Installer reference guide

Central control for hydroboxes

EKCC9-W

Table of contents

1. About this document

Target audience

Authorised installers

Documentation set

This document is part of a documentation set. The complete set consists of:

- Installer reference guide (this document):
  - Preparation of the installation, reference data,…
  - Format: Digital files on https://www.daikin.eu. Use the search function to find your model.
- Installation manual
  - System example, electric wiring diagram and technical data
  - Format: Paper (in the box)

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

Meaning of warning, caution, notice and information

WARNING

Indicates a situation that could result in death or serious injury.

CAUTION

Indicates a situation that could result in minor or moderate injury.

NOTICE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

2. Disposal requirements

Your product is marked with this symbol. This means that electrical and electronic products may NOT be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: dismantling the system MUST be done by an authorised installer and MUST comply with applicable legislation.

Products MUST be treated at a specialised treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

3. Legal note

Software used

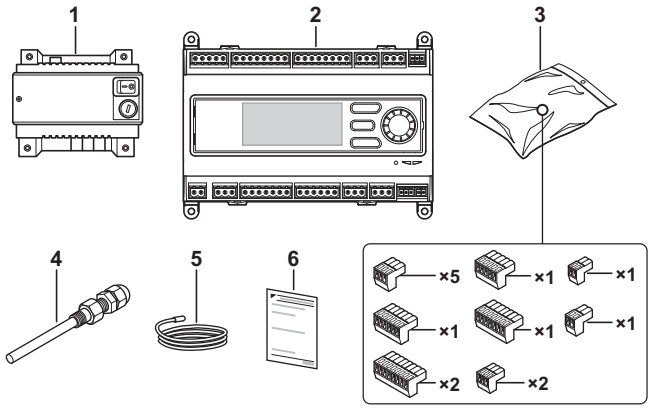
All open source software components used in this product (including copyright owners and license agreements) can be viewed on the controller's internal web server:

http://ip_address_of_the_device/licenses.html

Default IP address: 192.168.1.42

4. Supplied accessories and intended use

Supplied accessories



1 Power supply 24 V AC for Microtech 4 controller (Siemens)
2 POL688.80 Microtech 4 central control (Siemens/McQuay)
3 Connectors for Microtech 4 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.

- Daikin Altherma 3 H HT
- Daikin Altherma 3 H MT
- Daikin Altherma 3 R MT
- Daikin Altherma 3 R (except floor-standing indoor unit EHFH/Z03-S18D3V)
- Daikin Altherma 3 H
- Daikin Altherma 3 M
- Daikin Altherma 3 GEO
- Daikin Altherma 3 WS
- Mini Chillers EWAA_D
- Mini Chillers EWYA_D

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 "5. General layout and setup of a system" on page 3.

Field supplied components

The following field supplied components are not included:

- EKCLWS
  Tank sensor for centralized DHW tank.
- DCOM-LT/IO
  Control interface for Daikin Altherma units.
- Components for the connections to the anolog inputs and digital inputs/outputs.

Refer to "13. Field supplied components" on page 19 for more information.

Options

- EKCMBACIP
  Allows settings on the EKCC through BacNetIP.
- EKCMBACMSTP
  Allows settings on the EKCC through BacNet MSTP.
- EKCM200J
  Allows settings on the EKCC through Modbus.

Refer to "14. Optional modules" on page 19 for more information.

5. 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).
   Refer to Figure 3: System with integrated hot water tanks on page 13 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 7.)
   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 12 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 "7.4. Centralized DHW tank?", Backup heater settings.

INFORMATION

For an overview of the required indoor unit field settings to be configured, refer to the document "Application guidelines for HP's cascade" available on the Daikin Business Portal (Authentication required).

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).

6. Installation

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.

6.1. Preparing the installation site

A safe operation of the device/system, requires an installation location with sufficient space for proper transportation, correct warehousing, mounting, installation, commissioning, operation, and maintenance.

Installation site requirements

The device/system is designed for the described application installation only, and MUST comply with the following ambient conditions:

Ambient conditions	Permissible range
Temperature	-40~70 °C
Relative humidity	5~90% non-condensing
Ventilation	Ensure sufficient ventilation. The controller generates heat that must be removed to prevent heat buildup.

The device/system MUST comply with the following limitations:

Boundary conditions	Permissible range
Connected communication modules. Refer to "13. Field supplied components" on page 19 for more information	-40~60 °C
Reliable process bus communications	-25~70 °C
Reliable LCD legibility	-20~60 °C

Mind the following mounting positions for the central control:

Permitted	Not permitted
Horizontal installation	Suspended from the ceiling (above head)
Vertical installation Note that the communication interface on the central control must be on top.	Laying on flat surfaces

6.2. Mounting the central control

Proceed as follows to connect the central contol to the DIN rails:

1 Put the 4 fastening sliders to the extended position using a screwdriver.

2 Attach the controller to the DIN rails.

3 Press the 4 fastening sliders to the retracted position.

INFORMATION

The following DIN rails according to EN60715 are permitted:

- TH 35-7.5
- TH 35-15

6.3. Wiring the central control

Also refer to Figure 1: Electrical wiring diagram on page 11.

Precautions when connecting the electrical wiring

WARNING

- All wiring MUST be performed by an authorised electrician and MUST comply with the applicable national wiring regulation.
- Make electrical connections to the fixed wiring.
- All components procured on-site and all electrical construction MUST comply with the applicable legislation.

WARNING

Fuses, switches, wiring and grounding MUST comply with the local safety regulations for electrical installations. Observe all local and currently valid laws and regulations.

Connections

- Modbus wiring
  The control uses Modbus to communicate with the hydroboxes. The central control requires one DCOM* per unit it needs to control.
  Make sure to wire the RS485 wiring (2-wire twisted pair + shield) from the central control terminal T14 to the DCOM*s.
  Then connect the DCOM*s to the respective indoor unit(s) via P1P2 connection.
  Also make sure to configure the addresses on the DCOM* correctly (refer to DCOM* manual).

  INFORMATION

  The term "DCOM*" here applies to the model DCOM-LT/IO

  WARNING

  Do NOT use the bottom RS485 port (T12).

- 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 "7.5. Backup heater room heating?" on page 6.
- 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
- X9-M: Common leaving water sensor. This sensor measures the leaving water temperature to the secondary circuit. (Supplied with EKCC9-W).
- X10-M: Domestic hotwater 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.)
- C5-6-DO5: Contact to start Backup heater step 1. This contact will close as soon as there is a capacity shortage in room heating.
- C5-6-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.
- C7-8-DO7: Contact to energize the backup heater valve for room heating. This contact will close a defined time before the backup heater is started.
- C7-8-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.
- C9-10-DO9: Heating operation. This contact closes when the system is in room heating mode.
- C9-10-D010: Cooling operation. This contact closes when the system is in room cooling mode.

INFORMATION

For technical details of the digital outputs DO1A~DO8, refer to "15.1. Technical specifications relay outputs" on page 20.

WARNING

The following applies to the digital outputs DO1A~DO10:

■ Do not mix SELV/PELV and mains power on the same terminal block.

■ Use external protection circuit for inductive load.

■ The outputs are not fused internally. An external fuse is required.

7. Installer settings

Refer to "12. Operation of the central control and menu structure" on page 14 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.

7.1. 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.

7.2. Language

Select the desired language:

■ English
■ German
■ French
■ Dutch
■ Italian
■ Spanish

7.3. Operating modes?

Define the possible operating modes of the system.

■ Heating and cooling/Heating only/Cooling only/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.

7.4. 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:

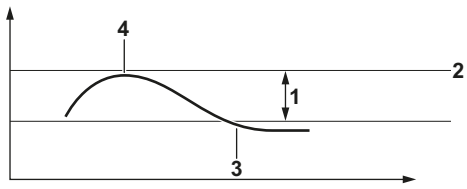
■ Centralized tank

Settings for system in combination with room heating

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

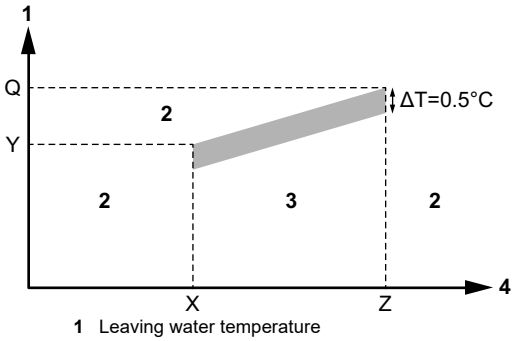
■ DT LWT-SP tank
This value determines the temperature difference between the setpoint of the leaving water temperature of the unit(s) and the setpoint of the tank. The higher the value, the faster the tank can be heated. The lower the value, the more efficiently the tank will be heated.

■ 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
ΔT Hysteresis temperature

- BUH if 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 if 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 minimum 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.

■ DHW alarm temp
When the temperature drops below the value set, and not all units are running within a certain time, the central control will restart automatically (and switch on all units) to heat-up the DHW tank.
E.g., the DHW alarm temperature is set to 55°C. So if the tank is below 55°C for a certain period, and not all units are running yet, the central control will restart.

■ 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.

7.5. Backup heater room heating?

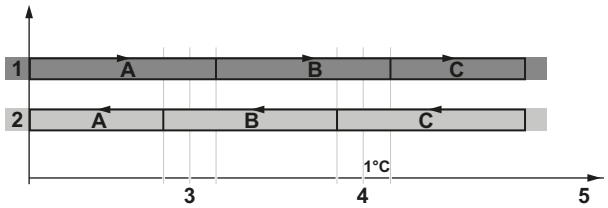
Define here if the system has a backup heater or not and the number of steps (1 or 2):

■ No Backup heater
■ 1x Backup heater
■ 2x Backup heater

If the system has a backup heater, select 'Method' and define the method for the backup heating.

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 setpoint, 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 setpoint, 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 temperature setpoint
4 BUH allowed temperature setpoint
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 on valve:
  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 delay:
  Defines the time that has to expire before another loaddown action can take place after heater step 1 or 2 loaddown.

7.6. System layout?

ON/OFF method

Define the ON/OFF method of the system:

- ON THIS CONTROL (automatic)
  Refer to 'User settings' menu > Set room mode
- BY EXTERNAL CONTACTS

Number of zones

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

Configuration

The number of units in the cascading system and the DHW priority can be configured here.

Enter

- Nr of Units installed: The number of DCOM*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 DCOM*s that can be controlled. Only the DCOM numbers entered above have to be configured. After restarting the central control, the list of DCOM*s will be restricted to the number of DCOM*s installed.

- DCOM* configuration:
  For every DCOM*, enter the following items (the number in the 'DCOM*' column corresponds to the address on the DCOM*).
  - Group (GRP)
    Enter which group the DCOM* belongs to. DCOM*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 "5. General layout and setup of a system" on page 3).
    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.

7.7. 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)
- Alarm temperature CLWT
  Defines the temperature for the common leaving water sensor alarm.

7.8. 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 (On or OFF).
- 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.
- Error History Unit
  If there is an error, either from the central control itself or from the units, an alarm symbol appears in the top right corner of the central control display. The first 2 letters of the unit's alarm can be viewed on the central control.
  Alarm indication on the central control is only informative. Exact diagnostics should always be checked on specific unit's MMI.

7.9. IP settings

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

8. Operation

8.1. Basic control

Refer to "12. Operation of the central control and menu structure" on page 14 for basic operation of the central control.

All menu structure items are explained in detail below.

8.2. 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.
- Outd. Temp (outdoor temperature)
- Nr 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 DCOMs is shown. Next to the DCOM, the running hours of the units belonging to this DCOM are shown and, in case of an error, the group error code. Below the DCOM info, info of up to 4 units connected to this DCOM 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 DCOM*.

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

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

To DHW info

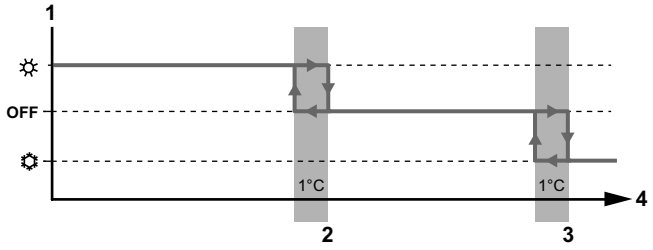
Available only when 'Centralized tank' is selected in the installer settings.

- DHW mode
- DHW setpoint
- DHW temperature
  Actual domestic hot water temperature.
- DHW 3-way valve
  3-way valve status.
- Backup heater DHW
  Whether the backup heater for DHW heating is ON or OFF.
- DHW stop contact
  External input stops DHW by HP (heat pump) or BUH (backup heater) for example when there is solar operation.
- DHW 2nd SP contact
  External contact to select a second setpoint.

To User settings

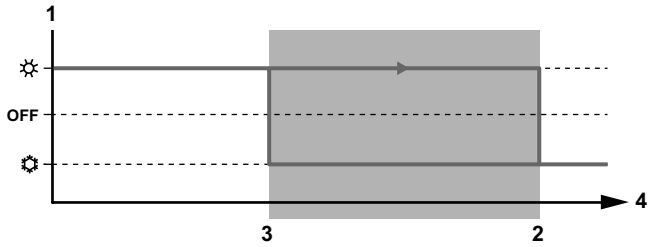
Opens the 'User settings' menu with following items:

- 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.
    - Example: Automatic mode with minimum outdoor temperature (3) > maximum outdoor temperature (2)



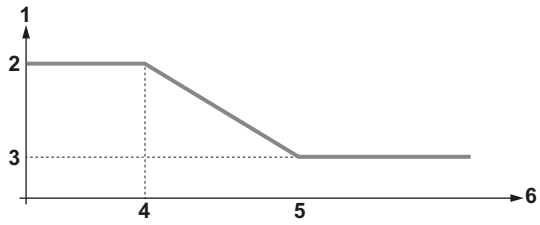
1 Operation mode
2 Max. outdoor temperature heating
3 Min. outdoor temperature cooling
4 Outdoor temperature
☼ Heating
OFF Off
✿ Cooling

    - Example:Automatic mode with maximum outdoor temperature (2) > minimum outdoor temperature (3)



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 Leaving water temperature
2 LWT at low Ta
3 LWT at high Ta
4 Low Ta
5 High Ta
6 Outdoor temperature

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
  You can schedule the leaving water temperture for each day of the week. Enter the deviation from the heating curve in function of time.

  - Room cooling
    - Leaving water temp.
      Define the cooling curve (leaving water temperature in function of outdoor temperature).
      Refer to room heating for more details.
    - Min Ta cooling
      Enter the room temperature below which the system should not cool.
    - LWT schedule
      You can schedule the leaving water temperture for each day of the week. Enter the deviation from the cooling curve in function of time.
- Domestic hot water

> **INFORMATION**
>
> The 'Domestic hot water' option in the 'User settings', is only available if the central control is configured to have DHW operation.
>
> This means that 'Centralized tank' must be selected in Installer settings - Centralized DHW tank?
>
> Refer to "Centralized DHW tank?" on page 5.

- Select DHW mode
  Enter OFF or ON.
- DHW setpoint 1 / DHW setpoint 2
  Enter the desired DHW setpoint.

- 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 temperature, duration, start day and time.
  The centralized tank will be heated until the entered disinfection temperature for an (accumulated) time equal to the disinfection duration is reached.

INFORMATION

- The desinfection is only available when 'Centralized tank' is selected in the installer settings.
- The desinfection behaviour of the different units is not affected.

- Reheat now till:
  Setpoint for tank temperature when reheat is activated.

9. 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.

9.1. Unit alarms

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

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.

9.2. 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.

9.3. Alarm menu

Press the alarm button to access the following screen:

- Alarm list
  Shows a list of the current alarms.

10. Troubleshooting

- MDB is shown in the 'Unit info' menu.
  Make sure that the Modbus connection to the DCOM* 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 DCOM* with the corresponding address is correct. If so, interrupt the power to the DCOM* 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.

11. Figures

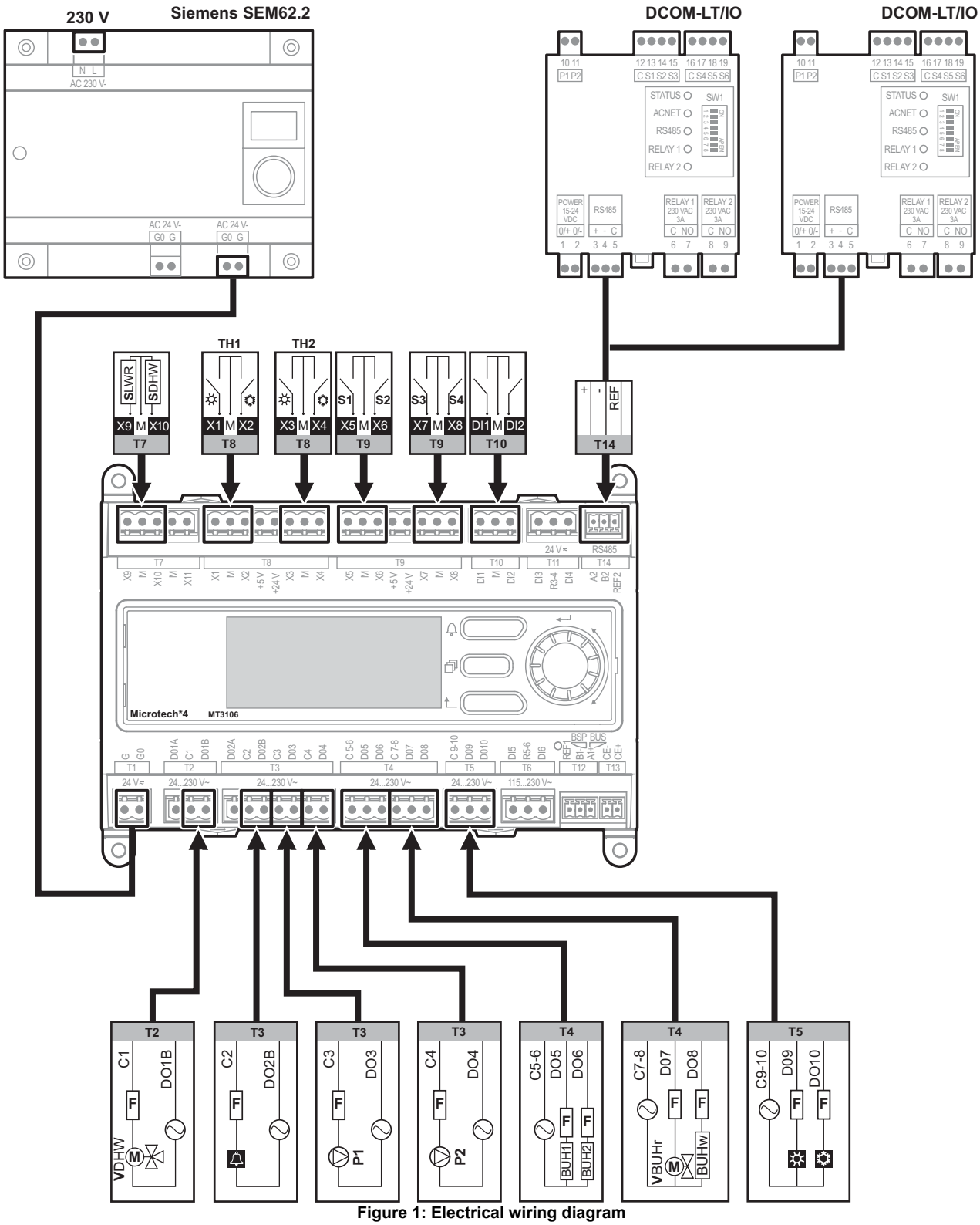


Figure 1: Electrical wiring diagram

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
BUHw: Backup heater for domestic hot water
F: Fuse

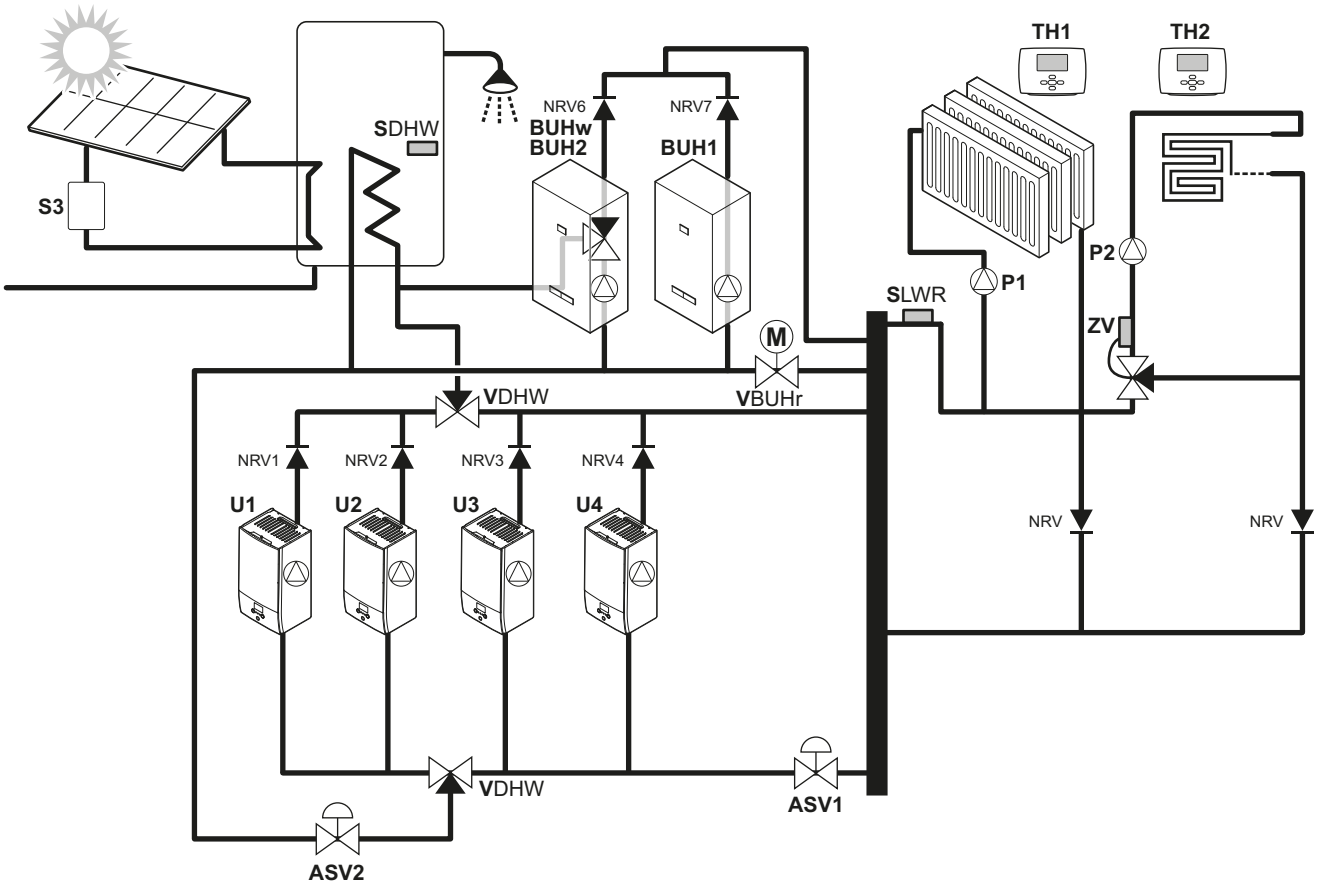


Figure 2: System with centralized domestic hot water tank

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..4: Daikin unit 1..4
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)

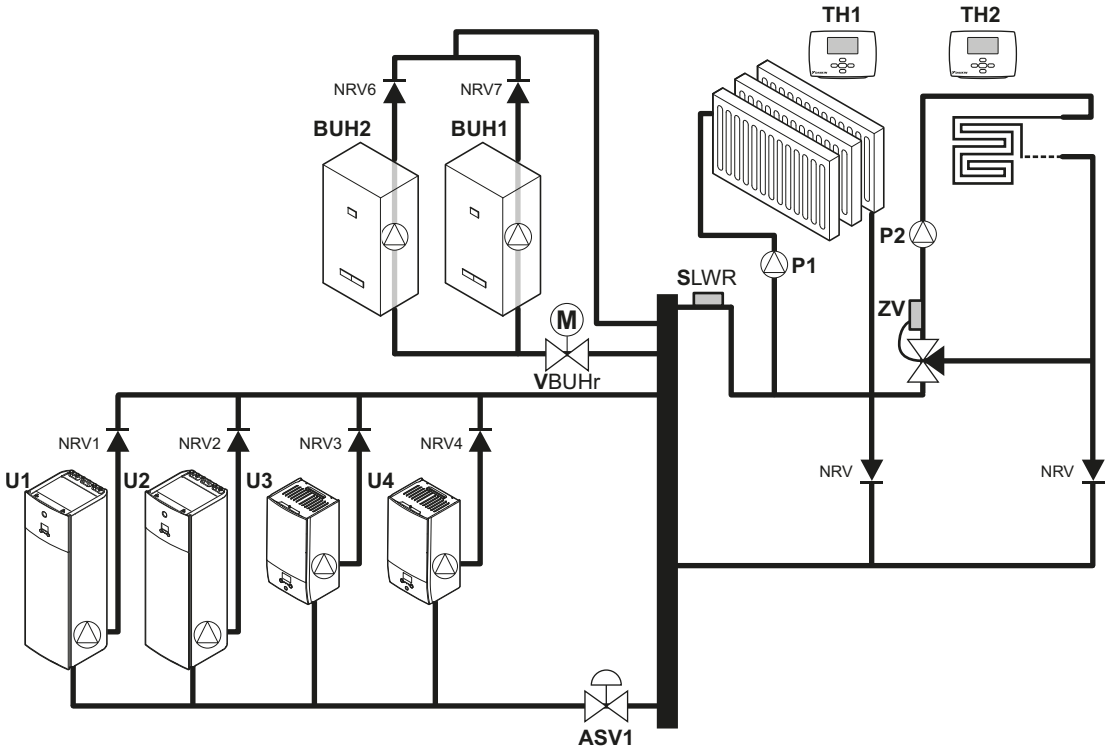
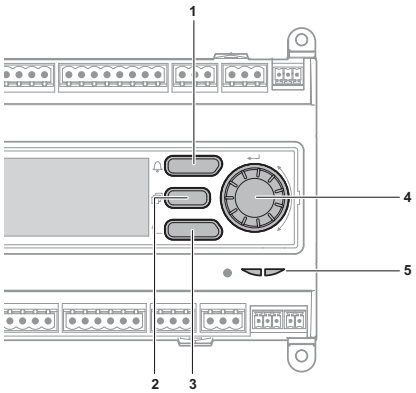


Figure 3: System with integrated hot water tanks

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..4: Daikin unit 1..4
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.

12. 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

12.1. Common abbreviations

Common abbreviations used in the controller interface:

BUH
Backup heater

CLWT
Common Leaving Water Temperature

DHW
Domestic Hot Water

DHWT
Domestic Hot Water Temperature

LWT
Leaving Water Temperature

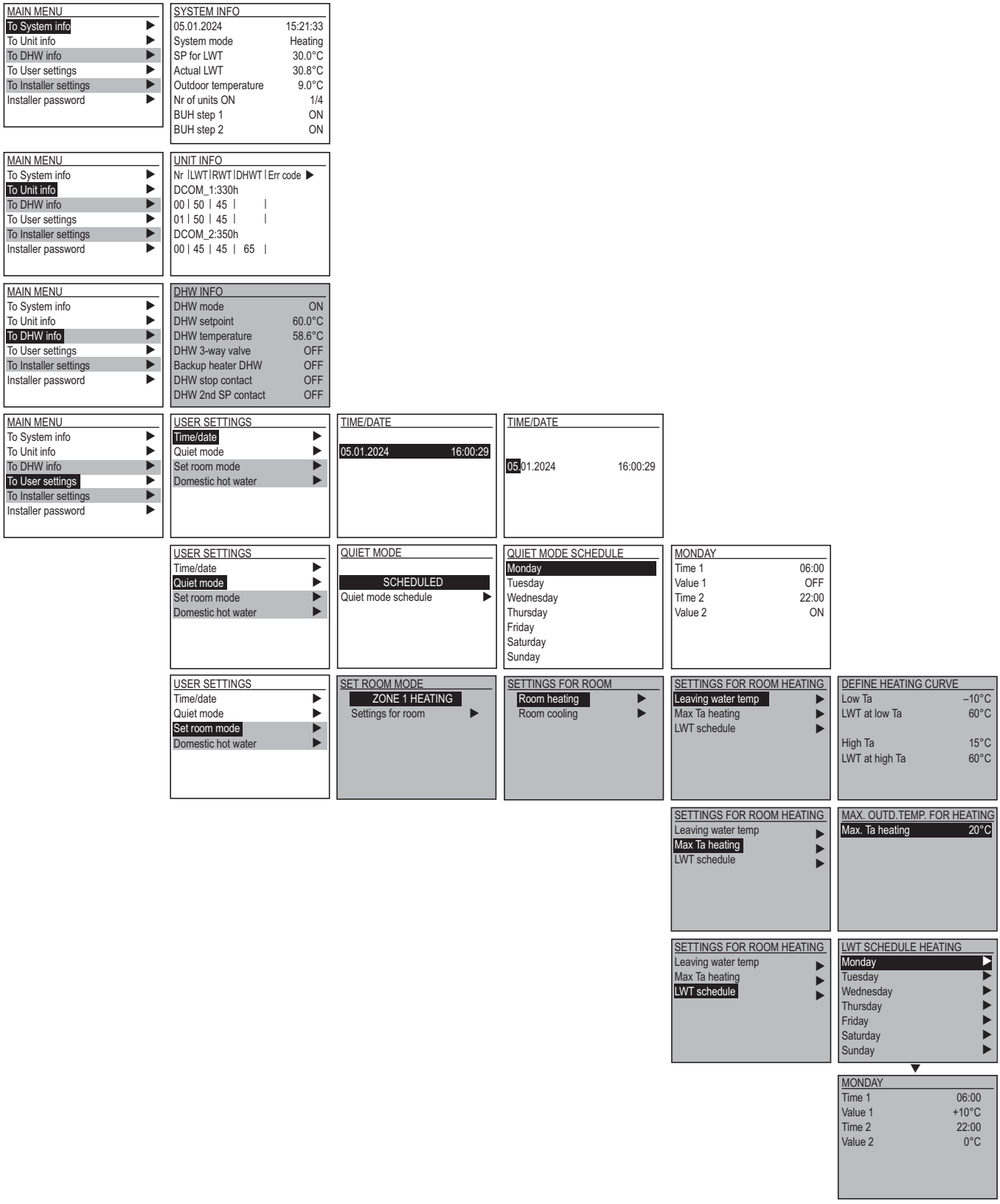
RH
Room heating

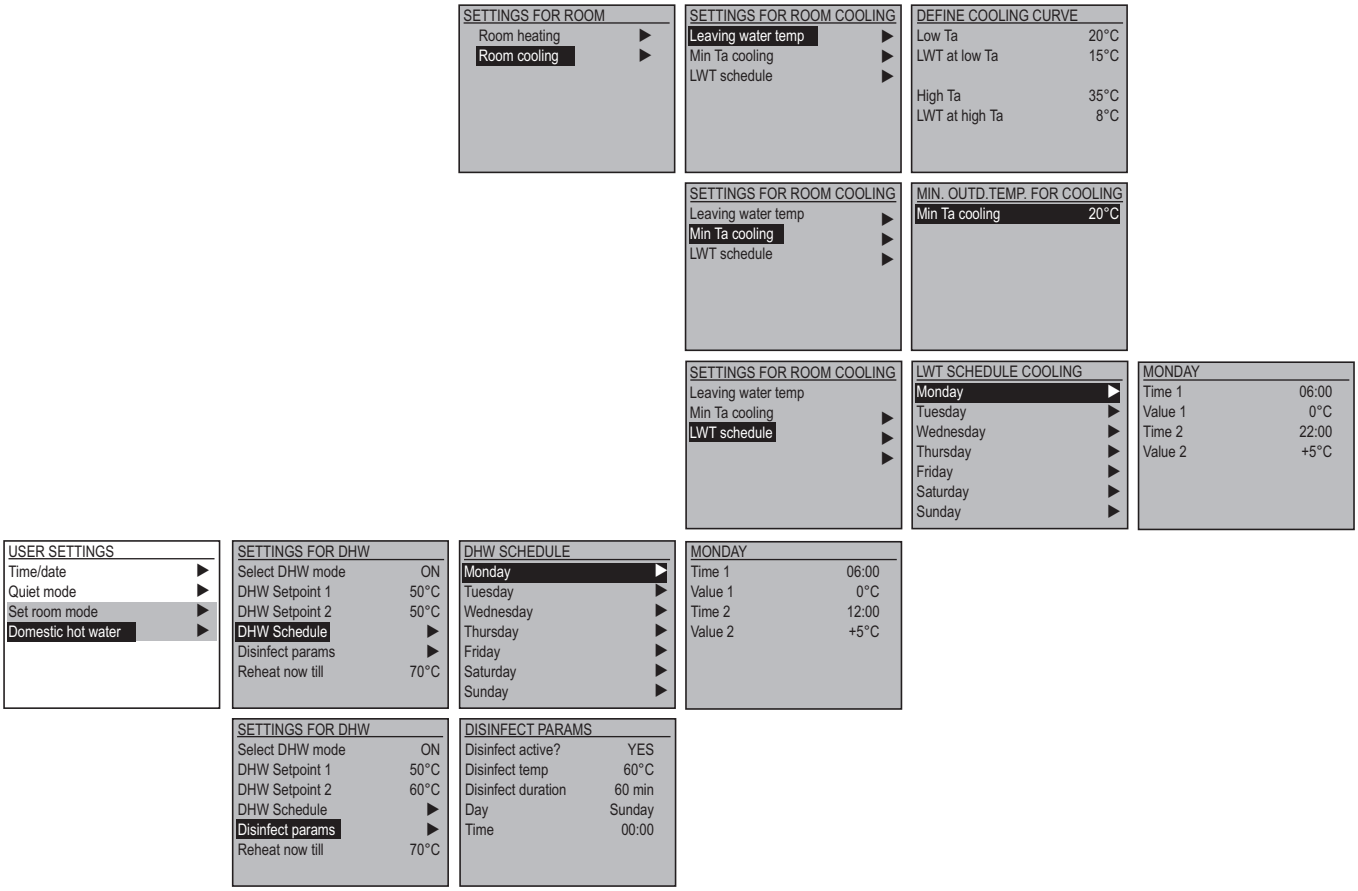
RWT
Return Water Temperature

SP for LWT
Setpoint for Leaving Water Temperature

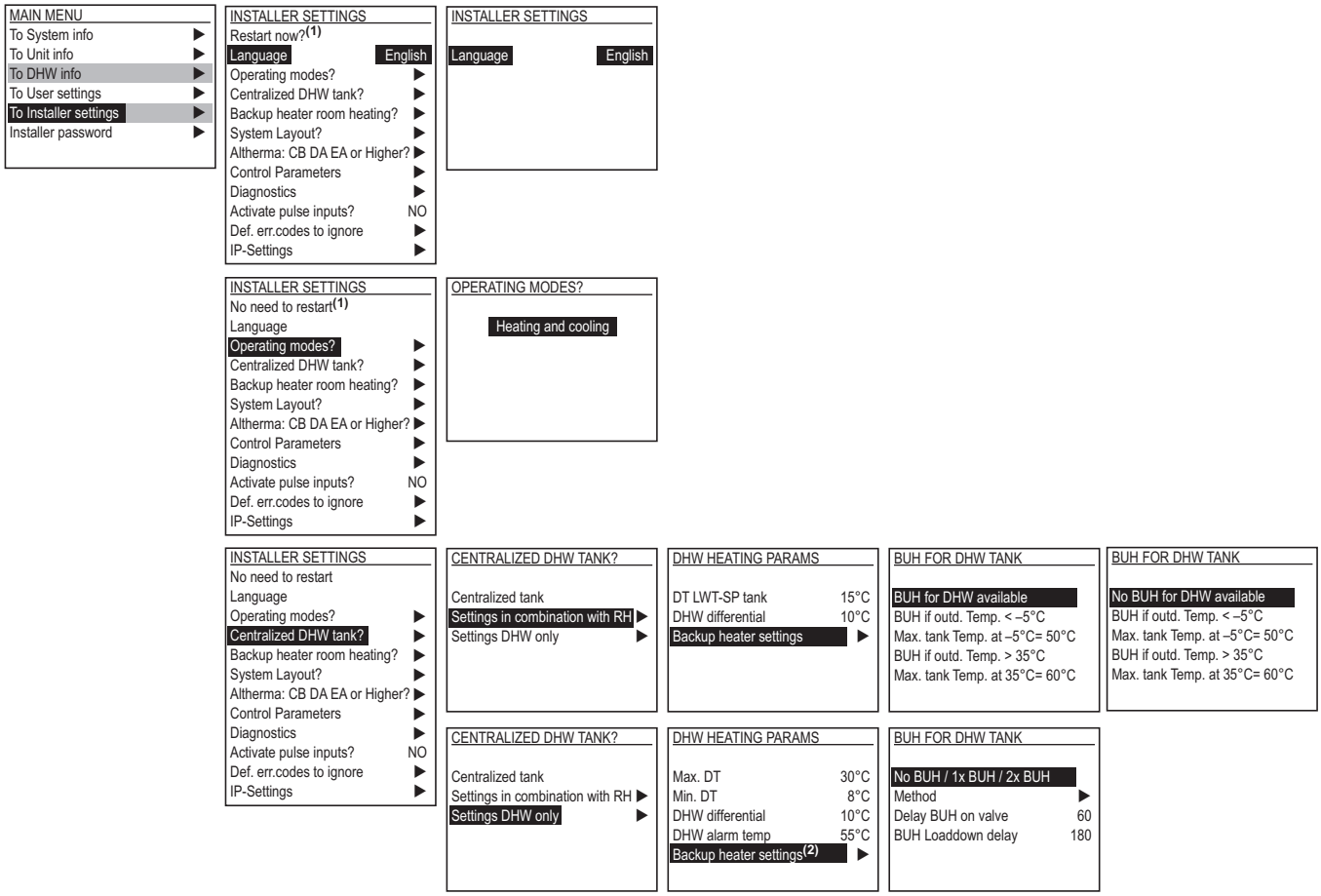
12.2. Operation menu structure

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



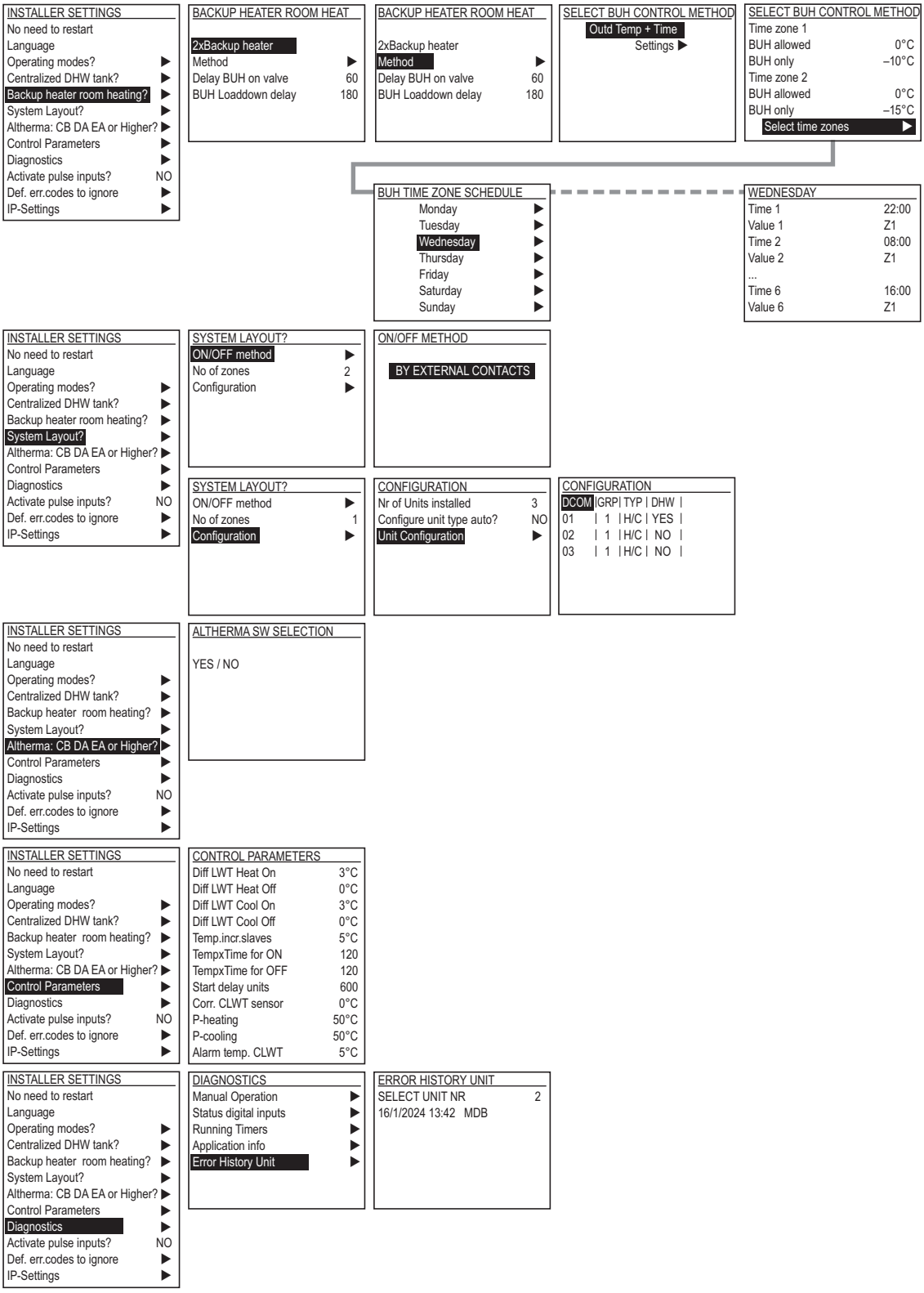

SETTINGS FOR ROOM
Room heating
Room cooling
SETTINGS FOR ROOM COOLING
Leaving water temp
Min Ta cooling
LWT schedule
DEFINE COOLING CURVE
Low Ta 20°C
LWT at low Ta 15°C
High Ta 35°C
LWT at high Ta 8°C
SETTINGS FOR ROOM COOLING
Leaving water temp
Min Ta cooling
LWT schedule
MIN. OUTD.TEMP. FOR COOLING
Min Ta cooling 20°C
SETTINGS FOR ROOM COOLING
Leaving water temp
Min Ta cooling
LWT schedule
LWT SCHEDULE COOLING
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
SETTINGS FOR DHW
Select DHW mode ON
DHW Setpoint 1 50°C
DHW Setpoint 2 50°C
DHW Schedule
Disinfect params
Reheat now till 70°C
DHW SCHEDULE
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
MONDAY
Time 1 06:00
Value 1 0°C
Time 2 12:00
Value 2 +5°C
SETTINGS FOR DHW
Select DHW mode ON
DHW Setpoint 1 50°C
DHW Setpoint 2 60°C
DHW Schedule
Disinfect params
Reheat now till 70°C
DISINFECT PARAMS
Disinfect active? YES
Disinfect temp 60°C
Disinfect duration 60 min
Day Sunday
Time 00:00

12.3. Installer settings menu structure



(1) Restart now? indicates that a restart of the central control is required in order to make changes made in the installer menu effective.
When 'No need to restart' appears, all changes are already active.

(2) For 'Backup heater settings' refer to the 'Backup heater room heating?' Installer settings (see next page).


INSTALLER SETTINGS
No need to restart
Language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater room heating? ▶
System Layout? ▶
Altherma: CB DA EA or Higher? ▶
Control Parameters ▶
Diagnostics ▶
Activate pulse inputs? NO
Def. err.codes to ignore ▶
IP-Settings ▶
BACKUP HEATER ROOM HEAT
2xBackup heater
Method ▶
Delay BUH on valve 60
BUH Loaddown delay 180
BACKUP HEATER ROOM HEAT
2xBackup heater
Method ▶
Delay BUH on valve 60
BUH Loaddown delay 180
SELECT BUH CONTROL METHOD
Outd Temp + Time
Settings ▶
SELECT BUH CONTROL METHOD
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
Monday ▶
Tuesday ▶
Wednesday ▶
Thursday ▶
Friday ▶
Saturday ▶
Sunday ▶
WEDNESDAY
Time 1 22:00
Value 1 Z1
Time 2 08:00
Value 2 Z1
...
Time 6 16:00
Value 6 Z1
INSTALLER SETTINGS
No need to restart
Language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater room heating? ▶
System Layout? ▶
Altherma: CB DA EA or Higher? ▶
Control Parameters ▶
Diagnostics ▶
Activate pulse inputs? NO
Def. err.codes to ignore ▶
IP-Settings ▶
SYSTEM LAYOUT?
ON/OFF method ▶
No of zones 2
Configuration ▶
ON/OFF METHOD
BY EXTERNAL CONTACTS
SYSTEM LAYOUT?
ON/OFF method ▶
No of zones 1
Configuration ▶
CONFIGURATION
Nr of Units installed 3
Configure unit type auto? NO
Unit Configuration ▶
CONFIGURATION
DCOM GRP TYP DHW
01 1 H/C YES
02 1 H/C NO
03 1 H/C NO
INSTALLER SETTINGS
No need to restart
Language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater room heating? ▶
System Layout? ▶
Altherma: CB DA EA or Higher? ▶
Control Parameters ▶
Diagnostics ▶
Activate pulse inputs? NO
Def. err.codes to ignore ▶
IP-Settings ▶
ALTHERMA SW SELECTION
YES / NO
INSTALLER SETTINGS
No need to restart
Language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater room heating? ▶
System Layout? ▶
Altherma: CB DA EA or Higher? ▶
Control Parameters ▶
Diagnostics ▶
Activate pulse inputs? NO
Def. err.codes to ignore ▶
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
Start delay units 600
Corr. CLWT sensor 0°C
P-heating 50°C
P-cooling 50°C
Alarm temp. CLWT 5°C
INSTALLER SETTINGS
No need to restart
Language
Operating modes? ▶
Centralized DHW tank? ▶
Backup heater room heating? ▶
System Layout? ▶
Altherma: CB DA EA or Higher? ▶
Control Parameters ▶
Diagnostics ▶
Activate pulse inputs? NO
Def. err.codes to ignore ▶
IP-Settings ▶
DIAGNOSTICS
Manual Operation ▶
Status digital inputs ▶
Running Timers ▶
Application info ▶
Error History Unit ▶
ERROR HISTORY UNIT
SELECT UNIT NR 2
16/1/2024 13:42 MDB

13. Field supplied components

WARNING

IImproper installation or attachment of equipment or accessories could result in electrical shock, short-circuit, leaks, fire or other damage to the equipment. ONLY use accessories, optional equipment and spare parts made or approved by Daikin unless otherwise specified.

Field supplied parts not included in the EKCC9-W package:

Component	Terminal	Source
Tank sensor for centralized DHW tank (SDHW)	T7	EKCLWS
DCOM	T14	DCOM-LT/IO
Thermostat 1 (TH1)	T8	Field supply
Thermostat 2 (TH2)	T8	Field supply
Domestic hot water valve	T2	Field supply
Alarm	T3	Field supply
Secondary pump zone 1	T3	Field supply
Secondary pump zone 2	T3	Field supply
Backup heater for room heating	T4	Field supply
Backup heater valve room heating	T4	Field supply
Backup heater for domestic hot water	T4	Field supply

14. 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.

14.1. EKCMBACIP and EKCMBACMSTP

The list of objects that can be read or written can be found in the Bacnet list and is available on the Daikin Business Portal (Authentication required).

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.

14.2. EKCM200J

The list of registers can be found in the Modbus list and is available on the Daikin Business Portal (Authentication required).

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.

15. Technical data

15.1. Technical specifications relay outputs

Relay outputs T2~T4 **C1, C2 (T2, T3) and C3~C7-8 (T3, T4)**		
Relay: Type, contact	• C1, C2, monostable, NO/NC • C3~C7-8, monostable, NO	
Switching voltage range	• 12~250 V AC (45~65 Hz) • 12~30 V DC	
Switching current range		
NO contact	0.01~4 A AC	0.01~4 A DC
NC contact	0.01~2 A AC	0.01~2 A DC
Contact load rating		
NO contact	4 A @ 250 V AC	3 A @ 30 V DC
NC contact	2 A @ 250 V AC	1 A @ 30 V DC
Electrical endurance (operations)		
NO contact	• C1, C2: 100000 @ 3 A @ 230 V AC (resistive load) • C3~C7-8: 100000 @ 4 A @ 230 V AC (resistive load) 100000 @ 4 A @ 230 V AC(resistive load) • C1~C7-8: 500000 @ 300 mA @ 230 V AC (resistive load) 100000 @ 2 A @ 230 V AC (inductive load, cos φ ≥ 0.6) 100000 @ 2 A @ 30 V DC	
NC contact	C1, C2 • 100000 @ 2 A @ 230 V AC (resistive load) • 100000 @ 1 A @ 230 V AC (inductive load, cos φ ≥ 0.6) • 100000 @ 1 A @ 30 V DC	
External supply line fusing	≤ 6.3 A non-renewable fuse or circuit breaker, type B, C or D	

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