



Providing sustainable energy solutions worldwide

Installation and Maintenance Manual
CTC EcoAir 610M / 614M / 622M

Modulating air-to-water heat pump

400 V 3N~

IMPORTANT

READ CAREFULLY BEFORE USE AND SAVE FOR
FUTURE REFERENCE



CTC EcoAir 610M / 614M / 622M

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Safety instructions



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 X4.



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.



Never jeopardise safety by deactivating safety equipment.



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



The product's electrical systems should only be installed and serviced by a qualified electrician.

-If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.



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.



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



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

Enertech AB provides the information with reservation for any typing errors and subject to modification.

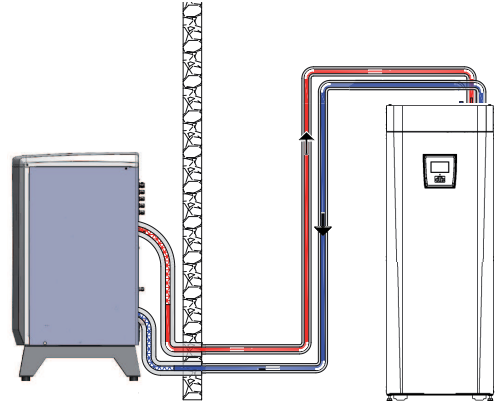
The Complete System



CTC EcoAir 610M / 614M / 622M

CTC EcoAir 600 (610M / 614M / 622M) is a modulating air source heat pump which transfers heat from the outside air to the property's heating system. The heat pump works with outside air temperatures as low as -22 °C.

CTC EcoAir 600 is designed to operate with high efficiency and low noise levels. The heat pump has integrated, on-demand hot gas defrosting which keeps the evaporator coil free from ice in order to maintain high efficiency.



Control

CTC EcoAir 600 is controlled by these products.

- CTC EcoZenith i550 Pro (CTC EcoAir 614M / 622M)
- CTC EcoLogic Pro/Family
- CTC EcoZenith i250
- CTC EcoZenith i350
- CTC EcoVent i350F

All control products must have software version 2018-04-06 or later.

Charge pumps

CTC's PWM-controlled charge pumps are included with the products CTC EcoZenith i250 / i350 and CTC EcoVent i350F, and are available as accessories for CTC EcoZenith i550 Pro and CTC EcoLogic.

Energy labeling decals can be downloaded at www.ctc-heating.com/Ecodesign.

Checklist

The check list must be completed by the installer.

- If 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

- ☐ Heat pump filled, positioned and adjusted in the correct manner according to the instructions.
- ☐ The heat pump should be positioned so that it can be serviced
- ☐ Capacity of the charge/radiator pump (depending on type of system) for the flow required.
- ☐ Open radiator valves (depending on type of system) and other relevant valves.
- ☐ Tightness test
- ☐ Bleed the system
- ☐ Check proper operation of the requisite safety valves
- ☐ Action taken to deal with condensation water

Electrical installation

- ☐ Power switch
- ☐ Correct tight wiring
- ☐ Requisite sensors fitted
- ☐ Heat pump activated and started
- ☐ Accessories

Information for the customer (adapted to current installation)

- ☐ Start-up with customer/installer
- ☐ Menus/controls for selected system
- ☐ Installation and maintenance manual supplied to the customer
- ☐ Check and filling, heating system
- ☐ Information on fine adjustments
- ☐ Alarm information
- ☐ Functional test of safety valves fitted
- ☐ Information on procedures for fault registration

Date / Customer

Date / Installer



1. Technical data

		EcoAir 610M	EcoAir 614M	EcoAir 622M
CTC no.:		588402001	588400001	588401001
Electrical data		400 V 3N~ 50Hz	400 V 3N~ 50Hz	400 V 3N~ 50Hz
Input power ¹⁾	kW	0.54 / 2.20	0.54 / 3.94	0.94 / 6.03
Output power ¹⁾	kW	2.55 / 6.20	2.55 / 8.69	4.75 / 13.99
COP ¹⁾		4.71 / 2.82	4.71 / 2.21	5.07 / 2.32
Rated current ²⁾	A	7.1	10.2	16.9
Rated current with temp. limit.	A	6.6	9.4	15.5
Max start current	A	2.7	2.7	4.9
Water volume	liter	1.9	1.9	2.8
Refrigerant quantity R407C, fluorinated greenhouse gases GWP 1774 ³⁾	kg	2.2	2.2	2.7
CO ₂ equivalent	ton	3.903	3.903	4.790
Max/min system temperature	°C	65/15	65/15	65/15
Max/min system pressure	MPa (bar)	0.25/0.05 (2,5/0,5)	0.25/0.05 (2,5/0,5)	0.25/0.05 (2,5/0,5)
High pressure switch HT	MPa (bar)	3.1 (31)	3.1 (31)	3.1 (31)
Max/min temp. (TS) (PED)	°C	100/0	100/0	100/0
Max/min pressure (PS) (PED)	MPa (bar)	0.3/0 (3.0/0)	0.3/0 (3.0/0)	0.3/0 (3.0/0)
Dimensions (Depth x Width x Height)	mm	545 x 1245 x 1080	545 x 1245 x 1080	610 x 1375 x 1180
Compressor / Oil type		Inverter scroll / PVE FV50S	Inverter scroll / PVE FV50S	Inverter scroll / PVE FV50S
Air flow 100%	m³/h	3129	3129	5457
Fan speed	rpm	Modulating		
Fan, max power	W	54	54	148
Weight (packaged weight)	kg	174 (204)	174 (204)	192 (226)
Sound power in accord. w. ecodesign ³⁾	dB(A)	53/53	51/52	55/55
Ingress Protection (IP)		IP X4	IP X4	IP X4

¹⁾ At 35°C water temperature. +7 @ min rps / -7 °C @ max rps. According to EN 14511.

²⁾ At max rps incl. Grundfos UPM GEO 25-85 charge pump.

³⁾ Sound power level in accordance with EN12102 appendix A.4 i at test conditions A7 W47/55 and A7 W30/35

No annual leakage control of the refrigerant is required.



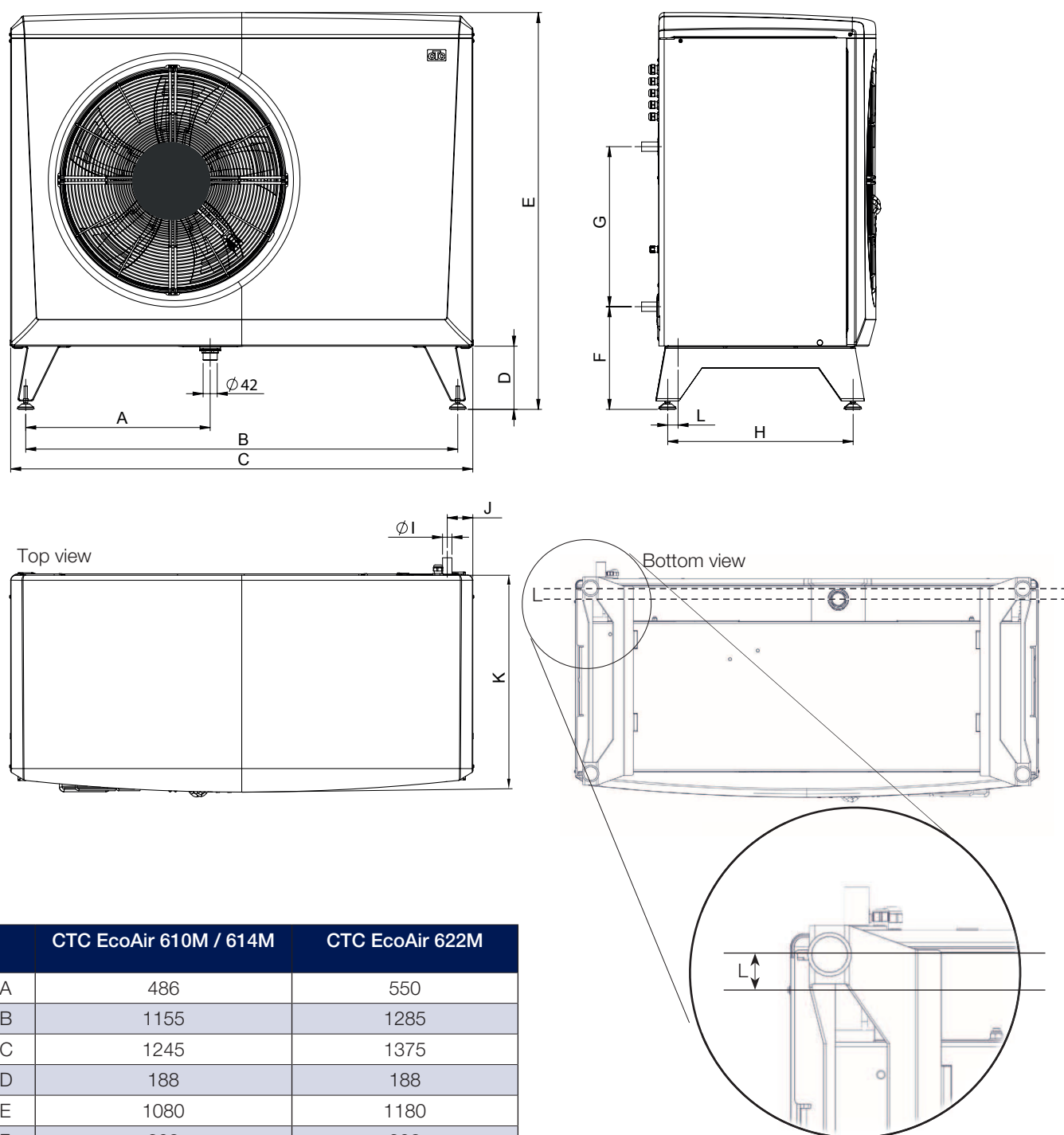
Note: In case of deviations, the product's data plate applies. When servicing always check the product's data plate for correct refrigerant quantity.

1.1 Sound pressure data

	Sound power	Sound pressure 5 m	Sound pressure 10 m
EcoAir 610M	53/53 dB(A)	34/34 dB(A)	28/28 dB(A)
EcoAir 614M	51/52 dB(A)	32/33 dB(A)	26/27 dB(A)
EcoAir 622M	55/55 dB(A)	36/36 dB(A)	30/30 dB(A)

The stated sound values should be considered an indication only, as the level is affected both by power output and the surroundings.

1.2 Dimensions diagram



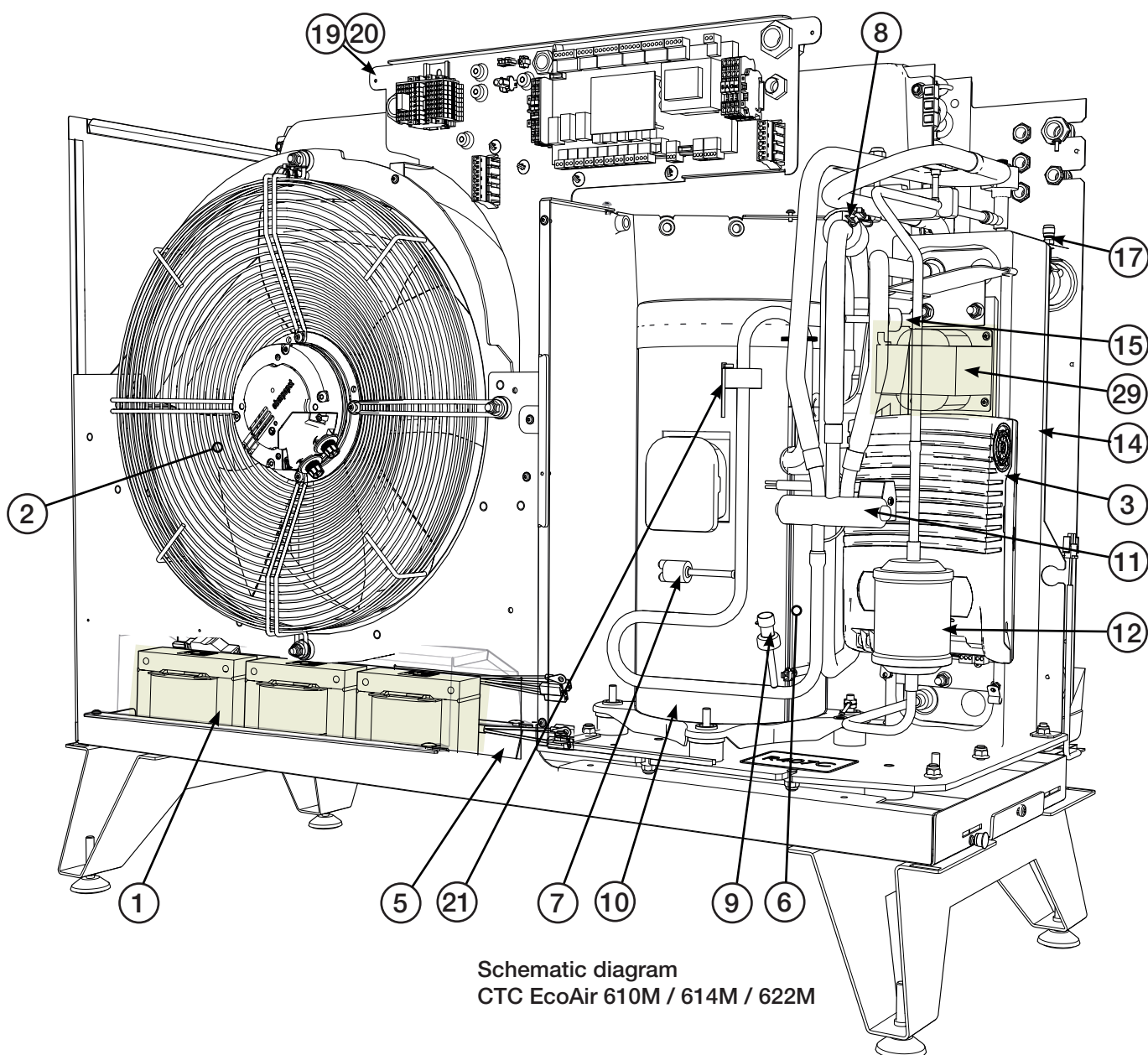
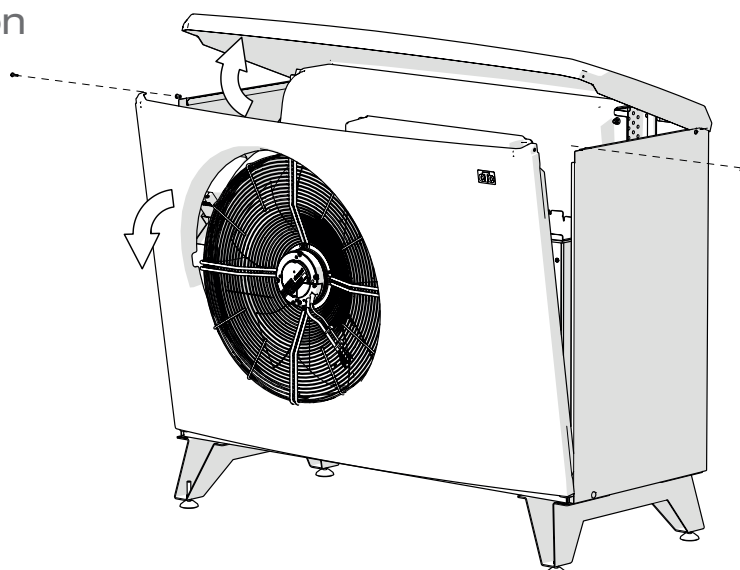
	CTC EcoAir 610M / 614M	CTC EcoAir 622M
A	486	550
B	1155	1285
C	1245	1375
D	188	188
E	1080	1180
F	308	308
G	476	476
H	451	551
I	Ø28	Ø28
J	85	83
K	545	645
L	10	33

1.3 Component location

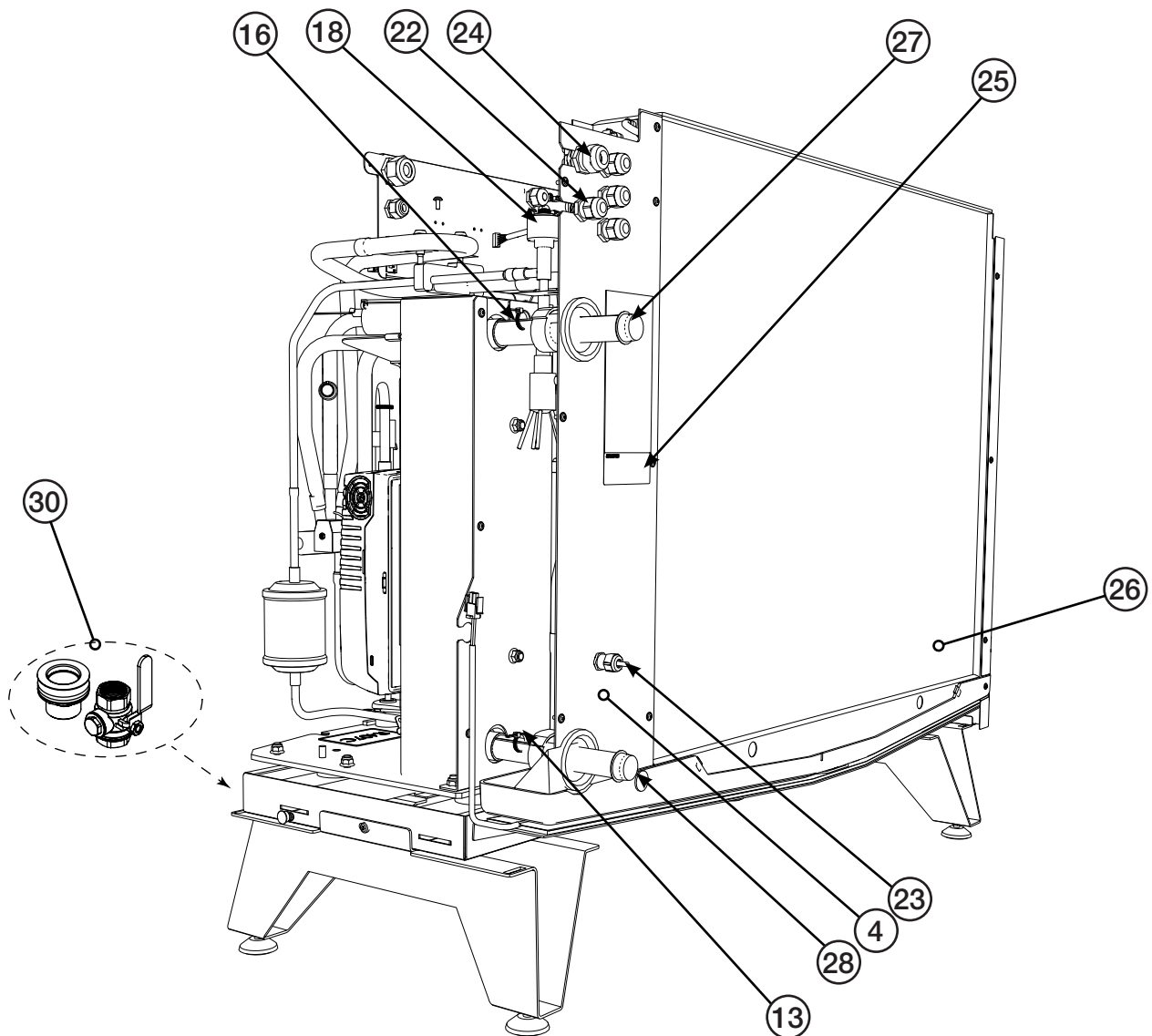
Component location
CTC EcoAir 610M / 614M / 622M

Configuration coils:

- ① AC coil: EcoAir 610M / 614M
- ②⑨ DC coil: EcoAir 622M



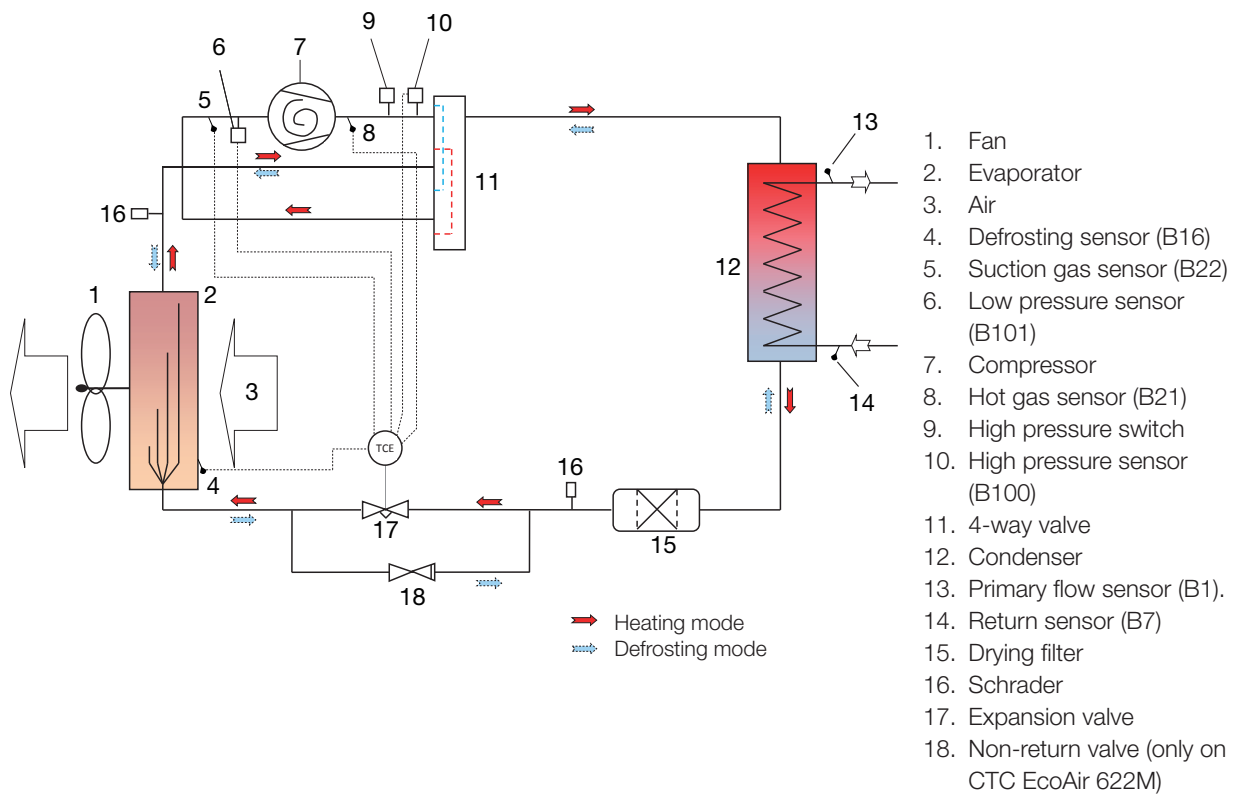
Schematic diagram
CTC EcoAir 610M / 614M / 622M



- | | |
|---------------------------------------|--|
| 1. AC coil | 17. Bleeding nipple/water |
| 2. Fan | 18. Expansion valve |
| 3. Frequency converter | 19. Connection box |
| 4. Defrosting sensor in evaporator | 20. Communication |
| 5. Type plate with serial number etc. | 21. Discharge sensor |
| 6. Compressor | 22. Communication product |
| 7. High pressure switch | 23. Outdoor sensor |
| 8. Suction gas sensor | 24. Feeding product |
| 9. High pressure sensor | 25. Serial number |
| 10. Compressor heater | 26. Evaporator |
| 11. 4-way valve | 27. Primary flow Ø28 mm |
| 12. Drying filter | 28. Return flow Ø28 mm |
| 13. Return sensor | 29. DC coil |
| 14. Condenser | 30. Packaged components (filter ball valve and condensate drain) in cardboard box under product on pallet. |
| 15. Low pressure sensor | |
| 16. Primary flow sensor | |

1.4 Refrigerant system

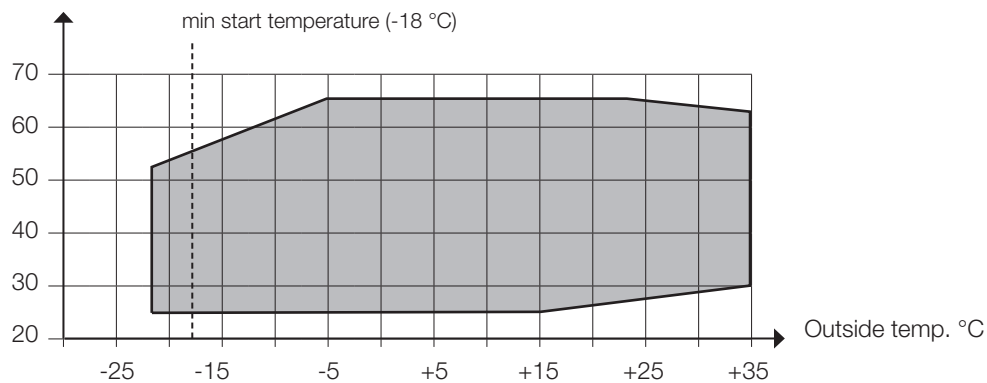
Refrigerant system CTC EcoAir 600



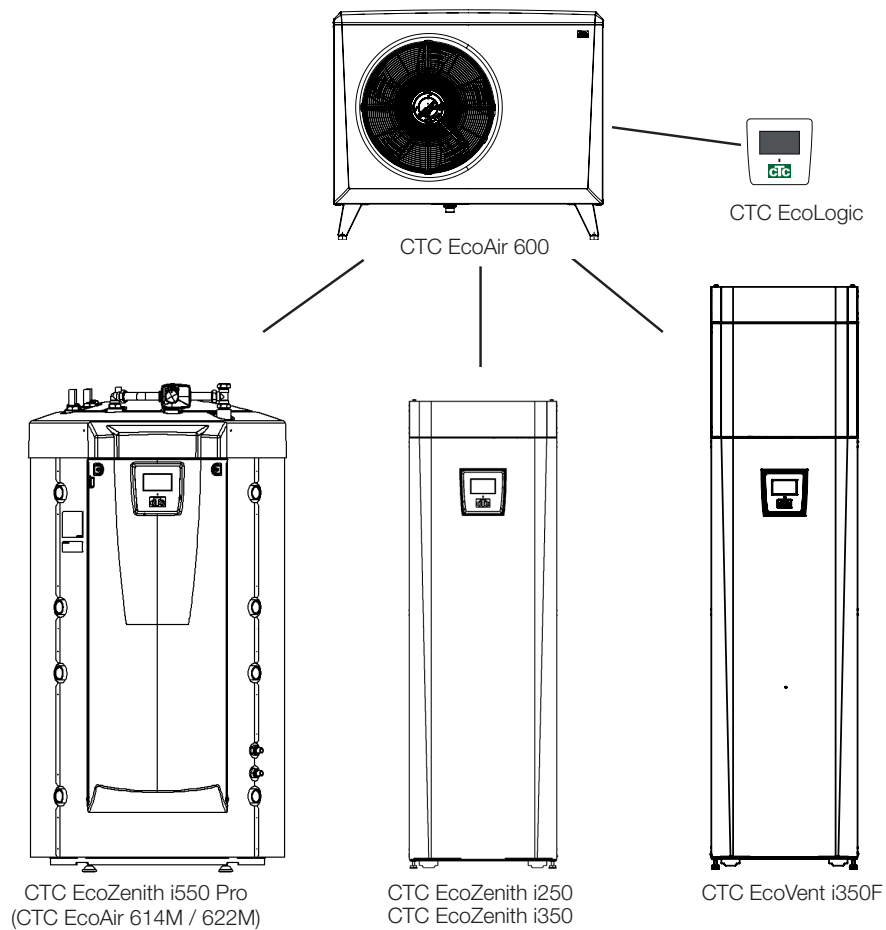
1.5 Operating range

The control system for CTC EcoAir 600 monitors and ensures that the product functions within its operating range.

Primary flow C°



2. Connection alternatives



3. Important to remember!

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

3.1 Transportation

- The product must be transported and stored in an upright position. Transport the unit to the installation site before removing the packaging.
- Remove the packaging and check before installation that the product has not been damaged in transit. Report any transport damage to the carrier.
- Move the product with a forklift if possible, or with lifting straps tied around the pallet. NB: Can only be used with the packaging on.

3.2 Positioning

- Place the product on a solid foundation; see chapter "Placement of the heat pump".
- Flexible hoses should be installed closest to the heat pump. Outdoor pipes should be thoroughly insulated with weather-proof insulation.
- Ensure that pipes used between the heat pump and the heating circuit are of adequate dimensions.
- Ensure that the circulation pump has sufficient capacity to pump the water to the heat pump.

3.3 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. Disposal of the product as household waste is not permitted.
- It is very important that the product's refrigerant, compressor oil and electric/electronic components are disposed of correctly.

3.4 After commissioning

- The installation engineer advises the property owner on the construction 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.

4. Installation

This section is aimed at anyone responsible for one or more of the installations required to ensure that the product works the way the property owner wants.

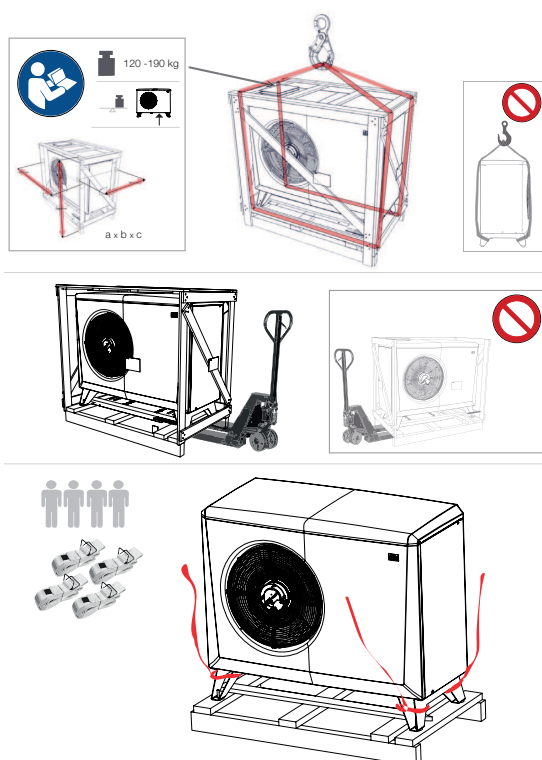
Take your time going through functions and settings with the property owner and answer any questions. Both you and the heat pump benefit from a user who has completely understood how the system operates and should be maintained.

The installation must be carried out in accordance with current standards.

4.1 Delivery includes:

- 1 x Heat pump CTC EcoAir 600
- Packaged components (see chapter titled 'Component Location')
 - filter ball valve: G1" (EcoAir 610M / 614M), G1 ¼" (EcoAir 622M)
 - condensate drain: G1 ¼"
- 15 m cable LIYCY (TP 2x2x0.75 mm²) with connector for communication, fitted.
- 2 m power cable, fitted:

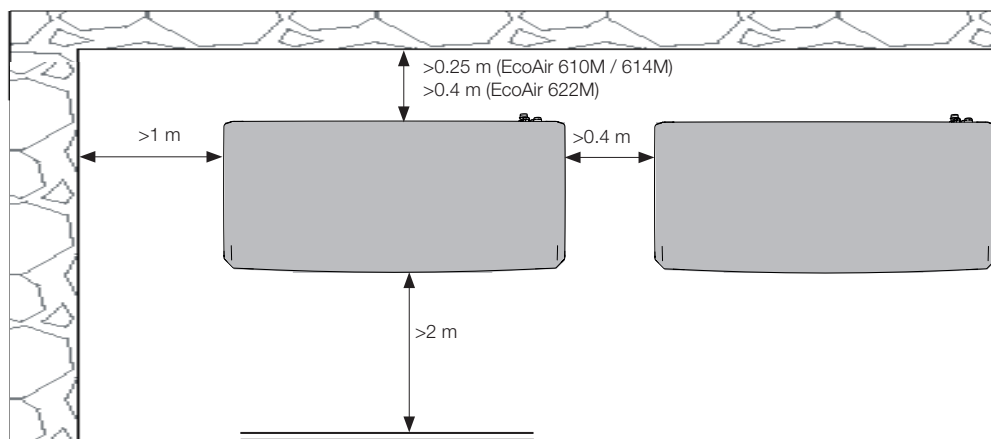
CTC EcoAir 610M / 614M	CTC EcoAir 622M
5G x 2.5 mm ²	5G x 4 mm ²



4.2 Placement of the heat pump

- CTC EcoAir 600 should be mounted as usual on an outside wall.
- The heat pump has a factory-fitted condensation water tray from which condensation water is conducted to a caisson, surface water drain, downpipe or other drainage equipment. You should therefore consider the position of the product.
- If the condensation water pipe is not used, the foundation must be such that condensing water and melted snow can drain into the ground. Make a 'stone curb' under the heat pump. Remove 70–100 cm and fill up with crushed stones to obtain the best possible drainage.
- There should be a space of at least 250 mm (EcoAir 610M / 614M) or 400 mm (EcoAir 622M) between the heat pump and the wall so that outdoor air can pass freely in through the evaporator.
- Allow a space of at least 2 metres between the heat pump and any bushes etc.
- Place the heat pump in a way that prevents noise from the compressor and fan disturbing the surroundings.
- Do not place the heat pump right next to a bedroom window, patio or fence.
- Take the distance to the nearest neighbour into account by studying the sound data in the chapter titled 'Technical Data'.
- The stand must stand stably on concrete blocks or similar.
- Use a spirit level to adjust the unit, so that it is completely level.
- Due to the design of the stand and the weight of the pump, it is not necessary to mount the unit to the ground or the wall.
- The heat pump must not be installed in a covered area, nor in an outbuilding or carport, because the air should flow as freely as possible through the heat pump and used air should not to be sucked into the inlet on the back. This can cause abnormal ice formation in the evaporator.
- If the product is placed in an area where it will be subjected to particularly harsh weather conditions, the product can be installed underneath a small awning.

! These guidelines must be followed in order for your CTC EcoAir 600 to perform optimally



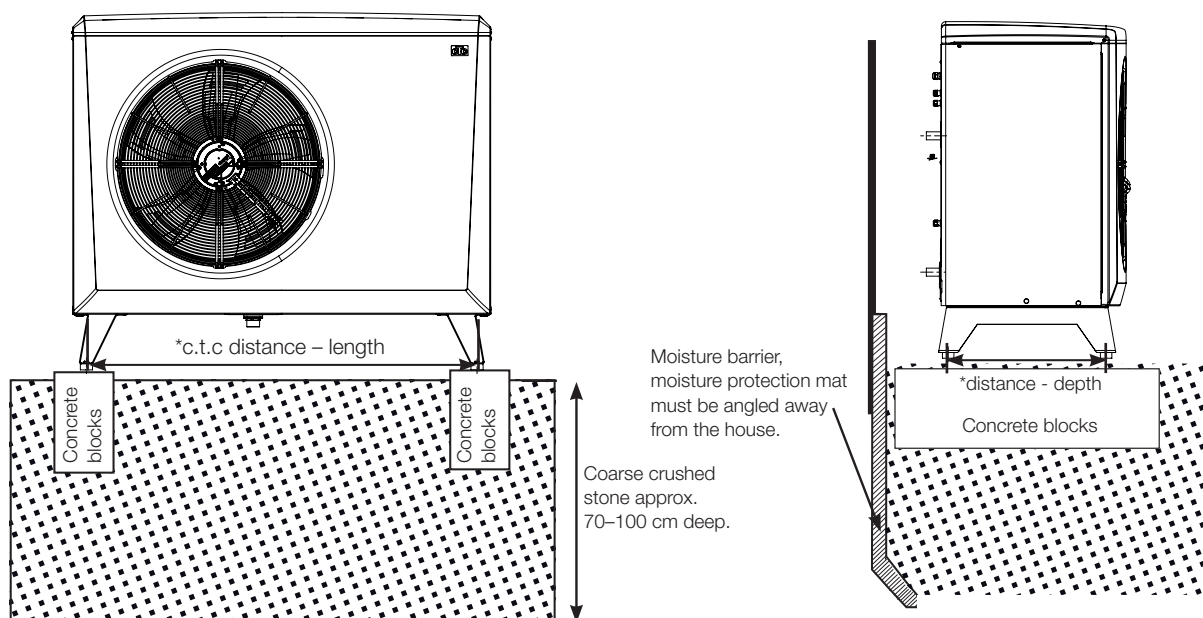
4.3 Preparation and drainage

The heat pump should be positioned so that the house cannot be damaged and the condensation water can easily drain into the ground. The foundation should be of concrete blocks or similar, resting on crushed stones or gravel.

- Make a 'stone curb' under the heat pump. Remember that there may be up to 70 litres of condensation water a day under some conditions.
- Dig a hole in the ground 70-100 cm deep.
- Place a moisture barrier in the hole on the side against the foundations of the building
- Half fill the hole with crushed stones and lay concrete blocks or similar.
- Mark the *centre-to-centre (c.t.c) distance between the blocks for the heat pump stand.

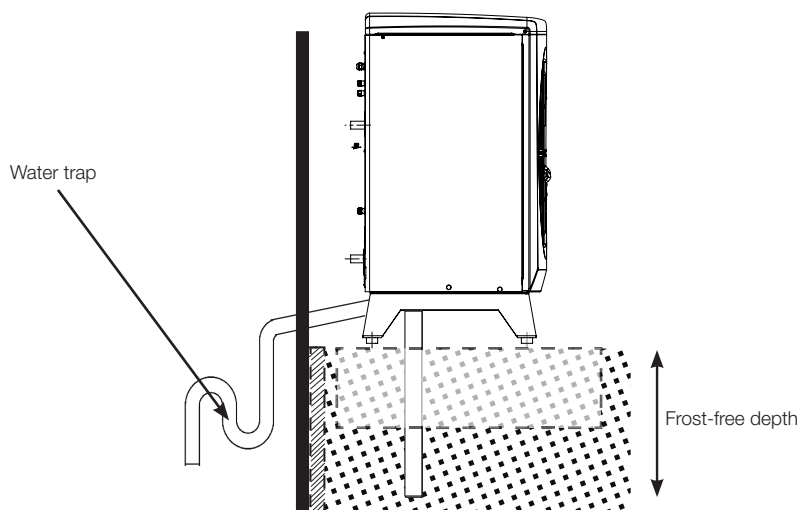
*c.t.c distance	CTC EcoAir 610M / 614M	CTC EcoAir 622M
length (depth) mm	1155 (452)	1285 (552)

- Use a spirit level to ensure that the blocks are level.
- Place crushed stones around the blocks to achieve optimal drainage.



4.4 Condensation water

- The condensation tray is built into the heat pump and is used to divert most of the condensation water. The tray can be connected to a suitable drain. Connection diameter: 42 mm.
- A heating cable (available as an accessory) should be placed in the pipe to prevent refreezing. The heating cable is connected to the electrical cabinet on the heat pump. (Must be performed by an authorised electrician and according to applicable provisions.)
- If the house has a cellar, it is advisable to route the condensation water to a floor drain indoors (to be performed according to the applicable rules). The pipe should be installed with a slope towards the house and above the ground (so no other water can get into the cellar). Wall apertures should be sealed and insulated. A water trap must be connected to the inside to prevent air from circulating in the pipe.
- If there is a stone curb, the outlet from the condensation water pipe should be placed at a frost-free depth.
- The condensation water can also be conducted to the building's drainage, e.g. downpipe drains. Here a heating cable must be placed in the pipes that are not frost-free.



5. Pipe installation

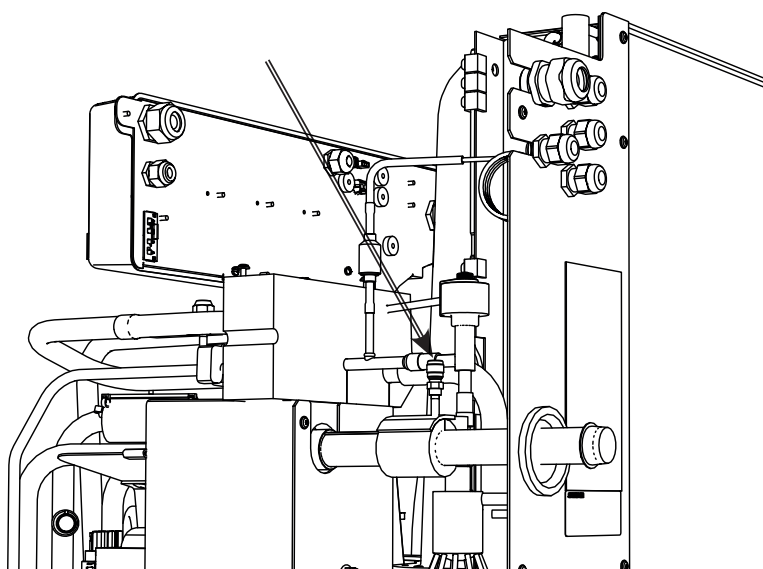
The installation must be carried out in accordance with current standards. The boiler must be connected to an expansion vessel in an open or closed system. Do not forget to flush the heating circuit clean before connection.

5.1 Pipe connection

- We recommend connecting a pipeline with a minimum of Ø28 mm copper tubing to the heat pump.
- Route the pipes between the heat pump and the boiler without any highest points. If this cannot be done, provide this highest point with an automatic air separator or an in line aerator.
- The connection to the heat pump should be made with a wire-reinforced, impermeable hose for hot water, minimum 1" (available as an accessory). Minimum hose length 1000 mm to prevent noise from the heat pump entering the building and to absorb any vibration in the heat pump.
- Pipes installed outside should be insulated with at least 13 mm thick pipe insulation which is not sensitive to water. Ensure that the insulation is sealed tightly everywhere and that joints are thoroughly taped or glued.
- Indoor pipes should be insulated all the way to the boiler with at least 9 mm thick insulation. This is to enable the heat pump to deliver the highest possible temperature to the boiler or tank without any losses.
- The product can be bled via the bleed valve inside the condenser.

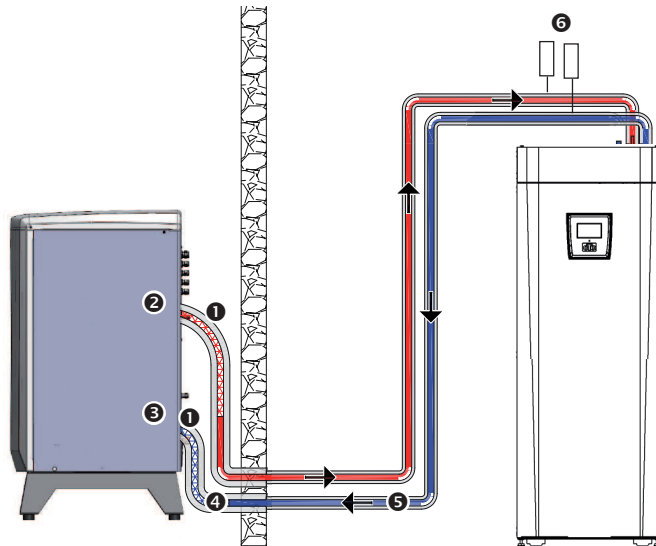
OBS! Only bleed this valve. Other valves are for the cooling system! If these are opened, refrigerant may leak out!

! If necessary, the radiator systems should be flushed clean before connecting.



5.2 Example of connection to CTC EcoZenith i350 L

CTC EcoZenith i350 L has pipes at the rear right edge for connection of the heat pump. The heat pump's lower connection is connected to the right connection when viewed from the front, so that water is pumped out to the heat pump. The heat pump's upper connection is thus connected to the left connection.



1. Flexible, wire-reinforced, impermeable hose for hot water, min. 1" (CTC accessory). Hose length 1000 mm from the product.
2. Primary flow, outgoing (heated) water Ø28 mm connection on the condenser.
3. Return line, incoming (cold) water Ø28 mm connection on the condenser.
4. Ø28 mm copper tubing insulated outdoors with 13 mm thick insulation.
5. Inside piping is insulated with 9 mm thick insulation.
6. Bleeder.

EcoAir/EcoZenith i350 H

On CTC EcoZenith i350 H, the heat pump is connected directly to the charge pump located under the tank. The heat pump's lower connection must be connected to the charge pump so that water is pumped out to the heat pump. The heat pump's upper connection is connected to the right 3-way valve by the charge pump.

5.3 Circulating pump – heat carrier

The pump transports the heat from EcoAir to CTC EcoZenith. If the outdoor temperature is below +2 °C the pump runs constantly to eliminate any risk of freezing.

If the product installed at a facility where power outages can occur, then it is advisable to supplement with an emergency power generator for the charge pump. It is also possible to install mechanical frost protection.

The product used for control monitors and ensures that the heat pump works within its operating range.

Speed setting

The speed for the circulation pump is set in the Installer/Settings/Heat pump menu.

Setting the temperature differential

For external control, a circulation pump is installed so that the right flow through the heat pump can be guaranteed.

Set the right temperature differential by adjusting the speed of the circulation pump. This is to ensure that the right differential for the current outdoor temperature is produced according to the table.

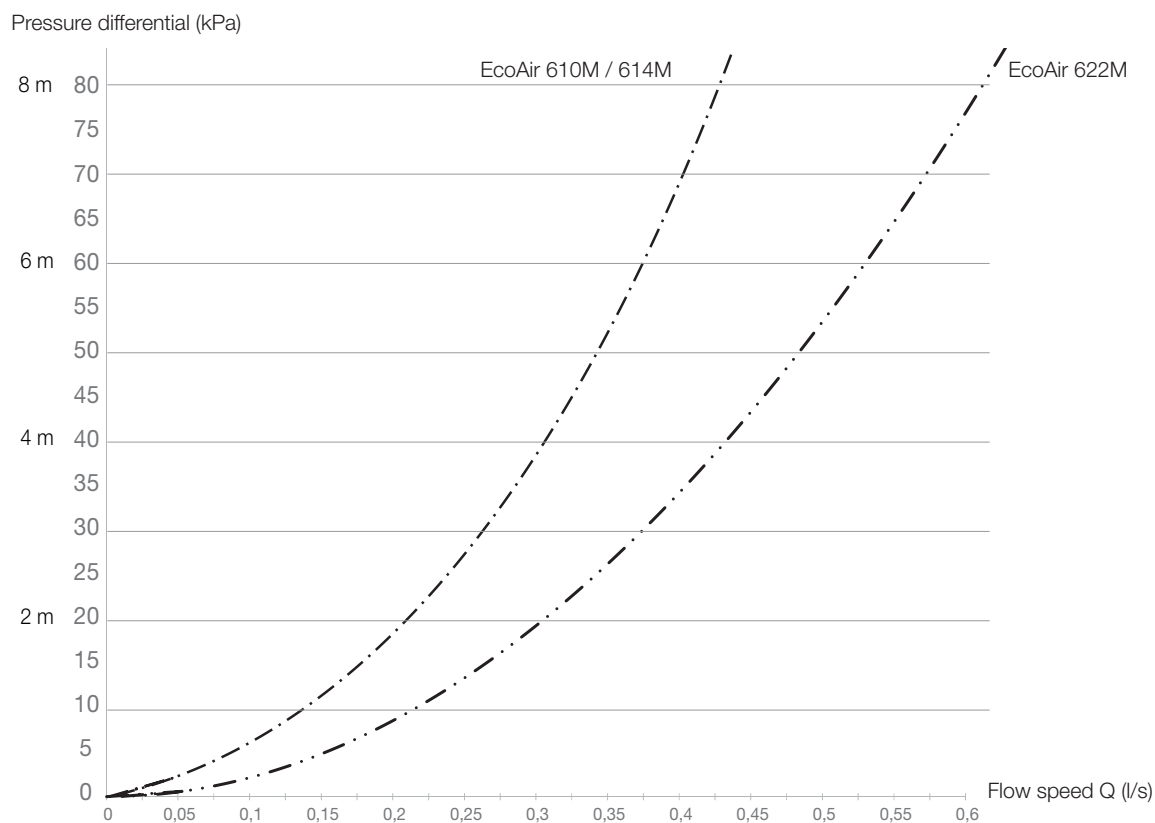
Outdoor temp. (°C)		-10	-5	0	+5	+7	+10
CTC EcoAir 610M / 614M	Primary flow 35 °C Flow = 0.21 l/s	4 °C	4.5 °C	5.5 °C	6.5 °C	7 °C	8 °C
CTC EcoAir 622M	Primary flow 35 °C Flow = 0.39 l/s	4 °C	5 °C	6 °C	6.5 °C	7 °C	8 °C

In some systems, the full radiator flow goes through the heat pump, which means the pump must be sized according to the flow of the whole system. For safe operation, the following flows should be considered:

- 760 l/h (CTC EcoAir 610M / 614M)
- 1400 l/h (CTC EcoAir 622M).

This provides a temperature differential of approx. 7 °C for an outside temperature of +7 °C and a primary flow temperature of 35 °C.

5.4 Pressure differential diagram for CTC EcoAir 600



6. Electrical installation

6.1 General information, electrical connections



Installation and heat pump connection must be performed by an authorised electrician. All wiring must be installed according to applicable provisions. Before the front panel is opened or other live components are made accessible, the power supply to the heat pump must be fully disconnected.

Omnipolar safety switch

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

Even if a residual current device is used, CTC EcoAir must still be fitted with its own residual current device with on/off delay.

6.2 Electric installation 400 V 3N~

CTC EcoAir 600 must be connected to 400 V 3N~ 50 Hz and protective earth.

The 2 m long power supply cable is pre-connected to the product.

6.3 Compressor heater

The compressor heater automatically heats up when the compressor is cold.

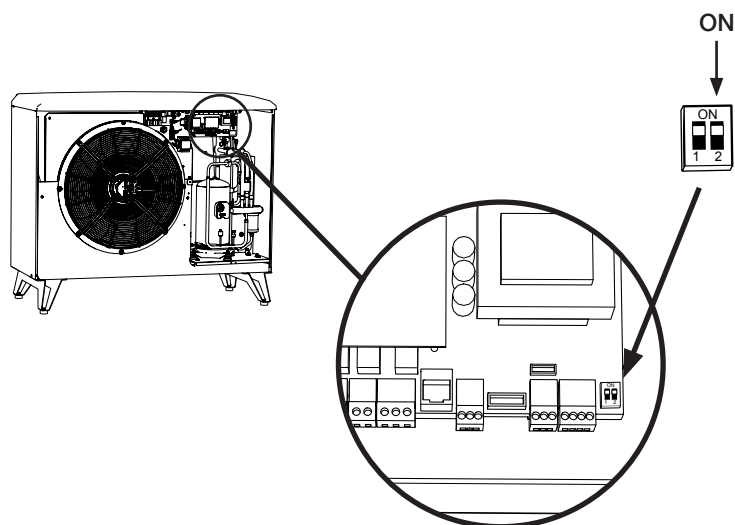
The compressor heater is pre-connected on delivery.

6.4 Heat pump connections

When installing a heat pump, make sure DIP switch 2 is in the ON position on the heat pump (factory default).

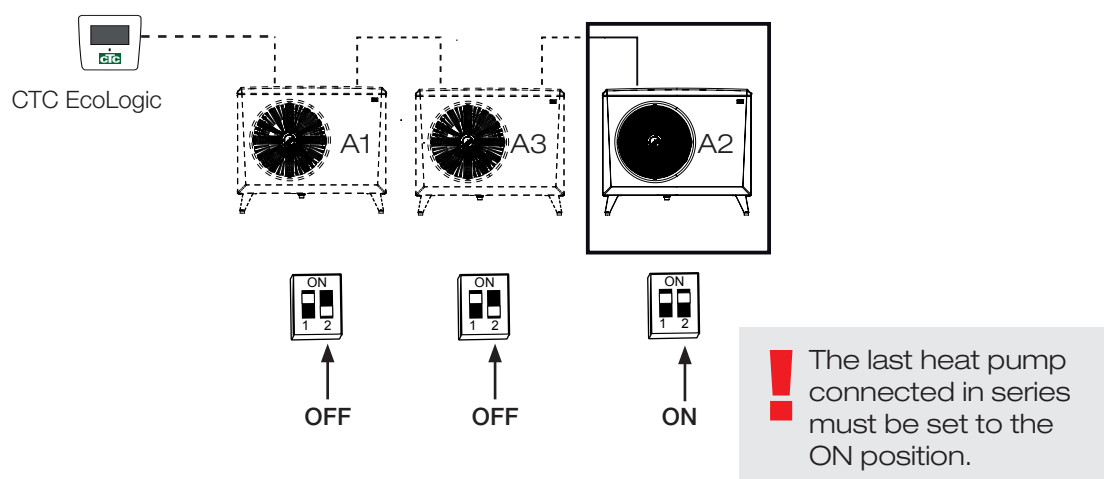


- CTC EcoAir 614M/622M must not be powered through CTC EcoZenith i250.
- The installation should be preceded by an omnipolar switch.
- Even if a residual current device is used, CTC EcoAir must still be fitted with its own residual current device with on/off delay.



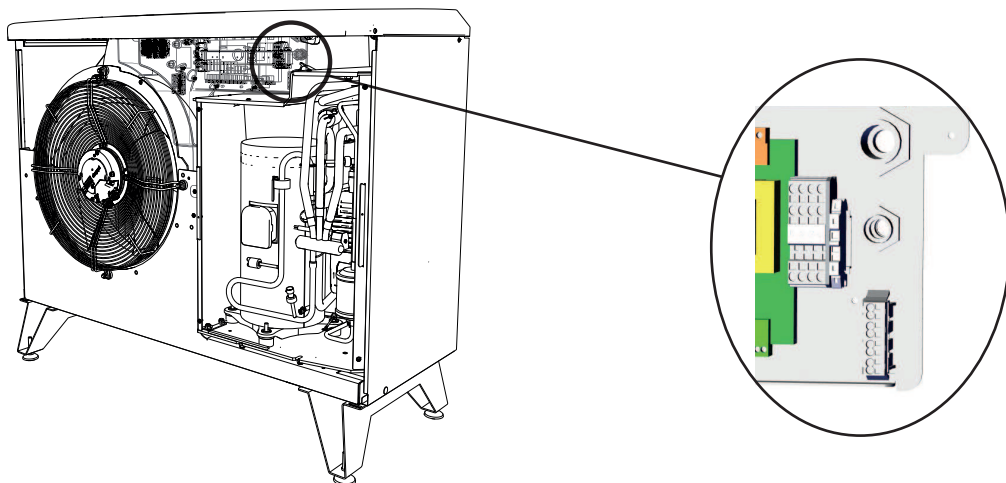
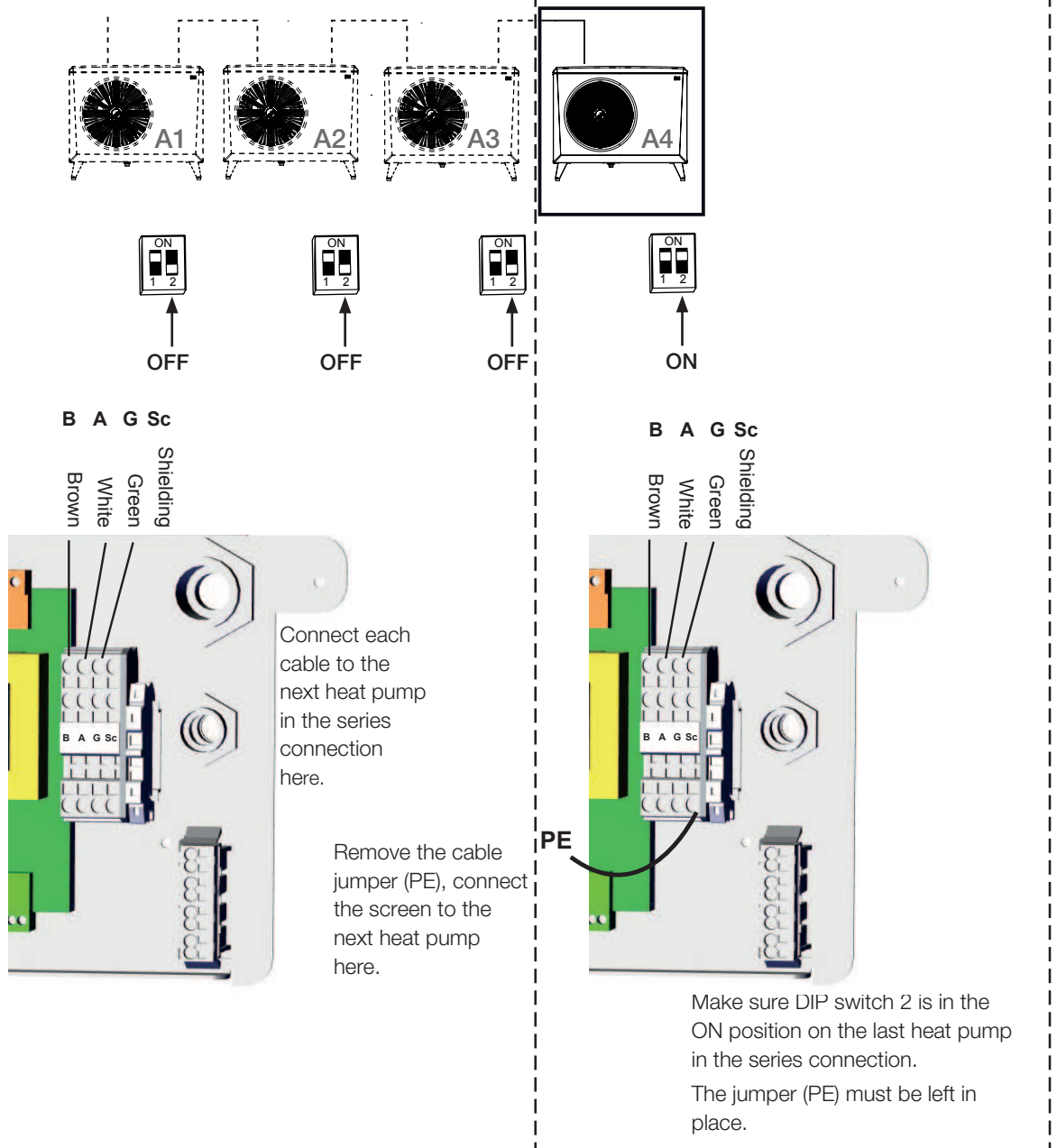
6.5 Series connection of CTC EcoAir 600

Make sure DIP switch 2 is in the ON position on the last heat pump in the series connection.



Heat pumps in series connection

The last heat pump connected in series



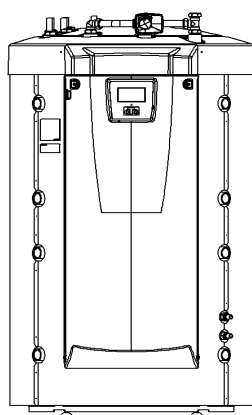
6.6 Connecting the control system

6.6.1 Connection options for one heat pump

When connecting CTC EcoAir 600 to CTC EcoZenith i250, CTC EcoZenith i350, CTC EcoZenith i550 Pro*, CTC EcoVent i350F and CTC EcoLogic, the communication cable (LiYCY (TP)) must be connected directly to the respective products.

6.6.2 Connection options for several heat pumps CTC EcoAir 600

CTC EcoZenith i550 Pro* and CTC EcoLogic can control several heat pumps.



CTC EcoZenith i550 Pro
(CTC EcoAir 614M/622M)

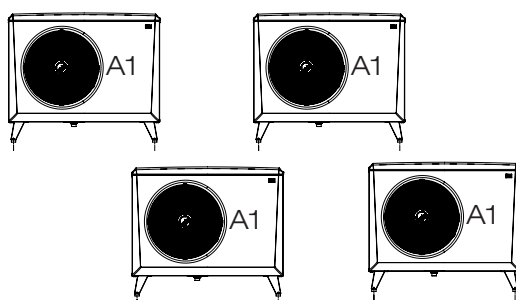


CTC EcoLogic



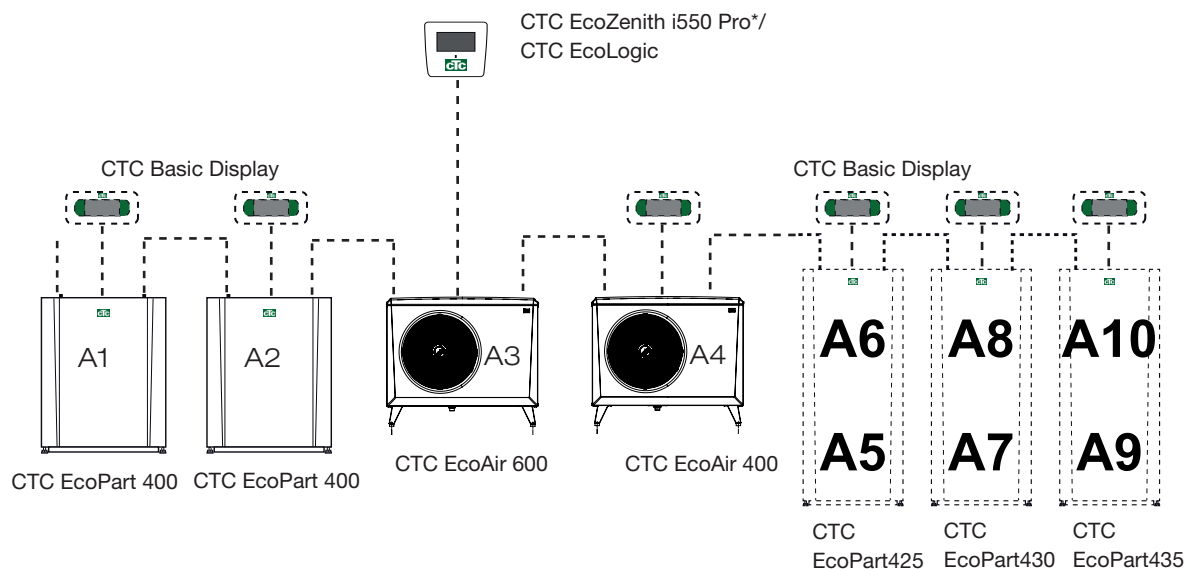
*CTC EcoZenith i550
Pro does not control
CTC EcoAir 610M

All heat pumps are supplied as A1.



6.6.3 Numbering example

The heat pumps must be numbered so that the controller is able to control the heat pumps individually.



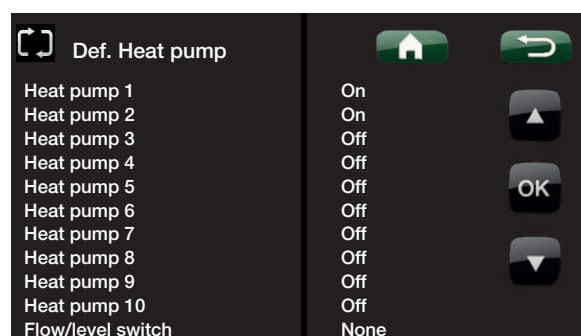
The image shows an example with 10 heat pumps numbered from A1 to A10.

6.6.4 Define number of heat pumps

Define the number of heat pumps.

This is done under the Installer/Define/Heat pump menu.

Set the number of heat pumps in "On" that the system contains.

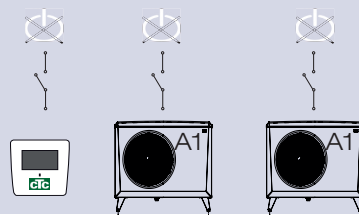


Example of system with 2 heat pumps.
(CTC EcoLogic Pro)

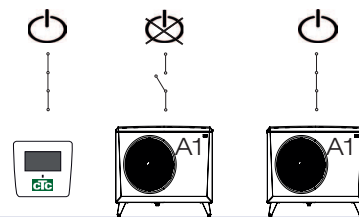
6.6.5 Numbering

CTC EcoAir 600 is numbered via the display in EcoZenith i550 Pro*/EcoLogic.

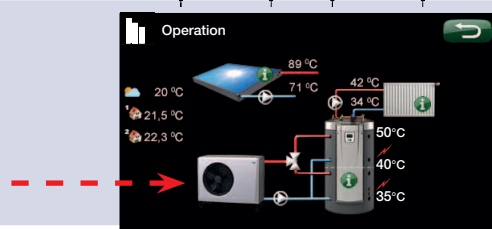
1. System disconnected from power.



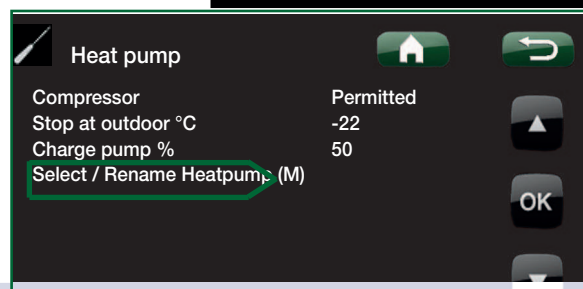
2. Switch on the control (CTC EcoLogic / CTC EcoZenith i550 Pro*) and the CTC EcoAir 600 that will be numbered as heat pump 2 (A2)



3. Wait 2 minutes until the heat pump is visible in the operation data.

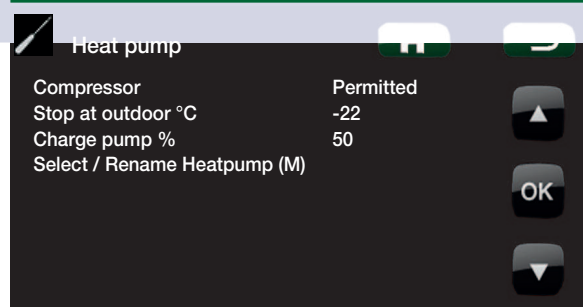
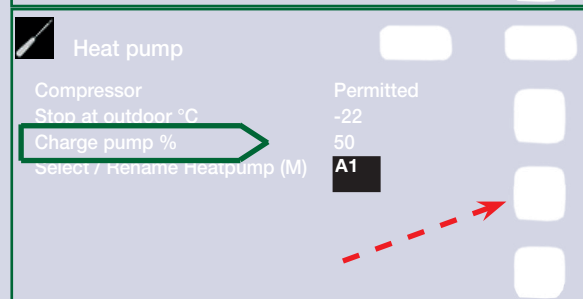


4. Go to Advanced/Settings/Heat pump 2 and option Select/Rename Heat pump (M).



5. Press the arrow up until (A1*) is displayed. Press OK. After pressing press OK, A1 disappears and the Select/Rename Heat pump (M) option darkens.

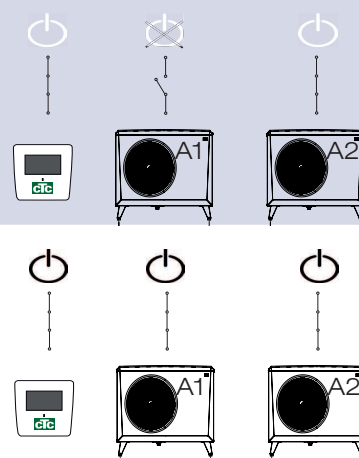
In this example, we have assumed that the heat pump is called A1, which is the factory default. If the heat pump has already been renumbered, then select this number instead.



! *CTC EcoZenith i550 Pro does not control CTC EcoAir 610M

6. The heat pump is now numbered (A2).

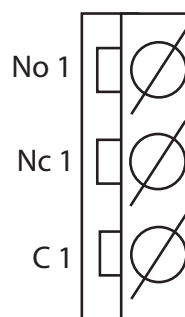
Redo the procedure according to the number of heat pumps to be numbered.



7. Once all have been numbered and switched on, a test must be carried out in Installer/Service/Function test/Heat pump to check that each heat pump has started.

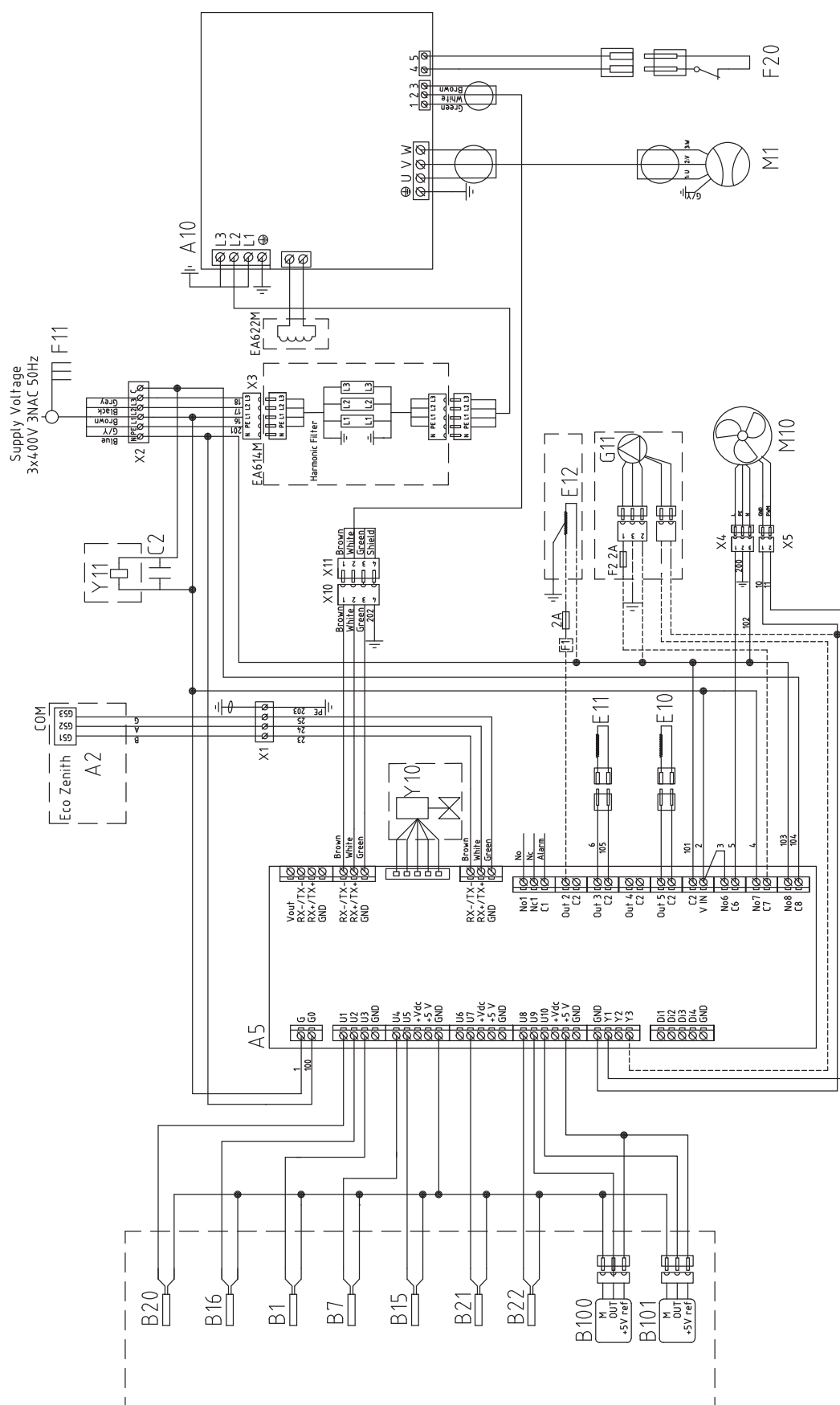
6.7 Alarm output

The CTC EcoAir 600 is fitted with a potential-free alarm output which is activated if any alarm is active in the heat pump. This output may be connected to a maximum load of 1 A 250 V AC. A cable approved for 230 V AC must be used for connecting this output, irrespective of the load that is connected. For connection information, see the wiring diagram.

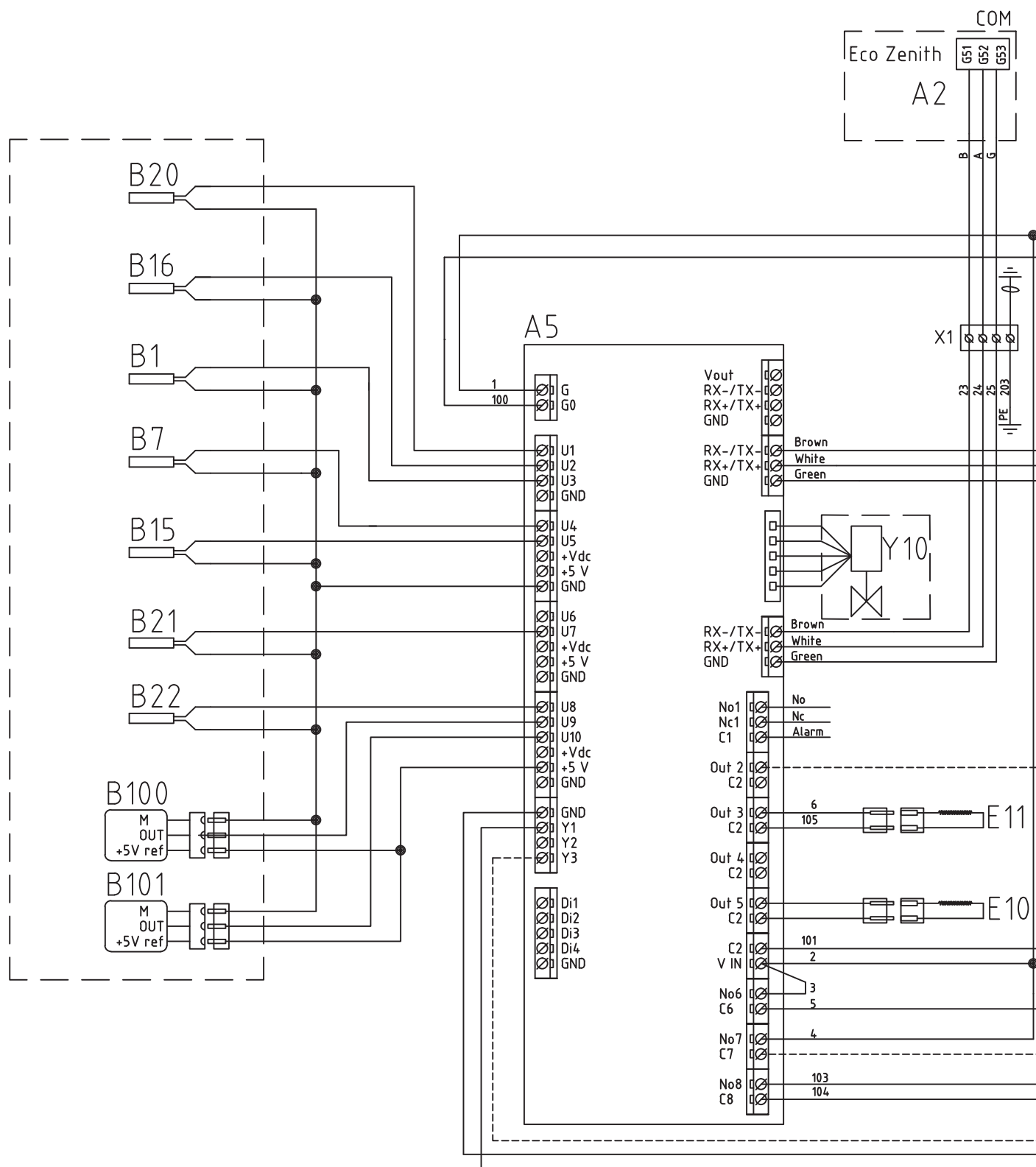


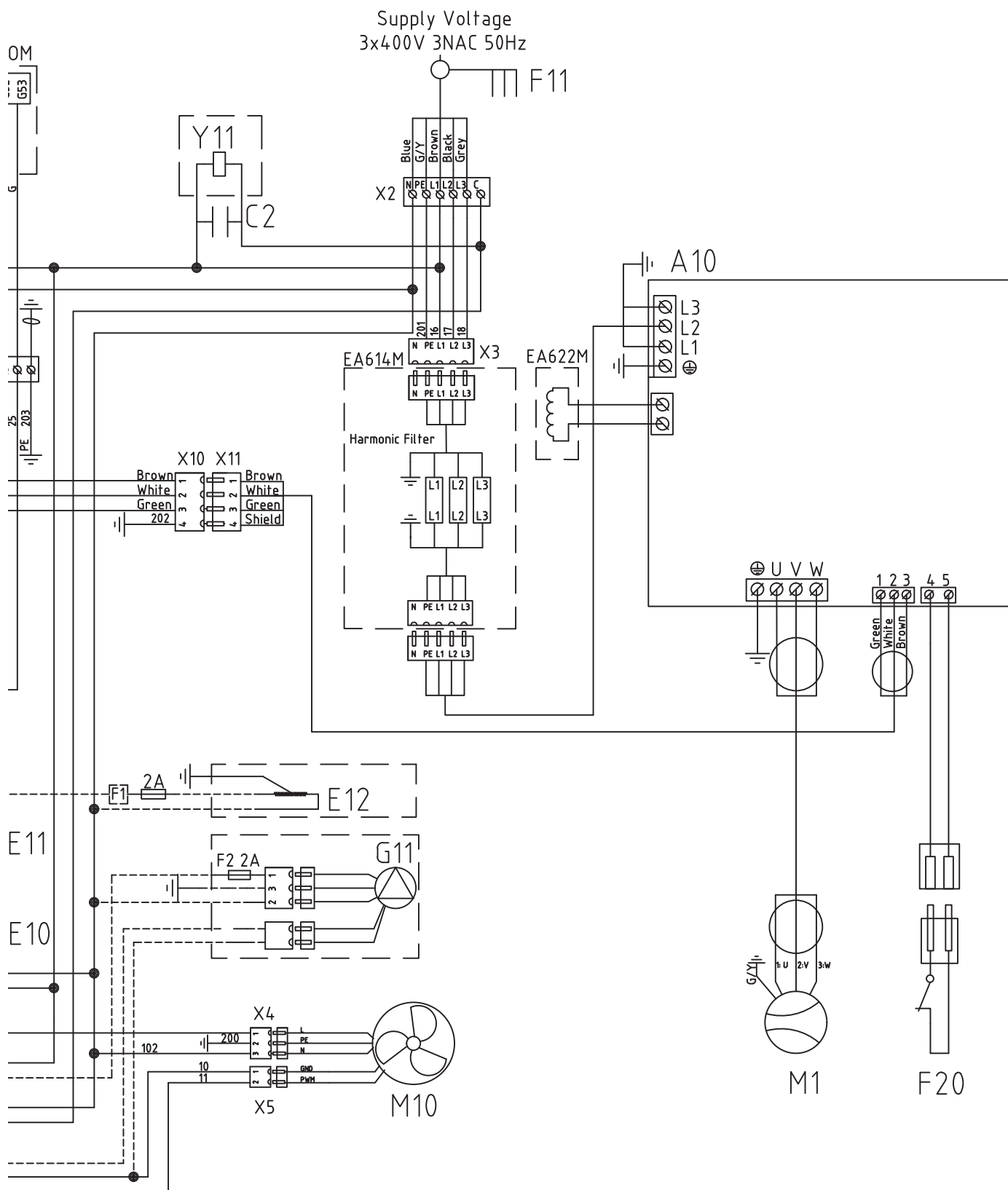
Close-up from wiring diagram.

6.8 Wiring diagram 400 V 3N~ (A4)



6.10 Wiring diagram 400 V 3N~ (A3)





6.11 Parts list

A1	Display (CTC EcoZenith i250/i350)	
A2	Relay/main card (CTC EcoZenith i250/i350/CTC EcoVent i350F)	
A5	HP control card	
A10	Frequency converter	
B1	Primary flow sensor	Type 2 NTC
B7	Return sensor	Type 2 NTC
B15	Outdoor sensor	Type 1 NTC
B16	Defrosting sensor	Type 1 NTC
B21	Discharge sensor	Type 3 NTC
B22	Suction gas sensor	Type 1 NTC
B100	High pressure sensor	
B101	Low pressure sensor	
C1	Condenser compressor (1-phase)	
C2	Condenser	
E10	Compressor heater	
E11	Condenser tray heater	
E12	Heating cable (option)	
F1	Fuse (option)	
F11	Omnipolar switch	
F20	High pressure switch	
L1	Spool	
M1	Compressor	
M10	Fan	
X1	Terminal block	
XM1	Connector supply Male	
XM2	Connector supply Female	
XC1	Connector compressor Male	
XC2	Connector compressor Female	
Y10	Expansion valve	
Y11	Solenoid valve	
Z1	EMC filter	

6.12 Sensor Data

Temperature °C	Sensor Type 1 NTC kΩ	Temperature °C	Sensor Type 2 NTC kΩ	Temperature °C	Sensor Type 3 NTC kΩ
100	0.22	100	0.67	130	5.37
95	0.25	95	0.78	125	6.18
90	0.28	90	0.908	120	7.13
85	0.32	85	1.06	115	8.26
80	0.37	80	1.25	110	9.59
75	0.42	75	1.47	105	11.17
70	0.49	70	1.74	100	13.06
65	0.57	65	2.07	95	15.33
60	0.7	60	2.5	90	18.1
55	0.8	55	3.0	85	21.4
50	0.9	50	3.6	80	25.4
45	1.1	45	4.4	75	30.3
40	1.3	40	5.3	70	36.3
35	1.5	35	6.5	65	43.6
30	1.8	30	8.1	60	52.8
25	2.2	25	10	55	64.1
20	2.6	20	12.5	50	78.3
15	3.2	15	15.8	45	96.1
10	4	10	20	40	119
5	5	5	26	35	147
0	6	0	33	30	184
-5	7	-5	43	25	232
-10	9	-10	56	20	293
-15	12	-15	74	15	373
-20	15	-20	99	10	479
-25	19	-25	134	5	619
-30	25	-30	183		

8. First start

1. Check that the boiler and system are full of water and have been bled.
2. Check that all connections are tight.
3. Check that sensors and the charge pump are connected to the power source.
4. Energise the heat pump by switching on the operating switch (the main switch).

Once the system has heated up, check that all connections are tight, the various systems have been bled, heat is coming out into the system and warm water is coming out at the tap locations.

7. Operation and Maintenance

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

Defrosting

CTC EcoAir 600 is fitted with hot gas defrosting. The heat pump checks constantly whether defrosting is needed and, if so, defrosting starts, the fan stops, the 4-way valve changes direction and the discharge goes to the evaporator instead. A hissing sound is heard as the water drains from the evaporator. There may be large amounts of water. When the product has defrosted, the fan starts and the discharge goes into the condenser instead, and the heat pump returns to normal operation.

Modulating compressor

The power in the heat pump is adapted using modulating operation according to the actual energy requirement. The compressor runs constantly with the correct power and thereby minimises the number of start and stop periods. The modulating power regulation provides optimal efficiency.

The fan

The fan starts 15 seconds before the condenser and runs until the compressor stops. During defrosting the fan stops and restarts when defrosting is finished. The fan is speed-controlled and follows the need for power.

Maintenance

A large amount of air passes through the evaporator. Leaves and other debris can get stuck and restrict the air flow. At least once year the evaporator coil should be checked and cleared of particles that block the air flow. The evaporator and outer covering should be cleaned with a damp cloth or soft brush. No other periodic maintenance or inspection is necessary.

Periodic maintenance

After three weeks' operation and then every three months during the first year. Then once a year:

- Check that the installation is free of leaks.
- Check that the product and system are free of air; bleed if needed.
- Check that the evaporator is clean.
- The products do not require annual inspection for refrigerant leakage.

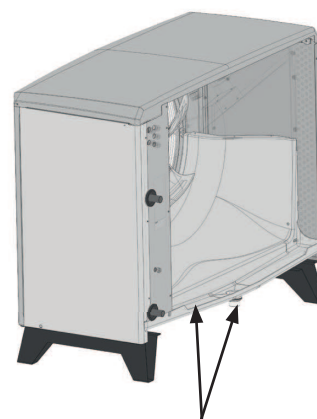
Operation stop

The heat pump is shut down using the operating switch. If there is a risk of the water freezing, ensure that there is circulation, or drain out all the water from the heat pump.

Condensation water tray

The condensation water tray collects water formed on the EcoAir's evaporator during operation and defrosting. The condensation water tray is equipped with an electric heating coil which keeps the tray free of ice when it is freezing outside. The condensation water tray is located at the bottom on the back of EcoAir. By lifting the handle on the cover plate and pulling it out, you can clean and inspect the condensation tray.

As an accessory you can buy a heating cable to connect to EcoAir. The cable is fitted in the drain from the condensation tray to the frost-free drain.



Condensation tray and drain

9. Troubleshooting/appropriate measures

CTC EcoAir 600 is designed to provide reliable operation and high levels of comfort, and to have a long service life. Various tips are given below which may be helpful and guide you in the event of an operational malfunction.

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

Air problems

If you hear a rasping sound from the heat pump, check that it is properly bled. Top up with water where required, so that the correct pressure is achieved. If this noise recurs, call a technician to check the cause.

Alarms

Any alarms and information texts from CTC EcoAir 600 are displayed in the product which is used to control it; you should therefore consult the manual of that product.

Circulation and Defrosting

If the circulation between the indoor and the outdoor unit is reduced or stops, the high pressure switch is triggered. Possible reasons for this:

- Defective circulating pump/Circulating pump too small
- Air in the pipes
- Condenser reset
- Other intermediate obstructions to the water flow

During defrosting the fan stops but the compressor operates and the melted snow and ice flows into the condensation tray under the heat pump. When defrosting stops, the fan starts again and initially a vapour cloud, consisting of damp air which condenses in the cold outdoor air, is created. This is perfectly normal and stops after a few seconds. If the pump heats poorly, check that no unusual ice formation has occurred. Possible reasons for this:

- Defective defrosting automation
- Lack of refrigerant (leakage)
- Extreme weather conditions.



