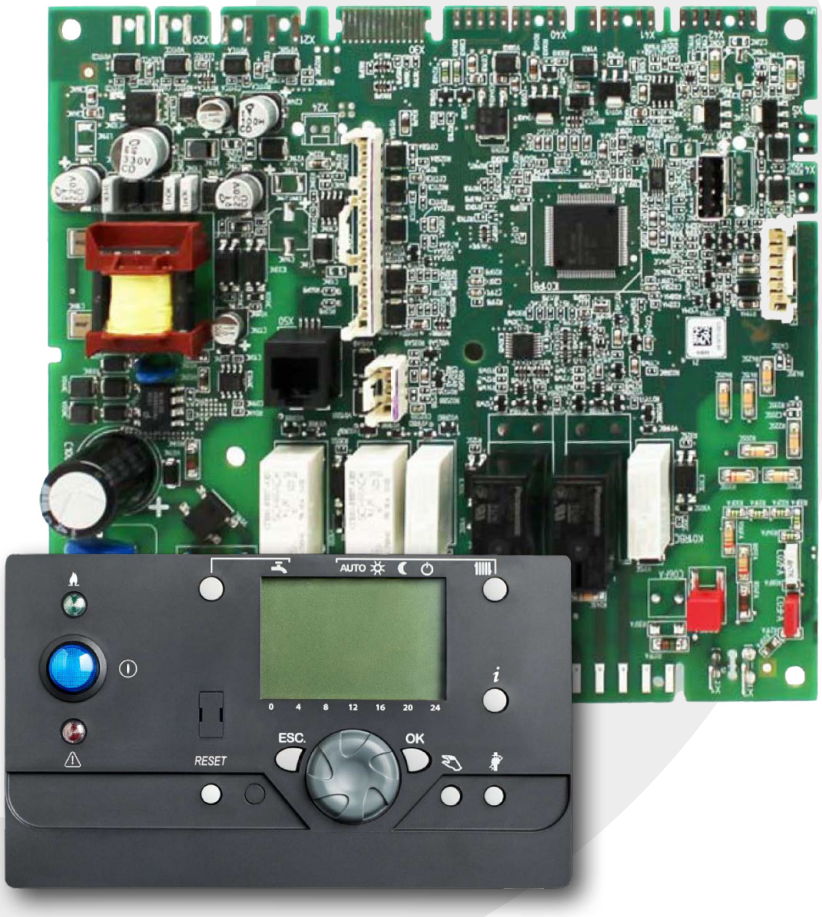
ACV
EXCELLENCE IN HOT WATER

NAVISTEM B3100

Boiler controller



Installation, Use & maintenance instructions

For professional.
To be retained by user for future reference

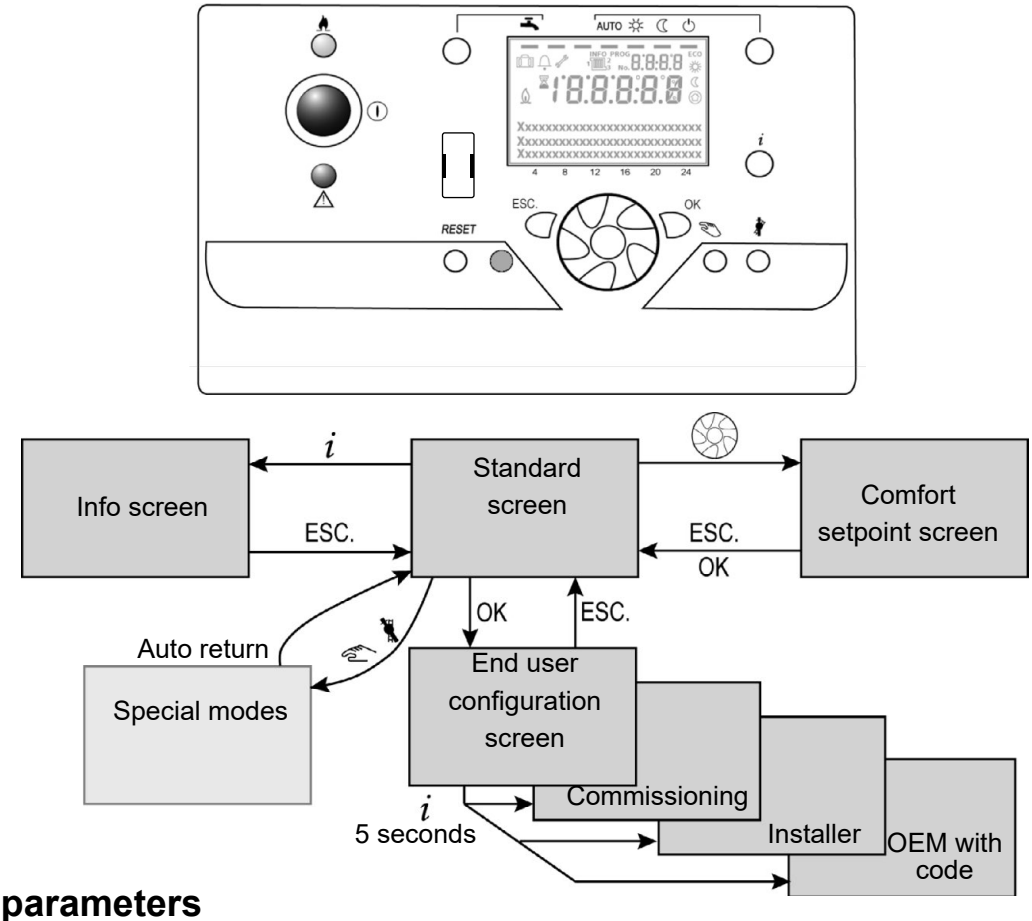
00U07462500-A_20-12-2022

EN

SIMPLIFIED USE GUIDE

This section gives a list of parameters to be programmed for a basic boiler installation.

Navigation between the various screens



Main parameters

All the parameters below are accessible from the “End user” level.

Date and time		
1	Hour minutes	See paragraph 6.1, page 32
2	Day month	See paragraph 6.1, page 32
3	Years	See paragraph 6.1, page 32
Time schedule program for heating circuits 1, 2 and 3		
5xx	Adjustment of energy saving time schedules	See paragraph 7.1.2, page 36
Heating circuits 1, 2 and 3		
710 - 1010 - 1310	Comfort setpoint	See paragraph 7.1.4, page 38
712 - 1012 - 1312	Reduced setpoint	See paragraph 7.1.4, page 38
720 - 1020 - 1320	Slope of curve	See paragraph 7.1.5, page 38
Domestic hot water		
1610	Comfort setpoint	See paragraph 8.1.1, page 51
Error		
Diagnostic Aid		See page 4

DIAGNOSTIC AID

Code		Fault		Description	1st diagnostic
B3000	extended	non blocking fault	blocking fault		
10	610			Exterior sensor fault, no signal.	Check the wiring on input B9.
20	All			Boiler 1 output fault, no signal.	Check the wiring on input B2.
26	612			Common temperature sensor fault (flow output).	Check the flow common output temperature sensor, declared as sensor B10.
28	All			Fumes sensor short circuited	Check the fumes temperature sensor on BX1.
30	614			Circuit 1 output temperature sensor fault.	Check the temperature sensor of circuits 1 and 2 (usually BX21 on the AVS75).
32	616			Circuit 2 output temperature sensor fault.	
40	All			Boiler 1 feedback sensor fault, no signal or short circuited.	Check the wiring on input B7.
46	53			Flow feedback temperature sensor fault.	Check the flow common feedback temperature sensor, declared as sensor B70.
50	All			DHW sensor 1 fault.	Check sensor B3.
60	59			Ambient sensor 1 fault.	Check the connection of the box supporting the ambient sensor.
65	60			Ambient sensor 2 fault.	
68	61			Ambient sensor 3 fault.	
81				Short circuit on the LPB bus, or no LPB bus power supply.	Check that the two bus wires are not short circuited of that the DB and MB terminals are not inverted on one of the boilers.
82				Identical addresses on the LPB bus.	Check the LPB addresses of the regulators.
91				Problem with the EEPROM.	Contact After Sales.
98	0			Extension module 1 error.	Check the ribbon cable of the bus connected to the AVS75 at address 1 or 2.
99	0			Extension module 2 error.	
110	412			Safety thermostat activated: thermostat wired to input STB activated due to excessively high boiler temperature.	
	431			The number of 110/420 faults (return temperature too high compared with the outlet temperature) in 24 hours is too high.	Check the wiring of the sensors and their positions (possible inversion of the two sensors).
	432			Boiler temperature too high: the value read by the boiler outlet sensor wired to input B2 is too high.	
	436			Return temperature too high: the temperature read on return sensor B7 is too high.	
	437			The number of 110/426 faults (rise in temperature too rapid) in 24 hours is too high.	

Code		Fault		Description	1st diagnostic
B3000	extended	non blocking fault	blocking fault		
111				Outlet and return temperatures too high, close to the max. thermostat cut-out temperature.	
119	563			Boiler pressure switch fault The pressure switch is open. The fault is the same if it is wired to input H1 or H3.	
128	All			Flame failure during operation.	
130				Fumes outlet temperature (fumes temperature too high)	Check the signal on input BX1.
132	404			Fault short circuited: Air pressure switch fault. No pressure detection.	
	409 or 410			Fault short circuited: Gas pressure fault.	Check the gas supply pressure.
	411			Fault 132/409 or 132/410 consecutive.	This fault is automatically cleared after 2 hours or immediately by a power cut.
133	All			Safety time delay expired. No detection of the flame on ignition.	
146				Sensor or parameter configuration error.	
151	All			LMS internal switch fault.	Invert the neutral and the phase of the power supply of the LMS platform. Invert the connector of the ignition transformer. Check the wiring of the gas valve. Otherwise, contact After Sales.
153	622			Unit manually locked because the clear faults button was pressed and held for too long.	Clear the fault.
160	380			Fan threshold error. Pre- and post-drain speeds higher than the maximum threshold.	
162	398			Air pressure switch error. The pressure switch did not detect any pressure during pre-ventilation.	
164	562			Flow rate error of the heating body irrigation pump.	Check that the pump is properly connected and is not operating without any water. Check input H1.
166	396			Air pressure switch fault. The air pressure switch detects pressure when the boiler is off.	Check the pressure switch signal.
171	800			External alarm wired to input H1.	Check whether H1 is configured as external alarm.
	805			External alarm wired to input H4.	Check whether H4 is configured as external alarm.
172	806			External alarm wired to input H5.	Check whether H5 is configured as external alarm.
193	846			Startup is inhibited on an Hx input.	Check the parameters of the Hx inputs.

Code		Fault		Description	1st diagnostic
B3000	extended	non blocking fault	blocking fault		
260	2			Circuit 3 output temperature sensor fault.	Check the temperature sensor of circuit 3 (usually BX21 on the AVS75).
322	566			Water pressure too high. This fault corresponds to a measurement wired on input H3.	
323	566			Water pressure too low or no signal. This fault corresponds to a measurement wired on input H3.	
324	0			Two Bx inputs declared with the same function.	Check the declarations of the Bx inputs.
327	0			Two AVS75 modules declared with the same function.	Check the declarations of the AVS75.
331	0			Input Bx2 without any function.	Check that the status of the Bx input is not 1, while no function is assigned to it.
332	0			Input Bx3 without any function.	
335	0			Input Bx21 without any function.	
336	0			Input Bx22 without any function.	
352	--			A flow outlet sensor is declared, while the LMS is not the flow master. The alarm relay outlet is not active on this fault.	Erase the B10 flow outlet sensor declaration of the input (BX1) or declare the LMS as the flow master.
353				Boiler flow programmed, but no cascade outlet sensor (common outlet B10) declared.	Check the declaration of the common outlet sensor B10.
373				Extension module 3 error.	Check the ribbon cable of the bus connected to the AVS75 at address 3.
384	391			Interfering light. The LMS detects a flame when the gas valve is closed.	
386	All			Fan problem	Contact After Sales.
426	528			Fumes valve feedback signal: - The valve is closed, while it should be open during startup. - Loss of the valve closed signal for 50s, while the boiler is working. - No loss of valve closed signal 50s after the boiler stops.	
432	746			Functional earth absent. The earth of the ionisation sensor does not use the same reference and the boiler power supply.	Check that the heating body is properly earthed (reference).

Maintenance code	Service description
1	Number of burner operating hours exceeded
2	Number of burner starts exceeded
3	Exceeding the maintenance interval
10	Change the batteries of the outdoor sensor
22	Hydraulic pressure 3 in the heating circuit too low (lower pressure limit 3 not reached)
25	Automatic water filling active

SOMMAIRE

1. WARNINGS AND RECOMMENDATIONS

1.1. Symbols used in this document

INFORMATION:	This symbol refers to information.
CAUTION:	Failure to observe these guidelines may result in damage to the installation or other systems.
DANGER:	Failure to observe these guidelines can result in electrocution.

1.2. Qualification of personnel for installation and maintenance

Installation and maintenance of the unit must only be performed by qualified professional technicians in compliance with the applicable regulations and practices, in particular the applicable national and local standards relative to low voltage electrical installations.

1.3. Safety guidelines

Always shut down the boiler and close the main gas supply before performing any work on the boiler controller.

2. ELECTRICAL CONNECTION

	**DANGER:**	**Before any intervention, make sure the main electrical power supply is switched off.**
	**CAUTION:**	**The ground conductor must be longer than the phase and neutral conductors.**
	**CAUTION:**	**Observe the phase polarity - neutral for electrical connections.**

2.1. Characteristics of electrical power supply

Electrical connections will only be made after other assembly operations (fixing,assembling,..) on the boiler will have been performed

The electrical installation must observe the CE standards relative to electrical connections and, in particular, the grounding connection.

This unit is designed to operate with a nominal voltage of 230 V, +10% / -15%, 50 Hz.

Please respect the following rules when connecting to avoid damaging the ionising current measurement:

- In single-phase: respect the live - neutral polarity
- In two-phase: due to the 120° difference between phases, the phases must be connected in the right order. Connect to terminal N of the NAVISTEM B3000 the phase in advance on the one connected to terminal L.

If you do not have a phase difference measurement resource, cable the NAVISTEM B3000 power supply in the 2 configurations then in both cases check the ionising current by going to the "generator diagnostic" menu in setting 8329.

2.2. Cable cross-section

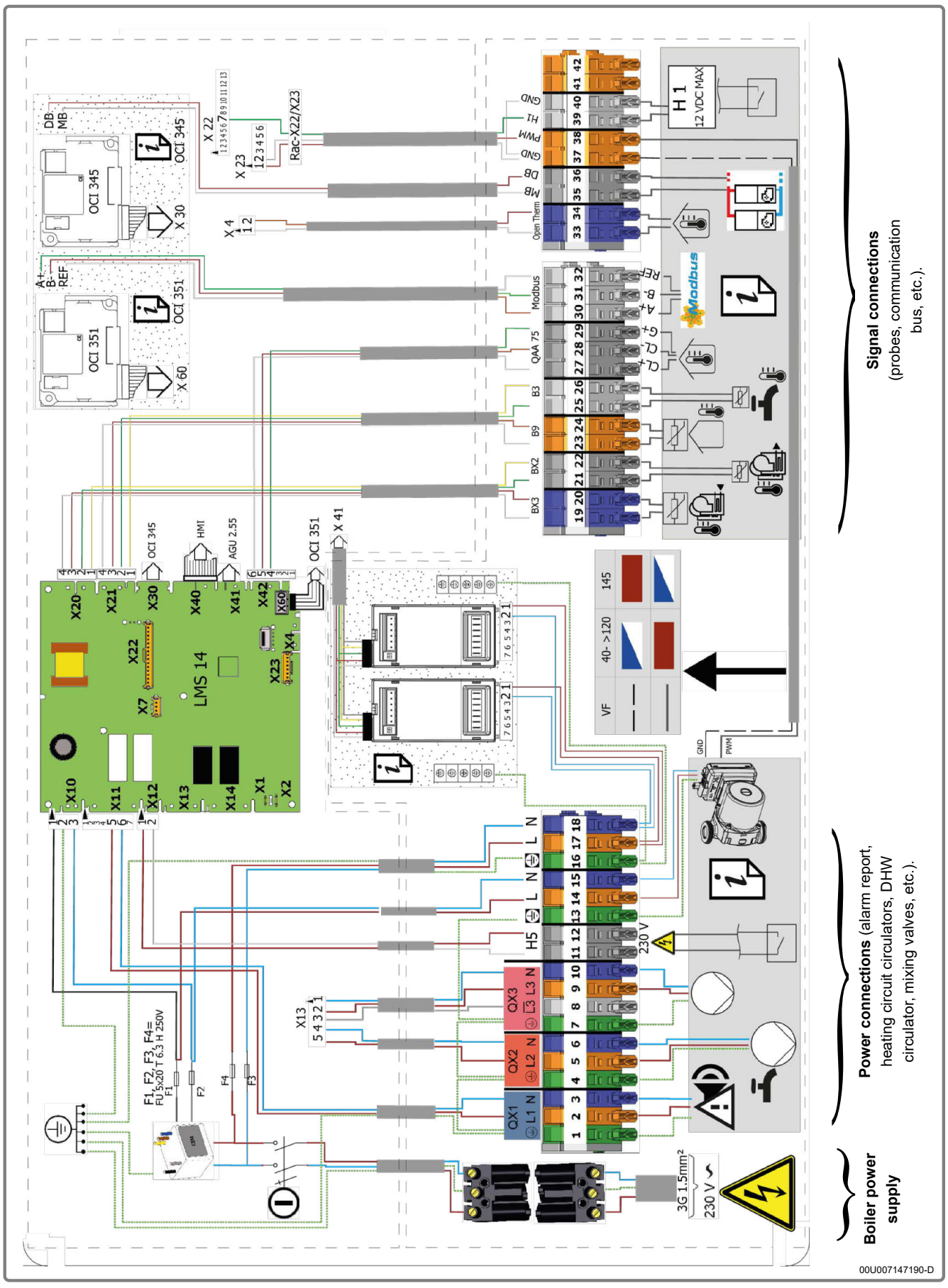
The cable cross-sections given below are given for information and do not release the installer from checking that they correspond to the needs and satisfy all applicable local and national standards.

If a cable is damaged, it must be replaced by the manufacturer, the manufacturer's after-sales service or any similar qualified person to avoid any danger.

Cable	Terminal strips	Copper conductor cross-section
Power supply	Power supply	3 x 1,5 mm²
Power	QX1, QX2, QX3	3 x 1,5 mm²
Signals	BX2, BX3, B3, B9, H1, H5, UX2, UX3, ambient temperature sensors	2 x 0,5 mm²

2.3. Electrical connections on terminal strips

2.3.1. Power and signal connection terminals



2.4. Fuses

The boiler controller is equipped with 4 identical fuses (T 6,3 H 250V - 5x20 ceramic). Each has a specific location and function:

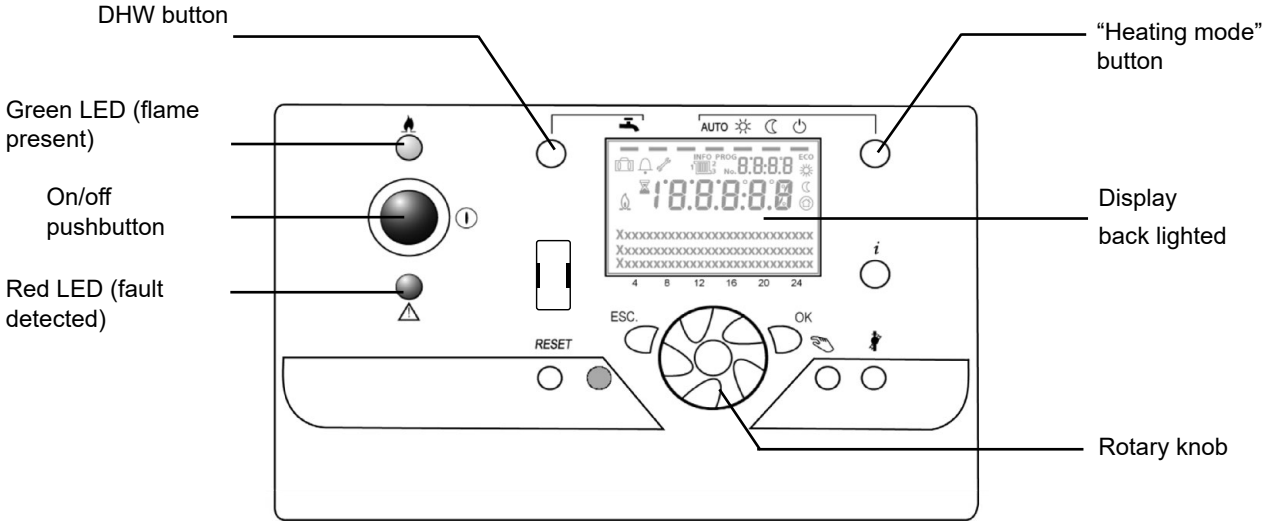
Reference	Function
F1 and F2	Boiler controller protection, fan
F3 and F4	Protection of AGU2.550 options

See diagram on previous page

3. USER INTERFACE

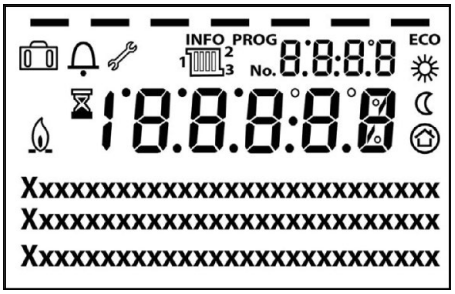
3.1. Presentation of interface:

- The boiler controller user interface comprises:
-a blue pushbutton (on/off),
- a backlighted LCD display,
- 8 function keys,
- A rotary adjustment knob,
- A red LED:
  The LED comes on steady when a non-blocking fault is detected (following correction, the LED goes off). The LED flashes when a blocking fault is detected (in this case, the LED goes off after the fault has been corrected and the reset button on the interface has been pressed),
- A green LED:
  This LED comes on when the flame is present.All the customer settings and possible parameter definitions are made on this interface. It is also used to look up the information concerning operation of the boiler.



3.2. Display

The screen summarises the state of the boiler: operating mode, time, time schedule, boiler temperature, flame present, possible fault.



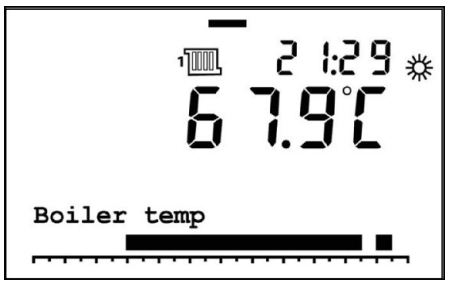
Pictograms:

- Comfort mode
- Reduced mode
- Frost protection mode
- Process in progress
- Flame present
- Alarm
- **INFO** Information
- **PROG** Programming
- **ECO** ECO function
- Vacation mode
- Heating circuit
- Maintenance
- **No.** Parameter number

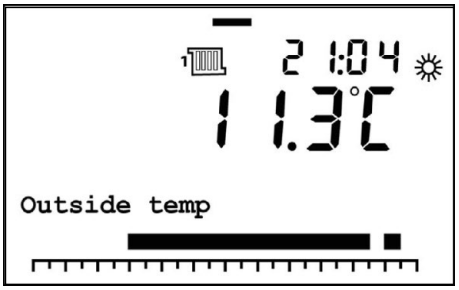
3.2.1. Predefined basic display

The basic display depends on the boiler operating mode chosen by the user:

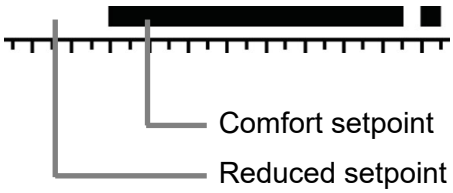
- In constant boiler flow temperature mode, the boiler flow water temperature is displayed.



- In regulation mode as a function of outdoor temperature or as a function of the room temperature or both, the outdoor temperature is displayed.

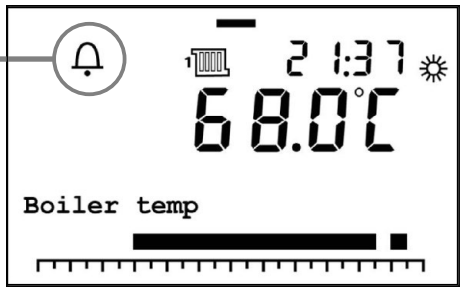


The bottom of the screen is displayed with a scale of 0 to 24 corresponding to the hours of a day.
The comfort setpoint request phases are represented by a black square above the scale. The other parts without square correspond to the reduced setpoint requests.



3.2.2. Display of a fault

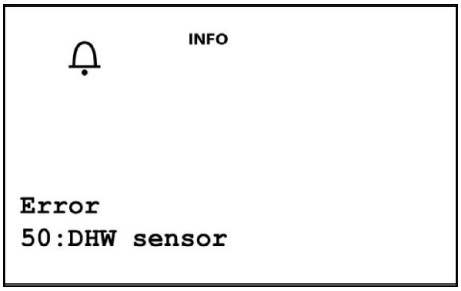
When a non-blocking fault is detected, a small bell is displayed at the top left of the screen. To identify the fault, press the information key. i .
This type of fault does not result in a blocking safety lockout requiring manual intervention.



Once the source of the fault has been eliminated, the clock automatically disappears.

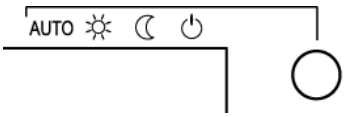
When the fault places the boiler in a safety lockout condition, the fault code and its text are displayed continuously on the screen. Similarly, a small bell appears at the top left of the screen.

To reset the boiler controller, eliminate the source of the fault, then press the reset button.



3.3. Operating modes

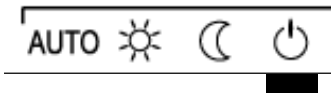
3.3.1. Heating mode



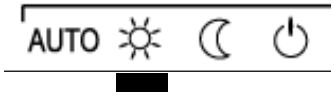
This is used to select the heating mode among the Standby, Comfort, Eco and Auto modes.

Note:
Where 2 or 3 independently adjusted heating circuits are used, press once on the heating mode key, then select the concerned circuit using the rotary adjustment knob and validate by OK.

Standby No internal heat request is taken into account.
The frost protection function is active.
The external heat requests (0-10 V or LPB bus) remain active except with cascade application.

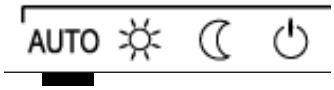


Comfort Continuous “comfort” mode.
The burner power is adapted to satisfy the heating setpoint.



Reduced Permanent reduced mode.
The burner power is adapted to satisfy the reduced heating setpoint.

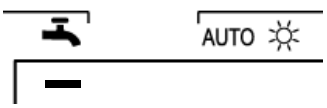
Auto Depending on the time schedule programmed, the regulator alternates the comfort and reduced modes.
With a cascade application, engages the boiler in a cascade.



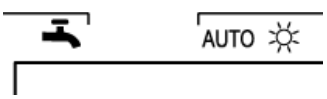
3.3.2. DHW mode

Activates / Deactivates DHW production.

DHW production activated



DHW production deactivated



3.3.3. *Manual temperature mode*

This mode is used to run the boiler in accordance with a special setpoint temperature.

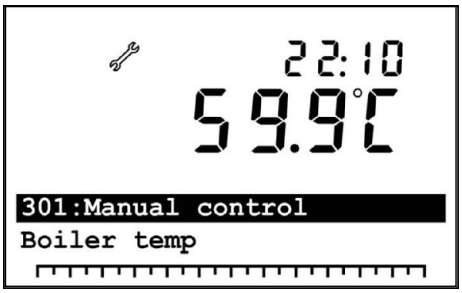
IMPORTANT: **In this mode, not all faults are transferred to the "alarm" output.**

Sequence of keys to access the function:

Access	Setting			Exit
	i	OK	OK	

The boiler regulates its power to achieve the defined setpoint.

While this function is active, an override signal[1] is generated to evacuate the calories.



IMPORTANT:
- Deactivates the 3 channel valve regulations.
- Activeates the operation of all the declared pumps, opens all the 3 channel valves
- Not to be used with under-floor heating.

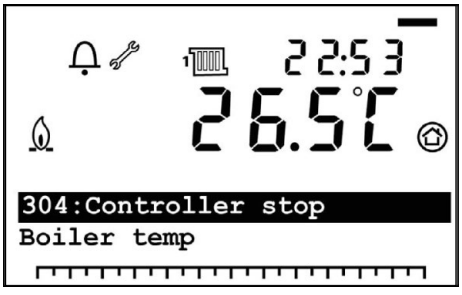
3.3.4. *Manual power mode*

This mode is used to manually define the burner heat release.

Sequence of keys to access the function:

Access	Setting			Exit
AUTO 3 seconds	*i*	OK	OK	AUTO 3 seconds

The relative power setpoint of[2]the burner is displayed on the screen.
The rotary adjustment knob is used to adjust the value of the setpoint in steps of 1 %.
While this function is active, an override signal[2] is generated to evacuate the calories.



1 *Forcing signal: causes switching on of the pumps, and/or opening of the 3 way valves of the connected heating circuits to remove the heat*

2 *Relative power: this is the effective power of the burner, referred to its modulation range. 0% corresponds to minimum power, 100% corresponds to maximum burner power. To calculate the burner load ratio (heat input percentage), the following formula is used:*

$$\%Q_{cal} = \frac{Puissance_{relative} \cdot (100 - \%Q_{min})}{100} + \%Q_m$$

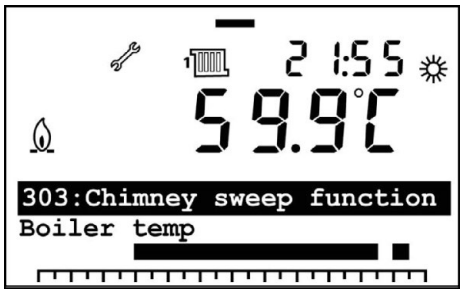
3.3.5. Cleaning mode

This mode is used to run the burner at full load.

Sequence of keys to access the function:

Access	Setting				Exit
	i	OK		OK	

The burner stops by cutout of the limiter electronic thermostat
While this function is active, an override signal[1] is generated to evacuate the calories.

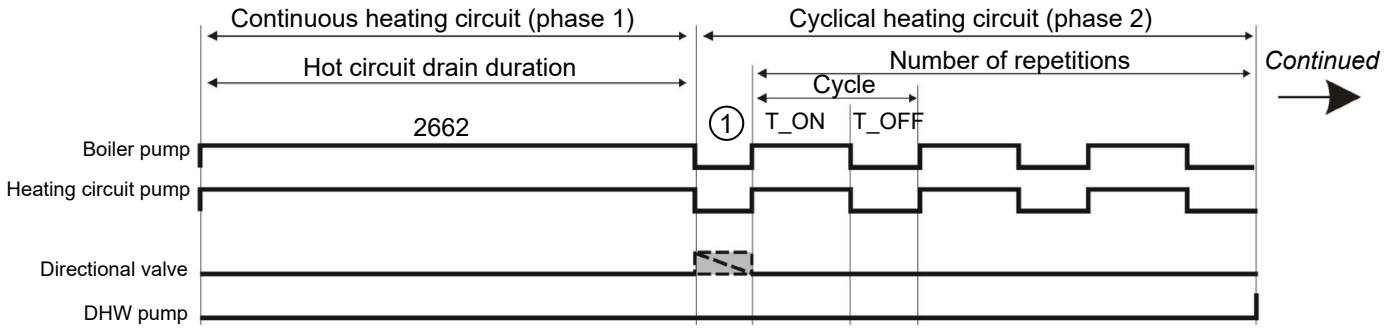


1 *Forcing signal: causes switching on of the pumps, and/or opening of the 3 way valves of the connected heating circuits to remove the heat.*

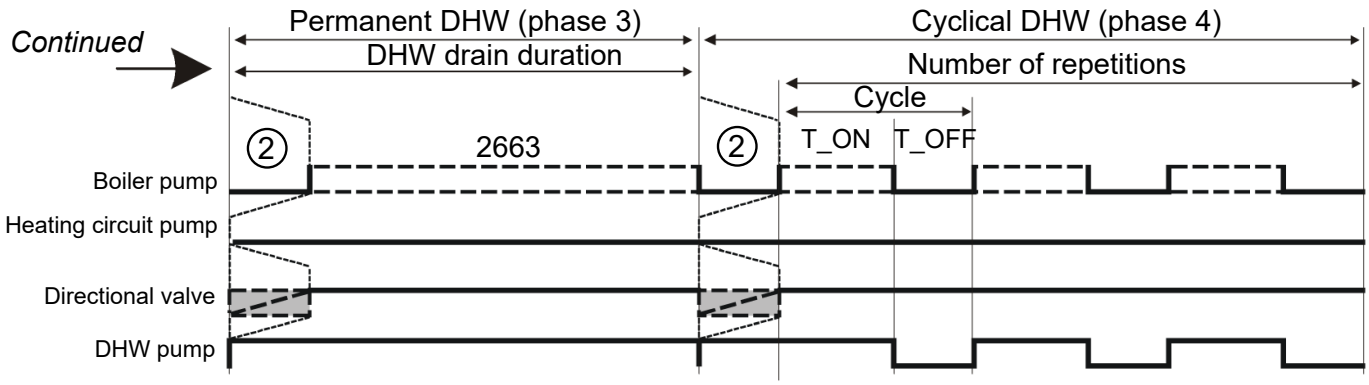
3.3.6. Purge mode

This mode is used to facilitate purging the installation water side (example, after the first time the installation is filled with water).

The drain function may include up to 4 phases that may be preselected. The phases differ according to whether the function is to drain the heating or DHW circuits and the pumps must be commanded cyclically or or statically for the whole phase. During these phases, a three-channel valve is taken into predefined positions.
The function is automatically interrupted when the predefined drain phases expire. The drain function may also be interrupted manually by pressing the same button again for 3 seconds.
When the function starts, the safety unit for the burner is on standby; the burner is stopped during the whole drain.



(1) Mixer heating valve / 3-channel valve opening time



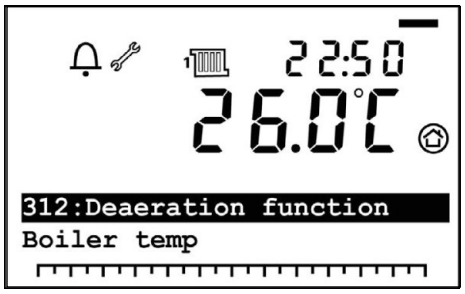
(2) 3-channel valve after DHW opening time (if the *Directional valve available* is configured).

Refer to parameters 2630, 2655, 2656, 2657, 2662, 2663 and 7147 to configure this mode before using it.

Sequence of keys to access the function:

Access	Exit		
3 seconds	automatic at end of purge	*or*	3 seconds

The pumps are switched on and off several times.



3.4. Adjustment of setpoints

3.4.1. Heating setpoint adjustment

The comfort temperature setpoint can be adjusted in 2 ways, either directly using the standard screen, or using the programming screen. The other temperature setpoints (reduced and frost protection) can only be adjusted using the programming screen.

1) Adjustment using standard screen:

Access	Setting	
OK	OK choice of heating circuit	OK adjustment of setpoint value

2) Adjustment using programming screen:

Access	Setting		
OK	 OK choice of heating circuit	 OK choice of setpoint to adjust	 OK adjustment of setpoint value

3.4.2. Adjustment of DHW setpoint

The DHW temperature setpoint can be adjusted using the programming screen between 40°C and 65°C.

Access	Setting	
OK	 OK Choice of *Domestic Hot Water header*	 OK adjustment of setpoint value

CAUTION: **The DHW setpoint must be defined in accordance with the applicable regulation to prevent any hazard with respect to legionella.**

3.5. Boiler states

On the basic display, you can scroll basic information concerning the boiler (see list below).

Access	Setting	Exit
i		ESC

1	Boiler temperature, heating circuit 1
2	Boiler temperature, heating circuit 2
3	Boiler temperature, heating circuit 3
4	Outdoor temperature
5	Min. outdoor temperature
6	Max. outdoor temperature
7	DHW temperature
8	State of heating circuit 1
9	State of heating circuit 2
10	State of heating circuit 3
11	DHW state
12	Heater status
13	Date
14	Customer service tel.

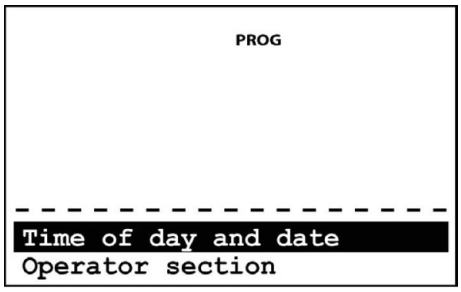
3.6. Parameter configurations

Depending on the functions controlled, the access level to the settings is different. There are 3 access levels:

E: End user,
C: Commissioning (acceptance, startup),
S: Specialist (technical level)

3.6.1. "End user" parameter configurations

The "end user" configuration mode is accessed on the standard display by pressing the OK key.
The « PROG » pictogram and the first 2 headers are displayed on the screen.

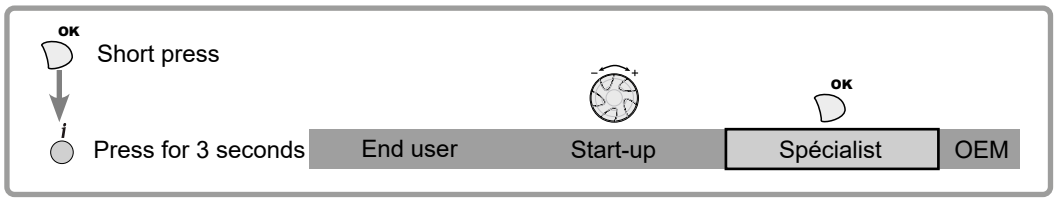


The rotary adjustment button is used to scroll the list of parameters. Once you have reached the parameter to be modified, press OK. The parameter value flashes. Adjust the value using the rotary knob.
The new value is validated by pressing OK

3.6.2. "Configuration" and "specialist" parameter configurations

The "Commissioning" and "Specialist" parameter configurations are accessed on the standard display by pressing the OK key, then on the information key for 5 seconds. *i* .

Use the rotary adjustment knob to reach the desired level: *Commissioning* or *Specialist*, then validate your selection by OK.
The Commissioning access level integrates the End User level. Similarly, the *Specialist* level integrates the *"Commissioning" level*.



3.6.3. Setting the various parameters

On the main menu, once you have obtained the desired level:
- Turn the control knob to scroll the menu.
- Once the desired menu appears, press OK to validate.
- Turn the control knob to adjust the setting.
- Press OK to validate the setting.

If no setting is performed during 8 minutes, the screen automatically returns to the basic display.

4. OPERATING CYCLES

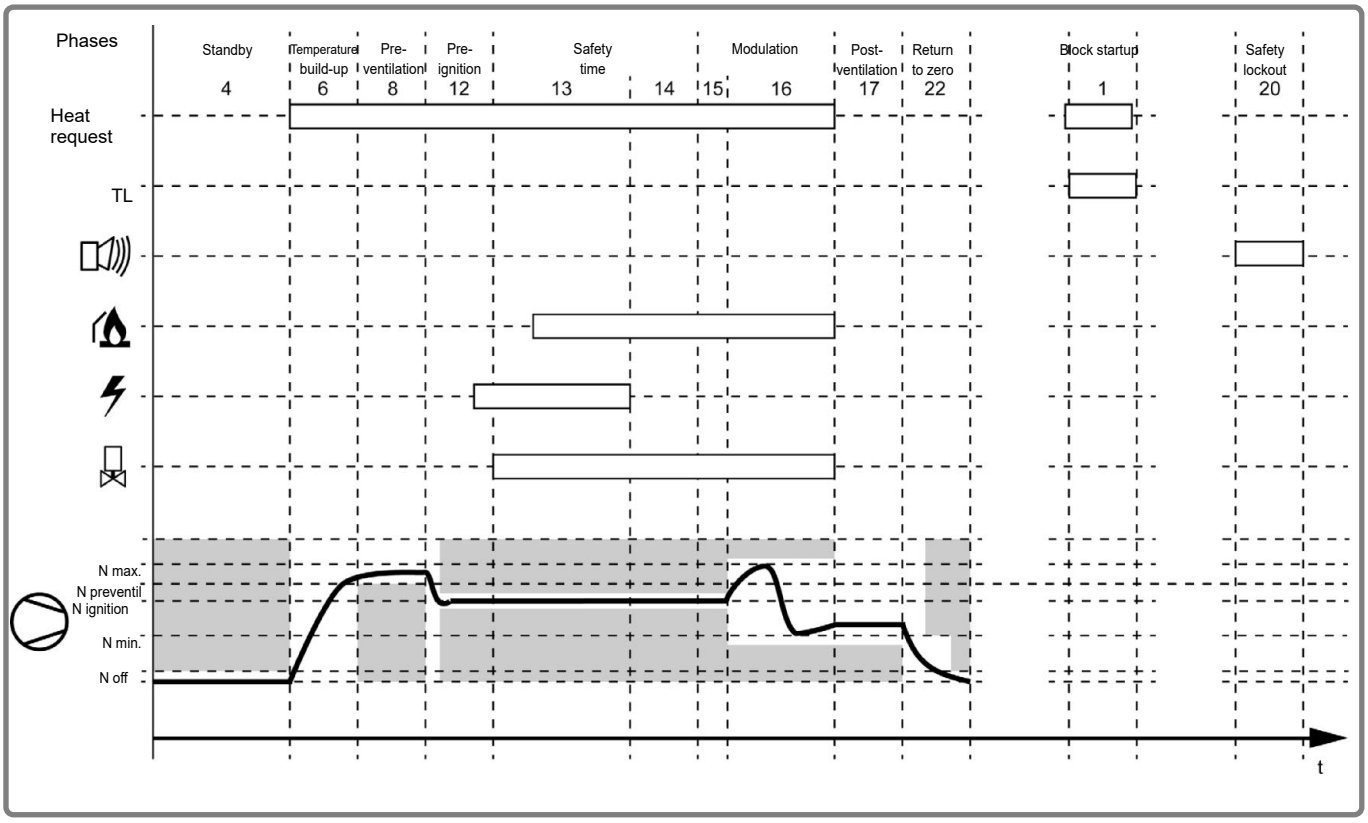


figure 1 - Cycles

Key:

TL = Limiter thermostat

= Alarm

= Flame detection

= Ignition electrode

= Gas valve

= Fan

N max. = max. authorised speed
N preventil = preventilation speed
N ignition = ignition speed
N min. = min. authorised speed with modulatio
N off = speed less than 200 rpm and therefore considered as null

} Fan speed

Note:
In the event of failure, the boiler controller automatically initiates several startup attempts.

5. LIST OF PARAMETERS

Line No.	Programming
	Time of day and date
1	Hours / minutes
2	Day / month
3	Year
5	Start of summertime
6	End of summertime
	Operator section
20	Language
22	Info
26	Operation lock
27	Programming lock
28	Direct adjustment
29	Units
42	Assignment device 1
44	Operation HC2
46	Operation HC3/P
70	Software version
	Time prog heating circuit 1
500	Preselection
501	First period start time
502	First period stop time
503	Second period start time
504	Second period stop time
505	Second period start time
506	Second period stop time
516	Default values
	Time prog heating circuit 2
520	Preselection
521	First period start time
522	First period stop time
523	Second period start time
524	Second period stop time
525	Second period start time
526	Second period stop time
536	Default values
	Time prog heating circuit 3
540	Preselection
541	First period start time
542	First period stop time
543	Second period start time
544	Second period stop time
545	Second period start time
546	Second period stop time
556	Default values

Line No.	Programming
	Time program 4 / DHW
560	Preselection
561	First period start time
562	First period stop time
563	Second period start time
564	Second period stop time
565	Second period start time
566	Second period stop time
576	Default values
	Time program 5
600	Preselection
601	First period start time
602	First period stop time
603	Second period start time
604	Second period stop time
605	Second period start time
606	Second period stop time
616	Default values
	Holidays heating circuit 1
641	Preselection
642	Begin (dd.mm)
643	End (dd.mm)
648	Operating level
	Holidays heating circuit 2
651	Preselection
652	Begin (dd.mm)
653	End (dd.mm)
658	Operating level
	Holidays heating circuit 3
661	Preselection
662	Begin (dd.mm)
663	End (dd.mm)
668	Operating level
	Heating circuit 1
710	Comfort setpoint
712	Reduced setpoint
714	Frost protection setpoint
716	Comfort setpoint max
720	Heating curve slope
721	Heating curve displacement
726	Heating curve adaptation
730	Summer/winter heating limit
732	24-hour heating limit
740	Flow temp setpoint min
741	Flow temp setpoint max

Line No.	Programming
742	Flow temp setpoint room stat
746	Delay heat request
750	Room influence
760	Room temp limitation
761	Heating limit room controller
770	Boost heating
780	Quick setback
790	Optimum start control max
791	Optimum stop control max
800	Reduced setp increase start
801	Reduced setp increase end
809	Continuous pump operation
820	Overtemp prot pump circuit
830	Mixing valve boost
832	Actuator type
833	TOR Switching differential
834	Actuator running time
835	Mixing valve Xp
836	Mixing valve Tn
850	Floor curing function
851	Floor curing setp manually
855	Floor curing setp current
856	Floor curing day current
861	Excess heat draw
870	With buffer
872	With prim contr/system pump
881	Starting speed
882	Pump speed min
883	Pump speed max
888	Curve readj at 50% speed
889	Filter time const speed ctrl
890	Flow setp readj speed ctrl
898	Operating level changeover
900	Optg mode changeover
	Heating circuit 2
1010	Comfort setpoint
1012	Reduced setpoint
1014	Frost protection setpoint
1016	Comfort setpoint max
1020	Heating curve slope
1021	Heating curve displacement
1026	Heating curve adaptation
1030	Summer/winter heating limit
1032	24-hour heating limit
1040	Flow temp setpoint min
1041	Flow temp setpoint max
1042	Flow temp setpoint room stat

Line No.	Programming
1046	Delay heat request
1050	Room influence
1060	Room temp limitation
1061	Heating limit room controller
1070	Boost heating
1080	Quick setback
1090	Optimum start control max
1091	Optimum stop control max
1100	Reduced setp increase start
1101	Reduced setp increase end
1109	Continuous pump operation
1120	Overtemp prot pump circuit
1130	Mixing valve boost
1132	Actuator type
1133	TOR Switching differential
1134	Actuator running time
1135	Mixing valve Xp
1136	Mixing valve Tn
1150	Floor curing function
1151	Floor curing setp manually
1155	Floor curing setp current
1156	Floor curing day current
1161	Excess heat draw
1170	With buffer
1172	With prim contr/system pump
1181	Starting speed
1182	Pump speed min
1183	Pump speed max
1188	Curve readj at 50% speed
1189	Filter time const speed ctrl
1190	Flow setp readj speed ctrl
1198	Operating level changeover
1200	Optg mode changeover
	Heating circuit 3
1310	Comfort setpoint
1312	Reduced setpoint
1314	Frost protection setpoint
1316	Comfort setpoint max
1320	Heating curve slope
1321	Heating curve displacement
1326	Heating curve adaptation
1330	Summer/winter heating limit
1332	24-hour heating limit
1340	Flow temp setpoint min
1341	Flow temp setpoint max
1342	Flow temp setpoint room stat
1346	Delay heat request

Line No.	Programming
1350	Room influence
1360	Room temp limitation
1361	Heating limit room controller
1370	Boost heating
1380	Quick setback
1390	Optimum start control max
1391	Optimum stop control max
1400	Reduced setp increase start
1401	Reduced setp increase end
1409	Continuous pump operation
1420	Overtemp prot pump circuit
1430	Mixing valve boost
1432	Actuator type
1433	TOR Switching differential
1434	Actuator running time
1435	Mixing valve Xp
1436	Mixing valve Tn
1450	Floor curing function
1451	Floor curing setp manually
1455	Floor curing setp current
1456	Floor curing day current
1461	Excess heat draw
1470	With buffer
1472	With prim contr/system pump
1481	Starting speed
1482	Pump speed min
1483	Pump speed max
1488	Curve readj at 50% speed
1489	Filter time const speed ctrl
1490	Flow setp readj speed ctrl
1498	Operating level changeover
1500	Optg mode changeover
	Domestic hot water
1610	Nominal setpoint
1612	Reduced setpoint
1614	Nominal setpoint max
1620	Release
1630	Charging priority
1640	Legionella function
1641	Legionella funct periodically
1642	Legionella funct weekday
1644	Legionella funct time
1645	Legionella funct setpoint
1646	Legionella funct duration
1647	Legionella funct circ pump
1660	Circulating pump release
1661	Circulating pump cycling

Line No.	Programming
1663	Circulation setpoint
1680	Optg mode changeover
	Consumer circuit 1
1859	Flow temp setp cons request
1874	DHW load priority
1875	Excess heat draw
1878	With buffer
1880	With prim contr/system pump
	Consumer circuit 2
1909	Flow temp setp cons request
1925	Excess heat draw
1928	With buffer
1930	With prim contr/system pump
	Consumer circuit 3
1959	Flow temp setp cons request
1974	DHW load priority
1975	Excess heat draw
1978	With buffer
1980	With prim contr/system pump
	Swimming pool
2056	Setpoint source heating
	Regulator / primary pump
2110	Minimum flow setpoint T°
2111	Minimum flow setpoint T°
2130	On mixing valve elevation
2150	Pre-regulator/feed pump
	Boiler
2203	Release below outside temp
2208	Full charging buffer
2210	Setpoint min
2212	Setpoint max
2214	Setpoint manual control
2217	Setpoint frost protection
2243	Burner off time min
2250	Pump overrun time
2253	Pump overr time after DHW
2270	Return setpoint min
2321	Starting speed
2322	Pump speed min
2323	Pump speed max
2324	Coef.P of boiler pump PID Q1
2325	Coef.P of boiler pump PID Q1
2326	Coef.P of boiler pump PID Q1
2330	Output nominal
2331	Output basic stage
2334	Output at pump speed min
2335	Output at pump speed max

Line No.	Programming
2441	Fan speed heating max
2442	Fan speed full charging max
2444	Fan speed DHW max
2450	Regulator delay
2452	Cruise control speed delay
2454	Switching diff on HCs
2455	Switching diff off min HCs
2456	Switching diff off max HCs
2457	Settling time HCs
2460	Switching diff on DHW
2461	Switching diff off min DHW
2462	Switching diff off max DHW
2463	Settling time DHW
2470	Delay heat req special op
2503	Parameter
2550	Gas energy metering
2551	Gas meter correction
2560	Smoke shutter stop delay
2630	Auto deaeration procedure
2655	ON time deaeration
2656	OFF time deaeration
2657	Number of repetitions
2662	Deaeration time heat circuit
2663	Deaeration time DHW
	Cascade
3510	Lead strategy
3511	Output band min
3512	Output band max
3530	Release integral source seq
3531	Reset integral source seq
3532	Restart lock
3533	Switch on delay
3534	Forced time basic stage
3535	Switch-on delay DHW
3540	Auto source seq ch'over
3541	Auto source seq exclusion
3544	Leading source
3560	Return setpoint min
3562	Return influence consumers
	DHW storage tank
5020	Flow setpoint boost
5021	Transfer boost
5022	Type of charging
5030	Charging time limitation
5040	Discharging protection
5055	Recooling temp
5056	Recooling heat gen/HCs

Line No.	Programming
5060	El imm heater optg mode
5061	El immersion heater release
5062	El immersion heater control
5085	Excess heat draw
5090	With buffer
5092	With prim contr/system pump
5101	Pump speed min
5102	Pump speed max
5108	Starting speed charg pump
	General functions
5570	Temp diff on dT contr 1
5571	Temp diff off dT contr 1
5572	On temp min dT contr 1
5573	Sensor 1 controller 1
5574	Sensor 2 controller 1
5575	On time min dT contr 1
5577	Pump/valve kick K21
5580	Temp diff on dT contr 2
5581	Temp diff off dT contr 2
5582	On temp min dT contr 2
5583	Sensor 1 controller 2
5584	Sensor 2 controller 2
5585	On time min dT contr 2
5587	Pump/valve kick K22
	Configuration
5710	Heating circuit 1
5715	Heating circuit 2
5721	Heating circuit 3
5730	DHW sensor
5731	DHW controlling element
5732	Pump off change div valve
5733	Delay pump off
5734	Basic position DHW div valve
5737	Optg action DHW div valve
5738	Midposition DHW div valve
5774	Ctrl boiler pump/DHW valve
5840	Solar controlling element
5841	External solar exchanger
5870	Combi storage tank
5890	Relay output QX1
5891	Relay output QX2
5892	Relay output QX3
5931	Sensor input BX2
5932	Sensor input BX3
5950	Function input H1
5951	Contact type H1
5953	Voltage value 1 H1 (U1)

Line No.	Programming
5954	Function value 1 H1 (F1)
5955	Voltage value 2 H1 (U2)
5956	Function value 2 H1 (F2)
5977	Function input H5
5978	Contact type H5
6020	Function extension module 1
6021	Function extension module 2
6022	Function extension module 3
6024	Funct input EX21 module 1
6026	Funct input EX21 module 2
6028	Funct input EX21 module 3
6030	Relay output QX21 module 1
6031	Relay output QX22 module 1
6032	Relay output QX23 module 1
6033	Relay output QX21 module 2
6034	Relay output QX22 module 2
6035	Relay output QX23 module 2
6036	Relay output QX21 module 3
6037	Relay output QX22 module 3
6038	Relay output QX23 module 3
6040	Sensor input BX21 module 1
6041	Sensor input BX22 module 1
6042	Sensor input BX21 module 2
6043	Sensor input BX22 module 2
6044	Sensor input BX21 module 3
6045	Sensor input BX22 module 3
6046	Function input H2 module 1
6047	Contact type H2 module 1
6049	Voltage value 1 H2 module 1(U1)
6050	Function value 1 H2 module 1 (F1)
6051	Voltage value 2 H2 module 1 (U2)
6052	Function value 2 H2 module 1 (F2)
6054	Function input H2 module 2
6055	Contact type H2 module 2
6057	Voltage value 1 H2 module 2(U1)
6058	Function value 1 H2 module 2 (F1)
6059	Voltage value 2 H2 module 2 (U2)
6060	Function value 2 H2 module 2 (F2)
6062	Function input H2 module 3
6063	Contact type H2 module 3
6065	Voltage value 1 H2 module 3(U1)
6066	Function value 1 H2 module 3 (F1)
6067	Voltage value 2 H2 module 3 (U2)
6068	Function value 2 H2 module 3 (F2)
6085	P1 output function
6086	P1 signal logic output
6097	Sensor type collector

Line No.	Programming
6098	Readjustm collector sensor
6100	Readjustm outside sensor
6110	Time constant building
6116	Const tmps compens consig.
6117	Compens centr T° consigne
6120	Frost protection plant
6127	Pump/valve kick duration
6200	Save sensors
6205	Reset to default parameter
6220	Software version
6230	Info 1 OEM
6231	Info 2 OEM
6234	Boiler type
6351	Channel 1 opentherm function
6355	CC1 room controller
6356	CC2 room controller
6357	CC3 room controller
6359	DHW external control
	LPB system
6600	Device address
6601	Segment address
6604	Bus power supply function
6605	Bus power supply state
6610	Display system messages
6611	Syst messages alarm relay
6612	Alarm delay
6620	Action changeover functions
6621	Summer changeover
6623	Optg mode changeover
6624	Manual source lock
6625	DHW assignment
6631	Ext source in Eco mode
6640	Clock mode
6650	Outside temp source
6651	Modbus slave address
6652	Modbus parity
6653	Clock operation
6654	Number of modbus stop bits
	Fault
6705	SW diagnostic code
6706	Burn ctrl phase lockout pos
6745	DHW charging alarm
6800	History 1
6805	SW diagnostic code 1
6810	History 2
6815	SW diagnostic code 2
6820	History 3

Line No.	Programming
6825	SW diagnostic code 3
6830	History 4
6835	SW diagnostic code 4
6840	History 5
6845	SW diagnostic code 5
6850	History 6
6855	SW diagnostic code 6
6860	History 7
6865	SW diagnostic code 7
6870	History 8
6875	SW diagnostic code 8
6880	History 9
6885	SW diagnostic code 9
6890	History 10
6895	SW diagnostic code 10
6900	History 11
6905	SW diagnostic code 11
6910	History 12
6915	SW diagnostic code 12
6920	History 13
6925	SW diagnostic code 13
6930	History 14
6935	SW diagnostic code 14
6940	History 15
6945	SW diagnostic code 15
6950	History 16
6955	SW diagnostic code 16
6960	History 17
6965	SW diagnostic code 17
6970	History 18
6975	SW diagnostic code 8
6980	History 19
6985	SW diagnostic code 19
6990	History 20
6995	SW diagnostic code 20
	Service/special operation
7040	Burner hours interval
7041	Burn hrs since maintenance
7042	Burner start interval
7043	Burn starts since maint
7044	Maintenance interval
7045	Time since maintenance
7050	Fan speed ionization current
7051	Message ionization current
7130	Chimney sweep function
7131	Burner output
7140	Manual control

Line No.	Programming
7143	Controller stop function
7145	Controller stop setpoint
7146	Deaeration function
7147	Type of venting
7170	Telephone customer service
	Input/output test
7700	Relay test
7730	Outside temp B9
7750	DHW temp B3/B38
7760	Boiler temp B2
7820	Sensor temp BX1
7821	Sensor temp BX2
7822	Sensor temp BX3
7823	Sensor temp BX4
7830	Sensor temp BX21 module 1
7831	Sensor temp BX22 module 1
7832	Sensor temp BX21 module 2
7833	Sensor temp BX22 module 2
7834	Sensor temp BX21 module 3
7835	Sensor temp BX22 module 3
7840	Voltage signal H1
7841	Contact state H1
7845	Voltage signal H2 module 1
7846	Contact state H2 module 1
7848	Voltage signal H2 module 2
7849	Contact state H2 module 2
7851	Voltage signal H2 module 3
7852	Contact state H2 module 3
7854	Voltage signal H3
7855	Contact state H3
7860	Contact state H4
7862	Frequency H4
7865	Contact state H5
7872	Contact state H6
7874	Contact state H7
7950	Input EX21 module 1
7951	Input EX21 module 2
7952	Input EX21 module 3
	State
8000	State heating circuit 1
8001	State heating circuit 2
8002	State heating circuit 3
8003	State DHW
8005	State boiler
8007	State solar
8008	State solid fuel boiler
8009	State burner

Line No.	Programming
8010	State buffer
8011	State swimming pool
	Diagnostics cascade
8100	Priority source 1
8101	State source 1
8102	Priority source 2
8103	State source 2
8104	Priority source 3
8105	State source 3
8106	Priority source 4
8107	State source 4
8108	Priority source 5
8109	State source 5
8110	Priority source 6
8111	State source 6
8112	Priority source 7
8113	State source 7
8114	Priority source 8
8115	State source 8
8116	Priority source 9
8117	State source 9
8118	Priority source 10
8119	State source 10
8120	Priority source 11
8121	State source 11
8122	Priority source 12
8123	State source 12
8124	Priority source 13
8125	State source 13
8126	Priority source 14
8127	State source 14
8128	Priority source 15
8129	State source 15
8130	Priority source 16
8131	State source 16
8138	Cascade flow temp
8139	Cascade flow temp setp
8140	Cascade return temp
8141	Cascade return temp setp
8150	Source seq ch'over current
	Diagnostics heat generation
8304	Boiler pump Q1
8308	Boiler pump speed
8309	Bypass pump speed
8310	Boiler temp
8311	Boiler setpoint
8312	Boiler switching point

Line No.	Programming
8313	Control sensor
8314	Boiler return temp
8315	Boiler return temp set
8316	Flue gas temp
8318	Flue gas temp max
8321	Primary exchanger temp
8323	Fan speed
8324	Set point fan
8325	Current fan control
8326	Burner modulation
8327	Water pressure
8329	Ionization current
8330	Hours run 1st stage
8331	Start counter 1st stage
8338	Hours run heating mode
8339	Hours run DHW
8366	Boiler throughput
8378	Overall heating energy
8679	Overall DHW energy
8380	Global Energy
8381	Énergie gaz chauffage
8382	DHW gas energy
8383	Gas energy
8390	Current phase number
8499	Collector pump 1
8501	Solar ctrl elem buffer
8502	Solar ctrl elem swi pool
8505	Speed collector pump 1
8506	Speed solar pump ext exch
8507	Speed solar pump buffer
8508	Speed solar pump swi pool
8510	Collector temp 1
8511	Collector temp 1 max
8512	Collector temp 1 min
8513	dt collector 1/DHW
8514	dt collector 1/buffer
8515	dt collector 1/swimming pool
8519	Solar flow temp
8520	Solar return temp
8526	24-hour yield solar energy
8527	Total yield solar energy
8530	Hours run solar yield
8531	Hours run collect overtemp
8532	Hours run collector pump
8560	Solid fuel boiler temp
8570	Hours run solid fuel boiler

Line No.	Programming
	Diagnostics consumers
8700	Outside temp
8701	Outside temp min
8702	Outside temp max
8703	Outside temp attenuated
8704	Outside temp composite
8730	Heating circuit pump 1
8731	Heat circ mix valv 1 open
8732	Heat circ mix valv 1 close
8740	Room temp 1
8741	Room setpoint 1
8742	Room model temperature
8743	Flow temp 1
8744	Flow temp setpoint 1
8749	Room thermostat 1
8760	Heating circuit pump 2
8761	Heat circ mix valv 2 open
8762	Heat circ mix valv 2 close
8770	Room temp 2
8771	Room setpoint 2
8772	Room model temperature
8773	Flow temp 2
8774	Flow temp setpoint 2
8779	Room thermostat 2
8790	Heating circuit pump 3
8791	HC mixing valve 3 open
8792	HC mixing valve 3 closed
8800	Room temp 3
8801	Room setpoint 3
8802	Room model temperature
8803	Flow temp 3
8804	Flow temp setpoint 3
8809	Room thermostat 3
8820	DHW pump
8830	DHW temp 1
8831	DHW temp setpoint
8832	DHW temp 2
8835	DHW circulation temp
8836	DHW charging temp
8852	DHW consumption temp
8853	Instant WH setpoint
8875	Flow temp setp VK1
8885	Flow temp setp VK2
8895	Flow temp setp swimming pool
8900	Swimming pool temp
8901	Swimming pool setpoint

Line No.	Programming
8930	Primary controller temp
8931	Primary controller set
8950	Common flow temp
8951	Common flow temp setp
8952	Common return temp
8962	Common output setpoint
8980	Buffer temp 1
8981	Buffer setpoint
8982	Buffer temp 2
8983	Buffer temp 3
9009	Water pressure H3
9031	Relay output QX1
9032	Relay output QX2
9033	Relay output QX3
9034	Relay output QX4
9050	Relay output QX21 module 1
9051	Relay output QX22 module 1
9052	Relay output QX23 module 1
9053	Relay output QX21 module 2
9054	Relay output QX22 module 2
9055	Relay output QX23 module 2
9056	Relay output QX21 module 3
9057	Relay output QX22 module 3
9058	Relay output QX23 module 3
	Burner control
9500	Pre-ventilation time
9504	Required speed prepurging
9512	Required speed ignition
9524	Required speed LF
9525	Required speed LF min
9529	Required speed HF
9530	Required speed HF max
9626	Power slope/fan speed
9627	Section Y power/fan speed
9650	Chimney drying
9651	Req speed chimney drying
9652	Duration chimney drying

6. "USER INTERFACE" PARAMETERS

6.1. Setting the time

Line No.	Programming	Possible values
1	Hours / minutes	00:00 ... 23:59
2	Day / month	01.01 ... 31.12
3	Year	1900 ... 2099
5	Start of summertime	01.01 ... 31.12
6	End of summertime	01.01 ... 31.12

The controller has an annual clock which indicates the hour, day and date.
For correct operation of the programs, the hour and date must be correctly set on the clock.

N.B: Summer time / winter time switchover
The dates have been programmed for transition to the summer time and winter time. The time automatically goes from 2^{am} (winter time) to 3^{am} (summer time) or from 3am (summer time) to 2am winter time (on the first Sunday following the respective date.

6.2. User interface

Line No.	Programming	Possible values
20	Language	English | Deutsch | Français | Italiano | Nederlands | Español
22	Info	Temporarily | Permanently
26	Operation lock	Off | On
27	Programming lock	Off | On
28	Direct adjustment	Automatic storage | Storage with confirmation
29	Units	°C, bar | °F, PSI

Info (22):

- ***Temporary:***
  After pressing the "Info" key, the display returns to the "predefined" basic display after 8 minutes or by pressing the operating mode key.
- ***Continuous:***
  After pressing the "Info" key, the display goes to the standard "new" display after 8 minutes max. The last information selected is visible on the new basic display.

Operation lock (26):
If the operation lock is activated, the following control elements can no longer be set: Heating circuit mode, DHW mode, temperature setpoint, comfort ambient temperature (knob), occupation key.

Program lock (27):

If the program lock is activated, the setting values are displayed but cannot be modified.

- ***Temporary suspension of program***

  The program lock can be temporarily deactivated on the program. To do so, simultaneously press the OK and ESC keys for at least 3 seconds. Temporary suspension of the program lock remains effective until the programming context is exited.

- ***Permanent suspension of program***

  Start with a temporary suspension, then cancel the “Program lock” on line 27.

Direct setting (28):

- ***Automatic***

  A setpoint correction using the knob is validated with no special confirmation (elapsed time) or by pressing the OK key.

- ***With validation***

  A setpoint correction with the button will only be validated after the OK key has been pressed.

6.3. Heating circuit assignment

Line No.	Programming	Possible values
42	Assignment device 1	Heating circuit 1 | Heating circuits 1 and 2 | Heating circuits 1 and 3 | All heating circuits
44	Operation HC2	Jointly with HC1 | Independently
46	Operation HC3/P	Jointly with HC1 | Independently

Assignment of unit 1 (42)

As room unit 1, the action generated by the corresponding user interface can be assigned to heating circuit 1 or to the two heating circuits. The latter case applies when the installation has 2 heating circuits and only one room unit

Control of heating circuit 2 (44)

Depending on the setting on line 40 (parameter accessible or QAA75 on QAA78: ambient temperature control module), the action (operating mode key or knob) can be defined on room unit 1, the user interface or the control component for heating circuit 2.

- **Common with HC1**

  Control of heating circuits 1 and 2 is shared.

- **Independent**

  The control action is displayed on the screen each time an operating mode key or knob is used.

Control of heating circuit (46)

Depending on the setting on line 40 (parameter accessible or QAA75 on QAA78: ambient temperature control module), the action (operating mode key or knob) can be defined on room unit 1, the user interface or the control component for heating circuit 3.

- **Common with HC1**

  Control of heating circuits 1 and 3 is shared.

- **Independent**

  Any change of operating mode or nominal temperature adjustment must be performed in the programming.

6.4. Software version

Line No.	Programming
70	Software version

The indication gives the current version of the user interface.

7. “HEATING CIRCUITS” PARAMETERS

The boiler controller can manage up to 3 heating circuits

The type of heating circuit (direct pump or mixed V3V) is self-defined in accordance with the connection (or not) of a flow temperature sensor.

Management of the heating circuit by the boiler controller (direct or mixed) requires use of an outdoor temperature sensor (QAC34 connected to B9, see section 2.3.2, page 13).

In order to have heating circuits with V3V, an extension module per heating circuit must be used.

The names of the sensors, pumps and valves used are:

	Sensor	Pump	V3V
HC1	B1	Q2	Y1/Y2
HC2	B12	Q6	Y5/Y6
HC3	B14	Q20	Y11/Y12

The following functions are available for each heating circuit independently:

- Adjustment of energy saving time schedules
- Adjustment of vacation programs
- Adjustment of setpoints
- Adjustment of heating curves
- Operation optimisation functions
- Adjustment of control of V3V and pump actuators

7.1. Basic settings

7.1.1. Operating mode

Operation of heating circuits 1, 2 and 3 is directly controlled by the operating mode key (see chapter 3.3, page 17).

7.1.2. *Time schedule program (heating circuits 1, 2 and 3, DHW, 5)*

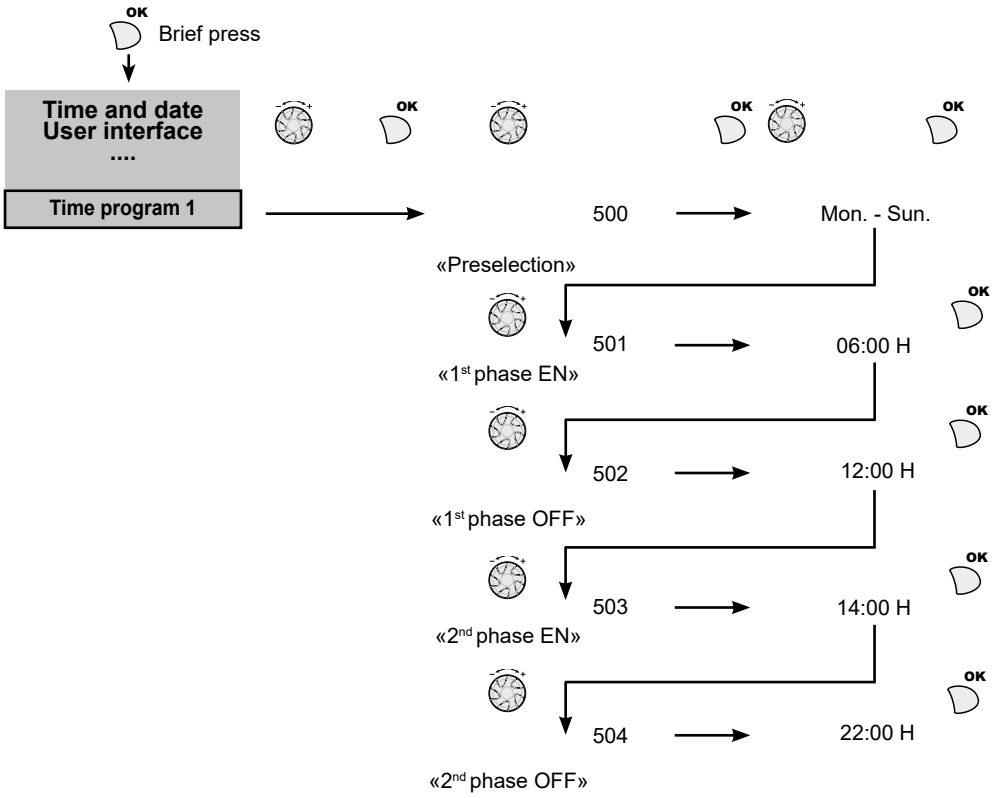
Line No.					Programming	Possible values
HC1	HC2	HC3	DHW	5		
500	520	540	560	600	Preselection	Mo-Su | Mo-Fr | Sa-Su | Mo...Su
501	521	541	561	601	First period start time	00:00 ... 24:00
502	522	542	562	602	First period stop time	00:00 ... 24:00
503	523	543	563	603	Second period start time	00:00 ... 24:00
504	524	544	564	604	Second period stop time	00:00 ... 24:00
505	525	545	565	605	Second period start time	00:00 ... 24:00
506	526	546	566	606	Second period stop time	00:00 ... 24:00
516	536	556	576	616	Default values	No | Yes

Several control programs are available for the heating and DHW production circuits. They are set up in « Automatic » mode and control the temperature level changes (and therefore the associated setpoints (reduced and comfort)) in accordance with the change times set.

Enter the change times:

The change times can be set in a combined way, i.e. identical times for several days or several different times for certain days. By preselecting groups of days (Monday … Friday and Saturday … Sunday, for example) with the same change times, you will considerably reduce the time spent in setting up the change program.

All the time schedule programs can be reset to the factory settings (lines 516, 536, 556, 576 and 616). Each time schedule program has its own control line for reinitialisation. In this case, the individual settings are lost.



7.1.3. Vacation (heating circuits 1, 2 and 3)

Line No.			Programming	Possible values
HC1	HC2	HC3		
641	651	661	Preselection	Period 1 | ... | Period 8
642	652	662	Begin (dd.mm)	01.01 ... 31.12
643	653	663	End (dd.mm)	01.01 ... 31.12
648	658	668	Operating level	Frost protection | Reduced

The « vacation » program allows you to change the heating circuits on an operational level selected in accordance with the date (calendar).

CAUTION: **The « vacation » program is active in automatic mode only.**

CAUTION: **When all the heating circuits configured are in holiday mode, the DHW circuit switches to frost protection mode.**

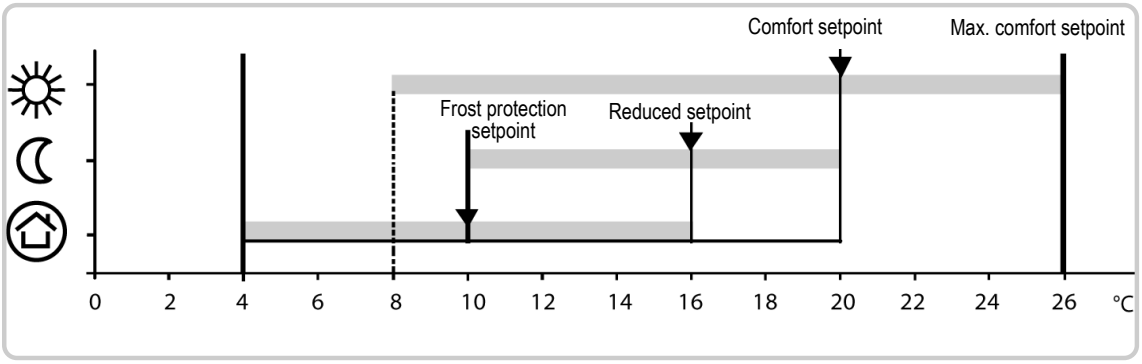
CAUTION: **When the holiday period is exceeded, it is deleted from the programming. The periods are to be programmed from one year to the next.**

7.1.4. Setpoint values

Line No.			Programming	Possible values
HC1	HC2	HC3		
710	1010	1310	Comfort setpoint	4 … 35 °C
712	1012	1312	Reduced setpoint	4 … 35 °C
714	1014	1314	Frost protection setpoint	4 … 35 °C
716	1016	1316	Comfort setpoint max	4 … 35 °C

Ambient temperature:
The ambient temperature can be set according to different setpoint values. Depending on the mode chosen, the adjustment points are activated and provide different levels of ambient temperature.

The configurable adjustment point ranges are defined by their interdependencies as shown in the chart below.



Frost protection :
The protection mode automatically prevents too sharp a drop in the ambient temperature. In this case, the control system adopts the frost protection adjustment point.

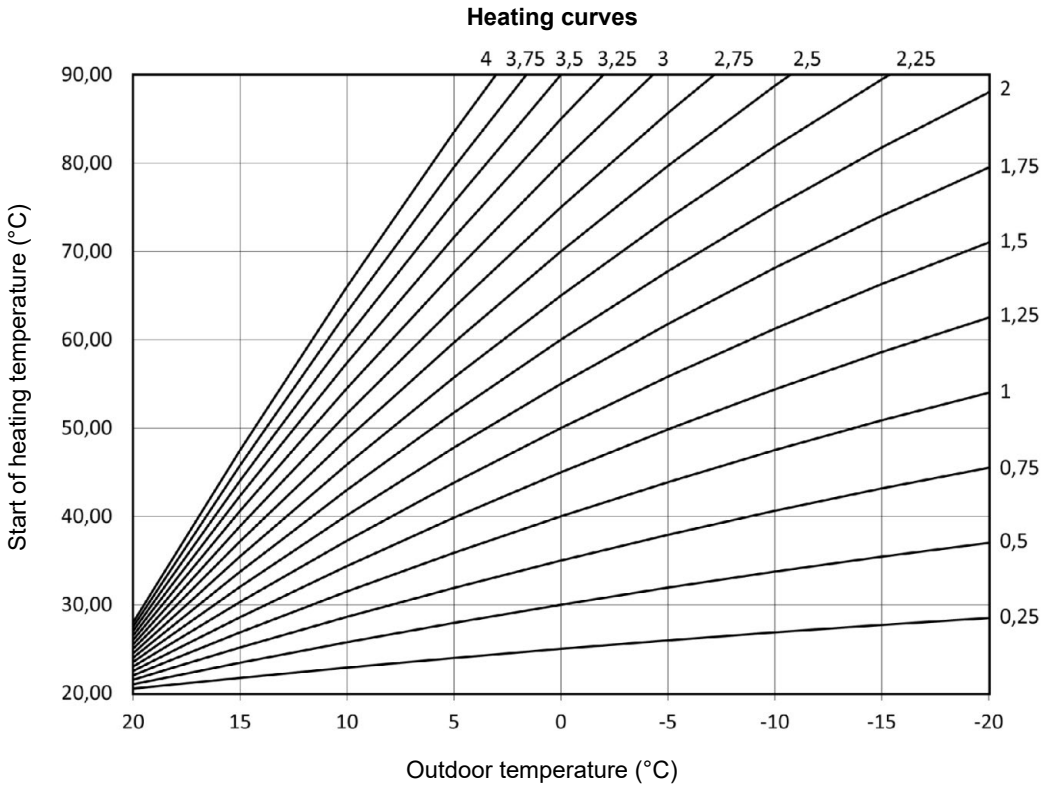
7.1.5. Heating curve

Line No.			Access	Programming	Possible values
HC1	HC2	HC3			
720	1020	1320	E	Heating curve slope	0.10 … 4.00
721	1021	1321	S	Heating curve displacement	-4,5 … 4,5 °C
726	1026	1326	S	Heating curve adaptation	Off | On

Heating curve slope
Depending on the heating characteristics, the controller will calculate the flow temperature setpoint which will be used to regulate the flow temperature in accordance with the atmospheric conditions. Different adjustments allow you to adapt the heating characteristic so that the heating capacity, and therefore the ambient temperature, corresponds to the individual needs.

CAUTION:

The heating curve is adjusted with respect to an ambient temperature setpoint of 20°C. If the ambient temperature is changed, the flow temperature setpoint is automatically recalculated. This does not modify the adjustment and comes down to automatically adapting the curve.



Translation of heating curve.

Any offset of the curve will modify the flow temperature overall and regularly over the entire outdoor temperature range. In other words, the offset must be corrected when the ambient temperature is globally too high or too low.

Adaptation of heating curve

The adaptation allows the controller to automatically adapt the heating curve to the actual conditions. This correction function can only be activated and deactivated.
In the latter case, there is no need to correct the slope and the offset.

INFORMATION:

To activate the function, the following conditions must be satisfied

- An ambient temperature sensor must be connected.
- The « ambient temperature influence » parameter must be set between 1 and 99.
- The reference room (where the ambient temperature sensor is installed) must not have a thermostatic valve. If it does, it must be completely open.
- Activation of this function requires an adaptation period which can take more or less time (around 1 week) depending on the weather conditions and the stability of the ambient temperature setpoint.

7.1.6. *Flow temperature setpoint*

Line No.			Programming	Possible values
HC1	HC2	HC3		
740	1040	1340	Flow temp setpoint min	8 ... 95 °C
741	1041	1341	Flow temp setpoint max	8 ... 95 °C

Limits the flow temperature setpoint (as min. or max.) calculated by the water law (heating curve).

7.1.7. *Flow temperature setpoint of room thermostat*

Line No.			Programming	Possible values
HC1	HC2	HC3		
742	1042	1342	Flow temp setpoint room stat	8 ... 95 °C

If a room thermostat is defined on an input Hx, the flow setpoint for the heating circuit set will apply here.
IMPORTANT: No longer follows a water logic.

7.1.8. *Delay heat request*

Line No.			Programming	Possible values
HC1	HC2	HC3		
746	1046	1346	Delay heat request	0 ... 600 s

If a valve is used as a heating circuit control element (in place of a pump), the heat request sent to the generator may be delayed for the time taken by the valve to achieve the fully open position.

7.2. Optimisation

7.2.1. *ECO functions*

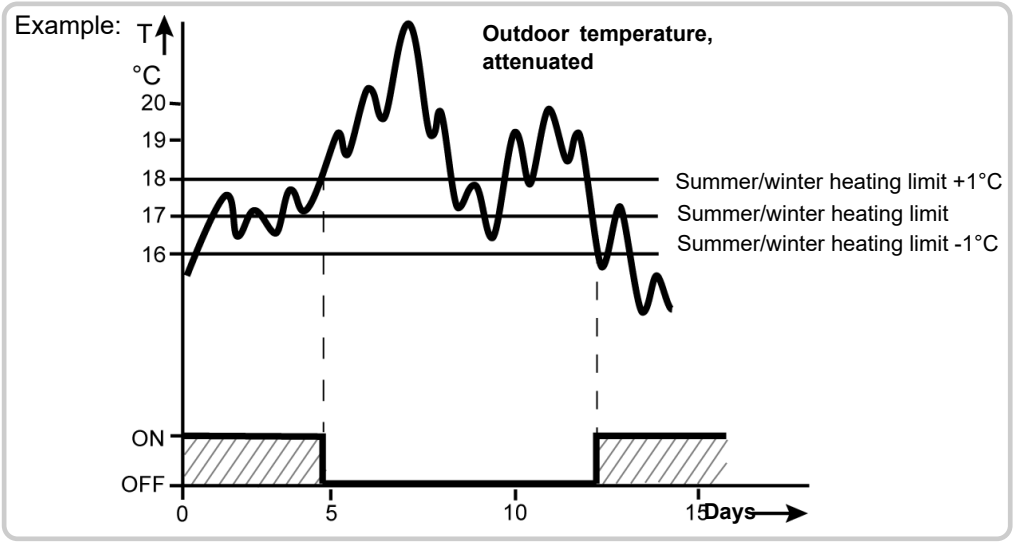
Line No.			Programming	Possible values
HC1	HC2	HC3		
730	1030	1330	Summer/winter heating limit	8 ... 30 °C
732	1032	1332	24-hour heating limit	-10 ... 10 °C

Summer/winter switchover:
The summer/winter switchover activates/deactivates the heating system during the year in accordance with the temperature. The changeover takes place automatically when the automatic mode is selected, thus eliminating the need by the user to switch on/off the heating system. Any change to the input value shortens or extends the respective annual periods (summer/winter).

- If the value is increased:
  The transition to winter mode is advanced, and the transition to summer mode is delayed.

- If the value is decreased:
  The transition to winter mode is delayed and the transition to summer mode is advanced.

INFORMATION:
This function is inactive in continuous comfort temperature mode (sun icon).
The controller displays "ECO".
The outdoor temperature is attenuated to take account of the building's dynamic's



Daily heating limit :
The daily heating limit is used to switch on/off the heating system during the day depending on the outdoor temperature. This function is mainly used during the intermediate seasons (spring/autumn) to quickly respond to temperature deviations.

In this way, in the following example, the temperature is 18 °C, calculated as follows:

Heating comfort setpoint. (710)	22 °C
Heating limit over 24 hours (732)	-3 °C
Switchover temperature (710 – 732) =	19 °C

Heating off

Differential (fixed)	-1 °C
Switchover temperature =	18 °C

Heating on

Any change to the value entered will shorten or increase the respective heating periods.
- If the value is increased: the transition to heating mode will be advanced ; The transition to ECO mode will be delayed.
- If the value is decreased: the transition to heating mode will be delayed ; the transition to ECO mode will be advanced.

INFORMATION:
This function is inactive in continuous comfort temperature mode.
The controller displays "ECO".
The outdoor temperature is attenuated to take account of the building's dynamic's

7.2.2. Influence of ambient temperature

Line No. HC1	HC2	HC3	Programming	Possible values
750	1050	1350	Room influence	1 ... 100 %

Types of control :

When an ambient temperature sensor is used, 3 different types of control are possible

SETTING	TYPE OF CONTROL
- - - %	Simple control based on outdoor conditions *
1...99 %	Control based on outdoor conditions, with influence of ambient temperature *
100 %	Control based on ambient temperature only

** Requires connection of an outdoor sensor.*

Simple control based on outdoor conditions

The flow temperature is calculated by the heating curve in accordance with the average outdoor temperature

Since the control does not take account of the ambient temperature for this adjustment, this type of control requires correct adjustment of the heating curve.

Control based on outdoor conditions, with influence of ambient temperature.

The difference between the ambient temperature and the setpoint is measured and taken into account for adjustment of the temperature. This makes it possible to take account of possible heat inputs and ensures a better uniformity of the ambient temperature.

The influence of the temperature difference is defined in the form of a percentage. The configurable value will be proportionally higher and consistent with the quality of the installation in the reference room (precise ambient temperature, correct location of sensor, etc.).

Example:

60 % approx.: good quality installation

20 % approx.: poor quality installation

Control according to ambient temperature only

The flow temperature is adjusted in accordance with the ambient temperature setpoint, the actual ambient temperature and its evolution. For example, a minor increase in the ambient temperature will result in immediately lowering the flow temperature.

INFORMATION:

To activate the function, the following conditions must be satisfied

- An ambient temperature sensor must be connected.
- The “ambient temperature influence” parameter must be set between 1 and 99 or to 100%.
- The reference room (where the ambient temperature sensor is installed) must not have a thermostatic valve. If it does, it must be completely open.

7.2.3. *Limitation of ambient temperature*

Line No.			Programming	Possible values
HC1	HC2	HC3		
760	1060	1360	Room temp limitation	0,5 … 4 °C

The ambient temperature limitation function is used to switch off the circulating pump when the ambient temperature exceeds the current setpoint by more than the set differential. The circulating pump is again activated as soon as the ambient temperature drops below the current ambient temperature setpoint. If the ambient temperature limitation function is active, no heat request is transmitted to the generator(s).

7.2.4. *Terminal regul heating limitation*

Line No.			Programming	Possible values
HC1	HC2	HC3		
761	1061	1361	Limite chauffe régul terminal	0 ... 100 %

For simple ambiance regulation, the request is invalid if the current start setpoint request is lower than the limit set (x % of the maximum start setpoint - ambiance setpoint). The request is active again if the requested setpoint passes above the disconnection threshold by over 8%. This function may be activated/deactivated.

INFORMATION: If an external probe is present, the daily heating limit and summer/winter switching functions may, where applicable, also deactivate the heating.

7.2.5. *Accelerated heating*

Line No.			Programming	Possible values
HC1	HC2	HC3		
770	1070	1370	Boost heating	0 … 20 °C

In fast heating mode, the new setpoint is reached more quickly when switching from the reduced setpoint to the comfort setpoint, thus shortening the temperature build-up time. During the fast heating operation, the room temperature setpoint is increased by the value set. An increase in the setting results in a shorter temperature build-up time. On the other hand, a decrease in the setting results in a longer period.

INFORMATION: Fast heating is possible with or without the room temperature sensor.

7.2.6. *Accelerated lowering of heating*

Line No.			Programming	Possible values
HC1	HC2	HC3		
780	1080	1380	Quick setback	Off | Down to reduced setpoint | Down to frost prot setpoint

During accelerated lowering of the heating, the heating circuit pump is disconnected and, if a mixing valve type circuit is used, the mixing valve is closed.

INFORMATION: The pump is operated in continuous mode to maintain the heating circuit pump activated during the accelerated temperature lowering operation.

- **Operation with room temperature sensor**
  With an ambient temperature sensor, the function disconnects the heating until the ambient temperature has dropped and reached the reduced setpoint or the frost protection level. When the ambient temperature has dropped down to the reduced or frost protection level, the heating circuit pump is activated and the mixing valve is released.

- **Operation without room temperature sensor**
  Accelerated lowering of the temperature cuts off the heating for a defined period of time in accordance with the outdoor temperature and the building time constant.

7.2.7. *Optimisation on startup and stop*

Line No.			Programming	Possible values
HC1	HC2	HC3		
790	1090	1390	Optimum start control max	00:00 … 06:00
791	1091	1391	Optimum stop control max	00:00 … 06:00

Maximum optimisation on activation
The change of temperature levels is optimised to achieve the comfort setpoint during the changeover periods.

Maximum optimisation on cutout
The change of temperature levels is optimised to achieve the comfort setpoint - 1/4 °C during the changeover periods.

7.2.8. *Increase of reduced setpoint*

Line No.			Programming	Possible values
HC1	HC2	HC3		
800	1100	1400	Reduced setp increase start	-30 … 10 °C
801	1101	1401	Reduced setp increase end	-30 … 10 °C

This function is mainly used in heating systems equipped with limited energy supply levels (homes with low energy profile, for example). In this case, when the outdoor temperatures are low, adjustment of the temperature would take too much time.

Increasing the reduced temperature setpoint prevents excess cooling of the rooms to shorten the temperature adjustment period on transition to the comfort setpoint.

7.2.9. Overtemperature protection

Line No.			Programming	Possible values
HC1	HC2	HC3		
820	1120	1420	Overtemp prot pump circuit	Off | On

In heating installations with pump circuit, the heating circuit flow temperature may be higher than the flow temperature required by the heating curve subsequent to needs generated by other consumers (heating circuit with mixing valve, DHW load, external heat request) or to configuration of a minimum boiler temperature. By an excessively high outlet temperature, this heating circuit with pump would therefore be overheated. The overheating protection function for pump circuits is used to ensure, by activation or cutout of the pump, that the heating circuit energy supply corresponds to the heating curve demand.

7.2.10. Mixing valve

Line No.			Programming	Possible values
HC1	HC2	HC3		
835	1135	1435	Mixing valve Xp	1 ... 100 °C

By using the servomotor's Xp proportional strip, the mixing valve's behaviour may be adapted to match the installation's behaviour (regulation loop). The mixing valve's proportional band influences the regulator's proportional behaviour.

Line No.			Programming	Possible values
HC1	HC2	HC3		
836	1136	1436	Mixing valve Tn	10 ... 873 s

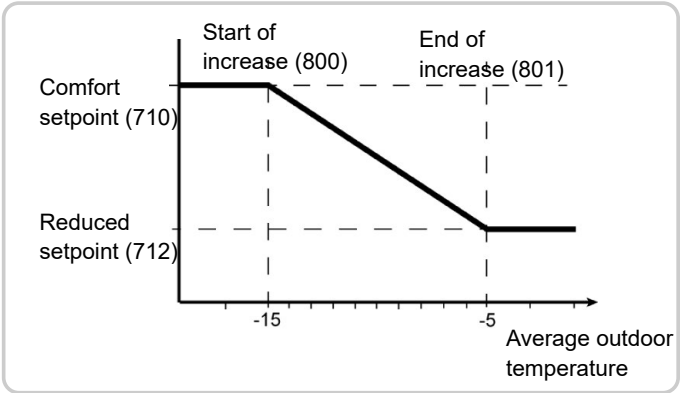
By using the Tn integration time, the mixing valve servomotor's behaviour may be adapted to match the installation's behaviour (regulation loop). The integration time influences the regulator's behaviour I.

7.2.11. Evacuation of excess heat

Line No. HC1	HC2	HC3	Programming	Possible values
861	1161	1461	Excess heat draw	Off | Heating mode | Always

The following functions can trigger evacuation of the surplus heat:
- Inputs Hx
- Adiabatic cooling of tank
- Evacuation of surplus heat from solid fuel boiler

If evacuation of surplus heat is activated, the surplus energy can be evacuated by the room heating system. This can be adjusted separately for each heating circuit.



Off
Evacuation of surplus heat deactivated.

Heating mode
Evacuation of surplus heat only takes place when the regulator is in heating mode.

Continuous
Evacuation of surplus heat takes place in all modes.

7.2.12. Storage tank / primary regulator

Line No. HC1	HC2	HC3	Programming	Possible values
870	1170	1470	With buffer	No | Yes

If a storage tank is used, it is necessary here to specify if the heating circuit is supplied from the storage tank. The temperature of the boiler storage tank serves as criterion for release of possible additional energy sources.

Line No. HC1	HC2	HC3	Programming	Possible values
872	1172	1472	With prim contr/system pump	No | Yes

You can specify if the heating circuit is supplied from the primary regulator or by the primary pump (depending on installation).

7.2.13. Temperature level switchover

Line No.			Programming	Possible values
HC1	HC2	HC3		
898	1198	1498	Operating level changeover	Frost protection | Reduced | Comfort

An external clock on input Hx is used to select the temperature level of the heating circuits.

7.2.14. Operating mode changeover

Line No.			Programming	Possible values
HC1	HC2	HC3		
900	1200	1500	Optg mode changeover	None | Protection | Reduced | Comfort | Automatic

In the event of an external change by input H (on extension module only), the operating mode to which the change will be applied must be defined beforehand.

7.3. Control of actuators

7.3.1. Uninterrupted operation of pumps

Line No.			Programming	Possible values
HC1	HC2	HC3		
809	1109	1409	Continuous pump operation	No | Yes

The pump is operated in continuous mode to inhibit cutout of the pump during an accelerated temperature lowering operation and regulation to the room temperature setpoint (room temperature thermostat, room temperature sensor or room temperature model).

- **Yes**
  The boiler heating circuit pump also remains activated during accelerated lowering of the temperature and when the room temperature setpoint has been achieved.

- **No**
  The boiler heating circuit pump can be stopped during an accelerated temperature lowering operation or when the room temperature setpoint has been achieved.

7.3.2. *Control by mixing valve*

Line No.			Programming	Possible values
HC1	HC2	HC3		
830	1130	1430	Mixing valve boost	0 ... 50 °C
832	1132	1432	Actuator type	2-position | 3-position
833	1133	1433	TOR Switching differential	0 ... 20 °C
834	1134	1434	Actuator running time	30 ... 873 s

Heightening of the mixing valve
The controller adds the increase defined here to the current flow setpoint and uses the result as temperature setpoint for the heat generator.

Type of servomotor
The type of servomotor setting modifies the behaviour of the regulation on the mixing valve servomotor.
The regulator controls on/off and 3-point servomotors

On/Off Differential (TOR)
For the On/Off servomotor, the “On/Off Differential” parameter must be adapted if necessary. This is not necessary for the 3-point servomotor

Servomotor travel time
On a 3-way valve, the servomotor travel time can be adjusted. On a 2-way valve, it is not possible to adjust the servomotor travel time.

7.3.3. *Speed-controlled pump*

Line No.			Programming	Possible values
HC1	HC2	HC3		
881	1181	1481	Starting speed	0 ... 100 %
882	1182	1482	Pump speed min	0 ... 100 %
883	1183	1483	Pump speed max	0 ... 100 %

The heating circulating pump start, minimum and maximum rotation speeds can be defined.

CAUTION: **When a UX2 or UX3 output (0-10V) is used for a heating circuit pump, the previous parameters of the same heating circuit must be set with the same value.**

Line No.			Programming	Possible values
HC1	HC2	HC3		
888	1188	1488	Curve readj at 50% speed	0 ... 100 %

Correction of flow setpoint by reduction of pump rotation speed by 50%.

The correction is calculated as the difference between the flow setpoint according to the heating curve and the actual ambient temperature setpoint.

Line No.			Programming	Possible values
HC1	HC2	HC3		
889	1189	1489	Filter time const speed ctrl	0 ... 20 min

The time constant is adjusted here to filter the flow temperature. This filtered time delay is used to calculate the speed of the modulating pump.

Line No.			Programming	Possible values
HC1	HC2	HC3		
890	1190	1490	Flow setp readj speed ctrl	No | Yes

Here, you can specify if the calculated flow setpoint correction must be integrated in the temperature request or not.

7.4. Controlled slab drying

Line No.			Programming	Possible values
HC1	HC2	HC3		
850	1150	1450	Floor curing function	Off | Functional heating | Curing heating | Functional/curing heating | Curing/functional heating | Manually
851	1151	1451	Floor curing setp manually	0 ... 95 °C
855	1155	1455	Floor curing setp current	0 ... 95 °C
856	1156	1456	Floor curing day current	0 ... 32

This function is used for controlled drying of slabs. It adjusts the flow temperature to a temperature profile. Drying is performed by heating the slab through the heating circuit with a mixing valve or a pump.
The « current drying day » is displayed with parameter 855 (1155 or 1455).

« Controlled drying » function:

- ***None :***
  The function is deactivated.

- ***Functional heating (Fh):***
  The first part of the temperature profile is completed automatically.

- ***« Ready to occupy » heating (Bh):***
  The second part of the temperature profile is completed automatically.

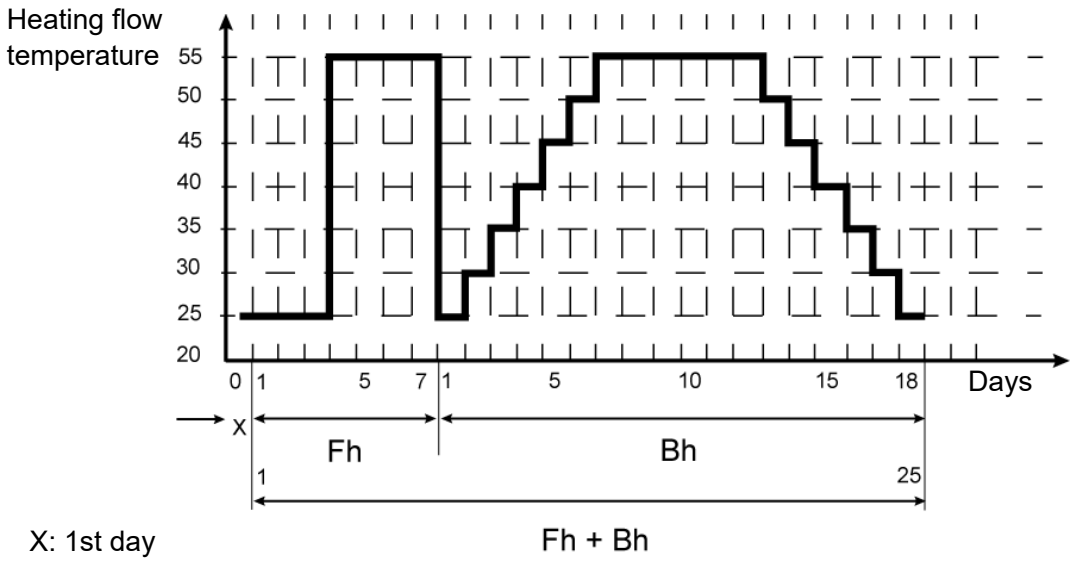
- ***Functional heating / "ready to occupy" heating (Fh + Bh):***
  The complete temperature profile (1st and 2nd part) is executed automatically.

- ***« Ready to occupy » heating / functional heating (Bh + Fh):***
  The complete temperature profile (2nd part and 1st part) is executed automatically.

- ***Manual:***
  No temperature profile is completed but the control is executed in accordance with the « manually controlled drying setpoint ». The function terminates automatically after 25 days.

INFORMATION:

- It is absolutely necessary to observe the standards and instructions of the building contractor !
- This function will only be active provided the installation has been properly done (hydraulic and electrical aspects, adjustments). Otherwise, the slabs to be dried could be damaged !
- The function can be interrupted prematurely by selecting « None ».
- The maximum flow temperature limitation remains active.



Manual drying setpoint

The flow temperature setpoint for the manual « controlled slab drying » function can be adjusted separately for each heating circuit.

Current drying setpoint

Displays the current flow temperature setpoint for the controlled slab drying function.

Current drying day

Displays the current day of the controlled slab drying function.

CAUTION: **After a power cutout, the controlled drying function resumes at the moment where the power cutout took place.**

8. "DOMESTIC HOT WATER" PARAMETERS

The boiler controller recognises that it must control a DHW circuit when a sensor or a thermostat is connected to its input B3.

The boiler controller can control a DHW actuator (DHW pump or valve Q3 to be defined at QX2).

The names of the sensor and the pump used are:

	Sensor	Pump
DHW	B3	Q3

The following functions are available on the DHW circuit :

- Adjustment of energy saving time schedules
- Adjustment of vacation programs
- Adjustment of setpoints
- Anti-legionella function
- DHW storage tank with load management

The boiler controller shows the DHW menu and the DHW tank when a sensor or a thermostat is connected to input B3.

The control adjusts the DHW temperature to the desired setpoint in accordance with the energy saving time schedule or continuously. In this case, the priority can be given to the DHW load function on the heating circuits.

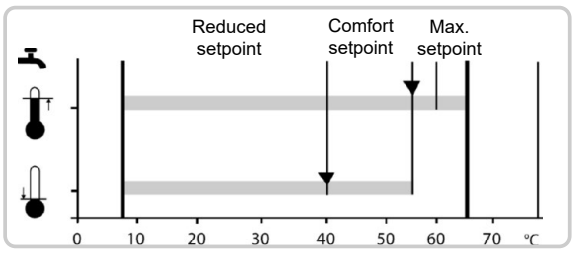
The controller has a configurable anti-legionella function designed to ensure protection against legionella in the tank and pipes. The circulating pump is controlled in accordance with the energy savings time schedule and the current operating mode.

8.1. Basic settings

8.1.1. Setpoint value

Line No.	Programming	Possible values
1610	Nominal setpoint	8 ... 80 °C
1612	Reduced setpoint	8 ... 80 °C
1614	Nominal setpoint max	8 ... 80 °C

The DHW is heated to various setpoint values.
These setpoints depend on the operating mode selected and are used to achieve the desired temperatures in the DHW tank.

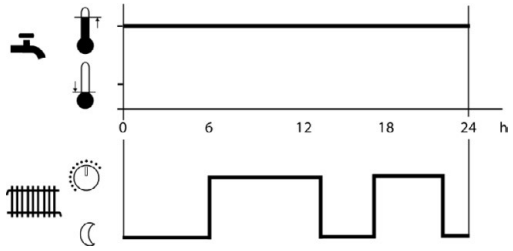


8.1.2. Release

Line No.	Programming	Possible values
1620	Release	24h/day | Time programs HCs | Time program 4/DHW

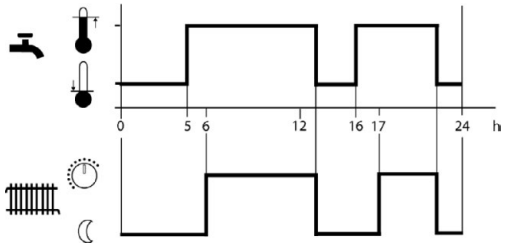
24h/24
Whatever the time schedule programs, the DHW temperature is maintained permanently to the nominal DHW setpoint.

Example:

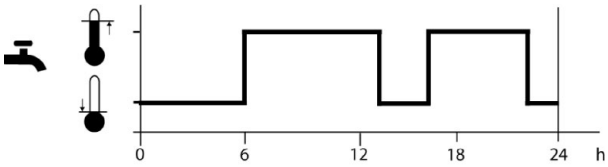


Time schedule programs of heating circuits
Depending on the time schedule programs of the heating circuits, the DHW setpoint will vary between the comfort DHW setpoint and the reduced DHW setpoint. The first switching point of each phase advances by one hour each time.

Example:



Time schedule program 4/DHW
Time schedule program 4 of the local controller is taken into account for the DHW mode. The change between the comfort and reduced DHW setpoints takes place at the change times defined for this program. In this way, the DHW is loaded independently of the heating circuits.



8.1.3. Priority

Line No.	Programming	Possible values
1630	Charging priority	Absolute | Shifting | None | MC shifting, PC absolute

If power is needed simultaneously for the heating and DHW circuits, the DHW priority function ensures that the boiler power is supplied with priority to the DHW during a DHW load cycle.

Absolute
The heating circuit with valve or pump is blocked until the DHW has achieved the desired temperature.

Sliding
If the heating power of the generator is not sufficient, the heating circuits with valve and with pump are restricted until the hot water has reached the desired temperature.

None
DHW charging takes place in parallel to operation of the heating system. If the sizing of the boilers and the heating circuits with valve is too tight, in the event of a high heating load, the DHW setpoint may not be achieved because there is too much heat passing into the heating circuit.

Sliding, absolute
The heating circuits with pump are cut off until the hot water has reached the desired temperature. If the heating power of the generator is insufficient, the heating circuits with mixing valves are restricted until the hot water has reached the desired temperature.

8.2. Anti-legionella function

Line No.	Programming	Possible values
1640	Legionella function	Off | Périodically | Fixed weekday

- **Periodic**
  The anti-legionella function is repeated in accordance with a defined frequency (line 1641).

- **Fixed day in week**
  The anti-legionella function can be activated on a fixed day of the week (line 1642). With this setting, the heating at the anti-legionella setpoint takes place on a fixed day of the week without taking account of the DHW tank temperatures during the previous period.

CAUTION: **During the period during which the anti-legionella function operates, there is a burn hazard when valves are opened.**

Line No.	Programming	Possible values
1641	Legionella funct periodically	1 ... 7

The periodic *anti-legionella function setting* determines the number of the days after which the anti-legionella function must be reactivated (this adjustment only works provided the *anti-legionella function* is set to Periodic).

Line No.	Programming	Possible values
1642	Legionella funct weekday	Monday | Tuesday | Wenesday | Thursday | Friday | Saturday | Sunday
1644	Legionella funct time	00:00 … 23:50 h:m

The day-of-the-week *anti-legionella operating parameter* defines on which day the anti-legionella function must be activated. The anti-legionella function is then executed on the concerned day, whether a renewable energy is available or not.

The anti-legionella function is started up at the time which has been set. The DHW setpoint is raised to the anti-legionella setpoint which has been set, and DHW charging begins.

If no time parameter has been set, the anti-legionella function is started on the day corresponding to the first normal charging of the DHW. If no DHW load is planned on that day (continuous reduced mode), the anti-legionella function is executed at 24.00.

If DHW production is deactivated (DHW mode key = Off or Vacation), the anti-legionella function resumes as soon as it is reactivated (DHW mode key = On or end of leave).

Line No.	Programming	Possible values
1645	Legionella funct setpoint	55 … 95°C

The higher the temperature in the tank, the shorter the duration of the anti-legionella function.

Line No.	Programming	Possible values
1646	Legionella funct duration	10 … 360 min

The *anti-legionella setpoint* must not be interrupted during the set holding time . If the tank temperature measured (by the coldest sensor, when two sensors are used) is greater than the *anti-legionella setpoint* less 1 K, the *anti-legionella function* is considered to be accomplished and the*holding time* begins.

If the tank temperature measured before the end of the *holding time* is less by more than a differential of + 2 K with respect to the *anti-legionella setpoint* , the *holding time* must be renewed. If no *setpoint holding time* is set, the *anti-legionella function* is considered to be accomplished as soon as the anti-legionella setpoint is achieved.

Line No.	Programming	Possible values
1647	Legionella funct circ pump	Off | On

The loop pump Q4 can be activated during the anti-legionella function .

8.3. Loop pump Q4

The pump is controlled by a multifunction relay configured accordingly.

Line No.	Programming	Possible values
1660	Circulating pump release	Time program 3 / HCP | DHW release | Time program 4 / DHW | Time program 5

The “DHW release” setting starts up the loop pump when DHW production is released.

Line No.	Programming	Possible values
1661	Circulating pump cycling	Off | On

To limit losses during circulation, the pump can be controlled for on/off.
If the function is activated, the loop pump is activated steady for 10 minutes during the release period and disconnected again for 20 minutes.

INFORMATION: **If the pump is activated as part of an anti-legionella cycle, it is no longer controlled cyclically. If the function is deactivated, the pump remains activated continuously during the release period.**

CAUTION: **This logic implies zero flow in the sanitary loop circuit. Please refer to the regulations in force to validate the obligation or not to maintain a constant minimum traffic speed.**

Line No.	Programming	Possible values
1663	Circulation setpoint	8 … 80 °C

If a sensor is installed in the DHW distribution line, the regulator monitors the temperature measured during execution of the anti-legionella function. The setpoint set must be maintained on the sensor throughout the duration *of the anti-legionella function* programmed. Adjustment of the maximum circulation value is limited to the nominal setpoint.

8.4. Mode switching

Line No.	Programming	Possible values
1680	Optg mode changeover	None | Off | On

In the event of external switching by input Hx, it is necessary to first define the mode to which the switchover will take place.

9. “CONSUMER CIRCUITS” PARAMETERS

The boiler controller can respond to external consumer requests.

The external consumers send their temperature request either by a 0...10 V signal configured at input H1, or by a dry contact (on H1) and a predefined setpoint configured in the boiler controller.

To display the consumer circuit menu in the program, you must first configure input H1 with one of the 2 functions described below.

The consumer circuit pumps can be controlled by defining a boiler controller output (QX2 to be defined in Q15).

A pool circuit is considered as an external consumer. The pool menu and the associated functions appear on the program when an input BX is declared as pool sensor (B13) and the sensor is connected. You can also define a pool pump (Q19).

9.1. Outlet setpoint

Line No.			Programming	Possible values
VK1	VK2	VK3		
1859	1909	1959	Flow temp setp cons request	8 ... 120 °C

Here, you set the outlet setpoint to be taken into account in the event of a consumer circuit request.

Line No.			Programming	Possible values
VK1	VK2	VK3		
1874	1924	1974	DHW load priority	Yes / No

9.2. Override signal / blocking signal

Line No.			Programming	Possible values
VK1	VK2	VK3		
1875	1925	1975	Excess heat draw	Off | On

If evacuation of the surplus heat is activated, the surplus of energy can be evacuated by consumer take-off. This can be adjusted separately for each consumer circuit.

9.3. Storage tank / primary regulator

Line No.			Programming	Possible values
VK1	VK2	VK3		
1878	1928	1978	With buffer	No | Yes

If a storage tank is used, you must specify here if the consumer circuit can be supplied from the storage tank. The boiler storage tank temperature serves as criterion for possible release of additional alternative sources of energy.

Line No.			Programming	Possible values
VK1	VK2	VK3		
1880	1930	1980	With prim contr/system pump	No | Yes

You can specify if the consumer circuit is supplied from the primary regulator or by the primary pump (depending on installation).

10. “POOL” PARAMETERS

Access to the pool function parameters is only possible when a consumer circuit is declared as pool circuit.

N° ligne	Programmation	Valeurs possibles
1959	Pool circuit generator set point	8 ... 80 °C

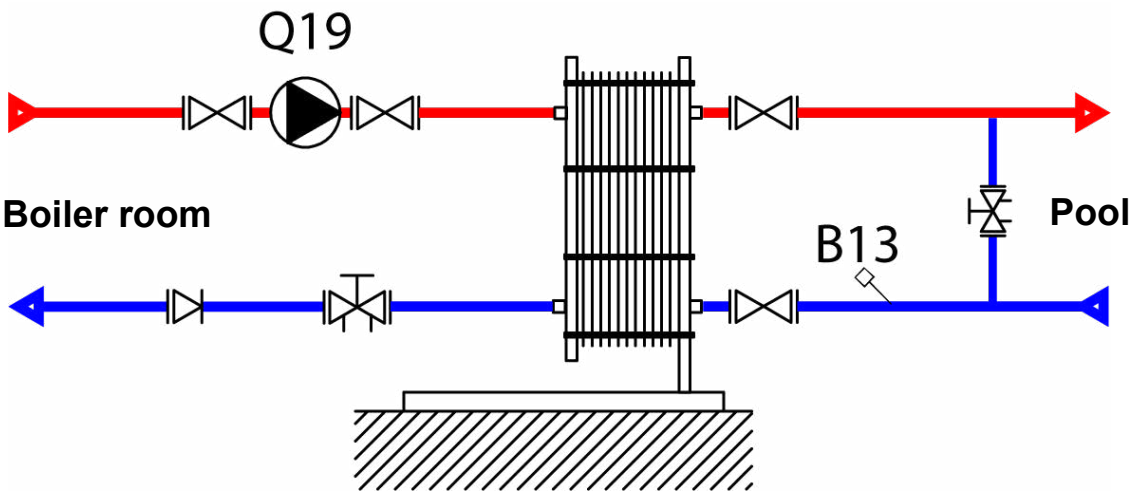
When there is a heat request from the swimming pool circuit, the generator takes 1959 as the set point.

10.1. Heating setpoint

Line No.	Programming	Possible values
2055	Setpoint solar heating	8 ... 80 °C
2070	Maximum pool temperature	para 2055...95 °C

Pool locker
When using heat source heating, the pool is heated to this setpoint.

Recommendation
It is recommended to set the lowest setpoint temperature that still provides adequate comfort. This avoids unnecessary energy consumption by the main heat source.



11. PRIMARY REGULATOR / PUMP

Line No.	Programming	Possible values
2110	Minimum flow setpoint T°	8 °C ... para 2111
2111	Minimum flow setpoint T°	para 2110 ... 95 °C

These limitations make it possible to define a range for the heating flow setpoint.

Line No.	Programming	Possible values
2130	Mixing valve elevation	0...50 °C

For mixing, the actual boiler flow temperature must be higher than the flow setpoint of the mixing valve. Otherwise, the latter cannot be reached at the desired time. The controller forms the boiler setpoint from the boost set here and the current flow setpoint.

Line No.	Programming	Possible values
2150	Primary regulator/pump	Upstream storage tank I Downstream storage tank

If the installation includes a storage tank, you can indicate here whether the primary regulator or the primary pump are placed upstream or downstream of it.

12. "BOILERS" PARAMETERS

The boiler receives heat requests and regulates its output according to need.

It is possible to use optimization functions to limit the number of cycles.

The boiler controller is the regulator that calculates the boiler's flow setpoint according to the different heat demands.These requests can come from several requesters:

- Heating circuits controlled by the boiler controller
- DHW circuit controlled by the boiler controller
- Request for consumers not controlled by the boiler controller via an On/Off contact or a 0...10 volt signal.
- External request on LPB bus

CAUTION: **The boiler has a suitable factory setting. Parameter changes must be made with caution to meet specific application cases.**

12.1. Operating mode

Line No.	Programming	Possible values
2203	Release under outside T°	-50 ... 50 °C

The boiler is only put into operation if the temperature is below the parameter value.

Line No.	Programming	Possible values
2208	Full stock tank charge	Stop | walking

To obtain sufficient operating times, the boiler remains in operation until the storage tank is fully charged.

12.2. Operating limits

12.2.1. Min. and max. setpoints

Line No.	Programming	Possible values
2210	Setpoint min	See boiler manual
2212	Setpoint max	See boiler manual

The boiler temperature setpoint which has been set can be limited by a minimum setpoint and a maximum setpoint.

These limitations will present a protection function for the boiler. Depending on the boiler mode, the minimum limitation on the boiler temperature setpoint in normal mode is the lower threshold of the boiler setpoint configured. In normal mode, the maximum boiler temperature limitation is the upper limit for the boiler setpoint which has been set and the setpoint for the electronic safety limiting thermostat.

INFORMATION: The minimum and maximum setpoint adjustment range is limited by the manual mode setpoint.

12.2.2. Manual mode

Line No.	Programming	Possible values
2214	Setpoint manual control	(setpoint min) ... (setpoint max)

In manual mode, the common starting setpoint can be adjusted to a fixed value.

12.2.3. Frost protection setpoint

Line No.	Programming	Possible values
2217	Setpoint frost protection	-20 ... 20 °C

Frost protection of the boiler is ensured independently of the heat requests or of the components connected. This function initiates, as may be necessary, activation of the burner. In this case, the consumer circuits are switched in order to take the heat generated.

12.2.4. Minimum return setpoint

Line No.	Programming	Possible values
2270	Return setpoint min	See boiler manual

The minimum return setpoint is configurable. If the boiler return temperature is below the return setpoint, the return temperature holding function is activated.

12.3. Optimisation

12.3.1. Burner control

Line No.	Programming	Possible values
2243	Burner off time min	0 … 20 min

The minimum pause time of the boiler acts exclusively between the successive heat requests. The boiler is then blocked for an adjustable duration. This time is activated subsequent to regular shutdowns or activation of the safety thermostat following heat requests. The system startups requested by the on/off regulator subsequent to heating requests are only taken into account after expiry of this time period.

12.3.2. Timing of pumps

Line No.	Programming	Possible values
2250	Pump overrun time	0 ... 240 min

Timed stopping of pumps following an external heating request.

Line No.	Programming	Possible values
2253	Pump overr time after DHW	0 ... 20 min

Timed stopping of pumps after DHW

12.3.3. Burner startup time delay

Line No.	Programming	Possible values
2470	Delay heat req special op	0 ... 600 s

The time delay is used to defer startup of the burner when an actuator with a slow opening time is used.

12.3.4. Boiler pump speeds

Line No.	Programming	Possible values
2321	Starting speed	0 ... 100 %
2322	Pump speed min	0 ... 100 %
2323	Pump speed max	0 ... 100 %

These parameters are used to set the minimum and maximum boiler pump speeds on start-up.

CAUTION: **When a UX2 or UX3 output (0-10V) is used for a boiler pump, parameters 2321, 2322 and 2323 must be set with the same value.**

Line No.	Programming	Possible values
2324	Xp pump speed	1...200 °C
2325	Tn rotational speed	10...873 s
2326	Tv rotational speed	0...30 s

These parameters are the PID settings that govern the boiler pump Q1.

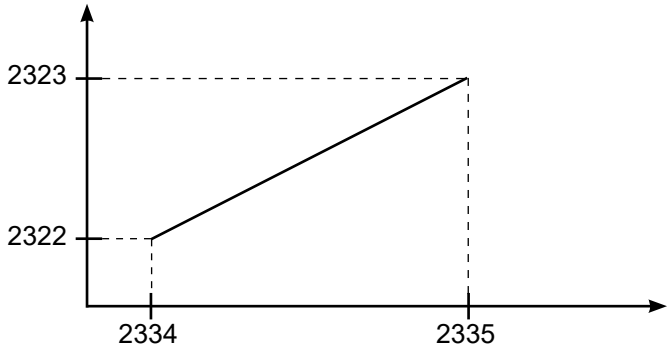
N° ligne	Programmation	Valeurs possibles
2334	Power to live. Minimum pump	0 ... 100 %
2335	Puiss. à vit. Max pompe	0 ... 100 %

The 0-10V output signal will be equivalent to ***Pump speed min*** (Q1) (2322) for a burner power equivalent to ***Output at pump speed min*** (2334).
The 0-10V output signal will be equivalent to ***Pump speed max*** (Q1) (2323) for a burner power equivalent to ***Output at pump speed max*** (2335).

CAUTION:

Powers 2334 and 2335 are expressed in % in relation to the nominal power of the boiler.
Do not rely on the fan control scale visible on the HMI which goes from 0% to 100%, 0% meaning minimum power of the model and 100% the maximum power of this model.

If the burner power is between these two values, the 0-10V output signal is extrapolated in a linear way.



12.3.5. Rate monitoring

Line No.	Programming	Possible values
2503	Parameter	0 ... 60 s

This parameter corresponds to the filtering time for information on the boiler pump's status on start-up. When this time expires, if the rate is insufficient the boiler is set to fault E164.

12.3.6. Boiler power

These settings are required for cascade connection of boilers which do not have the same power levels.

Line No.	Programming	Possible values
2330	Output nominal	0 ... 2000 kW
2331	Output basic stage	0 ... 2000 kW

CAUTION:

These parameters do not impact the power of the generator and therefore do not allow it to be clamped.

12.4. Regulation of heating and DHW

12.4.1. Fan

Line No.	Programming	Possible values
2441	Fan speed heating max	0 ... 10000 tr/min

This parameter is used to limit the maximum power in heating mode.

Line No.	Programming	Possible values
2442	Fan speed full charging max	0 ... 10000 tr/min

This parameter is used to limit the maximum power in complete load mode.

Line No.	Programming	Possible values
2444	Fan speed DHW max	0 ... 10000 tr/min

This parameter is used to limit the maximum speed of the fan for the DHW mode.
It is compatible with shutdown (HS). In the event of shutdown, the fan is controlled at its maximum speed in DHW mode.

Line No.	Programming	Possible values
2450	Regulator delay	Off I Heating mode only I DHW mode only I Heating and DHW mode

Here you can determine the speed for which the controller delay is active.

Stop
The function is inoperative.

Only heating mode
The regulator time delay only acts in DHW mode.

Heatind and DHW mode
The controller delay is effective in heating and DHW mode.

Line No.	Programming	Possible values
2452	Regulator speed delay	para 9525 ...para 9530

Speed commanded for the duration of the governor delay.

12.4.2. Differentials

To avoid accidental cutouts during a transient phenomenon, the cutout differential is dynamically adjusted in accordance with the temperature curve. In principle, the cutout differential is reduced in accordance with the amplitude of the ringing during a transient phenomenon. In the event of non-periodic phenomena, the reduction is carried out on a time-based criterion.

Line No.		Programming	Possible values
HC	DHW		
2454	2460	Switching diff on HCs	0 … 20 °C

The activation threshold is calculated on the basis of the setpoint requested less the activation differential. The current parameter designates the activation differential applied in the event of a heating or DHW request.

Line No.		Programming	Possible values
HC	DHW		
2455	2461	Switching diff off min HCs	0 … 20 °C

The cutout threshold is calculated on the basis of the setpoint requested increased by the cutout differential. The current parameter designates the cutout differential applied in the event of a heating or DHW request.

During the transient period, the cutout differential can fluctuate between the minimum and maximum value. After the transient period has elapsed, it is always the minimum cutout differential which is used.

Line No.		Programming	Possible values
HC	DHW		
2456	2462	Switching diff off max HCs	0 … 20 °C

The cutout threshold is calculated on the basis of the setpoint requested increased by the cutout differential. The current parameter designates the cutout differential applied in the event of a heating or DHW request.

The maximum cutout differential is only used during the transient period.

Line No.		Programming	Possible values
HC	DHW		
2457	2463	Settling time HCs	0 … 240 min

This parameter defines the time during which, following initiation of the burner, the cutout threshold can be calculated using the maximum cutout differential.

This parameter applies to heating and DHW requests.

Line No.	Programming	Possible values
2550	Gas energy metering	Off I On

Line No.	Programming	Possible values
2551	Gas meter correction	0.7..1.3

The Gas metering correction parameter (2551) allows the specialist to apply a factor to the current burner power value determined by the function linear approximation.
A value of 1.000 means no changes are made to the function configured approximation.
A low value leads to a low gas energy count and a high value leads to a higher gas energy count.

Line No.	Programming	Possible values
2630	Smoke damper stop delay	Off I On

The flue gas damper control reacts to the fan control. If the fan is no longer controlled, the smoke damper closes. To be able to cover brief shutdowns and transitions to post-ventilation or chimney drying, the smoke damper is switched off with a certain delay. This parameter is used to set the duration of the power-off delay.

11.4.3. Drain function

Line No.	Programming	Possible values
2630	Auto deaeration procedure	Off | On

This function must be released by this parameter (Start) to be able to start.

Off
This function is non-operational.

On
The function is activated.

Line No.	Programming	Possible values
2655	ON time deaeration	0 ... 240 s

Activation time (T_ON, see graph page 19) for the boiler pumps / heating circuits in drain function phase 2 and phase 4.

Line No.	Programming	Possible values
2656	OFF time deaeration	0 ... 240 s

Disconnection time (T_OFF, see graph page 19) for the boiler pumps / heating circuits in drain function phase 2 and phase 4.

Line No.	Programming	Possible values
2657	Number of repetitions	0 ... 100

Number of pump switching cycle repetitions (T_ON, T_OFF) in drain function phase 2 and 4.

Line No.	Programming	Possible values
2662	Deaeration time heat circuit	0 ... 255 min

Drain duration with continuous boiler pump / heating circuit command in drain function phase 1.

Line No.	Programming	Possible values
2663	Deaeration time DHW	0 ... 255 min

Drain duration with continuous boiler pump / DHW command in drain function phase 3.

13. "CASCADE" PARAMETERS

For a cascade, a network must be created on the LPB bus (with OCI345) comprising at least two boilers.

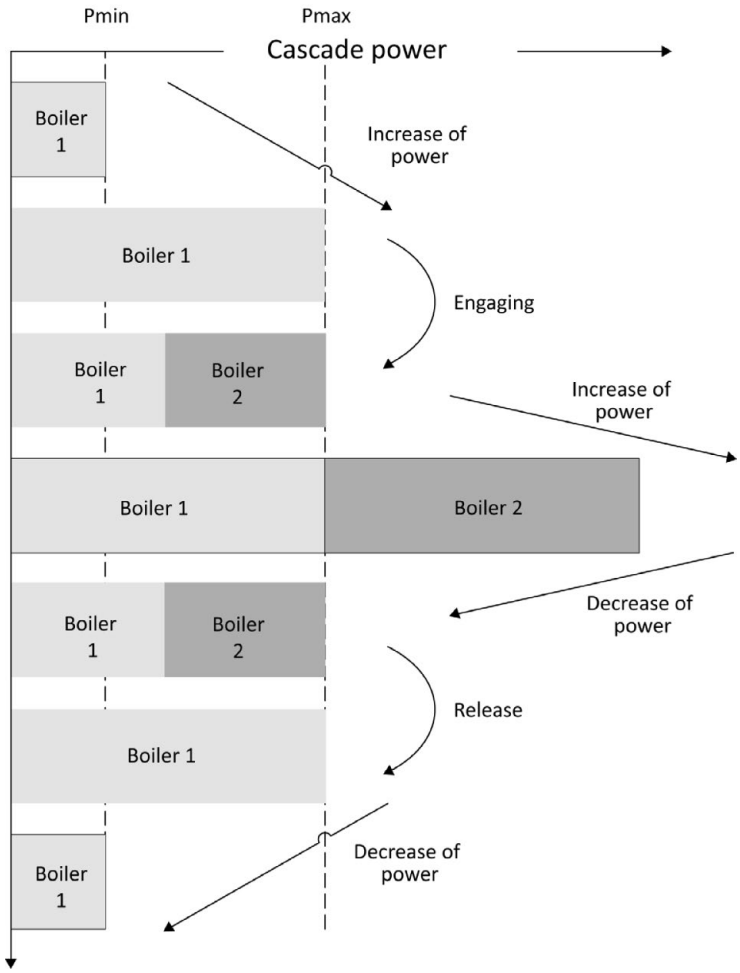
The NAVISTEM B3000 can be master or slave on the bus. The cascade can comprise an NAVISTEM B3000, LMU and RVS.

The bus always has a master (address 1) and one or several slaves defined with different addresses (addresses from 2 to 16)

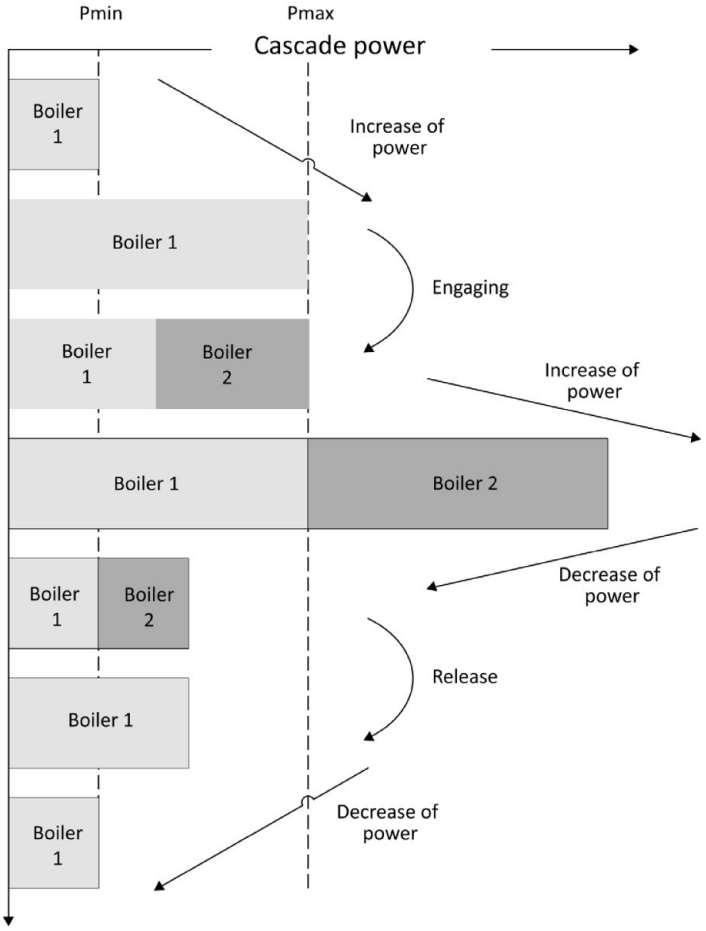
A cascade flow temperature sensor on an input Bx (configured as common flow sensor b10) must be configured on the cascade master. A cascade return sensor B70 can be configured for certain applications.

Select a cascade strategy :

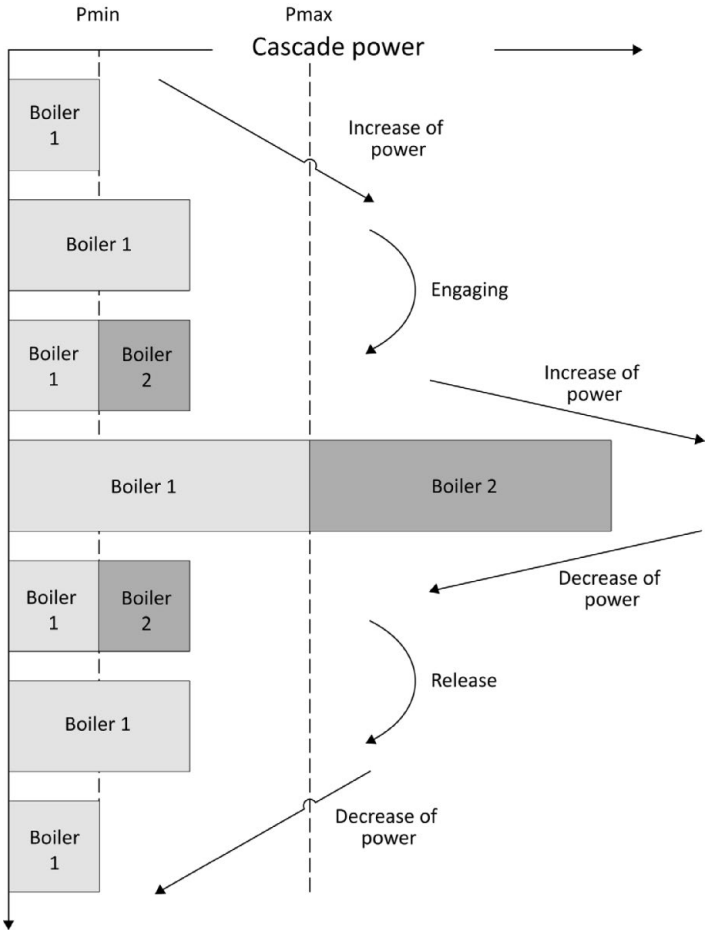
Activation delayed, stopping anticipated



Activation delayed, stopping delayed



Activation anticipated, stopping delayed



Adjust the power ranges to control the switchovers in the cascade strategies described above. The ranges are common to all the boiler switchovers, these ranges must therefore be adjusted in accordance with the type of boiler in the cascade.

Depending on the energy performance level of the boilers forming the cascade, priorities should be given. Use the boiler providing the highest efficiency (example, VARMAX) most often and use the least efficient boiler as little as possible or as backup (example, pressurised boiler).

13.1. Operating mode

Line No.	Programming	Possible values
3510	Lead strategy	Late on, early off |Late on, late off | Early on, late off
3511	Output band min	0 ... 100 %
3512	Output band max	0 ... 100 %

Keeping in mind the recommended power range, the generators are activated or deactivated in accordance with the cascade control strategy set.
To deactivate the power range action, set the limit values to 0% and 100% and the control strategy to delayed activation, delayed stop.

13.2. Regulation

Line No.	Programming	Possible values
3530	Release integral source seq	0 ... 500 °Cmin

When the energy request exceeds the release integral amount set here, a second boiler is activated. By increasing the value of the parameter, activation of the additional generators is slowed down. By decreasing the value of the parameter, activation of the additional generators is accelerated.

Line No.	Programming	Possible values
3531	Reset integral source seq	0 ... 500 °Cmin

If a heat generator currently in service exceeds the energy requirement of the cutout integral set here, the generator with the highest priority is cut off. By increasing this value, the generators stay activated longer (in the event of surplus heat). By decreasing the value of the parameter, stopping of the generators is accelerated.

Line No.	Programming	Possible values
3532	Restart lock	0 … 1800 s
3533	Switch on delay	0 … 120 min

Reactivation lock
The reactivation time delay prevents newly starting a boiler which has just been stopped. It is only at the end of this set time delay that it is again released. This prevents over-frequent starting and stopping of the generators while ensuring stable operation of the installation.

Heating mode switch-on delay
Correct adjustment of the time delay ensures stable operation of the installation. It prevents over-frequent starting and stopping of the generators.
For the DHW demand, the timeout is defined for 1 min.

Line No.	Programming	Possible values
3534	Forced time basic stage	0 ... 1200 s

Each boiler is then activated at the basic rate during the time defined.
It is only at the end of this period that the next rate is released.

Line no.	Programming	Possible values
3535	Switch-on delay DHW	0 ... 120 min

This setting is used to configure the timeout before starting additional boilers in a cascade layout when the demand for hot water increases.

Note: if the generator is in simultaneous production of heating and DHW and DHW is not absolute priority, the switch-on delay considered is the shortest between 3533 and 3535.

13.3. Boiler sequence

Line No.	Programming	Possible values
3540	Auto source seq ch'over	10 ... 990 h

The boiler sequence is automatically switched to manage the load of the boilers forming a cascade by defining the order of the control boiler and the backup boilers.

Fixed order
The - - - setting defines a fixed switching order. The control boiler can be defined at line 3544; the other boilers are activated in the order consistent with their LPB device addresses.

Switching order according to operating time
At the end of the hours configured, the order of the boilers forming the cascade is inverted. The boiler with the next higher address takes charge of the main boiler function.

Line No.	Programming	Possible values
3541	Auto source seq exclusion	none | first | last |first and last

The exclusion setting can only be used in association with the sequence activated at line 3540.
Boiler exclusion is used so that neither the first and/or the last boiler is used when the automatic switchover takes place.

None
The order of activation of the boilers is inverted at the end of the hours configured (line 3540).

First
The boiler with the lowest address continues to be the main boiler. The following ones switch their activation order after the number of hours specified in line 3540.

Last
The boiler with the highest address (last address) is always the last in the sequence. For the other boilers, the order of activation is inverted after the configured hours have elapsed (line 3540).

First and last
The boiler with the lowest address (first address) continues to be the main boiler. The boiler with the highest address (last address) is always the last in the sequence. The boilers with the intermediate addresses are switched over following the number of hours set (line 3540).

Line No.	Programming	Possible values
3544	Leading source	source 1 | … | source 16

The main boiler setting is only used in association with the fixed order of the boiler sequence on line 3540.
The main boiler defined will always be activated first and deactivated last. The other boilers are switched in the order of their device addresses.

13.4. Return temperature min. limitation.

Line No.	Programming	Possible values
3560	Return setpoint min	8 … 95 °C

As soon as the return temperature exceeds the return setpoint adjusted, the return temperature holding function is activated. The return temperature holding function is used to influence the consumers or to use a return regulator.

Line No.	Programming	Possible values
3562	Return influence consumers	Off | On

If the return temperature of the released boiler cascade drops below the minimum temperature set, the regulator calculates a blocking signal.

If this signal is greater than the corresponding limit value, the consumer pumps are or remain stopped in the pump circuits (circulating pump, DHW pump, external charging).
In those circuits with mixing valve, the flow setpoint is reduced in accordance with the value of the blocking signal.

14. "DHW TANK" PARAMETERS

14.1. Load regulation

Line No.	Programming	Possible values
5020	Flow setpoint boost	0 ... 30 °C

The DHW request to the generator comprises the current DHW setpoint and the adjustable boost.

Line No.	Programming	Possible values
5021	Transfer boost	0 ... 30 °C

The transfer is used to route the buffer tank energy to the DHW tank. In this respect, the current temperature of the buffer tank must be greater than the current temperature in the DHW tank. This differential can be set here.

Line No.	Programming	Possible values
5022	Type of charging	Recharging | Full charging | Full charging legio | Full charg 1st time day | Full charg 1st time legio

The tank can be loaded with up to two sensors max. A partial load can also be combined using a sensor and an anti-legionella function based on 2 sensors (setting 3).

Recharging
The DHW request is controlled by sensor B3.

Complete load
The DHW request is controlled by the two tank sensors B3 and B31.

Anti-legionella complete load
If the anti-legionella function is active, the DHW request is controlled by the two tank sensors B3 and B31, otherwise by sensor B3.

Complete load, first of the day
On the first daily load, the DHW request is controlled by the two tank sensors B3 and B31 ; the following charging operations by sensor B3 only.

Complete load, anti-legionella + 1st of the day
On the first daily load, and when the anti-legionella function is active, the DHW request is controlled by the two tank sensors B3 and B31 ; in the other cases, by sensor B3 only.

14.2. Charging time limitation

Line No.	Programming	Possible values
5030	Charging time limitation	--- 10 / 600 min

During charging, the ambiance heating (depending on the hydraulic circuit's DHW charge priority (1630)) may not receive enough energy. It may therefore be a good idea to limit the charging over time.
If the function is activated, the DHW is interrupted until the configured time expires then restarts. While the charging is interrupted, the energy produced by the generator is available for the ambiance heating.

INFORMATION: When the ambiance heating is stopped (summer mode, economy function, etc.), the DHW charging remains active, independently of the setting.

14.3. Discharge protection

Line no.	Programming	Possible values
5040	Discharging protection	Off | Always | Automatically

This function ensures that the hot water pump (Q3) is only started when the boiler temperature is hot enough.

If the hot water tank has a sensor:

The charging pump is only started if the generator temperature exceeds the temperature of the hot water increased by half of the increase in the charge. If during charging, the boiler temperature again falls below the temperature of the hot water increased by 1/8th of the increase in the charge, the charging pump is stopped. If two sensors have been configured for hot water charging, then the lowest temperature is taken into account by the discharge protection function (hot water sensor B31).

If the hot water tank has a thermostat:

Note that even in this case, it is essential to define a hot water setting from the "Hot water" menu.
The charging pump is only started if the boiler temperature is above the nominal hot water setting. If during charging, the boiler temperature again falls below the nominal hot water setting reduced by the hot water differential, then the charging pump is started once again.

Off
Thi function is non-operational.

Always
This function operates full time.

Automatically
This function only operates if the boiler cannot provide heat or no longer operates (failure, locking).

After charging, once the hot water setting is reached, the timed pump shutdown starts. If the boiler temperature or the common start temperature falls below the temperature in the hot water tank during the timeout, the timed pump shutdown is stopped. If there are two hot water sensors, then the one that measures the highest temperature is taken into account (sensor B3).

14.4. DHW tank frost protection

If the temperature drops below 5 °C, the boiler is activated to bring the temperature up to 10 °C.

14.5. Adiabatic cooling

Line No.	Programming	Possible values
5055	Recooling temp	8 … 95 °C
5056	Recooling heat gen/HCs	Off | On

There are two functions for adiabatic cooling of the DHW tank.
An adiabatic cooling function remains active so long as the tank has not reached the adiabatic cooling temperature.
The energy can be discharged in the heating circuits or be transferred to the surroundings by the manifold surface when it is cold.

14.6. Electrical resistor

Line No.	Programming	Possible values
5060	El imm heater optg mode	Substitute | Summer | Always
5061	El immersion heater release	24h/day | DHW release | Time program 4/DHW
5062	El immersion heater control	External thermostat | DHW sensor

INFORMATION:

The DHW mode selection key also acts on the heating unit. For DHW loading to take place, the DHW key must be activated.

Effective release only occurs when the electrical resistor can operate consistently with the *"Electrical resistor" mode* setting (5060).

For the setpoint value compensation to operate correctly, the thermostat external to the regulator must be set to the maximum tank temperature.

14.7. Evacuation of excess heat

Line No.	Programming	Possible values
5085	Excess heat draw	Off | On

The following functions can trigger evacuation of the surplus heat :

- Inputs H1, H2, H3 or EX2
- Adiabatic cooling of tank
- Evacuation of surplus heat from solid fuel boiler

If evacuation of surplus heat is activated, the surplus energy can be evacuated by the room heating system. This can be adjusted separately for each heating circuit.

14.8. Installation hydraulic system

Line No.	Programming	Possible values
5090	With buffer	No | Yes

If a buffer tank is used, you must specify here if the DHW tank is supplied from the buffer tank. The boiler buffer tank temperature serves as criterion for release of the additional energy sources when these are taken into account.

Line No.	Programming	Possible values
5092	With prim contr/system pump	No | Yes

You can specify if the DHW tank is supplied from the pre-regulator or with the network pump (depending on installation).

14.9. DHW pump speed-commanded

Line No.	Programming	Possible values
5101	Pump speed min	0 ... 100 %
5102	Pump speed max	0 ... 100 %

The range of speeds for control of the charging pump is limited by the minimum and maximum speeds authorised. To ensure correct operation of the pump, the speed is taken to its maximum for 10 seconds when the pump is started up.

Line No.	Programming	Possible values
5108	Starting speed charg pump	0 ... 100 %

This parameter is used to set the rotation speed on start-up (for 10 seconds) for the DHW pump.

CAUTION: **When a UX2 or UX3 output (0-10V) is used for a DHW pump, parameters 5101, 5102 and 5108 must be set with the same value.**

15. "GENERAL FUNCTIONS" PARAMETERS

The following functions allow activating one or more outputs called QX when these are declared as K21 and K22 (refer to the settings in the Configuration section). These K21 and K22 outputs can be set to provide an image for:

- Monitoring when the temperature is exceeded OR
- Monitoring when the temperature is not reached OR
- To monitor a change between two temperature measurements

This function can use the temperatures known by the NAVISTEM B3000 (e.g. Those of sensors B3 and B8, etc.) or the temperatures called "Special temp. 1" and "Special temp. 2". These sensors may be located by the client and declared on inputs BX1 or BX2 and can be used for any purpose. These are not linked to any specific NAVISTEM B3000 function.

Line No.		Programming	Possible values
Regul 1	Regul 2		
5570	5580	Temp diff on dT contr	0 … 40 °C
5571	5581	Temp diff off dT contr	0 … 40 °C
5572	5582	On temp min dT contr	-30 … 120 °C
5573	5583	Sensor 1 controller	None | DHW sensor B31 | Return sensor B7 | Flue gas temp sensor B8 | Common flow sensor B10 | Cascade return sensor B70 | Swimming pool sensor B13 | Boiler sensor B2 | DHW sensor B3 | Outside sensor B9 | Room sensor B5 | Room sensor B52 | Room sensor B53 | Flow sensor HC1 B1 | Flow sensor HC2 B12 | Flow sensor HC3 B14 | Special temp sensor 1 | Special temp sensor 2
5574	5584	Sensor 2 controller	
5575	5585	On time min dT contr	0 … 250 s

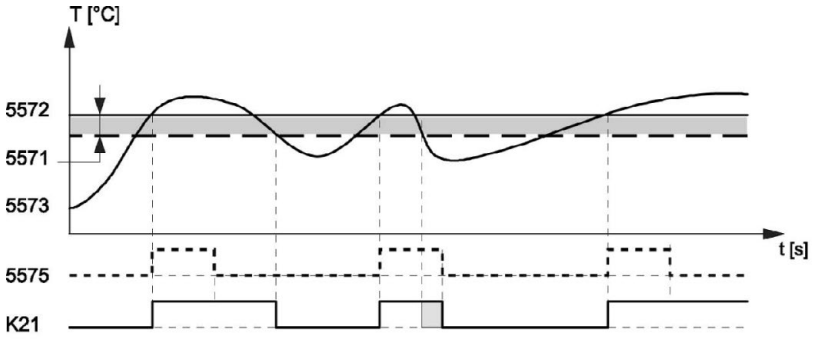
Temperature excess

This function enables a freely-selected temperature value to be compared with an adjustable limit value.

The relay switches if the limit value is exceeded.

Example for regulator 1:

Line No.	Programming	Values
5574	Sensor 2 controller 1	None



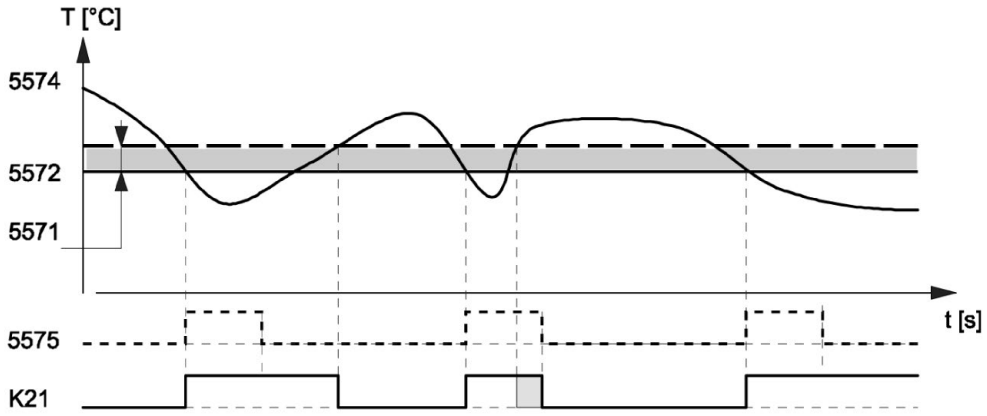
Insufficient temperature

This function enables a freely-selected temperature value to be compared with an adjustable limit value.

The relay switches if the limit value falls below it.

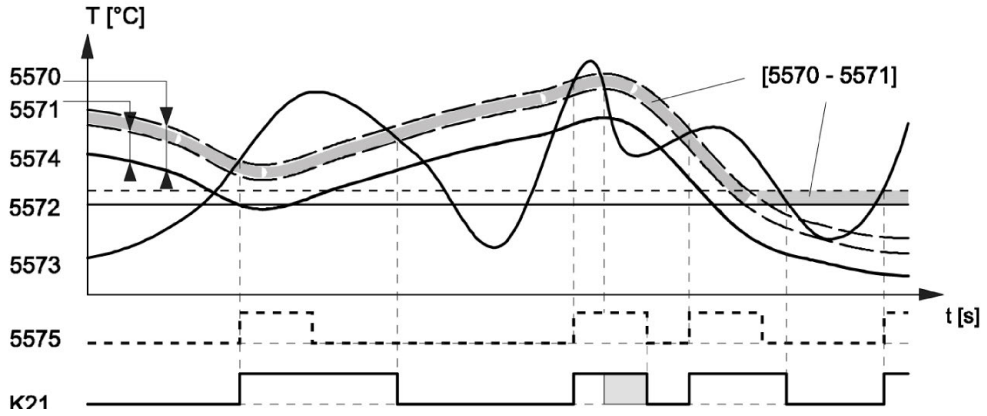
Example for regulator 1:

Line No.	Programming	Values
5573	Sensor 1 controller 1	None



Temperature difference regulator

This function enables 2 temperature values that may be freely selected to be compared to each other. An absolute minimum is monitored at the same time.



Assignment or not of the pump/valve kick-start for the K21 and K22 outputs (see parameter 6127)**:**

Line No.		Programming	Possible values
Regul 1	Regul 2		
5577	5587	Pump/valve kick K2x	Off | On

16. "CONFIGURATION" PARAMETERS

The boiler controller must be suitably configured to adapt to the heating system needs.

It has 3 configurable relay outputs (QX1, QX2 and QX3), 2 configurable sensor inputs (BX2 and BX3), a 0...10 V or On/Off input (H1) and a second On/Off input (H5, dry contact).

In its factory configuration, output QX1 is configured as an alarm output. The QX2 pump is configured as DHW Q3 pump. Output QX3 is configured as boiler pump Q1. QX3 and the other inputs/outputs must be configured according to needs.

Boiler controller inputs/outputs	Factory configuration	Possible configuration example
QX1	Alarm transfer K10	
QX2	DHW pump Q3	Consumer circuit pump Q15, or direct circuit pump.
QX3	Boiler pump, or shut-off valve Q1	
BX2	-	Cascade flow sensor B10.
BX3	-	Cascade return sensor B70.
H1	-	Request, consumer circuit 1 or 2 (10V), or request, consumer circuit 1 or 2 (On/Off).
H5	-	Generator blocked waiting

Be sure to correctly configure the boiler controller inputs/outputs to adapt to the heating system.

You can check that the boiler controller is properly configured by checking the hydraulic diagram which the boiler controller has detected.

EXTENSION MODULES

The extension modules bring additional inputs / outputs to the boiler controller.

These must be configured (no voltage) mechanically (jumper) to define the module number (from 1 to 3) and by software (MMI) to define the functionality ensured.

These can be either self-configured in accordance with 6 predefined functions (heating circuit 1, heating circuit 2, heating circuit 3, return temperature regulation, solar DHW, pre-regulation) or each input / output of an extension module can be defined for a specific function.

16.1. Hydraulic configuration

16.1.1. Heating and cooling circuits.

Line No.			Programming	Possible values
HC1	HC2	HC3		
5710	5715	5721	Heating circuit 1, 2, 3	Off | On

The heating circuits can be activated and deactivated by this setting.

16.1.2. DHW tank

Line No.	Programming	Possible values
5730	DHW sensor	DHW sensor B3 | Thermostat | DHW outlet sensor B38

This parameter is used to specify the sensor connected to input B3/B38.

DHW Sensor B3
There is a DHW sensor. The regulator calculates the switching points with the corresponding differential using the DHW setpoint and the temperature measured in the DHW tank.

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

DHW outlet sensor B38
There is a sensor on the instantaneous hot water outlet. The regulator calculates the switching points with the corresponding differential using the water heating setpoint and the DHW temperature measured at the outlet.

Line No.	Programming	Possible values
5731	DHW controlling element	No charging request | Charging pump | Diverting valve

The DHW load can be carried out with the charging pump or the directional valve and the heat generator pump.

INFORMATION: The DHW priority and discharge protection functions are only possible with the charging pump.

When a heating system heat request is detected, the valve always returns to the Heating position. If there is no room heating request (summer operation, ECO functions, vacation), you can specify if the valve in the DHW position must wait for the next DHW load or also return to the heating position.

None
No DHW load with DHW adjustment component Q3 / water heater adjustment component Q34.

Charging pump
The DHW is loaded with a pump.

Directional valve
The DHW is loaded with a bypass valve.

Line No.	Programming	Possible values
5732	Pump off change div valve	0 … 10 s

Pump deactivation time. You can set the time during which the pump is stopped while the directional valve inverts its operating mode.

In systems with a bypass valve, the pumps can be stopped on transition from heating mode to DHW mode and vice-versa. The deactivation time of the heating circuit circulators can be configured. Deactivation of these pumps can be simultaneous with startup of the directional valve or following a time delay. The number of heating circulators concerned by the cutout depends on the hydraulic system.

CAUTION: **There is no intervention on the modulation or control of the burners.**

Line No.	Programming	Possible values
5733	Delay pump off	0 … 10 s

Duration of pump deactivation time delay. The duration of the pump deactivation time delay can be adjusted while the directional valve inverts its operating mode.

Line No.	Programming	Possible values
5734	Basic position DHW div valve	Last request | Heating circuit | DHW

The bypass valve adopts, by default, the position in which it finds itself in the absence of a request.
Last request
The bypass valve stays in its last position on expiry of the last request.

Heating circuit
The bypass valve (UV) goes to the heating position after the last request.

DHW
The bypass valve (UV) goes to the DHW position after the last request.

16.1.3. Separation

In installations with several boilers, a boiler can be used to load the DHW. This boiler is hydraulically uncoupled from the system and, once the charging operation is completed, indicates that it can re-join the cascade.

INFORMATION: For DHW separation, the DHW adjustment component Q3 must be set for *bypass valve*.

Line No.	Programming	Possible values
5737	Optg action DHW div valve	Position on DHW | Position on heating circuit

Here, the position of the bypass valve is set when the output is active.

Position on DHW
When the output is active, the bypass valve is in the DHW position.

Position on Heating circuit
When the output is active, the bypass valve is in the heating circuit position.

Line No.	Programming	Possible values
5738	Midposition DHW div valve	Off | On

Here, the bypass valve can be placed in the middle position to fill or drain the two heating circuits. You must then return the valve manually.

Off
The directional valve is brought to the position currently needed in accordance with the heat request and its default position.

On
The bypass valve is brought to the middle position.

16.1.4. Boiler

Line No.	Programming	Possible values
5774	Ctrl boiler pump/DHW valve	All requests | Request HC1/ DHW only

For specific hydraulic installations, this parameter is used to specify that the boiler pump Q1 and the directional valve Q3 are only assigned to the DHW and to heating circuit 1, excluding the other circuits 2 and 3 and external consumer circuits.

All requests
The bypass valve is integrated in the hydraulic circuit for all the requests and alternates between the DHW mode and the other requests. The boiler pump is activated for all the requests.

Only request HC1/DHW
The bypass valve is only integrated in the hydraulic circuit for heating circuit 1 and the DHW, and alternates between the DHW function and heating circuit 1. All of the other requests are not hydraulically connected to the bypass valve and the boiler pump ; they are transmitted directly to the boiler.

16.1.5. Solar

Line No.	Programming	Possible values
5840	Solar controlling element	Charging pump | Diverting valve
5841	External solar exchanger	Jointly | DHW storage tank | Buffer storage tank

In place of a manifold pump and bypass valves for the storage tanks, the solar installation can be operated with charging pumps.

By charging pump
With charging pumps, all the exchangers can be used at the same time. Parallel or alternating operation is possible.

Directional valve
A bypass valve only allows flow in a single exchanger. Only alternating operation is possible.

For the solar circuits with two storage tanks, it is necessary to configure the external exchanger as available and use both as DHW and storage tank, or only one of these two functions.

16.1.6. Storage tank

Line No.	Programming	Possible values
5870	Combi storage tank	No | Yes

This setting activates the functions specific to the combined storage tanks. It is thus possible to use the electrical resistor of the tank both for heating and for the DHW.

16.2. Configuration of boiler controller inputs / outputs

16.2.1. Output, relay QX

Line number disconnect			Programming	Possible values
HC1	HC2	HC3		
5890	5891	5892	Relay output QX1, 2, 3	without | ppe circuit consum. 1 Q15 | boiler pump Q1 | alarm output K10 | CC3 Q20 pump | ppe circuit consum. 2 Q18 | Q25 waterfall pump | pump CC1 Q2 | CC2 Q6 pump | DHW pump/ valve Q3 | K36 status message | Destratative ppe. DHW Q35 | dT1 regulator K21 | dT2 regulator K22

The output settings associate the corresponding functions in accordance with the selection.
By default, relay QX1 is configured for fault transfer.

None
No function on the output by relay.

Consumer circuit pump 1 Q15
The consumer circuit pump VK1 can be used for an additional consumer. In association with an external heat request at input H with the *Consumer circuit request configuration. 1*, the application can be used, for example, for a heater battery or similar.

Boiler pump Q1
The connected pump serves to circulate the boiler water.

Output, alarm relay K10
If a fault occurs, it is indicated by the alarm relay. Closure of the contact is time-delayed by 2 minutes. When the error is eliminated, meaning that the error message is no longer present, the contact immediately opens.
Rq: If the fault cannot be eliminated for the moment, the relay can be reinitialised nonetheless. This is performed in the Faults page .

Pump HC3 Q20
The heating circuit with pump HC3 is activated.

Consumer circuit pump 2 Q18
The consumer circuit pump VK2 can be used for an additional consumer. In association with an external heat request at input H with the *Consumer circuit request configuration. 2*, the application can be used, for example, for a heater battery or similar.

Cascade pump Q25
Boiler pump common to all boilers of a cascade

Pump HC1 Q2
Heating circuit with pump HC1 activated.

Pump HC2 Q6
Heating circuit with pump HC2 activated.

DHW pump/valve Q3
Adjustment component for DHW tank

Status message K36
The output is activated when the burner is operating (flame detected).

DHW Mixing pump Q35
A separate pump for continuously circulating water in the hot water tank when the anti-legionella function is on.

Dt controller 1 K21 / Dt controller 2 K22
Relays K21 and K22 are used by the temperature change regulator.

16.2.2. Sensor input BX

Line No.		Programming	Possible values
BX2	BX3		
5931	5932	Sensor input BX2, 3	None | DHW sensor B31 | Common flow sensor B10 | Cascade return sensor B70 | Special temp sensor 1 | Special temp sensor 2

The sensor input settings associate the corresponding functions according to the selection.

B10 common outlet sensor
This sensor is used on the boiler alone or on the master cascade in order to correct the boiler setpoint in the event that the flow of consumers can be mitigated by a flow of unheated water.
This case can occur for example with a pressure-breaking bottle.

Special T° probe 1 or 2
They are used to activate a Qx relay output programmed as "dT 1 K21 or dT 2 K22 regulator" according to the settings made in the "General functions" menu.
These sensors do not influence the behavior of the boiler or of the heating or DHW consumers.

16.2.3. Inputs H1 / H5

Line No. H1	Programming	Possible values
5950	Function input Hx	None | Optg mode change HCs+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 | Excess heat discharge | Boiler pressure switch | Consumer request VK1 10V | DHW thermostat | return info fume shutter | starting prevention
Line No. H1	**Programming**	**Possible values**
5950	Function input Hx	None | DC+DHW switching mode | DC mode switching | CC1 switching mode | CC2 mode switching | CC3 switching mode | generation blocked waiting | error / alarm message | demand circuit consumed 1 | consumer circuit request 2 | room thermostat CC1 | room thermostat CC2 | CC3 room thermostat | DHW thermostat | return info fume shutter | starting prevention | boiler pressure switch

DHW thermostat
The DHW tank thermostat is connected here. You also have to adjust in the menu.

Configuration
The DHW sensor (5730) on Thermostat and do not connect anything to input B3.

Smoke shutter info feedback
This feedback signal is required for the *shutter control function smoke (chapter Smoke damper control).*

Starting prevention
This input is used to force the prevention of boiler start-up.
Error 193 "Prevention of starting" is generated and recorded in the fault history.
The start-up prevention only acts on the local boiler.

DANGER: **With the start prevention system, protective functions such as frost protection are blocked!**
Ensure that the implementation of the *start prevention function* does not cause any damage.

Remarque : Dans le cas du Navistem B3100 la tension est de 230Vac

None
No function on input.

Mode switching

- heating circuit

  The heating circuit modes are switched on the mode configured on line 900 / 1200 / 1500) by the connection terminals Hx (for example, telephone switch).

- domestic hot water

  The DHW load blocking function is only activated with the *setting "heating circuit +DHW mode switchover"* or *"DHW mode switchover".*

Generator blocked achieved

The generator is locked by the connection terminals Hx. All the temperature requests from the heating circuits and DHW are ignored. The boiler frost protection function is ensured during this time.

Error / alarm message

Input H1 generates a regulator error message. If the alarm output is configured accordingly (relay outputs QX1...3, lines 5891...5893), the error is retransmitted or indicated by an additional contact (for example, indicator light or external buzzer).

Consumer circuit request.

The flow setpoint set is activated by the terminals (for example, with a hot battery function of a hot air curtain).
The setpoint must be set on line 1859, 1909, 1959.

Evacuation of surplus heat

The surplus heat evacuation function is used, for example, by an external generator to constrain the consumers (heating circuit, DHW tank, pump Hx) to dissipate their surplus heat by an override signal. The « Evacuate excess heat » parameter is used to specify, for each consumer, acknowledgement of the override signal, and therefore participation in the surplus heat evacuation process.

Local action

With the setting "Device address LPB 0 or >1", the evacuation function only acts on the local consumers connected to the device.

Central action (LPB)

With the setting "Device address LPB = 1", the evacuation function also acts on the consumers of the other devices of the same segment. It is not possible to evacuate the surplus heat in the entire system on segments other than segment 0.

Boiler pressure switch

A blocking fault appears when the pressure switch is open. The burner is cut out and the pumps stop. The pressure switch must be closed and the fault cleared to allow the pumps to start and to authorise the burner to operate.

Consumer circuit request. 10V

The external load application node x receives a heat request in the form of a voltage signal (0...10V-). The linear characteristic is defined by two fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

10V pressure measurement
Function internal to boiler

Line No.		Programming	Possible values
H1	H5		
5951	5978	Contact type	NC | NO

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

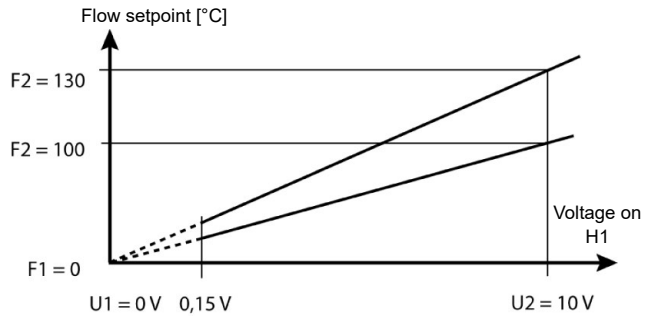
NO contact
The contact is normally open and must be closed to activate the selected function.

Parameter ***Direction of action of contact Hx***	**State of contact on terminal Hx**	**State of function / action**
NO contact	open	inactive
	closed	active
NC contact	open	active
	closed	inactive

Line No.	Programming	Possible values
5953	Voltage value 1 H1 (U1)	0 ... 10 V
5954	Function value 1 H1 (F1)	-1000 ... 5000
5955	Voltage value 2 H1 (U2)	0 ... 10 V
5956	Function value 2 H1 (F2)	-1000 ... 5000

The linear characteristic is defined by two fixed points. The setting is performed with two parameter binomials for « Function value » and « Voltage value »(F1/U1 and F2/U2).

Example of 10V heat request:



If the input signal goes below the 0.15 V threshold, the heat request is invalidated and therefore not operative.

16.2.4. Outputs 0-10V / PWM P1

Line No.	Programming	Possible values
6085	Choce of function P1	without | boiler pump Q1 | DHW pump Q3 | Intermediate circuit DHW pump Q33 | pump CC1 Q2 | CC2 Q6 pump | CC3 Q20 pump | burner modulation

None
No function on the UX output.

Boiler pump Q1
The pump connected is used to circulate the boiler's water.

DHW pump Q3
Setting device for the DHW tank.

DHW interm circ pump Q33
Charge pump for DHW tank with external exchanger.

Heat circuit pump HC1 Q2
The heating circuit with pump (HC1) is activated.

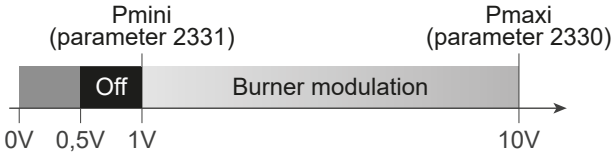
Heat circuit pump HC2 Q6
The heating circuit with pump (HC2) is activated.

Heat circuit pump HC3 Q20
The heating circuit with pump (HC3) is activated.

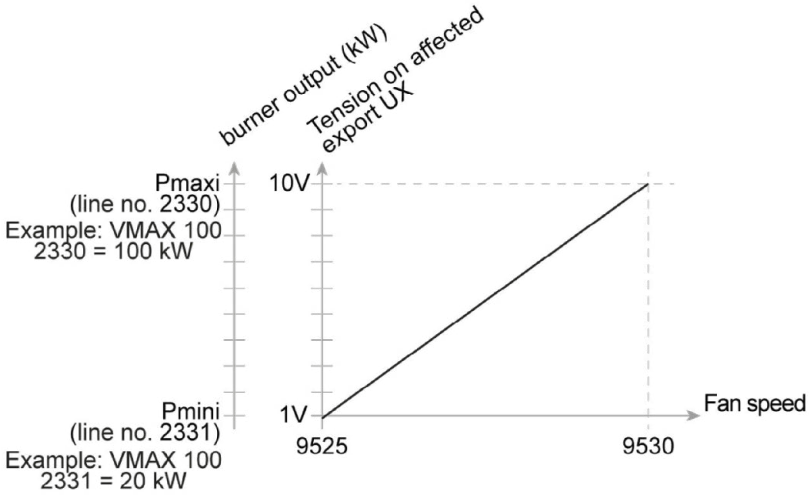
Burner modulation

This function is used to send an image of boiler power to a 0-10V output.

0...0,5 Vcc	The boiler status inhibits starting or locking
0,5...1 Vcc	The boiler is waiting to start or waiting for pre- or post- ventilation
1...10 Vcc	The boiler is working with its flame lit between the min. and max. power levels



The burner modulation calculation generated is based on the fan min. and max. OEM speeds (min. setting: parameter 9525 / max. setting: parameter 9530).



INFORMATION: When mains power returns after a power break or when a fault is reset, the value that is generated is temporarily undefined.

Line No.	Programming	Possible values
6086	P1 signal logic output	Standard | Inverted

16.3. Extension module configuration

Line No.			Programming	Possible values
Mod. 1	Mod. 2	Mod. 3		
6020	6021	6022	Function extension module 1, 2, 3	None | Multifunctional | Heat circuit 1 | Heat circuit 2 | Heat circuit 3 | Return temp controller | Primary contr/system pump

By assigning a function to the extension module, the inputs / outputs are self-configured.

None
The function is inoperative.

Multifunction
The functions which can be assigned to the multifunction inputs/outputs can be viewed on lines 6030...6038 and 6040...6045.

Heating circuit 1
The settings corresponding to the « Heating circuit 1 » operator page adapt to this application.

Heating circuit 2
The settings corresponding to the « Heating circuit 2 » operator page adapt to this application.

Heating circuit 3
The settings corresponding to the « Heating circuit 3 » operator page adapt to this application.

Return temp. regulator
This function is not used. It results in a configuration error message.

Connections:

	QX21	QX22	QX23	BX21	BX22	H2
Multifunction	*	*	*	*	*	*
Heating circuit 1	Y1	Y2	Q2	B1	*	*
Heating circuit 2	Y5	Y6	Q6	B12	*	*
Heating circuit 3	Y11	Y12	Q20	B14	*	*

16.3.1. Extension module EX 1 / 2 / 3

Line No.			Programming	Possible values
EX 1	EX 2	EX 3		
6024	6026	6028	Funct input EX21 module 1 , 2, 3	None | Limit thermostat HC

None
The input has no function

Heating circuit safety thermostat
If the extension module is used for the heating circuit, an external safety thermostat can be connected (for floor heating, for example) to input EX21 (230 V~).

16.3.2. Extension module QX 1 / 2 / 3

Line No.			Programming	Possible values
QX 21	QX 22	QX 23		
6030	6031	6032	Relay output module 1	None | Cons circuit pump VK1 Q15 | Boiler pump Q1 | Alarm output K10 | Heat circuit pump HC3 Q20 | Cons circuit pump VK2 Q18 | Cascade pump Q25 | Heat circuit pump HC1 Q2 | Heat circuit pump HC2 Q6 | DHW ctrl elem Q3 | Status information K36
6033	6034	6035	Relay output module 2	
6036	6037	6038	Relay output module 3	

The output settings associate the corresponding functions in accordance with the selection.

INFORMATION: The outputs QX of the extension module have the same functions as those of the boiler controller. See chapter 15.2.1, page 84.

16.3.3. Extension module BX

Line No.		Programming	Possible values
BX 21	BX 22		
6040	6041	Sensor input module 1	None | DHW sensor B31 | Common flow sensor B10 | Cascade return sensor B70
6042	6043	Sensor input module 2	
6044	6045	Sensor input module 3	

The sensor input settings associate the corresponding functions according to the selection.

INFORMATION: The inputs of sensor BX of the extension module have the same functions as those of the boiler controller. See chapter 15.2.2, page 85.

16.3.4. Extension module H2 1 / 2 / 3

Line No. module 1	Line No. module 2	Line No. module 3	Programming	Possible values
6046	6054	6062	Function input H2	None | Optg mode change HCs+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 | Excess heat discharge | Boiler pressure switch | Consumer request VK1 10V | Consumer request VK2 10V | Pressure measurement 10V
6047	6055	6063	Contact type H2	NC | NO
6049	6057	6065	Voltage value 1 H2 (U1)	0 … 10 V
6050	6058	6066	Function value 1 H2 (F1)	-1000 … 5000
6051	6059	6067	Voltage value 2 H2 (U2)	0 … 10 V
6052	6060	6068	Function value 2 H2 (F2)	-1000 … 5000

INFORMATION: Inputs H2 of the extension modules have the same functions as those of the boiler controller. See chapter 15.2.3, page 86.

Line No. UX2	Line No. UX3	Programming	Possible values
6078	6089	UXx output function	None | boiler pump Q1 | Burner modulation

16.4. System configuration

16.4.1. Type of sensor / corrections

Line No.	Programming	Possible values
6097	Sensor type collector	NTC | Pt 1000

If an extended temperature range is required, a Pt1000 (-28…350 °C) sensor can be used as solar panel sensor B6, rather than sensor CTN (-28…200 °C). The input of multifunction sensor BX (standard device or extension module) to which the sensor B6 is set and connected will therefore be indifferent. The corresponding input automatically uses the appropriate characteristic insofar as it is configured accordingly.

Line No.	Programming	Possible values
6098	Readjustm collector sensor	-20 ... 20 °C
6100	Readjustm outside sensor	-3 ... 3 °C

16.4.2. Building and ambient temperature model

Line No.	Programming	Possible values
6110	Time constant building	0 ... 50 h

The influence of the outdoor temperature on the ambient temperature variations is a function of the accumulative mass of the building (type of construction). This setting is used to act on the reaction speed of the flow setpoint in the event of a fluctuation of the outdoor temperature.

Example :
>20 hours
The ambient temperature reacts slowly to the outdoor temperature fluctuations.

10...20 hours
This setting can be used for most buildings.

<10 hours
The ambient temperature reacts quickly to the outdoor temperature fluctuations.

16.4.3. Setpoint control

Line No.	Programming	Possible values
6116	Const tmps compens consig.	0 ... 14 min
6117	Compens centr T° consigne	1 ... 100 °C

The setpoint control function adapts the setpoint of the heat generator.
If the temperature measured at B10 is far from the line flow setpoint, the setpoint of the generators is increased. This increase can be filtered with parameter 6116 and limited by parameter 6117.

CAUTION: **Under no circumstances should the 6117 be set to the value ---**

16.4.4. Frost protection

Line No.	Programming	Possible values
6120	Frost protection plant	Off | On

Depending on the current outdoor temperature, the regulator will trigger all the enabled pumps of the installation and prevent local freezing of the heating installation. The boilers are not put into service according to the outside temperature, but on their flow temperature.

Outside temperature	Boiler pump	
...-4 °C	Always on	Start
-5...1.5 °C	Activation approximately every 6 hours for 10 minutes	Cycle
1,5 °C...	Constantly on the lookout	STOP

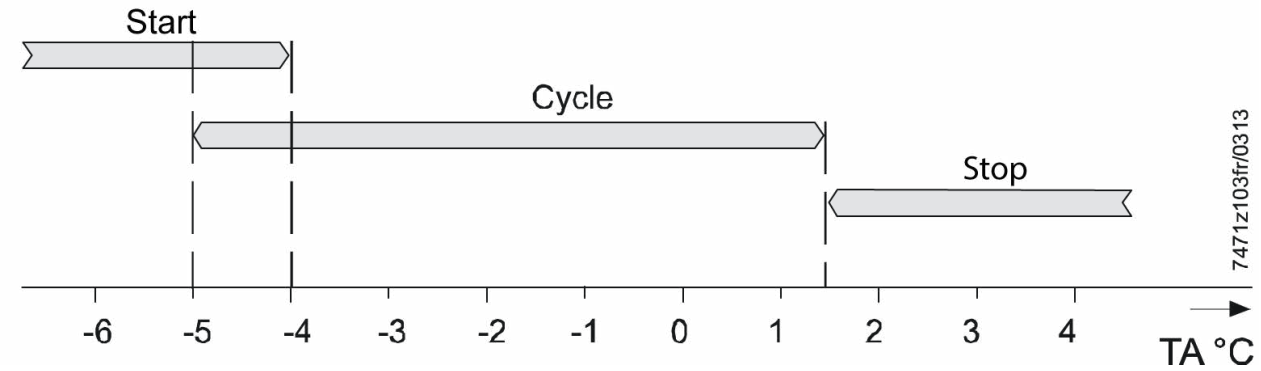


figure 2 - Frost protection - Installation frost protection - Boiler pump

16.4.5. Pump / valve degumming

Line No.	Programming	Possible values
6127	Pump/valve kick duration	0 … 51 s

The pumps and valves are periodically activated to protect against seizure. Activation of the pumps results in circulation of water in the installation. The pump mechanical parts and the valve seat are rinsed and cleaned of suspended particles to prevent gumming

The pumps directly connected to the standard device are activated every Friday at 10 :00 hours throughout the duration of the degumming process set with an interval of 1 minute.

Degumming is only activated when there is no heat request in progress.

INFORMATION:

Degumming of the valve only takes place provided the valve has not been actuated by a regulator function since the last degumming operation.
Degumming of the pump only takes place provided the pump has not been actuated by a regulator function since the last degumming operation.

16.4.6. Register sensor

If faulty sensors are detected after installation, and to prevent them from being integrated in a correct state (which could happen in the event of automatic detection), there is a Commissioning status function.
This function learns to recognise the sensors connected and generates, in the event of a fault, an error message while inhibiting any change of installation diagram.

Line No.	Programming	Possible values
6200	Save sensors	No | Yes

At midnight, the standard device registers the states at the sensor terminals provided the regulator has been operating for at least 2 hours. If a sensor breaks down after registration, the standard device generates an error message. This setting is used to immediately register the sensors. This may be necessary, for example, when a sensor is removed and is no longer useful.

Line No.	Programming	Possible values
6205	Reset to default parameter	No | Yes

All the parameters can be reset to the factory settings, except the following pages :

- Date and time
- User interface
- Radio and all time schedule programs
- and the manual mode setpoint

16.5. Information

16.5.1. Installation diagram

The installation diagram can be validated by parameters 6230, 6231 and 6234.

Line No.	Programming	Possible values
6230	Info 1 OEM	See boiler manual
6231	Info 2 OEM	See boiler manual
6234	Boiler type	1 : VARMAX 2 : VARFREE 3 : CONDENSINOX 4 : VARMAX B 5 : CONDENSINOX B 6 : VARPRIM 7 : VARBLOK 8 : VARBOX 9 : VARFREE EVO 10 SANIGAZ EVO

16.5.2. Device Features

Line No.	Programming	Possible values
6220	Software version	

This information indicates the current version of the standard device.

16.5.3. "OPENTHERM" parameters

Navistem B3100 supports OpenTherm Specification 4.0

Line No.	Programming	Possible values
6351	**Channel x OT function**	External room controller 1 External room controller 2 External room controller 3 Input Hx

External room controller 1
OT communication is activated and assigned to heating circuit 1. The room controller for heating circuit 1 (parameter (6355)) must be set to "external".

External room controller 2
OT communication is activated and assigned to heating circuit 2. The room controller for heating circuit 1 (parameter (6356)) must be set to "external".

External room controller 3
OT communication is activated and assigned to heating circuit 3. The room controller for heating circuit 1 (parameter (6357)) must be set to "external".

Line No.			Programming	Possible values
HC1	HC2	HC3		
6355	6356	6357	**HCx room controller**	Off | On Internal External

Internal
The heating circuit is operated as the default heating circuit, according to the configuration of the Navistem B3100.

External
The internal heating circuit of the Navistem B3100 is deactivated, but control of the adjustment devices remains active. This means that all Navistem B3100 internal functions related to heat demand calculation are no longer active (heating curve, room influence, room controller, daily heating limit, summer switching, time program, operating mode button, accelerated temperature reduction, accelerated heating, room frost protection, room thermostat, room temperature limit) and that they must be executed by the external controller. The internal functions of the Navistem B3100 are however calculated internally, including the status information, and they can have an influence on the other functions in the event of a summer heating limit, hence the importance of paying attention to an appropriate setting. Central summer switching via the BSB bus has no effect on the external room controllers, but does have an effect on all the other functions of the heating circuit which use this information. The functions of pump control, regulation by mixing valve, protection against overheating, delayed stoppage of pumps, mixing valve discharge, frost protection of the flow circuit, minimum flow temperature, maximum flow temperature, integration of the storage tank storage, primary circuit integration, start-up load shedding, DHW priority, drying function, forced draft, can be configured as for an internal heating circuit. The process values required for this must then be provided by the external controller (e.g. room temperature setpoint).

Note: If a heating circuit is controlled by OT, the "AUTO" operating mode will be displayed for this heating circuit. The operating mode button is blocked for this heating circuit. Pressing the operating mode button causes the message "Operating mode button blocked" to appear.

Line No.	Programming	Possible values
6359	**DHW external control**	Without External room controller 1 External room controller 2

Without
"Domestic hot water" use by selecting the operating mode via the DHW button on the HMI.

External room controller 1
“Domestic hot water” use by an external controller on channel 1 OpenTherm.

External room controller 2
“Domestic hot water” use by an external controller on channel 2 OpenTherm.

Parameter (6359) is used to release the use of the domestic hot water operating mode (DHW button located at the top left of the HMI) by means of an OpenTherm room controller. OpenTherm 1 and OpenTherm 2 interfaces, if present, are permanently assigned to external room controllers 1 and 2, respectively. If the domestic hot water is controlled by OT, no operation mode will be displayed. The operating mode key is blocked. Pressing the operating mode key causes the indication “Operating mode key blocked” to appear.

17. "LPB SYSTEM" PARAMETERS

To communicate with the other regulators, the OCI 345 enables use of the LPB bus.
This accessory is screwed onto the boiler controller platform.
The LPB bus is used either to allow the boiler to receive heat requests from other regulators having the same bus, or to create boiler cascades (cascade can be configured to optimise operation).

17.1. LPB address

Line No.	Programming	Possible values
6600	Device address	0 ... 16
6601	Segment address	0 ... 14

The device address identifies each address on the bus somewhat like a postal address Each device must have a correct address to ensure communication. **Favour segment 0 for the generators.**

17.2. Bus supply function

Line No.	Programming	Possible values
6604	Bus power supply function	Off | Automatically

The bus power supply is a direct system supply from the regulators (no central power supply). The type of bus supply provided by the regulators is adjustable.

Off
The regulator does not supply the bus with voltage.

Automatic
The electrical power supply of the bus by the regulators is automatically switched on/off on request by the bus.

17.3. Bus power supply status

Line No.	Programming	Possible values
6605	Bus power supply state	Off | On

The display indicates if the regulator is currently supplying the bus.

Off
Supply of the bus by the regulators is currently cut off.

On
Supply of the bus by the regulators is currently active ; the regulator is supplying current to the bus.

17.4. System messages

Line No.	Programming	Possible values
6610	Display system messages	no | yes

This setting disables the display of the system messages sent on the LPB bus on the connected control device.

No
Error messages are not displayed on the operating interface of the regulator.

Yes
Error messages are displayed on the operating interface of the regulator.

Line No.	Programming	Possible values
6611	Syst messages alarm relay	no | yes

If a system error is reported on the bus, the alarm relay K10 may be triggered. This depends on the settings of these line numbers.

No
The transmitted system error does not trigger the K10 alarm relay.

Yes
The transmitted system error triggers the K10 alarm relay.

Line no.	Programming	Possible values
6612	Alarm elay	0 ... 60 min

Timeout between when the fault appears and when the output set as the "K10 alarm output" is triggered.
This time also acts when sending the fault condition for a slave boiler to the master boiler.

17.5. Centralised functions

CAUTION: **These settings only concern the device with address 1.**

Centralised « Summer » switching (LPB)
The standard device with address 1 can centralise the summer mode switching for the LPB compatible devices.

To do so, it distributes its own summer/winter heating limit status for heating circuit 1 to the other devices on the bus and forces their heating circuits to Eco mode provided they are not in Comfort mode.

INFORMATION: Only transition to the summer mode is concerned by override of the centralised switching function. If the standard master device goes back to winter mode, the other devices return to their local state, whatever it may have been, for example, before the summer mode was controlled.

The centralised function is controlled by two parameters of the standard device :

Winter/summer switchover parameter*:*

- local:
  The summer heating limit is not shared
- centralised:
  The summer heating limit is transmitted to all the heating circuits in accordance with the perimeter defined.

The action perimeter in the bus depends on the segment address and on the parameter *« Switching action perimeter »:*

- Segment address = 0 and perimeter = Segment:
  The summer switching function only acts on the standard devices in their own segment 0.
- Segment address = 0 et perimeter = System:
  The summer switching function acts on the standard devices in all the segments (0...14).
- Segment address > 0:
  The parameter is not applicable The summer switching function always acts only on the standard devices in their own segment.

INFORMATION: The « action perimeter » parameter of the switching functions also acts in sharing of the other centralised switching functions, such as the Mode switching function.

Centralised switching of mode by LPB.

The standard device with address 1 can centralise mode switching for the LPB compatible devices. The switching functions on the central standard device (by input Hx) then also act on the heating circuits and on the DHW of the other devices on the bus.

Line No.	Programming	Possible values
6620	Action changeover functions	Segment | System

The range of the centralised switching functions can be defined.

This concerns :
Mode switching input H (provided line 6623 is set for « Centralised »")
« Summer » switching (by setting « Centralised » on line 6621)

Inputs to be implemented:

Segment
The switching function applies to all the regulators of a same segment.

System
the switching function applies to all the regulators of the system (all segments included). The regulator must be in segment 0.

Line No.	Programming	Possible values
6621	Summer changeover	Locally | Centrally

The regulator can only apply the summer switching function to the local heating circuits, or, by LPB, to another regulator of the same segment or system.

The « summer » switching perimeter is as follows :

Local **setting**
local action; the local circuit is activated and deactivated in accordance with the settings on lines 730, 1030, 1330.

Centralised **setting**
Centralised action ; Depending on the parameter set on the « Switching perimeter » line, either the heating circuits of the segment or those of the whole system (line 730) will be activated or deactivated.

Line No.	Programming	Possible values
6623	Optg mode changeover	Locally | Centrally

The standard device with address 1 can centralise mode switching for the LPB compatible devices.
The switching functions on the central standard device (by H1 / H2 or the heating circuit mode switching parameter) then also act on the heating circuits and on the DHW of the other devices on the bus

The effect of a centralised mode switching function depends on the device used :

For the devices **executing 1**, the heating circuits switch to *frost protection mode*.

For the devices **executing 2**, the heating circuits switch either to *frost protection mode* or *to reduced operation mode*. The mode can be determined for each circuit (parameter *"Mode switching* of heating circuit 1 = 900, HC 2 = 1200, heating circuit P = 1500").

CAUTION: **While the centralised mode switching function is active, local mode selection is inhibited on all the devices.**

The effect of mode switching by input H is as follows :

Local **setting**
Local action ; The local heating circuit is activated/deactivated

Centralised **setting**
Central action ; Depending on the parameter set on the « Switching perimeter » line, either the heating circuits of the segment or those of the entire system will be activated/ deactivated.

Line No.	Programming	Possible values
6624	Manual source lock	Locally | Segment

The action perimeter of the boiler locking function by input H is as follows in this case :

Local **setting**
Local action The local generator is locked.

“Segment **"input**”
Central action: All the cascade generators are locked.

Line No.	Programming	Possible values
6625	DHW assignment	Local HCs | All HCs in segment | All HCs in system

The DHW should only be assigned provided DHW production is only controlled by the heating time schedule program (see lines 1620 or 5061).

Local heating circuits
DHW production only takes place for the local heating circuit.

All the heating circuits of the segment
DHW production takes place for all the heating circuits of the segment.

All the heating circuits in the system
DHW production takes place for all the heating circuits of the system.

Whatever the setting, the regulators in « vacation » mode are also taken into account for DHW production.

Line No.	Programming	Possible values
6631	Ext source in Eco mode	Off | On DHW | On

The energy savings mode can be selected in the "*Special mode/Service*" menu at command line 7139.

The external boilers connected to the local bus operate as follows in eco mode :

Off
Remains locked .

DHW on
Released for DHW charging.

On
Continuously released.

17.6. Clock

Line No.	Programming	Possible values
6640	Clock mode	Autonomously | Slave without remote setting | Slave with remote setting | Master

This setting defines the action of the system time on the time set in the regulator.

Independent
The time can be set on the regulator. The regulator time is not synchronised on the system time.

Slave without adjustment
The time cannot be set on the regulator. The regulator time is continuously automatically synchronised on the system time.

Slave with adjustment
The time can be set on the regulator. It is simultaneously used as system time by the master. The regulator time is however automatically and continuously adapted to the system time.

Master
The time can be set on the regulator. The regulator time becomes the reference time for the system. The system time is synchronised.

17.7. Outdoor temperature

Line No.	Programming	Possible values
6650	Outside temp source	0 … 239

In the installation with LPB local bus, a single outdoor sensor only will suffice. It is connected to any regulator and supplies the temperature to the regulators which do not have an outdoor sensor. The screen first indicates the segment number, then the address of the device.

– – . – – Address of outdoor sensor cannot be read

01.02 Address of outdoor temperature sensor
The first number corresponds to the segment number (01.)
The second number corresponds to the device address (.02)

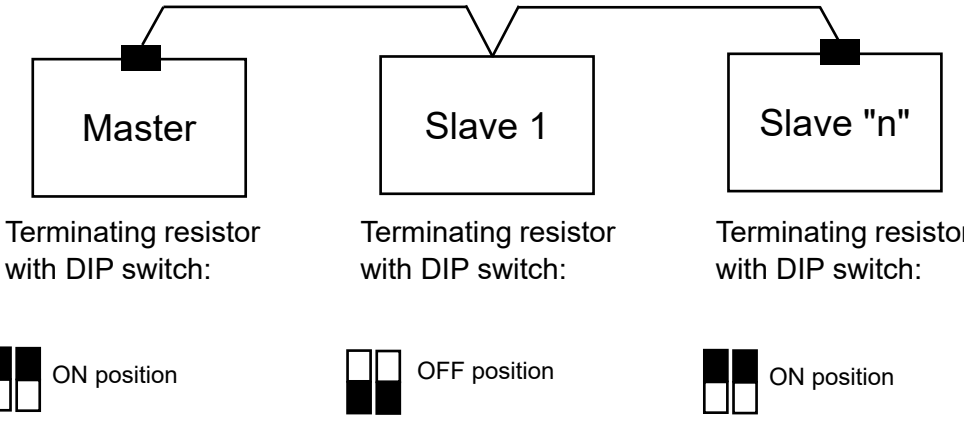
INFORMATION: If necessary (for example, if a building has different solar exposure areas), several areas of the system can be equipped with a separate outdoor sensor.

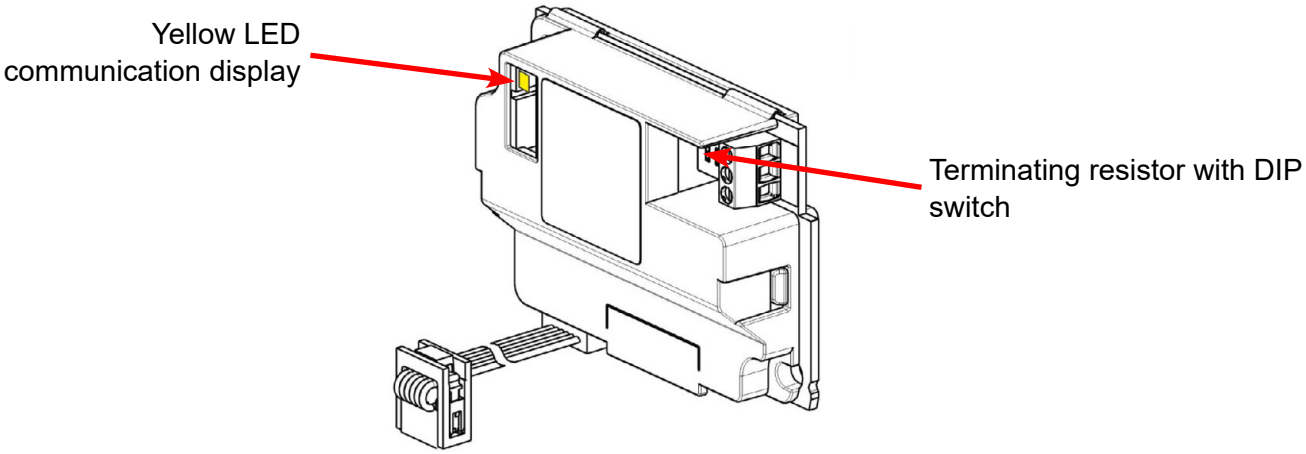
17.8. "MODBUS" parameters

The Navistem B3100 is Modbus compatible with the OCI351 Modbus kit.
On the bus the Navistem B3100 is always declared as a slave.

Dialog function code that can be used:

- 0x03 Read registers
- 0x06 Write to single register (not suitable for structured data types)
- 0x10 Write to multiple registers





Response delay to be taken into account by the bus master: 300ms
Maximum length: 1000 m with 9600 baud speed and a cable section 0.13 mm²

Line No.	Programming	Possible values
6650	Outdoor T° source	1 ... 239

Dans l'installation avec bus local LPB une seule sonde extérieure suffit. Elle se raccorde à un régulateur quelconque et fournit la température aux régulateurs sans sonde extérieure. L'écran affiche d'abord le numéro de segment, puis l'adresse de l'appareil.

Line No.	Programming	Possible values
6651	Slave address	1 à 247 or ...

Modbus inactive

Line No.	Programming	Possible values
6652	Baud rate	1200 2400 4800 9600 19200

Remark:
The following rule of thumb applies: doubling the transmission speed reduces the communication distance by half.

Line No.	Programming	Possible values
6653	Parity	Even | Odd | None

La parité sert à détecter les erreurs de transmission des octets de données.

Line No.	Programming	Possible values
6654	Stop bit	1

Remark:
If 2 stop bits are configured, parity must be configured to *None*.

18. “ERROR” PARAMETERS

When a fault occurs, an error message can be read using the Info key. The display indicates the cause of the fault.
The boiler controller saves the last 20 faults. The system stores the fault code, the time and the operating phase during which the fault has occurred.

18.1. Information message

A fault present in the system appears on the display with the Albatros code for which the error has occurred.

Line No.	Programming	Possible values
6705	SW diagnostic code	0 … 65535

A fault present in the system is displayed here with the internal software diagnostic code for which the error has occurred.

Line No.	Programming	Possible values
6706	Burn ctrl phase lockout pos	0 … 255

A fault present in the system is displayed with the disturbance phase in which the error has occurred.

18.2. Fault indication function

Line No.	Programming	Possible values
6743	Boiler temp alarm	10 … 240 min

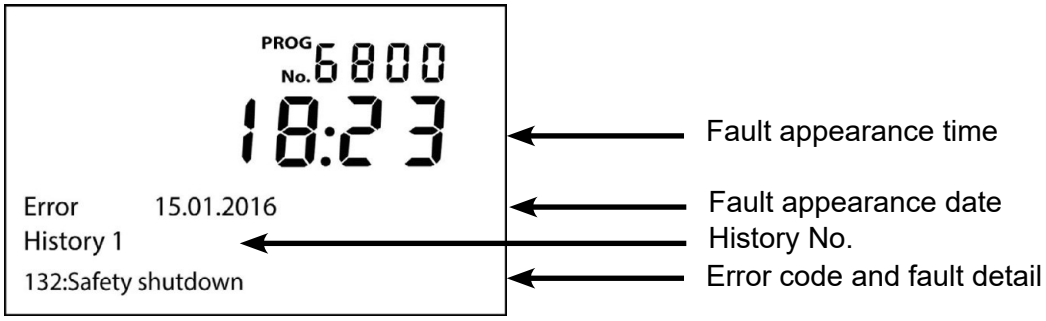
This function monitors the boiler temperature when the burner is active and generates an alarm message in the event of a fault.

18.3. History

Line No.	Programming	Possible values
6800, 6810, 6820, 6830, 6840, 6850, 6860, 6870, 6880, 6890, 6900, 6910, 6920, 6930, 6940, 6950, 6960, 6970, 6990	History …	00:00 … 23:59 h:m

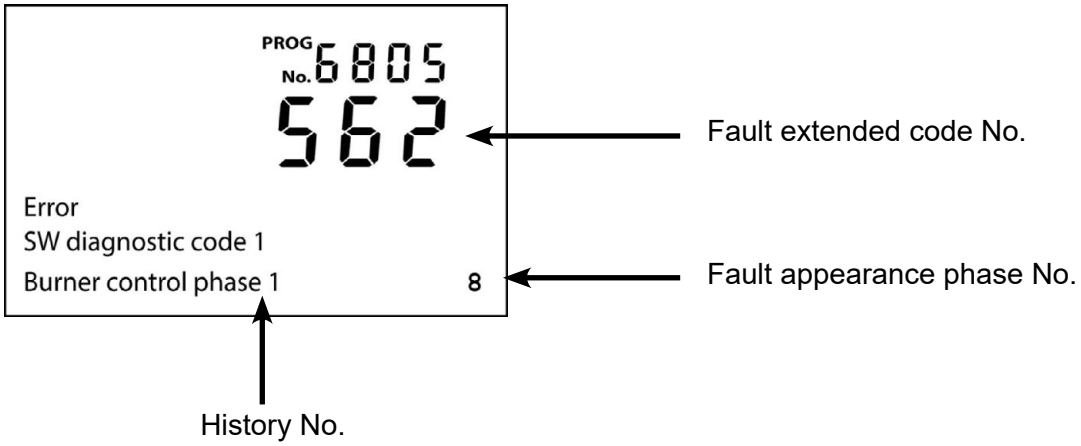
The unit registers the last 20 faults which have occurred in a non-volatile memory. Every new input deletes the oldest input from the memory. For each error input, the system registers the code, the time, the internal software diagnostic code and the disturbance phase of the safety unit.

Example:



Line No.	Programming	Possible values
6805, 6815, 6825, 6835, 6845, 6855, 6865, 6875, 6885, 6895, 6905, 6915, 6925, 6935, 6945, 6955, 6965, 6975, 6995	Software diagnostic code ...	0 ... 9999

Example:



19. “MAINTENANCE / SPECIAL MODE” PARAMETERS

19.1. Maintenance function

Line No.	Programming	Possible values
7040	Burner hours interval	100 ... 10000 h

A maintenance message is displayed as soon as the interval set for the burner operating hours has elapsed.

Line No.	Programming	Possible values
7041	Burn hrs since maintenance	0 ... 10000 h

Totalisation and display of current value. The value can be reset to 0 on this line.

Line No.	Programming	Possible values
7042	Burner start interval	100 ... 65500

A maintenance message is displayed as soon as the interval set for the burner startups has elapsed.

Line No.	Programming	Possible values
7043	Burn starts since maint	0 ... 65535

Totalisation and display of current value. The value can be reset to 0 on this line.

Line No.	Programming	Possible values
7044	Maintenance interval	1 ... 240 months

A maintenance message is displayed when the interval set for operating time has elapsed. The burner can be turned on or off.

Line No.	Programming	Possible values
7045	Time since maintenance	1 ... 240 months

Totalisation and display of current value. The value can be reset to 0 on this line.

Line No.	Programming	Possible values
7050	Fan speed ionization current	0 ... 10000 rpm

Speed limits starting from which the burner ionisation current maintenance alarm must be generated when the ionisation current monitoring function controls an increase in speed due to an ionisation current which is too low.

Line No.	Programming	Possible values
7051	Message ionization current	No | Yes

Display and reinitialisation indicator for burner ionisation current maintenance alarm for boiler controller. The maintenance alarm can only be reset provided the triggering event has been eliminated.

19.2. Cleaning

Line No.	Programming	Possible values
7130	Chimney sweep function	Off | On
7131	Burner output	Partial load | Full load | Max heating load

The burner is activated. For the burner to operate as long as possible, the only active cutout point is the maximum temperature limitation of the boiler.

The burner power can be adjusted during the cleaning function:

Partial load:
Cleaning function with minimum boiler power.

Full load:
Cleaning function with maximum boiler power.

Maximum heating load:
Cleaning function with maximum heat power configured.

INFORMATION: This function is deactivated by setting -.- on this line or automatically when the maximum boiler temperature is reached.

19.3. Maintenance function

Line No.	Programming	Possible values
7140	Manual control	Off | On

If the manual mode is active, the relay outputs are no longer controlled according to the regulation state, but are adjusted, according to their function, on a predefined state of the manual mode.
The relay outputs are switched on a state which will produce heat in accordance with their hydraulic function.

Adjustment of manual mode setpoint:
When the manual mode is activated, you must go into the main display. This is where the maintenance/special mode symbol is displayed.
By pressing on the Info key, the “Manual mode” information is displayed in which the setpoint can be defined.

If the cleaning function is activated in manual mode, the latter is interrupted to allow the function to run. The manual mode stays active so long as it is selected.

CAUTION: **This function is not monitored as a function of time. The manual mode selection remains active even after a restart.**

Line No.	Programming	Possible values
7143	Controller stop function	Off | On

If stopping of the regulator is activated, the boiler is directly controlled to the burner power set in the regulator stopping setpoint.

Line No.	Programming	Possible values
7145	Controller stop setpoint	0 … 100 %

When a regulator stopping function is active, the boiler is set to the power entered here.

Line No.	Programming	Possible values
7146	Deaeration function	Off | On

Parameter defining manual triggering of function by control key for example, or by maintenance/special mode menu . At the end of the purge operation, the parameter is reset to *Off*. It can also be set to Off to interrupt the purge operation at any time.

Line No.	Programming	Possible values
7147	Type of venting	None | Heating circuit continuous | Heating circuit cycled | DHW continuous | DHW cycled

This parameter is used to preselect the purge phases; also refer to the previous section, ***Purge function***.
If the function is initiated, this value indicates the current phase for information.

None
Operates as parameter: By default, i.e. the purge function is active throughout phase 1 (continuous heating circuit); Phase 2 (Cyclic heating circuit); Phase 3 (continuous DHW) and Phase 4 (cyclic DHW).

Operates as information value: The function is interrupted.

Continuous heating circuit
Operates as parameter: The purge function is active throughout phase 1 (Continuous heating circuit); Phase 2 (Cyclic heating circuit); Phase 3 (continuous DHW) and Phase 4 (cyclic DHW).

Operates as information value: The function is in phase 1 (Continuous heating circuit).

Cyclic heating circuit
Operates as parameter: The purge function is only active throughout phase 2 (Continuous heating circuit); Phase 3 (continuous DHW) and Phase 4 (cyclic DHW).

Operates as information value: The function is in phase 2 (Cyclic heating circuit).

Continuous DHW
Operates as parameter: The purge function is only active throughout phase 3 (Continuous DHW) and phase 4 (cyclic DHW).

Operates as information value: The function is in phase 3 (Continuous DHW).

Cyclic DHW
Operates as parameter: The purge function is only active throughout phase 4 (cyclic DHW).

Operates as information value: The function is in phase 4 (cyclic DHW).

19.4. Service

Line No.	Programming	Possible values
7170	Telephone customer service	0 … 9

Entry of telephone number which appears in the information display

20. “INPUT / OUTPUT TEST” PARAMETERS

The input/output test is used to check correct operation of the connected components.

CAUTION:	**The selected sensor values are updated within 5 seconds max. The display does not take account of the measured value corrections.**

INFORMATION:	The relay test can be activated by a diagnostic software, and by the user interface. It remains active for 8 minutes max., after which it is forced to interrupt.

20.1. Relay output test

Line No.	Programming	Possible values
7700	Relay test	No test | Everything off | Relay output QX1 | Relay output QX2 | Relay output QX3 | Relay output QX4 | Relay output QX21 module 1 | Relay output QX22 module 1 | Relay output QX23 module 1 | Relay output QX21 module 2 | Relay output QX22 module 2 | Relay output QX23 module 2 | Relay output QX21 module 3 | Relay output QX22 module 3 | Relay output QX23 module 3

The relay test is used to trigger and stop all of the relay outputs (burner, pumps, etc.) independently of the regulator state This is used to quickly check the wiring.
A parameter dedicated to this purpose is used to energise each relay individually. The set state remains active on exit from this parameter.
The test can be interrupted explicitly, otherwise it is automatically deactivated after 1 hour.

No test
The output test is deactivated

Everything is OFF
All the outputs are deactivated.

Relay output QX...
Only QX... is activated.

Relay output QX2... module n
Only QX2... on the extension module n is activated.

CAUTION: **The electronic temperature regulator of the boiler has priority with respect to the outputs test. It can therefore override the burner relay output test.**

20.2. Sensor inputs test.

Line No.	Programming	Possible values
7730	Outside temp B9	-50 ... 50 °C
7750	DHW temp B3/B38	0 ... 140 °C
7760	Boiler temp B2	0 ... 140 °C
7820	Sensor temp BX1	-28 ... 350 °C
7821	Sensor temp BX2	-28 ... 350 °C
7822	Sensor temp BX3	-28 ... 350 °C
7823	Sensor temp BX4	-28 ... 350 °C
7830	Sensor temp BX21 module 1	-28 ... 350 °C
7831	Sensor temp BX22 module 1	-28 ... 350 °C
7832	Sensor temp BX21 module 2	-28 ... 350 °C
7833	Sensor temp BX22 module 2	-28 ... 350 °C
7834	Sensor temp BX21 module 3	-28 ... 350 °C
7835	Sensor temp BX22 module 3	-28 ... 350 °C

The inputs test is used to read the current measurement values on the input terminals of the units. This is used to quickly check the wiring.

20.3. Test of inputs H1 / H2 / H3 / H4 / H5 / H6 / H7

Line No.	Programming	Possible values
7840	Voltage signal H1	0 ... 10 V
7841	Contact state H1	Open | Closed
7845	Voltage signal H2 module 1	0 ... 10 V
7846	Contact state H2 module 1	Open | Closed
7848	Voltage signal H2 module 2	0 ... 10 V
7849	Contact state H2 module 2	Open | Closed
7851	Voltage signal H2 module 3	0 ... 10 V
7852	Contact state H2 module 3	Open | Closed
7854	Voltage signal H3	0 ... 10 V
7855	Contact state H3	Open | Closed
7860	Contact state H4	Open | Closed
7862	Frequency H4	0 ... 2000
7865	Contact state H5	Open | Closed
7872	Contact state H6	Open | Closed
7874	Contact state H7	Open | Closed

The inputs test is used to read the current measurement values on the input terminals of the units. This is used to quickly check the wiring.

20.4. Test of EX inputs (extension module)

Line No.	Programming	Possible values
7950	Input EX21 module 1	0V | 230V
7951	Input EX21 module 2	0V | 230V
7952	Input EX21 module 3	0V | 230V

The inputs test is used to read the current measurement values on the input terminals of the units. This is used to quickly check the wiring.

21. “STATE” PARAMETERS

The current operating state of the installation is displayed by status displays.

Line No.	Programming
8000	State heating circuit 1
8001	State heating circuit 2
8002	State heating circuit 3

End user (info level)	Commissioning, specialist	State Nbr.
Thermostat response	Thermostat response	3
Manual intervention active	Manual intervention active	4
Drying function activated	Drying function activated	102
Heating mode restriction	Overheating protection active	56
	Restriction, heating protection	103
	Restriction, DHW priority	104
	Restriction, storage tank	105
		106
Forced drawing	Forced drawing, storage tank	107
	Forced drawing, DHW	108
	Forced drawing, boiler	109
	Forced drawing	110
	Time delay on cutout active	17
Comfort heating mode	Startup + accelerated heating option	111
	Optimisation on activation	112
	Accelerated temperature build-up	113
	Comfort heating mode	114
Reduced heating mode	Optimisation on cutout	115
	Reduced heating mode	116
Frost protection activated	Frost protection	101
	Frost protection, flow active	117
	Installation frost protection active	23
		24
Summer operation	Summer operation	118
Off	Day eco mode active	119
	Lowered, reduced	120
	Lowered, frost protection	121
	Ambient temperature limitation	122
	Off	25

Line No.	Programming
8003	State DHW

End user (info level)	Commissioning, specialist	State Nbr.
Thermostat response	Thermostat response	3
Manual intervention active	Manual intervention active	4
Withdrawal mode	Withdrawal mode	199
	Heat holding mode active	222
Heat holding mode EN	Heat holding mode EN	221
	Adiabatic cooling by manifold	77
	Adiabatic cooling by generator / heating circuits	78
Adiabatic cooling active		53
	Discharge protection active	79
	Load duration limitation active	80
	Load locked	81
Load lock active		82
	Override, Maximum tank temperature	83
	Override, Maximum load temperature	84
	Override, anti-legionella setpoint	85
	Override, comfort setpoint	86
Forced load active		67
	Load by electrical resistor, anti-legionella setpoint	87
	Load by electrical resistor, Comfort setpoint	88
	Load by electrical resistor, reduced setpoint	
	Load by electrical resistor, frost protection setpoint	89
	Electrical resistor released	90
Load by electrical resistor		91 66
	Flow active	92
	Accelerated load, anti-legionella	93
Accelerated load active		94
	Load, anti-legionella setpoint	95
	Load, Comfort setpoint	96
	Load, reduced setpoint	97
Load activated		69
Frost protection activated	Frost protection activated	24
	Instantaneous hot water frost protection	223
Time delay on cutout active	Time delay on cutout active	17
Load on standby	Load on standby	201
	Loaded, tank maximum temperature	70
	Loaded, maximum load temperature	71
	Loaded, anti-legionella temperature	98
	Loaded, comfort temperature	99
	Loaded, reduced temperature	100
Loaded		75

End user (info level)	Commissioning, specialist	State Nbr.
Off	Off	25
Ready	Ready	200

Line No.	Programming
8005	State boiler

End user (info level)	Commissioning, specialist	State Nbr.
STB response	STB response	1
Safety limitation test active	Safety limitation test active	123
fault	fault	2
	Smoke temperature, cutout	232
	Smoke temperature, power limitation	233
Smoke temperature too high		234
Thermostat response	Thermostat response	3
Manual intervention active	Manual intervention active	4
	Cleaning function, nominal load	5
	Cleaning function, partial load	6
Cleaning function active		7
	Manual lock	8
	Locked, solid fuel boiler	172
	Auto lock	9
	Locked, outdoor temperature	176
	Locked, ecological mode	198
Blocked		10
	Minimum limitation	20
	Minimum limitation, partial load	21
Minimum limitation active	Minimum limitation active	22
	Load shed on startup	11
	Load shed on startup, partial load	12
	Re-load limitation	13
	Re-load limitation, partial load	14
In operation		18
Load storage tank	Load storage tank	59
In operation for heating circuit, DHW	In operation for heating circuit, DHW	170
Partial load for heating circuit, DHW	Partial load for heating circuit, DHW	171
Released for heating circuit, DHW	Released for heating circuit, DHW	173
In operation for DHW	In operation for DHW	168
Partial load for DHW	Partial load for DHW	169
Released for DHW	Released for DHW	174
In operation for heating circuit	In operation for heating circuit	166
Partial load for heating circuit	Partial load for heating circuit	167
Released for heating circuit	Released for heating circuit	175
Time delay on cutout active	Time delay on cutout active	17
Released	Released	19
	Installation frost protection active	23
Frost protection activated		24
Off	Off	25

Line No.	Programming
8007	State solar

End user (info level)	Commissioning, specialist	State Nbr.
Manual intervention active	Manual intervention active	4
Fault	Fault	2
Collective frost protection active	Collective frost protection active	52
Adiabatic cooling active	Adiabatic cooling active	53
Tank maximum temperature reached	Tank maximum temperature reached	54
Evaporation protection active	Evaporation protection active	55
Overheating protection active	Overheating protection active	56
Maximum load temperature reached	Maximum load temperature reached	57
Load DHW+tank+pool	Load DHW+tank+pool	151
Load DHW+tank	Load DHW+tank	152
Load DHW+pool	Load DHW+pool	153
Load tank+pool	Load tank+pool	154
Load DHW	Load DHW	58
Load storage tank	Load storage tank	59
Load pool	Load pool	60
	Minimum load temperature not reached	61
	Insufficient differential temperature	62
Insufficient sunshine	Insufficient sunshine	63

Line No.	Programming
8008	State solid fuel boiler

End user (info level)	Commissioning, specialist	State Nbr.
Manual intervention active	Manual intervention active	4
Fault	Fault	2
Overheating protection active	Overheating protection active	56
	Manual lock	8
	Auto lock	9
Blocked		10
	Minimum limitation	20
	Minimum limitation, partial load	21
Minimum limitation active	Minimum limitation active	22

End user (info level)	Commissioning, specialist	State Nbr.
	Load shed on startup	11
	Load shed on startup, partial load	12
	Return limitation	13
	Return limitation, partial load	14
In operation for heating circuit	In operation for heating circuit	166
Partial load for heating circuit	Partial load for heating circuit	167
In operation for DHW	In operation for DHW	168
Partial load for DHW	Partial load for DHW	169
In operation for heating circuit, DHW	In operation for heating circuit, DHW	170
Partial load for heating circuit, DHW	Partial load for heating circuit, DHW	171
Time delay on cutout active	Time delay on cutout active	17
In operation	In operation	18
Ignition aid activated	Ignition aid activated	163
Released	Released	19
	Installation frost protection active	23
	Boiler frost protection activated	141
Frost protection activated		24
Off	Off	25

Line No.	Programming
8009	State burner

End user (info level)	Commissioning, specialist	State Nbr.
Disturbance position ?	Disturbance position ?	211
Startup inhibit	Startup inhibit	212
In operation	In operation	18
	Safety time	214
	Preventilation	218
Commissioning / Setting into service	Commissioning / Setting into service	215
	Post-ventilation	219
	Shutdown	213
	Return to zero	217
Reduced	Reduced	216

Line No.	Programming
8010	State buffer

End user (info level)	Commissioning, specialist	State Nbr.
Heat	Heat	147
Frost protection activated	Frost protection activated	24

End user (info level)	Commissioning, specialist	State Nbr.
	Electrical load, backup mode	64
	Load by electrical resistor, evaporator protection	65
	Electric load, de-icing	
	Load by electrical resistor, override	131
	Load by electrical resistor, replacement	164
		165
	Load locked	81
	Restriction, DHW priority	104
Restricted load		124
	Forced load active	67
	Partial load active	68
Load activated		69
	Adiabatic cooling by manifold	77
	Adiabatic cooling by DHW / heating circuits	142
Adiabatic cooling active		53
	Loaded, tank maximum temperature	70
	Loaded, maximum load temperature	71
	Loaded, first load at setpoint temperature	72
	Loaded, setpoint temperature	73
	Partially loaded, setpoint temperature	74
	Loaded, minimum load temperature	143
Loaded		75
Cold	Cold	76
No request	No request	51

Line No.	Programming
8011	State swimming pool

End user (info level)	Commissioning, specialist	State Nbr.
Manual intervention active	Manual intervention active	4
Fault	Fault	2
Heating mode restriction	Heating mode restriction	106
Forced drawing	Forced drawing	110
	Generator heating mode	155
Heating mode		137
Heated, maximum pool temperature	Heated, maximum pool temperature	156
	Heated, solar setpoint	158
	Heated, generator setpoint	157
Heated		159
	Heating mode, ART solar	160
	Heating mode, ART generator	161
Heating off		162
Cold	Cold	76

22. "DIAGNOSTICS" PARAMETERS

22.1. Cascade diagnostic

Various setpoints and actual values, relay switching states and generator states can be set for diagnostic purposes.

Line No.	Programming	Possible values
8100, 8102, 8104, 8106, 8108, 8110, 8112, 8114, 8116, 8118, 8120, 8122, 8124, 8126, 8128, 8130	Priority source	0 … 16
8101, 8103, 8105, 8107, 8109, 8111, 8113, 8115, 8117, 8119, 8121, 8123, 8125, 8127, 8129, 8131	State source	Missing | Faulty | Manual control active | Heat generation lock active | Chimney sweep funct active | Temporarily unavailable | Outside temp limit active | Not released | Released
8138	Cascade flow temp	0 … 140 °C
8139	Cascade flow temp setp	0 … 140 °C
8140	Cascade return temp	0 … 140 °C
8141	Cascade return temp setp	0 … 140 °C
8150	Source seq ch'over current	0 … 990 h

22.2. Generator diagnostic

Various setpoints and actual values, relay switching states and timer states can be set for diagnostic purposes.

Line No.	Programming	Possible values
8304	Boiler pump Q1	Off | On
8308	Boiler pump speed	0 … 100 %
8310	Boiler temp	0 … 140 °C
8311	Boiler setpoint	0 … 140 °C
8312	Boiler switching point	0 … 140 °C
8313	Control sensor	0 … 140 °C
8314	Boiler return temp	0 … 140 °C
8315	Boiler return temp set	0 … 140 °C
8316	Flue gas temp	0 … 350 °C
8318	Flue gas temp max	0 … 350 °C
8321	Primary exchanger temp	0 … 140 °C
8323	Fan speed	0 ... 10000 tr/min
8324	Set point fan	0 ... 10000 tr/min
8325	Current fan control	0 … 100 %

Line No.	Programming	Possible values
8326	Burner modulation	0 … 100 %
8327	Water pressure	0 … 10
8329	Ionization current	0 … 100 µA
8330	Hours run 1st stage	00:00:00 … 2730:15:00 h
8331	Start counter 1st stage	0 … 2147483647
8338	Hours run heating mode	00:00:00 … 8333:07:00 h
8339	Hours run DHW	00:00:00 … 8333:07:00 h
8366	Boiler throughput	0 ... 3276.7 l/min
8378	Overall heating energy	
8379	Overall DHW energy	
8380	Global Energy	
8381	Heating gas energy	
8382	DHW gas energy	
8383	Gas energy	
8390	Current phase number	TNB | TLO | TNN | STY | STV | THL1 | THL1A | TV | TBRE | TW1 | TW2 | TVZ TSA1 | TSA2 | TI | MOD | THL2 | THL2A | TN | SAV | STOE
8499	Collector pump 1	Off | On
8501	Solar ctrl elem buffer	Off | On
8502	Solar ctrl elem swi pool	Off | On
8505	Speed collector pump 1	0 ... 100 %
8506	Speed solar pump ext exch	0 ... 100 %
8507	Speed solar pump buffer	0 ... 100 %
8508	Speed solar pump swi pool	0 ... 100 %
8510	Collector temp 1	-28 ... 350 °C
8511	Collector temp 1 max	-28 ... 350 °C
8512	Collector temp 1 min	-28 ... 350 °C
8513	dt collector 1/DHW	-168 ... 350 °C
8514	dt collector 1/buffer	-168 ... 350 °C
8515	dt collector 1/swimming pool	-168 ... 350 °C
8519	Solar flow temp	-28 ... 350 °C
8520	Solar return temp	-28 ... 350 °C
8526	24-hour yield solar energy	0 ... 999,9 kW/h
8527	Total yield solar energy	0 ... 9999999,9 kW/h
8530	Hours run solar yield	00:00:00 ... 8333:07:00 h
8531	Hours run collect overtemp	00:00:00 ... 8333:07:00 h
8532	Hours run collector pump	00:00:00 ... 8333:07:00 h
8560	Solid fuel boiler temp	0 ... 140 °C
8570	Hours run solid fuel boiler	00:00:00 ... 8333:07:00 h
8742	HC1 Room model temperature	
8772	HC2 Room model temperature	
8802	HC3 Room model temperature	

22.3. Consumer diagnostic

Various setpoints and actual values, relay switching states and timer states can be set for diagnostic purposes.

Line No.	Programming	Possible values
8700	Outside temp	-50 ... 50 °C
8701	Outside temp min	-50 ... 50 °C
	Resetting of the minimum outside T°	
8702	Outside temp max	-50 ... 50 °C
	Resetting of the maximum outside T°	
8703	Outside temp attenuated	-50 ... 50 °C
	Réinitialisation de la T° atténuée	
8704	Outside temp composite	-50 ... 50 °C
8730, 8760, 8790	Heating circuit pump 1, 2, 3	Off | On
8731, 8761, 8791	Heat circ mix valv 1, 2, 3 open	Off | On
8732, 8762, 8792	Heat circ mix valv 1, 2, 3 close	Off | On
8740, 8770, 8800	Room temp 1, 2, 3	0 ... 50 °C
8741, 8771, 8801	Room setpoint 1, 2, 3	4 ... 35 °C
8743, 8773, 8803	Flow temp 1, 2, 3	0 ... 140 °C
	Flow temp setpoint 1, 2, 3	0 ... 140 °C
8749, 8779, 8809	Room thermostat 1, 2, 3	No demand | Demand
8820	DHW pump	Off | On
8830	DHW temp 1	0 ... 140 °C
8832	DHW temp 2	0 ... 140 °C
8835	DHW circulation temp	0 ... 140 °C
8836	DHW charging temp	0 ... 140 °C
8852	DHW consumption temp	0 ... 140 °C
8853	Instant WH setpoint	0 ... 140 °C
8875, 8885	Flow temp setp VK1, 2	5 ... 130 °C
8895	Flow temp setp swimming pool	5 ... 130 °C
8900	Swimming pool temp	0 ... 140 °C
8901	Swimming pool setpoint	8 ... 80 °C
8930	Primary controller temp	0 ... 140 °C
8931	Primary controller set	0 ... 140 °C
8950	Common flow temp	0 ... 140 °C
8951	Common flow temp setp	0 ... 140 °C
8952	Common return temp	0 ... 140 °C
8962	Common output setpoint	0 ... 100 %
8980	Buffer temp 1 (B4)	0 ... 140 °C
8981	Buffer setpoint	0 ... 140 °C
8982	Buffer temp 2 (B41)	0 ... 140 °C
8983	Buffer temp 3 (B42)	0 ... 140 °C
9009	Water pressure H3 *	0 ... 10 bar

Line No.	Programming	Possible values
9031, 9032, 9033, 9034	Relay output QX1, 2, 3, 4	Off | On
9050, 9053, 9056	Relay output QX21 module 1, 2, 3	Off | On
9051, 9054, 9057	Relay output QX22 module 1, 2, 3	Off | On
9052, 9055, 9058	Relay output QX23 module 1, 2, 3	Off | On

* Boiler pressure

23. “SAFETY UNIT” PARAMETERS

23.1. Operation

Line No.	Programming	Possible values
9500	Pre-ventilation time	0...51s

Adjustable pre-ventilation duration on the operating interface. This value can only always be greater than the Min pre-ventilation duration (9501).

Line No.	Programming	Possible values
9504	Required speed prepurging	200 ... 10000 tr/min
9505	Req speed prepurging min	200 ... 10000 tr/min

Preventilation speed setpoint may be set on the operating interface. This value may only be higher than the setpoint in parameter 9505.

Line No.	Programming	Possible values
9512	Required speed ignition	200 ... 10000 tr/min
9513	Required speed ignition max	200 ... 10000 tr/min

Ignition speed setpoint may be set on the operating interface. This value may only be higher than the setpoint in parameter 9513.

Line No.	Programming	Possible values
9524	Required speed LF	0 ... 10000 tr/min

Rotation speed setpoint with partial load adjustable on control interface This value can only always be greater than the minimum rotation speed setpoint with partial load

Line No.	Programming	Possible values
9525	Required speed LF min	0 ... 10000 tr/min

Minimum speed setpoint, partial load (safety parameter). Limit for rotation speed setpoint, *partial load*.

Line No.	Programming	Possible values
9529	Required speed HF	0 ... 10000 tr/min

Rotation speed setpoint with nominal load adjustable on control interface This value can only always be greater than the maximum rotation speed setpoint with nominal load .

Line No.	Programming	Possible values
9530	Required speed HF max	0 ... 10000 tr/min

Maximum speed setpoint with nominal load (safety parameter) *Limit for rotation speed setpoint with nominal load* .

Line No.	Programming	Possible values
9626	Power slope / wind speed	from -1000 to +1000
9627	Section Y power / fan speed	from -1500 to +1500

Energy consumption is approximated using fan speed and a linear approximation of current burner output.
It is possible to configure the linear approximation function for determining the burner output using the additional parameters.
Slope of the right equation Power/fan speed slope (9626) and y-axis section of the right equation Y section power/fan speed (9627).
These counters are visible at parameters, 8381, 8382, 8378, 8379, 8080, 8081, 8082, 8083

Note: The configuration of the DHW priority DHW load parameter (1630) has a direct influence on the detection of the operating mode for which the boiler is currently operating. 100% detection is only ensured if the parameter is configured with the absolute value. For all other configurations, in the event of multiple demand (domestic hot water and heating at the same time), the energy made available is added at a flat rate to the heating gas energy meter (8381).

23.2. Chimney drying function

Line No.	Programming	Possible values
9650	Chimney drying	off | temporary | continuous

If the chimney drying function is activated, the function starts after a shutdown on transition to reduced mode. The chimney drying function can be interrupted by any heat request, and restarts when the system returns to standby.

Off
The function is inoperative.

Temporary
Duration of chimney drying in accordance with *"Chimney drying duration"* parameter, line (9652).

Continuous
The chimney drying function is continuously executed in standby mode

Line No.	Programming	Possible values
9651	Req speed chimney drying	0 ... 10000 tr/min

Speed at which chimney drying must be executed.

Line No.	Programming	Possible values
9652	Duration chimney drying	10 ... 1440 min

Duration of chimney drying when execution must be limited in time.

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