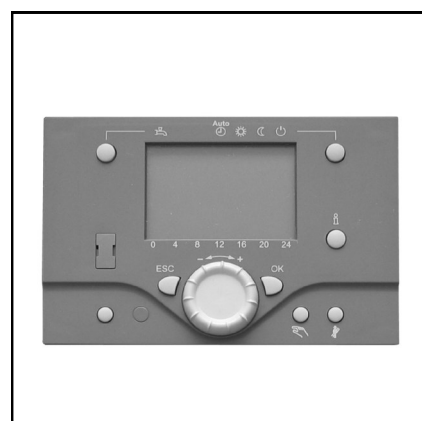


# Operating Manual

for professional installers

## LMS Controller (V5.5)

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## Product description, Features, Functionality

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### Product description

The LMS controller is a weather compensated digital controller that can control two mixed heating zones, DHW preparation, do cascading and burner control.

Additional functions can be activated. The controller calculates the required temperatures for the boiler and the heating zones according to the outside temperature and controls DHW preparation. With additional optimizing functionality optimal energy savings can be achieved.

### Features

Heating zone control with the following functions:

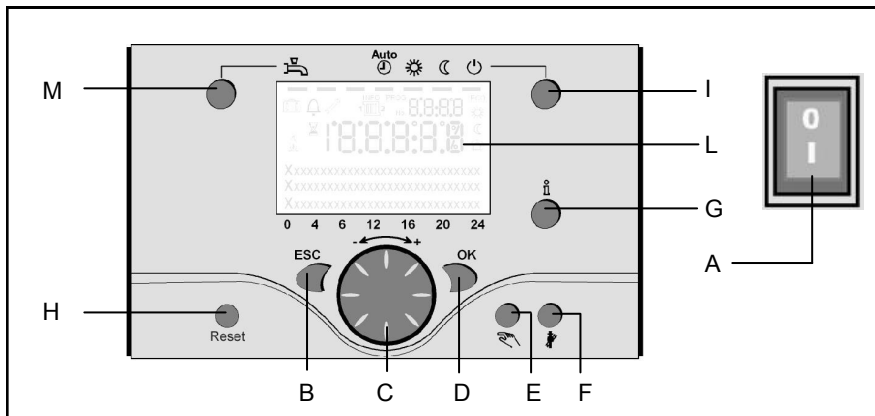
- Operation mode Heating, DHW
- Setpoint adjustment for Heating, DHW
- Info button
- Manual control
- Chimney sweeper function
- Reset button

### Functionality

- Weather compensated heating zone controller for max. 2 mixed heating zones. DHW control with enable and setpoint adjustment.
- programmable time controlled circulation pump
- Illuminated display, multi lingual clear text for status and function indication
- Automatic summer/winter change over
- Preprogrammed time programmes for Heating and DHW
- Individual time program with periods according to controller system configuration
- Holiday program for each heating zone
- Emission control / Chimney sweeper with automatic return to normal operation
- Floor curing function
- Storage tank management
- Heat generation lock
- External setpoint via 0-10Vdc
- Solar DHW Heating functionality
- Programmable swimming pool control
- Integrated Cascade functionality for multiple boiler installation
- Room temperature control via accessory QAA 75 / 78
- QAA 75 via 2-wire Bus
- QAA 78 via wireless connection
- Adjustment of radiator or underfloor heating zones with adjustment of time programs
- Automatic heat slope adaption programmable
- Heat up optimization with quick start programmable
- Demand dependant cool down
- Adjustable minimum and maximum flow temperatures
- Pump post run
- Integrated hour counter
- anti-legionella function
- Boiler and system antifrost
- 2-wire bus connection for controller accessories
- LPB-Bus functionality via optional OCI 345

# Operating instructions

## Controls



### Legend:

- A On/off switch
- B Return (ESC)
- C Room temperature control
- D Confirmation (OK)
- E Manual mode
- F Chimney sweeper mode
- G Info mode
- H Reset button
- I Operation mode heating zone(s)
- L Display
- M Operation mode DHW

### Operation mode DHW (M)

For switching on the DHW operation (indication in display below DHW symbol)

### Operation mode heating zone(s) (I)

For setting 4 different heating modes:  
Auto (clock): Automatic operation by time programm  
Comfort (sun): 24/7 heating in comfort mode  
Reduction (moon): 24/7 heating in reduced mode  
Standby: heating off, frost protection activated.

### Display (L)

### Info mode (G)

Display possibility of following info without influence on boiler control: temperatures, operation mode Heating / DHW, error code.

### Room temperature control (C)

- for changing room comfort temperature
- for changing setting when programming.

### Confirmation (OK) (D)

### Return (ESC) (B)

These buttons are used for programming in combination with the rotary knob.

By pressing the ESC button it's possible to go back one level, changed values are not taken over by the controller.

By pressing the OK button it's possible to arrive in the next level or confirm changed values.

### Manual mode (E)

This button is used for switching the boiler into manual mode. In manual mode all pumps will run and the mixing valves are no longer controlled, the burner setpoint is 60°C (indicated by spanner symbol).

### On/off switch (A)

Position 0:

Boiler and connected electrical components are no powered. Frost protection is not secured.

Position I

The boiler and connected electrical components are powered and standby for operation.

### Deaeration mode (E)

By pressing the manual mode button longer than 3 seconds, the automatic hydraulic deaeration is activated. During deaeration the system is put in standby mode

The pumps are switched on and off for several times.

After deaeration, the boiler automatically returns to normal operation.

### Chimney sweeper mode (F)

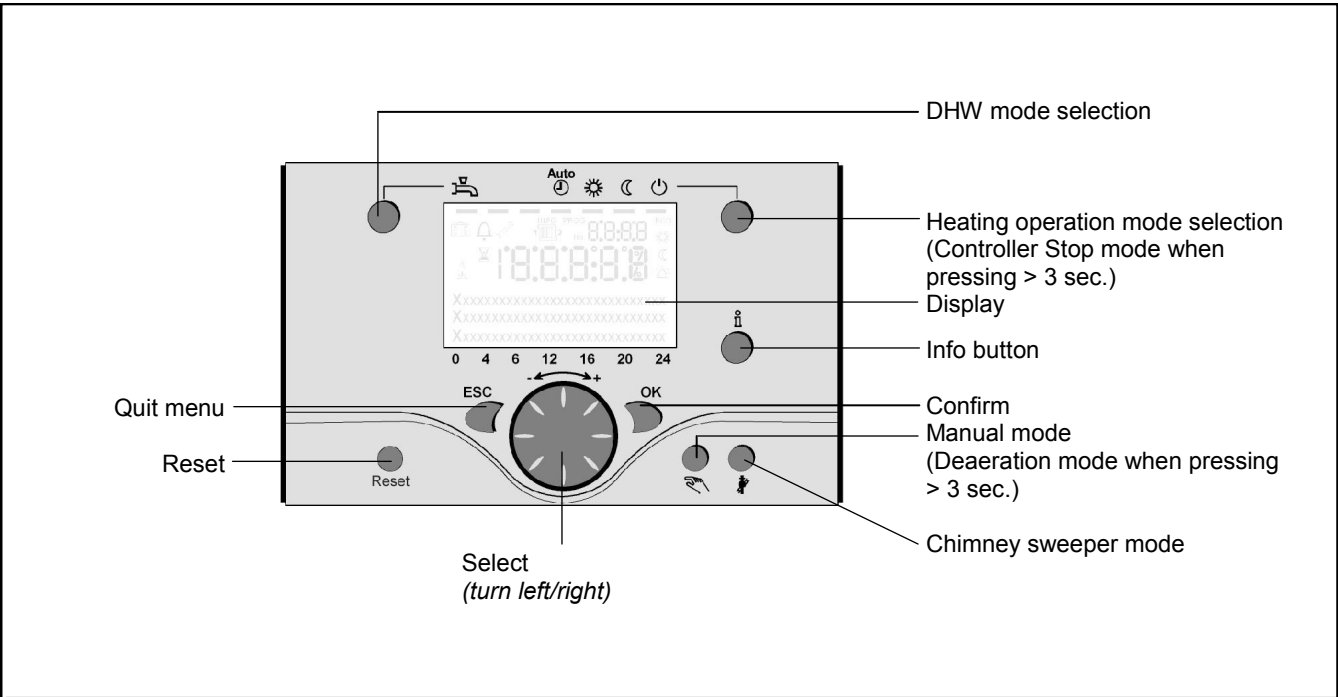
Used for combustion analysis. By pressing the button once again, or automatically after 15 minutes, the chimney sweeper mode will be deactivated (indicated by spanner symbol).

### Reset button (H)

By shortly pressing the reset button a burner lockout can be cancelled.

# Operating instructions

## Display / Programming



Heating to comfort setpoint Info level activated

Heating to reduced setpoint Programming activated

Heating for frost protection setpoint Heating temporarily switched off

Process running – please wait

Burner operating (only oil / gas boiler)

Error messages

**INFO** Info level active

**PROG** Programming active

**ECO** Heating temporarily switched off ECO function

Holiday function active

Reference to heating circuit

Maintenance / special operation

**No.** Parameter number

**Programming**

Press **OK** (1x)

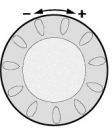

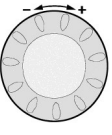

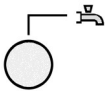
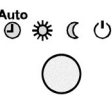








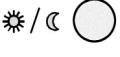
Enduser
<ul style="list-style-type: none"><li>- choose menu</li><li>- confirm with <b>OK</b> button</li><li>- choose parameter</li><li>- confirm with <b>OK</b> button</li><li>- change value + - with rotary knob</li><li>- confirm with <b>OK</b> button</li><li>- return to main menu with <b>ESC</b> button</li></ul>

Press **OK** (1x)  
Press **INFO** (4 sec.)

Commissioning	Expert
<ul style="list-style-type: none"><li>- choose user level</li><li>- confirm with <b>OK</b> button</li><li>- choose menu</li><li>- confirm with <b>OK</b> button</li><li>- choose parameter</li><li>- confirm with <b>OK</b> button</li><li>- change value + - with rotary knob</li><li>- confirm with <b>OK</b> button</li><li>- return to main menu with <b>ESC</b> button</li></ul>	

# Operating instructions

## Overview of main functions

Button	Action	Procedure	Display / Function
	Set room temperature	<b>Zone 1 and zone 2</b> Actuate rotary knob left/right Turn rotary knob Confirm with OK button or wait 5 sec. or press  ESC	Comfort setpoint with blinking temperature Blinking temperature in 0,5 °C steps from 10 to 30 °C  <b>Comfort setpoint saved</b> <b>Comfort setpoint cancelled</b> - after 3 sec. Main menu appears
	Set room temperature for zone 1 or zone 2	<b>Zone 2 independent from zone 1</b> Actuate rotary knob left/right Confirm with OK button Actuate rotary knob left/right Confirm with OK button or wait 5 sec. or press  ESC	Choose heating zone Heating zone is chosen Blinking temperature in 0,5 °C steps from 10 to 30 °C  <b>Comfort setpoint saved</b> <b>Comfort setpoint cancelled</b> - after 3 sec. Main menu appears
	Switch on /off DHW operation	Press button	<b>DHW mode on / off</b> (see indication below DHW symbol) - On: DHW mode by time programm - Off: no DHW operation - Safety functions activated
	Change heating operation mode	Factory setting  Press button 1x  Press button 1x again  Press button 1x again	<b>Automatic mode on</b> , with: - Heating by time programm - Temperature setpoint by heating programm - Safety functions activated - Summer/Winter automatic switching activated - ECO-functions activated (see indication below operation symbol) <b>Continuous COMFORT heating on</b> , with: - Heating without time programm by comfort setpoint - Safety functions activated <b>Continuous REDUCED heating on</b> , with: - Heating without time programm by reduced setpoint - Safety functions activated - Summer/Winter automatic switching activated - ECO-functions activated <b>Safety mode on</b> , with: - Heating off - Temperature by frost protection - Safety functions activated
	Controller Stop mode	Press button > 3 sec. Press button > 3 sec. again	<b>304: Controller Stopp mode</b> <b>insert setpoint</b> after 3 sec. Main menu appears
	Info display	Press button 1x Press button 1x again Press button 1x again .....  Press button 1x	INFO Segment displayed - Status Boiler      - room temperature - Status DHW      - room temperature minimum - Status zone 1      - room temperature maximum - Status zone 2      - outside temperature - Time / Date      - outside temperature minimum - Error indication      - outside temperature maximum - Maintenance indication      - DHW temperature 1 - Flow temperature (Info display depends on configuration) Back to main menu;      INFO Segment disappears
	Operation by manual setpoint	Press button 1x	<b>Manual mode on</b> (spanner symbol appears) - Heating by fixed setpoint (factory setting = 60 °C)
	Change factory setting boiler temperature	Press button  Press button  Turn rotary knob -/+ Press button  Press button  Press button 	<b>301: Manual mode</b> <b>insert setpoint?</b> blinking temperature set value  <b>Status boiler</b> Manual mode off (spanner symbol disappears)
	Deaeration	Press button > 3 sec. Press button > 3 sec. again	<b>312: Deaeration on</b> Deaeration off
	Activate chimney sweeper mode	Press button (< 3 sec.) Press button again (< 3 sec.)	Chimney sweeper mode on Chimney sweeper mode off
	Temporary reduction of reduced temperature on QAA75	Press button Press button again	Heating by reduced setpoint Heating by comfort setpoint
<b>RESET</b>	Reset button	Press button (< 3 sec.) Press button again > 3 sec.	Boiler manually blocked, no release Boiler released, Alarm symbol disappears

# Parameters Enduser

- Main display "Boiler temperature"
- Press OK Button 1x
- Turn the rotary knob to select for example menu "DHW"
- Press OK Button 1x
- Turn the rotary knob to select for example parameter 1612 "DHW temperature reduced setpoint" in menu "DHW"
- Press OK Button 1x
- Turn the rotary knob to change the setting
- Press OK Button 1x > new setting has been stored
- Press ESC Button 2x to go back to main display "Boiler temperature"

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Time of day and date	1	Hours / Minutes	hh:mm	00:00	23.59	--:--
	2	Day / Month	tt:MM	01.01	31.12.	--:--
	3	Year	jjjj	2004	2099	--:--
Operator section	20	Language	-	English, Deutsch, Francais, Italiano, Dansk, Nederlands, Español, Český, Slovenský, Türkçe		English
Time program HC 1	500	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	501	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	502	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	503	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	504	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	505	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	506	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	516	Default values	-	Yes, No		No
Time program HC 2 (When activated)	520	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	521	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	522	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	523	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	524	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	525	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	526	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	536	Default values	-	Yes, No		No
Time program 3/HC3 (When activated)	540	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	541	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	542	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	543	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	544	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	545	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	546	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	556	Default values	-	Yes, No		No

# Parameters Enduser

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Time program 4/DHW	560	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	561	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	562	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	563	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	564	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	565	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	566	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	576	Default values	-	Yes	No	No
Time program 5	600	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	601	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	602	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	603	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	604	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	605	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	606	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	616	Default values	-	Yes	No	No
Holidays HC1	641	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
	642	Period Start Day / Month	tt.MM	01.01	31.12	--:--
	643	Periode End Day / Month	tt.MM	01.01	31.12	--:--
	648	Operating level	-	Frost protection, Reduced		Frost protection
Holidays HC2 (When activated)	651	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
	652	Period Start Day / Month	tt.MM	01.01	31.12	--:--
	653	Periode End Day / Month	tt.MM	01.01	31.12	--:--
	658	Operating level	-	Frost protection, Reduced		Frost protection
HC1	710	Comfort setpoint	°C	Value from Line no. 712	35	20.0
	712	Reduced setpoint	°C	4	Value from Line no. 710	16.0
	714	Frost protection setpoint	°C	4	Value from Line no. 712	10.0
	720	Heating curve slope	-	0.10	4.00	1.50
	730	Summer/winter heating limit	°C	---/8	30	20
HC2 (When activated)	1010	Comfort setpoint	°C	Value from Line no. 1012	35	20.0
	1012	Reduced setpoint	°C	4	Value from Line no. 1010	16.0
	1014	Frost protection setpoint	°C	4	Value from Line no. 1012	4.0
	1020	Heating curve slope	-	0.10	4.00	1.5
	1030	Summer/winter heating limit	°C	---/8	30	20
DHW	1610	Nominal setpoint	°C	Value from Line no. 1612	80	55
	1612	Reduced setpoint	°C	8	Value from Line no. 1610	40



## Parameters Enduser

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Swimming pool	2055	Pool setpoint solar heating	°C	8	80	26
	2056	Pool sepoint boiler heating	°C	8	80	22
Boiler	2214	Setpoint manual control	°C	10	90	80
Fault	6705	SW Diagnose Code	-	-	-	Indication only
	6706	Burner ctrl phase lockout pos	-	-	-	Indication only

# Parameters professional installer

- Main display "Boiler temperature"
- Press OK Button 1x
- Press Info Button > 3s
- Turn the rotary knob to select level "Commissioning" or "Engineer"
- Press OK Button 1x
- Turn the rotary knob to select for example menu "DHW"
- Press OK Button 1x
- Turn the rotary knob to select for example parameter 1612 "DHW temperature reduced setpoint" in menu "DHW"
- Press OK Button 1x
- Turn the rotary knob to change the setting
- Press OK Button 1x > new setting has been stored
- Press ESC Button 2x to go back to main display "Boiler temperature"

Access via "Commissioning" level will only show the parameters in grey.  
Access via "Engineer" level will show all parameters.

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Time of day and date	1	Hours / Minutes	hh:mm	00:00	23.59	--:--
	2	Day / Month	tt:MM	01.01	31.12.	--:--
	3	Year	jjjj	2004	2099	--:--
	5	Start of summertime Day / Month	tt:MM	01.01	31.12.	25.03.
	6	End of summertime Day / Month	tt:MM	01.01	31.12.	25.10.
Operator section	20	Language	-	English, Deutsch Francais, Italiano, Nederlands Polski		English
	22	Info	-	Temporarily, Permanently		Temporarily
	26	Operation lock	-	Off, On		Off
	27	Programming lock	-	Off, On		Off
	28	Direct adjustment	-	Automatic storage, Storage with confirmation		Storage with confirmation
	44	Operation HC2	-	Jointly with HC1, Independently		Jointly with HC1
	46	Operation HC3/P	-	Jointly with HC1, Independently		Jointly with HC1
Time program HC 1	70	Software Version	-	0	99.0	Indication only
	500	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	501	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	502	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	503	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	504	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	505	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	506	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
Time program HC 2 (when activated)	516	Default values	-	Yes, No		No
	520	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	521	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	522	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	523	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	524	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	525	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	526	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
Time program HC3/P	536	Default values	-	Yes, No		No
	540	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	541	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	542	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	543	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	544	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	545	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	546	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
Time program 4 DHW	556	Default values	-	Yes, No		No
	560	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	561	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	562	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	563	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	564	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	565	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	566	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	576	Default values	-	Yes, No		No

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Time program 5	600	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	601	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	602	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	603	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--,--
	604	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--,--
	605	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--,--
	606	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--,--
	616	Default values	-	Yes, No		No
Holidays HC1	641	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
	642	Period Start Day / Month	tt.MM	01.01	31.12	--,--
	643	Period End Day / Month	tt.MM	01.01	31.12	--,--
	648	Operating level	-	Frost protection		Frost protection
Holidays HC2 (When activated)	651	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
	652	Period Start Day / Month	tt.MM	01.01	31.12	--,--
	653	Period End Day / Month	tt.MM	01.01	31.12	--,--
	658	Operating level	-	Frost protection		Frost protection
HC 1	700	Operating mode HC1	-	Protection, Automatic mode, Continuously comfort, Continuously reduced		Automatic mode
	710	Comfort setpoint	°C	Value from Line no. 712	35	20.0
	712	Reduced setpoint	°C	Value from Line no. 714	Value from Line no. 710	16.0
	714	Frost protection setpoint	°C	4	Value from Line no. 712	4
	720	Heating curve slope	-	0.10	4.00	1.50
	721	Heating curve parallel displacement	°C	-4.5	4.5	0.0
	726	Heating curve adaption	°C	Off, On		Off
	730	Summer/winter heating limit	°C	---/8	30	20
	732	24-hour heating limit	°C	---/-10	10	-3
	733	Ext'n 24-hour heating limit	-	No, Yes		Yes
	740	Flow temp setpoint min	°C	8	Value from Line no. 741	8
	741	Flow temp setpoint max	°C	Value from Line no. 740	80	80
	742	Flow temp setpoint room stat	°C	Value from Line no. 740	Value from Line no. 741	65
	746	Delay heat request	s	0	600	0
	750	Room influence	%	---/0	100	20
	760	Room temp limitation	°C	---/0.5	4	1
	770	Boost heating	°C	---/0	20	THISION L: 5° R600:2°C
	780	Quick setback	-	Off, Down to Reduced setpoint, Down to Frost protection setpoint		Off
	790	Optimum start control max	min	0	360	0
	791	Optimum Stop control max	min	0	360	0
	800	Reduced setp increase start	°C	---/30	10	-5°C
	801	Reduced setp increase end	°C	-30	Value from Line no. 800	-15
	820	Overtemp prot pump circuit	-	Off, On		On
	830	Mixing valve boost	°C	0	50	6
	832	Actuator type	-	2-position, 3-position		3-position
	833	Switching differential 2-pos	°C	0	20	2
	834	Actuator running time	s	30	873	120
	835	P-Band (Xp) HC1	°C	1	100	32
	836	Integral action time (Tn) HC1	s	10	873	120

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
HC 1	850	Floor curing function	-	Off, Functional heating, Curing heating, Functional/Curing heating, Manually		Off
	851	Floor curing setp manually	°C	0	95	25
	855	Floor curing setp current	°C	-		Indication only
	856	Floor curing day current	-	-		Indication only
	861	Excess heat draw	-	Off, Heating mode, Always		Off
	870	With buffer	-	No, Yes		Yes
	872	With prim contr/system pump	-	No, Yes		Yes
	890	Flow setp readj speed ctrl	-	No, Yes		No
	898	Operating level change over	-	Frost protection, Reduced, Comfort		Reduced
	900	Optg mode changeover	-	None, Protection, Reduced, Comfort, Automatic		Protection
HC 2 (when activated)	1000	Operating mode HC2	-	Protection, Automatic mode, Continuously comfort, Continuously reduced		Automatic mode
	1010	Comfort setpoint	°C	Value from Line no. 1012	35	20.0
	1012	Reduced setpoint	°C	Value from Line no. 1014	Value from Line no. 1010	16.0
	1014	Frost protection setpoint	°C	4	Value from Line no. 1012	4
	1020	Heating curve slope	-	0.10	4.00	1.50
	1021	Heating curve parallel displacement	°C	-4.5	4.5	0.0
	1026	Heating curve adaption	°C	Off, On		Off
	1030	Summer/winter heating limit	°C	---/8	30	20
	1032	24-hour heating limit	°C	---/-10	10	-3
	1033	Ext'n 24-hour heating limit	-	No, Yes	No, Yes	Yes
	1040	Flow temp setpoint min	°C	8	Value from Line no. 1041	8
	1041	Flow temp setpoint max	°C	Value from Line no. 1040	80	80
	1042	Flow temp setpoint room stat	°C	Value from Line no. 1040	Value from Line no. 1041	65
	1050	Room influence	%	---/0	100	20
	1060	Room temp limitation	°C	---/0.5	4	1
	1070	Boost heating	°C	---/0	20	THISION L:5° R600:2°C
	1080	Quick setback	-	Off, Down to Reduced setpoint, Down to Frost protection setpoint		Off
	1090	Optimum start control max	min	0	360	0
	1091	Optimum Stop control max	min	0	360	0
	1100	Reduced setp increase start	°C	---/30	10	---
	1101	Reduced setp increase end	°C	-30	Value from Line no. 1100	-15
	1120	Overtemp prot pump circuit	-	Off, On		On
	1130	Mixing valve boost	°C	0	50	6
	1132	Actuator type	-	2-position, 3-position		3-position
	1133	Switching differential 2-pos	°C	0	20	2
	1134	Actuator running time	s	30	873	120
	1135	P-Band (Xp) HC1	°C	1	100	32
	1136	Integral action time (Tn) HC1	s	10	873	120
	1150	Floor curing function	-	Off, Functional heating, Curing heating, Functional/Curing heating, Manually		Off
	1151	Floor curing setp manually	°C	0	95	25
	1155	Floor curing setp current	°C	-	-	Indication only
	1156	Floor curing day current	-	-	-	Indication only
	1161	Excess heat draw	-	Off, Heating mode, Always		Off
	1170	With buffer	-	No, Yes		Yes
	1172	With prim contr/system pump	-	No, Yes		Yes
	1190	Flow setp readj speed ctrl	-	No, Yes		No
	1198	Operating level change over	-	Frost protection, Reduced, Comfort		Reduced
	1200	Optg mode changeover	-	None, Protection, Reduced, Comfort, Automatic		Protection

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Domestic hot water	1600	Operating mode	-	Off, On, Eco		Off
	1610	Nominal setpoint	°C	8	80	55
	1612	Reduced setpoint	°C	8	80	40
	1620	Release	-	24h/Day, Time programs HCs, Time program 4/DHW		Time programs HCs
	1630	Charging priority	-	Absolute, Shifting, None, MC shifting PC absolute		MC shifting PC absolute
	1640	Legionella function	-	Off, Periodically, Fixed weekday		Off
	1641	Legionella function periodically	-	1	7	3
	1642	Legionella funct Day	-	Mo,Tu,We,Th,Fr,Sa,Su		Montag
	1644	Legionella funct time	h:m	00:00	23:50	---
	1645	Legionella funct setpoint	°C	55	95	65
	1646	Legionella funct duration	min	10	360	30
	1647	Legionella funct circ pump	-	Off, On		On
	1660	Circulating pump release	-	Time program 3/HCP, DHW release, Time program 4/DHW, Time program 5		DHW release
	1661	Circulating pump cycling	-	Off, On		Off
	1663	Circulation setpoint	°C	8	80	45
	1680	Optg mode changeover	-	None, Off, On		Off
Consumer circuit 1	1859	Flow temp setp cons request	°C	8	120	70
	1874	DHW charging priority	-	No, Yes		Yes
	1875	Excess heat draw	-	Off, On		On
	1878	With buffer	-	No, Yes		No
	1880	With prim contr/system pump	-	No, Yes		No
Consumer circuit 2	1909	Flow temp setp cons request	°C	8	120	70
	1924	DHW charging priority	-	No, Yes		Yes
	1925	Excess heat draw	-	Off, On		On
	1928	With buffer	-	No, Yes		No
	1930	With prim contr/system pump	-	No, Yes		No
Swimming pool circuit	1959	Flow temp setpoint	°C	8		70
	1974	DHW charging priority	-	No, Yes		Yes
	1975	Excess heat draw	-	Off, On		On
	1978	With buffer	-	No, Yes		No
	1980	With prim contr/system pump	-	No, Yes		No
Swimming pool	2055	Pool setpoint solar heating	°C	8	80	26
	2056	Pool setpoint producer heating	°C	8	80	22
	2065	Pool charging priority solar	-	Priority 1, Priority 2, Priority 3		Priority 3
	2070	Pool temperature maximum	°C	8	95	30
	2080	Pool with solar	-	No, Yes		Yes

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Primary control/ System pump	2110	Flow temp min limitation	°C	8	95	8
	2111	Flow temp max limitation	°C	8	95	80
	2121	Syst pump on heat gen lock	-	Off, On		Off
	2130	Mixing valve boost	°C	0	50	6
	2132	Actuator type	-	2-position, 3-position		3-position
	2133	Switching differential 2-pos	°C	0	20	2
	2134	Actuator running time	s	30	873	120
	2135	P-Band (Xp)	°C	1	100	32
	2136	Integral action time (Tn) HC1	s	10	873	120
	2150	Primary control/System pump	-	Upstream of buffer, Downstream of buffer		Downstream of buffer
Boiler	2210	Setpoint min	°C	8	95	10
	2212	Setpoint max	°C	8	120	90
	2214	Setpoint manual control	°C	8	120	80
	2233	P-Band Xp HCs	°C	1	200	20
	2234	Int action time Tn HCs	s	4	873	150
	2235	Der action time Tv HCs	s	0	30	4,5
	2236	P-Band Xp DHW	°C	1	200	34
	2237	Int action time Tn DHW	s	4	873	4
	2238	Der action time Tv DHW	s	0	30	8
	2241	Burner running time min	min	0	20	0
	2243	Burner off time min	min	0	60	5
	2245	SD burner off time	°C	0	80	THISION L: 25 R600:15
	2250	Pump overrun time	min	0	240	5
	2253	Pump overr time after DHW	min	0	20	5
	2270	Return setpoint min	°C	8	95	10
	2301	Boiler pump on heat gen lock	-	Off, On		Off
	2305	Impact heat generation lock	-	Heating mode only, Heating and DHW mode		Heating and DHW mode
	2316	Temp differential max	°C	0	80	20
	2317	Temp differential nominal	°C	0	80	10
	2320	Pump modulation	-	None, Demand, Boiler setpoint, Temp differential nominal, Burner output		Burner ouput
	2321	Starting speed	%	0	100	100
	2322	Pump speed min	%	0	100	50
	2323	Pump speed max	%	0	100	100
	2324	Speed Xp	°C	1	200	32
	2325	Speed Tn	s	10	873	120

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting	
						Thision L	R600
Boiler	2326	Speed Tv	s	0	30	10	
	2329	Pump setpoint reduction	°C	0	20	10	
	2330	Output nominal	kW	0	2000	ThL65: 65 ThL85: 85 ThL100: 100 ThL120: 120 ThL150: 150	R601: 142 R602: 190 R603: 237 R604: 285 R605: 380 R606: 475 R607: 539
	2331	Output basic stage	kW	0	2000	ThL65: 10 ThL85: 14 ThL100: 16 ThL120: 19 ThL150: 24	R601: 23 R602: 40 R603: 40 R604: 40 R605: 76 R606: 76 R607: 76
	2334	Output at pump speed min	%	0	100	0	
	2335	Output at pump speed max	%	0	100	100	
	2441	Fan speed heating max	U/min	0	10000	ThL65: 6240 ThL85: 6900 ThL100: 7500 ThL120: 8000 ThL150: 6560	R601: 6300 R602: 6230 R603: 6170 R604: 6040 R605: 6100 R606: 6100 R607: 5980
	2442	Fan speed full charging max	U/min	0	10000	See Line no. 2441	
	2444	Fan speed DHW max	U/min	0	10000	ThL65: 1660 ThL85: 1430 ThL100: 1430 ThL120: 2190 ThL150: 2190	R601: 1270 R602: 1590 R603: 1270 R604: 1650 R605: 1460 R606: 1270 R607: 1270
	2445	Fan shutdown heating mode	-	Off, On		Off	
	2446	Fan shutdown delay	s	0	200	3	
	2450	Controller delay	-	Off, Heating mode only, DHW mode only, Heating and DHW mode		Heating mode only	
	2452	Controller delay speed	U/min	0	10000	2400	
	2453	Controller delay duration	s	0	255	5	
	2470	Delay heat req special op	s	0	600	0	
	2630	Auto deaeration procedure	-	Off, On		Off	
	2655	ON time deaeration	s	0	240	60	
	2656	OFF time deaeration	s	0	240	60	
	2657	Number of repetitions	-	0	100	3	
	2662	Deaeration time heat circuit	min	0	255	3	
	2663	Deaeration time DHW	min	0	255	2	
Cascade (when activated)	3510	Lead strategy	-	Late on early off, Late on late off, Early on late off		Late on late off	
	3511	Output band min	%	0	100	40	
	3512	Output band max	%	0	100	90	
	3530	Release integral source seq	°C*min	0	500	100	
	3531	Reset integral source seq	°C*min	0	500	8	
	3532	Restart lock	s	0	1800	300	
	3533	Switch on delay	min	0	120	0	
	3534	Forced time basic stage	s	0	1200	60	
	3540	Auto source seq ch'over	h	10	990	500	
	3541	Auto source seq exclusion	-	None, First, Last, First and Last		None	
	3544	Leading source	-	1	16	Source 1	
	3560	Return setpoint min	°C	8	95	8	

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Solar	3810	Temp diff on	°C	0	40	8
	3811	Temp diff off	°C	0	40	4
	3812	Charge temp min DHW	°C	8	95	30
	3813	Temp diff on buffer	°C	0	40	8
	3814	Temp diff off buffer	°C	0	40	4
	3815	Charging temp min buffer	°C	8	95	30
	3816	Temp diff on pool	°C	0	40	8
	3817	Temp diff off pool	°C	0	40	4
	3818	Charging temp min pool	°C	8	95	30
	3822	DHW storage tank	-	None, DHW storage tank, Buffer		DHW storage tank
	3825	Charging time relative priority	min	2	60	20
	3826	Waiting time relative priority	min	1	40	5
	3827	Waiting time parallel operation	min	0	40	20
	3828	Delay secondary pump	s	0	600	60
	3830	Collector start function	min	5	60	30
	3831	Min run time collector pump	s	5	120	5
	3834	Collector start funct grad	min/°C	1	20	4
	3840	Collector frost protection	°C	-20	5	---
	3850	Collector overtemp protection	°C	30	350	80
	3860	Evaporation heat carrier	°C	60	350	110
	3870	Pump speed min	%	0	100	40
	3871	Pump speed max	%	0	100	100
	3880	Antifreeze	-	None, Ethylene glycol, Propylene glycol, Ethyl and propyl glycol		None
	3881	Antifreeze concentration	%	1	100	30
	3884	Pump capacity	l/h	10	1500	200
	3887	Pulse count yield	l	0	100	10
Solid fuel boiler	4102	Lock other heat sources	-	Off, On		On
	4110	Setpoint min	°C	8	120	60
	4130	Temp diff on	°C	1	40	8
	4131	Temp diff off	°C	0	40	4
	4133	Comparative temp	-	DHW sensor B3, DHW sensor B31, Buffer sensor B4, Buffer sensor B41, Flow temp setpoint, Setpoint min		Buffer sensor B41
	4141	Excess heat discharge	°C	60	140	90
	4170	Frost prot plant boiler pump	-	Off, On		On



# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Buffer	4720	Auto heat gen lock	-	None, With B4, With B4 and B42/B41		With B4
	4721	Auto heat gen lock SD	°C	0	20	3
	4722	Temp diff buffer/HC	°C	-20	20	-4
	4724	Min st tank temp heat mode	°C	8	95	8
	4750	Charging temp max	°C	8	95	80
	4755	Recooling temp	°C	8	95	60
	4756	Recooling DHW/HCs	-	Off, On		Off
	4757	Recooling collector	-	Off, Summer, Always		Summer
	4783	With solar integration	-	No, Yes		No
	4790	Temp diff on return div	°C	0	40	10
	4791	Temp diff off return div	°C	0	40	5
	4795	Compar temp return div	-	With B4, With B41, With B42		With B4
	4796	Optg action return diversion	-	Temperature decrease, Temp increase		Temp increase
	4800	Partial charging setpoint	°C	8	95	60
	4810	Full charging	-	Off, Heating mode, Always		Off
	4811	Full charging temp min	°C	8	80	8
	4813	Full charging sensor	-	With B4, With B42/B41		With B42/B41
DHW Storage tank	5010	Charging	-	Once/day, Several times/day		Several times/day
	5020	Flow setpoint boost	°C	0	30	16
	5021	Transfer boost	°C	0	30	8
	5022	Type of charging	-	Recharging, Full charging, Full charging legio, Full charg 1st time day, Full charg 1st time day legio		Recharging
	5024	Switching diff	°C	0	20	5
	5030	Charging time limitation	min	10	600	60
	5040	Discharging protection	-	Off, Always, Automatic		Automatic
	5050	Charging temp max	°C	8	95	70
	5055	Recooling temp	°C	8	95	70
	5056	Recooling heat gen/HCs	-	Off, On		Off
	5057	Recooling collector	-	Off, Summer, Always		Always
	5060	El imm heater optg mode	-	Substitute, Summer, Always		Substitute
	5061	El immersion heater release	-	24h/day, DHW release, Time program 4/DHW		DHW release
	5062	El immersion heater control	-	External thermostat, DHW sensor		DHW sensor
	5070	Automatic push	-	Off, On		On
	5085	Excess heat draw	-	Off, On		On

## Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
DHW storage tank	5090	With buffer	-	No, Yes		No
	5092	With prim contr/system pump	-	No, Yes		No
	5093	With solar integration	-	No, Yes		No
	5101	Pump speed min	%	0	100	40
	5102	Pump speed max	%	0	100	100
	5130	Transfer strategy	-	Off, Always, DHW release		Always
	5131	Comparison temp transfer	-	DHW sensor B3, DHW sensor B31		DHW sensor B3
DHW flow heater	5420	Flow setpoint boost	°C	0	30	16
	5444	Threshold flow detection	l/min	0,1	25,5	5
	5445	Switching diff flow detection	l/min	0,1	25,5	0,5
	5450	Gradient end cons	K/s	-2	1,984375	0,25
	5451	Grad start cons keep hot	K/s	-2	0	-1
	5452	Gradient start cons heat	K/s	-2	0	-1
	5455	Setp readj cons 40°C	°C	-20	20	0
	5456	'Setp readj cons 60°C	°C	-20	20	0
	5460	Setpoint keep hot	°C	10	60	50
	5461	Readj setp keep hot 40°C	°C	-20	20	0
	5462	Readj setp keep hot 60°C	°C	-20	20	0
	5464	Keep hot release	-	None, 24h/day, DJW release, Time program 3/HC3, Time program 4/DHW, Time program 5		DHW release
	5468	Min cons time for keep hot	s	0	60	5
	5470	Keep hot time wo heating	min	0	1440	10
	5471	Keep hot time with heating	min	0	30	5
	5472	Pump overrun time keep hot	min	0	255	20
	5473	Pump overrun time keep hot	s	0	59	0
	5475	Control sensor keep hot	-	Boiler sensor B2, Return sensor B7, DHW outlet sensor B38		Boiler sensor B2
	5482	Flow switch time cons	s	0	10	0
	5489	Overrun via inst WH	-	Off, On		On
	5530	Pump speed min	%	0	100	40
	5531	Pump speed max	%	0	100	100
	5550	Aqua booster	-	No, Yes, Wo grandient detection		No

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Configuration	5700	Presetting	-	1	4	---
	5710	Heating circuit 1	-	Off, On		On
	5715	Heating circuit 2	-	Off, On		Off
	5730	DHW sensor	-	DHW sensor B3, Thermostat, DHW outlet sensor B38		Thermostat
	5731	DHW controlling element	-	No charging request, Charging pump, Diverting valve		Charging pump
	5734	Basic pos DHW div valve	-	Last request, Heating circuit, DHW		Last request
	5736	DHW separate circuit	-	Off, On		Off
	5737	Optg action DHW div valve	-	Position On DHW, Position On HC		Position On DHW
	5738	Midposition DHW div valve	-	Off, On		Off
	5774	Ctrl boiler pump/DHW valve	-	All requests, Request HC1/DHW only		All requests
	5840	Solar controlling element	-	Charging pump, Diverting valve		Charging pump
	5841	External solar exchanger	-	Jointly, DHW storage tank, Buffer storage tank		Jointly
	5870	Combi storage tank	-	No, Yes		No
	5891	Relay output QX2	-	0: None 1: Circulating pump Q4 2: El imm heater DHW K6 3: Collector pump Q5 4: Cons circuit pump VK1 Q15 5: Boiler pump Q1 6: Bypass pump Q12 7: Alarm output K10 8: 2nd pump speed HC1 Q21 9: 2nd pump speed HC2 Q22 10: 2nd pump speed HC3 Q23 11: Heat circuit pump HC3 Q20 12: Cons circuit pump VK2 Q18 13: System pump Q14 14: Heat gen shutoff valve Y4 15: Solid fuel boiler pump Q10 16: Time program 5 K13 17: Buffer return valve Y15 18: Solar pump ext exch K9 19: Solar ctrl elem buffer K8 20: Solar ctrl elem swi pool K18 22: Swimming pool pump Q19 25: Cascade pump Q25 26: St tank transfer pump Q11 27: DHW mixing pump Q35 28: DHW interm circ pump Q33 29: Heat request K27 30: Refrigeration request K28 33: Heat circuit pump HC1 Q2 34: Heat circuit pump HC2 Q6 35: DHW ctrl elem Q3 36: Instant heater ctrl elem Q34 38: Water filling K34 39: 2nd boiler pump speed Q27 40: Status output K35 41: Status information K36 42: Flue gas damper K37 43: Fan shutdown K38		Alarm output K10
	5930	Sensor input BX1	-	0: None 1: DHW sensor B31 2: Collector sensor B6 4: DHW circulating sensor B39 5: Buffer sensor B4 6: Buffer sensor B41 7: Flue gas temp sensor B8 8: Segment flow sensor B10 9: Solid fuel boiler sensor B22 10: DHW charging sensor B36 11: Buffer sensor B42 12: Segment return sensor B73 13: Cascade return sensor B70 14: Pool sensor B13 16: Solar flow sensor B63 17: Solar return sensor B64 19: Primary exch sensor B26		None

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Configuration	5931	Sensor input BX2	-	See Line no. 5930		none
	5950	Function input H1	-	0: None 1: Optg mode change HCs+DHW 2: Optg mode changeover DHW 3: Optg mode changeover HCs 4: Optg mode changeover HC1 5: Optg mode changeover HC2 6: Optg mode changeover HC3 7: Heat generation lock 8: Error/alarm message 9: Consumer request VK1 10: Consumer request VK2 11: Release swi pool source heat 12: Excess heat discharge 13: Release swi pool solar 14: Operating level DHW 15: Operating level HC1 16: Operating level HC2 17: Operating level HC3 18: Room thermostat HC1 19: Room thermostat HC2 20: Room thermostat HC3 21: DHW flow switch 22: DHW thermostat 24: Pulse count 28: Checkb sign flue gas damper 29: Start prevention 31: Boiler flow switch 32: Boiler pressure switch 51: Consumer request VK1 10V 52: Consumer request VK2 10V 54: Pressure measurement 10V 58: Preselected output 10V		Consumer request VK1 10V
	5951	Contact type H1	-	NC, NO		NO
	5953	Voltage value 1 H1	V	0	10	2
	5954	Function value 1 H1	-	-1000	5000	100
	5955	Voltage value 2 H1	V	0	10	10
	5956	Function value 2 H1	-	-1000	5000	900
	5970	Function input H4	-	0: None 1: Optg mode change HCs+DHW 2: Optg mode changeover DHW 3: Optg mode changeover HCs 4: Optg mode changeover HC1 5: Optg mode changeover HC2 6: Optg mode changeover HC3 7: Heat generation lock 8: Error/alarm message 9: Consumer request VK1 10: Consumer request VK2 11: Release swi pool source heat 12: Excess heat discharge 13: Release swi pool solar 14: Operating level DHW 15: Operating level HC1 16: Operating level HC2 17: Operating level HC3 18: Room thermostat HC1 19: Room thermostat HC2 20: Room thermostat HC3 21: DHW flow switch 22: DHW thermostat 24: Pulse count 28: Checkb sign flue gas damper 29: Start prevention 31: Boiler flow switch 32: Boiler pressure switch 50: Flow measurement Hz		None

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Configuration	5971	Contact type H4	-	NC, NO		NO
	5973	Frequency value 1 H4	-	0	1000	0
	5974	Function value 1 H4	-	-1000	5000	0
	5975	Frequency 2 H4	-	0	1000	0
	5976	Function value 2 H4	-	-1000		0
	5977	Function input H5	-	0: None 1: Optg mode change HCs+DHW 2: Optg mode changeover DHW 3: Optg mode changeover HCs 4: Optg mode changeover HC1 5: Optg mode changeover HC2 6: Optg mode changeover HC3 7: Heat generation lock 8: Error/alarm message 9: Consumer request VK1 10: Consumer request VK2 11: Release swi pool source heat 12: Excess heat discharge 13: Release swi pool solar 14: Operating level DHW 15: Operating level HC1 16: Operating level HC2 17: Operating level HC3 18: Room thermostat HC1 19: Room thermostat HC2 20: Room thermostat HC3 21: DHW flow switch 22: DHW thermostat 24: Pulse count 28: Checkb sign flue gas damper 29: Start prevention 31: Boiler flow switch 32: Boiler pressure switch		Heat generation lock
	5978	Contact type H5	-	NC, NO		NC
	6020	Function extension module 1	-	0: None 1: Multifunctional		No function
	6021	Function extension module 2	-	2: Heating circuit 1 3: Heating circuit 2 4: Heating circuit 3		No function
	6022	Function extension module 3	-	5: Return temp controller 6: Solar DHW 7: Primary contr/system pump		No function
	6024	Funct input EX21 module 1	-	0: None 25: Limit thermostat HC		None
	6026	Funct input EX21 module 2	-			None
	6028	Funct input EX21 module 3	-			None
	6030	Relay output QX21 module 1	-	0: None 1: Circulating pump Q4 2: El imm heater DHW K6 3: Collector pump Q5 4: Cons circuit pump VK1 Q15 5: Boiler pump Q1 6: Bypass pump Q12 7: Alarm output K10 8: 2nd pump speed HC1 Q21 9: 2nd pump speed HC2 Q22 10: 2nd pump speed HC3 Q23 11: Heat circuit pump HC3 Q20 12: Cons circuit pump VK2 Q18 13: System pump Q14 14: Heat gen shutoff valve Y4 15: Solid fuel boiler pump Q10 16: Time program 5 K13 17: Buffer return valve Y15 18: Solar pump ext exch K9 19: Solar ctrl elem buffer K8 See next page for more functions		None
	6031	Relay output QX22 module 1	-			None
	6032	Relay output QX23 module 1	-			None
	6033	Relay output QX21 module 2	-			None
	6034	Relay output QX22 module 2	-			None
	6035	Relay output QX23 module 2	-			None
	6036	Relay output QX21 module 3	-			None
	6037	Relay output QX22 module 3	-			None
	6038	Relay output QX23 module 3	-			None

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Configuration	6030	Relay output QX21 module 1	-	See previous page for more functions 20: Solar ctrl elem swi pool K18 22: Swimming pool pump Q19 25: Cascade pump Q25 26: St tank transfer pump Q11 27: DHW mixing pump Q35 28: DHW interm circ pump Q33 29: Heat request K27 30: Refrigeration request K28 33: Heat circuit pump HC1 Q2 34: Heat circuit pump HC2 Q6 35: DHW ctrl elem Q3 36: Instant heater ctrl elem Q34 38: Water filling K34 39: 2nd boiler pump speed Q27 40: Status output K35 41: Status information K36 43: Fan shutdown K38		None
	6031	Relay output QX22 module 1	-			None
	6032	Relay output QX23 module 1	-			None
	6033	Relay output QX21 module 2	-			None
	6034	Relay output QX22 module 2	-			None
	6035	Relay output QX23 module 2	-			None
	6036	Relay output QX21 module 3	-			None
	6037	Relay output QX22 module 3	-			None
	6038	Relay output QX23 module 3	-			None
	6040	Sensor input BX21 module 1	-	0: None 1: DHW sensor B31 2: Collector sensor B6 4: DHW circulating sensor B39 5: Buffer sensor B4 6: Buffer sensor B41 7: Flue gas temp sensor B8 8: Segment flow sensor B10 9: Solid fuel boiler sensor B22 10: DHW charging sensor B36 11: Buffer sensor B42 12: Segment return sensor B73 13: Cascade return sensor B70		None
	6041	Sensor input BX22 module 1	-			None
	6042	Sensor input BX21 module 2	-			None
	6043	Sensor input BX22 module 2	-			None
	6044	Sensor input BX21 module 3	-			None
	6045	Sensor input BX22 module 3	-			None
	6046	Function input H2 module 1	-	0: None 1: DHW sensor B31 2: Collector sensor B6 4: DHW circulating sensor B39 5: Buffer sensor B4 6: Buffer sensor B41 7: Flue gas temp sensor B8 8: Segment flow sensor B10 9: Solid fuel boiler sensor B22 10: DHW charging sensor B36 11: Buffer sensor B42 12: Segment return sensor B73 13: Cascade return sensor B70 14: Pool sensor B13 16: Solar flow sensor B63 17: Solar return sensor B64 19: Primary exch sensor B26		None
	6054	Function input H2 module 2	-			None
	6062	Function input H2 module 3	-			None
	6047	Contact type H2 module 1	-	NC, NO		NO
	6055	Contact type H2 module 2	-			NO
	6063	Contact type H2 module 3	-			NO
	6049	Voltage value 1 H2 module 1	V	0	10	0
	6057	Voltage value 1 H2 module 2	V			0
	6065	Voltage value 1 H2 module 3	V			0
	6050	Function value 1 H2 module 1	-	-1000	5000	0
	6058	Function value 1 H2 module 2	-			0
	6066	Function value 1 H2 module 3	-			0

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Configuration	6051	Voltage value 2 H2 module 1	V	0	10	0
	6059	Voltage value 2 H2 module 2	V			0
	6067	Voltage value 2 H2 module 3	V			0
	6052	Function value 2 H2 module 1	-	-1000	5000	0
	6060	Function value 2 H2 module 2	-			0
	6068	Function value 2 H2 module 3	-			0
	6097	Sensor type collector	-	NTC, PT 1000		NTC
	6098	Readjustm collector sensor	°C	-20	20	0
	6100	Readjustm outside sensor	°C	-3	3	0
	6110	Time constant building	h	0	50	5
	6117	Central setpoint shift	°C	1	100	5
	6118	Setpoint reduction delay	K/min	1	200	20
	6120	Frost protection plant	-	Off, On		On
	6200	Save sensors	-	No, Yes		No
	6205	Reset to default parameters	-	No, Yes		No
	6212	Check nr heat source 1	-	0	199999	0
	6213	Check nr heat source 2	-	0	199999	0
	6215	Check nr storage tank	-	0	199999	0
	6217	Check nr heating circuits	-	0	199999	0
	6220	Software version	-	0	99	0
LPB	6600	Device address	-	0	239	1
	6601	Segment address	-	0	16	0
	6604	Bus power supply function	-	Off, Automatically		Automatically
	6605	Bus power supply state	-	Off, On		On
	6610	Display system messages	-	No, Yes		No
	6620	Action changeover functions	-	Segment, System		Segment
	6621	Summer changeover	-	Locally, Centrally		Locally
	6623	Optg mode changeover	-	Locally, Centrally		Locally
	6624	Manual source lock	-	Locally, Segment		Locally
	6625	DHW assignment	-	Local HCs, All HCs in segment, All HCs in system		All HCs in system
	6632	Note OT limit ext source	-	No, Yes		No
	6640	Clock mode	-	Autonomously, Slave without remote setting, Slave with remote setting, Master		Autonomously
	6650	Outside temp source	-	0	239	0

## Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Fault	6700	Message	-	0	65535	0
	6705	SW diagnostic code	-	0	65535	0
	6706	Burn ctrl phase lockout pos	-	0	255	0
	6710	Reset alarm relay	-	0	1	0
	6740	Flow temp 1 alarm	min	10	240	---
	6741	Flow temp 2 alarm	min			---
	6742	Flow temp 3 alarm	min			---
	6743	Boiler temp alarm	min	10	240	---
	6745	DHW charging alarm	h	1	48	---
	6800	History 1	h:m	00:00	23:59	04
	6803	Error code 1	-	0	9999	0
	6805	SW diagnostic code 1	-	0	9999	0
	6806	Burner control phase 1	-	0	255	0
	6810	History 2	h:m	00:00	23:59	04
	6813	Error code 2	-	0	9999	0
	6815	SW diagnostic code 2	-	0	9999	0
	6816	Burner control phase 2	-	0	255	0
	6820	History 3	h:m	00:00	23:59	04
	6823	Error code 3	-	0	9999	0
	6825	SW diagnostic code 3	-	0	9999	0
	6826	Burner control phase 3	-	0	255	0
	6830	History 4	h:m	00:00	23:59	04
	6833	Error code 4	-	0	9999	0
	6835	SW diagnostic code 4	-	0	9999	0
	6836	Burner control phase 4	-	0	255	0
	6840	History 5	h:m	00:00	23:59	04
	6843	Error code 5	-	0	9999	0
	6845	SW diagnostic code 5	-	0	9999	0
	6846	Burner control phase 5	-	0	255	0
	6850	History 6	h:m	00:00	23:59	04
	6853	Error code 6	-	0	9999	0
	6855	SW diagnostic code 6	-	0	9999	0
	6856	Burner control phase 6	-	0	255	0
	6860	History 7	h:m	00:00	23:59	04
	6863	Error code 7	-	0	9999	0
	6865	SW diagnostic code 7	-	0	9999	0
	6866	Burner control phase 7	-	0	255	0



## Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Fault	6870	History 8	h:m	00:00	23:59	04
	6873	Error code 8	-	0	9999	0
	6875	SW diagnostic code 8	-	0	9999	0
	6876	Burner control phase 8	-	0	255	0
	6880	History 9	h:m	00:00	23:59	04
	6883	Error code 9	-	0	9999	0
	6885	SW diagnostic code 9	-	0	9999	0
	6886	Burner control phase 9	-	0	255	0
	6890	History 10	h:m	00:00	23:59	04
	6893	Error code 10	-	0	9999	0
	6895	SW diagnostic code 10	-	0	9999	0
	6896	Burner control phase 10	-	0	255	0
	6900	History 11	h:m	00:00	23:59	04
	6903	Error code 11	-	0	9999	0
	6905	SW diagnostic code 11	-	0	9999	0
	6906	Burner control phase 11	-	0	255	0
	6910	History 12	h:m	00:00	23:59	04
	6913	Error code 12	-	0	9999	0
	6915	SW diagnostic code 12	-	0	9999	0
	6916	Burner control phase 12	-	0	255	0
	6920	History 13	h:m	00:00	23:59	04
	6923	Error code 13	-	0	9999	0
	6925	SW diagnostic code 13	-	0	9999	0
	6926	Burner control phase 13	-	0	255	0
	6930	History 14	h:m	00:00	23:59	04
	6933	Error code 14	-	0	9999	0
	6935	SW diagnostic code 14	-	0	9999	0
	6936	Burner control phase 14	-	0	255	0
	6940	History 15	h:m	00:00	23:59	04
	6943	Error code 15	-	0	9999	0
	6945	SW diagnostic code 15	-	0	9999	0
	6946	Burner control phase 15	-	0	255	0
	6950	History 16	h:m	00:00	23:59	04
	6953	Error code 16	-	0	9999	0
	6955	SW diagnostic code 16	-	0	9999	0
	6956	Burner control phase 16				

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Fault	6960	History 17	h:m	00:00	23:59	04
	6963	Error code 17	-	0	9999	0
	6965	SW diagnostic code 17	-	0	9999	0
	6966	Burner control phase 17	-	0	255	0
	6970	History 18	h:m	00:00	23:59	04
	6973	Error code 18	-	0	9999	0
	6975	SW diagnostic code 18	-	0	9999	0
	6976	Burner control phase 18	-	0	255	0
	6980	History 19	h:m	00:00	23:59	04
	6983	Error code 19	-	0	9999	0
	6985	SW diagnostic code 19	-	0	9999	0
	6986	Burner control phase 19	-	0	255	0
	6990	History 20	h:m	00:00	23:59	04
	6993	Error code 20	-	0	9999	0
	6995	SW diagnostic code 20	-	0	9999	0
	6996	Burner control phase 20	-	0	255	0
Service/Special operation	7040	Burner hours interval	h	100	10000	---
	7041	Burn hrs since maintenance	h	0	10000	0
	7042	Burner start interval	-	100	65500	---
	7043	Burn starts since maint	-	0	65535	0
	7044	Maintenance interval	Months	1	240	---
	7045	Time since maintenance	Months	0	240	0
	7050	Fan speed ionization current	rpm	0	10000	0
	7051	Message ionization current	-	No, Yes		No
	7130	Chimney sweep function	-	Off, On		Off
	7131	Burner output	-	Partial load, Full load, Max heating load		Full load
	7140	Manual control	-	Off, On		Off
	7143	Controller stop function	-	Off, On		Off
	7145	Controller stop setpoint	%	0	100	50
	7146	Deaeration function	-	Off, On		Off
	7147	Type of venting	-	None, Heating circuit continuous, Heating circuit cycled, DHW continuous, DHW cycled		Keine
	7170	Telephone customer service	-	0	9	0
	7250	PStick storage pos	-	0	250	0
	7251	PStick data description	-	0	255	0
	7252	PStick command	-	No operation, Reading from stick, Writing on stick		No operation
	7253	PStick progress	%	0	100	0

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Service/Special operation	7254	PStick status	-	No stick No operation Writing on stick Reading from stick EMC test active Writing error Reading error Incompatible data set Wrong stick type Stick format error Check data set Data set disabled Reading disabled		No stick
Input/Output Test	7700	Relay test	-	No test Everything off Relay output QX1 Relay output QX2 Relay output QX3 Relay output QX4 Relay output QX21 module 1 Relay output QX22 module 1 Relay output QX23 module 1 Relay output QX21 module 2 Relay output QX22 module 2 Relay output QX23 module 2 Relay output QX21 module 3 Relay output QX22 module 3 Relay output QX23 module 3		No test
	7713	Output test P1	%	0	100	---
	7714	PWM output P1	%	0	100	0
	7730	Outside temp B9	°C	-50	50	0
	7750	DHW temp B3/B38	°C	0	140	0
	7760	Boiler temp B2	°C	0	140	0
	7820	Sensor temp BX1	°C	-28	350	0
	7821	Sensor temp BX2	°C	-28	350	0
	7822	Sensor temp BX3	°C	-28	350	0
	7823	Sensor temp BX4	°C	-28	350	0
	7830	Sensor temp BX21 module 1	°C	-28	350	0
	7831	Sensor temp BX22 module 1	°C	-28	350	0
	7832	Sensor temp BX21 module 2	°C	-28	350	0
	7833	Sensor temp BX22 module 2	°C	-28	350	0
	7834	Sensor temp BX21 module 3	°C	-28	350	0
	7835	Sensor temp BX22 module 3	°C	-28	350	0
	7840	Voltage signal H1	V	0	10	0
	7841	Contact state H1	-	Open, Closed		Open
	7845	Voltage signal H2 module 1	V	0	10	0
	7846	Contact state H2 module 1	-	Open, Closed		Open
	7848	Voltage signal H2 module 2	V	0	10	0
	7849	Contact state H2 module 2	-	Open, Closed		Open
	7851	Voltage signal H2 module 3	V	0	10	0
	7852	Contact state H2 module 3	-	Open, Closed		Open
	7854	Voltage signal H3	V	0	10	0
	7855	Contact state H3	-	Open, Closed		Open

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Input/Output Test	7862	Frequency H4	-	0	2000	0
	7860	Contact state H4	-	Open, Closed		Open
	7865	Contact state H5	-	Open, Closed		Open
	7872	Contact state H6	-	Open, Closed		Open
	7874	Contact state H7	-	Open, Closed		Open
	7950	Input EX21 module 1	-	0V, 230V		0V
	7951	Input EX21 module 2	-	0V, 230V		0V
	7952	Input EX21 module 3	-	0V, 230V		0V
State	8000	State heating circuit 1	-	0: --- 1: SLT tripped ..... 254: Value 550; 254 255: Value 550; 255		---
	8001	State heating circuit 2	-			---
	8002	State heating circuit 3	-			---
	8003	State DHW	-			---
	8005	State boiler	-			---
	8007	State solar	-			---
	8008	State solid fuel boiler	-			---
	8009	State burner	-			---
	8010	State buffer	-			---
	8011	State swimming pool	-			---
Diagnostics cascade (when activated)	8100	Priority source 1	-	0	16	Indication only
	8101	State source 1	-	Missing Faulty Manual control active Heat generation lock active Chimney sweep funct active Temporarily unavailable Outside temp limit active Not released Released		
	8102	Priority source 2	-	0	16	
	8103	State source 2	-	See Line no. 8101		
	8104	Priority source 3	-	0	16	
	8105	State source 3	-	See Line no. 8101		
	8106	Priority source 4	-	0	16	
	8107	State source 4	-	See Line no. 8101		
	8108	Priority source 5	-	0	16	
	8109	State source 5	-	See Line no. 8101		
	8110	Priority source 6	-	0	16	
	8111	State source 6	-	See Line no. 8101		
	8112	Priority source 7	-	0	16	
	8113	State source 7	-	See Line no. 8101		
	8114	Priority source 8	-	0	16	
	8115	State source 8	-	See Line no. 8101		
	8116	Priority source 9	-	0	16	
	8117	State source 9	-	See Line no. 8101		
	8118	Priority source 10	-	0	16	
	8119	State source 10	-	See Line no. 8101		
	8120	Priority source 11	-	0	16	
	8121	State source 11	-	See Line no. 8101		
	8122	Priority source 12	-	0	16	
	8123	State source 12	-	See Line no. 8101		
	8124	Priority source 13	-	0	16	
	8125	State source 13	-	See Line no. 8101		

# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Diagnostics Cascade	8126	Priority source 14	-	0	16	Indication only
	8127	State source 14	-	See Line no. 8101		
	8128	Priority source 15	-	0	16	
	8129	State source 15	-	See Line no. 8101		
	8130	Priority source 16	-	0	16	
	8131	State source 16	-	See Line no. 8101		
	8138	Cascade flow temp	°C	0	140	
	8139	Cascade flow temp setpoint	°C	0	140	
	8140	Cascade return temp	°C	0	140	
	8141	Cascade return temp setpoint	°C	0	140	
	8150	Source seq ch'over current	h	0	990	
Diagnostics heat generation	8304	Boiler pump Q1	-	Off, On		Indication only
	8308	Boiler pump speed	%	0	100	
	8310	Boiler temp	°C	0	140	
	8311	Boiler setpoint	°C	0	140	
	8312	Boiler switching point	°C	0	140	
	8313	Inst heater switching point	°C	0	140	
	8314	Boiler return temp	°C	0	140	
	8316	Flue gas temp	°C	0	350	
	8318	Flue gas temp max	°C	0	350	
	8321	Primary exchanger temp	°C	0	140	
	8323	Fan speed	rpm	0	8000	
	8324	Setpoint fan	rpm	0	8000	
	8325	Current fan control	%	0	100	
	8326	Burner modulation	%	0	100	
	8327	Water pressure	-	0	10	
	8329	Ionization current	µA	0	100	
	8330	Hours run 1st stage	h	00:00:00	2730:15:00	
	8331	Start counter 1st stage	-	0	2147483647	
	8338	Hours run heating mode	h	00:00:00	8333:07:00	
	8339	Hours run DHW	h	00:00:00	8333:07:00	
	8390	Current phase number	-	0: Value 777; 0 1: TNB ..... 254: Wert 777; 254 255: Wert 777; 255		
	8499	Collector pump 1	-	Off, On		
	8501	Solar ctrl element buffer	-	Off, On		
	8502	Solar ctrl elem swimming pool	-	Off, On		
	8505	Speed collector pump 1	%	0	100	
	8506	Speed solar pump ext exch	%	0	100	

## Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Diagnostics heat generation	8507	Speed solar pump buffer	%	0	100	Indication only
	8508	Speed solar pump swi pool	%	0	100	
	8510	Collector temp 1	°C	-28	350	
	8511	Collector temp 1 max	°C	-28	350	
	8512	Collector temp 1 min	°C	-28	350	
	8513	dT collector 1/DHW	°C	-168	350	
	8514	dT collector 1/buffer	°C	-168	350	
	8515	dT collector 1/swimming pool	°C	-168	350	
	8519	Solar flow temp	°C	-28	350	
	8520	Solar return temp	°C	-28	350	
	8526	24-hour yield solar energy	kWh	0	999,9	
	8527	Total yield solar energy	kWh	0	9999999,9	
	8530	Hours run solar yield	h	00:00:00	8333:07:00	
	8531	Hours run collect overtemp	h	00:00:00	8333:07:00	
	8532	Hours run collector pump	h	00:00:00	8333:07:00	
	8560	Solid fuel boiler temp	°C	0	140	
	8570	Hours run solid fuel boiler	h	00:00:00	8333:07:00	
Diagnostics consumers	8700	Outside temp	°C	-50	50	Indication only
	8701	Outside temp min	°C	-50	50	
	8702	Outside temp max	°C	-50	50	
	8703	Outside temp attenuated	°C	-50	50	
	8704	Outside temp composite	°C	-50	50	
	8730	Heating circuit pump 1	-	Off, On		
	8731	Heat circ mix valve 1 open	-	Off, On		
	8732	Heat circ mix valve 1 close	-	Off, On		
	8735	Speed heating circuit pump 1	%	0	100	
	8740	Room temp 1	°C	0	50	
	8741	Room setpoint 1	°C	4	35	
	8743	Flow temp 1	°C	0	140	
	8744	Flow temp setpoint 1	°C	0	140	
	8749	Room thermostat 1	-	No demand, demand		
	8760	Heating circuit pump 2	-	Off, On		
	8761	Heat circ mix valve 2 open	-	Off, On		
	8762	Heat circ mix valve 2 close	-	Off, On		
	8765	Speed heating circuit pump 2	%	0	100	
	8770	Room temp 2	°C	0	50	

## Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Diagnostics consumers	8771	Room setpoint 2	°C	4	35	Indication only
	8773	Flow temp 2	°C	0	140	
	8774	Flow temp setpoint 2	°C	0	140	
	8779	Room thermostat 2	-	No demand, demand		
	8790	Heating circuit pump 3	-	Off, On		
	8791	Heat circ mix valve 3 open	-	Off, On		
	8792	Heat circ mix valve 3 close	-	Off, On		
	8795	Speed heating circuit pump 3	%	0	100	
	8800	Room temp 3	°C	0	50	
	8801	Room setpoint 3	°C	4	35	
	8803	Flow temp 3	°C	0	140	
	8804	Flow temp setpoint 3	°C	0	140	
	8809	Room thermostat 3	-	No demand, demand		
	8820	DHW pump	-	Off, On		
	8825	Speed DHW pump	%	0	100	
	8826	Speed DHW interm circ pump	%	0	100	
	8827	Speed inst DHW heater pump	%	0	100	
	8830	DHW temp 1	°C	0	140	
	8831	DHW temp setpoint	°C	8	80	
	8832	DHW temp 2	°C	0	140	
	8835	DHW circulation temp	°C	0	140	
	8836	DHW charging temp	°C	0	140	
	8852	DHW consumption temp	°C	0	140	
	8853	Instant WH setpoint	°C	0	140	
	8860	DHW flow	l/min	0	30	
	8875	Flow temp setpoint VK1	°C	5	130	
	8885	Flow temp setpoint VK2	°C	5	130	
	8895	Flow temp setpoint VK3	°C	5	130	
	8900	Swimming pool temp	°C	0	140	
	8901	Swimming pool setpoint	°C	8	80	
	8930	Primary controller temp	°C	0	140	
	8931	Primary controller setpoint	°C	0	140	
	8950	Common flow temp	°C	0	140	
	8951	Common flow temp setpoint	°C	0	140	
	8952	Common return temp	°C	0	140	

## Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting
Diagnostics consumers	8962	Common output setpoint	%	0	100	Indication only
	8980	Buffer temp 1	°C	0	140	
	8981	Buffer setpoint	°C	0	140	
	8982	Buffer temp 2	°C	0	140	
	8983	Buffer temp 3	°C	0	140	
	9005	Water pressure H1	bar	0	10	
	9006	Water pressure H2	bar	0	10	
	9009	Water pressure H3	bar	0	10	
	9031	Relay output QX1	-	Off, On		
	9032	Relay output QX2	-	Off, On		
	9033	Relay output QX3	-	Off, On		
	9034	Relay output QX4	-	Off, On		
	9050	Relay output QX21 module 1	-	Off, On		
	9051	Relay output QX22 module 1	-	Off, On		
	9052	Relay output QX23 module 1	-	Off, On		
	9053	Relay output QX21 module 2	-	Off, On		
	9054	Relay output QX22 module 2	-	Off, On		
	9055	Relay output QX23 module 2	-	Off, On		
	9056	Relay output QX21 module 3	-	Off, On		
	9057	Relay output QX22 module 3	-	Off, On		
	9058	Relay output QX23 module 3	-	Off, On		
-	2nd speed HC1 pump Q21	-	Off, On		Indication only	
-	Optg mode changeover HC1	-	Inactive, Active			
-	2nd speed HC2 pump Q22	-	Off, On			
-	Optg mode changeover HC2	-	Inactive, Active			
-	2nd speed HC2 pump Q23	-	Off, On			
-	Optg mode changeover HC3	-	Inactive, Active			
-	EI imm heater K6	-	Off, On			
-	Circulating pump Q4	-	Off, On			
-	Optg mode changeover DHW	-	Inactive, Active			
-	H1 pump Q15	-	Off, On			
-	H2 pump Q18	-	Off, On			
-	H3 pump Q19	-	Off, On			
-	Prim contr/system pump Q14	-	Off, On			



# Parameters professional installer

Menu	Line no.	Operating line	Unit	Min.	Max	Factory setting	
						Thision L	R600
Diagnostics consumers	-	Precontroller mixing valve opens Y19	-	Off, On		Indication only	
	-	Precontroller mixing valve closes Y20	-	Off, On			
	-	Heat generation lock Y4	-	Off, On			
	-	Time switch program 5 relais K13	-	Off, On			
	-	Return temp valve Y15	-	Off, On			
	-	Heat demand K27	-	Off, On			
	-	Instantaneous heater pump Q34	-	Off, On			
	-	Storage transfer pump Q11	-	Off, On			
	-	DHW stirring pump Q35	-	Off, On			
	-	DHW intermediate circuit pump Q33	-	Off, On			
	-	Flowswitch	-	Off, On			
Burner control	9500	Prepurge time	s	0	51	10	15
	9512	Required speed ignition	rpm		10000	ThL65: 2800 ThL85: 3100 ThL100: 3380 ThL120: 3600 ThL150: 2950	2500
	9524	Required speed LF	rpm	0	10000	ThL65: 1660 ThL85: 1430 ThL100: 1430 ThL120: 2190 ThL150: 2000	R601: 1270 R602: 1590 R603: 1270 R604: 1650 R605: 1460 R606: 1080 R607: 1020
	9529	Required speed HF	rpm	0	10000	ThL65: 6010 ThL85: 6900 ThL100: 7500 ThL120: 7750 ThL150: 6560	R601: 5150 R602: 6300 R603: 6170 R604: 6040 R605: 6100 R606: 6100 R607: 5980
	9540	Postpurge time	s	0	51	30	7
	9615	Forced prepurging on error	-	Off, On		On	
	9650	Chimney drying	-	Off, Temporarily, Permanently		Temporarily	Off

# Info menu

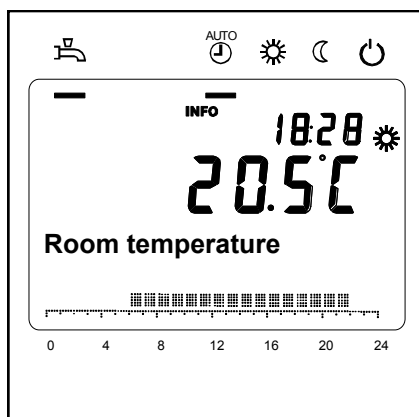
## Manual control

## Chimney sweeper function

## Controller stop function

### Display of information

Various data can be displayed by pressing the info button.



### Possible info

Depending on the type of unit, the configuration and operating state, some of the info lines listed below may not appear.

- Error message
- Maintenance message
- Room temperature
- Room temperature minimum
- Room temperature maximum
- Boiler temperature
- Outside temperature
- Outside temperature minimum
- Outside temperature maximum
- DHW temperature
- State of Boiler
- State of DHW
- State of HC1/2
- Time / Date
- Telephone customer service

### Manual control

When manual control is activated, the relays are no longer energized and deenergized according to the control status but are set to a predefined manual control status in accordance with their functions.

Boiler, Heating circuit, Transport and DHW pump are switched ON, Buffer pump is OFF.  
The heating circuit mixer on the AVS75 controls to half of average value.

### Setpoint adjustment in manual operation

After manual operation has been activated, a change to the basic display must be made where the service / special mode symbol appears.

The setpoint for manual control can be adjusted in the Boiler menu on parameter 2214.

### Chimney sweep function

To start the chimney sweep function, press the button for a moment (<3 seconds). This function produces the operating state required to make emission measurements (flue gas).

### Controller stop function

To start the chimney sweep function, hold the operation mode button for >3 seconds).

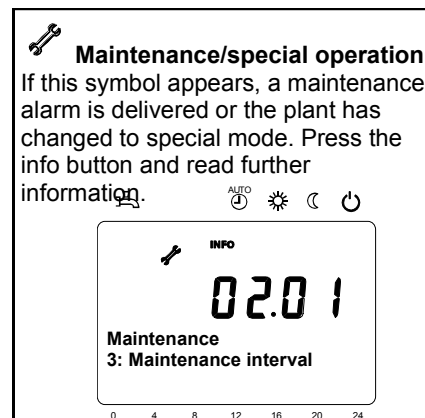
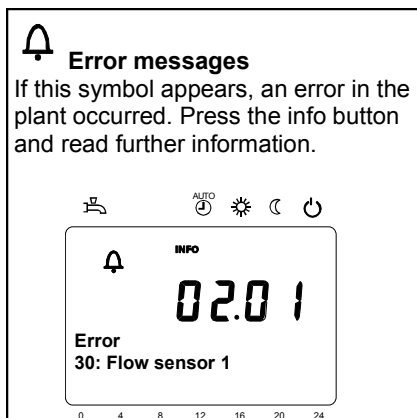
The controller stop function sets the burner to a fixed modulation. This function can be used to make emission measurements (flue gas).

To deactivate the function hold the operation mode button for >3 seconds.

# Error messages / Maintenance

## Error / Maintenance messages

In exceptional cases, the basic display shows one of the following symbols.



## List of display

### Error codes

Error code	Error description
0	No error
10	Outside temperature sensor error
20	Boiler temperature 1 sensor error
26	Common flow temperature sensor error
28	Flue gas temperature sensor error
30	Flow temperature 1 sensor error
32	Flow temperature 2 sensor error
38	Flow temperature primary controller sensor error
40	Return temperature 1 sensor error
46	Return temperature cascade sensor error
47	Common return temperature sensor error
50	DHW temperature 1 sensor error
52	DHW temperature 2 sensor error
54	DHW primary controller sensor error
57	DHW circulation temperature sensor error
60	Room temperature 1 sensor error
65	Room temperature 2 sensor error
70	Buffer storage tank temperature 1 sensor error
71	Buffer storage tank temperature 2 sensor error
72	Buffer storage tank temperature 3 sensor error
73	Collector temperature 1 sensor error
74	Collector temperature 2 sensor error
82	LPB address collision
83	BSB wire short-circuit
84	BSB address collision
85	BSB RF communication error
91	EEPROM error lockout information
98	Extension module 1 error (collective error)
99	Extension module 2 error (collective error)
100	2 clocktime masters (LPB)

## Error messages / Maintenance

### List of display

### Error codes

Error code	Error description
102	Clocktime master without reserve (LPB)
103	Communication error
105	Maintenance message
109	Boiler temperature supervision
110	STB lockout
111	TW cutout
121	Flow temperature 1 (HC1) supervision
122	Flow temperature 2 (HC2) supervision
125	Pump supervision error
126	DHW charging supervision
127	Legionella temperature not reached
128	Loss of flame during operation
129	Fan error or LP error
130	Flue gas temperature limit exceeded
131	Burner fault
132	GP or LP error
133	No flame during safety time
146	Configuration error collective message
151	Internal error
152	Parameterization error
153	Unit manually locked
160	Fan error
162	LP error, does not close
164	Error heating circuit flow switch
166	LP error, does not open
171	Alarm contact H1 or H4 active
172	Alarm contact H2 (EM1, EM2 or EM3) or H5 active
173	Alarm contact H6 active
174	Alarm contact H3 or H7 active
178	Limit thermostat heating circuit 1
179	Limit thermostat heating circuit 2
183	Unit in parameterization mode
193	Pump supervision error after flame on
216	Fault boiler
217	Fault sensor
241	Flow sensor solar sensor error
242	Return sensor solar sensor error
243	Swimming pool temperature sensor error
270	Limit function
317	Mains frequency outside permissible range
320	DHW charging temperature sensor error
324	BX same sensors
325	BX / extension module same sensors
326	BX / mixing group same sensors
327	Extension module same function
328	Mixing group same finction
329	Extension module / mixing group same function

## Error messages / Maintenance

### List of display

### Error codes

Error code	Error description
330	Sensor BX1 no function
331	Sensor BX2 no function
332	Sensor BX3 no function
333	Sensor BX4 no function
334	Sensor BX5 no function
335	Sensor BX21 no function (EM1, EM2 or EM3)
336	Sensor BX22 no function (EM1, EM2 or EM3)
337	Sensor BX1 no function
338	Sensor BX12 no function
339	Collector pump Q5 not available
340	Collector pump Q16 not available
341	Solar Collector sensor B6 not available
342	DHW sensor B31 not available
343	Solar integration not available
344	Solar controlling element buffer K8 not available
345	Solar ctrl element swimming pool K18 not available
346	Solid fuel boiler pump Q10 not available
347	Solid fuel boiler comparison sensor not available
348	Solid fuel boiler address error
349	Buffer return valve Y15 not available
350	Puffer address sensor
351	Primary controller / system pump address error
352	Pressureless header address error
353	Common flow sensor B10 not available
371	Flow temperature 3 (heating circuit 3) supervision
372	Limit thermostat heating circuit 3
373	Extension module 3 error (collective error)
349	Buffer return valve Y15 not available
350	Puffer address sensor
351	Primary controller / system pump address error
352	Pressureless header address error
353	Common flow sensor B10 not available
371	Flow temperature 3 (heating circuit 3) supervision
372	Limit thermostat heating circuit 3
373	Extension module 3 error (collective error)
386	Fan speed has lost valid range
388	DHW error no function
426	Feedback flue gas damper
427	Configuration flue gas damper
431	Sensor primary heat exchanger
432	Functional earth not connected
433	Temperature primary heat exchanger to high

### Maintenance codes

Maintenance code	Maintenance description
1	Burner hours run exceeded
2	Burner starts exceeded
3	Maintenance interval exceeded

# Detailed settings

## Menu: time of day and date

### Time of day and date

The controller has a yearly clock with time of day, weekday and date. To ensure the controller's functionality, both the time of day and the date must be correctly set.

### Summer- / wintertime changeover

The dates set for the changeover from wintertime to summertime, and vice versa, ensure that on the first Sunday after the set date the time of day will change from 02:00 (wintertime) to 03:00 (summertime), and from 03:00 (summertime) to 02:00 (wintertime).

Line no.	Operating line	Factory setting
1	Hours / minutes	
2	Day / month	
3	Year	
5	Start of summer time	25.03.
6	End of summer time	25.10.

## Menu: Operator section

### Operation and display

#### Language

Available languages vary depending on country and version.

#### Info

##### Temporarily:

After pressing the Info-button the Info display will appear. After 8 min. the basic display will reappear.

##### Permanently:

After activation the Info display will be shown permanently.

#### Operation lock

When operation lock is activated, the following operating elements can no longer be adjusted:

- Heating circuit operating mode
- DHW operating mode
- Room comfort setpoint (setting knob)
- Presence button

#### Programming lock

When programming lock is activated, parameter values can still be displayed, but can no longer be changed.

- Temporary deactivation of the programming lock  
Within the programming level, the programming lock can temporarily be overridden. To do this, press the OK and ESC buttons simultaneously for 3 seconds. Temporary deactivation of the programming lock is maintained until programming is quit.

- Constant deactivation of programming lock  
First, make the temporary deactivation, then go to operating line 27 *Programming lock* and deactivate the programming lock.

#### Direct adjustment

##### Automatic storage:

Altered values are stored without confirming with the OK-button.

Line no.	Operating line	Factory setting
20	Language	English
22	Info Temporarily Permanently	Temporarily
26	Operation lock	OFF
27	Programming lock	OFF
28	Direct adjustment	Storage with confirmation
44	Operation HC2 Jointly with HC1 Independently	Jointly with HC1
46	Operation HC3/P Jointly with HC1 Independently	Jointly with HC1
70	Software Version	Indication only

#### Storage with confirmation:

Altered values are only stored after confirmation with the OK-button.

#### Operation HC2

Depending on operation line 40, the action of operation (operating mode button or rotary knob) on room unit 1, on the operator unit or service unit can be defined for HC2.

#### Jointly with HC1:

Operation acts commonly on HC1 and 2.

#### Independently:

The action of operation is queried on the display as soon as the operating mode button is pressed or the rotary knob is operated.

#### Operation HC3/P

Depending on operation line 40, the action of operation (operating mode button or rotary knob) on room unit 1, on the operator unit or service unit can be defined for HC3/P.

#### Jointly with HC1:

Operation acts commonly on HC1 and 2.

#### Independently:

The action of operation is queried on the display as soon as the operating mode button is pressed or the rotary knob is operated

#### Software version

The display shows the current version of the operator/room unit.

## Menu: Time programs

### Menu: Holiday

For the heating circuits and for DHW heating, a number of switching programs are available. They are activated in *Automatic* operation and control the change of the temperature levels (and the associated setpoints) via the selected switching times.

#### Entering the switching times

The switching times can be set in a combined way, that is, either jointly for several days or in the form of separate times for individual days. When preselecting groups of days like for instance Mo...Fr and Sa...Su that use the same switching times, the setting of switching programs is simplified.

#### Switching points

Line no.					Operating line	Factory setting
HC1	HC2	3/HC3	4/DHW	5		
500	520	540	560	600	Preselection Mo - Su Mo - Fr Sa - Su Mo - Su	Mo - Su
501	521	541	561	601	1. phase on	6 : 00
502	522	542	562	602	1. phase off	22 : 00
503	523	543	563	603	2. phase on	-- : --
504	524	544	564	604	2. phase off	-- : --
505	525	545	565	605	3. phase on	-- : --
506	526	546	566	606	3. phase off	-- : --

#### Standard program

All time programs can be reset to their default setting. Each time program has its own operating line to make this reset.

Line no.					Operating line	Factory setting
HC1	HC2	3/HC3	4/DHW	5		
516	536	556	576	616	Default values	No

Note: In that case, individual setting will be lost!

#### Holiday

The holiday program allows switching the operating level of the HCs according to date. On the last day heating is still deactivated. On the following day heating to comfort setpoint will commence according to the time program.

Line no.		Operating line	Factory setting
HC1	HC2		
641	651	Preselection Period 1, 2, 3, 4, 5, 6, 7, 8	period 1
642	652	start	-- : --
643	653	end	-- : --
648	658	Operating level Frost protection Reduced	Frost protection

The holiday program can only be used in automatic mode.



## Menu: Heating circuits

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For heating circuits, there are various functions available which can be individually set for each heating circuit.

### Operating mode HCs

The operating modes of heating circuits are selected directly with the operating mode button. This setting is used to switch between different operating modes. Functionality corresponds to the operating mode selection via the operating mode button.

#### Protection

Continuous operation (24 hours) at the frost protection level. Switching program, occupancy button, holiday program, optimum start / stop control and ECO program have no impact. Control to room temperature frost protection can be deactivated. This may become necessary if a room thermostat is used for activating the boiler pump. In that case, it is only the room thermostat that prevents the room temperature from dropping. It should be considered however that when the flow temperature drops, the limit thermostat might cut out. The limit thermostat's cut-out temperature is 0 °C. This means that cutout must be prevented by appropriate setting of the room thermostat.

#### Automatic

Automatic operation at the Comfort, reduced or frost protection level in accordance with the switching program, the occupancy button, the holiday program, optimum start / stop control and the ECO function.

Line no.		Operating line	Factory setting
HC1	HC2		
700	1000	Operating mode HC Protection Automatic Reduced Comfort	Automatic

#### Reduced

Continuous operation (24 hours) at the reduced level. Switching program, occupancy button, holiday program, optimum start / stop control and ECO program have no impact. The protective functions will remain active.

#### Comfort

Continuous operation (24 hours) at the Comfort level. Switching program, occupancy button, holiday program, optimum start / stop control and ECO program have no impact. The protective functions will remain active.

## Menu: Heating circuits

For heating circuits, there are various functions available which can be individually set for each heating circuit.

### Room setpoint

#### Room temperature

The room temperature can be shifted according to different setpoints. These setpoints become active depending on the selected operating mode, thus producing different temperature levels in the rooms. The ranges of adjustable setpoints result from the interdependencies, as this is shown in the following diagram.

#### Frost protection

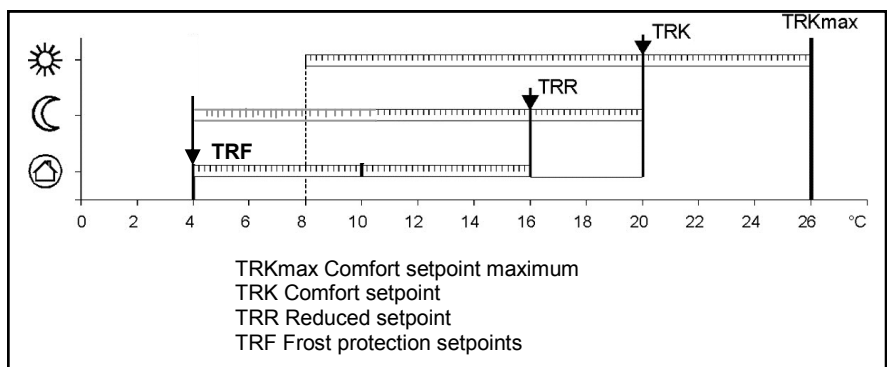
In protection mode, the room temperature is prevented from falling below a certain level. This means that the frost protection setpoint of the room temperature will be maintained.

#### Heating curve

The heating curve is used to generate the flow temperature setpoint, which is used to maintain a certain flow temperature level depending on the prevailing weather conditions.

The heating curve can be adjusted with a number of settings, thus matching heat output and room temperature to individual needs.

Line no.		Operating line	Factory setting
HC1	HC2		
710	1010	Comfort setpoint	20°C
712	1012	Reduced setpoint	16°C
714	1014	Frost protection	4°C



Line no.		Operating line	Factory setting
HC1	HC2		
720	-	Heating curve slope	1,5
-	1020	Heating curve slope	1,5
721	1021	Heating curve displacement	0
726	1026	Heating curve adaption	Off

## Menu: Heating circuits

### Heating curve slope

As the heating curve slope is raised, the flow temperature increases quicker at lower outside temperature. In other words, if the room temperature is not correct at low outside temperatures but correct at higher outside temperatures, the heating curve slope requires readjustment.

#### Increase adjustment:

Raises the flow temperature, especially when outside temperatures are low.

#### Decrease adjustment:

Lowers the flow temperature, especially when outside temperatures are low.

### Heating curve displacement

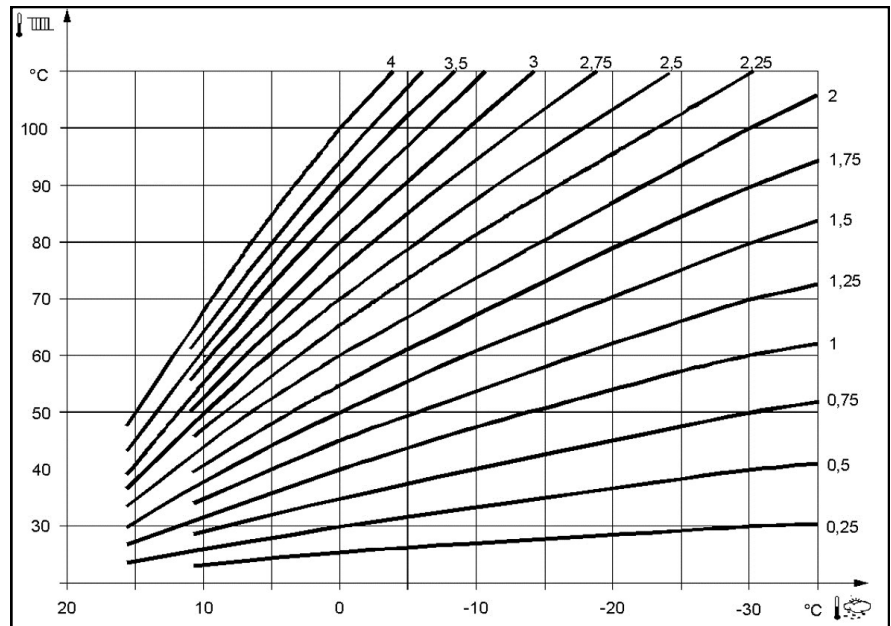
Parallel displacement of the heating curve is used to change the flow temperature evenly across the entire outside temperature range. In other words, if the room temperature is always too high or too low, a readjustment must be made with the help of the parallel displacement.

### Heating curve adaption

Adaption of the heating curve is used by the controller to automatically adapt the heating curve to the prevailing conditions. In that case, a readjustment of heating curve slope and parallel displacement is not required. It can only be switched on or off.

To assure this function, following must be observed:

- A room sensor must be connected
- The Room influence setting must be selected between 1 and 99
- There should be no thermostatic radiator valves in the reference room (mounting location of room sensor) (if such valves are present, they must be set to their fully open position).



## Menu: Heating circuits

### ECO-Function

#### Summer/winter heating limit

The summer / winter heating limit is used to switch the heating on and off in the course of the year, depending on temperature conditions. In automatic mode, switching on / off takes place automatically, so there is not need for the user to do this manually. By changing the setting, the respective periods of time will be shortened or extended.

Increase:

Winter operation will start earlier.

Summer operation will start later.

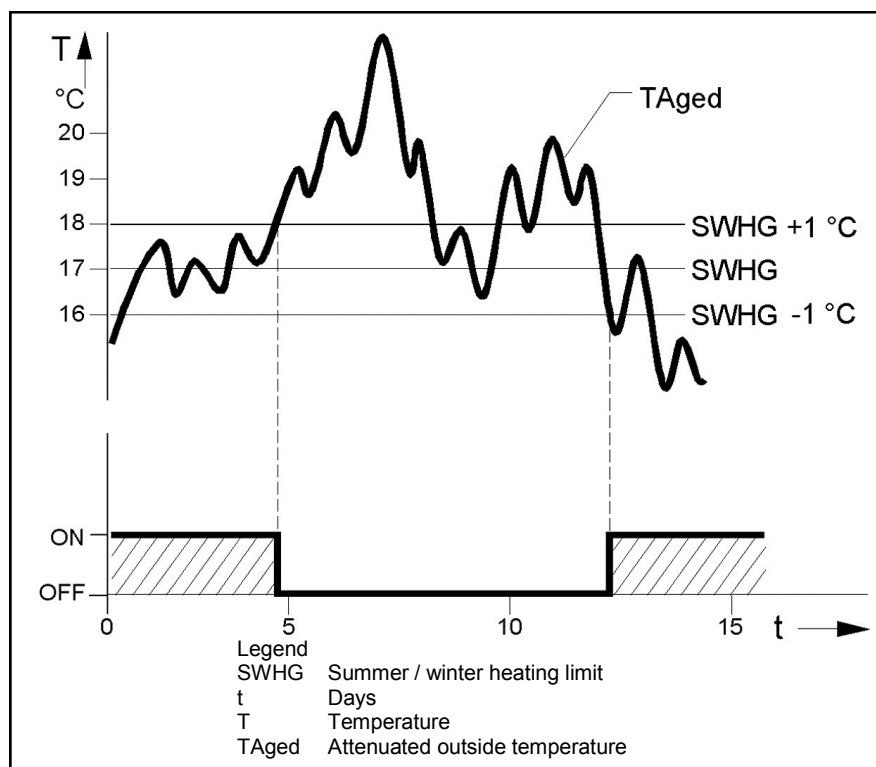
Decrease:

Winter operation will start later.

Summer operation will start earlier.

- The function is not active in operating mode Comfort
- The display shows ECO
- To incorporate the building's thermal dynamics, the outside temperature is attenuated

Line no.		Operating line	Factory setting
HC1	HC2		
730	1030	Summer/winter heating limit	20°C
732	1032	24-hour heating limit	-3°K
733	1033	Ext'n 24-hour heating limit	Yes



#### 24-hour heating limit

The 24-hour heating limit is used to switch the heating on and off in the course of the day, depending on the outside temperature. This function is used primarily during spring and autumn to respond to short-term temperature variations.

By changing the value entered, the respective heating periods will be shortened or extended.

Increase: Heating mode will start earlier. Changeover to ECO later.

Decrease: Heating mode will start later. Changeover to ECO earlier.

- The function is not active in operating mode Continuously comfort temperature.
- The display shows ECO
- To give consideration to the building's thermal dynamics, the outside temperature will be attenuated.

#### Example

Setting line	E.g.
Comfort setpoint (TRw)	22°C
24-hour heating limit (THG)	-3°C
Changeover temperature (TRw-THG) heating OFF	= 19°C
Switching differential (fixed)	-1°C
Changeover temperature heating ON	= 18°C

#### Ext'n 24-hour heating limit

The 24-hour heating limit is extended by giving consideration to the composite outside temperature when the heating is switched on. Alternatively, the heating can be switched on again only dependent on the current outside temperature.

#### No

The 24-hour heating limit applies only dependent on the current outside temperature.

#### Yes

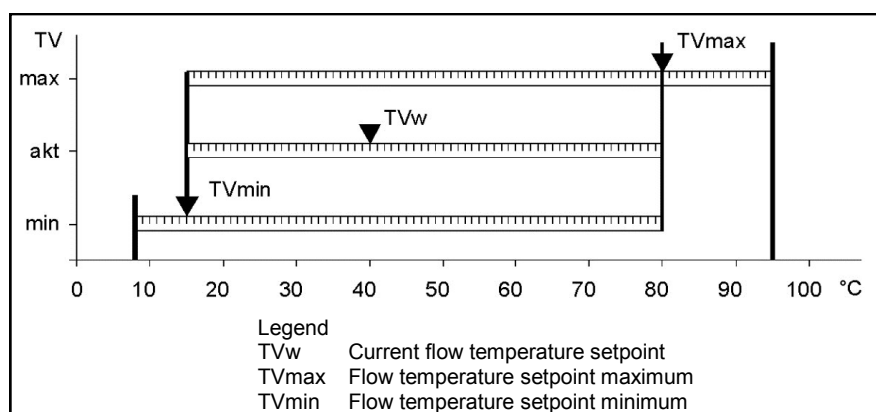
The 24-hour heating limit applies as described under *24-hour heating limit*, depending on both the current and the composite outside temperature.

## Menu: Heating circuits

### Flow temp setpoint min/ max

Using this limitation, a temperature range for the flow temperature setpoint can be defined. If the flow temperature setpoint demanded by the heating circuit reaches the relevant limit and the heat request increases or decreases, the flow temperature setpoint will be maintained at the maximum or minimum limit.

Line no.		Operating line	Factory setting
HC1	HC2		
740	1040	Flow temp setpoint min	8°C
741	-	Flow temp setpoint max HC1	80°C
-	1041	Flow temp setpoint max HC2	80°C
742	-	Flow temp setpoint room stat HC1	65°C
-	1042	Flow temp setpoint room stat HC2	65°C
746	1046	Delay heat request	0s



### Room influence

#### Type of compensation

When a room temperature sensor is used, there is a choice of 3 different types of compensation.

Line no.		Operating line	Factory setting
HC1	HC2		
750	1050	Room influence	20%

Setting	Type of compensation
- - - %	Pure weather compensation *
1...99 %	Weather compensation with room influence *
100 %	Pure room compensation

\* Outside sensor required.

#### Pure weather compensation

The flow temperature is calculated via the heating curve, depending on the composite outside temperature. This type of compensation calls for a correct adjustment of the heating curve since in this case the control gives no consideration to the room temperature.

#### Weather compensation with room influence

Deviations of the actual room temperature from the setpoint are acquired and taken into account when controlling the temperature. Heat gains can thus be considered, facilitating more accurate room temperature control. The authority of deviation is set as a percentage figure. The better the reference room (correct room temperature, correct mounting location, etc.) the higher the value can be set.

Example:

Approx. 60 % Good reference room conditions

Approx. 20 % Unfavorable reference room

To activate the function, following must be considered:

- A room sensor must be connected
- Room influence must be set to a value between 1 and 99 %
- There should be no thermostatic radiator valves in the reference room (mounting location of the room sensor) (if such valves are present, they must be set to their fully open position).

#### Pure room compensation

The flow temperature is controlled depending on the room temperature setpoint, the current room temperature and the progression of the room temperature. For example, a slight increase of the room temperature causes an immediate drop of the following temperature.

To activate the function, following must be considered:

- A room sensor must be connected
- Room influence must be set to 100 %
- There should be no thermostatic radiator valves in the reference room (mounting location of the room sensor) (if such valves are present, they must be set to their fully open position)

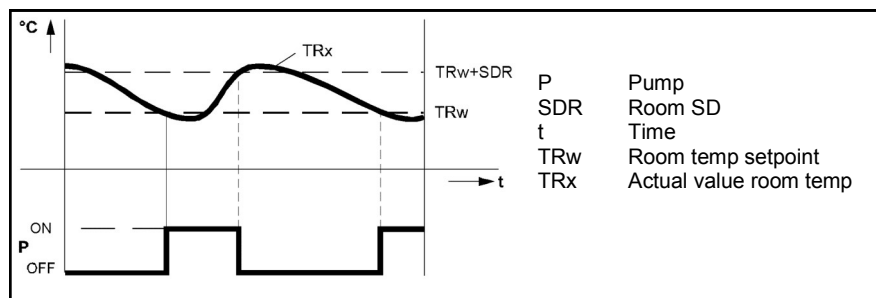
## Menu: Heating circuits

### Room temperature control and limitation

With the room temperature limitation function, the heating circuit pump can be disabled if the room temperature exceeds the current room temperature setpoint by more than the preset differential.

The room temperature limitation does not work in the case of pure weather compensation.

Line no.		Operating line	Factory setting
HC1	HC2		
760	1060	Room temp limitation	1.0°C

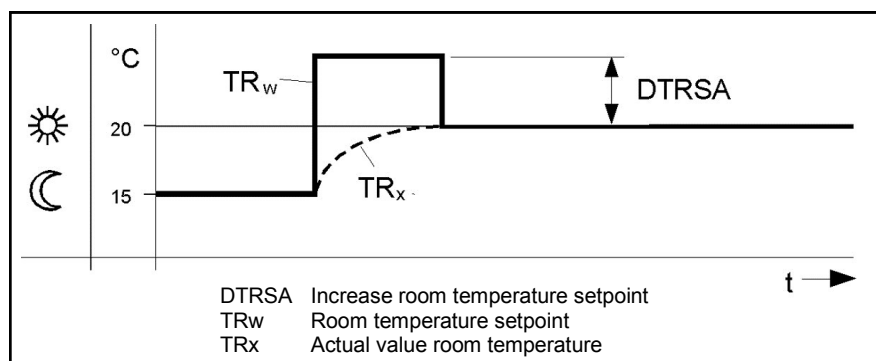


### Boost heating

Boost heating is used to reach the new setpoint more quickly when switching from the reduced setpoint to the comfort setpoint, thus reducing the heat-up time. During boost heating, the room temperature setpoint is raised by the value set here. A higher setting leads to shorter heat-up times, a lower setting to longer heat-times.

Boost heating is possible with or without room sensor.

Line no.		Operating line	Factory setting
HC1	HC2		
770	1070	Boost heating	THISION L: 5°C R600: 2°C



### Quick setback

During quick setback, the heating circuit pump is deactivated and, in the case of mixing valve circuits, the mixing valve is fully closed.

#### Function with room sensor:

- When using the room sensor, the function keeps the heating switched off until the room temperature has dropped to the level of the reduced setpoint or the frost level. When the room temperature has fallen to the reduced level or the frost level, the heating circuit pump will be activated and the mixing valve will be released.

- Function without room sensor: Quick setback switches the heating off for a certain period of time, depending on the outside temperature and the building time constant.

- Quick setback is possible with or without a room sensor.

Line no.		Operating line	Factory setting
HC1	HC2		
780	1080	Quick setback Off Down to reduced setpoint Down to frost prot setpoint	Off

#### Example:

Duration of quick setback when comfort setpoint minus reduced setpoint = 2 °C (e.g. comfort setpoint = 20 °C and reduced setpoint = 18 °C)

Outside temp composite	Time constant building (Line no. 6110)						
	0	2	5	10	15	20	50
15 °C	0	3.1	7.7	15.3	23	30.6	76.6
10 °C	0	1.3	3.3	6.7	10	13.4	33.5
5 °C	0	0.9	2.1	4.3	6.4	8.6	21.5
0 °C	Frost protection						
	Duration of quick setback in hours						

When differential between Comfort setpoint and reduced setpoint is f.e. 4°C, the default values in the table will be doubled.

## Menu: Heating circuits

### Optimum start / stop control

#### Optimum start control max

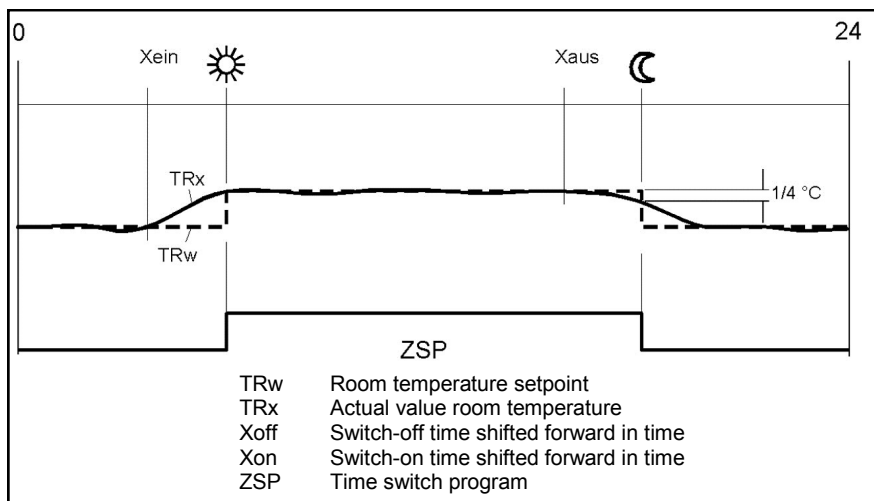
The change from one temperature level to the other is optimized in a way that the comfort setpoint is reached at the relevant switching time.

#### Optimum stop control max

The change from one temperature level to the other is optimized in a way that the comfort setpoint minus  $\frac{1}{4}^{\circ}\text{C}$  is reached at the relevant switching time.

- Optimum start / stop control is possible with or without room sensor.

Line no.		Operating line	Factory setting
HC1	HC2		
790	1090	Optimum start control max	0
791	1091	Optimum stop control max	0

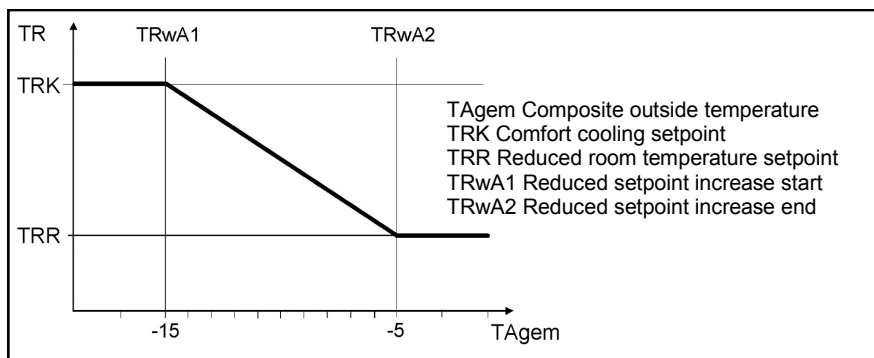


### Raising the reduced setpoint

The function is used primarily in connection with heating systems with only little spare capacity (e.g. low-energy houses).

In such cases, the heating up time would be too long at low outside temperatures. When the reduced setpoint is raised, the rooms are prevented from cooling down to too low levels, thus shortening the heating up time when changing to the comfort setpoint.

Line no.		Operating line	Factory setting
HC1	HC2		
800	1100	Reduced setp increase start	-5°C
801	1101	Reduced setp increase end	-15°C



### Overtemperature protection

#### Overtemperature protection for pump heating circuit

In the case of heating plant with pump heating circuits, the flow temperature of the heating circuit can be higher than the flow temperature demanded by the heating curve, due to requests from other heat consumers (mixing heating circuit, DHW charging, external heat demand), or a parameterized minimum boiler temperature.

Line no.		Operating line	Factory setting
HC1	HC2		
820	1120	Overtemperature protection for Pump heating circuit Off On	On

As a result of this too high flow temperature, the pump heating circuit would assume excessive temperatures. The function overtemperature protection for pump heating circuits ensures that the energy supply for pump heating circuits corresponds to the demand from the heating curve by activating / deactivating the pump.

The cycling period is fixed at 10 min. This period of time is broken down according to a time ration. The pump's running time is set to a minimum of 3 minutes. The pump's off time is set to a minimum of 2 minutes.

## Menu: Heating circuits

### Mixing valve control

#### Mixing valve boost

To ensure proper mixing valve flow temperature control, the flow temperature must be higher than the demanded setpoint of the mixing valve flow temperature. The value set here is added to the request.

The selection of the type of actuator determines the control behavior for the type of mixing valve actuator used.

#### 2-position

The controller drives the actuator with only one relay output. When the output delivers a signal, the valve opens. If the signal is missing, the valve will automatically close (thermally or mechanically).

If the flow temperature lies more than half the switching differential below the setpoint, relay "Mixing valve opening" will be energized and remains energized until the flow temperature exceeds the setpoint by half the switching differential.

#### 3-position

The controller drives the actuator with 2 relay outputs. One of the outputs is used for opening the valve and one for closing the valve. If none of the relays is energized, the actuator maintains its position.

Control is accomplished with a PID controller, whereby XP and TN can be parameterized. The actuator running time can also be set. The controller's neutral zone is +/- 1K. In the case of difficult controlled systems, the control parameters can be matched to the system.

Line no.		Operating line	Factory setting
HC1	HC2		
830	1130	Mixing valve boost	6°C
832	1132	Actuator typ Position-2 Position-3	3-point
833	1133	Switching differential 2-pos	2°C
834	1134	Actuator running time	120s
835	1135	Mixing valve Xp	32
836	1136	Mixing valve Tn	120

#### Switching differential 2-pos

For the 2-position actuator, the 2-position switching differential must also be adapted. This is not required when using a 3-position actuator.

#### Actuator running time

Setting the running time of the actuator used with the mixing valve.

#### Mixing valve Xp

The mixing valve's P-band can be adjusted, thereby matching the control behavior of the valve's actuator to that of the plant (controlled system). Xp influences the controller's P-behavior.

#### Mixing valve Tn

The mixing valve's integral action time can be adjusted, thereby matching the control behavior of the valve's actuator to that of the plant (controlled system). Tn influences the controller's I-behavior.



## Menu: Heating circuits

### Floor curing function

The floor curing function ensures controlled drying of the floor. It controls the flow temperature according to a temperature profile. Drying of the floor is ensured via the floor heating system and the mixing or pump heating circuit.

### Floor curing function

#### Off

Function is deactivated.

#### Functional heating

The first part of the temperature profile is automatically completed.

#### Curing heating

The second part of the temperature profile is traversed automatically.

#### Functional/curing heating

The entire temperature profile (first and second part) is passed automatically.

#### Manually

It is not a temperature profile that is completed, but the floor setpoint is controlled manually.

### Floor curing setp manually

The flow temperature setpoint for the manual floor-curing function can be set separately for each heating circuit.

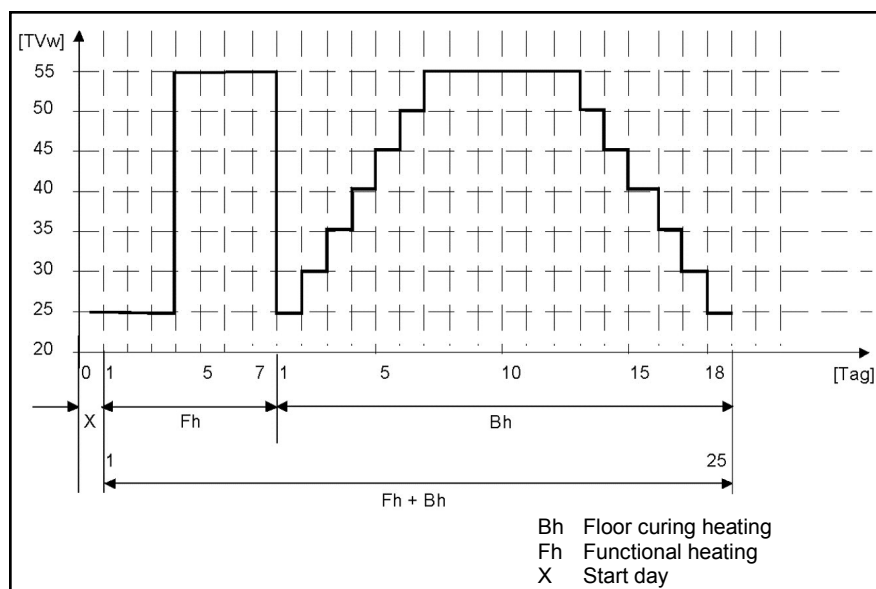
### Floor curing setp current

Shows the current flow temperature setpoint while the floor-curing function is in progress.

### Floor curing day current

Shows the current weekday of the floor-curing function in progress.

Line no.		Operating line	Factory setting
HC1	HC2		
850	1150	Floor curing function Off Functional heating Curing heating Functional/curing heating Manually	Off
851	1151	Floor curing setp manually	25°C
855	1155	Floor curing setp current	Indication only
856	1156	Floor curing day current	Indication only



- Observe the relevant standards and regulations of the floor manufacturer
- Proper functioning is ensured only when the plant is correctly installed (hydraulic system, electrical installation, setting)! If not observed, the floor might get damaged

- The function can be aborted by choosing Off
- Maximum limitation of the flow temperature remains active

## Menu: Heating circuits

### Excess heat draw

Excess heat draw can be triggered by the following functions:

- Inputs Hx
- Storage tank recooling
- Solit fuel boiler excess heat draw

When dissipation of excess heat is activated, it can be draw by space heating. This can be adjusted separately for each heating circuit.

### Off

Excess heat draw is deactivated.

### Heating mode

Excess heat is drawn only when the controller operates in heating mode.

### Always

Excess heat is drawn in all operating modes.

Line no.		Operating line	Factory setting
HC1	HC2		
861	1161	Excess heat draw Off Heating mode always	Off

### With buffer

If there is a buffer storage tank, specify whether the heating circuit can draw heat from it. When using alternative heat sources, the buffer storage tank temperature is used as a control criteria for the release of additional heat sources.

Line no.		Operating line	Factory setting
HC1	HC2		
870	1170	With buffer No Yes	Yes
872	1172	With prim/contr system pump No Yes	Yes

### With prim/contr system pump

Specify whether the heating circuit receives its heat via the primary controller or with the help of the system pump (depending on the type of plant).

## Menu: Heating circuits

### Flow setp readj speed ctrl

Here, it can be determined whether or not the calculated readjustment of the flow temperature setpoint shall be included in the temperature request.

Line no.		Operating line	Factory setting
HC1	HC2		
890	1190	Flow setp readj speed ctrl No Yes	No

### Remote control

#### Operating level changeover

The operating level to which the heating circuits shall be switched can be selected via an external time switch and inputs Hx.

#### Optg mode changeover

The heating circuit can be forced to adopt a selected mode via the H input by operating a contact. The operating mode required when the changeover is made can be defined in the "Operating mode changeover" parameters for each heating circuit. In that case, selection of the operating modes on the controller is locked.

Line no.		Operating line	Factory setting
HC1	HC2		
898	1198	Operating level changeover Frost protection Reduced comfort	Reduced
900	1200	Optg mode changeover None Protection Reduced Comfort Automatic	Reduced

## Menu: DHW

### Operating mode

The DHW operating mode is operated directly via operating button.

#### Off

Continuous operation, the setpoint being the DHW frost protection setpoint (5 °C).

#### On

DHW charging takes place automatically, the setpoint being the nominal DHW setpoint or the reduced DHW setpoint based on the selected kind of DHW release.

Line no.	Operating line	Factory setting
1600	Operating mode Off On	Off

### Setpoints

The DHW setpoint acting on the control is selected based on the current operating level which includes impact of the operating mode, the release (possibly the switching program), the DHW push and the legionella function.

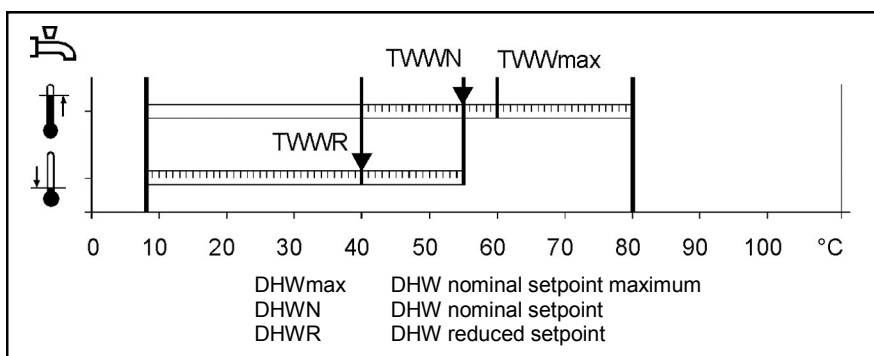
#### Nominal setpoint

Backup temperature inside the release.

#### Reduced setpoint

Backup temperature outside the release.

Line no.	Operating line	Factory setting
1610	Nominal setpoint	55°C
1612	Reduced setpoint	40°C



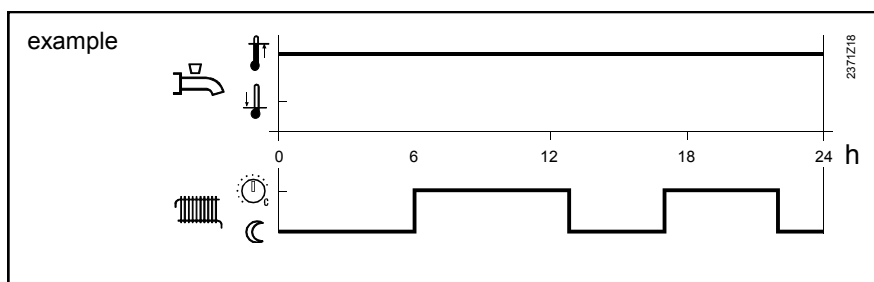
## Menu: DHW

### Release

Line no.	Operating line	Factory setting
1620	Release 24h/day Time programs HCs Time program 4/D HW	Time program heating circuits

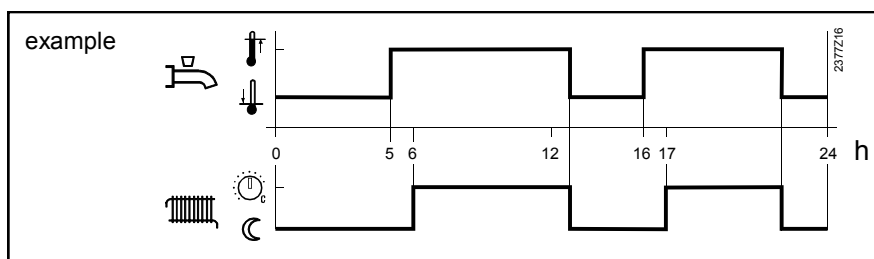
### 24h/Day

When this setting is used, DHW heating is continuously released as long as it is switched on. The DHW setpoint is always the nominal setpoint, unless the legionella function has been activated.



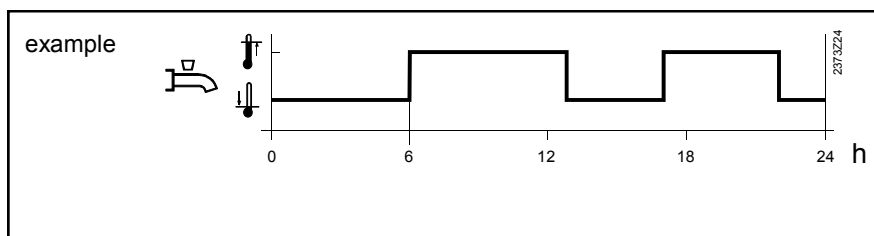
### Time programs HCs

When this setting is used, DHW heating is released during the occupancy times of the connected heating circuits. If at least one of the heating circuits is at the Comfort level, DHW heating will also be released. If all heating circuits are at the reduced level or in protective mode, the DHW level will also be set to reduced.



### Time program 4/DHW

When using this setting, a specific time program is available for DHW heating. For every weekday, a time program with a maximum of three on phases can be set. During the release time, the nominal DHW setpoint applies, outside the release time, the reduced DHW setpoint. If the legionella function is pending, it will be performed when DHW heating is released for the first time in the morning. Setting "Once / several times per day" has no impact. If DHW heating is switched off, the frost protection setpoint will apply.



### Charging priority

When both space heating and DHW heating call for heat, the DHW priority function ensures that while DHW charging is in progress, the boiler's capacity is used primarily for DHW heating.

With diverting valves, the function is automatically deactivated.

### Absolute

The mixing and pump heating circuits stay locked until DHW heating is completed.

Line no.	Operating line	Factory setting
1630	Charging priority Absolute Shifting None MC shifting, PC absolute	MC shifting, PC absolute

### Shifting

If the capacity of the heat source is not sufficient, the mixing and pump heating circuits will be restricted until DHW is heated up.

### None

DHW heating and space heating take place at the same time. In the case of tightly sized boilers and mixing heating circuits,

the DHW setpoint may not be reached if space heating demands considerable amounts of heat.

### MC shifting, PC absolute

The pump heating circuits stay locked until the DHW storage tank is heated up. If the capacity of the heat source is not sufficient, the mixing heating circuits will be restricted also.

## Menu: DHW

### Legionella function

#### Off

The function is deactivated.

#### Periodically

The legionella function is repeated according to the interval set (operating line 1641). The legionella setpoint is attained via a solar plant, independent of the period of time set, the period of time will be newly started. This means that the heat source is switched on only if the solar plant could not deliver the required "Legionella function setpoint" within the adjusted period of time.

#### Fixed weekday

The legionella function can be activated on a fixed weekday (operating line 1642). When using this setting, heating up to the legionella setpoint takes place on the selected weekday, independent of previous storage tank temperatures. This setting is intended primarily for plant with no solar integration.

#### Legionella funct periodically

Setting "Legionella funct periodically" is used to select after how many weekdays the function shall be activated again. (This setting is active only if parameter "Legionella function" is set to "Periodically").

#### Legionella funct weekday

Parameter "Legionella funct weekday" is used to select on which weekday the function shall be performed. The function is carried out on the selected weekday, independent of the availability of alternative energy.

#### Legionella function time

The legionella function is started at the time set. The DHW setpoint is raised to the adjusted legionella setpoint and DHW charging is started.

If no time is parameterized, the legionella function is started on the respective day together with the first normal release of DHW heating. If no release of DHW heating is scheduled for that day (continuously reduced), the legionella function will be performed at 24:00.

Line no.	Operating line	Factory setting
1640	Legionella function Off Periodically Fixed weekday	Off
1641	Legionella funct periodically	All 3 days
1642	Legionella funct weekday Mo - Su	Monday
1644	Legionella function time	-- : --
1645	Legionella funct setpoint	65°C
1646	Legionella funct duration	30 min
1647	Legionella funct. circ. pump Off On	On

If DHW heating is switched off (DHW operating mode button = off or holidays), the legionella function will be made up for as soon as DHW heating is switched on again (DHW operating mode button = on or end of holiday period).

#### Legionella funct setpoint

The higher the temperature level of the storage tank, the shorter the required dwelling time at that level.

#### Legionella funct duration

The demanded "Legionella function setpoint" must be continuously maintained during the dwelling time set. If the storage tank temperature (in the case of 2 sensors, the temperature acquired by the "colder" sensor) exceeds the "Legionella function setpoint" minus 1 K, the "Legionella function setpoint" is considered fulfilled and the "Dwelling time" timer elapses. If the storage tank temperature drops below the demanded "Legionella function setpoint" by more than the switching differential plus 2 K before the dwelling time has elapsed, the dwelling time must be fulfilled again. If no dwelling time is set, the "Legionella" function is performed the moment the "Legionella function setpoint" is reached.

If the "Legionella" function cannot be performed within a 48-hour period, an error message will be delivered.

#### Legionella funct circ pump

When the function is activated, the circulating pump is switched on while the "Legionella" function is performed as soon as the storage tank temperature (in the case of 2 sensors the temperature acquired by the "colder" sensor) lies above the "Legionella function setpoint" minus 1 K. The pump runs during the dwelling time set. If the storage tank temperature falls below the demanded "Legionella function setpoint" by more than the DHW switching differential plus 2 K, the circulating pump will prematurely be deactivated.

During the time the legionella function is performed, the DHW circulating pump can be activated.

## Menu: DHW

### Circulating pump

A multifunctional relay is used for controlling the circulating pump. It must be appropriately parameterized.

#### Circulating pump release

The circulating pump is switched on during the release time (see below), provided DHW heating is switched on and at least one of the connected heating circuits is not in holiday mode. If the DHW operating mode is "Off", or if all connected heating circuits are in holiday mode, the circulating pump remains deactivated, independent of the parameterized release. Release of the circulating pump can take place in different ways:

#### Time program 3/HCP

The circulating pump is released according to time program 3 / HCP.

#### DHW release

With this parameterization, the circulating pump is released when DHW heating is released also.

#### Trinkwasser Freigabe

Bei dieser Parametrierung ist Zirkulationspumpe freigegeben wenn auch die Trinkwasserbereitung freigegeben ist.

#### Time program 4/DHW

The circulating pump is released according to time program 4 / DHW.

#### Time program 5

The circulating pump is released according to time program 5.

Line no.	Operating line	Factory setting
1660	Circulating pump release Time program 3/HCP DHW release Time program 4/DHW Time program 5	DHW release
1661	Circulating pump cycling Off On	Off
1663	Circulating setpoint	45°C

#### Circulating pump cycling

When the function is activated, the circulating pump is switched on for 10 minutes within the release time and then switched off again for 20 minutes.

#### Circulating setpoint

If a sensor is installed in the DHW distribution pipe, the controller will monitor its actual value during the time the legionella function is performed. The adjusted setpoint must be maintained at the sensor during the adjusted Dwelling time. The circulating setpoint is limited at the top at the nominal setpoint.

### Remote control

#### Optg mode changeover

In the case of external changeover via inputs *Hx*, the operating mode where changeover is to take place can be selected.

#### None

Function deactivated. No changeover of operating mode.

#### Off

Operating mode is changed to *Off*.

Line no.	Operating line	Factory setting
1680	Optg mode changeover None Off On	Off

#### On

Operating mode is changed to *On*.

## Menu: Consumer circuit

### Consumer circuit

#### Flow temp setp cons request

Adjustment of the flow temperature setpoint that becomes active when there is a heat request from the consumer circuit.

#### DHW charging priority

With this setting, the connected consumer circuit pump can be excluded from or included in the impact resulting from DHW charging priority. This means that in the case of ventilation applications, for instance, constant delivery of heat can be ensured without any impact from DHW charging priority.

#### Excess heat draw

If excess heat draw is activated, it can be delivered to the consumer circuits. This can be selected separately for each consumer circuit.

#### Off

Function is deactivated.

#### On

Function is activated.

#### With buffer

If a buffer storage tank is used, it is to be entered whether the consumer circuit is allowed to draw heat from the pump storage tank. When employing alternative heat sources, the buffer storage tank temperature is used as a control criterion for the release of additional heat sources.

#### Off

Function is deactivated.

#### On

Function is activated.

Line no.			Operating line	Factory setting
HC1	HC2	HC3		
1859	1909	1959	Flow temp setp cons request	70°C
1874	1924	1974	DHW charging priority No Yes	Yes
1875	1925	1975	Excess heat draw No Yes	No
1878	1928	1978	With buffer No Yes	No
1880	1930	1980	With prim contr/system No Yes	No

#### With prim contr/system pump

The setting made here defines whether the consumer circuit shall receive heat via the primary controller or the system pump (depending on the type of plant).

#### Off

Function is deactivated.

#### On

Function is activated.



## Menu: Swimming pool

When swimming pool control is activated, the setpoints for solar heating or for conventional heating can be adjusted.

### Setpoint solar heating

When making use of solar energy, the swimming pool is heated to this setpoint.

The collector overtemperature protection function can put the collector pump back into operation until the maximum swimming pool temperature is reached.

Line no.	Operating line	Factory setting
2055	Setpoint solar heating	26°C
2056	Setpoint source heating	22°C

### Setpoint source heating

When using other heat sources, the swimming pool is heated to this setpoint.

### Charging priority solar

#### Priority 1

Swimming pool charging has the first priority.

#### Priority 2

Swimming pool charging has the second priority (after the buffer storage tank and the DHW storage tank).

#### Priority 3

Swimming pool charging is effected without priority (after the buffer storage tank, the DHW storage tank, the heating circuits, and the consumer circuits).

Line no.	Operating line	Factory setting
2065	Charging priority solar Priority 1 Priority 2 Priority 3	Priority 3
2080	With solar integration No Yes	Yes

### Swimming pool temp max

When the swimming pool temperature reaches the temperature limit set here, the collector pump will be deactivated. It is released again only when the swimming pool temperature drops 1 °C below the maximum limit.

Line no.	Operating line	Factory setting
2070	Swimming pool temp	30
2080	With solar integration No Yes	Yes

### With solar integration

The setting made here decides whether the swimming pool can be heated by solar energy.



## Primary controller / system pump

### Mixing valve control

#### Mixing valve boost

To ensure accurate control, the flow temperature delivered by the boiler must be higher than the demanded flow temperature setpoint after the mixing valve. The controller therefore generates the boiler temperature setpoint based on the mixing valve boost set here and the current flow temperature setpoint.

#### Actuator type

The selection of the type of actuator determines the control behavior for the type of mixing valve actuator used.

#### 2-position

The controller drives the actuator via one relay output only. When a control signal is delivered, the valve opens. When no control signal is present, the valve closes automatically (thermal action or mechanically).

The control employs a 2-position controller with an adjustable switching differential. If the flow temperature lies more than half the switching differential below the setpoint, relay Mixing valve OPEN is energized to remain energized until the flow temperature reaches a level half the switching differential above the setpoint.

#### 3-position

The controller drives the actuator via 2 relay outputs. One of the outputs is used for opening the valve, one for closing the valve. If none of the relays is energized, the actuator maintains its present position.

Line no.	Operating line	Factory setting
2130	Mixing valve boost	6°C
2132	Actuator type 2-position 3-position	3-point
2133	Switching differential 2-pos	2°C
2134	Actuator running time	120s
2135	Mixing valve Xp	32
2136	Mixing valve Tn	120

The control employs a PID controller whose proportional band (Xp) and integral action time (Tn) can be parameterized. The actuator running time can also be adjusted. The controller's neutral zone is +/- 1 K. The control parameters can be matched to the requirements of difficult controlled systems.

#### Switching differential 2-pos

For a 2-position actuator, the 2-position switching differential must also be adapted. This is not required when using a 3-position actuator.

#### Actuator running time

Setting the running time of the actuator used with the mixing valve.

#### Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system). Xp influences the controller's P-control action.

#### Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve's actuator is matched to the behavior of the plant (controlled system). Tn influences the controller's I-control action.

### Primary contr/system pump

If the plant is equipped with a buffer storage tank, it must be stated here whether – hydraulically speaking – the primary controller or the system pump is located before or after the buffer storage tank.

Line no.	Operating line	Factory setting
2150	Primary contr/system pump Before the buffer After the buffer	After the buffer storage tank

## Menu: Boiler

### Setpoints

The controlled boiler temperature setpoint can be limited with Setpoint min und -max. These limitations can be considered to be a protective function for the boiler. In normal operation, minimum limitation of the boiler temperature is the lower limit value for the controlled boiler temperature setpoint, depending on the boiler's operating mode. In normal operation, maximum limitation of the boiler temperature is the upper limit value for the controlled boiler temperature setpoint and setpoint for the electronic limit thermostat (TR).

Line no.	Operating line	Factory setting
2210	Setpoint min	10°C
2212	Setpoint max	90°C
2214	Setpoint manual control	80°C

### Setpoint manual control

In manual control, the common flow temperature setpoint can be set to a fixed value.

### PID boiler management unit

#### Modulating Xp / P-band Xp DHW

P-band Xp defines the controller's gain. A small Xp leads to higher control of the burner fan without changing the control difference  $\Delta T = (T_{soll} \text{ minus } T_{ist})$ .

#### Int action time Tn DHW

The integral action time Tn determines the controller's rate of response when correcting proportional offsets. A shorter Tn leads to faster correcting actions.

Line no.	Operating line	Factory setting
2233	P-band Xp HCs	20°C
2234	Int action time Tn HCs	150s
2235	Der action time Tv HCs	4,5s
2236	P-band Xp DHW	34°C
2237	Int action time Tn DHW	4s
2238	Der action time Tv DHW	8s

### Derivative action time Tv DHW

The derivative action time Tv determines the extent of after-effect of a spontaneous change of control difference. A short Tv only has a short-time impact on the manipulated variable.

### Boiler / burner control

#### Burner running time min

Here, a period of time after burner startup is defined during which the off time differential is increased by 50%. This means that with similar heating up processes, the 2-position controller switches off later. But this parameter setting does not guarantee that the burner remains in operation for the parameterized period of time.

#### Burner off time min

The minimum boiler off time takes effect exclusively between successive heat requests. It locks the boiler for an adjustable period of time and is started after regular shutdown or if the temperature limiter cuts out in response to heat requests. New startups initiated by the 2-position controller due to heat requests are made only when this period of time has elapsed.

Line no.	Operating line	Factory setting
2241	Burner running time min	0 min
2243	Burner off time min	5 min
2245	SD burner off time	THISION L: 25°C R600: 15°C

### SD burner off time

If SD burner off time is exceeded, the minimum off time will be aborted.

## Menu: Boiler

### Overtemperature protection

#### Pump overrun time

Pump overrun time after heating mode and external requests.

#### Pump overr time after DHW

Pump overrun time after DHW heating.

Line no.	Operating line	Factory setting
2250	Pump overrun time	5 min
2253	Pump overr time after DHW	5 min

### Return setpoint min

The required minimum return temperature setpoint can be parameterized. If the boiler return temperature falls below the return temperature setpoint, maintained boiler return temperature becomes active.

In connection with the return temperature, the following functions can be provided:  
- Locking signal acting on the consumers

Line no.	Operating line	Factory setting
2270	Return setpoint min	10°C

- Control of the bypass pump
- Control of a modulating valve

### Boiler pump

#### Boiler pump on heat gen lock

This parameter is used to determine whether heat generation lock shall also act on the boiler pump.

#### Off

Boiler pump locked when heat generation lock is active.

#### On

Boiler pump not locked when heat generation lock is active.

#### Impact heat generation lock

This parameter is used to select whether heat generation lock shall only be active in the case of heat requests from the heating circuit, or in the case of DHW heating requests also.

#### Heating mode only

Only space heating requests are locked. DHW heating requests continue to be met.

Line no.	Operating line	Factory setting
2301	Boiler pump on heat gen lock	Off
2305	Impact heat generation lock Heating mode only Heating and DHW mode	Heating and DHW mode

#### Heating and DHW mode

All space heating and DHW heating requests are locked.

## Menu: Boiler

### Temp differential nominal

#### Temp differential max

The "Maximum boiler differential" function is used to monitor the speed control of the boiler pump. When the boiler flow/return differential reaches the preset value, the boiler pump speed is not increased further. If the actual differential exceeds the preset value, the speed is reduced.

The function can be deactivated with setting ---.

Line no.	Operating line	Factory setting
2316	Temp differential max	20°C
2317	Temp differential nominal	10°C

#### Temp differential nominal

In connection with a modulating heating circuit pump, the boiler maintains a nominal temperature differential as long as the pump is not operated at the maximum permissible speed.

### Speed control

#### Pump modulation

A number of functions are available for the modulating boiler pump.

#### None

Function is switched-off.

#### Demand

Do not use this function.

#### Boiler setpoint

Do not use this function.

#### Temp differential nominal

The LMS... continues to control the boiler's output such that the boiler temperature setpoint is maintained. Pump speed control controls the boiler pump's speed in a way that the parameterized nominal temperature differential of boiler return and boiler flow is maintained.

If the effective differential is greater than the nominal differential, the pump's speed is increased, otherwise it is decreased.

The pump's speed is limited by the parameterized minimum and maximum speed.

#### Burner output

This function can be used with both single-boiler plants and cascades, with or without pressureless header.

If the burner operates at low output, the boiler pump shall also be operated at low speed. In the case of high outputs, the boiler pump shall run at high speed.

Line no.	Operating line	Factory setting
2320	Pump modulation None Demand Boiler setpoint Temp differential nominal Burner output	Burner output
2321	Starting speed	100%
2322	Pump speed min	50%
2323	Pump speed max	100%
2324	Speed Xp	32°C
2325	Speed Tn	120s
2326	Speed Tv	10s
2329	Pump setpoint reduction	10°C
2334	Output at pump speed min	0%
2335	Output at pump speed max	100%

The speed of the boiler pump is calculated based on the current boiler output. Up to a selectable boiler output (operating line 2334) the boiler pump operates at minimum speed. And above a selectable boiler output (operating line 2335), the boiler pump operates at maximum speed. Between minimum output (Ynmin) and maximum output (Ynmax), the pump speed is continuously increased.

#### Starting speed

At start up the pump will start with the programmed starting speed. After modulation release the pump will be controlled according to the chosen function.

#### Pump speed min

Minimum speed for the pump.

#### Pump speed max

Maximum speed for the pump.

#### Speed Xp

#### Speed Tn

#### Speed Tv

PID settings for function Boiler setpoint at parameter 2320.

#### Pump setpoint reduction

This parameter is used to set the setpoint reduction for the boiler pump's speed control. This setpoint reduction is only active in connection with Pump modulation and Boiler setpoint (operating line 2320).

#### Output at pump speed min

#### Output at pump speed max

If option Burner output is selected on operating line number 2320, the boiler pump is operated at minimum speed until the burner output set on operating line number 2334 is reached, and at maximum speed from the burner output set on operating line number 2335. If the burner's output lies between these 2 values, the boiler pump's speed is calculated through linear conversion.

## Menu: Boiler

### Output data

#### Output nominal Output basic stage

These settings are required when several boilers with different outputs are operated in a cascade.

Line no.	Operating line	Factory setting
2330	Output nominal	See parameter list
2331	Output basic stage	See parameter list

### Fan

#### Fan speed heating max

This parameter can be used to limit the maximum output in heating mode.

#### Fan speed full charging max

This parameter can be used to limit the maximum output during full charging.

#### Fan speed DHW max

This parameter is used to limit the maximum fan speed for DHW heating. The parameter is OSV-compatible. With OSV, the maximum fan speed applies to DHW heating.

Line no.	Operating line	Factory setting
2441	Fan speed heating max	See parameter list
2442	Fan speed full charging max	See parameter list
2444	Fan speed DHW max	See parameter list
2445	Fan shutdown heating mode Off On	Off
2446	Fan shutdown delay	3s
2450	Controller delay Off Heating mode only DHW mode only Heating and DHW mode	Heating mode only
2452	Controller delay speed	2400U/min
2453	Controller delay duration	5s
2470	Delay heat req special op	0s

#### Fan shutdown heating mode

This function is used to switch off the fan's power supply. Power supply to the fan is released as soon as the fan's PWM control is active or whenever there is a request for DHW. Fan shutdown is delayed and takes place after PWM control is switched off, or after there is no more demand for DHW. The delay time can be set via parameter *Fan shutdown delay*. During the period of time a request for DHW is active, the fan's power supply remains released also when PWM control is inactive. Parameter *Fan shutdown with heat request* (fan release configuration) can be used to select whether the fan's power supply shall be released also when there is a request for DHW, independent of PWM control.

#### Off

Function is deactivated.

#### On

Function is activated.

#### Fan shutdown delay

Setting of the delay time for the fan shutdown function.

#### Controller delay

Here, it can be selected in which operating mode the controller delay shall become active.

#### Controller delay speed

Speed delivered during the controller delay time.

#### Controller delay duration

Duration of controller delay. This delay time is started the moment a flame is definitively detected after ignition.

#### Delay heat req special op

Parameter Delay heat req special op (2470) can be used to delay burner startup, thus allowing the actuating element to release the heating circuit before the heat source reaches its operating position.

## Menu: Boiler

### Deaeration function

Using the automatic deaerator installed in the boiler, the function is intended to remove any air from the space heating / DHW system. For that purpose, the pumps in the system are activated and deactivated according to a certain sequence. The Deaeration function is performed in up to 4 preselectable phases. The phases are distinguished in terms of heating circuit deaeration, DHW circuit deaeration, cycled pump control, and static pump control for the entire phase. During these phases, a 3-port valve is driven to a certain position. When the preselected phases of the Deaeration function have elapsed, the function is automatically ended.

When this function is started, the burner control changes to standby, which means that it is off during the whole time the Deaeration function is performed.

### Auto deaeration procedure

The deaeration ends automatically.

### Off

Function deactivated.

### On

Function activated.

Line no.	Operating line	Factory setting
2630	Auto deaeration procedure Off On	Off
2655	ON time deaeration	60s
2656	OFF time deaeration	60s
2657	Number of repetitions	3
2662	Venting time heating circuit	3 min
2663	Venting time DHW	2 min

### ON time deaeration

On time of the boiler / heating circuit pumps in phases 2 and 4 of the deaeration procedure.

### OFF time deaeration

Off time of the boiler / heating circuit pumps in phases 2 and 4 of the deaeration procedure.

### Number of repetitions

Number of repetitions of pump switching cycles in phases 2 and 4 of the deaeration procedure.

### Venting time heating circuit

Duration of deaeration with continuous control of the boiler / heating circuit pumps in phase 1 of the deaeration procedure.

### Venting time DHW

Duration of deaeration with continuous control of the boiler / DHW pumps in phase 3 of the deaeration procedure.



## Menu: Cascade

### General:

The cascade function and menu are only active when: the LBS Device address (Line no. 6600) is set to 1 and another LMS controller is connected to the LBS bus.

### Lead strategy

The sources are switched on and off according to the selected lead strategy while giving consideration to the preset output band. To deactivate the impact of the output band, the limit values must be set to 0% and 100%, and the lead strategy to be selected is Late on, late off.

### Late on, early off

Additional boilers are switched on as late as possible (output band max) and switched off again as early as possible (output band min). This means that the smallest possible number of boilers are in operation, or additional boilers operate with short on times.

Line no.	Operating line	Factory setting
3510	Lead strategy Late on, early off Late on, late off Early on, late off	Late on, late off
3511	Output band min	40%
3512	Output band max	90%

### Late on, late off

Additional boilers are switched on as late as possible (output band max) and switched off again as late as possible (output band min). This leads to the smallest possible number of switch-on/off actions for the boilers.

### Early on, late off

Additional boilers are switched on as early as possible (output band min) and switched off again as late as possible (output band min). This means that the largest possible number of boilers are in operation, or additional boilers operate with the longest possible on times.

### Release integral source seq

When, with the heat source currently in operation, the demand for heat cannot be met, the difference being the release integral set here, another boiler is switched on. When the value is increased, additional heat sources are switched on at a slower rate. When the value is decreased, additional heat sources are switched on at a faster rate.

### Reset integral source seq

When, with the heat source currently in operation, the demand for heat is exceeded by the reset integral set here, the heat source with the highest priority is shut down. When the value is increased, heat sources operate for longer periods of time (in the case of surplus heat). When the value is decreased, heat sources are switched off at a faster rate.

Line no.	Operating line	Factory setting
3530	Release integral source seq	100 °C * min
3531	Reset integral source seq	8 °C * min
3532	Restart lock	300s
3533	Switch on delay	0 min
3534	Forced time basic stage	60s

### Restart lock

The restart lock prevents a deactivated heat source from being switched on again. It is released again only after the set time has elapsed. This prevents too frequent switching actions of the heat sources and ensures stable plant operating states.

### Switch on delay

Correct adjustment of the switch-on delay ensures that plant operating conditions will be stable. This prevents too frequent switching actions of the boilers (cycling). In the case of a DHW request, the delay time is fixed at 1 minute.

### Forced time basic stage

When switched on, every boiler operates with its basic stage for the period of time set here. The next stage is released only when this period of time has elapsed.

## Menu: Cascade

### Boiler sequence

#### Auto source seq ch'over

With automatic source sequence changeover, the boiler loads in a cascade can be influenced by defining the order of lead and lag boiler.

#### Fixed order

Setting - - - defines a fixed order. In that case, the lead boiler can be selected on operating line 3544; the other boilers are then switched on and off in the same order as the LPB device addresses.

#### Order according to the number of operating hours

On completion of the number of hours set, the boiler sequence in the cascade changes. It is always the boiler with the next higher device address which assumes the role of the lead boiler.

#### Auto source seq excluding

Setting automatic source sequence exclusion is only used in connection with the activated heat source sequence (operating line 3540). Using automatic source sequence exclusion, the first and / or the last boiler can be exempted from automatic changeover.

#### None.

The order of switching on the boilers changes when the number of hours set is reached (operating line 3540).

#### First

The first boiler in terms of addressing will always be the lead boiler. With the other boilers, the order of switching on changes when the set number of hours is reached (operating line 3540).

#### Last

The last boiler in terms of addressing will always be the last. The other boilers change when the set number of hours is reached (operating line 3540).

#### First and last

The first boiler in terms of addressing will always be the lead boiler. The last boiler in terms of addressing will always be the last. The boilers in between change when the set number of hours is reached (operating line 3540).

Line no.	Operating line	Factory setting
3540	Auto source seq ch'over	500 h
3541	Auto source seq excluding None First Last First and last	None
3544	Leading source Source 1... source 16	Source 1
3560	Return setpoint min	8 °C

#### Leading source

The leading source is only selected in connection with the fixed order of the heat source sequence (operating line 3540).

The boiler selected as the lead boiler is always the first to be switched on, or the last to be switched off. The other boilers are switched on and off in the order of their device addresses.

#### Return setpoint min

If the return temperature drops below the adjusted return setpoint, maintained boiler return temperature becomes active. Maintained boiler return temperature allows consumers to be influenced or a return temperature controller to be used.

# Menu: Solar

**General:**

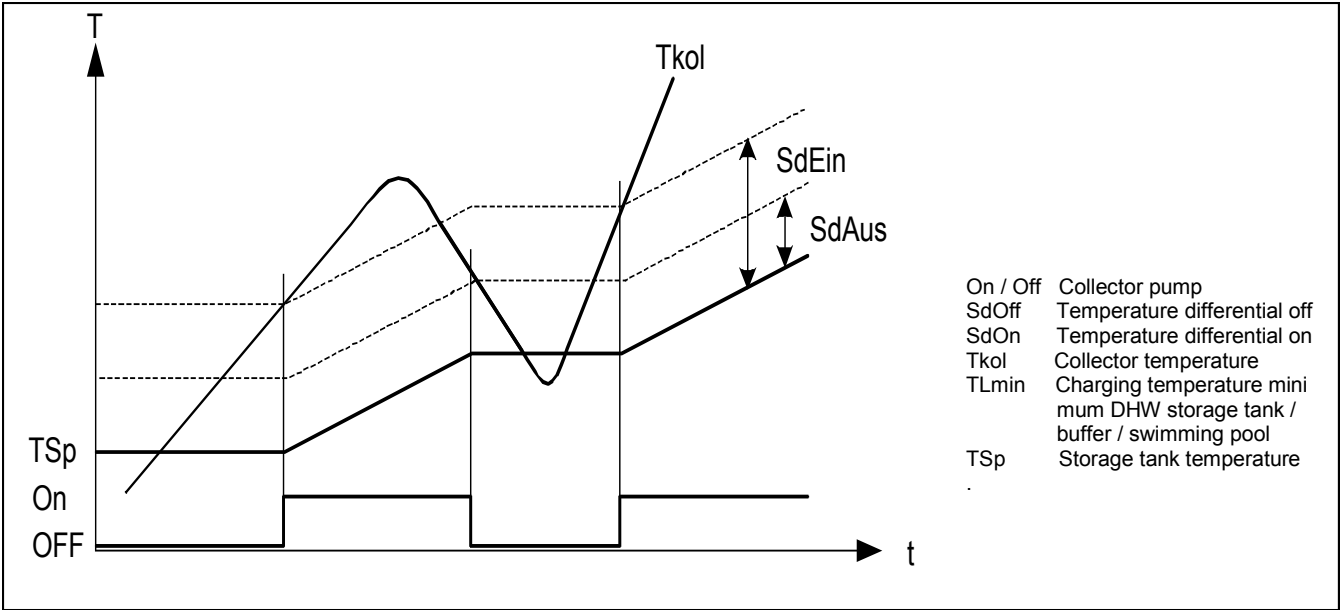
The solar function and menu are only active when in the Configuration menu a multifunctional output 5891, 6030-6038 is programmed as solar function and the dedicated multifunctional sensor inputs 5930, 5931, 6040-6045 are activated.

**Solar**

**Charging controller (dT)**

For charging the storage tank via the heat exchanger, the temperature differential between collector and storage tank/swimming pool must be sufficient, and the collector must have reached the minimum charging temperature for the storage tank/swimming pool.

Line no.	Operating line	Factory setting
3810	Temp diff on	8 °C
3811	Temp diff off	4 °C
3812	Charg temp min DHW	30°C
3813	Temp diff on buffer	8 °C
3814	Temp diff off buffer	4 °C
3815	Charging temp min buffer	30°C
3816	Temp diff on swi pool	8 °C
3817	Temp diff off swi pool	4 °C
3818	Charging temp min swi pool	30°C



## Menu: Solar

### Priority

The priority circuit for the swimming pool (operating line 2065) can impact storage tank priority of solar charging and possibly charge the swimming pool before the storage tanks.

### Charging prio storage tank

If a plant uses several heat exchangers, it is possible to set a priority for the integrated storage tanks, which defines the charging sequence.

### None

Every storage tank is charged alternately by 5 °C at a time, until every setpoint of level A, B or C (see below) is reached. The setpoints of the next higher level are approached only when all setpoints of the previous level have been reached.

### DHW storage tank

During solar charging, preference is given to the DHW storage tank. At every level A, B or C (see below), it is charged with priority. Only then will the other consumers of the same level be charged. As soon as all setpoints of a level are attained, those of the next level are approached, whereby priority is again given to the DHW storage tank.

### Charging time relative prio

If the preferred storage tank cannot be charged in accordance with charging control, priority is transferred to the next storage tank or the swimming pool for the period of time set (e.g. too great temperature differential between collector and storage tank). As soon as the preferred storage tank (according to setting Charging priority storage tank) is again ready to be charged, the transfer of priority will immediately be stopped.

If this parameter is disabled (---) charging proceeds in accordance with the Charging prio storage tank setting.

### Waiting time relative prio

During the period of time set, the transfer of priority will be delayed. This prevents relative priority from intervening too frequently.

Line no.	Operating line	Factory setting
3822	Charging prio storage tank None DHW storage tank Buffer storage tank	DHW storage tank

### Sollwerte der Speicher:

Level	DHW storage tank		Buffer storage tank		Swimming pool (1)
A	1610	Nominal setpoint	Buffer setpoint (slave pointer)		2055 Setpoint Solar heating
B	5050	Charging Temperature Maximum	4750	Charging Temperature Maximum	2055 Setpoint Solar heating
C	5051	Storage tank Temperature Maximum	4751	Storage tank Temperature Maximum	2070 Swimming pool Temperature Maximum

### Buffer storage tank

During solar charging, preference is given to the buffer storage tank. At every level A, B or C (see below), it is charged with priority. Only then will the other consumers of the same level be charged. As soon as all setpoints of a level are attained, those of the next level are approached, whereby priority is again given to the buffer storage tank.

(<sup>1</sup>)When priority for the swimming pool is activated (operating line 2065), the swimming pool is charged before the storage tanks.

Line no.	Operating line	Factory setting
3825	Charging time relative prio	20 min
3826	Waiting time relative prio	5 min
3827	Waiting time parallel op	20 min
3828	Delay secondary pump	60 sec

### Waiting time parallel op

If solar output is sufficient and solar charging pumps are used, parallel operation is possible. In that case, the storage tank of the priority model can be the next to be simultaneously charged, in addition to the storage tank to be charged next. Parallel operation can be delayed by introducing a waiting time. This way, in the case of parallel operation, switching on of the storage tanks can be effected in steps. The setting (---) disables parallel operation.

### Delay secondary pump

To carry away any cold water resting in the primary circuit, the secondary pump of the external heat exchanger can be delayed.

## Menu: Solar

### Start function

#### Collector start function

If the collector temperature cannot be correctly acquired because the pump is not running (especially in the case of vacuum tubes), the pump can be activated from time to time.

#### Min run time collector pump

When the collector pump is activated, it remains on for the minimum running time, independent of temperature differentials. The minimum running time of the pump can be parameterized and is active with all functions that activate the collector pump.

#### Collector frost protection

When there is risk of frost at the collector, the collector pump will be activated to prevent the heat-carrying medium from freezing.

- If the collector temperature falls below the frost protection temperature, the collector pump will be activated:  
 $TKol < TKolFrost$

Line no.	Operating line	Factory setting
3830	Collector start function	30 min
3831	Min run time collector pump	5 min
3834	Collector start funct grad	4min/°C

#### Collector start funct grad

The collector pump is activated as soon as the temperature acquired by the collector sensor rises.

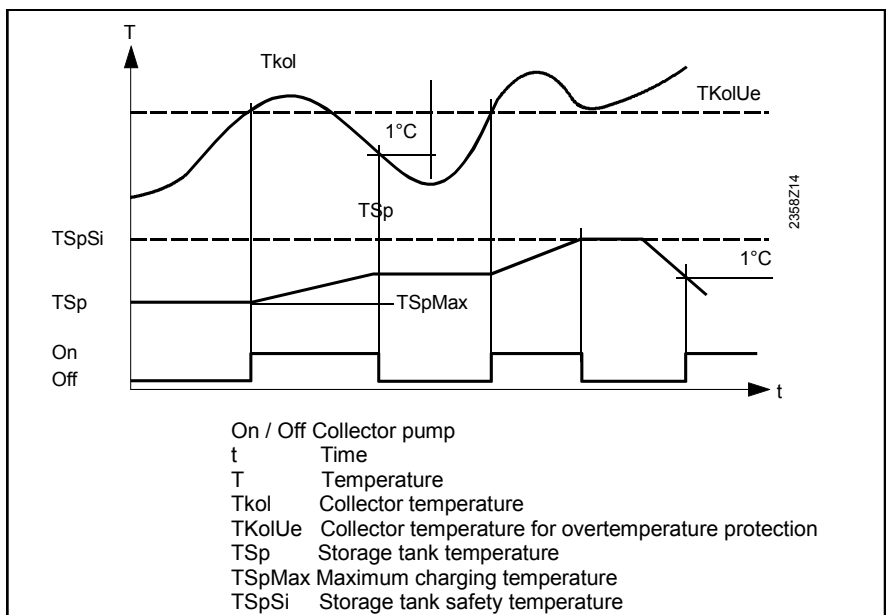
Line no.	Operating line	Factory setting
3840	Collector frost protection	-

- When the collector temperature returns to a level of 1°K above the frost protection temperature, the collector pump will be deactivated again:  $TKol > TKolFrost + 1$

#### Collector overtemp prot

If there is a risk of overtemperature at the collector, storage tank charging is continued to reduce the amount of surplus heat. When the storage tank safety temperature is reached, charging will be stopped.

Line no.	Operating line	Factory setting
3850	Collector overtemp prot	80°C



## Menu: Solar

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### Evaporation heat carrier

If there is a risk of the heat carrying medium evaporating due to high collector temperatures, the collector pump will be deactivated to prevent it from reaching excessive temperatures. This is a protective pump function.

Line no.	Operating line	Factory setting
3860	Evaporation heat carrier	110°C

---

### Speed controlled pump

When the collector pump is connected to multifunctional output QX3. The modulation range of the pump can be limited.

Line no.	Operating line	Factory setting
3870	Pump speed min	40 %
3871	Pump speed max	100 %

### Pump speed min / max

The solar pump motor speed is limited by a minimum and maximum permitted speed.

---

### Yield measurement

The 24-hour and total solar energy yield (Line no. 8526, 8527) is calculated, based on these data.

### Antifreeze

Since the mixing ratio of the collector medium has an impact on heat transmission, the type of antifreeze used and its concentration must be entered in order to be able to determine the energy yield.

Line no.	Operating line	Factory setting
3880	Antifreeze None Ethylen glycol Propylene glycol Ethyl and propyl glycol	1: none
3881	Antifreeze concentration	30%
3884	Pump capacity	200l/h
3887	Pulse unit yield	10 l

### Pump capacity

The flow rate in l/h of the pump used must be determined and serves for calculating the volume delivered.

### Pulse unit yield

Defines the flow per pulse for the chosen Hx-Input. The chosen Hx-Input has to be configured to Pulse measurement accordingly.

## Menu: Solid fuel boiler

### General:

The solid fuel boiler function and menu are only active when in the Configuration menu a multifunctional output 5891, 6030-6038 is programmed as solid fuel boiler function and the dedicated multifunctional sensor inputs 5930, 5931, 6040-6045 are activated.

### Locks other heat sources

When the solid fuel boiler is put into operation, other heat sources, such as oil/gas boilers, will be locked. Locking takes place as soon as the boiler temperature rises to a degree that crossing of the comparative temperature (Line no. 4133) can be expected.

### Setpoints, Temperature diffs

The boiler pump will be put into operation only when the boiler temperature has reached a minimum temperature level, in addition to the required temperature differential. Above this minimum temperature the boiler should not produce condensate anymore.

### Comparative temp

Depending on the hydraulic configuration, the solid fuel boiler temp will be compared to for example the buffer sensor B4.

### Delta T-Controller

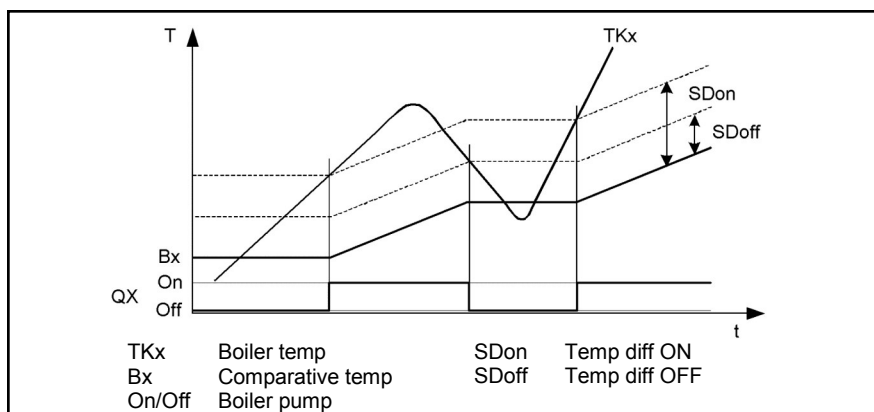
For the boiler pump to be put into operation, a sufficiently great temperature differential between boiler temperature and comparison temperature is required.

Line no.	Operating line	Factory setting
4102	Locks other heat sources	On

This anticipating function enables the locked heat sources to terminate any overrun of pumps before the solid fuel boiler pump is activated.

Also, in the case of a common stack, it can be made certain that only one boiler is in operation at a time.

Line no.	Operating line	Factory setting
4110	Setpoint min	60°C
4130	Temp diff on exchanger	8°C
4131	Temp diff off exchanger	4°C
4133	Comparative temp DHW sensor B3 DHW sensor B31 Buffer sensor B4 Buffer sensor B41 Flow temp setpoint Setpoint min	Buffer sensor B41



### Excess heat discharge

If the boiler temperature reaches the set maximum value, the solid fuel boiler pump is activated until the boiler temp sinks 5K below the set value. The excess heat is discharged into the Buffer or HCs for which Excess heat draw Line no. 861, 1161, 5085 are activated.

Line no.	Operating line	Factory setting
4141	Excess heat discharge	90°C
4170	Frost prot plant boiler pump On Off	On

### Frost prot plant boiler pump

The boiler pump is activated, depending on the **current** outside temperature, although there is no heat request.

Frost protection for the solid fuel boiler works only if frost protection for the plant is activated (operating line 6120).

## Menu: Buffer storage tank

### General:

The Buffer function and menu are only active when in the Configuration menu the multifunctional sensor inputs 5930, 5931, 6040-6045 are programmed as B4 and B41. Additionally in the LPB menu the device address has to be set to 1.

### Auto generation lock

The automatic heat generation lock brings about a temporary hydraulic separation between heat source and buffer storage tank. The heat source is put into operation only when the buffer storage tank is no longer able to cover the current demand for heat.

Line no.	Operating line	Factory setting
4720	Auto generation lock None With B4	With B4
4721	Auto heat gen lock SD	3
4722	Temp diff buffer/HC	-4

### Min st tank temp heat mode

If the tank temperature B4 drops below the set min. tank temp, the HCs are switched off.

Line no.	Operating line	Factory setting
4724	Min st tank temp heat mode	8°C

### Overtemperature protection

The buffer will be charged by the solar energy to the set max charging temp.

The overtemperature protection can reactivate the collector pump until the maximum buffer temperature (fix 90°C) has been reached.

Line no.	Operating line	Factory setting
4750	Charging temp max	80°C

### Recooling DHW/HCs

2 functions are available for recooling the buffer storage tank down to the recooling temperature.

- The recooling takes place from the max buffer temperature down to the return temperature.

Line no.	Operating line	Factory setting
4755	Recooling temp	60°C
4756	Recooling DHW/HCs	Off
4757	Recooling collector Off Summer Always	Summer

- The excess heat of the buffer can be drawn by a heat demand of heating or DHW tank. This can be selected for the individual HCs (Line no's 861, 1161, 5085).

- Recooling Collector. In case of a cold collector, the excess heat can be dispersed to the surroundings via the collector field.

### Plant hydraulics

Select whether the buffer should be charged by the solar energy. Only the DHW tank or the buffer can be charged by the solar energy.

Line no.	Operating line	Factory setting
4783	With solar integration	No



## Menu: Buffer storage tank

If there is a certain temperature differential between the common return sensor (B73) and the selectable comparative temperature, the return is diverted through the lower section of the buffer storage tank. The function can be used for a **return temperature increase or return temperature decrease** (to be selected on operating line 4796).

### Temp diff on/off return div

The selected temperature differential defines the switch on / off point of return diversion.

### Compar temp return div

Selection of the buffer storage tank temperature sensor with which the return temperature is compared in order to switch the return diversion based on the selected temperature differentials.

### Optg action return diversion

Selection of the buffer storage tank temperature sensor with which the return temperature is compared in order to switch the return diversion based on the selected temperature differentials.

### Partial charging setpoint

By hydraulically decoupling the lower buffer storage tank section, the chargeable storage volume is reduced. As a result, the upper storage tank section is charged in a shorter period of time. The lower storage tank section is only charged when charging of the upper section is completed.

This is defined on operating line 4796. In addition, the setting of the respective relay output is to be made as *Buffer return valve Y15* in configuration *Relay output QX1, 2, 3, 4* (operating lines 5890, 5891, 5892 and 5894) and the common return sensor (B73) at BX.

Line no.	Operating line	Factory setting
4790	Temp diff on return div	10°C
4791	Temp diff off return div	5°C

Line no.	Operating line	Factory setting
4795	Compar temp return div With B4 With B41 With B42	B4

Line no.	Operating line	Factory setting
4796	Optg action return diversion Temp decrease Temp increase	Temp increase

#### Temp decrease

If the consumers' return temperature is higher than the temperature at the selected sensor (operating line 4795), the return can be used to preheat the lower storage tank section. As a result, the return temperature drops further which, in the case of a condensing boiler, leads to higher efficiency.

#### Temp increase

If the consumers' return temperature is lower than the temperature at the selected sensor (operating line 4795), the return temperature can be raised by diverting the return through the lower storage tank section. As a result, the return temperature increases.

Line no.	Operating line	Factory setting
4800	Partial charging setpoint	60°C

## Menu: Buffer storage tank

### Full charging

Function full buffer storage tank charging enables released heat sources to switch off only when the buffer storage tank is fully charged, in spite of automatic heat generation lock.

Line no.	Operating line	Factory setting
4810	Full charging Off Heating mode Always	Off

#### Off

The full charging function is deactivated.

#### Heating mode

Full charging becomes active when due to the buffer storage tank temperature automatic heat generation locks the heat sources while the heat request is valid. When the buffer storage tank's sensor parameterized for the function reaches the required temperature, the function is ended.

#### Always

Full charging becomes active when due to the buffer storage tank temperature automatic heat generation locks the heat sources while the heat request is valid, or when the heat request becomes invalid. When the buffer storage tank's sensor parameterized for the function reaches the required temperature, the function is ended.

### Full charging temp min

The buffer storage tank is charged to at least the set level.

Line no.	Operating line	Factory setting
4811	Full charging temp min	8°C

### Full charging sensor

Line no.	Operating line	Factory setting
4813	Full charging sensor With B4 With B42/B41	With B42/B41

#### With B4

The full charging function uses buffer sensor B4.

#### With B42/B41

The full charging function uses buffer sensor B42 or, if not available, buffer sensor B41.

## Menu: DHW storage tank

### Charging

Setting Once/day or Several times/day is active only when the DHW release is set in accordance with the heating circuits' time programs.

### Flow setpoint boost

The DHW request to the boiler is made up of the current DHW setpoint plus the adjustable charging boost.

### Transfer boost

Heat transfer makes it possible to transport energy from the buffer storage tank to the DHW storage tank. In that case, the actual buffer storage tank temperature must be higher than the actual temperature of the DHW storage tank. The temperature differential can be set here.

### Switching diff

If the DHW temperature is lower than the current setpoint minus the switching differential set here, DHW charging is started. DHW charging is ended when the temperature reaches the current setpoint.

### Charging time limitation

During DHW charging, space heating may receive no heat or not enough heat, depending on the selected charging priority (operating line 1630) and the hydraulic circuit. For this reason, it is often practical to have a temporal limitation of DHW charging.

### Discharging protection

This function ensures that the DHW charging pump (Q3) is activated only when the heat source temperature is high enough.

### Charging temp max

Solar energy charges the DHW storage tank up to the adjusted maximum DHW charging level.

The protective collector overtemperature function can reactivate the collector pump until the maximum storage tank temperature is reached.

### Recooling temp

If activated, the recooling function remains in operation until the adjusted recooling temperature in the DHW storage tank is reached.

Line no.	Operating line	Factory setting
5010	Charging Once/day Several times/day	Several times/day
5020	Flow setpoint boost	16°C
5021	Transfer boost	8°C
5022	Type of charging Recharging Full charging Full charging legio Full Charg 1st time day	recharging

### Type of charging

The storage tank can be charged using up to 2 sensors. It is also possible to combine partial charging with 1 sensor and the Legionella function with 2 sensors (setting 3).

Line no.	Operating line	Factory setting
5024	Switching diff	5°C
5030	Charging time limitation	60 min
5040	Discharging protection Off Always Automatic	Automatic

### Application with sensor

The charging pump is activated only when the heat source temperature lies at a level half the charging boost above the DHW temperature. When, during the charging process, the boiler temperature drops to a level below the DHW temperature plus 1/8 the charging boost, the charging pump is deactivated again. If 2 DHW sensors are parameterized for DHW charging, the lower temperature is considered for the Discharging protection function (usually B31).

### Application with thermostat

The charging pump is activated only when the boiler temperature lies above the nominal DHW setpoint. When, during the charging process, the boiler temperature drops to a level below the nominal DHW temperature setpoint minus the DHW switching differential, the charging pump is deactivated again.

Line no.	Operating line	Factory setting
5050	Charging temp max	70°C
5055	Recooling temp	70°C
5056	Recooling heat gen/HCs	Off
5057	Recooling collector Off Summer Always	Always

### Recooling heat gen/HCs

Heating energy can be drawn off either by space heating or the DHW storage tank. This can be selected separately for each heating circuit (operating page heating circuit 1...).

### Recooling collector

If the collector is cold, the energy can be emitted to the environment via the collector's surfaces.

## Menu: DHW storage tank

### El imm heater optg mode

In place of the boiler, DHW can also be heated with an electric immersion heater. If DHW heating is provided by an electric immersion heater, no request will be sent to the boiler. The changeover between boiler and electric immersion heater takes place based on the following criteria.

Line no.	Operating line	Factory setting
5060	El imm heater optg mode Substitute Summer Always	Substitute
5061	El immersion heater release 24h/day DHW release Time program 4/DHW	DHW release
5062	El immersion heater control External thermostat DHW sensor	DHW sensor

#### Substitute

The electric immersion heater is only used if the boiler delivers a fault status message or has been shut down via boiler lock. This means that in normal situations the DHW is always heated by the boiler.

#### Summer

The electric immersion heater is used as soon as all connected heating circuits have switched to summer operation. The DHW is again heated by the boiler as soon as at least 1 of the heating circuits has switched back to heating operation. But the electric immersion heater is also used if the boiler delivers a fault status message or has been shut down via boiler lock.

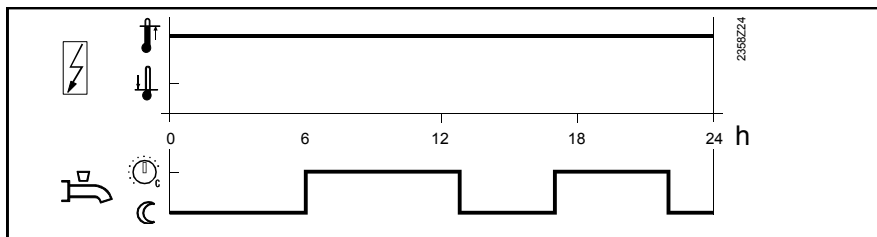
#### Always

DHW is heated with the electric immersion heater throughout the year. This means that when using this application, the boiler is never required for DHW heating.

### El immersion heater release

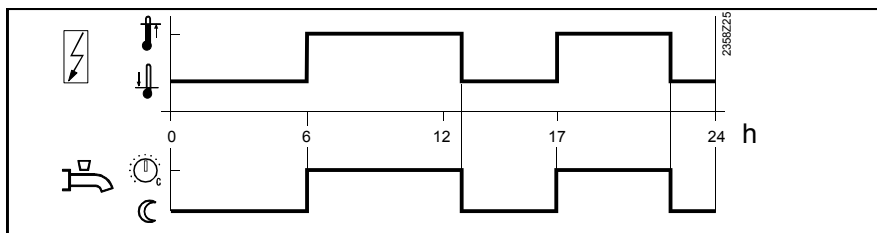
#### 24h/day

The electric immersion heater is continuously released independently of the time programs.



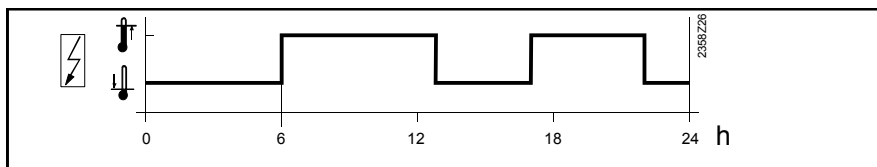
#### DHW Release

The electric immersion heater is released within the DHW release period.



#### Time program 4/DHW

The electric immersion heater is released within switching program 4.



### El immersion heater control

#### External thermostat

The storage tank is charged via an external thermostat without setpoint compensation of the controller.

#### DHW sensor

The storage tank is charged via an electric immersion heater, with setpoint compensation from the controller.

Important: To ensure that setpoint compensation operates as required, the external control thermostat must be set to the minimum storage temperature.

## Menu: DHW storage tank

### Automatic push

This function is only active when DHW heating is switched on.

Line no.	Operating line	Factory setting
5070	Automatic push Off On	On

### Off

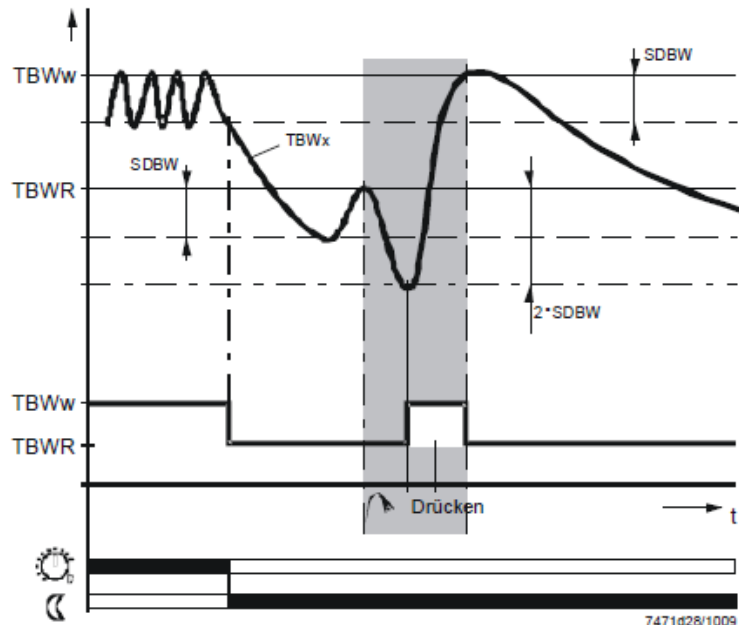
The DHW push can only be triggered manually.

### On

If the DHW temperature drops by more than 2 switching differentials (operating line 5024) below the Reduced setpoint (operating line 1612), one-time charging to the nominal DHW setpoint is effected again (operating line 1610).

#### Legend

SDBW Switching differential DHW  
TBWw Nominal DHW temp setpoint  
TBWR Reduced DHW temp setpoint



### Plant hydraulics

#### Excess heat draw

Excess heat draw can be triggered by one of the following functions:

- Inputs H1, H2, H3 or EX2
- Storage tank recooling
- Solid fuel boiler with excess heat draw

Line no.	Operating line	Factory setting
5085	Excess heat draw	On

When excess heat draw is activated, the surplus energy can be discharged for DHW storage.

#### With Buffer

If there is a buffer storage tank, specify whether the DHW storage tank can draw heat from it or directly from the boiler.

When using alternative heat sources, the buffer storage tank temperature is used as a control criterion for the release of additional heat sources.

Line no.	Operating line	Factory setting
5090	With Buffer	No
5092	With prim contr/system pump	No
5093	With solar integration	No

#### With prim contr/system pump

It is to be set whether the DHW storage tank receives its heat via the primary controller or with the help of the system pump (depending on the type of plant). The primary controller / system pump will be activated in the LOGON B.

#### With solar integration

It is to be set whether the DHW storage tank receives its heat from the solar collectors.

#### Speed control charging pump

The charging pump motor speed is limited by a minimum and maximum permitted speed. On start-up the pump is operated at maximum speed for appr. 10 seconds.

Line no.	Operating line	Factory setting
5101	Pump speed min	40%
5102	Pump speed max	100%

#### Pump speed min

Minimum speed for the pump.

#### Pump speed max

Maximum speed for the pump.

## Menu: DHW storage tank

### Transfer strategy

Die Umladung ist immer oder zu den eingestellten Freigabezeiten (Line no. 1620) zugelassen.

Line no.	Operating line	Factory setting
5130	Transfer strategy Off Always DHW Release	Always

### Off

There is no heat transfer via charging pump Q3. For the transfer of heat via charging pump Q11, setting DHW release applies in this case.

### Always

The transfer can always happen.

### DHW Release

The transfer can only happen during DHW release.

### Comparison temp transfer

For the transfer the corresponding DHW sensor can be chosen as comparison temperature.

Line no.	Operating line	Factory setting
5131	Comparison temp transfer DHW sensor B3 DHW sensor B31	DHW sensor B3

## Menu: Configuration

In the configuration menu general parameters can be programmed.

### Presetting

Via presetting one of 30 so called preselect configurations can be chosen. When doing so, the controller will automatically preset various line nr's according to the chosen configuration.

Afterwards individual parameters can be changed to adapt to the demands.

The plant diagram is determined by the preselect and the attached sensors.

Line no.	Operating line	Factory setting
5700	Preselect	-

Line no. 5700 Preselct can show the following:

#### Unchanged:

All parameters that were preset by the Preselect function have the preselect settings.

#### Changed:

Parameters that were preset by the Preselect function have been adapted manually.

### Heating circuit 1, 2

The HCs can be switched on or off.

Line no.	Operating line	Factory setting
5710	Heating circuit 1	On
5715	Heating circuit 2	Off

### DHW Sensor

#### DHW sensor B3

The controller calculates the switching points including the switching differential from the DHW setpoint and the acquired DHW storage tank temperature.

#### Thermostat

The DHW temperature is controlled based on the switching state of a thermostat connected to DHW sensor B3.

Line no.	Operating line	Factory setting
5730	DHW Sensor DHW sensor B3 Thermostat	Thermostat

- When using a DHW thermostat, Reduced mode is not possible. This means that
- when Reduced mode is active, DHW heating with the thermostat is locked.
- The adjustment of the nominal DHW temperature setpoint must be equal to or higher than the setpoint adjustment on the thermostat (thermostat calibrated at switch-off point).
- The flow temperature setpoint for DHW must be set to a minimum of 10 °C (has an impact on the charging time).
- In that case, the DHW is not protected against frost.

### DHW controlling element Q3

#### No charging element

No charging via Q3.

#### Charging pump

The DHW is charged via a pump connected to Q3/Y3.

Line no.	Operating line	Factory setting
5731	DHW controlling element Q3 No charging element Charging pump Diverting valve	Charging pump

#### Diverting valve

The DHW is charged via a diverting valve connected to Q3/Y3. In this setting pump Q2 will be set to boilerpump, if the boiler pump has not already been programmed at a Relay output QX...

## Menu: Configuration

### Basic pos DHW div valve

The basic position of the diverting valve is the position the valve maintains when there is no heat request.

### Last request

On completion of the last heat request, the diverting valve maintains position it held last.

Line no.	Operating line	Factory setting
5734	Basic pos DHW div valve Last request Heating circuit DHW	Last request

### Heating circuit

On completion of the last heat request, the diverting valve is driven to the heating circuit position.

### DHW

On completion of the last heat request, the diverting valve is driven to the DHW position.

### DHW separate circuit

The separate circuit can only be employed if a boiler cascade is used.

For the separate circuit, DHW controlling element Q3 must be set to Diverting valve.

Line no.	Operating line	Factory setting
5736	DHW separate circuit Off On	Off

### Off

The separate circuit is switched off. Every boiler in use can charge the DHW storage tank.

### On

The separate circuit is switched on. DHW charging takes place exclusively via the boiler defined for that purpose.

### Optg action DHW div valve

Here, the diverting valve position is set that applies when the output is active.

Line no.	Operating line	Factory setting
5737	Optg action DHW div valve Position on DHW Position on heating circuit	Position On DHW

### Position On DHW

When the output is active, the diverting valve is in the DHW position.

### Position on heating circuit

When the output is active, the diverting valve is in the heating circuit position.

### Midposition DHW div valve

Here, the DHW diverting valve can be driven to the midposition. This serves for filling or draining both heating circuits. This action must be reset manually.

Line no.	Operating line	Factory setting
5738	Midposition DHW div valve Off On	Off

### Off

The diverting valve is driven to position currently demanded, independent of heat requests and the basic position.

### On

The diverting valve is driven to the midposition.

### Ctrl boiler pump/DHW valve

This parameter is for use with special hydraulic schemes to define that boiler pump Q1 and diverting valve Q3 are only in charge of DHW and heating circuit 1, but not of heating circuit 2 and of external consumer circuits.

Line no.	Operating line	Factory setting
5774	Steuer' Kesselpump/TWW UV All requests Request HC1/DHW only	All requests

### All requests

Hydraulically speaking, the diverting valve is integrated with all heat requests and changes over between DHW mode and the other heat requests. The boiler pump runs, no matter what the heat request.

### Request HC1/DHW only

Das Umlenkventil ist hydraulisch nur bei HC 1 und Trinkwasser eingebunden und schaltet zwischen Trinkwasserbetrieb und HC 1-Betrieb um. Alle anderen Anforderungen sind hydraulisch nicht über das Umlenkventil (UV) und die Kesselpumpe, sondern direkt am Kessel angebunden.



## Menu: Configuration

### Solar controlling element

In place of a collector pump and diverting valves for integrating the storage tanks, the solar plant can also be operated with charging pumps.

Line no.	Operating line	Factory setting
5840	Solar controlling element Charging pump Diverting valve	Charging pump

#### Charging pump

When using a charging pump, all heat exchangers can be used at the same time. Either parallel or alternative operation is possible.

#### Diverting valve

When using a diverting valve, it is always only 1 heat exchanger that can be used at a time. Only alternative operation is possible.

### External solar exchanger

In the case of solar plants with 2 storage tanks, it must be selected whether there is an external heat exchanger used for both the DHW and the buffer storage tank, or for 1 of them only.

Line no.	Operating line	Factory setting
5841	External solar exchanger Jointly DHW storage tank Buffer storage tank	Jointly

### Combi storage tank

Functions specific to combi storage tanks are activated with this setting. For example the electric immersion heater in the buffer storage tank can be used for both space heating and DHW heating.

Line no.	Operating line	Factory setting
5870	Combi storage tank No Yes	No

#### No

No combi storage tank present.

#### Yes

Combi storage tank present.

## Menu: Configuration

### Relais output QX

The settings of the relay outputs add additional functions to the plant diagram.

QX2 is a relay output of LMS14.  
QX21, 22, 23 are relay output on AVS75 modules.

### Circulating pump Q4

The connected pump serves as a DHW circulating pump. Operation of the pump can be scheduled as required on operating page DHW, operating line Release circulating pump (Line no. 1660).

### El imm heater DHW K6

Using the connected electric immersion heater, the DHW can be heated up according to operating page DHW storage tank, operating line electric immersion heater. Line no. 5060 should be programmed appropriately.

### Collector pump Q5

When using a solar collector, a circulating pump for the collector circuit is required.

### Cons circuit pump VK1/2/3

External request pump 1 can be used for an additional consumer. Together with an external request for heat at input external request 1, it is possible to operate an air heater or similar.

### Boiler pump Q1

The connected pump is used for circulating the boiler water between boiler and low velocity header.

### Bypass pump Q12

The connected pump serves as a boiler bypass pump for maintaining the boiler return temperature.

### Alarm output K10

The alarm relay signals faults, should they occur. Switching on takes place with a delay of two minutes. When the fault is corrected, that is, when the fault status is no longer present, the relay will be deenergized with no delay. If the fault cannot immediately be corrected, it is still possible to reset the alarm relay. This is made on operating page Faults (Line no. 6710).

Line no.	Operating line	Factory setting
5891	Relais output QX None Circulating pump Q4 El imm heater DHW K6	Alarm output K10
6030 6031 6032 6033 6034 6035 6036 6037 6038	Collector pump Q5 Cons circuit pump VK1 Q15 Boiler pump Q1 Bypass pump Q12 Alarm output K10 2nd pump speed HC1 Q21 2nd pump speed HC2 Q22 2nd pump speed HC3 Q23 Heat circuit pump HC3 Q20 Cons circuit pump VK2 Q18 System pump Q14 Heat gen shutoff valve Y4 Solid fuel boiler pump Q10 Time program 5 K13 Buffer return valve Y15 Solar pump ext exch K9 Solar ctrl elem buffer K8 Solar ctrl elem swi pool K18 Cons circuit pump VK3 Q19 Cascade pump Q25 St tank transfer pump Q11 DHW mixing pump Q35 DHW interm circ pump Q33 Heat request K27 Refrigeration request K28 Heat circuit pump HC1 Q2 Heat circuit pump HC2 Q6 DHW ctrl elem Q3 Instant heater ctrl elem Q34 Water filling K34 2nd boiler pump speed Q27 Status output K35 Status information K36 Flue gas damper K37 Fan shutdown K38	None

### 2nd pump speed HC1/2/3

This function allows the control of a 2-stage heating circuit pump, so that when heating load is reduced the pump load can be reduced as well. The relay output QX is used to switch on the 2nd stage.

1st stage Output Q2/ Q6/Q20	2nd Stage Output Q21/ Q22/Q23	Pump mode
Off	Off	Off
On	Off	Min load
On	On	Full load

### Heat circuit pump Q20 (for direct circuit)

The direct circuit will be activated.

Time program:  
For the direct circuit only Time program 3/HC3 can be used. Also check menu "Time program 3/HC3".

### System pump Q14

The connected pump serves as a system pump, which can be used to supply heat to additional consumers. The system pump is put into operation as soon as there is a heat request from one of the consumers. If there is no heat request, the pump is deactivated on completion of the overrun time.

## Menu: Configuration

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### Heat gen shutoff valve Y4

If the buffer storage tank holds a sufficient amount of heat, the consumers can draw their heat from it, and the heat sources need not be put into operation. Automatic heat generation lock locks the heat sources and hydraulically disconnects them from the rest of the plant with the help of heat source shutoff valve Y4. This means that the heat consumers draw their energy from the buffer storage tank and wrong circulation through the heat sources will be eliminated.

### Solid fuel boiler pump Q10

For the connection of a solid fuel boiler, a circulating pump for the boiler circuit is required.

### Time program 5 K13

The relay is controlled according to the settings made in time program 5.

### Buffer return valve Y15

This valve must be configured for return temperature increase / decrease or partial charging of the buffer storage tank.

### Solar pump ext. exch K9

For the external heat exchanger, solar pump external exchanger K9 must be set at the multifunctional relay output (QX). If both a DHW and a buffer storage tank are available, operating line 5841 External solar heat exchanger must also be set.

### Solar ctrl elem buffer K8

If several heat exchangers are used, the buffer storage tank must be set at the respective relay output and, in addition, the type of solar controlling element must be defined on operating line 5840).

### Solar ctrl elem swi pool K18

If several heat exchangers are used, the swimming pool must be set at the respective relay output and, in addition, the type of solar controlling element must be defined on operating line 5840).

### Swimming pool pum Q16

External request pump 3 can be used for an additional consumer. Together with an external request for heat at input external request 3, it is possible to operate an air heater or similar.

### Cascade pump Q25

Common boiler pump for all boilers in a cascade.

### St tank transfer pump Q11

If the temperature level of the buffer storage tank is high enough, the DHW storage tank can be charged by the buffer. This transfer can be made by means of storage tank transfer pump Q11.

### DHW mixing pump Q35

Separate pump for storage tank circulation during the time the legionella function is active.

### DHW interm circ pump Q33

Charging pump with DHW storage tank using an external heat exchanger.

### Heat request K27

Contact closes to inform an external heat source that a heat demand is pending.

### Refrigeration request K28

Function not yet implemented.

### Heat circuit pump HC1 Q2

Pump HC1 will be activated.

### Hat circuit pump HC2 Q6

Pump HC2 will be activated.

### DHW ctrl elem Q3

Control element for DHW storage tank.

### Instant WH ctrl elem Q34

Ctrl element for DHW instantaneous.

### 2nd boiler pump speed Q27

Speed 2 of the boiler pump will be activated.

### Status output K35

Function status output.

### Status information K36

Function status information.

### Flue gas damper K37

Function flue gas damper.

### Fan shutdown K38

Function "Fan shutdown" to turn off power supply when the fan is not needed.

## Menu: Configuration

### Sensor input BX1, 2, 21, 22

Depending on the selection made, the sensor input settings assign appropriate functions.

BX1 and 2 are sensor inputs of the LMS14. BX21 and 22 are sensor inputs on the AVS75 modules.

#### None

Sensor input with no function.

#### DHW sensor B31

DHW storage tank sensor at the bottom.

#### Return sensor B7

Not a safety-related boiler return temperature sensor.

#### DHW circulation sensor B39

DHW circulation sensor / standby sensor.

#### Buffer sensor B4

Buffer storage tank sensor at the top.

#### Buffer sensor B41

Buffer storage tank sensor at the bottom.

#### Buffer sensor B42

Third buffer storage tank sensor (in the middle).

#### Solar flow sensor B63

Solar flow temperature sensor for yield measurement.

#### Solar return sensor B64

Solar return temperature sensor for yield measurement

Line no.	Operating line	Factory setting
5930 5931	Sensor input BX1, BX2 None DHW sensor B31 Collector sensor B6 Return sensor B7 DHW circulation sensor B39 Buffer sensor B4 Buffer sensor B41 Flue gas temp sensor B8 Common flow sensor B10 Solid fuel boiler sensor B22 DHW charging sensor B36 Buffer sensor B42 Common return sensor B73 Cascade return sensor B70 Swimming pool sensor B13 Solar flow sensor B63 Solar return sensor B64 Primary exch sensor B26	None
6040 6041 6042 6043 6044 6045	Sensor input BX21, BX22 See 5930 and 5931 for functions	None

## Menu: Configuration

### Function input H1/H2/H4/H5

### Function input H1/H2/H4/H5

### Optg mode changeover

### HC

The operating modes of the heating circuits are switched to Protection mode via the Hx input (e.g. using a remote telephone switch).

### DHW

DHW heating is locked only when using setting HCs+DHW or DHW.

### Heat generation lock

The heat source is be locked via the Hx terminals. All temperature requests made by the heating circuits and by DHW will be ignored. Frost protection for the boiler will be maintained.

### Error/Alarm message

Input H1 generates a controller-internal error message. If the "Alarm output" (relay outputs QX1 - 4, operating lines 5891 – 5894) is appropriately configured, the error message will be forwarded or displayed by an additional contact (e.g. an external lamp or horn).

### Consumer request VK1/VK2/VK3

The adjusted flow temperature setpoint will be activated via terminal Hx (e.g. an air heater function for a warm air curtain) closes its contact. The setpoint can be programmed on Line no. 1859, 1909 and 1959.

### Excess heat discharge

Active dissipation of excess heat enables an external heat source to force consumers (heating circuit, DHW storage tank, Hx pump) to draw excess heat by delivering a forced signal. Parameter Excess heat draw can be used to determine for every consumer whether or not it should take account of the forced signal and, hence, whether or not that consumer should participate in the dissipation of heat.

#### • Local effect

When using LPB device address 0 or >1, excess heat discharge only acts on the local consumers connected to the controller.

Line no.	Operating line	Factory setting
5950	Function Input H1/H2/H4/H5	Consumer request VK1
5970	None	10V
5977	Optg mode change HCs+DHW	None
6046	Optg mode changeover DHW	Heat generation lock
6054	Optg mode changeover HCs	None
6062	Optg mode changeover HC1	None
	Optg mode changeover HC2	None
	Optg mode changeover HC3	None
	Heat generation lock	
	Error/alarm message	
	Consumer request VK1	
	Consumer request VK2	
	Consumer request VK3	
	Excess heat discharge	
	Release swi pool solar	
	Operating level DHW	
	Operating level HC1	
	Operating level HC2	
	Operating level HC3	
	Room thermostat HC1	
	Room thermostat HC2	
	Room thermostat HC3	
	DHW flow switch	
	DHW thermostat	
	Start prevention	
	Consumer request VK1 10V	
	Consumer request VK2 10V	
	Consumer request VK3 10V	
	Pressure measurement 10V	
	Preselected output 10V	

#### • Central effect (LPB)

When using LPB device address = 1, excess heat discharge also acts on the consumers connected to the other controllers in the same segment.

The distribution of excess heat from segment 0 across other segments of the system is not possible.

#### Release swi pool solar

The function can be used to enable solar heating of the swimming pool externally (e.g. with a manual switch) or to define solar charging priority over storage.

#### Configuration:

Set the function of input Hx to Release swimming pool solar. Refer to operating line 2065 "Charging priority solar" for a description of the function.

#### Operating level HC's / DHW

The operating level can be set via the contact in place of using the internal time program (external time program).

#### Room thermostat HC1/HC2/HC3

The input can be used to generate a room thermostat request for the selected heating circuit.

#### DHW flow switch

Input from the flow switch of the instantaneous water heater.

#### DHW thermostat

Input from the DHW storage tank thermostat.

#### Start prevention

This input can be used to prevent burner starts.

#### Consumer request VK1/VK2/VK3 10V

Application node "External load x" receives heat requests in the form of voltage signals (DC 0...10 V). The linear characteristic is defined with the help of 2 fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

#### Pressure measurement DC 10 V

The voltage signal present at input Hx is converted to a pressure value (linear conversion). The linear characteristic is defined by 2 fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

#### Preselected output 10V

The heat source receives a voltage signal (DC 0...10V) as an output request. The linear characteristic is defined with the help of 2 fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

## Menu: Configuration

### Contact type H1/H2/H4/H5

#### NC

The contact is normally closed and must be opened to activate the selected function.

#### NO

The contact is normally open and must be closed to activate the selected function.

The linear characteristic is defined via 2 fixed points. The setting uses 2 parameter pairs for Function value and Voltage value (F1/U1 and F2/U2). At input H4 (frequency input), a frequency value is assigned to the function value, and not a voltage value.

Line no.	Operating line	Factory setting
5951 6047 6055 6063	Contact type H1/H2 NC NO	NO
5952	Min. Flow setpoint H1	70°C
5953 6049 6057 6065	Voltage value 1 H1/H2	2V 0V 0V 0V
5954 6050 6058 6066	Function value 1 H1/H2	100 0 0 0
5955 6051 6059 6067	Voltage value 2 H1/H2	10V 0V 0V 0V
5956 6052 6060 6068	Function value 2 H1/H2	900 0 0 0
5971	Contact type H4 NC NO	NO
5973	Frequency value 1 H4	0Hz
5974	Function value 1 H4	0
5975	Frequency value 2 H4	0Hz
5976	Function value 2 H4	0
5978	Contact type H5 NC NO	NO

### Extension module AVS75

#### Multifunctional

Functions that can be assigned to the multifunctional inputs / outputs appear on operating lines 6030...6038.

#### Heating circuit 1/2

For this application, the respective settings of operating page Heating circuit 1/2 can be adapted.

#### Return temp controller

The mixing valve control is part of the return temperature increase function. Settings in menu "Boiler".

### Function input EX21 Module 1/2/3

#### None

Input Hx has no function.

#### Limit thermostat HC

If the extension module for the heating circuit is used, an external limit thermostat (e.g. for underfloor heating) can be connected to input EX21 (AC 230V).

Line no.	Operating line	Factory setting
6020 6021 6022	Function Extension module 1/2/3 None Multifunctional HC1 HC2 Return temp controller Solar DHW Primary contr/system pump	None

#### Solar DHW

The relevant settings of operating page "Solar" can be matched to meet the requirements of this application.

#### Primary contr/system pump

For this application, the respective settings of operating page Primary controller / system pump can be adapted.

Line no.	Operating line	Factory setting
6024 6026 6028	Function input EX21 Module 1/2/3 None Limit thermostat HC	None

## Menu: Configuration

### Sensor type collector

Selection of type of sensor used. The controller will use the respective temperature characteristic.

Line no.	Operating line	Factory setting
6097	Fühlertyp Kollektor NTC PT1000	NTC

### Readjustm collector sensor

The measured value of the collector sensor can be corrected +/- 20 K.

Line no.	Operating line	Factory setting
6098	Readjustm collector sensor	0.0 °C
6100	Readjustm outside sensor	0.0 °C

The measured value of the outside sensor can be corrected +/- 3 K.

### Time constant building

When the outside temperature varies, the room temperature changes at different rates, depending on the building's thermal storage capacity.

Line no.	Operating line	Factory setting
6110	Time constant building	5 h

The above setting is used to adjust the response of the flow temperature setpoint when the outside temperature varies.

### Central setp compensation

Central setpoint compensation matches the setpoint of the heat source to the required central flow temperature. The setting limits the maximum readjustment, even in cases where greater adaptations would be called for.

Line no.	Operating line	Factory setting
6117	Central setp compensation	5 °C

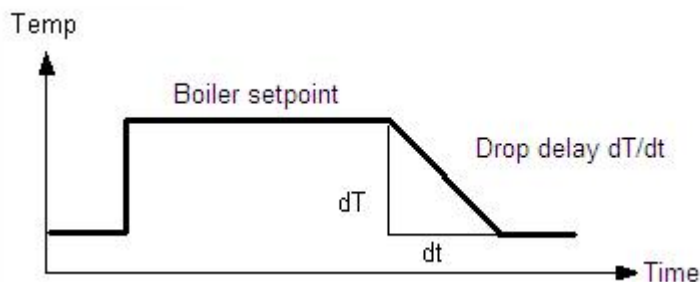
This function can only be implemented when using the common flow sensor (B10).

### Setpoint Reduction delay

This function prevents stage boilers or modulating boilers switching off too quickly. This makes the boilers not cool down, to prevent a new heat demand and restart of the boilers.

Line no.	Operating line	Factory setting
6118	Setpoint reduction delay	20K/min

The reduction delay only works when there is a setpoint change, not when the heat demand disappears.



## Menu: Configuration

### Frost protection plant

Depending on the actual outside temperature the pumps will be switched on, even if there is no heat demand.

Prerequisite for proper functioning is a fully operational plant. Frost protection for the plant necessitates an outside sensor. If that sensor is missing, the function will nevertheless be ensured by simulating an outside temperature of 0 °C and by delivering an error message.

#### Off

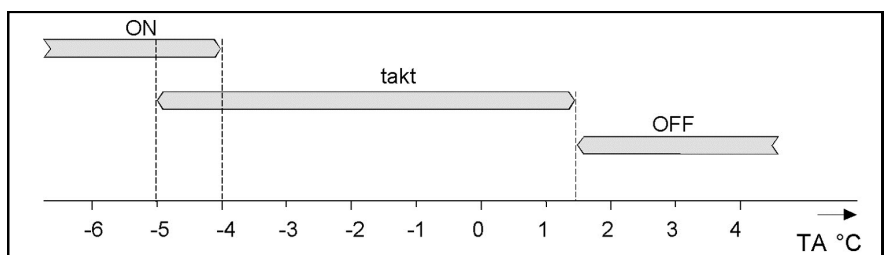
Function is deactivated.

#### On

Function is activated.

Line no.	Operating line	Factory setting
6120	Frost protection plant Off On	On

Outside temp	Pump	Diagram
...-4°C	Continuously ON	ON
-5...1.5°C	ON for 10 minutes at 6 hours intervals	Cycle
1.5°C...	Continuously OFF	OFF



### Save sensors

At midnight, the basic unit saves the statuses at the sensor terminals, provided the controller has previously been in operation for at least 2 hours. If, after storage, a sensor fails, the basic unit generates an error message. This setting is used to ensure immediate saving of the sensors. This becomes a requirement when, for instance, a sensor is removed because it is no longer needed.

Line no.	Operating line	Factory setting
6200	Save sensors No Yes	No

### Reset to default parameters

All resettable parameters can be reset to their default values. Exempted from this are the following operating pages: Time of day and date, Operating unit, RF and all time programs, Setpoint "Manual control".

Line no.	Operating line	Factory setting
6205	Reset to default parameters No Yes	No

### Plant diagram

To identify the current plant diagram, the basic unit generates a check number. The check no. is made up of the lined up partial diagram numbers. The meaning of the numbers for the line no.'s can be found in the tables on the next page.

Line no.	Operating line
6212	Check no. heat source 1
6213	Check no. heat source 2
6215	Check no. storage tank
6217	Check no. heating circuits

### Software-Version

The software version indicated here represents the current version of the basic unit.

Line no.	Operating line
6220	Software version



## Menu: Configuration

### Check no. heat source 1 (Line no. 6212)

<b>Gaskessel modulierend</b>	
11	Modulating boiler
12	Modulating boiler, boiler pump
13	Modulating boiler, bypass pump
14	Modulating boiler, boiler pump, bypass pump
<b>Solar</b>	
0	No Solar
1	Solar with collector sensor and - pump

### Check no. heat source 2 (Line no. 6213)

<b>Solid fuel boiler</b>	
0	No solid fuel boiler
1	Solid fuel boiler, boiler pump
2	Solid fuel boiler, boiler pump, integration DHW storage tank

### Check no. storage tank (Line no. 6215)

Buffer storage tank		DHW storage tank	
0	No storage tank	0	No DHW storage tank
1	Buffer storage tank	1	Electric immersion heater
2	Buffer storage tank, solar connection	2	Solar connection
4	Buffer storage tank, heat source valve	4	Charging pump
5	Buffer storage tank, solar connection, heat source valve	5	Charging pump, solar connection
		13	Diverting valve
		14	Diverting valve, solar connection
		16	Primary controller, without heat exchanger
		17	Primary controller, 1 heat exchanger
		19	Intermediate circuit, without heat exchanger
		20	Intermediate circuit, 1 heat exchanger
		22	Charging pump / intermediate circuit, without heat exchanger
		23	Charging pump / intermediate circuit, 1 heat exchanger
		25	Diverting valve / intermediate circuit, without heat exchanger
		26	Diverting valve / intermediate circuit, 1 heat exchanger

### Check no. heating circuits (Line no. 6217)

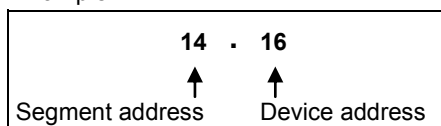
HC 3		HC 2		HC 1	
0	No HC	0	No HC	0	No HC
1	Circulation via boiler pump	1	Circulation via boiler pump	1	Circulation via boiler pump
2	HC pump	2	HC pump	2	HC pump
3	HC pump, mixing valve	3	HC pump, mixing valve	3	HC pump, mixing valve

## Menu: LPB

### Device address and Segment address

The controller LPB address is divided into 2 parts each consisting of two 2-digit numerals.

Example:



### Bus power supply function

The bus power supply enables the bus system to be powered directly by the individual controllers (no central bus power supply). The type of bus power supply can be selected.

#### Off

No bus power supply via the controller.

#### Automatically

The bus power supply (LPB) via the controller is automatically switched on and off depending on the requirements of the LPB.

### Bus power supply state

The display shows whether the controller currently supplies power to the bus.

#### Off

The bus power supply via controller is currently inactive.

#### On

The bus power supply via controller is currently active. At the moment, the controller supplies some of the power required by the bus.

### Display system messages

This setting makes it possible to suppress on the connected operating section system messages transmitted via LPB.

#### No

Error messages are not displayed on the operator unit of the controller.

#### Yes

Error messages are displayed on the operator unit of the controller.

Line no.	Operating line	Factory setting
6600	Device address	1
6601	Segment address	0
6604	Bus power supply function Off Automatically	Automatically
6605	Bus power supply State Off On	On
6610	Display system messages No Yes	No
6620	Action changeover functions Segment System	Segment
6621	Summer changeover Locally Centrally	Locally
6623	Optg mode changeover Locally Centrally	Centrally
6624	Manual source lock Locally Segment	Locally

### Action changeover functions

The range of action of central changeover can be defined. This applies to the following types of limitation:

- Summer changeover (when selecting Centrally on line 6623)
- Summer changeover (with Centrally setting on operating line 6621)

#### Segment

Changeover takes place with all controllers in the same segment.

#### System

Changeover takes place with all controllers in the entire system (in all segments). The controller must be located in segment 0!

### Summer changeover

The scope of summer changeover is as follows:

#### Locally

Local action; the local heating circuit is switched based on operating lines 730, 1030 and 1330.

#### Centrally

Central action; depending on the setting made on operating line Action changeover functions, either the heating circuits in the segment or those of the entire system are switched based on operating line 730.

### Optg mode changeover

In LPB-capable devices, the basic unit with the LPB device address = 1 can adopt the function of a central operating mode changeover. The changeovers on the central basic unit (via H1 / H3) or the "HC operating mode changeover" parameter) then also take effect on the heating circuits and the DHW of the other basic units on the LPB.

The scope of the operating mode changeover via input H is as follows:

#### Locally

Local action; the local heating circuit is switched on and off.

#### Centrally

Central action; depending on the setting made on operating line Action changeover functions, either the heating circuits in the segment or those of the entire system are switched based on operating line 730.

### Manual source lock

The range of action of source lock is as follows:

#### Locally

Local action; the local source is locked.

#### Segment

Central action; all sources of the cascade are locked.

## Menu: LPB system

### DHW Assignment

Assignment of DHW heating is required only if it is controlled by a heating circuit program (operating lines 1620 and 5061).

### Local HCs

DHW is only heated for the local heating circuit.

### All HCs in segment

DHW is heated for all heating circuits in the segment.

### All HCs in system

DHW is heated for all heating circuits in the system.

With all settings, controllers in holiday mode are also considered for DHW heating.

### Note OT limit ext source

Additional generators connected via the LPB bus can be locked or released per its own parameter based on the outside air temperature (e.g. air/water heat pump). This status is distributed via LPB. The master therefore knows in a cascade whether an additional generator (slave) is available per its own employment limits (outside air temperature or not and can switch another generator accordingly.

### No

The Ecobit from the external generator is not observed.

### Yes

The Ecobit from the external generator is observed and the cascade is controlled per the provided generators.

### Caution!

If an LMU control (slave) is connected as an additional generator, the parameter must be set to "No"!

Line no.	Operating line	Factory settings
6625	DHW Assignment Local HCs All HCs i segment All HCs in system	All HCs in system
6632	Note OT limit ext source No Yes	No
6640	Clock mode Autonomously Slave without remote setting Slave with remote setting Master	Autonomously
6650	Outside temp source	-

### Clock mode

This setting defines the impact of the system time on the controller's time setting.

### Autonomously

The time of day on the controller can be readjusted. The controller's time of day is not matched to the system time.

### Slave without remote setting

The time of day on the controller cannot be readjusted. The controller's time of day is constantly and automatically matched to the system time.

### Slave with remote setting

The time of day on the controller can be readjusted; at the same time, the system time is readjusted since the change is adopted from the master. The controller's time of day is still automatically and constantly matched to the system time.


### Master

The time of day on the controller can be readjusted. The time of day on the controller is used for the system. The system time will be readjusted.

### Outside temp source

Only 1 outside temperature sensor is required in the LPB plant. This sensor is connected to a freely selectable controller and delivers via LPB the signal to the controllers without sensor. The first numeral to appear on the display is the segment no. followed by the device no.

## Menu: Fault, Service/special operation

When a fault  is pending, an error message can be displayed on the info level by pressing the Info button. The display describes the cause of the fault.

### Message

A fault currently pending in the system is displayed here with the Albatros code indicating where the fault occurred.

### SW Diagnostic code

An internal software error currently pending in the system is displayed here with diagnostic code indicating where the error occurred.

Line no.	Operating line	Factory setting
6700	Message	-
6705	SW Diagnostic code	-
6706	Burner ctrl phase lockout pos	-
6710	Reset Alarm relay	No

### Burner ctrl phase lockout pos

A fault currently pending in the system is displayed here with the lockout phase indicating where the fault occurred.

### Reset alarm relay

When a fault is pending, an alarm can be triggered via relay QX... The QX... relay must be appropriately configured. This setting can be used to reset the alarm relay.

### Temperature alarms

This function can be used for maintaining the required flow temperature. If the flow temperature deviates constantly from the required level for more than the period of time set, an error message will be delivered.

Line no.	Operating line	Factory setting
6740	Flow temp 1 Alarm	-
6741	Flow temp 2 Alarm	-
6742	Flow temp 3 Alarm	-
6743	Boiler temp Alarm	-
6745	DHW charging Alarm	-

### History

The basic unit stores the last 20 errors in nonvolatile memory. Every new entry cancels the entry made last. For every error entry, error code, time, internal SW diagnostic code and fault phase of the burner control are stored.

Line no.	Operating line	Factory setting
6800...6996	History ...	Indication only

### Maintenance functions

#### Burner hours interval / Burner start interval/ Maintenance interval

As soon as the set number of burner hours or burner starts or maintenance interval has elapsed, a maintenance message is displayed. For this message, the number of operating hours and starts of the first burner stage (input E1) are counted.

Line no.	Operating line	Factory setting
7040	Burner hours interval	- - -
7041	Burn hrs since maintenance	Indication only
7042	Burner start interval	- - -
7043	Burn starts since maint	Indication only
7044	Maintenance interval	- - -
7045	Time since maintenance	Indication only
7050	Fan speed ionization current	0
7051	Message ionization current No Yes	No

### Burn hrs since maintenance

#### Burn starts since maint

#### Time since maintenance

The current value is added up and displayed. On this operating line, the value can be reset to 0.

### Fan speed ionization current

This is the fan speed limit from which the burner ionization current maintenance message should be set if – due to too low ionization current – ionization current supervision and thus increased speed are activated.

### Message ionization current

Flag to indicate and to reset the burner ionization current maintenance message.

The maintenance message can be reset only if the cause of the message has been rectified.

## Menu: Service/special operation

### Chimney sweep function

The burner is started up. To ensure that burner operation will be as continuous as possible, only maximum limitation of the boiler temperature is active to be used as the switch off point.

To reach the minimum boiler temperature of 64 °C as quickly as possible, all consumers are locked for that period of time by an absolute locking signal.

When the boiler temperature exceeds 64 °C, a forced signal forces all consumers to draw heat so ensure that the boiler keeps running.

The boiler temperature maximum limitation remains active when chimney sweeper function is active.

### Burner output

Preset burner output for performing the Chimney sweep function.

### Manual control

When manual control is activated, the relays are no longer energized and deenergized according to the control status but are set to a predefined manual control status in accordance with their functions (see table).

### Setpoint adjustment manual control

After Manual control has been activated, one should return to the main display. There the Service/special operation symbol is displayed. The setpoint for manual control can be changed in the info menu, which can be reached by pushing the info-button.

When manual control is activated, the relays are no longer energized and deenergized according to the control status but are set to a predefined manual control status in accordance with their functions (see table below). The relay outputs are set to a state where heat is provided, independent of their hydraulic function. The solar plant remains switched off since there is a possibility of storage tank recooling via the collector. A relay energized in manual operation can be deenergized by an electronic control thermostat (TR) or limit thermostat (TW).

Line no.	Operating line	Factory setting
7130	Chimney sweep function	Off
7131	Burner output Partial load Full load Max heating load	Max heating load
7140	Manual control	Off

Designation		Relay	Status
Gas boiler	Boiler pump	Q1	On
	2. stage boiler pump	Q27	On
Solid fuel boiler	Solid fuel boiler pump	Q10	On
Solar	Collector pump	Q5	Off
	External exchange pump	K9	Off
	Control element buffer storage tank	K8	Off
	Control element swimming pool	K18	Off
DHW	Charging pump	Q3	On
	Diverting valve	Q3	Off
	Intermediate circuit pump	Q33	On
	DHW mixing pump	Q35	Off
	Circulation pump	Q4	On
	Electric immersion heater	K6	On
Instantaneous water heater	Charging pump	Q34	Off
	Diverting valve	Q34	Off
Buffer storage tank	Heat generation shutoff valve	Y4	On
	Return valve	Y15	Off
HC 1..3	HC pump	Q2 Q6 Q20	On
	Mixer open/close	Y1/Y2 Y5/Y6 Y11/Y12	Off
	HC pump 2. stage	Q21 Q22 Q23	On
Primary controller	System pump	Q14	On
	Prim ctrl mixer open/close	Y19/Y20	Off
External consumer circuits 1..3	Consumer circuit pump	Q15 Q18 Q19	On
Extra function	Alarm output	K10	Off
	Time program 5	K13	Off
	Heat demand	K27	On
	Status output	K35	On
	Status information	K36	On
	Flue gas damper	K37	On
	Fan shutdown	K38	On
	Storage tank diverter pump	Q11	Off
	Cascade pump	Q25	On

## Menu: Service/special operation

### Controller stop function

In controller stop function the request to the burner is set to setpoint controller stop.

### Controller stop setpoint

Setpoint for the burner request in controller stop function.

### Deaeration function

This parameter serves for triggering the function manually, e.g. via hotkey or menu Maintenance/special operation. On completion of deaeration, the parameter will be reset to Off. Deaeration can also be aborted any time by setting the parameter to Off.

### Type of venting

This parameter can be used to preselect the phases of the Deaeration function (for more detailed information, refer to chapter Deaeration function).

Line no.	Operating line	Factory setting
7143	Controller stop function Off On	Off
7145	Controller stop setpoint	50%
7146	Deaeration function Off On	Off
7147	Type of venting None HC continuous HC cycled DHW continuous DHW cycled	None
7170	Telephone customer service	-

Once the function is started, the value serves for information purposes and shows the phase currently handled.

### Telephone customer service

Setting of phone number that appears on the info display.

### Parameterstick

The parameter stick can only be used in connection with a full-text operating unit. If this type of operating unit is not available, a service room unit can be connected for temporary use. When the parameter stick is plugged into the LMS14, it is identified and the information for auto-backup or auto-restore is evaluated.

Stored on the parameter stick are several parameter sets, which can be selected via the operating unit.

### PStick storage pos

### PStick description parameter set

Using data point PStick storage pos, the data set (data set number on the stick) to be written or read can be selected. When a data set was selected, a second data point PStick Bez Datensatz shows the Data set name.

### PStick Command

Depending on the selection made, the following actions are performed:

### No operation (0)

This is the basic state. This command is displayed as long as no operation on the stick is active.

Line no.	Operating line	Factory setting
7250	PStick storage pos	-
7251	PStick description parameter set	-
7252	PStick command No operation Reading from stick Writing on stick	No operation
7253	PStick progress	-
7254	No stick No operation Writing on stick Reading from stick EMC test active Writing error Reading error Incompatible data set Wrong stick type Stick format error Check data set Data set disabled Reading disabled	No stick

### Reading from stick (1)

Starts reading data from the stick. This operation is only possible with read or read / write sticks.

### Writing on stick (2)

Starts writing data from the LMS14... to the stick. This operation is only possible with write or read / write sticks.

### PStick progress

The progress made appears as a percentage which, when stick operation is active (reading or writing) shows the percentage already completed. If no operation is active, or if an error occurs, the display reads 0%. In the 2nd box of the double display, the state is shown. Among other things, it serves as information about errors should problems occur.

## Menu: Input/output test, State

The input and output test is used to check the correct functioning of the connected plant components.

By choosing a setting in the Relay test, the respective relay will be energized and the attached component will be activated. Functionality of the relays and the correctness of the wiring can be verified.

Line no.	Operating line	Factory setting
7700...7952	-	-

**Important:**

Selected sensor values are updated within a maximum of 5 seconds. The display is made without measured value correction.

### State

The current operating state of the plant is visualized by means of status displays.

Line no.	Operating line
8000	State HC 1
8001	State HC 2
8002	State HC P
8003	State DHW
8005	State Boiler
8007	State Solar
8008	State Solid fuel boiler
8009	State Burner
8010	State Buffer
8011	State Swimming pool

## Menu: Diagnostics

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### Diagnose cascade

For diagnostics purposes, a number of setpoints, actual values, switching states of relays and heat source priorities can be displayed.

Line no.	Operating line
8100...8150	-

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### Diagnostics heat generation

For diagnostic purposes, the various setpoints, actual values, relay switching states and meter readings can be displayed.

Line no.	Operating line
8304...8570	-

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### Diagnostics consumers

For diagnostic purposes, the various setpoints, actual values, relay switching states and meter readings can be displayed.

Line no.	Operating line
8700...9058	-



## Menu: Burner control

The burner control guarantees the proper functioning of the boiler including boiler start up, shutdown and flame supervision. The procedure itself is defined by parameters set by the manufacturer.

The values in the table below are classed to various boiler capacities and they should not be changed by installers. Only in certain cases should they be changed by Elco engineers.

### Prepurge time

The prepurge time can be adjusted via the operating section. It can only be set to a value greater than 10 seconds.

### Required speed ignition

Required speed at the time of ignition, which can be adjusted via the operating section. It can only be set to a value smaller than 3000rpm.

### Required speed LF

Speed required at low-fire, which can be adjusted via the operating section. It can only be set to a value greater than "Required speed LF min".

### Required speed HF

Speed required at high-fire, which can be adjusted via the operating section. It can only be set to a value greater than "Required speed HF max".

### Postpurge time

Duration of postpurging, which can be adjusted via the operating section. It can only be set to a value greater than 7 seconds.

### Forced prepurging on error

After a reset following lockout, after Power On, or after 24 hours in standby mode, forced prepurging takes place, in the TV phase for 21 s or "Prepurge time" if "Prepurge time" exceeds 21 s.

### Off

Function is deactivated.

### On

Function is activated.

Line no.	Operating line	Factory setting
9500	Prepurge time	THISION L:10 s R600: 15s
9512	Required speed ignition	See parameter list
9524	Required speed LF	See parameter list
9529	Required speed HF	See parameter list
9540	Postpurge time	THISION L:7s R600: 15s
9615	Forced prepurging on error Off On	On
9650	Chimney drying Off Temporarily Permanently	THISION L: Temporarily R600: Off

### Chimney drying

When chimney drying is activated, the function is started after shutdown when changing to standby. Chimney drying can be interrupted by any heat request and can be restarted when the sequence of phases returns to standby.

### Off

Function is deactivated.

### Temporarily

The duration of chimney drying is 10 minutes.

### Permanently

Chimney drying is continuously performed in standby mode.

## Notes

[illegible]

## Notes

[illegible]

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**Service:**