Boost heating operation diagram

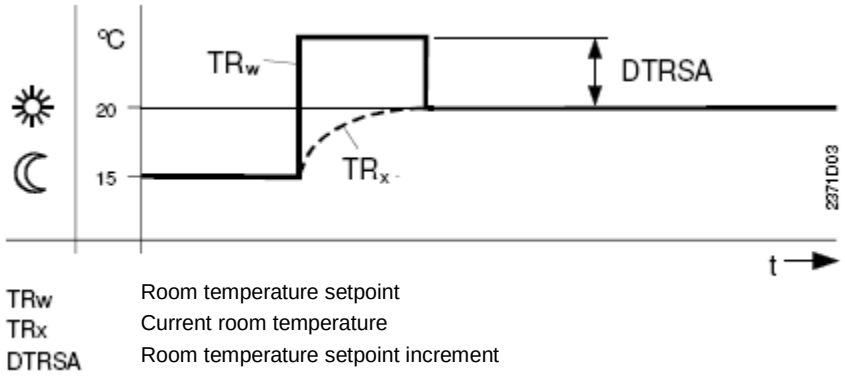


Figure 66 Example of heating operation depending on the temperature setting

"Boost heating" is possible with or without room units.

14. Parameters "780, 1080 and 1380: Quick setback" (default: "Down to reduced setpoint"; possible values: "Off", "Down to reduced setpoint", "Down to frost prot setpoint"). During quick deactivation the **pump** (Q20) of the heating circuit (CP) does not run, and in the mixed circuits (C1, C2), the mixer valve is completely closed.

    The type of quick setback can be chosen in parameter:

    - 780 for circuit C1.
    - 1080 for circuit C2.
    - 1380 for circuit CP.

    he quick setback function is available with or without the room sensor:

    - With room sensor:

      The function keeps heating off until the room temperature has reached the reduced or protection setpoint.

      When the setpoint in question has been reached, the heating circuit pump and mixer valve are reactivated.
    - Without room sensor:

      Quick setback deactivates heating for a period of time, depending on the external temperature and the building's heating constant (parameter "6110").

Example:

Duration of quick setback if Comfort Setpoint minus Reduced Setpoint = 2 °C (Comfort Setpoint = 20 °C, Reduced Setpoint =18 °C) .

Quick setback operation table

Composite external temperature:	Building time constant:						
	0	2	5	10	15	20	50
15 °C	0	3.1	7.7	15.3	23	30.6	76.6
10 °C	0	1.3	3.3	6.7	10	13.4	33.5
5 °C	0	0.9	2.1	4.3	6.4	8.6	21.5
0 °C	0	0.6	1.6	3.2	4.7	6.3	15.8
-5 °C	0	0.5	1.3	2.5	3.8	5.0	12.5
-10 °C	0	0.4	1.0	2.1	3.1	4.1	10.3
-15 °C	0	0.4	0.9	1.8	2.6	3.5	8.8
-20 °C	0	0.3	0.8	1.5	2.3	3.1	7.7
	Quick setback duration (hours)						

Figure 67 Example of heating operation depending on the temperature setpoints

15. Parameter “6110: Time constant building” (default 20 h, range: 0 to 50 h), when the external temperature varies, the room temperature changes in relation to the thermal storage capacity of the building. This function is used to correct the response of the delivery setpoint to changes in the external temperature.

    Example:

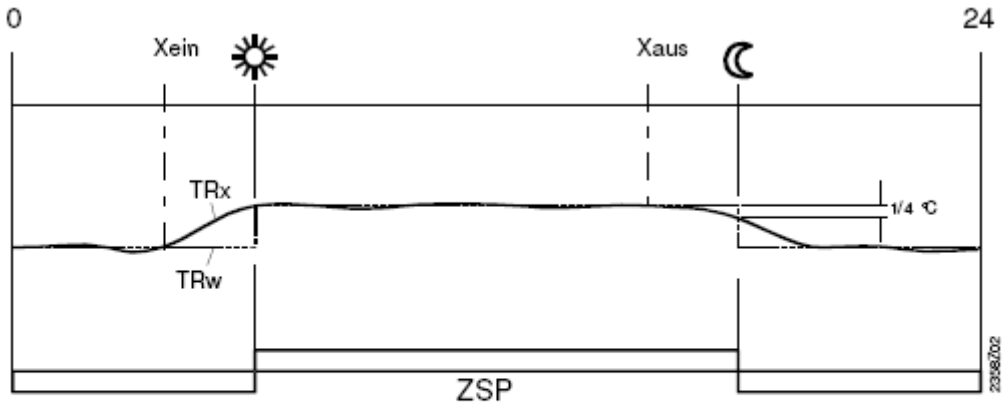
    - > 20: the room temperature responds more slowly to changes in the external temperature.
    - 10 ÷ 20: This setting can be used for the majority of buildings.
    - < 10 the room temperature responds more quickly to changes in the external temperature.

16. Parameters “790, 1090 and 1390: Optimum start control max”; passage from one temperature level to another (reduced to comfort) is optimised so that the Comfort setpoint can be reached in the respective “Activation switching time” (Xein). The switching time in question can be set with parameters:

    - 790 for circuit C1.
    - 1090 for circuit C2.
    - 1390 for circuit CP.

“Optimum start control” is possible with or without room units.

Optimised start/stop control diagram



Xein	Activation time
Xaus	Deactivation time
ZSP	Time program
TRx	Current room temperature
TRw	Room temperature setpoint

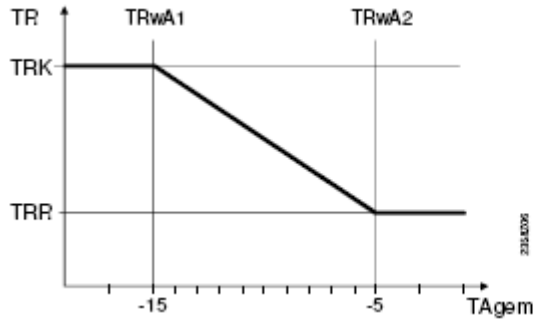
Figure 68 Example of optimised operation (activation/deactivation)

17. Parameters “790, 1090 and 1390: Optimum stop control max”, the passage from one temperature level to another (comfort to comfort minus 1/4°C) is optimised so that the setpoint comfort minus 1/4°C is reached in the resp ective “Deactivation switching time” (Xaus). The switching time in question can be set with parameters:
    - 791 for circuit C1.
    - 1091 for circuit C2.
    - 1391 for circuit CP.

    “Optimum stop control” is possible with or without room units.

18. Parameters “800, 1100 and 1400: Reduced setpoint increase start (TrwA1)” and “801, 1101, 1401: Reduced setpoint increase end (TrwA2)”. The “Reduced setpoint increase” function is used primarily in connection with low power heating systems (e.g., low-energy buildings). In this case, the time to reach the comfort setpoint would be too long with low external temperatures. Increasing the reduced setpoint prevents excessive room temperature drops; it also diminishes the time for which the heating has to run to pass to the comfort setpoint. The “Reduced setpoint increase start (TrwA1)” and “Reduced setpoint increase end (TrwA2)” temperatures can be set with parameters:
    - 800 and 801 for circuit C1.
    - 1100 and 1101 for circuit C2.
    - 1400 and 1401 for circuit CP.

    “Reduced setpoint increase” operation diagram



TRwA1	Reduce setpoint increase start
TRwA2	Reduce setpoint increase end
TRK	Comfort setpoint
TRR	Reduced room temperature setpoint
Tagem	Composite external temperature

Figure 69 "Reduced setpoint increase" function behaviour

19. Mixer valve control in heating mode:

Row number		Operating row
C1	C2	
830	1130	Boost mixer valve
832	1132	Actuator type 2-position; 3-position
834	1134	Actuator stroke time

- Boost mixer valve:

  The controller sums the boost values given here to the delivery setpoints for the various heating circuits, and uses the values obtained in this way as effective setpoints for the heat generator power draw.

- Actuator type:
  - For 2-position actuators, the controller directs the movement with only one relay output which opens the corresponding valve. If the signal is not available, the valve automatically closes.

    This configuration MAY NOT be used.

  - For 3-position actuators, the controller directs the movement with two relay outputs which open and close the corresponding valve.

- Actuator stroke time:
  - For the 3-position device, the actuator stroke time can be adapted to the mixer valves actually in use.
  - For the 2-position device, the actuator stroke time has no consequence.

For "Siemens SQS35.00" type actuators, the stroke time is 150 seconds (default value of parameters "834" and "1134").

20. Floor curing function:

Row number			Operating row
C1	C2	CP	
850	1150	1450	**Floor curing function** Off Functional heating (Fh) Curing heating (Bh) Heating functional/curing Heating curing/functional Manual
851	1151	1451	**Floor curing setpoint manually**
855	1155	1455	**Floor curing setpoint current**
856	1156	1456	**Floor curing day current**
857	1157	1457	**Floor curing days completed**

The floor curing function ensures controlled curing of the screed by controlling the delivery temperature and following a given temperature profile.

Floor curing is provided by the mixed or direct circuit.

- Off: The function is off.
- Functional heating (Fh): The first part of the temperature profile is executed automatically (see Figure 70 on page 96).
- Curing heating (Bh): The second part of the temperature profile is executed automatically (see Figure 70 on page 96).
- Functional/curing heating: The entire temperature profile is executed automatically (first and second part) (see Figure 70 on page 96).
- Curing/functional heating: The entire temperature profile is executed automatically (first and second part) (see Figure 70 on page 96).
- Manual: No temperature profile is executed; the floor curing setpoint is controlled manually.

Observe the recommendations of the floor manufacturer.

Correct operation is only guaranteed with properly installed systems (plumbing, electrical, parameter settings)!

Failure to observe the above may result in damage to the floor!

The function can be interrupted at any time by selecting **Off**.

The maximum delivery temperature limit remains active.

- Manual setpoint: The delivery temperature setpoint for the manual floor curing function can be entered independently for each heating circuit.
- Current setpoint: Indicates the current delivery temperature setpoint for the current floor curing function.
- Current day: Indicates the current day for the current floor curing function.
- Completed days: If the floor curing function is aborted, the number of whole days for which it ran is stored; this is stored in memory until the function is initiated again.

Floor curing function with “temperature profile”:

- The temperature profile selected in parameter “Floor curing function” (“850”, “1150” and “1450”) is run automatically by the controller.

Floor curing function with “temperature profile” diagram

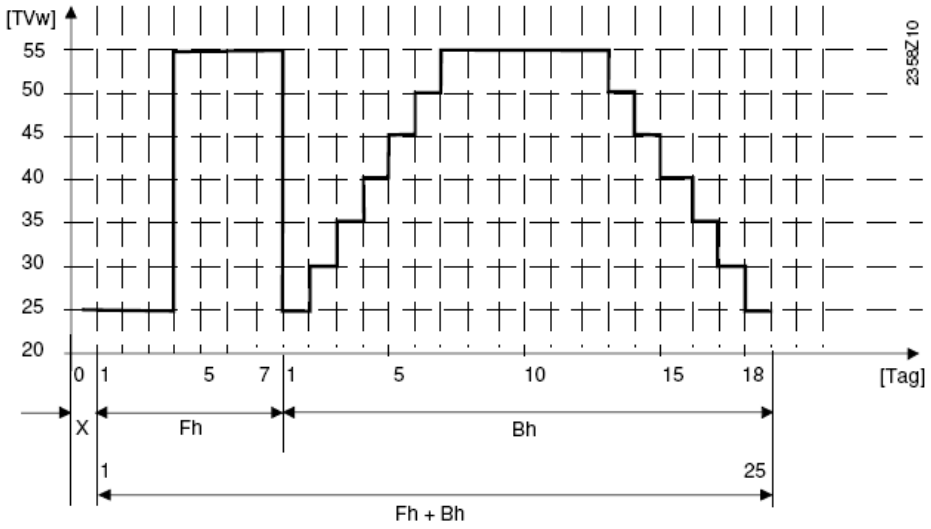
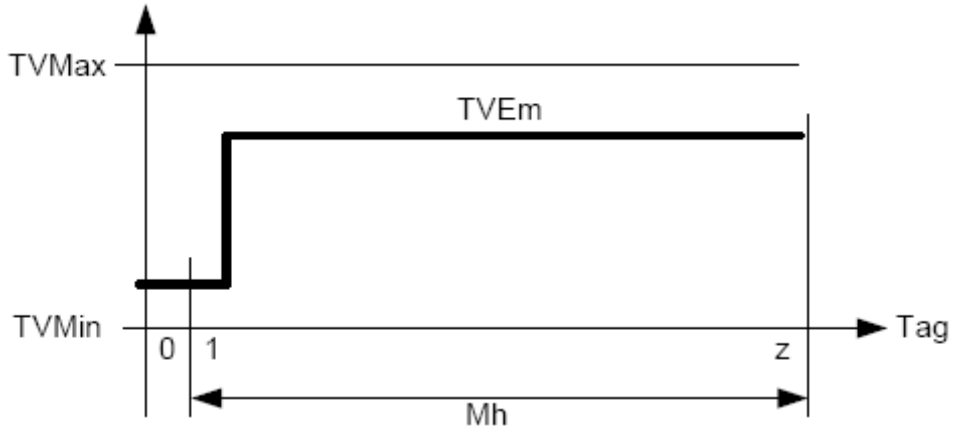


Figure 70 Example of operation of the “floor curing function”. X: start day; Fh: functional heating; Bh: curing heating.

- The temperature profile is kept between “TVMmin: Flow temp setpoint min” (parameters: “740”, “1040” and “1340”) and “TVmax: Flow temp setpoint max” (parameters: “741”, “1041” and “1341”). The temperature change always occurs at midnight.
- The floor curing temperature profile is the same for all heating circuits (C1, C2 and CP).
- The setpoint (TVw) used on the start day is the setpoint of the first day of operation.
- The floor curing function terminates when the number of days of operation set by the controller has expired or if it is deactivated by the respective parameter: “Floor curing function” = “Off”. The start day (day0), the day from the time of activation to midnight, is not counted as a day of operation.

Manual floor curing function:

- No temperature profile is executed. The delivery temperature is set separately for each heating circuit, using parameter “TVEm: Floor curing setpoint manually” (“851” for C1, “1151” for C2 and “1451” for CP).



- Parameter “TVEm: Floor curing setpoint manually” is kept between “TVMmin: Flow temp setpoint min” (parameters: “740” for C1, “1040” for C2 and “1340” for CP) and “TVmax: Flow temp setpoint max” (parameters: “741” for C1, “1041” for C2 and “1341” for CP).
- The setpoint (TVEm) used on the start day is the setpoint of the first day of operation.
- The floor curing function terminates when the “days of operation Mh” has expired. The number of “days of operation Mh” is given by the sum of the “Functional heating (Fh)” and “Curing heating (Bh)” functions: Mh = Fh + Bh. The start day (day 0), the day from the time of activation to midnight, is not counted as a day of operation.

Floor curing function control:

- When the floor curing function is active, the heating circuit delivery temperature is compared either with the setpoint obtained from the temperature profile, or with the manual setpoint. In mixed circuits, one uses the sensors B1 and B12 on the deliveries to circuits C1 and C2. In heating circuit CP, one uses the common sensor B10 on the delivery.
- If the difference between the setpoint and the delivery temperature is less than 2K for less than one hour, a counter which registers the time of operation of the floor curing function is incremented. If the difference is greater than 2K, the counter is temporarily suspended, and the count resumes when the difference is one more less than 2K. If more than an hour has passed and the delivery temperature has not reached the setpoint value, the counter is suspended, and the delivery temperature must return to the nominal value for it to resume.

  days completed = (complete hours/24) rounded

21. Parameter “1420: Overtemp prot pump circuit”: prevents the CP delivery temperature exceeding the setpoint (“1310” or “1312”). When parameter “1420” is ON, if the water temperature measured by sensor B10 is greater than the CP service setpoint (“1310” or “1312”), pump Q20 is run intermittently (ON/OFF) to re-establish the correct heating temperature (this happens frequently if heating is done with the aid of the boiler).

Heating circuit frost protection:

- Heating circuit frost protection is always active and cannot be disabled.
- Heating circuit frost protection in heating mode: if the delivery temperature drops below 5 degrees, the controller activates both heat generation and the protection circuit pump, independently of the current heating mode.

  When the delivery temperature rises above 7 degrees once more, the controller waits for 5 minutes, then deactivates both heat generation and the protection circuit pump.
- Heating circuit frost protection in cooling mode: See the note at the end of the next paragraph, Parameters useful for regulating the system “Cooling circuits configuration”::

Parameters useful for regulating the system “Cooling circuits configuration”:

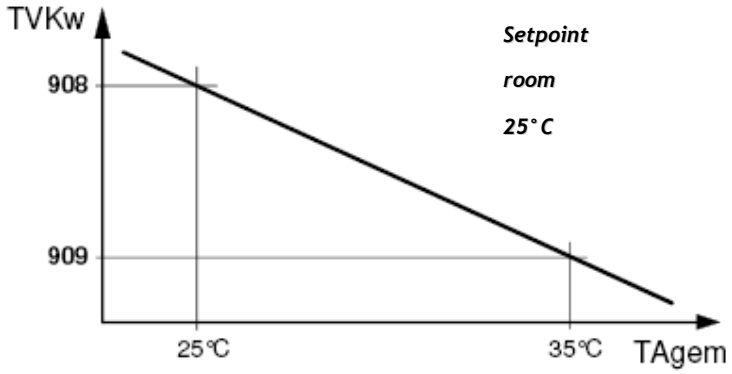
1. Parameter “907: Release” (“24h/day”, “Time program HC”, “Time program 5”), determines which time program is controlling cooling.
   - “24h/day”: Cooling is always active (24 h/day).
   - “Time program HC”: Cooling is active in accordance with the heating circuit time programs.
   - “Time program 5”: Cooling is active in accordance with time program 5.
2. Parameters “908 and 909: Flow setp at OT 25℃ an d Flow setp at OT 35℃”; define the “Cooling curve (straight)” for circuit C1 (the only circuit which provides conditioning), see Figure 71 a pagina 99.
   - Keeping parameter 908 constant and modifying parameter 909 makes it possible to modify the slope of the “Cooling curve” of circuit C1 when it is running in conditioning mode:
     - Decrease parameter 909 if in the rooms served by C1 the temperature is higher when the external temperature is higher.
     - Increase parameter 909 if in the rooms served by C1 the temperature is lower when the external temperature is higher.

It is also possible to keep parameter 909 constant and modify parameter 908.

- If we modify both parameters by the same amount, the “Cooling curve (straight)” can be shifted in parallel:
  - Move the cooling curve upwards by increasing both parameters by the same amount if in the rooms served by C1 the temperature is always lower than the setpoint.

- Move the cooling curve downwards by decreasing both parameters by the same amount if in the rooms served by C1 the temperature is always higher than the setpoint.

Cooling curve



TVKw Cooling flow temperature setpoint
TAgem Mixed external temperature

Figure 71 Cooling curve graph. The figure shows the straight cooling curve determined by the points “908” and “909”. The straight curve represents the delivery v. the external ambient temperature (mixed), when the required ambient setpoint is 25°C.

Since the cooling service is always passive (it uses the water drawn from the cold well to condition services connected to C1 and not the E^3) the lower limit of the cooling curve is the temperature at which water is taken from the well itself.

3. Parameter “912: Cooling limit at OT”:
   - If the external temperature stays above the cooling limit, cooling is active.
   - If the external temperature drops by at least 0. 5°C below the cooling limit, cooling is deactivated (see parameter 913).

4. Parameter ““913: Lock time at end of heating”; to prevent too rapid activation of cooling at the end of the heating request, the cooling function is locked out for the time specified in this parameter. The lock time starts when no heating demand is present on heating circuit C1. The heating demand of heating circuit C2 or heating circuit CP is not taken into consideration.

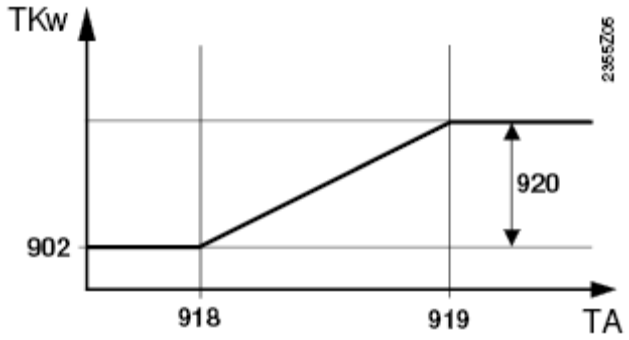
   It is possible to disable the lock time by switching the operating mode key to OFF (Protection) and then back to ON.

5. Parameter “920: Summer comp setp increase”; determines the maximum increase of the comfort setpoint following summer temperature compensation.

   In summer, the comfort cooling setpoint (TKw: parameter 902) is raised as the external temperature increases (up to the maximum value specified in

parameter 920), so as to save cooling energy and prevent large differences between the external and room temperatures.

Summer compensation curve



TKw Comfort setpoint
TA External temperature

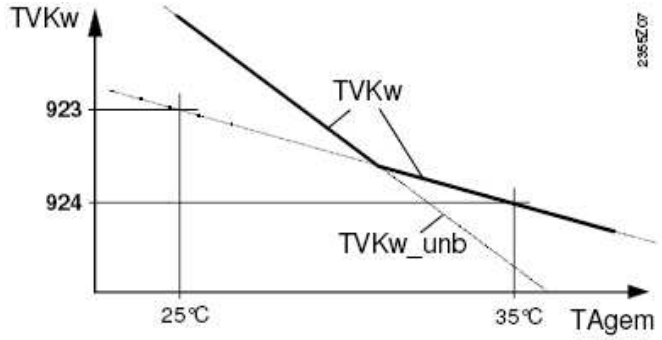
Figure 72 Summer compensation curve graph.

6. Parameter “918: Summer comp start at OT”; the temperature entered here determines the start of summer compensation. If the summer temperature increases, the comfort setpoint is gradually increased.

7. Parameter “919: Summer comp end at OT”; at this temperature, summer compensation reaches it complete effect (parameter 920). Further increases in the external temperature have no effect on the comfort setpoint.

8. Parameters “923 and 924: Flow temp setp min at OT 25℃ and Flow temp setp min at OT 35℃”; Define the “straight minimum cooling curv e (TVKw_unb)” or circuit C1, in order to prevent too low room temperatures leading to the formation of condensation.

Minimum cooling curve (TVK_unb)



TVKw	Cooling flow temperature setpoint (with minimum limitation)
TVKw_unb	Cooling flow temperature setpoint (without minimum limitation)
TAgem	Mixed external temperature

Figure 73 Cooling curve graph (TVKw) with 25°C room setpoint an d minimum limit curve (TVK_unb).

9. Parameter “932: Room temperature limitation”:

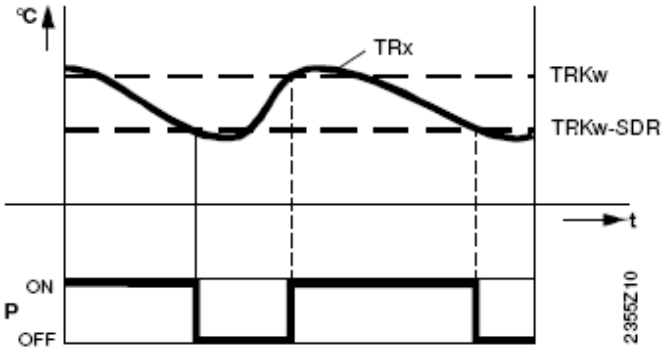
   Circuit C1 pump (Q2) is switched off if the room temperature (TRx) is less than the actual room setpoint C1 (TRKw) (with summer compensation see parameter 920) minus the differential (SDR) specified in parameter 932.

   The cooling circuit pump activates again when the temperature rises above the current room setpoint.

   The function is deactivated in the following conditions:

   - No room sensor.
   - “Room temperature limitation” (932) = --- (deactivated).
   - “Room influence” (928, see paragraph 7.7 - Configuration of Room Units (RU) and Control Units for heating and conditioning circuits a pagina 106) = --- (deactivated).

Circuit pump operation diagram



TRx	Effective ambient temperature
TRKw	Cooling ambient temperature setpoint (including summer compensation)
SDR	Ambient switching differential
P	pump
T	time

Figure 74 Example of pump operation depending on the internal room temperature setting

10. Mixer valve control in cooling mode:

Row number	Operating row
938	Hyper-cooling of mixer valve
939	Actuator type 2-position ¦ 3-position
941	Actuator stroke time
945	Mixer valve in heating mode Control ¦ Open

- Hyper-cooling of mixer valve: the mixing circuit cooling request to the source is reduced to the specified value. This reduction enables the temperature oscillation caused by the source to be regulated by the mixer valve.
- Actuator type:
  - For 2-position actuators, the controller directs the movement with only a relay output which opens the corresponding valve. If the signal is not available, the valve automatically closes.

     This configuration MAY NOT be used.

  - For 3-position actuators, the controller directs the movement with two relay outputs which open and close the corresponding valve.

- Actuator stroke time:
  - For the 3-position device, the actuator stroke time can be adapted to the mixer valves actually in use.
  - For the 2-position device, the actuator stroke time has no consequence.

 For “Siemens SQS35.00” type actuators, the stroke time is 150 seconds (default value of parameter “941”).

- Mixer valve in heating mode: defines the position of mixer valve 1 (Y1/ Y2) in the active heating function. In systems with separate heating and cooling circuits, this parameter is not active. Use of mixer valves:
  - Control: the valve is regulated in the heating and cooling functions.
  - Open: the valve is regulated in the cooling function, open in the heating function.

 Parameter “945” = “Control” is the recommended default.

11. Parameter “946: Lock time dewpoint limiter”; the time which must pass from when condensation is detected (by the hygrostat) to resumption of cooling service.

- As soon as the connected dewpoint controller (hygrostat) recognises formation of **condensation,** it closes/opens the contact and **thus switches off cooling.**
- As soon as the contact is re-opened/re-closed (no condensation detected by the hygrostat), the time specified in parameter “946” starts to count down. At the end of this time, cooling can resume.

Dewpoint detection (hygrostat) must be connected to input H1. Parameter “5950” (associated with H1) must be set to “dewpoint monitor”.

Contact H1 can be set as NC or NO in “parameter 5951: Contact type H1”.

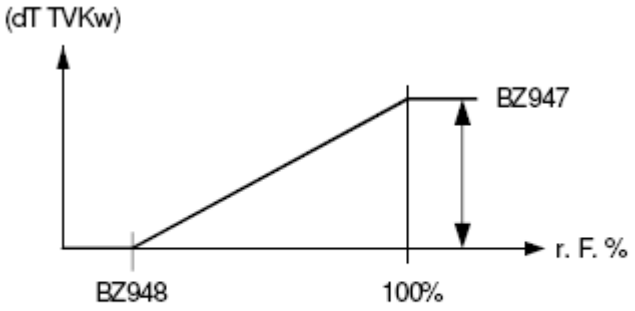
12. Parameter “947: **Flow temp setp incr hygro**”: increased delivery temperature to prevent condensation forming following excessive humidity detected in room by hygrostat.
    - To prevent condensation due to excessive humidity in the room, we can set a **fixed increase in the delivery temperature** (value set in parameter “947”) via the hygrostat.
    - As soon as the humidity exceeds the hygrostat setting, the latter closes the contact and enables the increased delivery setpoint.

The increased hygrostat setpoint is associated with input H1, which is the hygrostat input. Parameter “5950” (associated with H1) must be set to “Flow temp setp incr hygro”.

Contact H1 can be set as NC or NO in “parameter 5951: Contact type H1”.

13. Parameter “948: Flow setp incr start at r.h.”; prevents condensation forming when the room’s humidity is too high. The delivery temperature can be increased via the humidity detection signal 0…10V:
    - When the ambient humidity exceeds the “Flow setp incr start at r.h.”, the delivery setpoint is gradually increased.
    - The start of this increase is set in parameter “948”, whereas the maximum increase is given in parameter “947”.

Diagram of increased delivery temperature in cooling



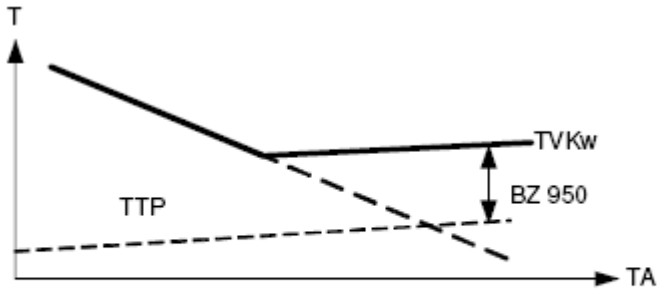
dT TVKw flow temperature setpoint increase
r.F. relative humidity
BZ operating rows

Figure 75 Example of increased delivery temperature v. relative humidity measured by hygrometer.

The humidity sensor must be associated with input H1, which is the hygrostat input. Parameter “5950” (associated with H1) must be set to “Rel room humidity 10V”.

14. Parameter “950: Flow temp diff dewpoint”; limits the delivery temperature to prevent condensation forming (the controller calculates he condensation temperature and limits the delivery temperature to that value plus the value given in this parameter as indicated in Figure 76).

Dewpoint delivery temperature diagram



TVKw Cooling flow temperature setpoint
TTP Dewpoint temperature
TA External temperature
BZ Operating rows

Figure 76 Example of delivery temperature limitation v. relative humidity measured by hygrometer.

The function can be disabled by setting parameter “950” to “ - - - ”.

The humidity sensor must be associated with input H1, which is the hygrostat input. Parameter “5950” (associated with H1) must be set to “Rel room humidity 10V”, and at least one room unit must be installed in the system.

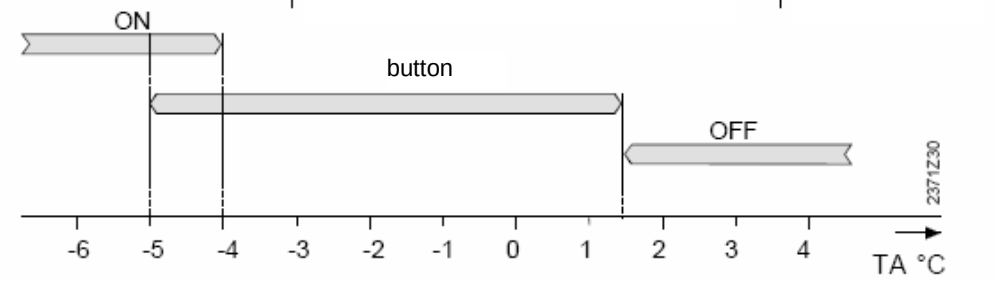
Cooling circuit frost protection:

- Cooling circuit frost protection is always active and cannot be disabled.
- Heating circuit frost protection in cooling mode: If during cooling service the delivery temperature of cooling circuit B1 drops below 5℃, the cooling circuit source is switched off. The cooling source is switched back on when the B1 delivery temperature returns above 7℃ and a delay of 5 minutes has expired. When the frost protection function is active in cooling mode, all requests, whether for cooling or heating, are denied.

System frost protection: the heating circuit pumps (Q2, Q6, Q20) (and condenser pump Q9) are activated in response to the external temperature, even if no heating demand is active.

- If the external temperature is less than -4℃ the pumps are always On.
- If the external temperature is in the range -5℃ t o 1.5 ℃, the pumps are ON for 10 minutes every 6 hours.
- If the external temperature is greater than 1.5℃ the pumps are always OFF.

External temperature	Pump	Diagram
...-4 °C -5...1.5 °C 1.5°C...	Continuously ON ON for 10 minutes at 6 hour intervals Continuously OFF	ON (cycles) OFF



7.7 CONFIGURATION OF ROOM UNITS (RU) AND CONTROL UNITS FOR HEATING AND CONDITIONING CIRCUITS

Introduction:

a. The room units **are optional** and, especially in systems with multiple services, it may be preferable to use only climate curves to control the system:
   - The delivery temperature of each heating circuit is calculated by the "heating curve" as a function of the external temperature and the desired room setpoint.
   - The "heating curve" depends on parameters 720, 1020 and 1320 "heating curve slope" and 721, 1021 and 1321 "heating curve displacement". These parameters are explained in "Parameters useful for regulating the system "Heating circuits configuration" a pagina 83 (see points 6 and 7).
   - The climatic control of each service can be effected by installing room thermostats which control the cut-off valves on the respective plumbing circuits.

b. The AVS37 controller is installed in the Comfort Control Panel (and hence is not easily accessed by the user) and is used to modify:
   - The "Comfort setpoint". See paragraph - AVS37 controller and QAA75 or QAA78 room unit settings using parameters 40 ("Used as"), 42 ("Assignment device 1"), 44 ("Operation HC2") and 46 ("Operation HCP") - a pagina 111.
   - The "Heating mode" (Automatic, Comfort, Reduced or Protection) of circuits C1, C2 and CP. See paragraph - AVS37 controller and QAA75 or QAA78 room unit settings using parameters 40 ("Used as"), 42 ("Assignment device 1"), 44 ("Operation HC2") and 46 ("Operation HCP") - a pagina 111.
   - All configuration parameters (excluded those which are controlled exclusively by PC).

c. Evolved room unit: QAA75 or QAA78 has the following features:
   - Modifies the "Comfort setpoint". See paragraph - AVS37 controller and QAA75 or QAA78 room unit settings using parameters 40 ("Used as"), 42 ("Assignment device 1"), 44 ("Operation HC2") and 46 ("Operation HCP") - a pagina 111.
   - Modifies the "Heating mode" (Automatic, Comfort, Reduced or Protection). See paragraph - AVS37 controller and QAA75 or QAA78 room unit settings using parameters 40 ("Used as"), 42 ("Assignment device 1"), 44 ("Operation HC2") and 46 ("Operation HCP") - a pagina 111.
   - Modifies all configuration parameters (excluding those which can only be accessed via PC and those related to heating/cooling circuits not controlled by the room unit in question).
   - "Influences" the delivery temperature of circuits C1, C2 and CP**:**
     - Normally, each RU is associated with just **one circuit** and its purpose is to influence, together with the heating curve, the circuit's delivery temperature, as a function of the temperature in the room in question.

- Only RU1, normally associated with circuit C1, can alternatively be associated with and hence influence more than one circuit: C1 and C2; C1 and CP; C1, C2 and CP. See paragraph - AVS37 controller and QAA75 or QAA78 room unit settings using parameters 40 (“Used as”), 42 (“Assignment device 1”), 44 (“Operation HC2”) and 46 (“Operation HCP”) - a pagina 111.

d. Basic room unit: QAA55” has the following features:
   - Modifies the “Comfort setpoint”. See paragraph “QAA55 room unit settings using parameters ru1, ru2 and ru3” a pagina 113.
   - Modifies the “Heating mode” (Automatic, Comfort, Reduced or Protection) See paragraph “QAA55 room unit settings using parameters ru1, ru2 and ru3” a pagina 113.
   - “Influences” the delivery temperature of circuits C1, C2 and CP**:**
     - Normally, each RU, including RU1, is associated with just **one circuit** and its purpose is to influence, together with the heating curve, the circuit’s delivery temperature, as a function of the temperature in the room in question. See paragraph “QAA55 room unit settings using parameters ru1, ru2 and ru3” a pagina 113.

QAA55 is preferable to QAA75/78 (especially in case of multi-service installations) when there is no need to, or one prefers not to, make all parameters accessible via the room unit.

In any case, on both types of room unit, access to the parameters, setpoints and heating modes can be locked out (see points f and g a pagina 108.

The heating circuit delivery temperatures are influenced by the temperature sensor in the room unit and the Room influence parameters: 750, 928, 1050 and 1350.

- Parameter “750: Room influence (C1 heating)” (default 20%, range: ---% (disabled) to 100%).
- Parameter “928: Room influence (C1 cooling)” (default 20%, range: ---% (disabled) to 100%).
- Parameter “1050: Room influence (C2 cooling)” (default 20%, range: ---% (disabled) to 100%).
- Parameter “1350: Room influence (CP)” (default 20%, range: ---% (disabled) to 100%).
- The parameter (750, 928, 1050, 1350):
  - if set to ---% (disabled): “Pure climate compensation”; The delivery temperature is calculated by the “heating/cooling curve” as a function of the attenuated external temperature. This compensation requires correct calibration of the “heating/cooling curve”, since the room temperature reference is lacking. With this setting, the delivery temperature is controlled exactly as if there were no room unit.

- If set from 1% to 99%: “Climate compensation with room influence”; the better the room reference (proper selection of the reference room and positioning of the sensor), the greater the influence of the room unit on climate control. A generally good setting would be:
  - around 20%: unfavourable room reference conditions.
  - around 60%: good room reference conditions.
- If set to 100%: “Pure room compensation”; the delivery temperature is calculated as a function of: the room temperature setpoint, the current room temperature and the progress of the room temperature over time (e.g.: a slight increase in room temperature causes an immediate diminution in the delivery temperature).

The parameter (750, 928, 1050, 1350) can be activated (1% to 100%) if there are no thermostatic valves in the reference room (the one in which the room sensor is located). If they are present, they must be set to completely open.

Heating/cooling circuits without room units must have parameters (750, 928, 1050, 1350) deactivated.

e. The room unit/s **are not** strictly necessary for the operation of circuits C1, C2 and CP, and in some cases may be undesirable, inasmuch as:

- the room unit only has a corrective effect on the delivery temperature of one or more heating/cooling circuits.
- The use of room units to influence the delivery temperature of one or more heating/cooling circuits presupposes that there is a “reference room” served by those circuits, in which the RU can be installed.
- The “Comfort setpoint” and the “Heating mode” as well as he hating/cooling circuit configuration parameters can also be modified by the controller.

Up to a **maximum** of **three** room units can be installed, independently of whether they are all of the same type (QAA75, QAA78, QAA55) or mixed.

f. Each room unit or controller must be locked/unlocked using the “lock controls” function to prevent the user modifying the “comfort setpoint”, the “heating mode”, the DHW mode or operating the presence key.
Parameter “26” serves to:
  - “lock the controls” of the room unit or controller when “26” = “On”.
  - “unlock the controls” of the room unit or controller when “26” = “Off”.

g. The potential to modify the configuration parameters of each room unit (QAA75 / QAA78) or controller can be locked/unlocked with parameter “27”.
Parameter ““27” serves to:
- Access the configuration parameters and modify them if “27” = “Off”
- Access the configuration parameters but not modify them if “27” = “On” (read only mode).

Each room unit and controller must be “locked/unlocked” before it can be disabled/enabled.

To disable both the controls and access to the parameters of a room unit, set parameter “26” of the unit in question to ON; then set its parameter “27” to ON.

If parameter “27” is set to “On”, to temporarily allow modification of the unit’s parameters, enter the menu you are interested in, then hold down “OK” and “ESC” together for 3 seconds. This temporary access for modification of parameter values ceases as soon you exit programming mode.
To enable permanent access for modification of parameter values, first implement the temporary access described above, then set parameter “27” to “Off”.

The QAA55 room unit can be locked/unlocked using parameter P2 (to access P2: hold down the presence key for 3 seconds until the unit displays “RU”; now press the presence key again and turn the knob to select P2 = 0 or P2 = 1; wait for the text to disappear from the display):

If P2 = 0 (OFF): all functioning elements are enabled (factory setting).

If P2 = 1 (ON): The following functioning elements are disabled:

- Switching of heating circuit mode.
- Modification of the comfort setpoint
- Switching of operating level (presence key).

Detailed description of room unit settings

The following paragraphs give a detailed description of the possible settings for a single "QAA75, QAA78, QAA55" room unit or the "AVS37" controller with all heating circuits (1, 2, P).

The configurations given in the following paragraphs ae given schematically in Table 9 a pagina 115.

The following parameters are used for the configurations:

- "40: used as" (only accessible for "QAA75, QAA78"); selects the type of room unit:
  - If "40" = "Room unit 1", the room unit in question becomes room unit 1.
  - If "40" = "Room unit 2", the room unit in question becomes room unit 2.
  - If "40" = "Room unit P", the room unit in question becomes room unit P.

The "QAA55" parameter corresponding to "40" is parameter "ru":

- If "ru" = "ru1", the room unit in question becomes room unit 1.
- If "ru" = "ru2", the room unit in question becomes room unit 2.
- If "ru" = "ru3", the room unit in question becomes room unit P.

- "42: Assignment device 1" ("QAA75, QAA78" only) is active only when "40" = "Room unit 1", and selects the circuits influenced by "Room unit 1":
  - If "42" = "Heating circuit 1", RU 1 influences C1 only.
  - If "42" = "Heating circuits 1 and 2", RU 1 influences both C1 and C2.
  - If "42" = "Heating circuits 1 and P", RU 1 influences both C1 and CP.
  - If "42" = "All heating circuits", RU 1 influences all heating circuits.

If parameter "40" is not configured as "Room unit 1", parameter "42" is disabled.

- "44: Operation HC2": (only accessible for "QAA75, QAA78"); active only if "40" = "Room unit 1" and "42" = "Heating circuits 1 and 2" or "42" = "All heating circuits"; it selects two different setpoint and heating modes for C2:
  - if "44" = "Commonly with HC1", the setpoint set by turning the knob and the heating mode (Automatic, Comfort, Reduced or Protection) set by pressing the button are common to both circuits (C1 and C2);
  - if "44" = "Independently", when you turn the knob or press the mode button you area asked to specify which circuit you are configuring (C1 or C2); you can thus set different setpoints and heating modes for the two circuits.

- "46": Operation HCP": (accessible only for "QAA75, QAA78"), is active only if "40" = "Room unit 1" and "42" = "Heating circuits 1 and P" or "42" = "All heating circuits"; it sets the setpoint and mode for CP:
  - if "46" = "Commonly with HC1", the setpoint set by turning the knob and the heating mode (Automatic, Comfort, Reduced or Protection) set by pressing the button are common to both circuits (C1 and CP);
  - if "46" = "Independently", turning the knob or pressing the mode key modifies only the setting for circuit C1 (or C1 and C2), whereas to modify the settings for CP you have to go through the menus.

If more than one room unit is present, each of them must be configured appropriately, obviously without causing conflicts between them:

- Do not configure two or more room units with the same function (e.g.: two units, both configured as "Room unit 1"). This generates error 84: BSB address collision.
- Do not add or configure a room unit for circuit 2 or P (RU2, RUP), if RU1 is already configured to also influence 2 or P; for example:
  - if RU1 has parameter 42 set to "All heating circuits", do not configure an RU2 nor an RUP;
  - if RU1 has parameter 42 set to "Heating circuits 1 and P", do not configure an RUP; on the other hand, you may configure an RU2.

  In general, do not configure any two or more units to influence the control of any given circuit.

The above room unit and controller configurations for "Heating circuit 1" can also be used by circuit 1 in conditioning mode. Circuits 2 and P, unlike circuit 1, cannot be used in conditioning mode.

- **example**: if RU1 is configured to modify the "Comfort setpoint" for circuits 1 and 2 in heating mode, it can modify the "Comfort setpoint" in conditioning for circuit 1 only.

AVS37 controller and QAA75 or QAA78 room unit settings using parameters 40 ("Used as"), 42 ("Assignment device 1"), 44 ("Operation HC2") and 46 ("Operation HCP"):

The following settings must be made on the controller or room unit which they are to effect.

1. **Room unit QAA75 or QAA78:**
   - Parameter 40 ("Used as") = "Room unit 1" (RU1):
     - and parameter 42 ("Assignment device 1") = "Heating circuit 1":
       - Influences only heating circuit 1 (C1) delivery temperature by means of the temperature sensor in room unit 1 and the parameter "750: Room influence (C1)".
       - Press the button on RU1 to modify the "Heating mode" of only heating circuit 1 (see Note 1 a pagina 114).
       - Turn the knob on RU1 to modify the "Comfort setpoint" of only heating circuit 1 (see Note 3 a pagina 114).

         The setpoint can also be modified via parameter 710.
       - Parameters 42, 44 and 46 are disabled (see Note 5 a pagina 115), and so RU1 has no effect on C2 or CP.
     - and parameter 42 ("Assignment device 1") = "Heating circuits 1 and 2":

- Influences heating circuit 1 and 2 delivery temperature by means of the temperature sensor in room unit 1 and parameter 750 “room influence (C1 and C2)” and 1050:
- if parameter 44 (“Operation HC2”) = “Commonly with HC1”:
  - Press the button on RU1 to modify the “Heating mode” of **both** heating circuit C1 and C2 (see Note 1 a pagina 114).
  - Turn the knob on RU1 to modify the “Comfort setpoint” of **both** heating circuit C1 and C2 (see Note 3 a pagina 114).

    However, it is possible to set the setpoints of the two circuits independently using parameters 710 (circuit C1) and 1010 (circuit C2).

- if parameter 44 (“Operation HC2”) = “Independently”:
  - Press the button on RU1, and you will be prompted to specify which circuit (C1 or C2) you want to configure; you can then set the heating modes of circuits C1 and C2 **separately** (see Note 2 a pagina 114).
  - In the same way, turn the knob on RU1 to select circuit C1 or C2 and thus modify the “Comfort setpoint” **separately** for the two circuits (see Note 4 a pagina 115).

    It is also possible to set the setpoints of the two circuits using parameters 710 (circuit C1) and 1010 (circuit C2).

- Parameter 46 (“Operation HCP”) is disabled (see Note 5 a pagina 115), and so RU1 has no effect on CP.

➢ and parameter 42 (“Assignment device 1”) = “Heating circuits 1 and P”:

- This influences the heating circuit 1 and P delivery temperatures by means of the temperature sensor in room unit C1 and the parameters 750 and 1350 (“room influence C1 and CP”).
- Parameter 44 (“Operation HC2”) is disabled (see Note 5 a pagina 115), and so RU1 has no effect on C2.
- if parameter 46 (“Operation HCP”) = “Commonly with HC1”:
  - Press the button on RU1 to modify the “Heating mode” of **both** heating circuit C1 and CP (see Note 1 a pagina 114).
  - Turn the knob on RU1 to modify the “Comfort setpoint” of **both** heating circuit C1 and CP (see Note 3 a pagina 114).

    However, it is possible to set the setpoints of the two circuits independently using parameters 710 (circuit C1) and 1310 (circuit CP).

- if parameter 46 (“Operation HCP”) = “Independently”:
  - Press the button on RU1 to modify the “Heating mode” of only heating circuit C1 (see Note 1 a pagina 114). circuit CP’s heating mode can only be set via parameter 1300.
  - In the same way, turn the knob on RU1 to modify the “Comfort setpoint” of only heating circuit C1 (see Note 3 a pagina 114). circuit CP’s comfort setpoint can only be set via parameter 1310.

    The C1 setpoint can also be modified via parameter 710.

- ➢ and parameter 42 = “All heating circuits”:
  - This influences the heating circuit 1, 2 and P delivery temperatures by means of the temperature sensor in room unit 1 and parameters 750, 1050 and 1350 “room influence (C1, C2 and CP)”.
  - Parameters 44 and 46 are both available and the settings “Commonly with HC1” and “Independently” have the same meanings as described above; the two parameters can take the same value or different values, depending on the requirements of the application.

- Parameter 40 (“Used as”) = “Room unit 2” (RU2):
  - Influences only the heating circuit C2 delivery temperature by means of the temperature sensor in room unit RU2 and parameter 1050 (Room influence C2).
  - Press the button on RU2 to modify the “Heating mode” of only heating circuit C2 (see Note 1 a pagina 114).
  - In the same way, turn the knob on RU2 to modify the “Comfort setpoint” of only heating circuit C2 (see Note 3 a pagina 114).

     The C2 setpoint can also be modified via parameter 1010.
  - Parameters 42, 44 and 46 are disabled (see Note 5 a pagina 115), and so RU2 has no effect on C1 or CP.

- Parameter 40 (“Used as”) = “Room unit P”(RUP):
  - Influences only the heating circuit CP delivery temperature by means of the temperature sensor in RUP and parameter 1350 (Room influence CP).
  - Press the button on RUP to modify the “Heating mode” of only heating circuit CP (see Note 1 a pagina 114).
  - In the same way, turn the knob on RUP to modify the “Comfort setpoint” of only heating circuit CP (see Note 3 a pagina 114).

     The CP setpoint can also be modified via parameter 1310.
  - Parameters 42, 44 and 46 are disabled (see Note 5 a pagina 115), and so RUP has no effect on C1 or C2.

2. **AVS37 control unit:**
   The AVS37 is always defined as the control unit for all circuits, hence parameter 42 is not available.
   Parameters 44 and 46 are both available and the settings “Commonly with HC1” and “Independently” have the same meanings as described above for room units QAA75 and QAA78; the two parameters can take the same or different values, depending on the application.

QAA55 room unit settings using parameters ru1, ru2 and ru3:

- If ru = 1 “Room unit is addressed as RU1”:
  - It influences only the heating circuit C1 delivery temperature by means of the temperature sensor in room unit RU1 and parameter 750 (Room influence C1).

- Press the button on RU1 to modify the “Heating mode” of only heating circuit C1 (see Note 1 sotto).
- Turn the knob on RU1 to modify the “Comfort setpoint” of only heating circuit C1 (see Note 3 sotto).

  The C1 setpoint can also be modified via parameter 710.
- RU1 has no effect on C2 and CP.

- If ru = 2 “Room unit is addressed as RU2”:
  - It influences only the heating circuit C2 delivery temperature by means of the temperature sensor in room unit RU2 and parameter 1050 (Room influence C1).
  - Press the button on RU2 to modify the “Heating mode” of only heating circuit C2 (see Note 1on page 114).
  - Turn the knob on RU2 to modify the “Comfort setpoint” of only heating circuit C2 (see Note 3on page 114).

    The C2 setpoint can also be modified via parameter 1010.
  - RU2 has no effect on C1 and CP.
- If ru = 3 “Room unit is addressed as RUP”:
  - It influences only the heating circuit CP delivery temperature by means of the temperature sensor in RUP and parameter 1350 (Room influence CP).
  - Press the button on RUP to modify the “Heating mode” of only heating circuit CP (see Note 1on page 114).
  - Turn the knob on RUP to modify the “Comfort setpoint” of only heating circuit CP (see Note 3on page 114).

    The CP setpoint can also be modified via parameter 1310.
  - RUP has no effect on C1 and C2.

- **Note 1**: To modify the “ Heating mode” use the key 

.

- **Note 2**: To modify the “Heating mode”:

  1. Press the key 

.
  2. Turn the knob  to obtain the number of the desired heating circuit (1 or 2) and press the button 

.
  3. Use the key 

 to select the desired heating modes and press the key 

.

- **Note 3**: To modify the “Comfort setpoint” turn the knob  to the desired value and press the key 

.

- **Note 4**: To modify the “Comfort setpoint”:

  1. Turn the knob  to obtain the number of the desired heating circuit (1 or 2) and press the button  .
  2. Turn the knob  to the desired value and press the key  .

- **Note 5**: The following table summarises the relationships between the room and control units and parameters 40, 42, 44, 46 and 48.

Functions					
40	**42**	**44**	**46**	**48**	**54**
Room unit 1	Heating circuit 1				X
	Heating circuits 1 and 2	X		X	X
	Heating circuits 1 and P		X	X	X
	All Heating circuits	X	X	X	X
Room unit 2					X
Room unit P					X
Control unit 1	Heating circuit 1				
	Heating circuits 1 and 2	X		X	
	Heating circuits 1 and P		X	X	
	All Heating circuits	X	X	X	
Control unit 2					
Control unit P					
Service unit					

Table 9

SECTION 8 EXAMPLE INSTALLATIONS

SECTION 7 “Configuration” treats the configuration of the various system blocks to obtain the full range of solutions in detail. This section describes two specific examples, with the aim of further clarifying the configuration process.

8.1 SYSTEM EXAMPLE 1

The system produces hot water for a mixed heating circuit (C1), while also producing DHW using the same E^3 unit employed for heating. It does not use room units.

☞ For the **plumbing connections** to the Siemens mixer valves, refer to SECTION 4 “valve connections”.

8.1.1 Plumbing diagram

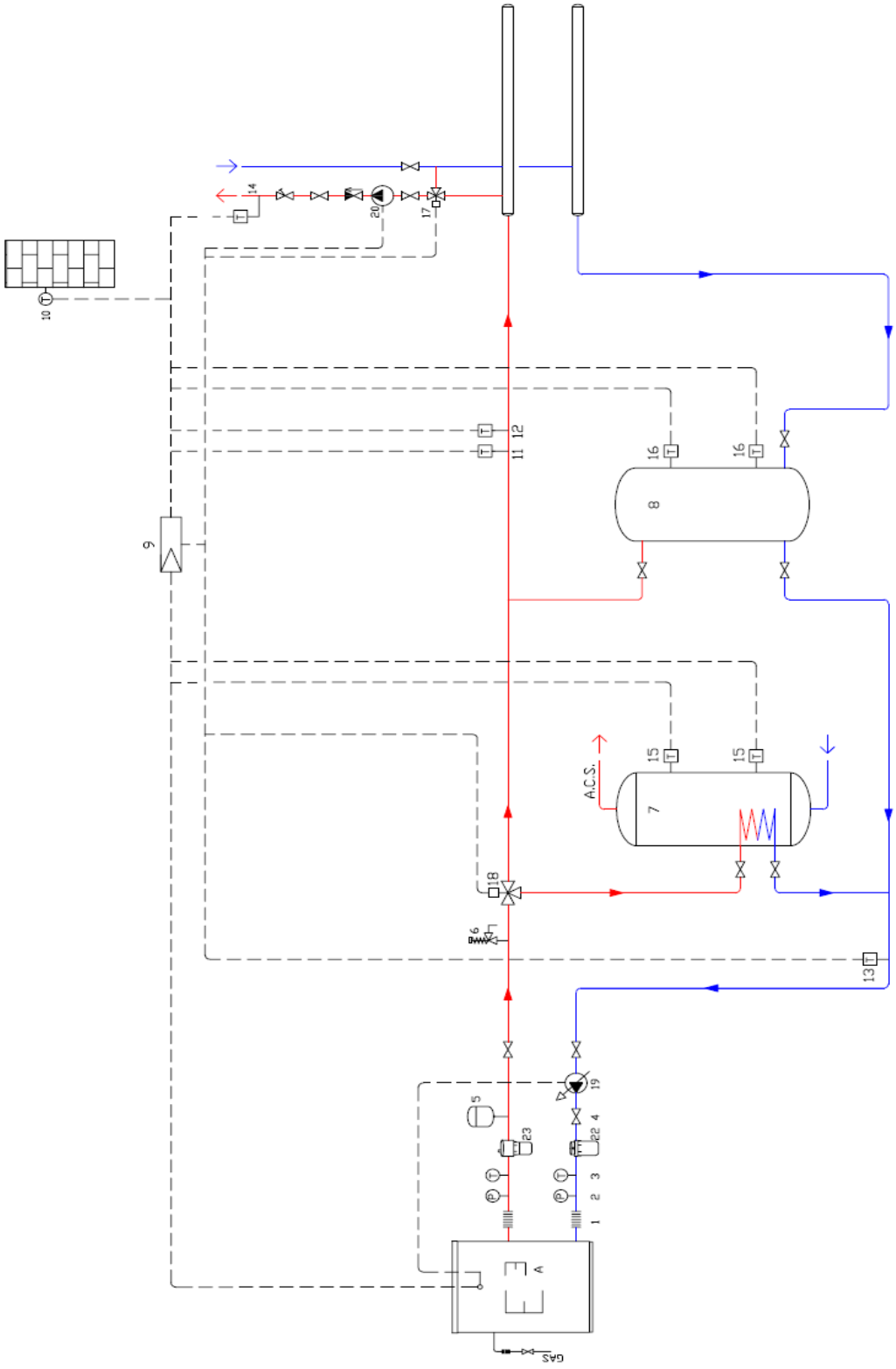


Figure 77 Plumbing diagram

☞ For the **electrical connections** of the RVS61 and the AVS75 expansion units, refer to paragraph 8.1.2 Wiring diagram a pagina 119.

8.1.2 Wiring diagram

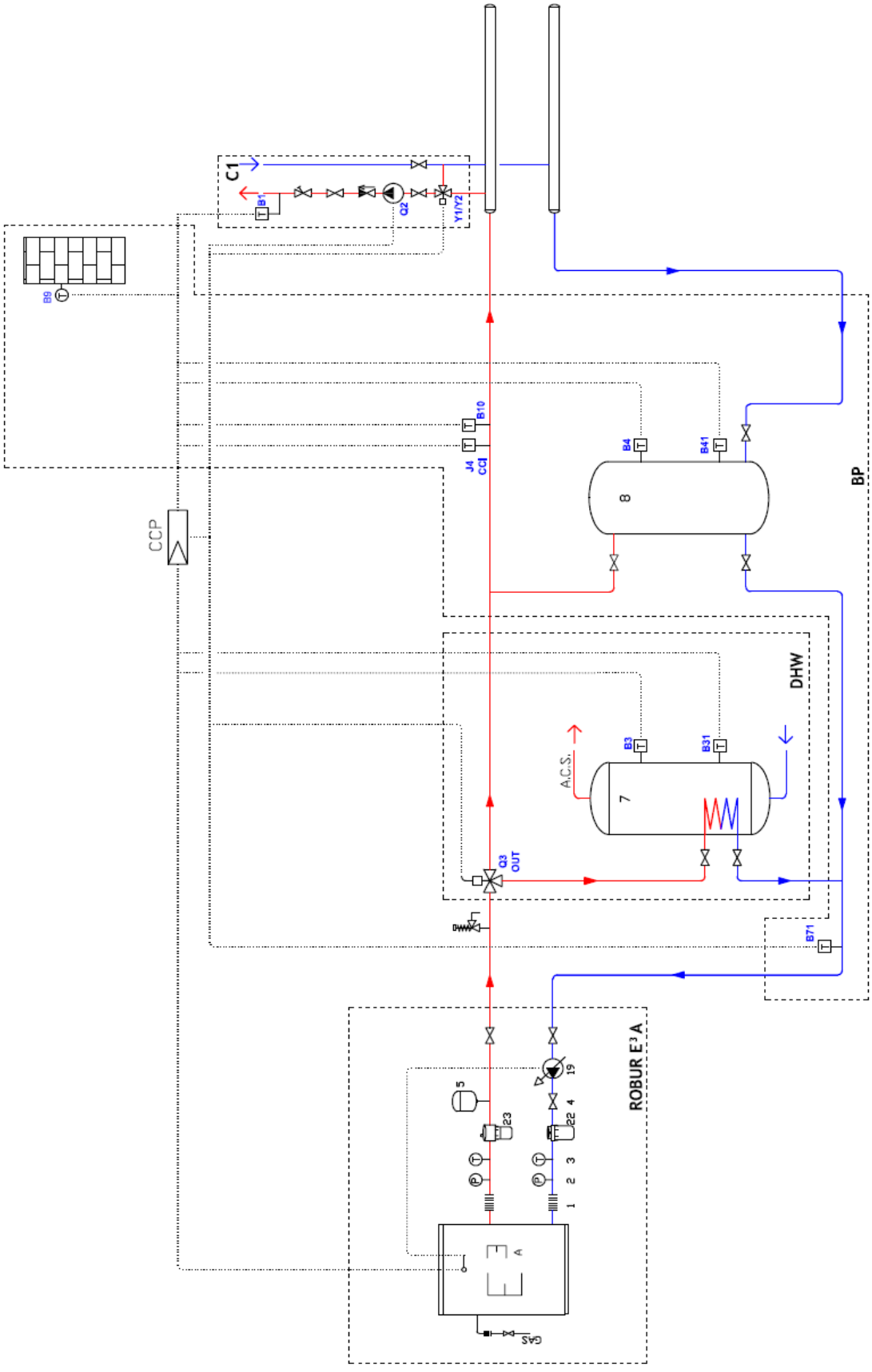


Figure 78 Wiring diagram schematic

☞ The temperature sensor connections are detailed in paragraph 3.2 Temperature sensor connection a pagina 28.

☞ The connections of the pumps to the devices are detailed in paragraph 3.3 Water circulation pump connection a pagina 29.

☞ The connections of the mixer/diverter valves are detailed in paragraph 3.4 Mixer/diverter valve connection a pagina 32.

☞ References regarding the terminology used in the diagrams to identify the sensors, valves and pumps, along with the technical data for the equipment, are given in APPENDIX A - Legend and technical data a pagina 137.

8.1.3 Unit board configuration

PARAMETERS TO BE SET FOR THE SYSTEM ILLUSTRATED IN FIGURE 77		
	S61 PARAMETER SETUP	
UNIT	40 BOARD CODE (COMMUNICATION WITH CCI)	150 HOT UNIT ID
E 3	000	1

For the settings, refer to the unit's user manual.

8.1.4 Comfort Control configuration

The operating parameters can be configured using the AVS37 interface or PC (the device is already configured with the Robur basic factory settings, which summarised in Table - 10 Robur basic configurations table a pagina 155).

8.1.5 System components

1. BP - Base block:

The solution does not require modification to the Base Block parameters.

However, it must be hooked up (I/O) as indicated in paragraph 7.1 BP - Basic system configuration a pagina 60.

2. Robur E^3 - Robur unit block:

The units employed in the system (E^3 A) are of the air/water type, and thus do not feature passive cooling.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

  The E^3-A units do not require other inputs than those used in paragraph 7.1 BP - Basic system configuration a pagina 60.

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

  All solutions based on E^3-A type units require addition of Y22 to the outputs listed in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
RVS61	QX5 - N*	Y22	N.O. RELAY ~230V

** Output already cabled to Robur panel.*

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	5800: HEAT SOURCE/THERMAL SOURCE	"AIR"
CONFIGURATION	5807: COOLING SERVICE	"OFF"
CONFIGURATION	5895: RELAY OUTPUT QX5	"Y22"

3. DHW: DHW block

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
RVS61	B3 - M	B3	WATER SENSOR (NTC 10K)
RVS61	BX4 - M	B31	• WATER SENSOR (NTC 10K) IF SENSOR B31 IS PRESENT. • "NONE" IF B31 SENSOR NOT PRESENT.

Sensor B31 is given in the Robur schematics but is optional, whereas B3 is obligatory if DHW service is required. ParagraphParameters useful for regulating the system "DHW block" a pagina 70 gives the effects of using sensor B31.

- Outputs Q3 and $Q3_{OUT}$ are to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
PLC	Q3	Q3 OUT	N.O. CONTACT
RVS61	Q3 - N*	Q3	N.O. RELAY ~230V

** Output already cabled to Robur panel.*

Add "5022" and "5933" to the parameters listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
DHW STORAGE TANK	5022: TYPE OF FILLING.	• "WITH B3/B31" IF SENSORS B3 AND B31 ARE USED FOR FILLING DHW WITH THE HEAT PUMP. • "WITH B3" IF ONLY SENSOR B3 IS USED FOR FILLING DHW WITH THE HEAT PUMP.
CONFIGURATION	5933: SENSOR INPUT BX4	• "B31" IF SENSOR B31 IS PRESENT. • "NONE" IF B31 SENSOR NOT PRESENT.

4. C1: C1/C2 block

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
RVS61	B1 - M	B1	WATER SENSOR (NTC 10K)

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
RVS61	Y1 - N	Y1	MIXER VALVE ~230V C1
RVS61	Y2 - N	Y2	MIXER VALVE ~230V C1
RVS61	Q2 - N	Q2	CIRCUIT C1 PUMP

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	5710: HEATING CIRCUIT 1	"ON" TO ACTIVATE HEATING IN C1.
CONFIGURATION	5711: COOLING CIRCUIT 1	"OFF" TO DEACTIVATE COOLING IN C1.

On completion of the configuration of a system with the SIEMENS RVS61, we recommend switching the electrical power supply (~230V) off and on again to activate the new settings.

8.1.6 Configuration of the Comfort Control Interface [CCI] (D-LBR 526) Id:960

Configuring equipment with the CCI: “Device configuration”;

- CCI → installation → menu → Device configuration

At this point, the system is operational.

For the parameter settings, refer to the user and programming manual for the Comfort Control Interface [CCI] (D-LBR 526).

8.2 SYSTEM EXAMPLE 2

For the part of the system regarding solar power, consult the Siemens documentation. Implementation of this part of the system is not supported by Robur.

The system produces hot water for two mixed heating circuits (C1 and C2) and a direct circuit (CP) while also producing DHW using the same units employed for heating and a boiler for supplementary hot water production. Heat recovery is done underground using geothermal probes.

The system also uses two room units (RU1 and RUP).

For the **plumbing connections** to the Siemens mixer valves, refer to SECTION 4 “valve connections”.

8.2.1 Plumbing diagram

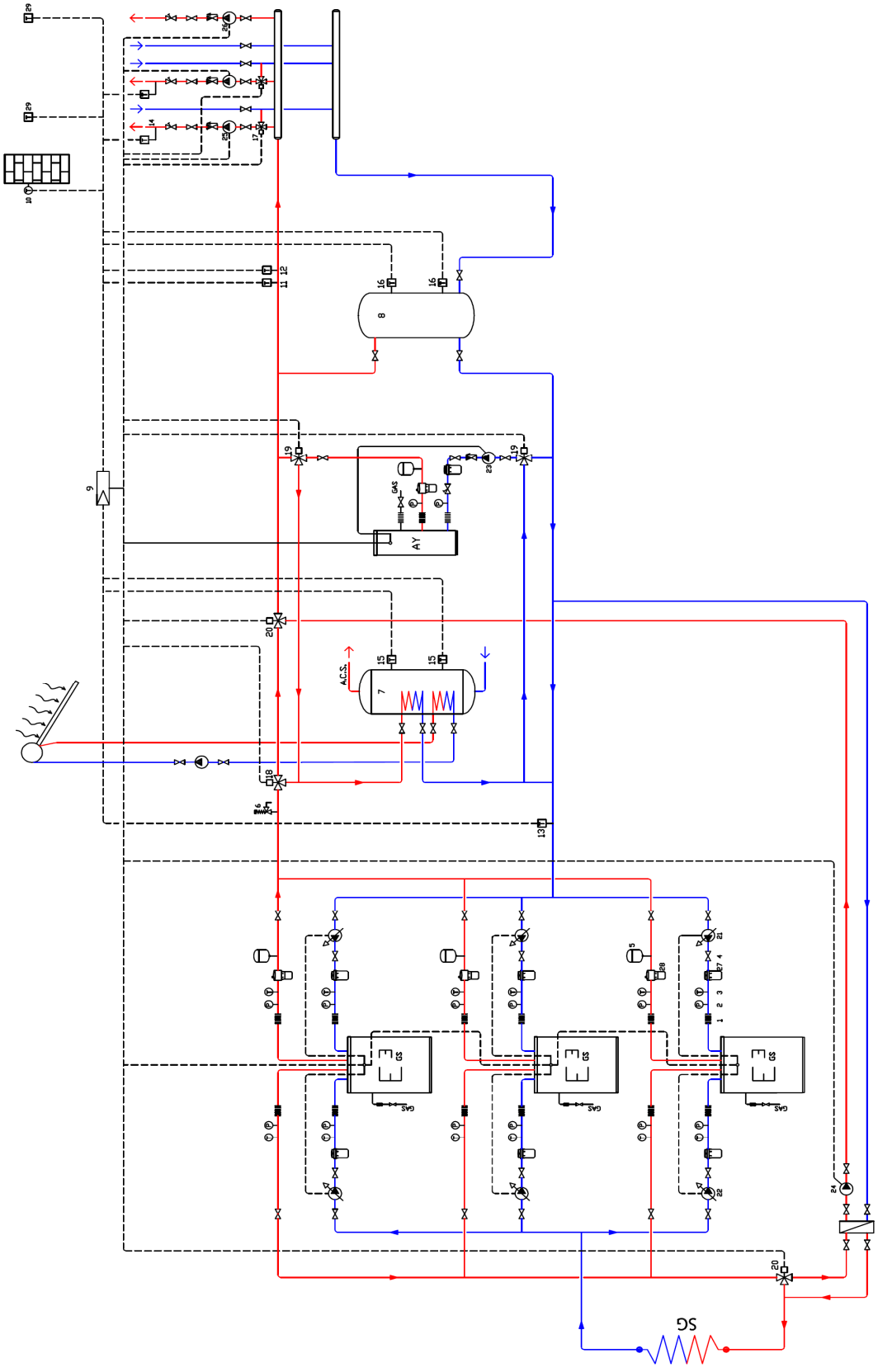


Figure 79 Plumbing diagram

For the **electrical connections** of the RVS61 and the AVS75 expansion units, refer to paragraph 8.2.2 Wiring diagram a pagina 126.

8.2.2 Wiring diagram

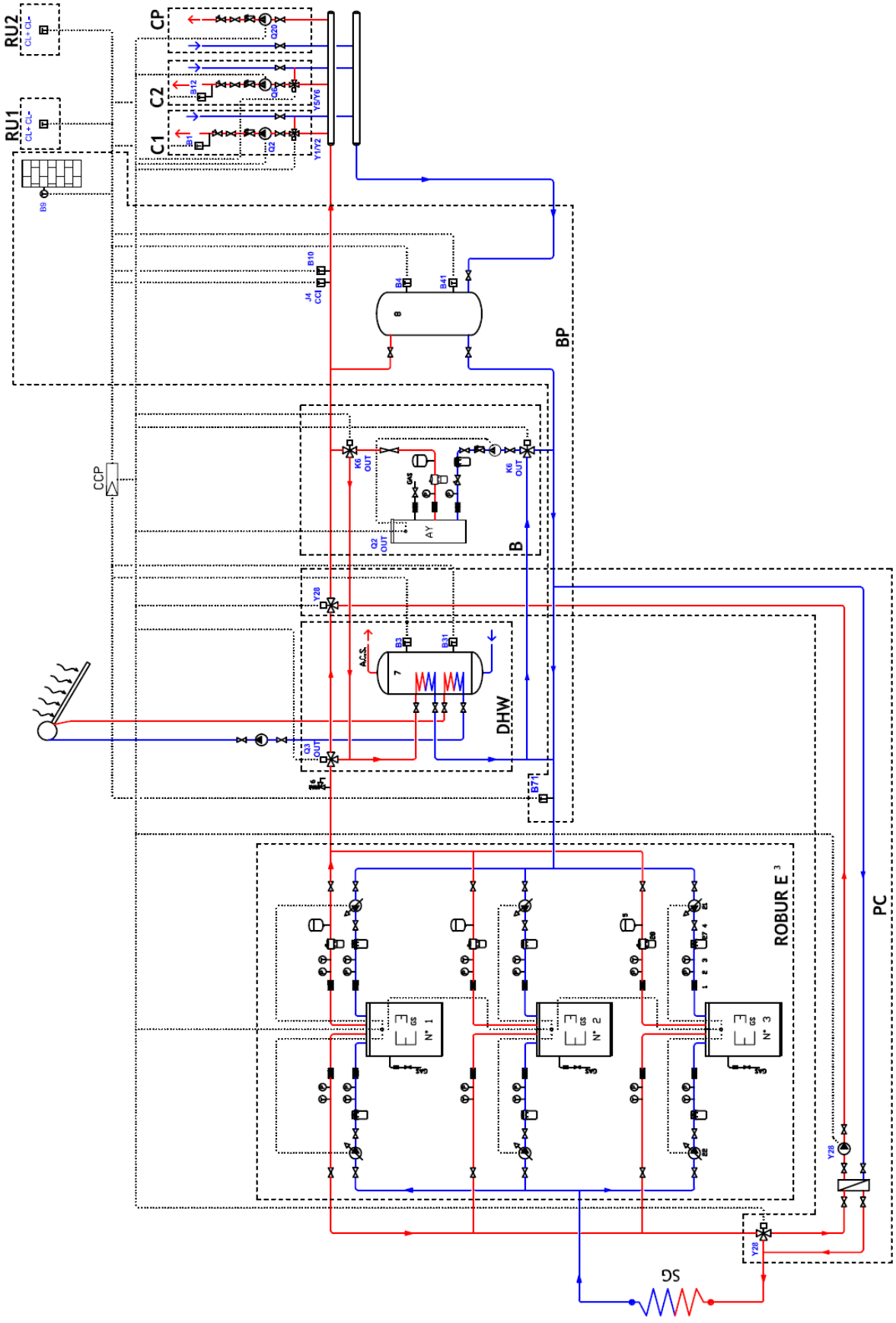


Figure 80 Wiring diagram schematic

☞ The room unit connections are detailed in paragraph 3.1 Room unit connection a pagina 27.

☞ The temperature sensor connections are detailed in paragraph 3.2 Temperature sensor connection a pagina 28.

☞ The connections of the pumps to the devices are detailed in paragraph 3.3 Water circulation pump connection a pagina 29.

☞ The connections of the mixer/diverter valves are detailed in paragraph 3.4 Mixer/diverter valve connection a pagina 32.

☞ References regarding the terminology used in the diagrams to identify the sensors, valves and pumps, along with the technical data for the equipment, are given in APPENDIX A - Legend and technical data a pagina 137.

8.2.3 Unit board configuration

PARAMETERS TO BE SET FOR THE SYSTEM ILLUSTRATED IN FIGURE 79			
	S61 PARAMETER SETUP		
UNIT	40 BOARD CODE (COMMUNICATION WITH CCI)	60 COLD UNIT ID	150 HOT UNIT ID
E 3 N. 1	000	0	0
E 3 N. 2	001	0	0
E 3 N. 3	002	0	0


For the settings, refer to the unit's user manual.

8.2.4 Comfort Control configuration


The operating parameters can be configured using the AVS37 interface or PC (the device is already configured with the Robur basic factory settings, which summarised in Table - 10 Robur basic configurations table a pagina 155).

8.2.5 System components

1. BP - basic system:

The solution does not require modification to the Base Block parameters.

However, it must be hooked up (I/O) as indicated in paragraph 7.1 BP - Basic system configuration a pagina 60.

2. E^3 - Robur machines:

The units employed in the system (E^3 GS/WS) are of the water/water type, and hence feature passive cooling (active cooling is not currently available).

In paragraph 7.2 E^3 - Robur machine configuration a pagina 64 we give the general procedures for configuring the Robur equipment in the system.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

  The E^3-WS and E^3-GS with passive cooling, require a hygrostat/hygrometer connection:

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
RVS61	H1 - M	HYGROSTAT / HYGROMETER	• HYGROSTAT NC-NO • HYGROMETER 0-10V

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

The E^3-WS and E^3-GS with passive cooling do not require you to add other outputs to those for the basic configuration.

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	5800: HEAT SOURCE/THERMAL SOURCE	• "WATER" IF E^3-WS. • "GLYCOLATED WATER" IF E^3-GS.
CONFIGURATION	5807: COOLING SERVICE	"4-PIPE SYSTEM"
CONFIGURATION	5895: RELAY OUTPUT QX5	"NONE"
CONFIGURATION	5950: FUNCTION INPUT H1	• "RELATIVE HUMIDITY 10V" IF E^3-WS OR E^3-GS WITH HYGROMETER. • "DEWPOINT MONITOR" OR "FLOW TEMP SETP INCR HYGRO" IF E^3-A, E^3-WS OR E^3-GS WITH HYGROSTAT.

3. PC:

The units employed in the system (E^3 GS/WS) are of the water/water type, and hence feature passive cooling.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

  The E^3 units do not require other inputs than those used in paragraph 7.1 BP - Basic system configuration a pagina 60.

- The E^3-WS and E^3-GS units with passive cooling units require addition of Y28 to the outputs listed in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
RVS61	QX6 - N	Y28	N.O. RELAY ~230V

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	5896: RELAY OUTPUT QX6	Y28

4. DHW:

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
RVS61	B3 - M	B3	WATER SENSOR (NTC 10K)
RVS61	BX4 - M	B31	• WATER SENSOR (NTC 10K) IF SENSOR B31 IS PRESENT. • "NONE" IF B31 SENSOR NOT PRESENT.

Sensor B31 is given in the Robur schematics but is optional, whereas B3 is obligatory if DHW service is required. ParagraphParameters useful for regulating the system "DHW block" a pagina 70 gives the effects of using sensor B31.

- Outputs Q3 and $Q3_{OUT}$ are to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
PLC	Q3	$Q3_{OUT}$	N.O. CONTACT
RVS61	Q3 - N*	Q3	N.O. RELAY ~230V

** Output already cabled to Robur panel.*

Add "5022" and "5933" to the parameters listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
DHW STORAGE TANK	5022: TYPE OF FILLING.	• "WITH B3/B31" IF SENSORS B3 AND B31 ARE USED FOR FILLING DHW WITH THE HEAT PUMP. • "WITH B3" IF ONLY SENSOR B3 IS USED FOR FILLING DHW WITH THE HEAT PUMP.
CONFIGURATION	5933: SENSOR INPUT BX4	• "B31" IF SENSOR B31 IS PRESENT. • "NONE" IF B31 SENSOR NOT PRESENT.

5. B - Boiler for heating/DHW integration to heat pump:

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- No inputs need be configured in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
PLC	Q2	Q2 $_{PLC}$ (BOILER ENABLE)	N.O. CONTACT
PLC	Q4	K6 OUT **	N.O. CONTACT
RVS61	QX1 - N*	K25	N.O. RELAY ~230V
RVS61	QX2 - N*	K26	N.O. RELAY ~230V
PLC	Q1*	Q1 $_{PLC}$ (CCI BOILER ENABLE)	N.O. CONTACT
RVS61	QX3 - N*	K6	N.O. RELAY ~230V

** Output used in Robur panel.*

*** Used only in case of DHW and if the boiler is used to supplement DHW production*

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
DHW STORAGE TANK	5060: EL IMM HEATER OPTG MODE	"SUBSTITUTE"
CONFIGURATION	5890: RELAY OUTPUT QX1	K25
CONFIGURATION	5891: RELAY OUTPUT QX2	K26
CONFIGURATION	5892: RELAY OUTPUT QX3	K6 **

*** Used only in case of DHW and if the boiler is used to supplement DHW production*

6. C1:

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
RVS61	B1 - M	B1	WATER SENSOR (NTC 10K)

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
RVS61	Y1 - N	Y1	MIXER VALVE ~230V C1
RVS61	Y2 - N	Y2	MIXER VALVE ~230V C1
RVS61	Q2 - N	Q2	CIRCUIT C1 PUMP

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	5710: HEATING CIRCUIT 1	"ON" TO ACTIVATE HEATING IN C1.
CONFIGURATION	5711: COOLING CIRCUIT 1	"OFF" TO DEACTIVATE COOLING IN C1.

7. C2:

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- Inputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60:

DEVICE:	POSITION:	NAME OF SENSOR:	TYPE OF SENSOR:
AVS75 MODULE 2	BX21 - M	B12	WATER SENSOR (NTC 10K)

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
AVS75 MODULE 2	QX21 - N	Y5	MIXER VALVE ~230V C2
AVS75 MODULE 2	QX22 - N	Y6	MIXER VALVE ~230V C2
AVS75 MODULE 2	QX23 - N	Q6	CIRCUIT C2 PUMP

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	6021: EXPANSION MODULE FUNCTION 2	HEATING CIRCUIT 2
CONFIGURATION	5715: HEATING CIRCUIT 2	ON

8. CP:

The points given below define: the inputs, outputs and parameters to be set for the system under consideration.

- No inputs need be configured in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

- Outputs to be used in addition to those specified in paragraph 7.1 BP - Basic system configuration a pagina 60.

DEVICE:	POSITION:	NAME OF OUTPUT:	TYPE OF OUTPUT:
AVS75 MODULE 1	QX21 - N	Q20	CIRCUIT CP PUMP

Add the following values to those listed in Table - 10 Robur basic configurations table a pagina 155:

MENU:	PARAMETER:	VALUE:
CONFIGURATION	6030: RELAY OUTPUT QX21	Q20

9. RU1 and RUP:

The following table gives an **example** in which:

- RU1 influences circuits 1 and 2 by means of the temperature sensor in RU1.
- RUP influences only circuit P by means of the temperature sensor in RUP.
- The control unit (AVS37...) modifies the “Comfort setpoint” of both heating circuit C1 and C2 (by turning the knob  on the room unit).
- The control unit (AVS37...) modifies the “heating mode” of both heating circuit C1 and C2 (using the key  on the room unit).
- RU1 modifies the “Comfort setpoint” of C1 and C2 separately (with the knob  on the room unit).
- RU1 modifies the “Heating mode” of C1 and C2 separately (with the button  on the room unit).
- RUP modifies the “Comfort setpoint” of CP only (with the knob  on the room unit).

- RUP modifies the "Heating mode" of CP only (with the button  on the room unit).

UNIT FROM WHICH TO MAKE THE SETTINGS	PARAMETERS AND SETTINGS:			
	40 ("USED AS")	42 ("ASSIGNMENT DEVICE 1")	44 ("OPERATION HC2")	46 ("OPERATION HCP")
CONTROL UNIT (AVS37...)			TOGETHER WITH C1	TOGETHER WITH C1
ROOM UNIT 1 (QAA75.../78...)	ROOM UNIT 1	HEATING CIRCUITS 1 AND 2	INDEPENDENTLY	---
ROOM UNIT 2 (QAA75.../78.../55...)	ROOM UNIT P*	---	---	---

** If used Unit QAA55... Hold down the Presence key for 3 seconds and turn the knob to select RU3; wait for the text to disappear from the display.*

It is important to recall that the QAA55 room unit does not provide for configuration of several circuits at a time (e.g. C1 and C2) and hence for influencing their delivery temperatures together (see QAA55 room unit settings using parameters ru1, ru2 and ru3" a pagina 113).

After having adjusted the system, view the "Parameters useful for system adjustment" given at the end of each appendix (refer to the Siemens manual for the use of applications not described in this manual).

On completion of the configuration of a system with the SIEMENS RVS61, we recommend switching the electrical power supply (~230V) off and on again to activate the new settings.

8.2.6 Configuration of the Comfort Control Interface [CCI] (D-LBR 526) Id:960

Configuring equipment with the CCI: "Device configuration";

- CCI → installation → menu → Device configuration

At this point, the system is operational.

For the parameter settings, refer to the user and programming manual for the Comfort Control Interface [CCI] (D-LBR 526).

SECTION 9 OTHER POSSIBLE SETTINGS

If the heat pump should not function correctly, the emergency operation may be started up.

This operating mode allows the system to operate with the integration boiler (if present), or by activating any potential electrical resistances (if available).

In these operating conditions the heat pump will remain off.

The emergency operation can be turned on (ON) or turned of (OFF) manually by acting on the parameter 7141, in the Maintenance/Assistance section.

To make the settings follow the instructions given below:

- To enter the programming phase, press the OK button on the room unit.
    1. Select the “Maintenance/Assistance” menu and press OK.
    2. Select line “” (line 7141). Press OK to confirm.
    3. Turn the knob to “YES” and press OK. Emergency operation is now active.
    4. Errors

When a malfunction down takes place an error code is displayed

By pressing the relative "information" key the cause that has generated it is shown on the display.

9.1 ERROR HISTORY

The controller keeps a record of the last 10 errors in its memory. The next memorization wipes out the last memory.

For each error the system records the error code, the date and time in which the error took place.

Through the DHW 700-PC tool, the certified technical assistants can visualize the actual values, the setpoints and the relay outputs for each error.

9.2 ERROR RESET

The error reset can be done manually or automatically (see. the next table for the error messages) depending on the type of error.

Manual reset

If the case of an error displayed at an information level in which “**Reset ?” appears,**the reset can be carried out manually.

After having pressed the “OK” button once, a flashing “Yes” sign will appear on the display.

By pressing the “OK” button a second time the “Yes” message is confirmed and the error is reset.

Automatic reset

The automatic recognition takes place at the end of a preset period of time (OEM parameter managed by Robur). Once this time has elapsed (the default setting is 6 hours) the controller attempts to carry out error reset.

The available error messages are listed in APPENDIX d - TABLE OF ERROR CODES a pagina 151.

APPENDIX A - Legend and technical data

Description of connected sensors

B91: Source delivery temperature (fixed resistance equal to 22kΩ)

B84/B92: Source intake temperature (fixed resistance equal to 22kΩ)

B71: Heat pump return temperature

B9: External temperature sensor

B3: DHW tank temperature (upper). Obligatory sensor for DHW service

B31: DHW tank temperature (lower). Optional sensor for DHW service (the service is operational without B31)

B4: Reserve tank temperature (upper)

B41: Reserve tank temperature (lower)

B1: Heating/cooling mixed circuit 1 temperature sensor

B12: Heating mixed circuit 2 temperature sensor

B10: Water collector delivery temperature sensor

Description of connected valves and pumps

SG: Geothermal probes

Y28: Passive cooling diverter valves and pump

$Q3_{OUT}$: DHW charging diverter valve (connected to PLC)

Q2: Heating/cooling mixed circuit 1 pump

Q6: Heating mixed circuit 2 pump (expansion module 2)

Q20: Heating circuit CP pump (without mixer valve) (expansion module 1)

$Q2_{OUT}$: Boiler ON/OFF signal (connected to PLC)

$K6_{OUT}$: heating/DHW integration diverter valve (connected to PLC)

Y1/Y2: Heating/cooling mixed circuit 1 mixer valve (Y1 open; Y2 close)

Y5/Y6: Heating mixed circuit 2 mixer valve (Y5 open; Y6 close)

Technical data

RVS61

Power supply	Power voltage	AC 230 V (±10%)
	Frequency	50 / 60 Hz
	Maximum consumption	RVS61.843: 11 VA
	Power fuse	max. 10 AT
Cabling	(Power and outputs)	1 cable: 0.5...2.5 mm2 2 cables 0.5...1.5 mm2
Data	Software class	A
	Operation per EN 60 730	1.B (automatic operation)
Inputs	Digital inputs H1, H3	Voltage free contacts Low voltage Voltage with contact open:: DC 12 V Current with contact closed: DC 3 mA
	Analogue inputs H1, H3	Protection from extra low-voltage Range: DC (0...10) V internal resistance:: > 100 kΩ
	Inputs S3, 4 and EX2	AC 230 V (±10 %) internal resistance:: > 100 kΩ
	Sensor input for B9 Sensor inputs for B1, B2, B3, B12, BX1, BX2, BX3, BX4 Sensor inputs for BX1…BX4 Permitted cable length (copper) If: Maximum length	NTC1 k (QAC34) NTC10k (QAZ36, QAD36) PT1000 (optional for gas collector and sensor) 0.25 - 0.5 - 0.75 - 1.0 - 1.5 (mm^2) 20 - 40 - 60 - 80 - 120 (m)
Outputs	Relay outputs for Q2, 3, 8,9, Qx1..6, Y1, Y2 Current range Maximum switch-on current Maximum total current (all relays) Power voltage range	 AC 0.02…2 (2) A 15 A for ≤1 s AC 6 A AC (24...230) V (for voltage free outputs)
	Output model Q4- Current range Modes ON/OFF Speed control Maximum current switching on	 AC 0.05...2 (2) A AC 0.05...1.4 (1.4) A 4 A for ≤1 s
	Analogue output UX Output voltage Current range „Ripple“ Modulation Zero point precision Remaining error range	Output short-circuited U_{out} = 0... 10.0 V ±2 mA RMS; ±2.7 mA peak ≤ 50 mVpp < ± 80 mV ≤ 130 mV
Interface and cable run length	BSB Maximum cable run length Base unit - peripherals Maximum total length Minimum cross-section	2-wire, not swappable 200 m 400 m (max. conductivity 60 nF) 0.5 mm^2

	LPB With bus power from controller (for controller) With central bus power Charge number Bus	1.5 mm2 copper 2-wire, not swappable 250 m 460 m E = 3
Protection rating and safety class	Housing protection rating per EN 60 529	IP 00
	Safety class per EN 60 730	Class II Low voltage if correctly installed
	Contamination rating per EN 60 730	Normal contamination
Standards, safety, EMC, etc..	Conformity to EC EM directive - Immunity - Emission Low voltage - Electrical safety	 2004/108/EC - EN 61000-6-2 - EN 61000-6-3 2006/95/EC - EN 60730-1, EN 60730-2-9
Climatic conditions	Storage IEC721-3-1, EN 60721-3-1 Shipping IEC721-3-2 class 2K3-3-2 Operational IEC721-3-3 5-3-3	class 1K3 temperature -20…65℃ class 2K3 temperature -25…70℃ class 3K5 temperature -2…0...50℃ (non condensing)
Weights	Weight (excluding packaging)	RVS61.843: 607 g

AVS75

Power supply	Power voltage	AC 230 V (±10%)
	Frequency	50 / 60 Hz
	Maximum consumption	4 VA
	Power fuse	max. 10 AT
Cabling	(Power and outputs)	1 cable: 0.5...2.5 mm^2 2 wire 0.5...1.5 mm^2
Data	Software class	A
	Operation per EN 60 730	1.B (automatic operation)
Inputs	Digital inputs H2	Voltage free contacts Low voltage Voltage with contact open:: DC 12 V Current with contact closed: DC 3 mA
	Analogue inputs H2	Protection from extra low-voltage Range: DC (0...10) V resistance: > 100 kΩ
	Inputs L	AC 230 V (±10 %) internal resistance: > 100 kΩ
Outputs	Sensor inputs for BX6, BX7 Maximum permitted cable run length (copper) Cross section: Length: Relay output Range Maximum switch-on current Maximum total current (all relays) Power voltage range	NTC10k (QAZ36, QAD36) 0.25 - 0.5 - 0.75 - 1.0 - 1.5 mm^2 20 - 40 - 60 - 80 - 120 m AC 0.02…2 (2) A 15 A for ≤1 s AC 6 A AC (24...230) V (for voltage free outputs)

Interfaces	BSB Maximum cable run length Base unit - peripherals Maximum total length Minimum cross-section	2-wire, not swappable 200 m 400 m (max. conductivity 60 nF) 0.5 mm2
Housing protection rating	Housing protection rating per EN 60 529	IP 00
	Safety class per EN 60 730	Class II Low voltage if correctly installed
	Contamination rating per EN 60 730	Normal contamination
Standards, safety, EMC, etc..	Conformity to EC EM directive - Immunity - Emission Low voltage - Electrical safety	 2004/108/EC - EN 61000-6-2 - EN 61000-6-3 2006/95/EC - EN 60730-1, EN 60730-2-9
Climatic conditions	Storage IEC721-3-1 class Shipping IEC721-3-2 class Operational IEC721-3-3 class 5	class 1K3 temperature -20…65℃ class 2K3 temperature -25…70℃ class 3K5 temperature -2…0...50℃ (non condensing)
Weights	Weight (excluding packaging)	293 g

AVS37 / QAA7X / QAA55

Power supply	For devices without batteries: Bus power supply: For devices with batteries:	 BSB
	Batteries	3 units
	Type of battery	1.5 V Alkaline type AA (LR06)
	Battery life	approx. 1.5 years
Ambient temperature measurement (only with QAA7x...) / QAA55...)	Measuring range	0...50 ℃
	Per standard EN 12098: Range 15...25 ℃ Range 0..15 ℃ or 25...50 ℃ Resolution	 tolerance 0.8 K tolerance 1.0 K 1/10 K
Interface	AVS37../QAA75../QAA55.. Maximum cable run length Base unit - peripherals	BSB-W, 2-wire not swappable QAA75... / QAA55... = 200 m AVS37... = 3 m
	QAA78..	BSB-RF Frequency band 868 MHz
Protection rating and safety class	Housing protection rating per EN 60 529	IP20 for QAA7... / QAA55... IP40 for AVS37… IP20 (installed) Normal contamination
	Safety class per EN 60 730	Class II Low voltage if correctly installed
	Contamination rating per EN 60 730	Normal contamination
Standards, safety, EMC, etc..	Conformity to EC EM directive - Immunity - Emission Low voltage - Electrical safety Radio (wireless)	 2004/108/EC - EN 61000-6-2 - EN 61000-6-3 2006/95/EC - EN 60730-1, EN 50090-2-2 EN 300 220-1 (25-1000 MHz)
Climatic conditions	For devices without batteries: Storage IEC721-3-1 Shipping IEC721-3-2 Operational IEC721-3-3 For devices with batteries: Storage IEC721-3-1 Shipping IEC721-3-2 Operational IEC721-3-3	 class 1K3 temperature -20...65℃ class 2K3 temperature -25...70℃ class 3K5 temperature -2…0...50℃ (non condensing) class 1K3 temperature -20…30℃ class 2K3 temperature -20...70℃ class 3K5 temperature 0...50℃ (non condensing)
Weight	Weight (excluding packaging)	AVS37.294: 160 g QAA75.61x: 170 g QAA78.610: 312 g QAA55.110: 115 g

AVS71

Power supply	From base unit… RVS maximum consumption	5.5V DC Maximum 0.11 VA
Interface	Connection to base unit RVS… (power, communications)	6-wire ribbon cable, length 1.5m
	Radio transmitter	BSB-RF Frequency band 868 MHz
Protection rating and safety class	Housing protection rating per EN 60 529	IP40
	Safety class per EN 60 730	Class III Low voltage if correctly installed
	Contamination rating per EN 60 730	Normal contamination
Standards, safety, EMC, etc..	Conformity to EC EM directive - Immunity - Emission Low voltage - Electrical safety Radio (wireless)	 2004/108/EC - EN 61000-6-1, EN 61000-6-2 - EN 61000-6-3, EN 61000-6-4 2006/95/EC EN 60730-1, EN 50090-2-2 EN 300 220-1, -3 (25-1000MHz) EN 301 489-1, -3
Climatic conditions	Storage IEC721-3-1 Shipping IEC721-3-2 Operational IEC721-3-3	class 1K3 temperature -20...65℃ class 2K3 temperature -25...70℃ class 3K5 temperature -2…20...50℃ (non condensing)
Weight	Weight (excluding packaging)	54 g

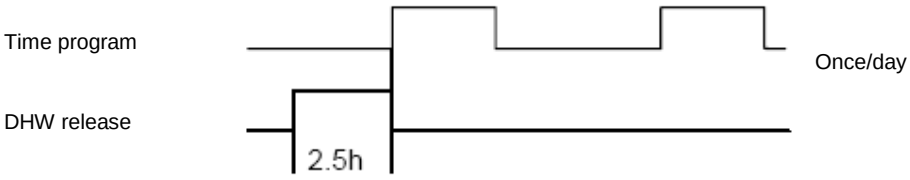
AVS13

Power supply	Batteries Type of battery Battery life	2 units 1.5 V Alkaline type AAA (LR03) approx. 2 years
Interface	Radio transmitter	BSB-RF Frequency band 868 MHz
Protection rating and safety class	Housing protection rating per EN 60 529	IP20
	Safety class per EN 60 730	Class II Low voltage if correctly installed
	Contamination rating per EN 60 730	Normal contamination
Standards, safety, EMC, etc..	Conformity to EC EM directive - Immunity - Emission Low voltage - Electrical safety Radio (wireless)	 89/336/EEC - EN 61000-6-2 - EN 61000-6-3 73/23/EEC - EN 60730-1, EN 50090-2-2 EN 300 220-1 (25-1000 MHz)
Climatic conditions	For devices without batteries: Storage IEC721-3-1 Shipping IEC721-3-2 Operational IEC721-3-3 For devices with batteries: Storage IEC721-3-1 Shipping IEC721-3-2 Operational IEC721-3-3	 class 1K3 temperature -20...65℃ class 2K3 temperature -25...70℃ class 3K5 temperature -2…20...50℃ (non condensing) class 1K3 temperature -20…30℃ class 2K3 temperature -20...70℃ class 3K5 temperature 0...50℃ (non condensing)
External temperature acquisition	External sensor r	QAC34/101
	Range	-50...50 ℃
	Cable run length	maximum 5 m
Weight	Weight (excluding packaging)	Weight (excluding packaging): 160 g external sensor QAC34: 73 g 70 g cable

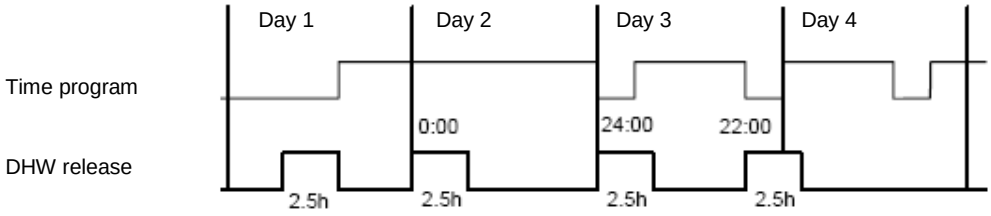
APPENDIX B - Oother useful OEM parameters

1. Mixer valve control:
   - Parameters “835, 942, 1135: Xp mixer valve”. Setting the correct proportional band forces the action of the mixer valve actuator to correspond to the behaviour of the system (controlled system).
     - Parameter “835” sets the proportional band of circuit C1 in heating.
     - Parameter “942” sets the proportional band of circuit C1 in cooling.
     - Parameter “1135” sets the proportional band of circuit C2 (heating only).
   - Parameters “836, 943 and 1136: Tn mixer valve”. Setting the correct integral action time forces the action of the mixer valve actuator to correspond to the behaviour of the system (controlled system).
     - Parameter “836” sets the integral action time of circuit C1 in heating.
     - Parameter “943” sets the integral action time of circuit C1 in cooling.
     - Parameter “1136” sets the integral action time of circuit C2 (heating only).

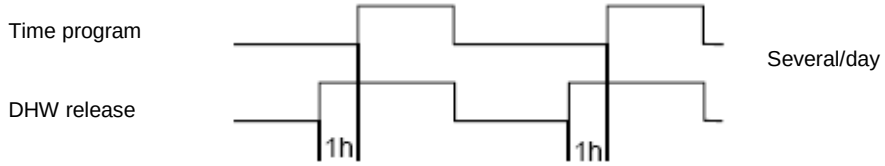
2. DHW tank:
   - Parameters “5010: Recharge” (default: “Several/day”; possible values: “Once/day”, “Several/day”), selecting “Once/day“ or “Several/day” is only active if DHW activation is set (parameter “1620”) as the heating circuit time program.
     - If “Once/day” activates DHW recharging 2.5 hours before the first heating request from the heating circuit. Hence, the DHW reduced setpoint applies for the entire day.



In case of continuous heating (without off times), DHW recharging is set to 0:00 o’clock. The same rule applies if the first heating request from the heating circuit occurs before 02:30. If a heating request is received at midnight, DHW recharging is activated after the first off period, but no earlier than 2.5 hours before midnight.



- If set to “Several/day” DHW recharging is set ahead by 1 hour relative to the periods of time in which heating circuit requests heating and is maintained unchanged during these periods of time.



- Parameter “5070: Forced automatic recharge” (default: “Off”; possible values: “Off” or “On”), DHW forced recharging can be activated manually or automatically. Forced recharging recharges the DHW to the nominal setpoint one time.
  - If set to “Off”, forced DHW recharging must be activated manually. To do this, hold down the button on the “AVS37” controller or room unit (QAA75 or QAA78) for at least 3 seconds. forced DHW recharging can also be activated when:
    - The operating mode is “Off“.
    - The operating mode can be changed using H1 or centrally (LPB).
    - All heating circuits operate in holiday mode.
  - If set to “On” and the DHW temperature drops by at least two switching differentials (parameter “5024”) below the reduced setpoint (parameter “1612”), recharging is run one time to the nominal DHW operating setpoint (parameter “1610”).

    “Forced automatic recharging” only works when DHW is activated with the button on the “AVS37” controller or room unit (QAA75 or QAA78).

- Parameter “5071: Priority recharge time during forced charging”, during DHW forced charging, the DHW tank is recharged with absolute priority for the time set in this parameter.

3. Configuration:
   - Parameter “6112: Room model gradient” (default 60 min/℃, range: 0 to 300 min/℃), the room gradient model provides the period of time in minutes which it takes for the heating to raise the room temperature by 1℃. This value applies to all circuits.

APPENDIX C - Parameters of use in testing the system:

I/O testing is used to check that all connected components are working properly.

1. Parameter “7150: Simulation outside temperature”, simulates an external temperature in the range -50 to +50°C to facilitate commissioning and troubleshooting.

   The “Simulation outside temperature” function is disabled by selecting --- in parameter “7150” or, automatically, after 5 hours of operation.

2. Parameter “7700: Relay test”, select one of the tests to excite the relay in question, thus actuating its associated component to make sure that it is correctly cabled and operational.

Row number	***Operating row***
7700	**Test Relè** No test all off Source pump Q8 / Fan K19 compressor K1 (approx. 1-2 sec) Condenser pump Q9 DHW pump Q3 Heating circuit pump Q2 Heating mixer On Y1 Heating mixer Off Y2 Relay output QX23 module 1 Relay output QX21 module 1 Relay output QX22 module 1 Relay output QX1 (approx. 1-2 sec) Relay output QX2 Relay output QX3 Relay output QX4 Relay output QX5 Relay output QX6 Relay output QX23 module 2 Relay output QX21 module 2 Relay output QX22 module 2

Outputs used by Robur:

- K1: Heat pump enable.
- Q3: DHW recharging valve inversion enable.
- Q2: C1 pump.
- Y1: Opens the C1 mixer valve in heating mode.
- Y2: Closes the C1 mixer valve in heating mode.
- QX1: Set as for K25. Together with K26 enables/disables the heating integration boiler.
- QX2: Set as for K26. Together with K25 enables/disables the heating integration boiler.
- QX3: Set as for K6. Enables/disables the DHW integration boiler.

- QX6: Set as for Y28. Controls passive cooling.
- QX21 of module AVS75 n°1: Set as for Q20. CP pump.
- QX21 of module AVS75 n°2: Set as for Y5. Opens the C2 mixer valve in heating mode.
- QX22 of module AVS75 n°2: Set as for Y6. Closes th e C2 mixer valve in heating mode.
- QX23 of module AVS75 n°2: Set as for Q6. C2 pump.

During relay testing, the limits imposed by the controller are not active!

3. “Sensor input test” parameters, selecting an input test setting displays the input value for validation.

The displayed values of the sensors are updated every 5 seconds.
The value displayed is uncorrected.

Row number	*Operating row*
7730	**External temperature B9**
7732	**Flow temperature B1**
7750	**DHW charging temperature B3**
7770	**Heat pump flow temperature B21**
7771	**Heat pump return temperature B71**
7772	**Hot-gas temperature B81**
7775	**Source flow temperature B91**
7777	**Sensor temperature BX1**
7820	**Sensor temperature BX2**
7821	**Sensor temperature BX3**
7823	**Sensor temperature BX4**
7824	**Sensor temperature BX5**
7830	**Sensor temperature BX21, module 1**
7831	**Sensor temperature BX22, module 1**
7832	**Sensor temperature BX21, module 2**
7833	**Sensor temperature BX22, module 2**

Inputs used by Robur:

- B9: External temperature.
- B1: C1 delivery temperature.
- B3: DHW tank upper temperature.
- B71: Heat pump return temperature.
- BX1: Set as for B4. Heating tank upper temperature.
- BX2: Set as for B41. Heating tank lower temperature.
- BX3: Set as for B10. Heat pump delivery temperature after heating tank.
- BX4: Set as for B31. DHW tank lower temperature.
- BX21 of module AVS75 n°2: Set as for B41. C2 deliv ery temperature.

4. Parameters “Input tests H1, H2, H3”.

   - Parameters “7840”, “7845” and “7854” give the voltages (0 ÷ 10V) input to H1, H2 and H3 respectively.
   - Parameters “7841”, “7846” and “7855” give the statuses (open/closed) of the H1, H2 and H3 input contacts respectively.

Row number	*Operating row*
7840	**Voltage signal H1**
7841	**Contact type H1** Open ¦ Close
7845	**Voltage signal H2**
7846	**Contact type H2** Open ¦ Close
7854	**Voltage signal H3**
7855	**Contact type H3** Open ¦ Close

Inputs used by Robur:

- H1: Set as hygrometer/hygrostat or as error/alarm message.
- H2: Set as error/alarm message.
- H3: Set as error/alarm message.

5. “E input test” parameters, selecting an E input test setting displays the input value for validation. If 0 V is displayed, this means that there is no voltage and the input in question is currently inactive. If 230 V is displayed, this means that there is voltage and the input in question may be activated.

Row number	*Operating row*
7889	**Low pressure switch E9** 0V ¦ 230V
7890	**High pressure switch E10** 0V ¦ 230V
7891	**Compressor 1 Overload 1**
7911	**Input EX 1**
7912	**Input EX 2**
7913	**Input EX 3**
7914	**Input EX 4**
7915	**Input EX 5**
7916	**Input EX 6**
7917	**Input EX 7**

Inputs used by Robur:

- E10: Interrupts operation of the heat pump during DHW use and activates the integration boiler.
- EX1: Set as Common error HP E20. Activates the boiler whenever all the heat pumps are faulty (see parameter “7142”).

APPENDIX D - Table of error codes

T_CC_0017

Nr: error text	Reset.	Localisation		Heat pump in operation	Priority
		Man.	Auto.		
0: No error					
10: Outside sensor	B9	No	No	yes	6
26: Common flow sensor	B10	No	No	yes	6
30 Flow sensor 1	B1	No	No	yes	6
31: Flow sensor cooling 1	B16	No	No	yes	6
32: Flow sensor 2	B12	No	No	yes	6
33: Flow sensor HP	B21	No	No	yes	6
35: Source inlet sensor	B91	No	No	Not in Sun	9
36: Hot-gas sensor 1	B81	No	No	yes	6
37: Hot-gas sensor 2	B82	No	No	yes	6
38: Flow sensor prim controller	B15	No	No	yes	6
39: Evaporator sensor	B84	No	No	Not in Air	9
44: Return sensor HP	B71	No	No	Depends on the diagram	6
45: Source outlet sensor	B92	No	No	No in Water	9
46: Return sensor cascade	B70	No	No	yes	6
48: Refrigerant sensor, liquid	B83	No	No	yes	6
50: DHW sensor 1	B3	No	No	yes	6
52: DHW sensor 2	B31	No	No	yes	6
54: DHW primary control sensor	B35	No	No	yes	6
57: DHW circulation sensor	B39	No	No	yes	6
60: Room sensor 1		No	No	yes	6
65: Room sensor 2		No	No	yes	6
68: Room sensor 3		No	No	yes	6
70: Storage tank sensor 1	B4	No	No	Depends on the diagram	6
71: Storage tank sensor 2	B41	No	No	Depends on the diagram	6
72: Storage tank sensor 3	B42	No	No	yes	6
73: Collector sensor 1	B6	No	No	yes	6
74: Collector sensor 2	B61	No	No	yes	6
76: Special sensor 1	BX	No	No	yes	3
81: LPB short circuit/comm		No	No	yes	6
82: LPB address collision		No	No	yes	3
83: BSB short-circuit		No	No	yes	8
84: BSB address collision		No	No	yes	3
85: BSB Radio Communications		No	No	yes	8
98: Extension module 1		No	No	yes	8
99: Extension module 2		No	No	yes	8
100: 2 clock time masters		No	No	yes	3
102: Clock without backup		No	No	yes	3
105: Maintenance message		No	No	yes	5
106: Source temperature too low		yes	yes	No	6
107: Hot-gas compressor 1		yes	Sit.imp.*	No	9
108: Hot-gas compressor 2		yes	Sit.imp.*	No	9
117: Water pressure too high	H1	No	No	yes	6

Nr: error text	Reset.	Localisation		Heat pump in operation	Priority
		Man.	Auto.		
118: Water pressure too low	H1	No	No	No	6
121: Flow temperature HC1 too low		No	No	yes	6
122: Flow temperature HC2 too low		No	No	yes	6
126: DHW charging supervision		No	No	yes	6
127: Legionella temperature		No	No	yes	6
134: Common fault HP	"0" and "1"	yes	Sit. Imp. *	No	9
138: Control sensor HP missing		No	yes	No	1
146: Sensor/controlling element config		No	No	yes	3
171: Contact alarm 1 active		No	No	yes	6
172: Contact alarm 2 active	H2	No	No	yes	6
174: Contact alarm 4 active	H3	No	No	yes	6
176: Water pressure 2 too high	H2	No	No	yes	6
177: Water pressure 2 too low	H2	No	No	No	6
178: Limit thermostat HC1		No	No	yes	3
179: Limit thermostat HC2		No	No	yes	3
201: Frost alarm	B21/71	yes	No	No	9
204: Fan overload	E16	yes	Sit. Imp.*	No	9
222: Hi-pressure on HP op	E10	yes	Sit. Imp.*	No	9
223: Hi-press on start HC	E10	yes	No	No	9
224: Hi-press on start DHW	E10	yes	No	No	9
225: Low pressure	E9	yes	Sit. Imp.*	No	9
226: Compressor 1 overload	E11	yes	Sit. Imp.*	No	9
227:Compressor 2 overload	E12	yes	Sit. Imp.*	No	9
228: Flow swi heat source	E15	yes	Sit. Imp.*	No	9
229: Press swi heat source	E15	yes	Sit. Imp.*	No	9
230: Source pump overload	E14	yes	Sit. Imp.*	No	9
241: Flow sensor yield	B63	No	No	yes	6
242: Return sensor yield	B64	No	No	yes	6
243: Swimming pool sensor	B13	No	No	yes	6
247: Defrost fault	B36	yes	Sit. Imp.*	No	9
320: DHW charging temperature sensor		No	No	yes	6
321: DHW heater temperature sensor fault	B38	No	No	yes	6
322: Water pressure 3 too high	H3	No	No	yes	6
323: Water pressure 3 too low	H3	No	No	No	6
324: BX same sensors		No	No	yes	3
325: BX/e' module same sens		No	No	yes	3
327: E' module same funct		No	No	yes	3
329: E'mod/m'grp same funct		No	No	yes	3
330: BX1 no function		No	No	yes	3
331: BX2 no function		No	No	yes	3
332: BX3 no function		No	No	yes	3
333: BX4 no function		No	No	yes	3
334: BX5 no function		No	No	yes	3
335: BX21 no function		No	No	yes	3

Nr: error text	Reset.	Localisation		Heat pump in operation	Priority
		Man.	Auto.		
336: BX22 no function		No	No	yes	3
339: Coll pump Q5 missing		No	No	yes	3
340: Manifold pump Q16 missing		No	No	yes	3
341: Coll pump B6 missing		No	No	yes	3
343: Solar buffer K8 missing		No	No	yes	3
344: K8 solar buffer missing		No	No	yes	3
345: Solar swimming K18 missing		No	No	yes	3
350: Buffer address error		No	No	yes	3
351: Prim/sys pump addr err		No	No	yes	3
352: Pr'less header addr err. Hyd		No	No	yes	3
353: Cascade sensor B10 missing		No	No	yes	3
354: Special sensor 2	BX	No	No	yes	3
355: Three phase curr asymetrical	E21-23	yes	Sit. Imp.*	No	9
356: Flow switch consumers	E24	yes	Sit. Imp.*	No	9
357: Flow temp cooling 1		No	No	yes	6
358: Soft starter	E25	No	No	No	9
359: Div valve cool Y21 missing		No	No	yes	3
360: Proc rev val Y22 missing		No	No	yes	3
361: Source sensor B91 missing		No	No	yes	3
362: Source sensor B92 missing		No	No	yes	3
363: Compr sensor B84 missing		No	No	yes	3
364: Cool system HP wrong		No	No	yes	3
365: Inst H'pump Q34 missing		No	No	yes	3

☞ Parameter “**6820: Reset log**” deletes the last ten errors, along with the corresponding operational values and setpoints, as well as the status of the output relays.
Parameter “**8070: Delete log**” deletes the last ten status messages and status codes, along with the corresponding operational values and setpoints, as well as the status of the output relays.

APPENDIX E - ROBUR Basic configurations table

The following table gives the default settings for the basic system BP in the "Robur factory settings" (orange) column.

Legend:

U = User.

T = Technician.

I = Installation technician.

O = OEM.

DHW* = Parameter only accessible using PC with OCI700 application

Notes:

1) QAA75 and QAA78 only

4) RVS41 only

6) RVS61 only

Table - 10 Robur basic configurations table

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
Time and date						
1	U	Hour/ minutes	-	00:00	23:59	hh:mm
2	U	Month, day	-	01.01	31.12	dd.mm
3	U	Year	-	2004	2099	yyyy
5	I	Start of daylight saving time	25.03	01.01	31.12	dd.mm
6	I	End of daylight saving time	25.10	01.01	31.12	dd.mm
Control unit						
20	U	Language German ¦...	English	-	-	-
22	I	Info Temporary ¦ Permanent	Temporary	-	-	-
26	I	Lock controls Off ¦ On	Off	-	-	-
27	I	Lock programming Off ¦ On	Off	-	-	-
28	T	Direct regulation Auto save ¦ Save with confirm	Save with confirm	-	-	-
30	O	Save basic settings No ¦ Yes	No	-	-	-
31	O	Activate basic settings No ¦ Yes	No	-	-	-
40[1)]	T	Used as Room unit 1 ¦ Room unit 2 ¦ Room unit P ¦ Operator unit 1 ¦ Operator unit 2 ¦ Operator unit P ¦ Service unit	Room unit 1	-	-	-
42[1)]	T	Assignment device 1 Heating circuit 1 ¦ Heating circuits 1 and 2 ¦ Heating circuits 1 and P ¦ All heating circuits	Heating circuit 1	-	-	-
44	T	Operation HC2 Commonly with HC1 ¦ Independently	Commonly with HC1	-	-	-
46	T	Operation HCP Commonly with HC1 ¦ Independently	Commonly with HC1	-	-	-
48[1)]	T	Action occupancy button None ¦ Heating circuit 1 ¦ Heating circuit 2 ¦ Commonly	Heating circuit 1	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
54[1)]	I	Readjustment room sensor	0.0	-3	3	℃
70	I	Software version	-	0	99.9	-
Radio						
120	T	Connection No ¦ Yes	No	-	-	-
121	T	Test mode Off ¦ On	Off	-	-	-
130	T	Room unit 1 Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
131	T	Room unit 2 Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
132	T	Room unit P Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
133	T	Outside sensor Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
134	T	Repeater Missing ¦ Ready ¦ No recept'n	-	-	-	-
135	T	Operator unit 1 Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
136	T	Operator unit 2 Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
137	T	Operator unit P Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
138	T	Service unit Missing ¦ Ready ¦ No recept'n ¦ Change battery	-	-	-	-
140	T	Delete all devices No ¦ Yes	No	-	-	-
Time program for heating circuit 1						
500	U	Preselection Mo - Su ¦ - Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦ Su	Mo - Su	-	-	-
501	U	1st phase on	06:00	00:00	24:00	hh:mm
502	U	1st phase off	22:00	00:00	24:00	hh:mm
503	U	2nd phase on	24:00	00:00	24:00	hh:mm
504	U	2nd phase off	24:00	00:00	24:00	hh:mm
505	U	3rd phase on	24:00	00:00	24:00	hh:mm
506	U	3rd phase off	24:00	00:00	24:00	hh:mm
516	U	Standard values No ¦ Yes	No	-	1	-
Time program for heating circuit 2						
520	U	Preselection Mo - Su ¦ - Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦ Su	Mo - Su	-	-	-
521	U	1st phase on	06:00	00:00	24:00	hh:mm
522	U	1st phase off	22:00	00:00	24:00	hh:mm
523	U	2nd phase on	24:00	00:00	24:00	hh:mm
524	U	2nd phase off	24:00	00:00	24:00	hh:mm
525	U	3rd phase on	24:00	00:00	24:00	hh:mm
526	U	3rd phase off	24:00	00:00	24:00	hh:mm
536	U	Standard values No ¦ Yes	No	-	1	-
Time program 3/HCP						
540	U	Preselection Mo - Su ¦ - Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦ Su	Mo - Su	-	-	-
541	U	1st phase on	06:00	00:00	24:00	hh:mm
542	U	1st phase off	22:00	00:00	24:00	hh:mm
543	U	2nd phase on	24:00	00:00	24:00	hh:mm
544	U	2nd phase off	24:00	00:00	24:00	hh:mm
545	U	3rd phase on	24:00	00:00	24:00	hh:mm
546	U	3rd phase off	24:00	00:00	24:00	hh:mm

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
556	U	Standard values No ¦ Yes	No	-	1	-
Time program 4 / DHW						
560	U	Preselection Mo - Su ¦ - Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦ Su	Mo - Su	-	-	-
561	U	1st phase on	00:00	00:00	24:00	hh:mm
562	U	1st phase off	05:00	00:00	24:00	hh:mm
563	U	2nd phase on	24:00	00:00	24:00	hh:mm
564	U	2nd phase off	24:00	00:00	24:00	hh:mm
565	U	3rd phase on	24:00	00:00	24:00	hh:mm
566	U	3rd phase off	24:00	00:00	24:00	hh:mm
576	U	Standard values No ¦ Yes	No	-	1	-
Time program 5 (Cooling)						
600	U	Preselection Mo - Su ¦ - Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦ Su	Mo - Su	-	-	-
601	U	1st phase on	06:00	00:00	24:00	hh:mm
602	U	1st phase off	22:00	00:00	24:00	hh:mm
603	U	2nd phase on	24:00	00:00	24:00	hh:mm
604	U	2nd phase off	24:00	00:00	24:00	hh:mm
605	U	3rd phase on	24:00	00:00	24:00	hh:mm
606	U	3rd phase off	24:00	00:00	24:00	hh:mm
616	U	Standard values No ¦ Yes	No	-	1	-
Holiday HC 1						
641	U	Preselection from phase 1 to phase 8	phase 1 - phase 8	-	-	-
642	U	Start	--.--	01.01	31.12	dd.mm
643	U	End	--.--	01.01	31.12	dd.mm
648	U	Common operating level Antifreeze protection ¦ Reduced	Antifreeze protection	-	-	-
Holiday HC 2						
651	U	Preselection from phase 1 to phase 8	phase 1 - phase 8	-	-	-
652	U	Start	--.--	01.01	31.12	dd.mm
653	U	End	--.--	01.01	31.12	dd.mm
658	U	Common operating level Antifreeze protection ¦ Reduced	Antifreeze protection	-	-	-
Holiday HC P						
661	U	Preselection from phase 1 to phase 8	phase 1 - phase 8	-	-	-
662	U	Start	--.--	01.01	31.12	dd.mm
663	U	End	--.--	01.01	31.12	dd.mm
668	U	Common operating level Antifreeze protection ¦ Reduced	Antifreeze protection	-	-	-
Heating circuit 1						
710	U	Comfort setpoint	20.0	BZ 712	BZ 716	℃
712	U	Reduced setpoint	19	BZ 714	BZ 710	℃
714	U	Antifreeze protection setpoint	10.0	4	BZ 712	℃
716	I	Maximum Comfort setpoint	35.0	BZ 710	35	℃
720	I	Characteristic curve pitch	0.8	0.10	4.00	-
721	I	Heating curve displacement	0.0	-4.5	4.5	℃
726	I	Heating curve adaption Off ¦ On	Off	-	-	-
730	U	Summer / winter switch limit	18	– – – / 8	30	℃
732	I	24-hour heating limit	-3	– – – / -10	10	℃
740	T	Flow temp setpoint min	8	8	BZ 741	℃
741	T	Flow temp setpoint max	50	BZ 740	95	℃
750	I	Room influence	20	– – – / 1	100	%

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
760	I	Room temperature limitation	1	– – – / 0.5	4	°C
770	I	Boost heating	– – –	– – – / 0	20	℃
780	I	Quick setback Off ¦ Down to reduced setpoint ¦ Down to frost prot setpoint	Down to reduced setpoint	-	-	-
790	I	Optimum start control max	00:00:00	00:00:00	00:06:00	h.min.s
791	I	Optimum stop control max	00:00:00	00:00:00	00:06:00	h.min.s
800	I	Reduce setpoint increase start	– – –	– – – / 30	10	℃
801	I	Reduce setpoint increase end	-15	-30	BZ 800	°C
820	I	Overtemp prot pump circuit Off ¦ On	Off	-	-	-
830	I	Mixing valve boost	0	0	50	℃
832	T	Actuator type 2-position ¦ 3-position	3 position	-	-	-
833	T	Switching differential 2-pos	2	0	20	℃
834	I	Actuator running time	150	30	873	s
835	O	Xp mixer valve	32	1	100	℃
836	O	Tn mixer valve	120	10	873	s
850	T	Floor curing function off ¦ Function heating ¦ Curing heating ¦ Functional/curing heating ¦ Manually	Off	-	-	-
851	T	Floor curing setpoint manually	25	0	95	℃
855	T	Floor curing setpoint current	0	0	95	℃
856	T	Floor curing day current	0	0	32	-
857	T	Floor curing days completed	0	0	32	-
861	I	Excess heat draw Off ¦ Heating mode ¦ Always	Always	-	-	-
870	I	With buffer No ¦ Yes	yes	-	-	-
872	I	With primary controller/system pump No ¦ Yes	No	-	-	-
882	O	Pump speed min	100	0	100	%
883	O	Pump speed max	100	0	100	%
900	T	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection mode	-	-	-
Cooling circuit 1						
901	U	Operating mode off ¦ Automatic	Automatic	-	-	-
902	U	Comfort setpoint	24	15	40	℃
907	U	Release / Consent 24h a day ¦ Hourly heating circuit program¦ Time program 5	24h/Day	-	-	-
908	T	Flow setp at OT 25℃	20	6	35	℃
909	T	Flow setp at OT 35℃	16	6	35	℃
912	T	Cooling limit at OT	20	– – – / 8	35	℃
913	I	Lock time at end of heating	24	– – – / 8	100	h
918	I	Summer comp start at OT	26	20	50	℃
919	I	Summer comp end at OT	35	20	50	℃
920	I	Summer comp setp increase	4	– – – / 1	10	℃
923	I	Flow temp setp min at OT 25℃	18	6	35	℃
924	I	Flow temp setp min at OT 35℃	18	6	35	℃
928	I	Room influence	20	– – – / 1	100	℃
932	I	Room temperature limitation	0.5	– – – / 0.5	4	℃
938	I	Mixing valve decrease	0	0	20	℃
939	I	Actuator type 2-position ¦ 3-position	3-position	-	-	-
940	I	Switching differential 2-pos	2	0	20	℃
941	I	Actuator running time	150	30	875	s
942	O	Xp mixer valve	12	1	100	℃
943	O	Tn mixer valve	90	10	873	s
945	I	Mixer valve in heating mode Control ¦ Open	Control	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
946	I	Lock time dewpoint limiter	60	– – – / 10	600	min
947	I	Flow temp setp incr hygro	10	– – – / 1	20	℃
948	T	Flow setp incr start at r.h.	60	0	100	%
950	T	Flow temp diff dewpoint	2	– – – / 0	5	℃
962	I	With buffer No ¦ Yes	yes	-	-	-
963	I	With primary controller/system pump No ¦ Yes	No	-	-	-
969	I	Optg mode changeover None ¦ Off ¦ Automatic	Off	-	-	-
Heating circuit 2						
1010	U	Comfort setpoint	20.0	BZ 1012	BZ 1016	℃
1012	U	Reduced setpoint	19	BZ 1014	BZ 1010	℃
1014	U	Antifreeze protection setpoint	10.0	4	BZ 1012	℃
1016	I	Comfort setpoint maximum	35.0	BZ 1010	35	℃
1020	I	Heating curve slope	0.8	0.10	4.00	-
1021	I	Curve displacement	0.0	-4.5	4.5	℃
1026	I	Curve adaption Off ¦ On	Off	-	-	-
1030	U	Summer / winter switch limit	18	– – – / 8	30	℃
1032	I	24-hour heating limit	-3	– – – / 10	10	℃
1040	T	Flow temp setpoint min	8	8	BZ 1041	℃
1041	T	Flow temp setpoint max	50	BZ 1040	95	℃
1050	I	Room influence	20	– – – / 1	100	%
1060	I	Room temperature limitation	1	– – – / 0.5	4	℃
1070	I	Boost heating	– – –	– – – / 0	20	℃
1080	I	Quick setback Off ¦ Down to reduced setpoint ¦ Down to frost prot setpoint	Down to reduced setpoint	-	-	-
1090	I	Optimum start control max	00:00:00	00:00:00	00:06:00	h.min.s
1091	I	Optimum stop control max	00:00:00	00:00:00	00:06:00	h.min.s
1100	I	Reduce setpoint increase start	– – –	– – – / 30	10	℃
1101	I	Reduce setpoint increase end	-15	-30	BZ 1100	℃
1120	I	Overtemp prot pump circuit Off ¦ On	OFF	-	-	-
1130	I	Mixing valve boost	0	0	50	℃
1132	T	Actuator type 2-position ¦ 3-position	3 position	-	-	-
1133	T	Switching differential 2-pos	2	0	20	℃
1134	I	Actuator running time	150	30	873	s
1135	O	Xp mixer valve	32	1	100	℃
1136	O	Tn mixer valve	120	10	873	s
1150	T	Floor curing function off ¦ Function heating ¦ Curing heating ¦ Functional/curing heating ¦ Manual	OFF	-	-	-
1151	T	Floor curing setpoint manually	25	0	95	℃
1155	T	Floor curing setpoint current	0	0	95	℃
1156	T	Floor curing day current	0	0	32	-
1157	T	Floor curing days completed	0 0	-	-	-
1161	I	Excess heat draw Off ¦ Heating mode ¦ Always	Always	-	-	-
1170	I	With buffer No ¦ Yes	yes	-	-	-
1172	I	With primary controller/system pump No ¦ Yes	No	-	-	-
1182	O	Pump speed min	100	0	100	%
1183	O	Pump speed max	100	0	100	%
1200	I	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection mode	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
Heating circuit P						
1300	U	Operating mode Protection ¦ Automatic ¦ Reduced¦ Comfort	Automatic	-	-	-
1310	U	Comfort setpoint	20.0	BZ 1312	BZ 1316	℃
1312	U	Reduced setpoint	19	BZ 1314	BZ 1310	℃
1314	U	Frost protection setpoint	10.0	4	BZ 1312	℃
1316	I	Comfort setpoint maximum	35.0	BZ 1310	35	℃
1320	I	Heating curve slope	0.8	0.10	4.00	-
1321	I	Heating curve displacement	0.0	-4.5	4.5	℃
1326	I	Heating curve adaption Off ¦ On	OFF	-	-	-
1330	U	Summer / winter switch limit	18	– – – / 8	30	℃
1332	I	24-hour heating limit	-3	– – – / 10	10	℃
1340	T	Flow temp setpoint min	8	8	BZ 1341	℃
1341	T	Flow temp setpoint max	50	BZ 1340	95	℃
1350	I	Room influence	20	– – – / 1	100	%
1360	I	Room temperature limitation	1	– – – / 0.5	4	℃
1370	I	Boost heating	– – –	– – – / 0	20	℃
1380	I	Quick setback Off ¦ Down to reduced setpoint ¦ Down to frost prot setpoint	Down to reduced setpoint	-	-	-
1390	I	Optimum start control max	0:00:00	00:00:00	00:06:00	h.min.s
1391	I	Optimum stop control max	0:00:00	00:00:00	00:06:00	h.min.s
1400	I	Reduce setpoint increase start	– – –	– – – / 30	10	℃
1401	I	Reduce setpoint increase end	-15	-30	BZ 1400	℃
1420	I	Overtemp prot pump circuit Off ¦ On	OFF	-	-	-
1450	T	Floor curing function off ¦ Function heating ¦ Curing heating ¦ Functional/curing heating ¦ Manual	OFF	-	-	-
1451	T	Floor curing setpoint manually	25	0	95	℃
1455	T	Floor curing setpoint current	0	0	95	℃
1456	T	Floor curing day current	0	0	32	-
1457	T	Floor curing days completed	0	0	32	-
1461	I	Excess heat draw Off ¦ Heating mode ¦ Always	Always	-	-	-
1470	I	With buffer No ¦ Yes	yes	-	-	-
1472	I	With primary controller/system pump No ¦ Yes	No	-	-	-
1482	O	Pump speed min	100	0	100	%
1483	O	Pump speed max	100	0	100	%
1500	T	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection mode			-
Hot water for domestic use DHW						
1610	U	Nominal setpoint	50	BZ 1612	TempBwMax	℃
1612	U	Reduced setpoint	40	8	BZ 1610	℃
1614	O	Nominal setpoint	65	8	80	℃
1620	T	Release 24h/day ¦ Time programs HCs¦ Time program 4	24h/day			-
1630	T	Charging priority Absolute ¦ Shifting ¦ None ¦ MC shifting PC absolute	Absolute			-
1640	I	Legionella function Off ¦ Periodically ¦ Fixed weekday	OFF			-
1641	I	Legionella funct periodically	3	1	7	Day
1642	I	Legionella funct weekday Monday ¦ Tuesday ¦ Wednesday ¦ Thursday ¦ Friday ¦ Saturday ¦ Sunday	Monday			-
1644	I	Legionella func time	– – –	– – – / 00:00	23:50	hh:mm
1645	I	Legionella func setpoint	65	55	95	℃
1646	I	Legionella funct duration	– – –	– – – / 10	360	min

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
1647	I	Legionella funct circ pump Off ¦ On	On			-
1660	I	Circulating pump release Time program 3 / HCP ¦ DHW release ¦ Time program 4/DHW	DHW release			-
1661	I	Circulating pump cycling Off ¦ On	OFF			-
1663	I	Circulation setpoint	45	8	80	℃
Pump Hx						
2008	O	Charging priority H1 DHW No ¦ Yes*	yes	-	-	-
2010	O	H1 excess heat draw Off ¦ On	On	-	-	-
2012	O	H1 with buffer No ¦ Yes	yes	-	-	-
2014	O	H1 prim contr/system pump No ¦ Yes	yes	-	-	-
2015	O	H1 refrigeration request 2-pipe system* ¦ 4-pipe system	2-pipe system	-	-	-
2033	O	Charging priority H2 DHW No ¦ Yes*	yes	-	-	-
2035	O	H2 excess heat draw Off ¦ On	On	-	-	-
2037	O	H2 with buffer No ¦ Yes	yes	-	-	-
2039	O	H2 prim contr/system pump No ¦ Yes	yes	-	-	-
2040	O	H2 refrigeration request 2-pipe system* ¦ 4-pipe system	2-pipe system	-	-	-
2044	O	Charging priority H3 DHW No ¦ Yes*	yes	-	-	-
2046	O	H3 excess heat draw Off ¦ On	On	-	-	-
2048	I	H3 with buffer No ¦ Yes	yes	-	-	-
2050	I	H2 prim contr/system pump No ¦ Yes	yes	-	-	-
2051	I	H3 refrigeration request 2-pipe system ¦ 4-pipe system	2-pipe system	-	-	-
Swimming pool						
2055	U	Setpoint solar heating	26	8	80	℃
2056	U	Setpoint source heating	22	8	80	℃
2065	I	Charging priority solar No ¦ Yes	No	-	-	-
2070	O	Maximum swimming pool temperature	35	8	95	℃
2080	I	With solar integration No ¦ Yes	No	-	-	-
Primary controller/system pump						
2110	O	Flow temp min operating point	8	8	95	℃
2111	O	Flow temp max operating point	80	8	95	℃
2112	O	Flow cooling temp min operating point	8	8	20	℃
2130	O	Mixer valve release	10	0	50	℃
2131	O	Mixer valve decrease	0	0	20	℃
2132	O	Actuator type 2-position ¦ 3-position	3 position	-	-	-
2133	O	2-position switching differential	2	0	20	℃
2134	O	Actuator open time	150	30	873	s
2135	O	Xp mixer valve	32	1	100	℃
2136	O	Tn mixer valve	120	10	873	s
2150	T	Primary controller/system pump Before buffer ¦ After buffer	After buffer	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
Heat pump						
2840	I	Switching diff return temp	4	1	20	℃
2861	O	Release stage 2 below OT	5	– – – / 30	30	℃
2862	O	Locking time stage 2	10	0	40	min
2863	O	Release integral stage 2	250	0	500	℃*min
2864	O	Reset integral stage 2	10	0	500	℃*min
2865	O	Compr sequence changeover	– – –	– – – / 10	1000	h
2880	O	Use electric flow Substitute ¦ Complement HP operation	Complement HP operation	-	2	-
2881	T	Locking time electric flow	30	0	255	min
2882	T	Release integr electric flow	25	0	500	℃*min
2883	T	Reset integr electric flow	2	0	500	℃*min
2884	T	Release el flow below OT	– – –	-30	30	℃
2886	O	Compensation heat deficit Off ¦ On ¦ Only with floor curing fct	OFF	-	-	-
2887	DHW*	Temperature threshold operation	10	10	60	℃
2889	O	During repetition error	1	1	40	h
2893	I	Number: DHW charging attempts	1	1	10	-
2894	I	Delay 3-ph current error	3	1	40	s
2895	I	Delay flow switch	0	0	10	s
2896	O	Control active source current Always ¦ Only heating mode	Always	-	-	-
2910	I	Release above OT	– – –	– – – / 30	30	℃
2911	O	For forced buffer storage tank charging Locked ¦ Released	Released	-	-	-
2912	I	Full charging of buffer storage tank Off ¦ On	OFF	-	-	-
2951	O	Defrost release below OT	5	5	20	℃
3006	O	During compressor operation Passive cooling off ¦ Passive cooling on	Passive cooling Off	Depends on system	1	-
3007	O	IN passive cooling mode Condenser pump off ¦ Condenser pump on	Condenser pump off	Depends on system	1	-
3008	O	Temp diff cond cooling mode	0	0	20	℃
3010	O	Fan / source pump speed max	100	0	100	%
3011	O	Fan / source pump speed min	30	0	100	%
3012	O	Source off below B83	– – –	10	60	℃
3014	O	Source off temp diff	5	1	10	℃
3015	O	Start speed control B83	30	10	60	℃
3016	O	End speed control B83	50	10	60	℃
3017	O	Lock time control	– – –	0	250	s
3019	O	Start speed control Speed min ¦ Speed max	Speed min	-	2	-
Cascade heat generators						
3510	O	Optg strategy None ¦ Delay on, advance off ¦ Delay on, Delay off ¦ Advance on, Delay off	Delay on, Delay off	-	-	-
3516	O	Source forced load max	4	1	16	-
3517	O	Source forced load max OT	– – –	– – – / 20	15	-
3530	I	Release source integral sequence	100	0	500	°C*min
3531	I	Reset source integral sequence	20	0	500	℃*m in
3533	T	Switch on delay	5	0	120	min
3540	T	Auto source seq ch'over	500	– – – / 10	990	h
3541	T	Auto source seq exclusion None ¦ First ¦ Last ¦ First and last	None	-	-	-
3590	O	Temp diff min	– – –	– – – / 0	20	℃
Solar collector						
3810	I	Temp diff ON	8	BZ 3811	40	℃
3811	I	Temp diff OFF	4	0	BZ 3812	℃
3812	I	Charg temp min DHW st tank	– – –	– – – / 8	95	℃
3813	O	Charging temp min buffer	– – –	– – – / 0	40	℃

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
3814	O	Temp diff off buffer	– – –	– – – / 0	40	℃
3815	I	Charging temp min buffer	– – –	– – – / 8	95	℃
3816	O	Temp diff on swi pool	– – –	– – – / 0	40	℃
3817	O	Temp diff off swi pool	– – –	– – – / 0	40	℃
3818	I	Charging temp min swi pool	– – –	– – – / 8	95	℃
3822	I	Charging prio storage tank None ¦ DHW storage tank ¦ Buffer	DHW storage tank	-	-	-
3825	I	Charging time relative prio	– – –	– – – / 2	60	min
3826	I	waiting time relative prio	5	1	40	min
3827	I	Waiting time parallel op	– – –	– – – / 0	40	min
3828	I	Delay secondary pump	60	0	600	s
3830	O	Collector start funct	– – –	– – – / 5	60	min
3831	I	Min run time collector pump	20	5	120	s
3832	O	Collector start funct ON	07:00	00:00	23:50	min
3833	O	Collector start funct OFF	21:00	00:00	23:50	min
3834	I	Collector start funct grad	– – –	– – – / 1	20	min/℃
3840	I	Collector frost protection	– – –	– – – / -20	5	℃
3850	I	Collector overtemp prot	– – –	– – – / 30	350	℃
3860	I	Evaporation heat carrier	– – –	– – – / 60	350	℃
3870	I	Pump speed min	40	0	100	%
3871	I	Pump speed max	100	0	100	%
3872	O	Xp mixer valve	32	1	100	℃
3873	O	Tn mixer valve	120	10	873	s
3880	I	Antifreeze None ¦ Ethylen glycol ¦ Propylene glycol ¦ Etyl and propyl glycol	None	-	-	-
3881	I	Antifreeze concentration	30	1	100	%
3884	I	Pump capacity	200	10	1500	l/h
Buffer						
4708	O	Forced charging setp cooling	– – –	6	35	℃
4709	O	Forced charg setp heat min	40	20	80	℃
4710	O	Forced charg setp heat max	50	20	80	℃
4711	O	Forced charging time	– – –	– – – / 00:00	23:50	hh:mm
4712	O	Forced charg duration max	4	1	20	h
4720	I	Auto generation lock None ¦ With B4 ¦ With B4 and B42/B41	With B4 and B42/B41	-	-	-
4721	I	Heat generation SD auto lock	0	0	20	℃
4722	T	Temp diff buffer/HC	2	-20	20	℃
4723	O	Temp diff buffer / CC	0	-20	20	℃
4724	O	Buffer temp heat min	8	– – – / 8	95	℃
4726	O	Buffer temp cool max	25	– – – / 10	40	℃
4739	O	Schichtschutz Off ¦ Always	OFF	-	-	-
4740	O	Schichtschutz temp diff max	5	0	20	℃
4743	O	Schichtschutz time advance	60	0	240	s
4744	O	Tn Schichtschutz	120	10	200	s
4750	I	Charging temperature max	80	8	95	℃
4751	O	Buffer temp max	90	8	95	℃
4755	I	Recooling temp	60	8	95	℃
4756	I	Recooling DHW/HCs Off ¦ On	OFF	-	-	-
4757	I	Recooling collector Off ¦ Summer ¦ Always	OFF	-	-	-
4760	I	Charg sensor el imm heater With B4 ¦ With B42/B41	With B4	-	-	-
4761	I	Forced charging electric No ¦ Yes	NO	-	-	-
4783	I	With solar integration No ¦ Yes	NO	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
DHW storage tank						
5010	O	Charging Once/day ¦ Several/day	Several/day	-	-	-
5020	I	Flow setpoint boost	0	0	30	℃
5021	I	Transfer boost	8	0	30	℃
5022	I	Type of charging With B3 ¦ With B3/B31 ¦ With B3 / With B3, legio B3/B31	With B3/B31	-	-	-
5024	I	Switching differential	5	0	20	℃
5030	O	Charging time limitation	240	– – – / 10	600	min
5040	O	Draining protection Off ¦ Always ¦ Automatic	Automatic	0	2	-
5050	I	Charging temperature max	80	8	BZ 5051 OEM	℃
5051	O	Buffer temp max	90	BZ 5050	95	℃
5055	I	Recooling temp	80	8	95	℃
5056	I	Recooling heat gen/HCs Off ¦ On	OFF	-	-	-
5057	I	Recooling collector Off ¦ Summer ¦ Always	OFF	-	-	-
5060	I	El imm heater optg mode Substitute ¦ Summer ¦ Always	Substitute	-	-	-
5061	I	Electric immersion heater release 24h/day ¦ DHW release ¦ Time program 4/DHW	DHW release	-	-	-
5070	O	Automatic boost Off ¦ On	OFF	-	-	-
5071	O	Charging time prio boost	0	0	120	min
5085	O	Excess heat draw Off ¦ On	OFF	-	-	-
5090	O	With buffer No ¦ Yes	NO	-	-	-
5092	O	With prim contr/system pump No ¦ Yes	NO	-	-	-
5093	I	With solar integration No ¦ Yes	NO	-	-	-
5101	O	Pump speed min	40	00	100	%
5102	O	Pump speed max	100	0	100	%
5103	O	Xp mixer valve	32	1	100	℃
5104	O	Tn mixer valve	120	10	873	s
5120	O	Release mixer valve	10	0	50	℃
5124	O	Actuator open time	150	30	873	s
5125	O	Mixer P-Band Xp	32	1	100	℃
5126	O	Tn mixer reset time	120	10	873	s
5130	O	Transfer strategy Always ¦ DHW release	Always	-	-	-
5131	O	Transfer temp compare DHW sensor B3 ¦ DHW sensor B31	DHW sensor B3	-	-	-
DHW instant heater						
5406	O	Min setp diff to tank temp	4	0	20	℃
5530	O	Pump speed min	20	0	100	%
5531	O	Pump speed max	80	0	100	%
5544	O	Actuator running time	60	7.5	480	s
5545	O	Xp mixer valve	20	1	200	℃
5546	O	Tn mixer valve	150	10	873	s
5547	O	Tv mixer valve	4.5	0	30	s
Configuration						
5710	T	Heating circuit 1 Off ¦ On	OFF	-	-	-
5711	T	Cooling circuit 1 Off ¦ 4-pipe system ¦ 2-pipe system	OFF	-	-	

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
5712	T	Use of mixing valve 1 None ¦ Heating ¦ Cooling ¦ Heating and cooling	Heating and cooling	-	-	
5715	T	Heating circuit 2 Off ¦ On	OFF	-	-	-
5731	O	DHW controlling element Q3 None ¦ Charging pump ¦ Diverting valve	Diverting valve	-	-	-
5736	O	Separate DHW circuit Off ¦ On	OFF	-	-	-
5800	T	Heat source Brine ¦ Water ¦ Air; External	Brine	-	-	-
5807	T	Refrigeration Off ¦ 4-pipe system ¦ 2-pipe system	OFF	-	-	-
5810	T	Differential HC at OT -10℃	7	0	20	℃
5840	T	Solar controlling element Charging pump ¦ Diverting valve	Charging pump	-	-	-
5841	T	External solar exchanger Jointly ¦ DHW storage tank ¦ Buffer	Jointly	-	-	-
5870	T	Combi storage tank No ¦ Si	NO	-	-	-
5890	T	Relay output QX1 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-
5891	T	Relay output QX2 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
5892	T	Relay output QX3 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-
5894	T	Relay output QX4 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-
5895	T	Relay output QX5 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
5896	T	Relay output QX6 None ¦ Compressor 2 K2 ¦ Process revers valve Y22 ¦ Hot-gas temp K31 ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-
5909	T	Function output QX4-Mod None ¦ Source pump Q8/fan K19 ¦ DHW pump Q3 ¦ DHW interm circ pump Q33 ¦ Instant DHW heater Q34 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump buffer K8 ¦ Solar pump ext exch K9 ¦ Solar pump swi pool K18 ¦ Heat circuit pump HC1 Q2 ¦ Heat circuit pump HC2 Q6 ¦ Heat circuit pump HCP Q20	None	-	-	-
5930	I	Sensor input BX1 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	B4	-	-	-
5931	I	Sensor input BX2 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	B41	-	-	-
5932	O	Sensor input BX3 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	B10	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
5933	T	Sensor input BX4 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None	-	-	-
5934	T	Sensor input BX5 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70 ¦ Special temp sensor 1 ¦ Special temp sensor 2	None	-	-	-
5950	T	Function input H1 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2	Rel room humidity 10V		-	-
5951	T	Contact type H1 NC ¦ NO	NO	-	-	-
5952	T	Function value, contact type H1	30	0	130	℃
5953	T	Voltage value 1 H1	0	0	10	V
5954	T	Function value 1 H1	0	-100	500	-
5955	T	Voltage value 2 H1	10	0	10	V
5956	T	Function value 2 H1	100	-100	500	-
5960	O	Function input H3 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2	Error/alarm message	-	-	-
5961	O	Contact type H3 NC ¦ NO	NO contact	-	-	-
5962	O	Function value, contact type H3	30	0	130	℃
5963	O	Voltage value 1 H3	0	0	10	V
5964	O	Function value 1 H3	0	-100	500	-
5965	O	Voltage value 2 H3	10	0	10	V
5966	O	Function value 2 H3	100	-100	500	-
5980[6)]	O	Function input EX1 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦ Common fault HP E20 ¦ Fault soft starter E25	Common fault HP E20	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
5981	O	Contact type EX1 NC ¦ NO	Normally closed	-	-	-
5982	T	Function input EX2 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦HP storage tank ¦ DHW storage tank	None	-	-	-
5983	O	Contact type EX2 NC ¦ NO	NO contact	-	-	-
5984	T	Function input EX3 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦HP storage tank ¦ DHW storage tank	None	-	-	-
5985	O	Contact type EX3 NC ¦ NO	NO contact	-	-	-
5986	T	Function input EX4 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦HP storage tank ¦ DHW storage tank	None	-	-	-
5987	O	Contact type EX4 NC ¦ NO	NO contact	-	-	-
5988	T	Function input EX5 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦HP storage tank ¦ DHW storage tank	None	-	-	-
5989	O	Contact type EX5 NC ¦ NO	NO contact	-	-	-
5990	T	Function input EX6 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦HP storage tank ¦ DHW storage tank	None	-	-	-
5991	O	Contact type EX6 NC ¦ NO	NO contact	-	-	-
5992	T	Function input EX7 None ¦ Electrical utility lock E6 ¦ Low-tariff E5 ¦ Compressor 2 overload ¦ Source overload E14 ¦ Pressure switch source E26 ¦ Flow switch source E15 ¦ Flow switch consumers E24 ¦ Manual defrost E17 ¦HP storage tank ¦ DHW storage tank	None	-	-	-
5993	O	Contact type EX7 NC ¦ NO	NO contact	-	-	-
5999	O	Low pressure control contact NC ¦ NO	NO contact	-	-	-
6000	O	High pressure control contact NC ¦ NO	NO contact	-	-	-
6001	O	Comp 1 control overload E11 NC ¦ NO	NO contact	-	-	-
6014[6)]	O	Function mixing group 1 Heating circuit 1 ¦ Cooling circuit 1 ¦ Heating circ/cooling circ 1 ¦ Prim contr/system pump ¦ DHW primary controller ¦ Instantaneous DHW heater	Heating circ/cooling circ 1	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
6020[4)]	T	Function extension module 1 None ¦ Multifunctional ¦ Cooling circuit 1 ¦ Heating circuit 2 ¦ Solar DHW ¦ Heating circuit 1¦ Heating circ/cooling circ 1	Multifunctional	-	-	-
6021[4)]	T	Function extension module 2 None ¦ Multifunctional ¦ Cooling circuit 1 ¦ Heating circuit 2 ¦ Solar DHW ¦ Heating circuit 1¦ Heating circ/cooling circ 1	None	-	-	-
6030	T	Relay output QX21 None ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-
6031	T	Relay output QX22 None ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-
6032	T	Relay output QX23 None ¦ El imm heater 1 flow K25 ¦ El imm heater 2 flow K26 ¦ Div valve cool source Y28 ¦ System pump Q14 ¦ Cascade pump Q25 ¦ Heat gen shutoff valve Y4 ¦ El imm heater DHW K6 ¦ Circulating pump Q4 ¦ St tank transfer pump Q11 ¦ DHW interm circ pump Q33 ¦ DHW mixing pump Q35 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump ext exch K9 ¦ Solar ctrl elem buffer K8 ¦ Solar ctrl elem swi pool K18 ¦ El imm heater buffer K16 ¦ H1 pump Q15 ¦ H2 pump Q18 ¦ H3 pump Q19 ¦ Heat circuit pump HCP Q20 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Diverting valve cooling Y21 ¦ Air dehumidifier K29 ¦ Heat request K27 ¦ Refrigeration request K28 ¦ Alarm output K10 ¦ Time program 5 K13	None	-	-	-

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
6040	T	Sensor input BX21 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70	None	-	-	-
6041	T	Sensor input BX22 None ¦ Buffer sensor B4 ¦ Buffer sensor B41 ¦ Collector sensor B6 ¦ DHW sensor B31 ¦ Hot-gas sensor B82 ¦ Refrig sensor liquid B83 ¦ DHW charging sensor B36 ¦ DHW outlet sensor B38 ¦ DHW circulation sensor B39 ¦ Swimming pool sensor B13 ¦ Collector sensor 2 B61 ¦ Solar flow sensor B63 ¦ Solar return sensor B64 ¦ Buffer sensor B42 ¦ Common flow sensor B10 ¦ Cascade return sensor B70	None	-	-	-
6046	O	Function input H2 Optg mode change HCs+DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC2 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Heat request 10V ¦ Dewpoint monitor ¦ Flow temp setp incr hygro ¦ Refrigeration request ¦ Refrigeration request 10V ¦ Pressure measurement 10V ¦ Rel room humidity 10V ¦ Room temp 10V ¦ Release swimming pool ¦ Swi-on command HP stage 1 ¦ Swi-on command HP stage 2	Error/alarm message	-	-	-
6047	O	Contact type H2 NC ¦ NO	NO contact	-	-	-
6048	O	Function value, contact type H2	30	0	130	℃
6049	O	Voltage value 1 H2	0	0	10	V
6050	O	Function value 1 H2	0	-100	500	-
6051	O	Voltage value 2 H2	10	0	10	V
6052	O	Function value 2 H2	100	-100	500	-
6070	O	Function output UX None ¦ Source pump Q8/fan K19 ¦ DHW pump Q3 ¦ DHW interm circ pump Q33 ¦ Instant DHW heater Q34 ¦ Collector pump Q5 ¦ Collector pump 2 Q16 ¦ Solar pump buffer K8 ¦ Solar pump ext exch K9 ¦ Solar pump swi pool K18 ¦ Heat circ pump HC1 Q2 ¦ Heat circ pump HC2 Q6 ¦ Heat circ pump HCP Q20 ¦ HP setpoint ¦ Output request ¦ Heat request ¦ Refrigeration request	Heat pump setpoint	-	-	-
6071	O	Signal logic output UX Standard ¦ Inverted	Standard	-	-	-
6072	O	Signal output UX 0..10V ¦ PWM	0..10V	-	-	-
6075	O	Temp value 10V UX	70	5	130	℃
6097	I	Sensor type collector NTC* ¦ Pt 1000	NTC	-	-	-
6098	I	Readjustm collector sensor	0	-20	20	℃
6099	I	Readjustm coll sensor 2	0	-20	20	℃
6100	I	Readjustm outside sensor	0.0	-3.0	3.0	℃
6110	I	Time constant building	20	0	50	h
6112	O	Room gradient model	60	0	300	min/℃
6116	O	Time constant optg point compensation	1	0	14	-
6117	O	Central optg point compensation	– – –	1	100	%
6120	I	Frost protection for the plant Off ¦ On	On	-	-	-
6128	O	Heat request below OT	– – – /	– – – / -50	50	℃
6129	O	Heat request above OT	– – – /	– – – / -50	50	℃

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
6135	I	Air dehumidifier Off ¦ On	Off	-	-	-
6136	I	Release air dehumidifier 24h/day ¦ Time program HC ¦ Time program 5	24h/Day	-	-	-
6137	I	Air dehumidifier r.h. on ON	55	0	100	%
6138	I	Air dehumidifier r.h. SD	5	2	50	%
6140	O	Water pressure max	– – –	– – – / 0	10	bar
6141	O	Water pressure min	– – –	– – – / 0	10	bar
6142	O	Water pressure critical min	– – –	– – – / 0	10	bar
6150	O	Water pressure max 2	– – –	– – – / 0	10	bar
6151	O	Water pressure min 2	– – –	– – – / 0	10	bar
6152	O	Water pressure critical min 2	– – –	– – – / 0	10	bar
6180	O	Water pressure max 3	– – –	– – – / 0	10	bar
6181	O	Water pressure min 3	– – –	– – – / 0	10	bar
6182	O	Water pressure critical min 3	– – –	– – – / 0	10	bar
6200	I	Save sensors No ¦ Yes	NO	-	-	-
6201	I	Reset sensors No ¦ Yes	NO	-	-	-
6204	I	Save parameters No ¦ Yes	NO	-	-	-
6205	I	Reset to default parameters No ¦ Yes	NO	-	-	-
6212	T	Check no. heat source 1	0	0	199999	-
6213	T	Check no. heat source 2	0	0	199999	-
6215	T	Check no. storage tank	0	0	199999	-
6217	T	Check no. heating circuits	0	0	199999	-
6220	U	Software version	0	0	99.9	-
6222	O	Device optg hours	00:00	00:00	20833:00:00	h:min:s
LPB system						
6600	T	Device address	1	0	16	-
6601	I	Segment address	0	0	14	-
6604	I	Bus power supply:function Off ¦ Automatically	Automatic	-	-	-
6605	I	Bus power supply:state Off ¦ On	On	-	-	-
6610	O	Display system messages No ¦ Yes	yes	-	-	-
6612	O	Delay alarm	– – –	– – – / 2	60	min
6620	I	Action changeover functions Segment ¦ System	System	-	-	-
6621	I	Summer changeover Locally ¦ Centrally	Locally	-	-	-
6623	I	Optg mode changeover Locally ¦ Centrally	Centrally	-	-	-
6625	I	DHW assignment Local HCs ¦ All HCs in segment ¦ All HCs in system	All HCs in system	-	-	-
6627	I	Refrigeration request Locally ¦ Centrally	Centrally	-	-	-
6632	I	OT source limitation No ¦ Yes	yes	-	-	-
6640	T	Clock mode Autonomously ¦ Slave without remote setting ¦ Slave with remote setting ¦ Master	Autonomously	-	-	-
6650	I	Outside temp source	0	0	239	-
ERROR						
6710	T	Reset alarm relay No ¦ Yes	NO	-	-	-
6711	T	Reset HP No ¦ Yes	NO	-	-	-
6740	I	Flow temp 1 alarm	– – –	– – – / 10	240	min
6741	I	Flow temp 2 alarm	– – –	– – – / 10	240	min

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
6745	I	Trinkwasserladung alarm	– – –	– – – / 1	48	h
6746	I	Flow temp cooling 1 alarm	– – –	– – – / 10	240	min
6800	I	History 1	-	-	-	-
6801	I	Error code 1	-	0	255	-
6802	I	History 2	-	-	-	-
6803	I	Error code 2	-	0	255	-
6804	I	History 3	-	-	-	-
6805	I	Error code 3	-	0	255	-
6806	I	History 4	-	-	-	-
6807	I	Error code 4	-	0	255	-
6808	I	History 5	-	-	-	-
6809	I	Error code 5	-	0	255	-
6810	I	History 6	-	-	-	-
6811	I	Error code 6	-	0	255	-
6812	I	History 7	-	-	-	-
6813	I	Error code 7	-	0	255	-
6814	I	History 8	-	-	-	-
6815	I	Error code 8	-	0	255	-
6816	I	History 9	-	-	-	-
6817	I	Error code 9	-	0	255	-
6818	I	History 10	-	-	-	-
6819	I	Error code 10	-	0	255	-
6820	O	Reset history No ¦ Yes	NO	-	-	-
6825	DHW*	Repetition error 222: high pressure in HP operation	– – –	0	50	-
Maintenance / Assistance						
7070	T	HP interval	– – –	– – – / 1	240	Months
7071	T	HP time since maint	0	0	240	Months
7072	T	Max starts compr1/hrs run	– – –	– – – / 0.1	12.0	-
7073	T	Cur starts compr1/hrs run	0	0	12.0	-
7074	T	Max starts compr2/hrs run	– – –	– – – / 0.1	12.0	-
7075	T	Cur starts compr2/hrs run	0	0	12.0	-
7090	T	DHW storage tank interval	– – –	– – – / 1	240	Months
7091	T	DHW stor tank since maint	0	0	240	Months
7092	T	DHW charg temp HP min	40	8	80	℃
7093	T	Curr DHW charg temp HP	20	8	80	℃
7119	I	Ökofunktion Locked ¦ Released	Locked	-	-	-
7120	U	Economy mode off ¦ on	Off	-	-	-
7141	U	Emergency operation off ¦ on	Off	-	-	-
7142	I	Type of functioning of emergency operation Manually ¦ Automatically	Automatic	-	-	-
7150	T	Simulation outside temperature	– – –	– – – / -50	50	℃
7160	I	Reset limitation No ¦ Yes	NO	-	-	-
7180	O	Responsibility 1 No responsibility display ¦ Display phone number only ¦ Assistance ¦ Customer assistance ¦ Installation tech ¦ Janitor ¦ Administrator ¦ Refrigeration tech assistant ¦ Hot line	No responsibility display	-	-	-
7181	T	Phone no. responsibility 1	– – –	0	16	Number
7182	O	Responsibility 2 No responsibility display ¦ Display phone number only ¦ Assistance ¦ Customer assistance ¦ Installation tech ¦ Janitor ¦ Administrator ¦ Refrigeration tech assistant ¦ Hot line	No responsibility display	-	-	-
7183	T	Phone no. responsibility 2	– – –	0	16	Number

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
7184	O	Responsibility 3 No responsibility display ¦ Display phone number only ¦ Assistance ¦ Customer assistance ¦ Installation tech ¦ Janitor ¦ Administrator ¦ Refrigeration tech assistant ¦ Hot line	No responsibility display	-	-	-
7185	O	Phone no. responsibility 3	– – –	0	16	Number
7186	O	Responsibility 4 No responsibility display ¦ Display phone number only ¦ Assistance ¦ Customer assistance ¦ Installation tech ¦ Janitor ¦ Administrator ¦ Refrigeration tech assistant ¦ Hot line	No responsibility display	-	-	-
7187	O	Phone no. responsibility 4	– – –	0	16	Number
7188	O	Responsibility 5 No responsibility display ¦ Display phone number only ¦ Assistance ¦ Customer assistance ¦ Installation tech ¦ Janitor ¦ Administrator ¦ Refrigeration tech assistant ¦ Hot line	No responsibility display	-	-	-
7189	O	Phone no. responsibility 5	– – –	0	16	Number
I/O test						
7700	T	Relay test No test ¦ Everything off ¦ Source pump Q8 / Fan K19 ¦ Compressor 1 K1 (for approx. 1-2 s) ¦ Condenser pump Q9 ¦ DHW pump Q3 ¦ Heating circuit pump Q2¦ Heat circ mix valve op Y1¦ Heat circ mix valve cl Y2 ¦ Relay output QX23 module 1 ¦ Relay output QX21 module 1 ¦ Relay output QX22 module 1 ¦ Relay output QX1 ¦ Relay output QX2 ¦ Relay output QX3 ¦ Relay output QX4 ¦ Relay output QX5 ¦ Relay output QX6 ¦ Relay output QX23 module 2 ¦ Relay output QX21 module 2 ¦ Relay output QX22 module 2	No test	-	-	-
7710	T	Output test UX	– – –	– – – / 0	100	%
7711	T	Voltage signal UX	-	0.0	10.0	Volt
7714	T	PWM signal P1	-	0	100	%
7730	T	Outside temp B9	-	-50.0	50.0	℃
7732	T	Flow temp B1	-	0.0	140.0	℃
7750	T	DHW temp B3	-	0.0	140.0	℃
7770	T	Flow temp HP B21	-	0.0	140.0	℃
7771	T	Return temp HP B71	-	0.0	140.0	℃
7772	T	Hot-gas temp B81	-	0.0	180.0	℃
7775	T	Source inlet temp B91	-	-50.0	50.0	℃
7777	T	Sensor temp B92, B84	-	-50.0	50.0	℃
7820	T	Sensor temp BX1	-	-28	350	℃
7821	T	Sensor temp BX2	-	-28	350	℃
7822	T	Sensor temp BX3	-	-28	350	℃
7823	T	Sensor temp BX4	-	-28	350	℃
7824	T	Sensor temp BX5	-	-28	350	℃
7830	T	Sensor temp BX21, module 1	-	-28	350	℃
7831	T	Sensor temp BX22, module 1	-	-28	350	℃
7832	T	Sensor temp BX21, module 2	-	-28	350	℃
7833	T	Sensor temp BX22, module 2	-	-28	350	℃
7840	T	Voltage signal H1	-	0.0	10.0	Volt
7841	T	Contact state H1 Open ¦ Closed	Open	-	-	-
7845	T	Voltage signal H2	-	0.0	10.0	Volt
7846	T	Contact state H2 Open ¦ Closed	Open	-	-	-
7854	T	Voltage signal H3	-	0.0	10.0	Volt
7855	T	Contact state H3 Open ¦ Closed	Open	-	-	-
7889	T	Low pressure switch E9 0V ¦ 230V	0	-	-	Volt

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
7890	T	High pressure switch E10 0V ¦ 230V	0	-	-	Volt
7891	T	Compressor 1 overload E11 0V ¦ 230V	0	-	-	Volt
7911	T	Input EX1 0V ¦ 230V	0	-	-	Volt
7912	T	Input EX2 0V ¦ 230V	0	-	-	Volt
7913	T	Input EX3 0V ¦ 230V	0	-	-	Volt
7914	T	Input EX4 0V ¦ 230V	0	-	-	Volt
7915	T	Input EX5 0V ¦ 230V	0	-	-	Volt
7916	T	Input EX6 0V ¦ 230V	0	-	-	Volt
7917	T	Input EX7 0V ¦ 230V	0	-	-	Volt
Display status						
8000	T	State heating circuit 1	-	0	255	
8001	T	State heating circuit 2	-	0	255	-
8002	T	State heating circuit P	-	0	255	-
8003	T	State DHW	-	0	255	-
8004	T	State cooling circuit 1	-	0	255	-
8006	T	State heat pump	-	0	255	-
8007	T	State solar	-	0	255	-
8010	T	State buffer	-	0	255	-
8011	T	State swimming pool	-	0	255	-
8050	T	History 1	-	-	-	-
8051	T	Setpoint code 1	-	0	255	-
8052	T	History 2	-	-	-	-
8053	T	Setpoint code 2	-	0	255	-
8054	T	History 3	-	-	-	-
8055	T	Setpoint code 3	-	0	255	-
8056	T	History 4	-	-	-	-
8057	T	Setpoint code 4	-	0	255	-
8058	T	History 5	-	-	-	-
8059	T	Setpoint code 5	-	0	255	-
8060	T	History 6	-	-	-	-
8061	T	Setpoint code 6	-	0	255	-
8062	T	History 7	-	-	-	-
8063	T	Setpoint code 7	-	0	255	-
8064	T	History 8	-	-	-	-
8065	T	Setpoint code 8	-	0	255	-
8066	T	History 9	-	-	-	-
8067	T	Setpoint code 9	-	0	255	-
8068	T	History 10	-	-	-	-
8069	T	Setpoint code 10	-	0	255	-
8070	O	Reset history	NO	-	-	-
Cascade HP diagnostics						
8100 through 8131	T	State source 1…16 Missing ¦ Faulty ¦ Manual control active ¦ Heat generation lock active ¦ Chimney sweep funct active ¦ Temporarily unavailable ¦ Outside temp limit active ¦ Not released ¦ Released	Missing	-	-	-
8138	T	Cascade flow temp	-	0.0	140.0	℃
8139	T	Cascade flow temp setp	-	0.0	140.0	℃
8140	T	Cascade return temp	-	0.0	140.0	℃
8141	T	Cascade return temp setp	-	0.0	140.0	℃
8150	T	Source seq ch'over current	-	0	990	h

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
HP diagnostics						
8400	T	Compressor 1 off ¦ on	Off	-	-	-
8401	T	Compressor 2 off ¦ on	Off	-	-	-
8402	T	El imm heater 1 flow Off ¦ On	Off	-	-	-
8403	T	El imm heater 2 flow Off ¦ On	Off	-	-	-
8404	T	Source pump off ¦ on	Off	-	-	-
8405	I	Speed of source pump off ¦ on	0	0	100	%
8406	T	Condenser pump off ¦ on	Off	-	-	-
8410	U	Return temp HP	0	0.0	140.0	℃
8411	U	Setpoint HP	0	0.0	140.0	℃
8412	U	Flow temp HP	0	0.0	140.0	℃
8427	U	Source inlet temp	0	-50.0	50.0	℃
8429	U	Source outlet temp	0	-50.0	50.0	℃
8450	I	Hours run compressor 1	0	0	65535	h
8451	I	Start counter compressor 1 (n°starts)	0	0	1 99'999	-
8452	I	Hours run compressor 2	0	0	65535	h
8453	I	Start counter compressor 2 (n°starts)	0	0	1 99'999	-
8454	I	Locking time HP	0	0	65535	h
8455	I	Counter number of locks HP	0	0	65535	-
8456	I	Hours run el flow	0	0	65535	h
8457	I	Start counter el flow	0	0	65535	-
8471	T	Process reversing valve Off ¦ on	Off	-	-	-
8505	I	Speed collector pump 1	0	0	100	%
8506	I	Speed solar pump ext exch	0	0	100	%
8507	I	Speed solar pump buffer	0	0	100	%
8508	I	Speed solar pump swi pool	0	0	100	%
8510	T	Manifold temperature 1	0	-28	350	℃
8511	T	Collector temp 1	-28	-28	350	℃
8512	T	Collector temp 1 min	350	-28	350	℃
8513	T	dT collector 1/DHW	0	-168	350	℃
8514	T	dT collector 1/buffer	0	-168	350	℃
8515	T	dT collector 1/swimming pool	0	-168	350	℃
8519	T	Solar flow temp	0	-28	350	℃
8520	T	Solar return temp	0	-28	350	℃
8526	T	24-hour yield solar energy	0	0	999.9	kWh
8527	T	Total yield solar energy	0	0	9999999.9	kWh
8530	I	Hours run solar yield	00:00	00:00	65535	h
8531	I	Hours run collect overtemp	00:00	00:00	65535	h
8543	I	Speed collector pump 2	0	0	100	%
8547	T	Collector temp 2	0	-28	350	℃
8548	T	Collector temp 2 max	-28	-28	350	℃
8549	T	Collector temp 2 min	350	-28	350	℃
8550	T	dT collector 2/DHW	0	-168	350	℃
8551	T	dT collector 2/buffer	0	-168	350	℃
8552	T	dT collector 2/swimming pool	0	-168	350	℃
User diagnostics						
8700	U	Outside temperature	-	-50.0	50.0	℃
8701	U	Minimum external temperature	-	-50.0	50.0	℃
8702	U	Outside temp max	-	-50.0	50.0	℃
8703	T	Outside temp attenuated	-	-50.0	50.0	℃
8704	T	Outside temp composite	-	-50.0	50.0	℃
8720	T	Rel room humidity	-	0	100	%
8721	T	Room temperature	-	0	50	℃

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
8722	T	Dewpoint temp 1	-	0	50	℃
8730	T	Heating circuit pump 1 Off ¦ On	Off	-	-	-
8731	T	Heat circ mix valve op Y1 Off ¦ On	Off	-	-	-
8732	T	Heat circ mix valve cl Y2 Off ¦ On	Off	-	-	-
8735	I	Speed heating circuit pump 1	-	0	100	%
8740	U	Room temp 1	-	0.0	50.0	℃
8741	U	room setpoint 1	-	4.0	35.0	℃
8742	O	Room temp - model 1	-	0.0	50.0	℃
8743	U	Flow temp 1	-	0.0	140.0	℃
8744	U	Flow temp setpoint 1	-	0.0	140.0	℃
8751	T	Kühlkreispumpe 1 Off ¦ On	Off	-	-	-
8752	T	Cool circ mix valve 1 open Off ¦ On	Off	-	-	-
8753	T	Cool circ mix valve 1 closed Off ¦ On	Off	-	-	-
8754	T	Diverting valve cooling 1 Off ¦ On	Off	-	-	-
8756	U	Flow temperature cooling 1	-	0	140	℃
8757	U	Flow temperature setpoint cooling 1	-	0	140	℃
8760	T	Heating circuit pump 1 Off ¦ On	Off	-	-	-
8761	T	Heat circ mix valve op Y5 Off ¦ On	Off	-	-	-
8762	T	Heat circ mix valve cl Y6 Off ¦ On	Off	-	-	-
8765	I	Speed heating circuit pump 2	-	0	100	%
8770	U	Room temp 2	-	0.0	50.0	℃
8771	U	Room setpoint 2	-	4.0	35.0	℃
8772	O	Room temp - model 2	-	0.0	50.0	℃
8773	U	Flow temp 2	-	0.0	140.0	℃
8774	U	Flow temp setpoint 2	-	0.0	140.0	℃
8795	I	Speed heating circuit pump P	-	0	100	%
8800	U	Room temp P	-	0.0	50.0	℃
8801	U	Room setpoint P	-	4.0	35.0	℃
8802	O	Room temp - model P	-	0.0	50.0	℃
8803	U	Flow temp setpoint P	-	0.0	140.0	℃
8820	T	DHW pump Q3 Off ¦ On	Off	-	-	-
8821	T	El immersion heater DHW off ¦ on	Off	-	-	-
8825	I	Speed DHW pump	-	0	100	%
8826	I	Speed DHW intern circ pump	-	0	100	%
8827	I	Speed inst DHW heater pump	-	0	100	%
8830	U	DHW temp 1	-	0.0	140.0	℃
8831	U	DHW temp setpoint	-	5	80.0	℃
8832	T	DHW temp 2	-	0.0	140.0	℃
8835	T	DHW circulation temp	-	0.0	140.0	℃
8836	T	DHW charging temp	-	0.0	140.0	℃
8840	I	Hours run DHW pump	0:00:00	00:00:00	2730:15:00	h/Min/s
8841	I	Start counter DHW pump	0	0	65535	-
8842	I	Hours run el DHW	0:00:00	00:00:00	2730:15:00	h/Min/s
8843	I	Start counter el DHW	0	0	65535	-
8850	T	DHW primary controller temp	-	0	140.0	℃
8851	T	DHW primary controller setp	-	0	140.0	℃
8852	T	Instant DHW heater temp	-	0	140.0	℃
8853	T	Instant DHW heater setpoint	-	0	140.0	℃
8900	T	Swimming pool temp	-	0	140.0	℃
8901	T	Swimming pool setpoint	-	8	80.0	℃

Operating row	Siemens user level	Function	Robur factory settings	Minimum	Maximum	Unit measure
8930	T	Primary controller temp	-	0	140.0	℃
8931	T	Primary controller setpoint	-	0	140.0	℃
8950	T	Common flow temp	-	0	140.0	℃
8951	T	Common flow temp setpoint	-	0	140.0	℃
8957	T	Common flow setp refrig	-	0	140.0	℃
8970	T	El imm heater buffer Off ¦ on	Off	-	-	-
8980	U	Buffer temp 1	-	0	140.0	℃
8981	U	Buffer setpoint	-	0	140.0	℃
8982	U	Buffer temp 2	-	0	140.0	℃
8983	T	Buffer temp 3	-	0	140.0	℃
8990	I	Hours run el buffer	0:00:00	0:00:00	2730:15:00	h/Min/s
8991	I	Start counter el buffer	0	0	199999	-
9000	T	Flow temp setpoint H1	-	0	140.0	℃
9001	T	Flow temp setpoint H2	-	0	140.0	℃
9004	T	Flow temp setpoint H3	-	0	140.0	℃
9005	T	Water pressure H1	-	-100	500	bar
9006	T	Water pressure H2	-	-100	500	bar
9009	T	Water pressure H3	-	-100	500	bar
9031	U	Relay output QX1 Off ¦ On	Off	-	-	-
9032	U	Relay output QX2 Off ¦ On	Off	-	-	-
9033	U	Relay output QX3 Off ¦ On	Off	-	-	-
9034	U	Relay output QX4 Off ¦ On	Off	-	-	-
9035	U	Relay output QX5 Off ¦ On	Off	-	-	-
9036	U	Relay output QX6 Off ¦ On	Off	-	-	-
9050	T	Relay output QX21 module 1 Off ¦ On	Off	-	-	-
9051	T	Relay output QX22 module 1 Off ¦ On	Off	-	-	-
9052	T	Relay output QX23 module 1 Off ¦ On	Off	-	-	-
9053	T	Relay output QX21 module 2 Off ¦ On	Off	-	-	-
9054	T	Relay output QX22 module 2 Off ¦ On	Off	-	-	-
9055	T	Relay output QX23 module 2 Off ¦ On	Off	-	-	-

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