

COMBiflo

Indirect High Efficiency Boiler & Stainless Steel Storage Water Heater

100/300

150/300



This manual must be kept with the appliance

Andrews. Built to perform.



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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.

Bedienung HK 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

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	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.

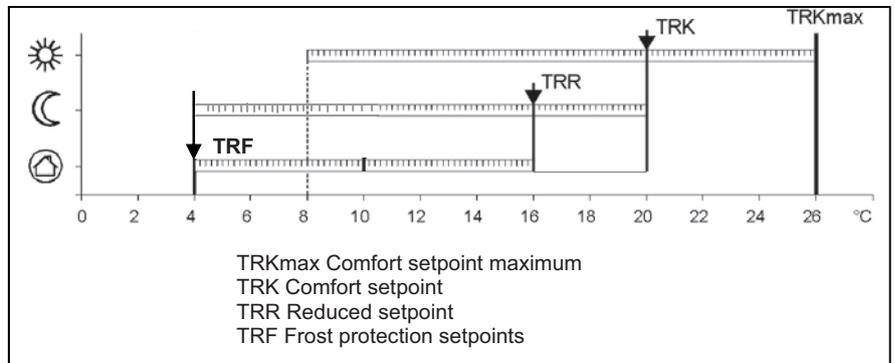
Frost protection

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 setting, 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

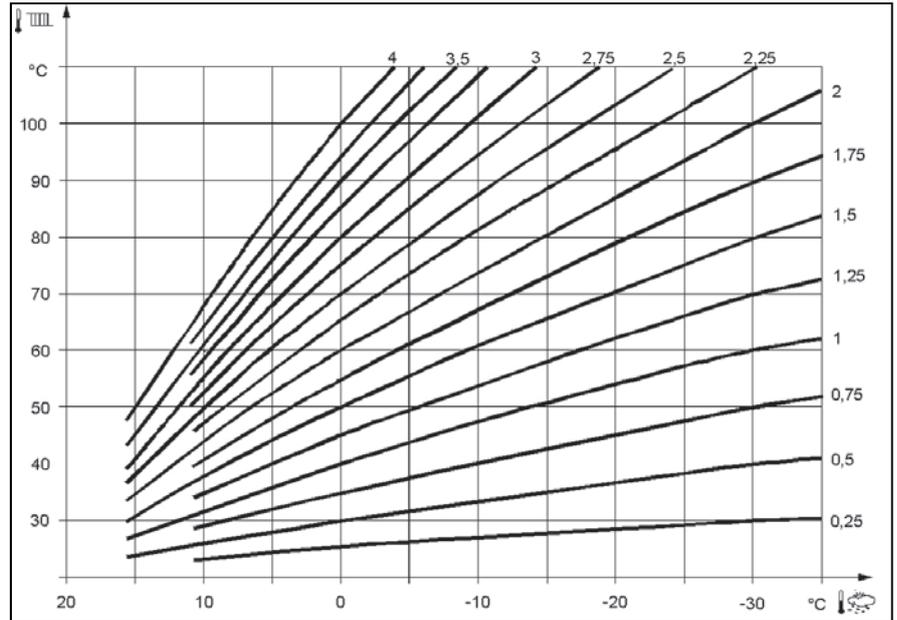
Parallel displacement of the heating curve is used to change the flow temperature evenly across the entire outside temperature range. In other words, if the room temperature is always too high or too low, a readjustment must be made with the help of the parallel displacement.

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:

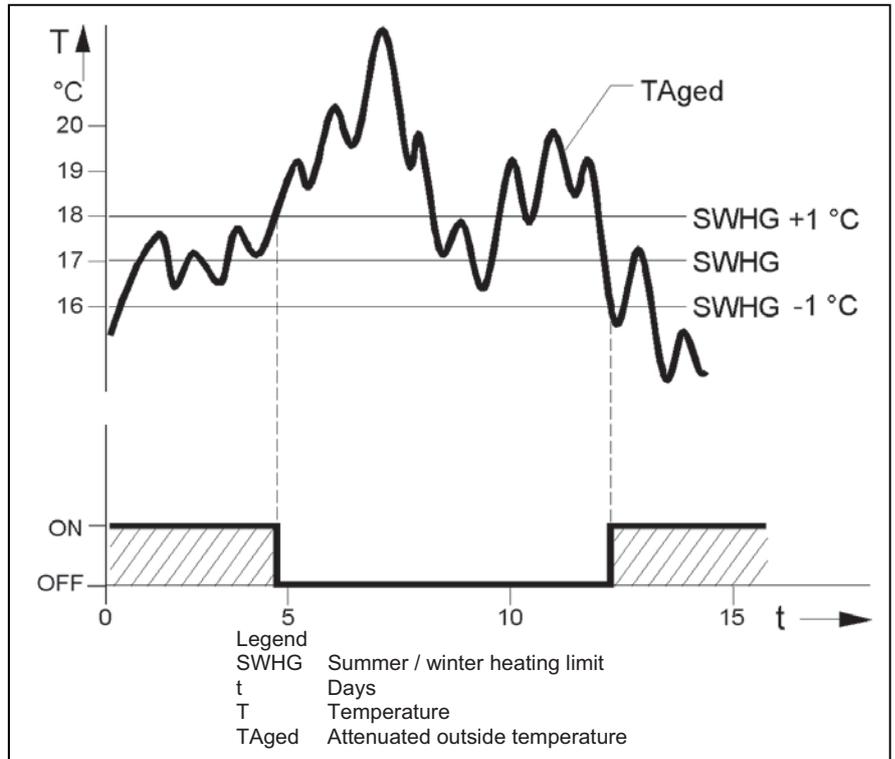
Winter operation will start earlier.
Summer operation will start later.

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

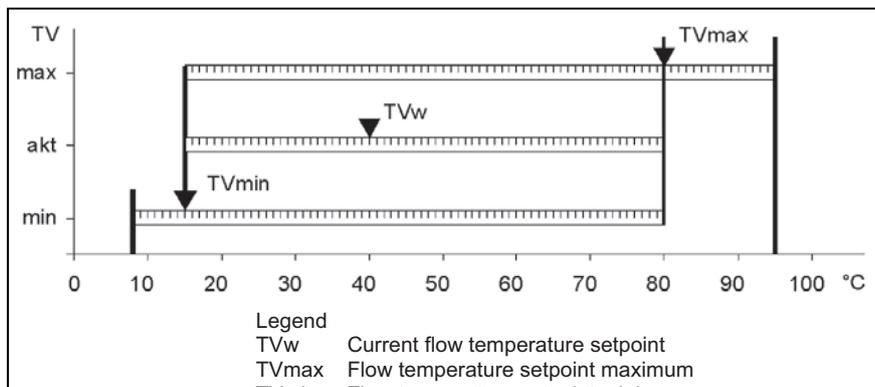
The 24-hour heating limit applies as described under *24-hour heating limit*, depending on both the current and the composite outside temperature.

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



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)

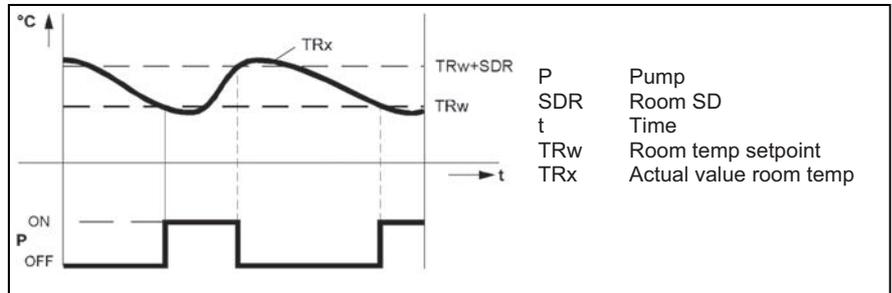
Menu: Heating circuits

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

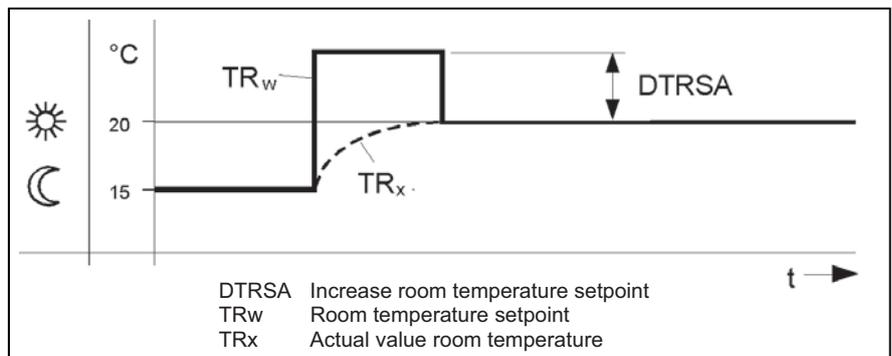


Boost heating

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	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	Down to reduced setpoint

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

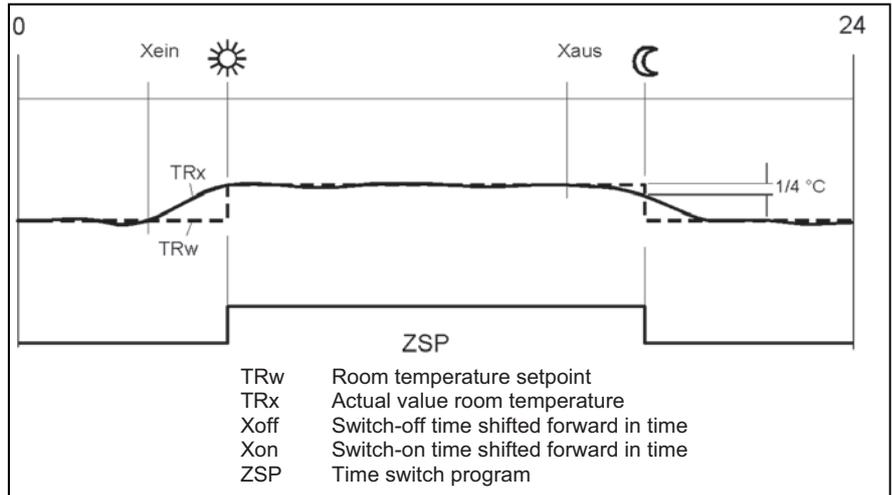
The change from one temperature level to the other is optimized in a way that the comfort setpoint is reached at the relevant switching time.

Optimum stop control max

The change from one temperature level to the other is optimized in a way that the comfort setpoint minus 1/4 °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

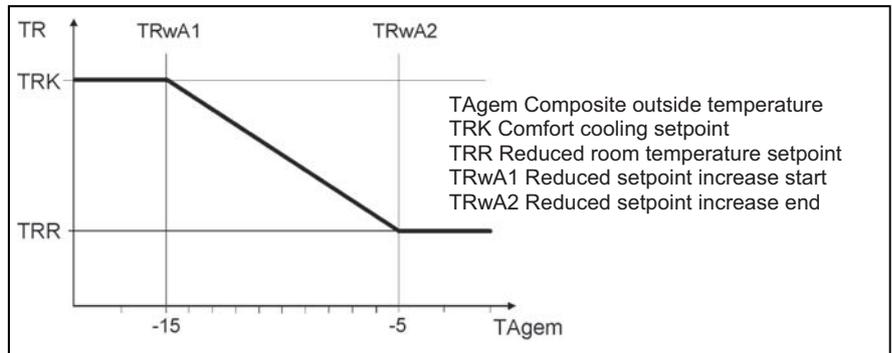


Raising the reduced setpoint

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	---
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). X_p 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.

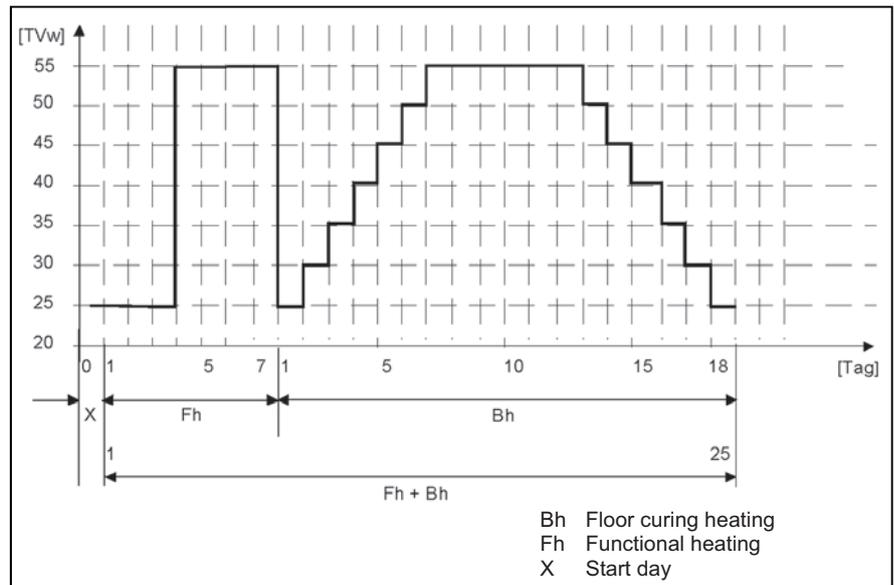
Floor curing setp current

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	No
872	1172	With prim/contr system pump No Yes	No

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.

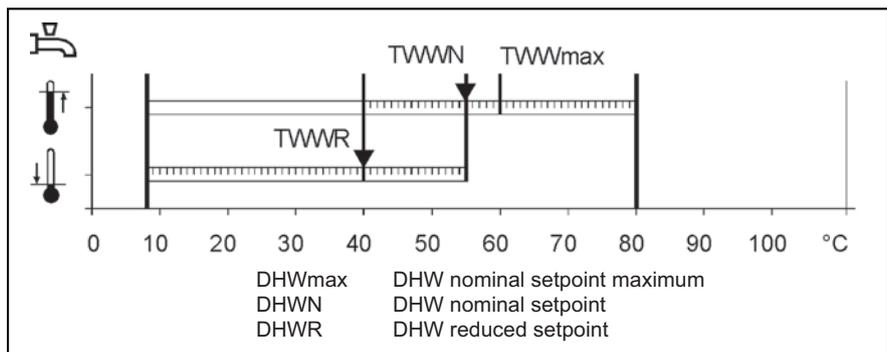
Nominal setpoint

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



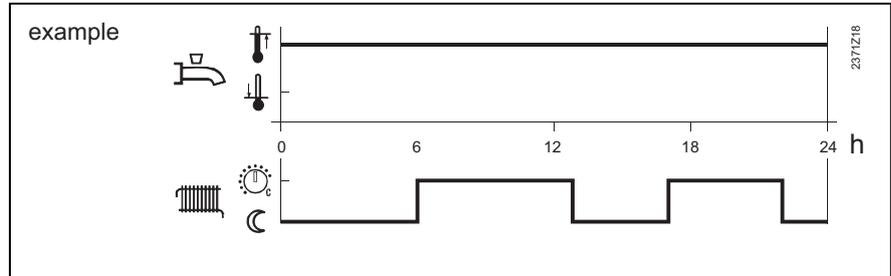
Menu: DHW

Release

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

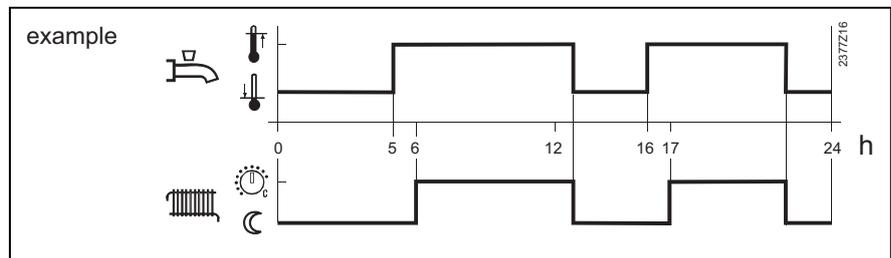
24h/Day

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.



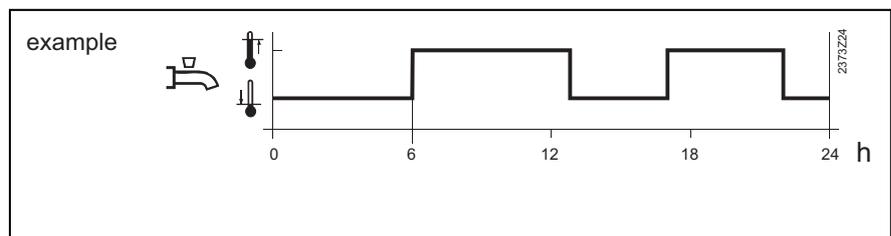
Time programs HCs

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

No

Swimming pool heating via solar does not give consideration to any priorities. If charging prio storage tank (operating line 3822) is deactivated as well, the swimming pool is heated alternately via the storage tanks until the temperature increase is 5 °C.

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

Yes

Swimming pool heating via solar is given priority, even if charging prio storage tank (operating line 3822) would have to prefer other heat sources.

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	0 min
2245	SD burner off time	15°C

SD burner off time

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

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 change-over 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.

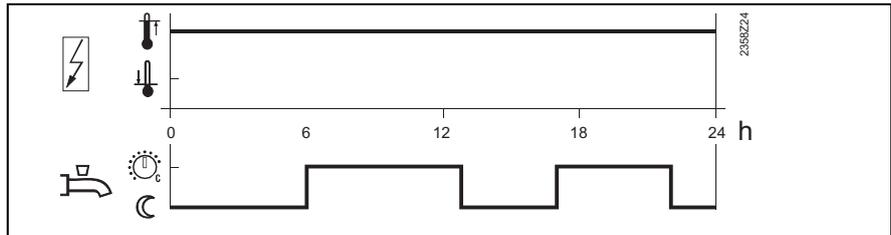
Always

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

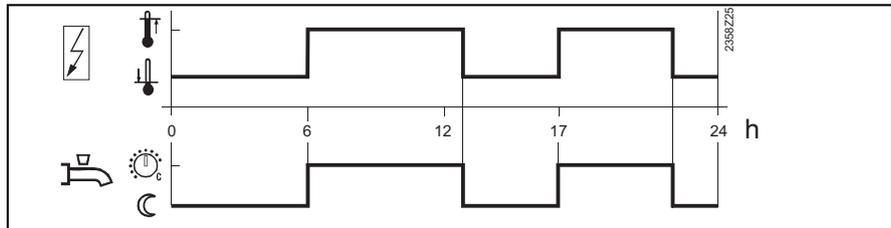
24h/day

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



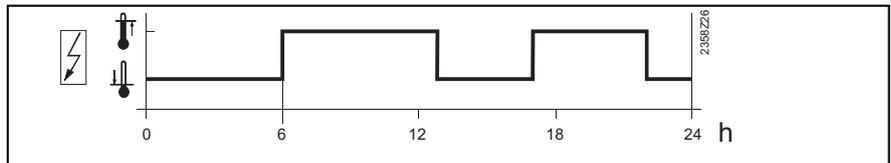
DHW Release

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.

Off

The DHW push can only be triggered manually.

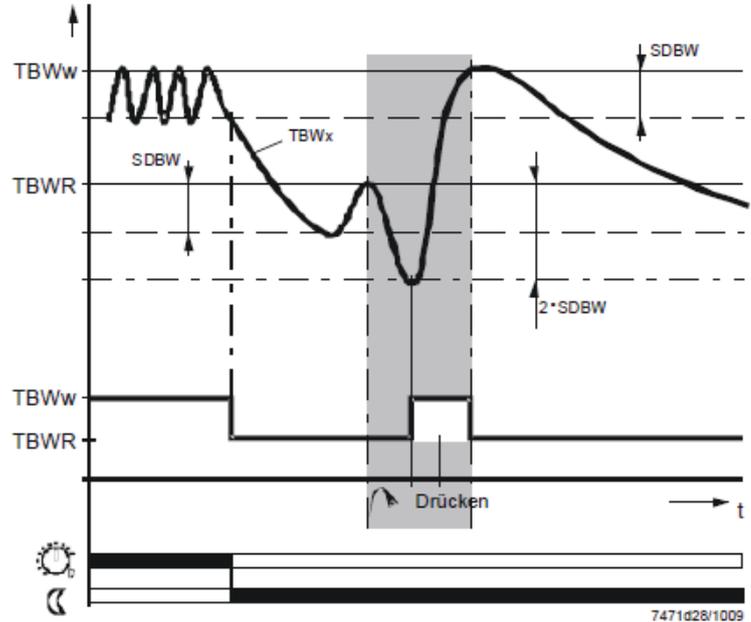
On

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

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



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: Configuration

In the configuration menu general parameters can be programmed.

Presetting

Via presetting one of 30 so called pre-select 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 Preselect 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

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
6030	None	None
6031	Circulating pump Q4	
6032	El imm heater DHW K6	
6033	Collector pump Q5	
6034	Cons circuit pump VK1 Q15	
6035	Boiler pump Q1	
6036	Bypass pump Q12	
6037	Alarm output K10	
6038	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	

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

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 pump 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.

Heat 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
6040	Sensor input BX1, BX2	None
6041	None	
6042	DHW sensor B31	
6043	Collector sensor B6	
6044	Return sensor B7	
6045	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	

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
6046	Function Input H1/H2/H4/H5	None
6054	None	
6062	Optg mode change HCs+DHW Optg mode changeover DHW Optg mode changeover HCs Optg mode changeover HC1 Optg mode changeover HC2 Optg mode changeover HC3 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 instan-

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 H2

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).

Line no.	Operating line	Factory setting
6047 6055 6063	Contact type H2 NC NO	NO
6049 6057 6065	Voltage value 1 H2	None
6050 6058 6066	Function value 1 H2	None
6051 6059 6067	Voltage value 2 H2	None
6052 6060 6068	Function value 2 H2	None

Extension module

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

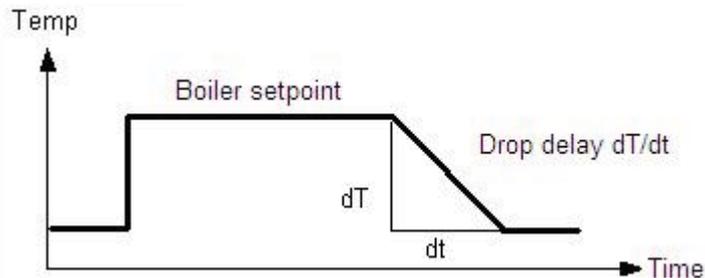
This function can only be implemented when using the common flow sensor (B10).

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	Off

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

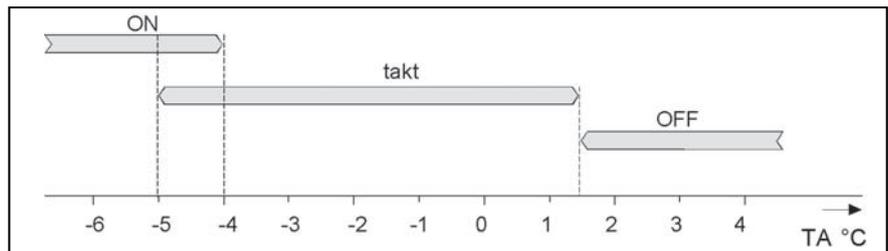
Function is deactivated.

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.

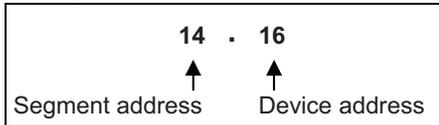
Line no.	Operating line
6220	Software version

Menu: 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.

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.

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.

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.

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.

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.

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	-

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

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

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	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

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	-

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	-

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	10 s
9512	Required speed ignition	See parameter list
9524	Required speed LF	See parameter list
9529	Required speed HF	See parameter list
9540	Postpurge time	7 s
9615	Forced prepurging on error Off On	On
9650	Chimney drying Off Temporarily Permanently	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.

All the technical information you need is easy to find on our website, using your smart phone, tablet or PC:

- BIM files
- CAD files
- Brochures
- Technical specification sheets
- Case studies
- Installation manuals
- User guides
- Size-It Tool

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