



Providing sustainable energy solutions worldwide

Installation and Maintenance Manual  
**CTC EcoLogic Pro/Family**

**IMPORTANT**  
READ CAREFULLY BEFORE USE  
KEEP FOR FUTURE REFERENCE





# CTC EcoLogic Pro/Family



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### Quick reference

Fill in the information below. It may come in useful if anything should happen.

Product:	Serial number:
Installer:	Name:
Date:	Tel. no.:
Electrical installer:	Name:
Date:	Tel. no.:

No liability is accepted for any misprints. We reserve the right to make design changes.

## Congratulations on buying your new product



You have just bought a CTC EcoLogic, which we hope you will be very pleased with. The following pages provide information on how to operate your CTC EcoLogic. One part contains general information for the property owner etc. and one part has been written for the installer. Keep this handbook containing the installation and maintenance instructions. You will be able to enjoy the benefits of your CTC EcoLogic for many years, and this manual provides all the information you will need.

The CTC EcoLogic is available in two different models: the EcoLogic PRO and the EcoLogic Family. The EcoLogic PRO has more functions than the EcoLogic Family. These are marked \* in the manual. The EcoLogic Family can easily be upgraded to the EcoLogic PRO by installing an expansion card.

### The Complete System

CTC EcoLogic is a complete heat pump which meets your home's heating and hot water requirements. It is equipped with a unique control system that monitors and controls your entire heating circuit regardless of how you choose to tailor it.

### The CTC EcoLogic has a control system that:

- monitors all hot water and heating system functions;
- monitors and controls your heat pump, solar panels\*, additional heat, buffer tank, pool\*, etc.;
- allows for individual settings;
- indicates desired values, for instance, temperatures and energy consumption;
- facilitates settings in a simple and structured manner.

### Service-friendly, second to none

Easily accessible electrical components, along with effective troubleshooting functions in the control program, make the CTC EcoLogic easy to service. It is supplied with a room sensor as standard, which is equipped with LED lights that flash in the event of a fault. The CTC EcoLogic is fully designed to work with the CTC EcoAir outdoor air heat pump, the CTC EcoPart bedrock/ground source heat pump, solar panels\* and an additional boiler where present. The CTC EcoLogic can control a number of combinations and provide you with an extremely flexible, eco-friendly and energy-saving heating system.

*\* Applies to the CTC EcoLogic PRO only*

# Important to remember!

Check the following points in particular at the time of delivery and installation:

- Remove the packaging and check that the product (electrical connection box and display) has not been damaged in transit. Report any transport damage directly to the carrier.
- Check for missing parts.
- The product must not be installed where the ambient temperature is higher than 60°C.
- CTC EcoAir 510M 230V 1N~ must have Software HP PCB 20160401 or later.
- CTC EcoAir 520M 400V 3N~ must have Software HP PCB 20160401 or later.

# Safety Instructions

The following safety instructions must be observed when handling, installing and using the product:

- Do not soak the product with water or any other liquid.
- All installation must be carried out by a qualified person in accordance with applicable regulations.
- Make sure that the electrical connection box is not left with the cover open after the installation – bear in mind the risk of electrical hazards to your safety and the safety of those around you.

This appliance is not intended for use by persons ( including children ) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

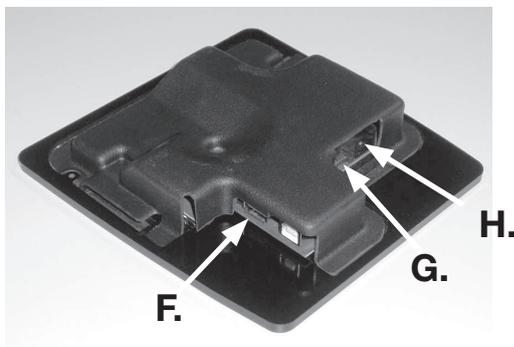
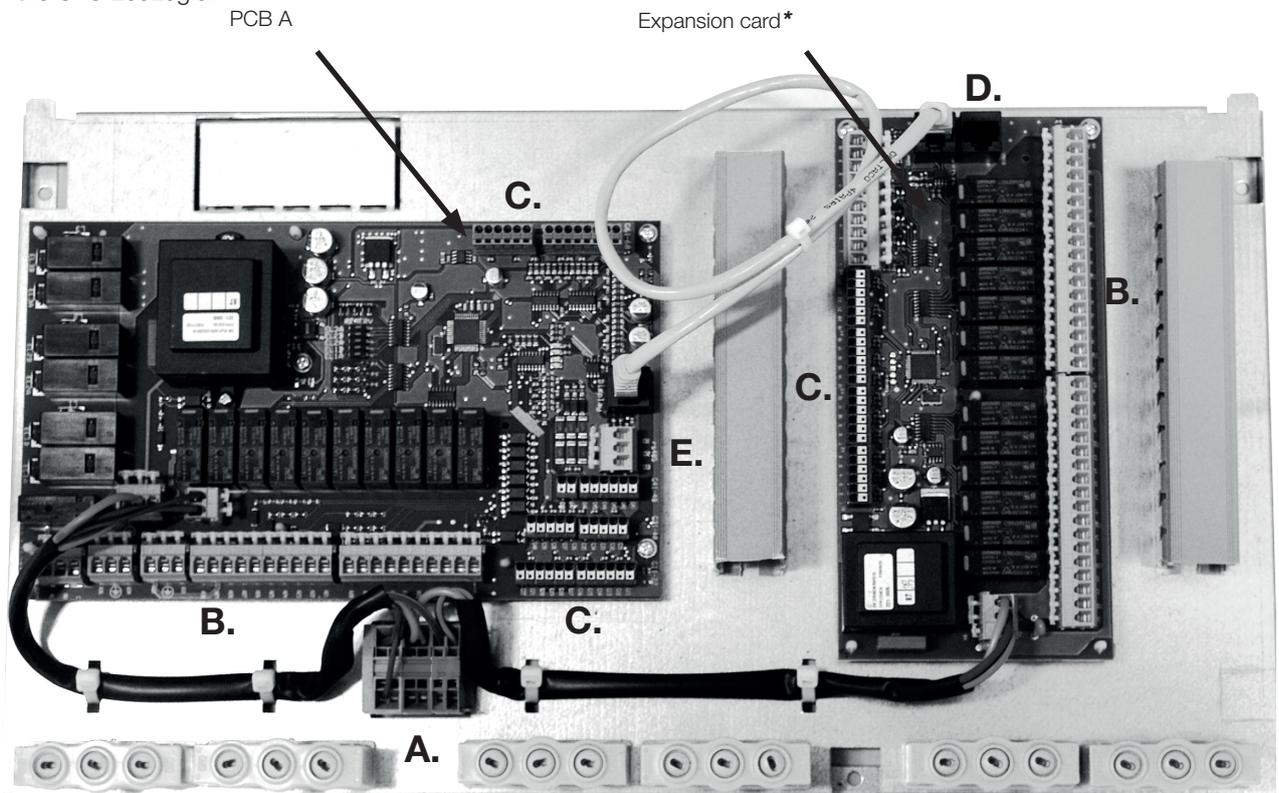
# 1. Design and function of the CTC EcoLogic

This chapter illustrates the main components and describes the subsystems, which in different configurations form part of the six main systems (EcoLogic systems 1 to 6). For more information about EcoLogic systems 1 to 6, refer to the “Pipe connections” chapter.

## 1.1 Main components

### 1.1.1 Printed circuit board (PCB)

The illustration below shows the important components when connecting up the CTC EcoLogic.



- A. Power supply
- B. Connection 230 V
- C. Terminal block low voltage
- D. Communication display
- E. Communication heat pump
- F. USB port
- G. Communication relay/expansion card
- H. BMS connection

*\* Accompanies the CTC EcoLogic PRO.*

*Accessory pack included with the CTC EcoLogic Family.*

1.1.2 Scope of delivery

The figure below shows the main components in the EcoLogic delivery.

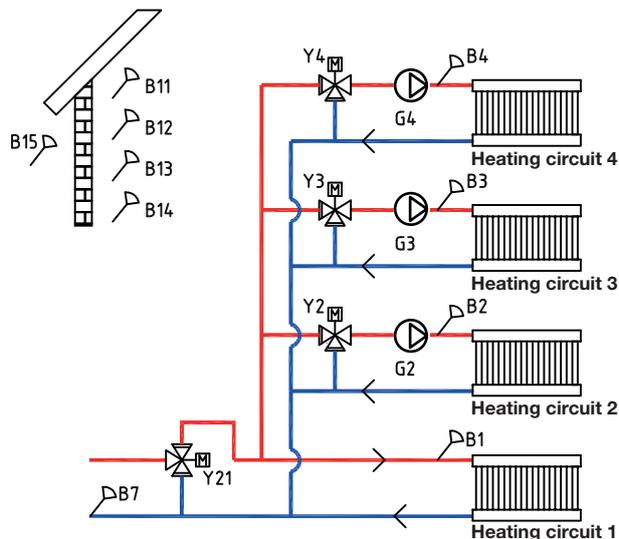


- A. Electrical connection box
- B. Electrical connection box communication cable – display unit
- C. Display unit
- D. Wall mounting for display unit
- E. Room sensor
- F. Outdoor sensors
- G. Primary flow sensors (22k)

## 1.2 Heating circuit

The CTC EcoLogic can control up to four heating circuits using room sensors – for example, two radiator circuits and two floor heating circuits.

The required curve inclination and adjustment is set when operating outdoor sensors only. This value is different from home to home and should be adjusted to suit your needs.



A room sensor that is correctly positioned provides more comfort and more heating system savings. The room sensor picks up the current indoor temperature and adjusts the heat, for example when it is windy outside and the house is losing heat, which the outdoor sensor is unable to register. During solar insolation, or other instances when heat builds inside the house, the room sensor can also reduce the heat supplied, thus saving energy. Another way to save energy is to use the night reduction function, which reduces the indoor house temperature at certain times or periods, for example during the night or when you are away on holiday.

### Degree minutes, EcoLogic systems 1 to 3

For EcoLogic systems 1, 2 and 3 (see the schematic diagrams for EcoLogic systems 1 to 6 in the “Pipe installation” chapter) the control system measures the temperature in the heating circuit each minute. Once a certain cumulative heat loss (measured in degree minutes) is measured, the heat pump is started up to compensate for the loss.

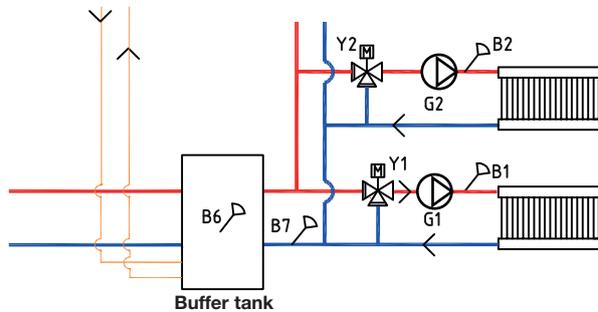
“Degree minutes” refers to the product of the cumulative heat loss in degrees (°C) and the time measured for this in minutes. For example, 60 degree minutes may arise if a total of one degree of heat loss accumulates for one hour, or three degrees of cumulative heat loss is measured after 20 minutes.

The first heat pump starts when heat loss reaches 60 degree minutes (factory setting) and stops when the system has recovered the loss (at 0 degree minutes). If several heat pumps are connected at the same time as the heat loss increases, the A2 heat pump starts when there is a loss of 90 degree minutes (the factory-set difference between the heat pumps is 30 degree minutes). If additional heat is needed, this is added when there is a heat loss of 500 degree minutes and stops at 400 degree minutes (both values are factory set).

*\*Applies to the CTC EcoLogic PRO only. The CTC EcoLogic Family controls up to two heating circuits.*

### Buffer tank, EcoLogic systems 4 to 6

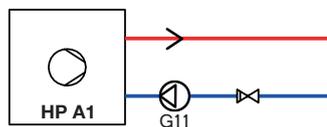
If a buffer tank is connected (see the schematic diagrams for EcoLogic systems 4 to 6 in the “Pipe installation” chapter), the heating circuit can be kept at a constant temperature.



The heat pump is controlled based on the temperature in the buffer tank. The compressor starts at a certain predefined time after the sensor in the tank measures a temperature that is lower than the setpoint for the tank and stops when the tank measures a temperature difference that is set higher than the setpoint for the tank. The indoor temperature in conjunction with the outdoor temperature and chosen heat curve determine at which temperature the primary flow temperature will be aimed.

#### 1.2.1 Heat pump

The CTC EcoLogic can control up to ten heat pumps\*, two of which can be connected via diverting valves to deliver heat to either the heating circuit or the hot water circuit.



Heat pump operation is a so-called floating condensation, where the heat pump heats to the temperature required by the heating circuit. This temperature varies depending on the outdoor temperature and which set inclination and adjustment of the heat curve has been chosen. Installed room sensors affect the temperature required in the heating circuit.

Savings from a heat pump are directly linked to the COP value. COP means the output in proportion to the supplied power. Thus, COP = 3 means that for 1 kW of supplied power from the compressor, 3 kW of heat output is produced.

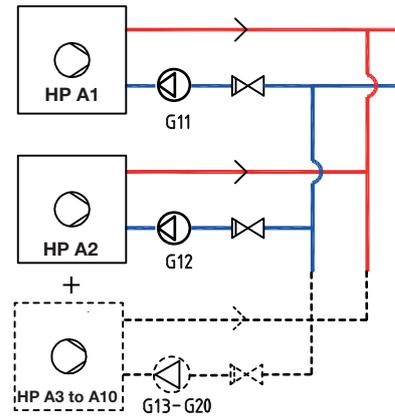
The lower the temperature the heat pump needs to produce, the higher the COP value obtained from the heat pump, as this is a more advantageous operation for the compressor. The heat pump therefore only heats to the temperature required by the heating circuit. This is economical in terms of the service life of the compressor and in maximising operating economy.

*\*Applies to the CTC EcoLogic PRO only. The CTC EcoLogic Family can control up to two heat pumps.*

### 1.2.1.1 More than two heat pumps\*

Two heat pumps can be connected via diverting valves that alternate the charging between the hot water tank and the heating circuit. If more than two heat pumps are installed, these are connected to the heating circuit. The heat pumps are connected via the Modbus communication interface.

When two or more heat pumps are connected to the same system, the common pipes, diverting valves and mixing valves must be sized so that they are able to cope with the total flow from the heat pumps. Check the flow of the heat pumps by comparing primary/return/outdoor temperature (see the “Initial startup” chapter in the heat pump manual).

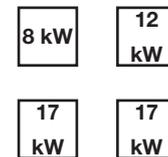


### 1.2.1.2 Prioritisation of heat pump operation

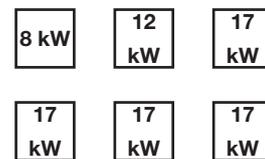
When the CTC EcoLogic controls two or more heat pumps of different sizes, the connected heat pumps are divided into two different categories: small or large heat pumps. Dividing the available heat pumps into two different size categories means it is possible to change the output in small steps and in this way achieve modulating operation.

When, for example, a need for power occurs, a large heat pump is switched on at the same time as a small heat pump is switched off, and vice versa when reducing power. Within both the small and large groups reciprocal heat pump operation is prioritised according to accumulated operation time.

When there is a mixture of different types of heat pumps, air/water and bedrock/ground source pumps are prioritised according to current outdoor temperature.



In the example above, 8 kW and 12 kW are classed as small, while the two 17 kW machines are classed as large.



In the example above, 8 kW and 12 kW are classed as small, while the four 17 kW machines are classed as large.

### 1.2.1.3 Different Heat Pumps

The CTC EcoLogic can control different types of CTC heat pumps, for example the CTC EcoAir (air/water heat pump) and the CTC EcoPart (water/water heat pump).

The outdoor temperature at which the CTC EcoAir is prioritised over the CTC EcoPart is set in the Installer/Settings/Heat pumps menu. This means that the operating economy can be maximised, as at a high outdoor temperature a greater energy yield is obtained from the CTC EcoAir than from the CTC EcoPart. This combination is excellent in installations where, for example, bedrock/ground source heat pumps are designed with too much focus on “saving” etc. An air/water heat pump may then be used to allow the bedrock more time to “recover” and to provide increased output of the installation.

\*Applies to the CTC EcoLogic PRO only.

### 1.2.1.4 Pressure/level switch

In some cases, extra protection is required due to local requirements or provisions. For example, the requirement in some areas is for the system to be installed within a water catchment area.

The pressure/level switch is connected to blocks K22/K23/K24/K25 and then defined under the Installer/Define system/Def Heat pump menu. If there is a leak, the compressor and brine pump stop and the Flow/level switch alarm appears on the display.

### 1.2.1.5 Speed-controlled charge pump

Each heat pump should have a separate charge pump that starts and stops together with its respective heat pump. If the charge pump is speed-controlled, the flow will be automatically set without adjustment via the control valve.

In the heating circuit, the charge pump will work towards a fixed difference between supply and return from the heat pump.

If a speed-controlled charge pump is not installed, the flow may be adjusted manually in accordance with the heat pump's manual. The difference between incoming and outgoing water from the heat pump will vary depending on the operating conditions during the year.

When the outdoor temperature is less than +2°C, the charge pumps must start in order to protect against frost in cases where an air/water heat pump is installed. A speed-controlled charge pump will only work at 50% of its maximum capacity. This provides for increased savings on the charge pump's operating economy. In addition, the heat losses are lowered compared with a charge pump with a fixed speed setting.

## 1.3 DHW

Hot water can be directed from heat pumps, solar panels and additional heat to the hot water tank.

The required hot water comfort level is set in the *DHW* menu. In this main menu, it is possible to schedule increased water temperatures during certain times of the day.

The stop temperature in the hot water tank is factory-set at 55°C. When hot water is being drained and the temperature in the tank falls to 5°C below the stop temperature, the heat pump starts and raises the water temperature towards the set stop temperature.

The stop temperature is adapted to hot water needs and to the heat pump model installed.

When there is a requirement for heat in the house at the same time, the heat pump charges the heating circuit even when the stop temperature (55°C) in the hot water tank has been reached.

## 1.4 Additional heat

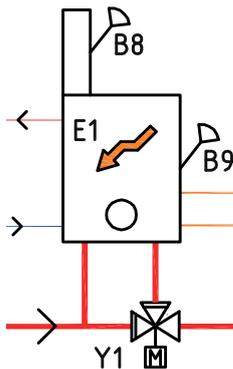
The CTC EcoLogic can control an external additional heat source (pellet, oil, gas or electric boiler) which is connected before or after the hot water system.

In the *Installer/Settings/Add heat* menu, systems 1, 2 and 3 can be set according to the cumulative heat loss in degree minutes at which the EcoLogic will start the additional heat as well as the difference between the start and stop of the additional heat. Additional heat is factory set to start when there is a loss of 500 degree minutes and to stop when the loss totals 400 degree minutes (set difference = 100 degree minutes).

For EcoLogic systems 4, 5 and 6, additional heat can be set to start at a certain time after heat loss occurs in the tank. The factory setting is 180 minutes.

### 1.4.1 Wood Boiler

The CTC EcoLogic in system 1 can be connected to a wood boiler.



When wood-firing is started and the flue gas sensor reaches the value set in the *Installer/Settings/Add heat/Start flue gas °C* menu (factory set to Off), control enters wood operation status.

When wood operation is active, the heat pump(s) or additional heat are not used for heating. When the flue gas sensor is below the set value, wood operation status is interrupted.

A charging system such as Laddomat 21 is recommended for the wood boiler for optimum performance. In special cases, for instance operating a water-jacketed stove, a charge pump controlled directly by the flue gas temperature can be used.

## 1.5 Solar panels\*

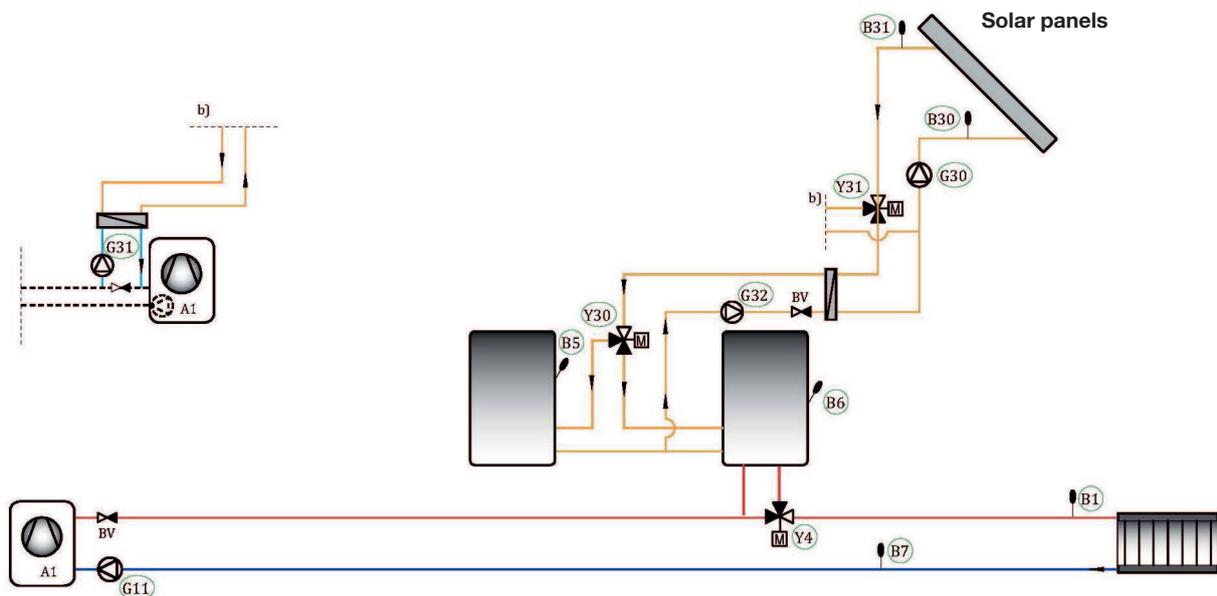
Solar panels can be connected to the buffer tank, hot water system and the bedrock/ground source heating circuit via diverting valves.

When the temperature rises and the temperature difference exceeds 7°C (factory setting) between the solar panels and the hot water tank, the charge pump starts and transfers the solar heat to the hot water system. The speed-controlled pump controls the flow so that it always delivers a temperature of at least 7°C higher. This means that if solar panel output rises, the charge pump will increase the flow, and if solar panel output decreases, the charge pump will reduce the flow. When the hot water tank temperature increases or the solar panels drop in temperature and the temperature difference becomes 3°C (factory setting), the charging stops and does not start again until the temperature is at least 7°C warmer than in the hot water tank.

If both the hot water tank and buffer tank are defined, the hot water tank is prioritised. Charging first takes place to the hot water tank; once the set setpoint has been reached, charging changes to the buffer tank. Charging continues until a need for hot water arises or the set setpoint has been reached.

There are frost protection functions for the solar panels/the collector (see the *Installer/Settings/Solar panels/Protection collector* menu).

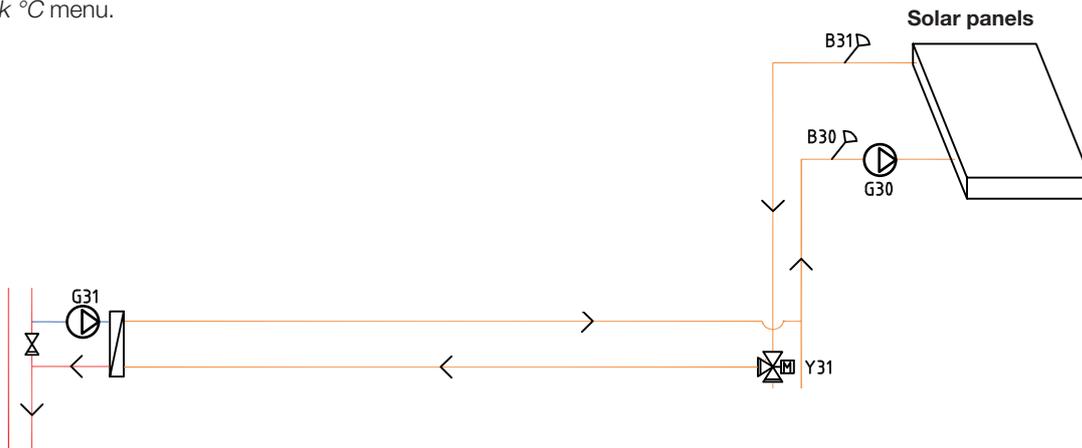
Heat exchangers and pumps (G32) do not need to be installed to the solar heating circuit if there is already an existing loop in the connected hot water/heating tank.



\*Applies to the CTC EcoLogic PRO only.

## 1.6 Recharging bedrock/ground\*

If a liquid/water heat pump (the CTC EcoPart) is used, a diverting valve can be installed in the solar circuit and connected to the brine circuit (the loop in the borehole or the ground heat loop) to recharge the bedrock/ground when the hot water tank/buffer tank are fully charged (factory set at 85°C), or when the temperature in the solar panels is not sufficiently high to charge the tank but is able to provide an addition to the brine circuit. See the *Settings/Solar panels/Max. DHW tank °C menu* or the *Settings/Solar panels/Max. buffer tank °C menu*.



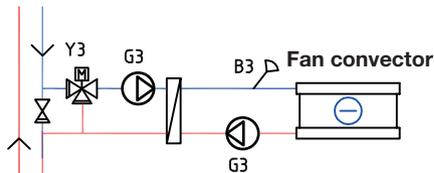
The solar panel temperature should be factory set at 60°C warmer than the brine temperature in order for the charging to start (see the *Installer/Settings/Solar panels/dT max. bedrock °C menu*). When the difference between the temperature in the solar panels and the brine circuit falls to 30°C, the charging is stopped. If the brine circuit temperature becomes warmer than the set value, the recharging will also be interrupted, as the temperature then becomes too high for the heat pump to work (see the *Installer/Settings/Solar panels/Max. brine °C menu*).

When the solar energy system works towards the brine circuit, the flow is factory set to switch to the hot water circuit every thirty minutes (see the *Installer/Settings/Solar panels/Test frequency min* menu) to check whether charging is possible, as the hot water circuit always has the highest priority. If possible, charging towards the hot water tank will continue. Otherwise the charging reverts to the brine circuit.

*\*Applies to the CTC EcoLogic PRO only.*

### 1.7 Cooling\*

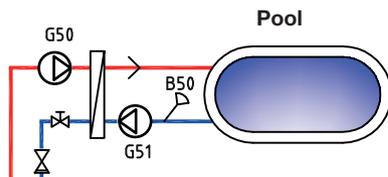
Cooling – also called “natural cooling” or “passive cooling” – exploits the free cooling found in bedrock. A bedrock/ground source heat installation is easily supplemented with a fan convector, a circulation pump, pipe and pipe parts, e.g. CTC EcoComfort. Operating costs are very low as the cold itself does not need to be produced, instead being simply transferred from the bedrock to the house.



In the *Installer/Settings/Cooling* menu, it is stated at which temperature cooling will be permitted.

### 1.8 Pool\*

For EcoLogic systems 4 to 6, the pool can be connected parallel with the heating circuit via a heat exchanger in order to separate the liquids.



Via a sensor in the pool, the pool's charge pump starts and stops in order to maintain the set temperature in the pool (factory set at 22°C) and the temperature is allowed to fall by 1°C before the charge pump starts again. It is also possible to set a high and low pool priority, which determines whether or not additional heat will be used to heat the pool. See the *Installer/Settings/Pool* menu.

*\*Applies to the CTC EcoLogic PRO only.*

## 2. The House Heating Curve

### The House Heating Curve

The heating curve is the central part of the product's control system. It is the heating curve which determines the compensated flow temperature requirements for your property dependent upon the outdoor temperatures. It is important that the heating curve is correctly adjusted, so that you achieve the best operation and economy possible.

One property requires a radiator temperature of 30 °C when the outdoor temperature is 0 °C, whilst a different property requires 40 °C. The difference between different properties is determined by the radiator surface area, the number of radiators and how well insulated the house is.

**!** The set heating curve always takes priority. The room sensor can only increase or decrease the heat beyond the set heating curve to a certain extent. Where **■** operating without a room sensor, the selected heating curve determines the flow temperature supplied to the radiators.

### Adjustment of Default Values for the Heating Curve

You define the heating curve yourself for your property by setting two values in the product control system. This is achieved by selecting the options Inclination or Adjustment under the Installer/Settings/Radiator system menu. Ask your installer to help you set these values.

It is extremely important to set the heating curve and, in some cases, unfortunately, this process may take several weeks. The best way of doing this, upon the initial start-up, is to select operation without any room sensor. The system then operates using the outdoor temperature reading and the property's heating curve only.

### During the adjustment period it is important that:

- the night reduction function is not selected.
- all thermostat valves on the radiators be fully opened. (This is to find the lowest curve for the most economical use of the heat pump.)
- the outdoor temperature is not higher than +5 °C. (If the outdoor temperature is higher when the system is installed, use the factory set curve until the outdoor temperature falls to a suitable level.)
- the radiator system is operational and correctly adjusted between different circuits.

### Appropriate Default Values

During installation you can seldom achieve a precise setting for the heating curve instantly. In this case, the values given below may provide a good starting point. Radiators with small heat-emission surfaces require a higher primary flow temperature. You can adjust the gradient (heating curve gradient) for your heating system under the Installer/Settings/Radiator system menu.

Recommended values are:

Floor heating only	Inclination 35
Low temperature system (well insulated houses)	Inclination 40
Normal temperature system (factory setting)	Inclination 50
High temperature system (older houses, small radiators, poorly insulated)	Inclination 60

### Adjusting the heating curve

The method described below can be used to adjust the heating curve correctly.

#### Adjustment if it is too cold indoors

- If the outdoor temperature is **lower** than 0 degrees:  
Increase the Inclination value by a couple of degrees.  
Wait 24 hours to see if any further adjustment is required.
- If the outdoor temperature is **higher** than 0 degrees:  
Increase the Adjustment value by a couple of degrees.  
Wait 24 hours to see if any further adjustment is required.

#### Adjustment if it is too warm indoors

- If the outdoor temperature is **lower** than 0 degrees:  
Decrease the Inclination value by a couple of degrees.  
Wait 24 hours to see if any further adjustment is required.
- If the outdoor temperature is **higher** than 0 degrees:  
Decrease the Adjustment value by a couple of degrees.  
Wait 24 hours to see if any further adjustment is required.

**!** If the values set are too low, this may mean that the desired room temperature is not being reached. You then need to adjust the heating curve, as necessary, following the method shown above.  
When the basic values have been set more or less correctly, the curve can be finely adjusted directly using the Room temp. shown on the home menu screen.

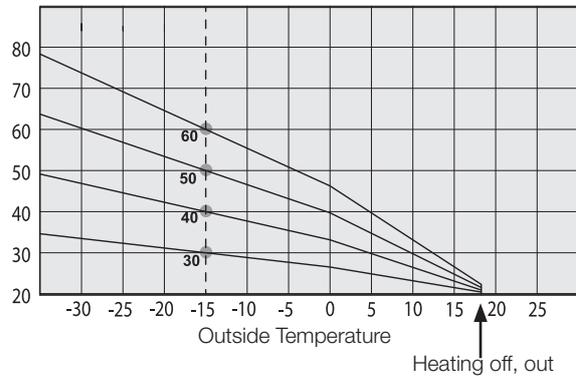
### Examples of Heating Curves

You can see in the diagram below how the heating curve changes with different inclination settings. The gradient of the curve shows the temperatures that the radiators require at different outdoor temperatures.

#### Curve Inclination

The inclination value which is set is the primary flow temperature when the outside temperature is  $-15\text{ }^{\circ}\text{C}$ .

Primary Flow Temperature

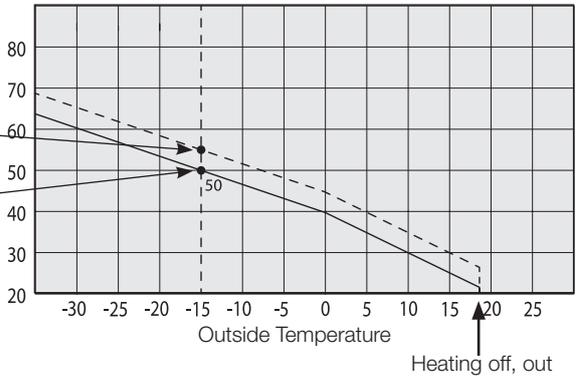


#### Adjustment

The curve can be parallel displaced (adjusted) by the desired number of degrees to adapt to different systems/ houses.

- Inclination  $50\text{ }^{\circ}\text{C}$   
Adjustment  $+5\text{ }^{\circ}\text{C}$
- Inclination  $50\text{ }^{\circ}\text{C}$   
Adjustment  $0\text{ }^{\circ}\text{C}$

Primary Flow Temperature



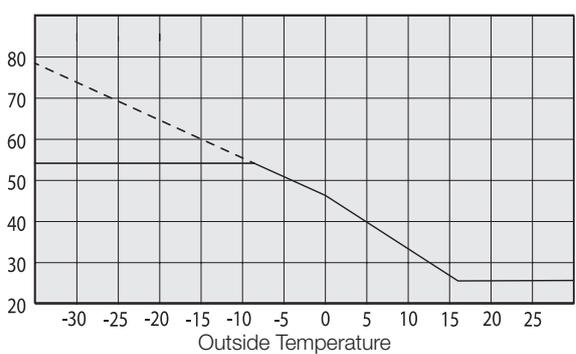
#### An example

Inclination  $60\text{ }^{\circ}\text{C}$   
Adjustment  $0\text{ }^{\circ}\text{C}$

In this example, the maximum outgoing primary flow temperature is set at  $55\text{ }^{\circ}\text{C}$ .

The minimum permitted primary flow temperature is  $27\text{ }^{\circ}\text{C}$  (e.g. summer-time basement heating or the floor circuits in a bathroom).

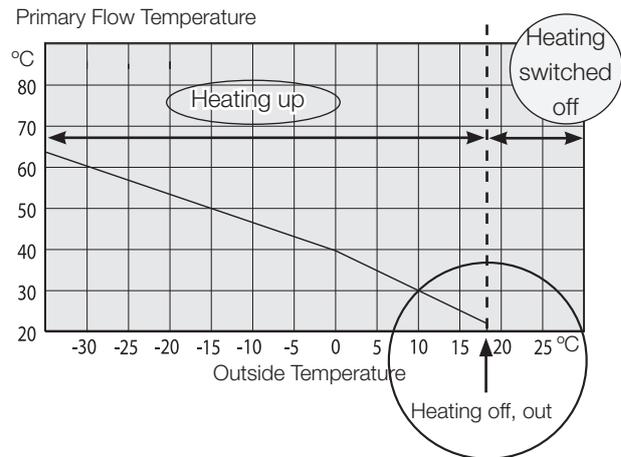
Primary Flow Temperature



### Summer-time operation

All properties have internal heat gains (lamps, oven, body heat, etc.), which means that the heating can be switched off when the outdoor temperature is lower than the desired room temperature. The better insulated the house is, the earlier the heating from the heat pump can be switched off.

The example shows the product set at the default value of 18°C. This value, "**Heating off, outside**", can be changed in the Advanced/Settings/Heat System menu. In systems with a radiator pump, the radiator pump stops when the heat is switched off. The heating starts up automatically when it is required again.



### Automatic or remote-controlled summer period

The factory setting causes "summer" to commence automatically at 18°C, as "Heating mode" is set to "Auto".

#### Heating, mode **Auto (Auto/On/Off)**

**Auto** means automatic.

**On** means that the heating is on. For systems with a mixing valve and a radiator pump, the mixing valve operates to the primary flow setpoint and the radiator pump is on.

**Off** means that the heating is switched off. For systems with a radiator pump, the radiator pump is switched off.

#### Heating, ext. mode **- (- /Auto/On/Off)**

Facility for remote control of whether the heating is to be on or off.

**Auto** means automatic.

**On** means that the heating is on. For systems with a mixing valve and a radiator pump, the mixing valve operates to the primary flow setpoint and the radiator pump is on.

**Off** means that the heating is switched off. For systems with a radiator pump, the radiator pump is switched off.

- No selection means no function when activated.

### 3. Technical data

Supply	230 V 1N~
Max. fuse size	10 A
Total max. load CTC EcoLogic	10 A
Max. load relay output	4 A
Electrical data diverting valve	230 V 1N~
Electrical mixing valve motor	230 V 1N~
Output additional heat (external additional heat source E1, E4)	230 V 1N~, max. 4 A
Sensor (protective extra low voltage), NTC 22k, °C/ohm	0/66k, 10/41.8k, 15/33.5k, 20/27.1k, 25/22k, 30/18k, 35/14.8k, 40/12.2k, 50/8.4k, 60/6.0k, 70/4.3k, 80/3.1k, 90/2.3k, 100/1.7k
Hot gas sensor, NTC 3.3 type, °C/ohm	20/61.5k, 30/39.5k, 40/26k, 50/17.5k, 60/12.1k, 70/8.5k, 80/6.1k, 90/4.5k, 100/3.3k, 110/2.5k, 120/1.9k, 130/1.5k, 150/0.9k
Outdoor sensor, NTC 150 type, °C/ohm	-20/1.11k, -10/681, 0/428, 10/276, 20/182, 30/123, 40/85
Solar panel sensors*, PT1000 type, °C/ohm	-10/960, 0/1000, 10/1039, 20/1077, 30/1116, 40/1155, 50/1194, 60/1232, 70/1271, 80/1309, 90/1347, 100/1385, 120/1461, 140/1535
Display	4.3 inches, colour, touch
Memory	maintains the memory in the event of a power failure
Back-up batteries	not needed
Clock	real-time
Measurements (w x h x d)	
-display	159 x 160 x 28.1 mm
-electrical connection box	479 x 283 x 121 mm

*\*Applies to the CTC EcoLogic PRO only.*

## 4. Detail Description Menus

All settings can be configured directly on screen using the straightforward control unit. The large icons operate as buttons on the touch display. Operational and temperature information is also displayed here. You can easily enter the different menus to find information on the operation or to set your own values.

### 4.1 Start menu

This menu is the system's start menu. This provides an overview of the current operational data. The system returns to this menu if no buttons are pressed within 10 minutes. All other menus can be accessed from this menu.



 **Room temp.**  
Heating circuit settings for raising or lowering the temperature indoors and for scheduling temperature changes.

 **DHW**  
Settings for DHW production.

 **Operation**  
This shows current and historical operational data for the system.

 **Installer**  
This is where the installer configures the settings and service for your system.

 **Room temperature heating circuit 1**  
If room sensor 1 is defined, the room temperature in question is displayed here.

 **Room temperature heating circuit 2**  
If room sensor 2 is defined, the room temperature in question is displayed here.

 **Tank temperature**  
This shows the current water temperature in the hot water tank.

 **Outdoor temperature**  
This displays the current outdoor temperature.

 **Home**  
The Home button takes you back to the Start menu.

 **Return**  
The Return button takes you back to the previous menu level.

 **OK**  
The OK button is used to mark and confirm text and options in the menus.

 **Night reduction**  
This schedules a temperature reduction at night if selected.

 **Holiday**  
This is used to reduce the room temperature permanently, e.g. during holidays when the house is unoccupied.

 **Weekly program**  
This is used to reduce the temperature for a few days, for instance if you commute every week.

 **Time/Language**  
This is used to set the date, time and the language you want the menu to be displayed in.

 **Settings**  
The settings for all heat pumps and operation of the system are usually configured by the installer.

 **Define system**  
This is used to adjust/modify the system's structure.

 **Service**  
Installer settings. These are configured by the appropriate technical person.

## 4.2 Room temp.



This is used to set the desired room temperature. The plus and minus buttons are used to set the desired temperature, displaying the so-called “setpoint” temperature in brackets. The actual value is shown in front of the brackets.

If heating circuit 3 and/or 4 is installed\*, the symbol for room temperature is displayed with the text “3/4” at the bottom right of the menu.

If you want to schedule a temperature reduction, you can continue to the Night reduction or Holiday submenus.

You can select *Room sensor No* in the *Installer/Define system/Heating circuit* menu. This can be done for each heating circuit if it is difficult to find a position for the room sensor, if the floor heating system has separate room sensors, or if you use a fireplace or open stove. The alarm LED on the room sensor still functions as normal.

If you use the fire or open stove only occasionally, the firing process can affect the room sensor and reduce the temperature supplied to the radiators. It can then get cold in other parts of the house. The room sensor can temporarily be deselected during the firing process. The EcoLogic then provides heating to the radiators using the set heating curve. The radiator thermostats reduce the heating supplied to the section of the house where a fire is burning.

### 4.2.1 Setting without a room sensor

If a room sensor has not been installed (this can be selected from the *Installer/Define system/Heating circuit* menu), the room temperature is adjusted here.

#### Adjustment if it is too cold indoors

- Increase the Inclination/Adjustment value by a couple of degrees.

#### Adjustment if it is too warm indoors

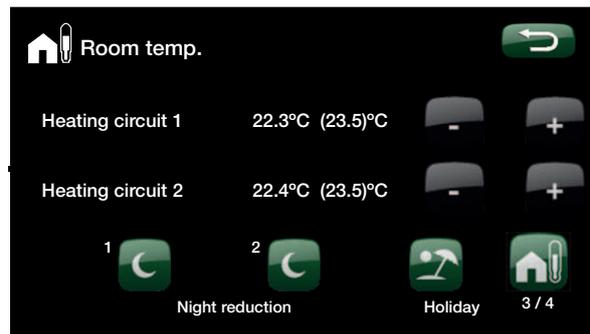
- Reduce the Inclination/Adjustment value by a couple of degrees.

**!** Wait 24 hours to see if any further adjustment is required.

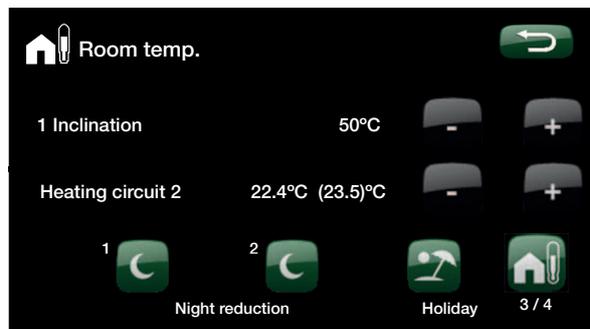
### 4.2.2 Outdoor Sensor/Room Sensor Faults

If a fault occurs with an outdoor sensor, an outdoor temperature of -5°C is simulated so that the house does not get cold. The product’s alarm is triggered.

If a fault occurs with a room sensor, the EcoLogic automatically switches to operating according to the set curve. The product’s alarm is triggered.



**!** The thermostats of the radiators must be fully open and well operating when the system is tuned.



The above menu shows heating circuit 1 without a room sensor and heating circuit 2 with a room sensor.

If the outdoor temperature is lower than zero degrees, Inclination is shown here; if the outdoor temperature is higher than zero degrees, Adjustment is shown here.

\*Applies to the CTC EcoLogic PRO only.

### 4.2.3 Night reduction temperature



This menu is used to activate and set a night reduction temperature for each defined heating circuit. Night reduction means that you reduce the temperature indoors during scheduled periods, for example at night or when you are at work.

The value by which the temperature is reduced – *Room temp. reduced/ Primary flow reduced* – can be set in the *Installer/Settings/Heating circuit* menu. The factory set value is -2°C.

The options in the night reduction menu are *Off*, *Day by day* or *Block*. If you select *Off*, no reduction is made at all.

#### Day by day menu

You use this menu to schedule a reduction on the days of the week. This schedule is repeated every week.

#### Example 1:

Monday 06-09 18-21

On Monday the timer comes on from 06–09 and 18–21; normal operation applies apart from these times.

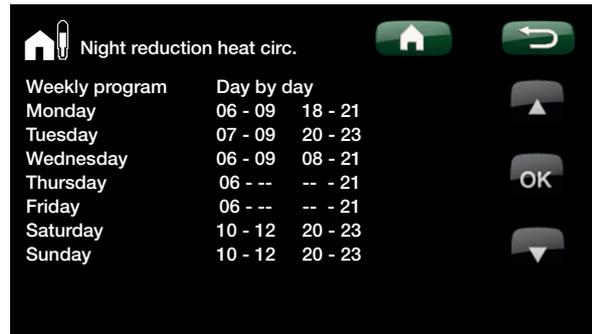
#### Example 2:

Thursday 06 - - - - 21

The timer comes on from 06–21 on Thursdays.

#### Block

This menu allows you to set a reduction for a few days during the week, for example, if you are working elsewhere on weekdays and at home at weekends.



The time on the left must be lower than the time on the right for the interval to be valid.

**!** Reducing a heat pump's temperature at night is a comfort setting which generally does not reduce energy consumption.



On Sunday at 10 pm, the temperature is lowered by the set value in the *Room temp. reduced* menu (in the *Installer/Settings* menu). On Friday at 2 pm the temperature is increased to the set value again.

### 4.2.4 Holiday

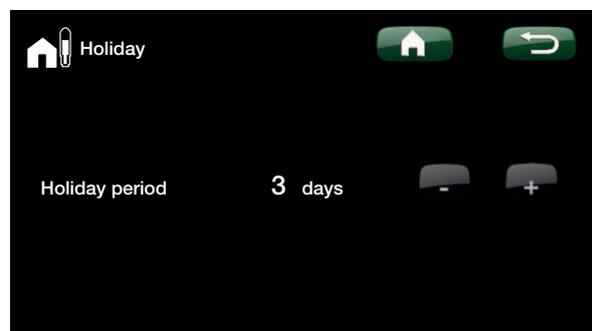


You use this option to set the number of days that you want the set temperature to be constantly reduced. For example, if you want to go on holiday.

The value by which the temperature is reduced – *Room temp. reduced/ Primary flow reduced* – can be set in the *Installer/Settings/Heating circuit* menu.

You can apply this setting for up to 300 days.

The period starts from the time for which the setting has been made.



When holiday is enabled, hot water production is stopped. Temporary extra hot water and the weekly program for extra hot water are stopped. The heat pump only operates in the lower tank.

**!** When both the Night reduction and Holiday settings are used, the Holiday function overrides the Night reduction setting.

## 4.3 DHW



You use this to set the DHW comfort level you want and extra DHW.

### Temperature

You set the values for this option which apply to the heat pump's normal operation. There are three modes:



**Economic** – Small hot water requirement.  
(Factory-set DHW tank temperature: 50°C)



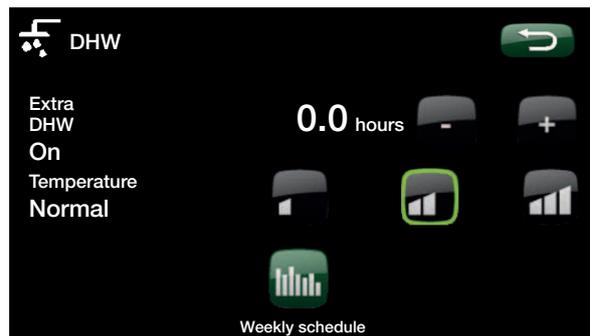
**Normal** – Normal hot water requirement.  
(Factory-set DHW tank temperature: 55°C)



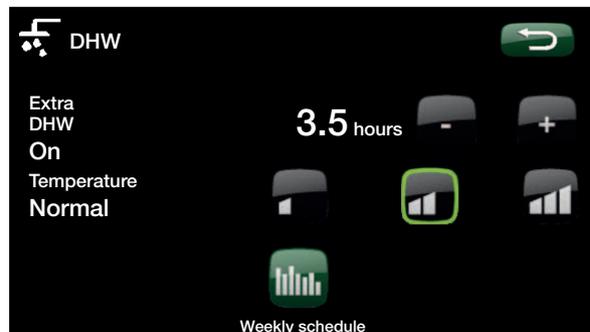
**Comfort** – Large DHW requirement.  
(Factory-set DHW tank temperature: 58°C)

### Extra hot water

Select this option if you want to activate the *Extra DHW* function. When the function is activated (by setting the number of hours) the heat pump immediately starts to produce extra DHW. You also have the option to schedule hot water production for certain times using the *Weekly program* function (recommended).



**Tip:** Start by setting the *Economic* mode and if you find that you are not getting enough hot water, increase it to *Normal*, and so on.



The example above shows that *Extra DHW* is *On* for 3.5 hours.

### 4.3.1 Weekly program DHW



You can use this menu to schedule periods during weekdays when you want extra hot water. This schedule is repeated every week.

Options for the weekly program are *Off* or *Day by day*.

#### Off

No scheduled hot water production.

#### Day by day

A weekly schedule which you program yourself. This is used if you always know when you repeatedly need extra hot water, for instance in the morning and evening.

#### Example 1:

Monday 06-09 18-21

On Monday the timer comes on from 06–09 and 18–21; normal operation applies apart from these times.

#### Example 2:

Thursday 06 - - - - - 21

The timer comes on from 06–21 on Thursdays.



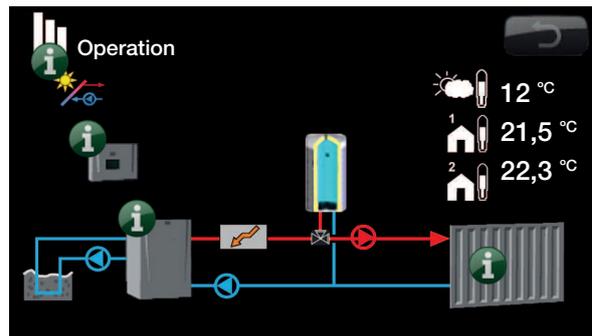
The time on the left must be lower than the time on the right for the interval to be valid.

**Tip:** Set the time about one hour earlier than when you need the hot water as it may take some time to heat.

## 4.4 Operation



This menu displays current operational data for the EcoLogic systems (1 to 6) selected in the *Installers/Defined system/System type* menu. For more information about the different system types, see the "Pipe installation" chapter.



### Information

Press the information button to display the operational data for the relevant item.



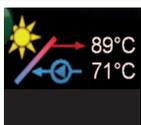
### Outside Temperature

Shows the outdoor temperature.



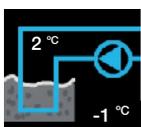
### Indoor temperature.

Shows the room temperature for room sensors 1 and 2, if these have been defined.



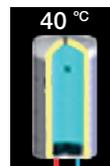
### Temperature of solar panels\*

The current temperatures for the solar panel's primary (89°C) and return (71°C) flow are shown next to this symbol.



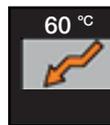
### Brine temperature

This symbol is shown if one or more CTC EcoPart heat pumps are connected to the system. The current temperature (2°C) of the coolant from the collector in the heat pump and return temperature (-1°C) of the coolant back in the collector hose are shown next to this symbol.



### Hot water tank

The current temperature (40°C) in the hot water tank is shown above this symbol.



### Additional heat temperature

The symbol represents an additional heat source (E1, E2, E3 and E4), above which the current additional heat temperature (60°C) is shown.



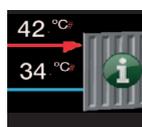
### Heat pump, EcoAir

The symbol is displayed if only the CTC EcoAir heat pump(s) is/are connected to the system.



### Heat pump, EcoPart (+EcoAir)

This symbol is shown if one or more CTC EcoPart heat pumps are connected to the system.



### Primary flow radiators

The current primary flow temperature (42°C) supplied to the house's radiators is shown to the left of the symbol.

### Return radiators

The current return flow temperatures (34°C) of the radiator water is shown under the primary flow temperature.

\*Applies to the CTC EcoLogic PRO only.

#### 4.4.1 Operation data EcoLogic



This menu shows current temperatures and operational data for the CTC EcoLogic. The first figure indicates the current operational value, and the value in brackets indicates the setpoint which the heat pump is trying to achieve.

##### Status

Shows the EcoLogic's operational status. The different operational statuses are:

##### -> DHW

Hot water (DHW) is produced.

##### -> HC

Heat is produced for the heating circuit (HC).

##### -> WOOD

Wood operation.

##### -> DHW+HC

Hot water (DHW) is produced and heat is produced for the heating circuit (HC).

##### -> OFF

No heating takes place.

##### DHW tank °C 59 (60) (40)

This shows the temperature in the hot water tank (sensor B5) and the setpoint that the system is trying to achieve (shown in brackets) The value in the other set of brackets is the setpoint that the immersion heater is trying to achieve.

##### External DHW tank\* 53

This shows the current temperature in the external hot water tank (sensor B41).

##### Buffer tank\* 39 (40)

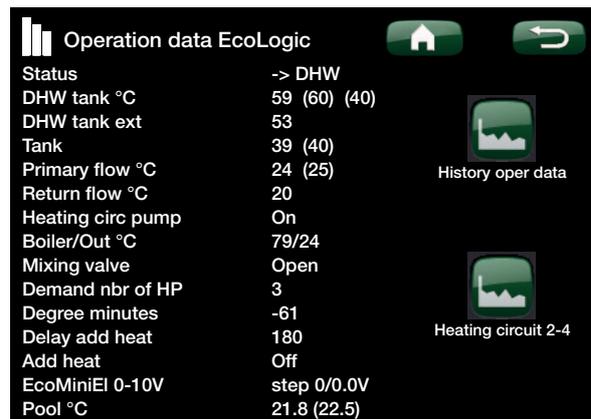
This shows the temperature in the buffer tank (sensor B6) and the setpoint that the system is trying to achieve.

##### Primary flow °C 24 (25)

This shows the temperature supplied to heating circuit 1 (sensor B1) and the temperature that the system is trying to achieve. This value (shown in brackets) will vary during the year according to the parameters set and the current outdoor temperature.

##### Return flow °C 20

Shows the temperature (sensor B7) of the water that comes back from the heating circuit and into the heat pump.



**!** The first figure indicates the current operational value, and the value in brackets indicates the setpoint which the heat pump is trying to achieve.

*\*Applies to the CTC EcoLogic PRO only.*

**Heating circ pump** **On (On/Off)**

Shows the operating status of the heating circ pump (G1).

**Boiler/Out °C** **79/24**

This shows the boiler temperature (sensor B9) and the temperature that is mixed out of the boiler (sensor B10).

The boiler temperature shows whether the boiler is connected to the heating circuit via the mixing valve.

For EcoLogic systems 2, 3 and 4, the temperature outside the boiler is shown if additional heat is connected via the mixing valve (Y1).

**Mixing valve** **Opens (Closes/Opens)**

Shows whether the mixing valve increases (opens) or reduces (closes) the heat supplied to the heating circuit. Once the correct temperature has been reached, the valve's motor then remains stationary.

This menu is displayed for EcoLogic systems 4, 5 and 6, and indicates whether additional heat is connected via the mixing valve (Y1).

**Number of heat pumps** **3**

Shows actual number of heat pumps in operation.

**Degree minute** **-61**

Shows current heat loss in degree minutes. The degree minute calculation applies only to EcoLogic systems 1 to 3.

**Delay add heat** **180 (0 to 240)**

A factory-set delay of 180 minutes before additional heat is turned on to heat the system. Delay add heat counts upwards by a value of 1 every minute until the set value has been reached.

Applies to EcoLogic systems 4, 5 and 6.

**Add heat** **Off (On/Off)**

Shows whether additional heat (E1) is On or Off.

**EcoMiniEI (E3)** **0 (1 to 3)**

Shows how many active steps the EcoMiniEI (E3) has.

**0-10V\* (E2)** **0 (1 to 0)**

Shows how many active steps there are for 0-10 V additional heat (E2).

**Pool °C\*** **21.8 (22.5)**

Shows pool heat (sensor B50) if the pool has been connected to the system. Pool connection is possible for EcoLogic systems 4, 5 and 6.

*\*Applies to the CTC EcoLogic PRO only.*

4.4.1.1 Stored operation data



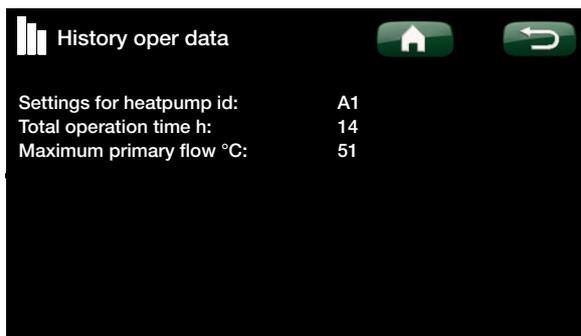
This menu reports the previous operating values for the heat pump.

**Total operation time h: 14196**

Shows the total time the product has been powered.

**Maximum primary flow °C: 51**

Shows the highest temperature supplied to the radiators. The value may indicate the temperature requirements of the heating circuit/house. The lower the value during the winter period, the more suitable it is for the heat pump's operation.



4.4.1.2 Operation data heating circuits 2-4



This menu shows the current temperatures and operational data for heating circuits 2, 3\* and 4\*, if these are defined in the *Installer/Defined system/Heating circuit (2-4)* menus. The first figure indicates the current operational value, and the value in brackets indicates the setpoint which the heat pump is trying to achieve.

**Primary flow 2 °C 34 (35)**

Shows the temperature supplied to heating circuit 2 (sensor B2).

**Heating circ pump 2 On (On/Off)**

Shows the operating status of the heating circ pump (G2).

**Mixing valve 2 Opens (Opens/Closes)**

Indicates whether the mixing valve (Y2) increases (opens) or reduces (closes). Once the correct temperature has been reached, the mixing valve's motor then shuts down.

When additional heat (E1) is connected, the mixing valve is used to connect the additional heat to the system (not to heating circuit 2).

Applies to EcoLogic systems 3 and 4.

**Room temperature 3 °C\* 21.8 (22)**

This shows the temperature registered by the room sensor (B13) for heating circuit 3.

**Primary flow 3 °C\* 37 (38)**

This shows the temperature (sensor B3) supplied to heating circuit 3, or the temperature brought to the fan convector if cooling has been defined (*Installer/Defined system/Cooling* menu).



\*Applies to the CTC EcoLogic PRO only.

### Heating circ pump 3\* **Off (On/Off)**

This shows the operating status of the heating circ pump (G3).

### Mixing valve 3\* **Closes (Opens/Closes)**

This indicates whether the mixing valve (Y3) increases (opens) or reduces (closes) the heat supplied to heating circuit 3, or to the cooling installation if cooling has been defined (*Installer/Defined system/Coolingmenu*). Once the correct temperature has been reached, the mixing valve's motor then shuts down.

### Room temperature 4 °C\* **21.9 (23.0)**

This shows the temperature registered by the room sensor (B14) for heating circuit 4.

### Primary flow 4 °C\* **39 (40)**

This shows the temperature (sensor B4) supplied to heating circuit 4, or the primary flow temperature after the buffer tank if the buffer tank has been connected (as defined in the *Installer/Defined system/Heating circuit 4menu*).

### Heating circ pump 4\* **Off (On/Off)**

This shows the operating status of the heating circ pump (G4).

### Mixing valve 4\* **Closes (Opens/Closes)**

This indicates whether the mixing valve (Y4) increases (opens) or reduces (closes) the heat supplied to heating circuit 4. Once the correct temperature has been reached, the mixing valve's motor then shuts down.

## 4.4.2 Operation data heating circuit



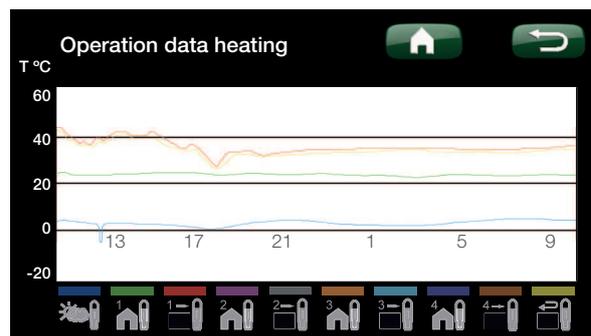
This shows operation data for heating circuits 1–4 for the last 24 hours. The furthest point to the right is the present, while the data for the last 24 hours is displayed to the left. The time “rolls” forward.

The blue curve is the current outdoor temperature.

Green/pink/orange/purple curves are room temperatures.

Red/grey/blue/brown curves are primary flow temperatures.

The yellow curve is the radiator circuit's/circuits' return temperature.



\*Applies to the CTC EcoLogic PRO only.

#### 4.4.2.1 Heat pump status



EcoPart



EcoAir = CTC EcoAir 400

EcoAirM= CTC EcoAir 500

This menu shows the current status of defined heat pumps. Heat pumps A1–A10 (EcoAir, EcoAirM or EcoPart) can have the following statuses:

##### Blocked in menu

The heat pump's compressor is not permitted in the *Installer/Settings/Heat pump* menu.

##### Communication error HP

EcoLogic cannot communicate with the heat pump.

##### On, DHW

The heat pump's compressor heats the hot water tank.

##### Off, start delay

The heat pump's compressor is off and is prevented from starting due to the start delay.

##### Off, ready to start

The heat pump's compressor is off and start ready.

##### Flow on

The heat pump and fan are started before the compressor. Shown for EcoAir heat pumps.

##### On, heating

The heat pump's compressor heats the heating circuit.

##### Defrosting

The heat pump defrosts. Shown for EcoAir heat pumps.

##### Blocked

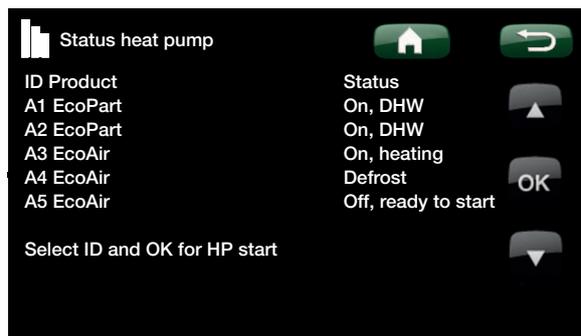
The heat pump has stopped due to a temperature or pressure that has reached its maximum value.

##### Off, alarm

The compressor is off and gives an alarm signal.

##### Function test

The compressor is function tested.



The illustration above shows an example of the status for five defined heat pumps.

### 4.4.2.2 Operation data heat pump



This menu is intended for servicing and advanced troubleshooting, and displays information about the heat pump that has been selected from the previous menu ("Heat pump status").

**Compressor** **On (On/Off)**

Shows whether the compressor is operating or not.

**Charge pump** **On/78% (On/Off/0 to 100)**

Shows the charge pump's operational status and flow as a percentage.

**Brine pump** **On (On/Off)**

Indicates whether the brine pump is on or off. Shown for EcoPart heat pumps.

**Brine in/out °C** **4/1 (-99 to 99/-99 to 99)**

This shows the brine pump's incoming and outgoing temperatures. Shown for EcoPart heat pumps.

**Fan** **On (On/Off)**

Shows the pump's operational status. Shown for EcoAir heat pumps.

**HP in/out °C** **35/42 (0 to 99/0 to 99)**

This shows the heat pump's return and primary flow temperatures.

**Outside temp °C** **3 (-50 to 50)**

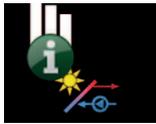
Shows the outside temperature (sensor B15). Shown for EcoAir heat pumps.

**Current L1** **9.8 (0.0 to 50.0)**

Shows the current in phase L1 of the compressor in the compressor soft start. Phase 2 and 3 are not measured in the product.

Operation data heat pump	
Compressor	On
Charge pump	On/78%
Brine pump	On
Brine in/out °C	4/1
Fan	On
HP in/out °C	35/42
Outside temp. °C	3
Current L1	9.8

### 4.4.3 Operation data solar panels\*



This menu shows information about solar panels (if defined in *Installer/Defined system/Solar panels* menu).

**Status** **Charge DHW**

Shows status for solar panels:

- **Off**  
Solar panels are in operating mode Off.
- **Charge boiler**  
The solar panels are charging the boiler. Applies to EcoLogic system 1.
- **Charge DHW**  
The solar panels are charging the hot water system.
- **Charge buffer tank**  
The solar panels are charging the buffer tank.
- **Test vacuum panel**  
Circulation through the solar panels is started temporarily  
to check the panels' outgoing temperature.
- **Charge bedrock/ground heat**  
The solar panels recharge the bedrock/ground.

**From solar panels °C** **68 (-99 to 99)**

This shows the temperature of the flow supplied from the solar panels (sensor B31).

**To solar panels °C** **60 (-99 to 99)**

This shows the temperature of the flow supplied to the solar panels (sensors B30).

**Pump solar panel %** **46 (0 to 100)**

This shows the current charge as a percentage of maximum capacity for the pump (G30).

**Charge pump solar %** **46 (0 to 100)**

This shows the current charge as a percentage of maximum capacity for the pump (G32).

**Charge solar/tank** **DHW (DHW/Buffer tank)**

This indicates whether the DHW tank or buffer tank is being charged.

**Charge pump brine loop** **Off (Off/On)**

This shows the operating mode for the pump (G31) for recharging the bedrock/ground.

**Valve charging Brine loop** **Off (Off/On)**

This shows the mode for the valve (Y31) for recharging the bedrock/ground.

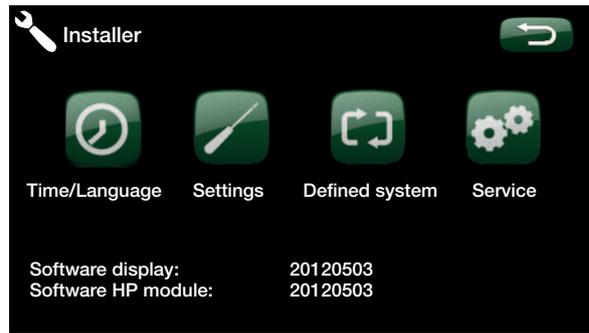
Solar panel	
Status	Charge DHW
Outlet °C	68
Inlet °C	60
Pump solar %	46
Pump solar charge %	46
Valve solar charge tank	DHW
Pump chrg brine loop	Off
Valve chrg brine loop	Off
Energy output (kWh)	0
Energy output /24h (kWh)	0.0
Power (kW)	0.0

\*Applies to the CTC EcoLogic PRO only.

## 4.5 Installer



This menu includes four submenus: Time/Language, Settings, Defined system, and Service.



### 4.5.1 Time/Language

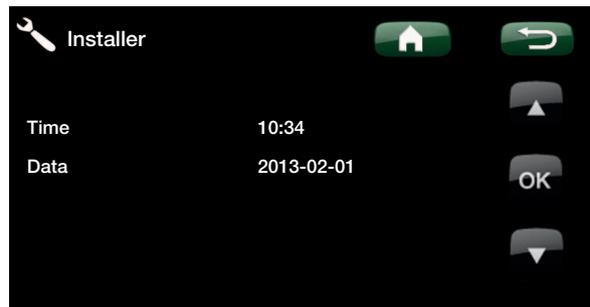


This is used to set the time, date and language. The clock saves the settings in the event of a power cut. Summer/winter time is changed automatically.

#### Time and date settings

Click on the time symbol.

Press "OK" to highlight the first value and use the arrows to set the correct value.



#### Setting the language

Click on the language symbol.

Select the language you want by clicking on the screen.

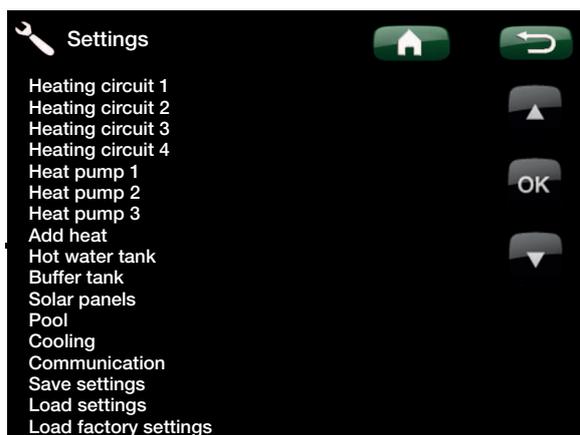
The language selected is highlighted by a green ring.



## 4.5.2 Settings



This is used to set the parameters for your home's heating requirements. It is important that this basic setting is right for your home. Values which are set incorrectly may mean that your property is not warm enough or that an unnecessarily large amount of energy is being used to heat your property.



### 4.5.2.1 Heating circuit 1 (2, 3\*, 4\*)

**Max. primary flow °C** **55 (30 to 80)**

Maximum permitted temperature supplied to the respective heating circuit.

**Min. primary flow °C** **Off (Off/15 to 65)**

Minimum permitted temperature supplied to the respective heating circuit.

**Heating mode** **Auto/On/Off**

Switching of heating season or summer season can take place automatically (auto) or a selection can be made here to set the heating to be on or off.

**Auto** = the switch between heating season (On) and (Off) (also known as summer mode) takes place automatically.

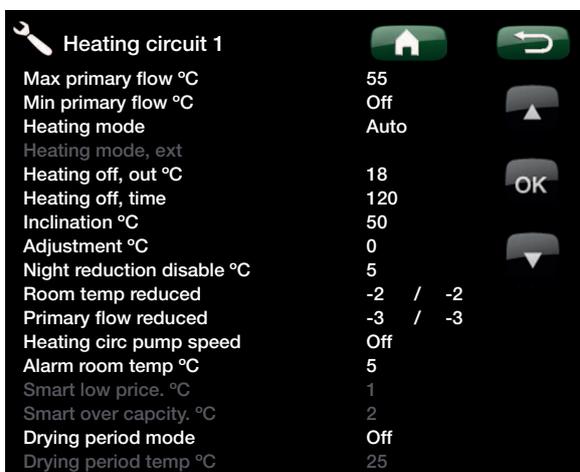
**On** = Continuous heating season, the radiator pump circulates constantly.

**Off** = There is no heating, the radiator pump does not run (is turned over).

#### Heating mode, ext

Switching between heating and summer mode can be controlled remotely. Enter here what will happen during external control Remote control.

Find out more in section entitled Define/Remote control/ Smart Grid



**Tip:** Find out more about these settings in the "Your home's heating settings" chapter.

\*Applies to the CTC EcoLogic PRO only.

### **Heating off, out °C** **18 (10 to 30)**

Outside temperature limit (B15) at which the house no longer requires heating. The heating circ pump stops, and the mixing valve remains closed. The heating circ pump is activated daily for a short period to prevent it from jamming. The system restarts automatically when heating is required.

### **Heating off, time** **120 (30 to 240)**

When the outside temperature (sensor B15) falls to the limit at which heating is required again, "Heating off, out °C" must remain this low or lower for this many minutes before heating the house is permitted again.

### **Inclination** **50 (25 to 85)**

Inclination means the temperature your property needs at different outdoor temperatures. See more detailed information in the "Your home's heating installation" chapter. The value set is the outgoing flow temperature to radiators when the outdoor temperature is -15 °C.

### **Curve adjustment** **0 (-20 to 20)**

The adjustment means that the temperature level can be raised or lowered at a specific outdoor temperature.

### **Night reduction of °C** **5 (-40...40)**

When the outdoor temperature is lower than this, the night reduction stops as too much energy is consumed and it takes a long time to increase the temperature. This menu overrides remote control.

### **Room temp. reduced °C** **-2 / -2 (0 to -30)**

The menu is displayed if room sensors for the respective heating system are installed. You define here how many degrees the room temperature will be reduced by during the various scheduled reduction periods. The first digit shows the Night reduction, and the second shows the Holiday reduction.

### **Primary flow reduced °C** **-3 / -3 (0 to -30)**

The menu is displayed if room sensors for the respective heating system are not installed. This menu is used to set the number of degrees by which the primary flow temperature for the respective heating system will be reduced during the various scheduled reduction periods. The first digit shows the Night reduction, and the second shows the Holiday reduction.

### **Example:**

As a general rule, a Primary flow reduced value of 3 to 4°C is equivalent to a reduction of approximately 1°C in room temperature in a normal system.

### **For example:**

"Inclination 50" means that the temperature of the water supplied to the radiators will be 50°C when the outdoor temperature is -15°C, if the adjustment is set to 0. If the adjustment is set to +5, the temperature will be 55°C instead. The curve is increased by 5°C at all outdoor temperatures, i.e. the curve is parallel offset by 5°C.

*\*Applies to the CTC EcoLogic PRO only.*

**Heating circ pump speed %      100 (Off/1 to 100)**

Applies to heating circuit 1 only. If the heating circ pump G1 is connected, this setting will be *Off*. The purpose of this menu is to set the speed of the charge pump G11, which can replace G1 in EcoLogic systems 1, 2 and 3.

This menu does not apply to EcoLogic systems 4, 5 and 6.

System			Family		
1	2	3			Pro

**Alarm room temp °C                      5 (-40...40)**

When the room temperature is too low alarm message is sent to the CTC SMS

**Smart low price °C                              1 ( Off, 1...5 )**

Setting to increase curve adjustment at energy price low price, via Smart Grid.

Find out more in section entitled Define/Remote control/ Smart Grid

**Smart high capacity °C                              2 ( Off, 1...5 )**

Setting to increase curve adjustment at energy price high capacity, via Smart Grid.

Find out more in section entitled Define/Remote control/ Smart Grid

*\*Applies to the CTC EcoLogic PRO only.*

Heating Circuit				System					
1	2	3	4	1	2	3	4	5	6

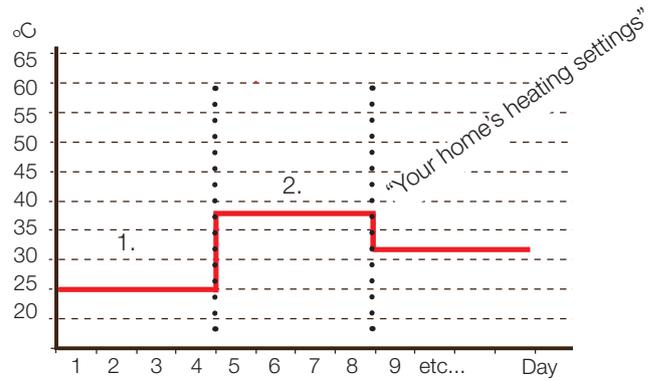
**Floor function mode** **Off (Off/1/2/3)**  
 Floor drying function for newly-built properties.  
 The function limits the calculation of primary flow temperature (setpoint) for "Your home's heating settings" to the schedule below.

**Mode 1**

Floor drying function for 8 days.

1. The (setpoint) of the radiator system is set to 25°C for 4 days.
2. On Days 5–8, the value set in "Floor function temp. °C" is used.

(From Day 9 onwards the value is calculated automatically according to "Your home's heating settings")



Example for Mode 1 with "Floor function temp. 38°C".

**Mode 2**

Floor drying function for 10 days + stepped increase and decrease.

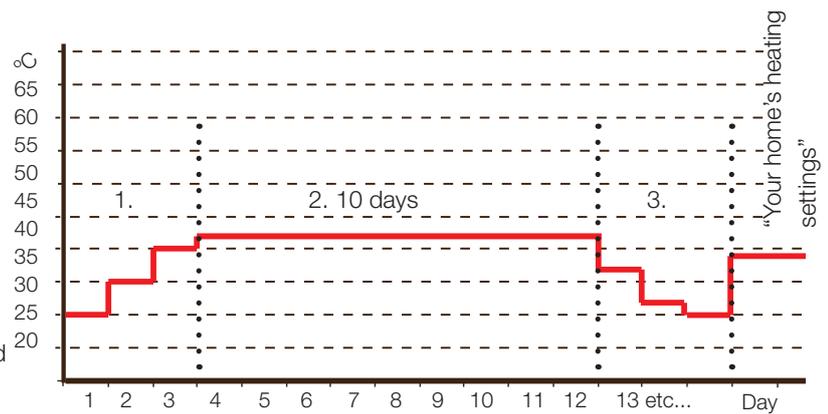
1. Stepped increase start: The (setpoint) of the radiator system is set to 25°C. The (setpoint) is then raised by 5°C each day until its (setpoint) is equal to the "Floor function temp. °C".

The final step may be less than 5°C.

3. Stepped decrease: After the stepped increase and 10 days at an even temperature, the temperature (setpoint) is reduced to 25°C in daily 5°C stages.

The final step may be less than 5°C.

(Following the stepped decrease and one day at the (setpoint) of 25°C the value is calculated automatically according to "Your home's heating settings".)



Example for Mode 2 with "Floor function temp. 37°C".

**Mode 3**

In this mode, the function starts in

Mode 1 and this is then followed by Mode 2 and finally by "Your home's heating settings".

**Floor function temp. °C** **25 (25...55)**

Here you set the temperature for Mode 1/2/3 as shown above.



Example for operation data Mode 2, Day 1 of 12 with current (setpoint) 25°C.

4.5.2.2 Heat pump

**Compressor**

**Blocked (Permitted/Blocked)**

The heat pump is supplied with a blocked compressor. *Permitted* means that the compressor is allowed to operate.

**Stop at outdoor temp °C -22 (-22 to 10)**

This menu is displayed only if the heat pump is an EcoAir model, and includes settings for the outdoor temperature at which the compressor is no longer permitted to operate. The heat pump starts 2°C above the set value. The lowest outdoor temperature required for start is -18°C.

**Start at degree minute -60 (-900 to -30)**

This states at which degree minute the A1 heat pump will start. Degree minute calculation is used only for EcoLogic systems 1, 2 and 3.

**Max. prim. flow HP diff. °C 10 (3 to 20)**

If the actual value for the primary flow is the same as the setpoint plus the set value and the degree minutes are less than the start value for the first heat pump (factory-set to -60), the degree minutes are set to the start value for the first heat pump.

If the actual value for the primary flow is greater than the setpoint plus the set value and the degree minutes are less than 0, the minutes are set to 0.

If the actual value for the primary flow is less than or equal to the setpoint minus the set value, the degree minutes are set to the start value for the first heat pump (factory-set to -60).

**Max. prim. flow HP add heat diff. °C 14 (5 to 20)**

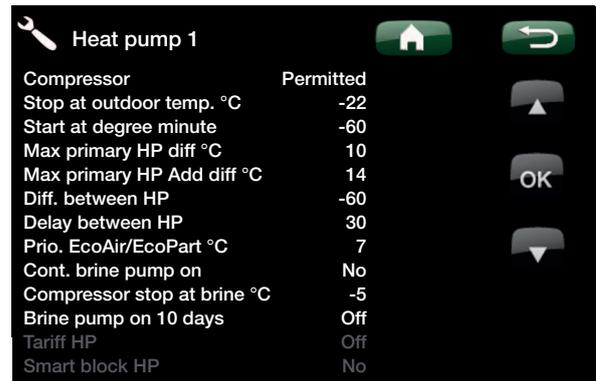
If the actual value for the primary flow is less than or equal to the setpoint minus the set value, the degree minutes are set to the highest set start value for the additional heat (factory-set to -500).

**Diff. between HP -60 (-200 to -30)**

This defines the difference (measured in degree minutes) at which the heat pumps will be started if necessary. Applies to EcoLogic systems 1, 2 and 3 only.

**Delay between HP 30 (5 to 180)**

This is used to set the delay time before the second heat pump in the system is allowed to start, when the first heat pump is already operating. This value is also valid for the amount of time that will pass before the third heat pump is allowed to start, when the first and second heat pumps are operating, and so on. Applies to EcoLogic systems 4, 5 and 6 only.



EP						Heat-
EA	System					pump
EA(M)	1	2	3			1-10

EP						Heat-
EA	System					pump
EA(M)			4	5	6	1

**Prio. EcoAir/EcoPart °C**  
**7 (-20 to 15)**

This temperature setting controls the prioritisation between the EcoAir air/water heat pump and the EcoPart liquid/water heat pump, if both of these are connected to EcoLogic. The factory value is 7°C; this means that the EcoAir is prioritised for outside temperatures from 7°C and warmer.

**Charge pump %** **50 (20...100)**

The charge pump's speed can be adjusted. The temperature through the heat pump can be read in "Operation data/ operation data compressor".  
 Only valid for heat pump CTC EcoAir 500M.

**Select/Rename Heat pump** **(A1/A2/A3)**

When CTC EcoZenith i550 is to control more than one heat pump, the names of heat pumps 2 and 3 must be changed. On delivery, the heat pumps are set to A1.

For more information, see the manuals for CTC EcoAir 520M/510 230V 1N~

CTC EcoPart 400 and CTC EcoAir 400 name is changed with CTC Basic Display

NB: Only valid for heat pump CTC EcoAir 500M

**Cont. brine pump on**

**No (No/Yes)**

Setting for whether the brine pump is permitted to run all the time or permitted to start and stop.  
 Applies to EcoPart heat pumps only.

**Compressor stop at brine °C**  
**-5 (-7 to 10)**

This menu defines the brine temperature at which the compressor will be stopped.  
 Applies to EcoPart heat pumps only.

**Brine pump on 10 days**

**Off (Off/On)**

After installation is complete, you can choose to run the brine pump constantly for 10 days to remove air from the system.  
 Applies to EcoPart heat pumps only.

**Tariff HP** **No (No/Yes)**

Find out more in section entitled "Define/Remote control".

**Smart block HP** **No (No/Yes)**

This is used when a dual tariff is used with lower energy costs at set hours of the day. Find out more in section entitled Define/Remote control/Smart Grid

EP	System						Heat-pump
EA	System						Heat-pump
EA(M)	1	2	3	4	5	6	1

	System						Heat-pump
	System						Heat-pump
EA(M)	1	2	3	4	5	6	1-10

EP	System						Heat-pump
	System						Heat-pump
	1	2	3	4	5	6	1-10

EP	System						Heat-pump
EA	System						Heat-pump
EA(M)	1	2	3	4	5	6	1-10



4.5.2.3 Additional heat

**Start add E1, degree min -500 (-900 to -30)**

This menu is used to define at how many degree minutes additional heat E1 should start to operate. Applies to EcoLogic systems 1, 2 and 3 only.

**Diff add E1, degree min -100 (-300 to -20)**

This menu is used to define the difference in degree minutes between the start and stop conditions for additional heat E1. If additional heat is set to start at -500 degree minutes, it will be stopped at -400 degree minutes (based on a difference setting of -100). Applies to EcoLogic systems 1, 2 and 3 only.

**Start 0-10 V E2, degree min\* -500 (-900 to -30)**

This menu is used to define at how many degree minutes the electric boiler (E2) should start to operate. Applies to EcoLogic systems 2 and 3 only.

**Diff 0-10V E2, degree min\* -100 (-300 to -20)**

This menu is used to define the difference in degree minutes between the start and stop conditions for the electric boiler. If the electric boiler is started at -500 degree minutes, it will be stopped at -400 degree minutes (based on a difference setting of -100). Applies to EcoLogic systems 2 and 3 only.

**EcoMiniEI (E3) No(No/1/2/3)**

Set to indicate whether or not EcoMiniEI (E3) is connected. Also specify whether the immersion heater is to connect 1, 2 or 3 steps. Valid for EcoLogic systems 2, 3 and 4.

**Start EcoMiniEI, degree min -500 (-900 to -30)**

This menu is used to define at how many degree minutes EcoMiniEI (E3) will start. Applies to EcoLogic systems 1, 2 and 3 only.

**Diff steps EcoMini -50 (-300 to -20)**

This menu is used to define the difference in degree minutes between the start and stop conditions for EcoMiniEI. If the electric boiler is started at -500 degree minutes, it will be stopped at -450 degree minutes (based on a difference setting of -50). Applies to EcoLogic systems 1, 2 and 3 only.

**Delay add E1 180 (30 to 480)**

This menu is used to state when additional heat E1 is started. The delay in minutes of subnormal temperature in the buffer tank required before additional heat E1 is started.

Applies to EcoLogic systems 4, 5 and 6 only.

**Diff add E1 delay. 60 (10 to 120)**

This function is not activated for this product.



System					Family
1	2	3			Pro

System					Family
	2	3			Pro

System					Family
	2	3	4		Pro

System					Family
	2	3			Pro

System					Family	
			4	5	6	Pro

System					Family	
			4			Pro

\*Applies to the CTC EcoLogic PRO only.

**Diff 0–10 V E2 delay\* 60 (10 to 120)**

This menu is used to define the difference in minutes between the start and full power conditions for the electric boiler. If the electric boiler is started after 180 minutes of subnormal temperature, full power will have come into effect after 240 minutes (based on a difference setting of 60).

Applies to EcoLogic systems 2 and 4 only.

System					
	2		4		Pro

**Delay add 0–10 V E2\* 180 (30 to 480)**

This menu is used to state the delay in minutes of subnormal temperature in the buffer tank required before additional heat 0–10 V (E2) is started.

Applies to EcoLogic systems 4, 5 and 6 only.

**Delay EcoMiniEI E3 180 (30 to 480)**

This menu is used to specify the number of minutes of subnormal temperature in the buffer tank after which EcoMiniEI is required to start.

**Delay EcoMiniEI E3 step 30 (10 to 120)**

This menu is used to specify the delay (step) with which EcoMiniEI is required to start.

**Block add, outdoor °C 5 (-15 to 10)**

In this menu, you can specify the outdoor temperature at which you require additional heat to be stopped/ blocked.

**Boiler, open mixing valve °C 70 (10 to 80)**

This menu is used to define the temperature at which the boiler's mixing valve is required to open.

Applies to EcoLogic systems 2, 3 and 4.

**Max prim. flow add °C Off (30 to 120)**

The temperature from the additional heat source is limited to this set temperature.

**Tariff EI. No (Yes /No)**

Find out more in section entitled "Define/Remote control".

**Smart blocking el. No (Yes/ No)**

Find out more in section "Define/Remote control/Smart Grid".

**Start at flue gas temp °C Off (Off/50 to 250)**

This menu is used to define the flue gas temperature (sensor B8) at which the system is required to enter wood operation status and the heat pump(s) is required to be stopped.

Wood operation is activated when the flue gas temperature exceeds the set value in this menu and the temperature is equal to or above its reference value (setpoint). When wood operation is active, the heat pump or additional heat is not used for heating. Wood operation is deactivated when the flue gas temperature drops below the set value in this menu.



System					
			4		Pro

System						Family
1	2	3	4	5	6	Pro

*\*Applies to the CTC EcoLogic PRO only.*

#### 4.5.2.4 DHW tank

This menu indicates whether the DHW tank has been defined in the *Installer/Defined system/DHW tank* menu. Sensor B5 measures the temperature in the hot water tank.

**Stop temp. HP °C** **55 (20 to 60)**

At the selected temperature, the heat pump stops charging towards the hot water tank.

**Start/stop diff °C** **5 (3 to 7)**

Hysteresis before the heat pump starts or stops the charging of the hot water tank.

**Extra DHW stop temp. °C** **60 (20 to 62)**

This menu is used to specify the setpoint for the heat pump to charge hot water.

**Max. time DHW** **20 (5 to 60)**

This specifies the maximum time for which the heat pump heats the hot water tank.

**Max. time heat** **40 (5 to 60)**

This is the maximum time for which the heat pump heats the heating circuit, if hot water charging is required.

**Delay heating calc.** **3 (1 to 7)**

The charge temperature is high after hot water charging. During the set time period, the primary flow temperature is ignored in terms of the degree minute calculation.

**Add heat DHW** **Demand (Yes/No/Demand)**

This menu is used to define whether additional heat needs to be active in parallel with the heat pump charging the hot water tank.

Yes means that the setpoint for the additional heat is automatically set to the same as the setpoint for the heat pump of the DHW tank. *Demand* means that the additional heat works according to the value that has been set for DHW tank additional heat. *No* means that additional heat should not be active in the event of DHW charging.

**Add heat DHW relay** **No (Yes/No)**

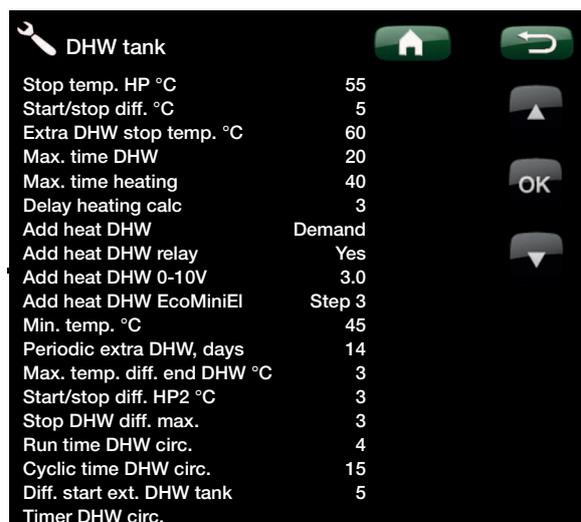
If Yes is selected, additional heat is active during hot water charging. If No is selected, the additional heat is blocked.

**Add heat DHW 0–10 V\*** **3 (No/1 to 10)**

If Yes (0.1–10 V) is selected, additional heat is active during hot water charging. If No is selected, the additional heat is blocked.

**Add heat DHW EcoMiniEI** **Step 3 (No/Step 1 to 3)**

If Yes (steps 1 to 3) is selected, additional heat is active during hot water charging. If No is selected, the additional heat is blocked.



\*Applies to the CTC EcoLogic PRO only.

### Min. temp. °C **45 (20 to 55)**

This menu is used to specify the lowest permitted temperature that may be present in the hot water tank.

### Periodic extra DHW, days **14 (0 to 30)**

The menu defines the interval for the periodic increase of the hot water tank (at 65°C to protect against legionella).  
0 = Off 1 = Every day 2 = Every other day etc...

### Max. temp. diff. interrupted DHW °C **3 (2 to 7)**

If there is a heating requirement, hot water charging is interrupted earlier than the time at which the maximum temperature has been reached, in order to avoid the compressor stopping while hot water is swapped for heating.

### Start/stop diff HP2 °C **3 (0 to 10)**

This menu applies only to a system where diverting valve Y22 has been defined. Hot water charging using valve Y22 takes place if the hot water temperature is below the start value by the set difference.

### Stop DHW diff. max. **3 (2 to 10)**

Hot water charging is normally interrupted in the hot water sensor, but this can also occur in the condensation temperature which is calculated based on the heat pump's internal pressure sensor. The condensation temperature is significantly increased during hot water charging. This menu relates to the value from the maximum permitted condensation temperature that interrupts hot water charging. If there is a heating requirement, the system then diverts to charging the heating circuit.

### Run time DHW circ. **4 (1 to 90)**

The operating time the domestic hot water circulation should take place during each period. Applies if DHW circulation has been defined in the *Installer/Defined system/DHW tank* menu.

### Cyclic time DHW circ. **15 (5 to 90)**

The cyclic time for domestic hot water circulation. DHW circulation must have been defined in the *Installer/Defined system/DHW tank* menu.

### Diff. start ext. DHW tank\* **5 (3 to 15)**

This menu is used to select the temperature difference at which the charging of the external DHW tank is required to start. The difference is specified against the setpoint that is set in the *Stop temp. HP °C* menu.

### Timer DHW circulation

This menu displays the scheduled weekday periods when the DHW circulation pump will run, if DHW circulation has been defined in the *Installer/Defined system/DHW tank* menu. This schedule is repeated every week.

Day	Start Time	End Time
Monday	06 - 09	18 - 21
Tuesday	07 - 09	20 - 23
Wednesday	06 - 09	-- - --
Thursday	06 - --	-- - 21
Friday	06 - --	-- - 21
Saturday	10 - 12	20 - 23
Sunday	10 - 12	20 - 23

The time on the left must be lower than the time on the right for the interval to be valid.

#### Example 1:

Monday 06-09 18-21

On Monday the timer comes on from 06–09 and 18–21; normal operation applies apart from these times.

#### Example 2:

Thursday 06 - - - - - 21

The timer comes on from 06–21 on Thursdays.

*\*Applies to the CTC EcoLogic PRO only.*

#### 4.5.2.5 Heating buffer tank

This menu applies only to the system with a buffer tank (EcoLogic systems 4 to 6) that has been defined in the *Installer/Defined system/Heating buffer tank* menu. The temperature in the buffer tank is measured using sensor B6.

**Tank max. °C** **55 (20 to 90)**

This menu is used to set the highest temperature required for the buffer tank.

**Tank min. °C** **25 (20 to 60)**

This menu is used to set the lowest temperature required for the buffer tank.

**Diff. tank prim. flow °C** **0 (0 to 15)**

This menu is used to set the difference between the temperature in the tank and the outgoing primary flow temperature to the heating circuit, if required.

**Start/Stop diff. tank °C** **5 (3 to 10)**

The hysteresis between the heat pump's start and stop conditions in charging the buffer tank.

**Timer setpoint** **50 (20 to 60)**

This menu is used to specify the setpoint that is active during the period of time set by the timer.

#### Timer buffer tank

See the "Timer buffer tank" chapter below.

#### 4.5.2.6 Timer buffer tank

This menu is used to schedule the weekday periods you require the buffer tank to be heated. This schedule is repeated every week.

#### Example 1:

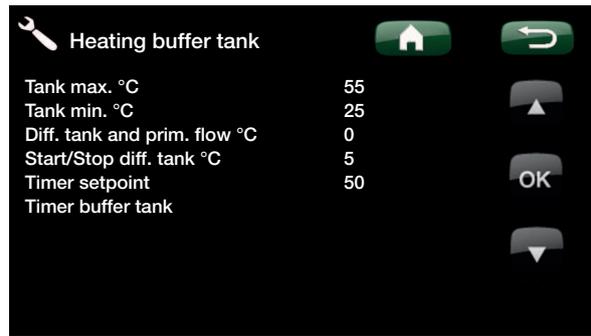
Monday 06-09 18-21

On Monday the timer comes on from 06–09 and 18–21; normal operation applies apart from these times.

#### Example 2:

Thursday 06 - - - - - 21

The timer comes on from 06–21 on Thursdays.



The time on the left must be lower than the time on the right for the interval to be valid.

### 4.5.2.7 Solar panels\*

#### **dT max. solar °C** **7 (3 to 30)**

When the temperature difference between the solar panels and the hot water tank exceeds the set value, the charge pump on the solar panels (G30) should begin producing hot water for the hot water tank.

#### **dT min. solar °C** **3 (2 to 20)**

When the temperature difference between the solar panels and the hot water tank reaches the set value, the charge pump on the solar panels (G30) should stop.

#### **Min. speed pump %** **30 (30 to 100)**

The minimum permitted speed (rpm) for the circulation pump (G30) is set here.

#### **Max. boiler °C** **85 (10 to 95)**

The maximum permitted temperature in the boiler. Charging of the boiler ceases once the set temperature has been reached. Applies to EcoLogic system 1.

#### **Max. DHW tank °C** **85 (10 to 95)**

The maximum permitted temperature in the hot water tank. Charging ceases once the set temperature has been reached.

#### **Max. buffer tank °C** **85 (10 to 95)**

The maximum temperature in the buffer tank. Charging ceases once the set temperature has been reached.

#### **Max. brine temp °C** **18 (1 to 30)**

Setting for maximum permitted brine temperature. Solar charging of the bore hole ceases when this value has been reached.

**NOTE!** This should not be adjusted without consulting your installer.

#### **dT max. bedrock °C** **60 (3 to 120)**

Setting for start conditions for solar charging of bedrock. Specifies the temperature difference (solar panels–bedrock) at which charging begins.

#### **dT min. bedrock °C** **30 (1 to 118)**

Setting for stop conditions for solar charging of bedrock. Specifies the temperature difference (solar panels–bedrock) at which charging stops.

#### **Solar test tank min.** **4 (1 to 20)**

(Used only if evacuated tube solar collectors have been defined.) When recharging the bedrock, switching to tank charging is done once every 30 minutes to check whether tank charging is possible. The test is carried out at the set time interval. If sufficient temperature is obtained, tank charging continues; otherwise the system switches to charging the bedrock again.

Setting	Value
dT max. solar °C	7
dT min. solar °C	3
Min. speed pump %	30
Max. boiler °C	85
Max. DHW tank °C	85
Max. buffer tank °C	85
Max. brine °C	18
dT max. bedrock °C	60
dT min. bedrock °C	30
Solar test tank min.	4
Test frequency min.	30
Winter mode	No
Flow l/min	6
Protection collector	

\*Applies to the CTC EcoLogic PRO only.

**Test frequency min.** **30 (0 to 180)**  
 Specifies the frequency at which the Solar Test function should perform. With 0 as the set value, solar test takes place continuously.

**Winter mode** **No (No/Yes)**  
 Deactivates the function Solar Test tank min. Off means charging only to bore hole.

**Time graph temp. min.** **5 (1 to 60)**  
 Time interval for graphs based on operation time.

**Time graph oper. min.** **1 (1 to 48)**  
 Time interval for graphs based on operation time.

**Protection function**  
 refer to "Protection collector" chapter below.

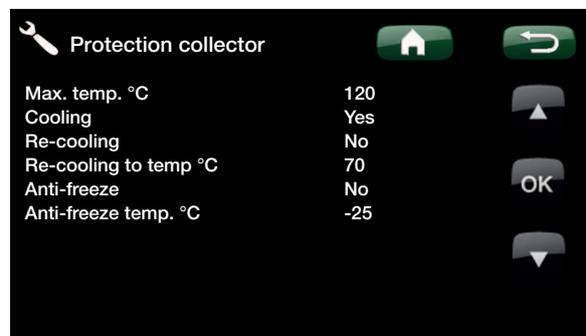
**Protection collector\***  
**Max. temp. °C** **120 (110 to 150)**  
 Protects the solar panels from high temperatures by allowing circulation in the solar panels even though the maximum temperature has been reached in the respective tank. For safety reasons, the temperature in the buffer tank is never allowed to exceed 95°C.

**Emergency cooling** **Yes (Yes/No)**  
 Allows circulation to the hot water and buffer tank as well as the bore hole. This is in order to prevent excessively high temperatures in the solar panels. Applies once the maximum permitted temperature has been reached.  
**NOTE!** Under no circumstances are the temperatures in the tanks allowed to exceed 95°C.

**Re-cooling** **No (Yes/No)**  
 This option can be activated when the emergency cooling function has been activated. The function means that the system endeavours to reduce the temperature in the hot water and buffer tank to the set setpoint (set in the *Re-cooling to temp.* menu). This means that the solar panels are used as cooling elements for a short period of time.

**Re-cooling to temp. °C** **70 (50 to 80)**  
 This option may be activated when the *Re-cooling* function has been activated. The function means that the system endeavours to reduce the temperature in the hot water tank and buffer tank to the set setpoint.

**Anti-freeze** **No (No/Yes)**  
 As there is a risk of blocks of ice forming in the solar panels, circulation may be started to reduce the risk of frost damage.



\*Applies to the CTC EcoLogic PRO only.



#### 4.5.2.9 Cooling\*

##### Cooling permit. from outdoor T °C From (0 to 39/ From)

The outdoor temperature from which cooling will be permitted is determined in this menu. At outdoor temperatures lower than the set value, cooling is not "On".

##### Primary flow at outdoor temp +20°C 20 (2 to 20)

The temperature of the cooling flow at an outdoor temperature of 20°C is determined in this menu.

##### Primary flow at outdoor temp +40°C 10 (2 to 20)

The temperature of the cooling flow at an outdoor temperature of 40°C is determined in this menu.

##### Min. primary flow °C 18 (2 to 25)

The minimum setpoint of the cooling flow is determined in this menu.

The flow temperature is displayed in the *Operation data EcoLogic/Heating circuit 2-4 menu*.

##### Start cooling at overtemp. 1.0 (0.5 to 15.0)

The overtemperature in the room at which cooling will start is determined in this menu.

##### Stop cooling at overtemp. 0.5 (0.1 to 14.0)

The overtemperature in the room at which cooling will stop is determined in this menu.

##### Smart low price °C 1 (Off, 1...5)

Find out more in "Define/Remote control/Smart Grid".

##### Smart overcap. °C 1 (Off, 1...5)

Find out more in "Define/Remote control/Smart Grid".

**See CTC EcoComfort manual for more information.**

#### 4.5.2.10 Communication

Settings to control the product with a controlling system. The CTC BMS accessory is needed to use this function. See the CTC BMS accessory manual for more information.

#### 4.5.2.11 Save settings

Here you can save your own settings. Confirm using the "OK" button.

#### 4.5.2.12 Load settings

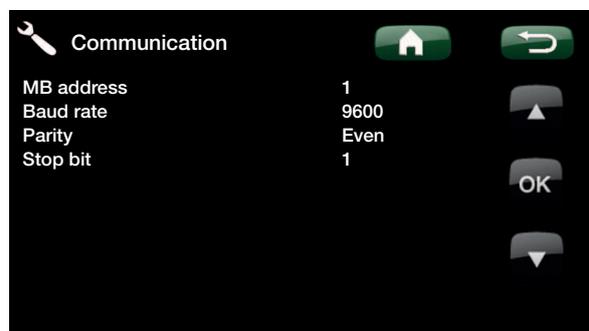
The saved settings can be reloaded.

#### 4.5.2.13 Load factory settings

The product is supplied with the factory values set. They can be restored by activating this function. Press OK to confirm. However, the language, product and product size are retained.



**!** The setpoint of the cooling flow is linear between +20°C and +40°C.



\*Applies to the CTC EcoLogic PRO only.

## 4.5.3 Define System



The menus are used to specify to CTC EcoLogic the components and subsystems of which the heating circuit consists.

### 4.5.3.1 Define heating circuit 1

**Room sensor 1 (B11) No (Yes/No)**

Specify whether the room sensor (B11) should be connected to the system. Displayed if room sensor 1 has been installed.

**Wired or wireless Wired/Wireless**

Select whether the room sensor for heating circuit 1 is permanently connected (wired) or wireless.

### 4.5.3.2 Define heating circuits 2–4

**Heating circuit 2 (Y2, G2) No (Yes/No)**

Select whether or not further heating circuits should be connected.

**Room sensor 2 (B12) No (Yes/No)**

Select whether the room sensor for heating circuit 2 (3 and 4) should be connected to the system. Displayed if the respective room sensor has been installed.

**Wire or wireless Wireless (Wire/Wireless)**

Select whether the room sensor for the respective heating circuit is permanently connected (wired) or wireless.

### 4.5.3.3 Def. heat pump

**Heat pump A1–A10 On/Off**

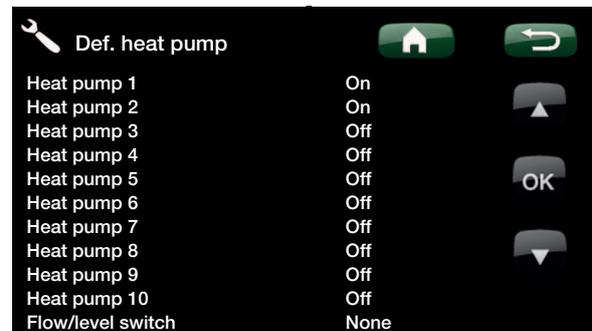
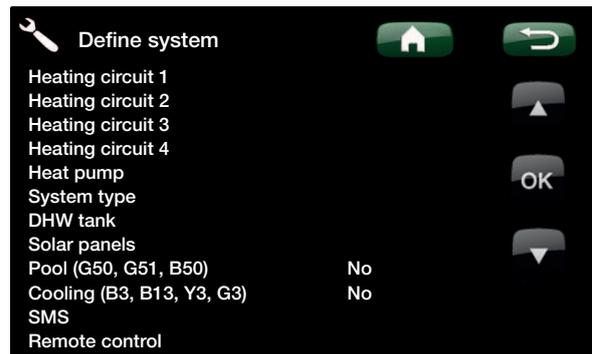
Select the heat pumps to connect to the system.

**Flow/level switch None (None/NC/NO)**

Select the type of level switch installed in the system.

“NC” and “NO” stand for Normally Closed and Normally Open, respectively. Flow/level switch must first be defined in Remote control

Find out more in “Define/Remote control/Smart Grid”.



#### 4.5.3.4 Def. system type

**System type (1/2/3/4/5/6)**

Select EcoLogic system 1 to 6. Refer to the "Pipe installation" chapter for more information about the six systems.

**Add heat (E1) Yes (Yes/No)**

Define whether or not additional heat (E1) is connected. Applies to EcoLogic systems 2, 3, 4 and 5. Note that the EcoLogic system 5 has no mixing valve for additional heat (E1).

Note that when E1 is used, Heat system 2 disappears in systems 2, 3, 4 and 5.

**EcoMiniEI (E3) No(No/Yes)**

Set to indicate whether or not EcoMiniEI (E3) is connected. Valid for EcoLogic systems 2, 3 and 4.

**Add heat 0-10V (E2)\* No (Yes/No)**

Set if additional heat 0–10 V (E2) has been connected. Applies to EcoLogic systems 2, 3 and 4.

**Heat pumps for DHW A1 (A1/A1+A2)**

Set if heat pump A1 alone or heat pumps A1 and A2 together are to be used to produce hot water.

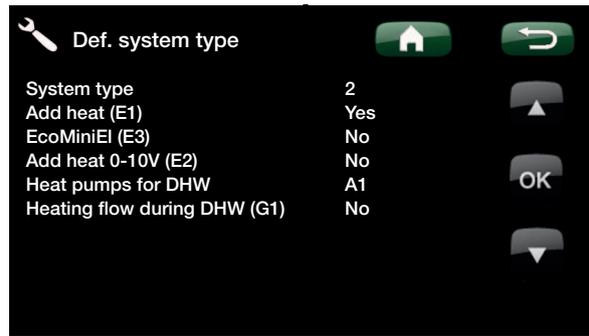
Applies to EcoLogic systems 2 to 6.

**Heating flow during DHW (G1) No (Yes/No)**

Set if heating flow is required for hot water production. This menu should be selected if pump G1 and the bypass connection are present.

If "Yes", a degree minute calculation will also be performed during hot water charging.

Applies to EcoLogic systems 2 and 3 only.



#### 4.5.3.5 Def. DHW tank

**DHW tank (B5) No (Yes/No)**

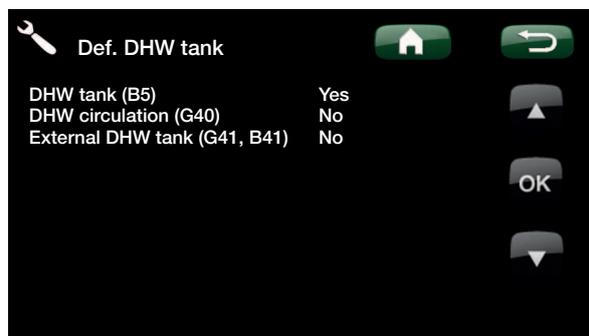
Specify whether sensor (B5) in the hot water tank is connected. Charging is done using diverting valve Y21.

**DHW circulation (G40)\* No (Yes/No)**

Specify whether the circulation pump (G40) is connected to the hot water system.

**DHW extra Buffer (B41, G41)\* No (Yes/No)**

Specify whether the circulation pump (G41) and sensor (B41) are connected to the hot water system.



\*Applies to the CTC EcoLogic PRO only.

### 4.5.3.6 Def. Solar Panels\*

#### **Solar panels (G30,B30, B31) No (Yes/No)**

Specify whether the circulation pump (G30) and sensors (B30 and B31) are connected to the system.

#### **Type DHW only**

Specify whether the solar energy should be supplied:

- to the hot water tank only
- to the buffer tank only
- to the hot water and buffer tanks
- to the boiler only (applies to system 1 only). (If this is selected, the solar panels will pre-heat the hot water in the boiler.)

#### **Vacuum No (Yes/No)**

Specify whether the solar panels are vacuum or flat solar panels.

#### **Bore hole recharge (Y31, G31) No (Yes/No)**

There is an option of recharging the bore hole using energy from the solar panels when the ordinary heating and domestic hot water needs have been met.

### 4.5.3.7 Def. Pool\*

Pool can be defined for systems 4, 5 and 6 only.

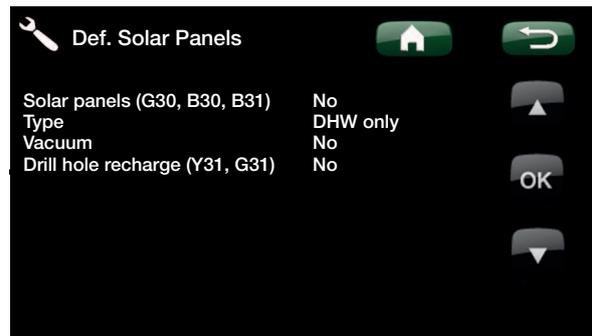
#### **Pool (G50, G51, B50) No (Yes/No)**

Select whether circulation pumps (G51) and (G51) and the sensors (B50) have been connected to the system.

### 4.5.3.8 Def. cooling\*

#### **Cooling (B3, B13, Y3, G3) No (Yes/No)**

Select whether the circulation pump (G3), mixing valve (Y3) and sensors (B3 and B13) have been connected to the system.



*\*Applies to the CTC EcoLogic PRO only.*

4.5.3.9 Def. SMS

**Activate** Yes (Yes/No)  
If "Yes", the menus below will be displayed.

**Level of Signal**  
The level of signal of the reception is shown here.

**Phone Number 1**  
The first activated phone number is shown here.

**Phone Number 2**  
The second activated phone number is shown here.

**Hardware Version**  
The hardware version of the SMS equipment is shown here.

**Software Version**  
The software version of the SMS equipment is shown here.

**NOTE!** For more information on the SMS function, see the "CTC SMS" manual.



\*Applies to the CTC EcoLogic PRO only.

### 4.5.3.10 Define Remote Control

The remote control function in CTC's products provides a wide range of opportunities to adjust the heating externally. The function is available in CTC EcoHeat, CTC GSi 12, CTC EcoZenith i 250, CTC EcoZenith i550 PRO, CTC EcoLogic Pro/Family. This section covers the remote control, although not all of the functions are available in all products. There are four programmable inputs that can activate the following functions:

- Heat pump tariff
- Immersion heater tariff
- Night reduction
- Ripple control
- Additional domestic hot water
- Flow/level switch
- Heating from HS1
- Heating from HS2
- Heating from HS3\*
- Heating from HS4\*
- Smart A
- Smart B

#### Terminal blocks – inputs

There are two programmable 230V inputs and two low-voltage ports on the relay card (A2).

Designation	Terminal block name	Connection type
K22	A14 & A25	230 V
K23	A24 & A25	230 V
K24	G33 & G34	Low voltage (<12V)
K25	G73 & G74	Low voltage (<12V)

Open terminal block = no external effect. (Normal NO).

Closed terminal block = function activated externally.

Example:

Night reduction is normally activated on terminal block K24.

Open terminal block K24 = "normal heating"

Closed terminal block K24 = Temperature reduction in accordance with night reduction

The function is activated when pole positions G33 and G34 on the PCB are short-circuited

\*The number of heating systems varies between different products. The maximum is four heating systems.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

4.5.3.11 Remote control procedure

Assign input

First of all, an input is assigned to the function or functions to be controlled remotely.

This is done in "Define Remote Control".

Example

In the example, there is manual control of whether the heating is to be on or off in Heating System 1 (HS1).

First of all, "Heating from HS1" is assigned input K24.



Example in which "Heating, ext. mode HS1" has been assigned terminal block "K24" for remote control.

\*The number of heating systems varies between different products. The maximum is four heating systems.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

## Activate/select function.

When an input is assigned, the function must be activated or set in the Settings menu.

In the example with remote controlled "Heating, ext. mode", K24 is assigned. A selection is then made of what is normal mode (arrow 1).

Normal mode was selected here as:

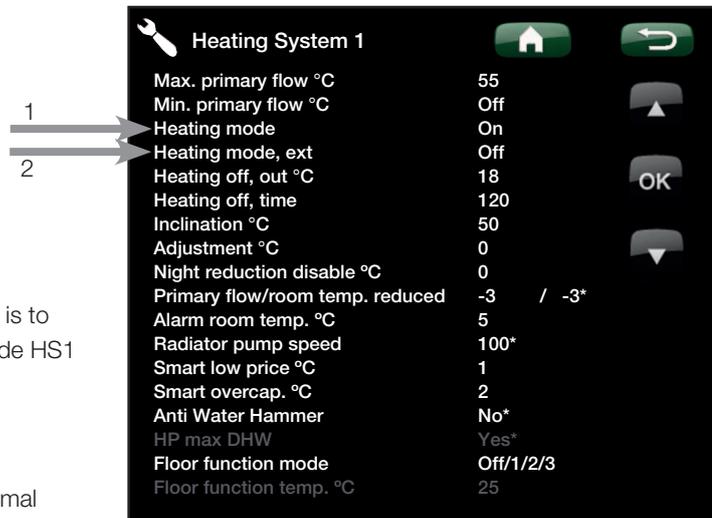
Heating, mode (On)

When this has been done, you programme what is to happen at Remote Control/Heating, external mode HS1 (closed input, arrow 2).

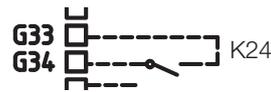
Arrow 2 indicates the selection "Off".

So in this example the heating is always on. (Normal mode) The radiator pump is switched on continuously, the mixing valve operates to maintain its "setpoint value".

But when K24 is closed, the radiator pump stops and the mixing valve closes. The heating remains switched off until you choose to start heating up by opening K24.



Example in which "Heating mode" is normally "On" in the heating season, but when terminal block K24 is closed "Off" is activated and the heating is switched off.



Open terminal block = "On" (in this example)



Closed terminal block = "Off" (in this example)

\*Individual function. This function is not present in all products.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

### **The functions in remote control.**

#### **HP tariff**

When electricity suppliers use a differentiated tariff, you have the opportunity to block the heat pump when the electricity tariff is high.

NB: If both the heat pump and the immersion heater are blocked, the building may be without heating for a long time. It is therefore recommended that you only block the electric heater with the tariff.

#### **Electricity tariff\***

When electricity suppliers use a differentiated tariff, you have the opportunity to block the immersion heater(s) when the electricity tariff is high.

NB: When combined with the air heat pump, there is a risk that the building will be without heating for a long time.

#### **Night reduction**

Night reduction means that you reduce the temperature indoors during scheduled periods, for example at night or when you are at work.

#### **Ripple control**

Disconnecting the compressor and immersion heater during a certain period which is defined by the electricity supplier (special equipment).

Ripple control is a device which an electricity supplier can fit with the aim of disconnecting high current draw equipment for a short period of time. The compressor and electrical power are blocked when ripple control is active.

#### **Additional Domestic Hot Water**

Select this option if you want to activate the *Extra DHW* function. When the function is activated (by setting the number of hours) the heat pump immediately starts to produce extra DHW. You also have the option to schedule hot water production for certain times using the *Weekly program* function (recommended).

The temperature is also determined by how the setting has been performed in the Installer/Settings/Upper tank/Extra DHW stop temp °C menu

or

Installer/Settings/DHW tank/Extra DHW stop temp °C.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

### **Flow/level switch**

In some cases, extra protection is required due to local requirements or provisions. For example, the requirement in some areas is for the system to be installed within a water catchment area. The pressure/level switch is defined in the Advanced/Define system/Def. Heat pump menu. If there is a leak, the compressor and brine pump stop and the Flow/level switch alarm appears on the display.

### **Heating, ext. mode HS1**

### **Heating, ext. mode HS2**

### **Heating, ext. mode HS3\***

### **Heating, ext. mode HS4\***

With remote controlled "Heating, etc. mode", "On" is selected if the heating is to be on or "Off" if the heating is to be switched off. "Auto" mode can also be selected.

Read more in the section entitled "Your home's heating curve".

### **Smart A**

### **Smart B**

Smart Grid offers an opportunity to control from the outside whether heating is to be calculated as normal price, low price or overcapacity. The heat pump and immersion heater can also be blocked in a way similar to "Ripple control".

\*The number of heating systems varies from product to product. The maximum is four heating systems.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

4.5.3.12 Smart Grid

The "Smart Grid" function selects different heating options depending on the price of energy using accessories from the energy supplier.

Smart Grid is based on the energy price being calculated as

- Normal price
- Low price
- Overcapacity
- Blocking

Room temperature, pool temperature and hot water temperature, etc. are given different heating temperatures depending on the energy price.

**Procedure:**

First of all, Smart A and Smart B are assigned a separate input in the Advanced/Define/Define Remote Control menu.

Activation then takes place based on the terminal blocks' closure and settings for each function.

- Normal price: (Smart A: Open, Smart B: Open). No effect on the system.
- Low price mode: (Smart A: Open, Smart B: Closed).
- Overcapacity mode: (Smart A: Closed, Smart B: Closed).
- Blocking mode: (Smart A: Closed, Smart B: Open)

In each function that can be controlled there is a choice of temperature change for low price mode and overcapacity mode.



Example in which Smart A has been assigned low voltage input K24 and Smart B has been assigned low voltage input K25.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

Factory setting for low price is 1°C increase\* in temperature.

Factory setting for overcapacity is 2°C increase\* in temperature.

Smart low price °C	1 (Off, 1-5)
Smart overcap. °C	2 (Off, 1-5)

\*Upper and lower tank have range of settings from 1-30

### The following can be controlled:

- Room temperature heating systems 1-4\*\*
- Primary flow temperature heating systems 1-4\*\*
- Upper tank\*\*\*
- Lower tank\*\*\*
- Pool
- Cooling

### Comment re. cooling

When active cooling = setpoint has not been reached.

E.g. 26.0 (25.0)

In these cases Smart Grid "Normal mode" is activated for the heating systems. (Smart low price or smart overcapacity is not activated).

The reason for this is to avoid a conflict between heating and cooling. For example, if there is a standard 2 °C difference between heating and cooling, you do not want to heat and cool at the same time.

\* With cooling, the setpoint is reduced to room cooling.

\*\* The number of heating systems varies from product to product. The maximum is four heating systems.

\*\*\* Valid for CTC EcoLogic PRO/Family

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

**Low price mode: (A: Open, B: Closed).**

- With room sensor: Room temp. (setpoint) increased by 1°C (Factory setting, Smart low price °C)
- Without room sensor: Primary flow (setpoint) increased by 1°C (Factory setting, Smart low price °C)
- Upper tank: Setpoint increased by 10°C (Factory setting, Smart low price °C)
- Lower tank: Setpoint increased by 10°C (Factory setting, Smart low price °C)
- Pool: Pool temp. increased by 1°C (Factory setting, Smart low price °C)
- Hot water set to temperature in accordance with "Hot Water Comfort"
- Cooling. Room temperature is reduced by 1°C (Factory setting, Smart low price °C)  
(EcoZenith 550; Heating System 2 is not affected)

**Blocking mode: (A: Closed, B: Open).**

- The heat pump and immersion heater can be blocked in accordance with the settings in heat pump and immersion heater.
- **Smart blocking hp**                      **No (Yes/No)**  
Blocks heat pump  
Advanced/Settings/Heat pump
- **Smart blocking immersion heater**  
**No (Yes/No)**  
Blocks immersion heater  
Advanced/Settings/Immersion heater
- **Smart blocking mixing valve** **No (Yes/No)**  
Blocks bivalent mixing valve so that it does not pass 50%. If the mixing valve has passed 50% when blocking starts, the mixing valve remains in the upper tank. If demand falls and the mixing valve closes, it may not open more than 50%.

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

### Overcapacity mode: (A: Closed, B: Closed).

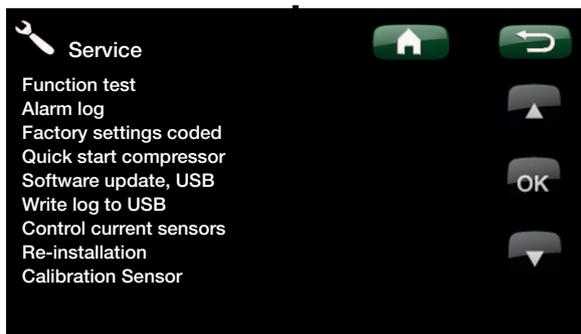
- With room sensor: Room temp. (setpoint) is increased by 2°C (Factory setting, Smart overcap. °C)
- Without room sensor: Primary flow (setpoint) is increased by 2°C (Factory setting, Smart overcap. °C)
- Upper tank: Heat pump  
The heat pump only operates in the lower tank.
- Upper tank: Immersion heater  
Setpoint is "Min. temp °C + increase of 10°C (Factory setting, Smart overcap. °C)
- Lower tank: Heat pump  
The heat pump only operates in the lower tank.  
Calculated setpoint increases by 2°C (Factory setting, Smart overcap. °C)
- Pool: Pool temp. is increased by 2°C (Factory setting, Smart overcap. °C)
- Hot water set to temperature in accordance with "Electric boiler extra DHW °C
- Cooling. Room temperature is reduced by 2°C (Factory setting, Smart overcap. °C)  
(EcoZenith 550; Heating System 2 is not affected)

NB: Enertech AB is NOT responsible for the required heat being produced if the remote control has blocked the heating over a long period.

#### 4.5.4 Service

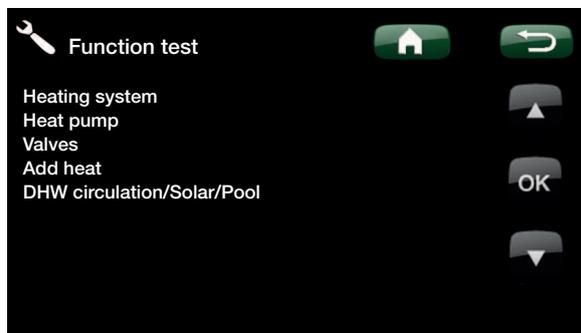


**!** NOTE! This menu is intended for the installer only.



##### 4.5.4.1 Function test

From this menu, the installer can test the connection and function of separate components of the heating system. When this menu is activated, all control functions are stopped. The only protection against incorrect operation are the pressure sensors and the electric heater's overheating protection device. When you exit the menu, the heat pump returns to normal operation. A return to normal operation follows after 10 minutes' inactivity.



**!** When you exit the menu, the heat pump returns to normal operation.

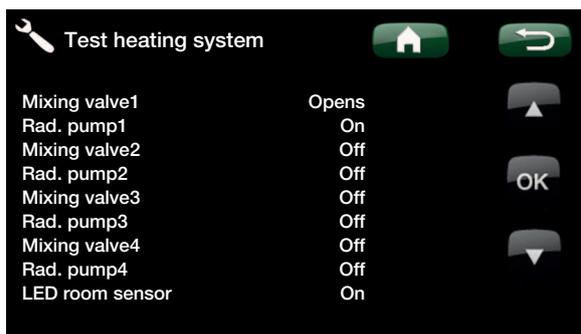
##### Test heating circuit

If a number of heating circuits have been installed, they will all be displayed here.

**Mixing valve (1-4)** **Opens/Closes**  
Opens and closes the respective mixing valve.

**Heating circ pump (1-4)** **On/Off**  
Starts and stops the respective heating circ pump.

**LED room sensor** **On/Off**  
The room sensor alarm functions can be controlled from here. When activated, the respective room sensor's red LED comes on steady.



### Test Heat pump

Select the heat pump (1 to 10) for function testing and select *Go to menu test*.

**HP Compr** Off (On/Off)

When the compressor is being function tested, the brine and charge pump are also operating so that the compressor does not trigger its pressure switches.

**HP Brine p. /Fan** Off (Off/On)

Function test brine pump.

**HP Charge p.** 0 (0 to 100)

Function test charge pump 0–100%.

**Manual Defrosting** Off (Off/On)

When function testing “Manual Defrosting”, a defrost cycle will be run on the EcoAir product. The defrosting cannot be stopped once it has begun; the entire defrost program will be completed.

**Compressor heater** Off (Off/On)

Function test compressor heater.

**Heater condenser tray** Off (Off/On)

Function test of the condenser tray heater.

**Heating cable** Off (Off/On)

Function test heating cable.

**4-way valve (Y11)** Off (Off/On)

Function test 4-way valve (Y11). Installed on CTC EcoAir.

### Test Valves

The following valves are function tested from this menu:

**Diverting valve (Y21)** Heating/DHW

**Diverting valve (Y22)** Heating/DHW

### Test Additional heat

The connected additional heat sources (E1, E2, E3 and E4) are tested from here.

**Relay output (E1)** Off (On/Off)

Switches the relay output on and off.

**0–10 V (E2)\*** 5 (1 to 10/Off)

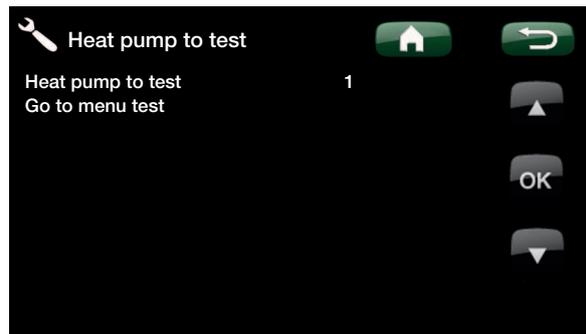
Function test 10 steps (1–10 V).

**EcoMiniEI (E3)** Off (1 to 3/Off)

Function test 3 steps.

**Add heat DHW (E4)** Off (On/Off)

Switches the immersion heater for hot water production on and off.



*\*Applies to the CTC EcoLogic PRO only.*

### Test DHW circ/Solar/Pool\*

The following pumps/valves are function tested from this menu:

**DHW circulation pump (G40)                      On (On/Off)**

Switches the circulation pump on and off.

**Circulation pump solar (G30)                      0 (0 to 100)**

Tests the circulation pump to to full speed (rpm).

**Heat exchanger pump solar (G32)                      0 (0 to 100%)**

Tests the solar heat exchanger pump up to full speed (rpm).

**Diverting valve solar (Y30)                      DHW (DHW/Heating)**

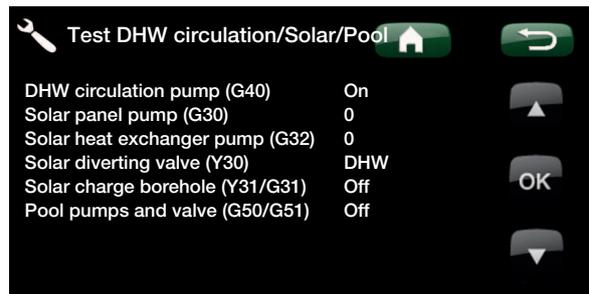
Tests the two modes on the valve: flow to hot water tank or buffer tank.

**Solar charge borehole (Y31, G31)                      Off (On/Off)**

Tests the diverting valve (Y31) and solar heat exchanger pump (G31).

**Pool pumps (G50, G51)                      Off (On/Off)**

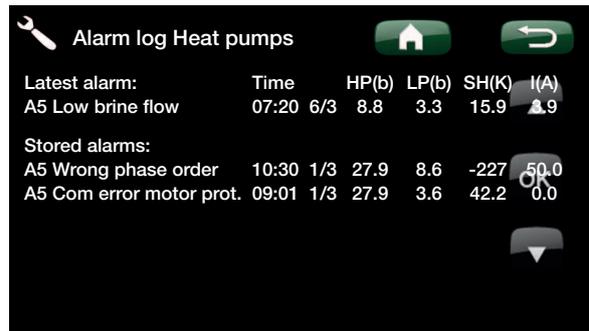
Tests the pool pumps and valve (G50, G51).



#### 4.5.4.2 Alarm log Heat pumps

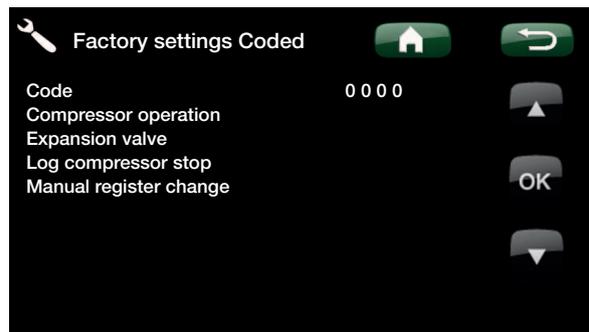
Here you can read information about the latest alarms from the heat pump that sounded the alarm. The latest alarm is displayed at the top and the four latest alarms are shown under *Stored alarms*.

An alarm which reoccurs within an hour is ignored so as not to fill up the log. If all the alarms are the same, this can indicate that there is an intermittent fault, e.g. a loose contact.



#### 4.5.4.3 Factory settings Coded

This menu is intended to set the manufacturer's operational and alarm limits. A 4-digit code must be specified to be able to amend these limits. However, you can also take a look without any code to see what options feature in the menu.



**!** NOTE! Only an authorised service engineer is allowed to log in to the Factory settings coded option. Severe operational problems and faults may occur affecting the product if values are amended without authorisation. Note that in such cases the warranty terms do not apply.

\*Applies to the CTC EcoLogic PRO only.

### 4.5.4.4 Quick start Compressor

The delay normally prevents compressor start earlier than 10 min. after compressor stop. The delay is also activated in the event of a power failure, or the first time after production is started. This function speeds up this process. For EcoLogic systems 1 to 3, the degree minute loss is set to the value that starts all heat pumps.

### 4.5.4.5 Software update, USB

This is only for service engineers. This option can be used to update the software in the display via USB. The software update process is complete when the start menu appears.

### 4.5.4.6 Write log to USB

This is only for service engineers. This function can be used to save logged values to a USB memory stick.

### 4.5.4.7 Re-installation

This command re-launches the installation sequence. See the chapter on "First start".

### 4.5.4.8 Calibration Sensor

#### **Primary flow VS 1°C (B1) 0.0 (-3.0 to 3.0)**

Correction of primary flow sensor B1.

#### **Primary flow VS 2°C (B2) 0.0 (-3.0 to 3.0)**

Correction of primary flow sensor B2.

#### **Room temperature 1°C (B11) 0.0 (-3.0 to 3.0)**

Correction of room sensor B12.

#### **Room temperature 2°C (B12) 0.0 (-3.0 to 3.0)**

Correction of room sensor B12.

#### **Outdoor temperature °C (B15) 0.0 (-3.0 to 3.0)**

Correction of outdoor sensor (B15).

#### **Out from solar panels °C (B31)\* 0.0 (-3.0 to 3.0)**

Correction of temperature sensor on solar panels for outgoing temperature.

#### **Into solar panels °C (B30)\* 0.0 (-3.0 to 3.0)**

Correction of temperature sensor on solar panels for incoming temperature.



**NOTE!** The power to the product must not be interrupted, under any circumstances, during the update process.



**NOTE!** Turn off the power and always restart the product after the program update! Several minutes may pass before the display communicates clearly after restart.



## 5. Menu overview

The menu overview for the CTC EcoLogic thermostat is structured as follows:

- Main Menu:**
  - Room temp.
  - DHW
  - Operation
  - Installer
- Room temp. Sub-menu:**
  - Heating circuit 1: 22.3°C (23.5°C)
  - Heating circuit 2: 22.4°C (23.5°C)
  - 1 Night reduction
  - 2 Holiday
  - 3 / 4
- DHW Sub-menu:**
  - Extra DHW: 0.0 hours
  - On
  - Temperature: Normal
  - Weekly schedule
- Operation Sub-menu:**
  - 12 °C
  - 1 21,5 °C
  - 2 22,3 °C
  - 2 °C
  - 1 °C
  - 42 °C
  - 34 °C
- Installer Sub-menu:**
  - Time/Language
  - Settings
  - Defined system
  - Service
  - Software display: 20120503
  - Software HP module: 20120503

### 5.1 Room temp.

Room temp.

Heating circuit 1 22.3°C (23.5°C) - +

Heating circuit 2 22.4°C (23.5°C) - +

1 2 Night reduction Holiday 3

Night reduction heat circ.

Weekly program	Day by day
Monday	06 - 09 18 - 21
Tuesday	07 - 09 20 - 23
Wednesday	06 - 09 08 - 21
Thursday	06 - -- -- -21
Friday	06 - -- -- -21
Saturday	10 - 12 20 - 23
Sunday	10 - 12 20 - 23

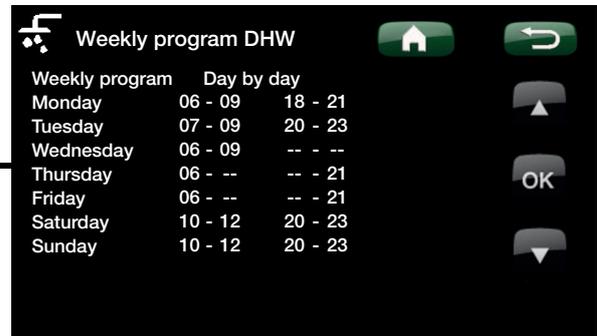
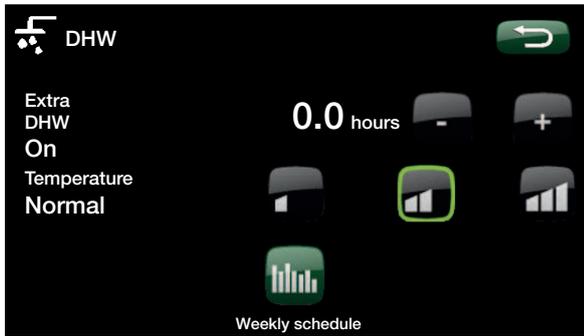
Night reduction heat circ.

Weekly program	Block
Decrease	Sunday 22:00
Increase	Friday 14:00
Decrease	----- 00:00
Increase	----- 00:00

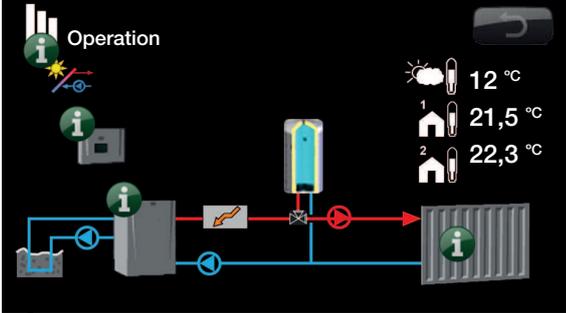
Holiday

Holiday period 3 days - +

## 5.2 DHW



5.3 Operation



**Operation data EcoLogic**

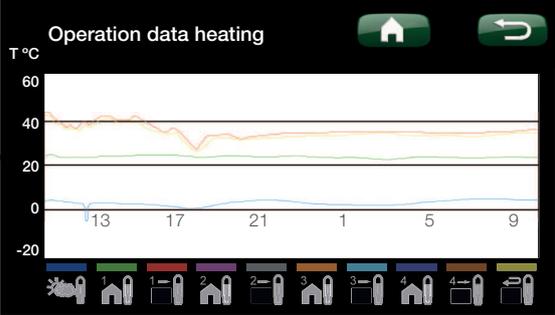
Status	-> DHW
DHW tank °C	59 (60) (40)
DHW tank ext	53
Tank	39 (40)
Primary flow °C	24 (25)
Return flow °C	20
Heating circ pump	On
Boiler/Out °C	79/24
Mixing valve	Open
Demand nbr of HP	3
Degree minutes	-61
Delay add heat	180
Add heat	Off
EcoMiniEl 0-10V	step 0/0,0V
Pool °C	21.8 (22.5)

**History oper data**

Settings for heatpump id:	A1
Total operation time h:	14
Maximum primary flow °C:	51

**Heating circuit 2-4**

Primary flow 2 °C	34 (35)
Radiator pump 2	On
Mixing valve 2	Opens
Room temp. 3 °C	21.8 (22)
Primary flow 3 °C	37 (38)
Radiator pump 3	Off
Mixing valve, 3	Close
Room temp. 4 °C	21.9 (23)
Primary flow 4 °C	39 (40)
Radiator pump 4	Off
Mixing valve 4	Close



**Status heat pump**

ID Product	Status
A1 EcoPart	On, DHW
A2 EcoPart	On, DHW
A3 EcoAir	On, heating
A4 EcoAir	Defrost
A5 EcoAir	Off, ready to start

Select ID and OK for HP start

**Operation data heat pump**

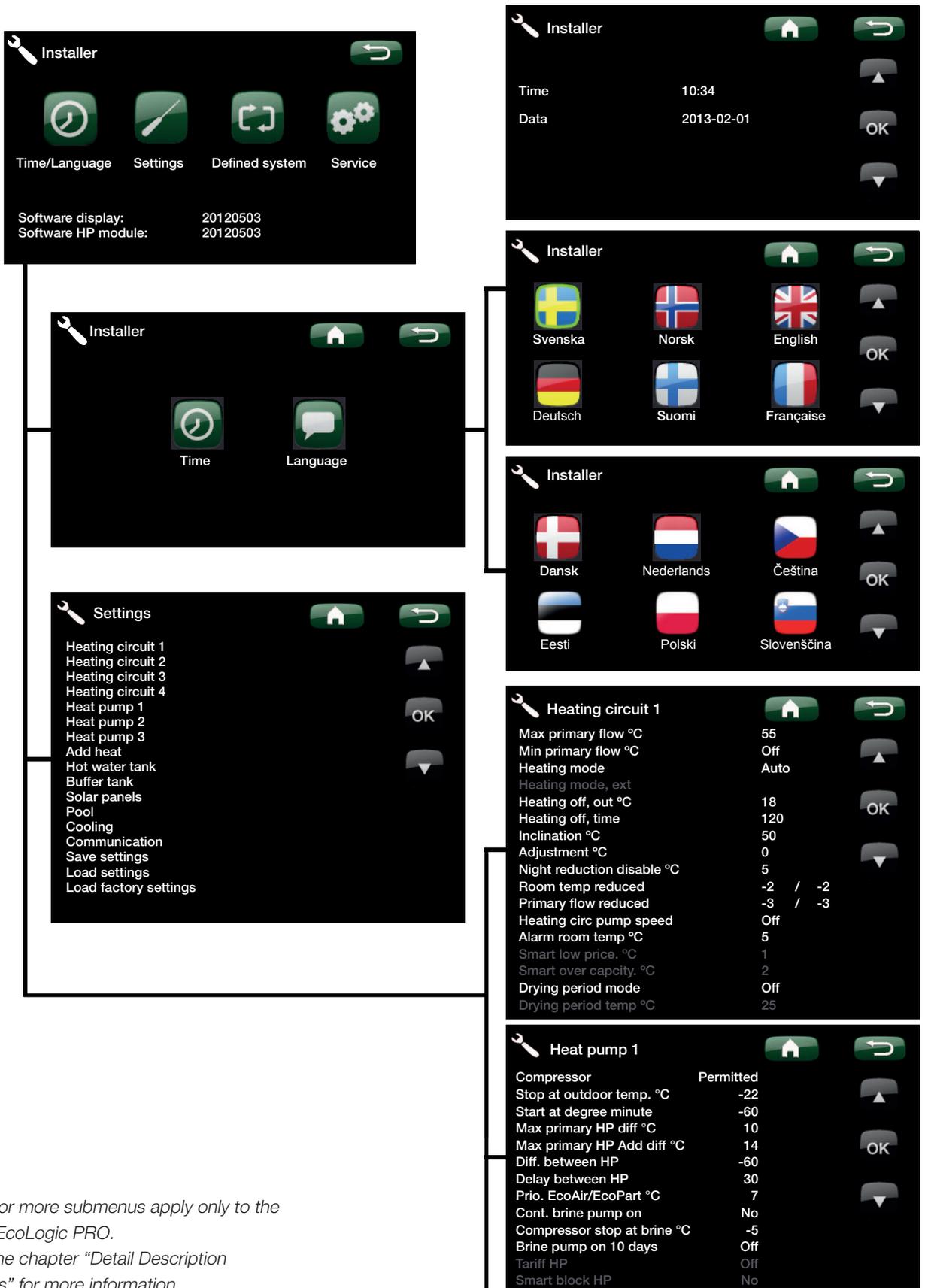
Compressor	On
Charge pump	On/78%
Brine pump	On
Brine in/out °C	4/1
Fan	On
HP in/out °C	35/42
Outside temp. °C	3
Current L1	9.8

**Solar panel**

Status	Charge DHW
Outlet °C	68
Inlet °C	60
Pump solar %	46
Pump solar charge %	46
Valve solar charge tank	DHW
Pump chrg brine loop	Off
Valve chrg brine loop	Off
Energy output (kWh)	0
Energy output /24h (kWh)	0.0
Power (kW)	0.0

\*One or more submenus apply only to the CTC EcoLogic PRO. See the chapter "Detail Description Menus" for more information.

## 5.4 Installer (Time/Language – Settings)



\*One or more submenus apply only to the CTC EcoLogic PRO.  
See the chapter "Detail Description Menus" for more information.

### Additional heat

Start E1, degree minute	-500	
Diff. E1, degree minute	-100	▲
Start 0-10V, °minute	-500	
Diff. 0-10V, °minute	-100	
Start EcoMiniEI, °minute	-500	OK
Diff. step EcoMiniEI	-50	
Delay add heat E1	180	
Delay add heat 0-10V E2	180	▼
Diff. 0-10V E2 delay	60	
Delay EcoMiniEI E3	180	
Delay EcoMiniEI E3 step	30	
Block add heat, outdoor °C	5	
Boiler, open mixing valve °C	70	
Max. flow add heat °C	55	
Tariff EL	Off	
Smart block immersion		
Start at flue gas °C	Off	

### Solar panels

dT max. solar °C	7	
dT min. solar °C	3	▲
Min. speed pump %	30	
Max. boiler °C	85	
Max. DHW tank °C	85	OK
Max. buffer tank °C	85	
Max. brine °C	18	
dT max. bedrock °C	60	▼
dT min. bedrock °C	30	
Solar test tank min.	4	
Test frequency min.	30	
Winter mode	No	
Flow l/min	6	
Protection collector		

### DHW tank

Stop temp. HP °C	55	
Start/stop diff. °C	5	▲
Extra DHW stop temp. °C	60	
Max. time DHW	20	
Max. time heating	40	OK
Delay heating calc	3	
Add heat DHW	Demand	
Add heat DHW relay	Yes	▼
Add heat DHW 0-10V	3.0	
Add heat DHW EcoMiniEI	Step 3	
Min. temp. °C	45	
Periodic extra DHW, days	14	
Max. temp. diff. end DHW °C	3	
Start/stop diff. HP2 °C	3	
Stop DHW diff. max.	3	
Run time DHW circ.	4	
Cyclic time DHW circ.	15	
Diff. start ext. DHW tank	5	
Timer DHW circ.		

### Protection collector

Max. temp. °C	120	
Cooling	Yes	▲
Re-cooling	No	
Re-cooling to temp °C	70	OK
Anti-freeze	No	
Anti-freeze temp. °C	-25	▼

### Timer DHW circulation

Monday	06 - 09	18 - 21	
Tuesday	07 - 09	20 - 23	
Wednesday	06 - 09	-- --	
Thursday	06 - --	-- - 21	OK
Friday	06 - --	-- - 21	
Saturday	10 - 12	20 - 23	
Sunday	10 - 12	20 - 23	▼

### Pool

Pool temp °C	22	
Pool diff. °C	1.0	▲
Pool prio. °C	Low	
Smart low price. °C	1	
Smart over capacity. °C	2	OK

### Heating buffer tank

Tank max. °C	55	▲
Tank min. °C	25	
Diff. tank and prim. flow °C	0	
Start/Stop diff. tank °C	5	OK
Timer setpoint	50	
Timer buffer tank		▼

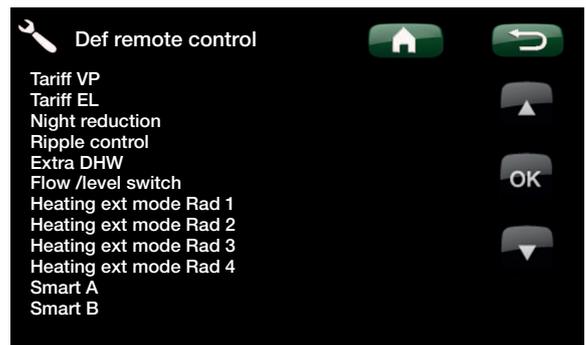
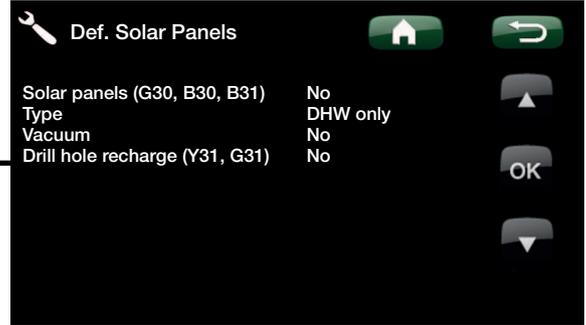
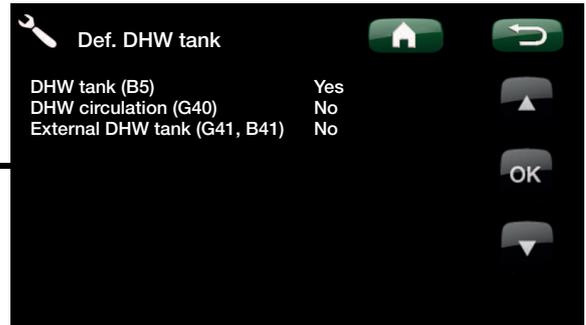
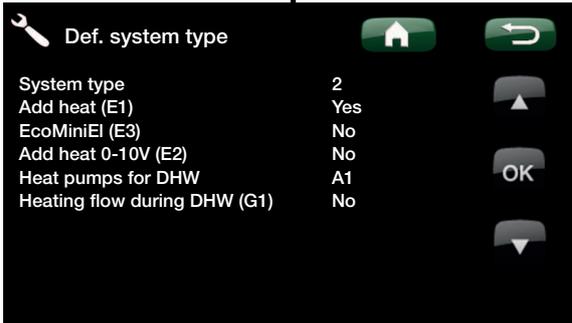
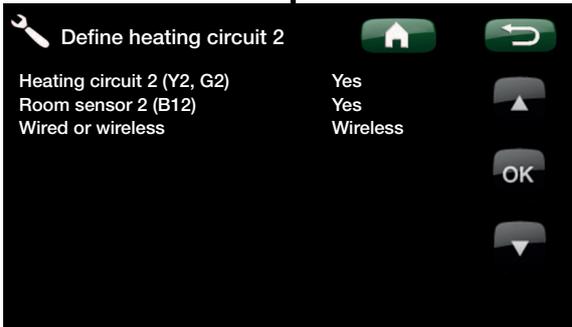
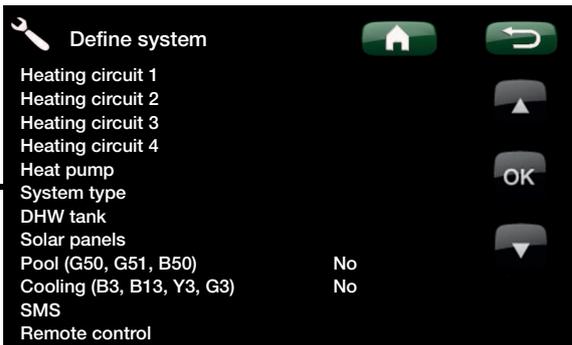
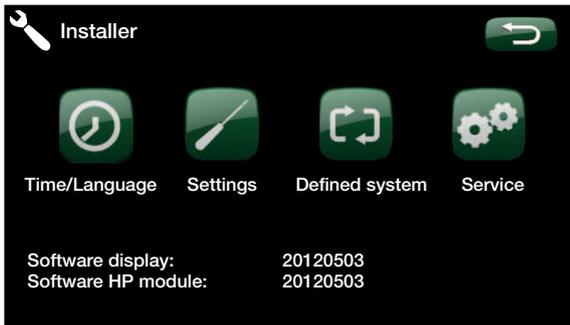
### Cooling

Cooling permit. from outdoor T °C	Off	
Flow temp. at outdoor temp. +20°C	20	▲
Flow temp. at outdoor temp. +40°C	10	
Min. flow temp. °C	18	
Start cooling at overtemp.	1.0	OK
Stop cooling at overtemp.	0.5	
Smart low price. °C	1	
Smart over capacity. °C	2	▼

### Communication

MB address	1	
Baud rate	9600	▲
Parity	Even	
Stop bit	1	OK

## 5.5 Installer (Define system)



*\*One or more submenus apply only to the CTC EcoLogic PRO. See the chapter "Detail Description Menus" for more information.*

## 5.6 Installer (Service)

**Installer**

Time/Language   Settings   Defined system   Service

Software display: 20120503  
Software HP module: 20120503

**Service**

Function test  
Alarm log  
Factory settings coded  
Quick start compressor  
Software update, USB  
Write log to USB  
Control current sensors  
Re-installation  
Calibration Sensor

**Function test**

Heating system  
Heat pump  
Valves  
Add heat  
DHW circulation/Solar/Pool

**Alarm log Heat pumps**

Latest alarm:	Time	HP(b)	LP(b)	SH(K)	I(A)
A5 Low brine flow	07:20	6/3	8.8	3.3	15.9

Stored alarms:

A5 Wrong phase order	10:30	1/3	27.9	8.6	-227	50.0
A5 Com error motor prot.	09:01	1/3	27.9	3.6	42.2	0.0

**Factory settings Coded**

Code 0 0 0 0

Compressor operation  
Expansion valve  
Log compressor stop  
Manual register change

**Test heating system**

Mixing valve1	Opens	
Rad. pump1	On	
Mixing valve2	Off	
Rad. pump2	Off	OK
Mixing valve3	Off	
Rad. pump3	Off	
Mixing valve4	Off	
Rad. pump4	Off	
LED room sensor	On	

**Heat pump to test**

Heat pump to test 1  
Go to menu test

**Test heat pump**

HP Compr.	Off	
HP Brine p./Fan	Off	
HP Charge p	0	
Manual defrosting	Off	
Compressor heater	Off	OK
Heating condenser bowl	Off	
Heating cabel	Off	
4-way valve (Y11)	Off	

**Test valves**

Diverting valve (Y21)	DHW	
Diverting valve (Y22)	Heating	

**Test Additional heat**

Relay Output (E1)	Off	
0-10V (E2)	5	
EcoMiniEI (E3)	Off	
Add heat DHW (E4)	Off	OK

**Test DHW circulation/Solar/Pool**

DHW circulation pump (G40)	On	
Solar panel pump (G30)	0	
Solar heat exchanger pump (G32)	0	
Solar diverting valve (Y30)	DHW	
Solar charge borehole (Y31/G31)	Off	OK
Pool pumps and valve (G50/G51)	Off	

## 6. Parameter list

Radiator system	Factory setting	User value
Max primary flow °C	55	
Min primary flow °C	Off	
Heating off, out °C	18	
Heating off, time	120	
Inclination °C	50	
Adjustment °C	0	
Room temp reduced	-2	
Primary flow reduced	-3	
Heating circ pump speed	100	

Heat pump	Factory setting	User value
Stop at outdoor°C	-22	
Start at degree minute	-60	
Max primary HP diff°C	10	
Max primary HP Add diff °C	14	
Diff between comp.	-60	
Delay between comp.	30	
Prio A/W °C	7	
Cont. brine pump on	No	
Compressor stop at brine°C	-5	

Add heat	Factory setting	User value
Start E1, degree minute	-500	
Diff E1, degree minute	-100	
Start 0-10V, °minute	-500	
Diff 0-10V, °minute	-100	
Start EcoMiniEI, °minute	-500	
Diff step EcoMiniEI.	-50	
Delay add heat E1	180	
Delay Add heat 0-10V	180	
Diff 0-10V delay	60	
Delay EcoMiniEI	180	
Delay EcoMiniE step	30	
Block add, outdoor°C	5	
Boiler, open mixing v.°C	70	
Add heat max primary °C	Off	
Main fuse A	20	
Start at flue gas °C	Off	

DHW tank	Factory setting	User value
Stop temp HP °C	55	
Start/stop diff °C	5	
Extra DHW stop temp°C	60	
Max time DHW	20	
Max time heating	40	
Delay heating calc	3	
Add heat DHW	Demand	
Add heat DHW relay	No	
Add heat DHW 0-10V	3	
Add heat DHW EcoMiniEL	3	
Min temp °C	45	
Periodic extra DHW, days	14	
Max temp diff end DHW °C	3	
Start/stop diff HP2 °C	3	
Stop DHW diff max	3	
Run time DHW circ.	4	
Time DHW circ	15	
Diff start ext DHW buffer	5	
Timer setpoint	50	

Heating Buffer Tank	Factory setting	User value
Tank max °C	55	
Tank min °C	25	
Diff tank vs primary °C	0	
Start/stop diff tank °C	5	

Solar panels	Factory setting	User value
dT max solar °C	7	
dT min solar °C	3	
Min speed pump %	30	
Max boiler °C	85	
Max DHW tank °C	85	
Max buffer tank °C	85	
Max temp brine °C	18	
dT max ground °C	60	
dT min ground °C	30	
Solar test tank min	4	
Test frequency min	30	
Winter mode	Off	
Time graph temp min	5	
Time graph oper. min	1	
Flow l/mln	6	

Protection collector	Factory setting	User value
Max Temp °C	120	
Cooling	Yes	
Recooling	No	
Recooling to temp	70	
Anti-freeze	No	
Anti-freeze °C	-25	

Pool	Factory setting	User value
Pool temp °C	22	
Pool diff °C	1.0	
Pool priority °C	Low	

Cooling	Factory setting	User value
Cooling permit. from outdoorT	Off	
Primary flow temp at outdoor +20	20	
Primary flow temp at outdoor +40	10	
Min primary flow temperature	18	
Start coolig at overtemp	1.0	
Stop cooling at overtemp	0.5	

Define system	Factory setting	User value
Def heating circuit 1		
Room sensor 1 (B11)		
Wire or wireless		
Def heating circuit 2		
Radiator system 2 (Y2, G2)		
Room sensor 2 (B12)		
Wire or wireless		
Def heating circuit 3		
Radiator system 3 (Y3, G3)		
Room sensor 3 (B13)		
Wire or wireless		
Def heating circuit 4		
Radiator system 4 (Y4, G4)		
Room sensor 4 (B14)		
Wire or wireless		

Def Heat pump	Factory setting	User value
Flow /level switch		

Def system type	Factory setting	User value
System type		
Mixing valve add. heat (Y2)		
EcoMiniEI (E3)		
Additional heat 0-10V (E2)		
Heat pump for DHW		
Heating flow during DHW (G1)		

Def DHW tank	Factory setting	User value
DHW tank (B5)	No	
DHW circulation (G40)	No	
External buffer X	No	

Def solar panels	Factory setting	User value
Solar panels (G30,B30, B31)	No	
Type	Only DHW	
Vacuum	No	
Borehole recharge (Y31,G31)	No	

Define SMS	Factory setting	User value
Activate	No	
Level of signal		
Phone Number 1		
Phone Number 2		

Define remote control	Factory setting	User value
Tariff VP		
Tariff EL		
Night reduction		
Ripple control		
Extra DHW		
Flow /level switch		
Heating ext mode Rad 1		
Heating ext mode Rad 2		
Heating ext mode Rad 3		
Heating ext mode Rad 4		
Smart A		
Smart B		

## 7. Operation and Maintenance

When the installer has installed your new heat pump, you should check together that the system is in perfect operating condition. Let the installer show you where the switches, controls and fuses are so that you know how the system works and how it should be maintained. Bleed the radiators after around three days of operation and top up with water if required.

The CTC EcoLogic operates fully automatically. The control system turns on additional heat when needed, adapts to wood burning when this occurs, switches to summer mode, etc.

### Room Sensor

A room sensor, which should always be fitted (up to four room sensors can be connected), ensures that the temperature in the room is always suitable and stable. For the sensor to provide the correct signals to the control unit, radiator thermostats should always be fully open in the area where the room sensor is located. When adjusting the system, always do so with all radiator thermostats fully open. The thermostats can be individually adjusted after a few days in the various rooms. You can select operation without room sensors by selecting "No" in the menu "Installer/Def. system/Def. heating circuit/Room sensors". This can be done if it is difficult to find a location for the room sensor, if there are several flats, if the floor heating system has separate room sensors, or when using an fire place or open stove. The alarm LED on the room sensor still functions as normal. If you use the fire or open stove only occasionally, the firing process can affect the room sensor and reduce the temperature supplied to the radiators. It can then get cold in the rooms in other parts of the house. The room sensor can temporarily be deselected during the firing process. CTC EcoLogic thus provides heating to the radiators using the set heating curve. Refer to the chapter on the "House heating curve". The radiator thermostats reduce the heating supplied to the section of the house where a fire is burning.

### "Summer Cellar Heat"

You will often want some background heating in basements/recreation rooms/bathrooms in the summer months, to avoid raw, damp air. The CTC EcoLogic takes care of this by setting the minimum permitted primary flow temperature to a suitable temperature (15 to 65°C). See under the menu "Installer/Settings/heating circuit/Min. primary flow °C". This means that the temperature supplied to the radiators does not fall below a selected temperature, for example 35°C. Functional radiator thermostats or shut-off valves are required in the rest of the house in order for this to work. These shut off the heating in the rest of the house. The function can also be used for floor heating in the bathroom to ensure warm floors during the summer.

### Night reduction

With night reduction you have the option of automatically varying the temperature in the house throughout the day, every day of the week. More information can be found in the chapter "Detail description menus/Night reduction".

## 8. Fault Tracing/Appropriate Measures

The CTC EcoLogic is designed to provide reliable operation and high levels of comfort, as well as have a long service life. Various tips are given below which may be helpful and guide you in the event of an operational malfunction.

If a fault occurs, you should always contact the installer who installed your unit. If the installer believes the malfunction is due to a materials or design fault, then they will contact us to check and rectify the issue. Always provide the product's serial number.

### DHW

Many want to gain maximum benefit from the heat pump's low operating costs. The control system is equipped with three comfort levels for hot water. We recommend starting at the lowest level and if there is not enough hot water, increase it to the next level. We also recommend that you operate a regular hot water pattern.

### The Heating Circuit

A room sensor, which should be fitted when possible, ensures that the temperature in the room is always suitable and stable. For the sensor to provide the correct signals to the control unit, radiator thermostats should always be fully open in the area where the room sensor is located. A correctly operating heating circuit is of significant importance to the heat pump's operation and affects energy savings. When adjusting the system, always do so with all radiator thermostats fully open. The thermostats can be individually adjusted after a few days in the other rooms.

#### If you do not achieve the set room temperature, check:

- that the heating circuit is correctly adjusted and is functioning normally. That radiator thermostats are open and the radiators are equally warm all over. Touch the entire radiator surface. Bleed the radiators. In order for the heat pump to run economically, the heating circuit must function well in order to provide good savings.
- that the heat pump is operating and no error messages are displayed.
- that there is sufficient electrical power available. Increase this if necessary. Also check that the electric power output is not limited due to excessively high electricity loads in the property (load monitor).
- that the product is not set to the "Max. allowed primary flow temperature" mode with a too low set value.
- that "Primary flow temperature at  $-15^{\circ}\text{C}$  outdoor temperature" is set sufficiently high. Increase if necessary. More can be read about this in the chapter on the "House heating curve". However, always check the other points first.
- that the temperature reduction is set correctly. See Settings/Heating circuit.
- that the mixing valve is not in the manual position.

 Avoid placing the room sensor close to the stairway due to the uneven air circulation.

 If you do not have radiator thermostats on the upper floor, you may need to install them.

### **If the heat is not even, check:**

- that the placement of the room sensors is appropriate for the house.
- that the radiator thermostats don't interfere with the room sensor.
- that no other heat sources/cold sources interfere with the room sensor.
- that the mixing valve is not in the manual position.

### **Ground loop**

Faults can occur in the cooling unit if the ground loop has not been installed correctly, if it has not been bled sufficiently, if it contains too little antifreeze or is not designed to an adequate size. Poor or insufficient circulation can result in the heat pump triggering an alarm in the case of low evaporation. If the temperature difference between the ingoing and outgoing temperature is too large, the product triggers an alarm and "Low brine flow" is displayed. The probable cause is that there is still air in the brine circuit. Bleed thoroughly, which may in some cases take up to a day. Also check the ground loop. See also the chapter on Connecting the brine system.

### **Check:**

- that the brine pump speed value is not set too low. Try to increase this if a problem arises.

Reset the "Low evaporation" alarm on the display. Where a malfunction repeatedly occurs, call in a technician to investigate and rectify the fault.

If the text "Low brine temp" is displayed, the ground loop may not be large enough or there may be a fault with the sensor. Check the brine circuit temperature in the "Current operation data" menu. If the incoming temperature falls below  $-5^{\circ}\text{C}$  during operation, call in a technician to inspect the brine circuit.

### **Motor protection**

The CTC EcoLogic constantly monitors the compressor's operating current and an alarm is triggered if the compressor is using an unusually high current. When a fault occurs, the message "Motor protect high current" is displayed.

### **The cause of the fault may be as follows:**

- Phase failure or mains interruption. Check the fuses, which are the most common cause.
- Compressor overload. Call out a service engineer.
- Faulty compressor. Call out a service engineer.
- Circulation too poor between the cooling circuit and cylinder. Check the heat medium pump (charge pump).
- Abnormally high temperature in the brine circuit. Call out a service engineer.

## 8.1 Information messages

Information messages are displayed when appropriate and are intended to inform users about various operational situations.



### **Start delay**

The compressor is not allowed to start too quickly when it has stopped. The delay is usually at least 10 minutes.

### **Heating off, radiator sys 1/2/3/4**

Shows for each heating system that the product is operating in summer mode when only hot water is required, not heating.

### **Ripple control**

Shows that ripple control is active. Ripple control is a device which an electricity supplier can fit with the aim of disconnecting high current draw equipment for a short period of time. The compressor and electrical power are blocked when ripple control is active.

### **Tariff, HP off.**

This is used when a dual tariff is used with lower energy costs at set hours of the day. The heat pump can then take advantage of reduced primary energy costs.

### **Tariff, EL, off.**

This is used when a dual tariff is used with lower energy costs at set hours of the day. The heat pump can then take advantage of reduced primary energy costs.

### **Compressor blocked**

The compressor is set to be shut down, e.g. before drilling or digging has been carried out for the collector loops. The product comes with the compressor switched off. This option is selected under the *Installer/Settings/Heat pump* menu.

### **Heating ext mode Rad 1**

The remote control affects whether the heating is to be on or off. If the heating is switched off, the information "Heating from heating system 1/2/3"

### **Smart: low price/overcap./blocking is also shown**

The product is operated on the basis of "Smart Grid". Also see:

**"Define system / Remote control / Smart Grid".**

## 8.2 Alarm messages



If a fault occurs with a sensor, for instance, an alarm is triggered. A message appears on the display with information about the fault. In the event of an alarm, the LEDs on the display and room sensor also flash.

You reset the alarm by pressing the “Reset alarm” button on the display. If several alarms are triggered, they are displayed one after the other. An outstanding fault cannot be reset without being rectified first. Some alarms are reset automatically if the fault disappears.

Alarm Text	Description																																				
<b>Wrong phase order compressor</b>	The product’s compressor motor must rotate in the right direction. The product checks that the phases are connected correctly; otherwise, an alarm is triggered. In this case, two of the phases to the product need to be changed. The power supply to the system must be shut off when rectifying this fault. This fault generally only occurs during installation.																																				
<b>Alarm sensor</b>	An alarm is displayed if a fault occurs with a sensor that is not connected or has short-circuited. If this sensor is significant to the system’s operation, the compressor stops. In this case, the alarm is reset manually after the fault has been rectified.																																				
	<table border="1"> <tbody> <tr> <td>B1</td> <td>Primary flow sensor 1</td> <td>B12</td> <td>Room sensor 2</td> </tr> <tr> <td>B2</td> <td>Primary flow sensor 2</td> <td>B13</td> <td>Room sensor 3*</td> </tr> <tr> <td>B3</td> <td>Primary flow sensor 3*</td> <td>B14</td> <td>Room sensor 4*</td> </tr> <tr> <td>B4</td> <td>Primary flow sensor 4*</td> <td>B15</td> <td>Outdoor sensor</td> </tr> <tr> <td>B5</td> <td>Sensor, hot water tank</td> <td>B30</td> <td>Sensor in to solar panels*</td> </tr> <tr> <td>B6</td> <td>Sensor buffer tank</td> <td>B31</td> <td>Sensor out from solar panels*</td> </tr> <tr> <td>B9</td> <td>Sensor external boiler</td> <td>B41</td> <td>Sensor external DHW tank</td> </tr> <tr> <td>B10</td> <td>Sensor external boiler out</td> <td>B50</td> <td>Sensor pool</td> </tr> <tr> <td>B11</td> <td>Room sensor 1</td> <td></td> <td></td> </tr> </tbody> </table>	B1	Primary flow sensor 1	B12	Room sensor 2	B2	Primary flow sensor 2	B13	Room sensor 3*	B3	Primary flow sensor 3*	B14	Room sensor 4*	B4	Primary flow sensor 4*	B15	Outdoor sensor	B5	Sensor, hot water tank	B30	Sensor in to solar panels*	B6	Sensor buffer tank	B31	Sensor out from solar panels*	B9	Sensor external boiler	B41	Sensor external DHW tank	B10	Sensor external boiler out	B50	Sensor pool	B11	Room sensor 1		
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<b>Motor protect compressor</b>	High/low current has been detected to the compressor. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.																																				
<b>High pressure switch</b>	The refrigerant’s high pressure switch has been triggered. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.																																				

\*Applies to the CTC EcoLogic PRO only.

Alarm Text	Description
<b>Low brine temp</b>	Incoming brine temperatures from borehole/ground loop are too low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer to check the dimensions of the cold side.
<b>Low brine flow</b>	Low brine flow is very often due to air in the collector system, particularly just after installation. Collectors which are too long can also be a cause. Check also that the brine pump is set to speed 3. Press reset and check whether the alarm recurs. Also check the brine filter that has been installed. If the fault recurs, contact your installer.
<b>Communication error PCB, Communication error HP, Communication error motor protect</b>	This message is displayed when the display card cannot communicate with the relay card. This message is displayed when the display card cannot communicate with the HP control card. This message is displayed when the HP control card cannot communicate with the motor protection.
<b>High compr.temp</b>	This message appears when the compressor temperature is high. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>Low evaporation</b>	This message appears when the evaporation temperature is low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>High evaporation</b>	This message appears when the evaporation temperature is high. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>Low suct gas exp. valve</b>	This message appears when the suction gas temperature is low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>Low evapor exp. valve</b>	This message appears when the expansion valve's evaporation temperature is low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>High evapor exp. valve</b>	This message appears when the expansion valve's evaporation temperature is high. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>Low superheat exp. valve</b>	This message appears when the expansion valve's superheat temperature is low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer.
<b>EVO off</b>	This message appears when there is a fault with the expansion valve control.
<b>Phase missing</b>	This message appears in the event of a phase failure.
<b>Compressor type?</b>	This message appears if there is no information about the compressor type.
<b>Heat pump alarm</b>	This message appears if the heat pump is in alarm mode.
<b>Risk of freezing (E12)</b>	Alarm indicating that the temperature of the outgoing water from the heat pump (HP out) is too low for defrosting. The water volume in the system may be too low. The flow may be too low. (Applies to EcoAir)

## 9. Pipe installation

The installation must be carried out in accordance with current standards and regulations. Refer to BBR-99 and the Warm and Hot Water Instructions 1993. Apply all the installation settings based on the description in the chapter on “First start”.

This chapter shows the fundamental connections of the heat pump(s) and additional heat to the property’s heating and hot water system for the six different EcoLogic system solutions. All EcoLogic systems include solar energy; systems 4, 5 and 6 also include heating of the pool. Refer also to the “Electrical installation” chapter.

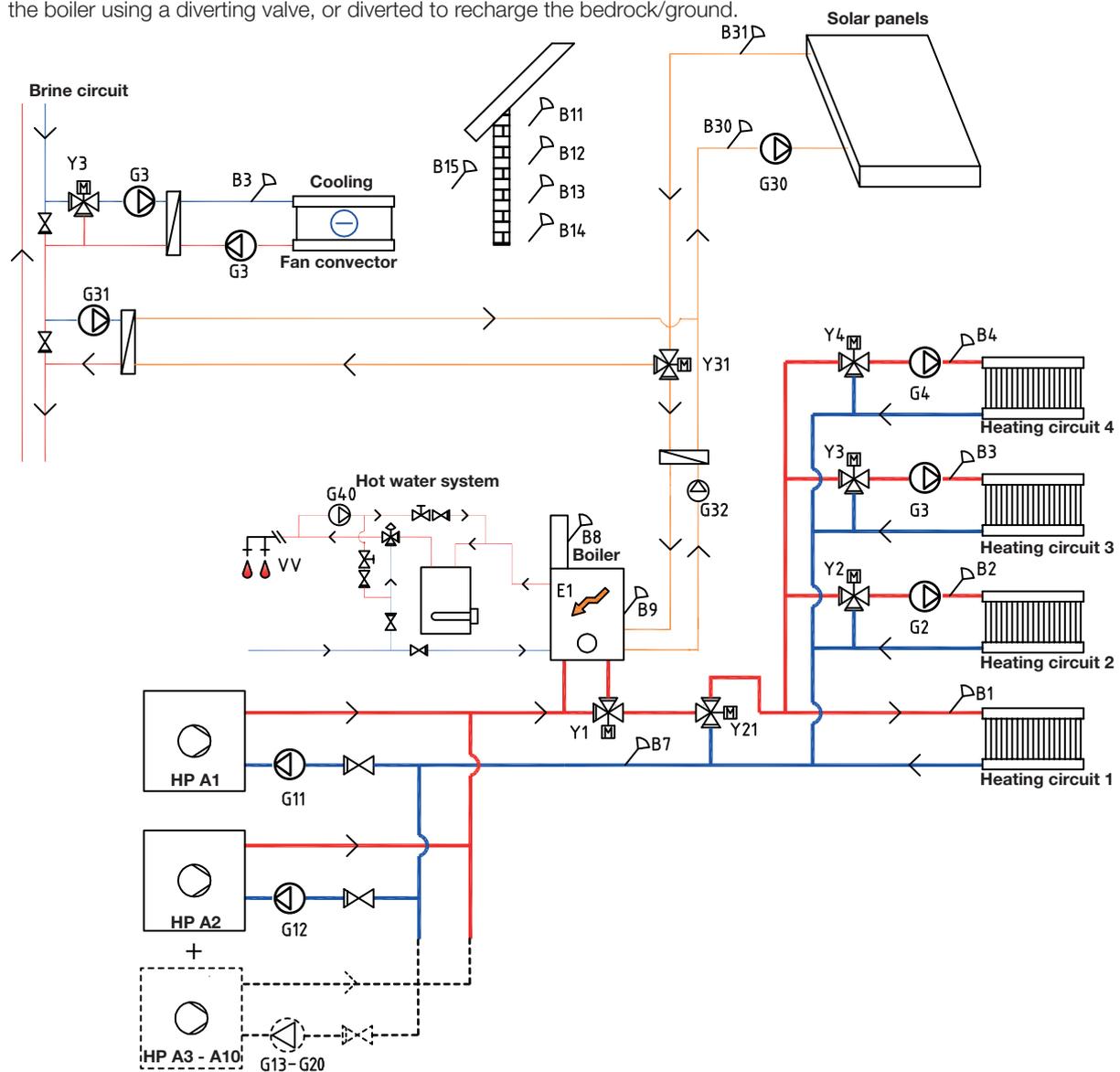
### 9.1 CTC EcoLogic system 1\*

EcoLogic system 1 is designed for connecting the heating circuit to an existing boiler using a mixing valve. The control system starts the boiler only as required, as the mixing valve mixes in the additional heat. The hot water is preheated in the boiler and then heated up in a separate hot water heater.

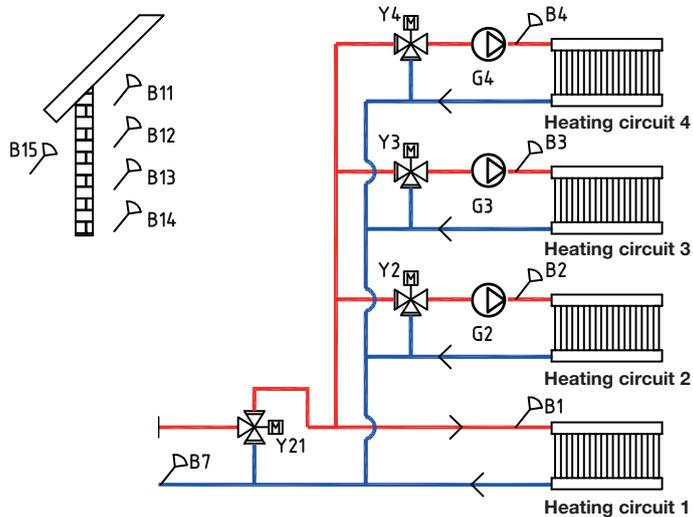
A flue gas sensor may be fitted to the boiler. Solar energy can be connected to the boiler using a diverting valve, or diverted to recharge the bedrock/ground.

\* The CTC EcoLogic Family, system 1, does not include the following subsystems and their associated pumps, valves and sensors:

- Heat pumps 3 to 10
- Heating circuits 3 and 4
- Cooling
- Recharging bedrock
- Solar energy
- Hot water circ. (DHW CIRC.)



## 9.1.1 CTC EcoLogic system 1 – Heating circuit



The CTC EcoLogic can be connected to four different heating circuits, each with separate room sensors. The diverting valve (Y21) is the main valve, and the mixing valves (Y2, Y3 and Y4) are subsidiary valves.

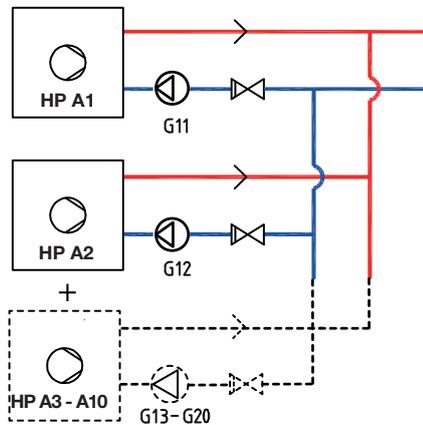
The outdoor sensor (B15) must be fitted to the outer wall of the house, protected from direct sunlight. It is connected using a 2-conductor cable (min. 0.5 mm<sup>2</sup>).

The room sensors (B11 to B14) must be fitted in an open space in the property where a representative temperature is expected. They are connected using a 3-conductor cable (min. 0.5 mm<sup>2</sup>).

The primary flow sensors (B1 to B4) must be placed on the primary flow of the respective heating circuit.

The sensor (B7) is placed on the return flow from the heating circuit.

### 9.1.2 CTC EcoLogic system 1 – Heat pumps



Up to 10 heat pumps (VPA1 to VPA10) can be fitted together with their respective charge pump (G11 to G20).

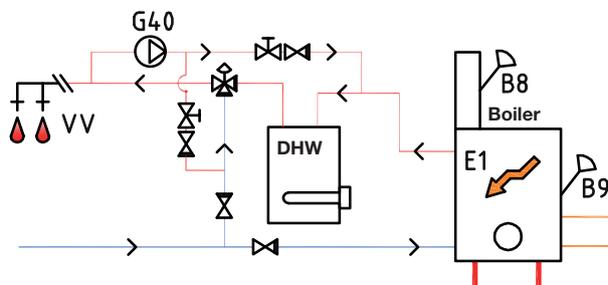
Charge pumps 1 and 2 (G11 and G12) can be controlled from EcoLogic, while charge pumps G13 to G20 are controlled from their respective heat pumps.

The heat pumps are powered separately, not from the CTC EcoLogic.

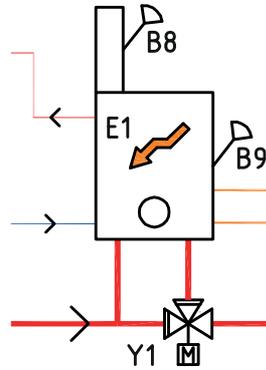
For more information, refer to the Installation and Maintenance instructions of the respective heat pump.

### 9.1.3 CTC EcoLogic system 1 – Hot water

The hot water is preheated in the boiler by the heat pump and then heated up in a separate hot water heater (DHW heater). Hot water (DHW) circulation is obtained from the pump (G40). Fresh hot water from the hot water heater is mixed in by the mixing valve and chilled water released down into the tank before once more being heated up. The non-return valves are necessary to ensure that circulation proceeds as intended. Control valves allow the desired flow of the circuit to be adjusted.



### 9.1.4 CTC EcoLogic system 1 – Additional heat (Wood boiler)



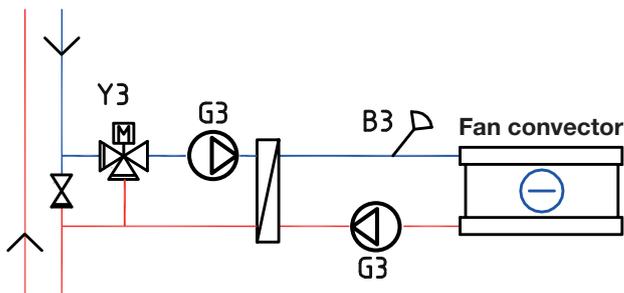
The existing boiler is connected to the heating circuit via a mixing valve (Y1).

When wood burning is taking place, the sensor (B8) measures the flue gas temperature and signals to the control system that wood is being lit.

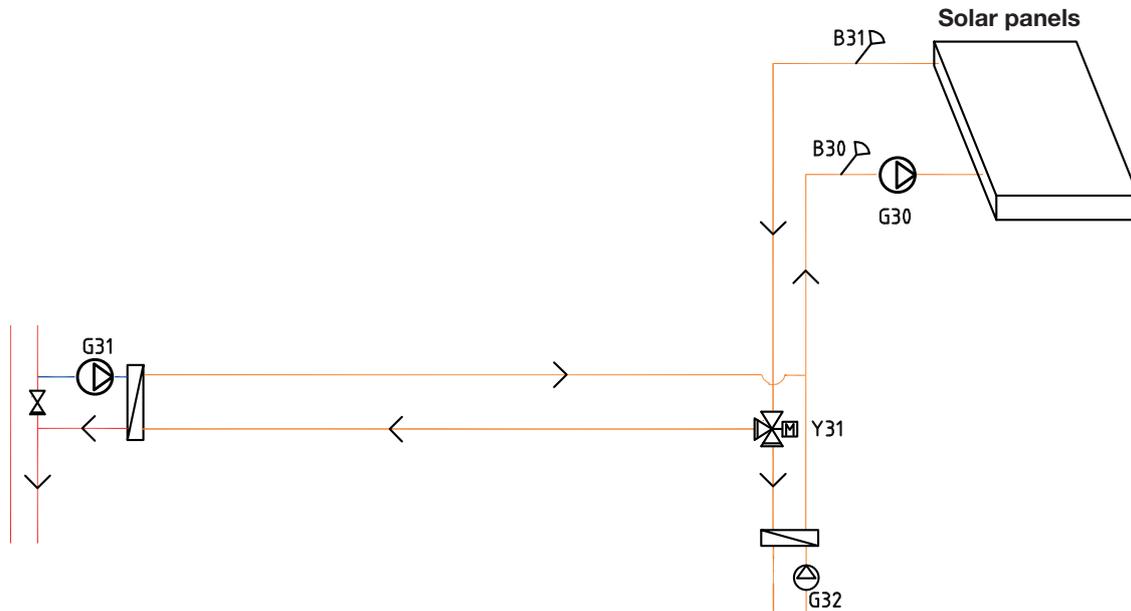
The sensor (B9) should be fitted so that the boiler temperature is measured.

### 9.1.5 CTC EcoLogic system 1 – Cooling

If the Cooling function is defined, mixing valve Y3, charge pump G3 and sensor B3 should be used for the cooling installation (not heating circuit 3). For details on how to connect, see the Installation and Maintenance instructions for the cooling installation.



### 9.1.6 CTC EcoLogic system 1 – Solar energy



Solar panels can be connected to the boiler using a diverting valve (Y31), or to a ground heating loop in order to recharge the bedrock/ground.

The speed-controlled pump (G30) and sensors B30 and B31 are fitted next to the solar panels.

For recharging the bedrock/ground, a diverting valve (Y31), heat exchanger, charge pump (G31) and non-return valve are connected.

When the recharging function is in operation, the CTC EcoLogic also starts the brine pump in the heat pump (CTC EcoPart). The charge pump for recharging the bore hole (G31) ensures there is sufficient flow through the heat exchanger.

The speed-controlled pump (G32) and a heat exchanger are fitted for charging the hot water.

## 9.2 CTC EcoLogic systems 2 and 3\*

The configuration of EcoLogic systems 2 and 3 differ in terms of the location of the additional heat source.

### EcoLogic system 2

In EcoLogic system 2, the additional heat is located before the hot water system, while in EcoLogic system 3 it is located after the hot water system.

Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. If more heat pumps are installed, these should be connected to the heating circuit.

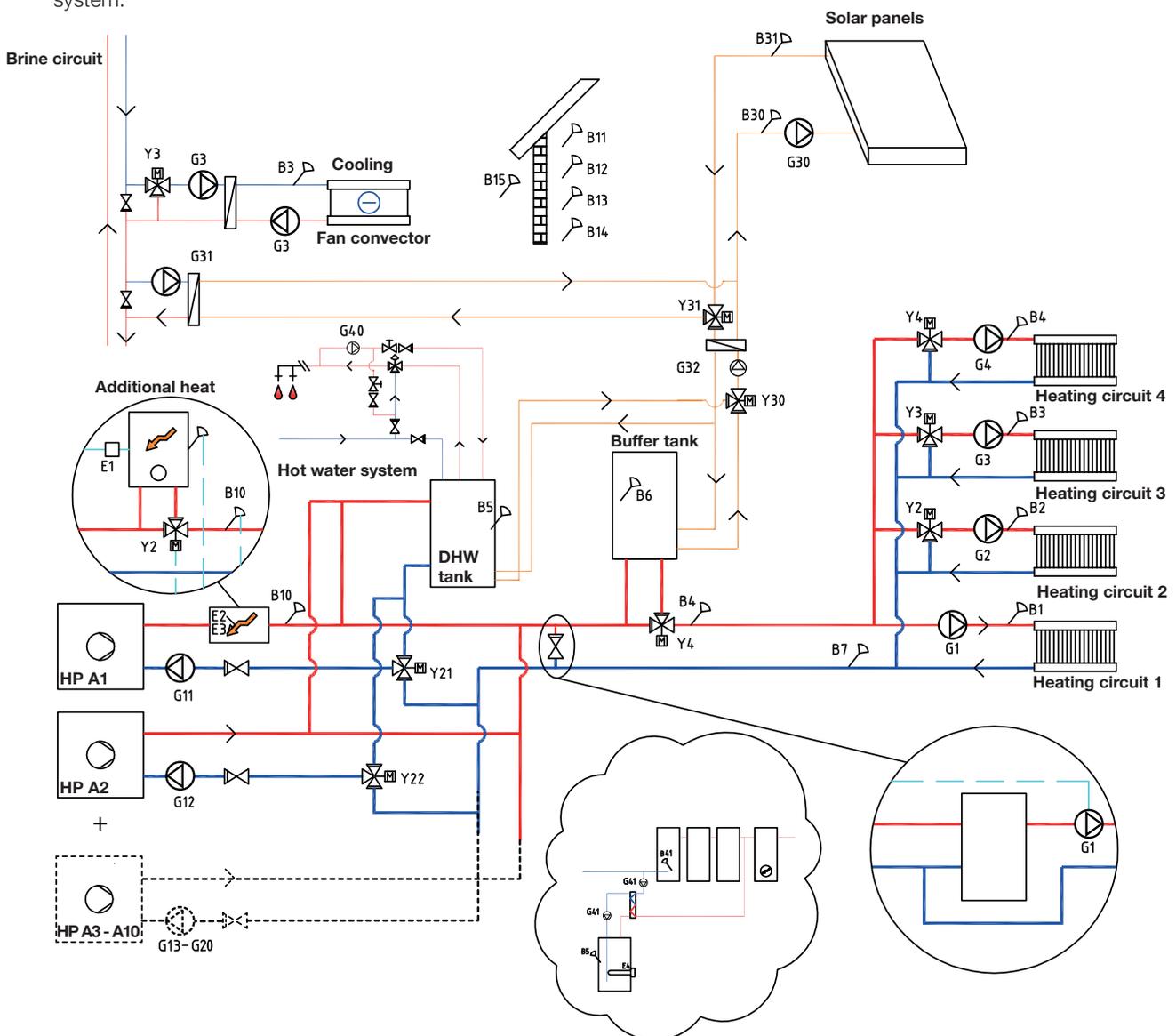
When connecting the buffer tank, the mixing valve (Y4) is used to connect the tank to the system (not to heating circuit 4).

Solar energy can be connected either to the hot water tank or to the buffer tank using diverting valves. The solar energy can also be used to recharge the bedrock/ground.

Cooling can easily be connected to the bedrock/ground source heating system.

\* The CTC EcoLogic Family, systems 2 and 3, do not include the following subsystems and their associated pumps, valves and sensors:

- Heat pumps 3 to 10
- Heating circuits 3 and 4
- Cooling
- Recharging bedrock
- Solar energy
- Hot water circ. (DHW CIRC.)
- External hot water tank
- Buffer tank



### EcoLogic system 3

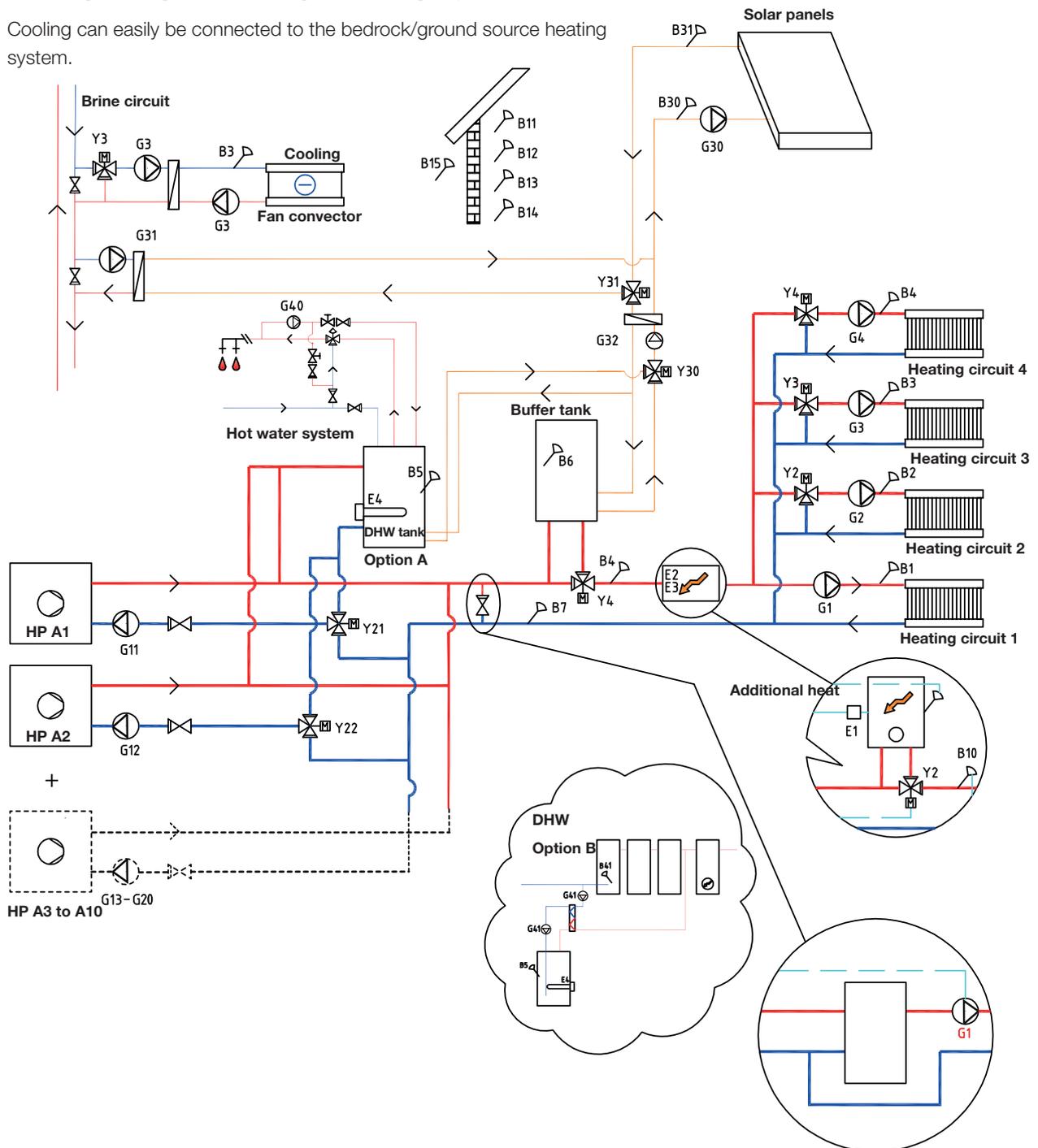
In EcoLogic system 3, the additional heat is located after the hot water system, while in EcoLogic system 2 it is located before the hot water system. In system 3 an immersion heater is installed in the hot water tank instead.

When connecting the buffer tank, the mixing valve (Y4) is used to connect the tank to the system (not to heating circuit 4).

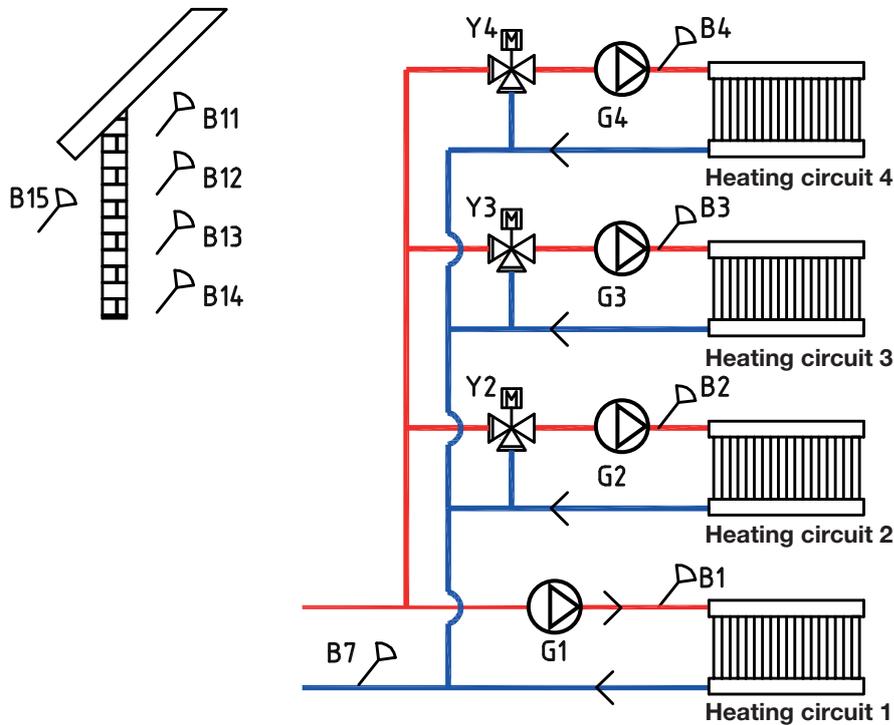
Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. The other heat pumps are connected to the heating circuit.

Solar energy can be connected either to the hot water tank or to a buffer tank using diverting valves, or to a ground heating loop.

Cooling can easily be connected to the bedrock/ground source heating system.



## 9.2.1 CTC EcoLogic systems 2 and 3 – Heating circuit



The CTC EcoLogic can be connected to four different heating circuits, each with separate room sensors. Heating circuits 2, 3 and 4 are connected via mixing valves (Y2, Y3 and Y4). If additional heat (E1) is defined, the mixing valve (Y2) should be used to connect additional heat to the system (not to heating circuit 2).

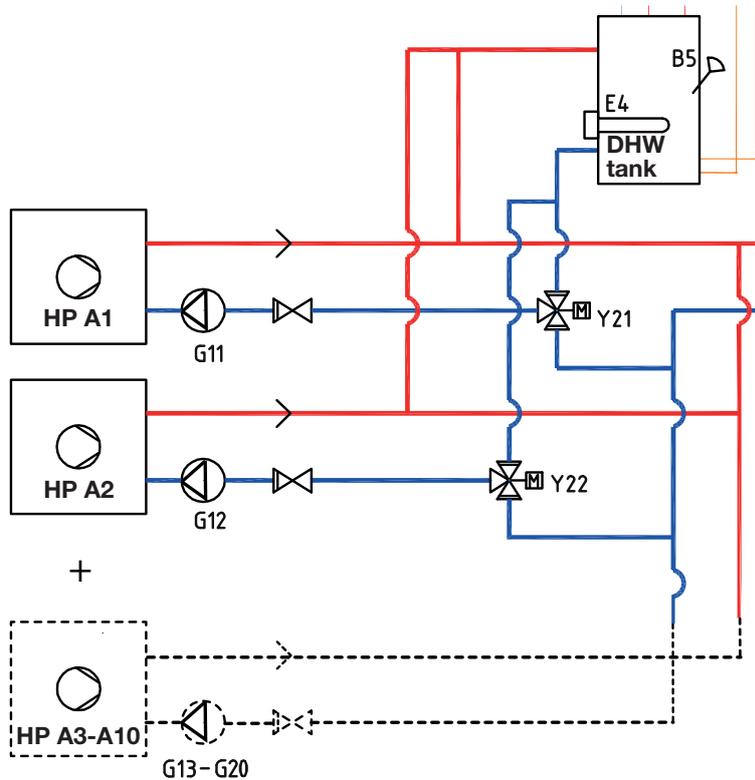
The outdoor sensor (B15) must be fitted to the outer wall of the house, protected from direct sunlight. It is connected using a 2-conductor cable (min. 0.5 mm<sup>2</sup>).

The room sensors (B11 to B14) must be fitted in an open space in the property where a representative temperature is expected. They are connected using a 3-conductor cable (min. 0.5 mm<sup>2</sup>).

The primary flow sensors (B1 to B4) must be placed on the primary flow of the respective heating circuit.

The sensor (B7) is placed on the return flow from the heating circuit.

9.2.2 CTC EcoLogic systems 2 and 3 – Heat pumps



Up to 10 heat pumps (VPA1 to VPA10) can be fitted together with their respective charge pump (G11 to G20).

Charge pumps 1 and 2 (G11 and G12) can be controlled from EcoLogic, while charge pumps G13 to G20 are controlled from their respective heat pumps.

Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. If more heat pumps are installed, these should be connected to the heating circuit.

The heat pumps are powered separately, not from the CTC EcoLogic.

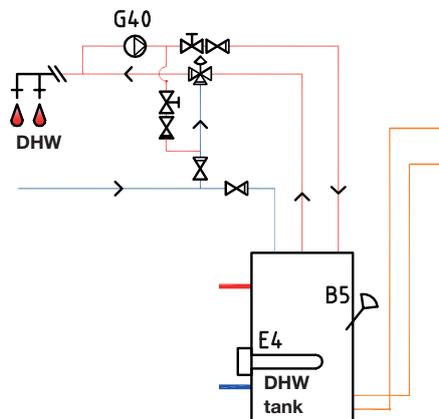
For more information, refer to the Installation and Maintenance instructions of the respective heat pump.

### 9.2.3 CTC EcoLogic systems 2 and 3 – Hot water

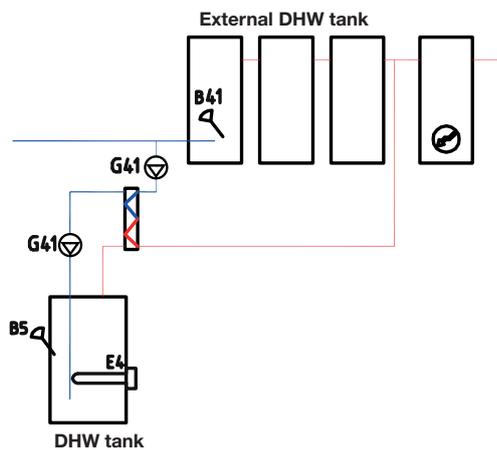
In EcoLogic system 3, the hot water tank can be equipped with an immersion heater (E4) if additional heat (E1, E2 or E3) is installed after the hot water tank. Sensor B5 should be installed in the hot water tank.

Hot water (DHW) circulation is obtained from the pump (G40). Fresh hot water from the hot water tank is mixed in by the mixing valve and chilled water released down into the tank before once more being heated up. The non-return valves are necessary to ensure that circulation proceeds as intended. Control valves allow the desired flow of the circuit to be adjusted.

#### Option A



#### Option B



Option B illustrates the possibility of installing (a) hot water tank(s) which is/ are then connected via a heat exchanger to the lower hot water tank shown in the figure. This solution requires the installation of a sensor (B41) in the external buffer tank, as well as circulation pumps (G41) before and after the heat exchanger.

### 9.2.4 CTC EcoLogic systems 2 and 3 – Additional heat

In EcoLogic system 2, the additional heat source (E1, E2 or E3) is connected before the hot water tank, while in EcoLogic system 3 it is connected after the hot water system. Additional heat (E4) can then be connected directly to the tank instead.

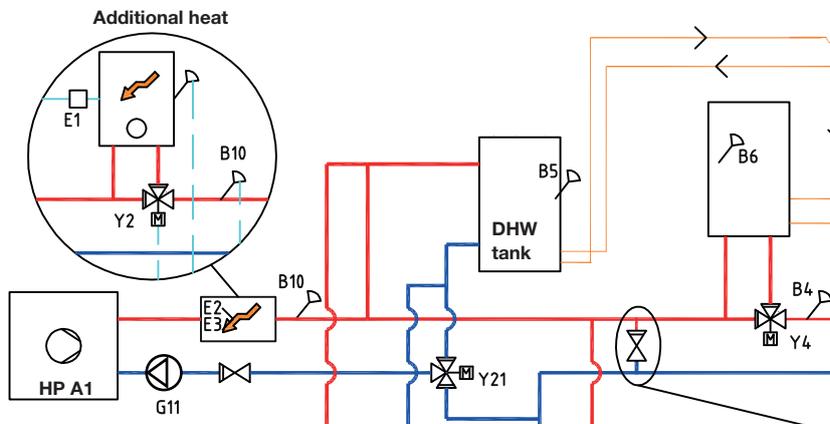
When additional heat (E1) is connected, the mixing valve (Y2) is used to connect the add heat to the system (not to heating circuit 2).

If the buffer tank is connected, the mixing valve (Y4) is used to connect the tank to the system (not to heating circuit 4). Sensor B6 should be installed in the buffer tank.

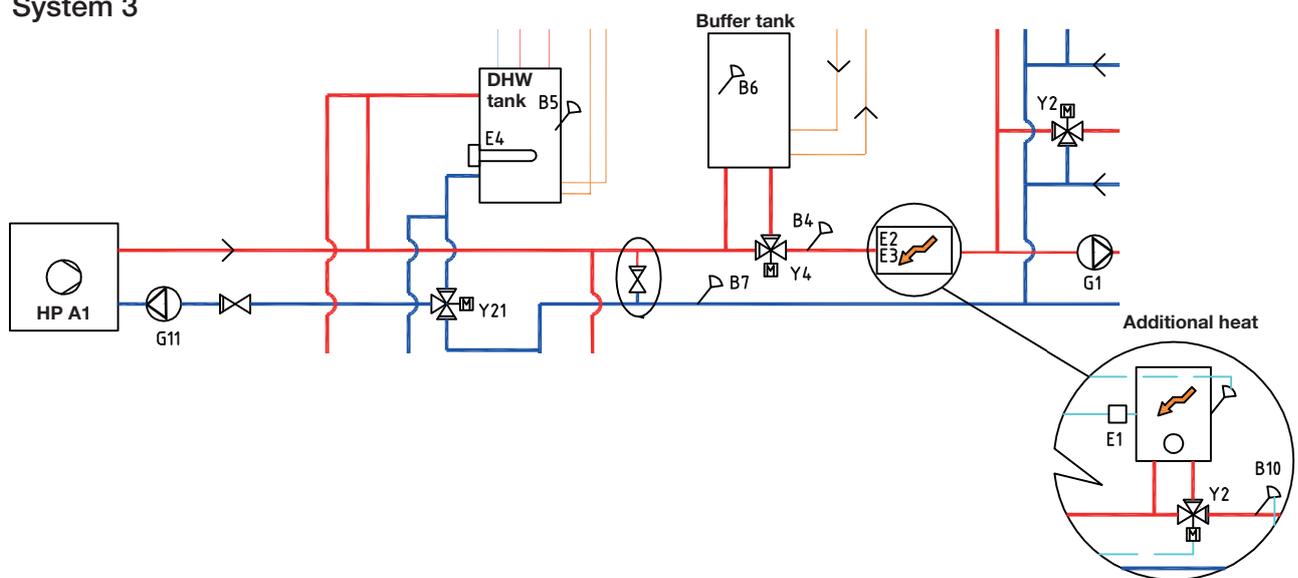
Sensor B10 should be connected to measure the temperature coming from the additional heat.

**!** If charge pump G11 is used for the flow heater, the control signal must be taken from CTC EcoLogic.

#### System 2

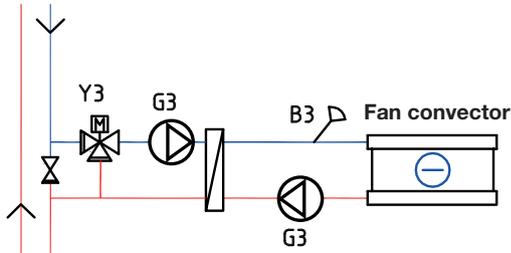


#### System 3

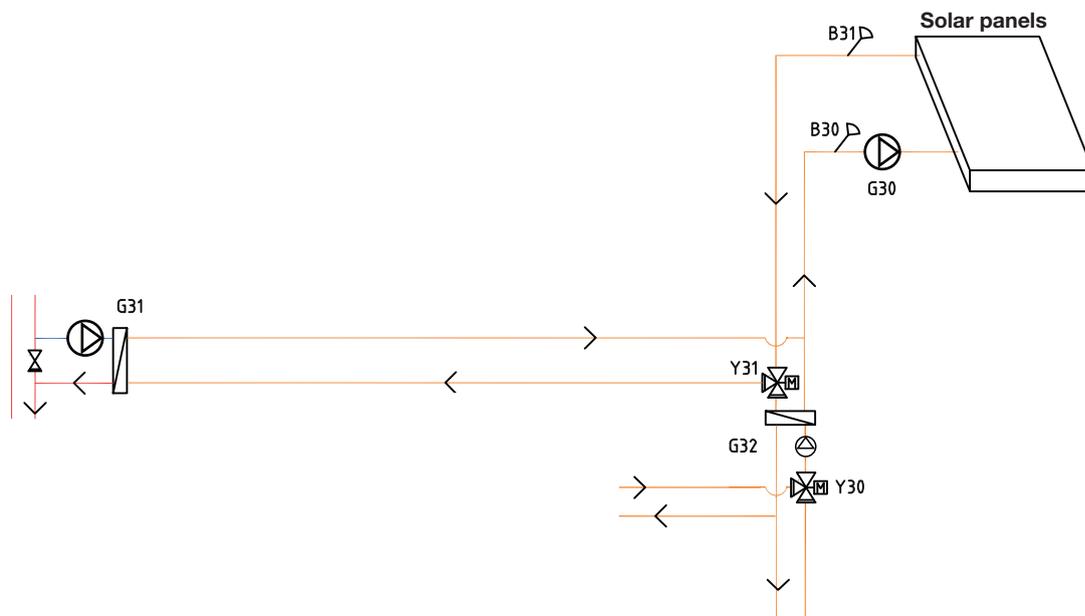


### 9.2.5 CTC EcoLogic systems 2 and 3 – Cooling

If the Cooling function is defined, mixing valve Y3, charge pump G3 and sensor B3 should be used for the cooling installation (not heating circuit 3). For details on how to connect, see the Installation and Maintenance instructions for the cooling installation.



### 9.2.6 CTC EcoLogic systems 2 and 3 – Solar energy



From the solar panels, the heat flow is directed to the hot water tank/buffer tank or to the ground heating loop in order to recharge the bedrock/ground once the hot water tank is fully charged.

The speed-controlled pump (G30) and sensors B31 and B30 are fitted next to the solar panels.

For recharging the bedrock/ground, a diverting valve (Y31), heat exchanger and charge pump (G31) are connected.

The diverting valve (Y31) is fitted together with the speed-controlled pump (G32) and heat exchanger in order to direct the flow towards the hot water tank or the buffer tank. Heat exchangers and pumps (G32) do not need to be installed to the solar heating circuit if there is already a loop in the connected hot water/heating tank.

When the recharging function is in operation, the CTC EcoLogic also starts the brine pump in the heat pump (CTC EcoPart). The charge pump for recharging the bore hole (G31) ensures there is sufficient flow through the heat exchanger.

### 9.3 CTC EcoLogic systems 4 and 5\*

The configuration of EcoLogic systems 4 and 5 differ in terms of the location of the additional heat source.

#### EcoLogic system 4

System 4 includes pool heating.

All heating from the heat pumps and additional heat goes to the heating circuit through the buffer tank, which maintains a constant temperature to the heating circuit.

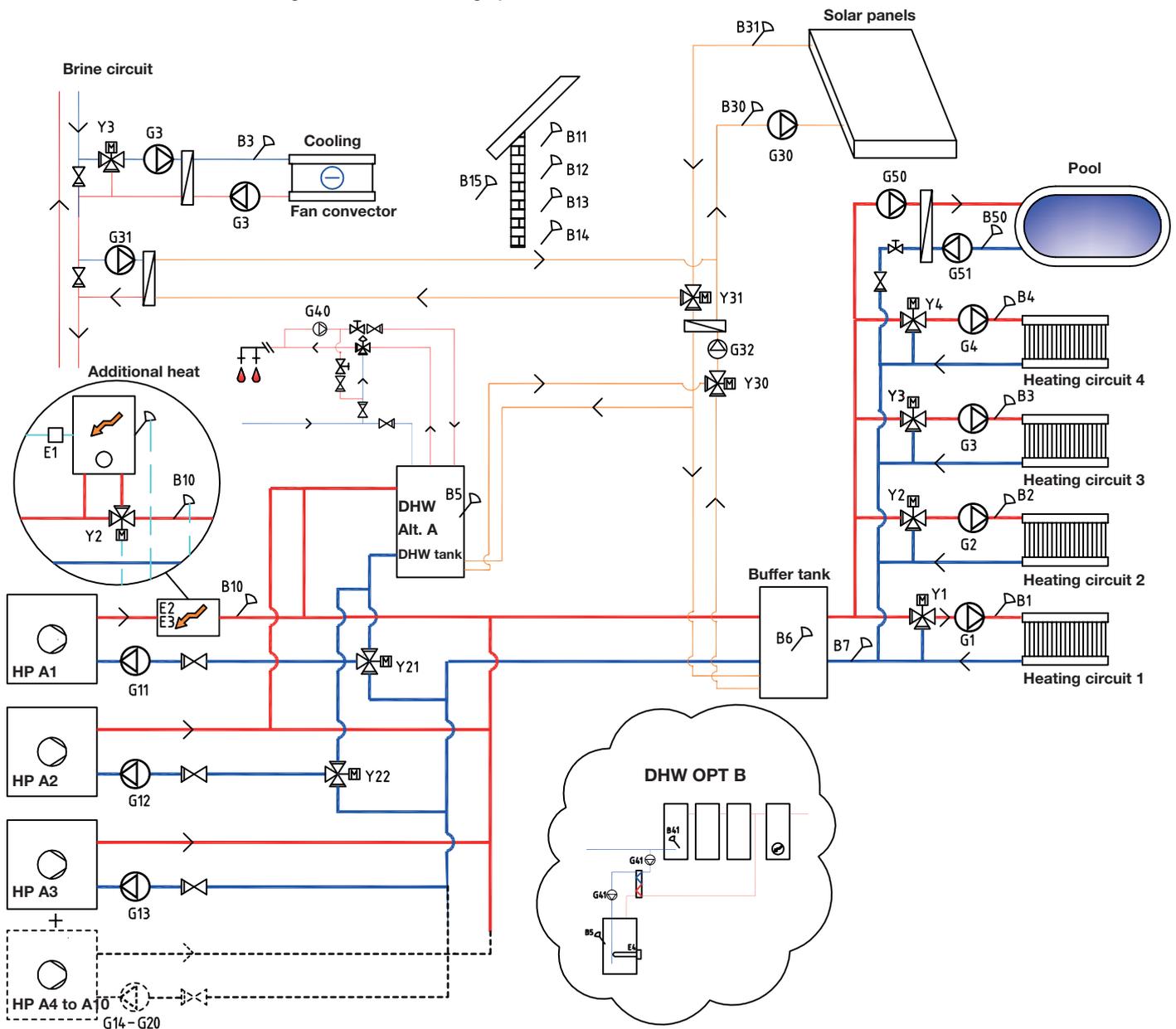
In system 4, the additional heat is located before the hot water system, while in EcoLogic system 5 it is located after the hot water system.

Heat pumps A1 and A2 can be connected using diverting valves that direct the heat flow either to the hot water system or to the heating circuit. The other heat pumps are connected to the heating circuit.

Solar energy can be connected either to the hot water tank or to a buffer tank using diverting valves, or to a ground heating loop. Cooling can easily be connected to the bedrock/ground source heating system.

\* The CTC EcoLogic Family, systems 4 and 5, do not include the following sub-systems and their associated pumps, valves and sensors:

- Heat pumps 3 to 10
- Heating circuits 3 and 4
- Cooling
- Recharging bedrock
- Solar energy
- Hot water circ. (DHW CIRC.)
- External hot water tank
- Pool



### EcoLogic system 5

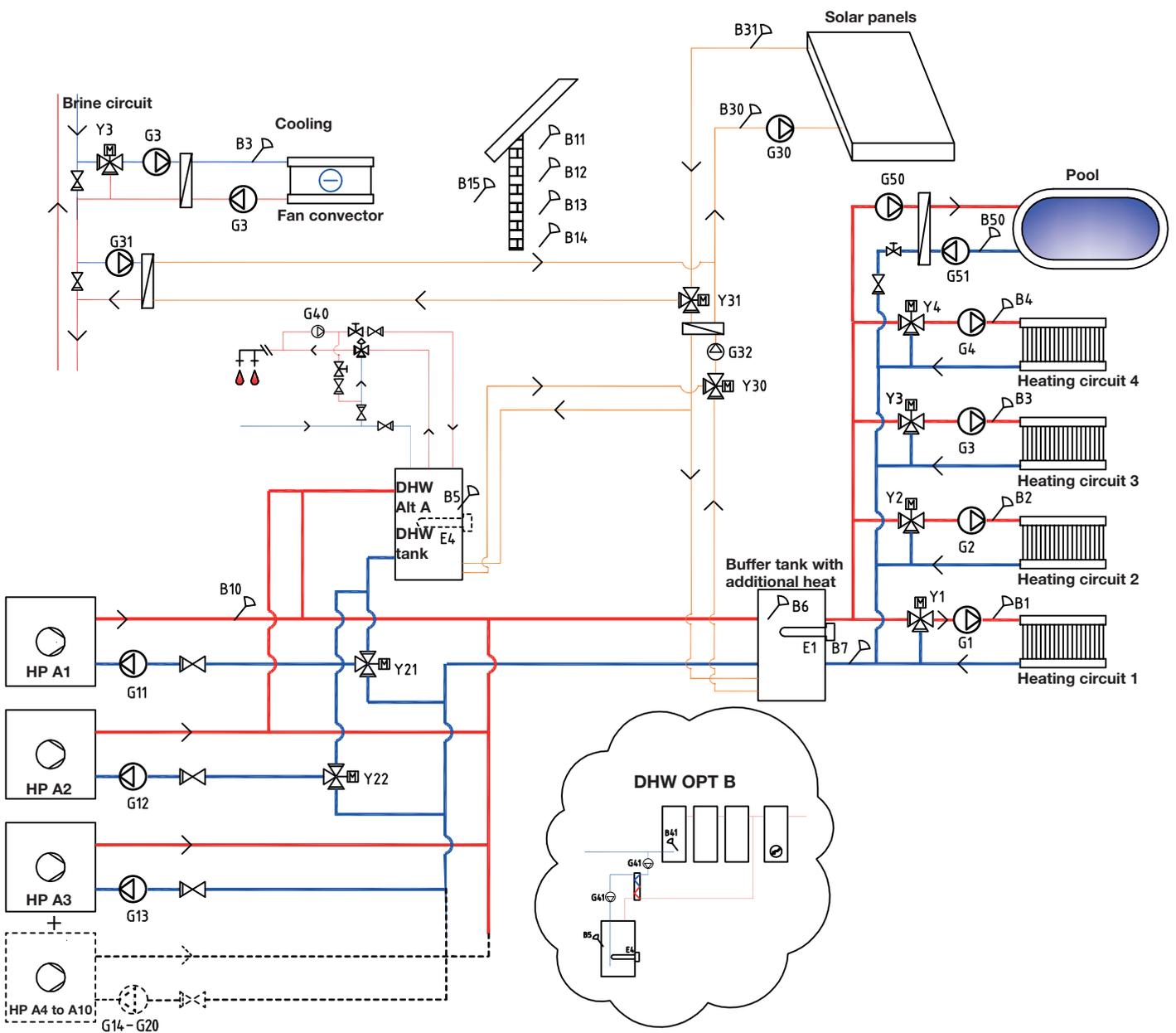
All heating from the heat pumps and additional heat goes to the heating circuit through the buffer tank, which maintains a constant temperature to the heating circuit.

In EcoLogic system 5, the additional heat is located after the hot water system, while in EcoLogic system 4 it is located before the hot water system.

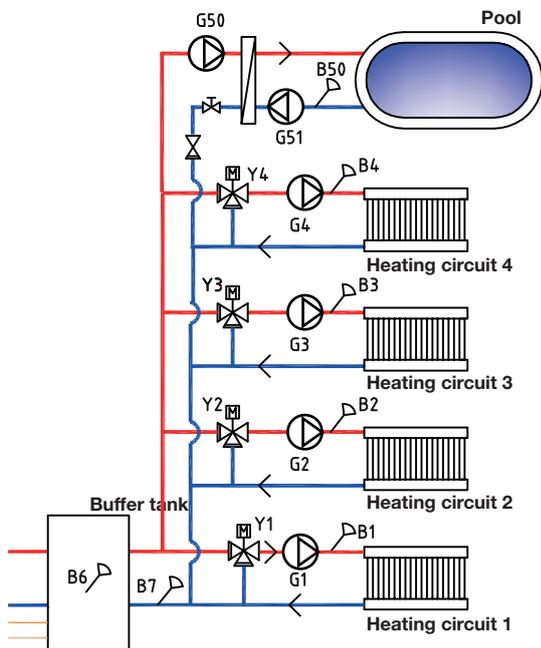
Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. The other heat pumps are connected to the heating circuit.

Solar energy can be connected either to the hot water tank or to a buffer tank using diverting valves, or to a ground heating loop.

Cooling can easily be connected to the bedrock/ground source heating system.



**9.3.1 CTC EcoLogic systems 4 and 5 – Heating circuit**



The CTC EcoLogic can be connected to four different heating circuits, each with separate room sensors. Heating circuits 1 to 4 are connected via mixing valves (Y1, Y2, Y3 and Y4).

For EcoLogic system 4, if additional heat (E1) is defined, the mixing valve (Y2) should be used to connect additional heat to the system (not to heating circuit 2).

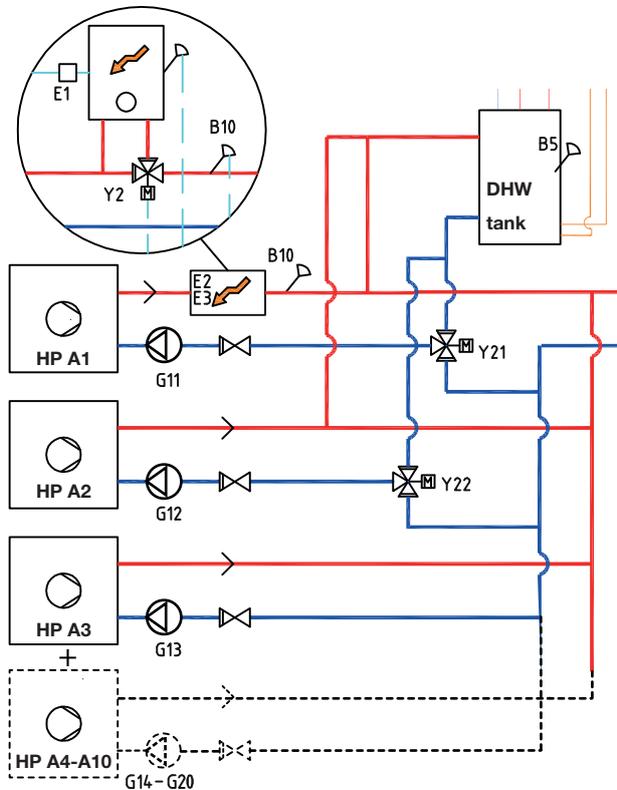
The outdoor sensor (B15) must be fitted to the outer wall of the house, protected from direct sunlight. It is connected using a 2-conductor cable (min. 0.5 mm<sup>2</sup>).

The room sensors (B11 to B14) must be fitted in an open space in the property where a representative temperature is expected. They are connected using a 3-conductor cable (min. 0.5 mm<sup>2</sup>).

The primary flow sensors (B1 to B4) must be placed on the primary flow of the respective heating circuit.

The sensor (B7) is placed on the return flow from the heating circuit.

### 9.3.2 CTC EcoLogic systems 4 and 5 – Heat pumps



Up to 10 heat pumps (VPA1 to VPA10) can be fitted together with their respective charge pump (G11 to G20).

Charge pumps 1 and 2 (G11 and G12) can be controlled from CTC EcoLogic, while charge pumps G13 to G20 are controlled from their respective heat pumps.

Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. If more heat pumps are installed, these should be connected to the heating circuit. Be careful to ensure that the ports on the valves are installed correctly.

In system 4, the primary flow from heat pump A1 is connected to the additional heat in accordance with the figure above.

The heat pumps are powered separately, not from EcoLogic.

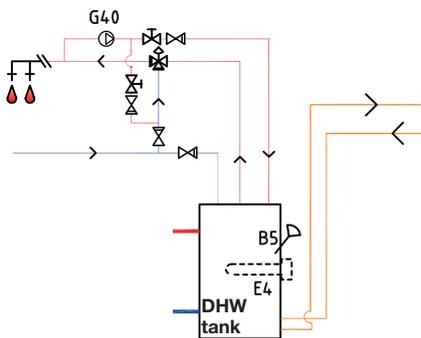
For more information, refer to the Installation and Maintenance instructions of the respective heat pump.

### 9.3.3 EcoLogic systems 4 and 5 – Hot water

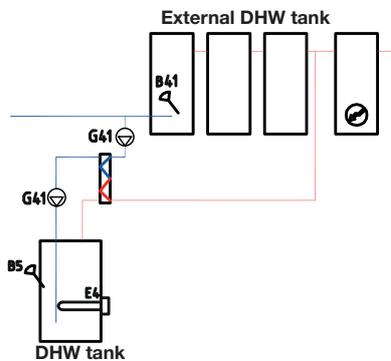
In EcoLogic system 5, the hot water tank can be equipped with an immersion heater (E4) as additional heat (E1, E2 or E3) has not been installed before the hot water tank (as in EcoLogic system 4). Sensor B5 should be installed in the hot water tank.

Hot water (DHW) circulation is obtained from the pump (G40). Fresh hot water from the hot water tank is mixed in by the mixing valve and chilled water released down into the tank before once more being heated up. The non-return valves are necessary to ensure that circulation proceeds as intended. Control valves allow the desired flow of the circuit to be adjusted.

#### Alternative A



#### Alternative B



Option B illustrates the possibility of installing (a) hot water tank(s) which is/ are then connected via a heat exchanger to the lower hot water tank shown in the figure. This solution requires the installation of a sensor (B41) in the external buffer tank, as well as circulation pumps (G41) before and after the heat exchanger.

### 9.3.4 CTC EcoLogic systems 4 and 5 – Additional heat

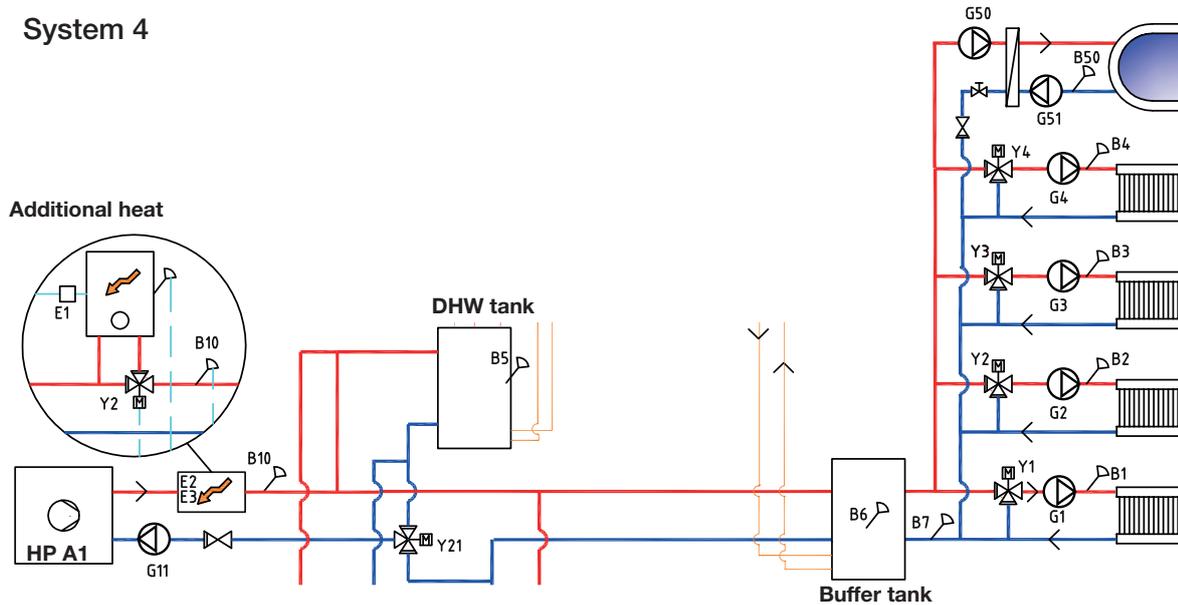
In EcoLogic system 4, the additional heat source (E1, E3 or E3) is connected before the hot water system as shown in the figure. When additional heat (E1) is connected, the mixing valve (Y2) is used to connect the add heat to the system (not to heating circuit 2).

Sensor B10 should be connected to measure the temperature coming from the additional heat.

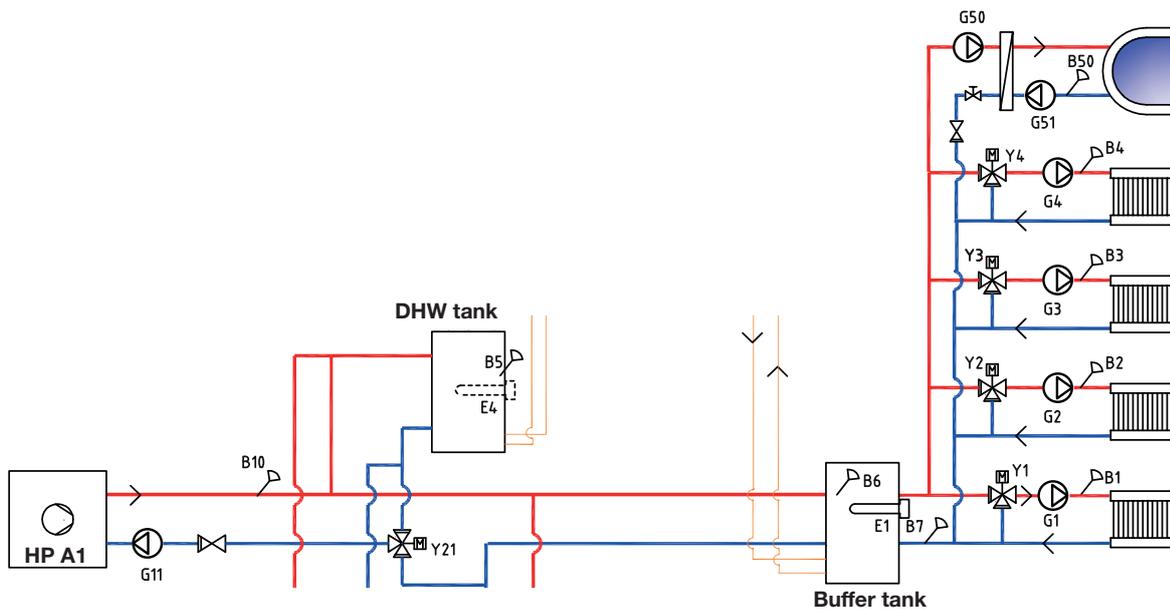
In EcoLogic system 5, the additional heat (E1) is connected to the buffer tank. The hot water tank can then be provided with additional heat (E4).

**!** If charge pump G11 is used for the flow heater, the control signal must be taken from CTC EcoLogic.

#### System 4

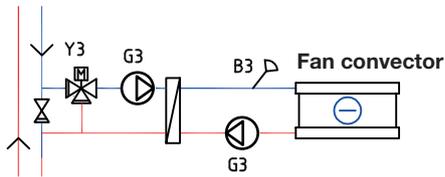


#### System 5



### 9.3.5 CTC EcoLogic systems 4 and 5 – Cooling

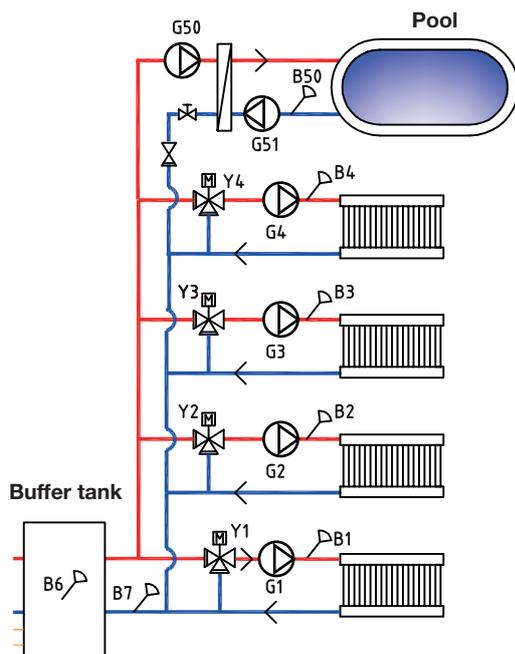
If the Cooling function is defined, mixing valve Y3, charge pump G3 and sensor B3 should be used for the cooling installation (not heating circuit 3). For details on how to connect, see the Installation and Maintenance instructions for the cooling installation.



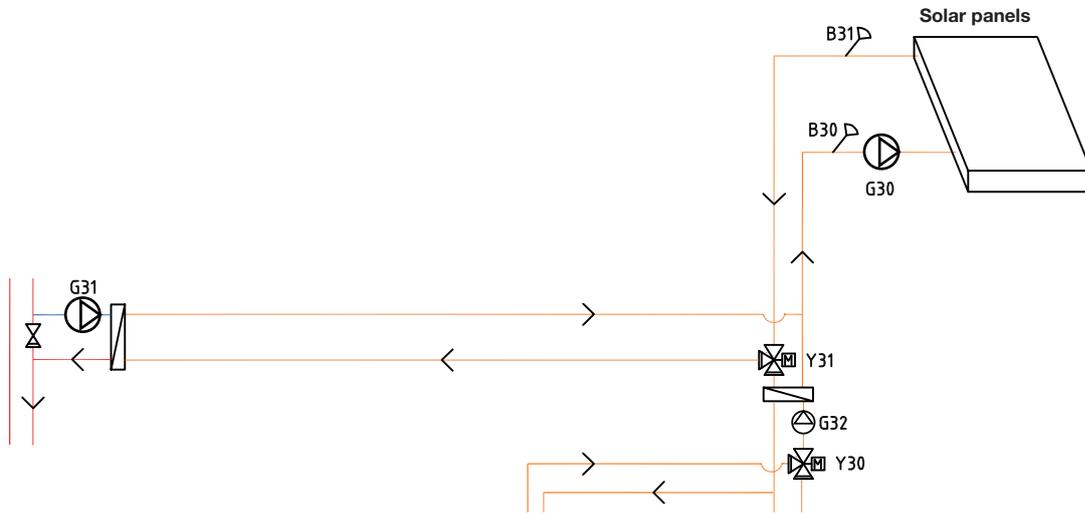
### 9.3.6 CTC EcoLogic systems 4 and 5 – Pool

The pool can be connected in parallel with the heating circuit.

Charge pump G50 and circulation pump G51 are connected together with sensor B50 and the heat exchanger.



9.3.7 CTC EcoLogic systems 4 and 5 – Solar energy



From the solar panels, the heat flow is directed to the hot water tank/buffer tank or to the ground heating loop in order to recharge the bedrock/ground once the hot water tank is fully charged.

The speed-controlled pump (G30) and sensors B31 and B30 are fitted next to the solar panels.

For recharging the bedrock/ground, a diverting valve (Y31), heat exchanger and charge pump (G31) are connected.

The diverting valve (Y31) is fitted together with the speed-controlled pump (G32) and heat exchanger in order to direct the flow towards the hot water tank or the buffer tank. Heat exchangers and pumps (G32) do not need to be installed to the solar heating circuit if there is already a loop in the connected hot water/heating tank.

When the recharging function is in operation, the CTC EcoLogic also starts the brine pump in the heat pump (CTC EcoPart). The charge pump for recharging the bore hole (G31) ensures there is sufficient flow through the heat exchanger.

## 9.4 CTC EcoLogic system 6\*

System 6 includes pool heating.

Additional heat can be mixed with heating from the buffer tank and output into the heating circuit by a bivalent mixing valve (Y1).

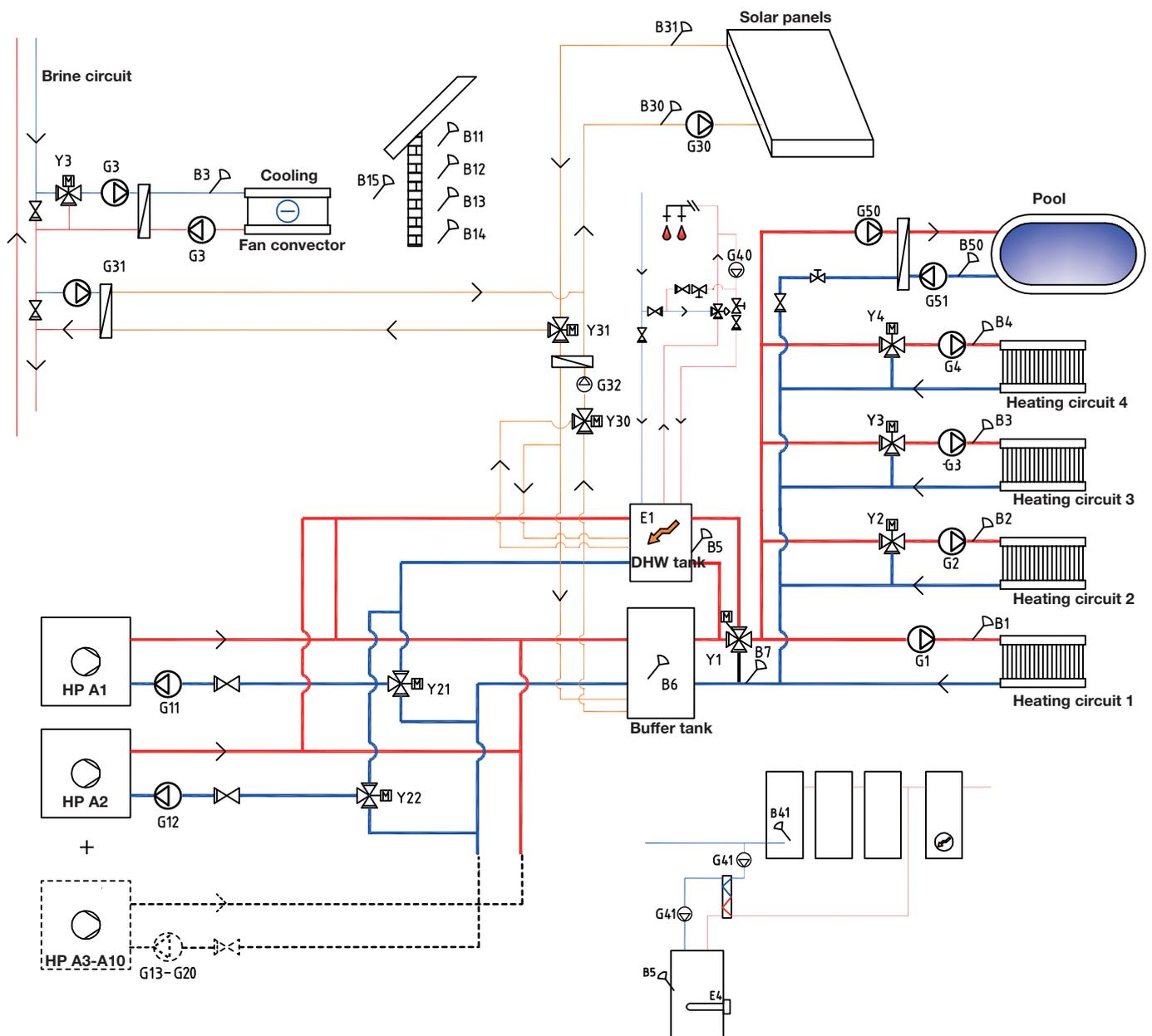
Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. The other heat pumps are connected to the heating circuit.

Solar energy can be connected either to the hot water tank or to a buffer tank using diverting valves, or to a ground heating loop.

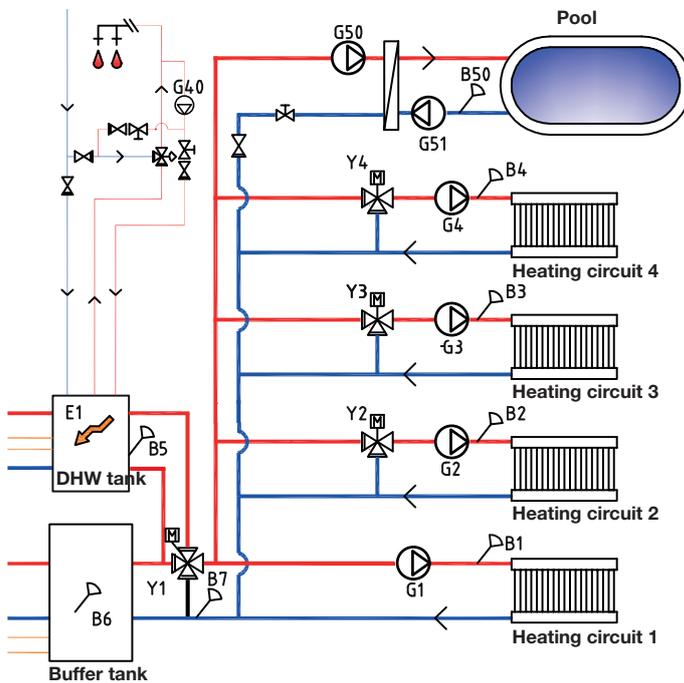
Cooling can easily be connected to the bedrock/ground source heating system.

\* The CTC EcoLogic Family, system 6, does not include the following subsystems and their associated pumps, valves and sensors:

- Heat pumps 3 to 10
- Heating circuits 3 and 4
- Cooling
- Recharging bedrock
- Solar energy
- Hot water circ. (DHW CIRC.)
- External hot water tank
- Pool



### 9.4.1 CTC EcoLogic system 6 – Heating circuit



The CTC EcoLogic can be connected to four different heating circuits, each with separate room sensors. Heating circuits 2, 3 and 4 are connected via mixing valves (Y2, Y3 and Y4).

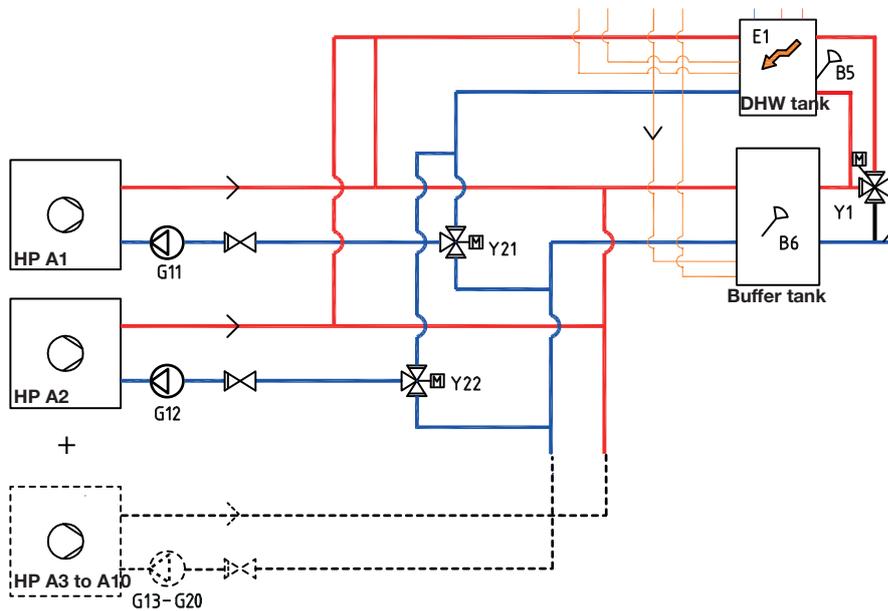
The outdoor sensor (B15) must be fitted to the outer wall of the house, protected from direct sunlight. It is connected using a 2-conductor cable (min. 0.5 mm<sup>2</sup>).

The room sensors (B11 to B14) must be fitted in an open space in the property where a representative temperature is expected. They are connected using a 3-conductor cable (min. 0.5 mm<sup>2</sup>).

The primary flow sensors (B1 to B4) must be placed on the primary flow of the respective heating circuit.

The sensor (B7) is placed on the return flow from the heating circuit.

9.4.2 CTC EcoLogic system 6 – Heat pumps



Up to 10 heat pumps (VPA1 to VPA10) can be fitted together with their respective charge pump (G11 to G20).

Charge pumps 1 and 2 (G11 and G12) can be controlled from CTC EcoLogic, while charge pumps G13 to G20 are controlled from their respective heat pumps.

Heat pumps A1 and A2 can be connected using diverting valves that direct the flow either to the hot water system or the heating circuit. If more heat pumps are installed, these should be connected to the heating circuit. Be careful to ensure that the ports on the valves are installed correctly.

The heat pumps are powered separately, not from EcoLogic.

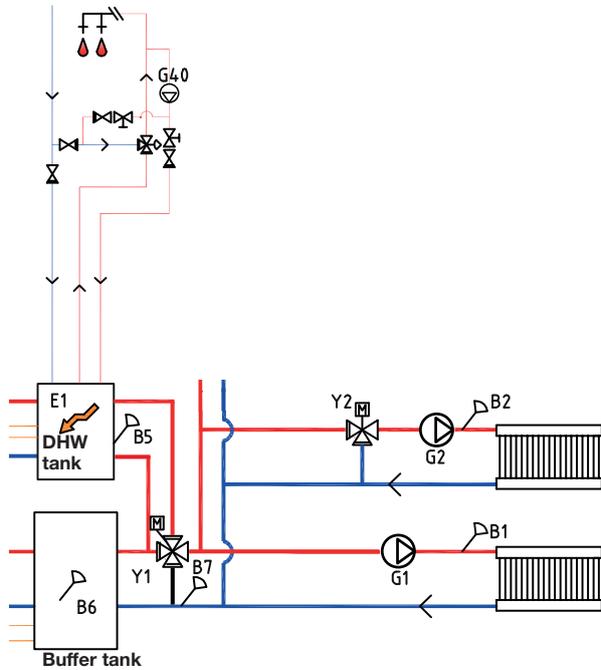
For more information, refer to the Installation and Maintenance instructions of the respective heat pump.

### 9.4.3 CTC EcoLogic system 6 – Hot water

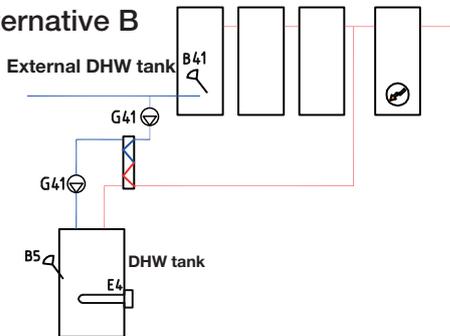
The hot water tank and additional heat E1 are connected to a 4-way bivalent mixing valve (Y1).

Sensor B5 should be installed in the hot water tank.

#### Alternative A



#### Alternative B

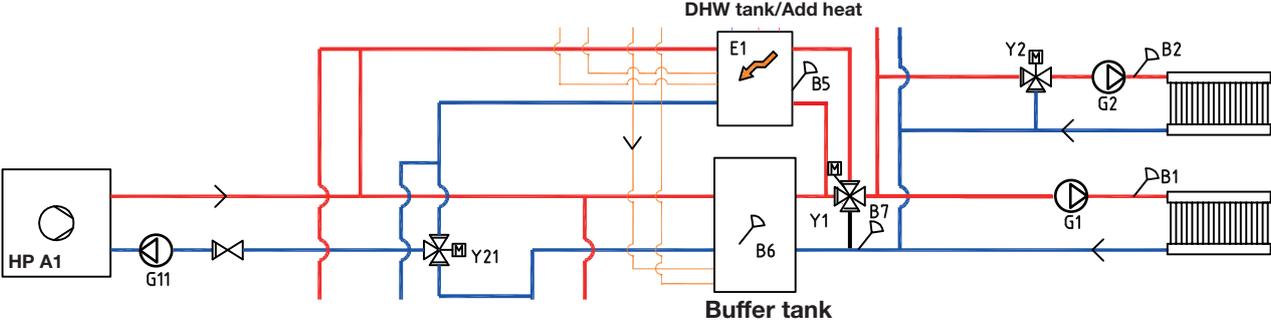


Hot water (DHW) circulation is obtained from the pump (G40). Fresh hot water from the hot water tank is mixed in by the mixing valve and chilled water released down into the tank before once more being heated up. The non-return valves are necessary to ensure that circulation proceeds as intended. Control valves allow the desired flow of the circuit to be adjusted.

Option B illustrates the possibility of installing (a) hot water tank(s) which is/ are then connected via a heat exchanger to the lower hot water tank shown in the figure. This solution requires the installation of a sensor (B41) in the external buffer tank, as well as circulation pumps (G41) before and after the heat exchanger.

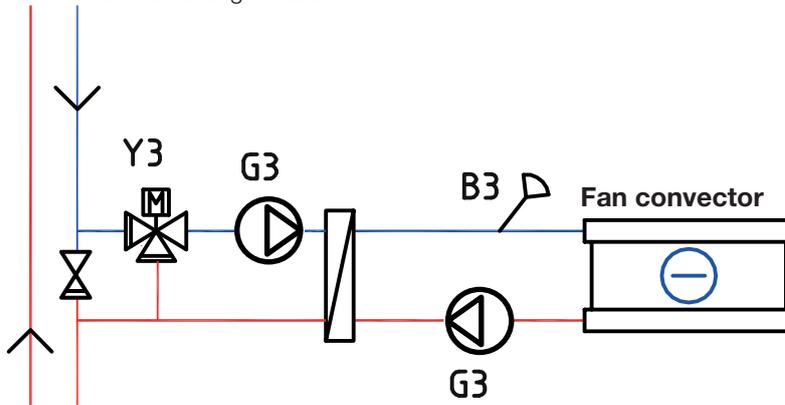
9.4.4 CTC EcoLogic system 6 – Additional heat

Additional heat E1 is connected to the hot water tank and connected to the heating circuit in parallel with the buffer tank using a 4-way bivalent mixing valve.



### 9.4.6 CTC EcoLogic system 6 – Cooling

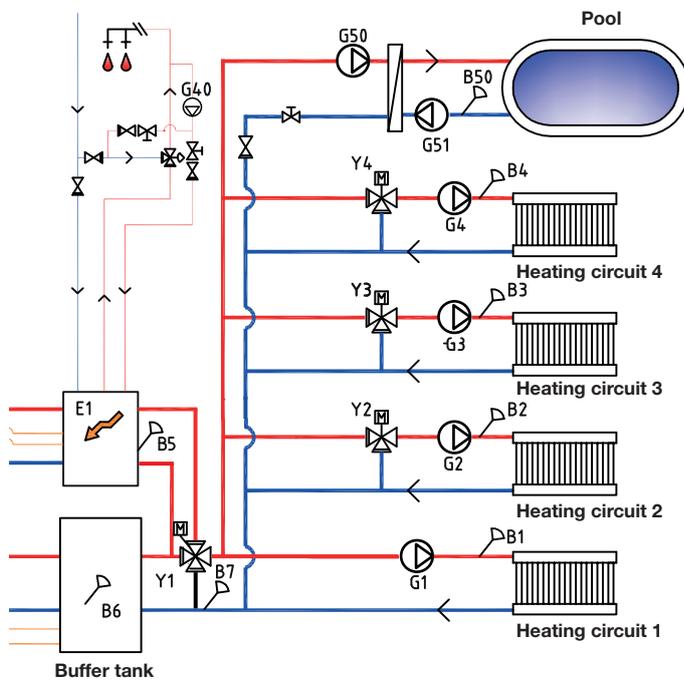
If the Cooling function is defined, mixing valve Y3, charge pump G3 and sensor B3 should be used for the cooling installation (not heating circuit 3). For details on how to connect, see the Installation and Maintenance instructions for the cooling installation.



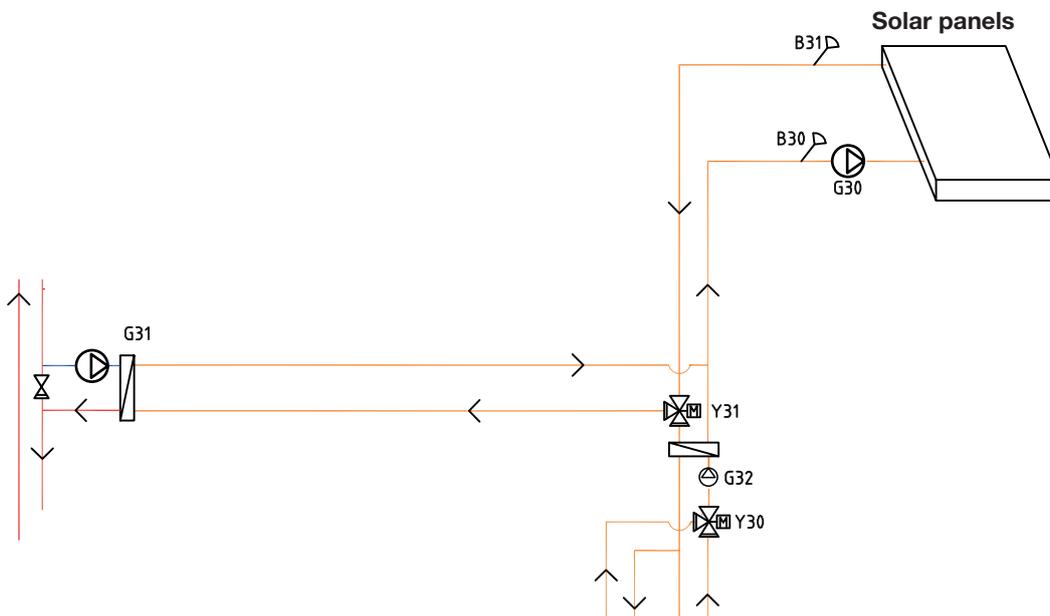
### 9.4.5 CTC EcoLogic system 6 – Pool

The pool can be connected in parallel with the heating circuit as shown in the figure below.

Charge pump G50 and circulation pump G51 are connected together with sensor B50 and the heat exchanger.



9.4.7 CTC EcoLogic system 6 – Solar energy



From the solar panels, the heat flow is directed to the hot water tank/buffer tank or to the ground heating loop in order to recharge the bedrock/ground once the hot water tank is fully charged.

The speed-controlled pump (G30) and sensors B31 and B30 are fitted next to the solar panels.

For recharging the bedrock/ground, a diverting valve (Y31), heat exchanger and charge pump (G31) are connected.

The diverting valve (Y31) is fitted together with the speed-controlled pump (G32) and heat exchanger in order to direct the flow towards the hot water tank or the buffer tank. Heat exchangers and pumps (G32) do not need to be installed to the solar heating circuit if there is already a loop in the connected hot water/heating tank.

When the recharging function is in operation, the CTC EcoLogic also starts the brine pump in the heat pump (CTC EcoPart). The charge pump for recharging the bore hole (G31) ensures there is sufficient flow through the heat exchanger.

## 10. Electrical installation

Installation and setting of switches in the CTC EcoLogic must be performed by an authorised electrician. All wiring shall be installed according to applicable local requirements. An omnipolar safety switch should be installed.

### 10.1 High voltage

#### Supply

230 V 1N~

Max. fuse size (group fuse) 10 A.

Connects to terminal block marked L1, N, PE

#### Safety switch

The installation should be preceded by a omnipolar safety switch (Category III), which ensures disconnection from all electric power sources.

#### 10.1.1 Mixing valves (Y1, Y2, Y3, Y4)

230 V 1N~

1.5 m cable 1.5 mm<sup>2</sup>, neutral, open, close.

The mixing valve motors are connected to the PCB/terminal block.

##### (Y1) Mixing valve 1

Open:	pole A27
Close:	pole A28
Zero:	pole A29

##### (Y2) Mixing valve 2

Open:	pole A15
Close:	pole A16
Zero:	pole A17

##### (Y3) Mixing valve 3, expansion card X6\*

Open:	pole 12
Close:	pole 13
Zero:	pole 14

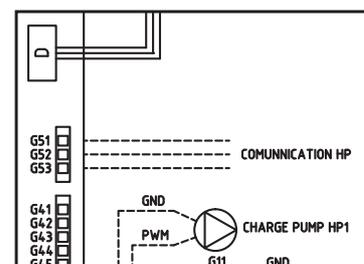
##### (Y4) Mixing valve 4, expansion card X7\*

Open:	pole 18
Close:	pole 19
Zero:	pole 20

Check that the open and close signals are correctly connected by testing the motor in menu "Installer/Service/Function test" in the control system.

### 10.2 Communication between EcoLogic and EcoAir/EcoPart

The communication cable used is an LiYCY (TP) which is 4-conductor shielded cable, where the communication-bearing conductors are of twisted pair type. This should be installed between the CTC EcoLogic terminal blocks G51 (brown), G52 (white), G53 (green) and heat pump A1, from which the other heat pumps can be controlled.



#### Voltage feed to heat pumps

The heat pumps are powered separately, not from the CTC EcoLogic.

\*Applies to the CTC EcoLogic PRO only.

### 10.2.1 Diverting valves (Y21, Y22)

230 V 1N~.

2.5 m cable 1.5 mm<sup>2</sup>

When pole A18 or X7/24 is supplied with power, flow should be to the hot water system. When they are not supplied with power, flow should be to the heating circuit.

The diverting valves are connected to the following terminal blocks:

**(Y21) Diverting valve 1**

Relay output	pole A18
Phase	pole A19
Zero:	pole A20

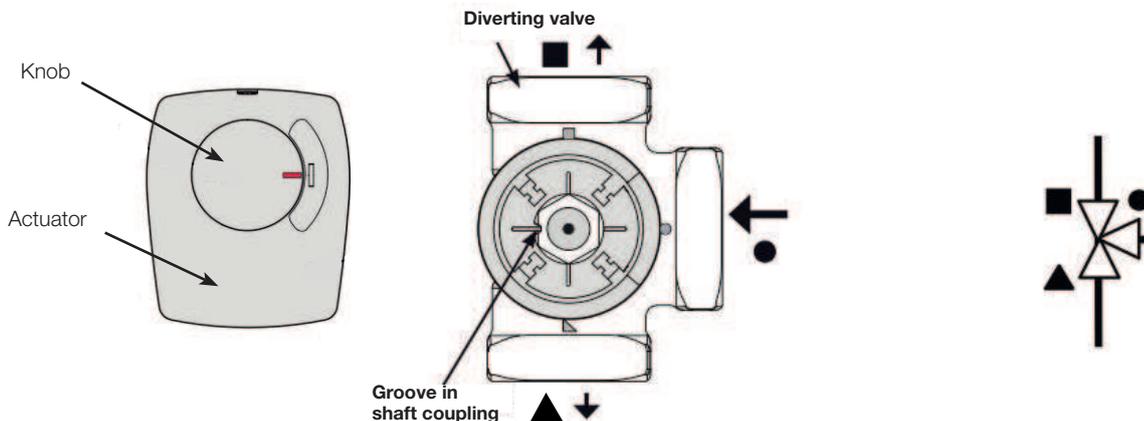
**(Y22) Diverting valve 2, expansion card X7**

Relay output	pole 24
Phase	pole 25
Zero:	pole 26

Check the function by test running the diverting valve in menu “*Installer/Service/Function test*” in the control system.

In the “DOWN” position on the function menu, port ▲ should be open (turn the knob on the motor clockwise, CW). In the “UP” position, port ■ should be open (turn the knob on the motor counterclockwise, CCW).

The motor is fitted to the diverting valve by a screw. To unfasten the motor: remove the knob by pulling it off, unfasten the screw and remove the motor. To prevent faults, turn the actuator and diverting valve to the starting position for fitting as shown in the figures. Pull out the knob on the actuator and turn to the central position.



Port ● should be completely open; ports ■ and ▲ should be partially open. Ensure that the groove in the white shaft coupling is in position as shown in the figure. The diverting valve and actuator can then be fitted together as shown in the figure, or turned in 90-degree steps relative to each other.

If ports ▲ and ■ have been shifted during the hydraulics connection, the motor can be reconnected to change its direction of rotation. This is done using two jumpers inside the motor.

**NOTE: the direction of rotation cannot be changed by swapping the black and brown cables.**

## 10.2.2 Heating circ pumps (G1, G2, G3, G4)

230 V 1N~

The heating circ pumps are connected to the following terminal blocks:

### (G1) Heating circ pump 1

Phase:	pole A31
Zero:	pole A33
Earth:	pole PE

### (G2) Heating circ pump 2

Phase:	pole A36
Zero:	pole A34
Earth:	pole PE

### (G3) Heating circ pump 3, expansion card X6\*

Phase:	pole 15
Zero:	pole 17
Earth:	pole 16

### (G4) Heating circ pump 4, expansion card X7\*

Phase:	pole 21
Zero:	pole 23
Earth:	pole 22

Check that the pump is correctly connected by test running it in menu "Installer/Service/Function test" in the control system.

## 10.2.3 Charge pumps, VPA1/VPA2 (G11, G12)

230V 1N~

Charge pumps G11 and G12 can be controlled from CTC EcoLogic, while the system's other charge pumps (G13 to G20) are controlled from their respective heat pumps (VPA3 to VPA10).

**NOTE!** The colours of the cables when connecting the charge pumps to the terminal block vary depending on the pump model.

Charge pumps 1 and 2 can be connected to a PCB/terminal block:

### (G11) Charge pump 1

WILO Stratos TEC

Relay output 8 A		A12
PWM+:	blue	G46
GND:	brown	G45

GRUNDFOS UPM GEO 25-85

Relay output 8 A		A12
PWM+:	brown	G46
GND:	blue	G45

**!** If charge pump G11 is used for the flow heater, the control signal must be taken from CTC EcoLogic.

\*Applies to the CTC EcoLogic PRO only.

### (G12) Charge pump 2

WILO Stratos TEC

PWM+:	blue	G48
GND:	brown	G47

GRUNDFOS UPM GEO 25-85

PWM+:	brown	G48
GND:	blue	G47

Check that the pump is correctly connected by test running it in menu "Installer/Service/Function test" in the control system.

### 10.2.4 Add heat (E1, E2, E3, E4)

The additional heat sources can be connected to the following terminal blocks:

#### (E1) Relay output

Relay output A8:	pole A11
------------------	----------

#### (E2) 0–10 V (E2), expansion card X5\*

Analogue output 0–10 V	pole 9
GND	pole 10

#### (E3) EcoMiniEI

Comm. 230 V	A30
-------------	-----

**NOTE!** The EcoLogic and EcoMiniEI (E3) must have a common connection to the neutral block.

#### (E4) Add heat DHW

Relay output A8:	pole A13
------------------	----------

### 10.2.5 Circulation Pump hot water (G40)\*

230 V 1N~

The circulation pump is connected to the following terminal blocks on (G40)  
Circulation pump (G4), Expansion card X6:

Phase:	pole 1
Zero:	pole 3
Earth:	pole 2

Check that the pump is correctly connected by test running it in menu "Installer/Service/Function test" in the control system.

### 10.2.6 Pump external DHW tank (G41)\*

230 V 1N~

The pump is connected to the following terminal blocks:  
(G41) Charge pump, expansion card (X7):

Phase:	pole 27
Zero:	pole 29
Earth:	pole 28

Check that the pump is correctly connected by test running it in menu "Installer/Service/Function test" in the control system.

\*Applies to the CTC EcoLogic PRO only.

## 10.2.7 Solar pumps (G30, G32)\*

The solar PWM pumps (G30 and G32) of model WILO Stratos PARA differ from the other PWM pumps. If the PWM control signal is interrupted, the solar pumps stop, whereas the other PWM pumps work at 100% power if the signal is interrupted.

### 10.2.7.1 Circulation pump solar panels (G30)

230 V 1N~

The circulation pump is connected to the following terminal blocks:

(G30) Circulation pump, expansion card X5:

Note the cable colours!

PWM+:	white	pole 1
GND:	brown	pole 2

Check the function by test running the pump in menu "Installer/Service/Function test" in the control system.

### 10.2.7.2 Pump heat exchanger solar panels (G32)

230 V 1N~

The heat exchanger pump is connected to the following terminal blocks:

(G32) Pump, expansion card X5:

Note the cable colours!

PWM+:	white	pole 3
GND:	brown	pole 4

Check the function by test running the pump in menu "Installer/Service/Function test" in the control system.

## 10.2.8 Diverting valve solar DHW (Y30)\*

230 V 1N~

The diverting valve is connected to the following terminal blocks:

(Y30) Diverting valve, expansion card X6:

Control voltage:	pole 4
Phase:	pole 5
Zero:	pole 7
Earth:	pole 6

## 10.2.9 Solar recharging borehole (Y31/G31)\*

### 10.2.9.1 Diverting valve Solar (Y31)

230 V 1N~

**NOTE:** It is important to connect the phase voltage to L (pole 9); refer to the wiring diagram.

The diverting valve is connected to the following terminal blocks:

(Y31) Diverting valve, expansion card X6:

Relay output 8 A:	Open to bore hole	pole 8	also controls Charge pump – recharging bore hole (G31)
Phase:	Open Tank	pole 9	
Zero:		pole 11	

Pole 8 is connected to an external connection box which distributes voltage to the solar diverting valve (Y31) and the Recharge Bore Hole charge pump (G31). Refer to the wiring diagram.

*\*Applies to the CTC EcoLogic PRO only.*

Check the function by test running the pump in menu "Installer/Service/Function test" in the control system.

### 10.2.9.2 Charge pump – recharging bore hole (G31)\*

230 V 1N~

The charge pump is connected at the following terminal blocks:

(G31) Charge pump, expansion card (X6):

Phase:	pole 8	also controls Diverting valve – solar (Y31)
Zero:	pole 11	
Earth:	pole 10	

Pole 8 is connected to an external connection box which distributes voltage to the solar diverting valve (Y31) and the Recharge Bore Hole charge pump (G31). Refer to the wiring diagram.

Check the function by test running the pump in menu “*Installer/Service/Function test*”.

### 10.2.10 Pool pumps (G50) and (G51)

230 V 1N~

Both pumps (G50) & (G51) are connected to the following terminal blocks:

Pumps pool (G50) and (G51), expansion card X7:

Phase:	pole 33
Zero:	pole 35
Earth:	pole 34

Pole 33 is connected to an external connection box which distributes voltage to the charge pump (G50) and circulation pump (G51).

Check the function by test running the pump in menu “*Installer/Service/Function test*” in the control system.

## 10.3 Protection - low voltage (sensor)

The sensors that form part of each system solution (schematic diagrams 1 to 6) should be fitted to the PCB/terminal block as follows: All sensors are temperature sensors.

### 10.3.1 Room sensors (B11, B12, B13, B14)

Room sensor cable connection:

#### (B11) Room sensor 1

block no.	G17	alarm output
block no.	G18	GND
block no.	G19	input

#### (B12) Room sensor 2

block no.	G20	alarm output
block no.	G21	GND
block no.	G22	input

#### (B13) Room sensor 3, expansion card X4\*

block no.	19	alarm output
block no.	20	input
block no.	21	GND

\*Applies to the CTC EcoLogic PRO only.

**(B14) Room sensor 4, expansion card X4\***

block no.	22	alarm output
block no.	23	input
block no.	24	GND

Room sensors should be installed at head height in open areas of the property with good air flow and where a representative temperature can be expected (not close to sources of heat or cold). Place sensors at head height. If you are unsure of where to place a sensor, hang it by a loose cable and test different positions.

Connection: 3-conductor cable, min. 0.5 mm<sup>2</sup>, between sensor and control box. The cables are connected as shown in the table above.

On start-up, an alarm is given if the sensor is incorrectly connected. Test the alarm sensor LED by testing the function in menu *Installer/Service/Function test*.

In the control system you can select whether or not to have the room sensor operational. If the room sensor is deselected, the heating level is controlled by the outdoor sensor/primary flow sensor. The alarm lamp on the room sensor still functions as normal. A room sensor does not, however, need to be installed if the function is deselected.

**10.3.2 Outdoor sensor (B15)**

The outdoor sensor should be fitted to the outer wall of the house, preferably in a north-northeastern or north-northwestern direction. The sensor should be placed out of direct sunlight. However, where this is difficult to achieve it can also be shielded from the sun by a screen. Remember that the sun rises and sets at different points at different times of the year.

The sensor should be placed about three-quarters of the way up the wall so that it senses the correct outdoor temperature and so that it is not affected by a heat source such as a window, infra-heating, air ventilation outlet, etc.

Connection: 2-conductor cable (min. 0.5 mm<sup>2</sup>) between the sensor and control box.

The sensor is connected to terminal blocks G11 and G12 of the control module. Connect to the outdoor sensor at the arrows.

**NOTE!** Strip the wire ends and fold them double if light cable is used. It is important that the contact in the connections is good.

**Sensor connections**

Mount the sensor on the pipe. The sensing part is towards the end of the sensor.

- Attach the sensor using the tie strap provided.
- Ensure that the sensor makes good contact with the pipe.
- Apply contact paste to the end part of the sensor between the sensor and the pipe if good contact is otherwise difficult to obtain.
- **NOTE!** Insulate the sensor using pipe insulation, for example. This prevents the measurement from being affected by the ambient temperature.
- Connect the cables to the CTC EcoLogic's connection block. If the cable is too short, join extra length to it.

*\*Applies to the CTC EcoLogic PRO only.*

### 10.3.3 Primary flow sensor (B1, B2, B3\*, B4\*)

The sensors sense the outgoing temperature to the radiators. Secure the primary flow sensor to the pipe using straps or similar. Most important is the position of the tip of the sensor as this is the part that detects the temperature. The sensor must be insulated to prevent the ambient temperature from affecting the measurement. For optimum function, use contact paste.

#### **(B1) Primary flow sensor 1**

Position: on the primary flow to heating circuit 1.

The sensor is connected to the PCB in positions G13 and G14.

#### **(B2) Primary flow sensor 2**

Position: on the primary flow to heating circuit 2 after heating circ pump G2.

The sensor is connected to the PCB in positions G15 and G16.

#### **(B3) Primary flow sensor 3\***

Position: on the primary flow to heating circuit 3 after heating circ pump G3.

The sensor is connected to expansion card X3 in positions 13 and 14.

#### **(B4) Primary flow sensor 4\***

Position: on the primary flow to heating circuit 4 after heating circ pump G4.

The sensor is connected to expansion card X2 in positions 7 and 8.

#### **(B5) Sensor hot water**

Position: in a sensor pipe or on the jacket surface in the hot water tank.

The sensor is connected to the PCB in positions G63 and G64.

#### **(B41) Sensor external DHW tank**

Position: in a sensor pipe or on the jacket surface in the buffer tank.

The sensor is connected to expansion card X2 in positions 9 and 10.

#### **(B6) Sensor buffer tank**

Position: in a sensor pipe or on the jacket surface in the buffer tank.

The sensor is connected to the PCB in positions G65 and G66.

#### **(B7) Return sensor heating circuit**

Position: on the return pipe from the heating circuit.

The sensor is connected to the PCB in positions G31 and G32.

#### **(B8) Flue gas sensor**

Position: in a sensor pipe or on the flue gas jacket surface on the wood boiler.

The sensor is connected to the PCB in positions G35 and G36.

#### **(B9) Sensor, external boiler**

Position: in a sensor pipe or on the jacket surface in the boiler.

The sensor is connected to the PCB in positions G61 and G62.

#### **(B10) Sensor, external boiler out**

Position: on the primary flow pipe of the boiler.

The sensor is connected to the PCB in positions G71 and G72.

#### **(B30) In to solar panels\***

Position: on the return pipe into the solar panels.

The sensor is connected to expansion card X1 in positions 3 and 4.

#### **(B31) Out from solar panels\***

Position: on the pipe out from the solar panels.

*\*Applies to the CTC EcoLogic PRO only.*

The sensor is connected to expansion card X1 in positions 1 and 2.

#### **(B50) Sensor, pool\***

Position: on the return pipe between the pool pump and pool.

The sensor is connected to expansion card X3 in positions 15 and 16.

#### **Settings made by the installation electrician.**

The following settings shall be made by the installation electrician after installation:

- Select main fuse size
- Select effect limitation
- Check room sensor connection
- Check that the sensors connected indicate reasonable values.
- Carry out the following checks:

#### **Check room sensor connection**

1. Scroll down and select the option *LED room sensor* in menu "*Installer/Service/Function test/Heating circuit*".
2. Select "On". Check that the room sensor LED lights up. If not, check the cables and connection.
3. Select "Off". If the LED goes off, the check is complete.

#### **Check connected sensors**

If any sensor is incorrectly connected, a message will appear on the display, e.g. "Alarm sensor out". If several sensors are incorrectly connected, the different alarms are displayed on different rows. If no alarm is displayed, the sensors are connected correctly. Note the the alarm function of the room sensor (LED) cannot be detected on the display. It must be checked on the room sensor.

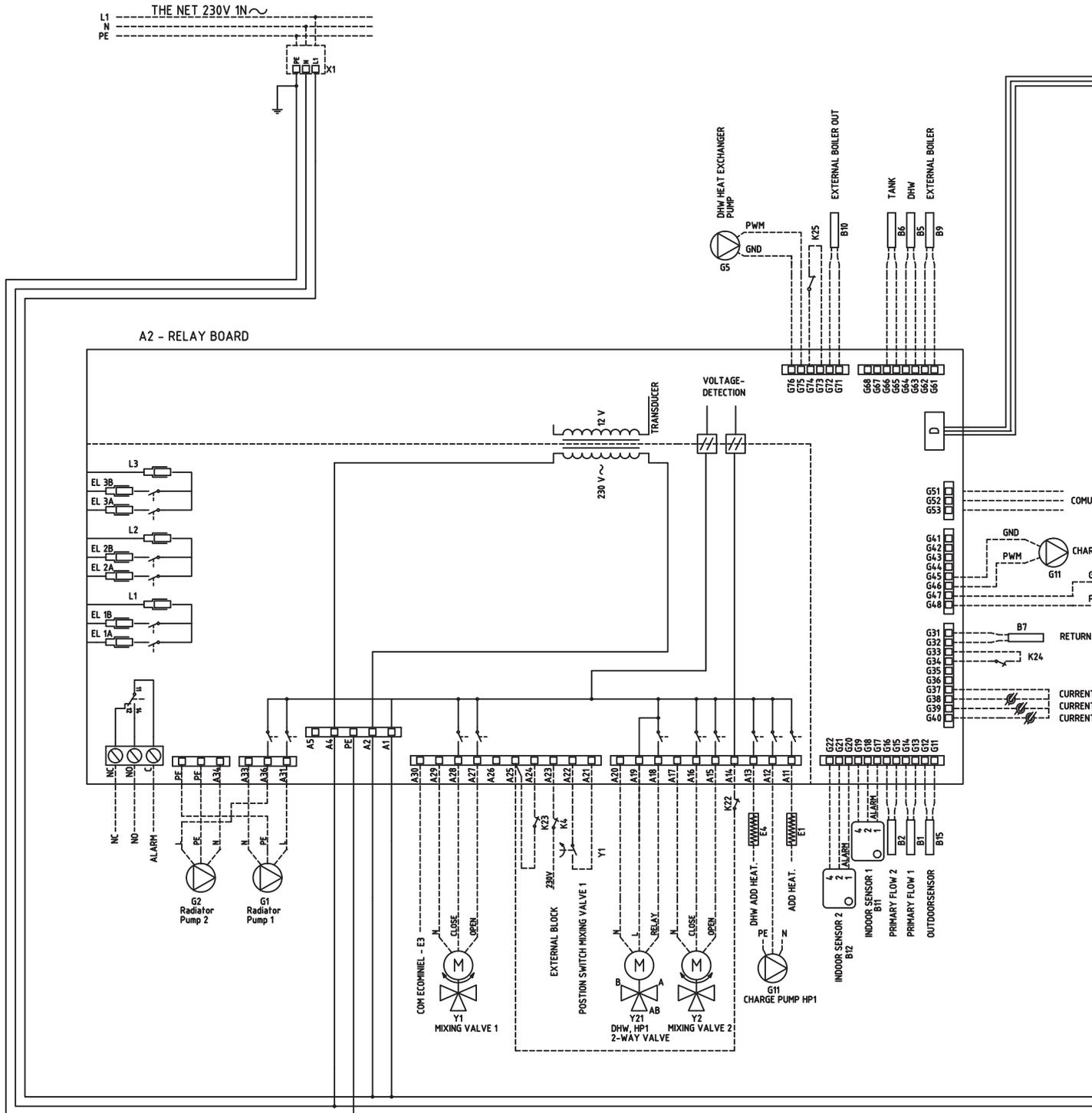
### **10.3.4 Pressure/level switch**

In some cases, extra protection is required due to local requirements or provisions. For example, the requirement in some areas is for the system to be installed within a water catchment area.

The pressure/level switch is connected to blocks K22/K23/K24/K25 and then defined under the Installer/Define system/Def Heat pump menu. If there is a leak, the compressor and brine pump stop and the Flow/level switch alarm appears on the display.

*\*Applies to the CTC EcoLogic PRO only.*

# 11. Wiring diagram





### 11.1 Parts list

E1	Additional heat, auxiliary relay	
E2*	Add heat 0-10V	
E3	Add heat EcoMiniEI 230V	
E4	Add heat hot water	
G1	Radiator pump 1	
G2	Radiator pump 2	
G3*	Radiator pump 3	
G4*	Radiator pump 4	
G11	Charge pump heat pump A1	
G12	Charge pump heat pump A2	
G13*	Charge pump heat pump A3	
G14*	Charge pump heat pump A4	
G15*	Charge pump heat pump A5	
G16*	Charge pump heat pump A6	
G17*	Charge pump heat pump A7	
G18*	Charge pump heat pump A8	
G19*	Charge pump heat pump A9	
G20*	Charge pump heat pump A10	
G30*	Circulation pump solar panels	
G31*	Charge pump – recharging bore hole	
G32*	Pump heat exchanger solar panels	
G40*	Circulation pump, hot water	
G41*	Charge pump External DHW tank	
G50*	Pump pool	
G51*	Pump pool	
Y1	Mixing valve 1	
Y2	Mixing valve 2	
Y3*	Mixing valve 3	
Y4*	Mixing valve 4	
Y21	Diverting valve (VPA1)	
Y22	Diverting valve (VPA2)	
Y30*	Solar diverting valve hot water	
Y31*	Diverting valve solar	
B1	Primary flow sensor 1	NTC 22
B2	Primary flow sensor 2	NTC 22
B3*	Primary flow sensor 3	NTC 22
B4*	Primary flow sensor 4	NTC 22
B5	Sensor, hot water tank	NTC 22
B6	Sensor buffer tank	NTC 22
B7	Return sensor heating circuit	NTC 22
B8	Flue gas sensor	NTC 3.3
B9	Sensor external boiler	NTC 22
B10	Sensor external boiler out	NTC 22

*\*Applies to the CTC EcoLogic PRO only.*

B11	Room sensor 1	NTC 22
B12	Room sensor 2	NTC 22
B13*	Room sensor 3	NTC 22
B14*	Room sensor 4	NTC 22
B15	Outdoor sensor	NTC 150
B30*	Sensor solar panels In	PT 1000
B31*	Sensor solar panels Out	PT 1000
B41*	Sensor external DHW tank	NTC 22
B50*	Sensor pool	NTC 22

HP A1	Heat pump A1
HP A2	Heat pump A2
HP A3*	Heat pump A3
HP A4*	Heat pump A4
HP A5*	Heat pump A5
HP A6*	Heat pump A6
HP A7*	Heat pump A7
HP A8*	Heat pump A8
HP A9*	Heat pump A9
HP A10*	Heat pump A10

K22	Remote control/ Smart Grid
K23	Remote control/ Smart Grid
K24	Remote control/ Smart Grid
K25	Remote control/ Smart Grid

*\*Applies to the CTC EcoLogic PRO only.*

## 12. Resistances for sensors

NTC 3.3K

NTC 22K

NTC 150

Temperature °C	Flue gas sensor Resistance Ω	Temperature °C	Brine, HP, Elec. Boiler, Primary Flow, Room Sensor Resistance Ω	Temperature °C	Outdoor sensor Resistance Ω
300	64	130	800	70	32
290	74	125	906	65	37
280	85	120	1027	60	43
270	98	115	1167	55	51
260	113	110	1330	50	60
250	132	105	1522	45	72
240	168	100	1746	40	85
230	183	95	2010	35	102
220	217	90	2320	30	123
210	259	85	2690	25	150
200	312	80	3130	20	182
190	379	75	3650	15	224
180	463	70	4280	10	276
170	571	65	5045	5	342
160	710	60	5960	0	428
150	892	55	7080	-5	538
140	1132	50	8450	-10	681
130	1452	45	10130	-15	868
120	1885	40	12200	-20	1115
110	2477	35	14770	-25	1443
100	3300	30	18000	-30	1883
90	4459	25	22000	-35	2478
80	6119	20	27100	-40	3289
70	8741	15	33540		
60	12140	10	41800		
50	17598	5	52400		
40	26064				
30	39517				
20	61465				

PT1000

Temperature °C	Resistance Ω	Temperature °C	Resistance Ω
-10	960	60	1232
0	1000	70	1271
10	1039	80	1309
20	1077	90	1347
30	1116	100	1385
40	1155	120	1461
50	1194	140	1535

## 13. First start

The CTC EcoLogic can also be started without a room sensor being fitted as the curve which has been set then regulates the heating. Deselect the room sensor for each heating circuit in menu *Installer/Settings*. The sensors can, however, always be fitted for the alarm LED function.

### Before first start

1. Check that the system is filled with water, purged and has the correct pressure, and that there is no leakage. Air in the system (poor circulation) can, for example, mean that the heat pump is tripped by its high pressure protection.
2. Check that all the valves in the system are correctly connected and set.
3. Check that all electrical cables and sensors are correctly installed and connected. See section "Electrical installation".
4. Check that the unit is correctly fused (10A group fuse).
5. Check that the heat pump is switched on.
6. If there is already a boiler in place, check that its temperature is set at normal boiler temperature, for example, 70°C.
7. Check that the control box of the heat pumps is set to A1, A2, A3, etc. Refer to the instructions for the heat pump.

### First start

Switch on the power using the safety switch. The display comes on. The heat pump now asks the following:

1. Select the language and press "OK".
2. Confirm that the system is filled with water by pressing "OK".
3. Select EcoLogic system type (1, 2, 3, 4, 5, 6).
4. Indicate whether the hot water tank is connected.
5. Select the option permitting the compressor to operate (if the collector system is ready). When the compressor is started for the first time, it is automatically checked that it is running in the correct direction. An error message is shown on the display if it is rotating in the wrong direction. Switch any two phases to change the direction of rotation. Use your hand to feel that the hot gas pipe immediately becomes warm when the compressor starts, but bear in mind that the pipe may be hot!
6. Select the brine pump for 10 days if you wish to operate for ten days.
7. Specify the max. primary flow °C for heating circuit 1.
8. Specify the inclination for heating circuit 1.
9. Specify the adjustment for heating circuit 1.
10. If the primary flow sensor for heating circuit 2 is installed, repeat steps 7 to 9 for heating circuit 2.

The heat pump then starts and the start page appears.

 Save these settings in the menu: *Installer/Settings/Save settings*

 If heating circuits 3 and 4 are to be used, they are activated in the menu: *Installer/Define system/Heating circuit 3/4*.



Enertech Group

Försäkran om överensstämmelse  
Déclaration de conformité  
Declaration of conformity  
Konformitätserklärung

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**Enertech AB**

**Box 313**

**S-341 26 LJUNGBY**

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försäkrar under eget ansvar att produkten  
confirme sous sa responsabilité exclusive que le produit,  
declare under our sole responsibility that the product,  
erklären in alleiniger Verantwortung, dass das Produkt,

**CTC EcoLogic PRO**

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som omfattas av denna försäkran är i överensstämmelse med följande direktiv,  
auquel cette déclaration se rapporte est en conformité avec les exigences des normes  
suivantes,  
to which this declaration relates is in conformity with requirements of the following directive,  
auf das sich diese Erklärung bezieht, konform ist mit den Anforderungen der Richtlinie,

**EC directive on:**

**Electromagnetic Compatibility (EMC) 2004/108/EC**

**Low Voltage Directive (LVD) 2006/95/EC**

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Överensstämmelsen är kontrollerad i enlighet med följande EN-standarder,  
La conformité a été contrôlée conformément aux normes EN,  
The conformity was checked in accordance with the following EN-standards,  
Die Konformität wurde überprüft nach den EN-normen,

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**EN 55014-1:2007, -A1:2009**

**EN 60 335-2-21**

**EN 55014-2:1997, -A1:2001, -A2:2008**

**EN 60 335-2-40**

**EN 61000-3-2:2006, -A1:2009, -A2:2009**

**EN 60 335-1**

**EN 61000-3-3-:2008**

**EN 62233**

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Ljungby 2012-10-19

Marcus Miller  
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