

# Use manual

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## System controller

for modulating absorption methane condensing heat pump +  
renewable aérothermal energy K18

Revision: A  
Code: D-LBR771

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# 1 PREFACE

This User Handbook is a guide to the use and configuration of the K18 system controller. The system controller consists of an electrical enclosure (CSK18), generally installed in a machine room, with an included room unit, and at most two other optional room units which can be added to improve comfort control when the heating system consists of two or three separate heating circuits, or two or three zone valves.



This handbook assumes that you are familiar with the products Robur and information contained in the equipment's respective installation, user and maintenance manuals.

This manual is specifically intended for:

- ▶ for end users for the operation of the appliance according to their own requirements;
- ▶ for installers of the water and electrical circuits, as a supplement to the K18 system controller installation manual (and the KECSK18 system controller expansion kit installation manual, if applicable).

## Glossary

**DHW** domestic hot water.

**HC** heating circuit

**HC1 or C1** Heating circuit 1 (with/without mixer valve)

**HC2 or C2** Heating circuit 2 (with/without mixer valve)

**HC3 or C3** Heating circuit 3 (without mixer valve)

## References

Further information can be found in the following documents:



K18 system controller installation manual (D-LBR770).



KECSK18 system controller expansion kit installation manual (D-LBR772).



K18 installation, user and maintenance manual (D-LBR687).

The icons in the edge of the manual have the following meanings:



Danger symbol



Warning



Note



Start of procedure



Reference to another part of the handbook or other manual/handbook

# 2 WARNINGS AND GENERAL INFORMATION

## 2.1 WARNINGS

This manual is an integral and essential part of the product and must be delivered to the user together with the appliance.

### Safety



The appliance must only be used for the purposes for which it has been designed. Any other use is considered inappropriate and therefore dangerous. The manufacturer does not accept any contractual or extra-contractual liability for any damage caused by improper use of the appliance.



Failure to observe the above instructions can compromise the safety of the appliance and voids the Robur warranty



Do not operate the appliance if any dangers are present: mains power problems; parts of the appliance flooded or damaged in any way; control and safety equipment tampered with or malfunctioning. In these cases, contact a professional technician for assistance.

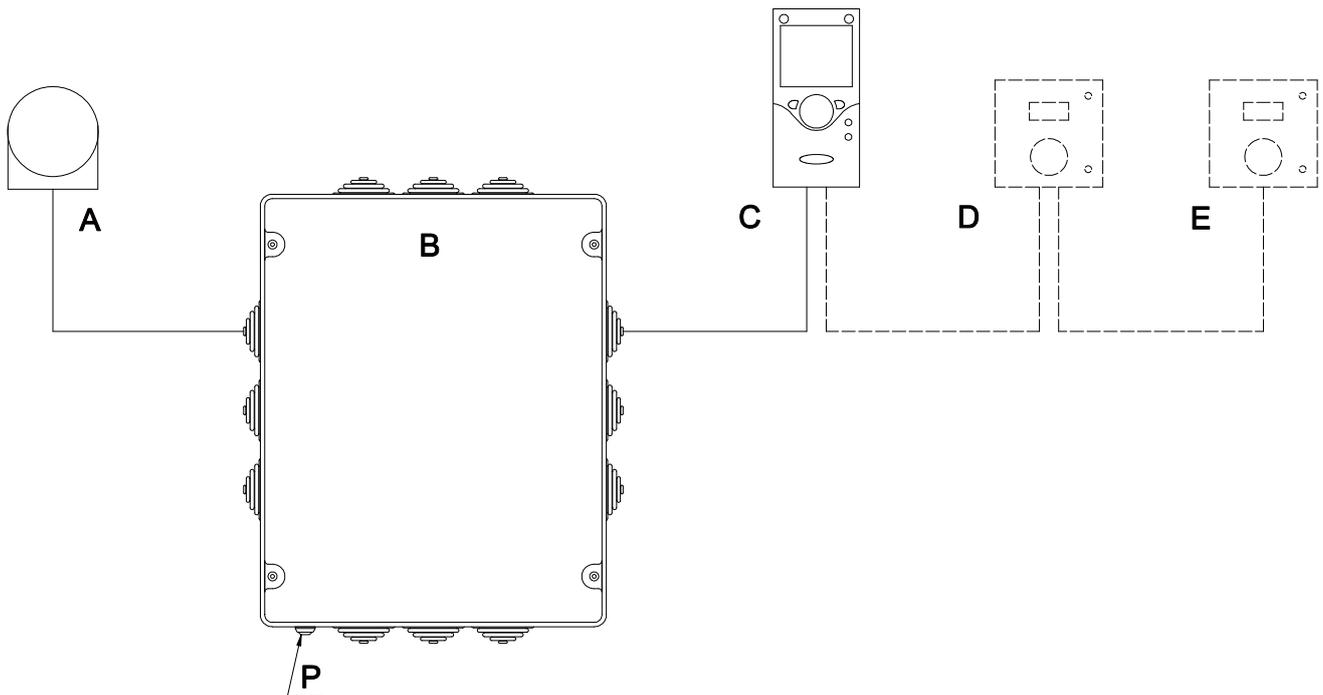


Packaging (plastic bags, polystyrene foam, etc.) must be kept out of the reach of children, as they are potentially dangerous.

## 2.2 GENERAL INFORMATION

Fig. 2.1 p. 5 shows the equipment of the K18 system controller.

**Figure 2.1** – K18 system controller components



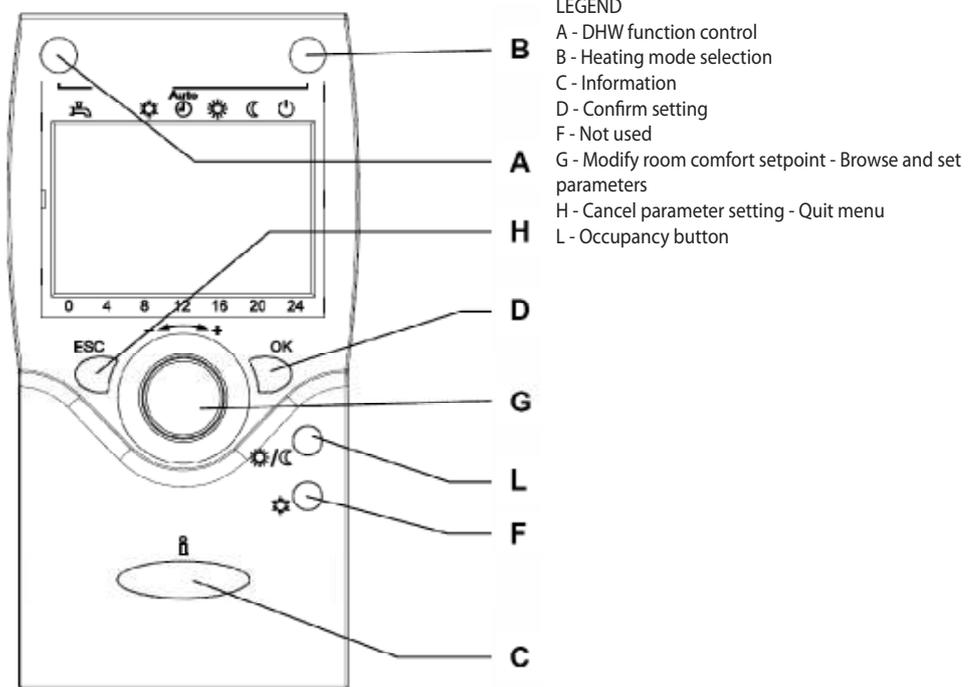
LEGEND

- A QAC34 external temperature sensor
- B CSK18 enclosure
- C Room unit 1 (QAA75.611)
- D Room unit 2 (Optional - QAA55.110, shown, or QAA75.611)
- E Room unit 3 (Optional - QAA55.110, shown, or QAA75.611)
- P K18 fault reset button

### 3 USER INSTRUCTIONS: QAA75.611 ROOM UNIT

#### 3.1 LEGEND OF COMMANDS

Figure 3.1 – QAA75.611 room unit



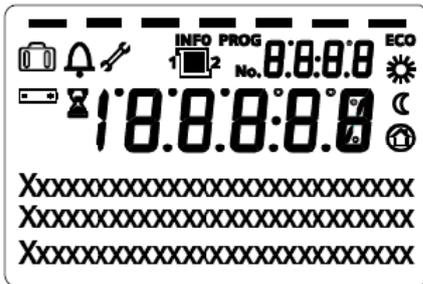
Description of QAA75.611 room unit controls

#### 3.2 DISPLAY SYMBOLS

Table 3.1 – Symbols shown on the display

	Current heating mode: Comfort setpoint
	Current heating mode: Reduced setpoint
	Current heating mode: Anti-icing protection setpoint
	Processing – please wait
	Holiday program active
	Indicates that the data on the display refer to heating circuit 1, 2 or 3, depending on the digit to the left or right of the symbol.
	Special mode / Maintenance
	Error message
	Protection mode
<b>INFO</b>	Info level active
<b>PROG</b>	Programming active
<b>ECO</b>	Heating system inactive, summer mode
	Indicates that the heat pump is running
	Indicates that the supplementary heater (e.g. boiler) is running

Figure 3.2 – Display



When it powers on, the display shows all segments for a few seconds

### 3.3 SELECTING THE HEATING MODE



Press, multiple times

if necessary, key B (fig. 3.1 p. 6) to select the heating mode. The selected mode displays with a hyphen under the respective symbol.



If multiple heating circuits are present (two or three), configured with a single room unit (factory setting), when you first press the button you are prompted to select which circuit you wish to configure; if so:

1. Turn knob G (fig. 3.1 p. 6) to select heating circuit 1, 2 or 3.
2. Press **OK** (D in fig. 3.1 p. 6) to confirm.
3. Press, multiple times if necessary, key B (fig. 3.1 p. 6) to set the heating mode.

#### Automatic mode **AUTO**

Automatic mode maintains the room temperature at the comfort or reduced level, depending on the time program.

Characteristics of automatic mode:

- ▶ Comfort or reduced heating mode, depending on time programming.
- ▶ Anti-icing protection functions active.
- ▶ Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.
- ▶ Current heating mode (depending on time program): Comfort
- ▶ Current heating mode (depending on time program): Reduced
- ▶

#### or **continuous mode**

Continuous mode always maintains the comfort or reduced room temperature

- ▶ Comfort mode heating
- ▶ Reduced mode heating

Characteristics of continuous mode:

- ▶ Constant heating mode, does not follow the time programming.
- ▶ Anti-icing protection functions active.
- ▶ Continuous operation in **Comfort mode**: automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit **disabled** (i.e. heating remains active, the said functions have no effect).

#### Anti-icing protection mode

Protection mode maintains the room temperature at the (configurable) Anti-icing protection level.

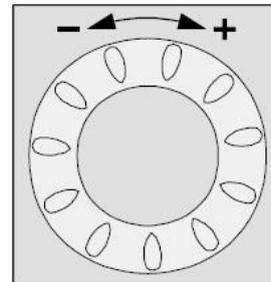
Characteristics of protection mode:

- ▶ Constant heating mode at the anti-icing protection setpoint.
- ▶ Anti-icing protection functions active.
- ▶ Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.

### 3.4 MODIFYING THE ROOM TEMPERATURE SETPOINT

Knob G (fig. 3.1 p. 6)

Figure 3.3 – Setpoint knob



#### Modifying the comfort setpoint

Turn the knob to increase the setpoint (CW) or reduce it (CCW). Confirm by pressing **OK**.



If multiple heating circuits are present (two or three), configured with a single room unit (factory setting), when you first turn the knob you are prompted to select which circuit you wish to configure; if so:

1. Turn the knob to select heating circuit 1, 2 or 3.
2. Press **OK** to confirm.
3. Turn the knob to set the setpoint value
4. Press **OK** to confirm.

#### Modifying the reduced setpoint

The reduced setpoint can only be adjusted in programming mode. Proceed as follows. For further information, refer to section **5 p. 11**

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.

2. Press **OK**.
3. Turn the knob to select the **“Heating circuit 1”, “Heating circuit 2”** or **“Heating circuit 3”** menu, depending on which circuit you want to configure.
4. Press **OK**.
5. Turn the knob clockwise to select **“Reduced setpoint”**
6. Press **OK**.
7. Turn the knob to set the value
8. Press **OK** to confirm.
9. Press **ESC** twice to go back to the start screen.

### 3.5 OCCUPANCY BUTTON



If, during heating in comfort mode, the rooms are unoccupied for a period of time, you can press the occupancy key L (fig. 3.1 p. 6) to switch to reduced mode and save heating costs.

When the rooms are occupied again, simply press the key once more to restore normal comfort mode heating.

In the same way, press the key once when in reduced mode to switch to comfort mode and press it again to restore reduced mode.



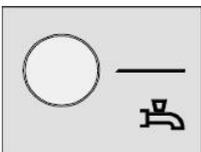
The occupancy key is only active in **automatic mode**. The setting applied by pressing the occupancy key remains active until the next change in heating mode set in the time program. For example, if you press the occupancy key while the system is in comfort mode, thus switching to reduced mode, the system will automatically return to comfort mode the next time the time program switches from reduced to comfort mode.



If multiple heating circuits (two or three) are present, configured to a single room unit (factory setting), the occupancy key effects all circuits.

### 3.6 SELECTING THE DHW MODE

#### DHW mode



Press key A (fig. 3.1 p. 6), multiple times if necessary, to set activation (two modes) or deactivation of the DHW production system. System activation is indicated on the display by one or two hyphens under the  symbol.

#### DHW mode

- ▶ **On** (two hyphens): the system produces DHW at the DHW comfort setpoint, over the 24 hours or during the periods set in the DHW time program, if active; in the latter case, DHW is held at the DHW reduced setpoint for the remainder of the time.
- ▶ **Eco On** (one hyphen): the system produces DHW at the DHW reduced setpoint over the 24 hours.
- ▶ **Off** (no hyphen): the system does not produce DHW, but the anti-icing protection function for the buffer tank is active.

### DHW forced charging function

This function forces a single charging cycle to prepare DHW at the DHW comfort setpoint.

The function can be activated independently of the DHW mode setting.

To activate the function, press and **hold down** the DHW mode button until the message **DHW charging on** displays temporarily to confirm initiation of the charging cycle.



Activating this function does not modify the DHW mode setting; when the single charging cycle terminates, the current DHW mode resumes.

### 3.7 INFORMATION DISPLAY



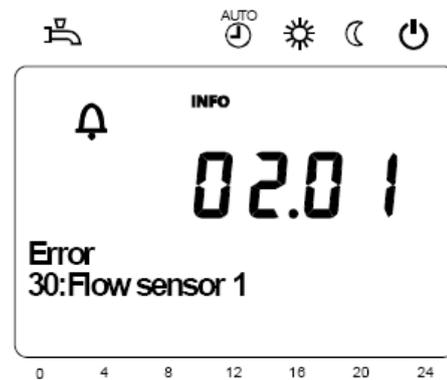
Pressing the **Info** key () (C in fig. 3.1 p. 6) starting from the start screen, displays the system's status and operating data.



If you are not sure that the display is showing the start screen, press **ESC** twice before pressing **Info** (

If the system has a fault, as indicated by the symbol  on the start screen, the first data displayed when you press **Info** (

**Figure 3.4** – Fault code and description in the Information screen



If a fault is present, refer to SECTION 6 p. 18.

Pressing **Info** (

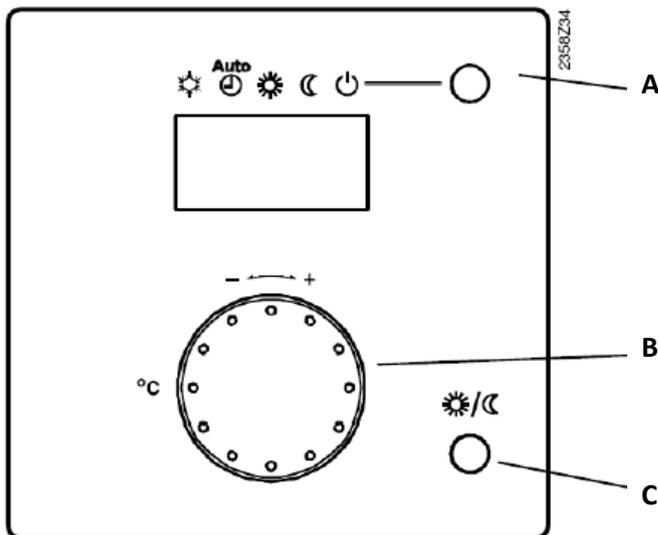
- ▶ Room temperature read by room unit 1
- ▶ Room temperature read by room unit 2 (if present)
- ▶ Room temperature read by room unit 3 (if present)
- ▶ Heat pump status
- ▶ Supplementary heater status (auxiliary boiler)
- ▶ Stato ACS
- ▶

- ▶ Heating circuit 1 status
  - ▶ Heating circuit 2 status
  - ▶ Heating circuit 3 status
  - ▶ External temperature
  - ▶ Heating circuit 1 room setpoint
  - ▶ Heating circuit 1 outlet temperature / heating circuit 1 outlet setpoint 1 (1)
  - ▶ Heating circuit 2 room setpoint, if present
  - ▶ Heating circuit 2 outlet temperature / heating circuit 2 outlet setpoint, if present (1)
  - ▶ Heating circuit 3 room setpoint, if present
  - ▶ Heating circuit 3 outlet setpoint, if present (1)
  - ▶ DHW tank temperature, if present
  - ▶ Stage 1 Off remaining min. (not used in the application, indicated with ---)
  - ▶ Stage 1 On remaining min. (not used in the application, indicated with ---)
- (1) **The circuit 1 and 2 outlet temperature is indicated only if the circuits are of the mixed type; circuit 3 is always of the not mixed type.**  
**The outlet setpoint only displays if the circuit is requesting heat.**
- Continuing to press **Info** (I) cycles through the data.  
 To return to the start screen, press **ESC**.

## 4 USER INSTRUCTIONS: QAA55.110 ROOM UNIT

### 4.1 LEGEND OF COMMANDS

Figure 4.1 – QAA55.110 room unit



LEGEND  
 A - Heating mode selection  
 B - Modify room comfort setpoint  
 C - Occupancy button

Description of QAA55.110 room unit keys

### 4.2 DISPLAY SYMBOLS

Table 4.1 – Display symbols

☀	Current heating mode: Comfort setpoint
☾	Current heating mode: Reduced setpoint
🔔	Error message

Figure 4.2 – Display



When it powers on, the display shows all segments for a few seconds

- ▶ Constant heating mode, does not follow the time programming.
- ▶ Anti-icing protection functions active.

Continuous operation in **Comfort mode**: automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit **disabled** (i.e. heating remains active, the said functions have no effect).

**Protection mode** 

Protection mode maintains the room temperature at the (configurable) Anti-icing protection level.

Characteristics of protection mode:

- ▶ Constant heating mode at the anti-icing protection setpoint.
- ▶ Anti-icing protection functions active.
- ▶ Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.

**4.3 SELECTING THE HEATING MODE**



Press, multiple times

if necessary, key A (fig. 4.1 p. 9) to select the heating mode. The selected mode displays with a hyphen under the respective symbol.



In contrast with the QAA75.611 room unit, the QAA55.110 unit is always associated with a single heating circuit and hence its settings apply only to that circuit. In the K18 system controller, this type of room unit is optionally used to control the second and third heating circuit (if present); in this case, the included QAA75.611 room unit is associated only with the first heating circuit during installation and commissioning. It follows that in this case the direct settings (i.e. those not made in programming mode) described in par. **3.3 p. 7**, **3.4 p. 7** and **3.5 p. 8** apply solely to the first heating circuit.

However, you can also change all settings for the second and third heating circuits with the included QAA75.611 room unit **in programming mode**.

**Automatic mode** 

Automatic mode maintains the room temperature at the comfort or reduced level, depending on the time program.

Characteristics of automatic mode:

- ▶ Comfort or reduced heating mode, depending on time programming.
- ▶ Anti-icing protection functions active.
- ▶ Automatic summer/winter mode switching (ECO functions) and 24 hour daily heating limit enabled.
- ▶  Current heating mode (depending on time program): Comfort
- ▶  Current heating mode (depending on time program): Reduced

 or  **continuous mode**

Continuous mode always maintains the comfort or reduced room temperature

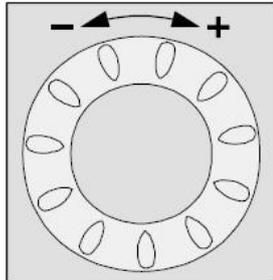
- ▶  Comfort mode heating
- ▶  Reduced mode heating

Characteristics of continuous mode:

#### 4.4 MODIFYING THE ROOM TEMPERATURE SETPOINT

Knob B (fig. 4.1 p. 9)

Figure 4.3 – Setpoint knob



##### Modifying the comfort setpoint ☀

Turn the knob to increase the setpoint (CW) or reduce it (CCW). Confirm by pressing **OK**.

##### Modifying the reduced setpoint ☾

The reduced setpoint can only be modified in programming

mode on a QAA75.611 room unit, as described in par. 3.4 p. 7.

#### 4.5 OCCUPANCY BUTTON



If, during heating in comfort mode, the rooms are unoccupied for a period of time, you can press the occupancy key C (fig. 4.1 p. 9) to switch to reduced mode and save heating costs.

When the rooms are occupied again, simply press the key once more to restore normal comfort mode heating.

In the same way, press the key once when in reduced mode to switch to comfort mode and press it again to restore reduced mode.



The occupancy key is only active in **automatic mode**. The setting applied by pressing the occupancy key remains active until the next change in heating mode set in the time program. For example, if you press the occupancy key while the system is in comfort mode, thus switching to reduced mode, the system will automatically return to comfort mode the next time the time program switches from reduced to comfort mode.

## 5 PARAMETERS AND SETTINGS

Par. 5.1 p. 11 describes how to set parameters with the user interface of the QAA75.611 room unit, and illustrates an example configuration procedure graphically. The following paragraphs detail the main user-configurable parameters.

### 5.1 PROGRAMMING

Settings which cannot be done directly with the room unit's knob and keys are done by means of programming. To display and modify the parameters of the system controller, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the menu, then press **OK** to display it.
4. Turn the knob to select the parameter you wish to view/modify; the display shows its current value.
5. To modify the value, press **OK**; the displayed value will start flashing.
  - ▶ Turn the knob to select the desired value.
  - ▶ Press **OK** to confirm it, or
  - ▶ Press **ESC** to abort the change.
6. If you want to view and modify other parameters in the same menu, turn the knob to display them; modify them as explained in point 5.
7. Once you have finished viewing and modifying the parameters of a given menu, press **ESC** to go back to the list of menus.
8. To access other menus, repeat steps 3 to 7 for each menu in question.
9. Once you have finished working with the menus, press **ESC** to return to the start screen.

automatically return to its start screen.

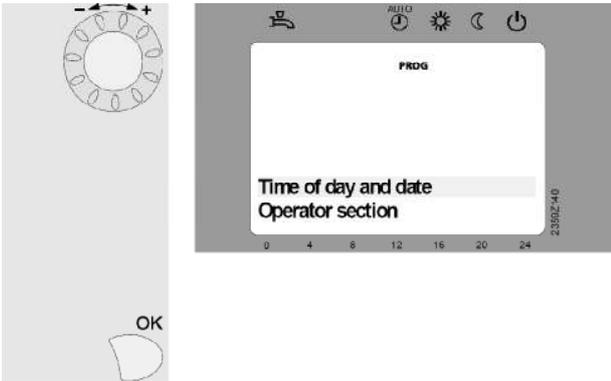
We illustrate below a sample setting: setting the time.



If you do nothing for 8 minutes the device will

Select the "Time of day and date" menu

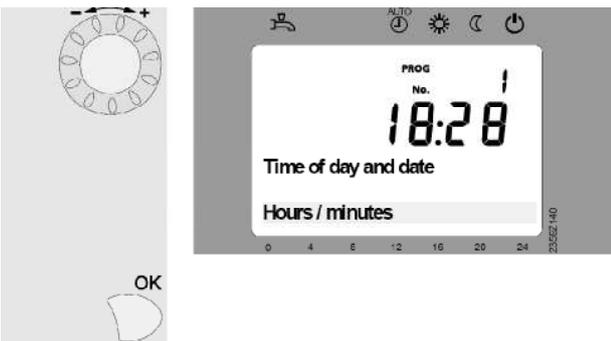
**Figure 5.1** – The display shows the time/date setting menu



**LEGEND**  
 Press **OK** (in the start menu), the display will show a list of menus.  
 Turn the knob until the **Time of day and date** menu displays.  
 Press **OK** to access the menu.

Select parameter: "Hours / minutes"

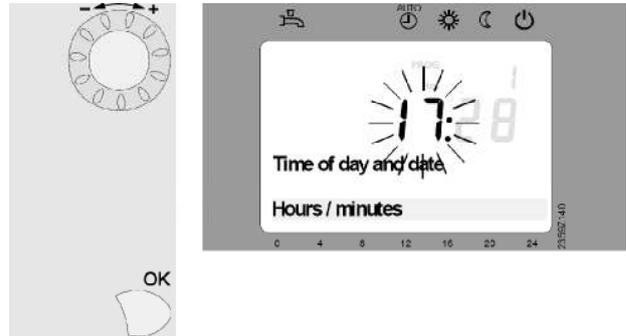
**Figure 5.2** – The display shows the hours and minutes for modification



**LEGEND**  
 The bottom of the screen displays the first parameter in the **Time of day and date** menu.  
 Turn the knob until the parameter **Hours / minutes** displays.  
 Press **OK** to select the parameter.

Modify the hour

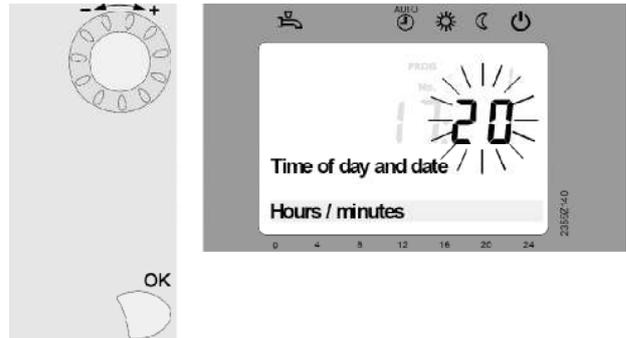
**Figure 5.3** – The display shows the hours, flashing



**LEGEND**  
 The display shows the hours, flashing  
 Turn the knob to set the hours.  
 Press **OK** to confirm.

Modify the minutes

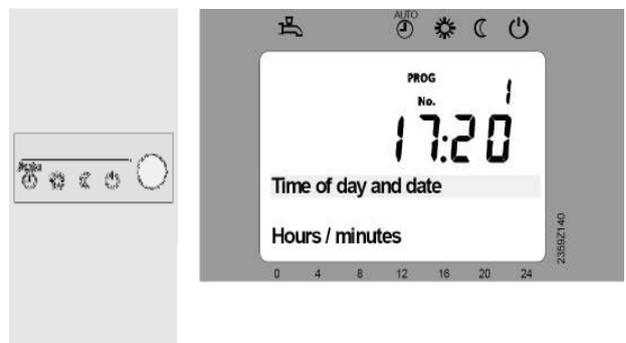
**Figure 5.4** – The display shows the minutes, flashing



**LEGEND**  
 The display shows the minutes, flashing  
 Turn the knob to set the minutes.  
 Press **OK** to confirm.

Hours and minutes modified

**Figure 5.5** – The display shows the set time



**LEGEND**  
 The settings have been saved. The display stops flashing.  
 Turn the knob to display the **Day / month** and **Year** parameters; to set them, proceed in the same way. After making the settings, press **ESC** once to return to the list of menus, and again to go back to the start screen.

## 5.2 LANGUAGE

To set the language, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Operator section** menu.
4. Press **OK** to access the menu.
5. Parameter **20 (Language)** displays; to adjust it:
  - ▶ press **OK**, the current language, at the bottom right of the screen, starts flashing;
  - ▶ turn the knob to select your language;
  - ▶ press **OK** to confirm; the new language selection displays without flashing.
6. Press **ESC** once to return to the list of menus, and again to return to the start screen.

## 5.3 DATE AND TIME

The controller has an annual clock with the following main characteristics:

- ▶ Automatic leap year adjustment
- ▶ Automatic switching between summer and winter time
- ▶ Backup charge to handle temporary power faults



To use the time programs and holiday programs, the date and time must be set correctly.



The switch from winter to summer time happens at 02:00 of the last Sunday of March (at 02:00 the timer is automatically set to 03:00); the switch from summer to winter time happens at 03:00 of the last Sunday of October (at 03:00 the timer is set back to 02:00).

To set the date and time, proceed as follows (this procedure is also given as an example with illustrations in par. 5.1 p. 11):

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Time of day and date** menu.
4. Press **OK** to access the menu.
5. Parameter **1 (Hours / minutes)** displays; to adjust it:
  - ▶ press **OK**, the two leftmost digits (hours) start flashing;
  - ▶ turn the knob to set the hours;
  - ▶ press **OK** to confirm; the new value of the hours displays without flashing, while the two right most digits (minutes) start flashing;
  - ▶ turn the knob to set the minutes;
  - ▶ press **OK** to confirm; the new time (hours and minutes) displays without flashing
6. Turn the knob to select parameter **2 (Day / month)**; to adjust it:
  - ▶ press **OK**, the two leftmost digits (month) start flashing;
  - ▶ turn the knob to set the month;
  - ▶ press **OK** to confirm; the new value of the month displays without flashing, while the two right most digits (day) start flashing;
  - ▶ turn the knob to set the day;
  - ▶ press **OK** to confirm; the new month and day display without flashing.

7. Turn the knob to select parameter **3 (Year)**; to adjust it:
  - ▶ press **OK**, the year digits start flashing;
  - ▶ turn the knob to set the year;
  - ▶ press **OK** to confirm; the new year value displays without flashing.

Once you have set the date and time, press **ESC** to return to the list of menus; you can now make other settings, or press **ESC** again to go back to the start screen.

Table 5.1 p. 13 lists the codes of the parameters used to set the date and time.

**Table 5.1** – Date and time setting parameter codes

Parameter code	Description of parameter
1	Hours/minutes HH:MM
2	Day/month DD:MM
3	Year YYYY

## 5.4 TIME PROGRAMS

The heating circuits (or zones) and DHW system (if present) each have their own dedicated weekly time program.

As described in par. **3.3 p. 7** and **4.3 p. 10**, the time program associated with a given heating circuit is activated when **automatic** mode is selected for the circuit in question.

For the DHW system, you can activate/deactivate the time program, but this can only be done by a TAC. The factory setting has this time program inactive (DHW comfort setpoint maintained all 24 hours). Even modifications to the DHW reduced setpoint (factory set to 45.0 °C) must be done by the TAC.

Each time program enables you to set up to 3 periods of operation with the comfort setpoint for each day of the week; outside these periods, the system maintains the reduced setpoint. The factory setting for the heating circuit time programs provides, for each day of the week, a period using the comfort setpoint from **6:00 to 22:00**; the DHW time program (when activated by the TAC) has two periods with the comfort setpoint: from **00:00 to 5:00** and **17:00 to 21:00**.

These settings can be changed as follows:

### Heating circuit 1 time program

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Time prog heating/cooling 1** menu.
4. Press **OK** to access the menu.
5. Parameter **500 (Preselection)** displays, the value of which indicates the days of the week for which the following settings will apply; you can set the values:
  - Mo - Su** to set all days of the week to the same settings
  - Mo - Fr** to set all working days to the same settings
  - Sa - Su** to set the weekend days to the same settings
  - Mo, Tu, We, Th, Fr, Sa, Su** to program the days individually.

To modify the initial setting (**Mo - Su**):

- ▶ press **OK**, the parameter's value will start flashing;
- ▶ turn the knob to set the value;
- ▶ press **OK** to confirm; the new preselection value will display without flashing at the bottom right; the following settings will apply to the days in question

6. Turn the knob to select parameter **501 (1st period on)** the value of which indicates the start time (hours and minutes) of the first daily period with the comfort setpoint; to modify this value:
  - ▶ press **OK**, the parameter's value will start flashing;
  - ▶ turn the knob to set the value;
  - ▶ press **OK** to confirm; the new value displays without flashing at the bottom right.
7. Turn the knob to select parameter **502 (1st period off)** the value of which indicates the end time (hours and minutes) of the first daily period with the comfort setpoint; to modify this value:
  - ▶ press **OK**, the parameter's value will start flashing;
  - ▶ turn the knob to set the value;
  - ▶ press **OK** to confirm; the new value displays without flashing at the bottom right.
8. If you need to set a second daily period with the comfort setpoint, proceed as indicated in steps 6 and 7 to set the value of parameters **503 (2nd period on)** and **504 (2nd period off)**.
9. If you need to set a third daily period with the comfort setpoint, proceed as indicated in steps 6 and 7 to set the value of parameters **505 (3rd period on)** and **506 (3rd period off)**.
10. If you need to program other days of the week, turn the knob to select **500 (Preselection)** again and proceed as indicated in step 5 to set a new value; then repeat steps 6 and 7 as many times as required to set one or more daily periods with the comfort setpoint for the days of the week in question.

▶ For the rest of the procedure, refer to table 5.2 p. 15 for the parameter codes.



if the **Time program 4/DHW** is not displayed, this means that the DHW time program is deactivated (factory setting, comfort setpoint maintained throughout 24 hours); contact the TAC to have it activated if necessary.

Once you have finished setting the time program parameters, press **ESC** to return to the list of menus; you can now configure other time programs, or press **ESC** again to go back to the start screen.



An inactive period is indicated by hyphens ( - :- - ) in place of the time (hours and minutes) for the respective **"Period on"** and **"Period off"** parameters. To set a parameter to the disabled setting, turn the knob clockwise until the hyphens display.



You can also copy all programming of a given preselection of days of the week, excepting **Mo - Su**, to specific days of the week, using parameter **515 (Copy)**:

- ▶ set parameter **500 (Preselection)** to the days of the week you wish to copy, as described in steps 1 – 5 above.
- ▶ turn the knob to select parameter **515 (Copy)**
- ▶ press **OK**, the parameter's value will start flashing
- ▶ turn the knob to set the day of the week to copy the values from the preselected days of the week to.
- ▶ press **OK** to confirm; all the programming of the preselected day/s of the week will be copied to that day.

Once you have finished setting the time program parameters for heating circuit 1, press **ESC** to return to the list of menus; you can now configure other time programs, or press **ESC** again to return to the start screen.

### Heating circuit 2 and 3 time programs, and DHW system time program (if present)

These programs are set in the same way as for heating circuit 1, with the following differences:

- ▶ In step 3, select the menu:
  - ▶ **Time prog heating/cooling 2**
  - ▶ **Time prog heating/cooling 3**
  - ▶ **Time program 4/DHW**

depending on the time program you wish to set.

Table 5.2 – Time program parameter codes

Parameter code				Description of parameter
HC1	HC2	HC3	4/DHW	
500	520	540	560	Preselection Mo – Su / Mo – Fr / Sa – Su / Mo / Tu / We / Th / Fr / Sa / Su
501	521	541	561	1st period On HH:MM [factory setting: HC1, HC2, HC3: 06:00; DHW: 00:00]
502	522	542	562	1st period Off HH:MM [factory setting: HC1, HC2, HC3: 22:00; DHW: 05:00]
503	523	543	563	2nd period On HH:MM [factory setting: HC1, HC2, HC3: - - - -; DHW: 17:00]
504	524	544	564	2nd period Off HH:MM [factory setting: HC1, HC2, HC3: - - - -; DHW: 21:00]
505	525	545	565	3rd period On HH:MM [factory setting: HC1, HC2, HC3, DHW: - - - -]
506	526	546	566	3rd period Off HH:MM [factory setting: HC1, HC2, HC3, DHW: - - - -]
515	535	555	575	Copy Mo / Tu / We / Th / Fr / Sa / Su

## 5.5 HOLIDAY PROGRAMS

Each heating circuit (or zone) also has its own holiday program. As for time programming, each holiday program is active only when the heating circuit in question is running in **automatic** mode; refer to par. 3.3 p. 7 and 4.3 p. 10.

Each holiday program allows you to set up to 8 periods of absence over the year; for each period you can specify whether the room units should maintain the reduced or anti-icing protection setpoints.

To set the holiday programs, proceed as follows:

### Heating circuit 1 holiday program

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK** on the room unit; this displays the list of menus.
3. Turn the knob to select the **Holidays zone 1** menu.
4. Press **OK** to access the menu.
5. Parameter **641 (Preselection)** displays, the value of which indicates the period of absence for which the following settings will apply; you can set the values:

#### Period 1, Period 2, .... Period 8.

To modify the initial setting (**Period 1**):

- ▶ press **OK**, the parameter's value will start flashing;
  - ▶ turn the knob to set the value;
  - ▶ press **OK** to confirm; the new preselection value will display without flashing at the bottom right; the following settings will apply to the period in question
6. Turn the knob to select parameter **642 (Period 1: Start)** the value of which indicates the date (day and month) on which the first period of absence starts; to modify this value:
    - ▶ press **OK**, the two leftmost digits (month) start flashing;
    - ▶ turn the knob to set the month;
    - ▶ press **OK** to confirm; the new value of the month displays without flashing, while the two leftmost digits (day) start flashing;
    - ▶ turn the knob to set the day;
    - ▶ press **OK** to confirm; the date displays without flashing.
  7. Turn the knob to select parameter **643 (Period 1: End)** the value of which indicates the date (day and month) on which the first period of absence ends; to modify this value:
    - ▶ press **OK**, the two leftmost digits (month) start

flashing;

- ▶ turn the knob to set the month;
  - ▶ press **OK** to confirm; the new value of the month displays without flashing, while the two leftmost digits (day) start flashing;
  - ▶ turn the knob to set the day;
  - ▶ press **OK** to confirm; the date displays without flashing.
8. Turn the knob to select parameter **648 (Operating level)** the value of which indicates the room setpoint to be maintained during the period in question; to change the setting:
    - ▶ press **OK**, the parameter's value will start flashing;
    - ▶ turn the knob to set the value:
      - **Protection** (anti-icing protection setpoint) or:
      - **Reduced** (reduced setpoint);
    - ▶ press **OK** to confirm; the new value displays without flashing.
  9. If you need to set other annual periods of absence, repeat steps 5, 6, 7 and 8 as many times as needed, with a different **Period** of absence in step 5 each time (**Period 2**, **Period 3**, etc.)



An inactive period of absence is indicated by hyphens (- - - -) in place of the date (day and month) for the respective "**Period n: Start**" and "**Period n: End**" parameters. To set a parameter to the disabled setting, turn the knob counterclockwise until the hyphens display.

Once you have finished setting the holiday program parameters for heating circuit 1, press **ESC** to return to the list of menus; you can now configure other holiday programs, or press **ESC** again to go back to the start screen.

### Heating circuit 2 and 3 holiday programs

These programs are set in the same way as for heating circuit 1, with the following differences:

- ▶ In step 3, select the menu:
  - ▶ **Holidays zone 2**
  - ▶ **Holidays zone 3**

depending on the holiday program you wish to set.

- ▶ For the rest of the procedure, refer to table 5.3 p. 16 for the parameter codes.

Once you have finished setting the holiday program parameters, press **ESC** to go back to the list of menus; you can now configure other holiday programs, or press **ESC** again to return to the start screen.

**Table 5.3** – Holiday program parameter codes

Parameter code			Description of parameter
HC1	HC2	HC3	
641	651	661	Preselection Period 1 / Period 2 / ... / Period 8
642	652	662	Period n: Start (n: 1 – 8) DD:MM [factory setting: - - - -]
643	653	663	Period n: End (n: 1 – 8) DD:MM [factory setting: - - - -]
648	658	668	Operating level Protection / Reduced



There is no holiday program for DHW production. If you intend to be away for a long time, you can:

- ▶ set **ECO** mode for the DHW system; the system will produce DHW at the DHW reduced setpoint temperature over the 24 hours

or:

- ▶ deactivate the DHW system; no DHW will be produced.

Both these settings can be made by pressing the dedicated button on the QAA75.611 room unit, as described in par. **3.6 p. 8**



In **ECO** mode, if the legionella function is enabled (see par. **5.7 p. 17**) the system will run regular thermal disinfection cycles.



Remember to restore normal operation when back.

## 5.6 HEATING CIRCUIT SETTINGS

Each heating circuit (or zone) has some own menu in which you can set its operating parameters.

The most commonly used parameters operating (mode and comfort setpoint) can also be set directly, as described in par. **3.3 p. 7** and **4.3 p. 10**, **3.4 p. 7** and **4.4 p. 11**; par.

**Table 5.4** – Heating circuit parameter codes

Parameter code			Description of parameter
HC1	HC2	HC3	
700	1000	1300	Operating mode Protection / Automatic / Reduced / Comfort
710	1010	1310	Comfort setpoint (Ambient comfort setpoint) CC.C °C [factory setting: HC1, HC2, HC3: 21.0 °C]
712	1012	1312	Reduced setpoint (Ambient reduced setpoint) RR .R °C [factory setting: HC1, HC2, HC3: 18.0 °C]
714	1014	1314	Protection setpoint (Ambient frost protection setpoint) PPP °C [factory setting: HC1, HC2, HC3: 7.0 °C]
720	1020	1320	Heating curve slope 0.10 – 4.00 [factory setting: HC1, HC2: 0.76; HC3: 1.26]
730	1030	1330	Summer/winter heating limit LL.L °C [factory setting: 18.0 °C]
742	1042	1342	Flow temp setpoint room stat - - - °C ( <b>Do not change this setting</b> )

We explain the parameters listed in Table 5.4 p. 16 below

### Comfort, reduced and frost protection modes and setpoints

These parameters are detailed in par. **3.3 p. 7** and **4.3 p. 10**,

**3.4 p. 7** also describes how to set the reduced setpoint in programming mode.

**This paragraph is thus only of interest to the end user if he wishes to make special settings; in case of doubt, contact the TAC.**

To access the settings menu, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK**; this displays the list of menus.
3. Turn the knob to select the menu:
  - ▶ **Heating circuit 1**
  - ▶ **Heating circuit 2**
  - ▶ **Heating circuit 3**

depending on which circuit you wish to configure.

4. Press **OK** to access the menu.
5. Turn the knob to select the parameter, with reference to Table 5.4 p. 16.
6. Press **OK**, the parameter's value will start flashing
7. Turn the knob to set the value
8. Press **OK** to confirm.
9. If you wish to set other parameters in the same menu, repeat steps 5, 6, 7 and 8 for each parameter in question.

Once you have finished setting the parameters for a given heating circuit, press **ESC** to return to the list of menus; you can now configure other heating circuits, or press **ESC** again to return to the start screen.

**3.4 p. 7 and 4.4 p. 11.**

Directly setting the operating mode and Comfort setpoint is exactly the same as setting them in programming mode.

**Heating curve slope**

Each heating circuit (or zone) has its own heating curve. The heating curve enables the system to modify the outlet temperature as a function of the external temperature, adapting the thermal power delivered to the terminals (radiators, fan coil units, floor radiators, etc.) to the building's actual heating requirements. It follows that the outlet temperature will be higher for lower external temperatures, while it will be lower for higher external temperatures.

This technique has considerable advantages compared to constant outlet temperature solutions:

- ▶ room comfort is greatly improved thanks to a delivery of thermal power which is commensurate to need, and hence more constant; this avoids alternating periods of excessive heating with periods of no heating at all, which results in oscillating room temperature.
- ▶ The system is more efficient thanks to the higher efficiency of the K18 heat pump and lower thermal dispersion, both due to the lower water temperature delivered during the greater part of the cold season; the result is considerable cost savings.

Depending on the type of terminal and their size, one must set the correct heating curve as a function of the slope parameter. When first starting up the system, the technician set this parameter to a value suited to the type and size of terminals for each circuit.

However, after a first period of operation in variable climate conditions, you may remark that the room temperature is not constant with variations in the external temperature; in particular, two cases may arise:

1. the room temperature is **lower** when the external temperature is **lower**
2. the room temperature is **higher** when the external temperature is **lower**



to avoid coming to a hasty conclusion, this assessment should be based on several observations, as follows:

- ▶ external temperature stable for at least two days (i.e., do not make observations while the weather is changing)
- ▶ at the same time of day, in heating mode with the comfort setpoint active for at least the last several hours
- ▶ with the same comfort setpoint value
- ▶ without using, at least in the 24 hours previous to the observation, other adjusting equipment, such as manual or thermostatic valves on radiators, or zone thermostats with or without timers: the valves must be kept completely open and the zone thermostat settings must be at least a few degrees higher than the comfort setpoint.

If the assessment confirms that the situation corresponds to case **1**, you must **increase** the slope of the heating curve, so as to increase thermal power delivery when the external temperature is low.

If, on the other hand, the situation corresponds to case **2**, you must **decrease** the Heating curve slope, to reduce thermal power delivery when the external temperature is low.



We recommend making gradual adjustments, so as to avoid major changes to the setting; for example, when using a moderate slope heating curve (1.26), to obtain a variation of 1°C in the room temperature, the slope must be varied by:

- ▶ 0.08 at an external temperature of -5 °C
- ▶ 0.06 at an external temperature of -10 °C
- ▶ 0.04 at an external temperature of -20 °C

For example, if you find that at -10 °C the room temperature is 1 °C lower than that obtained in mild climatic conditions, you should increase the slope by 0.06.

If, on the other hand, you find that at -5 °C the room temperature is 2 °C higher than that obtained in mild climatic conditions, decrease the slope by 0.16.

Furthermore, after each change in the setting, let the system stabilise for 1-2 days to assess its effect.

**Summer/winter heating limit**

For each heating circuit (or zone), a parameter is available to define the external temperature above which the heating system is automatically deactivated and below which it is activated.

- ▶ Increasing the value
  - ▶ Brings forward activation of the heating system
  - ▶ Delays deactivation of the heating system
- ▶ Decreasing the value
  - ▶ Delays activation of the heating system
  - ▶ Brings forward deactivation of the heating system



The external temperature in question is not that measured at a given time, but rather a value filtered to account for the building's thermal inertia.



Heating is not deactivated when the limit value is exceeded if the heating circuit is set to operate in continuous comfort mode.

**Flow temp setpoint room stat**

For correct operation of the system, do not change the setting of this parameter from the factory value of - - - °C (function disabled).

**5.7 DHW SYSTEM SETTINGS**

The DHW system can be activated and deactivated directly, as described in par. **3.6 p. 8**. You can do the same in programming mode; you can also modify the DHW comfort setpoint, i.e. the temperature maintained by the system in the DHW buffer tank.

To access the settings menu, proceed as follows:

1. Make sure the display is showing the start screen; press **ESC** twice to be certain.
2. Press **OK**; this displays the list of menus.
3. Turn the knob to select the **DHW** menu
4. Press **OK** to access the menu.
5. Turn the knob to select the parameter, with reference to Table 5.5 p. 18.
6. Press **OK**, the parameter's value will start flashing
7. Turn the knob to set the value
8. Press **OK** to confirm.
9. If you wish to set other parameters in the same menu, repeat steps 5, 6, 7 and 8 for each parameter in question.

Once you have finished setting the parameters, press **ESC** to return to the list of menus; you can now configure parameters in other menus, or press **ESC** again to go back to the start screen.

**Table 5.5** – DHW system parameter codes

Parameter code	Description of parameter
DHW	
1600	Operating mode Off / On / Eco
1610	Nominal setpoint (Comfort setpoint) CC.C °C [factory setting: 55.0 °C]

**Operating mode**

This parameter is described in detail in par. 3.6 p. 8.



Directly setting the operating mode is exactly the same as setting them in programming mode.

**Comfort setpoint**

The factory setting of 55 °C is suited to the vast majority of

household installations.

If the DHW buffer tank is oversized, reducing this value to 50 °C will yield cost savings.

If, on the other hand, the tank is relatively small (not an advisable situation), you can increase the value. However, we recommend not exceeding a value of around 57-58 °C; doing so can impact the efficiency of DHW production.

**Activating the DHW time program and modifying the DHW reduced setpoint**

AS explained in par. 5.4 p. 13, these settings must be made by a TAC.

**Legionella protection**

The DHW system includes an optional function which regularly runs a thermal cycle to prevent and eliminate legionella bacteria. The cycle consists in periodically raising the DHW temperature to a value which kills off the bacteria.

The function is disabled as the factory default, and must be enabled by a TAC if required.

Once enabled, the factory legionella cycle settings are given in Table 5.6 p. 18.

If necessary, the TAC can modify these settings.

**Table 5.6** – Legionella disinfection cycle factory settings

Disinfection cycle characteristics	Setting
Programming type	Weekly
Day of execution	Thursday
Start time	02:00
Setpoint	60 °C
Setpoint hold time	45 min



Be aware that, when the legionella cycle is activated, the DHW temperature in the buffer tank will be greater than

normal for a few hours after the thermal disinfection cycle executes. **Risk of scalding!**

## 6 ERRORS

### 6.1 ERROR LIST

Table 6.1 p. 18 lists the error codes generated by the K18 system controller, along with their descriptions and priorities. The last column of the table lists measures for resolving the problem.

**Table 6.1** – List of system controller errors for K18

Code	Description	Priority	See:
10	Outside sensor B9	6	Par. 6.2
26	Common flow sensor B10	6	Par. 6.2
30	Flow sensor 1 (1)	6	Par. 6.2
32	Flow sensor 2 (6)	6	Par. 6.2
50	DHW sensor 1 (2)	6	Par. 6.2
60	Room sensor 1 (3)	6	Par. 6.2
65	Room sensor 2 (4)	6	Par. 6.2
68	Room sensor 3 (7)	6	Par. 6.2
83	BSB, short-circuit (5)	8	Par. 6.2
84	BSB, address collision	3	Par. 6.2
103	Communication failure	3	Par. 6.2
127	Legionella temp	6	Par. 6.2
324	BX same sensors	3	Par. 6.2
330	BX1 no function	3	Par. 6.2
331	BX2 no function	3	Par. 6.2
332	BX3 no function	3	Par. 6.2
333	BX4 no function	3	Par. 6.2

Errors are shown on the QAA75.611 room unit's display with the symbol . If you press  when this symbol is displayed, the unit will display the code and description of the highest priority error. No other errors will be displayed until this error is resolved.

370	Thermodynamic source	9	Par. 6.3
441	BX31 no function	3	Par. 6.2
442	BX32 no function	3	Par. 6.2
443	BX33 no function	3	Par. 6.2
444	BX34 no function	3	Par. 6.2

- (1) Probe B1 (heating circuit 1 outlet sensor)
- (2) Probe B3 (DHW production tank probe)
- (3) Room unit 1
- (4) Room unit 2
- (5) Shown in this form in the error log, accessible to TAC. The information screen displays the text **"No connection"** without error code.
- (6) Probe B12 (heating circuit 2 outlet sensor)
- (7) Room unit 3

## 6.2 SYSTEM CONTROLLER ERROR HANDLING

Errors normally reset themselves automatically when their cause is eliminated; only in some cases need they be reset manually, as indicated below.

In presenza di errore di codice **370 (Sorgente termodinamica)**, si operi come indicato nel Paragrafo 6.3 p. 19.

The presence of other error codes usually indicates fault of a sensor or system cable, or problems due to incorrect configuration of the system controller (e.g. due to an inexperienced attempt to modify the configuration).



Modifications to the settings described in this manual do NOT cause errors.

In any case, proceed as follows:

1. Nel caso in cui, accedendo alla schermata di informazione dell'errore come descritto nel Paragrafo 6.1 p. 18, compaia in basso a sinistra la scritta **Reset ?** ed in basso a destra la scritta **Sì**, premendo due volte il tasto **OK** è possibile eseguire il tentativo di reset dell'errore.
2. If the operation described in point 1 is not applicable (the error information screen does not prompt for a reset) or does not resolve the problem, shut off electrical power to the system controller and then power it on again.
3. If the operation described in point 2 does not resolve the problem, note down the room unit error code and contact the TAC.

## 6.3 K18 ERROR HANDLING

If error code **370 (Thermodynamic source)** is reported, to indicate a problem with the K18 heat pump:

1. Wait up to 20-30 minutes. In most cases, a K18 error is reported in response to transitory events which are automatically resolved by the unit's on-board controller.
2. If the error persists, press either the reset button on the right side of the K18 unit (next to the transparent window over the on-board controller's display), or the button on the system controller enclosure, shown in fig. 2.1 p. 5.
3. If the error persists or recurs within a few minutes:
  - ▶ check that the K18 unit is powered on (the display, visible via the transparent window, is on); if not, restore power;
  - ▶ check that the gas supply is present; for example, check whether the check valve is closed. After resolving the problem, press either of the reset buttons as indicated in point 2.

4. If the problem is still not resolved even after restoring electrical power and the gas supply, contact the TAC. If possible, make sure to note down the error code/s on the K18 unit's display, and report them to the TAC.
  - ▶ The display will show one or more flashing codes like **u xxx** or **E xxx**; the letter **u** or **E** is green, **xxx** is a three digit numerical code, which displays in red.
  - ▶ If multiple fault codes are present, they will be displayed in sequence: note down all the codes.



The error codes display alternately with other information:

- outlet water temperature, preceded by a green  symbol

- inlet water temperature, preceded by a green  symbol

- difference between the two temperatures, preceded by a green  symbol

If at least one error code is present, the green  ,  and  symbols will display flashing.

If the display is showing this information, you may therefore have to wait a few seconds before the error codes are displayed.

For further details, refer to the "K18 Installation, user and maintenance manual".

## Robur mission

Robur is dedicated to dynamic progression in research, development and promotion of safe, environmentally-friendly, energy-efficiency products, through the commitment and caring of its employees and partners.



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