INSTALLATION AND OPERATION MANUAL

Central control for hydroboxes

EKCC8-W

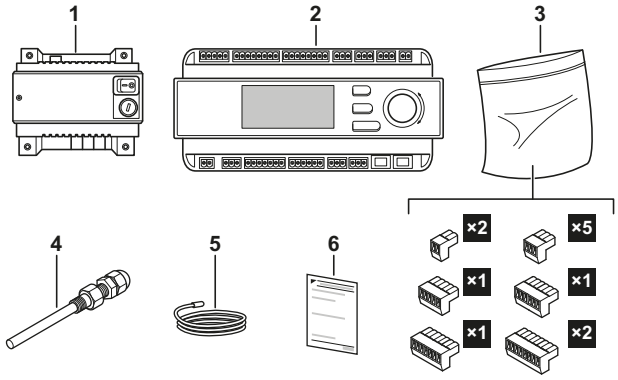
Table of contents

Page

1. Supplied accessories and intended use ... 1
2. General layout and setup of a system ... 2
3. Installation ... 3
   - 3.1. Mounting place ... 3
   - 3.2. Wiring the central control ... 3
4. Installer settings ... 3
   - 4.1. Confirmation of the installer settings ... 3
   - 4.2. Language ... 3
   - 4.3. Operating modes? ... 4
   - 4.4. Centralized DHW tank? ... 4
   - 4.5. Backup heater room heating? ... 5
   - 4.6. System layout? ... 5
     - ON/OFF method ... 5
     - Number of zones ... 5
     - Configuration ... 5
   - 4.7. Control parameters ... 6
   - 4.8. Diagnostics ... 6
   - 4.9. IP settings ... 6
5. Operation ... 6
   - 5.1. Basic control ... 6
   - 5.2. Main menu ... 6
     - To System info ... 6
     - To Unit info ... 6
     - To DHW info ... 6
     - To User settings ... 7
6. Alarm handling ... 8
   - 6.1. Unit alarms ... 8
   - 6.2. System alarms ... 8
   - 6.3. Alarm menu ... 8
7. Troubleshooting ... 8
8. Figures ... 9
9. Operation of the central control and menu structure ... 12
10. Optional modules ... 17

The original instructions are written in English. All other languages are translations of the original instructions.

1. Supplied accessories and intended use



1 Power supply 24 V AC for Microtech III controller (Siemens)
2 POL687.70 Microtech III central control (Siemens/McQuay)
3 Connectors for Microtech III controller
4 Sensor holder
5 Sensor for common leaving water
6 Basic installation instructions

Intended use

The central control is used to control following units in cascade.

- EKHBRD* series
- EKHVM* series
- HXHD125*
- EWAQ16..64
- EWYQ16..64
- SEHVX*
- EH*CA

Every unit or group of units is connected through a ModBus gateway (to be bought separately from Daikin) to the central control. For required type of Modbus gateway, see the general catalogue.

Moreover, the central control can control other components of the installation as explained in "2. General layout and setup of a system" on page 2.

Options

- EKCLWS
  Tank sensor for centralized DHW tank.
- EKCMBACIP
  Allows settings on the EKCC through BacNetIP. Refer to "10. Optional modules" on page 17 for more information.
- EKCMBACMSTP
  Allows settings on the EKCC through BacNet MSTP. Refer to "10. Optional modules" on page 17 for more information.
- EKCM200J
  Allows settings on the EKCC through Modbus. Refer to "10. Optional modules" on page 17 for more information.
- EU.SB.5000002
  Advanced webserver. Allows alarm messaging by e-mail. Refer to "10. Optional modules" on page 17 for more information.

2. General layout and setup of a system

The central control can control the following in a system:

- Leaving water temperature to the secondary circuit (circuit to the heat emitters)
  The setpoint for the leaving water temperature to the secondary circuit can be set. The central control will change the setpoint of the units and switch more or less units ON/OFF in order to reach this setpoint.
- Pump of the secondary circuits (2 zones)
- Backup heater for room heating
- Domestic hot water temperature in a centralized domestic hot water tank

In case of a system with domestic hot water, the system can be set up in 2 ways:

1. System with integrated hot water tank(s) (with EKHBRD/EKHVM hydroboxes)
   Refer to Figure 3: System with integrated hot water tanks on page 11 for a setup example.
   In this case, the units for domestic hot water have their own tank, 3-way valve and 3-way valve control. The parameters for heating domestic hot water (setpoint, schedule, etc.) must be set on the control of the unit itself. Refer to the operation/installation manual of the unit.
   On the central control, you can define whether a unit has domestic hot water function or not. (This can be defined in the installer settings. Refer to "Configuration" on page 5.)
   If the unit is defined as a unit for domestic hot water, it will always get the lowest priority to start up during room heating, in order to reserve it as much as possible for DHW heating. During room cooling, it will always get the highest priority in order to recover the heat to the DHW tank.
   When the system is set to heating or cooling (on the central control or by external contact connected to the central control), the central control will switch on the pump of the secondary circuit and change the setpoint of the hydroboxes in order to reach the setpoint for the leaving water temperature to the secondary circuit.
   If the hydroboxes cannot reach the set temperature to the secondary circuit and depending on other parameters set on the central control, the central control will also switch on the backup heater and open the backup heater valve.
2. System with centralized domestic hot water tank
   Refer to Figure 2: System with centralized domestic hot water tank on page 10 for a setup example.
   In this case, a tank sensor in the centralized tank is connected to the central control. The central control will increase the setpoint of the units and switch the 3-way valve when the temperature in the tank becomes too low. The tank can also be heated by a backup heater. Refer to "4.4. Centralized DHW tank?", Backup heater settings.

INFORMATION

This means that the units are put in heating mode to heat the DHW tank. For this reason, this setup is only applicable to EKHBRD*AC units set to the so-called 'DHW application setting'.

This must be done by setting the indoor unit parameters 5-04=1 and 7-01=1. Refer to the installation manual of the indoor units for information about how to set the parameters.

Refer also to configuration C of the 'Application guide Altherma flex for commercial applications').

This setup is not advised for EKHVM units, since heating mode is only possible up to an outdoor temperature of 25°C.

For EWYQ units, post-heating of domestic hot water might be required, since the maximum leaving water temperature of these units is limited to 50°C.

When the system is set to heating or cooling (on the central control or by external contact connected to the central control), the central control will switch on the pump of the secondary circuit, switch the hydroboxes ON/OFF and change the setpoint in order to reach the setpoint for the leaving water temperature to the secondary circuit.
If the hydroboxes cannot reach the set temperature to the secondary circuit and depending on other parameters set on the central control, the central control will also switch on the backup heater and the backup heater valve for room heating.
Domestic hot water heating by heatpump or backup heater will be prevented when the contact S3 from the solar station is closed.
Note: In the example BUH1 and BUH2 act as backup heaters for room heating step 1 and step 2. BUH2 also acts as backup heater for DHW and is at that time switched ON by output D08 (BUHw).

3. Installation

3.1. Mounting place

When the central control is ON, the units will be controlled (setpoint setting, ON/OFF control, etc.) by the central control. This will overrule the ON/OFF setting on the individual remote controllers. For ON/OFF control using the remote controllers of the units, the central control must be set to OFF. In order to allow local control of the units at all times, the central control must be installed in the vicinity of the individual remote controllers.

3.2. Wiring the central control

Also refer to Figure 1: Electrical wiring diagram on page 9.

WARNING

All electrical wiring must be installed by a licensed electrician and must comply with local regulations.

- Modbus wiring
  The control uses Modbus to communicate with the hydroboxes. Make sure to wire the RS485 wiring (2-wire twisted pair + shield) from the central control to the RTD*s.
  Also make sure to configure the addresses on the RTD* correctly (refer to RTD* manual).
- Digital inputs
  In order to start the system in heating/cooling by an external voltage free contact, wire the following digital inputs:
  - X1-M: Heating ON zone 1
  - X2-M: Cooling ON zone 1
  - X3-M: Heating ON zone 2
  - X4-M: Cooling ON zone 2

  INFORMATION
  - The central control can also be configured to start heating/cooling using the central control. In that case, it is not necessary to wire these contacts.
  - HEATING ON gets priority over COOLING ON.

  - X5-M: This voltage free input changes the value of the outdoor temperature at which the backup heater is allowed to operate. Also refer to "4.5. Backup heater room heating?" on page 5.
  - X6-M: This voltage free input detects alarms of the backup heater.
  - X7-M: This voltage free contact stops DHW heating by the heatpump and backup heater when closed (e.g. contact from solar station).
  - X8-M: This contact changes the setpoint of the central domestic hot water tank as defined in the controller (e.g. to store DHW at higher temperature when there is an excess of electricity due to photovoltaic installation).
  - DI1/2-M: This contact will count the pulses from pulse counter and convert them to a value as defined on the controller.
- Analog inputs
  - AI1-M: Common leaving water sensor. This sensor measures the leaving water temperature to the secondary circuit. (Supplied with EKCC8-W).
  - AI2-M: Domestic hot water temperature. (Daikin option EKCLWS). Only if you have a centralized tank and DHW must be controlled by the central control.
- Digital outputs
  - C1-DO1B: Contact to energize the 3-way valve for DHW heating. This contact closes whenever DHW heating by the heatpumps is activated by the centralized control.
  - C2-DO2A/DO2B: Changeover contact for alarm output.
  - C3-DO3: Contact to start the secondary pump of ZONE 1. This contact closes whenever heating or cooling for ZONE 1 is ON.
  - C4-DO4: Contact to start the secondary pump of ZONE 2. This contact closes whenever heating or cooling for ZONE 2 is ON. (Unless heating is requested by ZONE1 and cooling is requested by ZONE2. Heating has priority over cooling.)
  - C5-DO5: Contact to start Backup heater step 1. This contact will close as soon as there is a capacity shortage in room heating.
  - C6-DO6: Contact to start Backup heater step 2. This contact will close as soon as there is a capacity shortage in room heating and backup heater step 1 is already in operation.
  - C7-DO7: Contact to energize the backup heater valve for room heating. This contact will close a defined time before the backup heater is started.
  - C8-DO8: Contact to energize the backup heater valve and/or heater for domestic hot water heating. This contact will close as soon as backup heating for domestic hot water heating is required.
  - C9-DO9: Heating operation. This contact closes when the system is in room heating mode.
  - C10-D010: Cooling operation. This contact closes when the system is in room cooling mode.

INFORMATION

Contact rating:
- Switching voltage AC 24 V…230 V (–20%, +10%)
- Rated current (res./ind.) Max. AC 3 A / 2 A (cos φ0.6)
- Switching current at AC 19 V Min. AC 30 mA

Max. external supply line fusing 6.3 A slow wire fuse or circuit breaker.

WARNING
- Do not mix SELV/PELV and line voltage on the same terminal.
- Use external protection for inductive load.

4. Installer settings

Refer to "9. Operation of the central control and menu structure" on page 12 for basic operation of the central control.
All items in the 'Installer settings' menu are explained below in detail.
To make the installer settings available, scroll to 'Installer password' in the main menu and enter the installer password (default: '6000') and then go to the 'Installer settings' menu.

4.1. Confirmation of the installer settings

Some settings require a restart of the central control in order to become effective. This is indicated in the first line of the 'Installer settings' menu. When this line shows 'Restart now?', changes were made in the installer settings that require a restart to become effective. Enter the line and select to restart the central control.
When the line shows 'No need to restart', all changes are already effective.

4.2. Language

Select the desired language.

4.3. Operating modes?

Define the possible operating modes of the system.

- Heating only/Cooling only/Heating and cooling/DHW only

This will make sure the user can only select the appropriate modes. Restart the central control after changing these settings in order to make them effective.

4.4. Centralized DHW tank?

Define if the system has a centralized DHW tank.

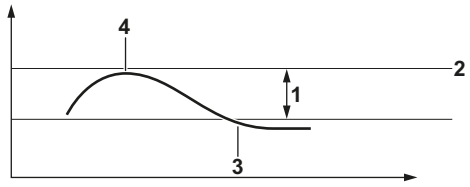
Only if the system has a centralized domestic hot water tank and field supplied 3-way valve, select:

- Centralized tank

Settings for system in combination with room heating

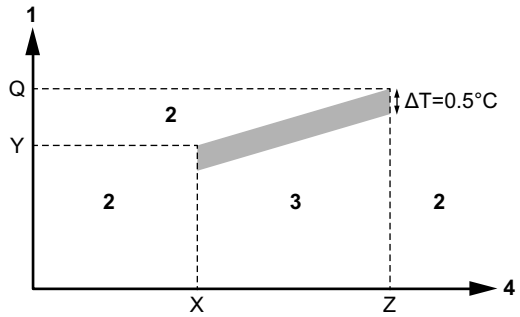
Go to the 'Settings in combination with RH' menu and enter the desired value for:

- DT LWT-SP tank
  This value determines the temperature difference between the setpoint of the leaving water temperature of the unit(s) and the setpoint of the tank. The higher the value, the faster the tank can be heated. The lower the value, the more efficiently the tank will be heated.
- DHW differential
  Differential for tank heating.



1 DHW differential
2 SP tank (set by user)
3 Start tank heating
4 Stop tank heating

- Backup heater settings
  Enter here if there is a backup heater for DHW heating.
  If there is a backup heater for DHW heating, a curve has to be entered to define when the heating of the tank is to be done by the heatpumps and when it is to be done by the backup heater as shown in the figure below.



1 Leaving water temperature
2 DHW heating by BUH
3 DHW heating by heatpump
4 Outdoor temperature

  - BUH at outd. temp. < X°C
    Define X. If the outdoor temperature becomes lower than X, heating of the DHW tank will always be done by the backup heater.
  - Max. tank temp. at X°C= Y°C
    Define Y, the maximum temperature to which the tank will be heated by the heatpump at outdoor temperature X.
  - BUH at outd. temp. > Z°C
    Define Z. If the outdoor temperature becomes higher than Z, heating of the DHW tank will always be done by the backup heater.
  - Max. tank temp. at Z°C= Q°C
    Define Q, the maximum temperature to which the tank will be heated by the heatpump at outdoor temperature Z.

INFORMATION

- Note 1: Make sure the values are within the operation range of the heatpump.
- Note 2: If the leaving water temperature and outdoor temperature are such that the DHW heating is to be done by the heatpump, operation of backup heating for DHW can also happen. This will be the case when one of the heatpumps configured for domestic hot water heating is in alarm.
- Note 3: The controller will close D08 (and not D05 or D06) when backup heating for domestic hot water becomes active.

Settings for DHW only system

Whereas a system for room heating and domestic hot water heating will heat up the domestic hot water as fast as possible in order to be able to return to room heating as soon as possible, a system dedicated to heating domestic hot water will heat up the DHW with an optimum balance between speed and efficiency. Therefore, it will change the temperature of the leaving water sent to the heating coil of the tank. If the tank temperature is far from its setpoint, it will increase the water temperature sent to the tank in order to speed up heating; when the tank temperature approaches its setpoint, the water temperature sent to the tank will be decreased in order to increase efficiency.

Enter the following:

- Max. DT
  Defines the maximum difference between the setpoint of the leaving water temperature of the units and the setpoint of the tank. E.g., if tank setpoint= 50°C, and Max. DT= 20°C, the maximum water temperature sent to the heating coils of the tank will be 50°C+20°C=70°C.
- Min. DT
  Defines the minimum difference between the setpoint of the leaving water temperature of the units and the setpoint of the tank. E.g., if tank setpoint= 50°C, and Min. DT= 10°C, the maximum water temperature sent to the heating coils of the tank will be 50°C+10°C=60°C.
- DHW differential
  Refer to setting for systems in combination with room heating.
- Backup heater settings
  Refer to backup heater room heating for the settings.

INFORMATION

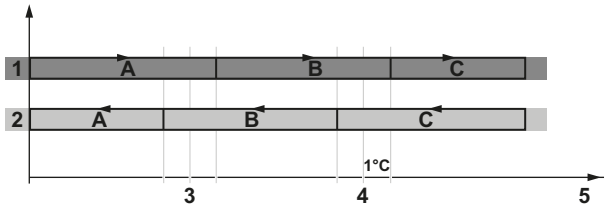
In case of DHW only system, outputs D05 and D06 will act as backup heating outputs for DHW heating.

4.5. Backup heater room heating?

Define here if the system has a backup heater or not and the number of steps (1 or 2). If so, select 'Backup heating method' and define the following.

3 methods for the backup heating can be defined:

- Method 1: Outd Temp
  The backup heater will be allowed to operate, depending on the outdoor temperature.
  - BUH allowed: Below this temperature, BUH is allowed to operate, but BUH has the lowest priority.
    Above this temperature, only heatpump units will run (even if target leaving water temperature cannot be reached, unless a heatpump is in alarm, then also BUH will run.)
  - BUH only: Below this outdoor temperature, all heatpump units will be stopped for room heating, and only BUH will operate for room heating.



1 At increasing outdoor temperature
2 At decreasing outdoor temperature
3 BUH only
4 BUH allowed
5 Outdoor temperature
A BUH-only zone
B BUH allowed
C No BUH allowed

- Method 2: Outd. Temp. + ext. contacts
  Define the following settings:
  - With open contact
    BUH allowed: Define the outdoor temperature for 'BUH allowed' with OPEN contact.
    BUH only: Define the outdoor temperature for 'BUH only' with OPEN contact.
  - With closed contact
    BUH allowed: Define the outdoor temperature for 'BUH allowed' with CLOSED contact.
    BUH only: Define the outdoor temperature for 'BUH only' with CLOSED contact.
- Method 3: Outd. Temp. + time
  - Time Zone 1
    Define the outdoor temperature for 'BUH allowed' and 'BUH only' from Time Zone 1 onwards.
  - Time Zone 2
    Define the outdoor temperature for 'BUH allowed' and 'BUH only' from Time Zone 2 onwards.
  - Select time zones
    Select for every day of the week the time and zone (Time Zone 1=Z1/Time Zone 2=Z2)

INFORMATION

General note on schedule settings:

Settings with time *:* are ignored.

- Delay BUH:
  Enter the delay in seconds of the BUH "ON" contact compared to the BUH valve "ON" contact. (This might be required if the valve needs time to open before the BUH is allowed to start.)
- BUH Loaddown Timer:
  Defines the time that has to expire before another loaddown action can take place after heater step 1 or 2 loaddown.

4.6. System layout?

ON/OFF method

Define here if the system has to be set to off, heating or cooling on the central control (refer to the 'User settings' menu > Set room mode) or by external contacts.

Number of zones

Enter the number of zones (secondary circuits to control). (1 or 2)

Configuration

Enter

- No of RTD* installed: The number of RTD*s installed.
- Configure unit type auto
  When 'YES' is selected, the system will detect and configure the unit type (cooling only/heating only/reversible) automatically.

INFORMATION

The central control will show the maximum number of RTD*s that can be controlled. Only the RTD numbers entered above have to be configured. After restarting the central control, the list of RTD*s will be restricted to the number of RTD*s installed.

- RTD* configuration:
  For every RTD*, enter the following items (the number in the 'RTD*' column corresponds to the address on the RTD*).
  - Group (GRP)
    Enter which group the RTD* belongs to. RTD*s belonging to the same group are usually connected to the same outdoor unit, because the program will start up units belonging to the same group first, before starting up units belonging to another group. This is done in order to avoid several outdoor units running at the same time at low load.
  - Type (TYP)
    It is recommended to configure the unit type automatically (see above). However, the type can be changed manually if desired. In this case, enter if the unit has cooling only, heating only or cooling and heating function.
  - Domestic hot water (DHW)
    What happens when you enter yes (Y) depends on whether the domestic hot water is controlled by the central control or not. (Refer to "2. General layout and setup of a system" on page 2).
    If the domestic hot water function is controlled by the unit(s) itself (integrated tank) and DHW=Y for this unit, then this unit will always get the lowest priority to start up in heating mode, in order to preserve it for domestic hot water heating. In cooling mode, it will get the highest priority in order to be able to do heat recovery. Domestic hot water heating itself will be done as configured on the remote controller of the unit.
    If the domestic hot water function is controlled by the central control (refer to Installer settings – Centralized DHW tank?), the units for domestic hot water must be configured to DHW=Y. When domestic hot water heating is requested, the central control will increase the setpoint for those units only.

4.7. Control parameters

- Diff. LWT Heat On/Off and Diff. LWT Cool On/Off
  Defines the differential above/below which the system takes action to switch units ON or OFF. (TempxTime counter is started, see below).
- Temperature increase slaves (Temp. Incr. slaves)
  This parameter determines the increase (heating)/decrease (cooling) for the slaves. The setpoint of the 'leading' unit will be equal to the setpoint of the leaving water temperature to the secondary circuit. The setpoint of the slaves will be the setpoint of the leaving water temperature to the secondary circuit plus temperature increase slaves (minus temperature increase slaves in cooling). This will lead to fully loading up of the slave units, and capacity control by the leading unit.
- TempxTime for ON and OFF
  Defines the temperature×time value that must be exceeded before a unit is switched ON or OFF. A low value will result in fast switching ON/OFF, a high value will result in slow switching ON/OFF.
- Start delay units (seconds)
  Defines the time that must expire before the control starts the TempxTime ON counter as explained above, after a unit has started. Since the units need time to build up capacity, it is advised to keep this value above 500 seconds.
- Corr. CLWT sensor
  This is a correction value for the common leaving water sensor.
- P-heating/P-cooling
  Influences the number of units to be started up at the same time (with an interval of about 10 seconds) when heating or cooling is started. A low value will result in more units starting up, a higher value in less.
  The number of units starting up when heating or cooling is switched ON is calculated as follows:

$$\frac{(\text{SP leaving water temp - leaving water temp})}{\text{P-heating}}$$

  e.g.: SP leaving water temp=50°C
  Leaving water temp at startup=22°C
  Number of units in system=12
  P-heating=50°C
  → ((50–22)/50)*12=7 units will be started up at a time (with a time difference of about 10 seconds)

4.8. Diagnostics

- Manual operation
  Change 'Auto' to 'Manual'.
  This allows manual ON/OFF control of the digital outputs.
  (Note that during this operation, the central control itself is OFF).

  NOTICE
  Make sure to revert to 'Auto' when leaving this menu.

- Status digital inputs
  Shows the status of the digital inputs.
- Running timers
  Allows readout of the actual value of the running timers set in the control parameters.
- Application info
  Shows information about the installed software.

4.9. IP settings

The desired DHCP, IP address, user name and password must be entered and the controller must be restarted.

5. Operation

5.1. Basic control

Refer to "9. Operation of the central control and menu structure" on page 12 for basic operation of the central control.

All menu structure items are explained in detail below.

5.2. Main menu

To System info

Enters a screen with the following main information about the system.

- Time and date
- System mode
  The system mode can be OFF, HEATING, COOLING, or DHW only. If heating or cooling is shown with a question mark, the mode is requested, but it does not become active because the outdoor temperature is too high (heating) or too low (cooling).
- SP for LWT and Actual LWT
  Setpoint and actual value of the leaving water temperature to the secondary circuit.
- Outdoor temperature
- No of units ON
  The number of units ON.
- Backup heating
  Indicates whether backup heating for room heating is ON or OFF.

To Unit info

Enters an overview screen with unit information.

A list of the defined RTDs is shown. Next to the RTD, the running hours of the units belonging to this RTD are shown, the mode (ON/OFF/HEATING/COOLING) and, in case of an error, the group error code. Below the RTD info, info of up to 4 units connected to this RTD is shown (unit number, leaving water temperature, return water temperature, domestic hot water temperature, and error code if unit is in error).

Note that the domestic hot water temperature is the temperature detected by the domestic hot water sensor connected to the unit.

When there is an error in the unit, the corresponding error code is shown. If 'MDB' (Modbus fault) is shown, check the connection to and the status of the RTD*.

If U5 is shown, check the P1P2 connection to the RTD* and the remote controller.

To view the unit's error history, scroll to the RTD line and press the Enter button. Then select the unit number for which you want to display the error history.

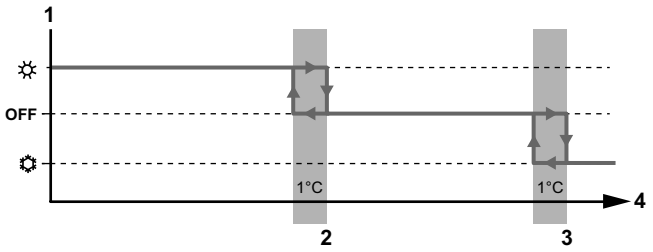
To DHW info

Available only when 'Centralized tank' is selected in the installer settings. Shows the setpoint, actual domestic hot water temperature, 3-way valve status and whether the backup heater for DHW heating is ON or OFF.

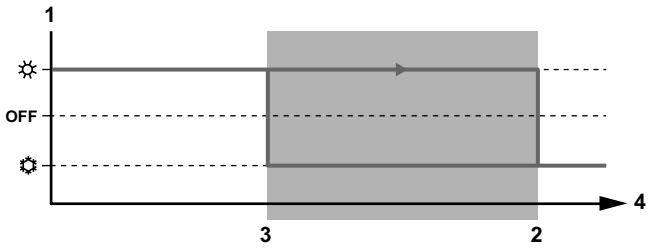
To User settings

Opens the 'User settings' menu with following items:

- Time/date
  Enter the correct time and date if you want to use the quiet mode, room heating or DHW heating schedules.
- Quiet mode
  - Select OFF, ON, or SCHEDULED.
    The central control will send the quiet mode command to the units as selected. (Make sure to set the desired quiet mode level on the units themselves. Refer to the installation manual of the units.)
  - If 'SCHEDULED' is selected, make sure to enter the quiet mode schedule.
- Set room mode
  - Select OFF, COOLING, HEATING, or AUTOMATIC mode.
    If 'By external contacts' is selected in Installer settings - System layout? - ON/OFF method, the mode cannot be selected on the central control, but only by external contacts.
    If AUTOMATIC mode is selected, the system will automatically switch between heating and cooling, depending on the setting of 'Max Ta heating' and 'Min Ta cooling' (see below) as shown in the figure below.

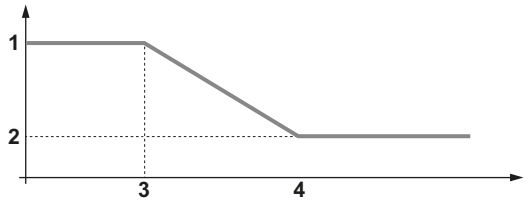


1 Operation mode
2 Max. outdoor temperature heating
3 Min. outdoor temperature cooling
4 Outdoor temperature
☼ Heating
OFF Off
✿ Cooling



1 Operation mode
2 Max. outdoor temperature heating
3 Min. outdoor temperature cooling
4 Outdoor temperature
☼ Heating
OFF Off
✿ Cooling

- Settings for room
  - Room heating
    - Leaving water temp.
      Define the heating curve (leaving water temperature in function of outdoor temperature).



1 LWT at low Ta
2 LWT at high Ta
3 Low Ta
4 High Ta

NOTE: If 2 zones are defined (installer settings) the leaving water temperature has to be entered for both zones. If both zones have heating request, the controller will regulate to the highest setpoint.
If both zones have cooling request, the controller will regulate to the lowest setpoint.
If one zone has cooling request and another zone heating request, heeating will have priority over cooling.
NOTE: There is no need to define the setpoint on the units. The setpoint is transferred by the central control. Make sure the weather dependent function on the units is set to OFF!

- Max Ta heating
  Enter the room temperature above which the system should not heat.

INFORMATION

This setting may also be available on the units. Make sure the setting on the unit is equal to or higher than the setting on the central control.

- LWT schedule
  Enter the deviation from the heating curve in function of time.

- Room cooling
  Refer to room heating.
- Set DHW mode
  - DHW setpoint
    Enter the desired DHW setpoint.
  - Select DHW mode
    Enter OFF or ON.
  - DHW schedule
    Enter the deviation from the desired setpoint in function of time.
  - Disinfection
    Enter if disinfection must be active or not.
    If active, enter the desired duration, start day and time.
    The tank will be heated until the entered disinfection temperature for an (accumulated) time equal to the disinfection duration is reached.
  - Reheat now?
    Set to ON if you want to reheat the tanks immediately to the desired temperature entered in 'Reheat now till:'.
  - Reheat now till:
    Setpoint for tank temperature when reheat is activated.

6. Alarm handling

Unit alarms and system alarms can occur. For both types of alarm, the digital alarm output (C2-DO2B) will be closed and an alarm will be indicated in the upper right corner of the display when an alarm is generated.

6.1. Unit alarms

When a unit alarm occurs, the central control will no longer use the unit (or group of units connected to the same RTD*).

After the cause of the alarm is tackled, the unit will be controlled again by the central control and will switch ON or OFF as required.

6.2. System alarms

Following system alarms can occur:

- Faulty common leaving water sensor
  When the common leaving water sensor indicates a value below 0°C or above 150°C (open sensor), an alarm is generated and all units are switched ON in the currently requested mode up to the currently requested setpoint.
  Units configured for heating a centralized DHW tank are also switched to room heating, but when DHW heating is requested, the setpoint will be increased and the 3-way valve will be energized, as in the normal DHW mode.
- Faulty domestic hot water sensor (centralized tank)
  When the domestic hot water sensor indicates a value below 0°C or above 150°C (open sensor), an alarm is generated and all units configured for DHW heating are operated for DHW heating and the DHW 3-way valve is energized when the DHW mode is requested.
  (The system operates as if it sees a DHW temperature that never reached the setpoint).
- Backup heater alarm
  When the backup heater alarm is active (X6-M closed), an alarm is generated.

6.3. Alarm menu

Press the alarm button to access the following screen:

- Alarm list
  Shows a list of the current alarms.

7. Troubleshooting

- MDB is shown in the 'Unit info' menu.
  Make sure that the Modbus connection to the RTD* with the corresponding address is correct.
  Make sure that the correct number of connected units is defined in the installer settings.
- U5 is shown in the 'Unit info' menu.
  Make sure that the P1P2 connection to the RTD* with the corresponding address is correct. If so, interrupt the power to the RTD* and apply it again.
- Some lines are not available in the menus.
  Make the correct installer settings and restart the control.
- Room mode cannot be set. The text "Not available. By external contacts" appears.
  Room mode can only be set by external contacts from the thermostat. To set the mode on the central control, change the installer settings.

8. Figures

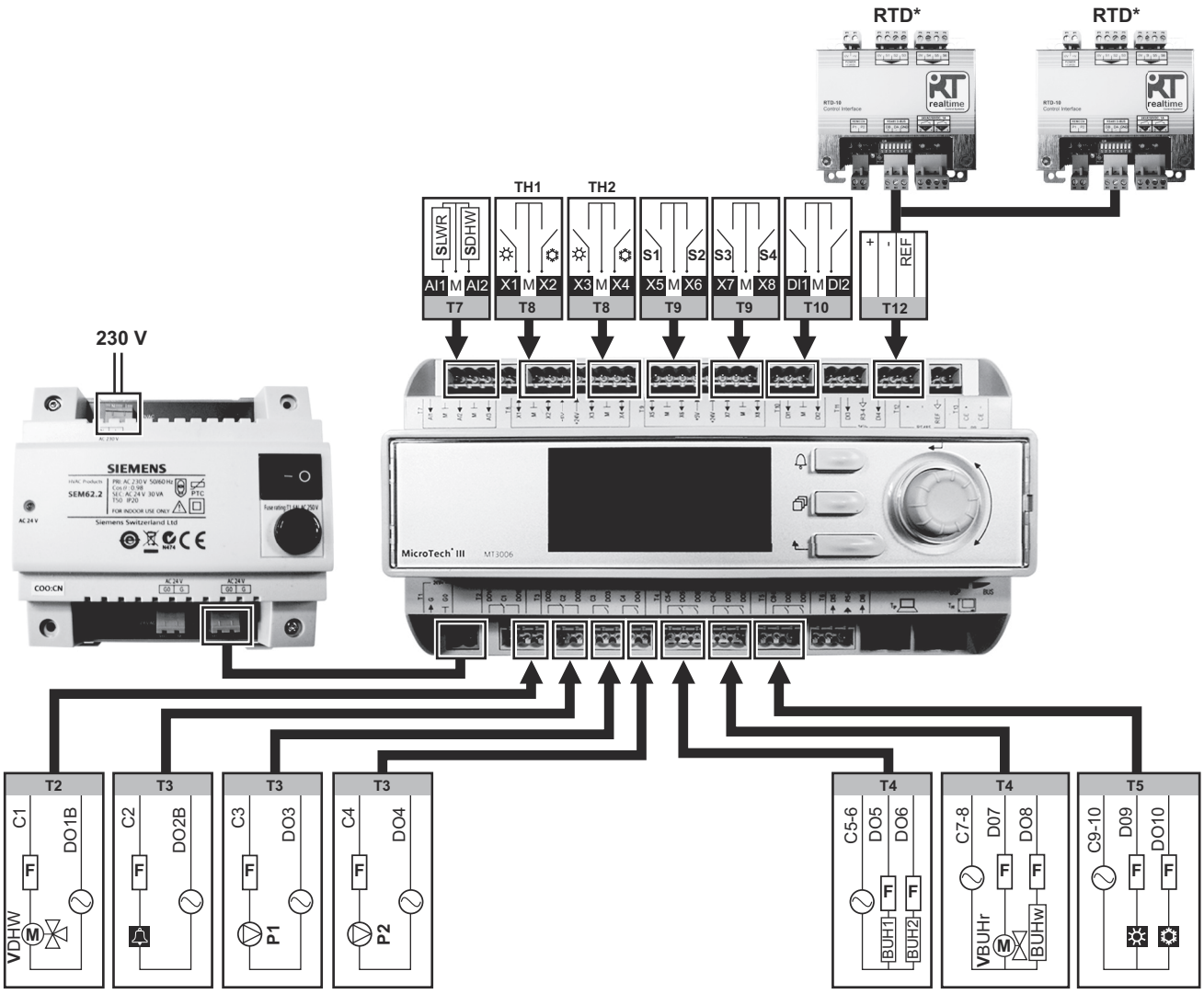


Figure 1: Electrical wiring diagram

SLWR: Common leaving water sensor
SDHW: Domestic hot water sensor
TH1: Thermostat zone 1
TH2: Thermostat zone 2
S1: Backup heater shift
S2: Backup heater alarm
S3: Solar contact (DHW disabled)
S4: DHW setpoint increase
P1 and P2: Secondary pump zone 1 and zone 2
VDHW: Domestic hot water valve
BUH1 and BUH2: Backup heater for room heating step 1 and step 2
VBUHr: BUH valve room heating
VBUHw: Backup heater for domestic hot water
F: Fuse

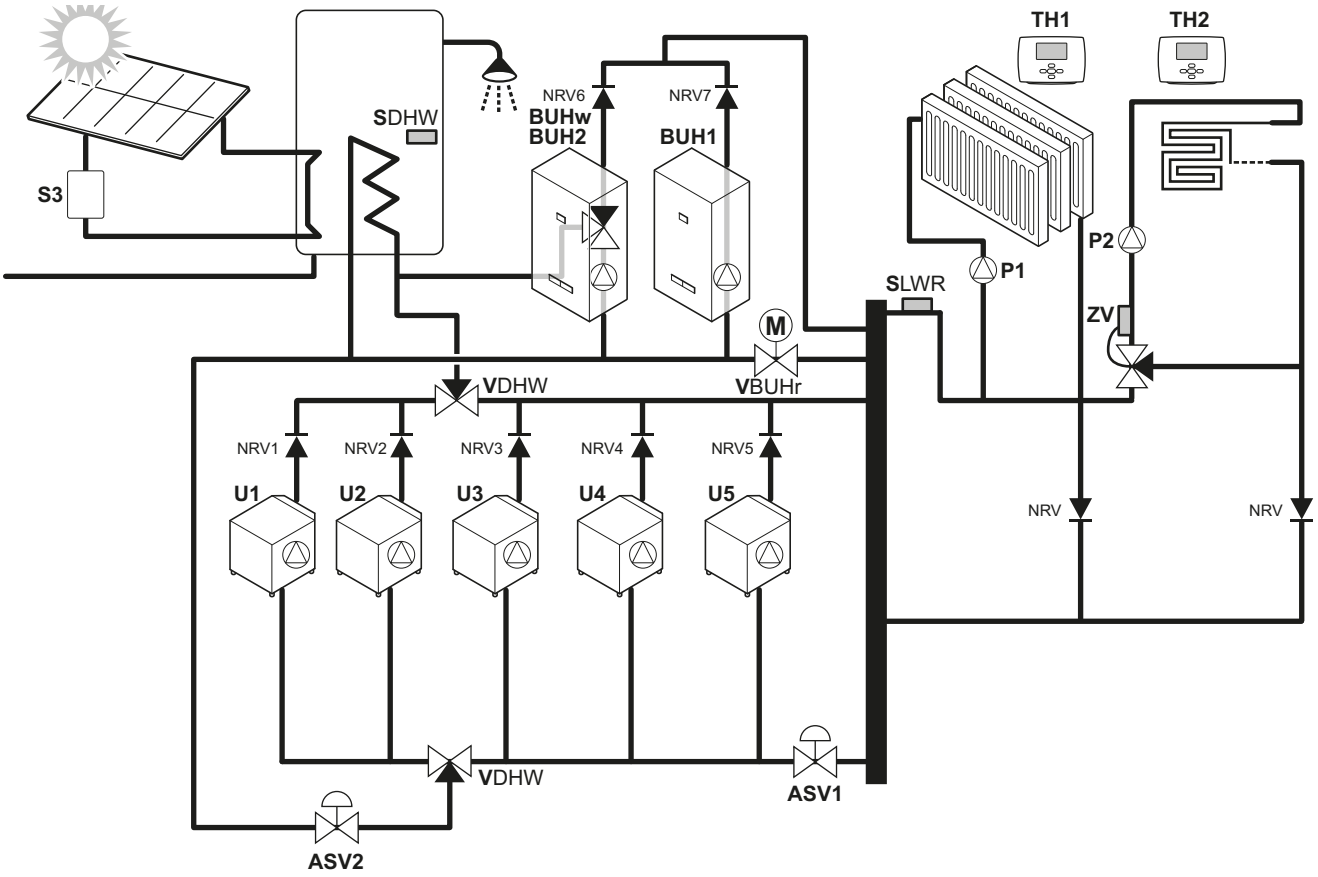


Figure 2: System with centralized domestic hot water tank

TH1: Room thermostat, zone 1
TH2: Room thermostat, zone 2
SLWR: Sensor leaving water to room (delivered with EKCC)
P1: Secondary pump circuit zone 1
P2: Secondary pump circuit zone 2
SDHW: Domestic hot water temperature sensor (option EKCLWS)
BUHw: Backup heater for domestic hot water
BUH1: BUH step 1 room heating
BUH2: BUH step 2 room heating
VBUHr: BUH valve room heating
U1..5: Daikin unit 1..5
VDHW: 3-way valve for domestic hot water
S3: Solar pump station
ZV: Zone valve (Operating independently! Not controlled by EKCC)
NRV: Non-return valve
ASV: Aquastat valve. Prevents return of too hot water in case of system malfunction. (Operating independently! Not controlled by EKCC)

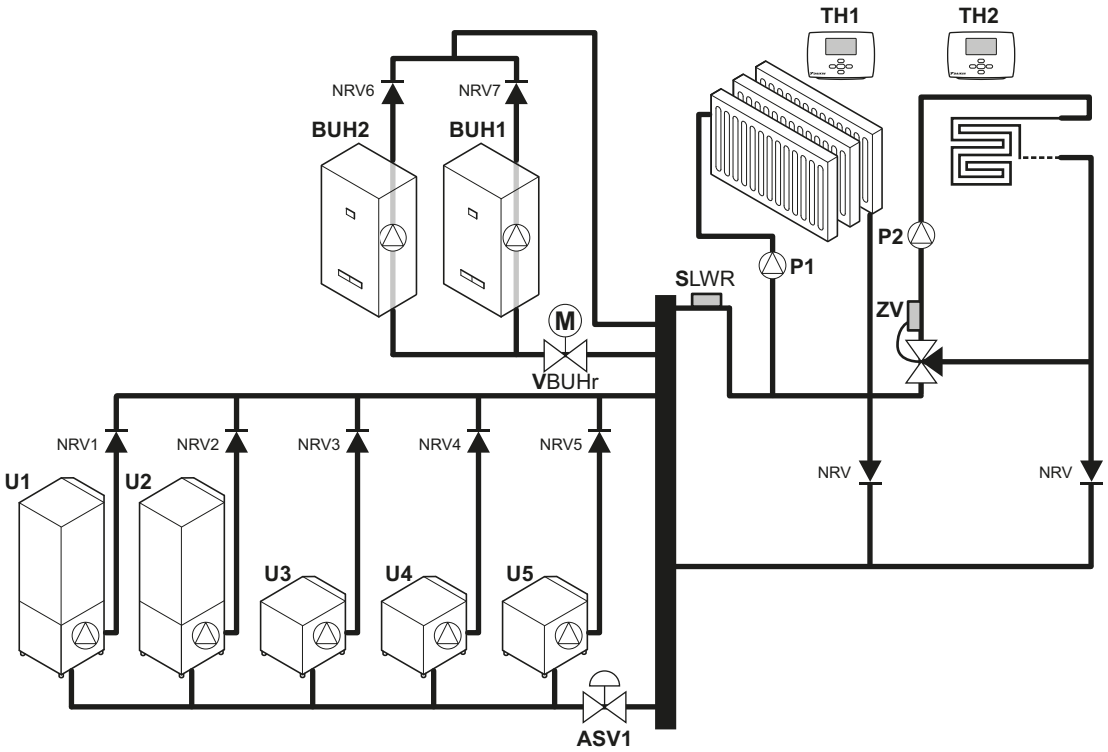
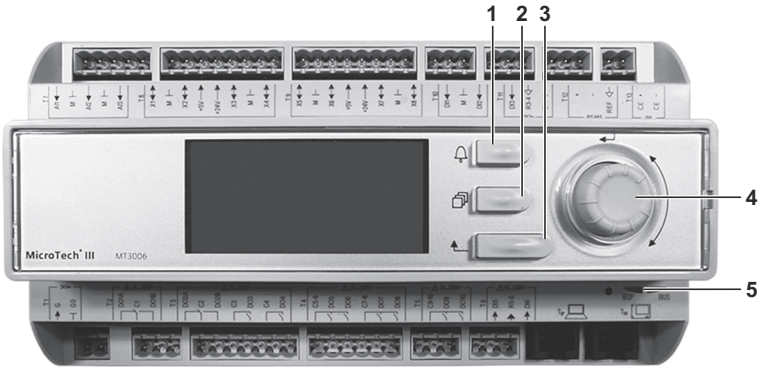


Figure 3: System with integrated hot water tanks

TH1: Room thermostat, zone 1
TH2: Room thermostat, zone 2
SLWR: Sensor leaving water to room (delivered with EKCC)
P1: Secondary pump circuit zone 1
P2: Secondary pump circuit zone 2
BUH1: BUH step 1
BUH2: BUH step 2
VBUHr: BUH valve room heating
U1..5: Daikin unit 1..5
ZV: zone valve (independent operating! Not controlled by EKCC)
NRV: Non-return valve
ASV: Aquastat valve. Prevents return of too hot water in case of system malfunction.

9. Operation of the central control and menu structure



1 Alarm button: press this button to enter the alarm menu.

2 Main menu button: press this button to return to the 'MAIN MENU' screen at all times.

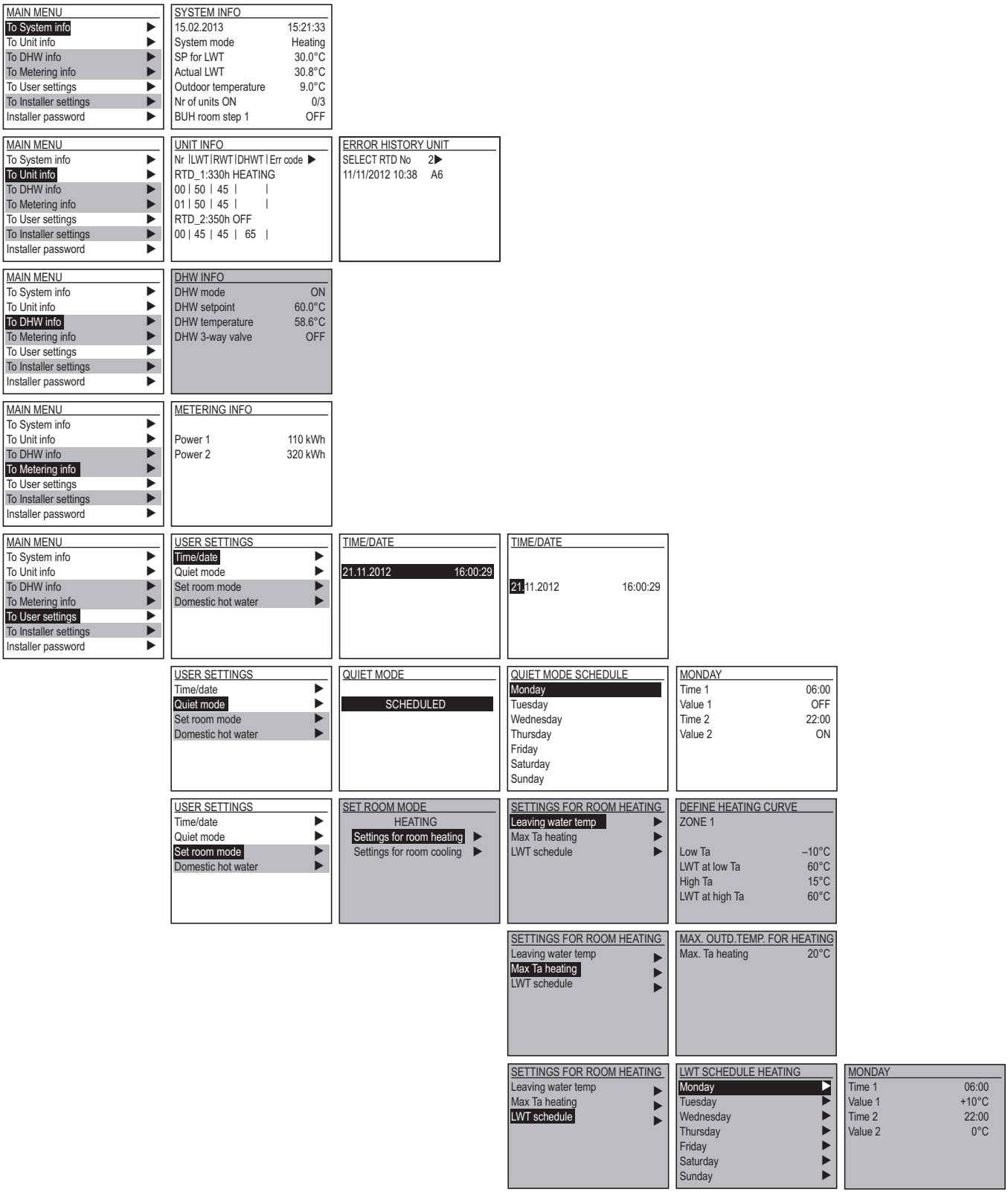
3 Return button: press this button to return to the previous screen.

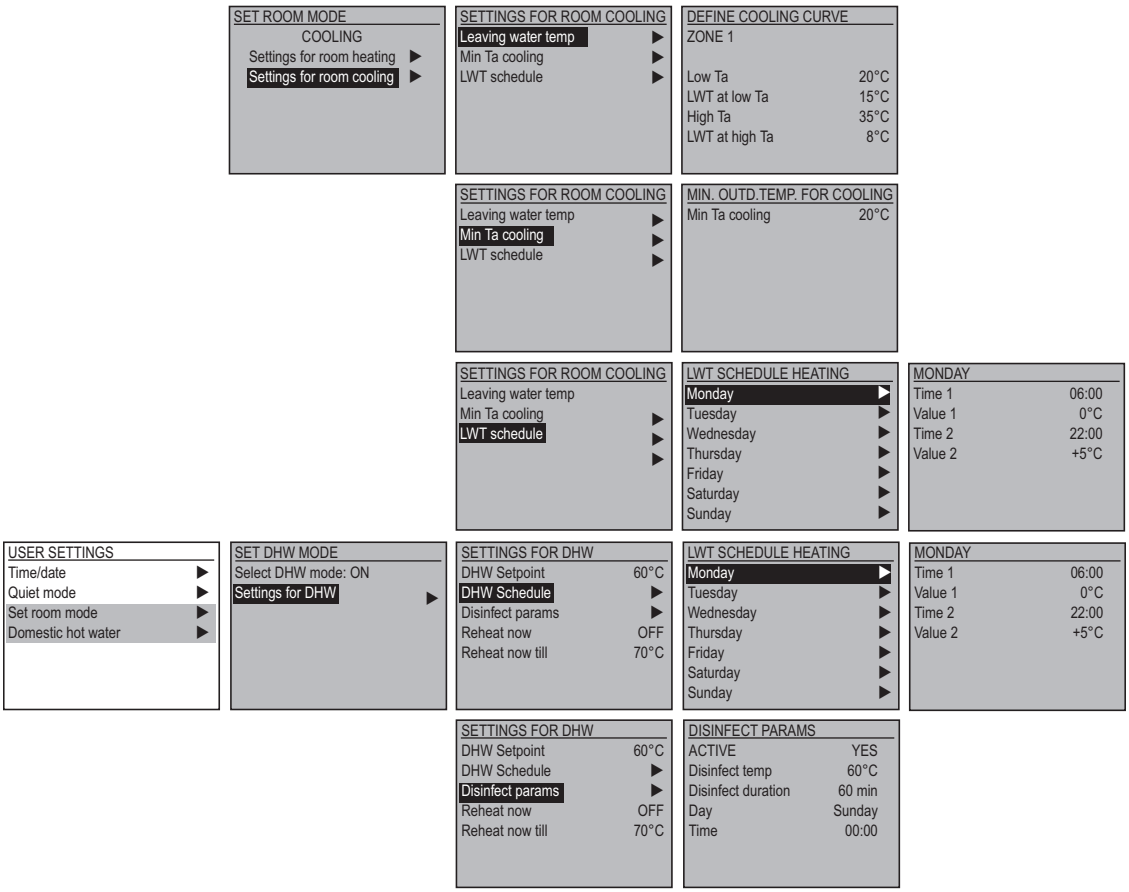
4 Select button: turn this button to scroll up and down through the menus. Press the button to enter your selection.

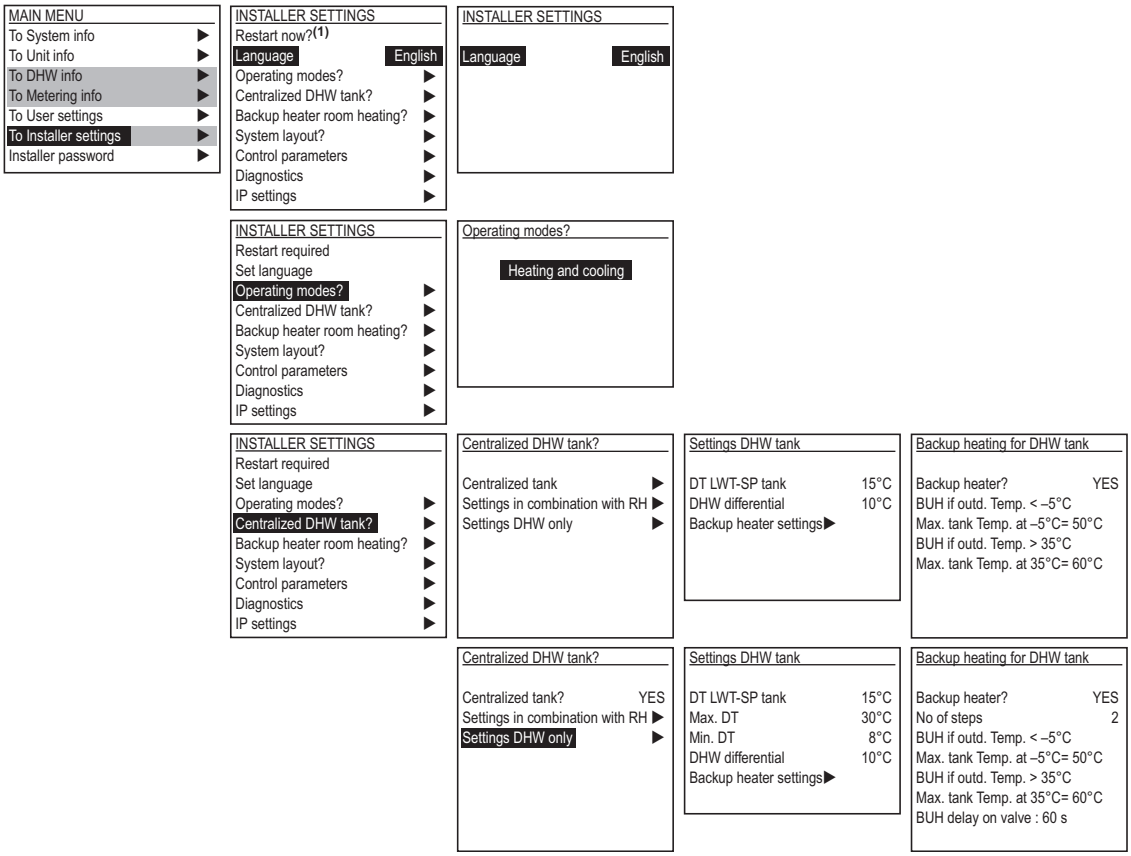
5 BSP LED. This LED should be green. See below for the possible states of the LED.

BSP LED status	
Every second flashing between red and green	Download from SD card active
Green	Application running
Yellow	Application loaded but not running
Yellow flashing	Application not loaded
Red flashing	BSP error (software error)
Red ON	Hardware error

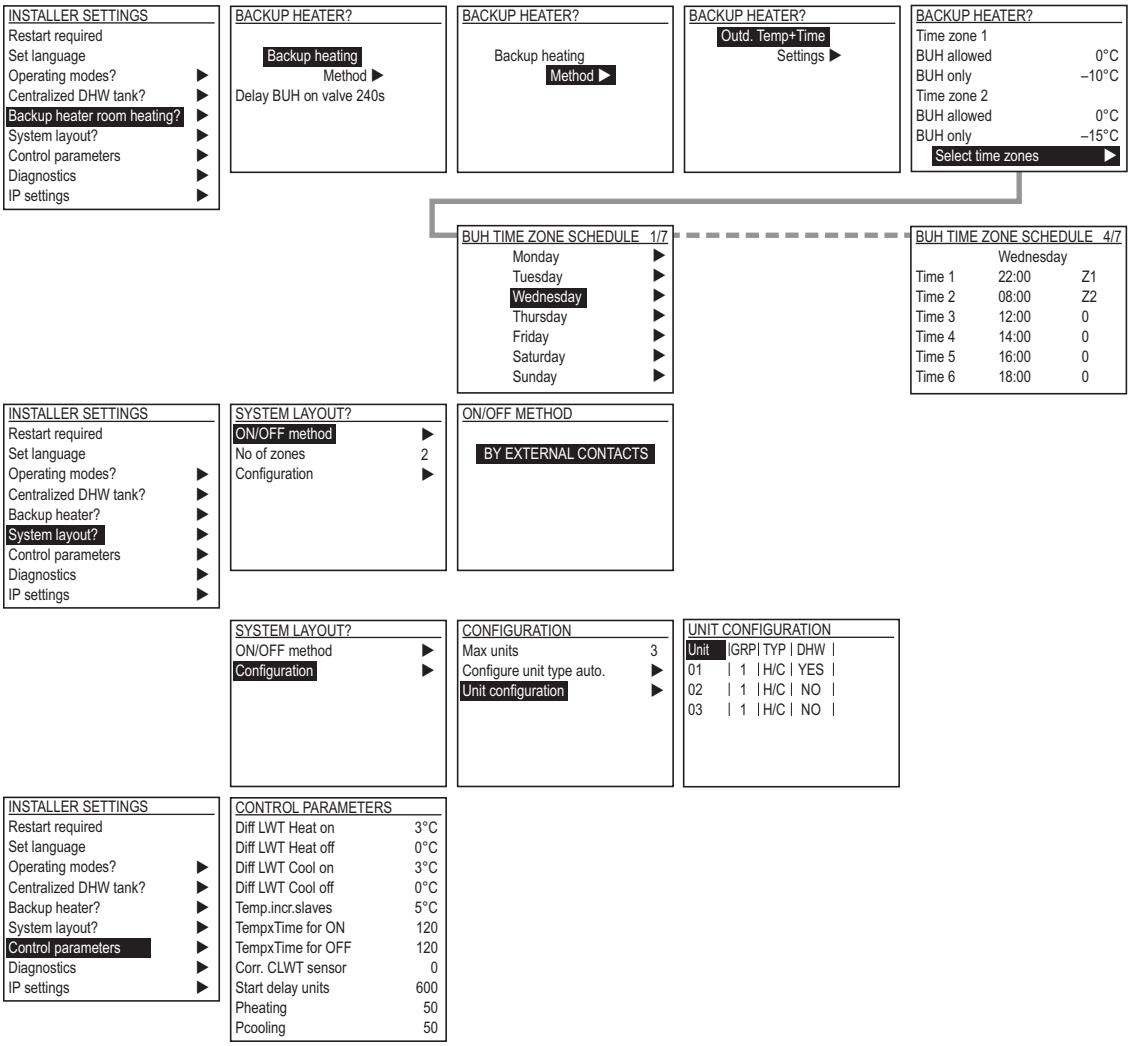
Screens shaded in gray are visible only depending on selections in the installer menu.




SET ROOM MODE
COOLING
Settings for room heating ▶
Settings for room cooling ▶
SETTINGS FOR ROOM COOLING
Leaving water temp ▶
Min Ta cooling ▶
LWT schedule ▶
DEFINE COOLING CURVE
ZONE 1
Low Ta 20°C
LWT at low Ta 15°C
High Ta 35°C
LWT at high Ta 8°C
SETTINGS FOR ROOM COOLING
Leaving water temp ▶
Min Ta cooling ▶
LWT schedule ▶
MIN. OUTD.TEMP. FOR COOLING
Min Ta cooling 20°C
SETTINGS FOR ROOM COOLING
Leaving water temp
Min Ta cooling ▶
LWT schedule ▶
LWT SCHEDULE HEATING
Monday ▶
Tuesday ▶
Wednesday ▶
Thursday ▶
Friday ▶
Saturday ▶
Sunday ▶
MONDAY
Time 1 06:00
Value 1 0°C
Time 2 22:00
Value 2 +5°C
USER SETTINGS
Time/date ▶
Quiet mode ▶
Set room mode ▶
Domestic hot water ▶
SET DHW MODE
Select DHW mode: ON
Settings for DHW ▶
SETTINGS FOR DHW
DHW Setpoint 60°C
DHW Schedule ▶
Disinfect params ▶
Reheat now OFF
Reheat now till 70°C
LWT SCHEDULE HEATING
Monday ▶
Tuesday ▶
Wednesday ▶
Thursday ▶
Friday ▶
Saturday ▶
Sunday ▶
MONDAY
Time 1 06:00
Value 1 0°C
Time 2 22:00
Value 2 +5°C
SETTINGS FOR DHW
DHW Setpoint 60°C
DHW Schedule ▶
Disinfect params ▶
Reheat now OFF
Reheat now till 70°C
DISINFECT PARAMS
ACTIVE YES
Disinfect temp 60°C
Disinfect duration 60 min
Day Sunday
Time 00:00



(1)Restart now? indicates that a restart of the central control is required in order to make changes made in the installer menu effective.


INSTALLER SETTINGS
Restart required
Set language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater room heating? ▶
System layout? ▶
Control parameters ▶
Diagnostics ▶
IP settings ▶
BACKUP HEATER?
Backup heating
Method ▶
Delay BUH on valve 240s
BACKUP HEATER?
Backup heating
Method ▶
BACKUP HEATER?
Outd. Temp+Time
Settings ▶
BACKUP HEATER?
Time zone 1
BUH allowed 0°C
BUH only –10°C
Time zone 2
BUH allowed 0°C
BUH only –15°C
Select time zones ▶
BUH TIME ZONE SCHEDULE 1/7
Monday ▶
Tuesday ▶
Wednesday ▶
Thursday ▶
Friday ▶
Saturday ▶
Sunday ▶
BUH TIME ZONE SCHEDULE 4/7
Wednesday
Time 1 22:00 Z1
Time 2 08:00 Z2
Time 3 12:00 0
Time 4 14:00 0
Time 5 16:00 0
Time 6 18:00 0
INSTALLER SETTINGS
Restart required
Set language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater? ▶
System layout? ▶
Control parameters ▶
Diagnostics ▶
IP settings ▶
SYSTEM LAYOUT?
ON/OFF method ▶
No of zones 2
Configuration ▶
ON/OFF METHOD
BY EXTERNAL CONTACTS
SYSTEM LAYOUT?
ON/OFF method ▶
Configuration ▶
CONFIGURATION
Max units 3
Configure unit type auto. ▶
Unit configuration ▶
UNIT CONFIGURATION
Unit | GRP | TYP | DHW |
01 | 1 | H/C | YES |
02 | 1 | H/C | NO |
03 | 1 | H/C | NO |
INSTALLER SETTINGS
Restart required
Set language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater? ▶
System layout? ▶
Control parameters ▶
Diagnostics ▶
IP settings ▶
CONTROL PARAMETERS
Diff LWT Heat on 3°C
Diff LWT Heat off 0°C
Diff LWT Cool on 3°C
Diff LWT Cool off 0°C
Temp.incr.slaves 5°C
TempxTime for ON 120
TempxTime for OFF 120
Corr. CLWT sensor 0
Start delay units 600
Pheating 50
Pcooling 50

10. Optional modules

The optional modules have to be plugged into the left side of the central controller.

The modules will be recognized by the control, and the setup menu will automatically appear in the installer settings menu.

10.1. EKCMBACIP and EKCMBACMSTP

The list of objects that can be read or written can be found in the Bacnet list in the annex of this manual.

In the installer menu / Bacnet settings following items can be seen.

- State: Shows the status of the module.
- Comm. Failure: Shows if there is a communication failure between module and controller.

Appropriate settings must be made, the 'Write setting' must be set to 'ACTIVE' (BACNET IP only) and the controller must be restarted (go to the installer menu to restart) in order to make changes to the settings effective.

10.2. EKCM200J

The list of registers can be found in the Modbus list in the annex of this manual.

In the installer menu / MODBus settings following items can be seen and entered.

- State: Shows the status of the module.
- Comm. Failure: Shows if there is a communication failure between module and controller.

Appropriate settings must be made in the rest of the menu.

10.3. EU.SB.5000002

In the installer menu / AWM settings following items can be seen and entered.

- State: Shows the status of the module.
- Comm. Failure: Shows if there is a communication failure between module and controller.
- TCP/IP : Shows DHCP status, the name of the module and actual IP address.
  A static IP address can be given by changing DHCP to 'Passive' and filling in the 'given' IP, mask and gateway.
  The 'Write setting' must be set to 'ACTIVE' and the controller must be restarted (go to the installer menu to restart) in order to make changes to the settings effective.

Go to the settings of the AWM by entering the configured IP address in a web browser and make the required configurations.

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