



Providing sustainable energy solutions worldwide

Installation- and maintenance instruction

**CTC EcoEI**

Model 1550 and 1800





Enertech Group

**Försäkran om överensstämmelse**  
**Déclaration de conformité**  
**Declaration of conformity**  
**Konformitätserklärung**

Enertech AB  
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försäkrar under eget ansvar att produkten  
 confirme sous sa responsabilité exclusive que le produit,  
 declare under our sole responsibility that the product,  
 erklären in alleiniger Verantwortung, dass das Produkt,

**CTC EcoEI.**

som omfattas av denna försäkran är i överensstämmelse med följande direktiv,  
 auquel cette déclaration se rapporte est en conformité avec les exigences des normes suivantes,  
 to which this declaration relates is in conformity with requirements of the following directive,  
 auf das sich diese Erklärung bezieht, konform ist mit den Anforderungen der Richtlinie,

**EC directive on:**

**Pressure Equipment Directive 97/23/EC, § 3.3**  
**(AFS 1999:4, § 8)**

**Electromagnetic Compatibility (EMC) 89/336/EEC**  
**Low Voltage Directive (LVD) 73/23 EEC, 93/68/EEC**

Överensstämmelsen är kontrollerad i enlighet med följande EN-standarder,  
 La conformité a été contrôlée conformément aux normes EN,  
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EN 719	EN 55014-1 /-2
EN 729-2	EN 55104
EN 288-3	EN 61 000-3-2
EN 1418	EN 60335-1
EN 287-1	EN 50165
EN 10 204, 3.1B	
EN 10 025, S 235 Jr-G2	

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 Technical Manager

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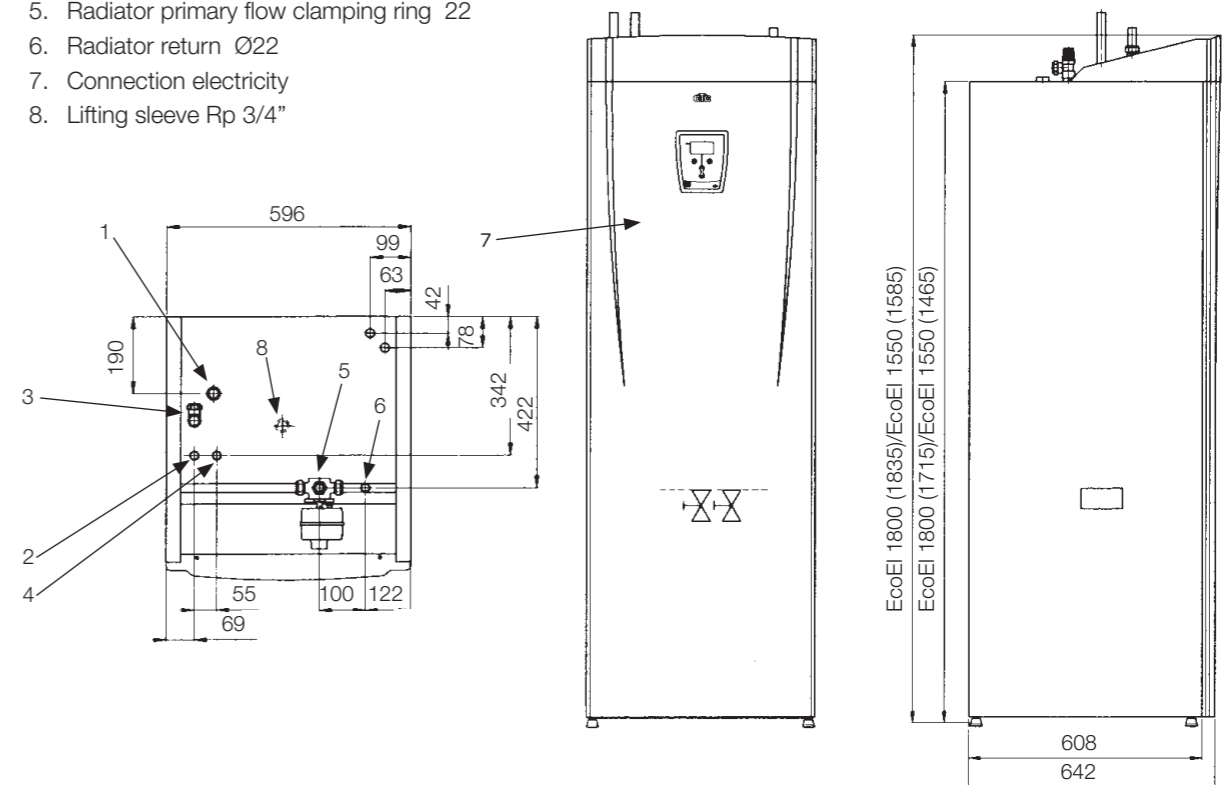
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18. Technical data

		EcoEI 1800	EcoEI 1550
Measurements	mm	600x642x1835	600x642x1585
Electrical data		400V 3N~	400V 3N~
Weight	kg	170	155
Water volume boiler	litre	223	223
DHW	type	Finned copper tube/5,7	Finned copper tube/5,7
Max pressure/temp boiler	Bar/°C	2,5/100	2,5/100
Max operation pressure/ temp finned tube	Bar/°C	9/100	9/100
Nominal output power	kW	9+6	9+6
Power limits, upper immersion heater		1,5 kW/step	1,5 kW/step
Internal charge control		Yes	Yes
Power consumption, when set at:	6 kW A	8,6	8,6
	9 kW A	12,9	12,9
	12 kW A	17,3	17,3
	15 kW A	21,6	21,6

19. Measurements and connections

1. Expansion connection Rp 3/4"
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## 17. First start

EcoEI can be installed and be started before the brine circuit is brought on line. Deselect the room sensor in the Settings menu. The sensor can however always be fitted to provide the alarm diode function.

### Before first start up

1. Check that the electrical boiler and system are full of water and have been bled. (EcoEI is bled through the safety valve on the top.)
2. Ensure that the brine system is filled with water and anti-freeze and that it is bled, or ensure that the compressor is blocked. Check that all connections are tight.
3. Check that sensors and radiator pump are connected to the power source.
4. Set the backup heating thermostat in the off position. The backup heating thermostat is reset on the electrical switchboard behind the front. It is in the off position when it is turned anticlockwise as far as it will go (the screwdriver slot should be vertical).  
⊛ = Anti-freeze setting, around +7°C.

5.

### Initial start up

6. Switch on the power using the safety switch. The display comes on.
7. The electrical boiler asks whether the system and the boiler are filled with water. Confirm by pressing "OK". The electrical boiler then starts.
8. Now the heat pump is ready to be brought into operation, but settings still need to be set.

## System settings

The installation contractor should set settings on the heat pump during installation. The settings are set in the installation menu Installer/Settings. For a review of the control panel, see page 9. When the system is warm, check that all connections are tight, that the various systems are bled, that heat comes out of the system and that hot water comes out of the tapping point. Go through the settings with the user.

Symbol for back-up heating thermostat:



## Welcome



Congratulations! You have just bought a CTC EcoEI, which we hope you will be very pleased with. In the following handbook, you can read about how to operate your electrical boiler. One chapter is written for the property owner and one chapter for the installation contractor.

Keep this handbook with the installation and maintenance instructions. The CTC EcoEI is designed to last for many years, and it is here you will find the information you need to operate and maintain the unit correctly and ensure its longevity.

CTC EcoEI is a complete electrical boiler which can provide your detached house's heating and hot water requirements. It is equipped with a motorised mixing valve valve which ensures correct and even temperatures are supplied to your radiators.

### CTC EcoEI has a control system which:

- Monitors all functions of the electrical boiler as well as potentially connected CTC EcoAir or CTC EcoPart heat pumps.
- Permits individual settings.
- Displays required values, such as temperatures, operation times, energy consumption, and fault recording.
- In a simple and well structured way, allows settings to be adjusted and fault tracing

Your CTC EcoEI is equipped with a built in copper coil providing copious amounts of hot water.

CTC EcoEI also has a so called summer time cellar heating function and a floor heating block, which maximises the temperature supplied to the floor circuits.

Using the built in night time reduction function, you can set and change house temperatures during the day and from day to day in the Week program.

Easily accessible electric components and good fault tracing functions in the control program make CTC EcoEI service friendly. It is supplied with a room sensor as standard, which is equipped with a light diode which flashes in the event of a fault.

The CTC EcoEL is designed for easy connection of the air/water heat pumps CTC EcoAir or the ground source heat pump CTC EcoPart. When connected the complete functions of the heat pump are controlled from the CTC EcoEI control system and menu display.

## Important points!

Upon delivery and installation carefully check the following important points:

- The EcoEI must be transported and stored standing.
- When moving the product inside the house it can be temporarily placed on its back.
- Unpack and check before installation that the product has not been damaged during transport.  
Report eventual transport damage to the transporter.
- Place the EcoEI on a solid foundation, recommended a concrete bed.  
If the electrical boiler shall be placed on a soft carpet, some type of base plate must be placed under the adjustable feet.
- For easy access upon service, the area in front of the product must be at least 1 meter. The product must also not be placed below floor level.
- 

## Safety instructions

The following safety instructions must be observed upon handling, installation and use of the heat pump:

- Ensure that the product is currentless before any interventions.
- Do not flush the heat pump with water.
- When handling the product with a crane etc., make sure that the lifting equipment, loops etc. are not damaged. Never place yourself under the elevated heat pump.
- Never risk your safety by dismantling casings, covers etc that are screwed tight.
- Never risk your safety by setting safety equipment out of function.
- Interventions in the electric or cooling system must be done only by a qualified person.
- Safety valve control:  
The safety valve for boiler/heating system and DHW must be controlled on a regular basis. See chapter Operation and maintenance.

## 16. Electrical connection of heat pump

### General

CTC EcoAir and EcoPart heat pumps are supplied with electricity from EcoEI. The fuse sizes and cables used to connect EcoEI to the electricity system should be dimensioned for both products. The 6 conductor cable supplied with the heat pump should be used to connect EcoEI to the heat pump. Communication takes place between CTC EcoEI and the CTC heat pumps. Other makes of heat pump cannot therefore be controlled from EcoEI.

**The cable between EcoEI and EcoPart/Air** heat pump carries 400V 3N~ and earth. A cable for this purpose is supplied with the heat pump. The 6 conductor cable has a connector at one end which fits the equivalent connector on EcoEI. The other end of the cable is connected to the heat pump as specified in the heat pump manual.

### Communication

EcoEI and the heat pump communicate with each other (230V~). This takes place via the 6th conductor in the cable between the products.

### Servicing the heat pump

The heat pump safety switches fitted before EcoEI are to be switched to the off position before any service of any kind is carried out.

### On starting

Check that all connectors are securely connected, that water is topped up and that the system is bled. EcoEI must be set to heat pump operation to start. This is set in the menu Advanced/Settings. Select the row 'Product EcoEI' and set to EcoAir (or Eco-Part).

More on first start: see next section.

**!** Note: excess cable is not to be rolled into a coil (can cause overheating). It is to be cut to the correct length.

## Settings to be carried out by an electrician

After connection, the following settings should be set by the electrician:

- Selection of main fuse size.
- Selection of power limit.
- Check of indoor sensor connection.
- Check that connected sensors register reasonable values.

Carry out the check as described below.

### Setting main fuse and power limitation

See the Initial start up section.

### Check of indoor sensor connection

- Go to the `Installer/Service/Function test` menu.
- Step down to `Diode Sensor` and press "OK".
- Go to the `Installer/Service/Function test` menu.
- Step down to `Diode Sensor` and press "OK".
- Select "On" using the "increase" button and press "OK".
- Check that the indoor sensor diode comes on. If not, check cables and connection.
- Select "Off" using the "decrease" button and press "OK". If the "OK" diode goes out, the check is successful.
- Return to the normal display by pressing the "step backwards"/"undo" button.

### Check of connected sensors

If any sensor is incorrectly connected, text will appear in the display. E.g. "Alarm sensor out". If several sensors are incorrectly connected, the different alarms are displayed on different rows.

If no alarm is displayed, the sensors are correctly connected.

Note that the indoor sensor alarm function (the diode) cannot be shown in the display but must be checked as described in the previous section. The current sensor connection has no alarm, but the current value can be read in the `Operation data` menu.

## 1. Heating curve

The heating curve is a central part of the product's control system. It is the heating curve which determines the temperature requirement for your property at different outdoor temperatures. It is important that the heating curve is correctly adjusted, so that you achieve the best function and economy possible. One property requires a radiator temperature of 30°C when the outdoor temperature is 0°C. A different property requires 40°C. The difference between different properties is determined by radiator surface area, the number of radiators and how well insulated the house is.

**!** The set heating curve is always prioritised. The room sensor can only call on the mixing valve to increase temperatures to a specific level beyond the set heating curve. Where operating without a room sensor, the selected graph determines the temperature supplied to the radiators.

### Adjustment of heating curve basic values

The heating curve for your property is set using two values in the product controlsystem. This is set in the menu `Installer/Settings/Setting house paramt/` → `Inclination and Adjustment`.

Arriving at the correct heating curve can take some time. The best way to achieve this is to select operation without room sensor in the initial period. The system then operates using outdoor temperatures only.

During the adjustment period it is important that:

- Night reduction function is not selected.
- All radiator thermostat valves are fully open.
- Outdoor temperature is not higher than +5°C. (If the outdoor temperature is higher when the system is installed, use the factory set graph until the outdoor temperature falls to this level.)
- The radiator system functions well and is correctly adjusted for the different circuits.

### Inclination and adjustment

#### Inclination 50:

The value defines the outgoing temperature of the water supplied to the radiators at an outdoor temperature of -15°C, e.g. 50°C. A lower value is set where a radiator system has larger radiator areas (a low temperature system). Floor heating systems require much lower temperatures. An even lower value should therefore be selected. The value must be increased for high temperature systems to achieve high enough indoor temperatures.

#### Adjustment 0:

The inclination defines how much the temperature of the water supplied to the radiators should be increased for falling outdoor temperatures. The adjustment specifies that the temperature level can be raised or be lowered at specific outdoor temperatures..

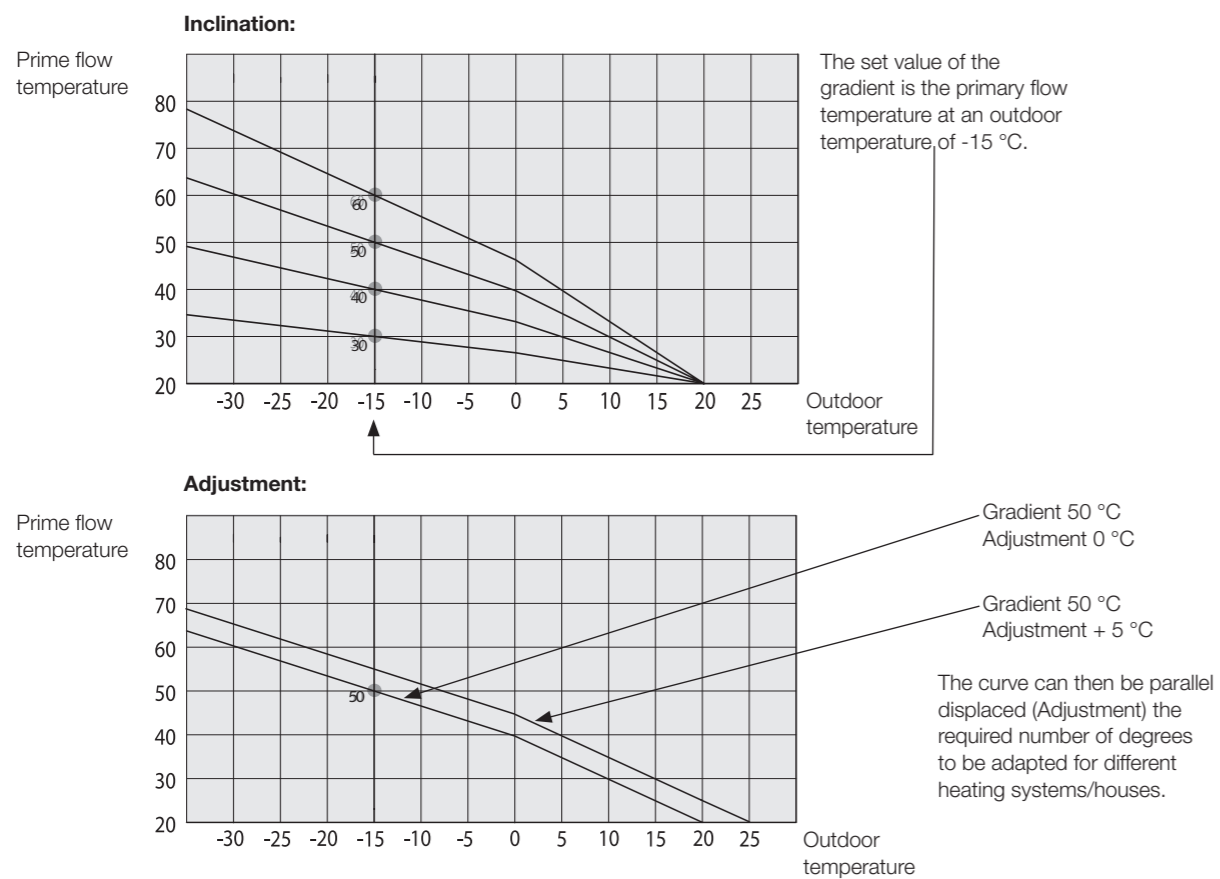
**Example:**

Inclination 50 means that the temperature of the water supplied to the radiators is 50°C when the outdoor temperature is -15°C (if adjustment is set to 0). If the adjustment is set to +5, the temperature is instead 55°C.

The graph is increased by 5°C at all temperatures, i.e. the graph is parallel displaced by 5°C

**Examples of heating curves**

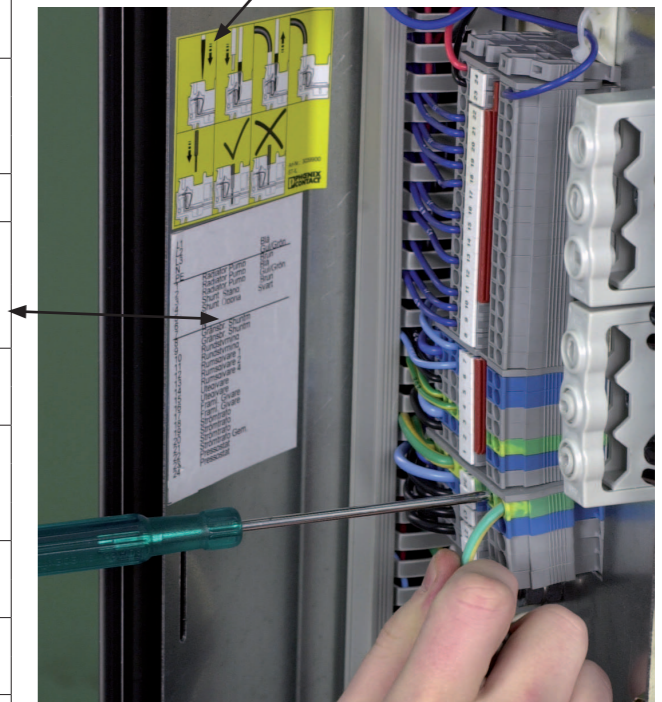
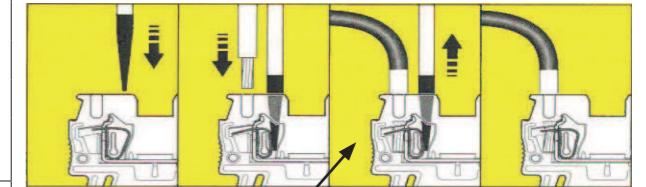
Below you find three charts where you can see how the heating curve changes by different settings of the Inclination. The gradient of the curve shows which temperature the heating system requires at different outdoor temperatures.



**Terminal block**

Nr	Description	Colour	Comments
L1	Phase		400V 3N~
L2	Phase		
L3	Phase		
N	Earthed neutral	Blue	
PE	Earth	Yellow-Green	
1	Radiator pump	Brown	230V 1N~
2	Radiator pump	Blue	
3	Radiator pump	Yellow-Green	
4	Mixing valve close	Brown	230V 1N~
5	Mixing valve open	Black	
6	N	Blue	230V 1N~
7	N	Blue	
8	Position switch mixing valve motor	Black	Low voltage
9	Position switch mixing valve moto	Black	
10	Remote control		Low voltage
11	Remote control		
12	Indoor sensor 1	larm	Low voltage
13	Indoor sensor 2		
14	Indoor sensor 4		
15	Outdoor sensor		
16	Outdoor sensor		Low voltage
17	Primary flow sensor		
18	Primary flow sensor		Low voltage
19	Current transformer		
20	Current transformer		
21	Current transformer		
22	Current transformer common		

**Handling instruction for spring-loaded terminal block**



**!** Open the spring contact with a screwdriver before the cable is attached, otherwise there is a risk for lack of contact..

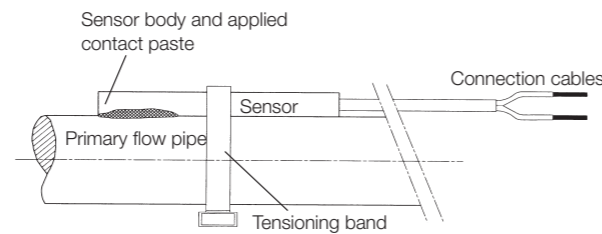


## Connecting the primary flow sensor

Fit the sensor to the primary flow pipe, ideally after the circulation pump.

The sensor is at the front of the sensor unit, see diagram.

- Tighten the sensor into position using the enclosed tensioning band.
- Ensure that the sensor has good contact with the pipe. Where required, apply contact paste to the front of the sensor, between the sensor and pipe, if good contact is difficult to achieve.
- **Important!** Isolate the sensor, for example using pipe insulation.
- Connect the cables to the heat pump connection block.



## Remote controlled night reduction of temperature

Night reduction of temperature can be activated by a closed function on the electricity remote control input, pin 10 and 11 on the terminal block.

The function can be remote controlled using, for example, "Minical".

When the input is short circuited, the night time temperature is activated, regardless of other night reduction of temperature settings. When the short circuit ceases, the product returns to ordinary night reduction of temperatures.

Number of degrees lowered is set in the "Night reduction of temperatures" menu.

Note: the input function is selectable in accordance with the following:

NR = night reduction of temperature (time controlled temperature lowering).

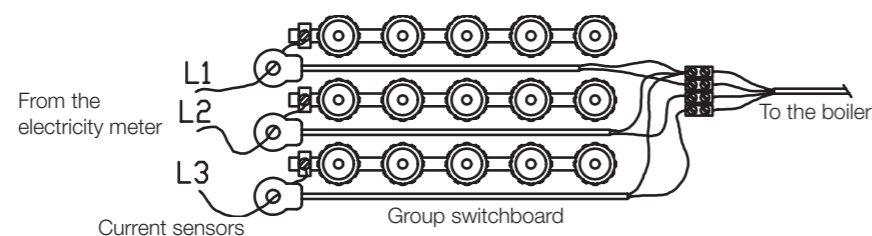
SO (Shut off) = electricity supplier control. (Block of compressor and electrical power by the electricity supplier.) **The function is made available by selecting NR in the Settings menu.**

"Settings"

## Current sensor connection

The three current sensors (designated current transformer on the connection sign), one for each phase, are fitted in the group switchboard as shown in the following:

Each phase from the electricity meter which supplies the group switchboard is led through a current sensor before being connected to each rail. Then connect the boiler as shown in the connection block picture. This ensures that phase current is continuously monitored and compared with the value set on the load monitor in the heat pump. If the current is higher than this value, the control unit disconnects a power step. If this is still too high, a further step is disconnected and so on. When the current falls below the set value, the step is reconnected. The current sensor, together with the electronics, also prevent more power being connected than the house fuses can withstand



## Suitable standard values

At the time of the installation it is seldom possible to instantly set the heating curve exactly. The values to the right may then be a good starting-point before the more accurate adjustment is set.

Radiators with small heat emission surfaces require higher primary flow temperatures.

Meny:	
Installer/Settings/Setting house paramt	→ Inclination
Floor heating only	Inclination 35
Low temperature system (well insulated house)	Inclination 40
Standard temperature system (older house)	Inclination 50
High temperature system (older house, small radiators, poorly insulated)	Inclination 60

## Adjustment (if the outdoor temperature is lower than 0 degrees)

- At too **cold** indoors: **Increase** the value at *Inclination* a couple of degrees. Wait one day before the next adjustment.
- At too **warm** indoors: **Decrease** the value at *Inclination* a couple of degrees. Wait one day before the next adjustment.

## Adjustment (if the outdoor temperature is higher than 0 degrees)

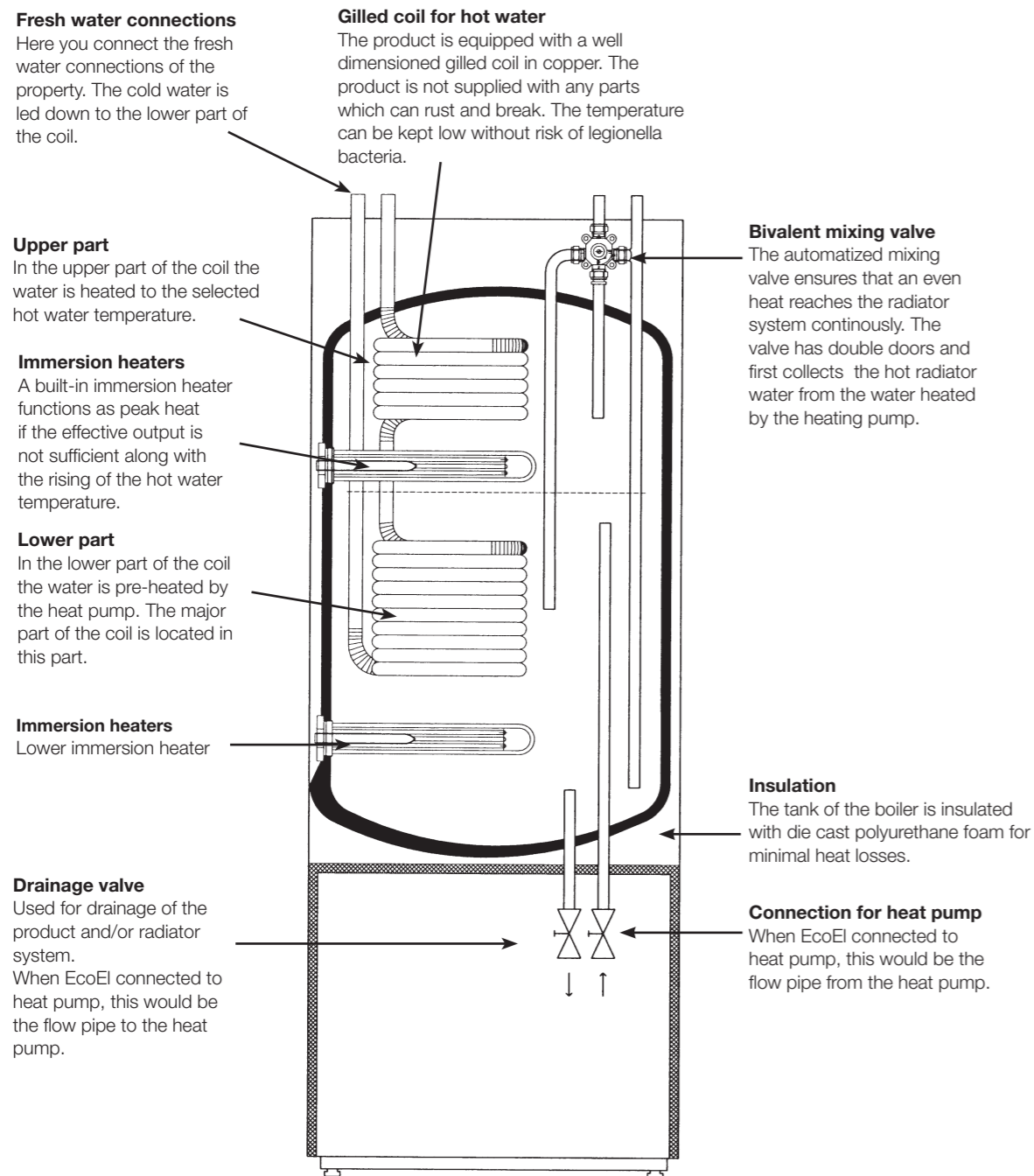
- At too **cold** indoors: **Increase** the value at *Adjustment* a couple of degrees. Wait one day before the next adjustment.
- At too **warm** indoors: **Decrease** the value at *Adjustment* a couple of degrees. Wait one day before the next adjustment.

**!** When the standard values are fairly correct adjusted, the curve can be displaced directly in the normal display menu Indoor°C.

**!** To low adjusted values might imply that the required indoor temperature is not being reached. Then you have to adjust the heating curve according to need.

## 2. Construction EcoEI

The picture below shows the fundamental construction of the product.



**!** Note: Do not connect the product according to this construction sketch, see instead the measurements on page 30 and the chapter "Plumbing system"..

## 15. Electrical installation

Installation and change over of the EcoEI should be carried out by a qualified electrician.

All wiring should be installed in accordance with relevant regulations. The boiler is internally connected by the factory and set for 6+6 kW electrical power output. Electrical connections are behind the front of the product. Undo the screws on the top (2 screws), bend out and set the front to one side (undo any network cables on the front printed circuit card for better accessibility). The connection blocks are located behind the electrical connection box cover. Connection cables are laid in the cable ducts on the roof of the product. These exit at the same height as the bottom of the electrical connections box.

### Power supply

EcoEI should be connected to 400V 3N~ and protective earth. Group fuse size is specified in the technical data.

### Multi-pole circuit breaker

A multi-pole circuit breaker should be installed.

### Connection heating circuit pump

The heating circuit pump electrical connections are made on the connection block as shown in the picture on the previous page. Electrical data 230 V 1N~. Internal fuse 10A.

### Safety limit thermostat

If the boiler has been stored under extremely cold conditions, the safety limit thermostat may have been triggered. This is reset by pressing in the button on the electrical connection box behind the front. Always check that the safety limit thermostat has not been triggered when installing.

Symbol for Safety limit thermostat:



### Safety extra low voltage

The following outputs and inputs have extra low voltage protection: current transformer, outdoor sensor, indoor sensor, primary flow sensor, primary flow NR/SO.

### Connection of outdoor sensor

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 that the sensor is affected by the sun, the sensor should be protected by a screen.

Place the sensor at height of around 2/3 on the facade near a corner, but not under a roof projection or other wind protection. Do not locate above ventilation ducts, doors or windows where the sensor can be affected by other radiators than the actual outdoor temperature.

### Connection of indoor sensor

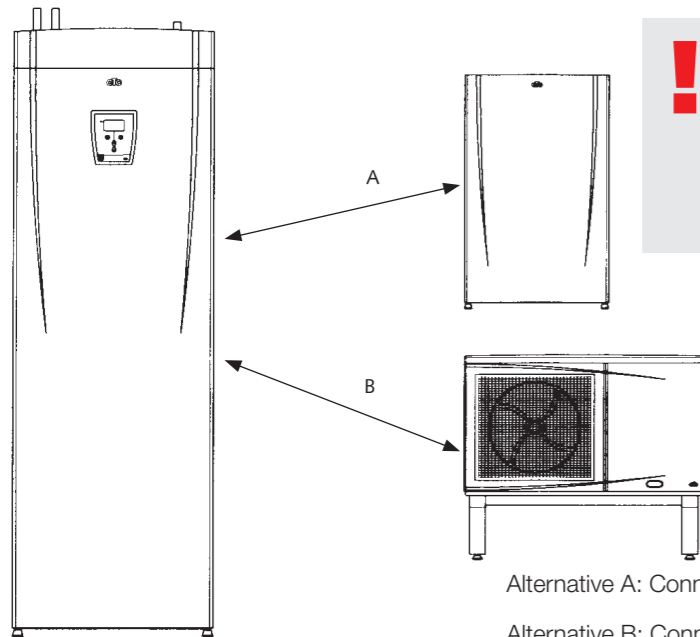
The indoor sensor is fitted at a central point in the house, at the most open position possible, ideally in a hall between several rooms or in a stairway. This position will allow the sensor to record an average temperature for the house. Lead a three conductor cable (minimum 0.5 mm<sup>2</sup>) between the heat pump and room sensor. Then mount the indoor sensor at approx two thirds wall height. Connect the cable to the indoor sensor and the heat pump.

**Important!** The wires must be correctly connected for the sensor to function.

**!** Do not permanently mount the sensor cable before you have tested and found the best position.

### Connection to CTC heat pump

Copper pipes of minimum Ø 22 mm must be mounted by the connection between the CTC EcoEI and the heat pump. On the CTC EcoEI 1550 an adapted circulation pump is factory mounted on the left connection (front view).



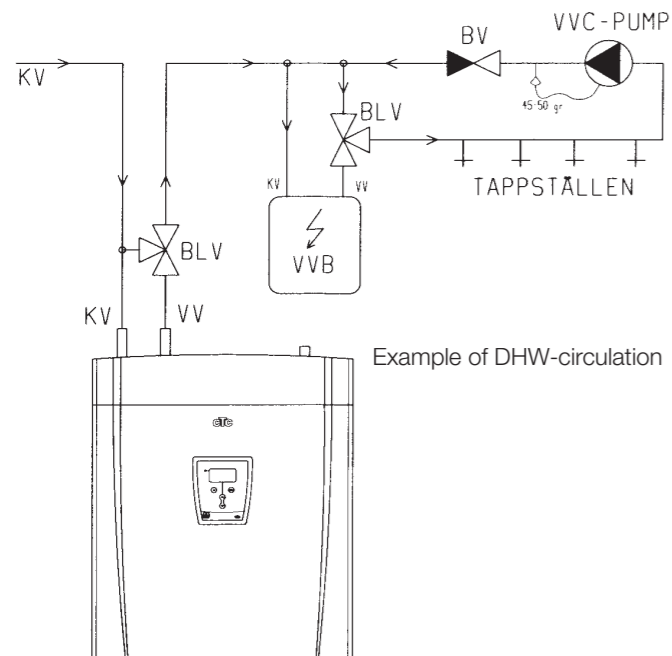
**!** N.B. Where the circulation pump is being after-mounted, a pump with minimum 6 m pressure head must be installed. The circulation pump shall pump the water from the CTC EcoEI to the heat pump.

Alternative A: Connection to CTC EcoPart ground source heat pump.

Alternative B: Connection to CTC EcoAir air/water heat pump

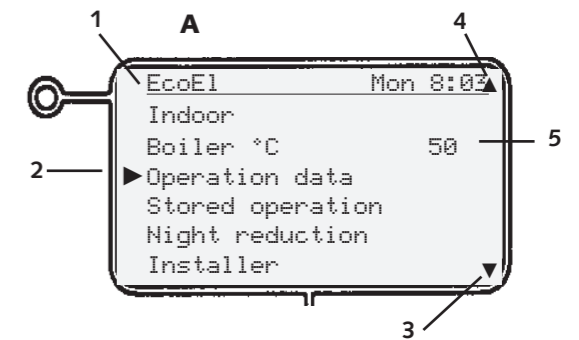
### DHW-system

It is possible to connect an external domestic hot water system. An example of such a connection is shown below.



## 3. How the control system works

All settings are set on the well structured control panel. The control panel also provides you with information on operation and temperatures. Information is displayed in the display screen. All the information you need is easily obtained by a few keystrokes and by making a few selections in the different menus.



### How the buttons are used

Accessing the menus, to display operation information or set your own values, is simple. The button functions are described below.

#### A The display screen

##### 1. Menu name

The name of the menu you are in is displayed here. When you are not in the menu system the product name, day and time (normal display) are displayed.

##### 2. Row marker

You can scroll the cursor up or down the screen to the row you want to select.

The cursor is moved using the increase or reduce button (D).

The cursor becomes filled and black when a row is selected. Press the “undo” button (B) to deselect a row selection.

##### 3. More rows indicator

The arrow shows that there are rows **below** which are not visible in the display.

Scroll the cursor downwards to view these rows.

The arrow disappears where there are no more rows below.

##### 4. More rows indicator

The arrow shows that there are rows **above** which are not visible in the display. Scroll the cursor upwards to view more rows. The arrow disappears where there are no more rows above.

##### 5. Information area

All information, temperatures, values etc. are displayed here.

#### B Button – “step backwards” or “undo”

Use this button to step backwards in the menu system to the previous menu. You can also use this button to deselect a selected row.

#### C Button – “OK”

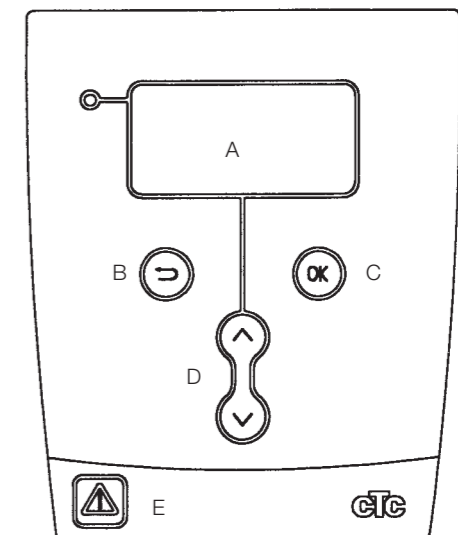
Use this button to approve/confirm a value or a selection.

#### D Button – “increase” or “reduce”

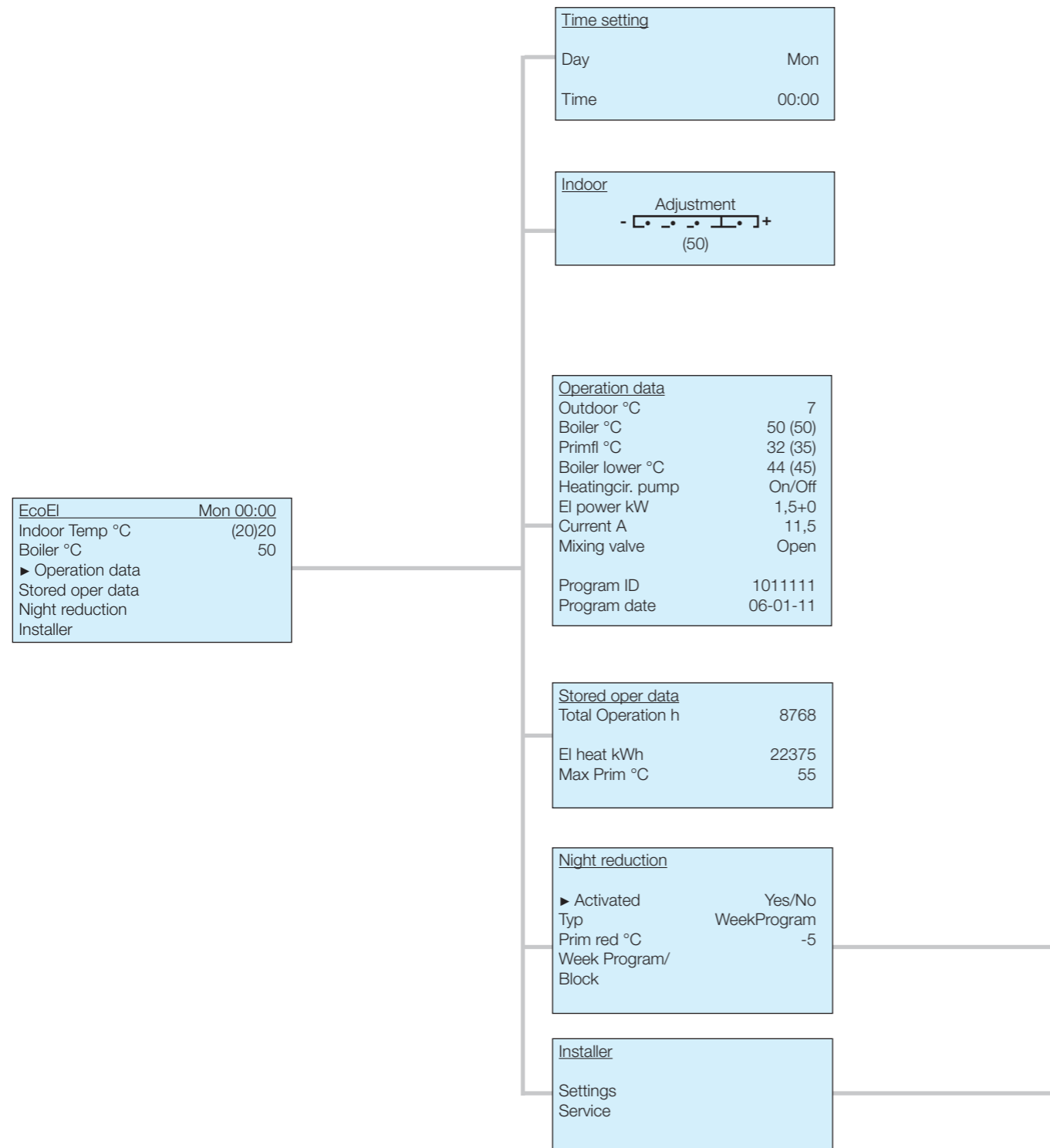
Use the button to increase or reduce a value. The button can also be used to move the row marker upwards or downwards.

#### E Button – “Reset alarm”

Use this button to reset the product after an alarm has been triggered. Only displayed where an alarm has been triggered.



## 4. CTC EcoEI menu map



### Mixing valve DHW

The mixing valve for the domestic water must be mounted on the hot water tap to avoid the risk of scalding.

### Safety valve DHW

Mount the enclosed valve to the incoming cold water connection. The waste pipe must be connected to the draining gutter directly, or if the distance is more than 2 m, to the waste funnel. Water may drip from the waste pipe. Therefore this pipe must lean towards the draining gutter, be installed frost free and left open to the atmosphere/without pressure.

### Non-return valve and safety valve

Mount the non-return valve to the incoming cold water connection. The safety valve of the boiler is mounted by the manufacturer. The waste pipe must be connected to the draining gutter directly, or if the distance is more than 2 m, to the waste funnel. Water may drip from the waste pipe. Therefore this pipe must lean towards the draining gutter, be installed frost free and left open to the atmosphere/without pressure.

### Filling valve heating system

Must be mounted between the cold water connection and the radiator return pipe, alternative: between the cold water and the expansion connection.

### Manometer – system pressure

The manometer must be mounted on the expansion pipe or on the radiator return pipe.

### Connection of the expansion vessel

It is recommended to connect the EcoEI to a closed expansion vessel. The EcoEI is ready for the assembly to an 18 l closed vessel, placed compact on top of the product. The expansion vessel with required angle connection is available as accessory. Then connect the system manometer to the return pipe of the radiator.

If another expansion vessel is chosen, the manometer is often included. With an open system, the height between the highest placed radiator and the expansion vessel must not exceed 2.5 m in order to avoid oxygen feed of the system.

Note that no hot water circulation may be connected as it affects the function of the heat pump and the system. If the heat pump is connected together with another heating source, e.g. an existing boiler, the installations must have separate expansion vessels.

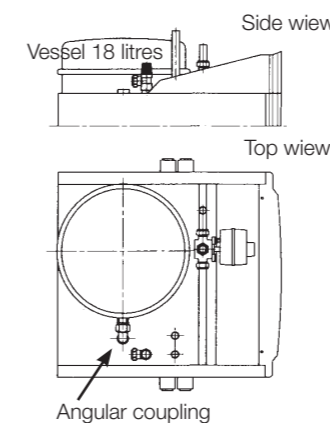
### Unusual noise when shutting off DHW

In some cases, unusual noises may be produced by the cold water, pipe work and EcoHeat due to the jolts which occur when the flow is quickly interrupted.

There is no fault with the product, but the noise may occur when older model outlets are used. More recent outlets are often fitted with a soft-closing mechanism.

If an unusual sound comes from hard-closing dishwasher and washing machines, this can be remedied using a shock arrestor.

A shock arrestor can also be an alternative to soft-closing water taps.



# 14. Hydraulic installation

The installation must be carried out in accordance with existing engineering standards and building regulations. The product must be connected to an expansion vessel in an open or closed system. Do not forget to flush the radiator system clean before connection. Do all installation-adjustments according to the description in chapter First start.

### Connections, placement and dimensions

See Measurements.

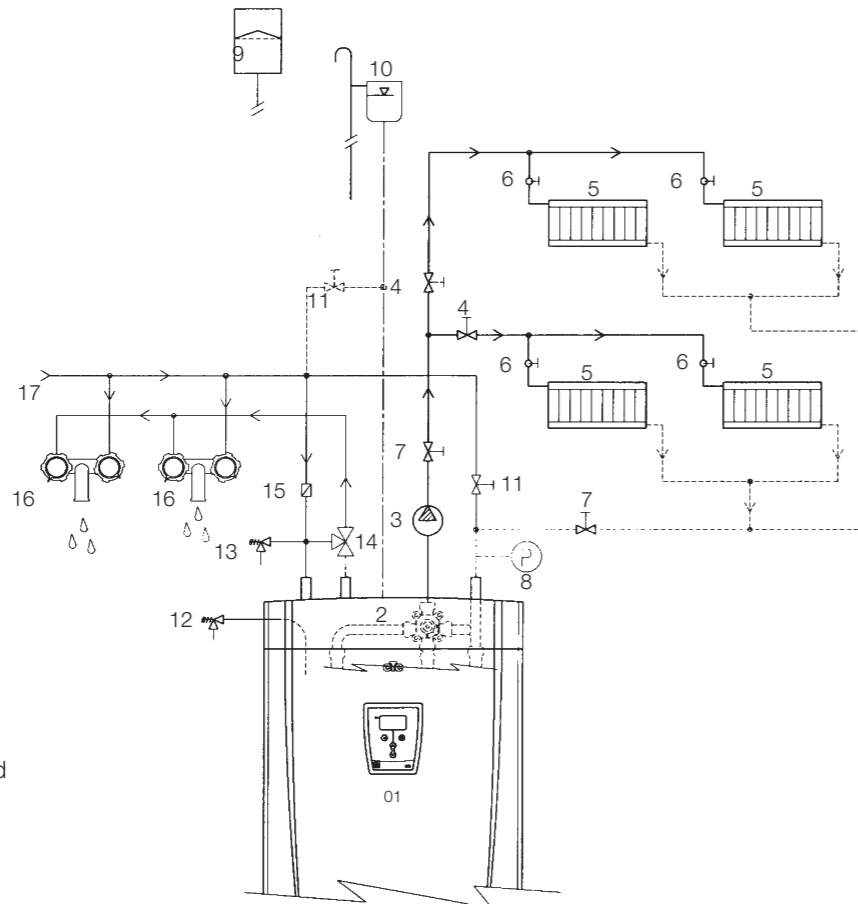
### Pipe connections of the product

Connect the pipes according to the principle sketch for pipe connection on the following page. See also Measurements on page for placements and dimensions of the connections.

### Circulation pump radiator system

The circulation pump is to be fitted on the primary flow pipe to the radiator system, The pump is to get its power supply from the CTC EcoEI, see Wiring diagram.

1. CTC EcoEI
2. Mixing valve, automatized
3. Heating circuit pump, radiator system
4. Adjustment valve for radiator coils
5. Radiators
6. Radiator thermost valve
7. Shut off valve for radiator system
8. System/boiler pressure install on the return pipe
9. Expansion vessel, closed (recommended)
10. Expansion vessel, open (alternative)
11. Filling valve for radiator system
12. Safety valve boiler (factory mounted)
13. Safety valve for hot water coil
14. Mixing valve hot water
15. Non-return valve incoming cold water
16. Tap place
17. Incoming cold water



### Principal sketch for pipe connection

Here the principal connection of the heat pump to the heating- and DHW-system of the house is shown. Different facilities and systems may look different e.g. single or double pipe systems, which may make the completed installation look different.

### Filling:

The valve for the filling(11) must be mounted to the return pipe of the radiator. Alternatively the valve can be installed in direction of the expansion pipe. When filling the boiler, the mixing valve (02) must be wide open. Press the knob on the valve and turn maximum counterclockwise.

WeekProgram		
Mon	▲06 ▼-- ▲-- ▼22	
Tue	▲06 ▼-- ▲-- ▼22	
Wed	▲06 ▼-- ▲-- ▼22	
Thu	▲06 ▼-- ▲-- ▼22	
Fri	▲06 ▼-- ▲-- ▼23	
Sat	▲08 ▼-- ▲-- ▼23	
Sun	▲08 ▼-- ▲-- ▼22	

Block		
Decr.	Sun	18:00
Incr.	Fri	16:00
Decr.	--	--
Incr.	--	--

Setting house paramt	
Max Primfi. °C	55
Min Primfi. °C	Off
Heating Off °C	16
Heating curve Inclination °C	50
Adjustment °C	0

Settings	
Lang.	English
Product	EcoEI
Indoor sens	Yes/No
Boiler °C	50
Boiler max kW	6
Boiler lower °C	50
Boiler lower kW	6
Main fuse A	20
External Control	NS
Setting house paramt	
Holiday	On/Off
Prim red °C	-2
HP max DHW	Yes
Save setting	
Load setting	
Load factory setting	

Function test	
EiRelay 1,5/3 kW	0,0
EiRelay 3/6 kW	0,0
Boiler lower	Off
Charg. pump	Off
Heatingcir. pump	Off
Mixing valve	Off
Room sensor LED	Off

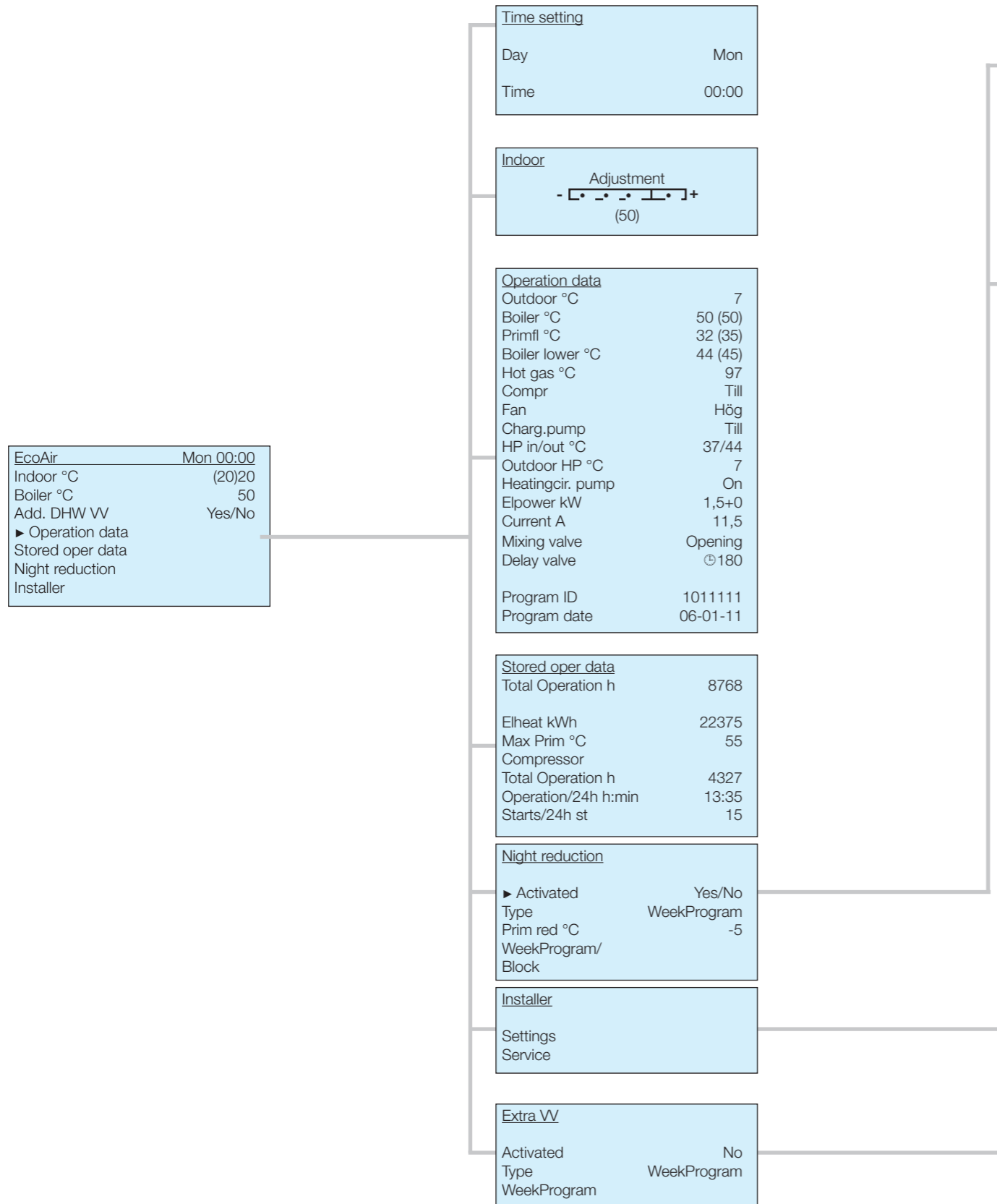
Service	
Function test	
Alarm info	

Alarm info	
Latest alarm	Outdoor sensor
Stored alarms	Room sensor
	Primary flow sensor

## 5. CTC EcoEI menu map

With the heat pump CTC EcoAir (or CTC EcoPart) connected.



## 13. Installation

This chapter turns to you who are responsible for the necessary installations in order to give the EcoEI such an operation as the house owner demands.

Take time going through functions, controls, knobs and settings together with the end user and answer eventual questions. Both you and the heat pump benefits from a well informed end user regarding operation and maintenance of the heat pump.

### Transport

To avoid transport damages, do not unpack the product until it has been transported to its installation site in the product room. The EcoEI can be handled and lifted in the following way:

- Fork truck.
- Lifting eye to be fitted to the lifting sleeve on top of the product (extra sleeve can be found on top of the product in the center under the insulation).
- Lifting band around the pallet. **Note! Only with the wrapping on.** Consider that the heat pump has a high gravity, handle with caution.

### Unpacking

Unpack the heat pump when it is placed next to its installation site. Check that the product has not been damaged during transport. Report eventual damages to the forwarding agent. Also check that the delivery is complete according to the list below.

### Standard delivery

- Electrical boiler CTC EcoEI (concerning the CTC EcoEI 1550 the heat carrier pump is being delivered factory mounted)
- Enclosed bag with:
  - indoor sensor
  - primary flow sensor
  - outdoor sensor
  - installation and maintenance instructions
  - safety valve for DHW, 9 bar
  - safety valve for the brine system, 3 bar
  - strömkännare 3 st

**!** The product must be vertically positioned when transported and kept in stock.

**!** Remember to leave a service space of minimum 1 m in front of the unit. The product should not be installed lower than the floor level.

## Menu Factory setting coded

(Installer/Service/Factory setting coded)

Factory setting code	
Code	XXX
Summer operat °C	16
HP max °C	55
HP min °C	35
Alarm compr. temp °C	120
Diff K start/stop °C	5
Min brine in °C	-5
Max brine in °C	20
Max brine diff °C	7
Startdelay min	10

Encoded menu. Intended for the manufacturer's operation/alarm limits.  
A 3 digit code must be entered to change limits..

HP max °C 55	Maximum permitted temperature which the compressor is permitted to supply..
HP min °C 35	Lowest temperature the compressor supplies to the product's water storage to maintain hot water comfort.
Alarm compr.tank °C 120	Maximum hot gas temperature which the compressor is permitted to supply.
Diff K start/stop 5	Temperature difference between compressor start and stop.
Min brine in °C -5	EcoPart only. The lowest allowed temperature from a bore hole/ground loop
Max brine in °C 20	EcoPart only. The highest allowed temperature from a bore hole/ground loop.
Max brine diff °C 7	EcoPart only. The highest allowed temperature difference between in- and outgoing brine liquid. During the first 72 operating hours, a further 2 °C.
Startdelay min 10	Shortest period of time the compressor must rest after a stop. The delay is activated if there is a power cut or the first time the product is started..

WeekProgram	
Mon	▲06 ▼-- ▲-- ▼22
Tue	▲06 ▼-- ▲-- ▼22
Wed	▲06 ▼-- ▲-- ▼22
Thu	▲06 ▼-- ▲-- ▼22
Fri	▲06 ▼-- ▲-- ▼23
Sat	▲08 ▼-- ▲-- ▼23
Sun	▲08 ▼-- ▲-- ▼22

Block	
Decr.	Sun 18:00
Incr.	Fri 16:00
Decr.	--
Incr.	

Settings	
Lang.	English
Product	EcoAir
Heat pump	Permitted
Indoor sensor	Yes/No
Boiler °C	50
Boiler max kW	6
Boiler lower °C	50
Boiler lower kW	6
Delay valve min	180
Main fuse A	20
Add. DHW min	120
Add. DHW boiler °C	60
ExternalControl	NR
Setting house paramet.	
Min outdoor temp °C	-10
Holiday	On/Off
Prim red°C	-2
HP max DHW	Yes
Save setting	
Load setting	
Load factory setting	

Service	
Function test	
Alarm info	
Factory setting coded	

WeekProgram	
Mon	▲06 ▼-- ▲-- ▼22
Tue	▲06 ▼-- ▲-- ▼22
Wed	▲06 ▼-- ▲-- ▼22
Thu	▲06 ▼-- ▲-- ▼22
Fri	▲06 ▼-- ▲-- ▼23
Sat	▲08 ▼-- ▲-- ▼23
Sun	▲08 ▼-- ▲-- ▼22

Setting house paramet.	
Max Primfi °C	55
Min Primfi °C	Off
Heating off °C	16
Heat curve	
Inclination °C	50
Adjustment °C	0

Function test	
EIRelay el 1,5/3 kW	0,0
EIRelay el 3/6 kW	0,0
Boiler lower	Off
Compr	Off
Fan	Off
Charg.pump	Off
Heatingcir. pump	Off
Mixing valve	
Diod sensor	Off

Alarm info	
Latest alarm	
Outdoor sensor	
Stored alarms	
Room sensor	
Primary flow sensor	

Factory setting code	
Code	0 0 0
Summer oper. °C	16
HP max °C	55
HP min °C	35
Alarm compr.temp °C	120
Diff start/stop	5
Start delay min	10

## 6. Detailed menu description

### Factory set values

The product is supplied with a set factory set values which are suitable for a normal house with a normal radiator system. These values can be changed as required. House parameters should be particularly checked. Ask your installation contractor to determine the correct values. The following basic values are set by the factory:

Night reduction:	off (constant normal temperature)
Temp. boiler upper: Power:	50 °C 6 kW
Temp. boiler lower: Power:	40°C 6 kW
Indoor sensor:	none
Main fuse:	20A
House parameters:	Inclination 50, Adjustment 0 °C
Night reduction:	No

### Main menu/Normal display menu

EcoEI	Mon 00:00
Indoor Temp °C	(20)20
Boiler °C	50
Operation data	
Stored oper data	
Night reduction	No
Installer	

This menu is the system's basic menu. The system returns to this menu if no buttons are pressed within a 10 minute period. All other menus can be accessed from this menu..

EcoEI Mon 00:00

Displays the product selected, the day and the time. Day and time can be set by selecting this row.

IndoorTemp °C

Displays current room temperature. The set temperature is displayed in brackets. Select this row to change set temperature. Can be set in the range 0.0... 35.0°C.

Indoor Temp °C

If a room sensor has not been fitted, temperature is adjusted using the outdoor temperature. Select this row to adjust the temperature of the water supplied to radiators. See the room temperature menu below. If "NS" is displayed, night time lowering of temperature is running

Boiler °C

The product's maximum temperature is displayed here. The product sensor is positioned at the top of the tank. Display only

Operation data

Select this menu to view all product current operating data, all current temperatures, active components etc.

Stored operation data period

Select this menu to view operating data which has been saved over a longer time period

Night reduction

You can select here whether you want to activate night time lowering of temperature. Two periods of lower temperatures per day, seven days a week can be programmed. Lowering can also be programmed for blocks of days.

Installer

This menu contains two sub menus. One menu is used to set all basic settings and one menu is used by service personnel..

### Menu Service

(Installer/Service)

Service
Function test
Alarm info
Factory setting coded

Factory setting code

The product's alarm limits are set in this menu. A code is required to make changes to the values. You can, however, view the contents of the menu without a code..

### Menu Function test

(Installer/Service/Function test)

Function test	
EIRelay el 1,5/3 kW	1,5
EIRelay el 3/6 kW	3
Boiler lower	Off
Compr	Off
Fan	Off
Charg. pump	Off
Heatingcir. pump	Off
Mixing valve	Off

Denna meny är till för att testa de olika komponenternas funktion i produkten och används av kvalificerad servicepersonal. Då meny aktiveras stannar alla funktioner i produkten. Sedan kan varje komponent testas separat eller tillsammans. Alla styrfunktioner utblir, det enda skydd mot felaktiga driftsfall är tryckgivarna och elpatronens överhettningsskydd. Om ingen knapptryckning sker inom 10 minuter, återgår produkten automatiskt till sin normala drift. Undantag är om enbart brinepumpen startas. Den kan driftsättas under lång tid. Används tillsammans med yttre fyllnadspump vid installation.

Compr Off

Compressor test running is controlled from here. The brine pump and charge pump are also in operation to prevent the compressor triggering its pressure switches.

Fan/brine pump Off

Function test carried out on the Fan/brine pump..

Charg. pump Off

Function test of the charge pump.



## Menu Settings

(Installer/Settings)

Settings	
Lang.	English
Product	EcoAir
Heat pump	Permitted
Indoor sensor	Yes/No
Boiler °C	50
Boiler max kW	6
Boiler lower °C	45
Boiler lower kW	6
Delay valve min	180
Main fuse A	20
Add. DHW min	120
Add. DWH boiler °C	60
ExternalControl	NR
Setting house paramet.	
Holiday D	On/Off
Room temp red °C	-2
Min outdoor temp. °C	-10
HP max DHW	Yes
Save setting	
Load setting	
Load factory setting	

In the menu "Settings", the installer and user make the adjustments to the requirements and demands

U = settings made by the user.

I = settings made by the installer.

Product EcoAir	I.	The control unit contains control systems to several product types: EcoHeat, EcoPart, EcoEI and EcoAir. The correct product is set by the factory. If EcoEI is supplemented with EcoPart or EcoAir, the product type must be changed.
Heat pump Permitted	I.	The compressor can be blocked here. The product is supplied with the compressor blocked. The product operates as an electric boiler where the compressor is blocked. All other functions operate as normal..
Boiler lower °C 50	I/U.	Setting of the desired temperature of the lower part of the boiler. Only engaged when heat pump is not in operation.
Boiler lower kW 6	I.	The maximum power output of the lower immersion heat of the boiler. Settings from 0 to 6 kW. Only engaged when heat pump is not in operation.
Delay valve min 180	I.	The mixing valve delay, the time period before it draws energy from the electric unit, is set here. Adjustable from 0 to 240 minutes. If a value of more than 240 min is set, the mixing valve will never open towards the electric boiler.
Add DHW min 120	U.	Selection of the time period in which additional hot water is to be produced. Activated in the main menu.
Add DHW boiler °C	U.	Here it is determined whether electric cartridges are to be used to assist the production °C 60 of additional hot water. Set the temperature which is required when additional hot water is activated on the electric unit.
Min outdoor temp. °C -10	I/U.	For EcoAir only. Lowest outdoor temperature for the heat pump to be operational. At lower temperatures, the compressor is blocked and the lower immersion heater is engaged.

## Menu Time setting

(at the top of the normal display menu)

Time setting	
Day	Mon
Time	00:00

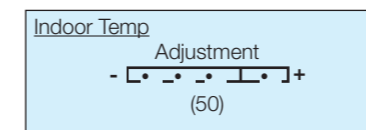
Day and time can be set here. The clock is metered by the mains electricity network frequency (50 Hz). If there is a power cut, reset the clock. The clock restarts at the time immediately before the power cut ± 5 minutes. Summer time/winter time is set manually.

Day Mon Set current day (monday...sunday).

Time 00:00 Set current time (00:00...23:59)

## Menu Indoor temperature

(the menu can be accessed directly from the main menu) (when "operation without room sensor" is selected)



The room temperature is set in this menu if a room sensor has not been fitted (selected in the settings menu). The house's basic settings are first set in the "house parameters" menu, usually with the help of the installation contractor. Basic settings are then fine tuned using this menu.

If the indoor temperature is experienced as being too low or too high, move the cursor towards + (increase) or - (reduce). Move a little at a time and see what effect this has on indoor temperatures (1 day) before making further changes. Several adjustments may be necessary at different outdoor temperatures. However, a correct setting will be arrived at which will not require further changing. A reference value (for example 50) is displayed under the bar. This value depends on the basic value set. If the bar does not extend far enough to allow the correct indoor temperature to be obtained, the basic setting must be adjusted in the Installer/Settings/Setting house paramet. The cursor is then centred in relation to the new values.

**!** NOTE: radiator thermostats must be fully open and fully functioning when adjusting the system.

## Menu Operation data

(the menu is directly accessed from the main menu)

Operation data	
Outdoor °C	7
Boiler °C	50 (50)
Primfl °C	32 (35)
Boiler lower °C	44 (45)
Heatingcir. pump	Till
El power kW	1,5+6
Current A	11,5
Mixing valve	Öppnar
Program ID	1011111
Program date	06-01-11

This menu displays current product and system temperatures and operating data. Values in brackets are either required values or automatically generated values which the product aims to achieve (expected values).

Outdoor °C -5	Displays current outdoor temperature. The product uses this value to determine a number of different operating data.
Room sensor °C 20 (20)	Displays current room temperature ( if room sensor has been activated in the menu), and desired value in brackets.
Boiler °C 47 (56)	Displays the upper boiler section temperature (electric boiler) and the temperature which the boiler aims to achieve. This value automatically increases if a poor radiator system requires higher temperatures.
Primfl °C 47 (49)	Displays the temperature of the water supplied to the house's radiators, and the temperature which the system aims to achieve. This value will vary during operation depending on set parameters and current outdoor temperatures
Boiler lower °C 48 (50)	Displays the lower boiler section temperature (electric boiler) and the temperature which the boiler aims to achieve..
Heatingcir. pump On/Off	Displays the heating circuit (radiator) pump's operating status. The pump stops in the summer time when there is no heating requirement. The pump is however exercised occasionally to avoid it jamming
El power kW 6.0	Displays auxiliary power of the electric boiler (0...9 kW). The electric boiler connects power in steps of 1.5 kW (6 connection steps)..
Current A 11 (20)	Displays the house's total current consumption on the hardest loaded phase. The house's main fuse size is displayed in brackets. Assumes that the current sensor applied has been fitted to the incoming cables. If the current drawn exceeds the main fuse size, the electric boiler automatically steps down a power step to protect the fuses, for example when several high consumption equipment units in the house are being used.
Mixing valve	A micro switch in the mixing valve valve's motor ensures that auxiliary heating is not used unnecessarily.
Program ID	Control program identity
Program date	Control program version date.).

El power kW 0.0+0	Displays auxiliary power of the electric boiler (0...9 kW). The electric boiler connects power in steps of 1.5 kW (6 connection steps).
Delay valve 180 min	A micro switch in the mixing valve valve's motor ensures that auxiliary heating is not used unnecessarily. The mixing valve delays the time period selected before heating is taken from the electrical unit in the product. If the control system requests auxiliary electrical heating, a countdown to zero is run, and only when the countdown reaches zero is the auxiliary electrical energy added to the heating system. The mixing valve can be blocked so that it never adds auxiliary peak electrical heating..

## Menu Stored operation data

((the menu can be directly accessed from the main menu)

Stored op data	
Total operation h	8768
Elheat kWh	22375
Max prim °C	55
Compressor:	
Total operation h	2568
Operation/24 h:min	8:50
Starts/24h st	14

Operation values across longer periods of time are reported in this menu.

Compressor:	Displays the total time the product has been connected to power.
Total Operation h 2568	
Starts/24 h:min 8:50	Displays the number of compressor starts in the last 24 hours. A new value is saved/displayed once a day. The first value is displayed 24 hours after initial start up..

### Menu Week program (Add DHW / WeekProgram)

WeekProgram	
Mon	▲06 ▼-- ▲-- ▼22
Tue	▲06 ▼-- ▲-- ▼22
Wed	▲06 ▼-- ▲-- ▼22
Thu	▲06 ▼-- ▲-- ▼22
Fri	▲06 ▼-- ▲-- ▼23
Sat	▲08 ▼-- ▲-- ▼23
Sun	▲08 ▼-- ▲-- ▼22

In this menu, you can schedule the periods for each day of the week when you require additional hot water. The schedule repeats every week. The picture shows the factory values. These can be changed. If additional periods are required on specific days, for example in the evening, the additional times are programmed.

▲ = Hot water temperature is increased at the time specified after the arrow.

▼ = Temperature is lowered to normal temperature at the time specified after the arrow.

- Ex 1. On Monday morning at 6:00 am, the product starts producing additional hot water up to 7:00 am, when the temperature returns to the normal .  
 Mon ▲06 ▼07 ▲ - - ▼ - -
- Ex 2. At 6:00 am, additional hot water is produced up to 7:00 am. A further increase is set between 4:00 pm and 5:00 pm  
 Mon ▲06 ▼07 ▲16 ▼17

### Menu Operation data

(the menu is directly accessed from the main menu)

Operation data	
Outdoor °C	-5
Boiler °C	44 (56)
Primfl °C	47 (49)
Boiler lower °C	48 (50)
Hot gas °C	44
Compr	Off
Fan/brine pump	Off
Charg.pump	Off
HP in/out °C	48/48
Outdoor HP °C	-5
Heatingcir. pump	On
El power kW	0.0
Current A	11 (20)
Mixing valve	Opening
Delay valve	1180
Program ID	
Program date	

This menu displays current product and system temperatures and operating data. Values in brackets are either required values or automatically generated values which the product aims to achieve (expected values)..

- Boiler lower 48(50) Displays the temperature of the lower part of the boiler. Desired temperature in brackets.
- Brine in/out °C 5/2 CTC EcoPart only.: Indicates incoming and outgoing brine temperature. The first digit (in) is the temperature in to the heat pump, and the second is the temperature going out of the heat pump. The values vary during the year according to the heat source's capacity and the energy drawn out.
- Hot gas °C 44 Displays the compressor's hot gas temperature. The temperature varies during operation.
- Fan/brine pump On Shows the fan's (EcoAir) or the brine pump's (EcoPart) operational status. The pump/fan stops after a delay when the compressor stops.

### Menu Stored operation data

(the menu can be directly accessed from the main menu))

Stored oper data	
Total Operation h	8768
El heat kWh	22375
Max prime °C	55

Operation values across longer periods of time are reported in this menu.

- Total Operation h 8768 Displays the total time the product has been connected to power..
- El heat kWh 22375 Displays the product's total calculated approximate consumption. This is not a direct energy measurement. The household energy is outside this display..
- Max prim °C 55 Displays the maximum temperature of the water supplied to the radiators. The value can indicate the radiator system/the house's temperature requirement. The lower the value in the winter season, the better the system is adapted to heat pump operation. The value can be reset by pressing the "OK" button in this menu..

### Menu Night reduction

(the menu can be directly accessed from the main menu)

Night reduction	
Activated	Yes/No
Type	WeekProgram
Prim red °C	-5
WeekProgram/Block	

Night time lowering of temperatures can be activated and set in this menu. Night time temperature lowering means that the indoor temperature is lowered during scheduled periods, for example at night or when you are at work. Two types of night time temperature lowering can be selected. Week Program is selected to schedule daily lowering of temperatures. Block is selected to schedule night temperature lowering periods which last for several days.

- Activated Yes/No Here you can select whether scheduled temperature lowering is active. Where "No" is selected, there is no temperature lowering.
- Typ WeekProgram The type of lowering is selected here: WeekProgram means that periods of lower temperatures can be scheduled for all days of the week, with the option of two periods of lower temperatures per day. The schedule repeats every week. Block means that lowering is scheduled for several days of the week, for example Monday to Friday. Two lower temperature periods can be scheduled. The schedule repeats every week.
- Prim red -5 Here you can set how many degrees the room temperature is to be lowered during the lower temperature periods. NB: -5 means that the room temperature is lower 5°C below the ordinary temp. If the room sensor is not included in operation, the lowering is applied to the primary flow temperature. Rule of thumb: a 3-4°C lower primary flow temperature gives around 1°C lower room temp in a normal system.
- WeekProgram or Block Scheduling is set under these menus, see next section.

## Menu Week program

(Night reduction/WeekProgram)

WeekProgram	
Mon	▲06 ▼-- ▲-- ▼22
Tue	▲06 ▼-- ▲-- ▼22
Wed	▲06 ▼-- ▲-- ▼22
Thu	▲06 ▼-- ▲-- ▼22
Fri	▲06 ▼-- ▲-- ▼23
Sat	▲08 ▼-- ▲-- ▼23
Sun	▲08 ▼-- ▲-- ▼22

Lowering times during days of the week can be scheduled in this menu. The schedule repeats every week. The picture shows the factory values, which can be changed. If further lowering periods are required, intermediate times can be programmed.

▲ = the temperature is raised (to normal temp) at the times specified after the arrow..

▼ = the temperature is lowered the number of degrees specified at the time specified after the arrow.

Ex. 1

Mon ▲06 ▼-- ▲-- ▼22 :

On Monday morning at 6.00 am, the temperature is raised to normal and remains normal throughout the day until 10.00 pm when the temperature is lowered

Ex. 2

Mon ▲06 ▼12 ▲16 ▼22 :

At 6:00 am, the temp is raised to normal, at 12:00 pm the temp is lowered until 4:00 pm. Between 4:00 pm and 10:00 pm the temp is normal, after which the temperature is lowered.

## Block menu

(Night reduction/Block)

Block		
Decr.	Sun	18:00
Incr.	Fri	16:00
Decr.	--	
Incr.	--	

Temperature lowering for several days of the week can be set in this menu. For example, if you work somewhere else during the week but are at home at the weekend.

Decr. Sunday 18:00

Set the first day and time at which the temperature should be lowered

Incr. Friday 16:00

Set the day and time at which the temperature is to be returned to normal. If two lowering periods are required in the week, they are programmed in chronologic order.

Ex:

Decr	Sunday	18:00
Incr	Wednesday	16:00
Decr	Thursday	21:00
Incr	Friday	16:00

# 12. Connected to a CTC heat pump

## General

The CTC EcoEI is design for easy connection to the CTC EcoAir or the CTC EcoPart heat pumps. The functions for control these combined systems are incorporated in the control system of the EcoEI. The following pages describe the operation and maintenance of these installations. Menu settings different from the EcoEI stand alone installations are considered in this Chapter.

## Main menu / Normal display menu

EcoAir	Mon 00:00
Indoor °C	(20)20
Boiler °C	50
Add. DHW VV	Yes/No
Operation data	
Stored oper data	
Night reduction	No
Installer	

Add DHW VV Yes/No

If additional hot water comfort is required, the times for this are selected in this row. Scheduled times or immediate timered hot water comfort can be selected in the sub menu. Times and comfort hot water temperatures can be set in the Advanced/Settings menu..

No:Extra DHW are not produced

Yes: Extra DHW are produced.

## Menu Additional DHW

(additional hot water)

Extra VV	
Activated	No
Typ	WeekProgram
Typ	Time
WeekProgram	

Möjlighet att öka produktens varmvattenkapacitet på bestämda tider, med eller utan elpatronshjälp. Du kan välja om du vill ha extra varmvatten omgående, eller schemalägga veckovis. Då funktionen aktiveras börjar produkten att skapa extra varmvatten. Varmvattnet produceras genom att kompressorn arbetar med hög temperatur. I meny "Inställningar" kan man också välja om elpatronen också ska hjälpa till att skapa extra varmvatten. Tänk på att extra varmvatten (hög temperatur) innebär att mer energi förbrukas för att skapa det varma vattnet, speciellt om elpatronen används.

Activated No:

Select here whether you want to activate the additional hot water function. Yes = additional hot water is supplied as specified in the schedule or immediately for a set time period.

No = deactivates the function, no additional hot water is produce

Typ WeekProgram

Select here the type of scheduling you want to use: :

Time

As specified in a weekly schedule, which you program as described in the bottom row. Is used if you always know when you will require additional hot water..

Time: additional hot water starts being produced for the period set in the "Settings menu", for example for 120 minutes. Is selected when you have an immediate need for hot water.

# 11. Information and alarm texts

## Information texts

Water filled?  
Confirm with "OK"

This text will be displayed in the first operation hour of the product and each time the voltage is switched on. No functions start before you confirm that water has been filled. If the system and the product have been filled with water, confirm by pressing the "OK" button.

Information  
Factory setting

Shows that the product resets to the pre-programmed factory values (can be selected in the "Installer/Settings/Load factory settings" menu).

Information  
High power demand, reduced electricity (xA)

The house's main fuses are overloaded due to (for example) several power demanding equipment units being used at the same time. The product reduces electric cartridge power during these periods..

Information  
House heating off  
Outdoor XX°C

Displays that no heating is required in the house. The radiator pump is shut down and the mixing valve valve remains closed. The pump is exercised daily for a short period, so that it does not jam. Current outdoor temperature is also displayed.

Information  
Electricity supplier control

Shows that electricity supplier control is active. Electricity supplier control is a piece of equipment which an electricity supplier can install to disconnect power demanding electrical equipment for shorter periods of time by district. Compressors and electrical power are blocked when this function is activated.

Information  
Low flow rate

If the flow rate is too low "Low flow rate" shows in the display. The alarm is reset automatically if the flow increases.

## Alarm texts

Alarm  
Sensor (hot gas, supply line, outdoor, room, brine in, brine out, heat pump, electric boiler)

An alarm is triggered where there is a fault on a sensor. The compressor stops if the sensor is important in compressor operation. The alarm must be reset manually after the fault is rectified. For other sensors, the alarm is automatically reset after rectification

## Menu Installer

(the menu can be accessed directly from the main menu)

Installer  
Settings  
Service

This menu contains two sub menus. The Settings menu is used by the installation contractor and the user and the Service menu is used when fault tracing

Settings

Select this menu to adjust the settings to your own requirements..

Service

The menu also contains an encoded section with alarm limits, where manufacturer's settings are stored.

## Menu Settings

(Installer/Settings)

Settings  
Lang. English  
Product EcoEI  
Indoor sens Yes/No  
Boiler °C 50  
Boiler max kW 6  
Boiler lower °C 50  
Boiler lower kW 6  
Main fuse A 20  
External Control NS  
Setting house paramt  
Holiday Från  
Prim red °C -2  
HP max DHW Yes  
Save setting  
Load setting  
Load factory setting

In the menu "Settings", the installer and user make the adjustments to the requirements and demands.

U = settings made by the user.

I = settings made by the installer.

Lang. English I/B.

Setting the language.

Product EcoEI I.

The control unit contains control systems to several product types: Eco Heat, EcoPart, EcoEI and EcoAir. The correct product is set by the factory. If EcoEI is supplemented with EcoPart or EcoAir, the product type must be changed

Indoor sens. Yes/No I.

Select here whether an indoor sensor is to be included in operation. An indoor sensor can be temporarily deselected, for example when a fire place is being used.

Boiler °C 50 I/B.

The electric unit's temperature is set here. A low setting is recommended. The electric unit is also responsible for peak heating. If the house requires a higher temperature than that selected, the control system compensates by automatically raising the temperature.

Boiler max kW 3 I.

Setting determining the electric unit's maximum permitted power. 0 to 9 kW with steps of 1.5 kW.

Boiler lower °C 50 I.

Setting the temperatur of the lower part of boiler.

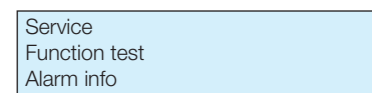
Boiler lower kW 3 I.

ISetting the lower part of the boilers maximum permitted power. 0 to 9 kW with steps of 1.5 kW..

Main fuse A 20	I.	The house's main fuse size is set here. This setting and the fitted current sensors ensure the fuses are protected when using equipment which generates temporary power peaks, for example cookers, ovens, engine heaters etc. The product temporarily reduces power drawn where this type of equipment is being used.
External control NS	I.	Selection of remote control type. NR = remote controlled temperature lowering, for example via the minicall system. SO = electricity supplier control. Disconnection of compressor and electric cartridge for specific periods of time as determined by the electricity supplier (special equipment is required).
Setting house	I/B	When this is selected, a sub menu will be displayed in which the house's temperature Paramet.requirement (heating curve) is set, see the "House parameters" menu.
Holiday D On/Off	B.	Where you require constant night time lowering of temperatures (for example when on holiday), the number of days (holiday) can be set here. Up to 250 days can be set. Off = not activated.
Prim red °C -2	B.	Here you can set how many degrees the room temperature is to be lowered during the lower temperature periods. NB: -5 means that the room temperature is lower 5°C below the ordinary temp. If the room sensor is not included in operation, the lowering is applied to the primary flow temperature. Rule of thumb: a 3-4°C lower primary flow temperature gives around 1°C lower room temp in a normal system.
HP max DHW Yes	I.	The setting determines whether the set point for the lower tank (menu "VP max") should be adjusted to every four compressor start-up. The menu is included in software version 090520 and later.
Save setting	I/B	I/B. Your own settings can be saved here. Confirm using the "OK" button..
Load setting	I/B	Saved settings can be retrieved here. Can be useful if you test new settings, which are subsequently shown to not be satisfactory and want to restore the old settings.
Load factory setting	I/B	The product is supplied with factory settings. These can be restored by using this function. Confirm using "OK". Language, product and product size are however not reset..

## Menu Service

(Installer/Service)



There are three sub menus in the service menu:

Function test	The product components can be tested using this sub menu. The menu is intended for fault tracing the product.
Alarm info	Information on the last alarm triggered is provided in this menu

## Reset where alarm triggered (red alarm diode flashes)

Reset the alarm by pressing the reset button on the panel. If several alarms are triggered, these are displayed sequentially. A fault cannot be reset without it first being rectified. Some alarms are reset automatically if the fault ceases.

## Load monitor

EcoEI has a load monitor. If the supplied current sensor is fitted, the house's main fuses are continuously monitored to ensure they are not overloaded. If the fuses are overloaded, an electrical step is disconnected from EcoEI. The heat pump can be limited where high heating requirement levels are combined with (for example) single phase engine heaters, cookers, washing machines or tumble dryers. This can result in inadequate heating or hot water temperatures.

If the heat pump is limited, High electrical output, reduced electrical power (X A) is displayed in text in the display.

Consult an electrician to determine whether the fuse size is correct.

## Air problem

If a chafing sound is heard from the heat pump, check that it is fully bled. Turn the boiler safety valve so that any air can be evacuated. Add water where required, so that the correct pressure is achieved. If this occurs repeatedly, call a technician to check the system.

## Unusual noise when shutting off DHW

In some cases, unusual noises may be produced by the cold water, pipe work and EcoHeat due to the jolts which occur when the flow is quickly interrupted.

There is no fault with the product, but the noise may occur when older model outlets are used. More recent outlets are often fitted with a soft-closing mechanism.

If an unusual sound comes from hard-closing dishwasher and washing machines, this can be remedied using a shock arrestor.

A shock arrestor can also be an alternative to soft-closing water taps.

**!** Do not forget that the radiators may also need to be bled.

## 10. Fault tracing/suitable measures

CTC EcoEI is designed to provide reliable operation and high levels of comfort and in addition have a long lifetime. Below are a number of suggestions and guidelines which can be useful in the event of malfunction.

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

### DHW (Domestic hot water)

Many want to utilise the heat pump's low operating costs to the maximum. The electric cartridge's temperature setting affects the temperature of the hot water which the heat pump provides. Lower settings give lower temperatures, but also larger savings. Set the temperature so that your requirements are met. Start at a low temperature, for example 47 °C, and increase gradually if the water is not hot enough.

### The heating system

A room sensor, which should always be fitted, ensures that the temperature in the room is correct and steady. For the sensor to provide the correct signals to the control unit, radiator thermostats should always be fully open in the area where the room sensor is located.

Always adjust the system with all radiator thermostats fully open. The thermostats can be individually adjusted after a few days in the other rooms.

**!** Avoid running hot water at high speeds. Reducing the DHW flow will increase the temperature of the water.

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

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

- That the radiator system is correctly adjusted and is functioning normally. That radiator thermostats are open and that the radiators are equally warm all over. Feel the entire radiator surface. Bleed the radiators. The heat pump's economical operation requires that the radiator system functions well, if good savings levels are to be achieved.
- That the heat pump is in operation and no error messages are displayed.
- That sufficient electrical power output has been installed. Increase where necessary.
- That the products "Max permitted primary flow temperature" is not too low in the menu Max Primfl. °C.
- That "Primary flow (Inclination) temperature at -15°C outdoor temperature" is set sufficiently high. Increase where necessary. More can be read about this and heating curves on page 5.
- That temperature lowering is not incorrectly set.
- That the mixing valve is not in the manual position.

### If heating is uneven, check:

- That the room sensor position is representative for the whole house.
- That radiator thermostats are not affecting the room sensor.
- That no secondary heat source/cold source is affecting the room sensor.
- That the mixing valve is not in the manual position.

increases (opens) or reduces (closes)

## Menu Function test

(Installer/Service/Function test)

Function test	
EIRelay 1,5/3 kW	0,0
EIRelay 3/6 kW	0,0
Boiler lower	Off
Charg. pump	Off
Heatingcir. pump	Off
Mixing valve	increase
LED room sensor	Off

This menu is used to test product component function. It is therefore used by qualified service personnel. When the menu is activated, all product functions stop. Each component can then be tested separately or together. All control functions are shut off. The only protection against incorrect operation are the pressure sensors and the electric cartridge overheating protection. If no button is pressed within a 10 minute period, the product automatically returns to normal operation. Except where only the brine pump is started, which can be operated for long periods of time. It is used together with the external filling pump in installation.

EI Relay 1.5/3kW

The electric cartridge's 3 kW unit is activated. First relay 1a (1.5 kW), then relay 1b (3 kW). The connected power is displayed.

EI Relay 3/6kW

The electric cartridge's 6 kW unit is activated. First relay 2a (3 kW), then relay 2b (6 kW). Connected power is displayed

Boiler lower Off

Activation of lower electrical elements in boiler..

Charg.pump Off

Activation of the charge pump..

Heatingcir. pump Off

Activation of radiator pump.

Mixing valve increase

Shows whether the mixing valve increases (opens) or reduces (closes) the heat supplied to the radiators.

LED room sensor Off

The room sensor alarm function can be controlled from here. When activated, the room sensor's red LED comes on steady. The LED on the display is also lit.

## Menu Alarm info

(Installer/Service/Alarm info)

Alarm info	
Latest alarm	
Outdoor sensor	
Stored alarms	
Room sensor	
Primary flow sensor	

Alarm history can be read here. The four last alarms are reported.

Latest alarm

Displays the last alarm in text form.

Stored alarm

Displays the three previous alarms. If all four alarms are of the same alarm type, this can indicate an intermittent fault, for example a bad contact.

## Menu Setting House Parameters

(Installer/Settings/Setting house paramt)

Setting house paramt	
Max Primfi. °C	55
Min Primfi. °C	Off
Heating Off °C	16
Heating curve	
Inclination °C	50
Adjustment °C	0

The house's heating requirement (the heating curve) is set in this menu. It is important that this basic setting is correct for your house. Incorrectly set values can result in insufficient heating, or that unnecessarily high levels of energy are used to heat your house. Particularly great emphasis should be focussed on determining the "Inclination" and "Adjustment" values.

Max Prim fl. °C 55

Maximum permitted temperature of the water supplied to the radiators. This functions as an "electronic" lock to protect floor circuits in floor heating systems..

Min Prim fl. °C Off

Adjustable from 15–65. If, in the summer months, you want cellar or floor circuits (e.g. bathrooms) to have a specific level of background heating, a minimum permitted temperature can be set here. Other sections of the house should be shut off using thermostat valves or shut off valves

Heating off °C 16

Outdoor temperature at which the house no longer requires heating. The radiator pump stops and the mixing valve valve remains closed. The radiator pump is exercised daily for a short period so that it does not jam. The system starts automatically when heating is required.

Heating curve

Collective name for the house's heating curve. The house graph consists of an "inclination" and an "adjustment", which together define the temperature the house requires at different outdoor temperatures.

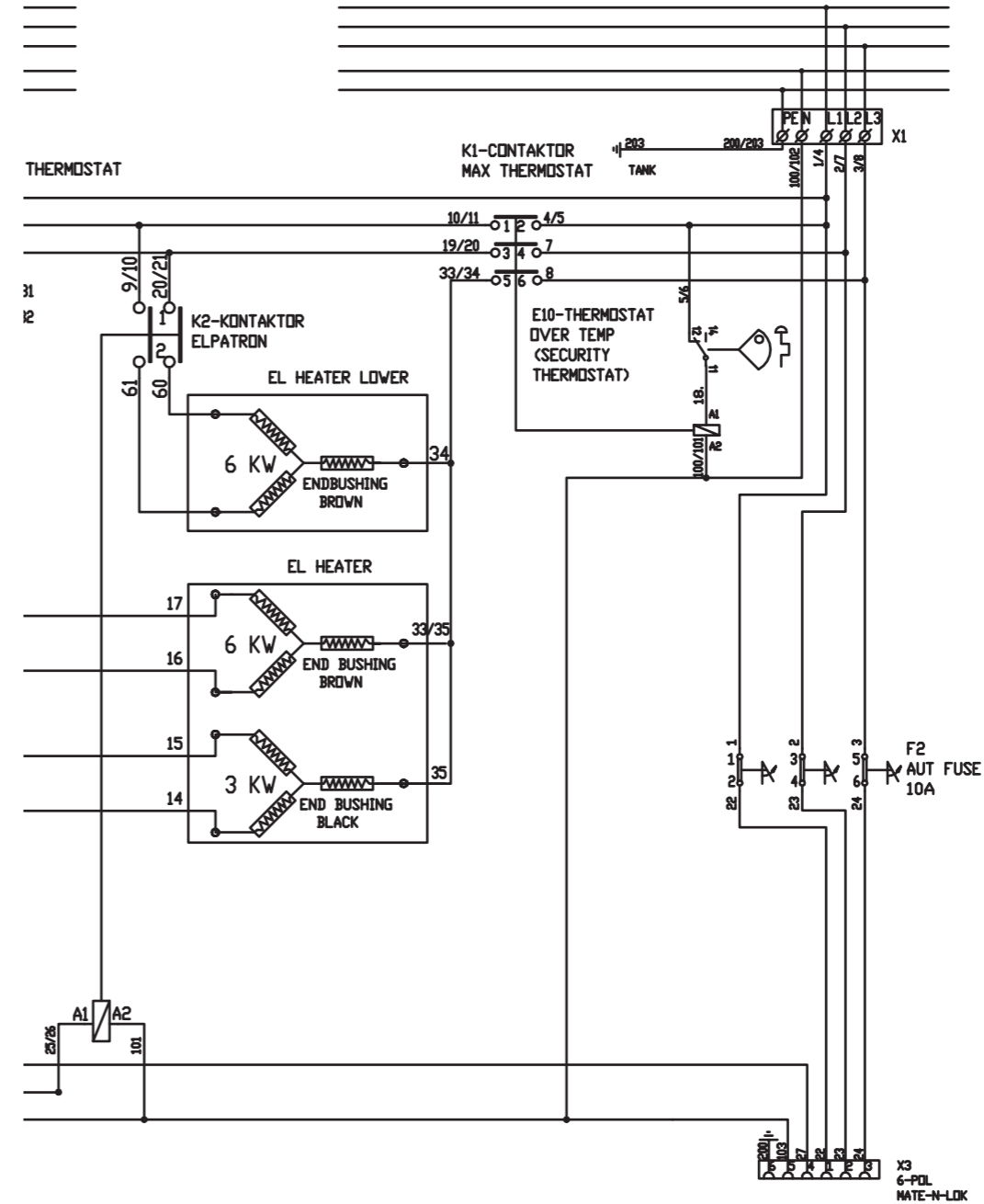
Inclination °C 50

This value is the temperature of the water supplied to the radiators at an outdoor temperature of -15°C. A lower value is set for radiator systems with larger radiator surface areas (a low temperature system). Floor heating systems require much lower temperatures. An even lower value should therefore be selected. The value is increased for high temperature systems, so that sufficient indoor temperatures are achieved. High temperature systems are not optimised for heat pump operation and savings will therefore be lower.

Adjustment °C

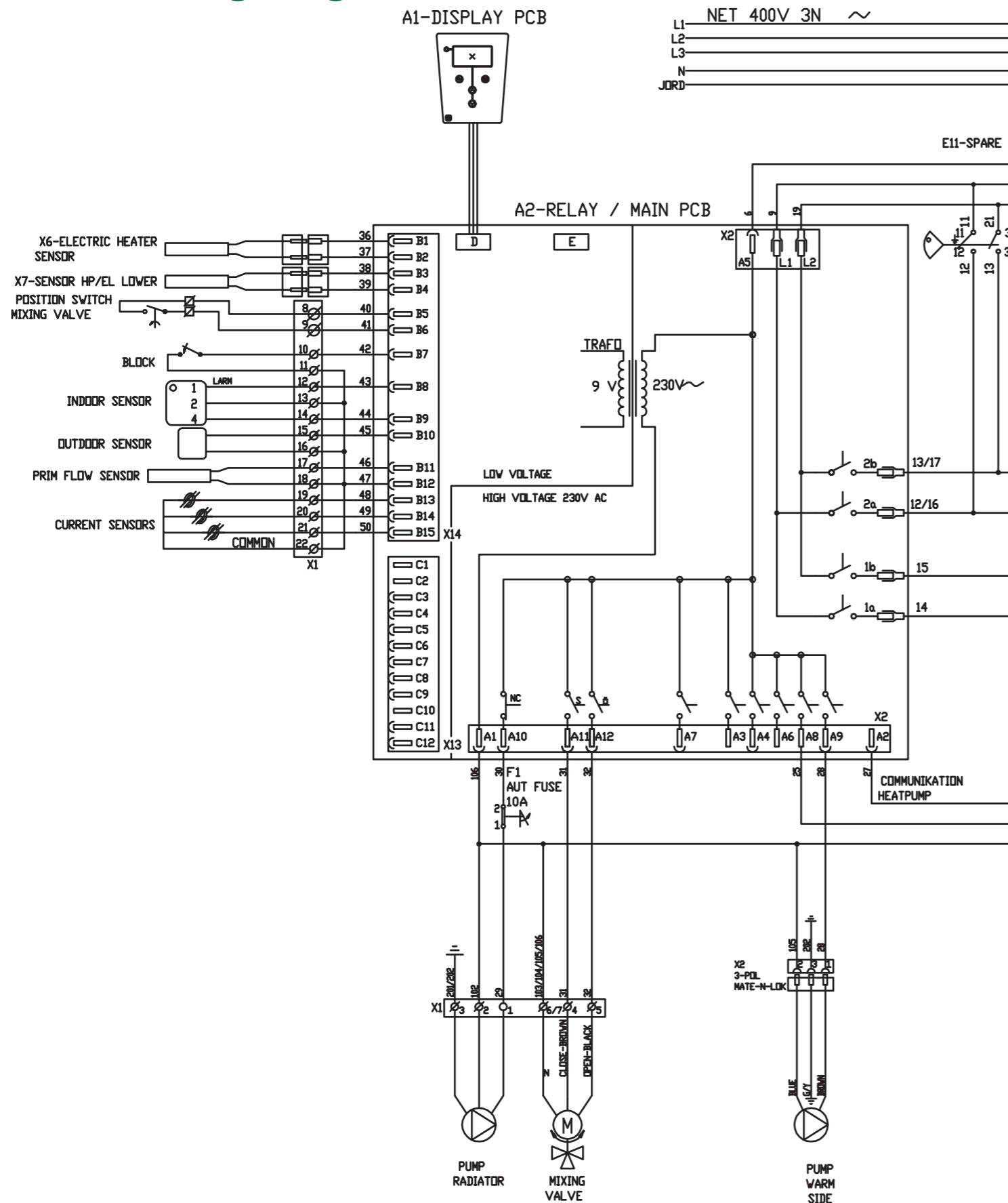
The inclination defines how much the temperature of the water supplied to the radiators should be increased where outdoor temperatures fall. The adjustment specifies that the temperature level can be raised or be lowered at a specific outdoor temperature.

Example: Inclination 50 specifies that the temperature of the water supplied to the radiators is 50°C when the outdoor temperature is -15°C, if the adjustment is set to 0. If the adjustment is set to +5, the temperature is 55°C. The graph is increased by 5°C at all outdoor temperatures, i.e. the graph is parallel displaced by 5°C..





## 9. Wiring diagram



## 7. Other information

### CTC EcoEI operating temperatures

CTC EcoEI operates in the temperature range up to 80°C. When connected with a CTC heat pump, the operation temperature would be 35-55°C, depending on the current heating requirement on the supply line. This is completely normal and is monitored by the control system, which continuously ensures that you are provided with optimal function

### Indoor sensor

You can select "Indoor sens No" in the Installer/Settings menu. This can be necessary if the room sensor is poorly positioned, if you have several apartments, if the floor heating system has a separate room sensor or if you use a fire place or open stove. The alarm diode on the room sensor functions however as normal.

If you use the fire or open stove only occasionally, the firing can affect the room sensor and reduce the temperature supplied to the radiators. Other rooms in the house can therefore become cold. The room sensor can temporarily be deselected during firing. EcoEI then provides heating to the radiators using the set heating curve.

The radiator thermostats reduce the heating supplied to the section of the house in which you are using wood firing.

### Where there is a fault on the Outdoor sensor/indoor sensor

If a fault occurs on the outdoor sensor, an outdoor temperature of -5°C is simulated so that the house does not become cold. The alarm is triggered.

If a fault occurs on a room sensor, EcoEI automatically switches to operation using the set graph. The alarm is triggered.

### Summer basement heating

Background heating is often wanted in basements/recreation rooms/bathrooms in the summer months, to avoid damp air. Your EcoEI can provide this by you setting a "minimum permitted supply line temperature" at a suitable temperature (15-65°C).

See the Installer/Settings/Setting house paramt

This means that the temperature of the water supplied to the radiators does not fall below a selected temperature, for example +27°C.

Functioning radiator thermostats or shut off valves in the rest of the house are required to achieve this. These shut off heating to the rest of the property. The function can also be used for bathroom floor heating, for summer floor heating.

## 8. Operation and maintenance

When the installation contractor installs your new heat pump, you should together with the contractor check that the system is satisfactorily set up. Ensure the installation contractor demonstrates the switches, controls and fuses, so you know how the system works and how it should be operated. Bleed the radiators after around three days of operation and top up with water if required.

### Boiler and radiator system safety valves

Around four times a year, check valve function through manually turning the operation levers. Check that water runs from the waste line.

### Mixing valve

The mixing valve is operated automatically from the control system and ensures that the radiators achieve the correct temperature, independent of season. You can however, where a fault occurs, operate the valve through pulling out the wheel on the motor in and turning it clockwise to reduce the temperature or anticlockwise to increase the temperature.



**!** Do not forget to reset the mixing valve to automatic position.

### Component positions

1. Setting wheel for mixing valve valve.
2. Safety valve for boiler and radiator system.
3. Control panel.
4. Valves. In use when connected to CTC EcoAir or CTC EcoPart. For drainage of product and radiator system, use the left valve
5. Front panel. To dismount - release the two screws at the top and pull forward.

### Drainage

The heat pump should be disconnected from the power source when it is being drained.

The drainage valve is positioned at the bottom left of the unit when viewed from the front, behind the front of the heat pump. When draining the **whole** system, the mixing valve valve should be fully open, i.e. turned anticlockwise as far as it will go. Air must be supplied to closed systems.

### Operation stops

The heat pump is shut down using the operating switch. If there is a risk that the water can freeze, all water should be drained from the boiler and the radiator system. The hot water circuit, which contains around five litres, is emptied by inserting a hose at the bottom of the cold water connection and then draining out by siphoning.

