of individual time profile.
RADIO DISTURBANCE	Radio communication disturbed.
ENOCEAN ERROR	Possible error at installed wireless module.
H-SENSOR DEFECT	Humidity sensor in the R-Tronic RTF B / RTFC K defective.
CO2 SENSOR DEFECT	CO2 sensor in the R-Tronic RTFC K defective.
HIGH PPM	CO2 value higher than 2,000 PPM.
KEY DEFECTIVE	Button at the R-Tronic does not trigger a function (contact problem).

10.3 Colour codes of the info LEDs at the mote 320 wireless actuator

The following colour codes are shown on the mote 320 wireless actuator.

3x green (slow)	Teach in/teach out process or calibration run successful
3x red (slow)	Teach in/teach out process or calibration run not successful
1x red (every 50 seconds)	Error message (e.g. batteries empty)
1x green (short)	Teach in/calibration button pressed for at least 2 seconds
5x green (fast)	Stem retracted successfully (for removal)
2x red and green alternately	Factory settings restored successfully

Red running	Calibration hat not (yet) been carried out

11. Removal

Before removing the mote 320 wireless actuator, press the teach in/calibration button of the wireless actuator for at last 2 seconds so that the stem is retracted. The LEDs start flashing green (fast) 5 times.
Unscrew the wireless actuator from the valve.

12. Disposal

Directive 2012/19/UE WEEE:

	Waste electrical and electronic components (WEEE) must not be disposed of with domestic waste, but must be dropped off at a collection point of the recycling of electrical and electronic appliances.

OVENTROP GmbH & Co. KG

Paul-Oventrop-Straße 1
59939 Olsberg
GERMANY
www.oventrop.com

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