



Installation and Maintenance Manual

CTC EcoZenith i360

Indoor model with heat pump control

3x400V / 1x230V / 3x230V



Translation of the original instructions.

Keep for future use.

Read carefully before use.

162 505 77-8 CR01117 2025-12-18



MADE IN SWEDEN

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Software update



software.ctc.se

EN

For more information on updated functions and downloading the latest software, see the website "software.ctc.se".

1. Safety instructions



The installation should be preceded by an omnipolar safety switch according to overvoltage category III, which ensures disconnection from all electric power sources.

Turn off the power with an omnipolar switch before doing any work on the product.



The product must be connected to protective earth.



The product is classified as IP X1. The product must not be rinsed with water.

The product must not be started if it is not filled with water; instructions are in the "Pipe installation" section.



When handling the product with a hoist ring or similar device, make sure that the lifting equipment, eyebolts and other parts are not damaged. Never stand under the hoisted product.



Never jeopardise safety by removing bolted covers, hoods or similar.

WARNING: Do not switch on the product if there is a possibility that the water in the heater is frozen.

If these instructions are not followed when installing, operating and maintaining the system, CTC's commitment under the applicable warranty terms is not binding.



Any work on the product's cooling system should be carried out by authorised personnel only.

Installation and connection in the product must be carried out by a authorised electrician. All piping must be installed according to the applicable requirements.

Service of the product's electrical system must only be carried out by a qualified electrician in compliance with the specific requirements of the national standard for electrical safety.

Replacement of damaged supply cable, must be carried out by the manufacturer or qualified service engineer to avoid risk.

Safety valve check:

-Safety valve for boiler/system to be checked regularly.

This device can be used by children from the age of eight years and above and by people with reduced physical, sensory or mental ability or lack of experience or knowledge if they have been taught, either with supervision or with the instructions provided, how to use the device safely and understand the risks involved. Children should not play with the device. Cleaning and maintenance should not be carried out by children without supervision.

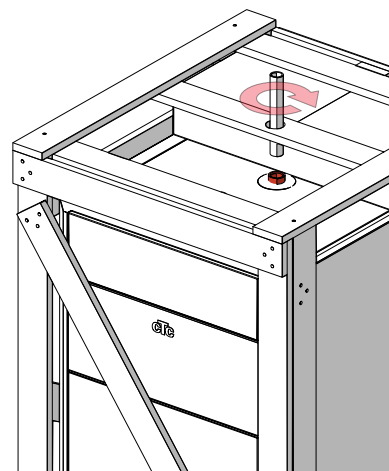
2. Important to consider!

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

2.1 Transportation

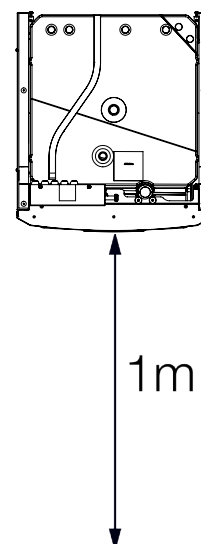
Transport the unit to the installation site before removing the packaging. Handle the product in the following manner:

- Forklift.
- Lifting eye that has been fitted to the lifting sleeve on top of the product in the expansion connection.
- Lifting band around the pallet. NB: Can only be used with the packaging on.
Remember that the product has a high centre of gravity and should be handled with caution.
- The product must be transported and stored in an upright position.



2.2 Positioning

- Remove the packaging and check before installation that the product has not been damaged in transit. Report any transport damage to the carrier.
- Place the product on a solid foundation, preferably made of concrete. If the product needs to be placed on a soft carpet, base plates must be placed under the adjustable feet.
- Remember to leave a service area of at least 1 metre in front of the product.
- The product must not be placed below floor level either.



2.3 Recycling

- The packaging must be deposited at a recycling station or with the installation engineer for correct waste management.
- Obsolete products must be disposed of correctly and transported to a waste station or distributor/retailer offering this service. It is very important that the product's refrigerant is disposed of correctly.
Disposal of the product as household waste is not permitted.

2.4 After commissioning

- The installation engineer advises the property owner on the design and servicing of the system.
- The installation engineer fills in a checklist and contact information – the customer and installation engineer sign the list, which the customer keeps.
- Register the product for warranty and insurance via the website.
<https://www.ctc-heating.com/customer-service#warranty-registration>

3. Checklist

The checklist must always be completed by the installation engineer

- If a service is needed, you may be required to provide this document.
- Installation must always be done according to the installation and maintenance instructions.
- Installation must always be carried out in a professional manner.

Following installation, the unit must be inspected and functional checks performed as indicated below:

Pipe installation

- The heat pump is filled, positioned and adjusted according to the instructions.
- The heat pump is positioned so that servicing is possible.
- Capacity of circulation pump(s) for required flow.
- Open radiator valves and other relevant valves.
- Tightness test.
- Bleed the system.
- Check the functions of the required safety valves.
- Waste pipe connected to floor drain.

Electrical installation

- Compressor, direction of rotation.
- Power switch.
- Correct wiring.
- Primary flow sensor, return sensor + any required sensors for selected system.
- Outdoor sensor.
- Room sensor (optional).
- Accessories.
- Heat pump activated and started.
- Electric power and fuse, adapted for the property, in normal operation and backup mode.

Customer information (adapted to the relevant installation)

- Start-up together with the customer.
- Menus/controls for selected system.
- Installation and maintenance manual supplied to the customer.
- Check and filling, heating circuit.
- Fine-tuning information, heat curve.
- Alarm information.
- Mixing valve.
- Safety valve function test.
- Review warranty terms and conditions with the customer.
- Register your Installation certificate at ctc-heating.com.
- Information on fault reporting procedures.

 Date/Customer

 Date/Installer

4. House heating settings

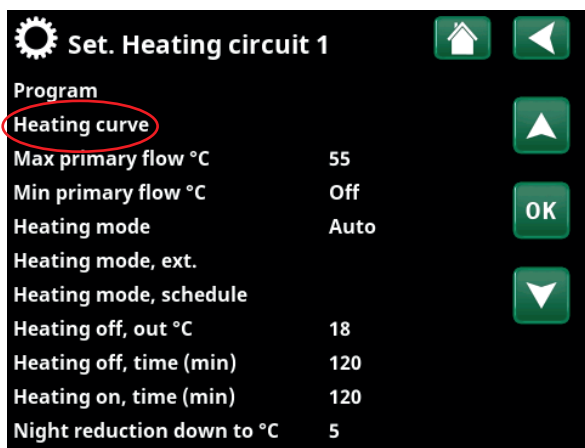
The House Heating Curve

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.

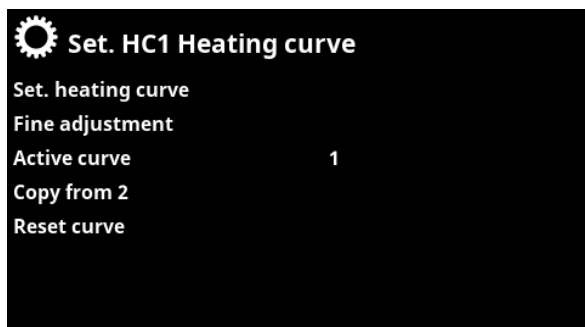
One property requires a radiator temperature of 30 °C when the outdoor temperature is 0 °C, whilst a different property requires 40 °C. The difference between different properties is determined by the radiator surface area, the number of radiators and how well insulated the house is.

Adjusting the heating curve

In the "Heating curve" menu under "Settings/Heating circuit", you can fine adjust the values of the heating curve for the primary flow temperature in relation to the outdoor temperature in the graph, as well as set the values for curve inclination and curve adjustment for the heating circuit.



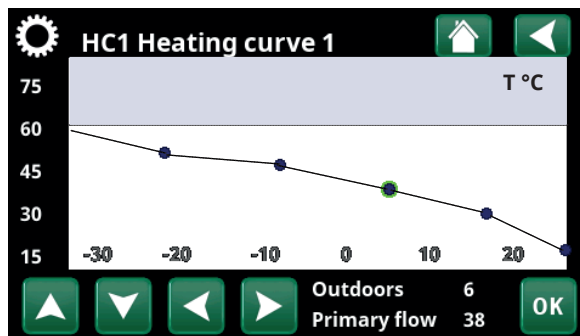
Part of the "Advanced/Settings/Heating Circuit/Heating Circuit 1" menu.



Menu: "Advanced/Settings/Heating Circuit/Heating Circuit 1/Heating curve". Active curve: #1.

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.



Menu: "Advanced/Settings/Heating Circuit/Heating Circuit 1/Heating curve/Fine adjustment".

For more information on how to set the heating curve, see section "Heating curve" in chapter "Settings / Heating circuit".

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.
- 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.

| | |
|-------------------------------------------------------------------------------|----------------|
| 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 °C: 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 °C: 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 °C: 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 °C: Decrease the Adjustment value by a couple of degrees. Wait 24 hours to see if any further adjustment is required.

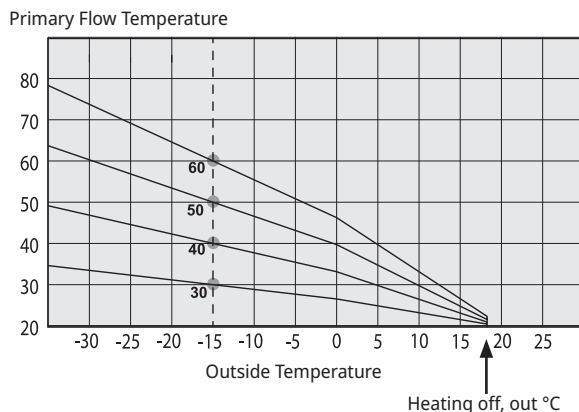
i The set heating curve always takes priority. The room sensor can only increase or decrease the heat beyond the set heating curve to a certain extent. Where operating without a room sensor, the selected heating curve determines the flow temperature supplied to the radiators.

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.

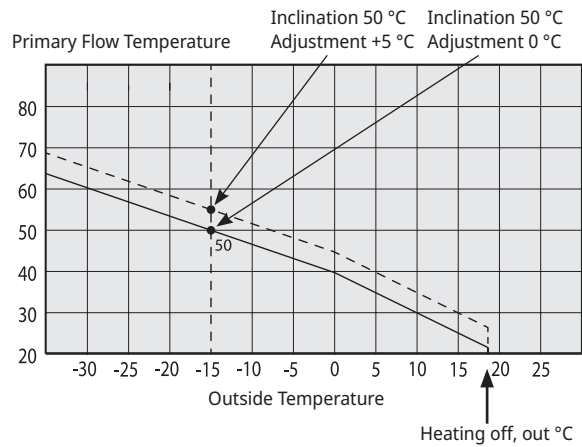
Curve inclination

The inclination value which is set is the primary flow temperature when the outside temperature is -15 °C.



Curve adjustment

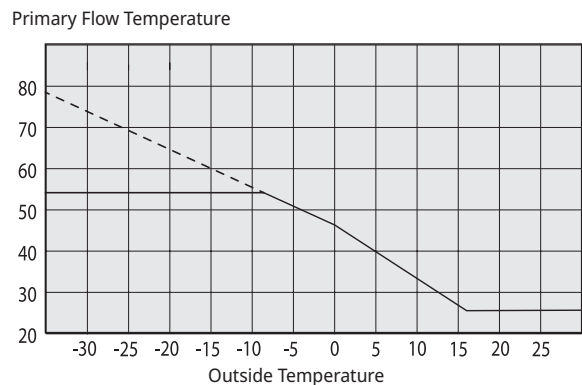
The curve can be parallel displaced (adjusted) by the desired number of degrees to adapt to different systems/houses.



Example

Curve inclination 60 °C
Curve adjustment 0 °C

In this example, the maximum outgoing primary flow temperature is set at 55 °C. The minimum permitted primary flow temperature is 27 °C (e.g. summer-time basement heating or the floor circuits in a bathroom).

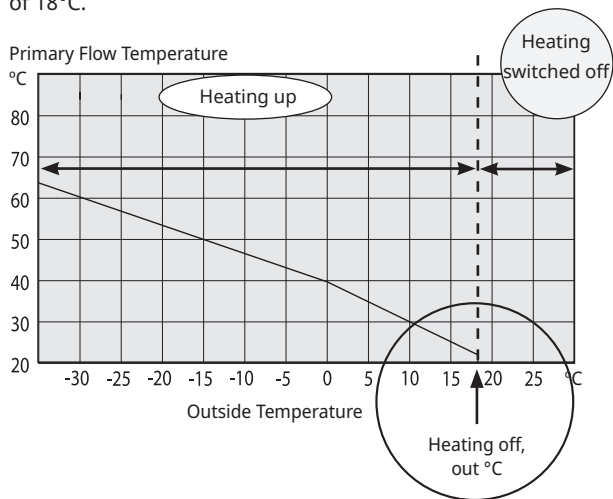


i If the values set are too low, this may mean that the desired room temperature is not being reached. You then need to adjust the heating curve, as necessary, following the method shown above.

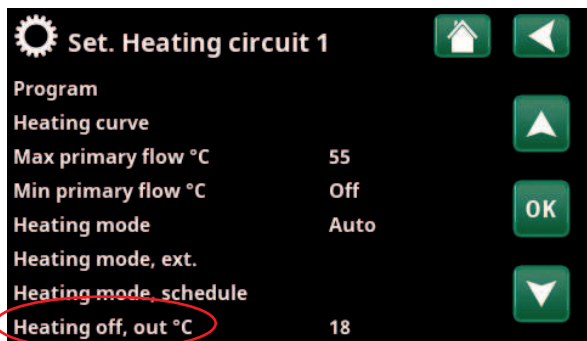
Summer season

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, out °C", can be changed in the "Advanced/Settings/Heat circuit" menu.



Part of the "Advanced/Settings/Heating Circuit/Heating Circuit 1" 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.

See chapter "Settings/Heating circuit" for information on setting the heating mode.

5. Technical data

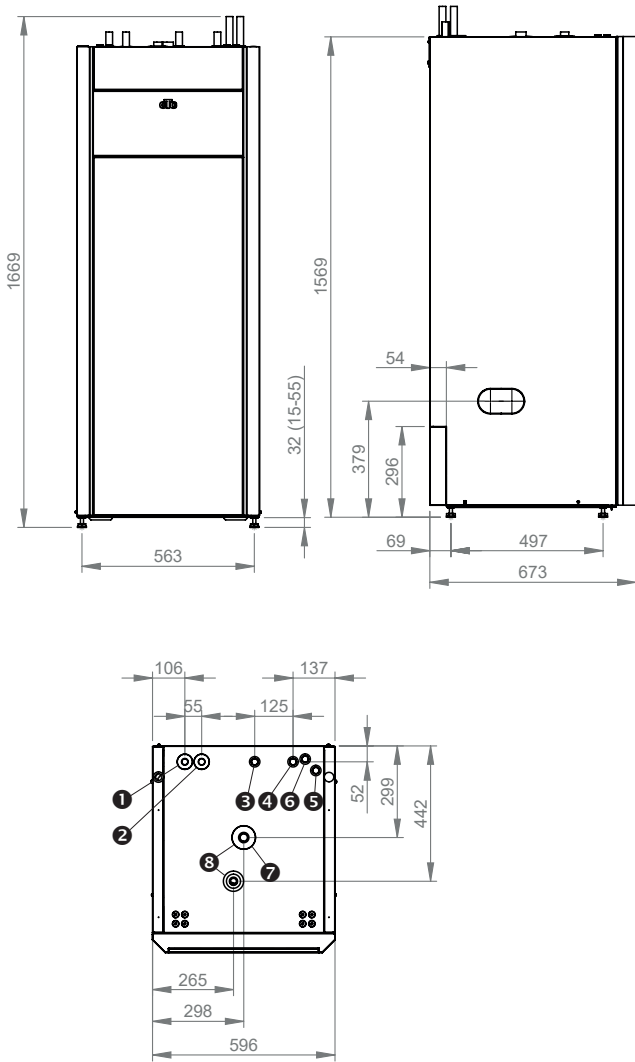
| Designation | | CTC EcoZenith | CTC EcoZenith | CTC EcoZenith | CTC EcoZenith |
|------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|
| General data | | i360 L | i360 H | i360 L 1x230V | i360 L 3x230V |
| Article number | | 590940001 | 590941001 | 590940002 | 590940003 |
| Gross weight | kg | 172 | 185 | 172 | 172 |
| Net weight | kg | 145 | 156 | 145 | 145 |
| Dimensions (depth x width x height) (without packaging) | mm | 673 x 596 x 1669 | 673 x 596 x 1867 | 673 x 596 x 1669 | 673 x 596 x 1669 |
| Required ceiling height | mm | 1669 | 1928 | 1669 | 1669 |
| Sound power L _{WA} (EN 12102) | dB(A) | 15 | 15 | 15 | 15 |
| Electrical data | | | | | |
| Rated electrical data | | 400V 3N~ 50Hz | 400V 3N~ 50Hz | 230V 1N~ 50Hz | 230V 3~ 50Hz |
| Rated power input | kW | 12.2 | 12.2 | 9.3 | 10.3 |
| Rated current | A | 19 | 19 | 41 | 27 |
| Max power immersion heater (at group fuse) | kW | 3.5/ 6.1/ 8.4/ 9.9/ 11.9 (10/ 13/ 16/ 20/ 25A) | 3.5/ 6.1/ 8.4/ 9.9/ 11.9 (10/ 13/ 16/ 20/ 25A) | 3.8/ 5.2/ 6.7/ 7.5/ 9/9 (20/ 25/ 32/ 35/ 50/ 63A) | 5/ 7.5/ 10/ 10/ 10/ 10 (20/ 25/ 32/ 35/ 50/ 63A) |
| Group fuse | A | 20 | 20 | 50 | 32 |
| Ingress Protection class (IP) | | IP X1 | IP X1 | IP X1 | IP X1 |
| Power range, Immersion heater (min-max) | kW | 0.5 - 11.9 | 0.5 - 11.9 | 0.3 - 9.0 | 2.5 - 10.0 |
| Warm side | | | | | |
| Water volume (V) | l | 225 | | | |
| Max operating pressure (PS) | MPa/bar | 0.3/3.0 | | | |
| Max operating temperature (TS) | °C | 100 | | | |
| Pressure differential diagram for product including exchanger and all internal pipes, valves etc. | | See pressure differential diagram in section "System adjustment". | | | |
| Built-in circulation pump | | Yes | | | |
| Domestic hot water system | | | | | |
| Water volume (V) | l | 1.7 | | | |
| Max operating pressure | bar | 10 | | | |

| DHW performance according to prEN 16147 | | Economy | Normal | Comfort |
|-----------------------------------------|----|---------|--------|---------|
| Quantity of hot water (40°C) | l | 210 | 235 | 304 |
| COP | | 2.61 | 2.42 | 2.27 |
| Stand by heat loss S _{stby} | kW | 0.057 | 0.073 | 0.083 |
| Load profile *) | | XL | XL | XL |

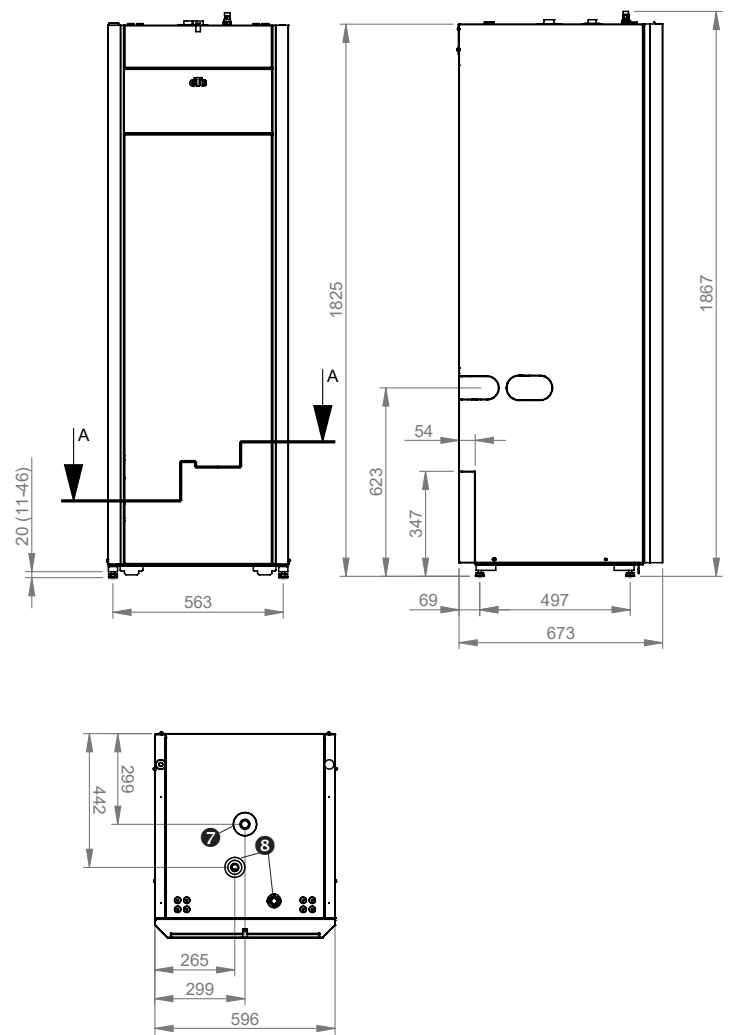
*) according to Regulation (EU) no. 813/2013

6. Measurements

Low Model



High Model

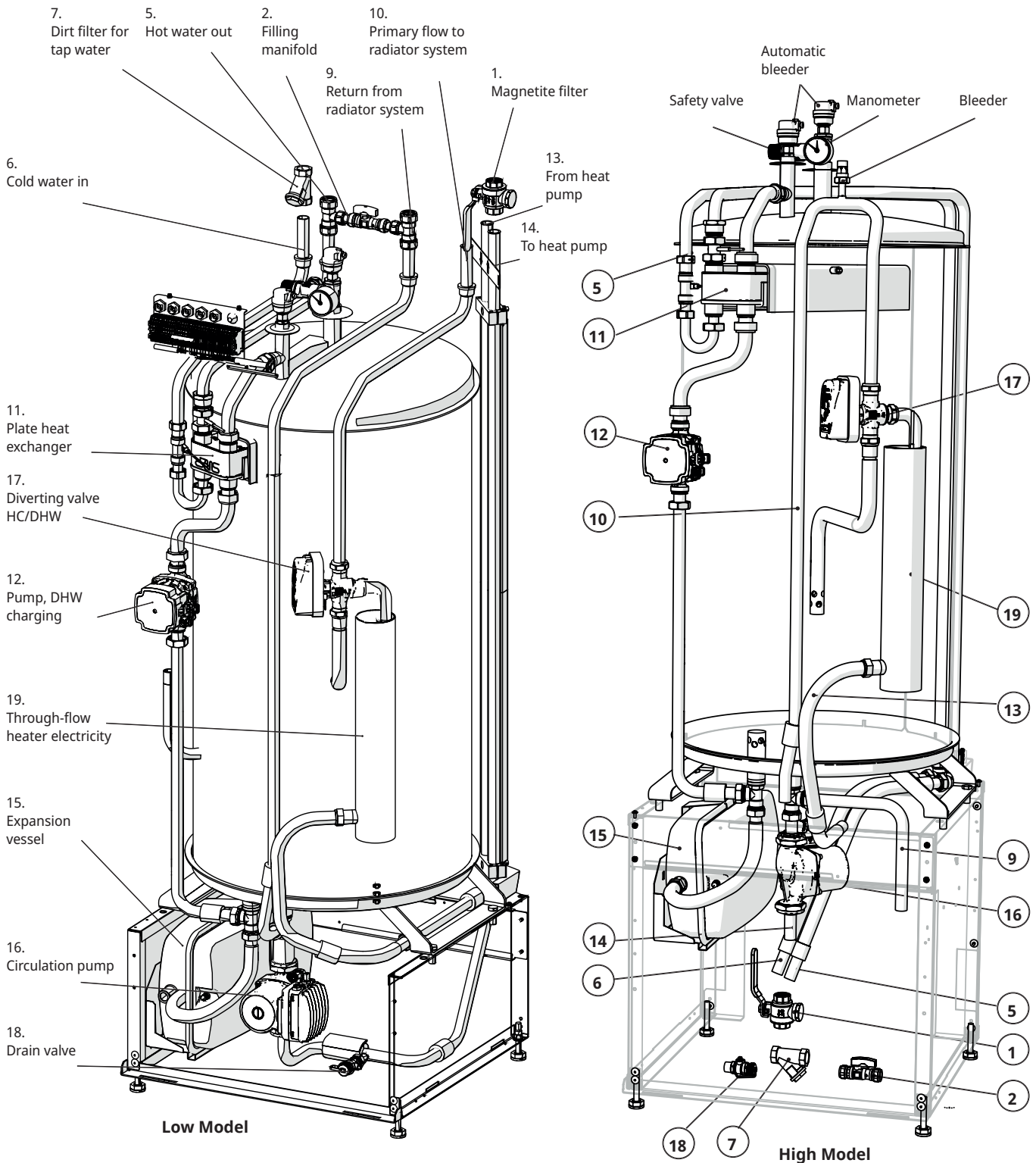


| | | | | | |
|---|--------------|-------|---|--------------------------|-----------|
| ❶ | Cold water | 22 mm | ❺ | To HP | 22 mm |
| ❷ | Hot water | 22 mm | ❻ | From HP | 22 mm |
| ❸ | Return flow | 22 mm | ❼ | Expansion/lifting sleeve | 3/4" ins. |
| ❹ | Primary flow | 22 mm | ❽ | Automatic bleeder | 1/2" ins. |

7. Overview CTC EcoZenith i360

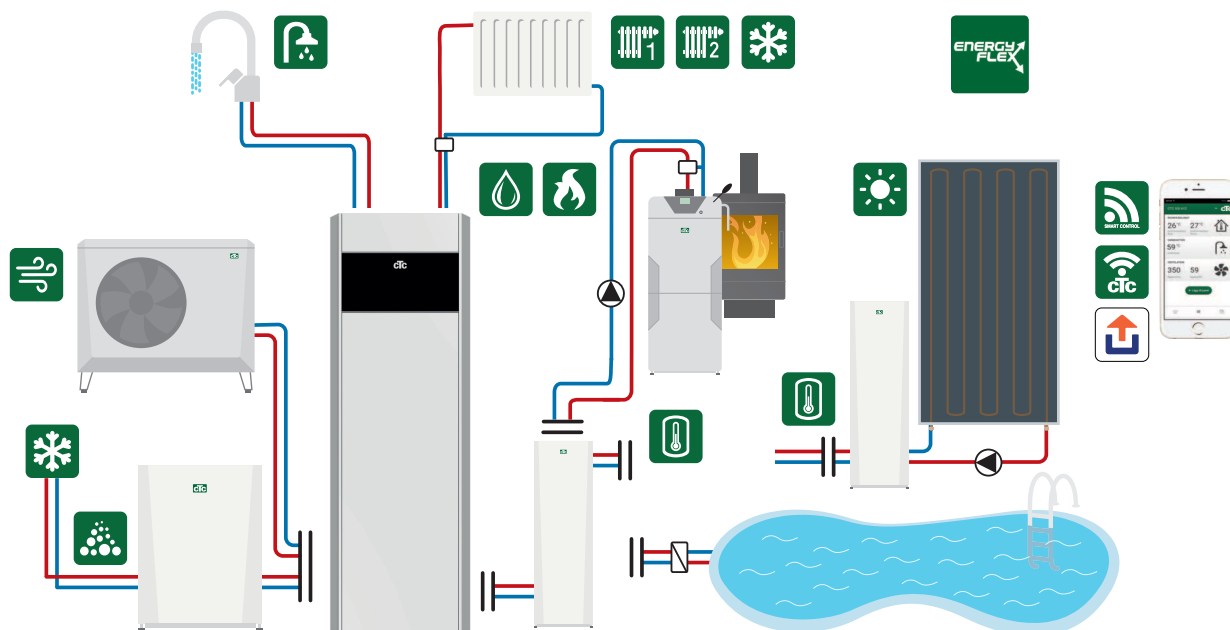
The picture below shows the basic construction of CTC EcoZenith i360.

If a heat pump is connected, the energy in the air or bedrock/ground is drawn up by the cooling system. The compressor then raises the temperature to a usable level, after which the energy is transferred to the heating system and hot water. The built-in immersion heater helps when additional heat is needed or when the heat pump is not connected.



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7.1 Options with CTC EcoZenith i360



In addition to the basic installation, accessories are required such as: Extra sensor, Mixing Valve group 2, Expansion Card, etc. CTC Volume tank is recommended for large heating needs or for systems with a high pressure differential. See chapter "System adjustments".

7.2 Basic installation, CTC EcoZenith i360

EcoZenith i360
1 heating circuit
1 compatible EcoAir/CombiAir heat pump



EcoZenith i360
1 heating circuit
1 compatible EcoPart heat pump



EcoDesign information and energy labelling stickers about the current combination (current package) can be retrieved/downloaded from www.ctc.se/ecodesign. Information and energy labelling stickers must be handed over to the final consumer of the package in question.

7.3 Compatible heat pumps

CTC EcoPart 400
Brine-to-water

- CTC EcoPart 406
- CTC EcoPart 408
- CTC EcoPart 410
- CTC EcoPart 412

CTC EcoPart 600
Speed controlled,
Brine-to-water

- CTC EcoPart 612*
- CTC EcoPart 616*

CTC EcoAir 400
Air-to-water

- CTC EcoAir 406
- CTC EcoAir 408

CTC EcoAir 600M
Speed controlled
Air-to-water

- CTC EcoAir 510M
- CTC EcoAir 610M
- CTC EcoAir 614M
- CTC EcoAir 622M

CTC EcoAir 700M
Speed controlled
Air-to-water

(from software version
2023-11-01)

- CTC EcoAir 708M
- CTC EcoAir 712M

(from software version
2025-04-08)

- CTC EcoAir 720M

CTC CombiAir 6-16M
Speed controlled
Air-to-water

(from software version
2021-01-01)

- CTC CombiAir 6M
- CTC CombiAir 8M
- CTC CombiAir 12M
- CTC CombiAir 16M

CTC EcoAir C100
Speed controlled
Air-to-water

(from software version
2025-12-12)

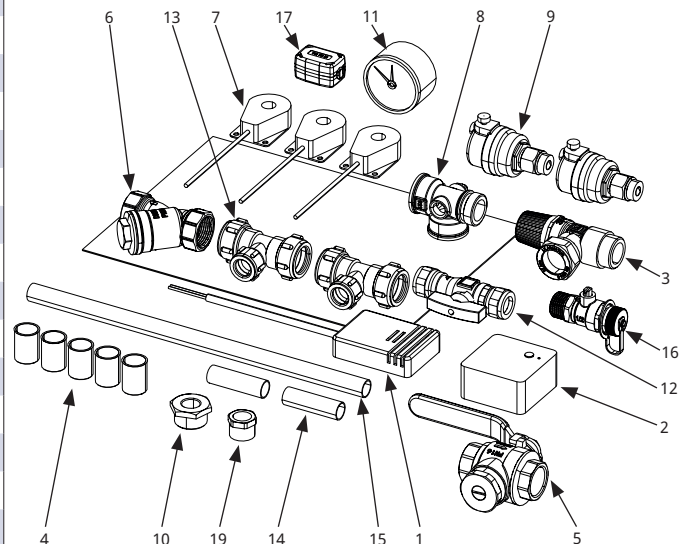
- CTC EcoAir C106
- CTC EcoAir C108
- CTC EcoAir C112
- CTC EcoAir C116

7.4 Delivery includes:

- CTC EcoZenith i360.
- Installation and Maintenance Manual.
- Supplied Components (list and picture below of supplied components for CTC EcoZenith i360).

*** NOTE!**
 When the CTC EcoPart 600 is controlled by the CTC EcoZenith i360, the heat pump's factory-fitted charge pump will not be used.

| No. | Designation | **Quantity |
|-----|-----------------------------------------------------------|------------|
| 1 | Outdoor sensor | 1/1/1/1 |
| 2 | Room sensor | 1/1/1/1 |
| 3 | Safety valve 2.5 bar 3/4" ext. | 1/1/1/1 |
| 4 | Support sleeve 22x1 | 4/5/4/4 |
| 5 | Filter ball valve with magnet | 1/1/1/1 |
| 6 | Dirt filter 3/4" int. 0.4 mm | 1/1/1/1 |
| 7 | Current sensor | 3/3/0/3 |
| 8 | Manifold | 1/1/1/1 |
| 9 | Automatic bleed valve | 2/2/2/2 |
| 10 | Bushing 3/4"x3/8" | 1/1/1/1 |
| 11 | Manometer | 1/1/1/1 |
| 12 | Filling valve | 1/1/1/1 |
| 13 | T-connection 22-15-22 | 2/2/2/2 |
| 14 | Filler pipe cu15 | 2/1/2/2 |
| 15 | Filler pipe cu15 | 0/1/0/0 |
| 16 | Drainage valve 1/2" | 0/1/0/0 |
| 17 | Ferrite 25 MHz 141 Ω | 1/1/1/1 |
| 18 | Installation instructions for bleeding and filling EZi360 | 1/1/1/1 |
| 19 | Bushing 1/2"x3/8 | 1/1/1/1 |



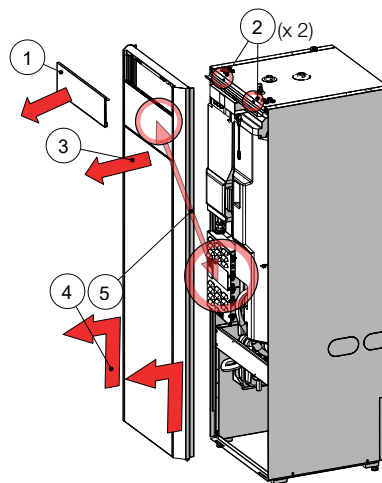
**CTC EcoZenith i360: L (3x400V) / H (3x400V) / L 1x230V / L 3x230V

8. Pipe installation

The installation must be carried out in accordance with the applicable standards. **Do not forget to flush the heating circuit clean before connecting.** Apply all the installation settings based on the description in the section entitled "First start".

In order to adjust the pressure in the expansion vessel and check the pipe fittings before the first start, the front needs to be dismantled.

1. Remove magnetic strip.
2. Loosen two screws.
3. Fold out front.
4. Lift up and out front.
5. Protect the cable between the display and the cabling.



! Minimum water volume in the heating circuit (>25 °C) for reliable defrosting functionality:

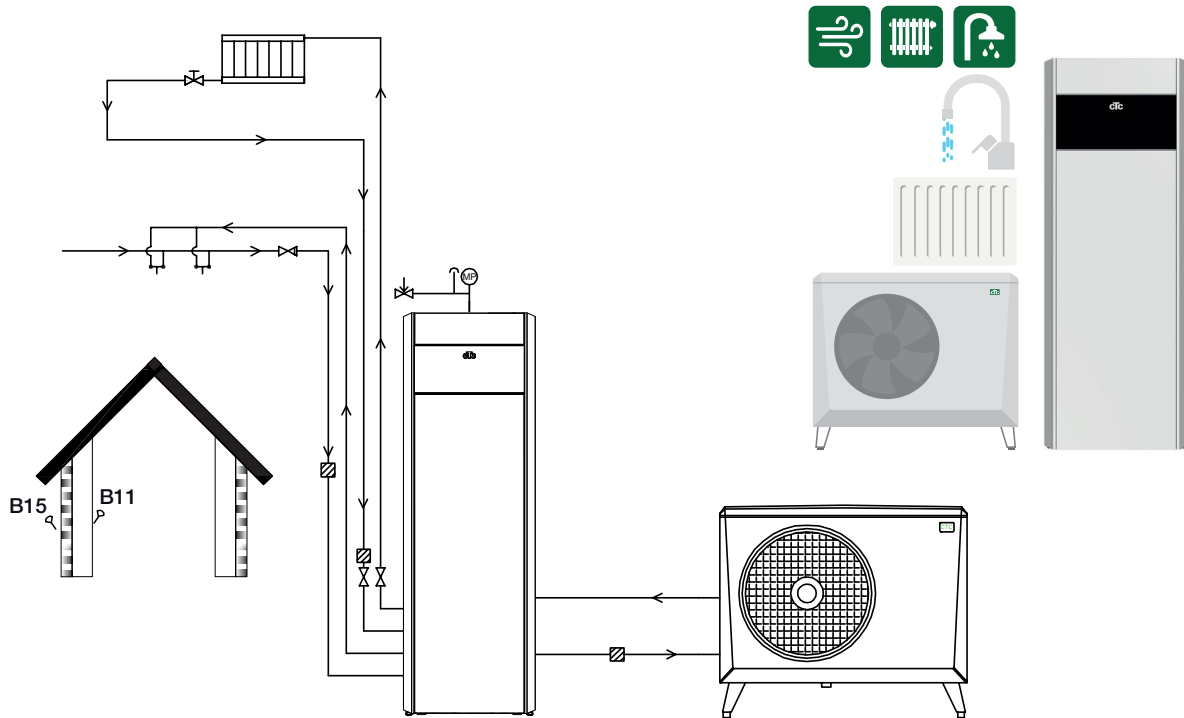
| | |
|----------------------|-------|
| CTC EcoAir 708M | 80 l |
| CTC EcoAir 712M | 80 l |
| CTC EcoAir 720M | 120 l |
| CTC EcoAir 610M | 80 l |
| CTC EcoAir 614M | 80 l |
| CTC EcoAir 622M | 120 l |
| CTC EcoAir 406 | 80 l |
| CTC EcoAir 408 | 100 l |
| CTC EcoAir C106/C108 | 50 l |
| CTC EcoAir C112/C116 | 100 l |

8.1 Schematic diagram for air-to-water heat pump

CTC EcoZenith i360

1 heating circuit

1 compatible CTC EcoAir heat pump from the 400, 500 or 600 series.

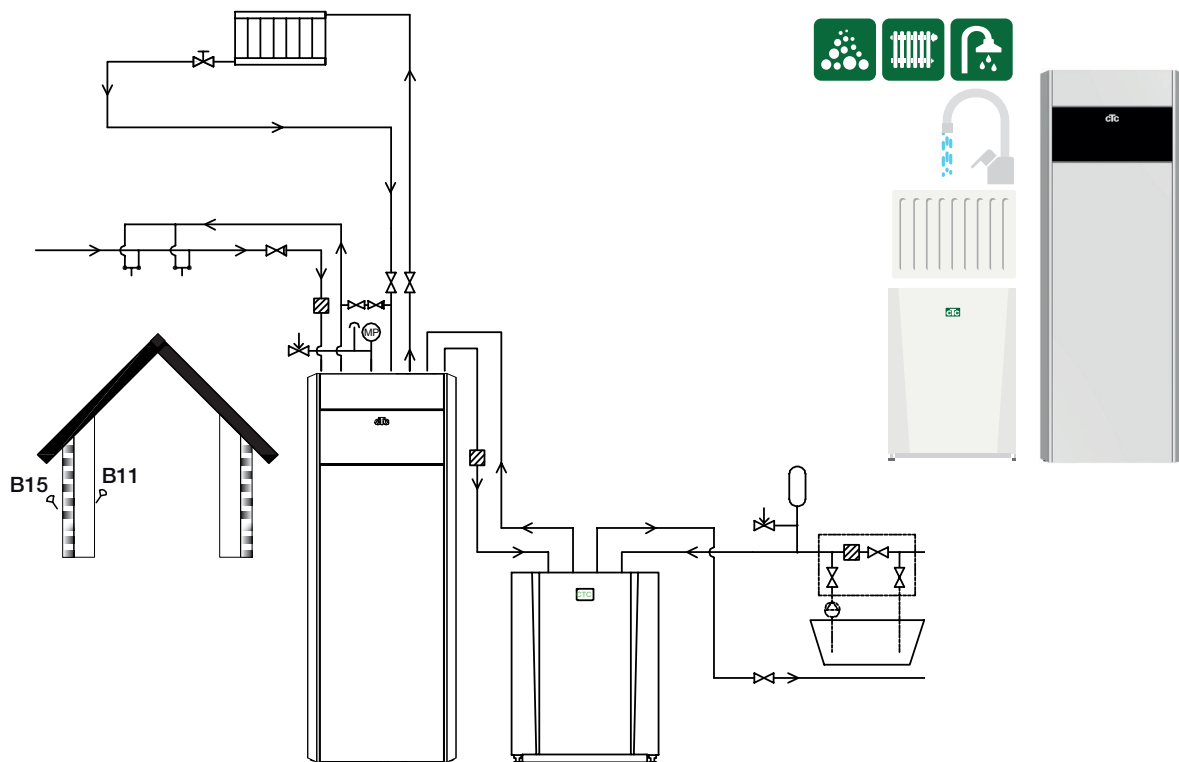


8.2 Schematic diagram for brine-to-water heat pump

CTC EcoZenith i360

1 heating circuit

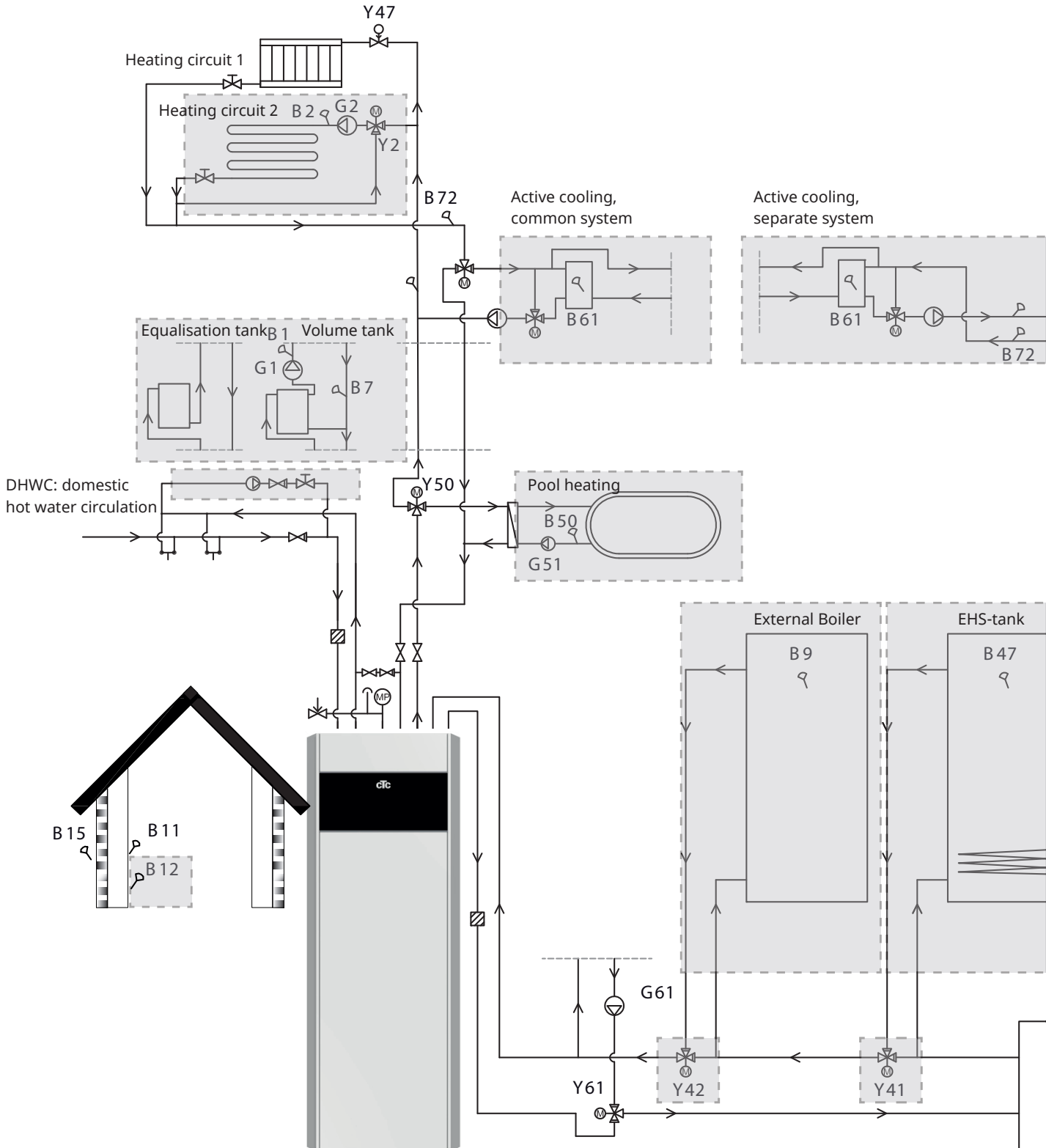
1 compatible heat pump from the CTC EcoPart 400 or 600 series.



8.3 Full schematic diagram

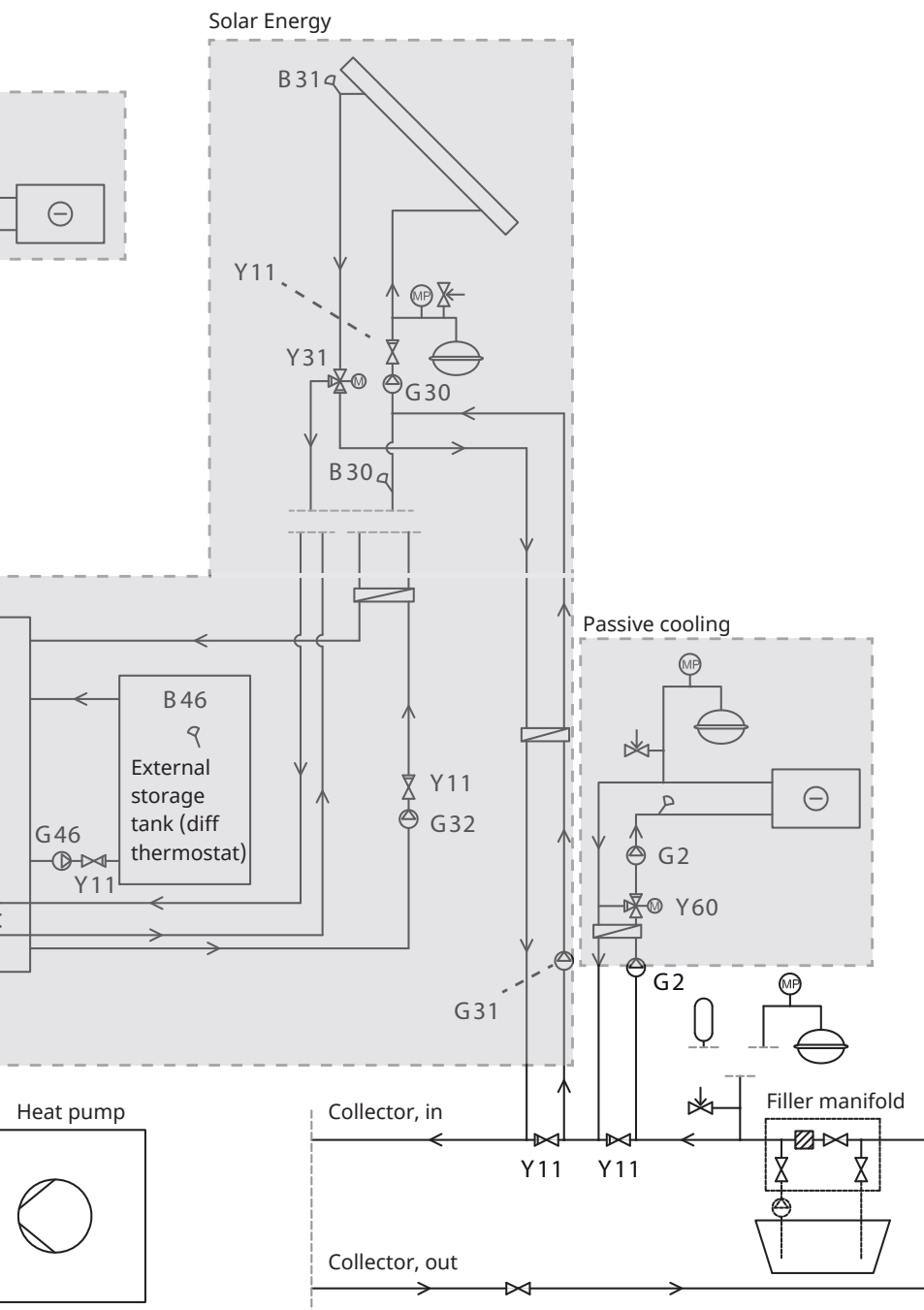
This is a full schematic diagram of the connection options for the CTC EcoZenith i360. Different installations and systems may look different, e.g. a one or two-pipe system, which means that the finished installation may be different.

In addition to basic installation



8.4 Interactive schematic diagram

On CTC's website, you can bring up and print out the schematic diagram for the installation you want by clicking the option in the interactive pdf file.

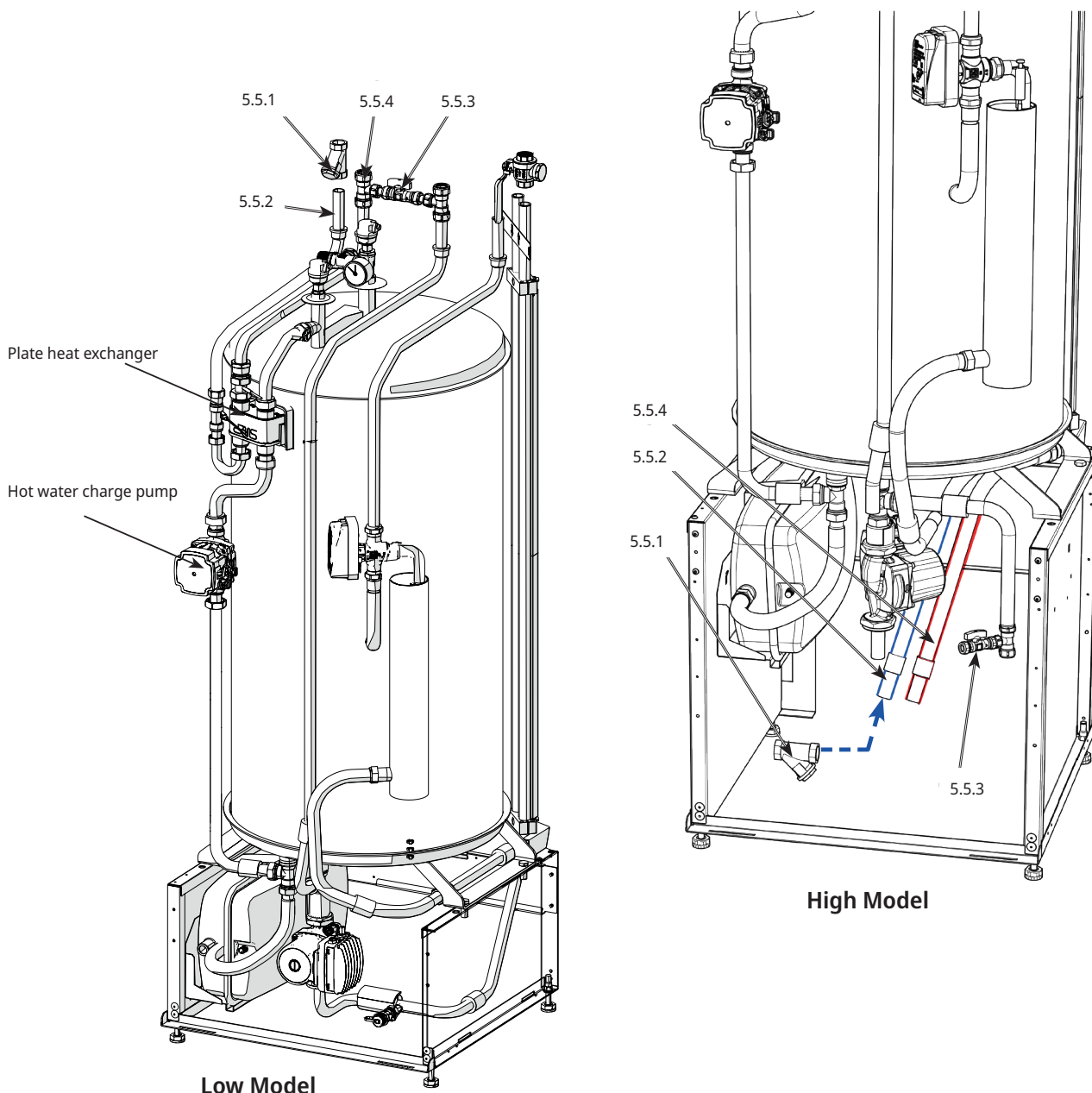


| | |
|--|------------------|
| | Mixing valve |
| | Diverting valve |
| | Control valve |
| | Solenoid valve |
| | Non-return valve |
| | Shut-off valve |
| | Sensor |
| | Pump |
| | Dirt filter |
| | Pressure sensor |
| | Safety valve |
| | Level vessel |
| | Expansion tank |
| | Heat exchanger |

8.5 Install hot water pipe

DHW

- 5.5.1 Install dirt filter.
 - 5.5.2 Install cold water supply with non-return valve.
 - 5.5.3 Install the filling valve.
 - 5.5.4 Install hot water pipe from tank.
- Check function – flush.

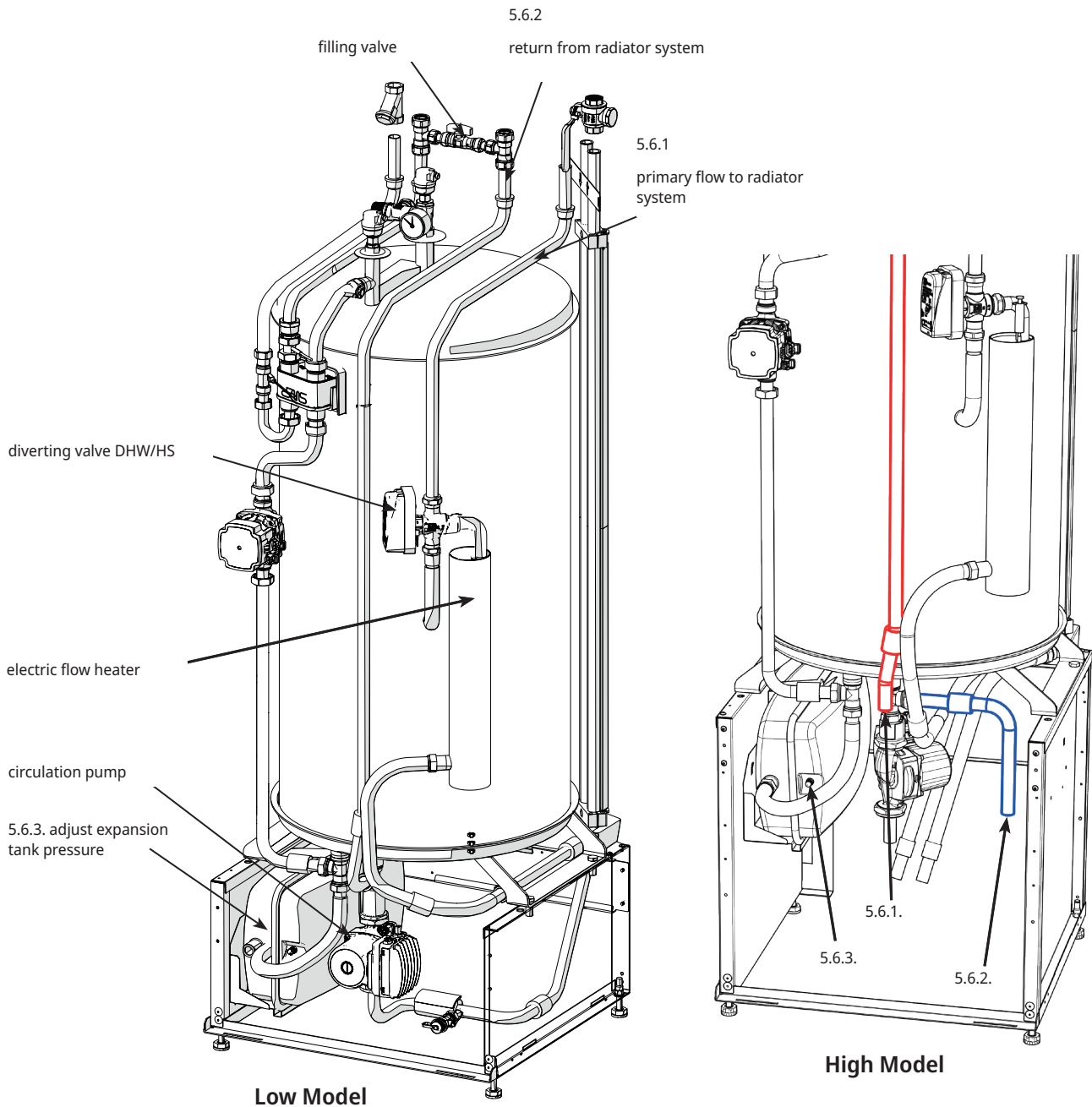


NB: To facilitate servicing, it is important to fit shut-off valves to both the primary flow and the return line.

8.6 Install pipe for radiator system

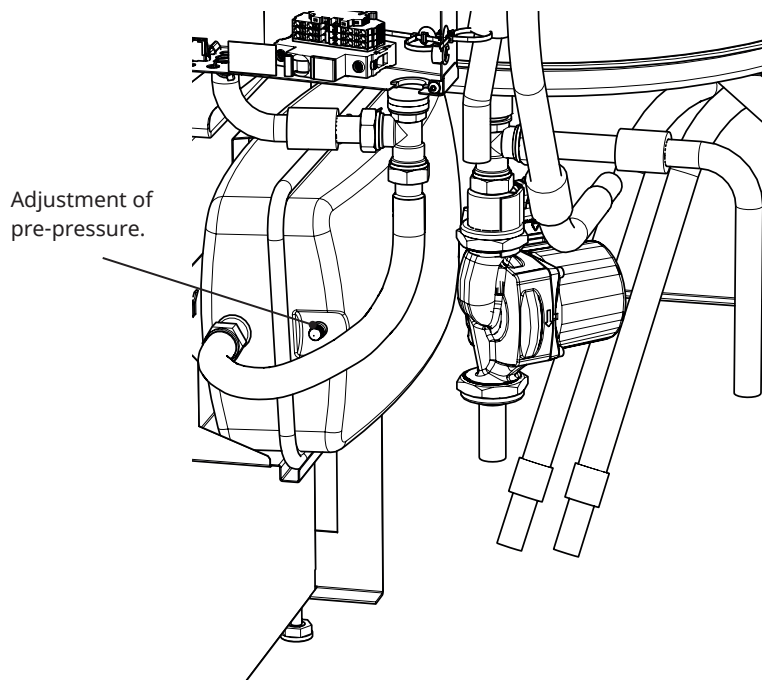
Heating circuit

- 5.6.1 Install primary flow with shut-off valve.
- 5.6.2 Install return line.

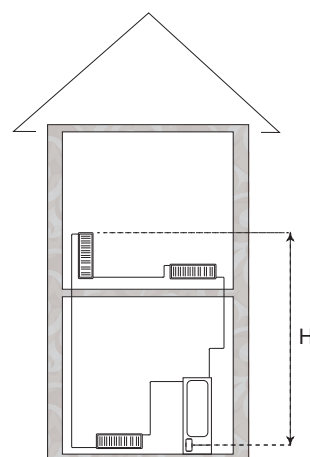


NB: To facilitate servicing, it is important to fit shut-off valves to both the primary flow and the return line.

5.6.3 Adjust the pre-assembled expansion tank to the right pre-pressure by using the valve to raise or lower the pressure.



The pre-pressure in the expansion tank is calculated according to the height (H) between the highest-positioned radiator and the expansion tank. The pre-pressure must be checked/set before the system is filled with water. The system pressure must be set 0.3 bar higher than the pre-pressure in the expansion tank. For example, a pre-pressure of 1.0 bar (10 mvp) means a maximum permitted height difference of 8 m.



| Maximum height (H) (m) | Pre-pressure (bar) | Maximum volume in the heating circuit (excluding product) (L) |
|------------------------|--------------------|---------------------------------------------------------------|
| 3 | 0.5 | 240 |
| 8 | 1.0 | 85 |

- !** The expansion tank provided is pre-pressurised to approx. 1 bar, and therefore needs to be adjusted to a suitable pre-pressure for the building. This must be done before the system is filled with water.
- If an open expansion tank is used, the distance between the expansion tank and the highest placed radiator must not be below 2.5 m, in order to avoid introducing oxygen into the system.
- If a heat pump is connected with another heat source, e.g. an existing boiler, the installations must have separate expansion vessels.

8.7 Install pipes to and from the heat pump

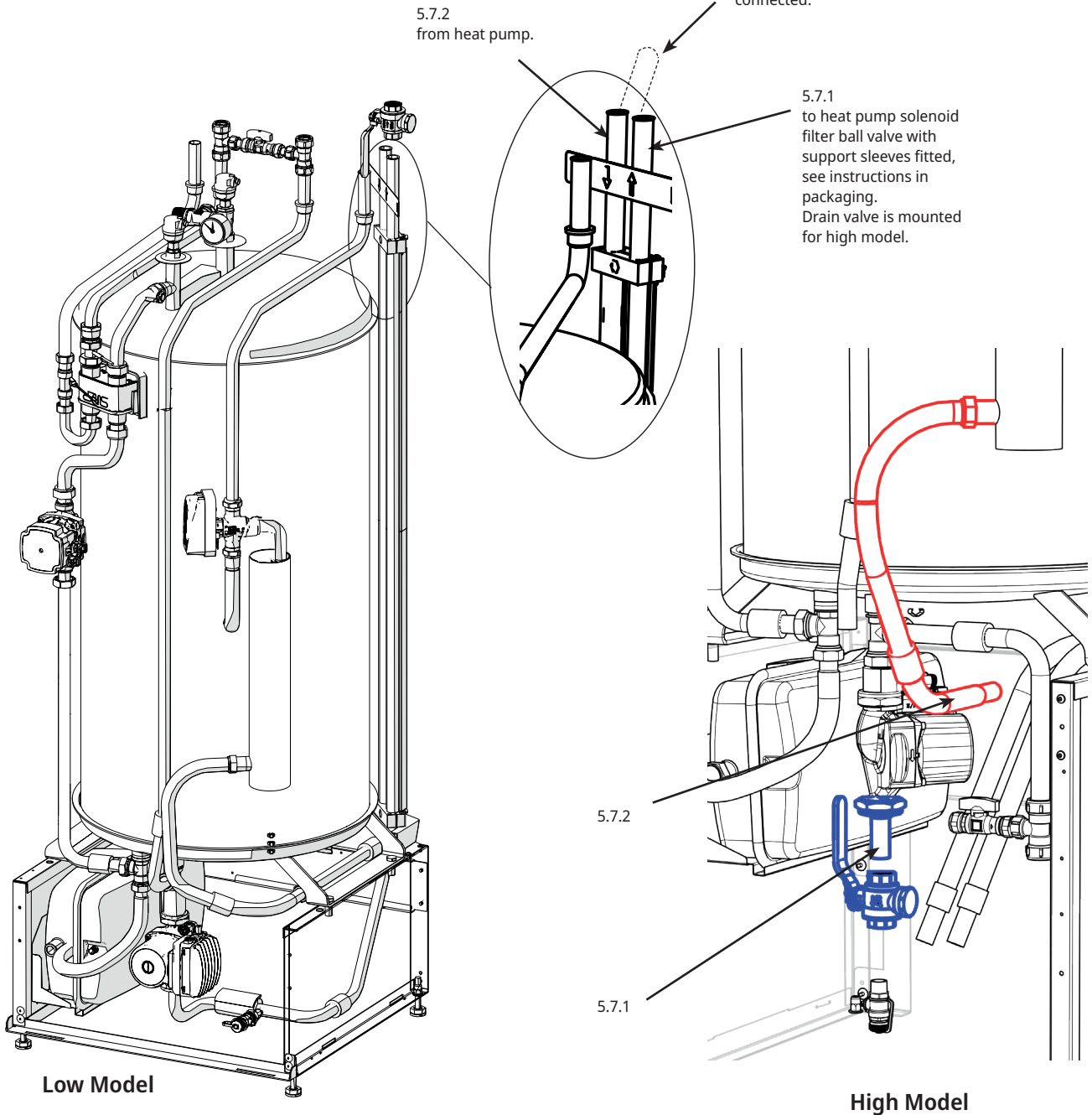
Heat pump

5.7.1 Install pipe to the heat pump with solenoid filter ball valve.

5.7.2 Install pipes from heat pump.

Install any adjustable by-pass coupling past the heat pump. (*a by-pass coupling is only used for electric operation without a heat pump).

* without a heat pump, to and from heat pump must be connected.



CTC EcoZenith i360 is only approved for installation together with CTC Heat pumps. See the recommended systems at the start of the installation instructions.

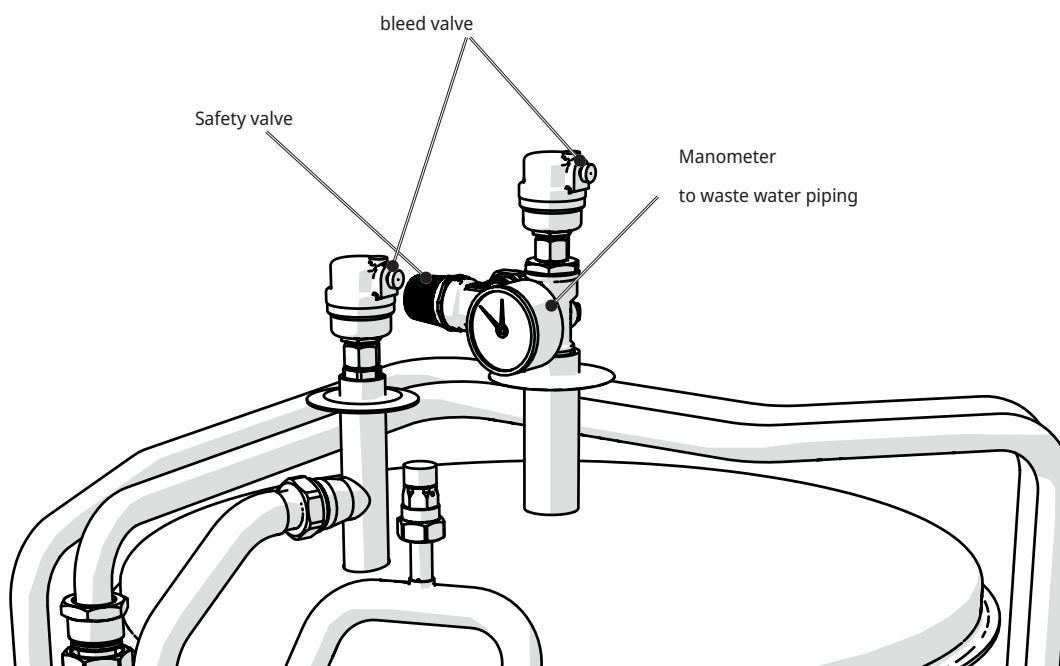
8.8 Install waste water piping

Waste water

5.8.1 Fit the safety valve, bleed valve and manometer. Components and assembly instructions are included in the additional pack for the product.

5.8.2 Install waste water piping.

5.8.3 The bleed valve is activated by loosening the bleeder screw, which should then be closed after a few minutes.



High Model



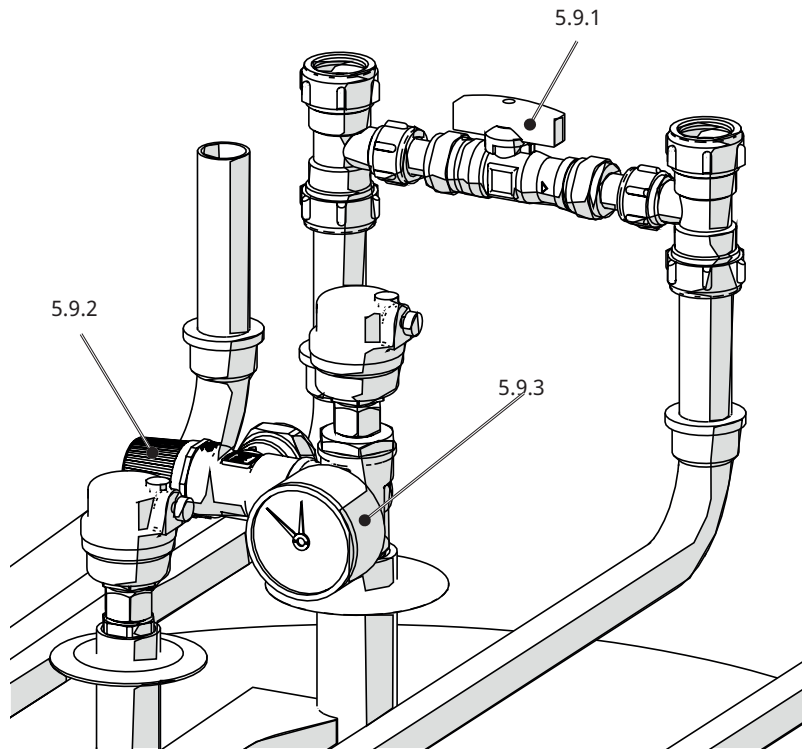
NB: Safety valve

The tank's safety valve (2.5 bar) for the heating circuit must be fitted in accordance with applicable regulations. The waste pipe is connected to the waste system, either directly to the floor drain or via a funnel. The waste pipe must slope towards the waste system, be installed frost-free and left open to the atmosphere/without pressure. The waste pipe must be fitted to the waste system.

8.9 Fill the heating circuit

Fill the heating circuit

- 5.9.1 Open the filling valve and fill the heating circuit.
- 5.9.2 Turn the safety valve to release air more quickly during filling; close the filling valve when the system is full.
- 5.9.3 Check the manometer for a filled cold system (approx. 1 bar or 0.2-0.3 bar above the pre-pressure on the expansion tank).



Low Model

8.10 Bleed the entire system

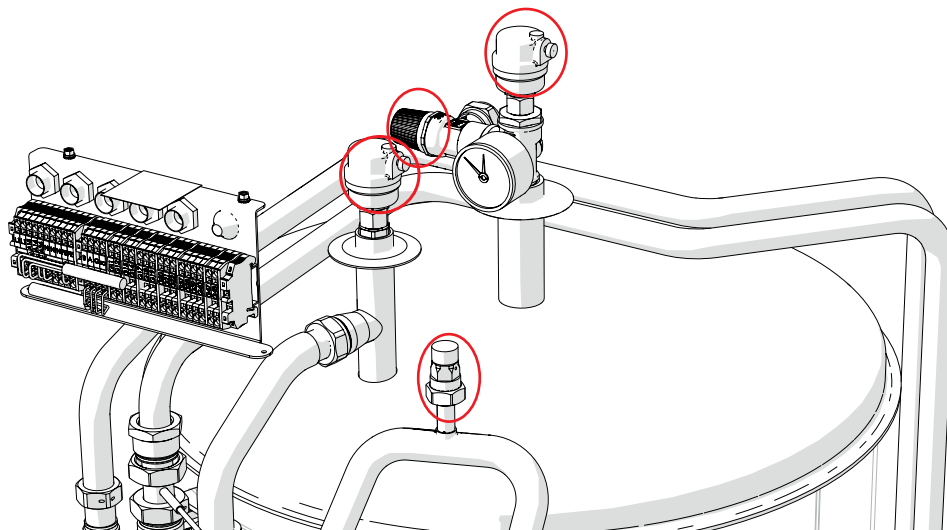
Bleed the system

5.10.1 Bleed the CTC EcoZenith i360 valve using the safety valve, make sure also that the screw for the automatic bleed valve has been activated.

5.10.2 Bleed, activate bleed valve for heat pump.

5.10.3 Bleed high points for the radiator system.

5.10.4 Flush the hot water system.



High Model



Bleeding is very important for the product to function. Problems that can be resolved by bleeding are listed in the chapter "troubleshooting".

9. Important! Information on air bleeding

For the product to work as intended, the system must be fully bled.

It is extremely important that a basic bleeding of the product is carried out systematically and carefully.

Bleeding devices must be fitted to the system's natural high points. A basic bleeding of the hot water tank can be carried out upon installation by releasing the safety valve, which must be fitted to the top of the product.

The water must be circulated during bleeding of the various subsystems: the radiator systems, heat pump system and hot water charging system (to run the pumps, 3-way valve etc. manually, go into the menu "Advanced/Service/Function test"). Also move the 3-way valve during the bleeding process. A careful basic bleeding must be carried out before the system is put into operation and the heat pump is started.

Tip:

Once basic bleeding is complete: increase the water pressure in the system temporarily to approx. 2 bar.

- Automatic bleeding valves are included in the package and supplied as standard for this product. They must be fitted to the top of the product as shown in the picture.
- Important! Bleed any air remaining in the radiators (elements) and other parts of the system after it has been in operation for a short time.

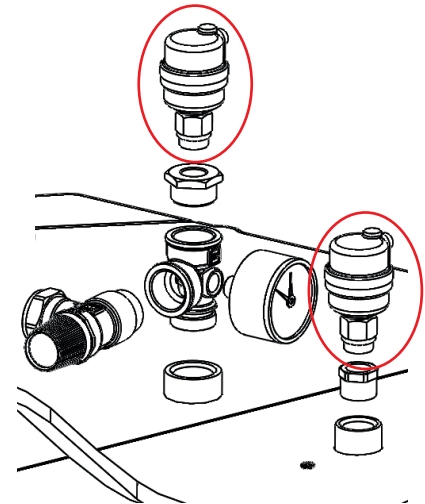
Small microbubbles gradually collect in the system's 'pockets', and it can take quite a long time before all the air is removed from the system. When the pressure is temporarily increased, any remaining air pockets are compressed and carried along more easily with the flow of water and can be released into the ventilation devices.

Tip:

After the air is bled, there may be a drop in system pressure. Having the system pressure too low increases the risk of noise in the system and of air being 'sucked' in on the suction side of the pump. Keep an eye on the system pressure. Bear in mind that the system pressure will vary during the year due to changes in temperature in the heating circuit, which is completely normal.

If 'gushing' sounds can be heard from the product, this is a sign of remaining air.

A loss of heating functionality can also be a sign of remaining air.



The automatic bleeder is equipped with shut off screws.



If these instructions are not followed during the installation, operation and maintenance of the system, CTC's liability under the applicable warranty terms is not binding.



Information in this type of box [i] is intended to help ensure that the product functions optimally.



Information in this type of box [!] is particularly important for correctly installing and using the product.

10. Electrical installation

Safety information

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

Turn off the power with an omnipolar switch before doing any work on the product.

- The product is classified as IP X1. The product must not be rinsed with water.
- Never jeopardise safety by removing bolted covers, hoods or similar.
- Never jeopardise safety by deactivating safety equipment.
- Damaged feed cables must be replaced by the manufacturer or a qualified service engineer in order to avoid any risks.
- Installation and heat pump connection must be performed by an authorised electrician. All wiring must be installed according to applicable provisions. The boiler's internal wiring is installed at the factory.

To open the front panel:

1. Remove the magnetic strip
2. Loosen two screws
3. Fold out the front panel
4. Lift up and out the front panel
5. Be careful with cable between display and cabling

Supply

The power supply cable is connected at (X), length 200 cm.

The group fuse is selected such that all relevant requirements for the electrical installation is met; see "Technical data". The size of the fuse is set in the installation flow on the display. The product adjusts the electrical power according to this. Once a current sensor has been installed, the built-in load switch is able to regulate the immersion heater's electrical output based on the set main fuse.

Omnipolar switch

The installation should be preceded by an omnipolar switch according to overvoltage category III, which ensures disconnection from all electric power sources.

Residual current device

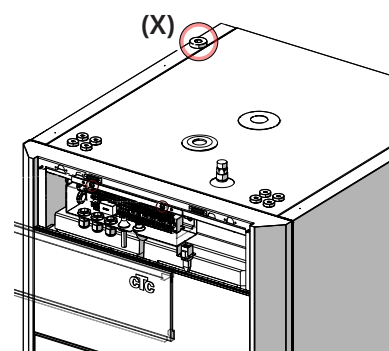
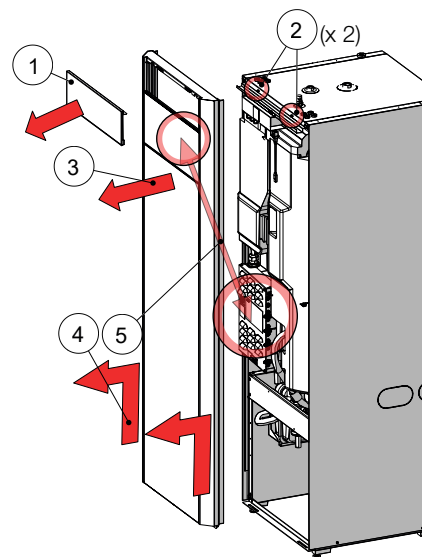
If there is already a residual current device for the building, the product still needs to be fitted with its own residual current device.

Max thermostat

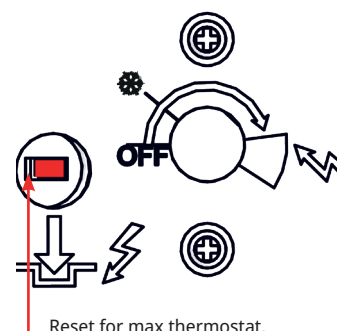
If the product has been stored in an extremely cold place, the max. thermostat may have been triggered. It can be reset by pressing the button on the electrical switchboard behind the front panel. Always check on installation that the max thermostat has not tripped.

Extra low voltage protection

The following outputs and inputs have extra low voltage protection/potential free input: current transformer, outdoor sensor, room sensor, primary flow sensor, return sensor, NR/SO, communication to heat pump.



Positioning of supply cable.



Reset for max thermostat.

10.1 Overview of basic electrical installation

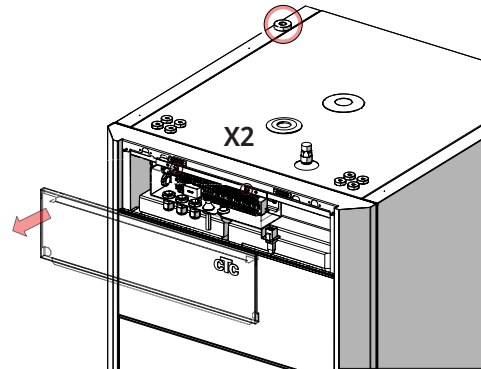
Basic installation includes:

CTC EcoZenith i360
 1 heating circuit
 1 CTC EcoAir heat pump in the 400, 500, 600M or 700M series.

CTC EcoZenith i360
 1 heating circuit
 1 heat pump in the CTC EcoPart 400 or 600M series.



In such cases, workflow points 1–6 can be used for electrical installation.



| 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------------------|------------------------------|------------------------------------------------|----------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| Install fuse panel | Current sensor fitted* | Fit outdoor sensor | Fit room sensor* | Connect heat pump | Finish electrical installation |
| Omnipolar switch | Fit on fuse panel | Place representatively for outdoor temperature | Place representatively for house temperature | Connect communication cable, terminal block X2 | Provide information on house fuse size to pipe installation engineer |
| Connect factory-fitted feed cable | Connect to terminal block X2 | Connect to terminal block X2 | Connect to terminal block X2 | Connect external power supply to heat pump | Check and sign electrical installation checklist |

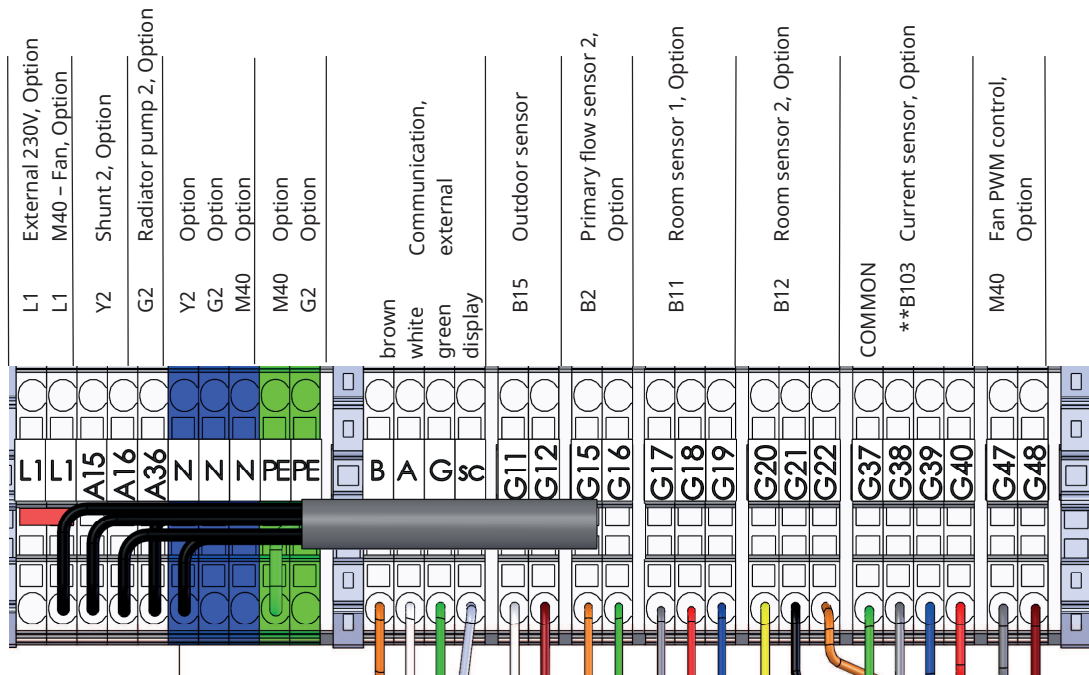
* option – can be selected

10.2 List of functions

| Function | Relay card [A] | Sensor [B] | Pump [G] | Valve [Y] | Fan | Other |
|---------------------------------------------|----------------|-----------------------|-------------|-----------|-----|-----------------|
| Basic installation | (A2) (X2) | B11, B15, (B18), B103 | (G5), (G11) | Y21 | | COM HP – HP A1* |
| Return temp., installation without HP A1 | (A2) | B7 | | | | |
| Heating circuit 2 | (A2) | B2, B12 | G2 | Y2 | | |
| Ventilation | (X2) | | | | M40 | |
| Passive cooling | (A2) | B2 | G2 | | | |
| Active cooling | (A2) | B61, B72 | G61 | Y61 | | |
| Volume tank (HS circulation under DHW/Pool) | (A2) | B1 | G1 | | | |
| Electric shut-off valve | (A2) | | | Y47 | | |
| DHW circulation | A3 | | G40 | | | |
| External heat source (EHS) | (A2) or A3 | B47 | | Y41 | | |
| External Boiler | (A2) or A3 | B9 | | Y42 | | E1 |
| Diff thermostat function | A3 | B46 | G46 | | | |
| Pool | A3 | B50 | G51 | Y50 | | |
| Solar Energy | A3 | B30, B31 | G30 | Y30 | | |
| Solar energy, bore hole charging | A3 | | G31 | Y31 | | |
| Solar energy, intermediate heat exchanger | A3 | | G32 | Y30 | | |
| SmartGrid | (A2) | | | | | K22–K25 |
| Remote control | (A2) | | | | | K22–K25 |

(Factory-fitted)

*powered separately (not from this unit)



Terminal block X2

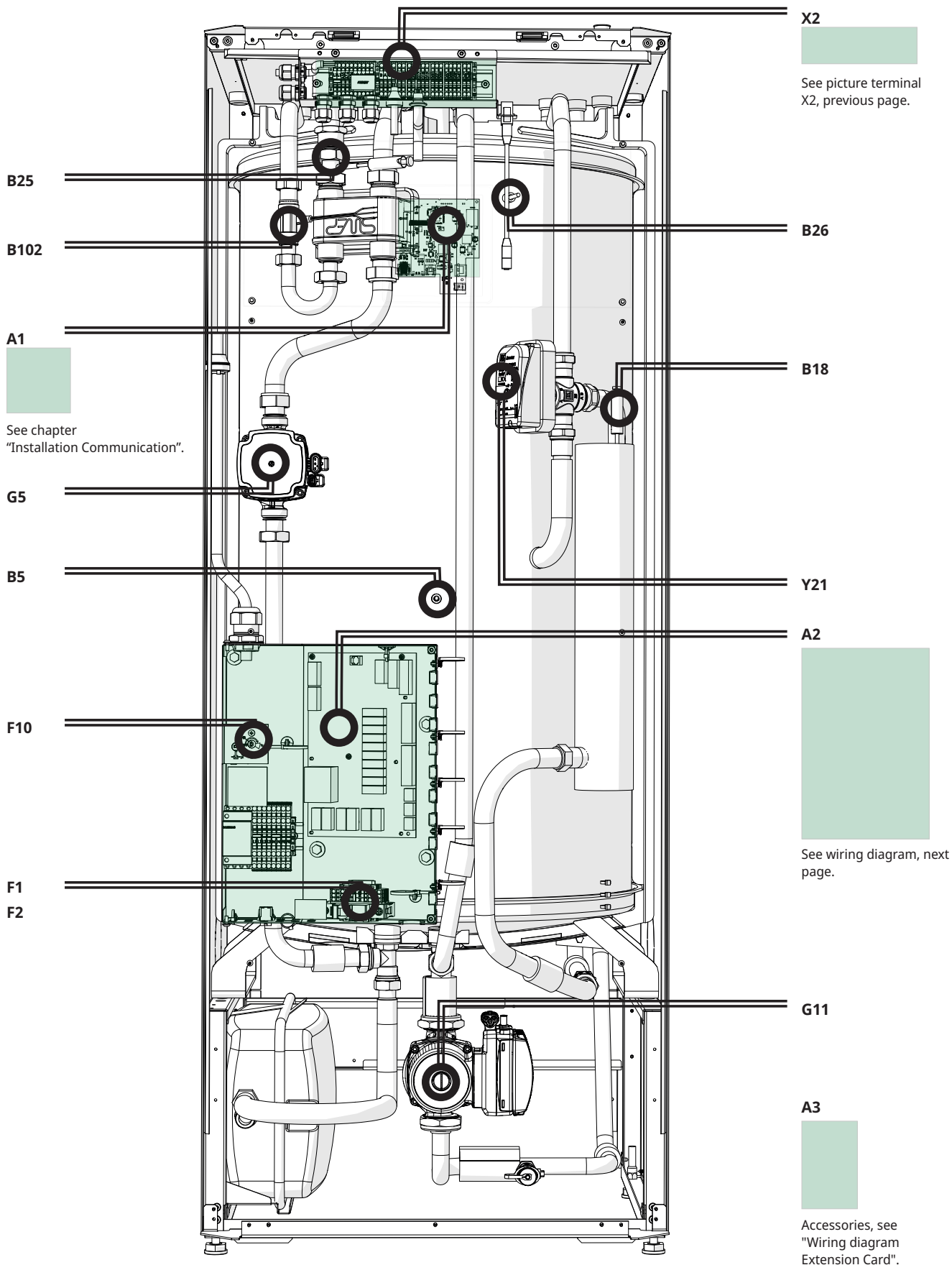
**B103 – current sensor not applicable to 1x230V

10.3 Electrical parts list

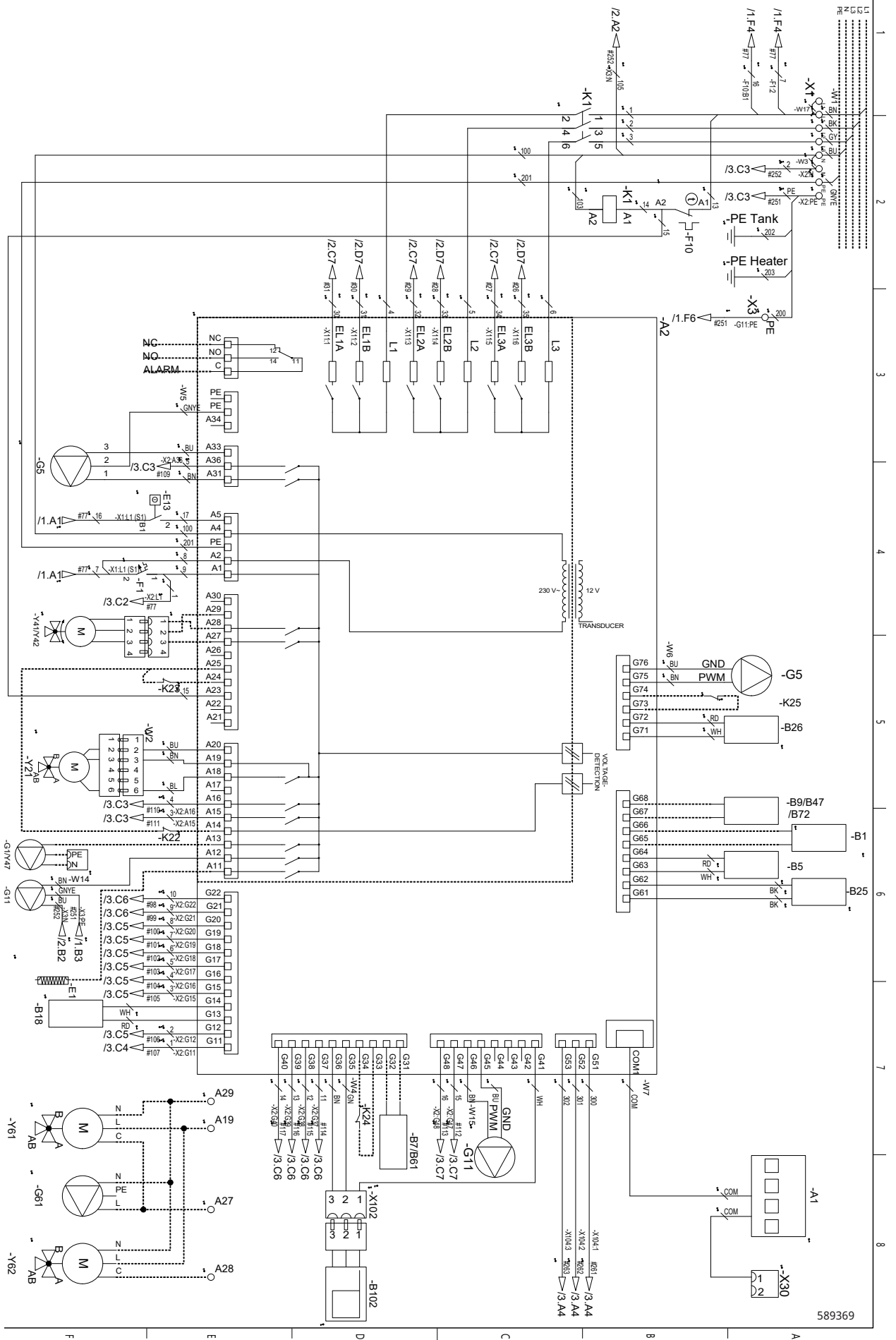
| Designation | Spec | |
|-------------|-----------------------------------------------|--------------|
| A1 | Display | |
| A2 | Relay/main card | |
| A3 | Expansion card | |
| A6* | Gateway | |
| B1 | Primary flow sensor 1 | NTC 22K |
| B2 | Primary flow sensor 2 | NTC 22K |
| B5 | Sensor, DHW tank | NTC 22K |
| B7 | Return sensor | NTC 22K |
| B9 | External boiler sensor | NTC 22K |
| B11 | Room sensor 1 | NTC 22K |
| B12 | Room sensor 2 | NTC 22K |
| B15 | Outdoor sensor | NTC 150 |
| B18 | Primary flow sensor | NTC 22K |
| B25 | DHW sensor | NTC 015 WF00 |
| B26 | Sensor, upper hot water tank | NTC 22K |
| B30 | Solar panel sensor in | PT 1000 |
| B31 | Solar panel sensor out | PT 1000 |
| B41 | Sensor, external buffer tank upper | NTC 22K |
| B42 | Sensor, external buffer tank lower | NTC 22K |
| B46 | Sensor, diff. thermostat | NTC 22K |
| B47 | Sensor, EHS-tank | NTC 22K |
| B50 | Sensor, pool | NTC 22K |
| B61 | Sensor, cooling tank | NTC 22K |
| B72 | Return sensor, active cooling | NTC 22K |
| B102 | Flow switch | |
| B103 | Current sensor | |
| E1 | Relay, additional heating | |
| E13 | Backup heating thermostat | |
| F1 | Automatic circuit breaker | |
| F2 | Automatic circuit breaker | |
| F10 | Max thermostat | |
| G1 | Heating circ. pump 1 | |
| G2 | Heating / cooling circ. pump 2 | |
| G5 | Circulation pump for hot water heat exchanger | |
| G11 | Charge pump HP1 | |
| G30 | Circulation pump, solar panel | |
| G31 | Pump, bore hole recharging | |
| G32 | Pump, plate heat exchanger solar energy | |
| G40 | Circulation pump DHW circ. | |
| G46 | Charging pump | |
| G50 | Circulation pump, pool heating | |
| G61 | Circulation pump, active cooling | |

| Designation | Spec |
|-------------|----------------------------------------------|
| K1 | Contacteur 1 |
| K22 | Flexible remote control/ SmartGrid |
| K23 | Flexible remote control/ SmartGrid |
| K24 | Flexible remote control/ SmartGrid |
| K25 | Flexible remote control/ SmartGrid |
| M40 | Fan |
| HP A1 | Heat pump A1 |
| X1 | Terminal board |
| X10 | Extra terminal board |
| Y2 | Mixing valve 2 |
| Y21 | Diverting valve DHW 1 |
| Y30 | Diverting valve, solar, external buffer tank |
| Y31 | Brine diverting valve, solar |
| Y41 | Mixing valve EHS Tank |
| Y42 | Mixing valve External boiler |
| Y47 | Electric shut-off valve |
| Y50 | Diverting valve, pool |
| Y60 | Mixing valve, passive cooling |
| Y61 | Diverting valve heating / active cooling |
| Y62 | Diverting valve, active cooling demand relay |

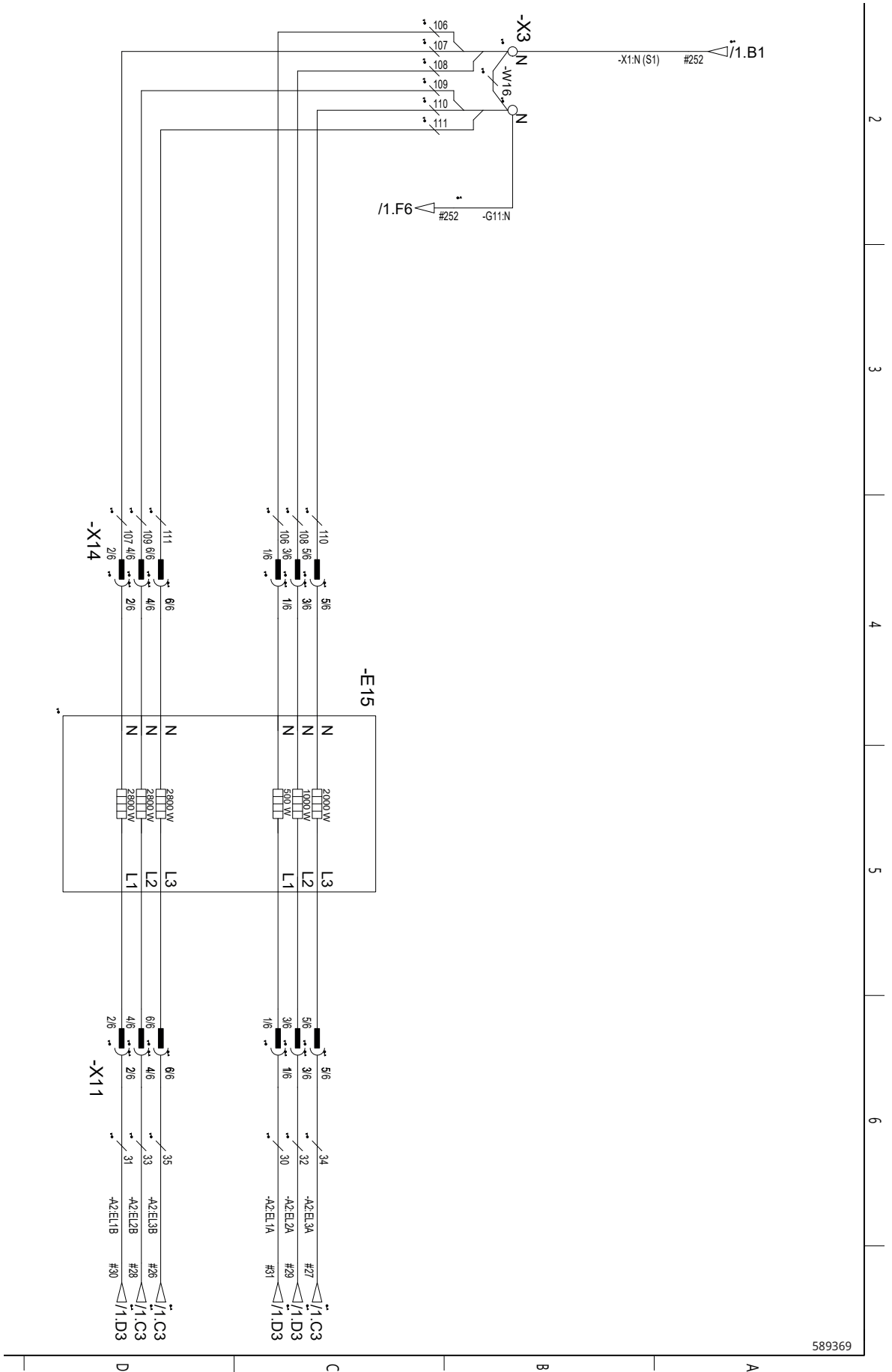
*Accessory CTC SmartControl.



10.4 Wiring diagram CTC EcoZenith i360 3x400V Relay card A2

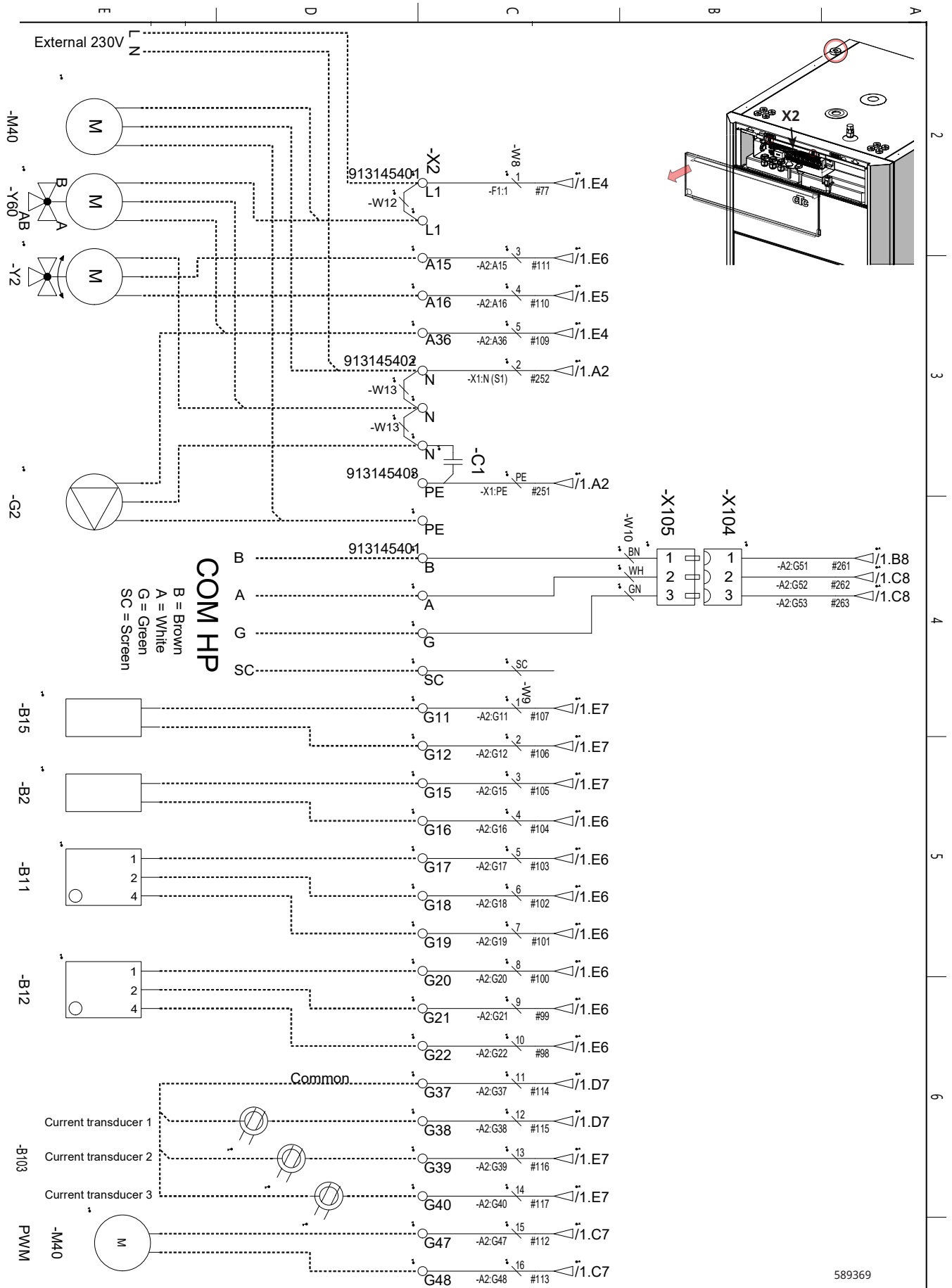


10.5 Wiring diagram CTC EcoZenith i360 3x400V Flow heater E15



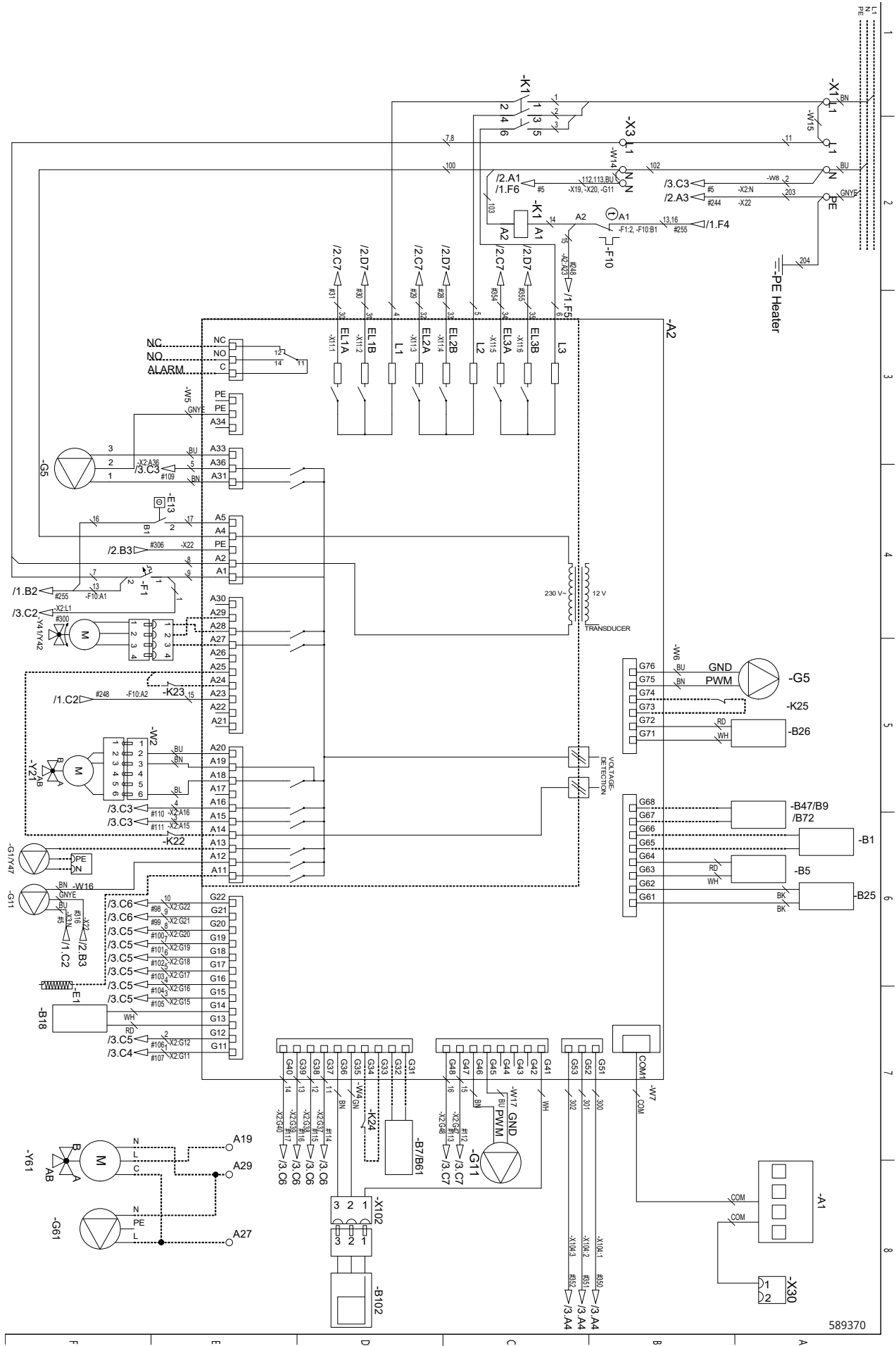
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10.6 Wiring diagram CTC EcoZenith i360 3x400V Terminal Block X2

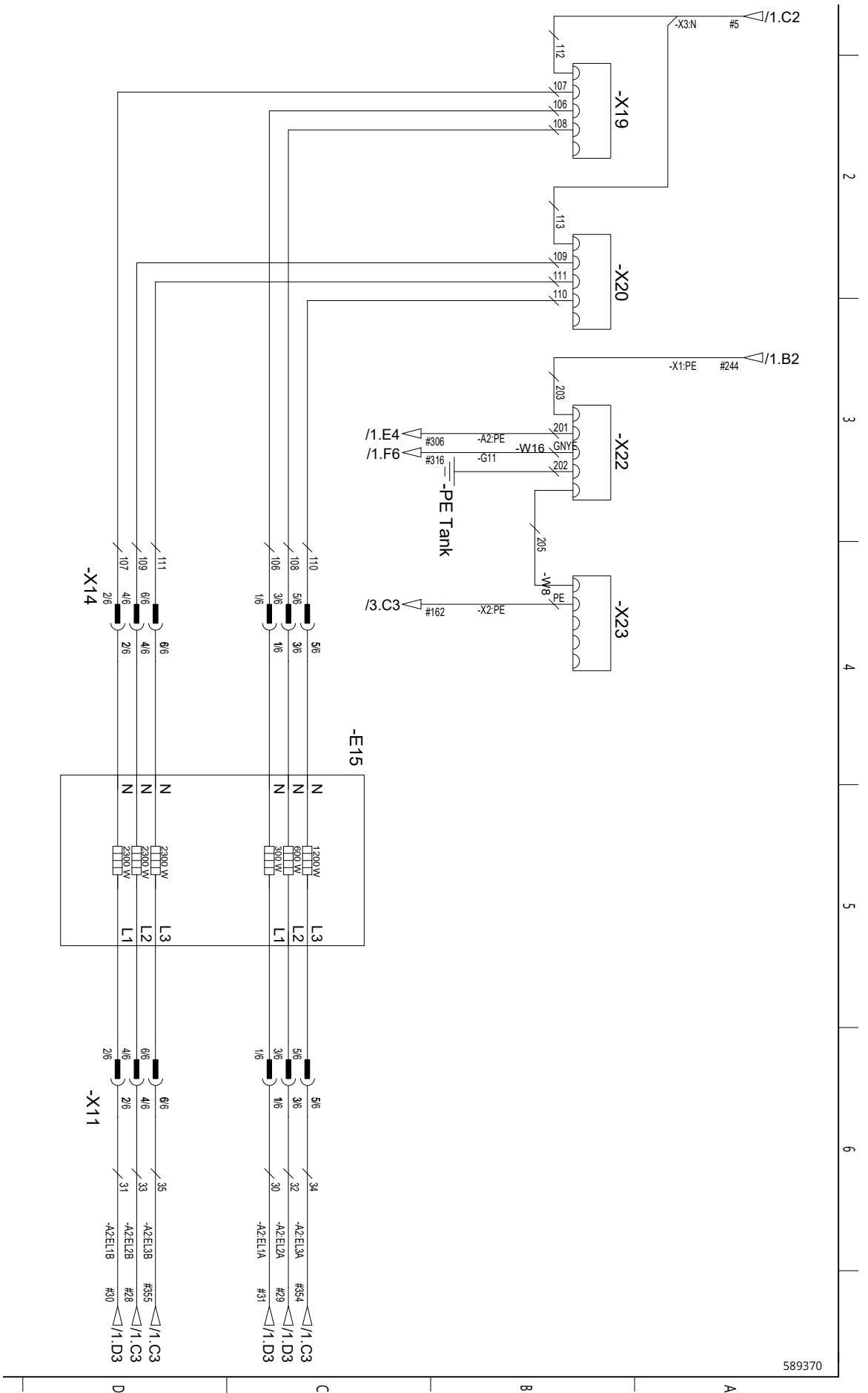


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10.7 Wiring diagram CTC EcoZenith i360 1x230V Relay card A2

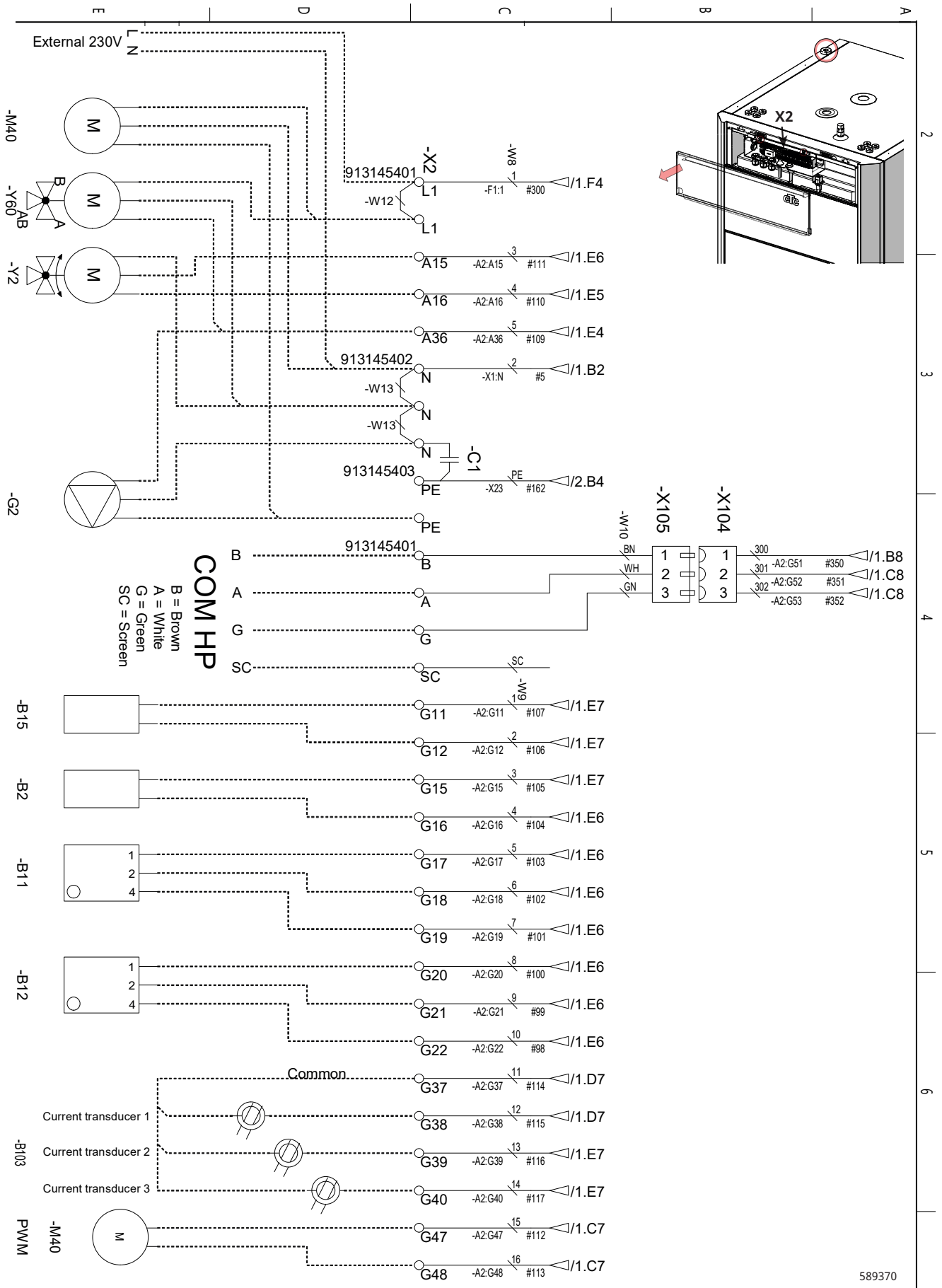


10.8 Wiring diagram CTC EcoZenith i360 1x230V Flow heater E15

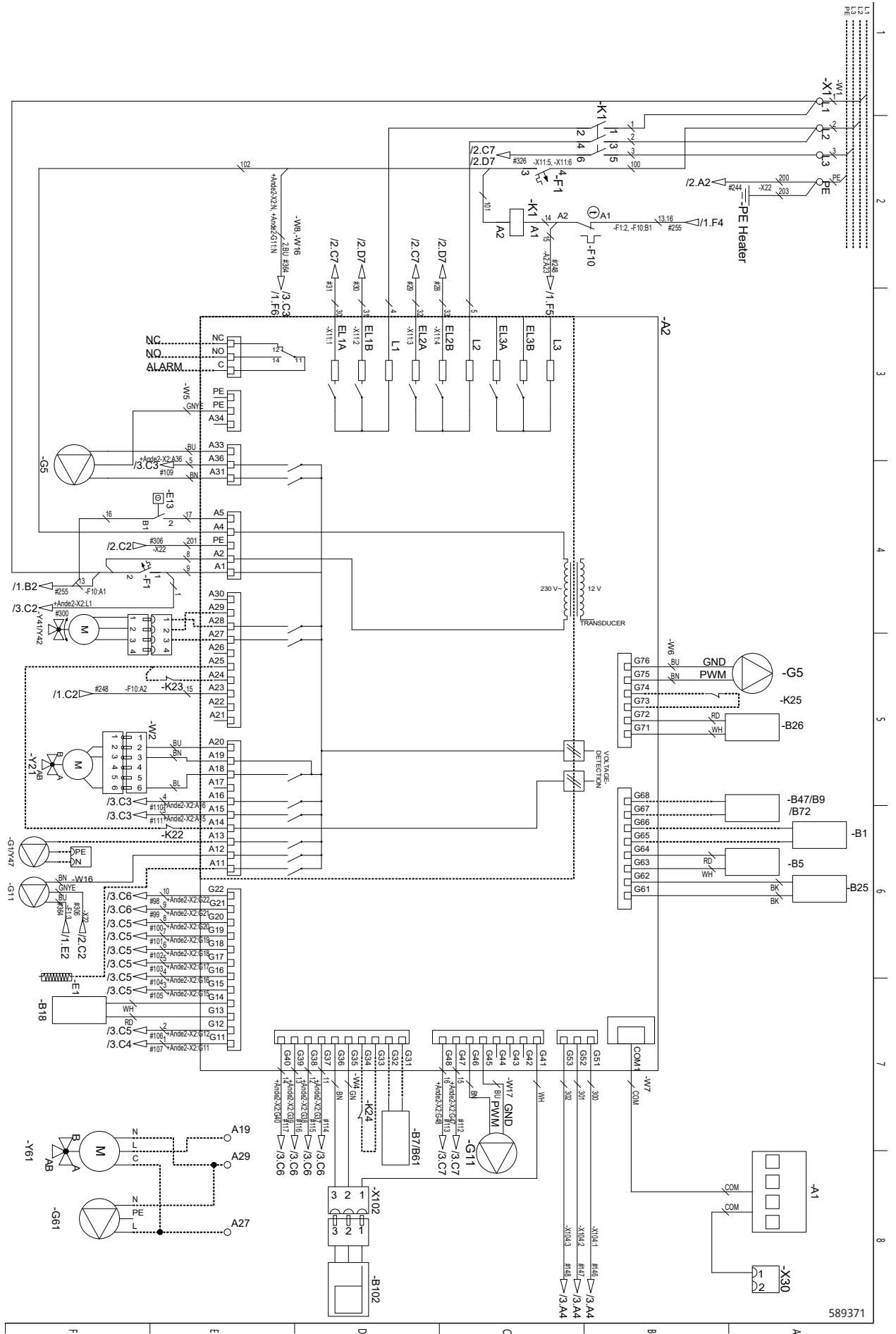


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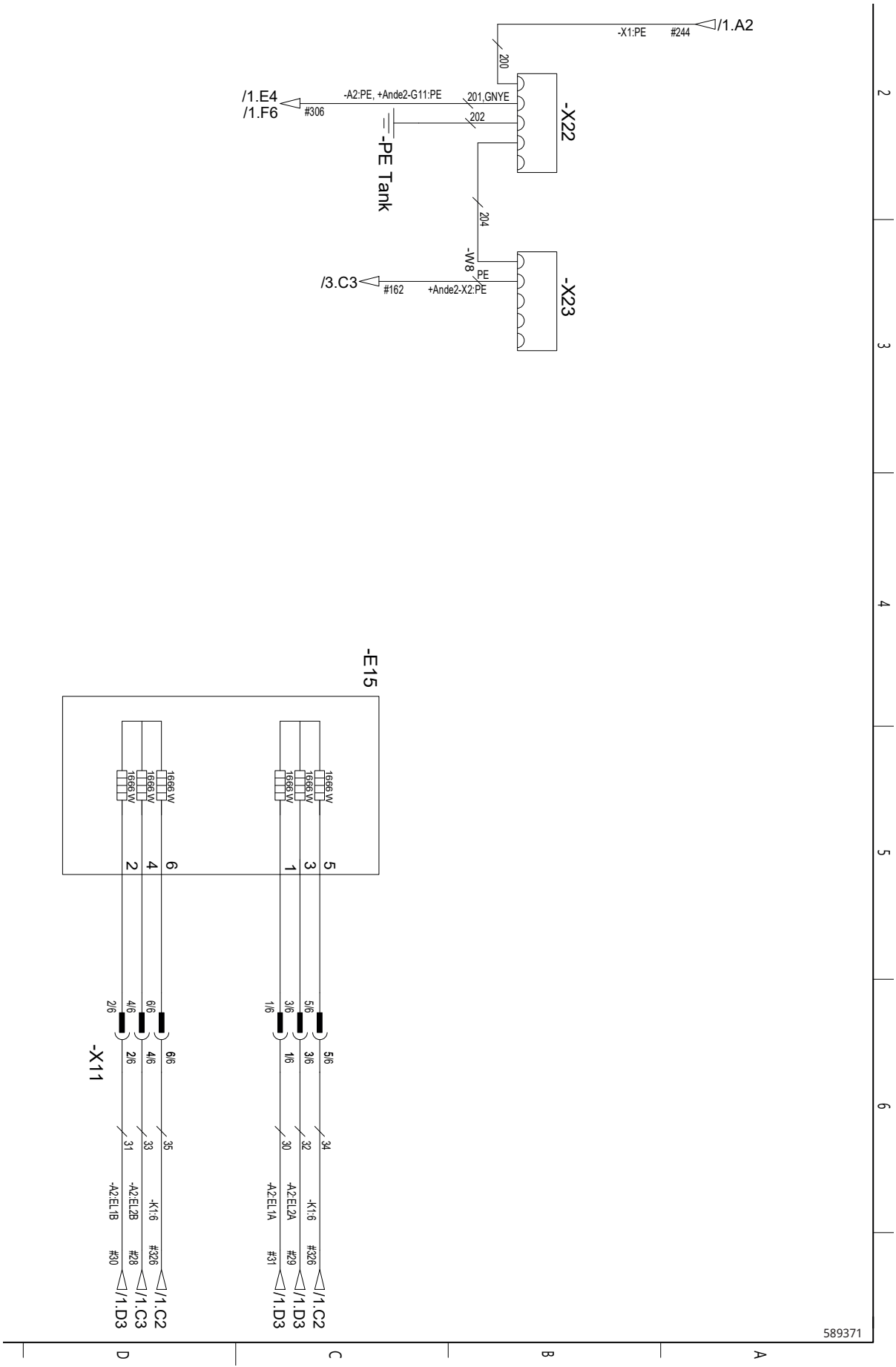
10.9 Wiring diagram CTC EcoZenith i360 1x230V Terminal Block X2



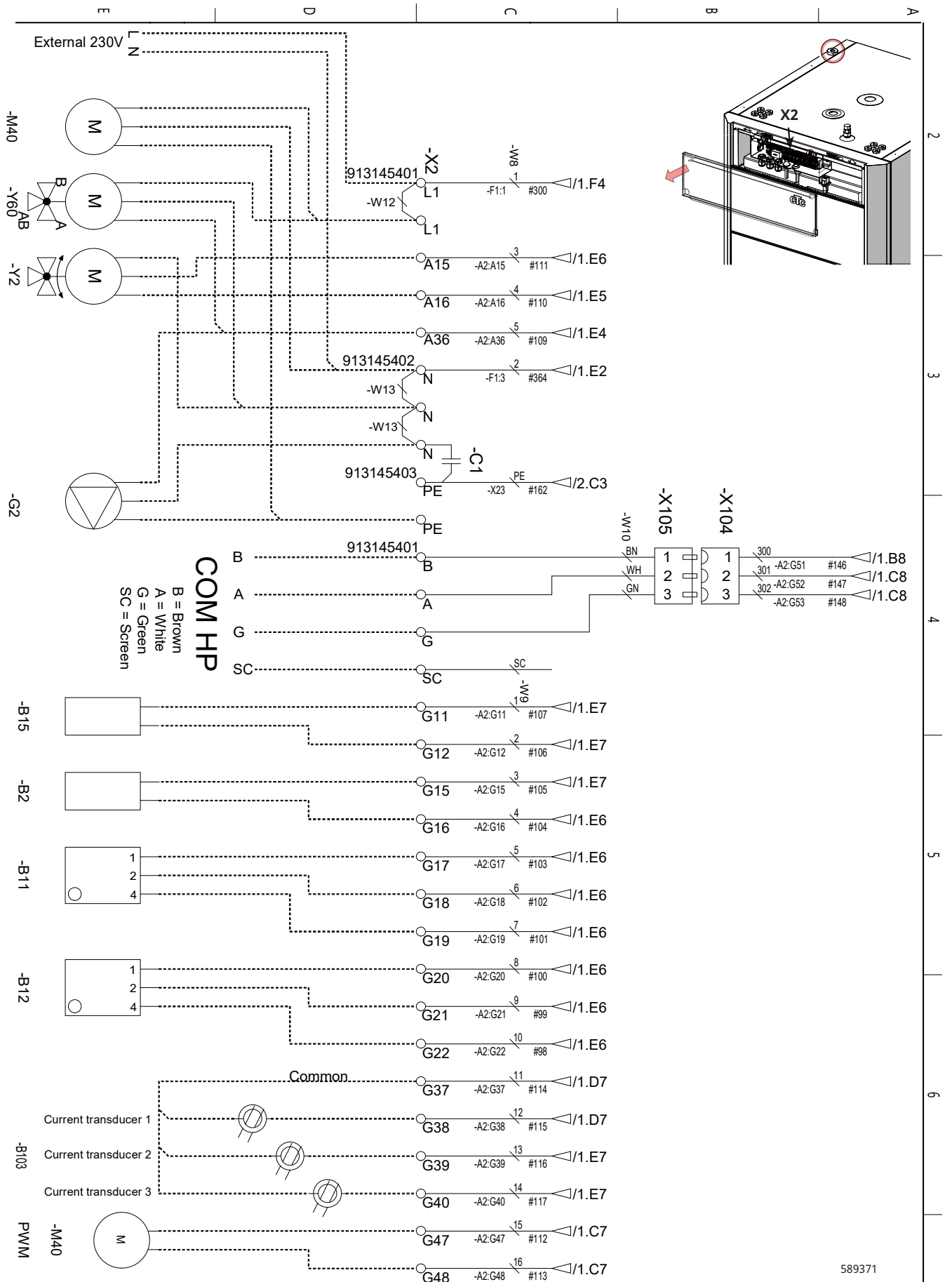
10.10 Wiring diagram CTC EcoZenith i360 3x230V Relay card A2



10.11 Wiring diagram CTC EcoZenith i360 3x230V Flow heater E15



10.12 Wiring diagram CTC EcoZenith i360 3x230V Terminal Block X2



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10.13 Connection table for electrical components

This table specifies the connections for components for the CTC EcoZenith i360 relay card A2 or terminal board X2. (See also the wiring diagram).

| Connection | Designation | Option | Card | Terminal block | Wire |
|--------------------|--------------------------------------|--------|------|----------------|--------------|
| A1 – Display board | Display | | A2 | COM A1 | Patch |
| A6 | Gateway (accessory CTC SmartControl) | | X2 | | |
| B1 | Primary flow sensor 1 | x | A2 | G65 | * |
| B1 | Primary flow sensor 1 | x | A2 | G66 | * |
| B2 | Primary flow sensor 2 | x | X2 | G15 | * |
| B2 | Primary flow sensor 2 | x | X2 | G16 | * |
| B5 | Sensor, DHW tank | | A2 | G63 | * |
| B5 | Sensor, DHW tank | | A2 | G64 | * |
| B7 | Return sensor | x | A2 | G31 | * |
| B7 | Return sensor | x | A2 | G32 | * |
| B9 | External boiler sensor | x | A2 | G67 | * |
| B9 | External boiler sensor | x | A2 | G68 | * |
| B11 | Room sensor 1 | x | X2 | G17 | 1 |
| B11 | Room sensor 1 | x | X2 | G18 | 2 |
| B11 | Room sensor 1 | x | X2 | G19 | 4 |
| B12 | Room sensor 2 | x | X2 | G20 | 1 |
| B12 | Room sensor 2 | x | X2 | G21 | 2 |
| B12 | Room sensor 2 | x | X2 | G22 | 4 |
| B15 | Outdoor sensor | | X2 | G11 | * |
| B15 | Outdoor sensor | | X2 | G12 | * |
| B18 | Primary flow sensor | | A2 | G13 | * |
| B18 | Primary flow sensor | | A2 | G14 | * |
| B25 | DHW sensor | | A2 | G61 | * |
| B25 | DHW sensor | | A2 | G62 | * |
| B26 | Sensor, upper hot water tank | | A2 | G71 | * |
| B26 | Sensor, upper hot water tank | | A2 | G72 | * |
| B47 | Sensor EHS-tank | x | A2 | G67 | * |
| B47 | Sensor EHS-tank | x | A2 | G68 | * |
| B61 | Sensor, cooling tank | x | A2 | G31 | * |
| B61 | Sensor, cooling tank | x | A2 | G32 | * |
| B72 | Return sensor, active cooling | x | A2 | G67 | * |
| B72 | Return sensor, active cooling | x | A2 | G68 | * |
| B102 | Flow switch | | A2 | G35 | Green |
| B102 | Flow switch | | A2 | G36 | Brown |
| B102 | Flow switch | | A2 | G41 | White |
| B103 | Current sensor COMMON | x | X2 | G37 | COMMON |
| B103 | Current sensor L1 | x | X2 | G38 | L1 |
| B103 | Current sensor L2 | x | X2 | G39 | L2 |
| B103 | Current sensor L3 | x | X2 | G40 | L3 |
| E1 | Relay, additional heating | | A2 | A11 | Black/brown |
| E1 | Relay, additional heating | | X1 | N | Blue |
| E1 | Relay, additional heating | | X1 | PE | Green/Yellow |

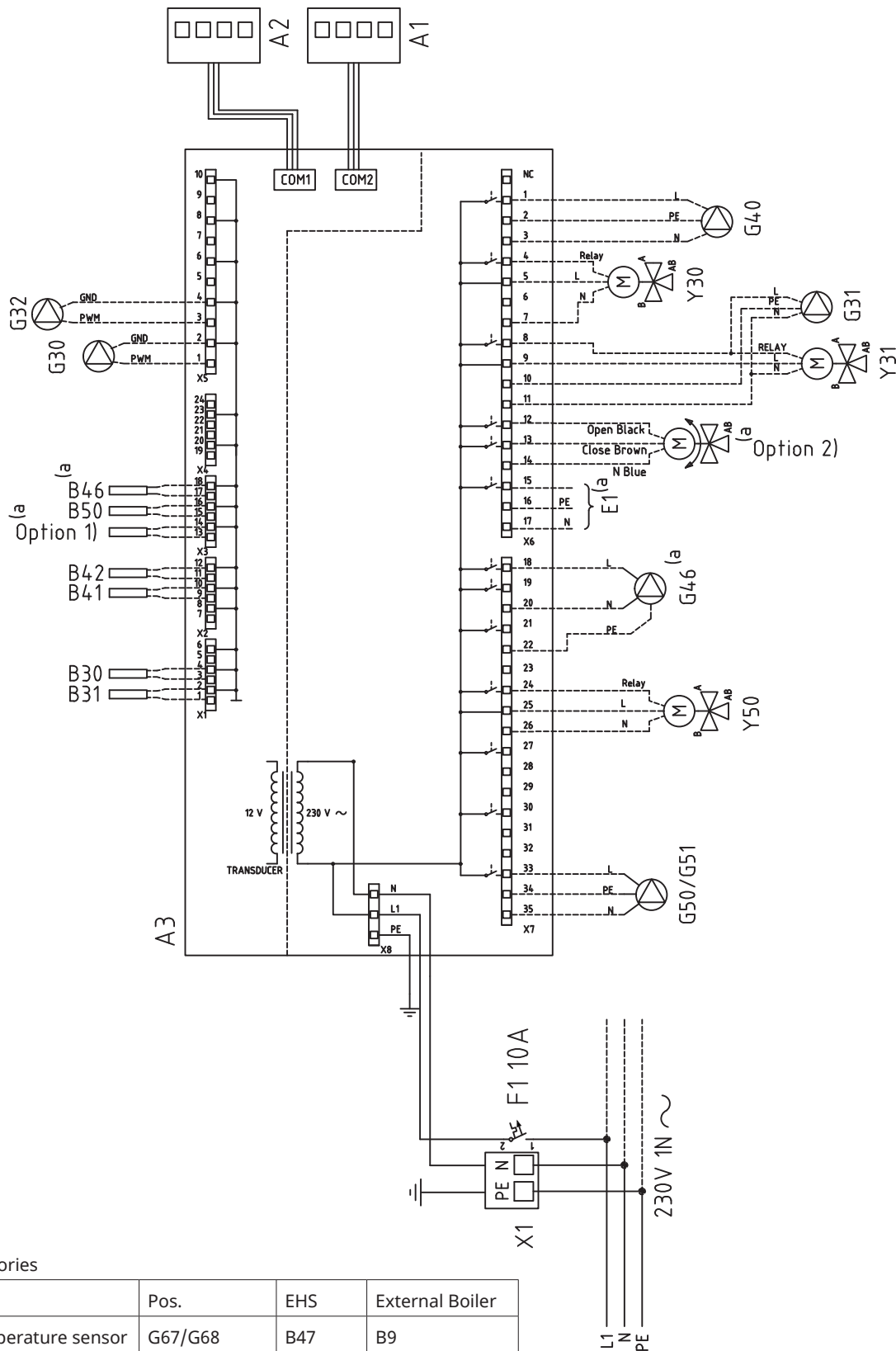
| Connection | Designation | Option | Card | Terminal block | Wire |
|------------------------|-----------------------------------------------|--------|------|----------------|---------------|
| External alarm - NC | External alarm | | A2 | NC | NC |
| External alarm - No | External alarm | | A2 | No | No |
| External alarm - Alarm | External alarm | | A2 | C | Alarm |
| G1 | Heating circ. pump 1 | | A2 | A13 | * |
| G2 | Heating circ. pump 2 | x | A2 | A36 | Brown |
| G2 | Heating / cooling circ. pump 2 | x | A2 | PE | Yellow/Green |
| G2 | Heating / cooling circ. pump 2 | x | A2 | A34 | Blue |
| G5 | Circulation pump for hot water heat exchanger | | A2 | A31 | Brown |
| G5 | Circulation pump for hot water heat exchanger | | A2 | A33 | Blue |
| G5 | Circulation pump for hot water heat exchanger | | A2 | PE | Yellow/Green |
| G5 | Circulation pump for hot water heat exchanger | | A2 | G75 | Brown |
| G5 | Circulation pump for hot water heat exchanger | | A2 | G76 | Blue |
| G11 | Charge pump HP1 | | A2 | A12 | Brown |
| G11 | Charge pump HP1 | | A2 | G45 | Blue |
| G11 | Charge pump HP1 | | A2 | G46 | Brown |
| G11 | Charge pump HP1 | | X3 | N | Blue |
| G11 | Charge pump HP1 | | X3 | Pe | Yellow/Green |
| G61 | Circulation pump, active cooling | x | A2 | A27 | Black |
| G61 | Circulation pump, active cooling | x | A2 | N | Blue |
| G61 | Circulation pump, active cooling | x | A2 | PE | Yellow/Green |
| K22 | Flexible remote control/ SmartGrid | x | A2 | A14 | *** |
| K22/K23 | Flexible remote control/ SmartGrid | x | A2 | A25 | *** |
| K23 | Flexible remote control/ SmartGrid | x | A2 | A24 | *** |
| K24 | Flexible remote control/ SmartGrid | x | A2 | G33 | *** |
| K24 | Flexible remote control/ SmartGrid | x | A2 | G34 | *** |
| K25 | Flexible remote control/ SmartGrid | x | A2 | G73 | *** |
| K25 | Flexible remote control/ SmartGrid | x | A2 | G74 | *** |
| M40 | Fan | | X2 | G47/G48 | Blue/Yellow |
| COM HP - HP A1 | Communication heat pump | | X2 | B | Brown |
| COM HP - HP A1 | Communication heat pump | | X2 | A | White |
| COM HP - HP A1 | Communication heat pump | | X2 | G | Green |
| COM HP - HP A1 | Communication heat pump | | X2 | Sc | Display setup |
| Y2 | Mixing valve 2 | x | A2 | A15 | Black |
| Y2 | Mixing valve 2 | x | A2 | A16 | Brown |
| Y2 | Mixing valve 2 | x | A2 | A17 | Blue |
| Y21 | Diverting valve DHW | | A2 | A18 | Black |
| Y21 | Diverting valve DHW | | A2 | A19 | Brown |
| Y21 | Diverting valve DHW | | A2 | A20 | Blue |
| Y41 | Mixing valve EHS Tank | x | A2 | A27 | Black |
| Y41 | Mixing valve EHS Tank | x | A2 | A28 | Brown |
| Y41 | Mixing valve EHS Tank | x | A2 | A29 | Blue |

| Connection | Designation | Option | Card | Terminal block | Wire |
|------------|----------------------------------------------|--------|------|----------------|-------|
| Y42 | Mixing valve External boiler | x | A2 | A27 | Black |
| Y42 | Mixing valve External boiler | x | A2 | A28 | Brown |
| Y42 | Mixing valve External boiler | x | A2 | A29 | Blue |
| Y47 | Electric shut-off valve | x | A2 | A13 | * |
| Y60 | Mixing valve, passive cooling | x | A2 | A36 | Black |
| Y60 | Mixing valve, passive cooling | x | X2 | L1 | Brown |
| Y60 | Mixing valve, passive cooling | x | X2 | N | Blue |
| Y61 | Diverting valve heating / active cooling | x | A2 | A19 | Brown |
| Y61 | Diverting valve heating / active cooling | x | A2 | A27 | Black |
| Y61 | Diverting valve heating / active cooling | x | A2 | A29 | Blue |
| Y62 | Diverting valve, active cooling demand relay | x | A2 | A19 | Brown |
| Y62 | Diverting valve, active cooling demand relay | x | A2 | A28 | Black |
| Y62 | Diverting valve, active cooling demand relay | x | A2 | A29 | Blue |

* cable can be connected regardless of terminal block for component

*** Connection according to description of remote control functions.

10.14 Wiring diagram for Expansion card



Accessories

| No. | Pos. | EHS | External Boiler |
|-----------------------|-------------|-----|-----------------|
| 1) temperature sensor | G67/G68 | B47 | B9 |
| 2) valve | A27/A28/A29 | Y41 | Y42 |

10.15 Connection table for Expansion Card A3

This table shows the connections for components for CTC EcoZenith i360 Extension Card A3. (See also the wiring diagram for the extension card).

| | Designation | Terminal block/cable | |
|-----|-------------------------------------------|----------------------|-----|
| A1 | Display | COM2 | * |
| A2 | Relay/main card | COM1 | * |
| B9 | Sensor external boiler | X3:13 | * |
| B9 | Sensor external boiler | X3:14 | * |
| B31 | Solar panel sensor out | X1:1 | * |
| B31 | Solar panel sensor out | X1:2 | * |
| B30 | Solar panel sensor in | X1:3 | * |
| B30 | Solar panel sensor in | X1:4 | * |
| B41 | Sensor, external buffer tank upper | X2:9 | * |
| B41 | Sensor, external buffer tank upper | X2:10 | * |
| B42 | Sensor, external buffer tank lower | X2:11 | * |
| B42 | Sensor, external buffer tank lower | X2:12 | * |
| B46 | Sensor, diff. thermostat | X3:18 | * |
| B46 | Sensor, diff. thermostat | X3:19 | * |
| B47 | Sensor, EHS-tank | X3:13 | * |
| B47 | Sensor, EHS-tank | X3:14 | * |
| B50 | Sensor pool | X3:15 | * |
| B50 | Sensor pool | X3:16 | * |
| G30 | Circulation pump, solar panel | X5:1 | PWM |
| G30 | Circulation pump, solar panel | X5:2 | GND |
| G32 | Pump, plate heat exchanger – solar energy | X5:3 | PWM |
| G32 | Pump, plate heat exchanger – solar energy | X5:4 | GND |
| G40 | Circulation pump for DHW circ. | X6:1 | L |
| G40 | Circulation pump for DHW circ. | X6:2 | PE |
| G40 | Circulation pump for DHW circ. | X6:3 | N |
| G31 | Pump, bore hole recharging | X6:8 | L |
| G31 | Pump, bore hole recharging | X6:10 | PE |
| G31 | Pump, bore hole recharging | X6:11 | N |
| E1 | Relay, external boiler | X6:15 | L |
| E1 | Relay, external boiler | X6:16 | PE |
| E1 | Relay, external boiler | X6:17 | N |

| | Designation | Terminal block/cable | |
|-----|----------------------------------------------|----------------------|-------|
| G46 | Charging pump | X7:18 | L |
| G46 | Charging pump | X7:20 | N |
| G46 | Charging pump | X7:22 | PE |
| G50 | Circulation pump, pool heating | X7:33 | L |
| G50 | Circulation pump, pool heating | X7:34 | PE |
| G50 | Circulation pump, pool heating | X7:35 | N |
| G51 | Circulation pump, pool heating | X7:33 | L |
| G51 | Circulation pump, pool heating | X7:34 | PE |
| G51 | Circulation pump, pool heating | X7:35 | N |
| Y30 | Diverting valve, solar, external buffer tank | X6:4 | Relay |
| Y30 | Diverting valve, solar, external buffer tank | X6:5 | L |
| Y30 | Diverting valve, solar, external buffer tank | X6:7 | N |
| Y31 | Brine diverting valve, solar | X6:8 | Relay |
| Y31 | Brine diverting valve, solar | X6:9 | L |
| Y31 | Brine diverting valve, solar | X6:11 | N |
| Y50 | Diverting valve, pool | X7:24 | Relay |
| Y50 | Diverting valve, pool | X7:25 | L |
| Y50 | Diverting valve, pool | X7:26 | N |

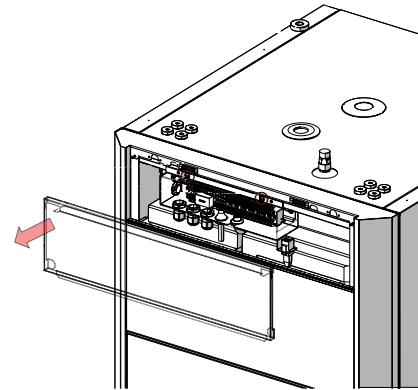
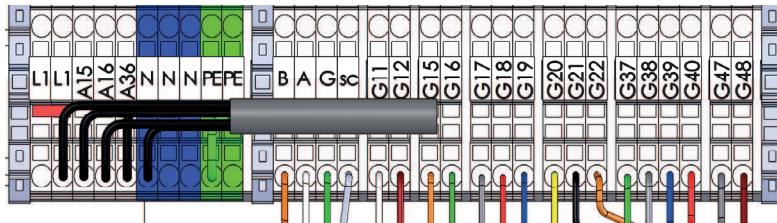
* cable can be connected regardless of terminal block for component.

10.16 Sensor connection

The sensor is connected on top of terminal X2, behind the magnetic strip.

See the wiring diagram and connection table for correct connection.

Sensor terminal block



10.16.1 Connection of outdoor sensor (B15)

The sensor should be set up on the house's northwest or north side, so that it is not exposed to morning and evening sun. If there is a risk of the sensor being affected by the sun's rays, it must be protected by a screen.

Place the sensor at around 2/3 of the height of the facade near a corner, but not under a roof projection or other form of wind protection. Do not place it either above ventilation ducts, doors or windows where the sensor may be affected by factors other than the actual outdoor temperature.

Do not attach the sensor cable permanently until you have tested where the best location is.

10.16.2 Connection of room sensors (B11 and B12)

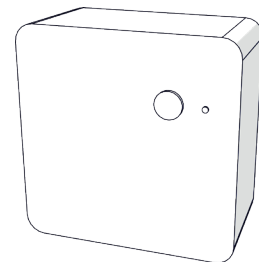
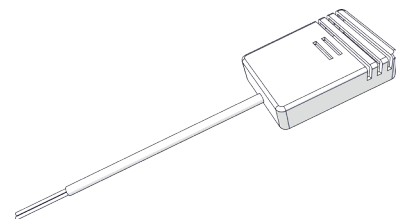
The room sensor is fitted at a central point in the house, in the most open position possible, ideally in a hall between several rooms. This is the best position for the sensor to record an average temperature for the house.

Feed a three-core cable (minimum 0.5 mm²) between the product and the room sensor. Then attach the room sensor securely in a position roughly two thirds of the way up the wall. Connect the cable to the room sensor and the product.

When connecting a wireless room sensor (accessory), refer to the "Wireless room sensor" manual.

Check room sensor connection

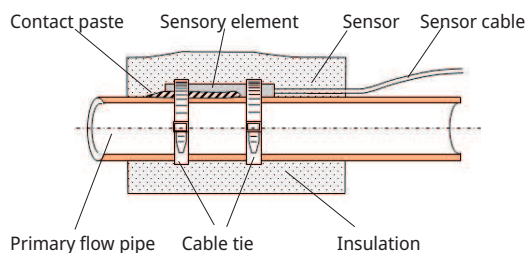
- Go to the menu: "Advanced/Service/Function test/Heating circuit".
- Go down and select the option LED room sensor and press OK.
- Select "On" using the "+" button and press "OK".
Check that the room sensor LED lights up. If not, check the cables and connection.
- Select "Off" using the "-" button and press "OK". If the OK LED goes off, the check is complete.
- Return to the start menu by pressing the "Home" button.



10.16.3 Installation of sensor on pipe

The sensing part is towards the end of the sensor (see sketch).

- Attach the sensor using the cable tie provided.
- Ensure that the sensor makes good contact with the pipe. Apply contact paste to the front part of the sensor between the sensor and the pipe if good contact is otherwise difficult to obtain.
- **Important!** Insulate the sensor using pipe insulation.
- Connect the cables to the sensor terminal block.



10.16.4 Primary flow sensor connection (B1 & B2)

When connecting primary flow sensors 1 (B1) and 2 (B2), fit the primary flow sensor to the primary flow pipe, ideally after the circulation pump.

- Free cooling is adjusted using primary flow sensor 2 (B2), which then means that heating circuit 2 and cooling cannot be used simultaneously.

10.16.5 Return sensor connection for installation without a heat pump

When connecting the return sensor (B7), fit the product to the return pipe before connecting to the product.

10.16.6 Checking connected sensors

If any sensor is incorrectly connected, a message will appear on the display, e.g. "Alarm sensor outside". If several sensors are incorrectly connected, the different alarms are displayed on different rows.

If no alarm is displayed, the sensors are correct.

10.17 Current sensor connection

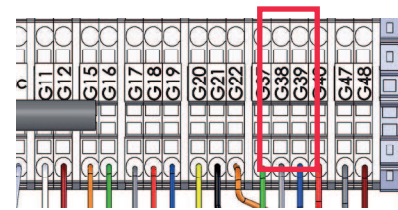
A current sensor with three sensors is used for product models with 400V 3N~50Hz (3x400V) and 230V 3N~ 50Hz (3x230V) connections (see technical data).

The three current sensors, one for each phase, are fitted on the fuse panel. Each phase from the electricity distribution board supplying the product is channelled through a current sensor before termination at the relevant terminal. This allows the phase current to be sensed all the time and compared with the value set for the product's load switch. If the current is higher, the control unit drops to a lower heat output on the immersion heater. If this is insufficient, the installed heat pump is also limited. When the power drops back below the set value, the heat pump and immersion heater are reconnected. This means that the current sensors, along with the electronics, prevent more power being supplied than the main fuses can tolerate.

A main fuse of up to 35 A is permitted. If the main fuse is larger, a conversion rate must be used.

The current sensors' cable holes are 11 mm in diameter.

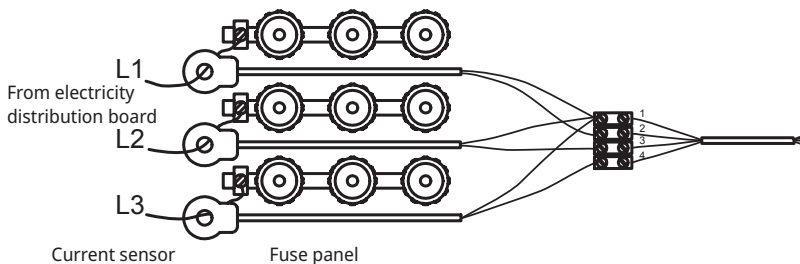
The current sensor connection has no alarm, but the current value can be read in the Operation data menu. Note that the tolerance/accuracy is very low with small current values.



Connect to sensor terminal block (see wiring diagram). Use at least a 0.5 mm² cable.

10.18 Setting electrical output in backup power supply

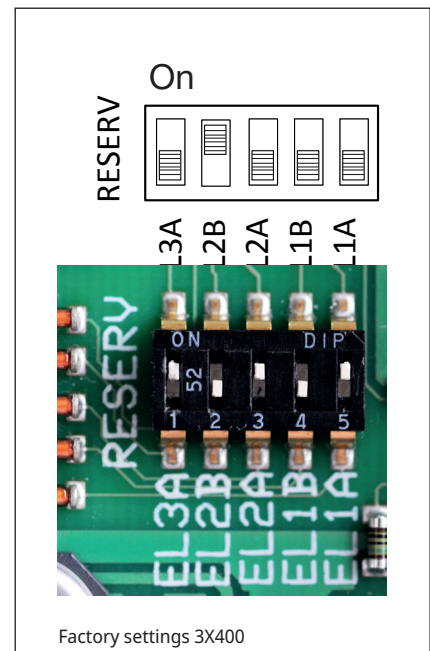
The DIP switch on the relay card (A2) is used to set the backup power supply. The DIP switch is marked "RESERV" (BACKUP).



When the switch is set to ON, the step is actively operating in backup heating mode. The factory-set mode is as shown in the image on the right.

| | Power from each step for immersion heater [kW] | | | | | |
|---------------------------|------------------------------------------------|------|------|------|------|------|
| | EL1A | EL1B | EL2A | EL2B | EL3A | EL3B |
| CTC EcoZenith i360 3x400V | 0.5 | 2.8 | 1 | 2.8 | 2 | 2.8 |
| CTC EcoZenith i360 1x230V | 0.3 | 2.3 | 0.6 | 2.3 | 1.2 | 2.3 |
| CTC EcoZenith i360 3x230V | 3 | 3 | 3 | 3 | - | - |

To give the total power for backup heating for 3X400 and 1x230, the power on the active relays is added together; for 3x230V the total power varies depending on the combination (see connection on wiring diagram). The power may need to be adjusted to the building.

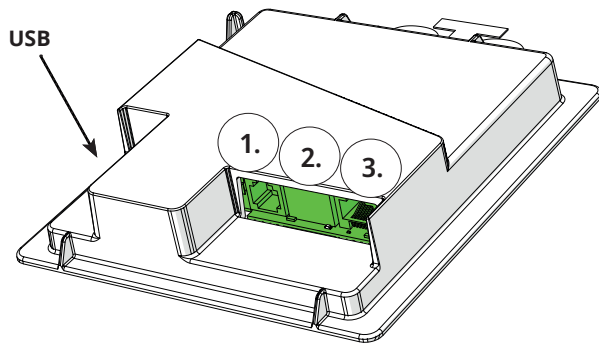


Factory settings 3X400

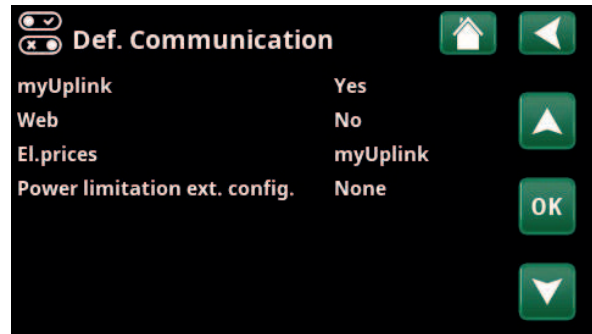
10.19 Resistance table for sensor

| [°C] | NTC 22K [Ω] | NTC 150 [Ω] | NTC 015 WF00 [Ω] |
|------|-------------|-------------|------------------|
| 130 | 800 | | |
| 125 | 906 | | |
| 120 | 1027 | | |
| 115 | 1167 | | |
| 110 | 1330 | | |
| 105 | 1522 | | |
| 100 | 1746 | | |
| 95 | 2010 | | |
| 90 | 2320 | | |
| 85 | 2690 | | |
| 80 | 3130 | | |
| 75 | 3650 | | |
| 70 | 4280 | 32 | |
| 65 | 5045 | 37 | |
| 60 | 5960 | 43 | |
| 55 | 7080 | 51 | |
| 50 | 8450 | 60 | |
| 45 | 10130 | 72 | |
| 40 | 12200 | 85 | 5830 |
| 35 | 14770 | 102 | 6940 |
| 30 | 18000 | 123 | 8310 |
| 25 | 22000 | 150 | 10000 |
| 20 | 27100 | 182 | 12090 |
| 15 | 33540 | 224 | 14690 |
| 10 | 41800 | 276 | 17960 |
| 5 | 52400 | 342 | 22050 |
| 0 | 66200 | 428 | 27280 |
| -5 | 84750 | 538 | 33900 |
| -10 | 108000 | 681 | 42470 |
| -15 | 139000 | 868 | 53410 |
| -20 | 181000 | 1115 | 67770 |
| -25 | 238000 | 1443 | 86430 |
| -30 | | 1883 | |
| -35 | | 2478 | |
| -40 | | 3289 | |

11. Installation, Communication



The back of the display unit has 3 communication ports.

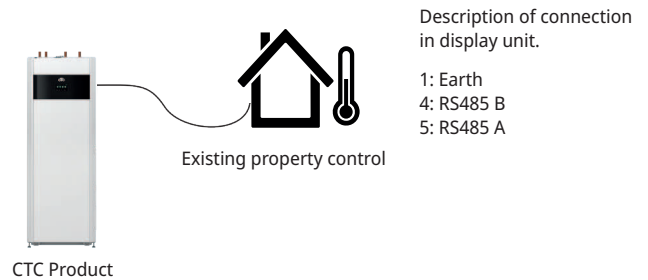


Menu: "Advanced/Define/Communication".

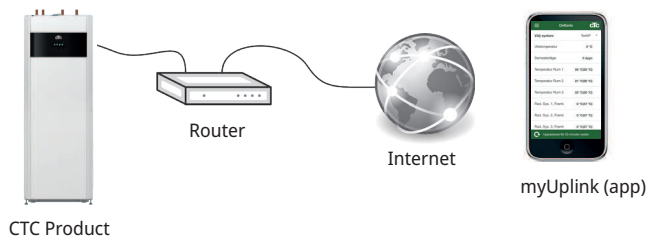


Display communication ports

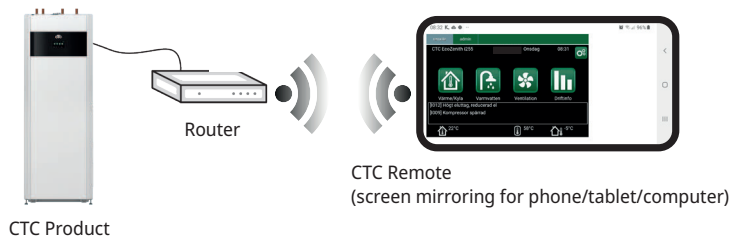
- 1 **Port 1. RS485 port without galvanic protection.**
 Define BMS:
 "Yes" permits BMS via the RS485 port.



- 2 **Port 2. Network jack (ethernet), see connection information on following page.**
 Define the app:
 myUplink: "Yes" enables connection to the app.



Define Web:
 "Yes" permits network connection, the "CTC Remote" screen mirror feature and BMS* function with remote control via network cable to local network.

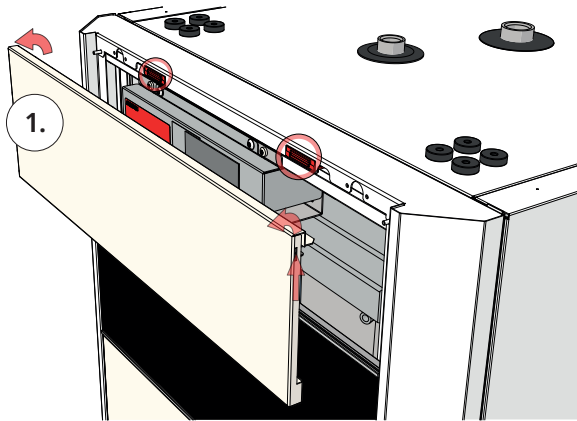


- 3 **Port 3. Communication between the product's electrical cabling and display: Factory fitted.**

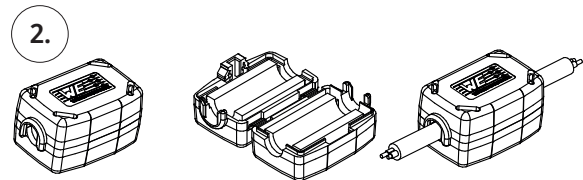
*Port 2 - Network socket (Ethernet) when connecting the BMS via TCP/IP.

11.1 Install ethernet cable

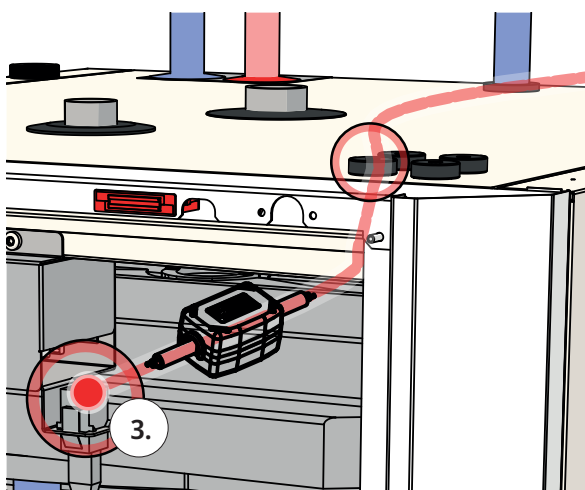
In order to define and enable connection to the network and app, an ethernet cable must be connected as described below.



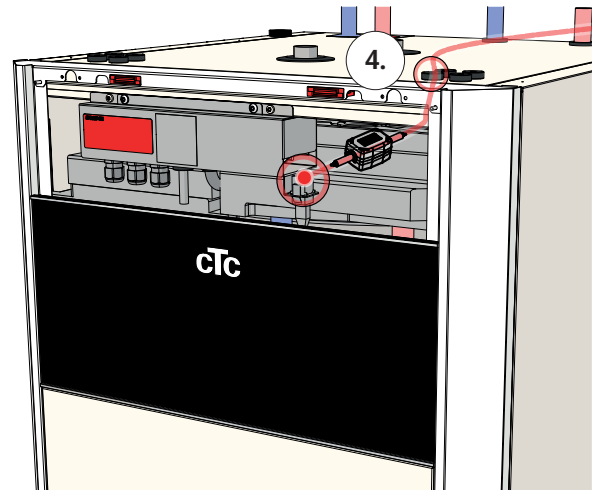
1. Pull out the magnetic strip. It is secured with magnets. If difficult to remove, use a small screwdriver in the notch along the top edge.



2. Open the ferrite from the packaging, clamp around the ethernet cable with the connector.



3. Connect the ethernet cable.




4. Route the ethernet cable through any hole in the top cover, remove rubber grommet if necessary.

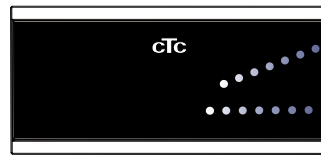
5. Connect ethernet cable to network port or router.

To permit and define connectivity, refer to the "Communication" section in the "Advanced/Define" chapter.

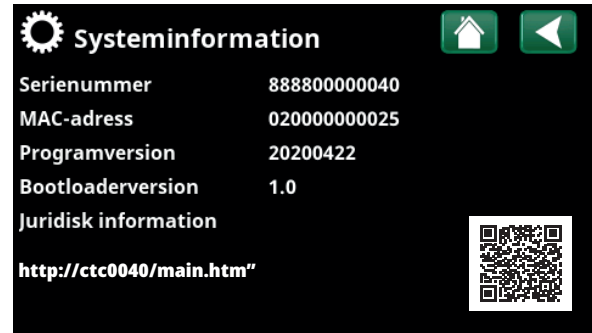


11.2 Remote - Screen Mirroring

- Connect the ethernet cable, see previous page.
- Advanced/Define/Communication/Web – Yes. Permits the product to connect with unencrypted web traffic on local area networks. Internet router and firewall required.
- Advanced/i – Scan the QR code with a tablet or smartphone. 
- Save as a favourite/icon on your mobile phone/tablet/computer. When your mobile phone/tablet is connected to the local network, the touch screen on the product can be accessed just as if you were using the product's display.
- In the app: scan QR code or enter address "http://ctcXXXX/main.htm". (XXXX = the last four digits of the display serial number, for example S/N 888800000040 = "http://ctc0040/main.htm"). In case of problems: click the link to update to the device's current IP no.



Tablet/Smartphone/PC as a touchscreen for local area network "Advanced/Define/Communication/Web" – "Yes".

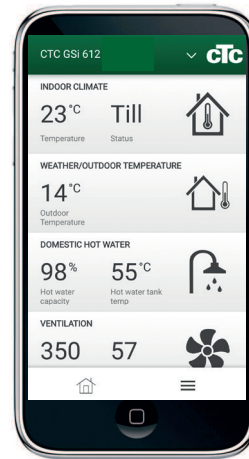


11.3 myUplink - App

Define myUplink. See "Advanced/Define/Communication/myUplink – Yes".

Installing the app.

- Download myUplink from the AppStore or Google Play.
- Create an account.
- Follow the instructions in the app's Help feature.



12. First start

CTC EcoZenith i360 can be installed and started before the ground source or air-to-water heat pump is put into operation. In order to use the product as electric boiler before a heat pump is installed, the installation engineer must connect the pipes to and from the heat pump (see the pipe installation section). The product can also be started without a room sensor being fitted as the curve which has been set then regulates the heating. The sensor can, however, always be fitted for the alarm LED function.

Before first start

1. Check that the product and system are full of water and have been bled. (CTC EcoZenith i360 is bled manually with a safety valve on the top cover of the product, activate the automatic bleeder as well for the first three months).
2. For installation with a heat pump, follow the instructions in the heat pump manual.
3. Check that all connections are tight.
4. Check that the sensor and radiator pump are connected to the power source. Check that the connections behind the insulation cap remains tight. Remove both insulation caps by pulling carefully on the points marked.
5. The backup heating thermostat is factory-set to OFF (off position when it is turned anticlockwise as far as it will go, at which point the screwdriver slot is vertical). Recommended mode is $\star\star$ = Frost protection setting, approx. +7 °C. The backup heating thermostat is in the electrical switchboard behind the front panel. See the image on the right for what the antifreeze setting looks like.

At the end of the installation, check the connections of any current sensors. At this point it is important that you have switched off any major electricity-consuming appliances in the house. Also make sure that the backup heating thermostat is turned off.

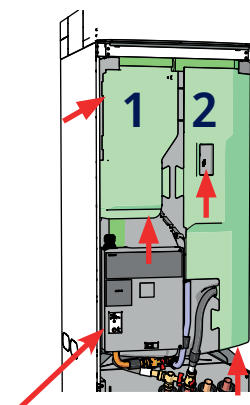
NB: The product has an automatic bleeding sequence for the DHW system, which runs in the background. The sequence takes approx. 15 minutes and does not affect other functions.

First start-up

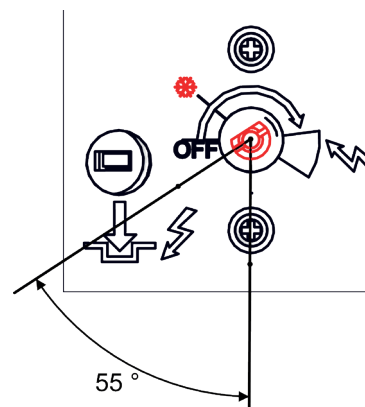
Connect the power with the safety switch, the display window lights up. For settings, see chapter "Installation Guide".

When only an electric boiler is operating

When starting the product without a borehole, it is necessary to specify the electrical power for hot water production in the menu "Advanced/Settings/ Immersion heater/Max immersion heater DHW kW".



Check connections.



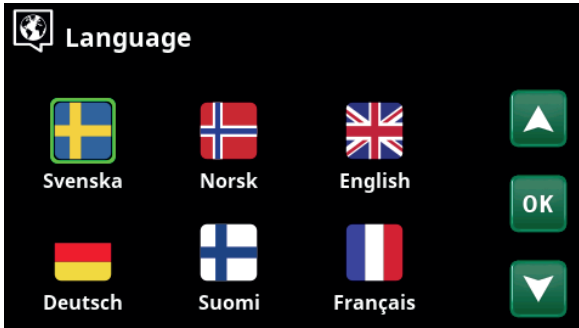
Position for frost protection setting.

i The selected power output must be written on the rating plate with a marker.

i Save these settings under: „Advanced/Settings/Save settings“.

12.1 Installation wizard

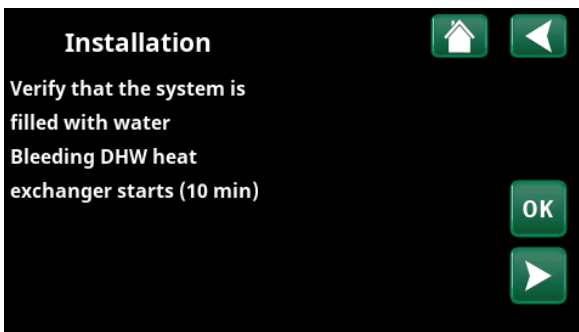
When starting up the system and during reinstallation (see chapter "Advanced/Service"), a number of system selections must be made. The menu screens that are displayed are described below; the values shown are only examples.



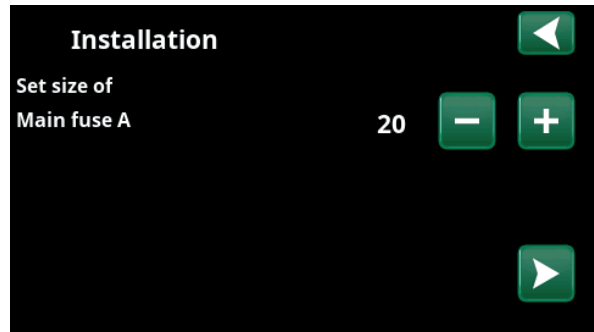
1. Choose language. Press OK to confirm.



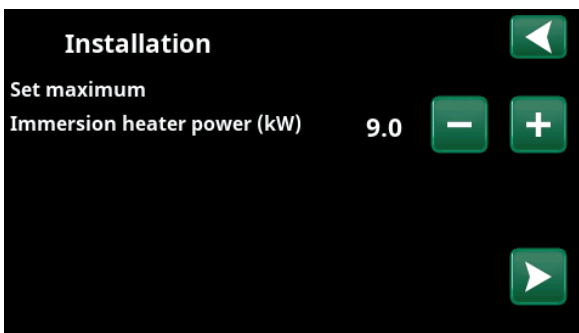
2. Select the country where the heat pump is installed. Press OK to confirm.



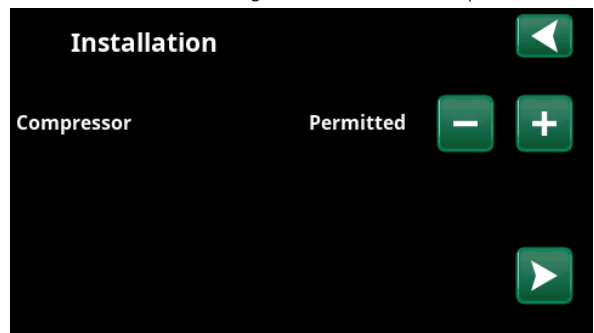
3. Verify that the system is filled with water. Confirm with "OK" and the "right" directional arrow.



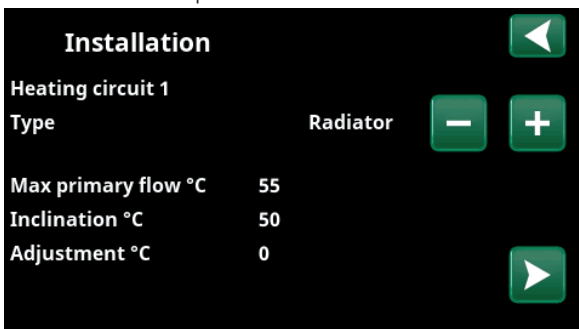
4. Select the size of the main fuse using the "+" and "-" buttons. Confirm with the "right" directional arrow. For more information about settings, refer to the "Advanced/Settings/Immersion heater" chapter.



5. Select maximum immersion heater power using the "+" and "-" buttons. Confirm with the "right" directional arrow. For more information about settings, refer to the "Advanced/Settings/Immersion heater" chapter.



6. Specify whether the compressor is "Permitted" or "Blocked" using the "+" and "-" buttons. Confirm with the "right" directional arrow.



7. Specify whether heating circuit 1 applies to radiators or underfloor heating. Switch between "Radiator" and "Underfloor Heating" using the "+" and "-" buttons. Confirm with the "right" directional arrow.

8. If Heating circuit 2 is defined, the corresponding menu for this system is displayed. Make a corresponding selection ("Radiator" and "Underfloor Heating") for Heating circuit 2 and finish the wizard with "OK".

i When operating as an electric boiler only, the settings must be changed:

"Advanced/Settings/DHW":

- "Add. Heat DHW": Yes.
- "DHW" Select mode: "Comfort".

Enter the set values in the parameter list so that the customer knows what has been set in addition to factory settings during installation.

13. Operation and Maintenance

The installation engineer together with the property owner must check that the system is in perfect operating condition. The installation engineer must show the switches, controls and fuses to the property owner so that the owner knows how the system works and how to service it. Bleed the radiators after approximately three days of operation. Fill with water as needed via the filling valve if the manometer shows that the system pressure is too low.

Operation stop

The product is turned off using the omnipolar switch. If there is a risk of the water freezing, all the water should be drained from the heat pump and the heating circuit.

Draining the tank

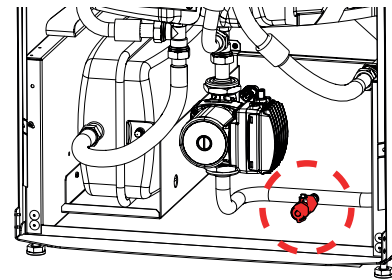
The product should be disconnected from the power source while it is being drained. The draining valve for the low model is situated in the bottom right as viewed from the front, behind the product's front panel. For the high model, the drainage valve is included in the additional pack and the pipe installation engineer chooses where to connect the valve. Air must be supplied to the closed system.

Boiler and heating circuit bleeding/safety valve

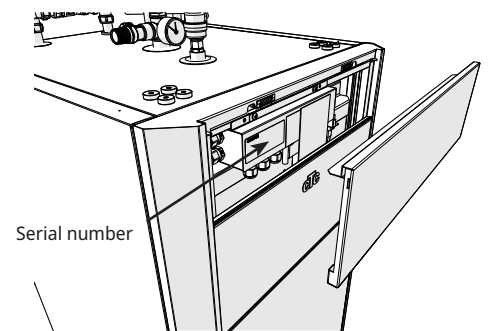
Check around four times a year that the valve is working correctly by manually turning the control. Check that there is water and not air coming out of the waste pipe; if air is coming out then the tank will need to be bled. Open the screw on the automatic bleeder for the first few months; the screw should then be closed to avoid damaging the bleed valve.

Cleaning the dirt filter and solenoid filter ball valve

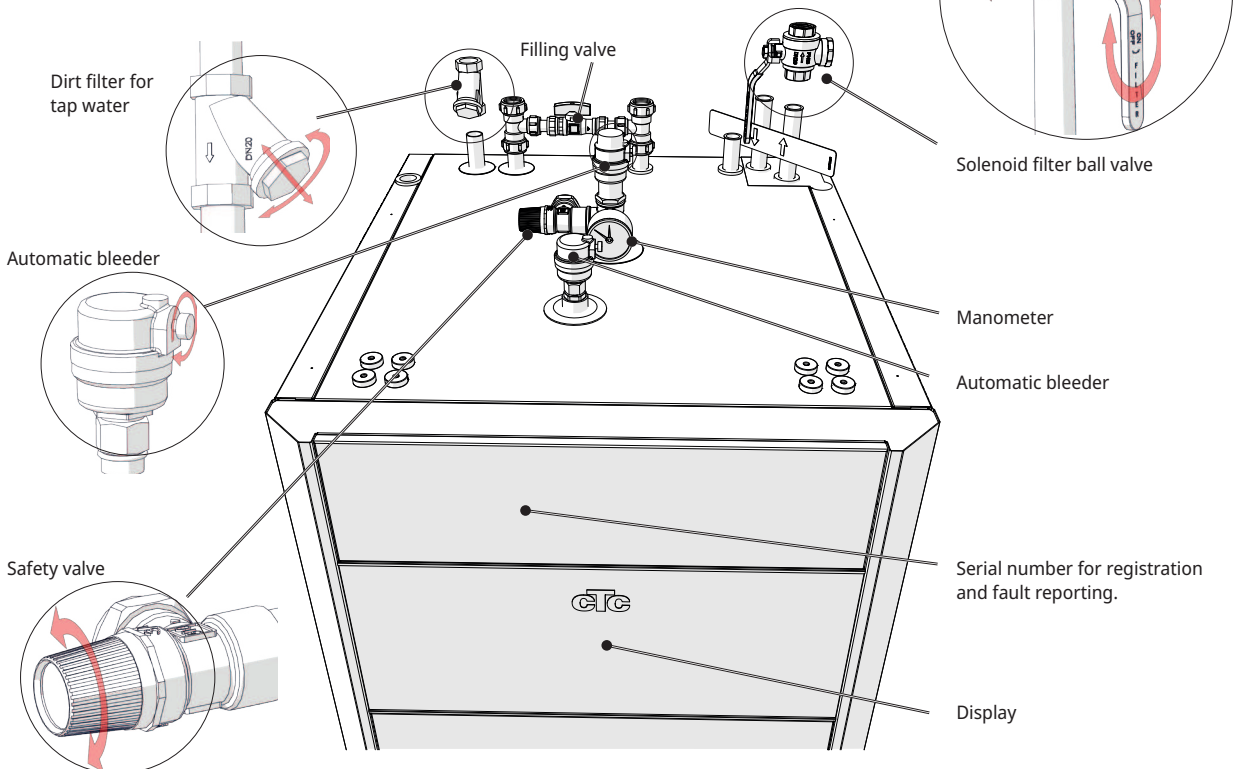
Regularly clean the dirt filter (close off incoming tap water, remove and clean the filter) and solenoid filter ball valve (close off the flow to the heat pump, remove and clean the filter).



Drainage valve



Serial number



16290531-1

14. System adjustments

14.1 Adjust circulation pump

The charge pump/circulation pump speed for the radiator system is set depending on the system type. Make sure the flow through the heat pump is enough.

The circulation pump is factory-set to 90%, and adjustable to [25–100%]. This can be changed in the display under “Advanced/Settings/Heating circuit/Charge pump %”.

- If the products do not work effectively, or if the heat in the radiator system is uneven because the flow is too low, the capacity of the charge pump can be increased. If the flow is too low, the heat in the radiators and floor heating circuits will become uneven. This requires a higher primary flow temperature to compensate, which will make heat pump operation more expensive.
- If there is noise in the radiator system caused by the flow being too high, the capacity of the charge pump can be reduced. As well as noise, unnecessarily high flow means more energy consumption/cost.

For CTC EcoZenith i360, the radiator system’s flow must go through the heat pump; the pump needs to be set to produce the minimum flow for the heat pump and the building.

Step 1 Calculate required flow

Read the flow required by the heating circuit from the table below. The following approximations can be used as a simple rule of thumb: 40–45 W/m² for a newer house and 50–60 W/m² for an older house.

| Required power [kW] | New house [m ²] 42.5 W/m ² | Older house [m ²] 55 W/m ² | delta 5 degrees e.g. underfloor heating circuit 40/35 [l/s] | delta 10 degrees e.g. heating circuit 55/45 [l/s] |
|---------------------|---------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------|
| 4 | 94 | 73 | 0.19 | 0.10 |
| 5 | 118 | 91 | 0.24 | 0.12 |
| 6 | 141 | 109 | 0.29 | 0.14 |
| 7 | 165 | 128 | 0.33 | 0.17 |
| 8 | 188 | 145 | 0.38 | 0.19 |
| 9 | 218 | 164 | 0.43 | 0.22 |
| 10 | 235 | 182 | 0.48 – CTC Volume tank required | 0.24 |
| 11 | 259 | 200 | 0.53 – CTC Volume tank required | 0.26 |
| 12 | 282 | 218 | 0.57 – CTC Volume tank required | 0.29 |
| 13 | 306 | 236 | 0.62 – CTC Volume tank required | 0.31 |
| 14 | 329 | 255 | 0.67 – CTC Volume tank required | 0.33 |
| 15 | 353 | 273 | 0.72 – CTC Volume tank required | 0.36 |
| 16 | 376 | 291 | 0.77 – CTC Volume tank required | 0.38 |
| 17 | 400 | 309 | 0.81 – CTC Volume tank required | 0.41 |
| 18 | 424 | 327 | 0.86 – CTC Volume tank required | 0.43 |
| 19 | 447 | 345 | 0.91 – CTC Volume tank required | 0.45 |
| 20 | 471 | 364 | 0.96 – CTC Volume tank required | 0.48 – CTC Volume tank required |

Power requirement for this building: _____ [kW]

This building requires: _____ [l/s]

Available pressure remaining according to pressure differential diagram: _____ [kPa]

Step 2 Check minimum heat pump flow

To install an air-to-water heat pump, the flows shown below must be used even if step 1 gives a lower flow.

| | | | |
|---------------------|----------|-----------------------|----------|
| CTC EcoAir 406 | 0,21 l/s | CTC EcoAir 708M, 712M | 0,23 l/s |
| CTC EcoAir 408 | 0,27 l/s | CTC EcoAir 720M | 0,51 l/s |
| CTC EcoAir 610, 614 | 0,21 l/s | CTC EcoAir 100 | 0,17 l/s |
| CTC EcoAir 622 | 0,39 l/s | | |

This building requires: _____ [l/s]

Step 3 Check whether a volume tank is needed

If the flow is below 0.45 l/s, the system can manage without a CTC Volume tank. If the system has a high pressure differential, a volume tank may be required. If the required flow is greater than 0.45 l/s, this accessory should be installed.

A CTC Volume tank must be installed to increase the flow in the system in the following cases:

- If the flow exceeds 0.45 l/s.
- If a mixing valve for an EHS-tank or external peak needs to be installed and the flow exceeds approx.: 0.35 l/s.
- If the flow in the heating circuit can be closed quickly, e.g. floor heating with no bypass etc.

A CTC Volume tank should be installed in the following cases:

- The system volume is less than 20 litres per kW heat pump to achieve good operation.

Step 4 Dimension the pipeline to the heat pump

The pipe dimensioning between the heat pump and CTC EcoZenith i360 depending on flow and number of metres between the products (single route).

| Flow [l/s] | Copper pipe 22 mm [m] | Copper pipe 28 mm [m] | Copper pipe 35 mm [m] |
|------------|-----------------------|-----------------------|-----------------------|
| 0.1 | >20 | >20 | >20 |
| 0.12 | >20 | >20 | >20 |
| 0.14 | >20 | >20 | >20 |
| 0.17 | 21 | >20 | >20 |
| 0.19 | 17 | >20 | >20 |
| 0.22 | 12 | >20 | >20 |
| 0.24 | 10 | >20 | >20 |
| 0.26 | 8 | >20 | >20 |
| 0.29 | | >20 | >20 |
| 0.31 | | 18 | >20 |
| 0.33 | | 15 | >20 |
| 0.36 | | 12 | >20 |
| 0.38 | | 10 | >20 |
| 0.41 | | 8 | >20 |
| 0.43 | | | 18 |
| 0.45 | | | 15 |

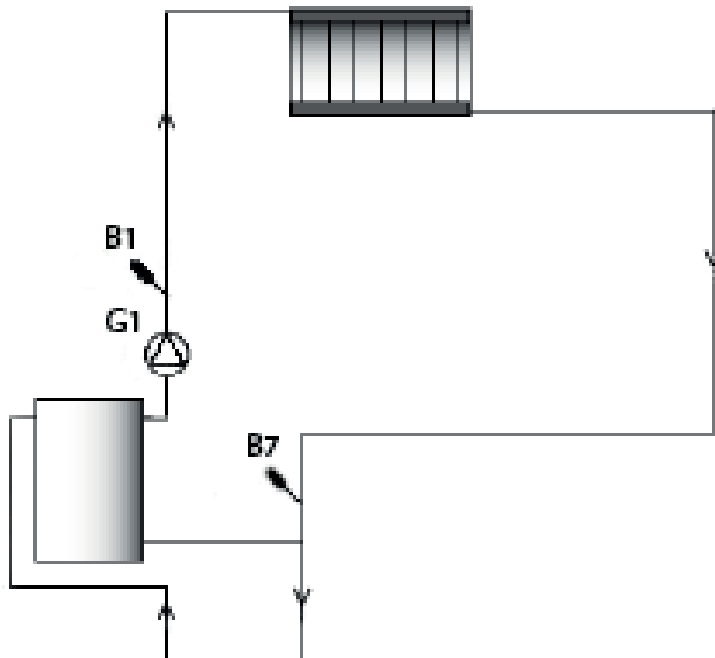
If a CTC Volume tank is installed to increase flow, the flow between the heat pump and CTC Volume tank is calculated according to the flow below.

| | | | |
|-----------------------|----------|------------------|----------|
| CTC EcoAir 406 | 0,21 l/s | CTC EcoPart 406 | 0,14 l/s |
| CTC EcoAir 408 | 0,27 l/s | CTC EcoPart 408 | 0,20 l/s |
| CTC EcoAir 610, 614 | 0,21 l/s | CTC EcoPart 410 | 0,24 l/s |
| CTC EcoAir 622 | 0,39 l/s | CTC EcoPart 412 | 0,28 l/s |
| CTC EcoAir 708M, 712M | 0,23 l/s | CTC EcoPart 612M | 0,29 l/s |
| CTC EcoAir 720M | 0,51 l/s | CTC EcoPart 616M | 0,52 l/s |
| CTC EcoAir C100 | 0,17 l/s | | |

This building requires: _____ l/s between heat pump and CTC Volume tank.

This building requires: _____ l/s to the heating circuit.

Example: House with 11 kW floor heating where an CTC EcoAir 610 is to be installed.



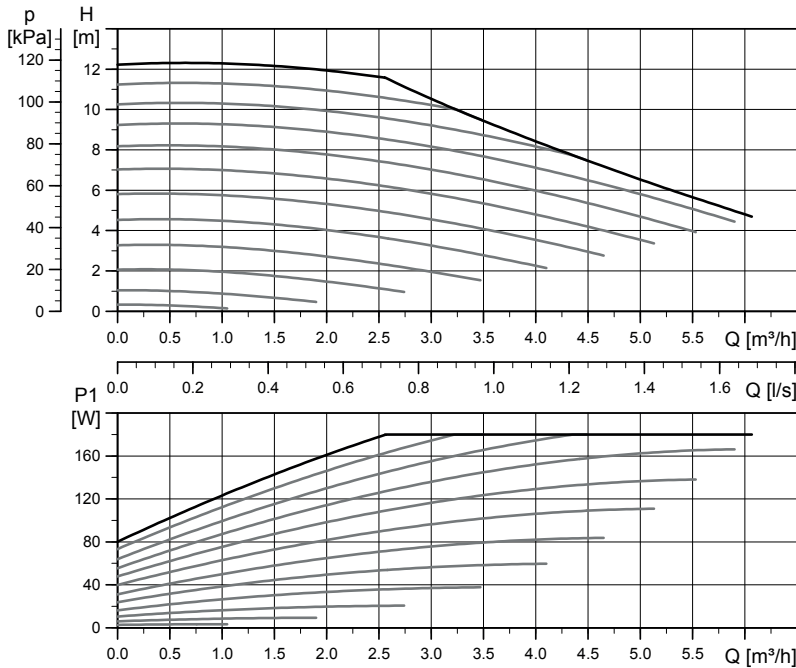
The heating circuit requires a flow of 0.53 l/s. External circulation pump G1 is designed for this flow. The heat pump requires a flow of 0.21 l/s.

Step 5 Set % of PWM signal on the charge pump

Use the pump and pressure differential diagram overleaf to determine the speed [%] according to which the circulation pump/charge pump should be set.

14.2 Pump curve for heating medium system circulation pump

25/125-130 PWM, 1x230V, 50/60Hz



El. data, 1x230V, 50Hz

| Speed | P ₁ [W] | I _{1/1} [A] |
|-------|--------------------|----------------------|
| Min. | 3 | 0.06 |
| Max. | 180 | 1.4 |

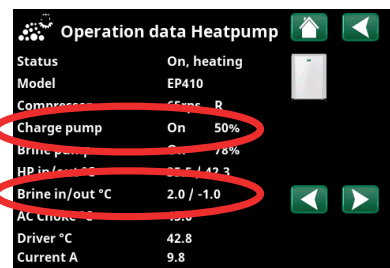
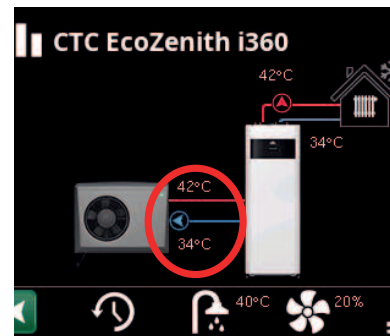
The circulation pumps in CTC's products have energy efficiency class A.

14.3 Flow check

Once the system has been in operation and stabilised and as the outdoor temperature gets colder, the temperature differential between HPout and HPin should be checked so that the set flow speed is enough:

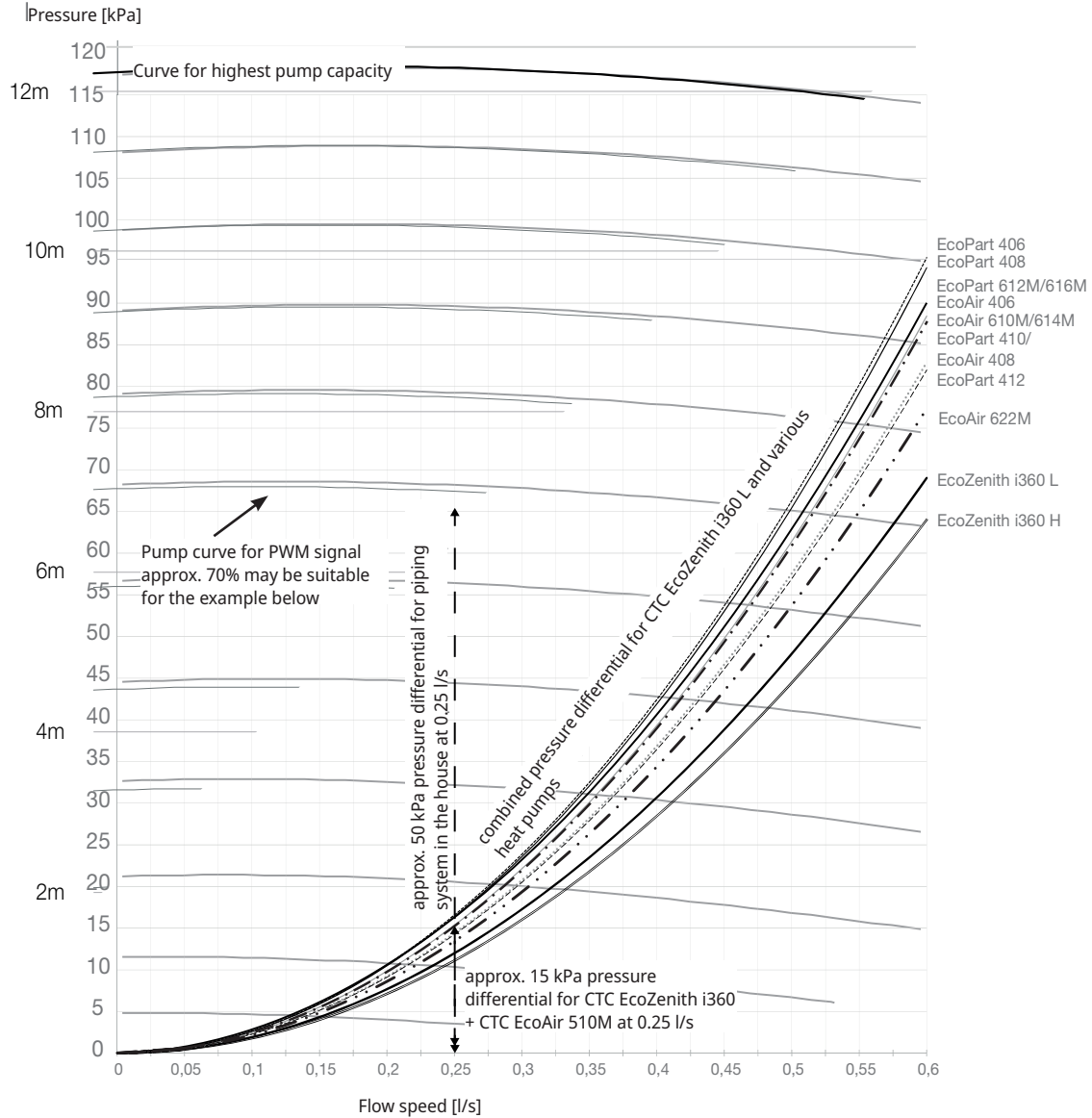
For heat pump in product range:

- CTC EcoAir 400, see table in installation instructions for heat pump.
- CTC EcoAir 600M, 700M, C100/CTC EcoPart 600M series:
Underfloor heating: HPout-HPin should not exceed 5 degrees, when RPS > 20.
Radiators: HPout-HPin should not exceed 10 degrees, when RPS > 20.
If HPout-HPin is greater, the circulation pump speed should be increased.
With an outdoor temperature of -15°C, the temperature differential should be around 5/10 degrees depending on the temperature differential the system is designed for.
- CTC EcoPart 400, see table in installation instructions for heat pump.



14.4 Pressure differential for heating medium side

The diagram below shows the total pressure differential for CTC EcoZenith i360 and the heat pump specified by the curve to the right of the diagram. Curves from the pump diagram on the previous page are added for reference.



Example for calculating speed pump at required flow 0.25 l/s approx. 15 kPa pressure differential for CTC EcoZenith i360 + CTC EcoAir 610M at 0.25 l/s approx. 50 kPa pressure differential for piping systems in house at 0.25 l/s. The total pressure differential, over the heating circuit is approximately 65 kPa at 0.25 l/s. Compare against reference curves from the pump diagram included in the diagram. Approx. 70% for PWM signal to charge pump may be a suitable setting.

| Product | Kvs value | Product | Kvs value | Product | Kvs value |
|----------------------|-----------|----------------------|-----------|------------------|-----------|
| CTC EcoZenith i360 L | 2.6 | CTC EcoAir 610M/614M | 5 | CTC EcoPart 406 | 4.2 |
| CTC EcoZenith i360 H | 2.7 | CTC EcoAir 622M | 7.5 | CTC EcoPart 408 | 4.3 |
| | | CTC EcoAir 406 | 4.9 | CTC EcoPart 410 | 5.8 |
| | | CTC EcoAir 408 | 5.8 | CTC EcoPart 412 | 6.0 |
| | | | | CTC EcoPart 612M | 4.7 |
| | | | | CTC EcoPart 616M | 4.7 |

14.5 Extra functions

There are many types of installation are possible with CTC EcoZenith i360. Several options are described here. For pipe installation, see the full schematic diagram or select combinations in the schematic diagram on our website.

14.5.1 Volume tank/equalisation tank

Connection options with volume tank, radiator pump (G1) and sensor (B1)

The heating circuit is extended with:

- CTC Volume tank
- Radiator pump (G1)
- Primary flow sensor (B1)

Aim: to achieve a sufficient flow speed for the building in the event of high energy needs and increased volume to avoid clicks in the radiator system.

If a volume increaser is needed, this requires an extra radiator pump (G1). For adjustment by degree minutes, install an extra primary flow sensor (B1). The product will then continue to calculate degree minutes in the heating circuit even if the heat pump is producing hot water or heating the pool.

Define the radiator pump via the display: "Advanced/Define/Radiator pump (G1)" – Yes.

Connection options with equalisation tank

The heating circuit is expanded with an equalisation tank.

Aim: to increase the water volume for defrosting the air-to-water heat pump and to counteract clicks in the radiator system, such as floor heating.

14.5.2 Electric shut-off valve Y47

For background heating in heating circuit 2, where the heating is switched off during the summer in heating circuit 1, an electric shut-off valve (Y47) may be installed. Terminal block A13 is powered during the heating season and not powered in the summer. Requires installation of primary flow sensor (B1), radiator pump (G1) and non-return valve or volume tank.

14.5.3 DHW circulation (accessory)

The settings for hot water circulation require the installation of an expansion card accessory.

DHW circulation is connected as shown in the schematic diagram. Pump G40 is used to circulate the hot water.

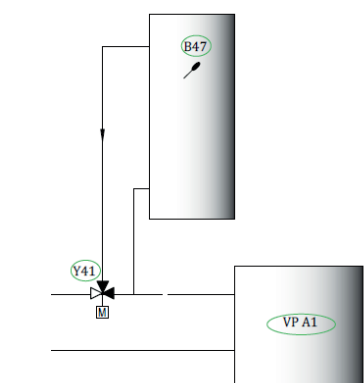
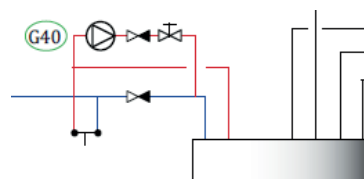
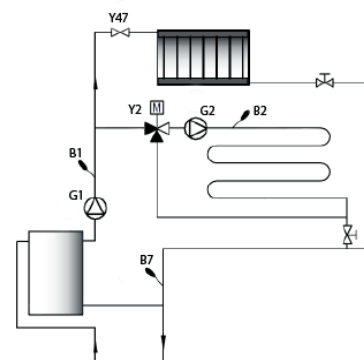
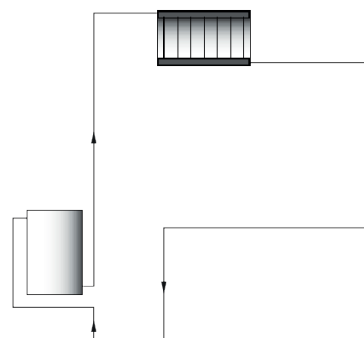
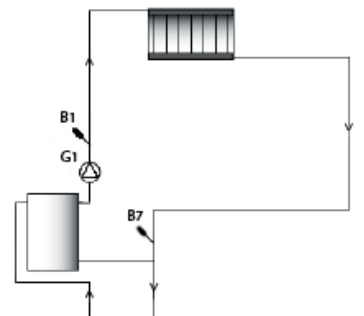
14.5.4 External heat source (EHS)

This function is used to connect additional heat sources to the heating circuit, e.g. water-jacketed stove, solar heat.

The heat from the external heat source is diverted into the system when the set temperature in the external tank is reached and is at least 5°C higher than the setpoint in the radiator system. Diversion stops when the temperature is 3°C higher. The compressor and immersion heater are switched off as long as there is enough energy in the external heat source. Heat is diverted to both the heating circuit and to hot water.

This comes to an end when one of the following alarms occur: "Primary flow sensor 1", "HP in-sensor", "Comm. error HP" or if "Primary flow sensor 1" is hotter than 80 °C.

Enter settings under "Settings/External heat source".

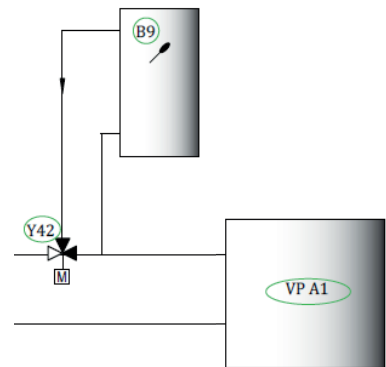


14.5.5 External Boiler

Aim: added heat when the need for heating or hot water is at its highest in winter, and for hot water when the need for heating is low if this is permitted. The function allows additional heat sources to be connected to the heating circuit with lower priorities (costlier heat sources), e.g. district heating or oil/ gas boilers.

Relay for external boiler (E1) is activated by outdoor temperature (or alarm). When the loss of degree minutes is great enough and the temperature is high enough (B9), the mixing valve (Y42) opens to the external boiler. Both the compressor in the heat pump and the immersion heater can be used at the same time as the external boiler. Heat is diverted to both the heating circuit and to hot water.

See more installation options in the menu description.

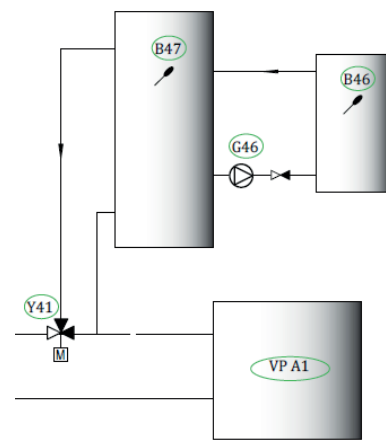


14.5.6 Diff thermostat function

The diff thermostat function is used to transfer heat from a tank with a sensor (B46) to a tank with a sensor (B47). The function compares the temperatures in the tanks and, when it is warmer in the first tank (B46), charging starts to the second tank (B47).

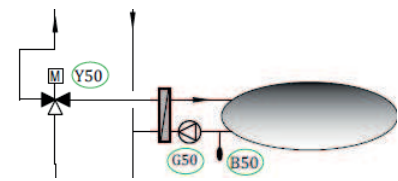
NB: For certain heat sources, e.g. solid fuel boilers, automatic chargers are recommended, among other things to counteract condensation in the fire box. However, this function cannot be combined with solar system 2 with CTC EcoTank. This is because the same circulation pump (G46) is used.

In the "Operation data/Diff thermostat function" menu, the information "Status (On/Off) is displayed.



14.5.7 Pool (accessory)

A pool can be connected to the system using a diverting valve (Y50). A heat exchanger should be fitted to separate the liquids. When the pool is heated, the diverting valve (Y50) changes direction and the pool pump (G51) starts. The immersion heater is never used to heat the pool. When a constant flow is desired in the pool water, the pool pump (G51) is connected with a separate supply and constant voltage. The Extension Card accessory is required to connect pool heating to your heating circuit.



14.5.8 Solar heat (accessory)

Solar heat is connected to the system through an external heat source tank (EHS-tank).

The number of solar panels which can be connected depends on the volume of water in the product/tanks to which the solar panels are to be connected.

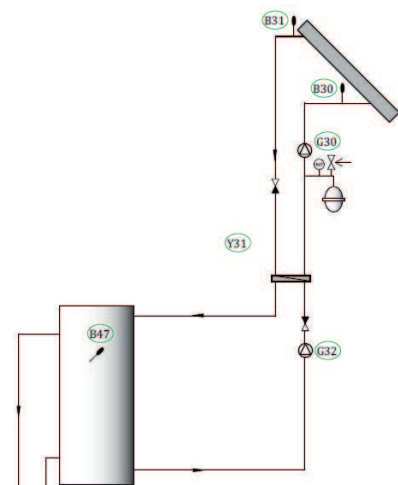
System 1

System 1 is a system structure with solar heat going directly to an external heat source tank (EHS-tank).

Charging conditions (main conditions, factory settings)

- Charging starts when B31 is 7°C warmer than B47.
- Charging stops when there is a difference of 3°C between B31 and B30 or when the charge temperature is reached.

The tank for the external heat source (01) can also have a solar coil, in which case the heat exchanger (F2), pump (G32) and non-return valve (Y11) are not required.



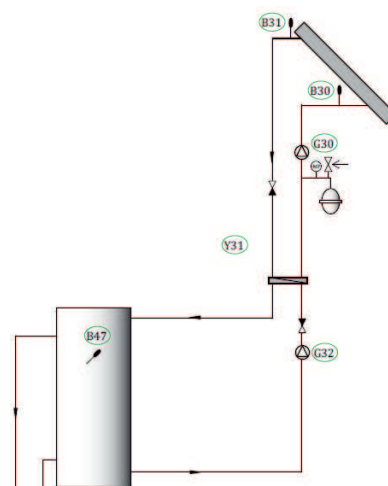
System 2

System 2 is a system structure with solar heat connected to an external heat source tank (EHS tank) and an extra buffer tank (CTC VT 80 for example). The system allows for a larger solar collector surface since it carries a greater volume of water.

Charging conditions

- Charging starts when B31 is 7°C warmer than B47.
- Buffer tank **without** coil:
Charging stops when there is a difference of 3°C between B31 and B30 or when the charge temperature is reached.
- Buffer tank **with** coil:
For a tank with a solar coil, the charging stops instead when B31 is 3°C warmer than B42.
- Charging of the EHS tank compares sensor B41 to sensor B47.

The buffer tank (02) may also have a solar coil; this means that the heat exchanger (F2), pump (G32) or non-return valve (Y11) is not required.



System 3

System 3 is a system structure with an extra volume called 03; this can be a large extra tank or a pool. The greater the water volume, the larger the solar collector surface required.

System 3 is solar heat connected to an external heat source tank (EHS-tank) and an extra buffer tank. The system allows for a larger solar collector surface since it carries a greater volume of water.

Charging conditions

- Charging starts when B31 is 7°C warmer than B42 or B47.
- Charging stops when there is a difference of 3°C between B31 and B30 or when the charge temperature is reached.

14.5.9 CTC EcoVent (accessory)

To connect the CTC EcoVent ventilation product, please refer to the CTC EcoVent manual.

14.5.10 CTC SmartControl (accessory)

To connect CTC SmartControl, please refer to the CTC SmartControl manual.

14.5.11 Active cooling

Function

Active cooling is when the cooling is produced by the heat pump.

There are different systems for active cooling, see examples. For these systems to work, different equipment may be necessary.

Common heating/cooling

To be able to utilise the active cooling function with common heating/cooling, you need to have an heating circuit to which cooling can be connected. If the heating circuit can be used for cooling the property, the heating circuit is used for heating in the winter and for cooling in the summer.

Separate heating/heating system and cooling system (fan convector)

The control system can manage both a heating circuit for heating and a separate system for cooling. This can be relevant if you want to cool a part of the property using e.g. a fan convector at the same time as there is a need to heat another part.

Automatic heating/cooling function

Once the setting is made, operation is completely automatic. The control system automatically ensures that the property is heated when there is a heating demand and cooled when there is a cooling demand, without the systems clashing.

Condensation

Condensation forming can be a problem if the cooling temperature is set to low and the system is not condensation proof.

Remote control

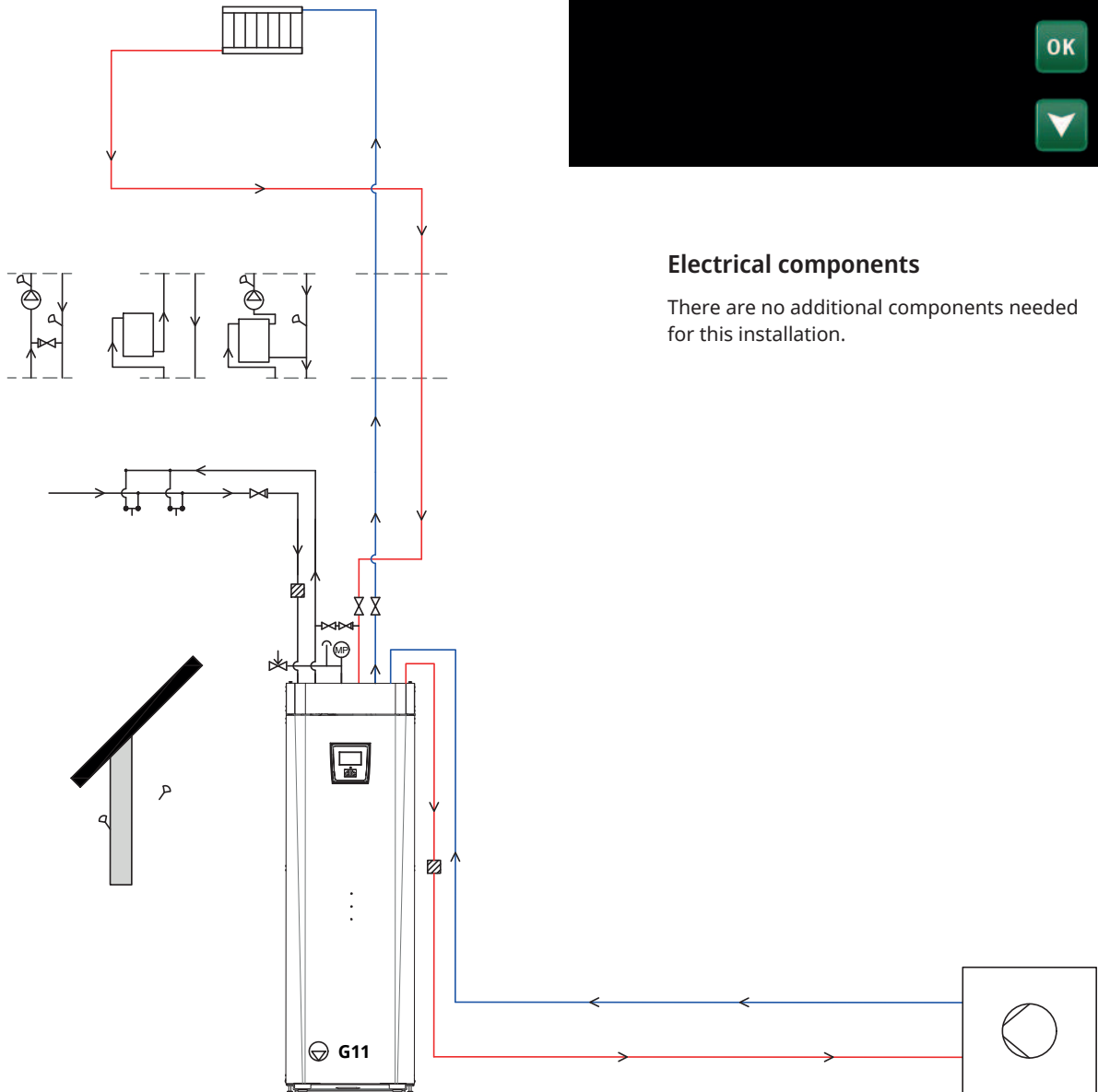
Block cooling can be controlled remotely. For example, the function can be used to turn off cooling with the help of a humidity sensor when there is a risk of condensation. See also the "Settings/Cooling" section of the "Display settings" chapter.

Example 1

Common heating/cooling

Direct cooling over the indoor unit

In cooling mode, the water flow goes through the indoor unit to the existing distribution system. Condense free temperature.



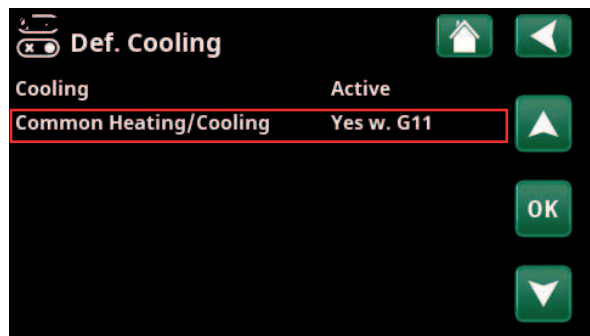
Preconditions:

- No heat production is possible when cooling is active.
- It is not possible to add a second heating circuit.
- The heat pump starts with degree minute calculation.
- The cooling temperature is limited due to condensation risk in the indoor module.
- The heat pump sensors are used to regulate the cooling temperature.

Define:

Common Heating/Cooling

Yes w. G11



Electrical components

There are no additional components needed for this installation.

Example 2

Common heating/cooling

Bypass of the indoor unit

In cooling mode, the water flow goes outside the indoor unit to the existing distribution system.

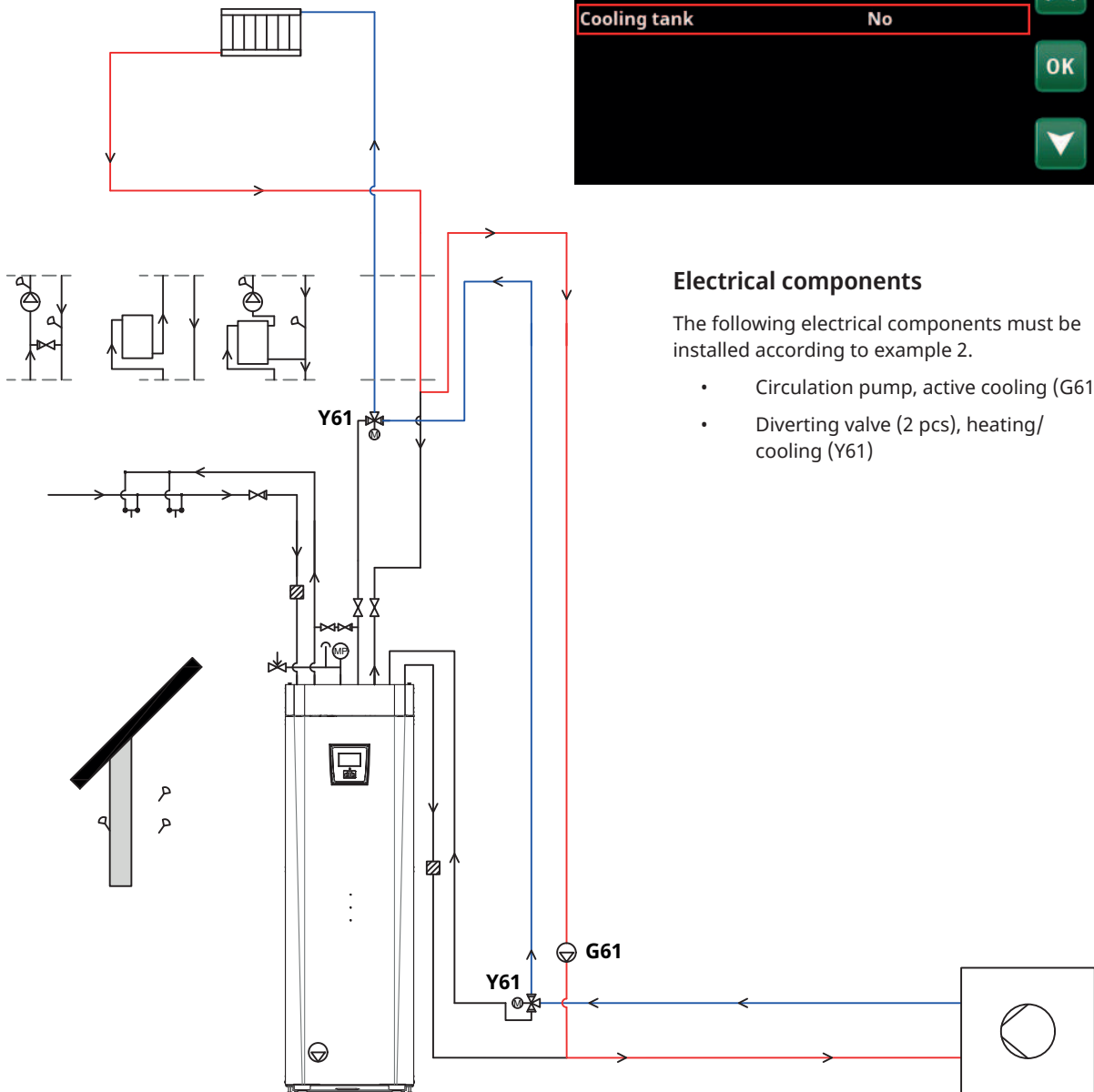
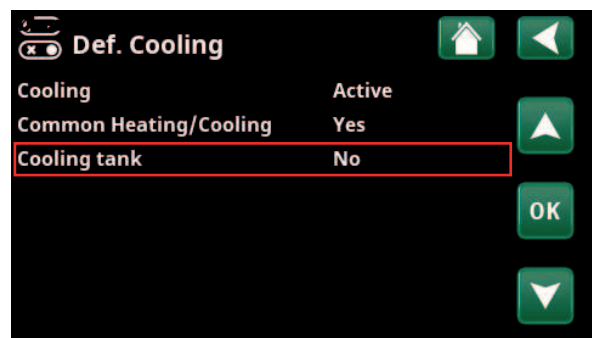
Preconditions:

- No heat production is possible when cooling is active.
- It is not possible to add a second heating circuit.
- The heat pump starts with degree minute calculation.
- Risk of condensation in the distribution system. Adjust temperature or ensure condensation protection before commissioning.
- The heat pump sensors are used to regulate the cooling temperature.

Define:

Cooling tank

No



Electrical components

The following electrical components must be installed according to example 2.

- Circulation pump, active cooling (G61)
- Diverting valve (2 pcs), heating/cooling (Y61)

Example 3

Common heating/cooling

With cooling tank

In cooling mode, the water flow goes outside the indoor unit through the cooling tank to the existing distribution system. The cooling tank sensor (B61) is used to regulate the cooling temperature. Two additional sensors are used to regulate the comfort control.

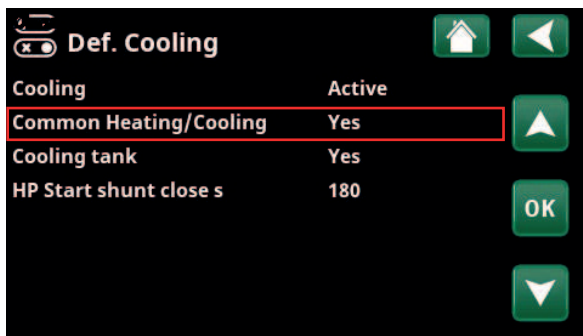
Preconditions:

- No heat production is possible when cooling is active.
- It is not possible to add a second heating circuit.
- Risk of condensation in the distribution system. Adjust temperature or ensure condensation protection before commissioning.
- The cooling tank sensor (B61) regulates the cooling temperature.
- The cooling temperature in the cooling circuit is regulated by two additional sensors (B1 and B72).

Define: (Step 1)

Common Heating/Cooling

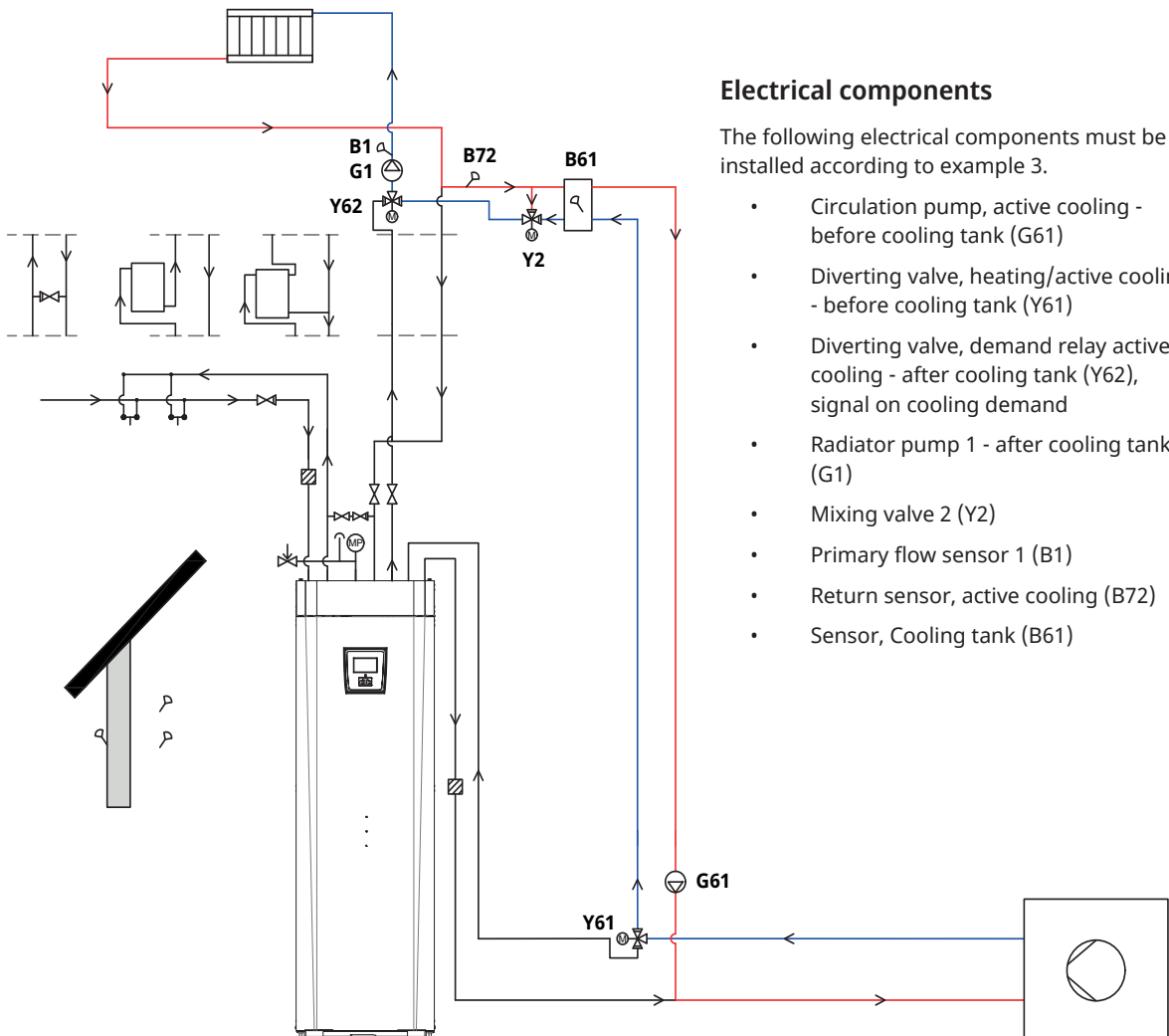
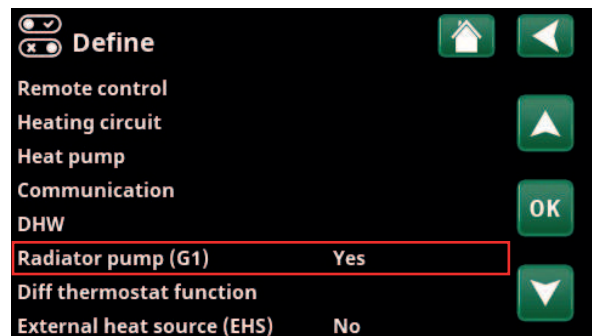
Yes



Define: (Step 2)

Radiator pump (G1)

Yes



Electrical components

The following electrical components must be installed according to example 3.

- Circulation pump, active cooling - before cooling tank (G61)
- Diverting valve, heating/active cooling - before cooling tank (Y61)
- Diverting valve, demand relay active cooling - after cooling tank (Y62), signal on cooling demand
- Radiator pump 1 - after cooling tank (G1)
- Mixing valve 2 (Y2)
- Primary flow sensor 1 (B1)
- Return sensor, active cooling (B72)
- Sensor, Cooling tank (B61)

Example 4

Separate heating/cooling

Direct cooling

In cooling mode, the water flow goes outside the indoor unit in a separate system without a cooling tank.

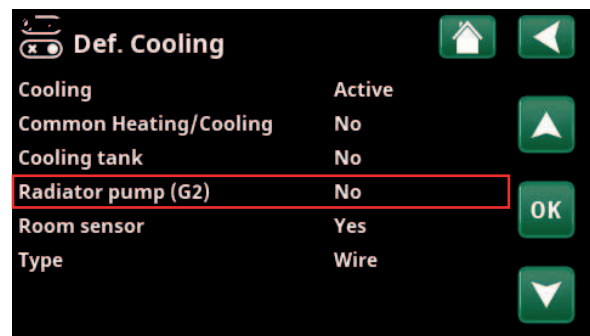
Preconditions:

- No heat production is possible when cooling is active.
- It is not possible to add a second heating circuit.
- The heat pump is activated with degree minutes.
- Risk of condensation in the distribution system. Adjust temperature or ensure condensation protection before commissioning.
- The heat pump sensors are used to regulate the cooling temperature.

Define:

Radiator pump (G2)

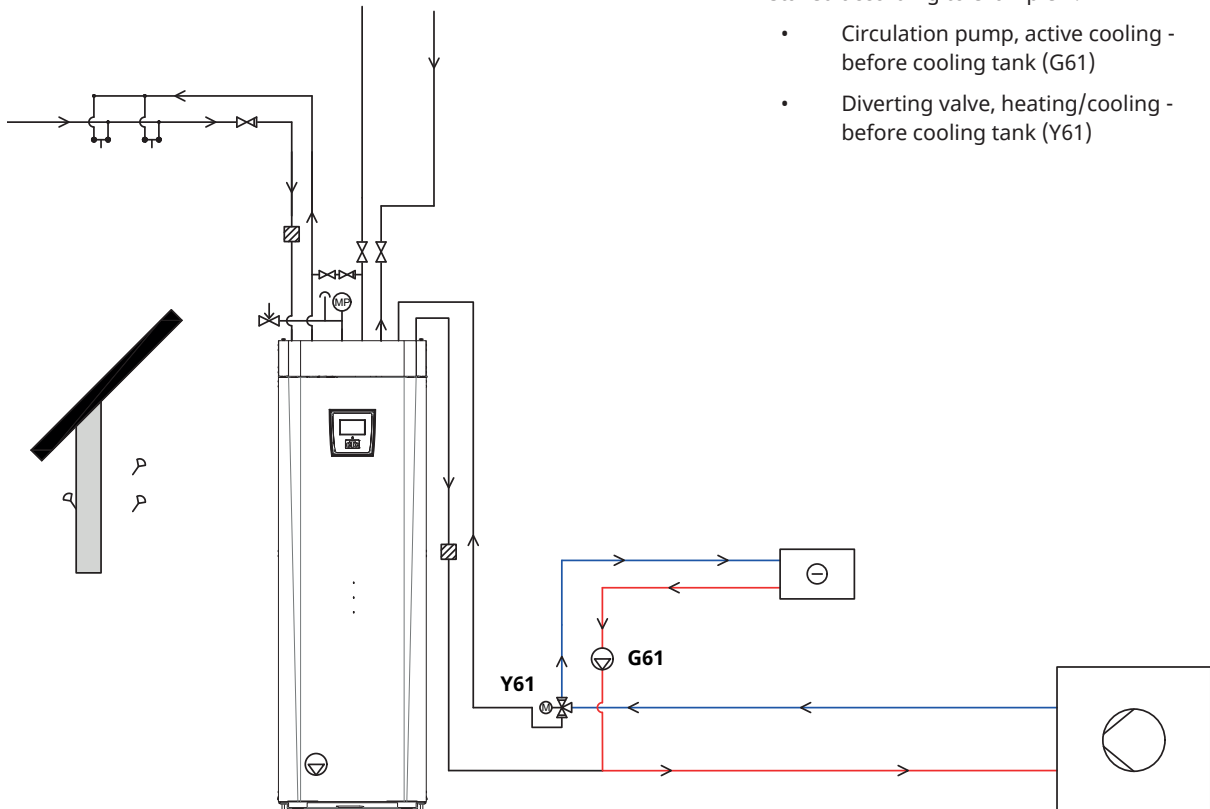
No



Electrical components

The following electrical components must be installed according to example 4.

- Circulation pump, active cooling - before cooling tank (G61)
- Diverting valve, heating/cooling - before cooling tank (Y61)



Example 5

Separate heating/cooling

Control of cooling tank only

In cooling mode, the water flow goes outside the indoor unit to the cooling tank and an independent distribution system. The comfort temperature is regulated outside of the CTC EcoZenith i360.

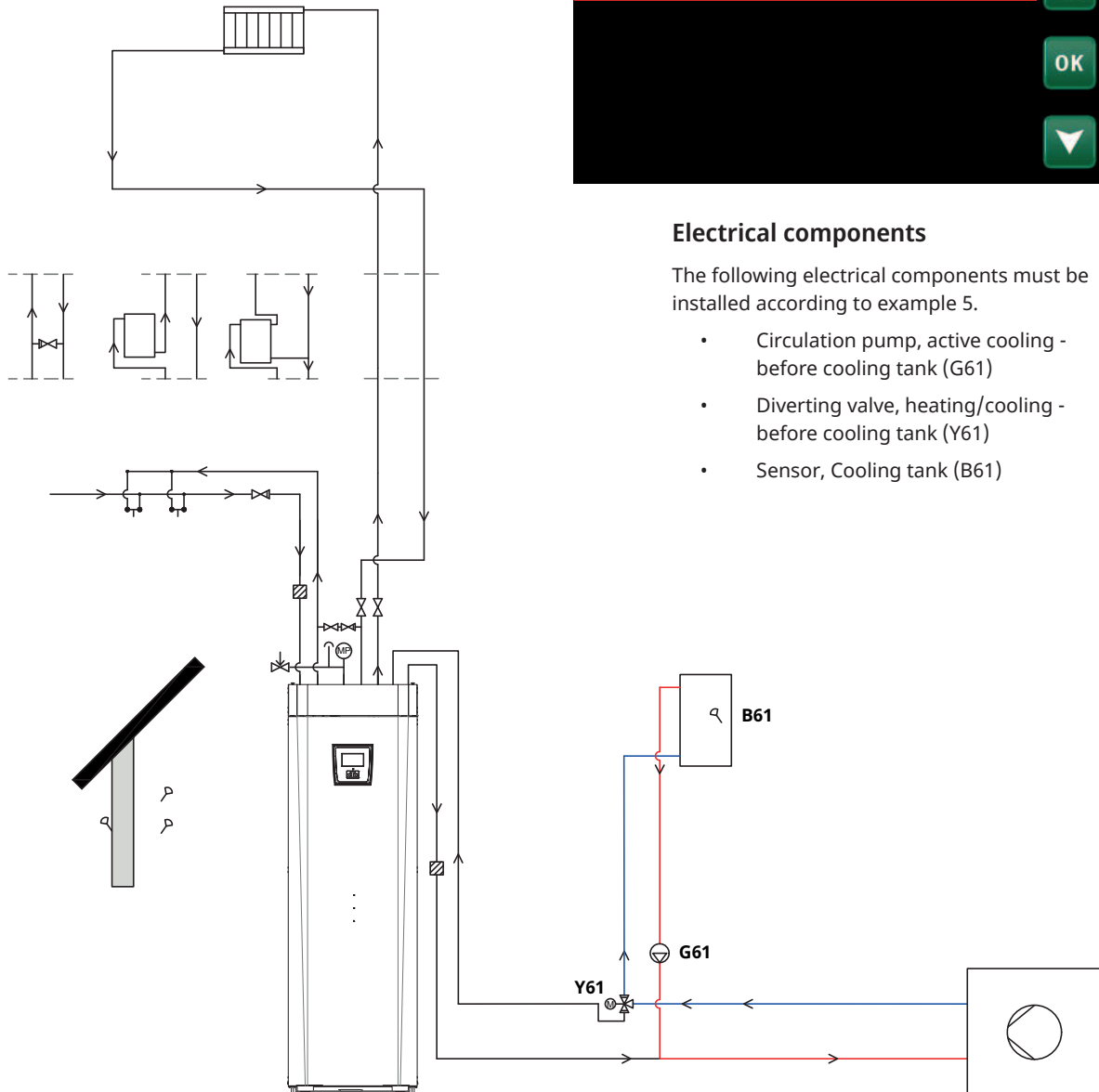
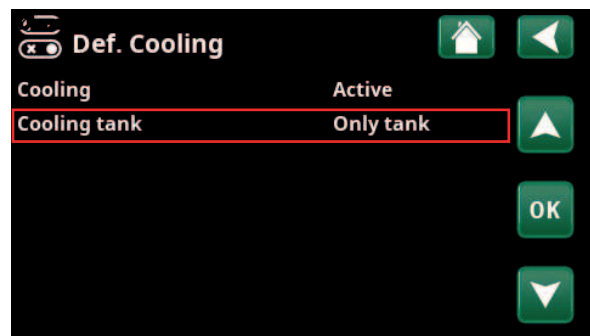
Preconditions:

- No heat production is possible when cooling is active.
- Risk of condensation in the distribution system. Adjust temperature or ensure condensation protection before commissioning.
- The cooling tank sensor (B61) regulates the cooling temperature.
- The cooling temperature in the cooling circuit is regulated by an independent system.

Define:

Cooling tank

Only tank



Electrical components

The following electrical components must be installed according to example 5.

- Circulation pump, active cooling - before cooling tank (G61)
- Diverting valve, heating/cooling - before cooling tank (Y61)
- Sensor, Cooling tank (B61)

Example 6

Separate heating/cooling

With cooling tank and control of cooling element

In cooling mode, the water flow goes outside the indoor unit to the cooling tank and a separate distribution system.

The sensor of the cooling tank (B61) is used to regulate the cooling temperature. Two additional sensors are used to control the comfort temperature.

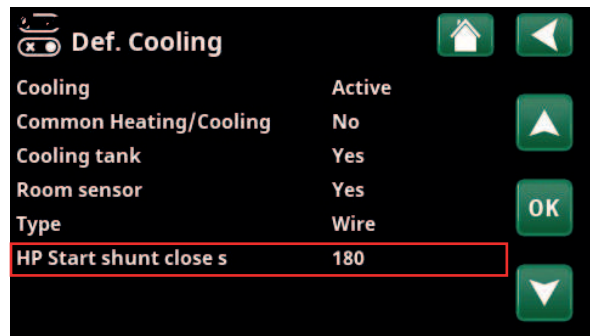
Preconditions:

- No heat production is possible when cooling is active.
- It is not possible to add a second heating circuit.
- Risk of condensation in the distribution system. Adjust temperature or ensure condensation protection before commissioning.
- The cooling tank sensor (B61) regulates the cooling temperature.
- The cooling temperature in the cooling circuit is regulated by two additional sensors (B1 and B72).

Define:

HP Start shunt close s

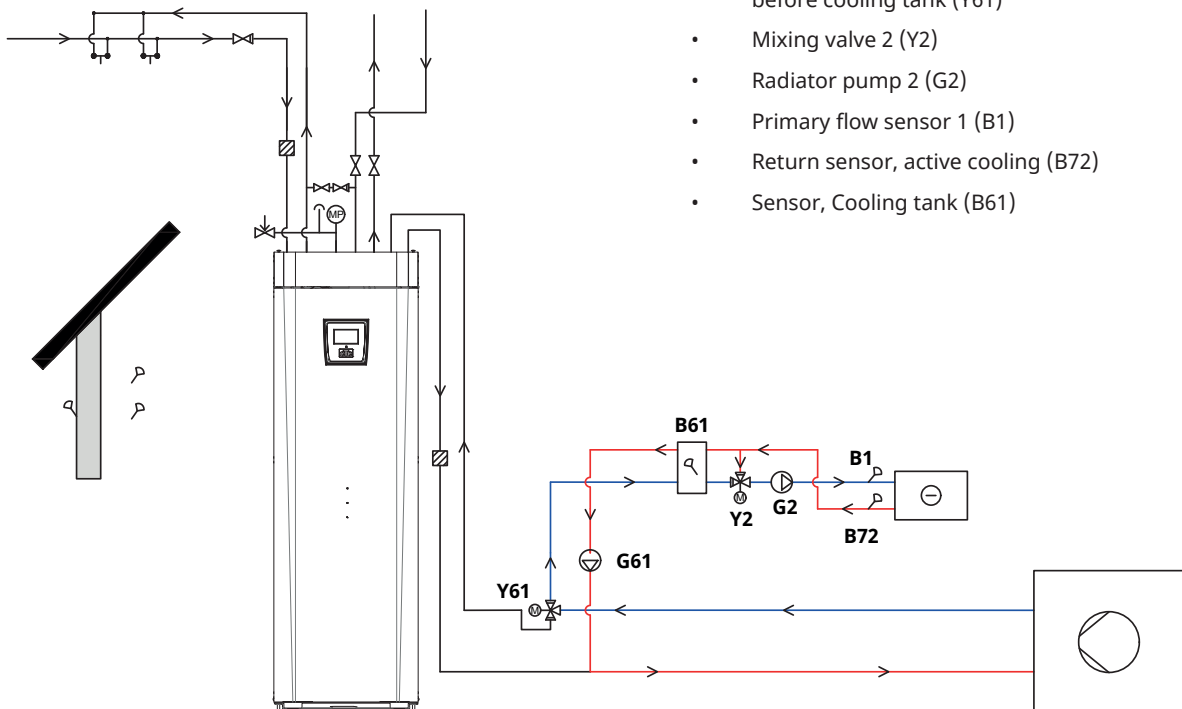
180



Electrical components

The following electrical components must be installed according to example 6.

- Circulation pump, active cooling - before cooling tank (G61)
- Diverting valve, heating/active cooling - before cooling tank (Y61)
- Mixing valve 2 (Y2)
- Radiator pump 2 (G2)
- Primary flow sensor 1 (B1)
- Return sensor, active cooling (B72)
- Sensor, Cooling tank (B61)



14.5.11.1 Control logic

The control logic for the consumer is described below, see also the section "Settings Cooling" of the "Display settings" chapter for more information about relevant menu settings.

Active cooling must be defined in the "Advanced/Define/Cooling" menu in order to be activated as shown below.

Common heating/cooling

Active cooling in a common system is permitted if the following criteria are met at the same time:

- the delay time has passed after the production of heat has ended.
--> see menu bar "Heating off, delay".
- the outdoor temperature exceeds (or is equal to) the temperature from which cooling is to be permitted.
--> see the "Cooling permit. from outdoor T °C" menu.

Separate heating/cooling

Active cooling in a separate system is permitted if the following criteria are met at the same time:

- the outdoor temperature exceeds (or is equal to) the temperature from which cooling is to be permitted.
--> see the "Cooling permit. from outdoor T °C" menu.

Room sensor installed

If a room sensor has been installed, active cooling is permitted if the following criteria are met at the same time:

- the room temperature exceeds (or equals) the set value.
- when the delay time has passed.
--> see the "Start delay" menu.

Active cooling is stopped when the room temperature is less than (or equal to) the set value.

Room sensor not installed

- Cooling is activated when the delay time has passed.
--> see the "Start delay" menu.

Block cooling

- Cooling can be temporarily deactivated by blocking cooling externally without any effect on delays.
--> see the "Ext. block cooling" menu.

Primary flow temperature

- The minimum primary flow temperature is calculated from the value set for the primary flow temperature at outdoor temperatures of +20 °C and +40 °C respectively.
--> see the "Primary flow temp at outdoor +20 °C/+40 °C" menus.
- The estimated diff. is calculated from the diff. set value permitted between the primary flow and return temperature of the cooling flow at outdoor temperatures of +20 °C and +40 °C respectively.
--> see the "Primary flow diff. outdoor +20 °C/+40 °C" menus.

Every x minutes, a new primary flow temperature is calculated based on the return temperature.

--> see the "Diff delay calc." menu.

If the value is lower than the minimum primary flow temperature, then this sets the minimum primary flow temperature.

Mixing valve control is calculated from the current and estimated primary flow temperature.

14.5.11.2 Alarm logic cooling

An alarm is triggered if:

- The cooling flow temperature is lower than the set value (factory setting: 18°C) minus 0.5 °C.
The value is set on the menu bar "Min. flow temp cooling" in the "Advanced/Service/Coded settings/Cooling" menu.

or

- For a common system: the primary flow temperature is lower than the room temperature minus the set flow diff. (factory setting: 5°C) minus 0.5 °C.
The "flow diff." value is set on the menu bar "Max diff. room temp cooling" in the "Advanced/Service/Coded settings/Cooling" menu.

If any of the conditions are met for 10 minutes, the mixing valve (Y2) closes for 5 minutes. The mixing valve is permitted to control the system for a total of 30 minutes. If the error persists after this time, the alarm will be triggered and appear in the display on the start menu.

15. Display settings

15.1 Navigate on the touchscreen

Scroll & Swipe sideways
 Single click = Select
 Double click = Open

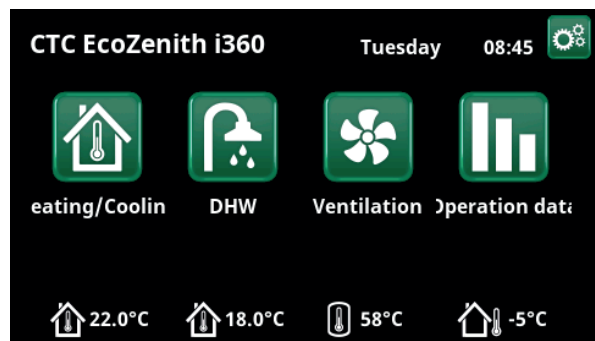
Start menu
 Back
 Decrease value

Next
 Increase value

Increase value
 Select and save (OK)
 Decrease value

15.2 Start menu

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



15.3 Alarm management

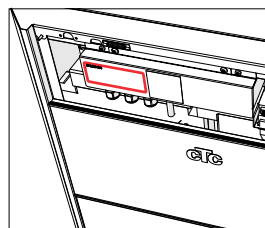
CTC EcoZenith i360 Monday 08:45

Heating/Cooling
 DHW
 Ventilation
 Operation data

Alarm: [E074] Room sensor 1
 [E044] Stop, high compr temp
 Reset alarm

| Signal | Status |
|-------------------------|-----------------------------------------------------------------------------------------|
| Green LED | OK. |
| Red/yellow flashing LED | Alarm. |
| Green flashing LED | Operation with active immersion heater - Applies only with language selection "Danish". |
| Info message at bottom | Information message about the current status |

- Refer to the troubleshooting table at the end of the installation manual.
- Call your installation engineer in the first instance



The serial number (12 digits) can be found behind the magnetic strip. This number is needed to be given to the installation engineer and CTC support in the event of a fault report.

15.4 Heating/Cooling



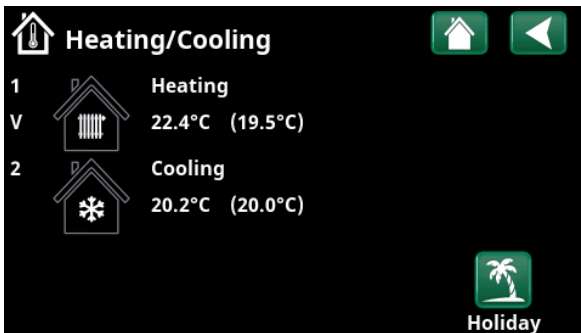
In the menu "HC- Heating/Cooling" the following settings can be made:

15.4.1 Setpoint setting with room sensor

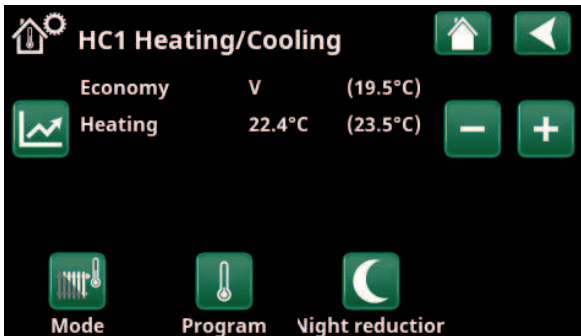
Set the desired room temperature (set point) with the "minus" and "plus" symbols. In the example in the "HC1 Heating/Cooling" menu, the "Economy" programme and "Holiday mode" (V) are active for heating circuit 1.

In the "HC2 Heating/Cooling" menu, the "Cooling" mode is active.

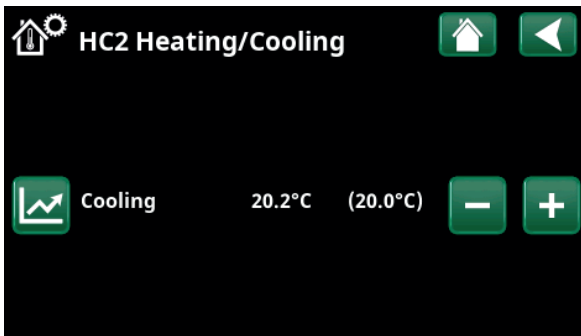
"Holiday mode" and "Night reduction" only lower the room temperature when heating mode is active.



Click on heating circuit 1 or 2 to go to the menu of the respective heating circuit. In this menu you can activate "Holiday mode" for the heating circuits.



In the menu, programs "Economy" and "Holiday mode" (V) are active for heating circuit 1. In this example, both the "Economy" and "Holiday Mode" programmes are set to lower the set point (23.5 °C) by 2 °C, which means that the actual set point = 23.5 - 2 - 2 °C = 19.5 °C.

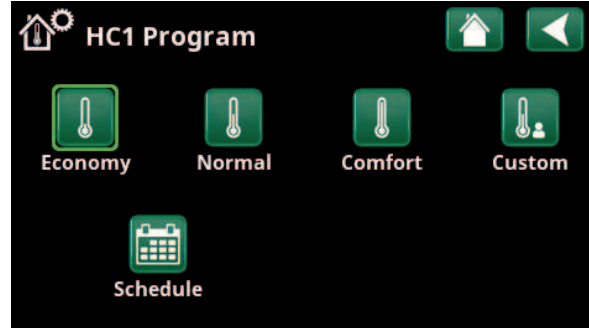


In the menu, "Cooling" (setpoint: 20.0 °C) is active for heating circuit 2. "Holiday mode" (V) does not lower the setpoint when cooling is active.

15.4.2 Program



Press the "Program" symbol and then the heating programme to be activated.



Menu "HC1 Heating/Cooling / HC1 Program" where program "Economy" has been activated.

Press and hold the symbol to go directly to the settings for the respective heating programs "Economy", "Comfort" and "Custom".

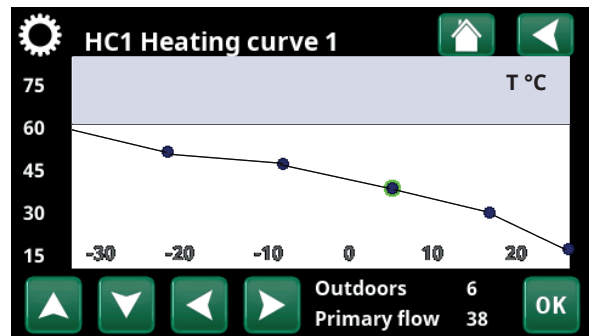
It is also possible to schedule the programs.

See chapter "Advanced/Settings/Heating circuit/Program" for information on how to set temperature increases/ decreases and delay times for the programs.

15.4.3 Heating/Cooling curve



Press the heating/cooling curve symbol in the "HC1- Heating/Cooling" menu. The graph of the heating/cooling curve of the heating circuit is displayed.



Menu "Heating/Cooling/HC1 Heating/Cooling".

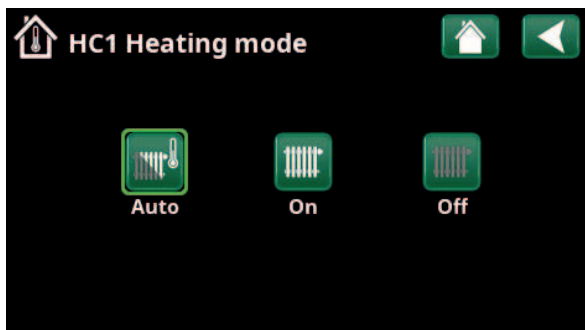
The chapter "Advanced/Installation/Heating circuit" describes the setting of the heating/cooling curve.

See also chapter "House heating curve" for more information on adjusting the heating curve.

15.4.4 Heating mode



Press the "Mode" symbol and then select "Heating mode"; "Auto", "On" or "Off".



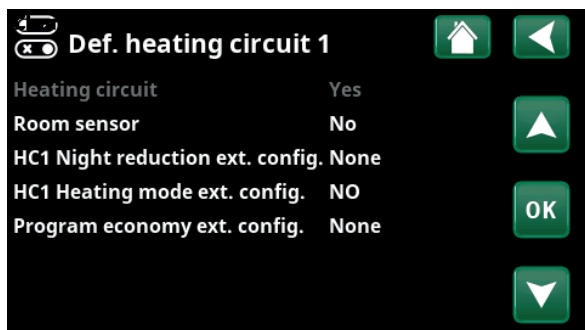
Menu "HC1 Heating/Cooling/HC1 Heating mode" where mode "Auto" has been activated.

Heating mode can also be selected in the menu "Advanced/Settings/Heating circuit/Heating mode".

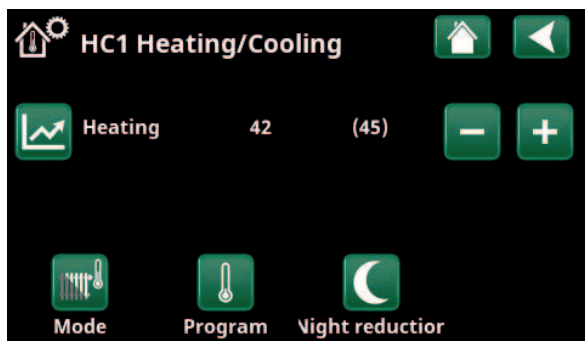
See chapter "Advanced/Settings/Heating circuit" for more information.

15.4.5 Room temperature setting without room sensor

You can select "Room sensor - No" in the "Advanced/Define/Heating circuit" menu.



Menu "Advanced/Define/Heating circuit/Heating circuit 1".



Menu "Advanced/Define/Heating circuit/Heating circuit 1". The heating circuit has no room sensors. The setpoint (primary flow temperature 45 °C) is shown in brackets, the current primary flow temperature 42 °C is shown to the left of the setpoint.

This is used if the room sensor is difficult to place, if the underfloor heating system control has its own room sensor or if you are using a wood-burning stove/fireplace. The alarm LED on the room sensor works as usual.

If a wood-burning stove or fireplace is used sporadically, the burning may cause the room sensor to reduce the temperature of the heating circuit and it may become cold in the rooms in other parts of the house. The room sensor can then be temporarily switched off during firing and the heat pump provides heat to the heating circuit according to the set heating curve. The radiator thermostats are throttled in the part of the house where the fire is burning.

If the room sensor has not been installed, the heating must be set according to the chapter "House heating setting".

15.4.6 Outdoor sensor/room sensor errors

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

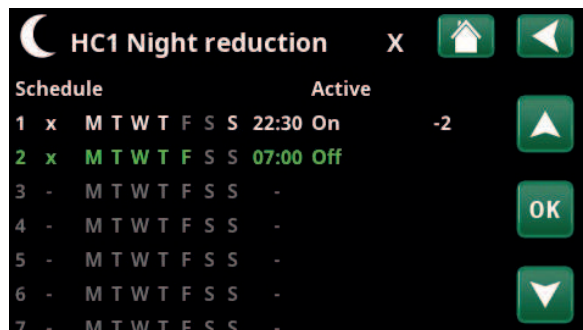
If a fault occurs with a room sensor, the product triggers an alarm and automatically switches to operating according to the set curve.

15.4.7 Night Reduction Temperature



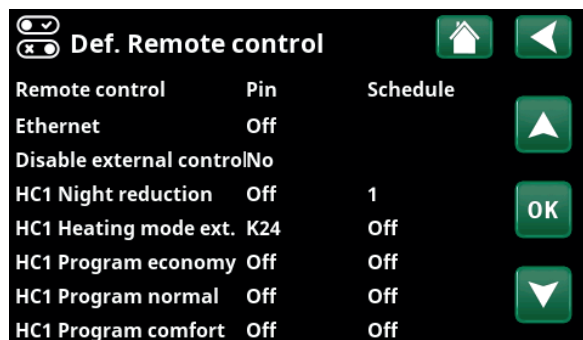
Night reduction means reducing the temperature indoors, via remote control or during scheduled periods.

In the menu "HC1 Night reduction" menu, the periods during the week for night temperature reduction can be scheduled.



The schedule has been set for "Night Reduction" to be active weekdays between 22:30 and 07:00, except during the night between Friday and Saturday and the night between Saturday and Sunday (when no night reduction occurs).

The "Night reduction" icon in the "Heating/Cooling" menu only appears if a "Schedule" has been defined for the heating circuit in the "Advanced/Define/Remote control" menu.



Menu: "Advanced / Define / Remote Control". The "HC1 Night Reduction" function is assigned to Schedule #1.

The "Schedule" chapter describes how to set schedules.

The value by which the temperature is reduced during remote control of the night reduction is set in one of the following menus.

Room sensor installed:

"Advanced/Settings/Heating circuit/Room temp reduced night red °C".

Room sensor not installed:

"Advanced/Settings/Heating circuit/Prim. flow reduced night red °C".

● When both "Night Reduction" and "Holiday Reduction" are in use, "Holiday Reduction" supersedes "Night Reduction".

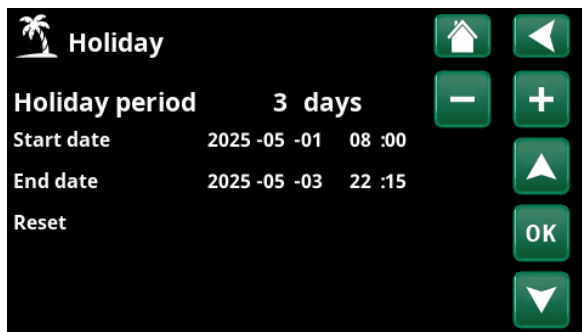
● When holiday is enabled, hot water production is stopped. The "Temporary extra DHW" feature is also stopped.

15.4.8 Holiday



Here you set the number of days you want the set temperature to be lowered, for example if you go on holiday.

The holiday period can be set in number of days or you can schedule the holiday with start/end date and time.



Menu "Heating/Cooling / Holiday".

Holiday period 0...300 days

Click on the "+" sign to set the number of days. The period is activated directly with date and time.

Start/End date

Set the date and time using the arrows.

NOTE! The number of days is displayed as 0.

Reset

Resets the holiday period to zero.

The number of degrees by which the temperature is lowered during the period is set in one of the menus:

Room sensor installed:

"Advanced/Settings/Heating circuit/Room temp reduced holiday °C".

Room sensor not installed:

"Advanced/Settings/Heating circuit/Prim. flow reduced holiday °C".



15.5 DHW

This menu is used to set the hot water comfort level and "Extra DHW".

Extra DHW

The "Extra DHW" function can be activated here. When the function is activated (by setting the number of hours using the plus sign in the "Hot Water" menu), the heat pump immediately starts to produce extra DHW. It is also possible to remotely control or schedule hot water production according to specified times.

DHW mode

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



Economy

For low hot water needs.
(Factory value stop temperature DHW tank: 50 °C).



Normal

Normal hot water needs.
(Factory value stop temperature DHW tank: 55 °C).



Comfort

For high hot water needs.
(Factory value stop temperature DHW tank: 58 °C).

Press and hold the button to go directly to the settings for the respective hot water programs "Economy", "Comfort" and "Custom".

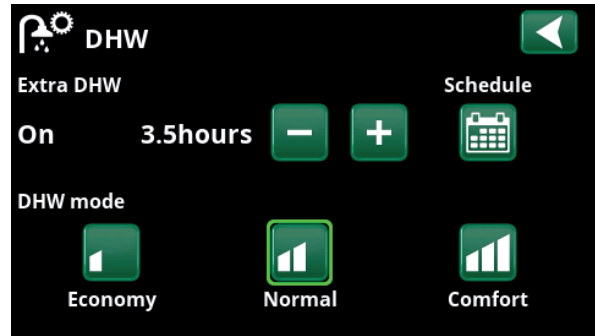
15.5.1 Extra DHW

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

The stop temperature for Extra DHW is 60 °C (factory setting).

The "Schedule" chapter describes how to set schedules.

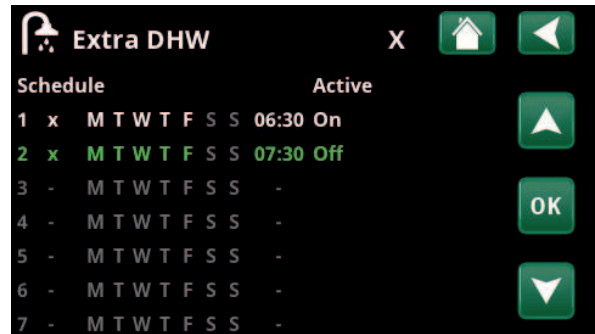
Click the "Extra DHW" heading to obtain a graphical overview of when the schedule is active during weekdays.



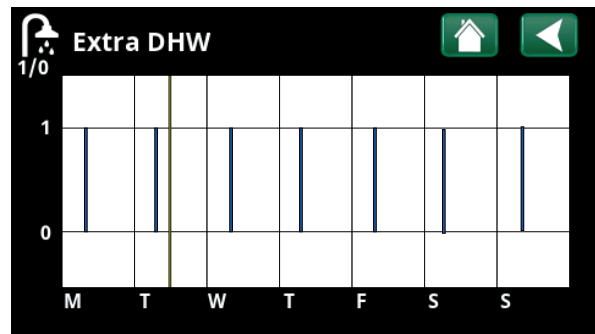
The "Extra DHW" function is set to be active for 3.5 hours.

NB: Set the time approx. 1 hour earlier than when you need the hot water as it may take some time to heat-up.

Tip: Set to "Economy" mode from the start. If the hot water is deemed insufficient, raise to "Normal" mode, and so on.



The "Extra DHW" function is set to be active on weekdays between 06:30 and 07:30.



Use the Back button to switch between settings and preview. A vertical blue bar indicates when "Extra DHW" is active. A horizontal yellow line indicates the current time. The X axis represents the days, Monday to Sunday.



15.6 Ventilation

Refer to the "Installation and Maintenance Manual" for the CTC EcoVent ventilation product.

15.7 Schedule

In a Schedule, the periods can be set for when a function should be active or inactive during the weekdays.

The system does not allow certain functions to be active at the same time on the same schedule; for example, the "Night Reduction" and "Extra DHW" functions, but most functions can share the same schedule.

If several functions share the same schedule, changes to the schedule for one function will cause the same changes for the other functions that share the schedule.

To the right of the schedule header, an "X" will appear if the same schedule is also shared by another remote control function.

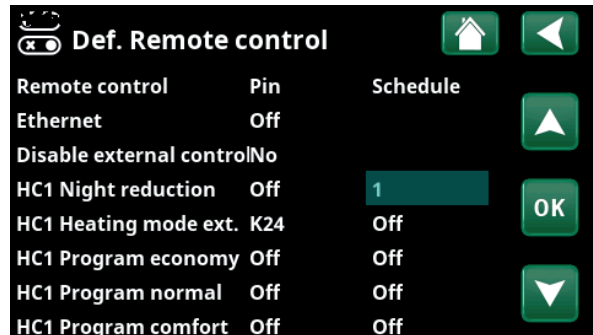
Click on the schedule's header row to see a graphical overview of when the schedule is active during the days of the week.

15.7.1 Defining a schedule

In this example, a night temperature reduction of heating circuit 1 (HC1) is programmed.

First, a schedule must be defined in the "Advanced/Define/Remote control" menu.

Enter a schedule (1-20) in the "Schedule" column in the "HC1 Night Reduction" row using the arrow keys, or click where the cursor is in the example.



Menu: "Advanced / Define / Remote Control".

The "HC1 Night Reduction" function is assigned to Schedule #1.

15.7.2 Schedule settings

A schedule can be set for most remotely controlled functions in the menus under "Advanced/Settings".

However, schedules for "Night reduction", "Extra DHW" and "Ventilation" can only be accessed via the start menu.

The schedule includes 30 rows and a setting can be made in each row. For example, in one row you can set the date and time for the function to activate, and the time the function should deactivate in the row below.

In the example, "Night reduction" for heating circuit 1 has been set to be "On" from 22:30 to 07:00 on weekdays, except for weekends (Friday and Saturday nights).

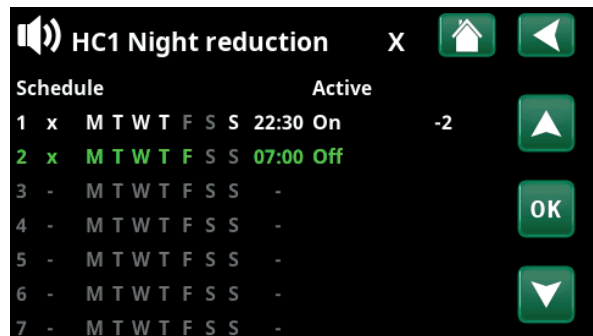
The second row is highlighted green, which means that row is active at the current time.



Click on the "Night Reduction" icon in the heating circuit "Heating/Cooling" menu to set the schedule.

Schedule **Active**
(Active/Inactive/Restore factory settings)

Activate the schedule by setting it to "Active" mode. It is also possible to restore factory settings.



The schedule has been set for "Night Reduction" to be active weekdays between 22:30 and 07:00, except during the night between Friday and Saturday and the night between Saturday and Sunday (when no night reduction occurs).

15.7.3 Editing a schedule

Go down to the first row and press "OK" to enable editing mode.

Time

Use the arrow keys to change the time (hours and minutes, respectively).

Day by day

Use the arrow keys (up arrow /down arrow) to mark active days in bold.

Action **Off (On/Off)**

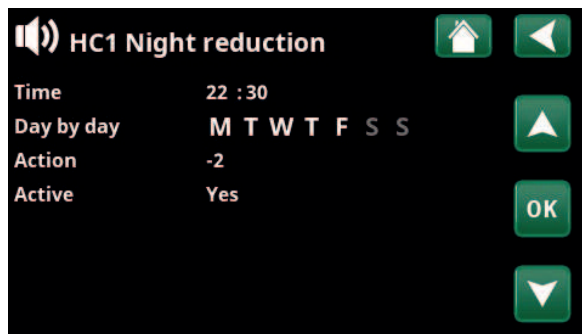
This normally indicates whether the row will switch the function "On" or "Off".

However, for the "Night Reduction" and "SmartGrid Schedule" functions, the following applies:

- In the schedule for "Night Reduction", the temperature reduction that will apply during the period is specified in °C here instead. When a temperature is specified (setting range -1 to -30 °C), the status of the row automatically switches to "On".
- When setting a "SmartGrid schedule", the SmartGrid function (SG Block., SG Low price and SG Overcapacity) is specified in the "Action" row. The status of the row automatically switches to "On".

Active **Yes (Yes/No)**

"Yes" means that the row is activated.



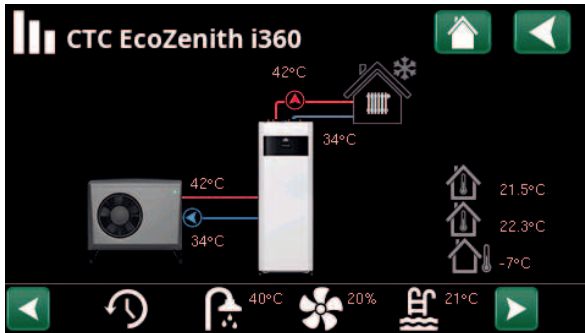
Setting the Night Reduction (-2 °C), weekday nights.



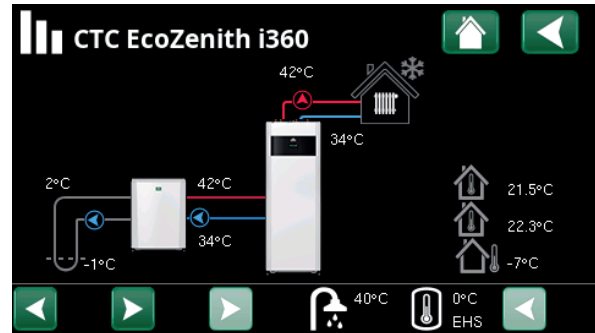
The SmartGrid function "SG Low Price" is scheduled for weekdays 22:30-06:00. Go to the menu by selecting "SmartGrid schedule" in the "Advanced/Settings" menu.



15.8 Operation data



The screen shows operational data with the CTC EcoAir connected. When the pumps are in operation, the pump icons also rotate on screen.



The screen shows operating information with the CTC EcoPart connected. When the pumps are in operation, the pump icons also rotate on screen.



Outside temperature

Measured temperature, outdoor sensor.



Indoor temperature

Shows the room temperature for defined heating circuits (room sensors 1 and 2).



Brine temperature

Current temperature (2 °C) of the brine from the collector in the heat pump and return temperature (-1 °C) of the brine back into the collector hose.



Heating circuit

Current primary flow temperature (42 °C) to the house is shown on the left. Current return temperature (34 °C) is shown below.



Heat pump, air-to-water

The air-to-water heat pump is connected and defined for the circuit. The in and out temperatures of the heat pump are shown on the right.

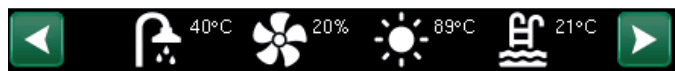


Heat pump, liquid-to-water

The liquid-to-water heat pump is connected and defined for the circuit. The in and out temperatures of the heat pump are shown on the right.

The icon bar at the bottom of the menu page displays icons for additional functions or subsystems that have been defined.

Scroll using the arrows or swipe in the list if not all the icons fit on the page.



Ventilation



Pool



Solar Panel



External Boiler



DHW



History



Diff. thermostat function



External Heat Source (EHS)

The gear icon is a shortcut to "Settings" for the respective part.





15.8.1 Operation data, Control unit

Status HS

Current charging mode, see table below.

DHW tank °C 49, 45 (55)

Shows the hot water temperatures in the upper and lower parts of the tank. The value in brackets is the setpoint (stop temperature). The set point is set for the top of the tank.

DHW °C 48 (50)

Shows current DHW temperature and setpoint (in brackets). If no hot water is drawn then no temperature is shown, just the setpoint.

Capacity 92%

Shows the estimated amount of energy remaining for DHW.

Degree minute -1000

Shows current heat loss in degree minutes.

Cooling tank °C 0 (--)

Shows current temperature and (setpoint) in the cooling tank.

Degree minute cooling* 0

Shows the current deficit of cooling in the heating system (measured in degree minutes).

Electric power kW 0.0

Shows instantaneous power from the immersion heater.

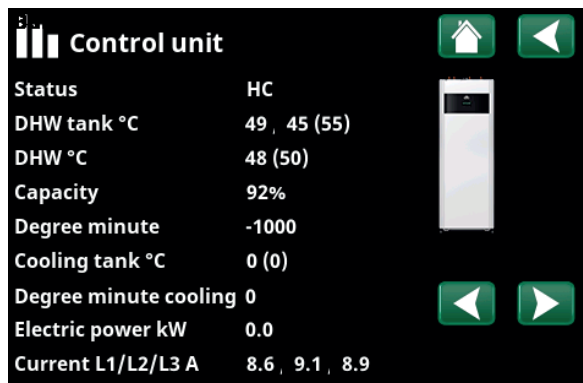
Current L1/L2/L3 A 8.6 9.1 8.9

Total current consumption of the house at the various phases L1/L2/L3, provided that three current sensors have been fitted to incoming cables in the house. If the current sensors mounting devices are not identified, only the phase with the highest load is displayed.

If the current exceeds the main fuse size, the boiler automatically switches down a power step to protect the fuses, for example, when several high-consumption appliances are being used in the house.

Three values are displayed for "Current" when the current transformers are connected and identified. If only one digit is displayed:

- connect all three current transformers.
- then select in the "Advanced/Service/Check current sensors" menu.



Menu Operation Data/Control Unit.

i The first figure is the current operating value. The value in brackets are the setpoint that the CTC EcoZenith is trying to achieve.

i "Degree minutes" refers to the product of the cumulative heat loss in degrees (°C) and the time measured for this in minutes.

**The menu bar is displayed if active cooling is defined in the menu "Advanced/Define/Cooling".*

- Cooling: Active
- Common Heating/Cooling: No
- Cooling tank: No

| Control unit status | |
|---------------------|--------------------------------------------------|
| HC | The heat pump charges the heating circuit. |
| DHW | The heat pump charges the DHW system. |
| Pool | The heat pump charges the pool. |
| Cooling | The heat pump charges the cooling tank. |
| Off | No heating takes place. |
| Alternating | The heat pump switches position to/from cooling. |



15.8.2 Operation data, Heating circuit*

Click on a heating circuit to see more detailed operation data in a new menu window.

Mode Custom

Shows the active DHW program.

Status Heating

Shows the operational status of the heating circuit. See the table below.

Primary flow °C 42 (48)

Shows the temperature supplied to the current heating circuit and the setpoint in brackets.

Return flow °C 34

Shows the temperature of the water returning from the heating circuit to the heat pump.

Room temp. °C 21 (22) (25)

Shows the room temperature for the heating circuit if room sensor installed. In brackets, the setpoint is shown for the "Heating" and "Cooling" status.

Radiator pump Off

Shows the operational status of the radiator pump ("On" or "Off").

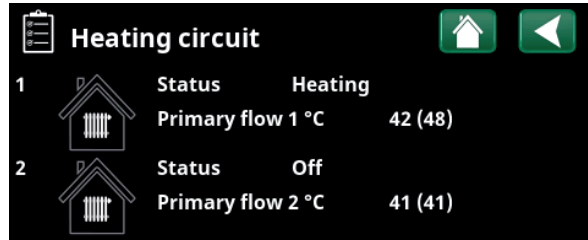
Mixing valve Open <50%

Only displayed for Heating circuit 2.

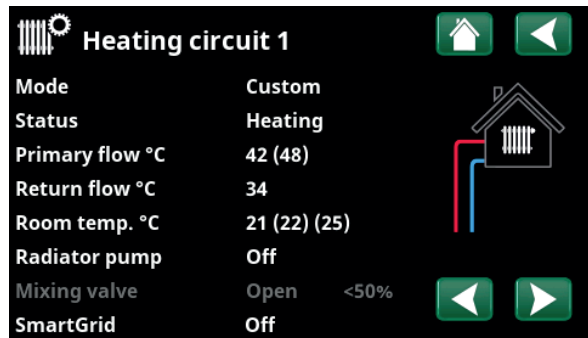
Shows whether the mixing valve increases (opens) or decreases (closes) the heating flow to heating system 2 and when the mixing valve is in the "<50%" or ">=50%" position.

SmartGrid Off

Shows the status of the SmartGrid functions for the selected heating circuit.



Menu: "Operation data, heating circuit". The menu shows the current temperatures and status of defined heating circuits.



The menu shows detailed operation data of the selected heating circuit. Click the arrows or swipe sideways to view defined heating circuits.

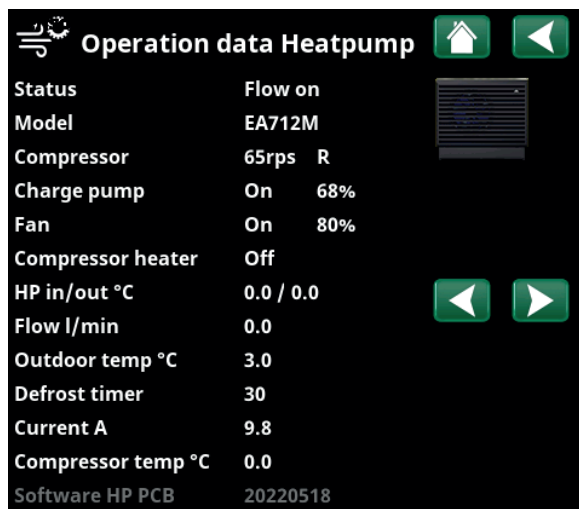
*The heat pump can control up to 2 heating circuits.

| Heating circuit status | |
|------------------------|------------------------------------------------------------------------------------------------------------------|
| Heating | Heating is produced for the heating circuit (HC). |
| Cooling | The system produces passive cooling. |
| Holiday | "Holiday reduction" of room temperature is active. For more information, refer to the "Heating/Cooling" chapter. |
| Night reduction | "Night reduction" of room temperature is active. For more information, refer to the "Heating/Cooling" chapter. |
| Off | No heating/cooling produced. |



15.8.3 Operation data, Heat pump (air-to-water)

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Status | On, heating |
| Heat pump status, see table below. | |
| Model | EcoAir 712M |
| Shows the heat pump model. | |
| Compressor | 65RPS R |
| Shows the compressor speed. "R" stands for "Reduced Mode" (for example, during "Silent Mode"). | |
| Charge pump | On 68% |
| Shows operating status of the charge pump ("On" or "Off") and the flow in percent (0-100). | |
| Fan | On 80% |
| Shows operating status of the fan ("On" or "Off") and the fan speed in percent. | |
| Compressor heater | Off |
| Displays the operating status of the compressor heater ("On" or "Off"). | |
| NOTE! The charge pump is normally switched off during compressor preheating. | |
| If the priority for the target changes during compressor preheating, a new circulation sequence is started to determine a new start temperature. | |
| If the charge pump is already working towards a target and a need arises, the compressor heater starts immediately. | |
| Applies only to CTC EcoAir 700M/C100. | |
| HP in/out °C | 35.5 / 42.3 |
| Shows the heat pump's incoming and outgoing temperatures. | |



Menu: "Operation data/Heat pump".

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Flow l/min | 0.0 |
| Shows flow to/from the heat pump. | |
| Outdoor temperature °C | 3.0 (-50...50) |
| Shows outdoor temperature. | |
| Defrost timer | 30 |
| Shows the time remaining until the heat pump enters defrosting mode. For the defrosting to start, the temperature in the heat pump's evaporator must be low enough. | |
| Current A | 9.8 |
| Shows the current across the compressor. | |
| Compressor temp °C | 0.0 |
| Shows the temperature in the compressor. | |
| Software HP PCB | 20220518 |
| Shows the heat pump software version. | |

| Heat pump status | |
|----------------------------|---------------------------------------------------------------------------|
| On | The heat pump is in the "On" position. |
| On, DHW | The heat pump heats the DHW tank. |
| On, cooling | The heat pump is producing cooling for the heating circuit |
| On, heating | The heat pump is producing heat for the heating circuit. |
| Start delay: 1 min. | Compressor off - prevented from starting due to 1 min. start delay. |
| Off | Heat pump not charging the tank - no need. |
| Blocked in menu | Compressor Blocked in the "Advanced/Settings/Heat Pump" menu. |
| Communication error HP | Control unit not communicating with heat pump. |
| Off, start ready | Compressor off but ready to start. |
| Driver block under voltage | Driver operating voltage too low. |
| Defrost | Defrosting in progress - air-to-water heat pump only. |
| Stop, low outdoor temp | Outdoor temperature lower than min. limit - air-to-water heat pump only. |
| Stop, high outdoor temp | Outdoor temperature higher than max. limit - air-to-water heat pump only. |
| Off, alarm | Compressor off - alarm activated. |
| Stop, tariff | Compressor blocked due to active remote control function. |
| Blocked, low brine in °C | Incoming brine temperature too low, compressor blocked. |
| Flow on | Flow in the charging coil. |



15.8.4 Operation data, Heat pump (brine-to-water)

Status **On, heating**

Heat pump status, see table below.

Model **EcoPart 410**

Shows model of selected heat pump.

Compressor **65RPS R (On/Off/RPS)**

Shows whether the compressor is operating or not. Displays the compressor speed for speed-controlled heat pumps. "R" stands for "Reduced Mode".

Charge pump **On 50%**

Shows operating status of the charge pump ("On" or "Off") and the flow in percent (0-100).

Brine pump **On 78%**

Shows operating status of the brine pump ("On" or "Off") and the speed in percent.

HP in/out °C **35.5 / 42.3**

Shows the heat pump's incoming and outgoing temperatures.

Brine in/out °C **2.0 / -1.0**

Shows the heat pump's return and primary flow brine temperatures.

AC Choke °C* **45.0**

Shows the temperature of the heat pump AC choke.

Inverter °C* **42.8**

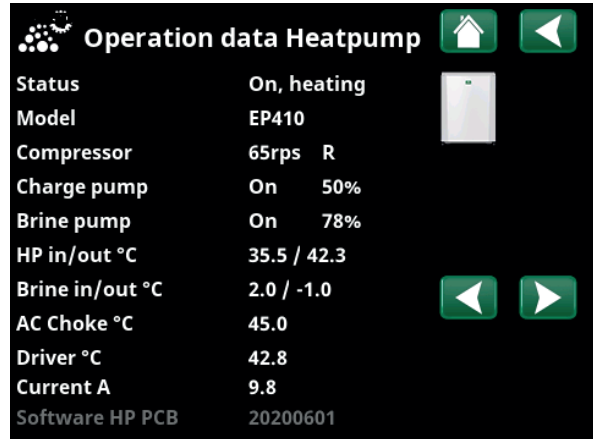
Shows the inverter temperature.

Current A **0.0**

Shows the current across the compressor.

Software HP PCB **20200601**

Shows the heat pump software version.



The menu shows detailed operation data of the selected heat pump.

**Only applies to inverter heat pump.*

| Heat pump status | |
|----------------------------|---------------------------------------------------------------------|
| On, DHW | The heat pump heats the DHW tank. |
| On, heating | The heat pump is producing heat for the heating circuit. |
| Start delay: 1 min. | Compressor off - prevented from starting due to 1 min. start delay. |
| Off | Heat pump not charging the tank - no need. |
| Blocked in menu | Compressor Blocked in the "Advanced/Settings/Heat Pump" menu. |
| Communication error HP | Control unit not communicating with heat pump. |
| Off, start ready | Compressor off but ready to start. |
| Driver block under voltage | Driver operating voltage too low. |
| Off, alarm | Compressor off – alarm activated. |
| Stop, tariff | Compressor blocked due to active remote control function. |
| Blocked, low brine in °C | Incoming brine temperature too low, compressor blocked. |
| Flow on | Flow in the charging coil. |



15.8.5 Stored operation data

This menu shows accumulated operating values.

The operating values shown in the menu screens are only examples. The operating data displayed varies depending on the language selected.

Total operation time h **3500**

Shows the total time the product has been powered.

Highest primary flow °C **51**

Shows the highest temperature that has been supplied to the heating circuit.

Energy el. total (kWh) **250**

Shows how much additional heat has been used.

Compressor

Operation time /24 h:m **07:26**

Shows total operating time during the last 24 hours.

Total operation time **1500**

Displays total compressor operating time in hours.

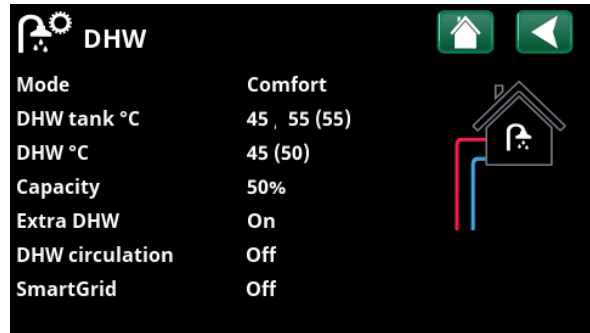
| Stored operation data | |
|-------------------------|-------|
| Total operation time h | 3500 |
| Highest primary flow °C | 51 |
| Energy el. total (kWh) | 250 |
| Compressor | |
| Operation time /24 h:m | 07:26 |
| Total operation time | 1500 |

Menu: "Operation data/Stored operation data".



15.8.6 Operation data, DHW

| | |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Mode | Comfort |
| Shows the active DHW program. | |
| DHW tank °C | 45, 55 (55) |
| Shows the current temperature in the DHW tank and the setpoint (in brackets) for heat pump operation and during additional heat. | |
| DHW °C | 45 (50) |
| Displays the DHW temperature and the setpoint (in brackets). | |
| Capacity | 50% |
| Displays the estimated amount of energy remaining for DHW. | |
| Extra DHW | On |
| "On" means the "Extra DHW" function is active. | |
| DHW circulation | Off |
| "On" means the "DHW circulation" function is active. | |
| SmartGrid | Off |
| The status of the SmartGrid functions for DHW is shown here. | |



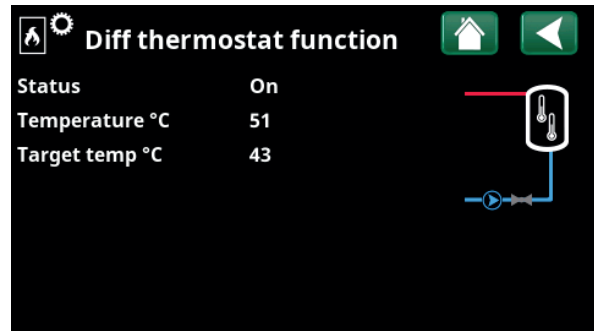
"Operation Data/DHW" menu.



15.8.7 Operation data, Diff thermostat function

This menu is displayed if a wood boiler has been defined in the "Advanced/Define/Diff Thermostat Function" menu.

| | |
|----------------------------------------------------------|-----------|
| Status | On |
| Shows whether the charge pump is turned on ("On"/"Off"). | |
| Temperature °C | 51 |
| Temperature in tank from which it is charged. | |
| Target temp. °C | 43 |
| Temperature in tank that it is charged to . | |



Menu: "Operation Data/Diff. thermostat function".



15.8.8 Operation Data, External heat source (EHS)

This menu is displayed if an External Heat Source has been defined in the "Advanced/Define/External Heat Source (EHS)" menu.

System status DHW

Shows the various operational statuses of the system. Refer to the "Operation info/Control Unit" section.

Status On

The status of the external heat source can be "Off" or "On".

Temperature °C 47

Shows the current temperature in the EHS tank.

Charge start °C 50

This is the minimum temperature required in the external heat source tank for the mixing valve to open and provide heat to the system.

SmartGrid Block. cap. Off

External heat source is blocked by SmartGrid due to "Overcapacity".

Mixing valve Closes

Indicates whether the EHS tank mixing valve increases (opens) or reduces (closes).

Demand DHW Yes (55)

"Yes" means that there is a need for hot water and that hot water is taken from the EHS tank. The DHW setpoint is shown in brackets.

Demand HC No (0)

"Yes" means that there is a need for heat in the heating circuit and that heat is taken from the EHS tank. The heating circuit setpoint is shown in brackets.

Demand pool No (0)

"Yes" means that there is a need for heat in the pool and that heat is taken from the EHS tank. The pool setpoint is shown in brackets.

| External heat source | |
|------------------------|----------|
| System status | DHW |
| Status | On |
| Temperature °C | 47 |
| Charge start °C | 50 |
| SmartGrid Blocking cap | Off |
| Mixing valve | Close |
| Demand DHW | Yes (55) |
| Demand HC | No (0) |
| Demand pool | No (0) |

Menu: "Operation Data/External Heat Source".



15.8.9 Operation data, External Boiler

System status DHW

Shows the various operational statuses of the system. Refer to the "Operation info/Control Unit/Status" section.

Status Standby

The external boiler may have the following status: "Off", "Standby", "Passive" or "Active".

Temperature °C 43

Shows current temperature of the boiler.

Boiler start out temp. 0

Shows the set outdoor temperature value (menu "Advanced/Settings/External boiler") when the boiler is active.

Boiler, open mix.valve °C 70

This is the minimum boiler temperature required for the mixing valve to open and provide heat to the system.

Tariff ext. boiler Off

"On" means that the function is activated via remote control or a schedule.

Read more in the "Advanced/Define/Remote Control" chapter.

SmartGrid Off

Boiler is blocked by SmartGrid due to "Overcapacity".

Mixing valve Closes

Indicates whether the boiler mixing valve increases (opens) or reduces (closes).

Demand DHW No (55)

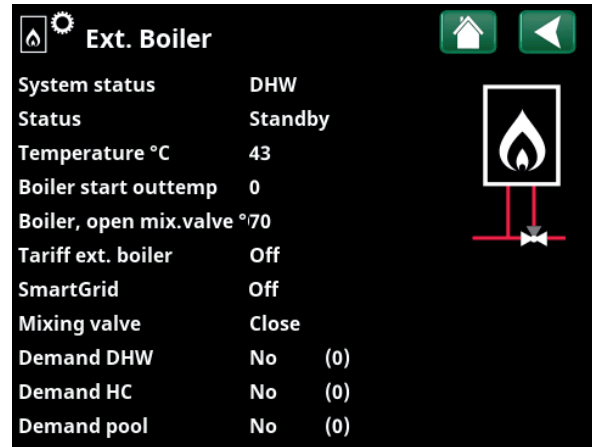
"Yes" means that there is a need for hot water and that hot water is taken from the boiler. The DHW setpoint is shown in brackets.

Demand HC No (0)

"Yes" means that there is a need for heat in the heating circuit and that heat is taken from the boiler. The heating circuit setpoint is shown in brackets.

Demand pool No (0)

"Yes" means that there is a need for heat in the pool and that heat is taken from the boiler. The pool setpoint is shown in brackets.



Menu "Operation Data/External boiler".



15.8.10 Operation data, El.prices

This menu is displayed if "El.prices" has been defined in the "Advanced/Define/Communication" menu.

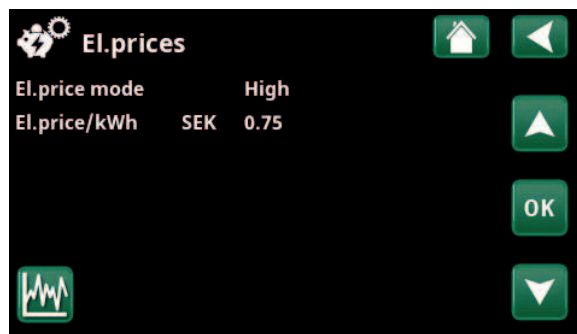
El.price mode **High**

Indicates the current price category ("High", "Medium" or "Low").

El.price/kWh **SEK 7.5**

Indicates the current electricity price in local currency.

Display the "Preview data" graph by clicking the "Graph icon" at the bottom-left of the menu screen.



Menu: "Operation data/El.prices".

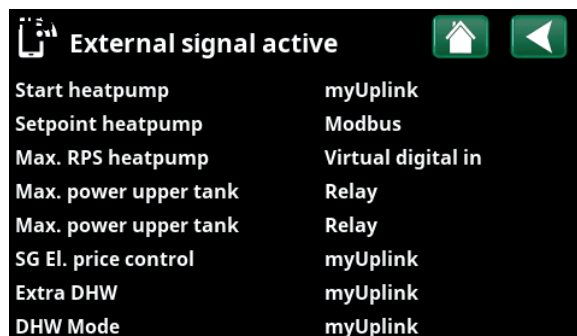
For more information and examples of Smart Electricity Price Control/SmartGrid, see the website www.ctc-heating.com/Products/Download.



15.8.11 External signal active

The menu shows the functions that are active via external control. The functions can be activated with:

- myUplink
- Virtuell digital in
- Modbus
- Relay
- SmartControl sensors



Menu: "Operation data/External signal active".



16. Advanced

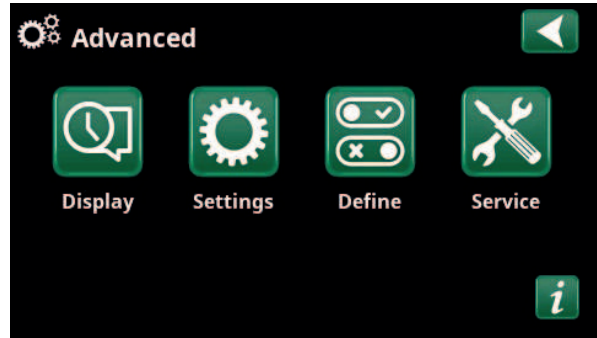
This menu contains four sub-menus:

- Display
- Settings
- Define
- Service

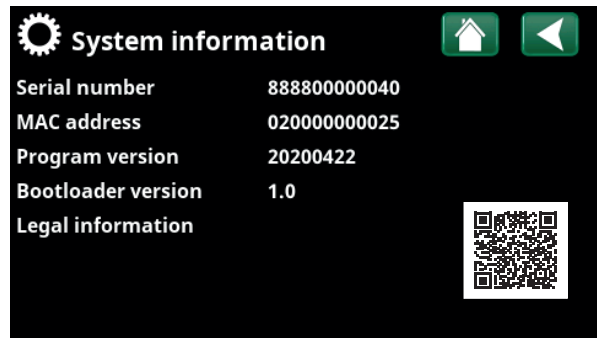


For "System Information", click the "i" button in the lower right corner of the display in the "Advanced" menu. This displays the product serial number, MAC address, and application and bootloader versions. Click "Legal Information" to view information regarding third-party licences.

Scan the QR code with a tablet or smartphone. When your phone/tablet is connected to your local network, the product can be used with your device's touchscreen in the same way as the product's display.



Menu: "Advanced".



Menu: "Advanced/System information". To access this menu, click the "i" button in the lower right corner of the "Advanced" menu.



16.1 Display

Time, language and other display settings can be carried out from this menu.



16.1.1 Time

Time and Date

Click on the time symbol. The menu can also be accessed by clicking the date or time in the upper right corner of the start page.

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

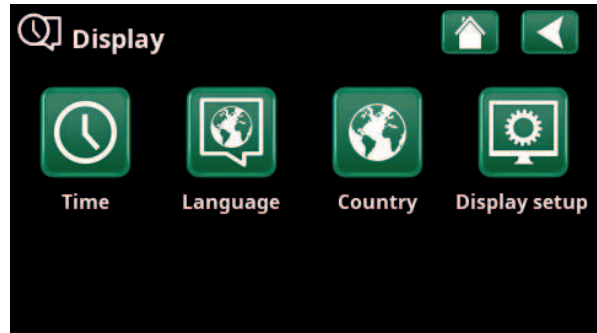
DST (On, Active)

The left value can be set. "On" means the time is adjusted according to Summer Time.

The right value is fixed and shows the current status (for example, "Off" during the winter period). The display does not need to be connected to power for the values to be adjusted, since this occurs at the next start-up.

SNTP

Menu option "On" retrieves the current time from the internet (if online). More settings options can be found in the "Advanced/Settings/Communication/Internet" menu.



Menu: "Advanced/Display".



Menu: "Advanced/Display/Time".



16.1.2 Language

Click a flag to select the language. The language selected is highlighted with a green square. To view more language options than those shown in the menu, scroll down the page, or press the down arrow key.



16.1.3 Country

Click on the "Country" symbol in the "Advanced/Display" menu to display selectable countries and regions. The country that is displayed (highlighted in green) depends on which language has been selected.

"English" is the default language setting, which means that "GB United Kingdom of Great Britain and Northern Ireland" is the default country setting.

Select the country where the plant is installed to get correct spot prices. Depending on which country is selected, product-specific factory settings may vary.

"Country" must also be selected to receive correct electricity prices when controlling electricity prices via the myUplink mobile app.



16.1.4 Display setup

Sleep delay 120 (Off, 1...360)

Enter the time in minutes before the display enters sleep mode if not touched. Settings can be applied in 10 min. intervals.

Backlight 80% (10...90)

Set the brightness of the backlit display.

Click sound Yes (Yes/No)

Enable or disable button sounds.

Alarm sound Yes (Yes/No)

Enable or disable alarm sounds.

Time zone, GMT +/- +1 (-12...14)

Set your time zone (relative to GMT).

Lock code 0000

Press "OK" and use the arrows to set a 4-digit lock code. If a lock code is set, it is shown as four stars. You will be prompted to enter the code when the display is restarted.

NB: Make a note of the lock code for your own reference when you enter it in the menu for the first time.

The serial number of the display (12 digits) can also be entered to unlock the display (enter '0000' + serial number); see chapter "Advanced/System Information".

The display can be locked by clicking the product name in the upper left of the start menu, whereupon you will be prompted to enter the lock code.

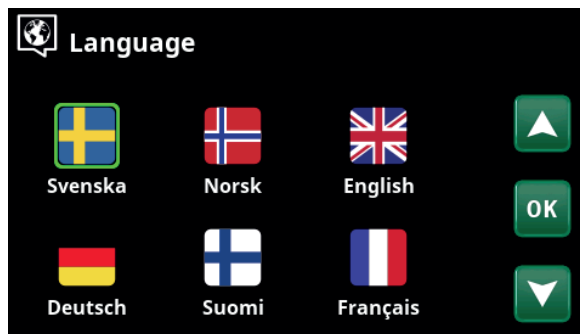
A lock code can be deleted by entering "0000" in this menu instead of the previously specified lock code.

Font size Standard (Small/Standard/Large)

The display's font size can be changed here.

Selection colour 0 (0/1/2)

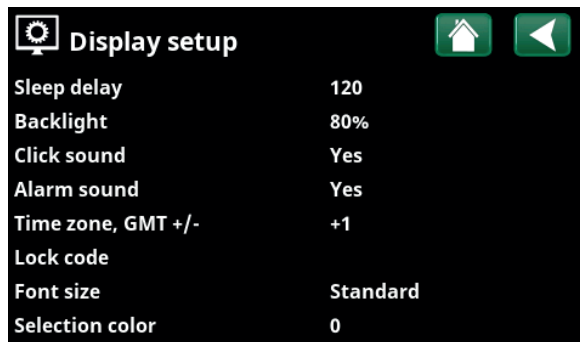
Option to change the cursor background colour for clearer selection according to the light conditions.



Menu: "Advanced/Display/Language".



Menu: "Advanced/Display/Country".



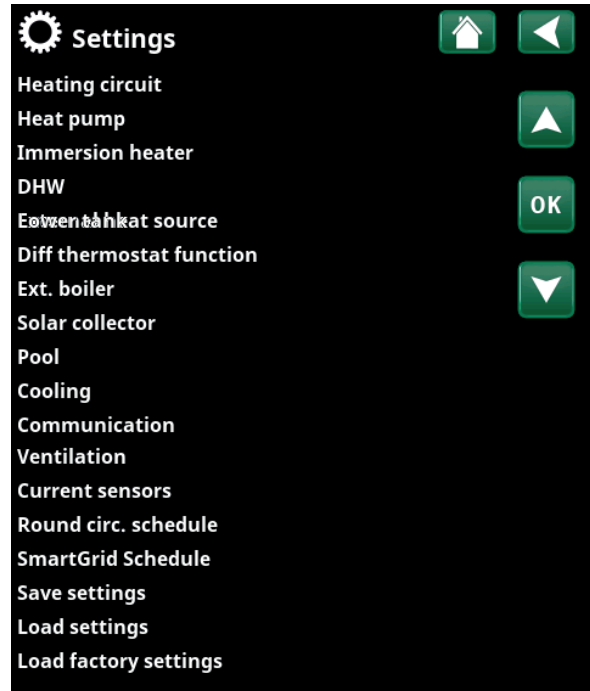
Menu: "Advanced/Display/Display setup".



16.2 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.

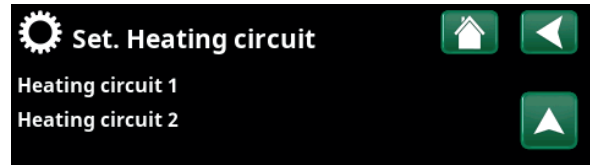
i First define the desired functions, see "Advanced/Define". Settings are only displayed for enabled functions.



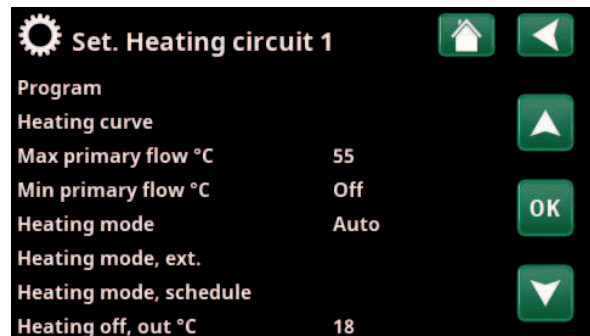
Menu: "Advanced/Settings".

16.2.1 Settings, Heating circuit*

In the "Settings" menu, select "Heating circuit" and then the heating circuit to be set.



Part of the "Advanced/Settings/Heating Circuit" menu.



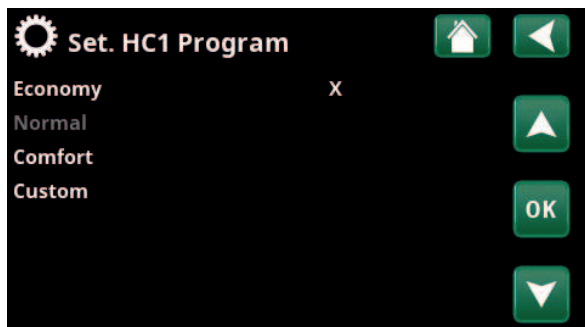
Part of the "Advanced/Settings/Heating Circuit/Heating Circuit 1" menu.

*The heat pump can control up to two heating circuits.

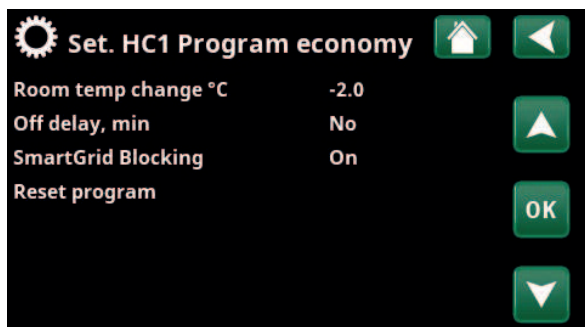
Program

Press "OK" on the "Program" menu bar to make settings for the "Economy", "Comfort" and "Custom" heating programs. Selected programme is marked with an "X".

To activate a heating program or set a schedule, press the "Program" button from the "Heating/Cooling" menu, see chapter "Display settings".



Menu "Advanced/Settings/Heating circuit/Heating circuit 1/Program".



Menu "Advanced/Settings/Heating circuit/Heating circuit 1/Program/Economy".

• Primary flow change °C -5 (-20...-1)

The menu bar is displayed if the room sensor is not defined for the heating circuit. Setting "-5" (factory value program "Economy") means that the setpoint of the primary flow is lowered by 5 °C when the program is active.

• Room temp change °C -2.0 (-5.0...-0.1)

The menu bar is displayed if the room sensor is defined for the heating circuit. Setting "-2" (factory value program "Economy") means that the set setpoint for room temperature is lowered by 2 °C when the program is active.

• Off delay, min No (No/10...600)

Off delay means the time in minutes after the heating program "Economy", "Comfort" or "Custom" has been activated as the heating mode returns to the program "Normal".

However, if the "Custom" program is selected later than the "Normal" program, the "Custom" program will apply after the Off delay. The Off delay is adjusted in steps of 10 minutes for each key press (up or down arrow).

"No" means that the selected program will be activated until another heating program is activated.

• SmartGrid Blocking* Off (Off/On)

The menu bar is displayed when setting the heating programme "Economy" or "Custom".

"On" means that the heating program is activated when "SmartGrid Blocking" is active.

SmartGrid Low price* Off (Off/On)

The menu bar is displayed when setting the heating programme "Comfort" or "Custom".

"On" means that the room temperature is increased according to the setting for "SmartGrid Low price °C" when "SmartGrid Low price" is active.

SmartGrid Overcapacity* Off (Off/On)

The menu bar is displayed when setting the heating programme "Comfort" or "Custom".

"On" means that the room temperature is increased according to the setting for "SmartGrid Overcapacity °C" when "SmartGrid Overcapacity" is active.

• Reset program

Current program is reset with factory values.

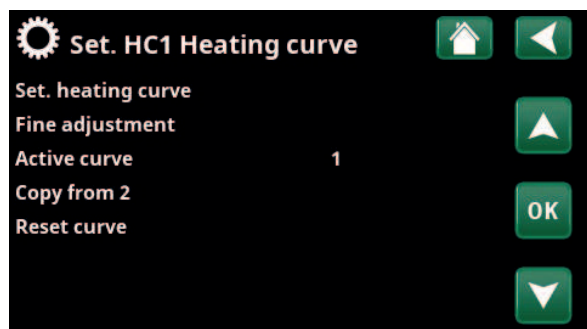
**SmartGrid functions are set in the menu "Advanced/Settings/Heating circuit".*

Heating curve

The heating curve determines the primary flow temperature (and thus the indoor temperature) to the heating circuit at different outdoor temperatures.

See chapter "House heating settings" for more information on adjusting the heating curve.

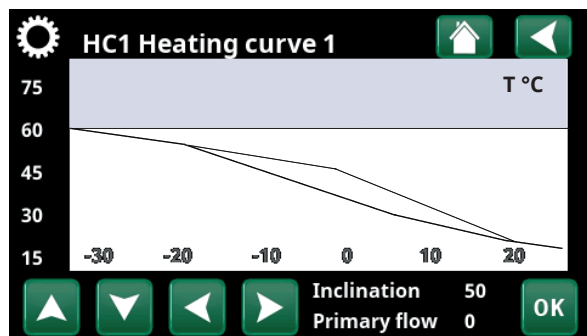
Possible choices are "Set. heating curve", "Fine adjustment", "Active curve", "Copy from ..." and "Reset curve".



Menu "Advanced/Settings/Heating Circuit/Heating Circuit 1/Heating curve".

• Set. heating curve

The thicker line shows the factory-set curve while the thinner line shows the active heating curve to be reset.

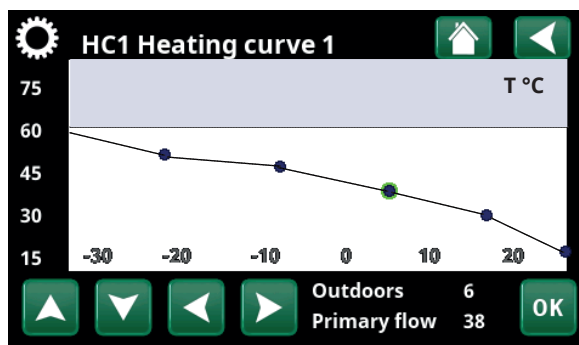


Menu "Advanced/Settings/Heating Circuit/Heating Circuit 1/Heating curve".

Here it is possible to adjust the appearance of the graph by adjusting the curve inclination and curve adjustment with the buttons below the graph. The adjustments you make here affect the entire appearance of the graph, while the changes made under "Fine adjustment" are made one point at a time. Curve inclination is adjusted with the left and right arrows while curve adjustment is adjusted with the up and down arrows. Confirm with "OK".

• Fine adjustment

The graph of the active heating curve for the heating circuit is displayed.



Menu "Advanced/Settings/Heating Circuit/Heating Circuit 1/Heating curve/Fine adjustment".

The heating curve can be adjusted in 5 points on the graph. Touch a point (becomes green) to change its position in the x-axis (outdoor temperature) and y-axis (primary flow temperature). Use the up/down/left/right buttons below the graph or press and drag the point.

Below the graph, the outdoor and primary flow temperatures for the selected point are shown. The heating curve can also be adjusted from the "Heating/Cooling" menu, see chapter "Display settings".

• Active curve 1 (1/2)

This menu bar shows the selected heating curve, it is possible to choose between two different heating curves per heating circuit.

• Copy from 1 (2)

The function "Copy from ..." is useful if you have created two different heating curve graphs but want to restore one graph to the same appearance as the other and then make changes.

Example: If heating curve 1 is selected as "Active curve", heating curve 1 will have the same appearance as heating curve 2 by selecting the line "Copy from 2" and pressing "OK". The menu bar cannot be selected (marked with gray) when heating curves 1 and 2 have the same values (the graphs look the same).

• Reset curve

Resets the active heating curve to the factory-set curve.

Max primary flow °C 60 (30...70)

Maximum permitted temperature supplied to the respective heating circuit.

Min primary flow °C Off (Off/15...65)

Minimum permitted temperature supplied to the respective heating circuit.

Heating mode Auto (Auto/On/Off)

Switching between heating season and summer mode can take place automatically (Auto) or a selection can be made here to set the heating to "On" or "Off".

Heating mode can also be selected from the start page by pressing the "Mode" button in the Heating/Cooling menu.

- **Auto** = switching the heating season On and Off carried out 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. - (Auto/On/Off)

The heating mode selected in this menu can be enabled/disabled externally.

This menu bar is displayed for the current heating circuit if a remote control input or a schedule has been defined for the function.

Read more in the "Def. Remote Control" section of the "Advanced/Define" chapter.

Heating mode, schedule

This menu bar is displayed if a schedule has been defined for the "Heating mode, ext." function in the remote control menu.

For more information, refer to:

- chapter "Schedule".
- section "Def. Remote Control" of the "Advanced/Define" chapter for defining the remote control function.

Heating off, out °C 18 (2...30)**Heating off, time (min)** 120 (30...1440)**Heating on, time (min)** 120 (30...1440)

The menu bars can only be set if the "Auto" mode is selected in the "Heating mode" menu above. Otherwise, the menu bars are locked (greyed out).

When the outdoor temperature exceeds (or equals) the set value in the "Heating off, out °C" menu during the time (in minutes) set in the "Heating off, time (min)" menu, the production of heat for the house is stopped.

This means the radiator pump stops, and the mixing valve remains closed. The radiator pump is activated daily for a short period to prevent it from jamming. The system restarts automatically when heating is needed.

When the outdoor temperature drops to the limit where heating is needed again, heat to the house is permitted when the temperature falls below (or equals) the set value in the "Heating off, out °C" menu for the number of minutes set in the "Heating on, time (min)" menu.

| Set. Heating circuit 1 | |
|---------------------------------|------|
| Program | |
| Heating curve | |
| Max primary flow °C | 55 |
| Min primary flow °C | Off |
| Heating mode | Auto |
| Heating mode, ext. | |
| Heating mode, schedule | |
| Heating off, out °C | 18 |
| Heating off, time (min) | 120 |
| Heating on, time (min) | 120 |
| Night reduction down to °C | 5 |
| Room temp reduced night red °C | -2 |
| Room temp reduced holiday °C | -2 |
| Prim. flow reduced night red °C | -3 |
| Prim. flow reduced holiday °C | -3 |
| Regulate room temp (min.) | Off |
| Alarm room temp °C | 5 |
| SmartGrid Low price °C | Off |
| SmartGrid Overcapacity °C | Off |
| SmartGrid Blocking | Off |
| Max time heating (min) | 20 |
| Charge pump % | 60 |
| Mode | Off |
| Temp °C | 25 |

Menu "Advanced/Settings/Heating Circuit/Heating Circuit 1".

Night reduction down to °C **5 (-40...40)**

When the outdoor temperature is lower than this, the "Night Reduction" function stops since too much energy is consumed and it takes too long to increase the temperature again.

This menu overrides remote control of "Night Reduction".

Room temp. reduced, Night red °C **-2 (0...-40)****Room temp. reduced, Holiday °C** **-2 (0...-40)**

The menus are displayed if room sensors are installed for the heating circuit. The number of degrees by which the room temperature should be lowered during remote-controlled night reduction and during holidays can be set here. Night reduction can also be set periodically; the temperature decrease is then entered in the schedule.

Prim. flow reduced, Night red °C **-3 (0...-40)****Prim. flow reduced, Holiday °C** **-3 (0...-40)**

The menus are displayed if room sensors are not installed for the heating circuit. The number of degrees by which the primary flow temperature for the heating circuit should be lowered during remote-controlled night reduction and during holidays can be set here. Night reduction can also be set periodically; the temperature decrease is then entered in the schedule.

Regulate room temp (min.) **Off (30...600)**

At the selected time interval, the system senses the current room temperature and regulates to reach the setpoint.

The time interval is set individually for each property, depending on insulation and heat transfer (well insulated = longer time, poorly insulated = shorter time).

Alarm room temp °C **5 (-40...40)**

If the room temperature is too low (according to the set value), the message "Alarm, low room temp." will be displayed.

This menu bar is displayed if the room sensor is connected and defined.

SmartGrid Low Price °C **1 (Off/1...5)**

Setting to increase the room temperature at "Low price" energy price, via SmartGrid.

Both SmartGrid A and SmartGrid B must be defined in the remote control menu for this menu to be displayed.

Read more in the "Remote Control/SmartGrid A/B" section of the "Advanced/Define" chapter.

SmartGrid Overcapacity °C **2 (Off/1...5)**

Setting to increase the room temperature at "Overcapacity" energy price, via SmartGrid. This function is not used for electricity price control.

Both SmartGrid A and SmartGrid B must be defined with a remote control input for this menu to be displayed.

Read more in the "Remote Control/SmartGrid A/B" section of the "Advanced /Define" chapter.

● If room sensors are installed, the "Room temp reduced..." menu is displayed. If there are no room sensors, the "Primary flow reduced..." menu is displayed.

Example

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

SmartGrid Blocking **Off (Off/On)**

"On" means the heating circuit is blocked at "High" energy price, via SmartGrid. If the outdoor temperature falls below the value set in the "Night reduction down to °C" menu, this function is not activated.

Both SmartGrid A and SmartGrid B must be defined with a remote control input for this menu to be displayed.

Read more in the "Remote Control/SmartGrid A/B" section of the "Advanced /Define" chapter.

Max time heating (min) 20 (10-120)

This is the maximum time (minutes) during which the heat pump charges the heating circuit if needed in the hot water tank.

Charge pump % 60 (20-100)

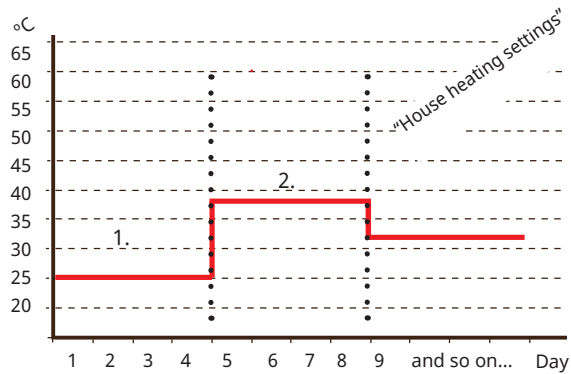
Setting for charge pump (G11) speed (percent) when charging the heating circuit.

Drying period mode Off (Off/1/2/3)

Applies to Heating circuit 1. Drying period for newly built properties. The function limits the calculation of primary flow temperature (setpoint) for "House heating settings" to the schedule below.

Mode 1 - Drying period for 8 days

1. The setpoint of the radiator system is set to 25 °C for 4 days.
2. On Days 5-8, the set value in "Drying period temperature °C" is used.
- (From Day 9 onwards the value is calculated automatically according to "House heating settings").

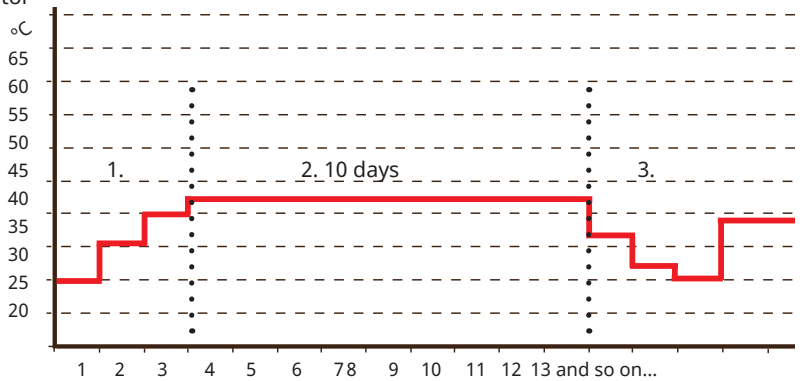


Example: Mode 1 with set value "Drying period temp °C": 38.

Mode 2 - Drying period for 10 days + stepped increased 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 it is equal to the "Drying period temp °C". The final step may be less than 5 °C.
2. Drying period for 10 days.
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 1 day at the setpoint of 25 °C, the value is calculated automatically according to "House heating settings").



Example: Mode 2 with set value for "Drying period temp °C": 37.

Mode 3

In this mode, the function starts in "Mode 1" followed by "Mode 2" and lastly by "House heating settings".

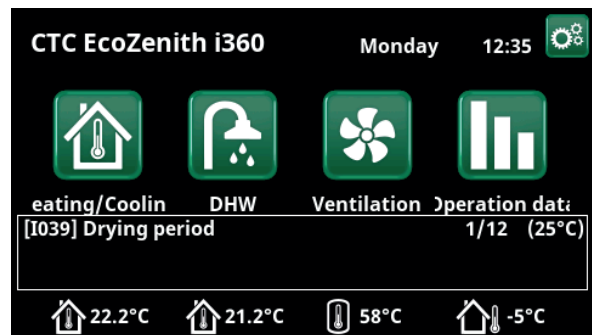
Drying period temp °C 25 (25...55)

The temperature for "Mode 1/2/3" as shown above is set here.

Drying period mode Off (Off/On)

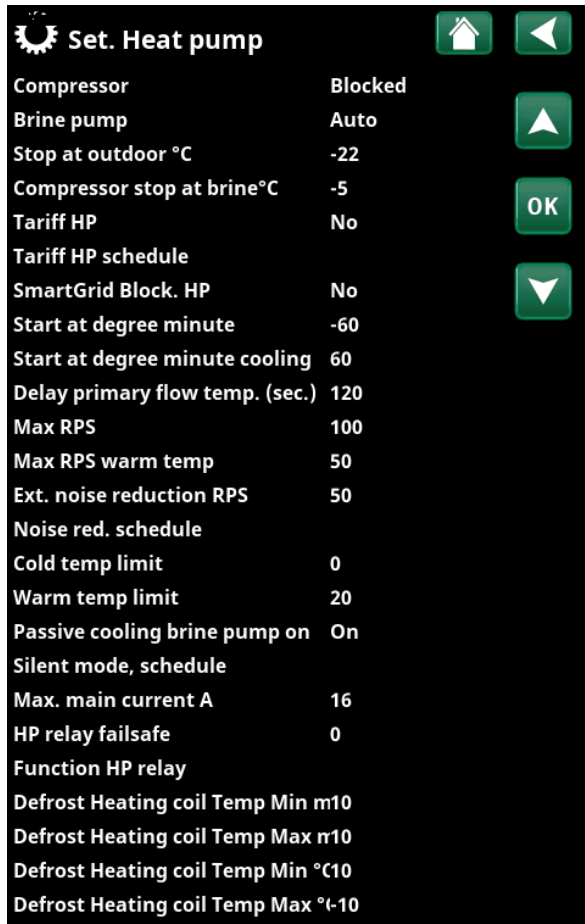
This menu bar is displayed for Heating Circuit 2 if a heating mode (1-3) is selected in the "Drying period mode" menu above.

The "On" option means that the drying period mode selected for Heating Circuit 1 will also be run for the selected heating circuit.



Example: Drying period temperature day 1 of 12 with current set point of 25 °C.

16.2.2 Settings, Heat pump



Menu: "Advanced/Settings/Heat pump".

Compressor **Blocked (Permitted/Blocked)**

The heat pump is supplied with a blocked compressor. "Permitted" means that the compressor can start.

Brine pump **Auto (Auto/10 days/On)**

After installation is complete, you can choose to run the brine pump constantly for 10 days to remove air from the system. The brine pump then enters "Auto" mode. "On" means the brine pump runs constantly. Only applies to brine-to-water heat pumps.

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

This menu relates to 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. Only applies to air-to-water heat pumps.

Compressor stop at brine °C **-5 (-15...10)**

This menu defines the brine temperature at which the compressor will be stopped. Only applies to brine-to-water heat pumps.

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

"Yes" means the function can be activated via remote control. Read more in the "Def. Remote Control" section of the "Advanced/Define" chapter.

Tariff HP schedule

This menu bar is displayed if a schedule has been defined for the "HP Tariff" function.

For more information, see the:

- chapter "Schedule".
- section "Def. Remote Control" of the "Advanced/Define" chapter for defining the remote control function.

SmartGrid Block. HP **No (No/Yes)**

"Yes" means that the heat pump is blocked when "SmartGrid Blocking" is active.

Read more in the "Remote Control /SmartGrid" section of the "Advanced/Define" chapter.

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

This specifies the degree minutes at which the heat pump should start for heating demand.

The degree minutes can be adjusted downwards by up to 200 degree minutes to reduce the number of starts/stops and delay the compressor start when heat production is too high.

Start at degree minute cooling **60 (30...900)**

This specifies the degree minutes at which the heat pump should start for cooling demand.

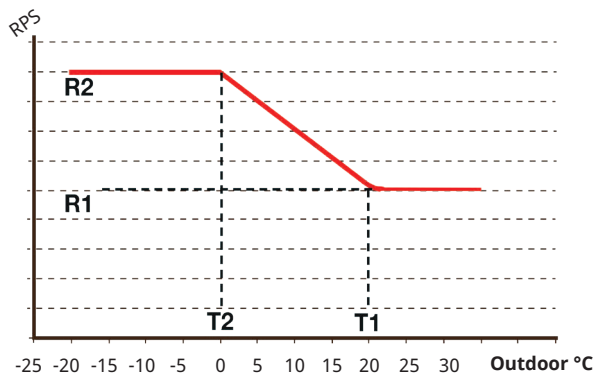
Delay primary flow temp. (sec.) **120 (30...300)**

The charge temperature is high after DHW charging. During the set time period, the primary flow temperature is ignored.

Max RPS **100* (50...120)**

The maximum permissible speed of the compressor at "winter temperature". Sets the compressor's maximum speed (R2) at outdoor temperature T2.

Only applies to modulating air-to-water heat pumps.



The diagram shows that the compressor speed is controlled according to the outdoor temperature.

When the outdoor temperature is below T2, the compressor speed adjusts up to R2.

When the outdoor temperature exceeds T1, the compressor speed adjusts down to R1.

These temperature and speed limits are set in the menus on the left.

Max RPS warm temp 50 (50...100)

The maximum permissible speed of the compressor at "summer temperature". Sets the compressor's maximum speed (R1) at outdoor temperature T1. Only applies to modulating air-to-water heat pumps.

Ext. noise reduction RPS 50 (20...120)

Set the compressor speed value applicable for remote control. Read more in the "Def. Remote Control" section of the "Advanced / Define" chapter.

Noise reduction schedule

This menu starts a schedule with limited compressor speed to reduce the noise level. For more information, see the chapter "Schedule".

Cold temp limit 0 (0...-15)

When the outdoor temperature is equal or lower (T2), the compressor speed is adjusted up to speed R2.

Warm temp limit 20 (0...20)

When the outdoor temperature is equal or higher (T1), the compressor speed is adjusted down to speed R1. The heat pump starts and stops at the actual value and setpoint value. Only applies to modulating air-to-water heat pumps.

Passive cooling brine pump On On (On/Off)

Enable "On" if the brine pump should be used for passive cooling. Only applies to brine-to-water heat pumps.

Silent mode, schedule

It is possible to start a schedule, e.g. during the night, with limited compressor speed and fan speed to reduce the noise level. For more information, see the chapter "Schedule".

Only applies to CTC EcoAir 600M/700M/C100.

Max. main current A 16***

Setting the maximum allowed main current for the heat pump.

Only applies to CTC EcoAir 700M/C100.

***Factory setting:

| | |
|------------------------|-------|
| EA712M/EA708M, 1x230V: | 16A |
| EA712M/EA708M, 3x400V: | 13A |
| EA720M, 3x400V: | 20A |
| EA C106, 1x230V: | 10A |
| EA C108, 1x230V: | 12,5A |
| EA C108, 3x400V: | 5A |
| EA C112, 1x230V: | 16A |
| EA C112, 3x400V: | 6A |
| EA C116, 1x230V: | 22A |
| EA C116, 3x400V: | 9A |

HP relay failsafe 0 (0...7)

Setting the fail-safe mode (bit 0-7). Currently, bit 0 and bit 1 are implemented as follows:

- bit 1: The relay closes (signal on output "External out 1/C7" on the heat pump circuit board) in case of communication failure between the display and the heat pump.

- bit 0: The relay does not close in case of communication failure between the display and the heat pump.

Only applies to CTC EcoAir 700M.

Function HP relay - (Alarm HP/All alarms/Compr. on)

The following settings are possible:

- Alarm HP:** The relay closes (signal on output "External out 1/C7" on the heat pump control board) in case of an alarm on the heat pump.
- All alarms:** the relay closes for all alarms on the system.
- Compr. on:** the relay closes when the compressor is running.

Only applies to CTC EcoAir 700M.

Factory setting: no value is set.

Defrost heating temp min m 10 (0...360)

Set the minimum heating time "Min m" (minutes) for the heating coil in the condensation tray at outdoor temperature T1.

Defrost heating temp max m 10 (0...360)

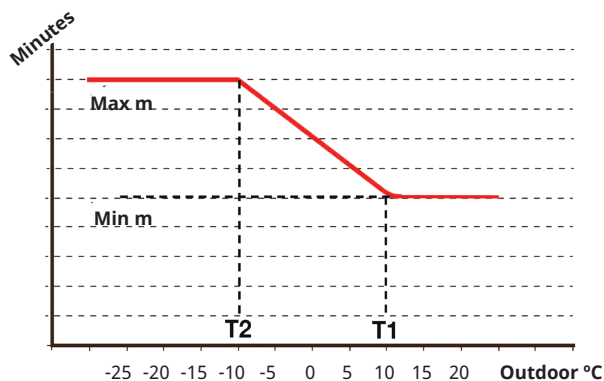
Set the maximum heating time "Max m" (minutes) for the heating coil in the condensation tray at outdoor temperature T2.

Defrost heating temp min °C 10 (-40...40)

When the outdoor temperature is this or higher (T1), the heating time is regulated down to the value set in the menu "Defrost heating temp min m".

Defrost heating temp max °C -10 (-40...40)

When the outdoor temperature is this or lower (T2), the heating time is regulated up to the value set in the menu "Defrost heating temp max m".



The diagram shows that the heating time of the heating coil to the condensation trays is regulated depending on the outside temperature. When the outdoor temperature is below T2, the heating time adjusts up to "Max m". When the outdoor temperature exceeds T2, the heating time adjusts down to "Min m".

These temperatures and times are set in the menus "Defrost heating temp..." on the left.

16.2.3 Settings, Immersion heater

Max immersion heater kW 9.1 (0.0...9.1)

Here you select the power that the immersion heater is permitted to provide.

The setting range may vary depending on the heat pump model.

The setting range varies, see "Electrical data" in the chapter "Technical data". For language choices "German" and "French" the max electric power is factory set at 0.0 kW.

Max immersion heater DHW kW 9.1 (0.0...9.1)

Here you select the power that the lower immersion heaters are allowed to emit.

The setting range varies, see "Electrical data" in the chapter "Technical data". For "Country" Germany and France, the max electric power is factory set at 0.0 kW.

Start at degree minute -500 (-900...-30)

This menu is used to define at how many degree minutes the immersion heater should start.

Diff step, degree minute -50 (-300...-20)

This menu is used to define the difference in degree minutes between the start and stop conditions for the immersion heater. If the immersion heater is started at -500 degree minutes, it will be stopped at -450 degree minutes (for a setting of -50).

Main fuse A 20 (10...90)

The property's main fuse size is set here. This setting and the fitted current sensors ensure the fuses are protected when using appliances which generate temporary power peaks, for example, cookers, ovens, engine heaters, etc. The product temporarily reduces power drawn where this type of equipment is being used.

Conv. factor current sensor 1 (1...10)

This menu is used to specify the conversion factor the current sensor should use. This setting is only performed if the connection has been installed for a current sensor for higher currents.

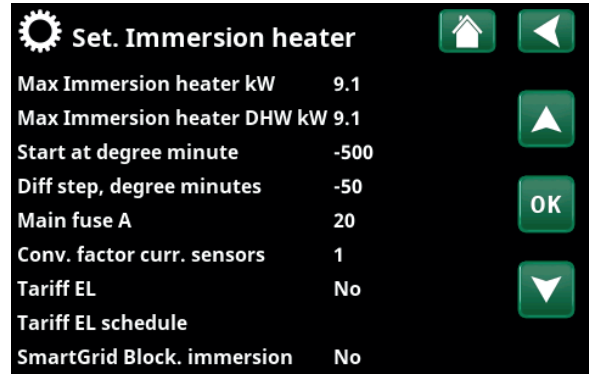
Example: User (set) value 2 => 16 A will be 32 A.

Tariff EL No (Yes/No)

This menu bar is displayed if an "Input" for remote control is defined for the "Tariff EL" function in the "Advanced/Define/Remote Control" menu.

"Yes" means the function can be activated via remote control.

Read more in the "Advanced/Define/Remote Control/Tariff EL" chapter.



Menu: "Advanced/Settings/Immersion heater".

Tariff EL schedule

This menu bar is displayed if a "Schedule" is defined for the "Tariff EL" function in the "Advanced/Define/Remote Control" menu.

For more information, refer to:

- chapter "Schedule".
- section "Def. Remote Control" of the "Advanced/Define" chapter for defining the remote control function.

SmartGrid Block. immersion No (Yes/No)

For this menu to be displayed, define a remote control input for both SmartGrid A and SmartGrid B.

"Yes" means that the additional heat is blocked when "SmartGrid Blocking" is active.

Read more in the "Advanced/Define/Remote Control" chapter.

16.2.4 Settings, DHW tank

The menus below are displayed if "DHW" has been defined in the "Advanced/Define /DHW" menu. Sensor B5 measures the temperature in the DHW tank.

DHW program

Available options are "Economy", "Normal" and "Comfort".

Press "OK" to open the settings for the selected DHW program. The factory settings shown below apply to "Normal" mode. Refer to the "Parameter List" chapter for the "Economy" and "Comfort" modes' factory settings.

• **Charge start %** **No (No/50...90)**

Value Charge start: 60% indicates that the charging of hot water is allowed to start when the amount of hot water is estimated to be "60%" or less. "No" means that the estimated amount of hot water does not affect the start of the hot water charging.

• **Charge stop, upper/lower °C** **55 (20...65)**

Charging of the hot water is complete when both sensors have reached the set value.

• **Charge start, lower °C** **40 (15...60)**

Hot water charging starts when the temperature falls below the set temperature.

• **DHW °C** **50 (38...65)**

The DHW out temp.

• **Permitted add.heat, outdoor °C** **No (-40...40)**

Additional heating is allowed for hot water charging when the outdoor temperature is equal to or below the set temperature.

"No" means that additional heating cannot be used regardless of the outdoor temperature.

• **Reset program**

The current DHW program will be reset to factory settings.

Start/stop diff. upper °C **5 (3...7)**

This menu is used to set the negative hysteresis before the heat pump starts charging the DHW tank after the setpoint has been reached.

Example: If the stop temperature is 55 °C and hysteresis is set to 5 °C in this menu, it means the heat pump will start DHW charging again when the temperature in the tank has dropped to 50 °C.

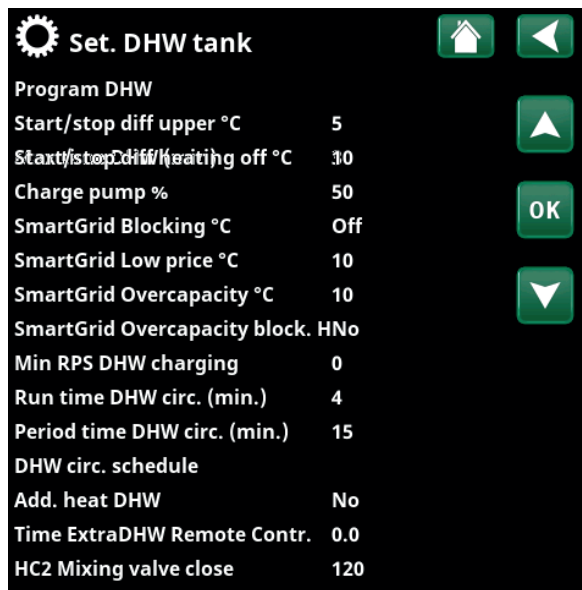
Max time DHW (min) **30 (10...150)**

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

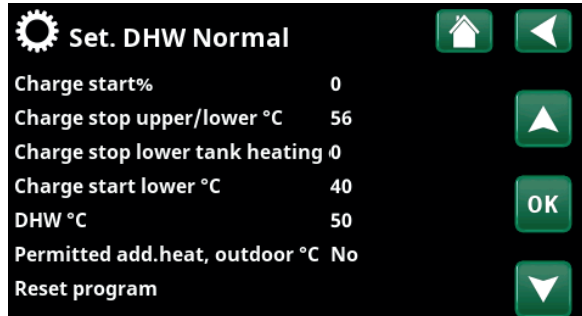
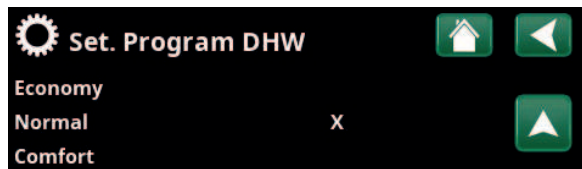
Only applies to CTC EcoAir 400 and CTC EcoPart 400 heat pumps.

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

The charge pump speed is set here.



Menu: "Advanced/Settings/DHW tank".



Menu: "Advanced/Settings/DHW/DHW Program".

SmartGrid Blocking °C **Off (Off/-1...-50)**

The setpoint for DHW tank heating is decreased by the value set in this menu when "SmartGrid Blocking" is active.

Both SmartGrid A and SmartGrid B must be defined in the remote control menu for this menu to be displayed.

Read more in the "Def. Remote Control /SmartGrid A/B" section of the "Advanced/Define" chapter.

SmartGrid Low price °C **Off (Off/1...30)**

The setpoint for DHW tank heating is increased by the value set in this menu when "SmartGrid Low price" is active.

Both SmartGrid A and SmartGrid B must be defined in the remote control menu for this menu to be displayed.

Read more in the "Def. Remote Control /SmartGrid A/B" section of the "Advanced/Define" chapter.

SmartGrid Overcapacity °C **Off (Off/1...30)**

The setpoint for DHW tank heating is increased by the value set in this menu when "SmartGrid Overcapacity" is active.

Both SmartGrid A and SmartGrid B must be defined with a remote control input for this menu to be displayed.

Read more in the "Def. Remote Control /SmartGrid A/B" section of the "Advanced/Define" chapter.

SmartGrid Overcapacity block HP **No (No/Yes)**

"Yes" means that DHW tank heating using the heat pump is blocked when "SmartGrid Overcapacity" is active.

Min RPS DHW charging **50 (50...100)**

Lowest compressor speed during hot water charging. When the heat pump switches from heating to hot water, this RPS is used for hot water.

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

The length of time that DHW circulation should active during each period. Displayed if "DHW circulation" has been defined in the "Advanced/Define/DHW" menu.

Time DHW circ. (min) **15 (5...90)**

Time between periods of DHW circulation. Displayed if "DHW circulation" has been defined in the "Advanced/Define/DHW" menu.

DHW circ. schedule

This menu displays the scheduled weekday periods when the DHW circulation pump is to run. The menu bar is displayed if:

- "DHW circulation" has been defined in the "Advanced/Define/DHW" menu.
- a "Schedule" is defined for the DHW Circulation" function in the "Advanced/Define/Remote Control" menu.

For more information, refer to:

- chapter "Schedule".
- section "Def. Remote Control" of the "Advanced/Define" chapter for defining the remote control function.

Add. heat DHW **Auto (Yes/No/Auto)**

"No" means that no immersion heater or external boiler is used to produce hot water.

"Auto" means that hot water is produced primarily by a heat pump. When the charging time is exceeded and the stop temperature is not reached by the heat pump, additional heating will be allowed during the next hot water heating cycle.

"Yes" means that an immersion heater or external boiler may be used to produce hot water.

See also "Immersion heater/Max. Immersion heater DHW kW" and "External boiler/Prio DHW tank".

Time ExtraDHW Remote Contr. **0.0 (0.0...10.0)**

Set the time (hours) that the production of additional hot water to the DHW tank should continue. The 'Extra DHW' function is activated via the remote control.

The menu bar is displayed if:

- a normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) is defined for the function in the "Advanced/Define/DHW Tank" menu.
- an "Input" for "Extra DHW" has been defined in the "Advanced/Define/DHW tank" menu.

HC2 Mixing valve close **120 (Off/1...300)**

The time in seconds to position the mixing valve at 50%. This is done to prevent flow problems when charging DHW.

This menu is displayed if heating circuit 2 is defined.

16.2.5 Settings, External heat source (EHS)

Charge start °C 70

This is the minimum temperature required in the external heat source tank (B47) for the mixing valve to open and emit heat to the system.

Stop diff °C 5

Temperature difference before charging stops from the additional heating source.

SmartGrid Blocking cap. No (No/Yes)

Electric operation prioritised. The shunt on the EHS tank is closed to accumulate heat energy.

Read more in the "Advanced/Define/Remote control/SmartGrid" menu.

16.2.6 Settings, Diff.thermostat function

The function must be defined before the settings can be entered. Diff thermostat function is used to charge the system tank from a different heat source.

Charge start diff temp °C 7 (3...30)

Here you can set the temperature difference determining when charging from the heat source is started. The heat source must be this many degrees warmer than the tank temperature for charging to start.

Charge stop diff temp °C 3 (2...20)

The temperature difference which determines when charging from the heat source is stopped is set here. When the temperature difference between the product and the tank falls below this set value, charging stops.

Charge temperature °C 60 (10...80)

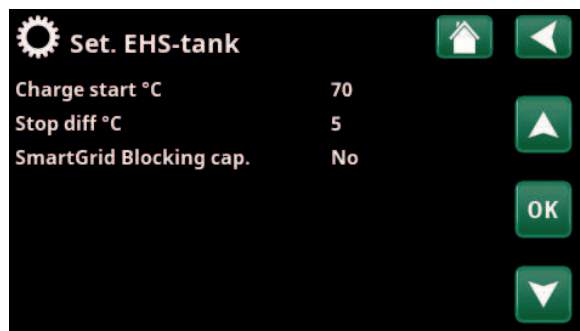
The maximum permitted temperature in the lower tank is set here. The charging stops if this temperature is exceeded.

Block diff thermostat No (No/Yes)

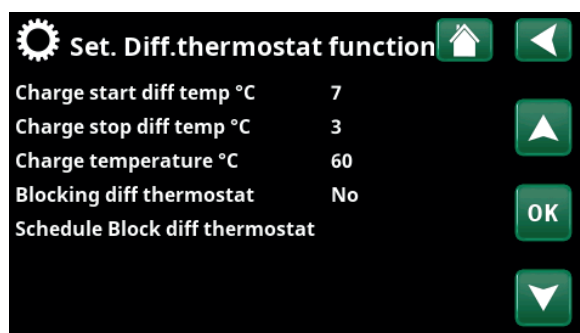
"Yes" means the function can be activated via remote control.

Block diff th. schedule

Access function scheduling from the "Block diff th. schedule" row.



Menu: "Advanced/Settings/External Heat Source".



Menu: "Advanced/Settings/Diff.thermostat function".



Ensure a high flow on the pump (G46) so that a low temperature difference of approx. 5-10°C is achieved over the EHS tank during charging.

16.2.7 Settings, External Boiler

Ext. Boiler-Mode **Auto (Auto/On/Off)**

Mode for adjusting an external boiler.

- **Auto** = adjusted as needed according to selected settings.
- **On** = continuously active.
- **Off** = mode in which the external boiler does not start, e.g., because there is no heat source available.

Boiler start out temp. **0 (-30...30)**

External boiler started at this outdoor temperature through the powering of E1.

Delay stop ext. boiler **0 (0...1440)**

If an external boiler is no longer needed, shutting it off can be delayed. This is used to avoid operation times too short (risk of corrosion). The boiler is kept warm for the set time, 10 minutes at a time.

Boiler, open mix.valve °C **70 (20...90)**

This is the minimum temperature required in the external boiler tank (B9) for the mixing valve to open and emit heat to the system. Used to, e.g., avoid condensation in oil boiler.

Stop diff °C **5 (1...15)**

Temperature difference compared to desired tank temperature before the mixing valve is allowed to open.

Hysteresis for "Boiler, open mixing valve °C". When the mixing valve has opened, the temperature may fall by this amount before the mixing valve closes.

Start boiler, degree minute **-300 (-900...-30)**

For the shunt to open and emit heat to the system, this requires a loss of degree minutes, which is set here.

Stop boiler diff, degree minute **-100 (-300...-20)**

This menu is used to define the difference in degree minutes between the start and stop conditions for the external boiler. If the boiler is started at -300 degree minutes, it will be stopped at -200 degree minutes (for a setting of -100).

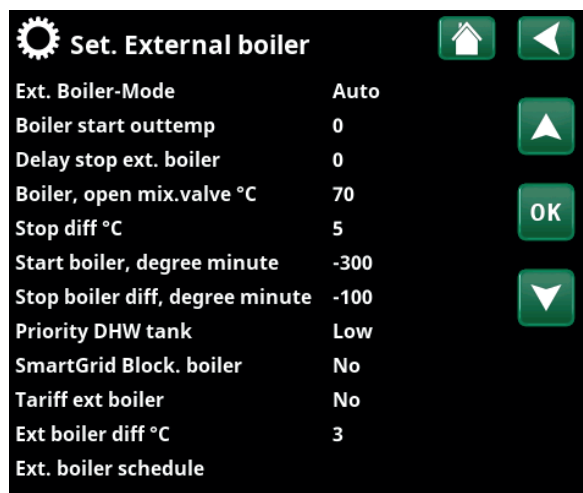
Priority DHW tank **Low (Low/High)**

Controls whether the external boiler is prioritised before electricity is added when producing hot water.

- **Low** – immersion heater activated before external boiler.
- **High** – external boiler activated before adding electricity.

SmartGrid Block. boiler **No (No/Yes)**

Controls whether the external boiler is blocked by settings in SmartGrid function.



Menu "Advanced/Settings/External Boiler".

Tariff ext. boiler **No (Yes/No)**

This menu bar is displayed if an "Input" for remote control is defined for the "Tariff, external boiler" function in the "Advanced/Define/Remote Control" menu and "Ext. Boiler-Mode" has been selected in this menu ("Settings/External boiler").

"Yes" means the function can be activated via remote control.

Read more in the "Advanced/Define/Remote Control/Tariff EL" chapter.

Ext. boiler diff °C **3 (Off, 1...15)**

Compensation set point for External Boiler is set these many degrees above the set point for "Primary Flow HC1", or "DHW," or "Pool". This is in addition to the compensation made for the loss in degree minutes.

Ext. boiler schedule

This menu bar is displayed if a "Schedule" is defined for the "Tariff EL" function in the "Advanced/Define/Remote Control" menu.

For more information, refer to:

- chapter "Schedule".
- section "Def. Remote Control" in the "Advanced/Define" chapter for defining the remote control function.

16.2.8 Settings, Cooling

Room temp. cooling °C 25.0 (18.0...30.0)

Set the desired room temperature for cooling.

Cooling permit. from outdoor T* Off (0...39/Off)

Set the outdoor temperature from which cooling will be permitted.

Active delay* 10 (1...600/Off)

Delay refers to the time (minutes) before the production of cooling is allowed when there is a need for cooling.

Heating off, delay* 10 (0...600/Off)

Delay refers to the time (minutes) from when production of heat has ended until cooling production is permitted.

Start delay* 180 (5...240)

The menu determines the delay time (minutes) from the time the cooling has been blocked (see menu bars "Ext. Block cooling" and "Block cooling schedule") until the production of cooling is permitted again.

Diff. delay calc.* 10 (1...600/Off)

Set how often (minutes) a new value for the primary flow temperature is calculated based on the measured return temperature of the cooling flow.

Cooling curve

See the description of "Cooling curve" in this chapter.

Max primary flow °C 20 (2...40)

The maximum temperature of the cooling flow allowed out to the respective heating circuit.

Min primary flow °C 18 (2...40)

The minimum temperature of the cooling flow allowed out to the respective heating circuit.

Min flow temp cooling °C 18 (2...30)

The minimum temperature of the cooling flow allowed out to the respective heating circuit.

This setting overrides the value set in the menu bar "Min. primary flow °C".

A 4-digit code (4002) must be entered to set the menu.

Max diff. room temp. cooling °C 5 (0...20)

Specify how many degrees of difference is permitted between the primary flow temperature of the cooling flow and the room temperature.

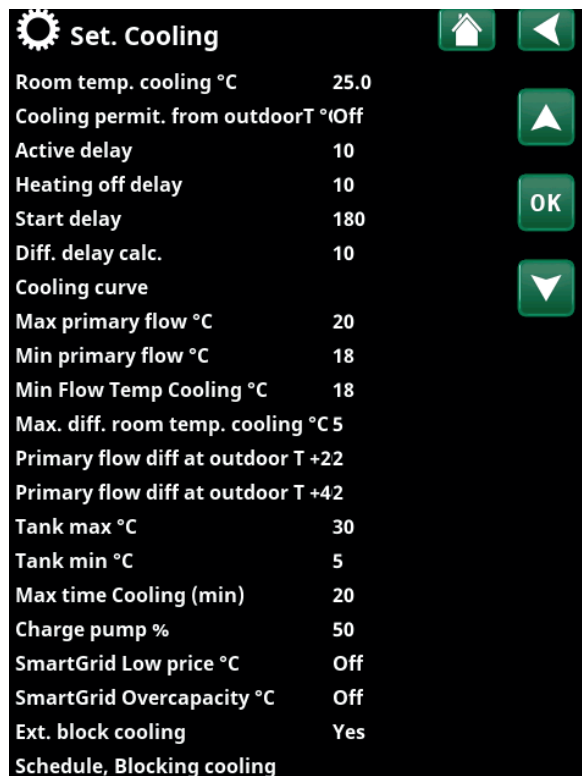
A 4-digit code (4002) must be entered to set the menu.

Primary flow diff. at outdoor +20 °C* 2 (1...10)

Specify how many degrees of difference is permitted between the primary flow and return temperature of the cooling flow at an outdoor temperature of 20 °C.

Primary flow diff. at outdoor +40 °C* 2 (1...10)

Specify how many degrees of difference is permitted between the primary flow and return temperature of the cooling flow at an outdoor temperature of 40 °C.



Menu: "Advanced/Settings/Cooling".

● A 4-digit code (4002) must be entered to set the menu "Min. flow temp. cooling" and "Max. diff. room temp. cooling".

When lowering the temperature, any risk of condensation must be taken into account!

! If the system is condensation-proofed, significantly lower temperatures are permitted at various points in the system. **WARNING!** Build-up of condensation in the house structure can lead to damp and damage from mildew.

In the event of doubt, contact a professional for an assessment.

*This menu bar is only displayed if active cooling has been defined in the "Advanced/Define/Cooling" menu.

Tank max °C 30 (10...50)

This menu specifies the maximum permissible temperature in the tank when cooling demand is active.

Tank min °C 5 (5...50)

This menu specifies the minimum permissible temperature in the tank when cooling demand is active.

Max time Cooling (min.) 20 (1...150)

Specify the maximum time that the heat pump is permitted to produce cooling if there is another need.

Charge pump % 50 (20...100)

The charge pump speed is set here.

The menu bar is displayed if you have selected "Yes with G11" in the menu bar "Common Heating/Cooling" in the "Advanced/Define/Cooling" menu.

SmartGrid Low price °C Off (Off/1...5)

The setpoint for room temperature is decreased by the value set in this menu when "SmartGrid Low price" is active.

The menu bar is displayed if SmartGrid have been defined in the "Advanced/Define/Remote Control" menu.

Read more in the "Remote Control/SmartGrid" section of the "Advanced/Define" chapter.

SmartGrid Overcapacity °C Off (Off/1...5)

The setpoint for room temperature is decreased by the value set in this menu when "SmartGrid Overcapacity" is active.

The menu bar is displayed if SmartGrid have been defined in the "Advanced/Define/Remote Control" menu.

Read more in the "Remote Control/SmartGrid" section of the "Advanced/Define" chapter.

Ext. block cooling No (Yes/No)

Blocking cooling can be remote controlled remotely. For example, the function can be used to turn off cooling with the help of a humidity sensor when there is a risk of condensation.

This menu bar is displayed if the criteria below are met:

- a remote control input has been defined for the "Block cooling" function.
- a normal mode (Normally Open (NO) or Normally Closed (NC)) for the external control signal has been defined on the menu bar "Block cooling ext. config." in the "Advanced/Define/Cooling" menu.

Read more in the "Def. Remote Control" section of the "Advanced/Define" chapter.

Block cooling schedule

This menu is used to schedule the weekday periods during which cooling should be blocked. This schedule is repeated every week.

This menu bar is displayed if a schedule has been defined for the "Block Cooling" function, in the "Advanced/Define/Remote Control" menu.

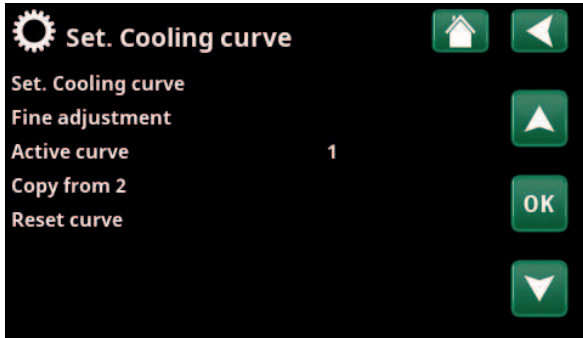
For more information, refer to:

- chapter "Schedule".
- section "Def. Remote Control" of the "Advanced/Define" chapter for defining the remote control function.

Cooling curve

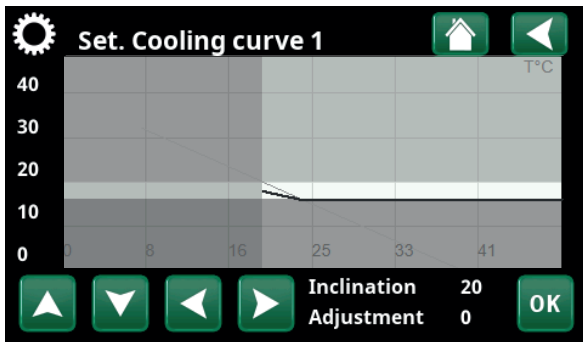
The cooling curve determines the primary flow temperature (and thus the indoor temperature) to the heating circuit at different outdoor temperatures.

Possible choices are "Set. cooling curve", "Fine adjustment", "Active curve", "Copy from ..." and "Reset curve".



Menu "Advanced/Settings/Cooling/Cooling curve/Set. Cooling curve".

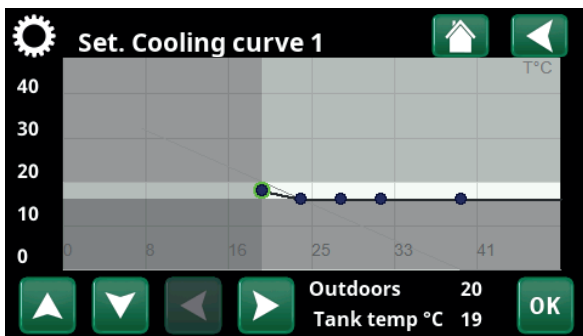
• Settings, Cooling curve



Menu "Advanced/Settings/Cooling/Cooling curve/Set. Cooling curve".

Here it is possible to adjust the appearance of the graph by adjusting the curve inclination and curve adjustment with the buttons below the graph. The adjustments you make here affect the entire appearance of the graph, while the changes made under "Fine adjustment" are made one point at a time. Curve inclination is adjusted with the left and right arrows while curve adjustment is adjusted with the up and down arrows. Confirm with "OK".

• Fine adjustment



Menu "Advanced/Settings/Cooling/Cooling curve/Fine adjustment".

change its position in the x-axis (outdoor temperature) and y-axis (primary flow temperature). Use the up/down/left/right buttons below the graph or press and drag the point.

Below the graph, the outdoor and primary flow temperatures for the selected point are shown.

The cooling curve can also be adjusted from the "Heating/Cooling" menu, see chapter "Display settings".

• Active curve 1 (1/2)

This menu bar shows the selected cooling curve, it is possible to choose between two different cooling curves per heating circuit.

• Copy from 1 (2)

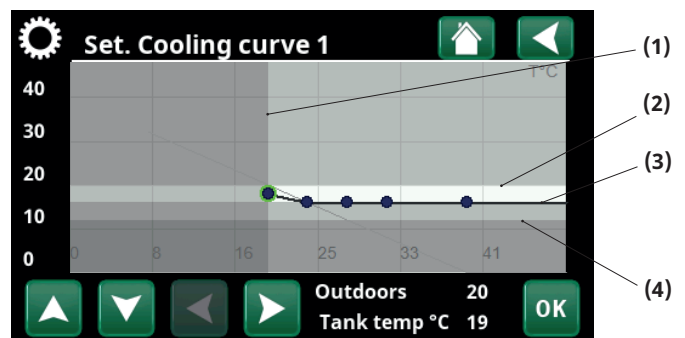
The function "Copy from" is useful if you have created two different cooling curve graphs but want to restore one graph to the same appearance as the other and then make changes.

Example: If cooling curve 1 is selected as "Active curve", cooling curve 1 will have the same appearance as cooling curve 2 by selecting the line "Copy from 2" and pressing "OK". The menu bar cannot be selected (marked with gray) when cooling curves 1 and 2 have the same values (the graphs look the same).

• Reset curve

Resets the active cooling curve to the factory-set curve.

Example Cooling curve



Menu "Advanced/Settings/Cooling/Cooling curve/Fine adjustment".

| Menu "Settings Cooling" | Setting "Example Cooling curve" |
|-----------------------------------------------|---------------------------------|
| (1) Cooling permit. from outdoor °C | 20 |
| (2) Max primary flow °C | 20 |
| (3) Min primary flow °C | 18 |
| (4) Min flow temp cooling °C (Coded settings) | 16 |

The specified min. and max. values of the cooling flow define the operating range of the system (the light-colored field between the grey areas in the menu screens "Set. Cooling curve").

The graph of the active cooling curve for the heating circuit is displayed. The cooling curve can be adjusted in 5 points on the graph. Touch a point (becomes green) to

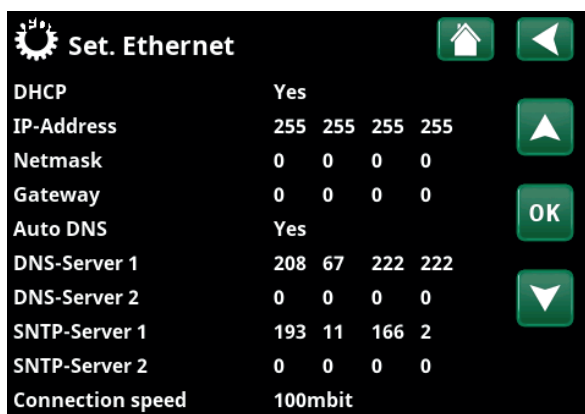
16.2.9 Settings, Communication

Settings can be made here to control the product with a control system.



Menu: "Advanced/Settings/Communication".

16.2.9.1 Settings, Ethernet



Menu: "Advanced/Settings/Communication/Internet".

DHCP Yes (Yes/No)

"Yes" enables automatic connection to the network.

If "No", custom router settings (IP address, Netmask and Gateway) as well as DNS setting must be made.

Auto DNS Yes (Yes/No)

If "Yes", default DNS server settings are used. If "No", custom DNS settings must be made.

SNTP Server

Option for custom SNTP server settings.

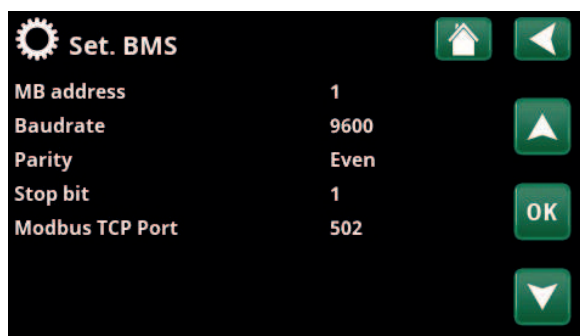
Connection speed 100mbit

Connection speed is specified here.

The factory-set connection speed is 100 mbit/s.

For more information on installing Ethernet cables, see the chapter "Installation, Communication".

16.2.9.2 Settings, BMS



Menu: "Advanced/Settings/Communication/BMS".

MB address 1 (1...255)

Adjustable "1-255".

Baudrate 9600 (9600/19200)

Possible settings: "9600" or "19200".

Parity Even (Even/Odd/None)

Possible settings: "Even", "Odd" or "None".

Stop bit 1 (1/2)

Possible settings: 1 or 2.

Modbus TCP Port 502 (1...32767)

This menu bar is displayed if "Modbus TCP" is defined in the "Ethernet" row in the "Advanced/Define/Remote Control" menu.

16.2.9.3 Settings, myUplink

The menu is used for pairing with the myUplink app.



Menu: "Advanced/Settings/Communication/myUplink".

Request connection string by pressing "Get connection string", confirm with "OK". The menu bar is clickable if the display is connected to the server.

In the app: Scan the QR code or enter values for "Serial" and "Connection string".

Select the menu items "Remove users" and / or "Remove service partners" to disconnect these accounts from the system. Confirm with "OK".

16.2.9.4 Settings, El. prices

Ensure that "myUplink" is selected in the "Def. Communication" menu.

Select "El.prices" in the "Advanced/Settings/Communication" menu to access the "Set. El.prices" menu.



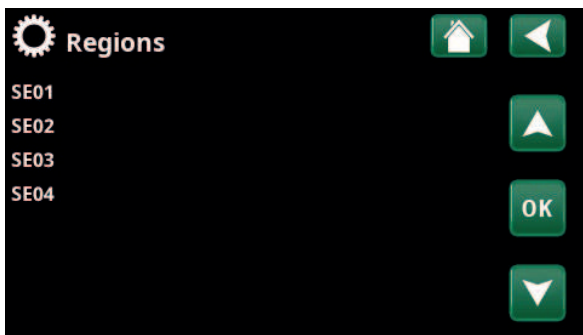
Menu: "Advanced/Settings/Communication/El.prices" where "Advanced/Define/Communication/myUplink: Yes" is selected.

Price control On/Off

Select "On" to show the other menu lines of the "Set. El.prices" display menu.

Regions SE01/SE02/SE03/SE04

Click "OK" on the "Regions" line. If "Regions" are defined for the selected country (see "Advanced/Display/Country" menu), price regions for the country are shown here. Otherwise, the text "No regions available" is displayed. In this example, Swedish price regions are displayed.



Menu: "Advanced/Settings/Communication/El.prices/Regions" where "Advanced/Define/Communication/myUplink:Yes" is selected

Dynamic Yes/No

"Yes" means that the electricity prices are calculated according to price algorithms that define the price categories ("High", "Medium" and "Low").

Limit value high

Set the limit value above which the electricity price is defined as "High" (in the example, the limit value is SEK 3.50). This can be used together with the dynamic price calculation feature to define a different "High" price range than that determined by the dynamic price calculation feature.

Prices defined as "High" activate the "SmartGrid Blocking" function.

Limit value low

Set the limit value below which the electricity price is defined as "Low" (in the example, the limit value is SEK 1.50). This can be used together with the dynamic price calculation feature to define a different "Low" price range than that determined by the dynamic price calculation feature.

Prices defined as "Low" activate the "SmartGrid Low price" function.

For more information and examples of Smart Electricity Price Control/SmartGrid, see the website www.ctc-heating.com/Products/Download.

Default High/Medium/Low

Select the price category that should apply if prices cannot be retrieved.

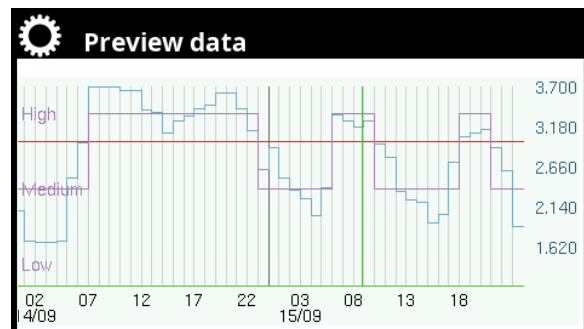
Days in calculation 1...10

Select the number of days on which the dynamic calculation of the electricity price will be based. Since the dynamic calculation is based on the average price per day, more days in calculation result in a more stable and reliable value.

Preview data

Click "OK" on the "Preview data" line to display a graph of electricity prices calculated over the selected time interval ("Days in calculation").

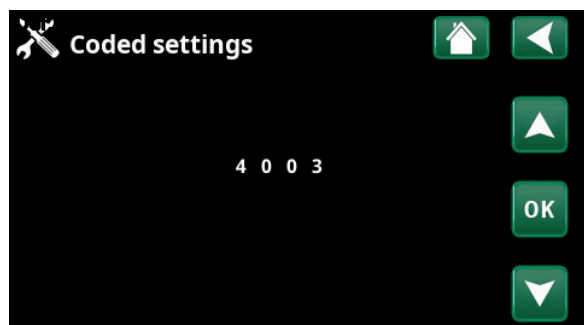
The graph can also be displayed by clicking the "El.prices" icon in the "Operation" main menu (see "Operation" section).



Menu: "Advanced/Settings/Communication/El.prices/Preview data".

Offset % **0 (0...100)**

Enter code "4003" in the "Advanced/Service/Coded settings/Code" menu to display the "Offset %" menu line.



Menu: "Advanced/Service/Coded settings/Code".

"Offset" is the boundary between where "High" price and "Medium" price electricity is determined and is based on the average price for the number of days used in the calculation.

If offset is changed, it will move the curve and the shape will be kept. Use "Inclination" to change the curve.

Width % **50 (0...200)**

Enter code "4003" in the "Advanced/Service/Coded settings/Code" menu to display the "Width %" menu line.

"Width" is the vertical price range where the electricity price is considered "Medium".

16.2.9.5 Settings, Power limitation

Power limitation can be used, for example, if the if the electricity grid operator requires control of the electricity grid load. The function can limit the operating power of the compressor and the immersion heater.

Press "OK" on the "Power limitation" menu bar in the "Advanced/Define/Communication/Power limitation" menu.



Menu: "Advanced/Settings/Communication/Power limitation".

! CTC EcoLogic L/M and CTC EcoPart i600M must have program version 2025-02-06 or later.

Mode **Blocking (Blocking/Limitation/Off)**

Select "Blocking" if both the heat pump and the additional heat should be blocked from starting.

Select "Limitation" if the operating power of the heating circuit is to be limited. The limit value and the offset must then be set.

Limit value (kW) **4.2 (1.0...100.0)**

Select the operating power value that the heating circuit must not exceed.

Offset (kW) **0.0 (0.0...10.0)**

Deduction from the limit value in addition to the operating power of the compressor and the immersion heater.

Allow power peak **Yes (Yes/No)**

Enter code "4003" in the "Advanced/Service/Coded settings/Code" menu to display the "Allow power peak" menu line.

Select "Yes" if the heat pump is allowed to exceed the set limit value for a short time during start-up. Only applies to modulating heat pumps.

Schedule **Off/On/Load fact.set.**

In the schedule, the periods is sets for when the power limitation should be active or inactive during the weekdays. For more information, see chapter "Schedule".

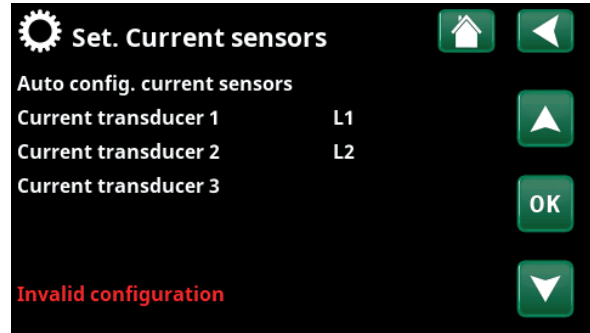
16.2.10 Settings, Current sensor

These menu bars are displayed if "Current Sensor" is defined in the "Advanced/Define/Current Sensor" menu.

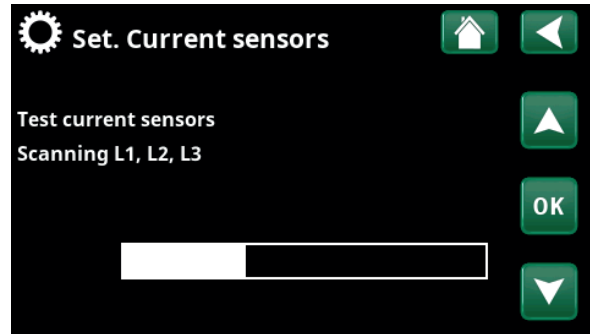
In the menu, specify the phases (L1, L2 and L3) to which the current sensors have been connected.

In the lower left corner of the display, "Invalid configuration" will be displayed until L1, L2, and L3 have been paired with the three current sensors in the menu.

When activating the "Auto config. current sensors" function, it is important that you have switched off all devices in the house that consume high levels of electricity. Also make sure that the backup thermostat is switched off.



Menu: "Advanced/Settings/Current Sensors".



Menu: "Advanced/Settings/Current Sensors /Auto config. current sensor".

16.2.11 Settings, Round circulation schedule

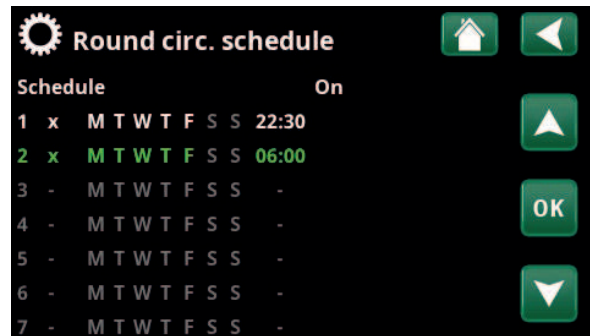
Round circulation is equipment which an electricity supplier can fit in order to disconnect, for a short period of time, equipment which draws high current. The compressor and electrical output are blocked when Round circulation is active.

This menu bar is displayed if a schedule has been defined for the "Round circulation" function.

The "Round circulation" function can also be controlled remotely by activating the "Input" defined for the function.

For more information, refer to:

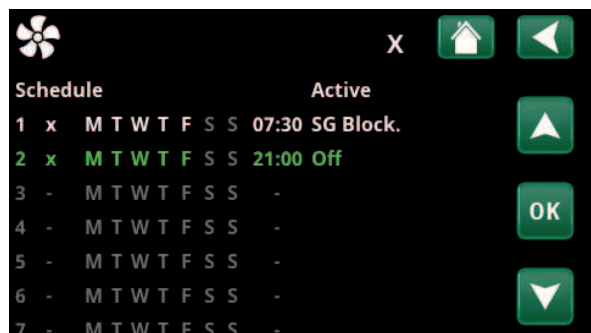
- chapter "Schedule".
- section "Def. Remote Control" of the "Advanced/Define" chapter for defining the remote control function.



Menu: "Advanced/Settings/Round circulation".

16.2.12 Settings, SmartGrid schedule

This menu is used to schedule the weekday periods during which the "SmartGrid" functions should be active. This schedule is repeated every week.



Menu: "Advanced/Settings/SmartGrid schedule".

"SmartGrid" can be used to block a function ("SG Block.") or to achieve a temperature increase during periods when the energy price is low ("SG Low price") or ("SG Overcapacity").

SG Normal mode can be used to easily deviate from any SmartGrid settings for the system on specific days/at specific times.

The "SmartGrid schedule" menu bar is displayed if a schedule has been defined in the "SmartGrid A" row.

For more information, refer to:

- chapter "Schedule".
- chapter "Advanced/Define/Remote Control" for defining SmartGrid.

16.2.13 Save settings

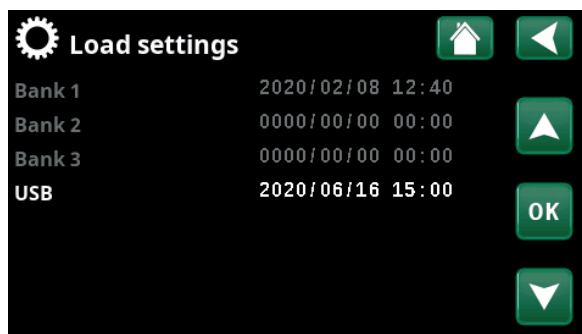
Custom settings can be saved to "Bank" 1-3 and on a USB drive here. The "USB" row is greyed out until the USB drive is installed. The rows show the date and time of saved settings.

Press "OK" to confirm.

16.2.14 Load settings

The saved settings can be recovered.

Press "OK" to confirm.



Menu: "Advanced/Settings/Load my settings".

16.2.15 Load Factory settings

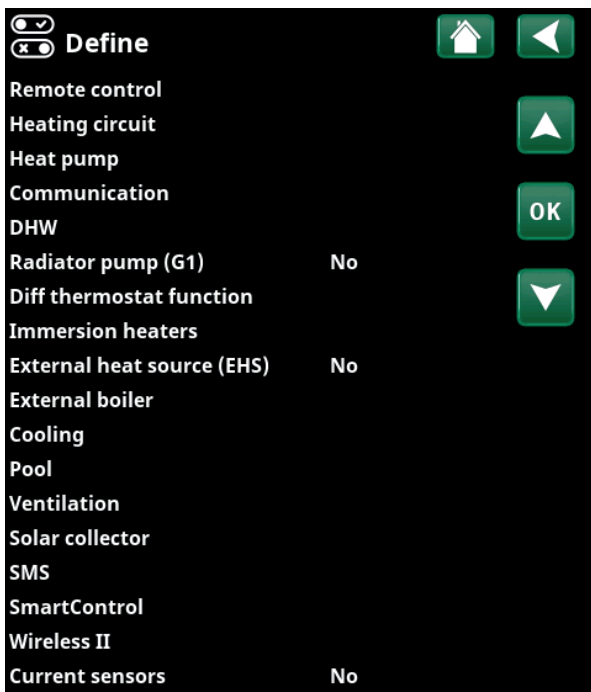
The product is supplied with the factory values set. Saved settings in "Bank" 1-3 are deleted when factory settings are restored. The selected language is recovered.

Press "OK" to confirm.

16.3 Define



The "Define" menus specify which components and subsystems the system consists of.



Menu: "Advanced/Define /Remote control".

- accessories in the CTC SmartControl series, consist of wireless sensors and control units that control signals for temperature, humidity and carbon dioxide levels.
- accessories in the CTC Wireless Room Sensor II series, consist of room unit and a base unit that control signals for temperature.
- BMS control where control signals are transmitted via the BMS interface.

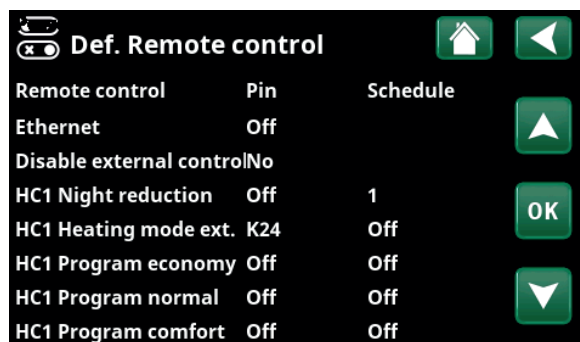
If you want a function to recur during weekdays, you can set when the function should be active/inactive in a schedule.

16.3.1.1 Setting the remote control function

1. Define an "Input"

First, an input must be assigned to the function or functions to be controlled remotely.

In the example, terminal block K24 is selected as the input for the "HC1 Heating mode, ext." function.



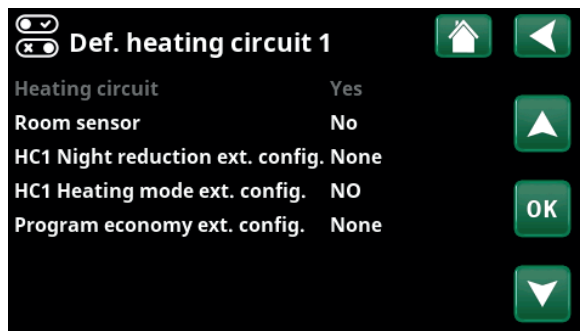
Menu: "Advanced/Define /Remote Control".

2. Configure the function (Normally Open (NO)/Normally Closed (NC))

Define a normal mode for the external control signal; NO or NC. The setting is made for the current heating circuit in the "Advanced/Define/Heating Circuit" menu.

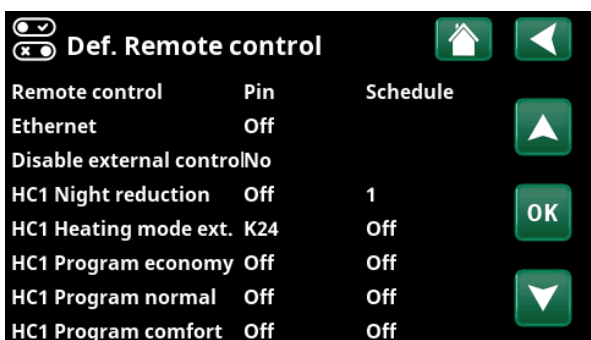
For example, a two-way switch can be connected to the defined input.

If the button when used generates a control signal on the input (circuit closes), the circuit shall be defined as NO. When the circuit closes and the control signal is generated, the heating mode selected in the "HC1 Heating mode, ext. config." row is activated in the settings menu for the heating circuit.



Menu: "Advanced/Define/Heating Circuit/ Heating Circuit 1".

16.3.1 Define, Remote control



Part of the "Advanced/Define/Remote control" menu.

The "Advanced/Define/Remote control" menu describes all remote control functions, how they are set up and how they are used.

The remote control inputs can be activated by specifying one of the following three modes in the "Input" column:

- a terminal block K22-K23 on the relay card (A2) has power or terminal block K24-K25 is closed. There are two 230 V inputs and two low voltage ports.

| Designation | Terminal block position | Connection type |
|-------------|-------------------------|--------------------------|
| K22 | A14 & A25 | 230V |
| K23 | A24 & A25 | 230V |
| K24 | G33 & G34 | Extra-low voltage (<12V) |
| K25 | G73 & G74 | Extra-low voltage (<12V) |

The table shows the remote control inputs K22-K25 on the relay card.

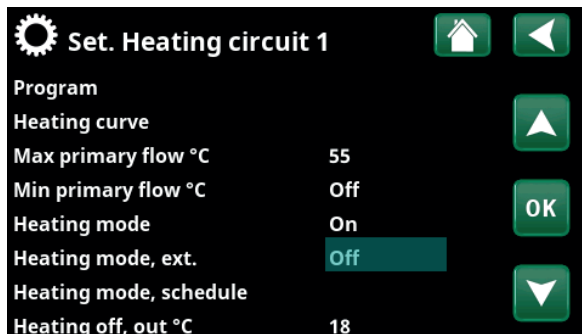
3. Setting the heating mode

In the example, the remote control function "Heating mode, ext." is set to the "Off" position in the "Heating mode, ext." row. This setting is made in the "Advanced/Settings/heating circuit" menu.

In this example, the normal heating mode is active ("On").

When input K24 is closed (the multi-button in the example generates a control signal), the status of the Heating Mode (normal mode "On" > mode "Off") changes.

Heating remains off until you choose to start the heating (normal mode "On") by opening terminal block K24 (no signal on the terminal block).



Menu: "Advanced/Settings/Heating Circuit/Heating Circuit 1". Remote control mode "Off" becomes active when terminal block K24 is closed.

Heating mode "On" = Open terminal block.

Heating mode "Off" = Closed terminal block (in this example).

16.3.1.2 Remote control functions

The "Advanced/Define/Remote Control" menu defines Inputs for current remote control functions:

- Inputs K22, K23, K24, K25.
- wireless accessories in the SmartControl/Wireless II series (Channel 1A, 1B, 2A, 2B, 3A, 3B and so on up to 7B).
- BMS digital input 0-7. Specify a value 0-255. The value must be set again within half an hour for the setting to persist.

Ethernet (Modbus TCP/Off)

For information about Modbus TCP Port settings, refer to the "Communication" section in the "Advanced/Settings" chapter.

Disable ext. control (Yes/No)

Selection "Yes" means disconnecting all external control of the heat pump. Schedule settings are not affected.

HC1- Night reduction

The "Night Reduction" function can be used to, for example, lower the indoor temperature during the night or during working hours.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Heating Circuit" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)).

The schedule can be set in the "Heating/Cooling" menu.

For more information, refer to the "Night Reduction Temperature" section in the "Heating/Cooling" chapter.

HC1- Heating mode, ext.

Switching between heating season and summer season can take place at a specific outdoor temperature (Auto) or heating can be either always "On" or "Off".

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

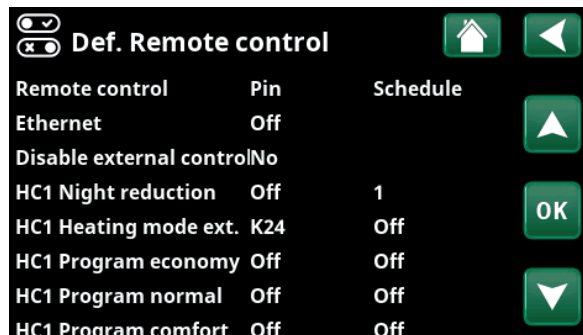
In the "Advanced/Define/Heating Circuit" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)).

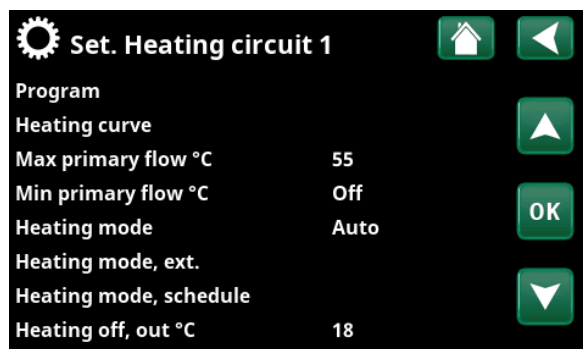
In the "Advanced/Settings/Heating Circuit" menu:

- set "Remote Control Mode" ("On", "Off" or "Auto") in the "Heating mode, ext." row.
- Access function scheduling from the "Heat mode, schedule" row.

For more information, refer to the "Heating Circuit" section in the "Advanced/Settings" chapter. Also refer to the "House heating settings" chapter.



Part of the "Advanced/Define/Remote Control" menu. "Input" and "Schedule" are defined here.



Menu: "Advanced/Settings/Heating Circuit". The remote control mode for the heating circuit is set on menu bar "Heating mode, ext.". Access the schedule from the menu bar "Heating mode, schedule".

HC1- Program economy/normal/comfort/custom ext. config.

The program functions "Economy", "Normal" "Comfort" and "Custom" can be used to change the indoor temperature for a certain period.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Heating circuit":

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC))

Setting the schedule is done from the "Heating/Cooling/Program" menu.

For more information, see section "Heating program" in chapter "Heating/Cooling".

Extra DHW

Upon activation, production of extra DHW begins. When activation stops, extra DHW is produced for a run-on time of 30 min. The "Stop temperature" for extra DHW is set in the "Advanced/Settings /DHW Tank/DHW program" menu.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/DHW" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Extra DHW" row.

Setting extra DHW production to start immediately can also be done in the "DHW" menu. The schedule for extra DHW can also be set in this menu.

For more information, refer to the "Extra DHW" section in the "DHW" chapter.

Block cooling

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

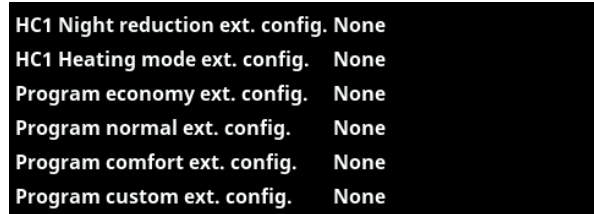
In the "Advanced/Define/Cooling" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)).

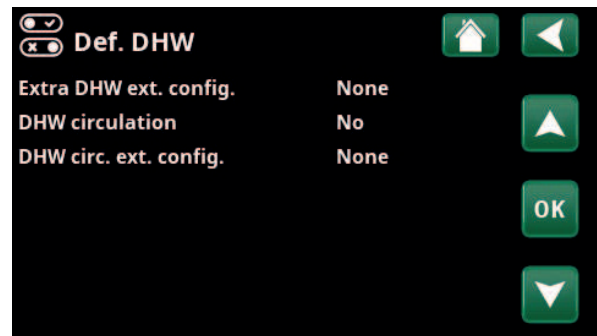
In the "Advanced/Settings/Cooling" menu:

- set the "remote control mode" ("On") in the "Ext. block. cooling" row.
- Access function scheduling from the "Block cooling schedule" row.

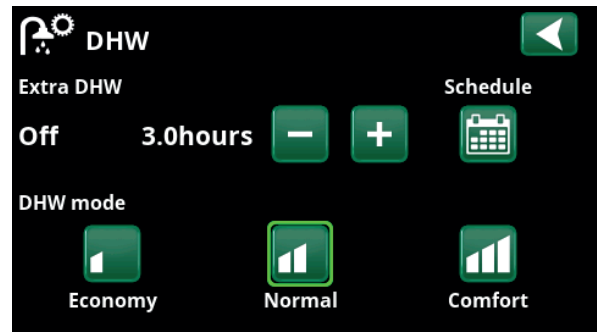
For more information, refer to the "Cooling" section in the "Advanced/Settings" chapter.



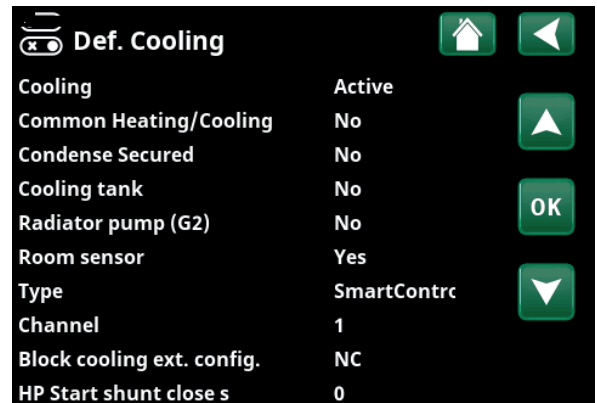
Part of the "Advanced/Define/Heating circuit" menu. In the menu bars "Program economy/normal/comfort/custom ..." the normal mode is indicated on the external control signal ("Normally Open (NO)" or "Normally Closed (NC)").



Menu: "Advanced/Define/DHW" On menu bar "Extra DHW", the normal mode is specified for the external control signal ("Normally Open (NO)" or "Normally Closed (NC)").



Setting the "Extra DHW" in the "DHW" menu.



On menu bar "Block. cooling ext. config.", the normal mode is specified for the external control signal ("Normally Open (NO)" or "Normally Closed (NC)").

Block Pool

This function is used to block pool heating.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Pool" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)).

In the "Advanced/Settings/Pool" menu:

- set the "remote control mode" ("On") in the "Blocking Pool" row.
- Access function scheduling from the "Block. pool, schedule" row.

For more information, see the "Pool" section in the "Advanced/Settings" chapter.

Tariff EL

This function is used to block the immersion heater during periods when the electricity rate is higher.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Settings/Additional Heat" menu:

- set "remote control mode" ("Yes") in the "Tariff EL" row.
- Access function scheduling from the "Tariff EL" row.

For more information, refer to the "Additional Heat/Tariff EL" section in the "Advanced/Settings" chapter.

Round circulation

Round circulation is equipment which an electricity supplier can fit in order to disconnect, for a short period of time, equipment which draws high current. The compressor and electrical output are blocked when round circulation is active.

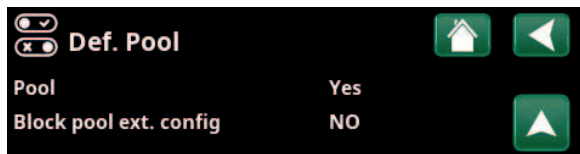
In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Settings" menu:

- Access function scheduling from the "Round circulation" row.

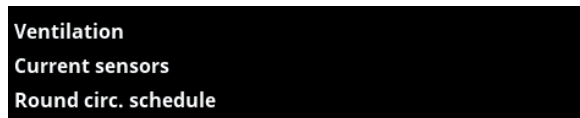
For more information, refer to the "Round circulation" section in the "Advanced/Settings" chapter.



Menu: "Advanced/Define/Pool".
A mode for the external control signal ("Normally Open (NO)" or "Normally Closed (NC)") is defined in the "Advanced/Define/Pool" menu.



Menu: "Advanced/Settings/Pool".
Activate this function via an external control signal or a schedule.



Part of the "Advanced/Settings" menu. Setting a "Round circulation" schedule.

DHW circulation

The function allows DHW to circulate in the pipes between the taps and the DHW tank, ensuring that the DHW is hot when the taps are opened.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/DHW Tank" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "DHW circ. ext. config." row.

In the "Advanced/Settings/DHW Tank" menu:

- Access function scheduling from the "DHW circ. schedule" row.

For more information, see the "DHW Tank" section in the "Advanced/Settings" chapter.

Flow/level switch

The flow/level switch produces an alarm on the heat pump.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Heat Pump" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Flow/level switch" row.

SmartGrid A / SmartGrid B

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

There are three SmartGrid functions:

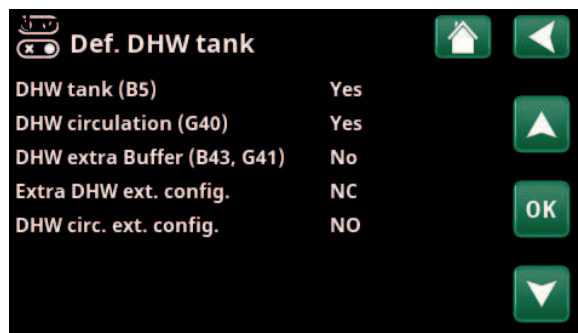
- SmartGrid Low Price
- SmartGrid Overcapacity
- SmartGrid Blocking

Example of "SmartGrid Low Price" for pool heating

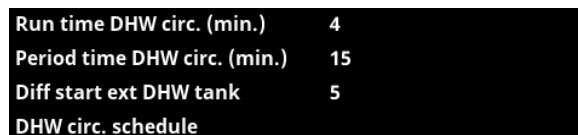
In this example, "SmartGrid A" and "SmartGrid B" have been assigned terminal blocks K22 and K23, respectively. In addition, SmartGrid A is assigned "Schedule #1".

According to the settings in the "Set. Pool" menu, the pool setpoint will be increased by 5°C when the electricity price is low (when the "SmartGrid Low price" function is active) and the setpoint will be decreased by 10°C* when the electricity price is high (when the "SmartGrid Blocking" function is active).

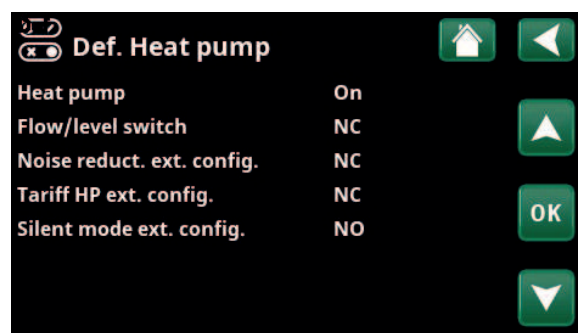
SmartGrid functions can be set (depending on system configuration/heat pump model) for Heating circuit including Heating program economy/comfort/custom, Heat pumps, Additional heating, Cooling, Pool, DHW tank, Buffer tank and Upper* and Lower* tank.



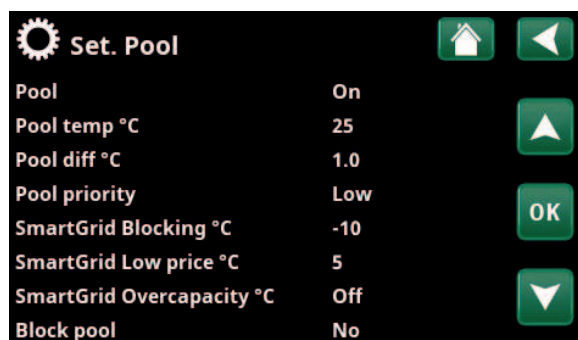
Menu: "Advanced/Define/DHW Tank". Define a mode (Normally Open (NO) or Normally Closed (NC)) for the external control signal.



Menu: "Advanced/Settings/DHW Tank". Setting a "DHW circulation" schedule.



Menu: "Advanced/Define/Heat Pump". A mode for the external control signal ("Normally Open (NO)" or "Normally Closed (NC)").



Menu: "Advanced/Settings/Pool". The pool temperature is increased by 5 °C when the SmartGrid Low Price function is activated.

Heating circuit 1-*

- SmartGrid Blocking (Off/On)
- SmartGrid Low price °C (Off/1...5 °C)
- SmartGrid Overcapacity °C (Off/1...5 °C)

Heating program

-Comfort:

- SmartGrid Low price °C (Off/On)
- SmartGrid Overcapacity °C (Off/On)

-Custom:

- SmartGrid Low price °C (Off/On)
- SmartGrid Overcapacity °C (Off/On)
- SmartGrid Blocking (Off/On)

-Economy:

- SmartGrid Blocking (Off/On)

Heat pump*

- SmartGrid Blocking HP (Yes/No)

Additional Heat/Immersion heater

- SmartGrid Blocking EL (Yes/No)
- SmartGrid Blocking Mixing valve (Yes/No)

Cooling

- SmartGrid Low Price °C (Off/1...5 °C)
- SmartGrid Overcapacity °C (Off/1...5 °C)

Pool

- SmartGrid Blocking °C (Off/-1...-50 °C)
- SmartGrid Low Price °C (Off/1...50 °C)
- SmartGrid Overcapacity °C (Off/1...50 °C)

DHW tank/Lower tank/Upper tank

- SmartGrid Blocking °C (Off/-1...-50 °C)
- SmartGrid Low Price °C (Off/1...30 °C)
- SmartGrid Overcapacity °C (Off/1...30 °C)

Buffer tank

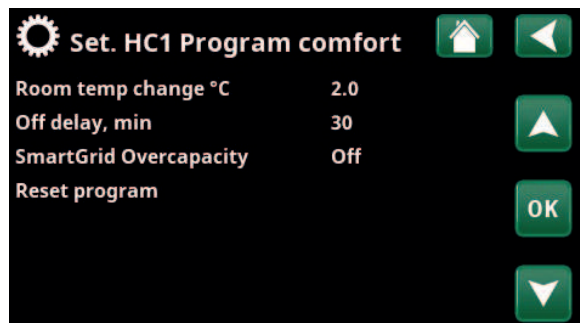
- SmartGrid Low Price °C (Off/1...30 °C)
- SmartGrid Overcapacity °C (Off/1...30 °C)

SmartGrid functions are enabled by activating the SmartGrid inputs in different ways according to the table on the right.

To enable the SmartGrid function "SG Low price" as shown in the example, terminal block K23 must have power while terminal block K22 should remain unchanged.

The pool temperature increase that will apply when "SG Low price" is activated is set in the "Pool Settings" menu, as shown in the example.

Alternatively, a schedule can be set up for periodic SmartGrid activation. For more information on setting schedules, refer to the "Schedule" section.



Menu "Advanced/Settings/Heating Circuit/Heating Circuit 1/Program/Comfort".

| K22 (SG A) | K23 (SG B) | Function |
|------------|------------|--------------|
| Open | Open | Normal |
| Open | Closed | Low price |
| Closed | Closed | Overcapacity |
| Closed | Open | Blocking |



The schedule is set to start at 22:30, weekdays.

*The heat pump can control SG up to 2 heating circuits.

Tariff HP

This function is used to block the heat pump during periods when the electricity rate is higher.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Heat Pump" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Tariff HP ext. config." row.

In the "Advanced/Settings/Heat Pump" menu:

- set "Tariff HP" ("On").

For more information, refer to the "Heating Pump" section in the "Advanced/Settings" chapter.

Power limitation

Power limitation can be used, for example, if the if the electricity grid operator requires control of the electricity grid load. The function can limit the operating power of the compressor and the immersion heater.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

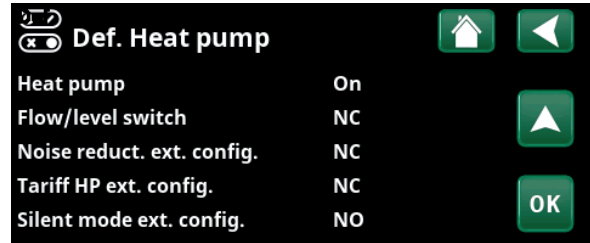
In the "Advanced/Define/Communication" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Power limitation ext. config." row.

In the "Advanced/Settings/Power limitation" menu:

- Access function scheduling from the "Schedule" row.

For more information, see the "Power limitation" section in the "Advanced/Settings" chapter.



Menu: "Advanced/Define/Heat Pump".

A mode for the external control signal ("Normally Open (NO)" or "Normally Closed (NC)") is defined for "TariffHP ext. config.", "Noise reduction ext. config." and "Silent mode ext. config.".

HP Noise reduction

This function can be used to reduce compressor speed in order to reduce the noise level.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Heat Pump" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Noise reduction ext. config." row.

In the "Advanced/Settings/Heat Pump" menu:

- in the "Ext. noise reduction RPS" row, set the compressor speed value applicable for remote control.

For more information, refer to the "Heating Pump" section in the "Advanced/Settings" chapter.

HP Night Mode

This function can be used to reduce compressor speed and fan speed in order to reduce the noise level.

Only applies to air-to-water heat pumps.

In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

In the "Advanced/Define/Heat Pump" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Silent mode ext. config." row.

For more information, refer to the "Heating Pump" section in the "Advanced/Settings" chapter.

Diff Thermostat function

This function is used to block the diff thermostat function.

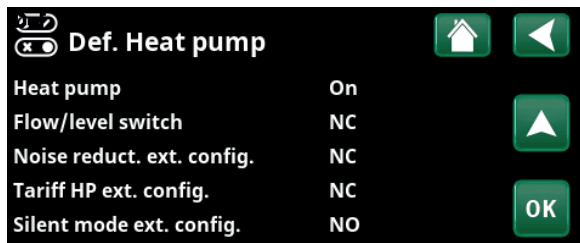
In the "Advanced/Define/Remote Control" menu:

- specify an "Input" for the remote control function.

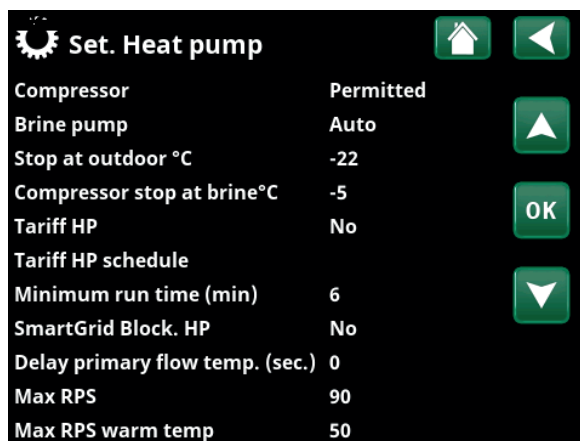
In the "Advanced/Define/Diff thermostat function" menu:

- configure the normal mode for the external control signal (Normally Open (NO)/Normally Closed (NC)) in the "Blocking diff thermostat ext. config." row.

For more information, refer to the "Diff thermostat function" section in the "Advanced/Settings" chapter.



Menu: "Advanced/Define/Heat Pump".
A mode for the external control signal ("Normally Open (NO)" or "Normally Closed (NC)") is defined for "Noise reduction ext. config.".

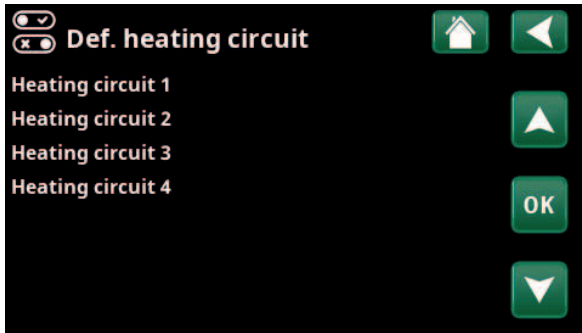


Menu: "Advanced/Settings/Heat Pump".
Set the compressor speed value applicable for remote control in the "Ext. noise reduction RPS" row.

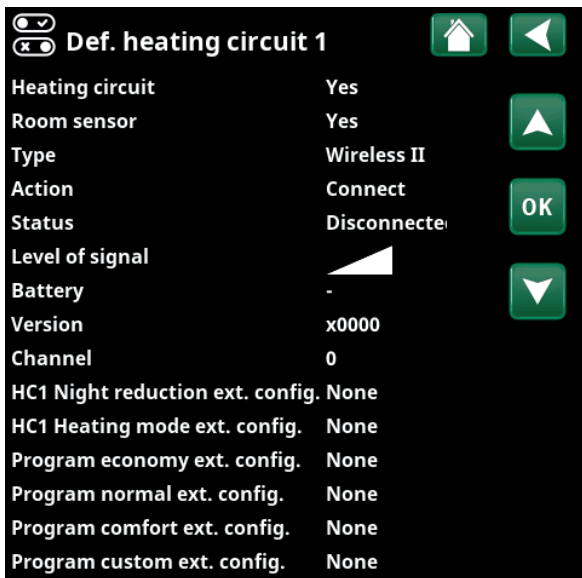
16.3.2 Define, Heating circuit

Heating Circuit 1 **Yes (Yes/No)**

Heating Circuit 1 (HC 1) is predefined by the control system. Heating Circuit 2 is shown on the row underneath if connected.



Menu: "Advanced/Define/Heating Circuit".
Select a heating circuit and press "OK" to access the settings.



Menu: "Advanced/Define/Heating Circuit/Heating Circuit 1".
Wireless room sensor II selected.

Room sensor **Yes (Yes/No/Show)**

Selection "Yes" means that room sensors should be connected to the heating circuit.

If "Show" is selected, the room temperature is displayed but the room sensor is not used for control.

Type **Cable/Wireless/Wireless II/SmartControl**

Select whether the room sensor for the heating circuit has a wired (via cable) or wireless connection.

- **Cable**
Wired room sensor.
- **Wireless**
Select "Wireless" to connect CTC's wireless room sensors to the heating circuit.
See the "CTC Wireless Room Sensor" manual for information on how to connect these sensors.

- **Wireless II**
Select "Wireless II" to connect CTC's wireless room sensor II to the heating circuit.
See the "CTC Wireless Room Sensor II" manual for information on how to connect these sensors.

- **SmartControl**
CTC SmartControl is a separate series of wireless accessories. If "SmartControl" is selected, the connection channel must be selected in the row below. CTC SmartControl accessories are connected to the system via the "Advanced/Define/SmartControl" menu. See the separate CTC SmartControl accessories manual.

HC1- Night reduction ext. config. **None (None/NO/NC)**

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of how to set the normal mode, refer to the "Advanced/Define/Remote Control" chapter.

HC1- Heating mode ext. config. **None (None/NO/NC)**

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of how to set the normal mode, refer to the "Advanced/Define/Remote Control" chapter.

Program * ext. config. **None (None/NO/NC) *economy/normal/comfort/custom**

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of how to set the normal mode, refer to the "Advanced/Define/Remote Control" chapter.

16.3.3 Define, Heat pump

Heat pump **Off (On/Off)**

Select whether the heat pump should be On or Off.

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

This menu bar is displayed if an "Input" for remote control is defined for the "Flow/level switch" function in the "Advanced/Define/Define Remote Control" menu.

Noise reduct. ext. config. **None (None/NC/NO)**

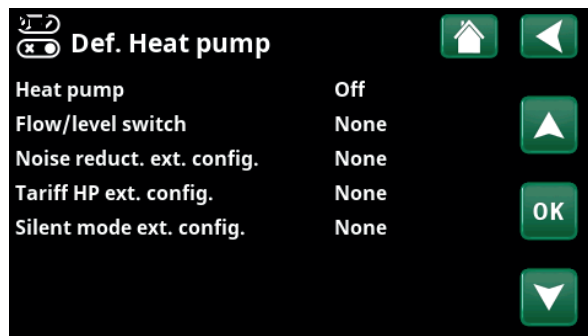
This menu bar is displayed if an "Input" for remote control is defined for the "HP Noise Reduction" function in the "Advanced/Define/Remote Control" menu.

Tariff HP ext. config. **None (None/NC/NO)**

This menu bar is displayed if an "Input" for remote control is defined for the "HP Tariff" function in the "Advanced/Define/Remote Control" menu.

Silent mode ext. config.* **None (None/NC/NO)**

This menu bar is displayed if an "Input" for remote control is defined for the "Silent Mode" function in the "Advanced/Define/Remote Control" menu.



Menu: "Advanced/Define/Heat Pump".

16.3.4 Define, Communication

myUplink **No (Yes/No)**

Select "Yes" to connect to the heat pump from the myUplink app.

Web **No (Yes/No)**

Select "Yes" to connect to the local web server. Internet router and firewall required.

El.prices **myUplink/myUplink ext./BMS/No**

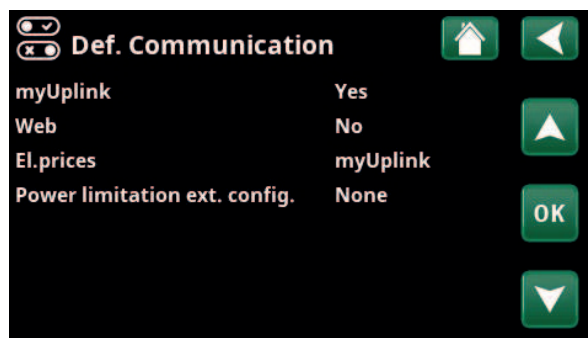
Select "myUplink" to connect the heat pump to the myUplink mobile app for electricity price control.

Select "myUplink ext." to connect via myUplink to an external price control app. This option is not available at the moment.

Select "BMS" to connect via property management.

Power limitation ext. config. **None (None/NC/NO)**

This menu bar is displayed if an "Input" for remote control is defined for the "Power limitation" function in the "Advanced/Define/Remote Control" menu.



Menu: "Advanced/Define/Communication".

i For more information, see the "Installation, Communication" chapter of this manual.

*Only applies to air-to-water heat pumps.

16.3.5 Define, DHW

Extra DHW ext. config. **None (None/NC/NO)**

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of normal mode settings, refer to the "Def. Remote Control" section of the "Advanced/Define" chapter.

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

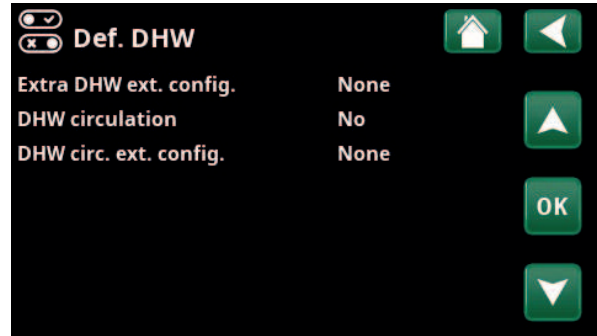
"Yes" DHW circulation with circulation pump G40 must be defined. This functionality option requires the Expansion Card (A3) accessory in order for DHW circulation to be monitored by the product.

"DHW" Alternative with external DHW circ. pump which is not controlled by the product. Does not require expansion card (A3).

DHW circ. ext. config. **None (None/NC/NO)**

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of normal mode settings, refer to the "Def. Remote Control" section of the "Advanced/Define" chapter.



Menu: "Advanced/Define/DHW".

16.3.6 Define, Diff thermostat function

Diff thermostat function **No/Yes**

The differential thermostat function is used if you want to charge your CTC EcoZenith from a water-jacketed stove, or another heating source.

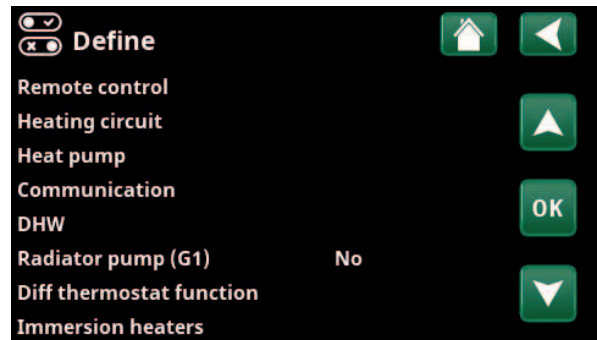
However, this function cannot be combined with the same function in a solar heating circuit (when e.g. an CTC EcoTank is connected to an CTC EcoZenith i360). This is because the same outlets and sensors are used for both functions.

Blocking diff thermostat ext. config. **None (None/NC/NO)**

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when controlling the function remotely.

For examples of normal mode settings, refer to the "Def. Remote Control" section of the "Advanced/Define" chapter.

Information about the Differential thermostat function is shown in chapter "Operation data".



Menu: "Advanced/Define".

16.3.7 Define, Immersion heater

Tariff EL ext. config. **None (NO/NC/None)**

The function can block the immersion heater at times of high electricity tariffs by means of an external signal.

This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of normal mode settings, refer to the "Def. Remote Control" section of the "Advanced/Define" chapter.



Menu: "Advanced/Define/Immersion heater".

16.3.8 Define, External heat source (EHS)

External heat source/Diff. thermostat can be defined together with either "Active cooling" or "External boiler" because the functions share the same inputs and outputs on the relay card.

External heat source **No (No/Yes)**

Specify here whether an "External heat source" should be connected ("Yes").

16.3.9 Define, External boiler

External boiler can be defined together with either "External heat source/Diff. thermostat" or "Active cooling" because the functions share the same inputs and outputs on the relay card.

External boiler **Yes (No/Yes)**

Specify here whether "External boiler" should be used.

Map to relay **A2 (A2/A3)**

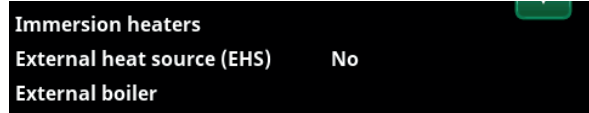
Specify whether the external boiler is connected to relay card A2 or expansion card A3.

The menu bar is only displayed if passive cooling is defined in the "Advanced/Define/Cooling" menu.

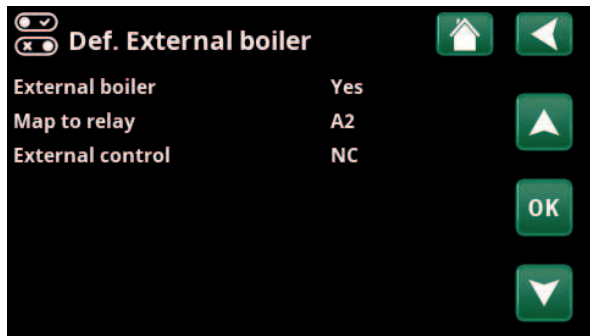
External control **NC (NO/NC/None)**

Determine the normal mode (Normally Open (NO) or Normally Closed (NC)) for the external control signal when controlling the function with a remote control.

This menu bar is only displayed if the input "Tariff ext. boiler" is defined in the "Advanced/Define/Remote control" menu.



Menu: "Advanced/Define/External heat source".



Menu: "Advanced/Define/External boiler".

16.3.10 Define, Cooling

Active cooling and heating circuit 2 cannot be used simultaneously.

Active cooling cannot be defined together with "External heat source/Diff. thermostat" or "External boiler" because the functions share the same inputs and outputs on the relay card.

Cooling **Active (Passive/No/Active)**

Selection "Passive" means that the brine in the system is cooled by the surrounding ground. Selection "Active" means that the compressor produces cooling.

Common Heating/Cooling **No (Yes/Yes with G11/No)**

Selection "Yes" means that cooling and heating are distributed in the same heating circuit.

Selection "Yes with G11" means that the heat pump's charge pump also runs when cooling is required. The cold water passes through the CTC EcoZenith i360 and must maintain a condensation safe temperature.

Selection "No" means that the temperature of the water is regulated by a different heating circuit.

Condense secured? **No (No/Yes)**

The menu bar is displayed when passive cooling has been selected (option "Passive").

If the system is condensation-proofed, significantly lower temperatures are permitted at various points in the system. **WARNING!** Build-up of condensation in the house structure can lead to damp and damage from mildew.

"No" means a setting range for room temperature of 18-30 °C and "Yes" means a setting range of 10-30 °C

In the event of doubt, contact a professional for an assessment.

Cooling tank **No (No/Yes/Only tank)**

Select "Yes" if the cooling tank is connected to the system.

The selection "Only tank" is used to cool the tank. The temperature towards the cooling circuits must be controlled by an external controller (not from CTC).

Radiator pump (G2) **No (No/Yes)**

Select "Yes" if radiator pump G2 is connected to the system.

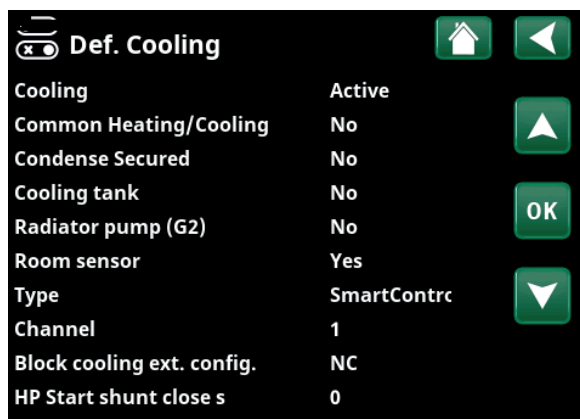
The menu bar is displayed for the following menu selection:

- Common Heating/Cooling: No
- Cooling tank: No

Room sensor **No (Yes/No/Show)**

Selection "Yes" means that room sensors should be connected to the heating circuit.

If "Show" is selected, the room temperature is displayed but the room sensor is not used for control.



Menu: "Advanced/Define/Cooling".

! A room sensor must always be used in that part of the property which is to be cooled by passive cooling, as it is the room sensor which determines/controls cooling capacity.

Type **Cable/Wireless/Wireless II/SmartControl**

Select whether the room sensor for the heating circuit has a wired (via cable) or wireless connection.

- **Cable**
Wired room sensor.
- **Wireless**
Select "Wireless" to connect CTC's wireless room sensors to the heating circuit. See the "CTC Wireless Room Sensor" manual for information on how to connect these sensors.
- **Wireless II**
Select "Wireless II" to connect CTC's wireless room sensor II to the heating circuit. See the "CTC Wireless Room Sensor II" manual for information on how to connect these sensors.
- **SmartControl**
CTC SmartControl is a separate series of wireless accessories. If "SmartControl" is selected, the connection channel must be selected in the row below. CTC SmartControl accessories are connected to the system via the "Advanced/Define/SmartControl" menu. See the separate CTC SmartControl accessories manual.

Block cooling, ext. config. **None (None/NC/NO)**

This menu bar is displayed if an "Input" for remote control is defined for the "Block Cooling" function in the "Advanced/Define/Remote Control" menu.

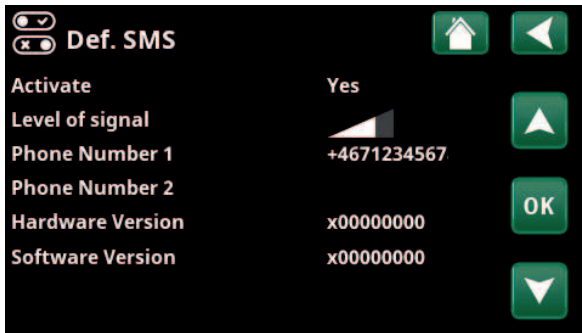
The function can be used to turn off cooling with the help of a humidity sensor when there is a risk of condensation. This menu defines the Normally Open (NO) or Normally Closed (NC) mode for the external control signal when remotely controlling the function.

For examples of normal mode settings, refer to the "Def. Remote Control" section of the "Advanced/Define" chapter.

HP Start, Shunt close (s) **180 (0...240)**

Displayed when the cooling tank is defined in the system. When the heat pump starts, the shunt Y2 closes this time (seconds).

16.3.11 Define, SMS



Menu: "Advanced/Define/ SMS".

Activate **No (Yes/No)**

If "Yes" is selected, the menus below are displayed:

Level of signal

The signal strength 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 accessory is shown here.

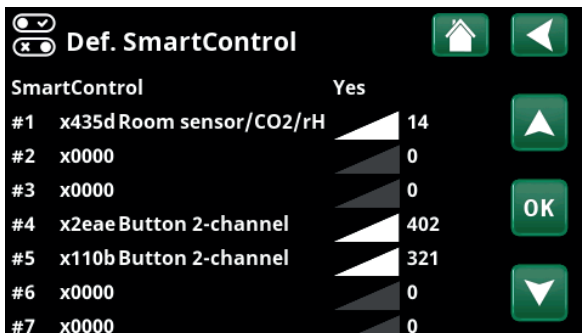
Software Version

The software version of the SMS accessory is shown here.

NB: For more information about the SMS function, refer to the "Installation and Maintenance Manual" for CTC SMS.

16.3.12 Define, SmartControl

CTC SmartControl is a separate series of wireless accessories.



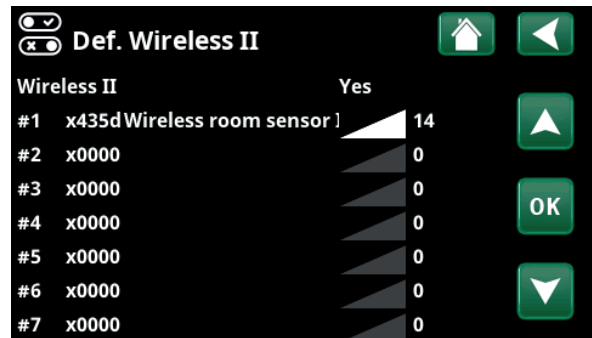
Menu: "Advanced/Define/SmartControl".

SmartControl **No (Yes/No)**

If "Yes" is selected, CTC SmartControl accessories can be connected to the heating circuit. See the connection procedure in the separate CTC SmartControl accessories manual.

16.3.13 Define, Wireless II

CTC Wireless Room Sensor II is a separate series of wireless accessories.



Menu: "Advanced/Define/Wireless II".

Wireless II **No (Yes/No)**

If "Yes" is selected, CTC Wireless Room Sensor II accessories can be connected to the heating circuit. See the connection procedure in the separate CTC Wireless Room Sensor II accessories manual.

16.3.14 Define, Current sensor

Current sensor **No (Yes/No)**

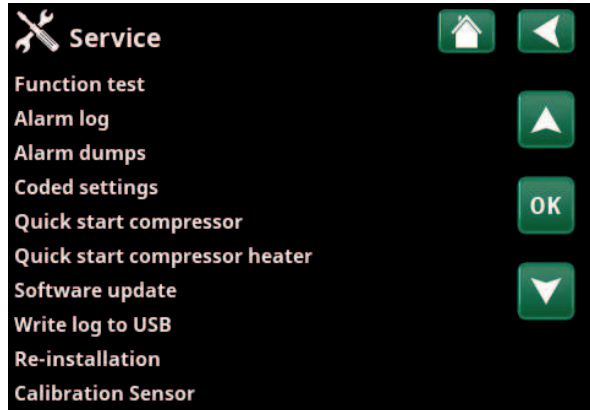
Select "Yes" if current sensors are to be connected to the system.

For more information, refer to the "Current Sensors" section in the "Advanced/Settings" chapter.



16.4 Service

! NB: This menu is intended for the installer only.

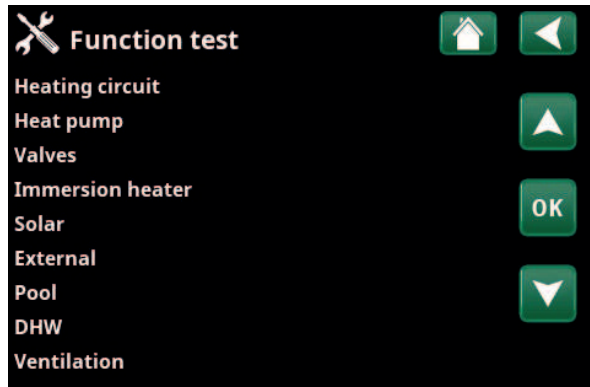


Menu: "Advanced/Service".

16.4.1 Function test

From this menu, the installer can test the connection and function of separate components of the heating circuit. When this menu is activated, all control functions are stopped. The only protection against incorrect operation are the pressure sensors and the immersion heater's overheating protection device. The heat pump returns to normal operation after 10 minutes of inactivity or when exiting the "Function Test" menu. When the menu is opened, all automatic functions are stopped and testing can be performed.

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



Menu: "Advanced/Service/Function test".

16.4.1.1 Heating Circuit

If several heating circuits have been installed, they will all be displayed here.

Heating circ pump (1-) **Off (On/Off)**

Starts and stops the respective radiator pump.

Mixing valve (1-)

Opens and closes the respective mixing valve.

LED room sensor **Off (On/Off)**

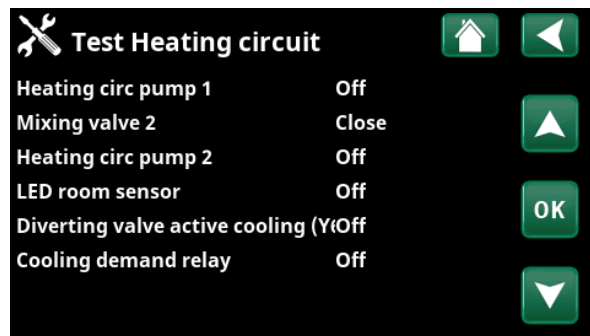
The room sensor alarm functions can be controlled from here. When activated, the respective room sensor's red LED comes on steady.

Cooling valve **Off (On/Off)**

Switches the cooling valve Y61 on or off if "Active cooling" is defined in the "Advanced/Define/Cooling" menu.

Cooling demand relay **Off (On/Off)**

Switches the cooling valve Y62 on or off if "Active cooling" is defined in the "Advanced/Define/Cooling" menu.



Menu: "Advanced/Service/Function test/Heating Circuit".

16.4.1.2 Heat Pump

HP Compressor 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 pump/Fan Off (Off/On)

Function test brine pump or fan (air-to-water HP).

HP Charge pump Off (Off/0...100)

Function test charge pump 0–100%.

Defrost Manually Off (Off/On)

When the "Manual defrosting" function is tested, a defrosting cycle will be performed in the air-to-water heat pump. Defrosting cannot be stopped once it has been started and the defrosting programme will be completed.

Compressor heater Off (Off/On)

Function test compressor heater.

Drip tray heater 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). Fitted to air-to-water HP.

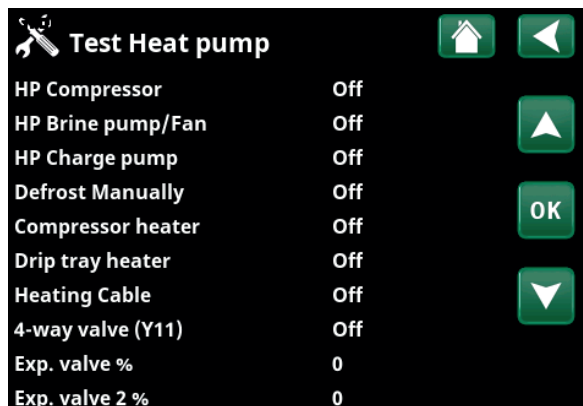
Exp. valve /2 % 0 (0...100)

Function test expansion valve. This menu bar is displayed depending on heat pump model.

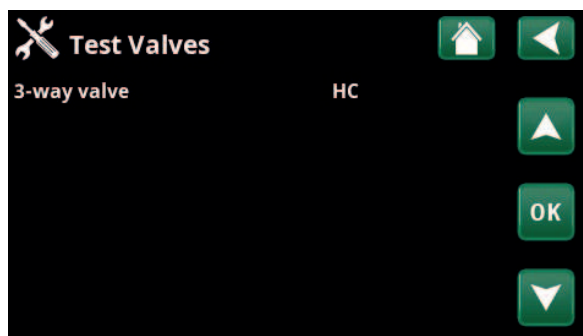
16.4.1.3 Valves

The following valves are function tested from this menu:

3-way valve HC/DHW



Menu: "Advanced/Service/Function test/Heat Pump".



Menu: "Advanced/Service/Function test/Valves".

16.4.1.4 Immersion heaters

Tests the immersion heaters per phase and step (On/Off).

Immersion heater L1A Off (Off/On)

Immersion heater L1B Off (Off/On)

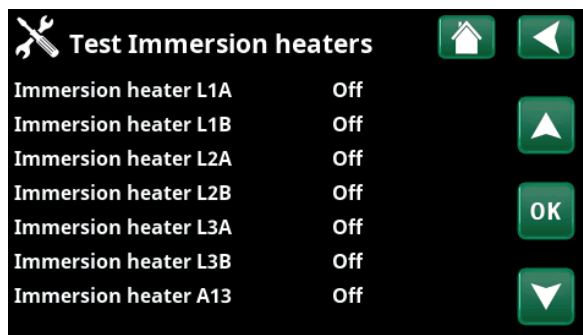
Immersion heater L2A Off (Off/On)

Immersion heater L2B Off (Off/On)

Immersion heater L3A Off (Off/On)

Immersion heater L3B Off (Off/On)

Immersion heater A13 Off (Off/On)



Menu: "Advanced/Service/Function test/Immersion heaters".

16.4.1.5 External (Diff Thermostat/External heat source/External boiler)

Pump (G46) Off (On/Off)

Function test of charge pump for external heat source.

Mixing valve (Y41) Close (- /Close/Open)

Function test of mixing valve for external heat source.

Mixing valve (Y42) Close (- /Close/Open)

Function test of mixing valve for External Boiler.

External boiler Off (On/Off)

Function test of external boiler.

Temperatures

EHS-tank °C (B47) 0 °C

Shows temperature value on sensor in EHS-tank.

Diff thermostat °C (B46) 0 °C

Shows temperature value on sensor for diff thermostat tank.

External boiler °C (B9) 0 °C

Shows temperature value on sensor in external boiler.

16.4.1.6 DHW

Tap water pump (G5) 0% (0...100)

Function test of the tap water pump for hot water.

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

Test of hot water circulation pump.

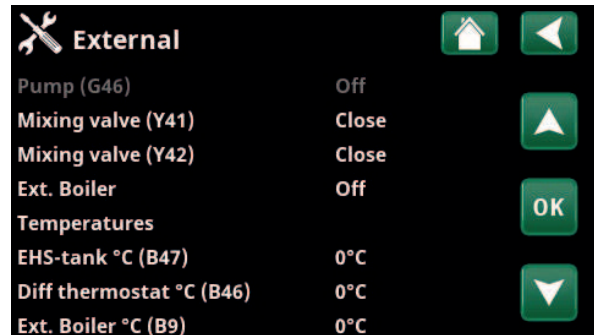
Sensor

DHW °C (B25) 0 °C

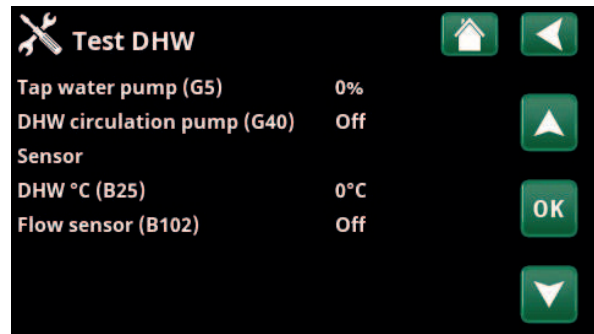
Displays current hot tap water temperature.

Flow sensor (B102) Off (On/Off)

Shows whether there is a flow in the DHW pipe.



Menu "Advanced/Service/Function test/External".



Menu "Advanced/Service/Function test/DHW".

16.4.2 Alarm log

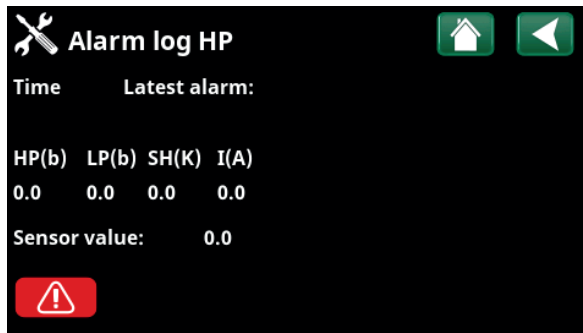
In the alarm log, up to 500 alarms can be displayed at the same time.

An alarm which reoccurs within an hour is ignored so as not to fill up the log.

Click an alarm row to see more information about an alarm.

If it is a "sensor alarm", a sensor value will be displayed at the bottom of the page from when the alarm was triggered for further troubleshooting.

For alarms related to the heat pump, values can be displayed from sensors for pressure (HP, LP), temperature (SH=Superheating) and current (I).

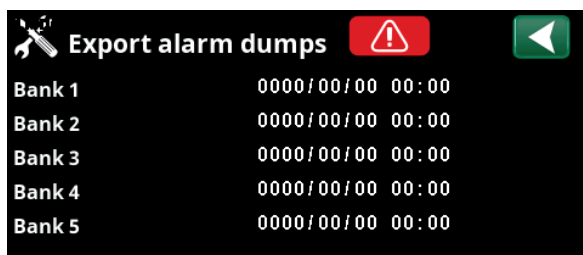


Menu: "Advanced/Service/ Alarm log".

! NB: 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.

16.4.3 Alarm dumps

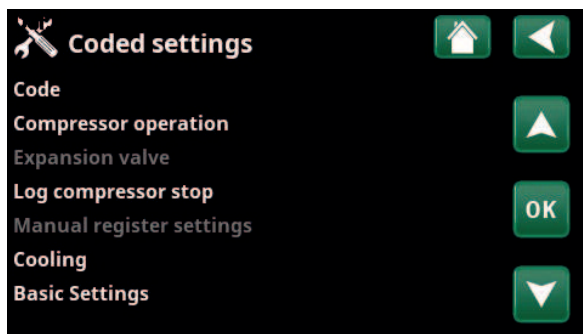
Export the alarms displayed in the alarm log to a USB drive. A dump can consist of one or more alarms as well as specific values before and after the alarm was triggered.



Menu: "Advanced/Service/Alarm dumps".

16.4.4 Coded settings

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 look without any code to see what options feature in the menu.



Menu: "Advanced/Service/Coded settings".

16.4.5 Quick start compressor

The delay normally prevents compressor start earlier than 10 mins 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 "System Types" 1 to 3, the degree minutes loss is set to the value that starts all heat pumps.

16.4.6 Quick start compressor heater

This function starts the compressor preheater, which speeds up the process of getting the compressor ready to start.

Only applies in combination with CTC EcoAir 700M.

16.4.7 Software update

The display software can be updated either via USB drive or online. The rows are greyed out until the USB drive is installed or the display is connected to the internet.

Click OK to confirm the upload.

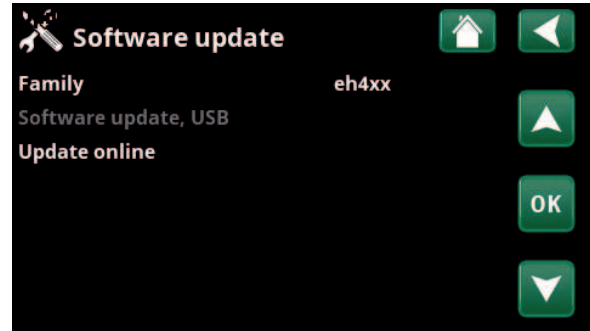
The settings are retained during updating, but the old values are overwritten by any new factory values.

16.4.8 Write log to USB

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

16.4.9 Re-installation

This command relaunches the installation sequence. First, confirm that you want to reinstall to access the installation wizard, refer to the "Installation Guide" and "First Start" chapters.



Menu: "Advanced/Service/ Software Update".

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

! NB: Turn off the power and always restart the product after software update. Several minutes may pass before the display communicates clearly after restart.

17. Factory settings CTC EcoZenith i360

| Designation | Factory setting | Min value | Max value | Alternative | | Set during Installation |
|-----------------------------------|-----------------|-----------|-----------|-------------|-----|-------------------------|
| Heating circuit | | | | | | |
| Program Economy | - | | | | | |
| Room temp change °C | -2.0 | -5.0 | -0.1 | | | |
| Off delay, min | 30 | 10 | 600 | | | |
| Program Comfort | - | | | | | |
| Room temp change °C | 2.0 | 0.1 | 5.0 | | | |
| Off delay, min | 30 | 10 | 600 | | | |
| Max primary flow °C | 55 | 30 | 70 | | | |
| Min primary flow °C | Off | 15 | 65 | | | |
| Heating, mode | Auto | | | Auto On | Off | |
| Heating mode, ext | - | | | Auto On | Off | |
| Heating off, out °C | 18 | 2 | 30 | | | |
| Heating off, time (min) | 120 | 30 | 1440 | | | |
| Heating on, time (min) | 120 | 30 | 1440 | | | |
| Night reduction down to °C | 5 | -40 | 40 | | | |
| Room temp reduced, night red. °C | -2 | -40 | 0 | | | |
| Room temp. reduced, holiday °C | -2 | -40 | 0 | | | |
| Prim. flow reduced, night red. °C | -3 | -40 | 0 | | | |
| Prim. flow reduced, holiday °C | -3 | -40 | 0 | | | |
| Regulate room temp (min.) | Off | 30 | 600 | | | |
| Alarm room temp °C | 5 | -40 | 40 | | | |
| SmartGrid Low price °C | Off | 1 | 5 | | | |
| SmartGrid Overcapacity °C | Off | 1 | 5 | | | |
| SmartGrid Blocking | Off | | | On | | |
| Max time heating (min.) | 20 | 10 | 120 | | | |
| Charge pump % | 60 | 25 | 100 | | | |
| Drying period mode | Off | 1 | 3 | | | |
| Drying period temp °C | 25 | 25 | 55 | | | |
| Heat pump | | | | | | |
| Compressor | Blocked | | | Permitted | | |
| Brine pump (CTC EcoPart) | Auto | | | 10d | On | |
| Stop at outdoor °C (CTC EcoAir) | -22 | -22 | 10 | | | |
| Compressor stop at brine °C | -5 | -15 | 10 | | | |
| Tariff HP | No | | | Yes | | |
| SmartGrid Block. HP | No | | | Yes | | |
| Start at degree minute | -60 | -900 | -30 | | | |
| Start at degree minute cooling | 60 | 30 | 900 | | | |
| Delay primary flow temp. (sec.) | 120 | 30 | 300 | | | |
| Max RPS | 100 | 50 | 120 (80) | | | |
| Max RPS warm temp | 50 | 50 | 100 | | | |
| Ext. noise reduction RPS | 50 | 20 | 120 | | | |
| Cold temp limit | 0 | -15 | 0 | | | |
| Warm temp limit | 20 | 0 | 20 | | | |
| Passive cooling brine pump On | On | | | On | Off | |

| Designation | Factory setting | Min value | Max value | Alternative | | Set during Installation |
|-----------------------------------|--------------------------------|-----------|------------|-------------|------|-------------------------|
| Max. main current A | 13/16/20*** | | | | | |
| HP relay failsafe | 0 | 0 | 7 | | | |
| Function HP relay | - | | | | | |
| Defrost heating Temp Min m | 10 | 0 | 360 | | | |
| Defrost heating Temp Max m | 10 | 0 | 360 | | | |
| Defrost heating Temp Min °C | 10 | -40 | 40 | | | |
| Defrost heating Temp Max °C | -10 | -40 | 40 | | | |
| Immersion heater | | | | | | |
| Max immersion heater kW | 9.1* | 0 | 11.9/9/10* | | | |
| Max immersion heater DHW kW | 9.1* | 0 | 11.9/9/10* | | | |
| Start at degree minute | -500 | -900 | -30 | | | |
| Diff step, degree minute | -50 | -300 | -20 | | | |
| Main fuse A | 20 | 10 | 90 | | | |
| Conv. factor curr. sensors | 1 | 1 | 10 | | | |
| Tariff EL | No | | | Yes | | |
| SmartGrid Block. immersion | No | | | Yes | | |
| Hot water (DHW tank) | | | | | | |
| Program DHW | Normal/ Economy/ Comfort | | | | | |
| Charge start % | No/No/No | | | | | |
| Charge stop upper/lower °C | 55/50/58 | | | | | |
| Charge start lower °C | 40/40/53 | | | | | |
| DHW °C | 50/45/45 | | | | | |
| Permitted Add.heat, outdoor °C | No/No/No | | | | | |
| Start/stop diff upper °C | 5 | 3 | 7 | | | |
| Max time DHW (min) | 30 | 10 | 150 | | | |
| Charge pump % | 50 | 20 | 100 | | | |
| SmartGrid Blocking °C | Off | -50 | -1 | | | |
| SmartGrid Low price °C | Off | 1 | 30 | | | |
| SmartGrid Overcapacity °C | Off | 1 | 30 | | | |
| SmartGrid Overcapacity block HP | No | | | Yes | | |
| Min RPS DHW charging | 50 | 50 | 100 | | | |
| Run time DHW circ. (min) | 4 | 1 | 90 | | | |
| Time DHW circ. (min) | 15 | 5 | 90 | | | |
| Add. heat DHW | No | | | Yes | Auto | |
| Time ExtraDHW Remote control | 0.0 | 0.0 | 10.0 | | | |
| HC2 Mixing valve close | 120 | 1 | 300 | Off | | |
| External heat source (EHS) | | | | | | |
| Charge start °C | 70 | 20 | 90 | | | |
| Stop diff. °C | 5 | 1 | 15 | | | |
| SmartGrid Blocking cap. | No | | | Yes | | |

*Applies to 3x400V, for other variants see Electrical data - Technical data.
For language choices "German" and "French" the max electric power is factory set at 0.0 kW.

***The value may vary depending on the heat pump model.

| Designation | Factory setting | Min value | Max value | Alternative | | Set during Installation |
|-----------------------------------------|-----------------|-----------|-----------|-------------|-----|-------------------------|
| Diff thermostat function | | | | | | |
| Charge start diff temp °C | 7 | 3 | 30 | | | |
| Charge stop diff temp °C | 3 | 2 | 20 | | | |
| Charge temperature °C | 60 | 10 | 80 | | | |
| Blocking diff thermostat | No | | | Yes | | |
| External Boiler | | | | | | |
| Ext. Boiler mode | Auto | | | On | Off | |
| Boiler start out temp. | 0 | -30 | 30 | | | |
| Delay stop ext boiler | 0 | 0 | 1440 | | | |
| Boiler, open mix.valve °C | 70 | 20 | 90 | | | |
| Stop diff. °C | 5 | 1 | 15 | | | |
| Start boiler, degree minute | -300 | -900 | -30 | | | |
| Stop boiler diff, degree minute | -100 | -300 | -20 | | | |
| Priority DHW tank | Low | | | High | | |
| SmartGrid Block. boiler | No | | | Yes | | |
| Tariff ext boiler | No | | | Yes | | |
| Ext boiler diff °C | 3 | Off/1 | 15 | | | |
| Cooling | | | | | | |
| Room temp. cooling °C | 25.0 | 18.0 | 30.0 | | | |
| Cooling permit. from outdoor T °C** | Off | 0 | 39 | | | |
| Active delay** | 10 | 1 | 600 | Off | | |
| Heating off, delay** | 10 | 0 | 600 | | | |
| Start delay** | 180 | 1 | 240 | Off | | |
| Diff. delay calc.** | 10 | 1 | 600 | Off | | |
| Max primary flow °C | 20 | 2 | 40 | | | |
| Min primary flow °C | 18 | 2 | 40 | | | |
| Min Flow temp Cooling °C | 18 | 2 | 30 | | | |
| Max. diff. room temp. cooling °C | 5 | 0 | 20 | | | |
| Primary flow diff at outdoor T +20 °C** | 2 | 1 | 10 | | | |
| Primary flow diff at outdoor T +40 °C** | 2 | 1 | 10 | | | |
| Tank max °C | 30 | 10 | 50 | | | |
| Tank min °C | 5 | 5 | 50 | | | |
| Max time, Cooling (min) | 20 | 1 | 150 | | | |
| Charge pump % | 50 | 20 | 100 | | | |
| SmartGrid Low price. °C | Off | 1 | 5 | | | |
| SmartGrid Overcapacity °C | Off | 1 | 5 | | | |
| Ext. block cooling | No | | | Yes | | |
| Power limitation | | | | | | |
| Mode | Blocking | | | | | |
| Limit value (kW) | 4.2 | 1.0 | 100.0 | | | |
| Offset (kW) | 0.2 | 0.0 | 10.0 | | | |
| Allow power peak | Yes | | | No | | |

**Displayed if "Active cooling" has been defined.

18. Troubleshooting

18.1 Troubleshooting, heat

| Problem | Cause | Action |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature too cold | The current monitor limits the heat pump power | The information message "High curr., reduced elec. (X A)" is shown. An electrician can adjust the load of the three phases or change the fuse size. |
| | Insufficient power permitted | Check that the power is not limited by the current monitor/excessively high current in the house. |
| | | Identify current sensor, otherwise limits the phase with the highest load. Menu: "Advanced/Service/Control current sensors". |
| | Permitted immersion heater power is too low | Increase the permitted electrical power in the menu: "Advanced/Settings/Immersion heater/Max immersion heater kW". |
| Max permitted primary flow temperature set too low | "Advanced/Settings/Heating Circuit", increase "Max primary flow °C". | |
| Incorrect temperature | Heating curve set incorrectly | Change inclination (when outdoor temperature < 0°C) "Advanced/Settings/Heating circuit". Change curve inclination °C. |
| | | Change adjustment (when outdoor temperature > 0°C) "Advanced/Settings/Heating circuit". Change curve adjustment °C. |
| | Install room sensor. | |
| Temperature reduction incorrectly activated | Change in the menu: Advanced/Settings/Heating circuit" or "Room temp.", "Night reduction" or "Holiday". | |
| Heat source out of order | Make sure the heat pump or other heat source is operational and that no error messages are shown. Contact the installation engineer in the first instance. | |
| Uneven indoor temperature | Air in radiator system | Bleed the radiator system. |
| | Radiator system set up incorrectly | Open the radiator thermostats completely. Evaluate after a few days, if too warm in any room, the thermostat can be turned down. |
| | | Fault in radiator, should be evenly hot, replace. |
| Room sensor incorrectly situated | Change the placement so that the room sensor reflects the indoor temperature of the house. | |
| | Make sure the room sensor is not in direct sunlight or by a door or staircase with uneven air circulation. | |
| | The room sensor functions best in an open-plan layout. | |

18.2 Troubleshooting, hot water

| Cause | Action |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Incorrect pressure in system | Check pre-pressure in the expansion tank with a pressure gauge. 0.5–0.6 bar. Fill the heating circuit; pressure should increase to approx. 1–1.5 bar. |
| Air pockets in various parts of the system | Bleed the tank, turn the safety valve. |
| | Bleed the tank, check that the automatic bleeder on the tank works. |
| | Perform a function test on the diverting valve in the menu: “Advanced/Service/Function test/Valves/3-way valve”. Switch between DHW and HC. |
| | Perform a function test on the tap water pump in the menu: “Advanced/Service/Function test/DHW/Tap water pump (G5)”. Increase and decrease the speed. |
| | Increase the system pressure to 2.5 bar by filling the radiator system; then test the safety valve; water and air pockets are released. |
| Cold water from the building mixer is leaking back. Causes dilution of hot water | Test the kitchen mixer on full heat, switch off, and then open the tap in the shower/bathroom straight away. If the hot water pipe under the kitchen mixer cools down quickly, it is leaking cold water backwards. Replace the mixer. |
| Hot water is collecting up too quickly. The DHW heat exchanger is not managing to transfer heat. | Let the water into the bathtub a little more slowly and use a low-flow shower head. |
| Hot water requirements set incorrectly | Raise the level in the menu: “DHW/Economy”, “Normal” or “Comfort”. |
| Heat source out of order | Make sure the heat pump or other heat source is operational and that no error messages are shown. Contact the installation engineer in the first instance. |

18.3 Information messages

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



[I002] HC1 Heating off

[I005] HC2 Heating off

Shows for each heating circuit that the product is operating in summer mode when only DHW is required, not heating.

[I008] Tariff HP off

Indicates that Tariff has switched off the heat pump.

[I009] Compressor blocked

The compressor is set to be shut down, e.g. before drilling or digging has been carried out for the collector coils. The product comes with the compressor switched off. This option is selected in the "Advanced/Settings/Heat Pump" menu.

[I010] Tariff EL Off

Shows that tariff has switched off the immersion heater elements.

[I011] Round circulation

Indicates that round circulation is active. Round circulation 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 output are blocked when round circulation is active.

[I012] High curr., reduced elec.

- The property's main fuses risk being overloaded due to, for example, the simultaneous use of several power-hungry appliances. The product reduces the immersion heaters electrical output during this period.
- 2h max. 6 kW. Immersion heater elements are limited to 6 kW for 2 hours after being switched on. This message appears if more than 6 kW are required during the product's first 2 hours of operation. This is applicable after a power outage or a new installation.

[I013] Start delay

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

[I014] Drying period active, d

Indicates that the floor function is active and displays the time (days) remaining that the function will be active.

[I017] SmartGrid: Blocking

[I019] SmartGrid: Low price

[I018] SmartGrid: Overcapacity

The product is externally affected by "SmartGrid". See also "Define/Remote control/SmartGrid".

[I021] Ext. Ctrl Heating 1

[I022] Ext. Ctrl Heating 2

The remote control affects whether the heating is to be on or off. If the heating is switched off, "Heating off, heating circuit 1/2" is also displayed.

[I028] Holiday period

Displayed when setting the holiday schedule, which entails lowering the room temperature and that no hot water is produced.

[I029] Bleeding DHW in progress

During the bleeding process, hot water will not be supplied at a continuous temperature. Hot water production can start when the bleeding process is complete and the message is no longer displayed.

[I030] Driver block under voltage

The heat pump has stopped due to insufficient mains voltage. The product will attempt to restart.

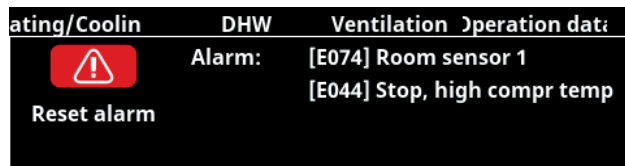
[I031] Driver block alarm

The heat pump has stopped due to driver failure; for example, voltage or excessive temperature. The product will attempt to restart.

[I050] Power limitation

Indicates that power limitation is activated.

18.4 Alarm messages



If a fault occurs with e.g. a sensor, an alarm is triggered. A message appears on the display with information about the fault.

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. A persisting fault must first be rectified before it can be reset. Some alarms are reset automatically if the fault ceases.

| Alarm messages | Description |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [E010] Compressor type? | This message appears if no information about the compressor type is available. |
| [E013] EVO off | This message appears when there is a fault with the expansion valve control. |
| [E024] Fuse blown | This message appears when the fuse (F1, F2) has been triggered. |
| [E026] Heat pump | This message appears if the heat pump is in alarm mode. |
| [E027] Comm. error HP | This message is displayed when the display card (A1) cannot communicate with the HP control card (A5). |
| [E063] Comm. err. relay board | This message is displayed when the display card (A1) cannot communicate with the relay card (A2). |
| [E056] Comm. err. motor protection | This message is displayed when the HP control card (A5) cannot communicate with the motor protection (A4). |
| [E086] Comm. err. expansion card | This message is displayed when the display card (A1) cannot communicate with CTC Solar control/Expansion card (A3). |
| [E035] High pressure switch | The refrigerant's high pressure switch has been triggered. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E040] Low brine flow | Low brine flow is often caused by air in the collector system, especially immediately following installation. Collectors which are too long can also be a cause. Press reset and check whether the alarm recurs. Also check the brine filter that has been installed. If the fault recurs, contact your installer. |
| [E041] Low brine temp. | Incoming brine temperatures from bore hole/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. |
| [E044] Stop, high compr temp | This message appears when the compressor temperature is high. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E045] Stop, low evaporation | This message appears when the evaporation temperature is low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E046] Stop, high evaporation | This message appears when the evaporation temperature is high. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E047] Stop, low suction gas exp. valve | 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. |
| [E048] Stop, low evaporation exp. valve | 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. |
| [E049] Stop, high evaporation exp. valve | 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. |

| Alarm messages | Description |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [E050] Stop, low superheating exp. valve | This message appears when the expansion valve's overheat temperature is low. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E052] Phase 1 missing [E053] Phase 2 missing [E054] Phase 3 missing | This message appears in the event of a phase failure. |
| [E055] Wrong phase order | 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. This will require changing two of the phases into the product. The power supply to the system must be shut off when rectifying this fault. This fault generally only occurs during installation. |
| [Exxx] Alarm 'sensor' | <p>An alarm message is displayed if an error occurs with a sensor that is not connected or has short-circuited and if the value is outside the sensor's range. If this sensor is important to the system's operation, the compressor stops. This requires the alarm to be reset manually after the fault has been rectified. The alarm is reset automatically after correction for the following sensors:</p> <p>[E140] Sensor EHS-tank (B47), [E031] Sensor prim flow 1 (B18), [E032] Sensor prim flow 2 (B2), [E074] Outdoor sensor (B15), [E074] Room sensor 1 (B11), [E075] Room sensor 2 (B12), [E005] Brine out sensor, [E003] Brine in sensor, [E028] HP in sensor, [E029] HP out sensor, [E037] Hot gas sensor, [E080] Suction gas sensor, [E036] High pressure sensor, [E043] Low pressure sensor.</p> |
| [E057] Motor protect high curr. | High current into the compressor has been detected. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E058] Motor protect low curr. | Low current into the compressor has been detected. Press reset and check whether the alarm recurs. If the fault recurs, contact your installer. |
| [E061] Max thermostat | <p>This alarm message appears if the product becomes too hot.</p> <p>During installation, make sure the max. thermostat (F10) has not been triggered as there is a chance of this occurring if the boiler has been stored in extremely cold temperatures, Reset it by pressing in the button on the electrical switchboard behind the front panel.</p> |
| [E135] Risk of freezing | 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 CTC EcoAir) |
| [E152] 4-way valve | This alarm message is displayed if a fault occurs with CTC EcoAir's 4-way valve or if the connection pipes to the CTC EcoAir are incorrectly connected. Press reset and check whether the alarm recurs. If the alarm recurs, check that the charge pump is pumping water to the heat pump's lower connection. If the fault recurs, contact your installer. |
| [E087] Driver | Press reset and check whether the alarm recurs. |
| [E088] Driver: 1 - [E109] Driver: 29 Driver fault. | If the fault recurs, contact your installer and tell them the error code number where applicable. |
| [E117] Driver: Offline | Communication error. The electrical connection box and driver of the heat pump are not communicating. |
| [E163] Defrost max time duration | The heat pump has not had time to complete defrosting within the maximum time. Make sure that any ice on the evaporator has disappeared. |

18.5 Critical alarms - Risk of freezing



[E135] Risk of freezing (after four alarms, a new alarm is displayed [E218])

[E211] Risk of freezing low flow (after four alarms, a new alarm is displayed [E219])

[E216] HP flow temp diff (after four alarms, a new alarm is displayed [E220])

[E217] HP Charge pump flow (after four alarms, a new alarm is displayed [E221])

If a critical alarm is shown on the display, take the action described below. Confirm the alarm by entering code 4005 in the display menu "Installer/Service/Coded settings/Code".

Please note: The critical alarms can be acknowledged three times by entering code 4005. **After four alarms, the heat pump is blocked;** in this case, contact the installer. After one year of operation without any alarms, the critical alarms are reset.

! The critical alarms [E135], [E211], [E216] and [E217] can be acknowledged three times by entering code 4005. After four alarms, the heat pump is blocked.

[E135] Risk of freezing

Applies to all air/water heat pumps.

Alarm conditions

If the temperature of the water exiting the heat pump (HP out) is lower than 15 °C during a defrost period or if there is more than 15 °C difference between HP in and HP out for more than 20 seconds.

Possible cause

- The circuit temperature and/or flow rate is too low.
- If the sensors (HP in and HP out) do not display the correct value, alarm [E135] can be generated. Check the temperatures using an external thermometer.

Action

- Ensure that the return flow of the heating circuit is at a minimum of 25°C during a defrost period. In the event of low temperature, contact the installer.
- Supplement with a volume tank.
- Check the circulation pump, dirt filter, pipe system and pipe size to ensure flow requirements are met.
- Check the sensors (HP in and HP out) and replace as required.

[E211] Risk of freezing low flow

Applies to CTC EcoAir 600M/700M/C100 with the "Flow Sensor" accessory installed.

Alarm conditions

The flow is less than 10 l/min (CTC EcoAir 610M/614M/708M/712M) or 15 l/min (CTC EcoAir 622M/720M) for more than 30 seconds during a defrost period.

Possible cause

- The circuit temperature and/or flow rate is too low.

Action

- Check the circulation pump, dirt filter, pipe system, pipe size and flow sensor to ensure flow requirements are met.

[E216] HP flow temp diff

Applies to CTC EcoAir 600M/700M/C100.

Alarm conditions

The difference between HP in and HP out exceeds 12 °C in heat operation for more than 15 minutes.

Possible cause

- The circuit temperature and/or flow rate is too low.

Action

- Check the dirt filter, pipe system and speed settings of the circulation pump to ensure flow requirements are met.
- Check the sensors (HP in and HP out) and replace as required.

[E217] HP Charge pump flow

Applies to CTC EcoAir 400.

Alarm conditions

The charge pump speed exceeds 70% during heat operation for more than 30 minutes.

Possible cause

- The circuit temperature and/or flow rate is too low.

Action

- Check the dirt filter, pipe system and speed settings of the circulation pump to ensure flow requirements are met.

Critical alarms during cooling operation

If the critical alarms appear during cooling operation, it is an indication that the base flow is set too low. Remedy by checking and adjusting the base flow.

i If the sound of the circulation pump is perceived as disturbing during constant running up and down, the basic flow rate should be set higher.



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