

Rinnai Control System

Operating Instructions Room control unit RS100

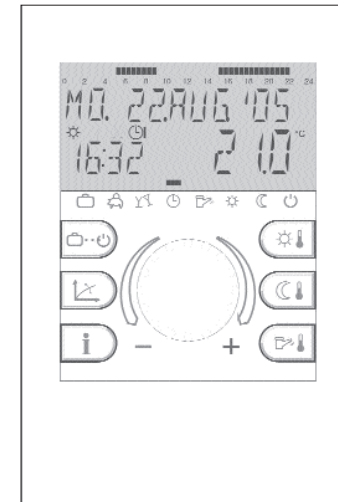


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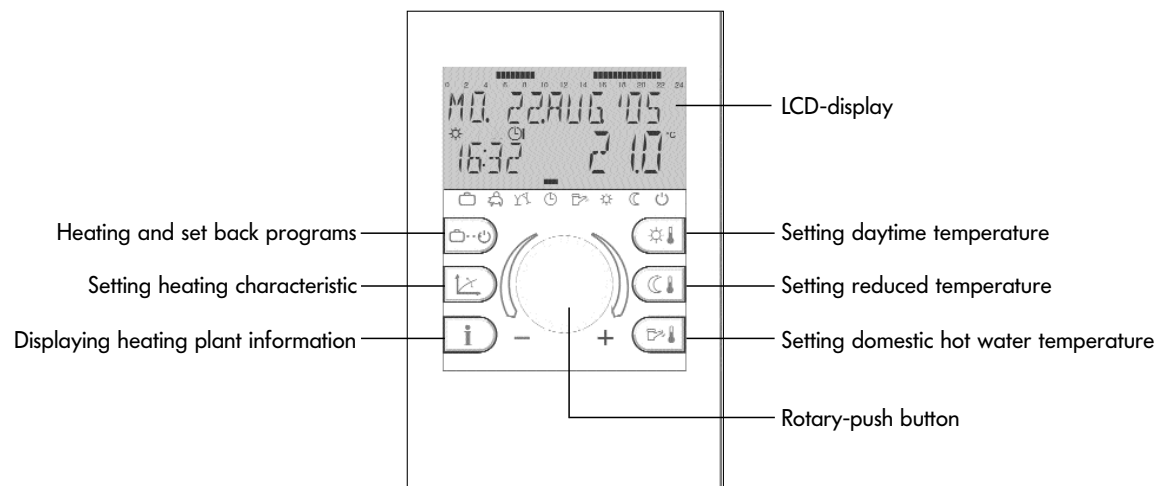
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PROGRAMMING LEVEL

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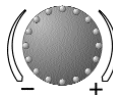
General operation

Operating instruments



Operation

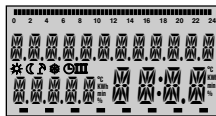
Symbolism used in this manual:



Turn: select parameters, change values



Press once: confirm, store



Display test



Language selection

Country code

The center-positioned rotary-push button and the labeled keys guarantee a simple and easy operation. It is however recommended to read this manual attentively to be informed about the repeating steps.

- Each value in the display appears flashing and can be modified with the rotary-push button. A flashing display is appropriately marked in this manual.

Turn to the right (+): Increase values

Turn to the left (-): Decrease values

- Press once: Acceptance of the selected and indicated value, store.
- Keep pressed: Entry into the programming level (level selection),

The last operation step will be stored automatically after approx. 60 seconds if it was not stored by means of the rotary-push button.

Start-up

In case of initiation of the plant or after every power failure a display test of the large display is carried out with automatic error diagnosis. At that all available segments and symbols will be displayed.

Language selection

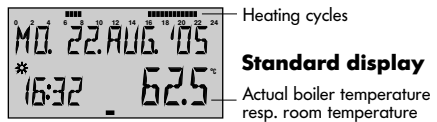
In case of first initiation the desired language can be chosen after the display test. The languages DE, GB, FR, IT, NL, ES, PT, HU, CZ, PL, RO, RU, TR, S, N can be selected.

Note: This display appears after every restart on day of first initiation until midnight. After that the language can only be changed in the level *SYSTEM* - parameter *LANGUAGE*.



Device identification

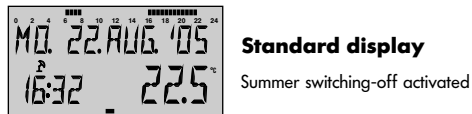
Interface and software version



Heating cycles

Standard display

Actual boiler temperature
resp. room temperature



Standard display

Summer switching-off activated



Standard display

Frost protection activated

Device identification

After the display test and/or the language selection the device identification momentary appears with device type, interface and the corresponding number of software version.

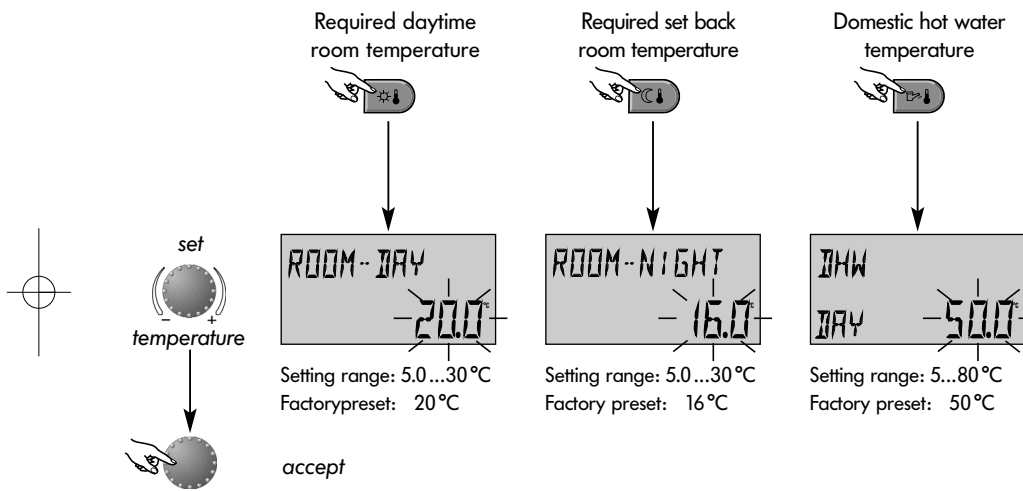
Basic display




Provided that there is not any error message, the basic display indicates the date, time, heating mode (☀ = daytime temperature, ☾ = reduced set back temperature) as well as the current boiler temperature or, if released, the room temperature. Response time program. The cursor below (■) indicates the current operating mode (see function of operating modes). The upper time bar shows the heating periods and the corresponding operating times of the current weekday.

An activated summer switch-off is represented in the basic display by a sunshade symbol (☂). The heating mode symbols ☀ or ☾ will be suppressed during an activated summer switch-off.

With acting frost protection function an ice crystal symbol appears in the basic display (❄).

Temperature settings




-  This button is used to set the required day-time room temperature
-  This button is used to set the required set back room temperature
-  This button is used to set the required domestic hot water temperature

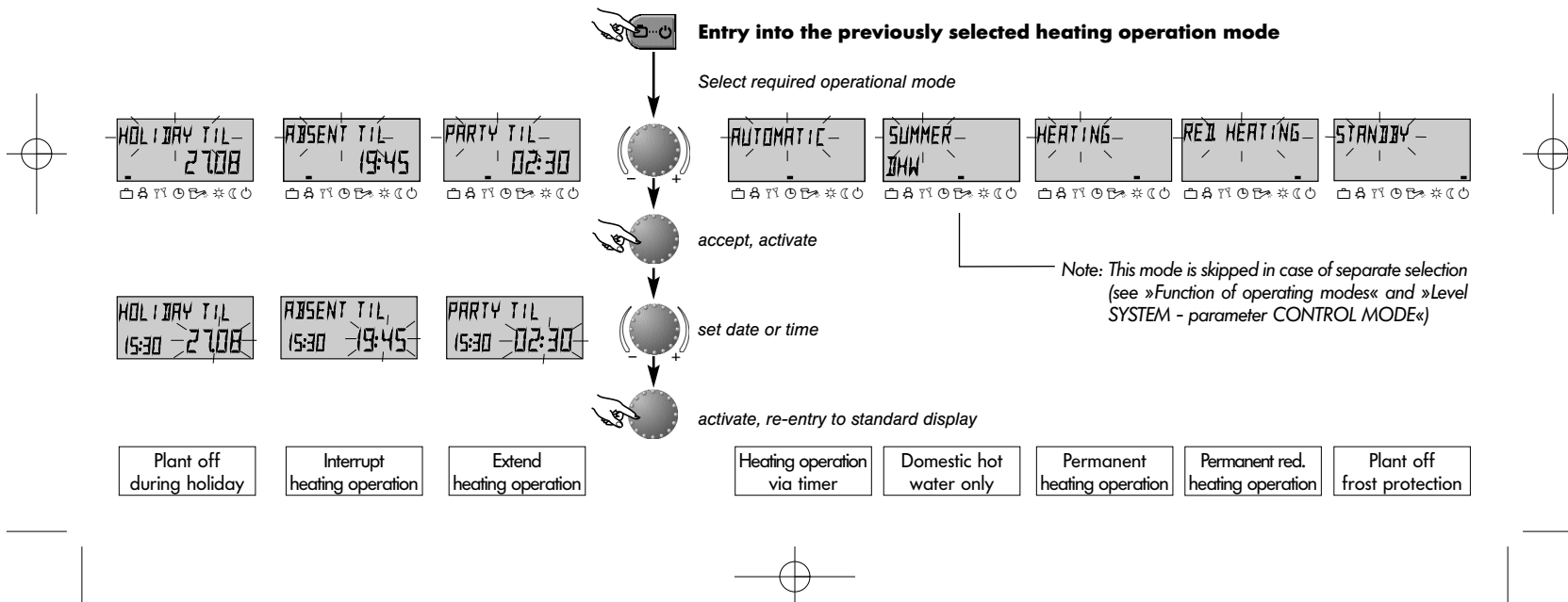
Adjustment (standard display mode only):
 After pressing the button for the required temperature the current value appears flashing and can be adjusted directly with the rotary pushbutton.
 Re-entry into the standard display is done by pressing the rotary-push button or the corresponding temperature button or automatically after approx. 60 seconds.

Operational mode selection for heating and hot water





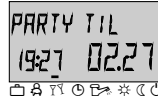



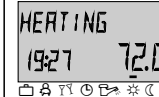




With this button the required operational mode is selected. It appears in plaintext on the display, simultaneously a cursor at the lower edge of the display points to the appertaining program symbol.

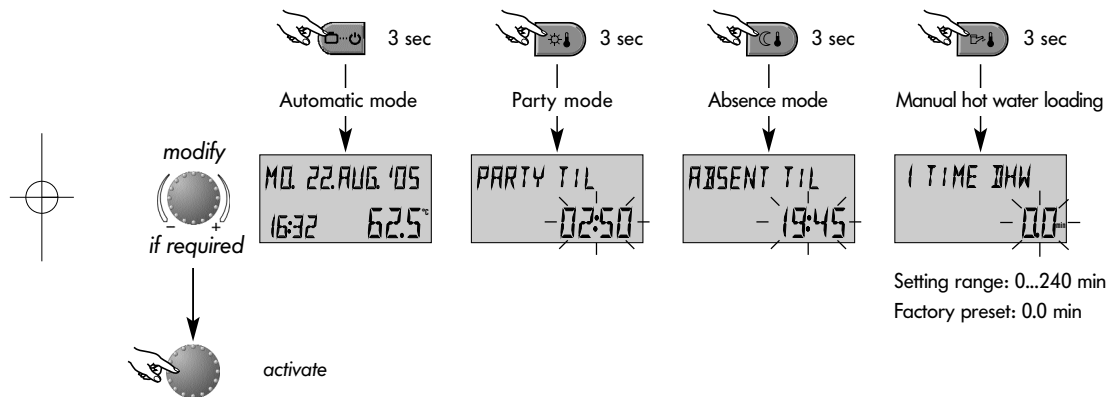
Select: Pressing the button , the previously selected operational mode appears flashing. The other operational modes can be selected and activated with the rotary-push button according to the following scheme.



Functions of operational modes

Plant off during holiday	Interrupt heating operation	Extend heating operation	Heating operation via timer	Domestic hot water only	Permanent heating operation	Permanent red. heating operation	Plant off frost protection
 <p>Setting range: Actual date...actual date + 250 days Return to the previously selected operational mode at 0.00 o'clock of the set return date. Hot water operation is set to frost protection temperature of 5 °C. Earlier termination: Press button , select required operational mode with rotary-push button and press again to activate.</p>	 <p>Setting range P1: Heating operation is interrupted until next switching-on time of current operating time program (see level TIME PROGRAMS) 0.5 ...24h: Heating operation is interrupted until set time of return. Earlier termination: Press button , select required operational mode with rotary-push button and press again to activate.</p>	 <p>Setting range: P1: Heating operation is continued until next switching-on time of current operating time program (see level TIME PROGRAMS) 0.5 ...24h: Heating operation is continued until end of party. Earlier termination: Press button , select required operational mode with rotary-push button and press again to activate.</p>	 <p>Operating times: (see level TIME PROGRAMS) Heating and domestic hot water operation automatically according to settings of temperature values (see <i>Temperature settings</i>) and selected operating times program. Programming of individual operating times see level TIME PROGRAMS).</p>	 <p>Operating times: (see level TIME PROGRAMS) Only hot water operation according to settings of hot water temperature (see <i>Temperature settings</i>) and selected operating times program. The heating operation is interrupted and frost protected. Programming of individual operating times see level TIME PROGRAMS).</p>	 <p>Permanent heating and reduced hot water operation round the clock according to the settings of daytime room temperature and domestic hot water temperature (see <i>Temperature settings</i>)</p>	 <p>Permanent reduced heating and reduced hot water operation round the clock according to the settings of set back temperature (see <i>Temperature settings</i>), reduced heating mode (see level UNMIXED CIRCUIT) and hot water economic temperature (see level DHW).</p>	 <p>Heating and hot water plant completely switched off except for frost protection mode.</p>


Quick operational mode selection




Short-time operational modes

Frequently used operating modes such as *PARTY* or *ABSENCE* or reloading the hot water tank during set back mode can be selected quickly according to the left scheme.

Direct automatic mode

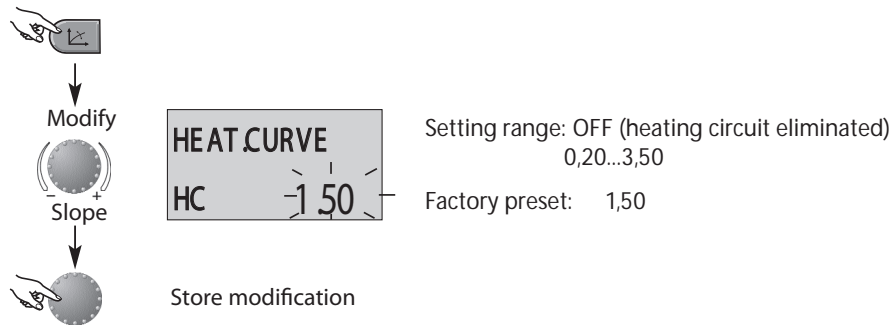
Pressing button  for approx. 3 seconds activates the automatic mode via timer inevitably. Functions and setting range see *Operational mode selection for heating and hot water - Function of operational modes*.

Manual hot water loading

To activate manual hot water loading outdoor of operation times the button  has to be pressed for about 3 seconds. This turns on hot water preparation at any time for a period which may be adjusted with the rotary pushbutton between 0 ...240 minutes. Pushing the rotary pushbutton activates loading. Afterwards the controller returns to program operation.

At adjustment 0.0 the loading is independent of any time period. The tank will be loaded up to the set DHW-temperature value once.

Setting the heating characteristics (heating curve)



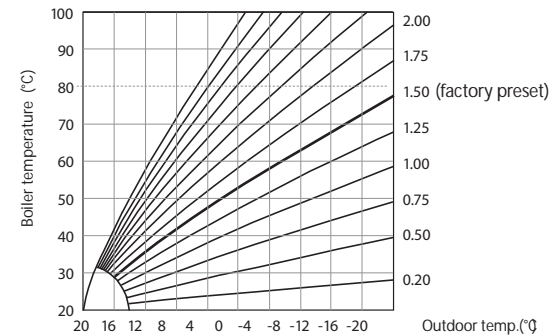
Note: The heating slope should be modified only in small steps and left for a while until steady condition can be obtained. Changes to the slope should be made in intervals of 0.1 every 1 or 2 days.

This button regulates the heating characteristics of the heating circuit in relation to outdoor temperature.

The adjustment is dependent of the plant installation and shows the relation between outdoor temperature and boiler temperature.

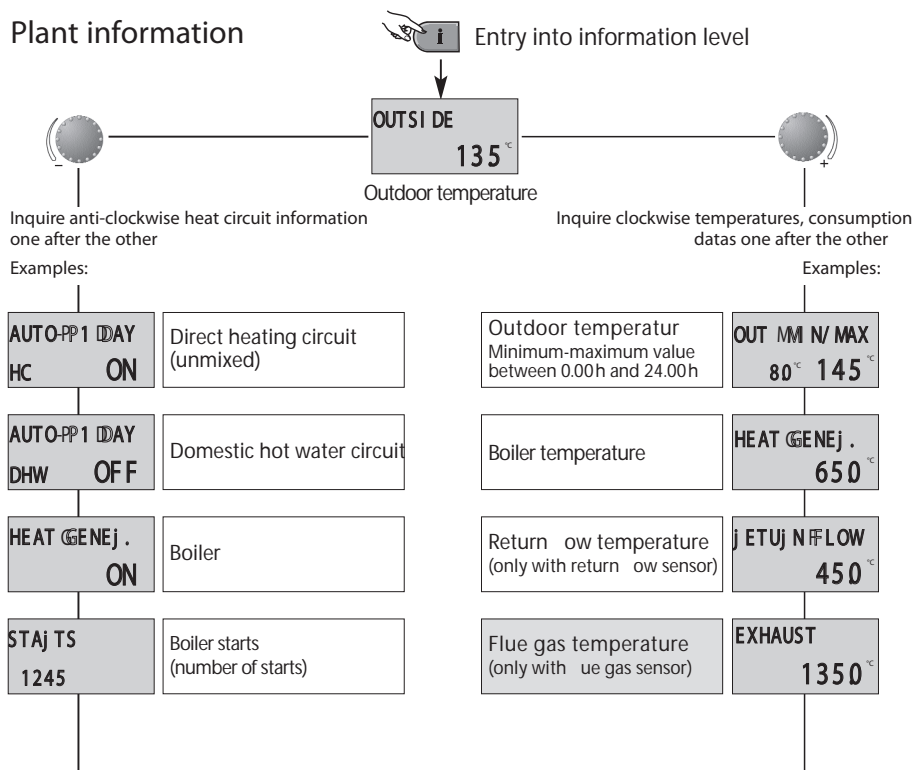
The slope sets the change of the supply temperature, if the outdoor temperature changes for 1 K.

Diagram of heating curves



Re-entry into the standard display is done by pressing the button **£** again or automatically after approx. 60 seconds.

Plant information



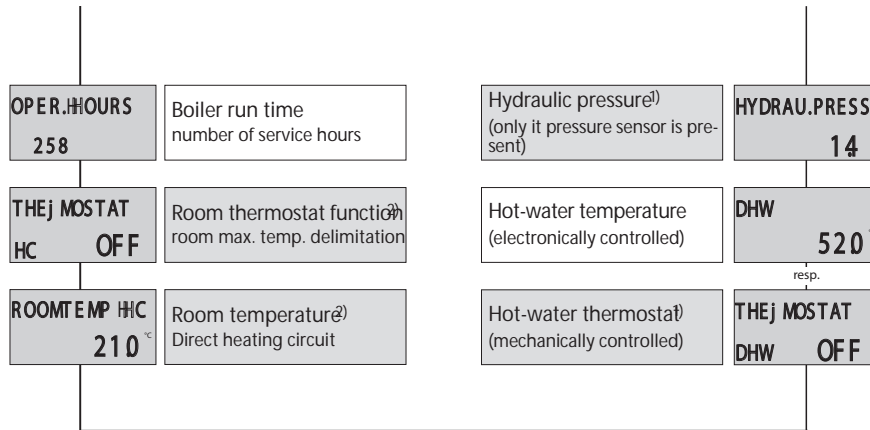
i This button displays all plant temperatures and states of all circuits. The information can be requested according to the direction with the rotary-push button.

Turning rotary-push button clockwise displays from all plant-specific temperatures

- the actual values and
- the nominal values (pressing rotary-push button)
- meter readings such as consumption data etc.

Turning rotary-push button anti-clockwise

- displays from direct heating circuit resp. DHW circuit
- operational mode (holiday, absence, party, auto etc.)
 - timer programm P1 (P2 and P3 only when released)
 - heating mode (daytime-, reduced-, ECO-mode)
 - identification (direct circuit HC, hot water circuit DHW)
 - status of heating- and DHW charging pump (on, off)



shows
 - operating status (on, off)
 - number of service hours
 - number of starts of boiler etc.

shows
 - room thermostat function (heating on, off)
 - current room temperature if room sensor is activated

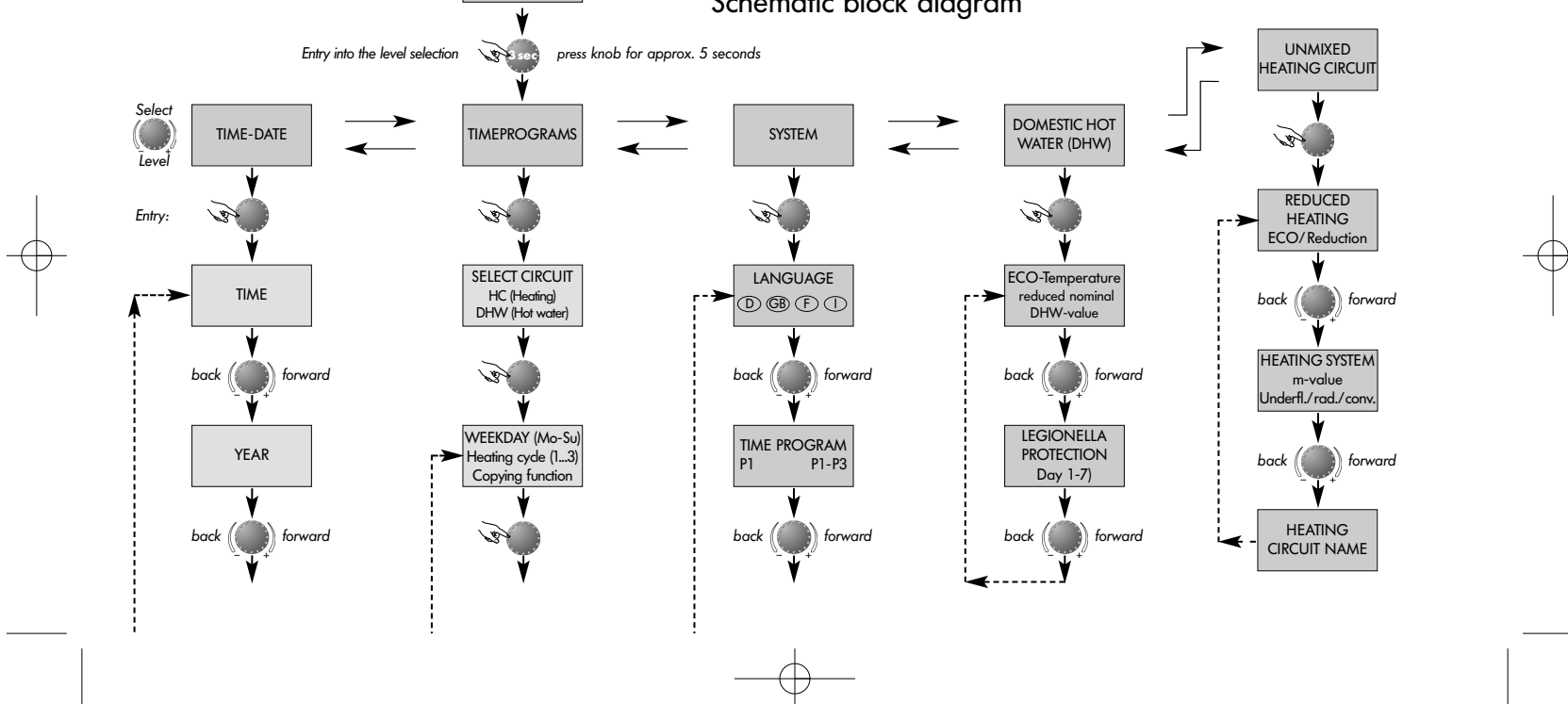
shows
 - water pressure if pressure sensor is present

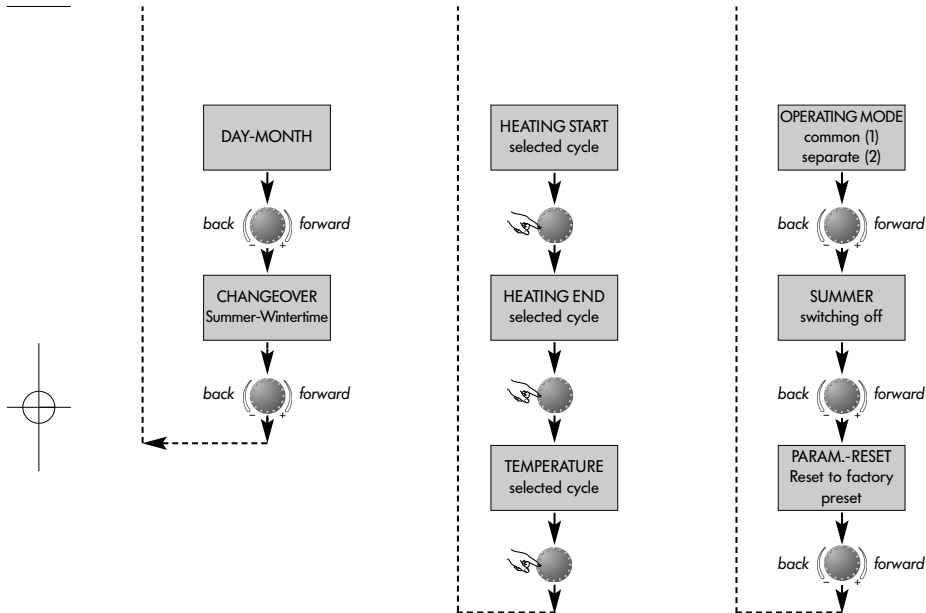
1) display dependent on the type of boiler
 2) will be displayed only if the room sensor was activated before



Programming level - Level summary

Schematic block diagram







Selection and modification of parameters and setting values

Entering into the programming level, principally the operating times level (TIME PROGRAMS) appears at first. All other levels, such as

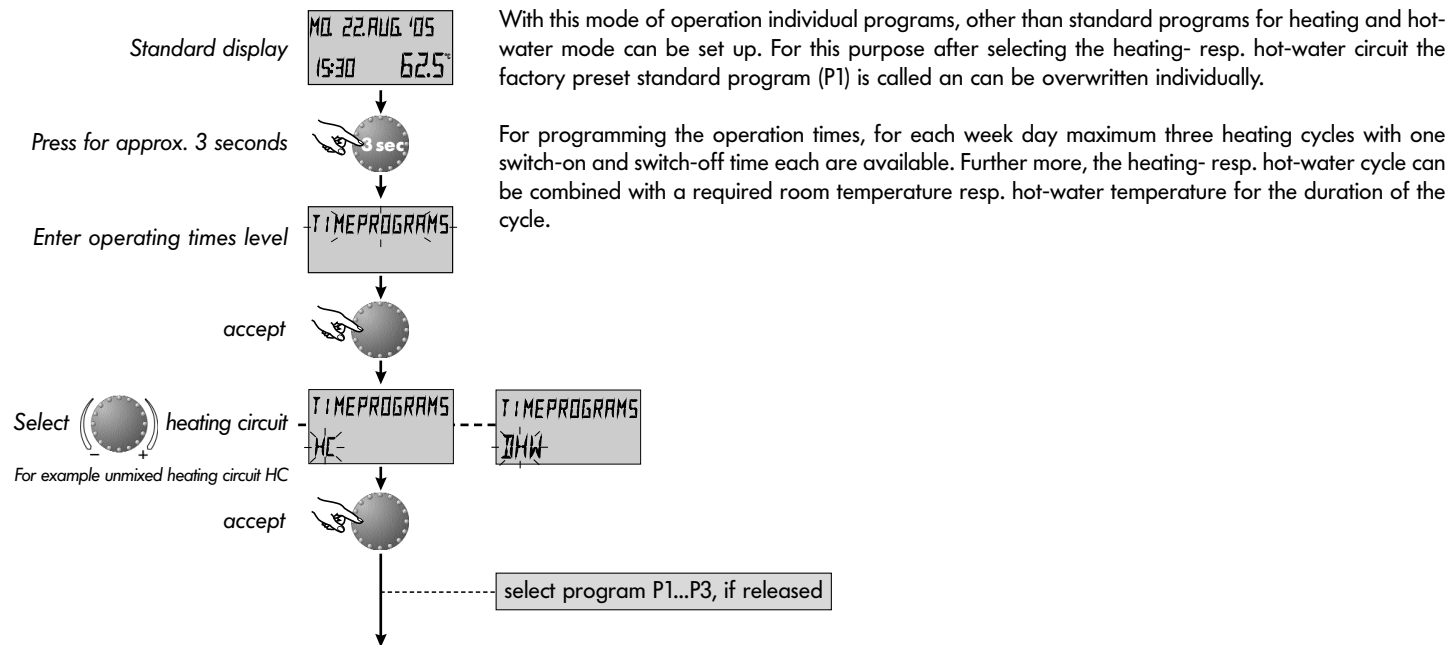
- SYSTEM
- DHW
- UNMIXED CIRCUIT
- DATE-TIME

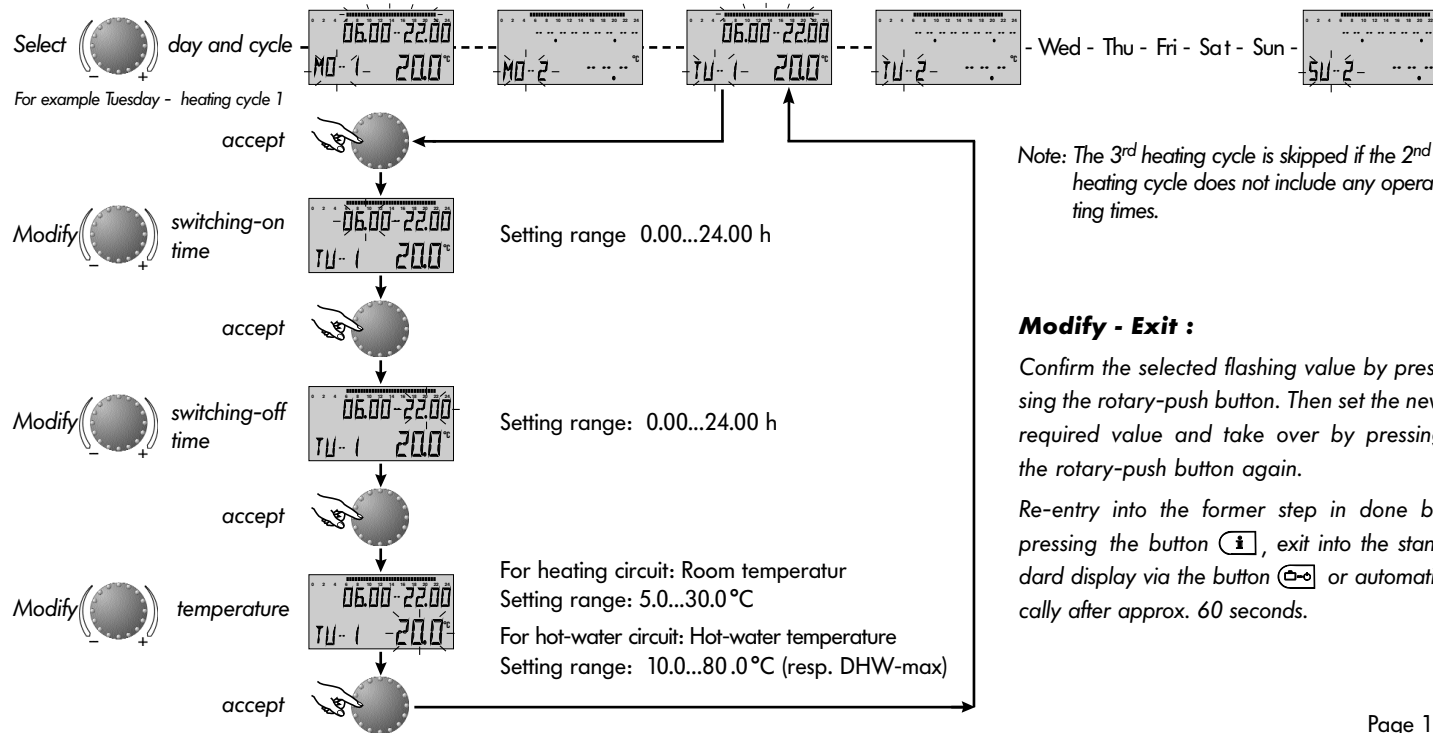
can be selected directly via rotary-push button

By pressing the rotary-push button, the selected flashing level is activated; the first value resp. parameter appears flashing. If necessary, it can be modified via the rotary-push button and accepted by pressing again. If necessary, the following parameters can be treated in the same way.

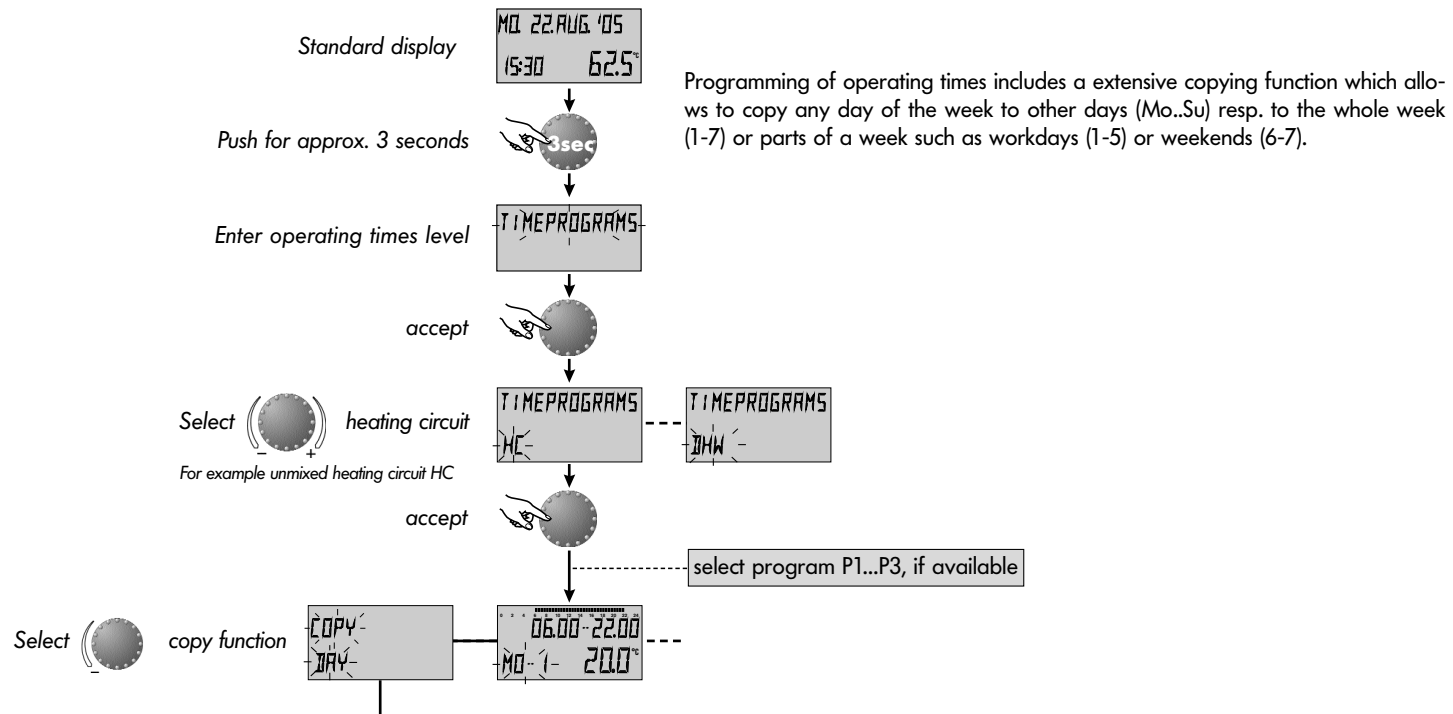
Re-entry into the level selection is done via the info button , re-entry into the standard display via the program-selection button  or automatically after approx. 60 seconds.

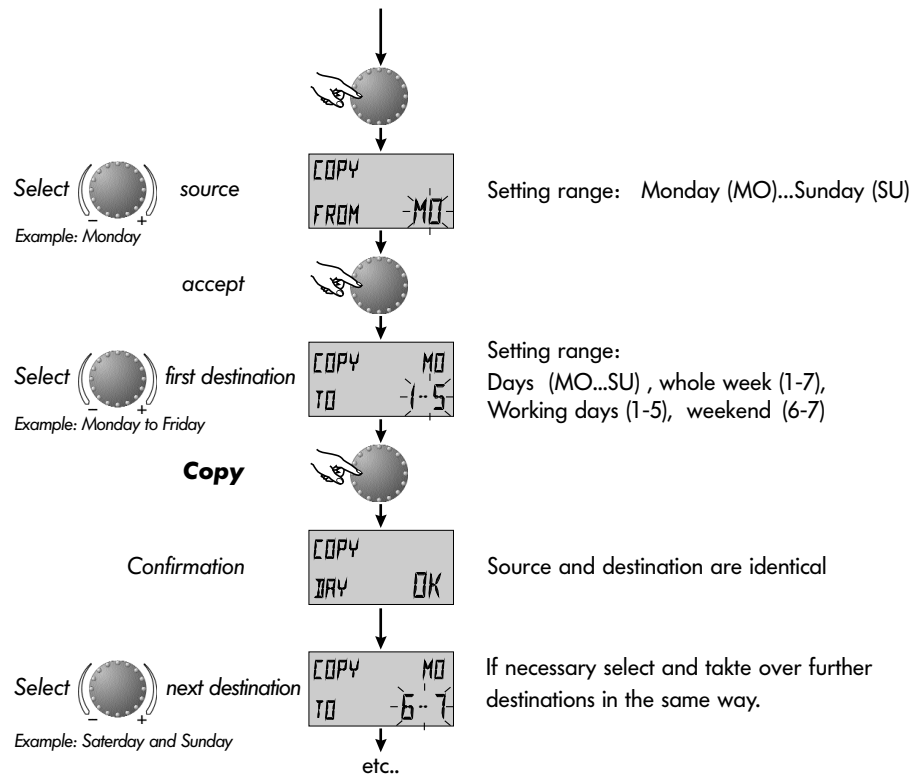
Programming of operating times





Copy operating times



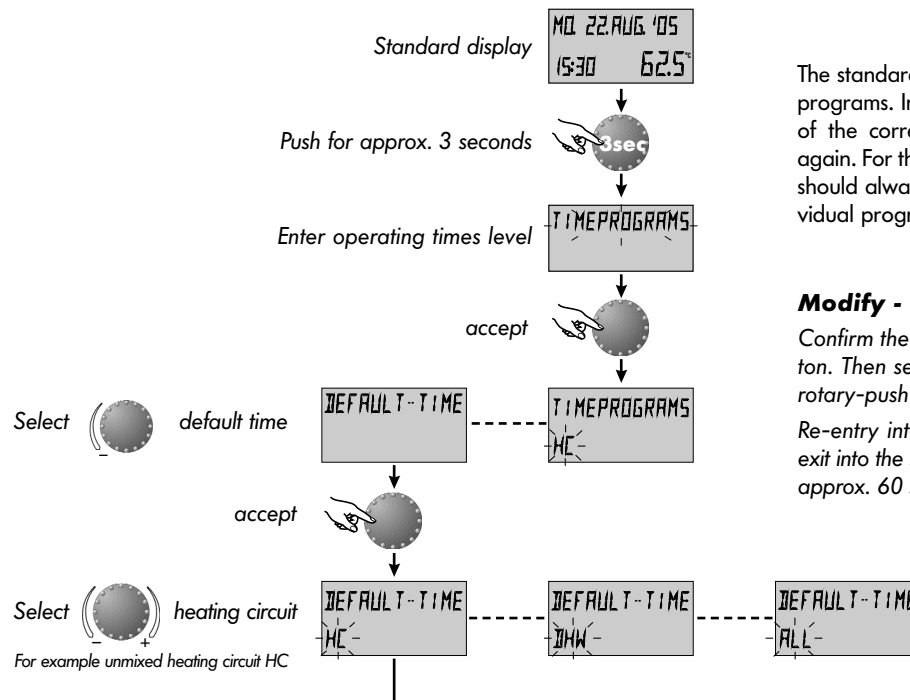


Modify - Exit :

Confirm the selected flashing value by pressing the rotary-push button. Then set the new required value and take over by pressing the rotary-push button again.

Re-entry into the former step is done by pressing the button , exit into the standard display via the button or automatically after approx. 60 seconds.

Reloading of standard time programs - deleting of individual time programs

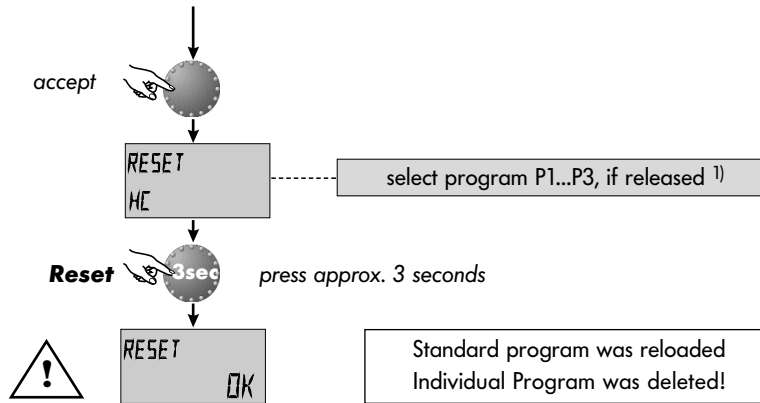


The standard programs do not get lost by overwriting with individual programs. Individual programs however are cancelled at a later call of the corresponding standard programs and have to be set up again. For this purpose individual switching-on and switching-off times should always be noted (see level *TIME PROGRAMS* - table for individual programs).

Modify - Exit :

Confirm the selected flashing value by pressing the rotary-push button. Then set the new required value and take over by pressing the rotary-push button again.

Re-entry into the former step is done by pressing the button **[i]**, exit into the standard display via the button **[C]** or automatically after approx. 60 seconds.



¹⁾ see level SYSTEM - parameter PROGRAM

Standard time programs

Standard operating-times program P1

Circuit	Day	Heating from...to
Unmixed heating circuit (HC)	Mo-Su	06.00 - 22.00 h
Domestic hot water (DHW)	Mo-Su	05.00 - 22.00 h

Standard operating-times program P1 ¹⁾

Circuit	Day	Heating from...to
Unmixed heating circuit (HC)	Mo-Th	06.00-08.00 16.00-22.00h
	Fr	06.00-08.00 13.00-22.00h
	Sa-Su	07.00-23.00h
Domestic hot water (DHW)	Mo-Th	05.00-08.00 15.30-22.00h
	Fr	05.00-08.00 12.30-22.00h
	Sa-Su	06.00-23.00h

Standard operating-times program P3 ¹⁾

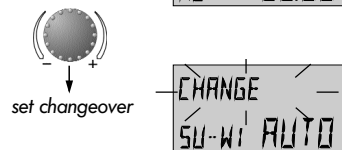
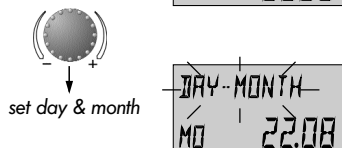
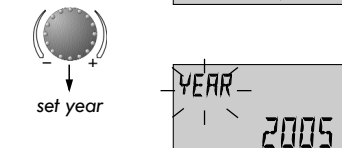
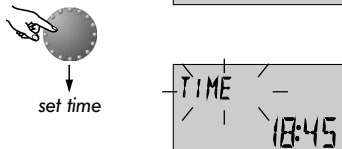
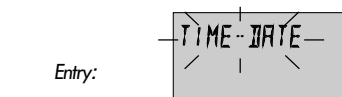
Circuit	Day	Heating from...to
Unmixed heating circuit (HC)	Mo-Fr	07.00-18.00 h
	Sa-Su	reduced heating
Domestic hot water (DHW)	Mo-Fr	06.00-18.00 h
	Sa-Su	reduced heating

Table for individual operating times and programs

Unmixed heating circuit (HC)	Operating times program P1						Operating times program P2						Operating times program P3					
	1 st cycle		2 nd cycle		3 rd cycle		1 st cycle		2 nd cycle		3 rd cycle		1 st cycle		2 nd cycle		3 rd cycle	
	From	till	from	till	from	till	from	till	from	till	from	till	from	till	from	till	from	till
Mon																		
Tue																		
Wed																		
Thu																		
Fri																		
Sat																		
Sun																		

Domestic hot-water circuit (DHW)	1 st cycle		2 nd cycle 2		3 rd cycle		1 st cycle		2 nd cycle		3 rd cycle		1 st cycle		2 nd cycle		3 rd cycle	
	from	till	from	till	from	till	from	till	from	till	from	till	from	till	from	till	from	till
	Mon																	
Tue																		
Wed																		
Thu																		
Fri																		
Sat																		
Sun																		

TIME-DATE



Current time
Setting range:
0.00... 24.00 h

Calendar year
Setting range:
2001... 2099

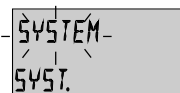
Calendar day-month-weekday
Setting range: 01.01... 31.12.
Weekday is set automatically

Time changeover mode
Setting range:
Automatic: last Sunday in March & Oct.
Manual: no time reset

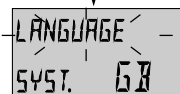
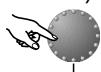
Entry: see » Programming level - Level summary « .
Exit: via button or automatically after 60 seconds
Modify: Confirm selected flashing parameter by pressing the rotary-push button. Then set the new required value via and accept by pressing the rotary-push button again. If necessary, correct the following parameters in the same way.

The values to the left are factory presets and normally need not be updated. If in some exceptional cases corrections should be necessary, the values can be adapted to the real conditions. The internal pre-programmed calendar provides an automatic time changeover at the yearly repeating summer-wintertime dates. If required, the automatic time changeover can be switched off (manual reset).

SYSTEM



Entry:



next parameter



next parameter



This level includes general delimiting parameters and options referring to the corresponding heating system

Language

Setting range:

DE = German	GB = English	FR = French
IT = Italian	NL = Dutch	ES = Spanish
PT = Portuguese	HU = Hungarian	CZ = Czech
PL = Polish	RO = Romanian	RU = Russian
TR = Turkish	S = Swedish	N = Norwegian

Factory preset: DE

All information that appears in the display, is available in a number of languages. After entry as first parameter appears the language selection. The required language can be selected and accepted according to the above assignment.

Operating times program

Setting range: P1, P1-P3

Factory preset: P1

This parameter specifies the number of the released time programs. With setting P1 only one operating-times program is available, with setting P1-P3 all three programs are released and can be selected for programming operating times.

Entry:

see » Programming level - Level summary « .

Exit:

via button  or automatically after 60 seconds

Modify:

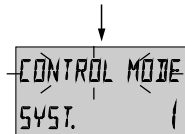
Confirm selected flashing parameter by pressing the rotary-push button. Then set the new required value via and accept by pressing the rotary-push button again. If necessary, correct the following parameters in the same way.

Application:

Use of the instrument at the corresponding language area.

Application:

Shift work, different programs for summer, transition period, winter etc.




next parameter



Control mode

Setting range: 1 = common mode 2 = separated mode
 Factory preset: 1

Common control mode:

The selected operational mode (via button  for *Holiday, Absence, Party, Automatic* etc.) applies to the heating circuit and to the hot-water circuit together.

Application: Objects with uniform seizure character (One-family houses etc).

Separated control mode:

The heating- and hot-water circuit can be assigned with own operational mode.

Application: Objects with different use of heating and hot-water (for example heating operation in Holiday mode, hot-water permanently in reduced mode).



Select

 Circuit



Unmixed circuit (HC), hot-water circuit (DHW)

accept

further operation see »Operational mode selection for heating and hot water« and »Temperature settings«



next parameter



Summer switch-off

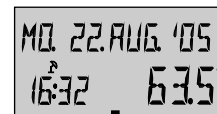
Setting range: OFF, 10.0 to 30.0 °C
 Factory preset: 20.0 °C

This parameter specifies the heating delimiting value regarding the average resp. current outdoor temperature and puts the heating plant automatically out of service as soon as the outdoor temperature exceeds the set heating delimiting value. During summer switch-off the pump of the heating circuit is activated each day for approx. 10 seconds to protect it against corrosion.

With setting OFF the summer switch-off is not effective.

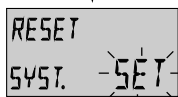
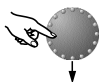
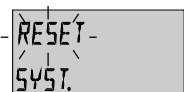
Hot water preparation is not affected by summer switch-off.

Note: The active summer switch-off appears on the standard display with a sunshade symbol.



Summer switch-off activated

Application: All objects which do not require a heating operation during summertime



Parameter-reset

This function resets all individually entered values in the programming level to factory preset.

Exception: Time-date, operating times

Reset: Press rotary-push button for approx. 5 sec. while indication SET is flashing, until standard display appears.

Important: Reset may only be executed if all individually entered values shall be replaced by the factory preset values!

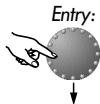


DOMESTIC HOT WATER



This level includes the necessary parameters for programming the hot-water circuit except the hot-water operating-times.

Entry: see » Programming level - Level summary « .
Exit: via button or automatically after 60 seconds



Hot-water economic temperature

Setting range: 5.0 °C up to the required hot water temperature
 Factory preset: 40.0 °C

Modify: Confirm selected flashing parameter by pressing the rotary-push button. Then set the new required value via and accept by pressing the rotary-push button again. If necessary, correct the following parameters in the same way.

next parameter



This parameter determines the amount of the reduced hot-water temperature outside the hot-water operating times (between the hot-water cycles) as well as in the operational mode *ABSENCE* for the duration of absence.

Application: Base temperature inside the hot-water tank in order to avoid a cooling down of the tank.

Note: This parameter is skipped if a hot-water thermostat is used instead of an electronic hot-water sensor.

Legionella protection (day)

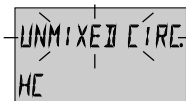
Setting range: OFF, MO...SU, ALL
 Factory preset: OFF

Note: Other legionella protection times can be regulated exclusively by the heating plant specialist.

The legionella protection serves to avoid a legionella infestation inside the hot-water tank and is activated on the selected week-day (Mon to Sun) or every day at 2.00 o'clock. If the hot-water temperature should drop below 65 °C, the tank is reloaded. With setting OFF this function is not effective.

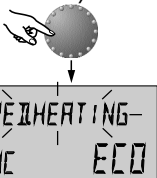
Important: Danger of scalding! Use thermostatic mixing valve on DHW outlet.

Unmixed heating circuit (direct circuit)



This level includes the parameters required for programming the heating circuit with the exception of the related operating-times programs.

Entry:



Reduced heating mode

Setting range: ECO, RED


Factory preset: ECO

During the reduced operation the following modes can be selected:

ECO mode: At outdoor temperatures above the set plant frost protection the heating circuit is switched off completely. At temperatures below frost protection the heating circuit is controlled with reduced heating characteristic according to the required reduced temperature (see »Temperature setting«).

RED mode: During the reduced mode the heating circuit pump remains activated. The heating circuit is controlled according to the reduced heating characteristic, the temperature does not drop below the set minimum temperature value.

Entry: see » Programming level - Level summary « .

Exit: via button  or automatically after 60 seconds

Modify: Confirm selected flashing parameter by pressing the rotary-push button. Then set the new required value via and accept by pressing the rotary-push button again. If necessary, correct the following parameters in the same way.

Application: Objects with high insulation values

Application: Objects with low insulation values

next parameter

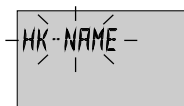




Adaptation to the heating system

Setting range: 1,00 to 10.0
 Factory preset: 1,30

This parameter refers to the type of the heating system and has to be adapted to the power characteristic of the corresponding consumer (underfloor systems, radiator, convector). The setting value specifies the curvature of the heating curve of the selected weather dependent heating circuit and compensates the system-related efficiency losses at lower temperatures by a progressive heating curve in conformity with the adjustment.



Heating circuit name

This is used to assign an individual, 5 character, abbreviated name to each heating circuit. No individual name is assigned if the setting "empty" is used. The default abbreviated name appears.

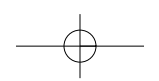
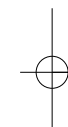
- The character that blinks can be altered using the rotary knob according to the code number and accepted by pressing the knob once. The remaining characters can be altered in the same way.
- The individual heating circuit name display appears
 - in the menu
 - in the parameter tree
 - in the info level



Applications:

The following setting values are recommended for the below-mentioned applications

Setting value	Application
1.00. . . 1.10	Heating curve for underfloor heating systems or other static heating surfaces
1.30. . . 2.20	Normal standard heating curves for radiators
3.00. . . 4.00	Heating curves for convectors
4.00. . . 10.0	Special heating curves for ventilators with high starting temperatures



Alarm messages

Page 30



OUTSIDE
ERROR 10--0

Example for alarm message »sensor«
(short or open circuit)
Error code 10...20



HEAT GEN
ERROR 30--n

Example for alarm message »heat generator«
(flue gas temperature exceeded)
Error code 30...40... ¹⁾



JHW
ERROR 50--4

Example for logical alarm messages
(control functions)
Error code 50...60



BUS
ERROR 70--n

Example for alarm message »data bus«
(address error)
Error code 70

¹⁾ For these alarm messages the error codes of the heat generator in the corresponding installation manuals have to be considered.

The instrument is equipped with an extensive error diagnostic features. The error displayed takes priority over other displays and varies dependent on the model in question.

For alarm messages from burner control (ERROR Xn:m) the error codes in the corresponding installation manuals have to be considered.

Note: Alarm messages only appear alternating with the standard display.



In case of alarm messages the heating specialist always has to be informed!

Temperature Cross Reference

Celsius °C	Fahrenheit °F
100	212
90	194
80	176
70	158
60	140
50	122
40	104
30	86
20	68
16	60.8

Celsius °C	Fahrenheit °F
12	53.6
8	46.4
4	39.2
0	32
-4	24.8
-8	17.6
-12	10.4
-16	3.2
-20	-4
-25	-13

