Thermostat NO contact with centre plate, time-controlled

Safety instructions

Electrical equipment must only be installed and assembled by qualified electricians. Always follow the relevant accident prevention regulations.

Appropriate installation measures must be taken to achieve the requirements of protection class II.

The device is compliant with the guidelines of the EN 60730 and works according to the mode of operation 1C.

Failure to comply with these instructions may result in damage to the device, fire or other hazards.

These operating instructions are an integral component of the product, and must be retained by the end user.
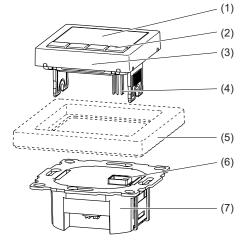
Design and layout of the device

Figure 1: Device overview

(1) Display
(2) Operating keys
(3) Operating unit
(4) Plug-in contacts for insertion
(5) Frame (not included in delivery)
(6) Socket for plug-in contacts
(7) Insert

Function

The time-controlled thermostat allows the room temperature to be controlled in automatic mode depending on the time and weekday (program) so that the heating requirements can be adjusted according to individual lifestyles. The automatically controlled temperature can also be adjusted manually as required.

The device is controlled by the measured value of the internal sensor. When the temperature falls below the programmed value, the room is heated. in addition, an external sensor can be connected for measuring the floor/room temperature.

The thermostat process can be adjusted according to the heating type:

- Room thermostat
  The heater is switched on if the room temperature falls below the preset default value.

- Floor thermostat
  The floor temperature is controlled. The heating is switched on if the room temperature (measured by the external thermostat) falls below the default value.

- Room thermostat with limiter
  The room temperature is controlled, the floor temperature (measured by the external tem-

perature sensor) is limited independent of this. The heater is switched on when the room temperature falls below the preset default value.
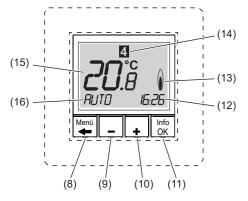
Operation

Operator control concept

Figure 2: Overview of the operating elements and basic display

(8) Push-button **Menu/←**
(9) Push-button **–**
(10) Push-button **+**
(11) Push-button Info/OK
(12) Current time/display of help texts
(13) Display of heating mode
(14) Display of day of the week
(15) Display of room temperature
(16) Display of function/settings

Operating thermostat

You can navigate through the menu using the four push-buttons below the display. In the menu the functions can be set and activated and settings can be adjusted.

ⓘ The operation can also be carried out when the operating unit is removed.

ⓘ If no push-button is actuated for longer than 3 minutes, the device returns automatically to the previous function and basic display.

■ In the basic display, press the **Info/OK** (11) push-button.

Information on the current operating mode/function is displayed as scrolled text. The device returns to the basic display by re-pressing **Info/OK**.

■ Press **Menu/←** (8) push-button.

The basic display disappears. **MENU** appears briefly in the function display (16). A help text on the current selection is shown at the bottom of the display (12) as scrolled text. The menu can be selected.

ⓘ The device returns to the last display/setting in the menus by pressing **Menu/←**. The device returns again to the basic display by pressing **Menu/←** repeatedly.

■ Press **+/–** (9/10) push-button.

Operating modes/functions and settings menus are changed. A description appears below in the display.

■ Press **Info/OK** (11) push-button.

Function selection:
The current function selection is confirmed. Carry out any necessary settings using the **+/–** (9/10) push-button if required and press **Info/OK** (11) to confirm.

Settings:

The selection of the settings menus is confirmed. Carry out further settings with the **+/–** (9/10) push-button and press **Info/OK** (11) to confirm.

Once all settings have been completed, the device returns to the basic display. The selected function appears in the display (16).

ⓘ In the settings menus identifiers of the function also appear as scrolled text in the display (15) in addition to the adjustable function.

Adjusting setpoint temperature manually

The setpoint temperature can always be adjusted in the **AUTO** and **MAN** operating modes.

The device is in the basic display.

■ Press **+/–** (9/10) push-button

The current setpoint temperature flashes.

■ Keep pressing the **+/–** push-button repeatedly until the desired temperature is displayed.

■ Press the **OK** (11) push-button to save the displayed temperature.

The device returns to the basic display.

ⓘ The readout **AUTO–** indicates that the manually adjusted setpoint temperature deviates from the temperature stored in the time temperature program. The temperature is controlled according to the changed setpoint temperature until the next event.

Switch off controller

The device is in the basic display.

■ Keep the **Menu/←** push-button (8) pressed for 10 s.

The display first returns to the menu. The device returns to the basic display after 10 s. The function display (16) indicates **OFF**.

ⓘ The controller is switched on again by selecting an operating mode/function.

Selecting and changing programs

The control provides three preset time temperature programs

Program 1

Figure 3: Time temperature diagram (day profile) for program 1

Program with six events and temperature setback to 18 °C in the morning and afternoon of working days (absence). At the weekend temperature setback in the morning and night setback.

Event	Mon – Fri		Sat – Sun	
	⏱	↕ °C	⏱	↕ °C
1	6:00	21.0	7:00	21.0
2	8:30	18.0	10:00	18.0
3	12:00	21.0	12:00	21.0
4	14:00	18.0	14:00	21.0
5	17:00	21.0	17:00	21.0
6	22:00	15.0	Sat: 23:00 Sun: 22:00	15.0

Program 2

Figure 4: Time temperature diagram (day profile) for program 2

On weekdays like program 1. At the weekend an event for comfort temperature during the whole day and night setback.

Event	Mon - Fri		Sat - Sun	
	⏱	↕ °C	⏱	↕ °C
1	6:00	21.0	7:00	21.0
2	8:30	18.0		
3	12:00	21.0		
4	14:00	18.0		
5	17:00	21.0		
6	22:00	15.0	Sat: 23:00 Sun: 22:00	15.0

Program 3

Figure 5: Time temperature diagram (day profile) for program 3

Program with four events and temperature setback to 18°C during the day (absence). At the weekend temperature setback in the morning and night setback.

Event	Mon - Fri		Sat - Sun	
	⏱	↕ °C	⏱	↕ °C
1	6:00	21.0	7:00	21.0
2	8:30	18.0	10:00	18.0
4	17:00	21.0	17:00	21.0
5	22:00	15.0	Sat: 23:00 Sun: 22:00	15.0

Selecting program (G 1)

In the standard delivery, program 1 is active.

The device is in the basic display.

■ Press **Menu/←** (8) push-button.

A help text is shown at the bottom of the display (12)

■ Select the settings menu **USER SETTING** with push-button **+/–** (9/10) and press **OK** to confirm (see operating thermostat).

G 1 - PROGRAM SELECT ONE is displayed.

■ Press **OK**.

The number of the active program flashes.

■ Using **+/–** select the desired program (1 ... 3) and press **OK** to confirm.

G 1 and the scrolled text **PROGRAM SELECT** is displayed once again. The selected program is active.

Adjust program (G 2)

The preset programs can be adjusted to personal requirements. A maximum of 9 events per day are possible.

ⓘ Adjustments affect the selected program. Adjustments are not saved if the program is changed. The adjustments of the standard program must be carried out once again.

ⓘ The program returns to the previous setting level by pressing the Menu/← push-button. Further adjustments can be carried out there if required.

The device is in the basic display.

■ Press **Menu/←** (8) push-button.

A help text is shown at the bottom of the display (12).

■ Select the settings menu **USER SETTING** with push-button **+/–** (9/10) and press **OK** to confirm (see operating thermostat).

G 1 - PROGRAM SELECT ONE is displayed.

■ Keep pressing the **+/–** push-button repeatedly until **G2 - EVENT SETTING** is displayed.

■ Press **OK**.

DAY is displayed, the weekday display (14) flashes.

ⓘ Besides individual weekdays, events can also be set for day blocks 1–5, 6–7, 1–7. 1 corresponds to Monday ... 7 Sunday.

■ Select the desired day using the **+/–** push-button and press **OK** to confirm.

The temperature display (15) flashes for the first switching interval of the day.

■ Set the desired temperature using the **+/–** push-button and press **OK** to confirm.

The start time of the switching interval flashes.

■ Set the desired start time using the **+/–** push-button and press **OK** to confirm.

The end time of the switching interval flashes.

■ Set the end time using the **+/–** push-button and press **OK** to confirm.

The temperature for the next switching interval flashes.

ⓘ 9 events per day are possible. The number of the switching interval is displayed before the events. The respective end time in the display is saved as the start time of the next interval. If **->>>** flashes in the display, then the following event is on the next weekday. If **OK** is pressed, the display for the start time changes to the start time of next weekday. If **+/–** is pressed, a further switching interval is created. If all 9 events of a day have been used, the program moves automatically to the next weekday.

ⓘ Further temperatures and events can be set similarly if necessary.

■ Press **Menu/←** repeatedly to exit the menu item **G2 - EVENT SETTING**.

The settings are saved.

Selecting function

The device is in the basic display.

■ Press **Menu/←** (8) push-button.

A help text is shown at the bottom of the display (12).

■ Keep pressing the **+/–** (9/10) push-button repeatedly until the desired menu item (Function or Settings menu) is displayed.

■ Press **OK** (11) push-button

The function is activated in the **AUTO** and **MAN** operating modes.

In the remaining operating modes/functions, the device returns to further settings (see Table 1: Overview of the functions and operation).

Setting default values

Default settings need to be set for some functions e.g. times/temperatures. The value to be set then flashes in the display.

Value flashes.

■ Set the default value using the **+/–** push-button and press **OK** to confirm.

The new value is saved, the next value to be set flashes.

ⓘ When all values have been set, the display returns again to the basic display. The function is executed.

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User settings (Table 2)

The behaviour of the controller is set in the settings menu User settings. The settings menu is accessed via the menu (see Select function). A scrolled text at the bottom of the display makes the selection easier.

Invoking settings menu

The display shows **G1 - PROGRAM SELECT ONE**.

■ Select the desired menu using **+/–**.

A menu identification and help text are shown at the bottom of the display (12).

■ Press **OK**.

The first adjustable value flashes in the display.

■ Adjust the desired value using **+/–**.

■ Press **OK**.

The next adjustable value flashes in the display.

ⓘ Once all values have been adjusted, the display returns to the subordinate level.

Function	Description
	Operation
	Display
AUTO	Control the room temperature according to time and temperature parameters of the selected program
	Activation: **OK**
	Adjust the temperature until the next event: **+/–** in the basic display
	Display of function (16): **AUTO**
MAN	Time-independent control of the room temperature according to the value set here
	Activation: **OK**
	Set temperature: **+/–** in the basic display
	Display of function (16): **MAN**
TIMER	Specifying a room temperature for a set number of hours
	Set hours: **+/–**
	Activation: **OK**
	Display of function (16): **TIMER**
	Display of time (12): **xh** (x = number of remaining hours)
HOLIDAY	Specifying a room temperature for a set time period with start and end date of the holiday
	The **AUTO** function is active until the start of the holiday. Alternatively, the **AUTO**, **MAN**, **TIMER**, **AT HOME** functions can be set. **HOLIDAY** starts when the start date is reached.
	Set **Year**, **Month**, **Day**, **Temperature**: **+/–**, confirm each setting by pressing **OK**.
	Activation by confirming the temperature setting: **OK**
	Display of function (16): **U**.
	Display of time (12): End date of the holiday in the format DD-MM-YY
AT HOME	Temperature control independent of the weekday according to time and temperature parameters of the set program (day profile).
	The presettings of the program correspond to the current day program of Monday.
	Set temperature and events: **+/–**, confirm each setting by pressing **OK**
	Activation with confirmation of the last event
	Display of function (16): **HOME**
USER SETTING	Invoke a settings menu for user settings (see User settings)
	Invoke: **OK**
	Display of room temperature (15) shows the menu identification - beginning with **G.**
	Scrolled text at the bottom of the display with information about the current settings menu
INSTALLER SETTINGS	Invoking a settings menu for the electrician
	Invoke: **OK** (see Information for Electricians – Commissioning)
	Display of room temperature (15) shows the menu identification - beginning with **H.**
	Scrolled text at the bottom of the display with information on the current settings menu

Table 1: Overview of the functions and operation

Setting	Description
	Operation
G1 SELECT PROGRAM	Selection of the preset time temperature programs (see Select program) Factory setting: **1** - Program 1
	Select programm **1**, **2** or **3**: +/–
G2 EVENT SETTING	Adjusting a preset time temperature program
	Set weekday, temperature, event: **+/–**, press **OK** to confirm (see Adjusting program)
G3 CLOCK SETTING	Setting the date and time
	Set **YEAR**, **MONTH**, **DAY**, **HOUR**, **MINUTE**: **+/–**, press **OK** to confirm
G4 OFF HEATING PERMANENT	Switch off the controller, no temperature, frost protection is active, if set by the electrician.
	Select: **YES/NO** - heating off/on: **+/–**, press **OK** to confirm Display of function (16): **OFF** Switch on controller again: Select any function via the menu or keep **Menu/←** pressed down for 10 s
G5 SUMMER/WINTER TIME CHANGE	Select whether or not the summer/winter time change should be carried out automatically. Factory setting: **YES** -Switchover on
	Select: **YES/NO**: **+/–**, press **OK** to confirm
G6 KEY LOCK	Protection of the controller against unauthorized operation If the key lock is active, no operation is possible
	Select: **YES** (key lock)/**NO**: **+/–**, press **OK** to confirm Cancel key lock again: Press any push-button, when **CODE** is displayed set **93** using **+/–** and press **OK** to confirm
G7 TEMP LIMIT MIN/MAX TEMP	Set parameter of the lower and upper temperature for the controller Factory setting: **LOWER TEMP LIMIT** = 5 °C, **UPPER TEMP LIMIT** = 30 °C
	Set temperatures: **+/–**, press **OK** to confirm
G8 COST/HR OF ENERGY	Enter the estimated energy costs per hour for the room being controlled. The calculated consumption is displayed under **G9**.
	ⓘ If the energy costs counter should be used as operating hours counter, set value **COSTS/h** to **100**. Factory setting: **10**
	Set COSTS/h: **+/–**, press **OK** to confirm
G9 ENERGY-CONSUMP-TION TO DATE	Display of the approximate calculated energy consumption/operating hours for **2 DAYS** – **WEEK** – **30 DAYS** – **YEAR**. The current day until the display time is taken into account. Calculation: Duty cycle of the heating x COSTS/h
	Select time period for calculating the energy consumption: **+/–** Return to the menu: **OK** Resetting using **INSTALLER SETTINGS H9**
G10 SET TEMP TO READ	Setting whether the setpoint temperature should be displayed in the basic display instead of the current room temperature Work setting: **NO** – room temperature display
	Select: **YES/NO**: **+/–**, press **OK** to confirm
G11 ADJUST TEMP	Determining the correction value by which the measured temperature should be corrected for display and controller
	ⓘ Sensible adjustments: e.g. alignment with calibrated thermometers, compensation of installation heights and installation locations that are not optimum Factory setting: **0.0** - no correction
	Adjust correction value: **+/–**, press **OK** to confirm
G12 NUMBER FOR FLOOR TEMPE-RATURE	Only when using as floor temperature controller! Activating the display of the floor temperature as information number The display °C is hidden Factory setting: **NO** (normal temperature display)
	Select: **YES/NO**: **+/–**, press **OK** to confirm
G13 BACKLIGHT	Adjusting the display lighting: **SHORT** = on for a short time after pressing push-button, **OFF** = permanently off Factory setting: **SHORT**
	Set lighting behaviour: **+/–**, press **OK** to confirm
G14 LANGUAGE	Selection of the language for the display text in the display: **DEUTSCH, ENGLISH, NEDERLANDS, FRANCAIS**
	Select language: **+/–**, press **OK** to confirm
G15 INFO	Display of the controller type and controller version
	Return to menu: **OK**
G16 RESET USER SETTINGS ONLY	Resetting the user settings to factory settings
	ⓘ The counter **ENERGY-CONSUMTION TO DATE** is not reset. The settings are reset via menu **H9**.
	Select: **YES** (Reset)/**NO**: **+/–**, press **OK** to confirm

Table 2: Overview of the user settings and their selection

Information for electricians

Assembly and electrical connection

⚠ **DANGER!**

Touching live parts can result in an electric shock.

An electric shock can lead to death.

Disconnect connecting cables before working on the device and cover all live parts in the area!

Installation location

To enable optimum room temperature control using the internal sensor, the installation location selected should

- allow free air circulation
- not be located behind curtains, cupboards, shelves etc.
- not be exposed to direct sun light
- be free of draughts
- not be on external walls
- be approx. 1.5 m above the floor

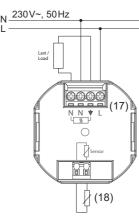### Connecting and mounting the device

Figure 6: Connection diagram

- Remove operating unit from the insert.
- Strip a max of 8 mm from connecting cables.
- Connect controller according to connection diagram (Figure 6).
- Connect an external temperature sensor if necessary (see connecting external temperature sensor).
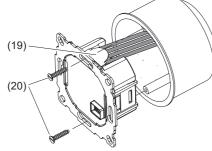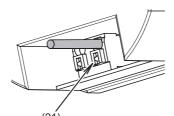

Figure 7: Mounting

- Align insert (7) in the connector socket and fix it into position with fastening screws (20). Mount the insert in such a way that the plastic tongue (19) acts as insulation for the fastening screw. (Figure 7)
- Mount the design frame (5) and fix it into position by attaching the operating unit (3).

Connecting external temperature sensor

An external temperature sensor is required for the thermostat process of the floor thermostat and thermostat with limiter. It is advisable to lay the temperature sensor in a protective pipe so that it can be replaced later.

ⓘ The wire of the temperature sensor supplies mains voltage and can be extended to 50 m using suitable wires.

ⓘ To avoid signal disturbances, do not lay the wire of the temperature sensor together with mains cables.

- Strip a maximum of 8 mm from the temperature sensor wire
- Connect temperature sensor according to connection diagram (Figure 6, 18).

(21)

Figure 8: Terminal for connecting the temperature sensor

ⓘ When using flexible wire, insert and remove the wire release button (21) with an appropriate tool.

Commissioning

⚠ **CAUTION!**

Malfunction of the heating system with incorrect controller settings.

The heating system could get damaged.

Only allow settings of the heating system to be carried out by a skilled specialist.

Setting the heating type

When commissioning the controller, the heating type must be set.

The device is in the basic display.

- Press **Menu/←** (8) push-button. A help text is shown at the bottom of the display.
- Keep pressing the **+/–** push-button repeatedly until **INSTALLER SETTINGS** is displayed.
- Press **OK**. **CODE** is displayed and the code number **0** flashes.
- Select: code number using **7 +/–** and press **OK** to confirm **H 1** and the scrolled text of **APPLICATION** is displayed.
- Press **OK**.
- Set the desired temperature using **+/–** and press **OK** to confirm.

ⓘ **ROOM** is preset. When changing the heating type, all user and installer settings are reset to the factory settings.

Overview and selection of the settings

The settings menu is invoked (see Setting heating type). If **H1** and the scrolled text of **APPLICA-TION** is displayed, you can toggle between the possible settings menus using **+/–** (see Table 3).

Setting	Description
	Operation
H1 APPLICATION	Selecting between the thermostat processes according to heating type: - **ROOM** = Room thermostat - **FLOOR** = Floor thermostat - **LIMITER** = Room thermostat with limiter Factory settings: **ROOM** When used as a room thermostat, it is also possible to set whether an external temperature sensor (**EXTERNAL SENSOR** = **YES**) is connected.
	Selection of the heating type: **+/–**, press **OK** to confirm
H2 CONTROL MODE	Selection of the control type: - **PWM** (Pulse width modulation) with adjustment option for cycle time. Select short cycle time for fast heating systems and long cycle time for slow heating systems. Factory setting of cycle time: **10 min** The minimum switch on/off time is 10 % of the cycle time. - **ON/OFF** (on-off control) with the setting option of hysteresis and minimum switch on/off time of the relay Factory setting hysteresis: **OFF** Factory setting minimum switch on/off time: 10 min
	ⓘ If no hysteresis is set, the relay switches with the set minimum switch on/off time even in the case of very small temperature differences.
	Selection of controller, cycle time, hysteresis, switch on/off time: **+/–**, press **OK** to confirm
H3 MIN/MAX FLOOR-TEMP	Only when using as room thermostat with limiter. Setting the minimum and maximum floor temperature for the limit: - **LOWER LIMIT OF FLOOR TEMPERATURE**: The floor does not become colder than the temperature set here. Factory settings: **OFF** (no limit) - **UPPER LIMIT OF FLOOR TEMPERATURE**: The floor does not become colder than the temperature set here. Factory setting: **35 °C**
	Set temperatures: **+/–**, press **OK** to confirm
	ⓘ The lower temperature limit < 10 °C or the upper temperature limit > 40 °C must be set using **+/–** in order to deactivate the upper or lower limit with OFF. **OFF** is displayed.
H4 HEATING OR COOLING	Switchover of the controller to cooling mode/heating mode Cooling mode only when using as room thermostat and **H2 - CONTROL MODE = ON/OFF** In cooling mode: - Using the events and temperature of the heating mode - **H6 FROST PROTECTION = OFF** - **H7 OPTIMUM START = NO**
	Selection of cooling/heating: **+/–**, press **OK** to confirm
H5 VALVE PROTECTION	Protection of the valve against sticking after a longer absence of control The valve is opened daily at 10:00 for the time set here in minutes. Factory setting: **3 min**
	Set opening time: **+/–**, press **OK** to confirm
H6 FROST PROTECTION	Setting the frost protection mode and temperature When frost protection is activated, the heating is activated if the temperature falls below the set frost protection temperature Factory setting: **5 °C**
	ⓘ Frost protection mode only possible when controller is switched off.
	Set temperature: **+/–**, press **OK** to confirm
	ⓘ To deactivate the frost protection with **OFF**, set the temperature < 5 °C by pressing the push-button **–**. **OFF** is displayed.
H7 OPTIMUM START	This setting causes the set setpoint temperature to be reached already at the start time. **AUTO_** is displayed in the required pre-heating time. Factory setting: **YES**
	Set **YES** (OPTIMUM START)/**NO**: **+/–**, press **OK** to confirm
H8 VALVES NORMALLY OPEN	Switchover of the relay switching behaviour opened for using actuators currentless Factory setting: **NO** (deactivated)
	Select: **YES** (activated)/**NO**: **+/–**, press **OK** to confirm
H9 ENERGY COUNTER RESET	Resetting the energy costs counter set under **G8/G9** to 0
	Select **YES** (reset): **+/–**, press **OK** to confirm
H10 DISPLAY FLOOR TEMPERATURE	Only when using as room thermostat with limiter Display of the current floor temperature for service purposes ---
H11 RESET ALL	Resetting all installer and user settings carried out in the settings menu to the factory settings
	Select **YES** (reset): **+/–**, Press **OK** to confirm

Table 3: Overview of the installer settings and their selection

Displaying device errors

Errors in the hardware configuration can be shown via the display. In this case, **ERR** and an additional error type are displayed as scrolled text.

Error type	Description
	Measures for removal
ERR CONFIGURA-TION	Operating unit and insert do not match - Only use related components - Switch off voltage and switch on again
ERR COMMUNI-CATION	Communication between operating unit and insert interrupted - Remove operating unit and attach once again - Switch off voltage and switch on again
ERR EXT SENSOR	Failure/short circuit of the external temperature sensor - Replace temperature sensor
	Display range exceeded/fallen short of
	- ---

Appendix

Specifications

Operating voltage	AC 230 V~
Rated frequency	50 Hz
Output	relay NO contact, potential-linked
Switching current	10 mA ... 10 (4)A, 230 V~
Power consumption	approx. 1.2 W
Rated impulse voltage	4 kV
Ball pressure test temperature	75 °C (± 2 °C)
Protection class	IP30
Protection Class (s. Safety instructions)	II
Operating temperature	0 ... 40 °C (without condensation)
Storage temperature	-20 ... 70 °C (without condensation)
Temperature-adjustment range	in 0.5 °C increments
Room thermostat (with limiter)	5 ... 30 °C
Floor thermostat	10 ... 40 °C
Temperature display	in 0.1 °C increments
Output signal	Pulse width modulation (PWM) or on-off control (On/Off)
PWM cycle time	adjustable
Hysteresis	adjustable (with on-off control)
Minimum event	10 min
Time deviation	< 4 min per year
Power reserve by means of lithium battery	approx. 10 years

Resistance/temperature table for remote sensor

Tempera-ture [°C]	10	20	25	30	40	50
Resistor [kΩ]	66.8	41.3	33	26.3	17.0	11.3

Troubleshooting

It becomes warm too late

Cause 1: Programmed events or time do not match.
Adjust programming.

Cause 2: A summer/ wintertime changeover has taken place in the meantime (G5).
Adjust time.

Cause 3: Optimum Start H7 is deactivated or has not run long enough yet (a few days) to determine the optimum pre-heating time.
Select Optimum Start and give the controller time to adjust itself to the conditions of the controlling environment.

It is not possible to enter any data

Cause: Key lock G6 is active.
Cancel key lock.

The desired temperature cannot be set

Cause: Temperature limit G7 prevents the desired setting.
Reset temperature limit.

Temperature display does not change

Cause: Display of the set temperature G10 is activated.
Activate display of the room temperature.

Warranty

We reserve the right to make technical and formal changes to the product in the interest of technical progress.

Our products are under guarantee within the scope of the statutory provisions.

If you have a warranty claim, please contact the point of sale or ship the device postage free with a description of the fault to the appropriate regional representative.