

INSTALLATION INSTRUCTIONS

CTS602 HMI BY NILAN



Compact P / Compact P Polar - GEO Gateway

Version 5.11 - 24.10.2023
M24 Compact P GEO GB

Table of contents

General information

Safety	4
Power supply	4
Heat pump domestic hot water	4
Heat pump for central heating	4
Water quality requirements	5
Requirements for water quality	5
Introduction	5
Documentation	5
Unit type	6
Product description	6
The unit	7
Overview of temperature sensors	8
Dimensional drawing	9
Pipe diagram	9
Accessories	11
Electrical pre-heating element for frost protection of the unit	11
CO2-sensor	11
Expansion PCB	11
EM-box	11
DTBU damper	11
Extension cable HMI user panel for 8-pin plug	12
Cover plate HMI user panel	12
Safety group	12
Safety group with scalding protection	12
Vibration absorbers	12
Flexible sound damper	13
Pollen filter	13
Trolley	13
SHW hot water tank	13

Set-up

Installation	14
Transport into the building	14
Positioning of unit	14
Ground collector circuit	15
Examples of the laying	15

Electrical installation

Safety	16
Connections overview	16
HMI User panel	17
Moving the user panel	17
Wall bracket	17
Electrical connections unit	18
Power supply	18
GEO3, GEO6 and GEO9	18
Change from 400V to 230V	19
Circulation pump	20
Connecting a gateway	21
Location on the unit	21
Connections overview Gateway	21
Electrical connection	21
Connecting to the internet	21
Checking connections	21
Electrical connections accessories	22
SHW hot water tank	22
User selection 1	23
Modbus	23
External pre-heating element	24
CO2 sensor	25
Installation of expansion PCB on CTS602 circuit board	27
User selection 2	28
EM-box (damper solution)	28
DTBU damper solution	29
Fire thermostat / external fire automation system	29
Joint alarm	30
External heat supply	30
Passive cooling function	31

Smart Grid	32
External underfloor heating control	32

Plumbing installation

Condensate drain	33
Important information	33
Hot water tank	34
Connection overview	34
Connection	34
Requirements for water quality	35
Hot water circulation	35
Supplementary coil	35
Softened water	35
Central heating	36
Connection overview	36
The brine circuit	37
Check list for the central heating system prior to start-up	38
Plumbing connections for accessories	39
Safety group	39
Safety group with anti-scald protection	40
Passive cooling module	41
Domestic hot water tank	41
Connecting to SHW hot water	43
Connection to supplementary coil in SHW hot water tank	44
Connecting to DHW hot water	45

Ventilation installation

Duct system	46
Legislation	46
Ducts	46
Ventilation unit	46
Extract air	47
Supply air	47
Roof terminals	47
Installation example	47
Balancing	48
Important information	48
Balancing connectors	48
Pressure loss diagram	48

Start-up

Central heating	49
Filling with water	49
Topping up water	49
Check the particle filter	49

Troubleshooting

Emergency operation	50
Emergency mode domestic hot water	50
Emergency mode central heating	51
Domestic hot water	52
Errors and solutions domestic hot water	52
Central heating	52
Errors and solutions central heating	52

General information

Safety

Power supply



CAUTION

Always disconnect the power supply to the unit if an error occurs that cannot be rectified via the control panel.



CAUTION

If an error occurs on electrically conductive parts of the unit, always contact an authorised electrician to rectify the error.



CAUTION

Always disconnect the power supply to the unit before opening the unit doors, for instance for installation, inspection, cleaning and filter change.

Heat pump domestic hot water



CAUTION

Avoid direct contact with the heating system pipes in the heat pump as they can get very hot.



CAUTION

To protect the heat pump against damage, it is fitted with the following safety equipment.

The heat pump must undergo suitable service inspections under applicable legislation and regulations to keep it in good condition and in compliance with safety and environmental requirements.

Responsibility for maintenance of the heat pump rests with the owner/user.

Heat pump for central heating



CAUTION

To secure the heat pump against damages, it is fitted with the following safety equipment:

- Expansion systems for central heating and buffertank
- Safety valve for central heating and buffertank
- Low and high pressure switch for compressor

The heat pump must undergo suitable service inspections under applicable legislation and regulations to keep it in good condition and in compliance with safety and environmental requirements.

Responsibility for maintenance of the heat pump rests with the owner/user.

Water quality requirements

Requirements for water quality

The hot water tank in the Nilan units is made of steel, which has been given a double enamelling, to ensure an extra long service life. In addition, the tank is equipped with a sacrificial anode as extra protection. It is important that the sacrificial anode is replaced regularly.

Most units are equipped with an electronic monitoring sacrificial anode, which gives an alarm on the user panel when it is time to replace it.

In order for the sacrificial anode to function and protect the tank, it is required that the water quality complies with the following:

- Electrical conductivity (EC): Between 30 mS/m and 150 mS/m (millisiemens pr. m) at 25 °C
- Chloride must be below 250 mg/L at 65 °C

If the above criteria are not met, the sacrificial anode will not work as intended, after which the tank will be corroded, to

Introduction

Documentation

The following documents will be supplied with the unit:

- Quick guide
- Wiring diagram

In the Quick guide you will find important information regarding installation and start-up of the unit. If you require further information regarding, for instance, installation of accessories or additional settings in the software, or if you need an extended user manual, the following documents can be downloaded from the Nilan website:

- Installation instructions
- Software instructions
- User Manual
- Wiring diagram

The instructions can be downloaded from www.nilan.dk.

If you have questions regarding installation and operation of the unit after having read the instructions, please contact your nearest Nilan dealer. A list of Nilan dealers is available on www.nilan.dk.



ATTENTION

The unit must be started up immediately after installation and connection to the duct system.

When the ventilation unit is not in operation, humidity from the rooms will enter the duct system and create condensate water that can run out of the valves and cause damage to floors and furniture. Condensation may also form in the ventilation unit, which can damage its electronics and fans.

From factory, the unit has been tested and is ready for operation.

Unit type

Product description

Compact P is a ventilation unit with heat recovery, that has a built-in heat pump, which is used for the production of domestic hot water, and which is also able to heat and cool the home by central heating via a ground source heat pump.

Compact P is designed for air flows of up to 275 m³/h at 100 Pa external counter-pressure. Compact PXL can handle air flows up to 430 m³/h at 100 Pa external counter-pressure.

The unit is primarily used in residential construction such as single-family houses and apartments. It ventilates the home by drawing out the moist and bad air via valves in e.g. bathrooms, toilet, kitchen and utility room, and introduces fresh outdoor air in via valves in living rooms such as. living room, bedrooms and family room.

The cold outdoor air is heated via the high-efficiency counterflow heat exchanger by the hot exhaust air. The heat loss that occurs via heat recovery, the built-in heat pump use to produce domestic hot water. All the energy in the exhaust air is utilized, and you have not really seen any heat loss that you experience with an ordinary ventilation unit. In case of high hot water consumption, there is a 1.5 kW electric supplement heater in the hot water tank, which can also be used to heat the water.

In the winter, the built-in heat pump can heat the supply air up to 34 °C, and thus contribute to heating the home. When the supply air is heated, at the same time a little heat is deposited in the hot water tank and ensures a constant high hot water temperature.

The heat pump has a reversible cooling circuit, which means that the cooling circuit can be turned and it can cool the supply air in the summer. Compact P can cool the supply air by up to 10 °C in relation to the outdoor air. Due to the low air exchange, usually 1/2 time per hour, it will not act as an air conditioning system. However, when cooling, moisture in the supply air is removed, which results in a lower humidity in the home. The lower humidity means that it is easier to withstand a slightly higher temperature, which therefore provides good comfort in the home.

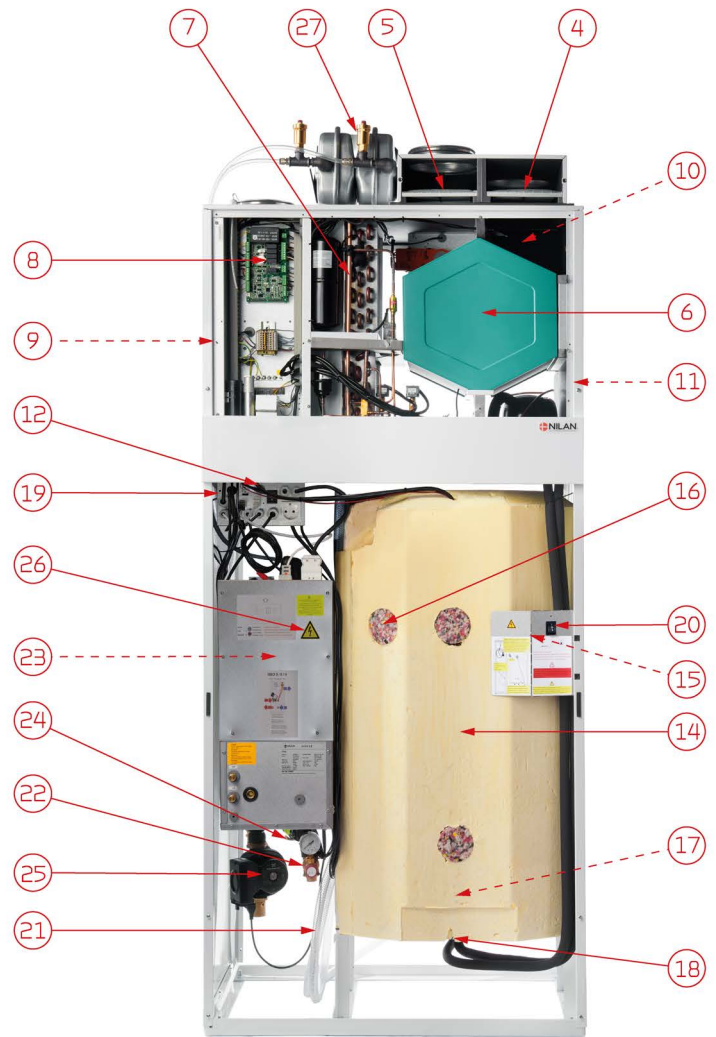
When Compact P cools the supply air, the energy is deposited in the hot water tank, and it can thus be said that "free" domestic hot water is produced during those periods.

The energy-efficient and low-noise GEOthermal heat pump heats the home via floor heating or lowtemperature radiators. It retrieves the energy from the earth. The heat pump has an electrical power supply to help it to function during very cold periods. GEO can cool the home in the summer with passive cooling, either through the underfloor heating system or fan coils.

The GEO ground source heat pump can also be used to help produce hot water for domestic use, either by pre-heating the water in a buffer tank, or directly in a Compact P hot water tank, if bought with a solar coil.



The unit



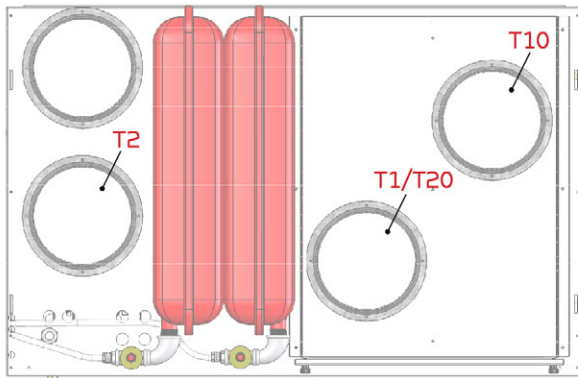
Compact P:

1. Duct connections
2. Filter replacement door
3. Control panel (HMI touch panel)
4. Extract air filter
5. Outdoor air filter (if purchased as an accessory, a pollen filter should be fitted here)
6. Counterflow heat exchanger
7. Heat pump
8. Automation CTS602
9. Fans
10. 100% bypass damper
11. Frost protection pre-heating element (Polar version only)
12. USB cable (for PC connection)
13. Gateway for App solution
14. 180 litres hot water tank (DHW)
15. 1.5 kW immersion heater (with overheat protection)
16. Electronically monitored sacrificial anode
17. Supplementary coil (SOL version only)
18. Plumbing connections
19. Electrical connection panel
20. Emergency mode (domestic hot water)
21. Condensate drain with water trap

GEO:

22. Safety valve and manometer for the central heating circuit
23. Inverter-controlled DC compressor
24. Filling tap and particle filter for the central heating circuit
25. Integrated circulation pump for the brine circuit
26. Supplementary electric heating central heating 2 kW
27. Expansion vessel for central heating- and brine circuit 2x8 litres

Overview of temperature sensors

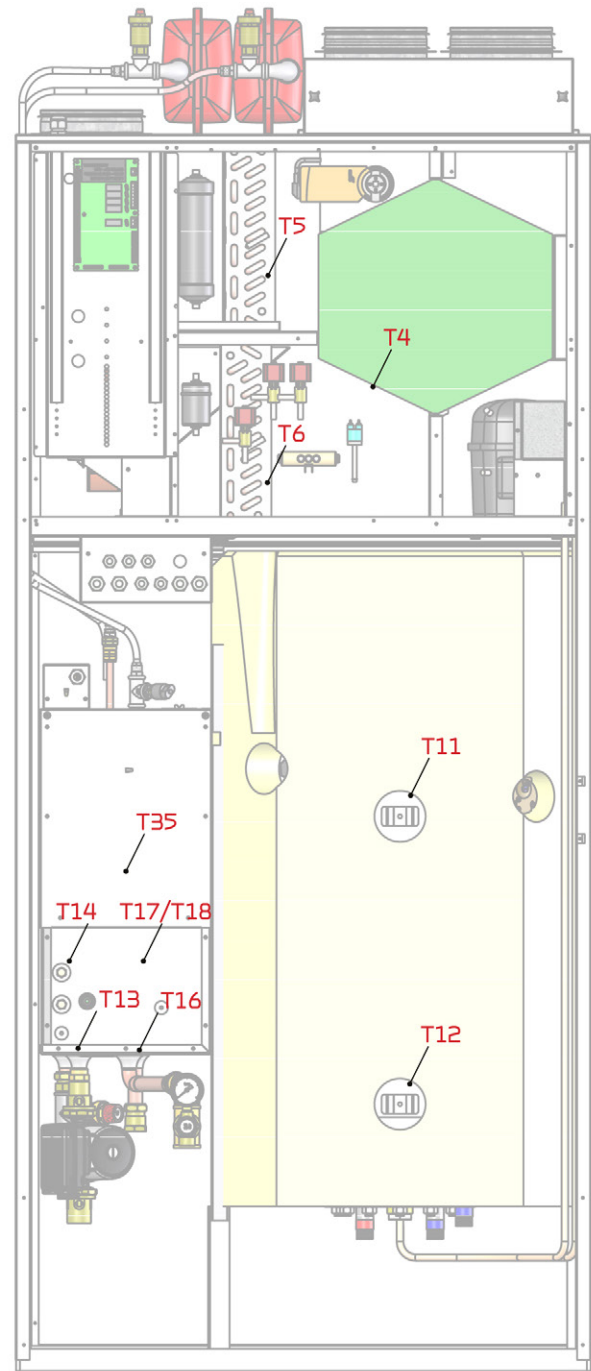


Temperature sensors in the unit

- T1: Outdoor air
- T2: Supply air
- T4: Extract air after heat exchanger
- T5: Condenser
- T6: Evaporator
- T10: Extract air

Temperature sensors Brine

- T13: Brine supply flow
- T14: Brine return flow



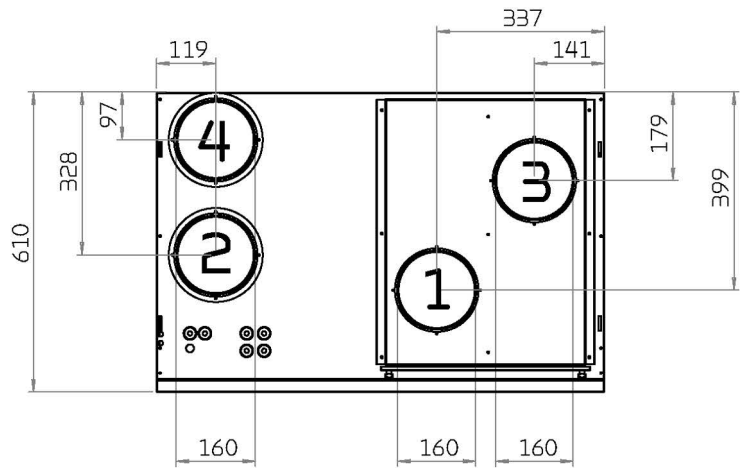
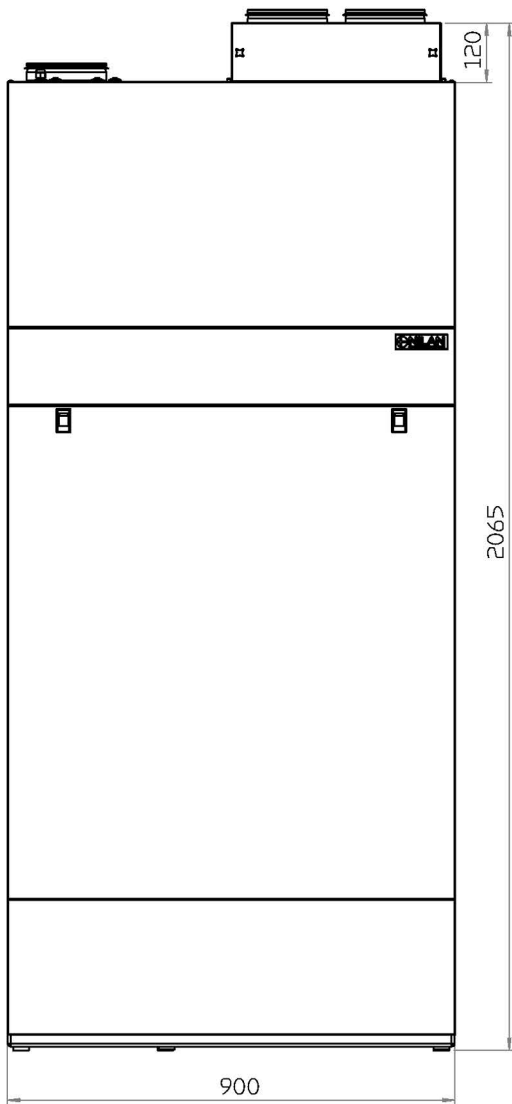
Temperature sensors GEO

- T16: Before condenser
- T17: After condenser
- T18: Supply flow central heating
- T20: Outdoor temperature
- T35: Pressure pipe temperature

Temperature sensors in the hot water tank

- T11: Top of tank
- T12: Bottom of tank

Dimensional drawing



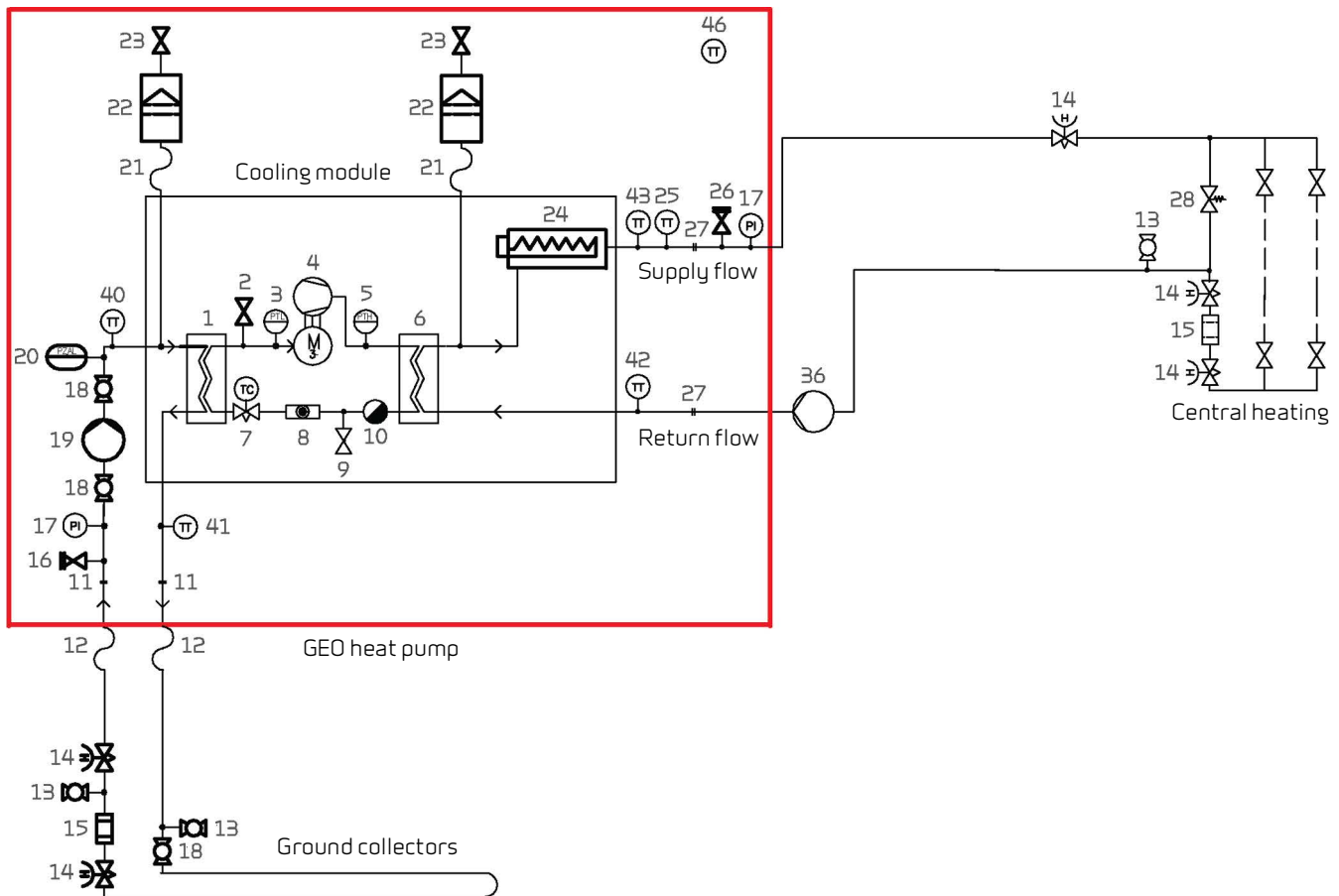
Connections:

1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

Weight: 257 kg.

All listed measurements are in mm.

Pipe diagram



*Everything within the red box is Nilan delivery.

- | | |
|---|--|
| 1. Evaporator | 18. Ball valve |
| 2. Service valve for low pressure | 19. Circulation pump 130 mm |
| 3. Low-pressure pressostat | 20. Brine pressure switch 0,5/1,1 bar |
| 4. Compressor | 21. Flexible hose 10 mm |
| 5. High-pressure pressostat | 22. Expansion vessel 8 L |
| 6. Condensor | 23. Automatic control vent 3/8" |
| 7. Expansion valve | 24. Immersion heater 2 kW |
| 8. Sight glass with humidity indicator | 25. Temperature sensor T18 |
| 9. Service valve for high pressure | 26. Safety valve 2,5 bar (not mounted) |
| 10. Combi filter | 27. Connection 3/4" (thread) |
| 11. Connection 1" (Internal thread) | 28. Relief valve |
| 12. Flexible hose 1" | 36. Circulation pump |
| 13. Filling tap | 40. Temperature sensor T13 |
| 14. Shut-off valve | 41. Temperature sensor T14 |
| 15. Particle filter | 42. Temperature sensor T16 |
| 16. Safety valve 3,5 bar | 43. Temperature sensor T17 |
| 17. Manometer (not mounted for central heating circuit) | 46. Outdoor temperature sensor T20 |



ATTENTION

An overflow valve must be installed point 28 in the floor heating circuit, with a circulation pump with fixed speed. Alternatively, remove the individual thermostats, to ensure sufficient flow.

Accessories

Electrical pre-heating element for frost protection of the unit



If your ventilation unit is not a Polar version with an integral pre-heating element, we recommend that you purchase an external pre-heating element as frost protection of the ventilation unit.

During prolonged periods of frost, the high efficiency counterflow heat exchanger will ice up. To prevent ice formation, we recommend that you install an electrical pre-heating element.

The pre-heating element consumes limited energy and it ensures efficient heat recovery without periods of defrosting the counterflow heat exchanger. You thereby achieve an overall reduction in energy consumption.

CO₂-sensor



If you want to adjust the fan speed level according to use of the dwelling/building (amount of people), you can retrofit a CO₂-sensor.

You select the CO₂-level you want via the control panel. If this level is exceeded, ventilation will increase.

Expansion PCB



With an expansion PCB, it is possible to expand the functions within the control system.

- Connecting an after-heating element (supplied with the heating element)
- Connecting a CO₂-sensor
- Connecting a joint alarm

EM-box



If you want to run the cooker hood via the ventilation unit, in some cases there may be insufficient air for cooker hood extraction.

If you install an EM-box, you can regulate the extracted air when the cooker hood is in operation, so that less air is drawn from, for instance, the bathroom and the utility room. This will allow enough air for the cooker hood to extract sufficiently.

The EM-box is fitted with a metal filter that cleans the air in the cooker hood of grease particles efficiently. It thereby protects the ventilation unit.

DTBU damper



If there is insufficient space for mounting an EM-box in the installation, you can achieve the same effect by controlling the extract air with a DTBU damper.

You then have to adjust the duct system yourself with a connection to the cooker hood.

Extension cable HMI user panel for 8-pin plug

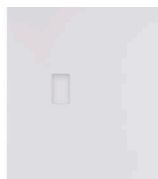


The control panel for the ventilation unit is connected to a short cable so that the panel can be mounted in the immediate vicinity of the unit. The panel can also be mounted on the front of the unit.

Is the unit located in a place where you can not immediately see the control panel, e.g. in a closet or on a unused ceiling, you can order a 10 or 20 m extension cable with plugs, so that the control panel can be placed in a place where the user has the opportunity to see it.

It is important that the control panel is located so that the user can see any alarms such as when changing filters i needed.

Cover plate HMI user panel



It is possible to move the HMI control panel away from the unit and place it in a more visible place.

A cover plate can be ordered to cover the hole where the control panel was located.

Safety group



By law, a safety group must be fitted for the cold water connection to the hot water tank.

Nilan offers a safety valve in brass with the following functions:

- Safety valve
- Check valve
- Stop valve
- Drain tab

Safety group with scalding protection



The control has a software scald protection that ensures that the water in the hot water tank does not gets too hot.

If you have a large cooling and / or heating need, it may be necessary to deactivate the software scald protection. The water in the hot water tank can be up to 90 ° C, which is why you need to install a safety group with scald protection.

If a solar panel is used to heat the domestic hot water via the supplementary coil in the hot water tank, a safety group with scald protection must be fitted.

Vibration absorbers



It is important to ensure that the ventilation unit does not transfer vibrations to the building. The ventilation unit should therefore be placed on a vibration absorbing material.

Nilan can supply effective vibration absorbers to place under the ventilation unit. They are sold in packs of 4.

Flexible sound damper



To make it easy to service the unit in the future, we recommend that you fit a flexible connection between the unit and the duct system.

Nilan flexible sound damper absorbs sounds effectively from both the duct system and from roof stacks.

Pollen filter



The ventilation unit comes, as standard, with a plate filter to protect the unit.

If the dwelling is used by anybody with, for instance, pollen allergies, you may benefit from purchasing a pollen filter. This should be placed in the outdoor air intake, which will reduce the pollen count in the dwelling.

Trolley



A Nilan trolley makes it easy to transport the heavy units into the home, without having to carry out heavy lifting yourself with the risk of injury.

A set consists of two lifting carts that are fastened on each side of the unit while it is standing on the pallet. Using the two handles, lift the unit off the pallet and drive it to where it is to be used.

SHW hot water tank



The SHW tank is a Nilan-produced 250 liter hot water tank with built-in solar coil and heat pump supplemental coil that can be connected to all Compact P solutions.

The SHW tank is prepared for mounting a temperature sensor for external solar heat control. The supplemental spiral is intended for solar heating systems with solar collectors of approx. 4 m².

The steel container is with double enamelling to guarantee a perfect water quality. It comes with a 1.5kW insert heating element as well as an electrically monitored magnesium sacrificial anode, both of which are controlled by the CTS automatics.

The solution is ideal for families with a large consumption of hot water.

Set-up

Installation

Transport into the building

Compact P is supplied in one piece on a pallet, packed in cardboard.

You can use Nilan lifting trolley, with which the unit can be lifted directly off the pallet and into the building. If the filter box is removed, the unit can be manoeuvred through an ordinary door.



The unit is fitted at the factory with 4 lifting straps, one for each top corner.

This makes it possible to lift in the unit with a crane, which is a great advantage if the terrain does not allow you to drive with a lift truck.

When lifting the units with the supplied straps, these must be at an angle of max. 45° from the vertical.

Positioning of unit

The unit should be positioned on a level and vibration-free substrate, with good access for servicing and filter change.



ATTENTION

When setting up the unit, consideration must always be given to future servicing and maintenance, therefore a free space in front of the unit of at least 60 cm is recommended.



ATTENTION

To achieve a proper run-off from the condensate tray, it is important that the unit is installed in level.



ATTENTION

If a screen is mounted over the Compact P, it must be easy to dismantle this.



At the lower rear and sides of the unit, there are punched areas which can be clipped out, so you do not cut the holes yourself.

The rear angle iron on the base frame can be removed, allowing the unit to be pushed closer to the wall, thereby concealing the water connections.

Ground collector circuit

Examples of the laying

By laying the geothermal circuit there are some range distances, which need to be observed to get a unit which will have an effective and smooth operation. Further local authorities may make requirements for installation and acceptance of the facility before entry into use.

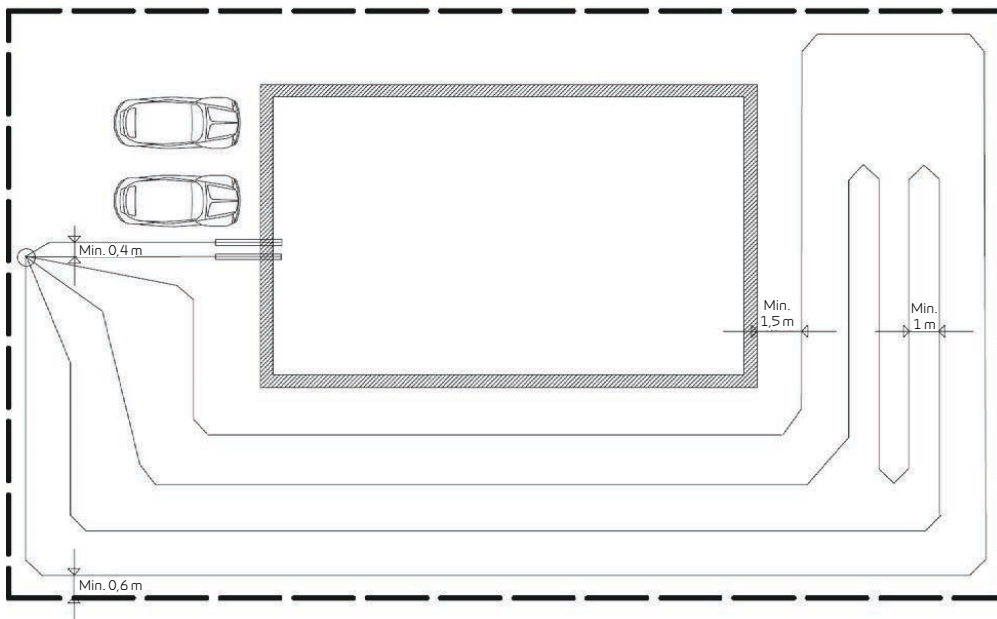
In some cases where there is less space vertically holes is drilled for hoses, but most lay the hoses horizontally. Below are some examples of laying the ground collectors.



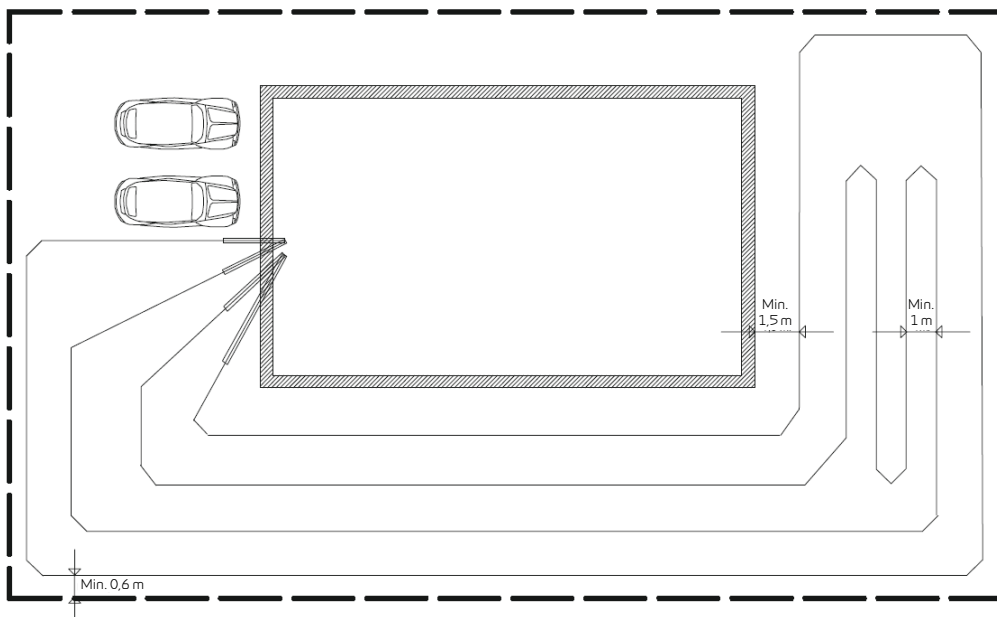
ATTENTION

Is is important to pressure test the pipes for tightness one by one immediately before covering with soil, as during handling.

Example of layout of ground tubes collecting in a well



Example of layout of ground tubes collected within the foundation:



Electrical installation

Safety



ATTENTION

All work must be carried out by qualified persons and in compliance with existing legislation and regulations.

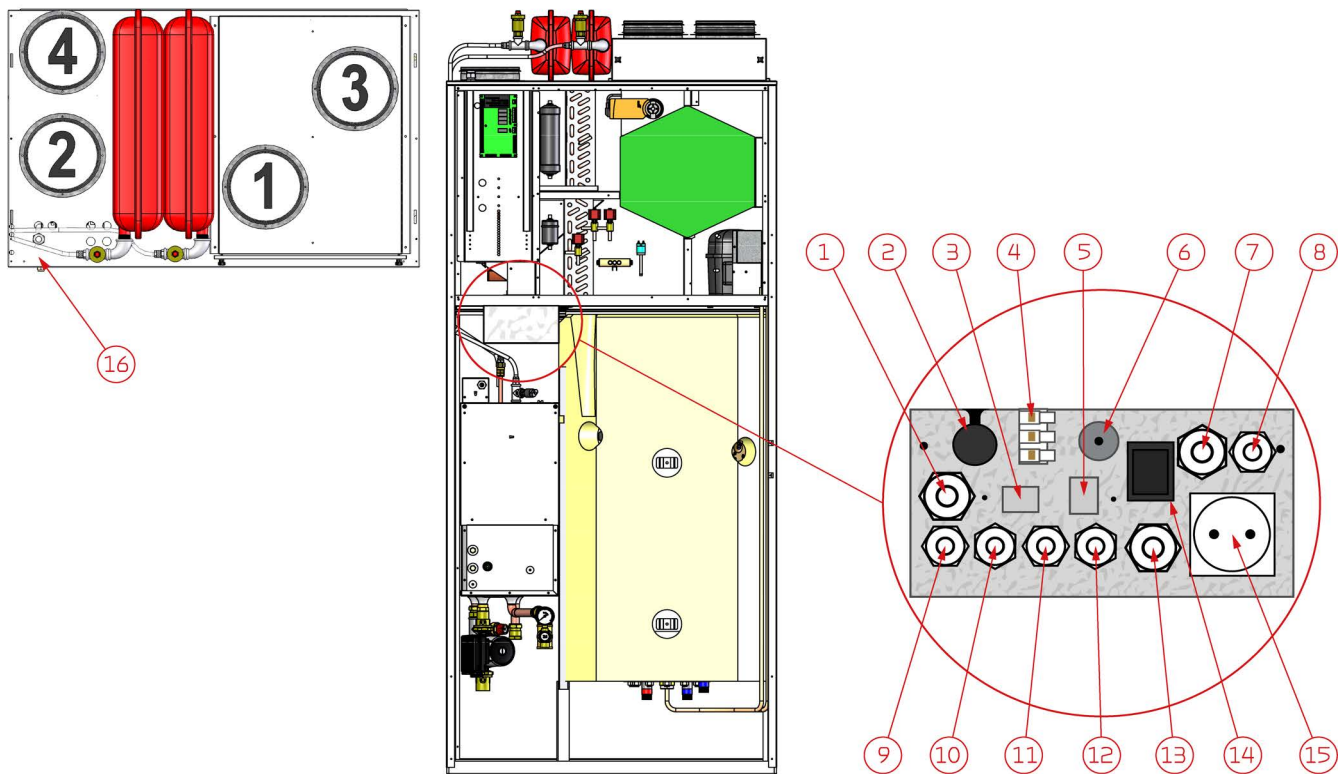


ATTENTION

It is important that the power is off, if you do work to the electrical components of the unit.

It is important to check that wires are not damaged or squeezed during connection and use.

Connections overview



1. Electrical connection cable for GEO 3/6/9
2. Temperature sensors
3. Connector for additional electric heating in SHW tank
4. Crown sleeve for heat / cooling control (HEAT + COM: heat control. COM + COOL: cooling control)
5. RJ45 connector for T21, T22 and anode in SHW tank
6. Control cable for 3-way valve for SHW container
7. Power supply cable for supplementary electric heating for central heating
8. Power supply cable for circulation pump for central circuit
9. Communication cable for Compact P (control cable between print)
10. Communication cable for GEO 3/6/9 (control cable for GEO)
11. Cable for environmental pressure switch
12. Power supply cable for brine pump
13. Power cable for GEO 3/6/9 + Compact P (main supply cable)
14. Emergency operation of electricity supplement for central heating
15. Power supply socket 230V for Compact P
16. 8-pole plug for the option to connect User selection 1, Modbus and HMI control panel

HMI User panel

Moving the user panel

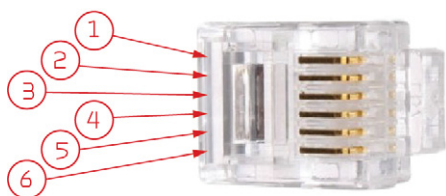
The user panel is from the factory mounted in the front of the unit. It is important that the user panel is located in a visible place so that the user can follow the operation and become aware of any alarms. Therefore, it may be necessary to move the user panel to another location.

A cover plate can be purchased for mounting in the hole in the front of the unit where the user panel is located from the factory.

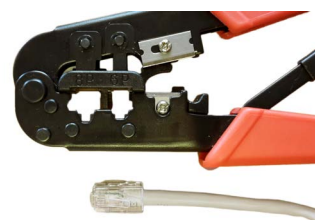
Wires from the 8-pin socket, for connection of the HMI control panel, are loose in the unit and must be connected to the circuit (according to the electrical diagram), where the wires from the front connection are removed.

Nilan offers a connection cable with RJ12 connectors of 10 m and 20 m, respectively. It is also possible to customize a cable up to 50 m in length. A standard LAN cable is used for this.

Mounting the RJ12 plug

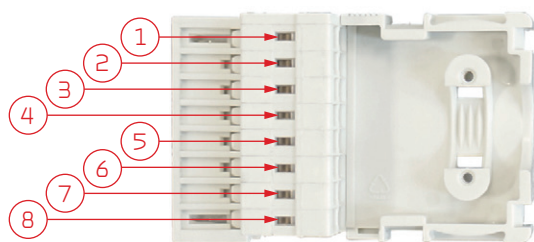


1. Empty
2. Empty
3. Green (A2)
4. Green/white (B2)
5. Brown (12V)
6. Brown/white (GND)



Use a RJ12 crimping tool

Mounting in the 8-pin plug



1. Brown/white (GND)
2. Green/white (B2)
3. Green (A2)
4. Empty (User programme 1)
5. Empty (User programme 1)
6. Empty (Modbus A1)
7. Empty (Modbus B1)
8. Brown (12V)

Wall bracket

Mount the HMI panel on the wall using the integrated wall bracket..

The panel should be placed in a visible spot so it is possible to change settings and to monitor warnings or alarms regarding operation of the unit.



The wall bracket is located at the back of the panel. You can detach it by loosening the bracket at the bottom of the panel. You can remove it.

Mount the wall bracket on the wall using 2 screws.

Click the RJ12 plug into place at the bottom of the HMI panel. The wire can run down along the wall, into the wall or through the groove at the back of the panel.

Electrical connections unit

Power supply



CAUTION

The power supply is plugged into a 230V socket with a safety switch. It is important that the unit has ground connection.

The ventilation unit is supplied with an EU Schuko plug for 230V power supply.

This means that if you have not installed a shoko socket with side earth or pin earth, an Adapter schuko plug with pin earth must be used.

This Schuko adapter can be plugged into the ventilation unit's Schuko plug and then into a socket with earth.



Schuko socket with side earth

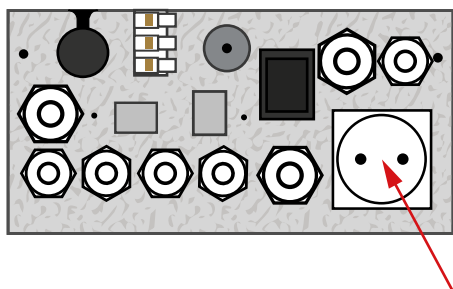
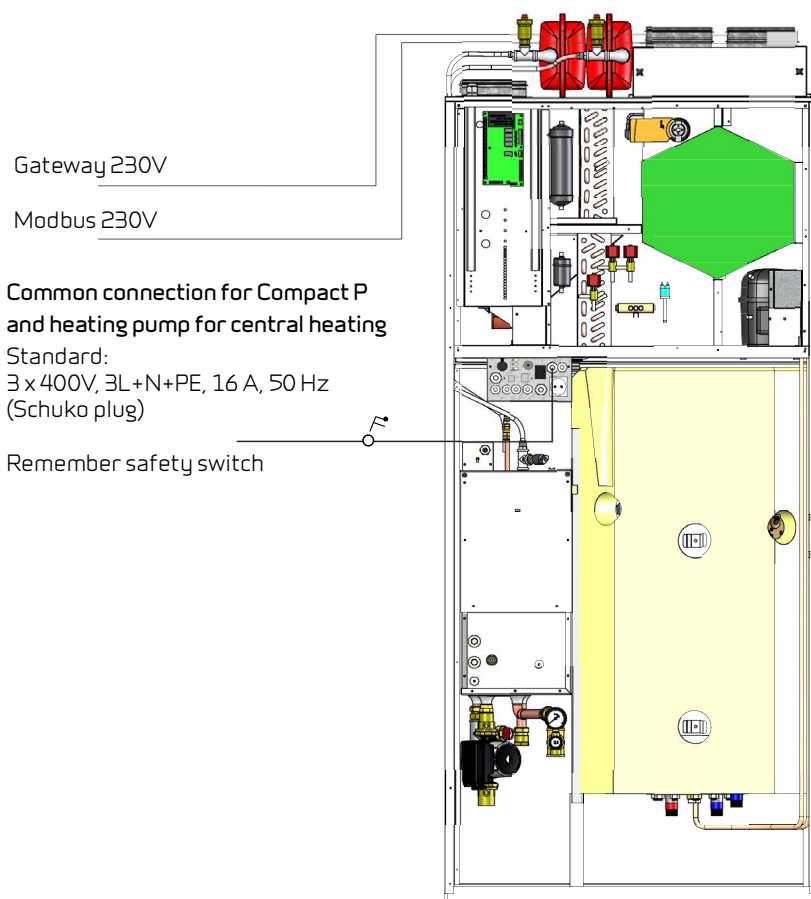


Schuko socket with pin earth



Example of Adapter Schuko plug with pin ground

GEO3, GEO6 and GEO9



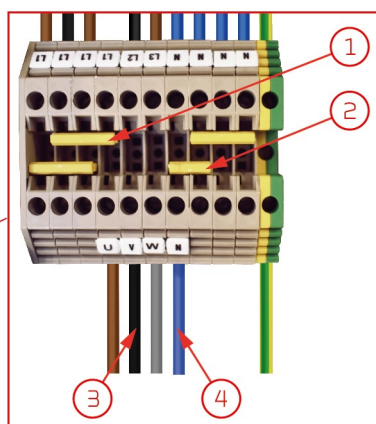
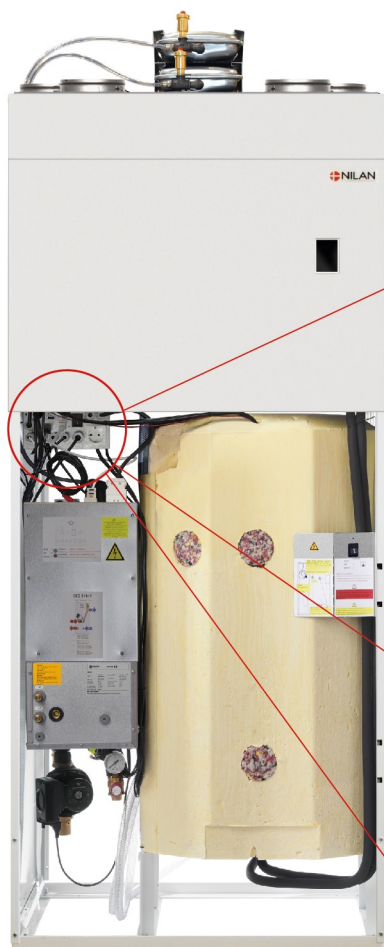
Power connection for Compact P, ventilation and domestic hot water

This power connection via Schuko socket allows to measure the power consumption of the ventilation separately, as well as the possibility that the hot water part does not have the same connection as the heat pump.

Change from 400V to 230V (NOT POSSIBLE FOR GEO9)

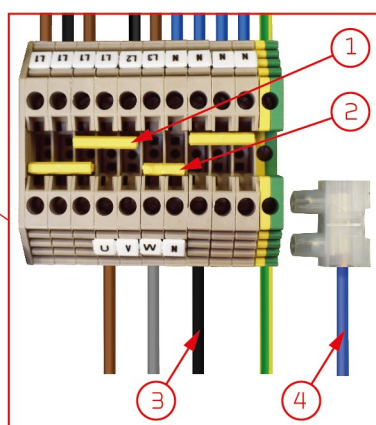
The standard connection in the unit is 3x400V + N. In those countries or areas where this standard is not applicable, the unit can easily be switched to either 3x230V or 1x230V.

The terminal block can be found in the control system for GEO. Please refer to the wiring diagram enclosed with the unit.



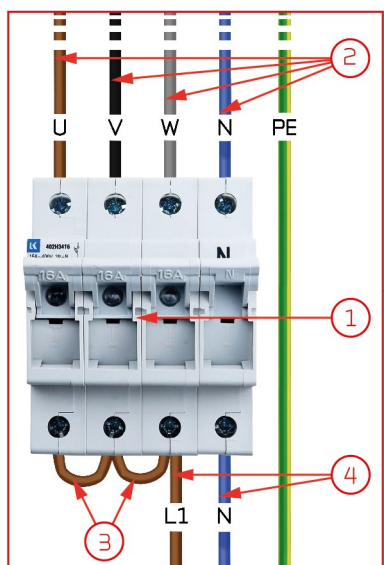
3 x 400V + N + PE

1. Jumper located in L1+L1+L2 (terminal block top row)
2. Jumper located in N + zero on the right (terminal block bottom row)
3. Black wire located in V (terminal block bottom row)
4. Blue wire located in N (terminal block bottom row)



3 x 230V+N + PE (NOT POSSIBLE FOR GEO9)

1. Jumper located in L1 + L1 + L2 (terminal block top row)
2. Jumper located in W + N (terminal block bottom row)
3. Black wire located in zero to the right of N (terminal block bottom row)
4. Blue wire disconnected and secured with 2-pin screw terminal



1 x 230V+N + PE (NOT POSSIBLE FOR GEO9)

1. In the panelboard there must be mounted a 3x16A circuit breaker. There must be 40A available before the circuit breaker.
2. Wires are connected between the terminal block and the circuit breaker: U = brown, V = black, W = gray, N = blue/zero.
3. Jumpers are mounted on the access side of the circuit breaker from 1-2 and 2-3.
4. Brown (L1) is mounted in the third wire inlet. Blue/zero (N) is mounted in the fourth wire inlet.



ATTENTION

The installer carries the responsibility for the electrical installation work.

Circulation pump

In Compact P AIR and Compact P GEO, there is a Power supply cable for circulation pump for central circuit in the Electrical connection panel. The cable is marked with a sticker with the text "Circulation pump" and ends in 3 screw terminals.



Compact P AIR



Power supply cable for circulation pump for central circuit



Compact P GEO

Connecting a gateway

Location on the unit

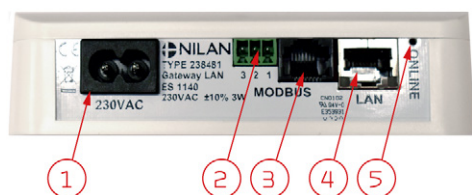


On Compact P (AIR/GEO) units, the gateway is installed on the filter box on top of the unit.

The gateway arrives from the factory already connected to the Modbus connection of the unit.

A wire for a 230V connection is included. Connect this to an external power socket.

Connections overview Gateway



1. 230V connection (wire included)
2. Reserved for future connections
3. Connection to the Modbus connection of the unit
4. Connection to the user's internet router
5. Light to check connection

Electrical connection



Using the supplied cable, connect the Gateway to 230V.

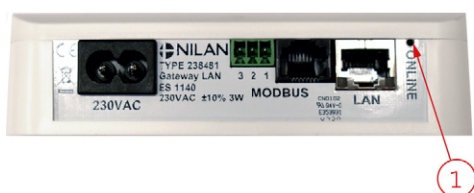
Connecting to the internet

Using an RJ45 cable, you connect the gateway to a router with internet connection (cable not supplied by Nilan).

Once the gateway is connected to a power supply and connection to the router has been established, you will have a secure cloud connection. You can now use the Nilan User APP to communicate with the gateway.



Checking connections



The ONLINE indicator makes it possible for you to check the connections by using the following code:

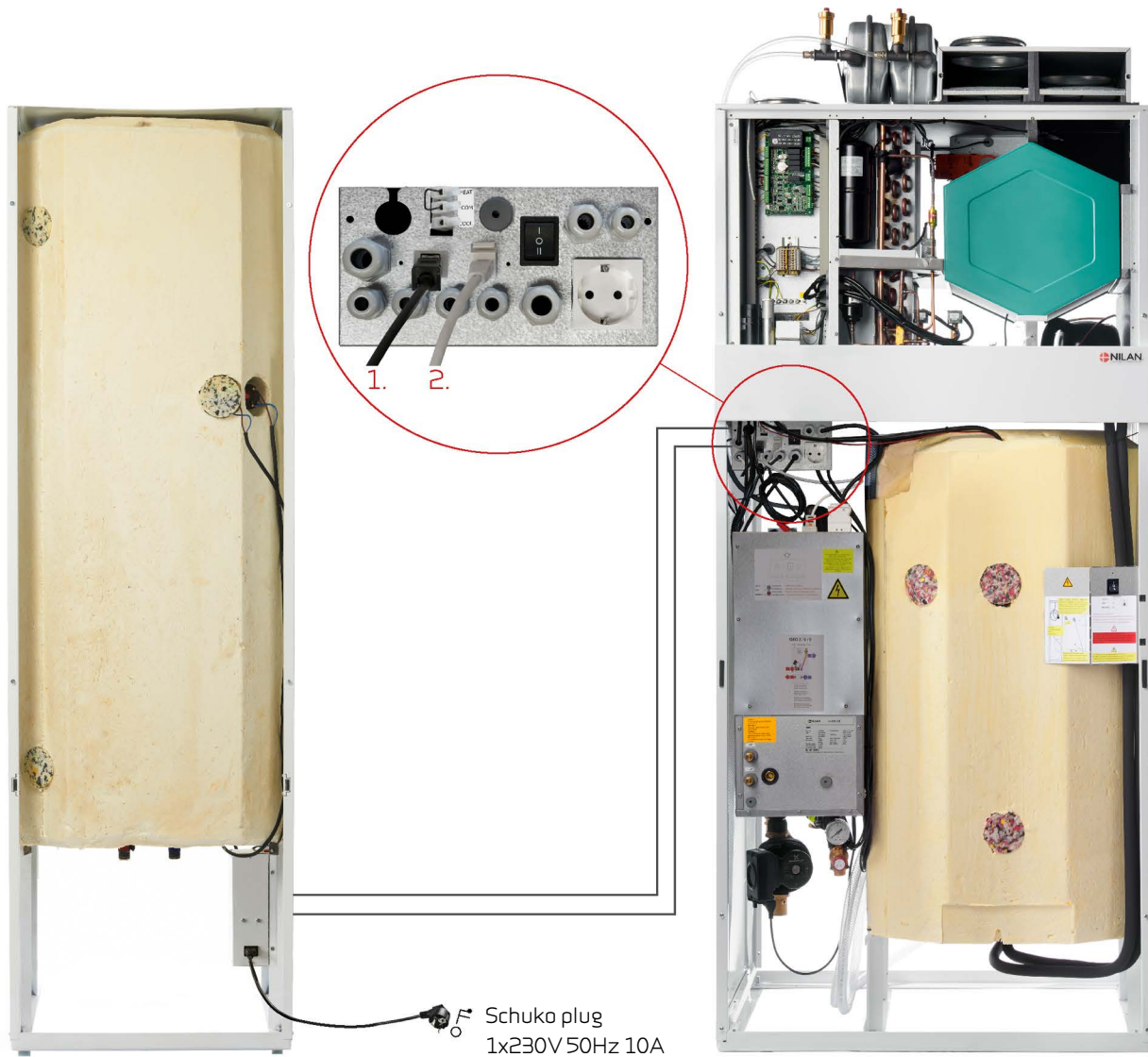
- When connecting 230V - the light will flash for 5 sec.
- When connecting Modbus communication - the light flashes continuously
- When connecting a Router - the light comes on and stays on
- When connecting a Router without Modbus communication - the light does not come on

Electrical connections accessories

SHW hot water tank

The SHW hot water tank is connected to Compact PGEO connection panel as shown below. The SHW tank has its own power supply via a Schuko connector.

1. Connector for control of supplementary electric heating in the SHW tank.
2. RJ45 connector for transmitting top temperature (T21), bottom temperature (T22) and anode monitoring in the SHW tank.



User selection 1

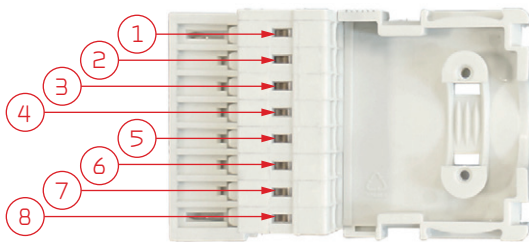
User selection 1 is connected via the 8-pin plug mounted on top of the unit.

The user selection functions are used to override normal operation. The input signal must come from a potential-free switch. When closed, the function is activated with the settings selected in the control panel under Service / User selection.

Some examples of the situations in which the user selection functions are used:

Cooker hood	If you choose to run the cooker hood over the ventilation unit, the cooker hood sends a potential-free signal to the ventilation unit when it is switched on. When this happens, the ventilation unit increases the air volume to the set level, so that enough air is extracted through the hood.
Fireplace/wood burning stove	<p>Normally, the ventilation is balanced with a small negative pressure in the home, so that no moisture is forced into the building's construction. It is a disadvantage if you light up your fireplace / wood stove, as the smoke will then enter the home instead of out of the chimney.</p> <p>When you switch on the fireplace/burning stove, you can activate the user function with a potential-free switch, which ensures that there is an overpressure in the home, so that the smoke smokes out of the chimney as it should.</p>
Extended operation	<p>If the ventilation unit is used in an office or school where the ventilation is reduced outside the opening hours, it may be necessary to turn it up briefly if, for example when a meeting is held in the evening.</p> <p>There you can then have a switch that is activated and the ventilation is increased e.g. for an hour before it then goes back into operation.</p>

Connection via the 8-pin plug:



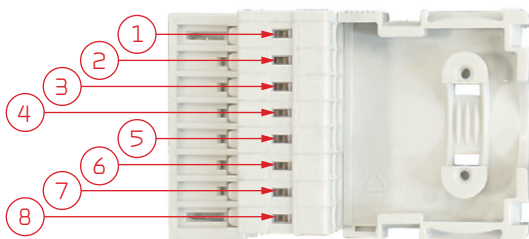
User selection 1 is connected to pin 4 and 5 in the 8-pin plug.

Modbus

The CTS602 controller has an open Modbus RS485 communication, that allows you to communicate with it and control the ventilation unit via external control systems.

We refer to the software manual and the Modbus protocol for further information about settings and registers.

Connection via the 8-pin plug:



Modbus is connected in following pins:

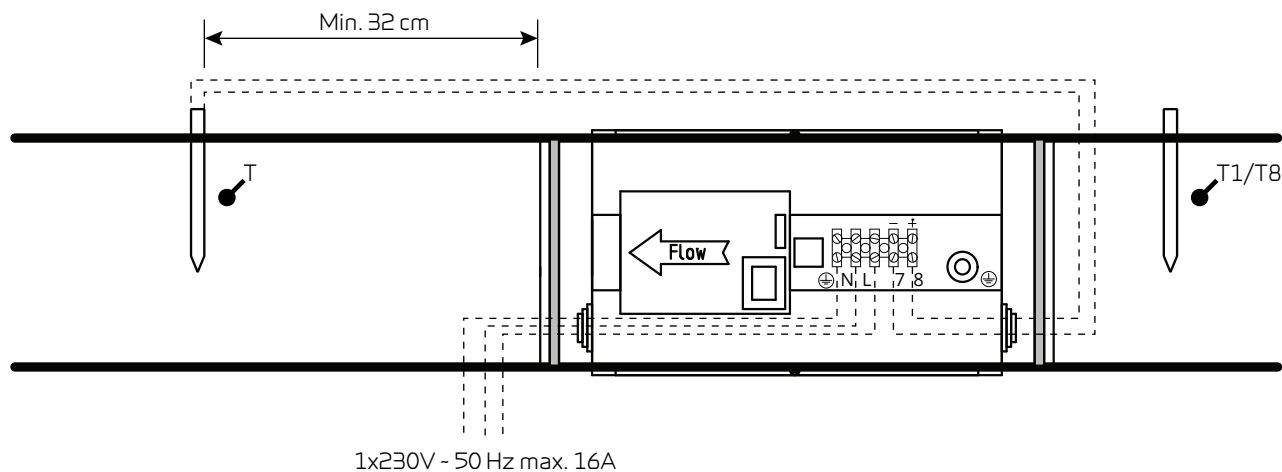
- 1. GND
- 6. A1 (Modbus +)
- 7. B1 (Modbus -)

External pre-heating element

It is possible to purchase an external electric pre-heating element for frost protection of the ventilation unit.

The electric preheating element is mounted in the outdoor air duct before the unit with the necessary temperature sensor.

If it is desired to see the actual outdoor air temperature on the control panel, the temperature sensor T1 / T8 must be led out into the duct before the preheating surface.



It is important that the sensor is placed at least 32 cm from the preheating element to achieve correct regulation.



The pre-heating element has a three-step safety system that prevents overheating.

1. An operating thermostat regulates the heating and ensures that the supply air temperature does not fall below -1 °C
2. Should the temperature exceed 50 °C, a max. thermostat switches off the pre-heating element. (If installed vertically with downward airflow, the pre-heating element switches off at 70 °C)
3. A safety thermostat switches off the pre-heating element if the temperature exceeds 100 °C. Then, you must reset it manually.

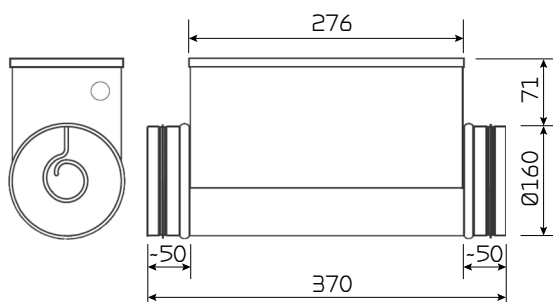
Minimum airflow at Ø160: 110m³/h.



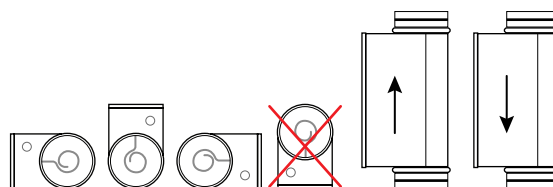
ATTENTION

The heating element must be insulated with a fire retardant insulation material. The cover of the connection box, however, must not be insulated.

Dimensional drawing:



Positioning options:



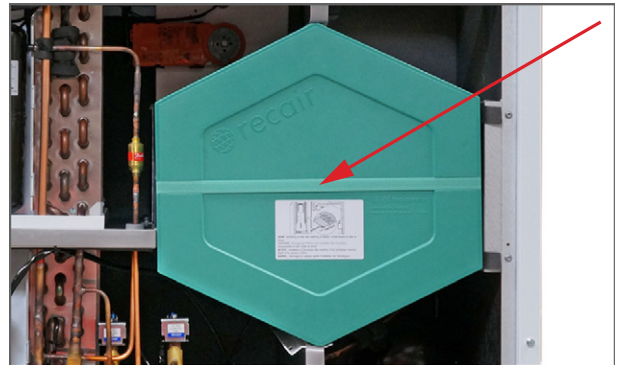
CO₂ sensor

If there is a large load change in the home / building, it is advantageous to install a CO₂ sensor to control the air exchange. The CO₂ sensor measures the CO₂ level in the exhaust air, and regulates the ventilation level accordingly.

The CO₂ sensor is mounted in the unit as illustrated below:



1. Remove the T4 sensor in the heat exchanger.



2. Remove the heat exchange by pulling the strap (do not cut).



3. Pierce a hole into the foam over the crossbar, (where the heat exchanger is positioned) to gain access to the recess in the top cover.



4. Run the wire from the CO₂ sensor through this recess.



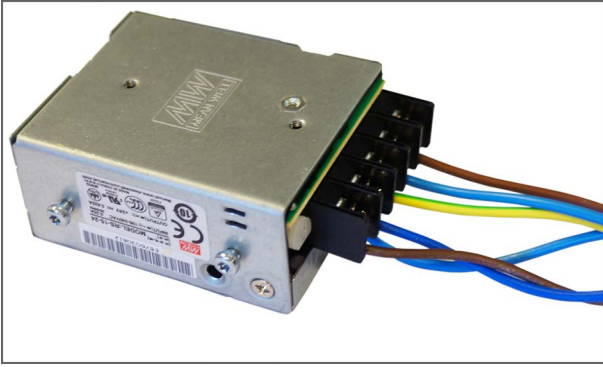
5. Mount the CO₂ sensor in the top cover, using self-threading screws (included in the CO₂ sensor kit).



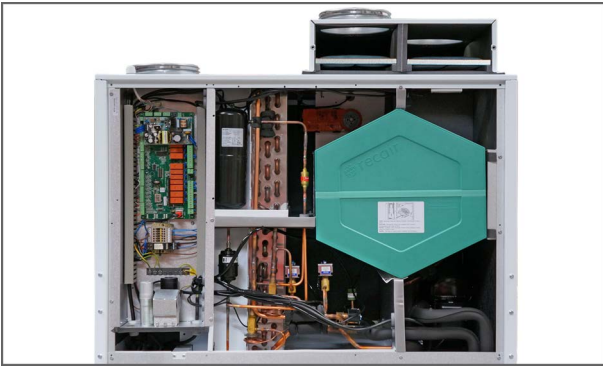
6. Run the wire from the CO₂ sensor through the cable grommet to the automation. Wire is subsequently tied up with cable strips.



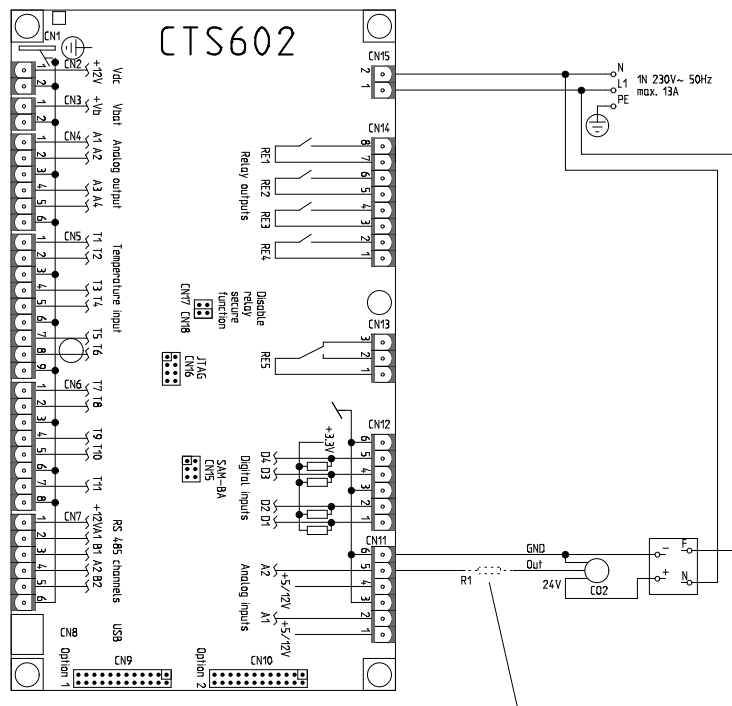
7. Mount the power supply box in the box for automatic.
(pre-drill 2 holes for the screws).



8. Connects as shown in the electrical diagram below.



9. Reinstall the counterflow heat exchanger. Remember to
reinstall the T4 sensor.

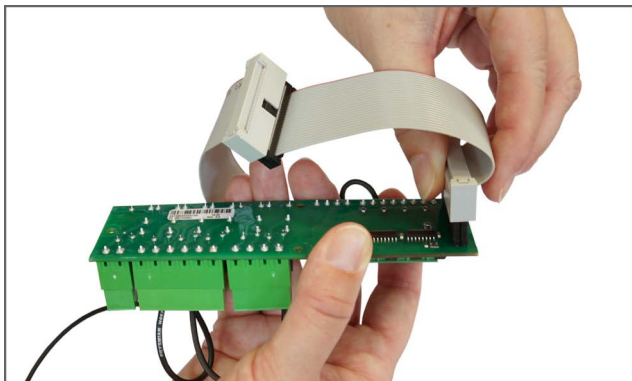


For SW version 2.00x or less, the resistor must be mounted in series with a black signal cable
For SW version 2.01x and above, do not mount a resistor.

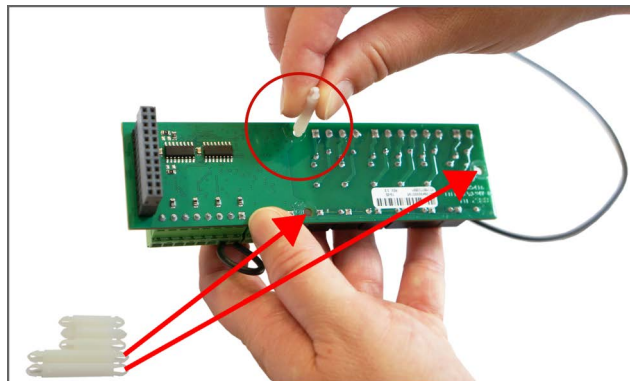
Installation of expansion PCB on CTS602 circuit board

With an expansion PCB, it is possible to expand the functions within the control system.

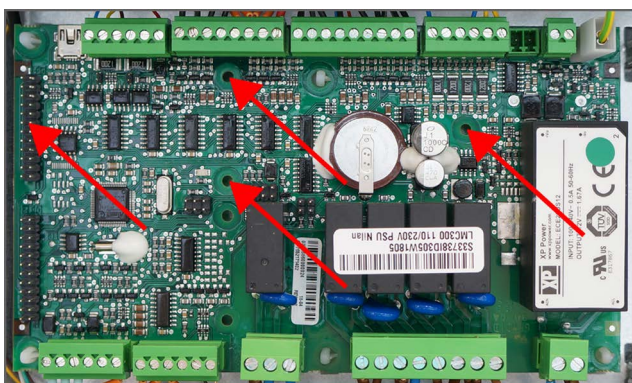
You can connect a CO₂-sensor, a joint alarm and User selection 2 (expansion PCB is included with the heating element)



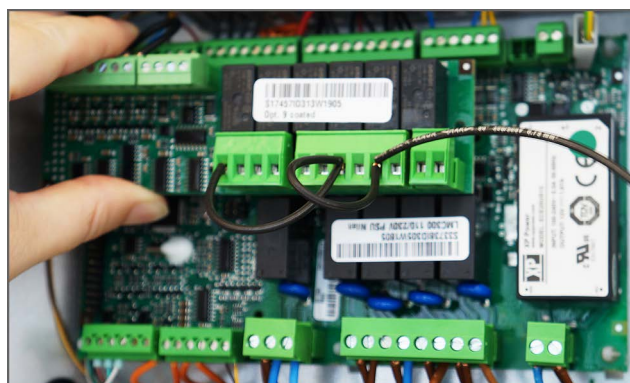
1. Demount the shown bus cable from the expansion PCB.



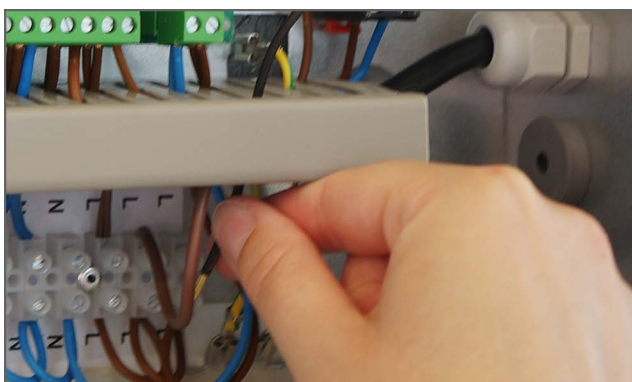
2. Mount the large circuit board supports in the 3 holes on the expansion PCB.



3. Connect the expansion PCB to CN9. Mount the circuit board supports in the holes provided for this on the CTS602 Light circuit board.



4. Mount the expansion PCB on the CTS602 Light circuit board.



5. Connect the wires up in accordance with the wiring diagram.



ATTENTION

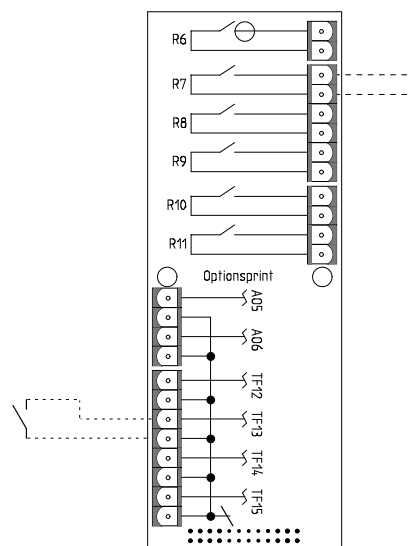
The expansion PCB and the connections must be installed by a certified electrician.

The expansion PCB is an accessory for the CTS602 circuit board. Nilan does not supply external components.

User selection 2

With User selection 2, the same options are achieved as with User selection 1. In addition, you get the option of a relay output that can control e.g. a damper or whatever need one may have to control an external function.

User selection 2 potential-free input is connected to TF13 and User selection 2 output is connected to relay R7 on the PCB board.



EM-box (damper solution)

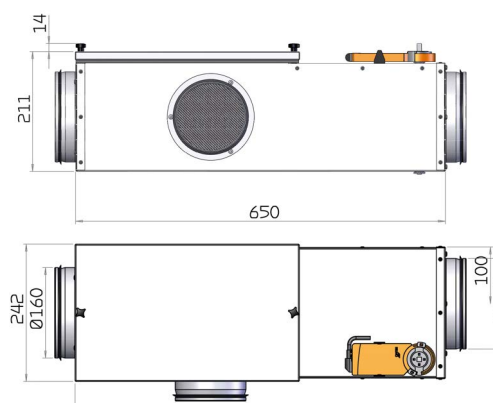


If it is desired to run the cooker hood over the ventilation system, it may in some cases be difficult to get enough air for the cooker hood.

With an EM box installed and when the cooker hood is in operation, you can regulate the extraction so that less air is extracted out of the other rooms, e.g. bathroom and utility room so that there is enough air for the cooker hood to extract sufficiently.

The EM box is equipped with a metal filter that effectively cleans the cooker hood air of grease particles, as extra protection for the ventilation unit.

Dimensional drawing:

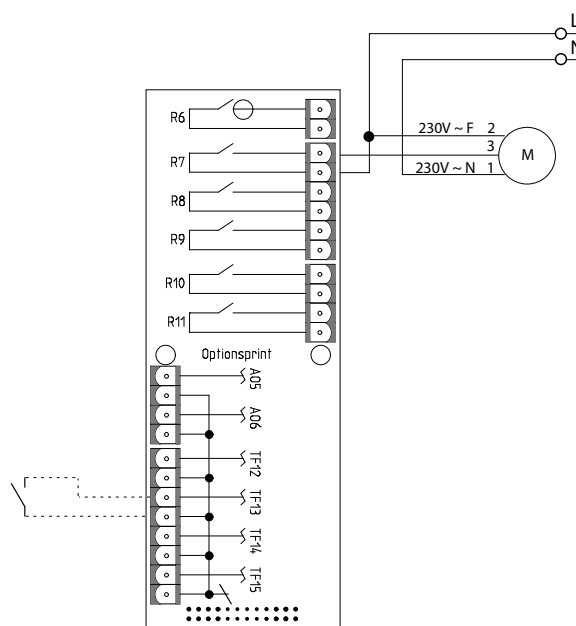


The system works as follows:

When the cooker hood is switched on, User selection 2 is activated. The ventilation unit increases the ventilation and at the same time sends an output signal to the EM box that it must close the damper for extract air from the other rooms. However, the damper does not close completely in, there will still be extraction from the other rooms, just reduced.

When balancing, the small stop blocks on the damper must be set so that the basic ventilation is maintained from the other rooms.

The EM-box solution is connected to the PCB board via the following electrical diagram:



DTBU damper solution



If it is desired to run the cooker hood over the ventilation system, it may in some cases be difficult to get enough air for the cooker hood.

To solve that challenge, an EM-box solution can be used. However, if there is not enough space in the installation for an EM box, you can alternatively connect a DTBU damper in the duct system, which has the same function, except that it does not have a built-in dirt filter. However, a filter box with a steel filter can be purchased, which can be mounted in the duct system in a suitable place.

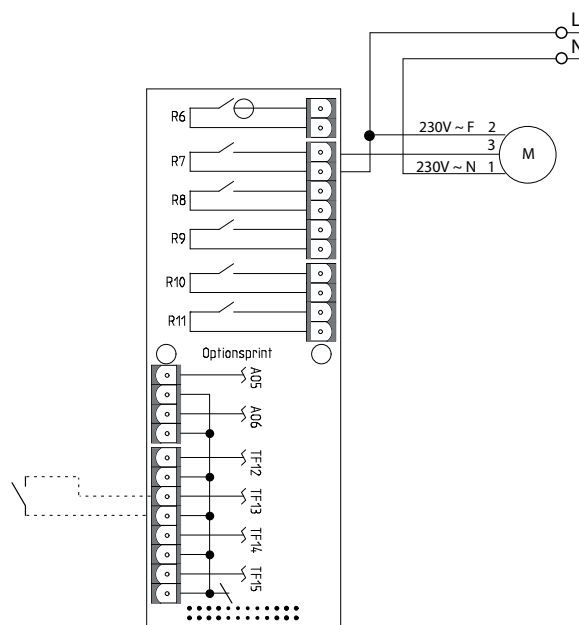
The DTBU damper regulates the extract air so that less air is extracted out of the other rooms, e.g. bathroom and utility room so that there is enough air for the cooker hood to extract sufficiently.

The system works as follows:

When the cooker hood is switched on, User selection 2 is activated. The ventilation unit increases the ventilation and at the same time sends an output signal to the DTBU damper that it must close the damper for extract air from the other rooms. However, the damper does not close completely in, there will still be extraction from the other rooms, just reduced.

When balancing, the small stop blocks on the damper must be set so that the basic ventilation is maintained from the other rooms.

The DTBU damper is connected to the PCB board via the electrical diagram.



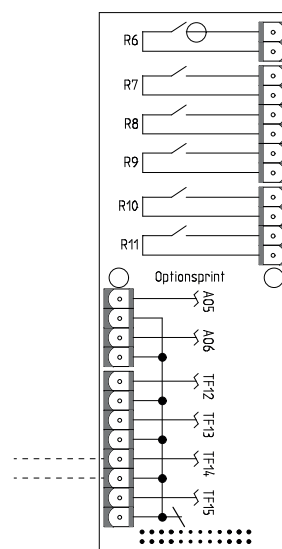
Fire thermostat / external fire automation system

The ventilation unit can be connected up to an external fire thermostat that will stop the ventilation unit in the event of fire. The same port can be used for connection of an external fire automation system.

The control system identifies a broken input signal as fire, and stops. It will only restart once connection to the fire thermostat has been established or the external fire automation system starts signaling again. This must be done manually via the control panel.

When you connect up an external fire automation system, it will be necessary for the ventilation unit to restart automatically. You can set for this to happen on the control panel. Please consult the software instructions for further information.

The connection is made on the expansion PCB via the electrical diagram.



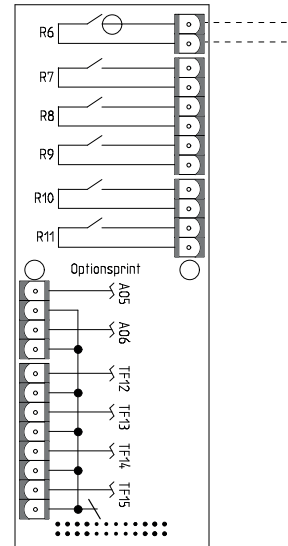
ATTENTION

If this function is not used, a jumper must be established on the expansion PCB. Otherwise there will be a fire alarm in the control system.

Joint alarm

It may be difficult to notice alarms if the unit is located in a place where access is difficult or infrequent, and if the control panel is located in the same place.

An external alarm indicator in the form of an electric bulb or an acoustic signal can be connected to the ventilation unit and announce when an alarm occurs. This could, for example, be when filters need replacing.



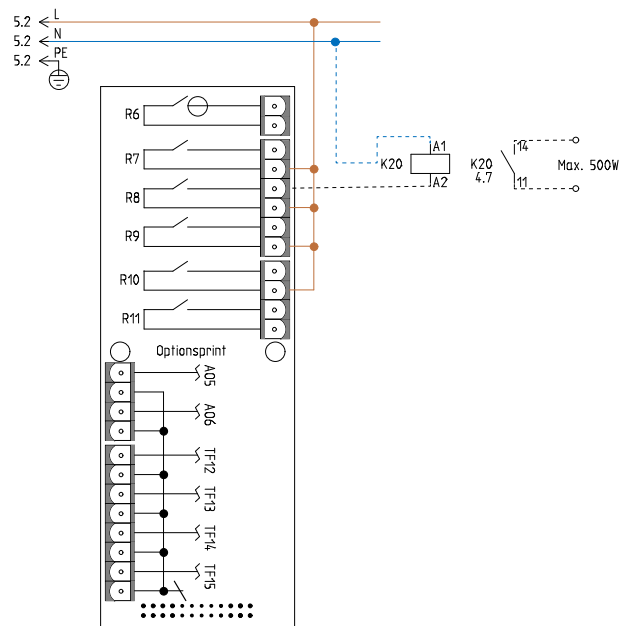
External heat supply

The unit can control an external heat supply, such as electric radiators or an underfloor heating system. This feature is used in the cases where the unit contributes to the heating of the house via a heat pump and/or a after-heating element.

The room temperature is monitored by the unit's control system, which only releases the external heat supply if it cannot heat the home/house to the desired room temperature.

External heating supply is connected to the expansion PCB via relay R8, and the settings are set in the control panel.

Read the software manual to see which settings to set.



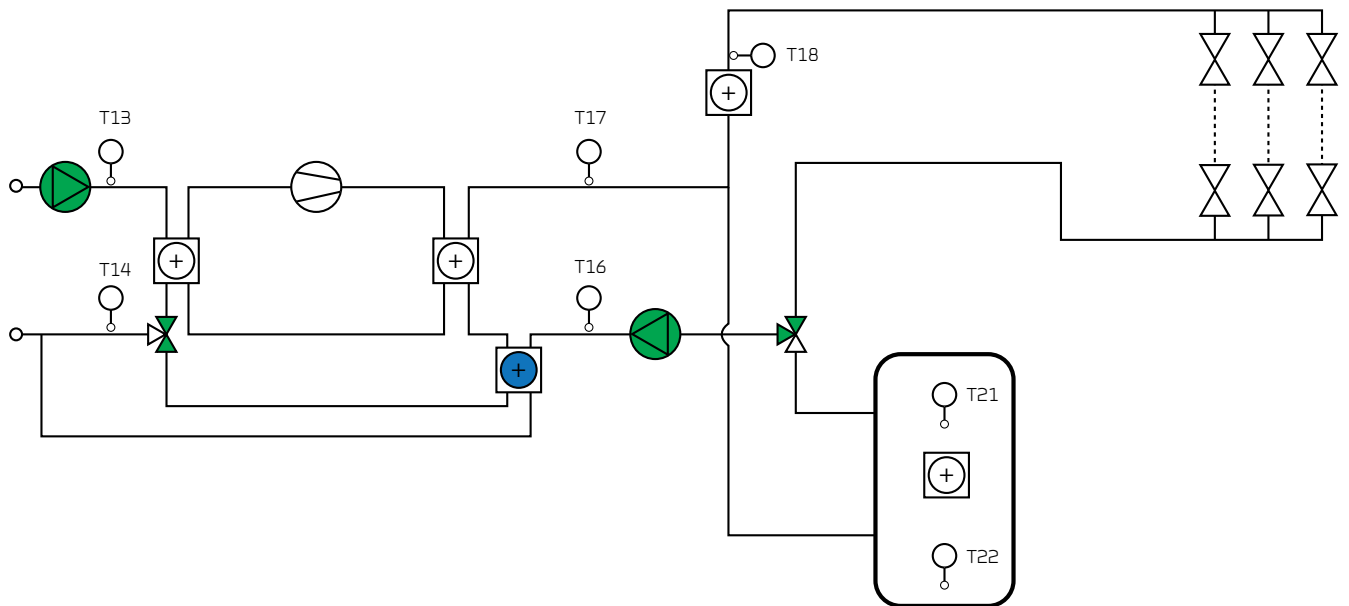
Passive cooling function

GEO has a passive cooling function. It works by the soil which cools the temperature of the brine, the cold brine water used to cool the water in the central heating floor system or led to a fan coil.

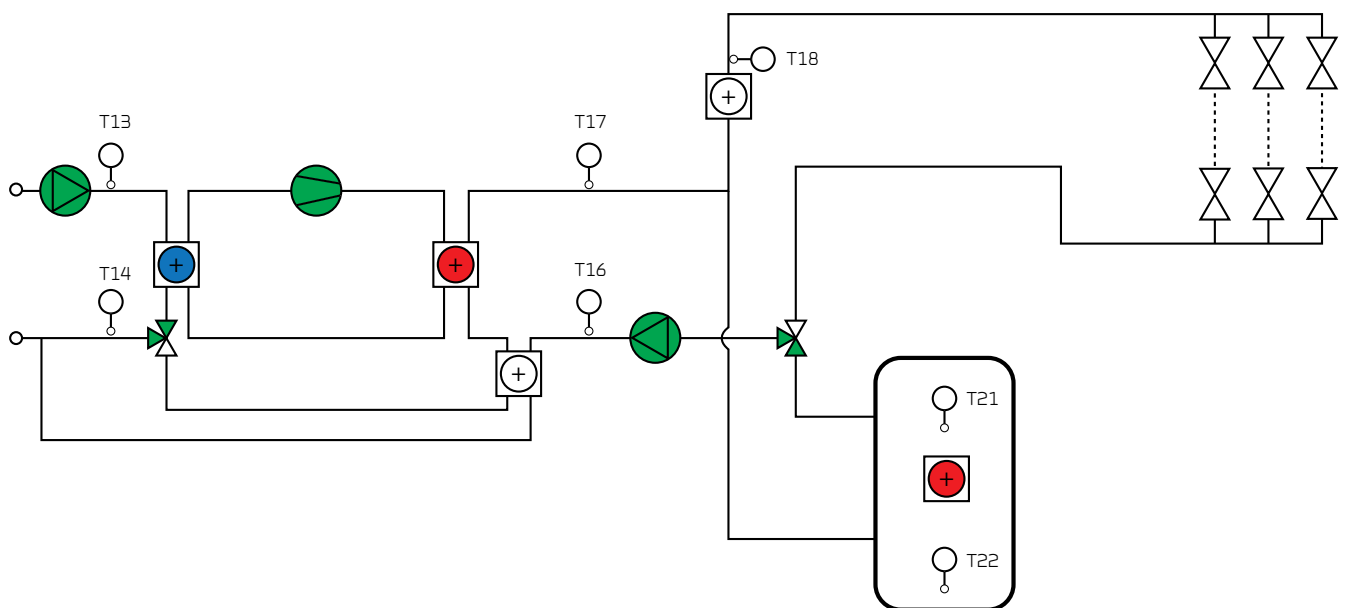
Passive cooling by the floor heating system

An external temperature sensor is connected to digital input 10. When the contact is switched on GEO goes into passive cooling, where the circulation pump for the brine circuit and the circulation pump for the central heating are running. The relay output 10 is activated and turns a tree-way-valve, so the brine water is led to the passive heat exchanger (not a Nilan delivery). When the contact is switched off again, GEO will go back to normal operation.

The external temperature sensor is often equipped with an infrared sensor, which measures the floor temperature and stop the cooling before, dew is formed on the floor.



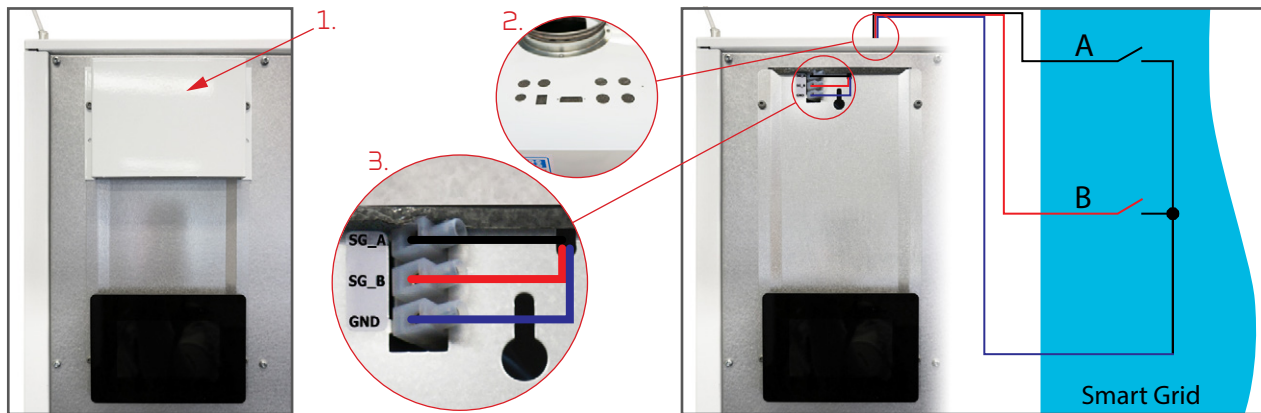
If there is a need that GEO must produce domestic hot water, the passive cooling is stopped.



Smart Grid

If you wish to run Smart Grid, you will need to update to the latest Software version and connect the Smart Grid modem to Compact P, as shown.

The Smart Grid signal is connected to the LC circuit board in the Compact P, which will also control AIR and GEO, if connected. Connect the signal directly, without resistance, as these are pre-installed in the cable.



1. Remove the white plate.

2. Route the wires from the SG through the hole in the top of the unit.
3. Connect the wires:
SG-A: black, SG-B: red, GND: blue.

Smart Grid is programmed in the unit's software under General settings. See the options in the Software Instructions.

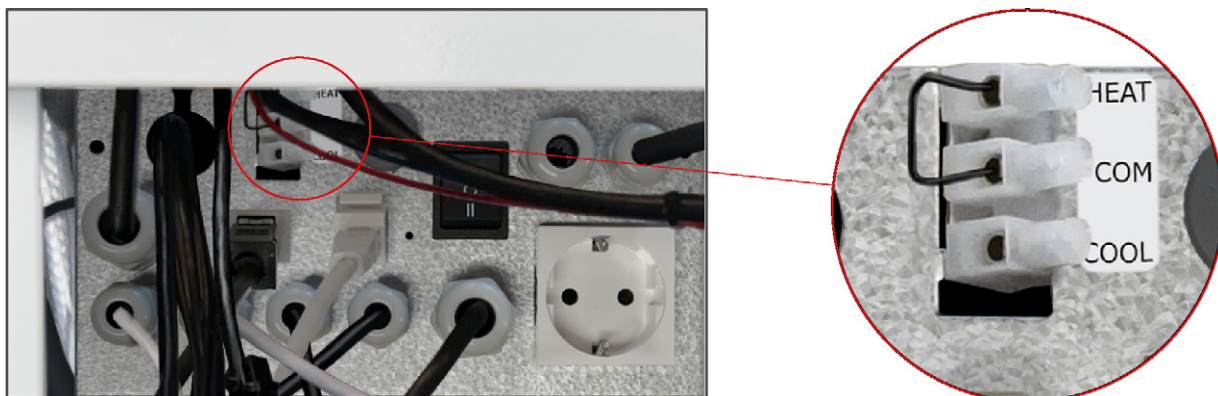
External underfloor heating control

To avoid the heat pump producing heat when there is no need for it, it is advisable to connect the underfloor heating control on the thermostat to AIR/GEO.

A screw terminal is mounted on the connections panel for controlling heating/cooling. The loop, which is in HEAT and COM, is removed and the signal from the floor heating control is connected here.

Closed contact set: heating require! Open contact set: no heating required!

The circulation pump for floor heating can also beneficially be connected to the external heating control.



Plumbing installation

Condensate drain

Important information

Compact P is supplied with a reinforced 20 mm condensation drain pipe with built-in water lock.



ATTENTION

Run the condensate drain to the nearest drain, allowing an even fall of at least 1 cm per m.

The overflow from the safety valve for domestic cold water must likewise be led to a visible drain.



ATTENTION

If the unit is positioned outside the climate screen, it is important to secure the condensate drain against icing.

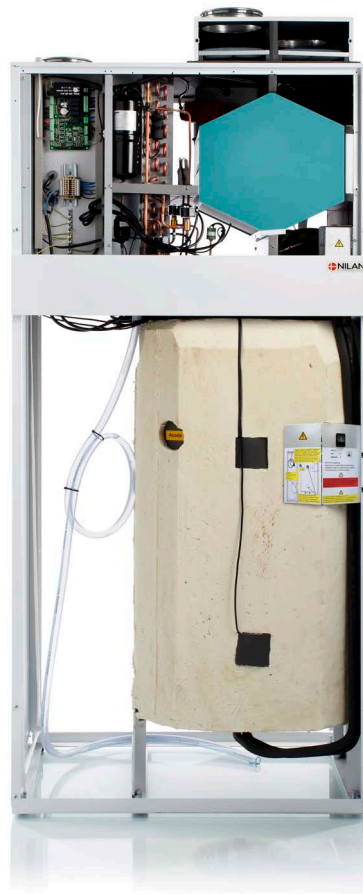
Frost protection of the unit is the installer's responsibility.

The connection of the water trap must be air-tight, otherwise air will be sucked into the unit and condensate water will not be able to run out. It could cause water damage if the condensate tray overflows and condensate water runs out of the unit.

After installing the water trap, its function is tested as follows (the unit must be connected to the duct system):

Fill the condensate tray with water, close the door and start the unit at the highest fan speed level. Allow it to run for several minutes.

Open the door and check that there is no more water in the condensate tray.

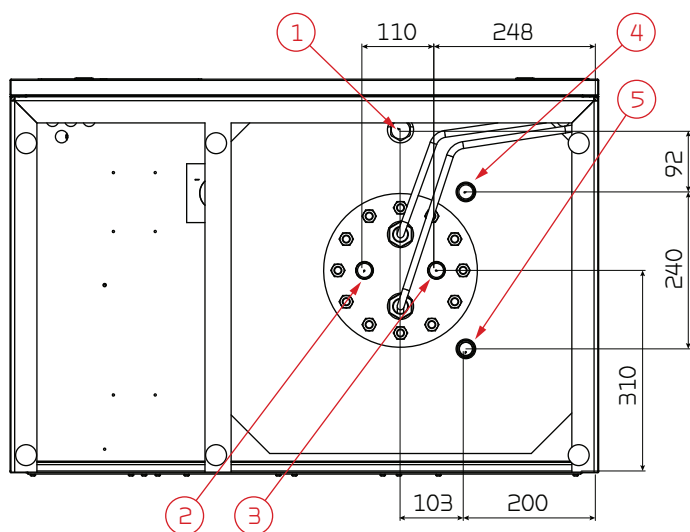


There is provided a loop of tubing from the condensate drain, which acts as a water trap. It is fixed with strips, which in no case must be cut up.

Hot water tank

Connection overview

Compact P front



Connections:

1. Connection for 3/4" circulation pipe
2. Hot water outlet 3/4"
3. Cold water intake 3/4"
4. Return supplementary coil 3/4"
5. Supply supplementary coil 3/4"

All listed measurements are in mm.

Supplementary coil is only standard on Compact P SOL models.

The coil is located in the bottom, and has an external diameter of 22 mm and is 8,500 mm long, equivalent to 0.6 m².

Connection



ATTENTION

All work must be performed by qualified personnel and in accordance with relevant legislation and provisions.

Nilan's hot water tanks are double-enamelled, ensuring long life. The efficient foam insulation protects against unnecessary heat loss.

All connection nozzles for water have 3/4" thread and are located in the tank bottom.

The tank is also fitted with an electronically-monitored sacrificial anode that automatically displays a warning on the display when it needs changing.



CAUTION

Changing the anode when notified on the display is important. Failure to do so can cancel the guarantee on the hot water tank.

The tank is fitted with supplementary electrical heater deactivated by default and activated via the control panel if required.



ATTENTION

The supplementary heating must not be activated before the water tank is full of water.

Requirements for water quality

The hot water tank in the Nilan units is made of steel, which has been given a double enamelling, to ensure an extra long service life. In addition, the tank is equipped with a sacrificial anode as extra protection. It is important that the sacrificial anode is replaced regularly.

Most units are equipped with an electronic monitoring sacrificial anode, which gives an alarm on the user panel when it is time to replace it.

In order for the sacrificial anode to function and protect the tank, it is required that the water quality complies with the following:

- Electrical conductivity (EC): Between 30 mS/m and 150 mS/m (millisiemens pr. m) at 25 °C
- Chloride must be below 250 mg/L at 65 °C

If the above criteria are not met, the sacrificial anode will not work as intended, after which the tank will be corroded, to

Hot water circulation

Hot water circulation can be established by fitting a non-return valve and a circulation pump for domestic water to the tank's circulation connector.

If hot water circulation is not established, the connector must remain closed with the factory-mounted shut-off plug.



ATTENTION

Hot water circulation can lead to a significant heat loss in the pipes, diverting a good proportion of the heat pump's output. To avoid this, circulation pipes and the hot water loop must be insulated with at least 30 mm mineral wool.

It is advisable to set a timer so that the circulation pump is not running constantly.

Supplementary coil

All units ordered as a SOL models have integral supplementary coil, see connections list.

The supplemental coil is intended for solar heating systems, though it can also be connected to other heat sources, e.g. a heat pump.



ATTENTION

If a solar collector or other heat source is connected to the supplementary coil, it is recommended to install a scald protection on the hot water outlet.

Softened water

If it is wished to soften water with salt in a Nilan hot water tank, the following must be observed:

- The conductivity must be between 30 mS/m og 150 mS/m (millisiemens per m)
- The chlorine content must be under 250 mg Cl/l

If the above criteria are exceeded, the anode current will be too high, the anode will break down too quickly and the water will begin to smell bad.

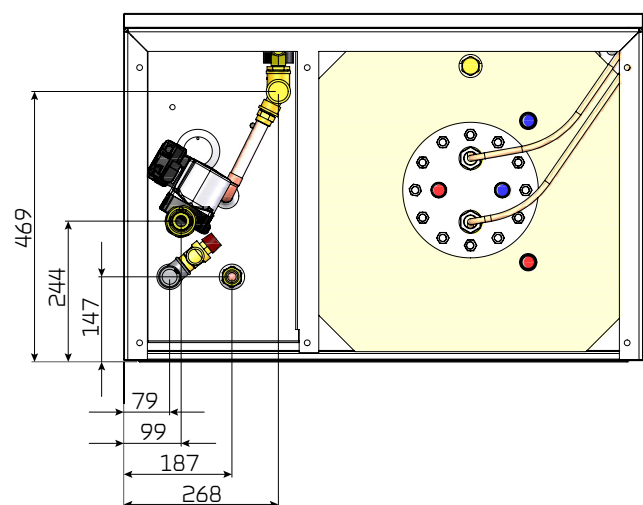
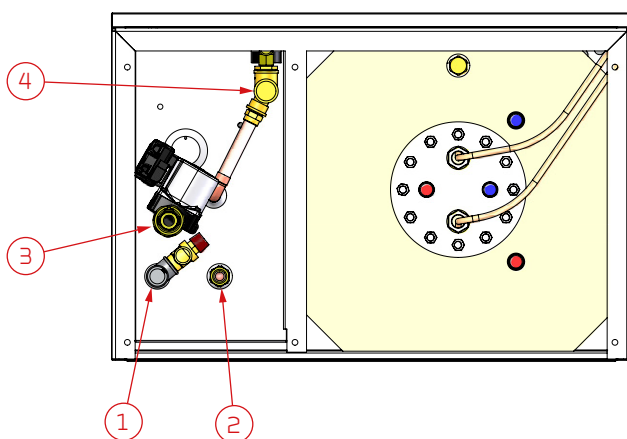
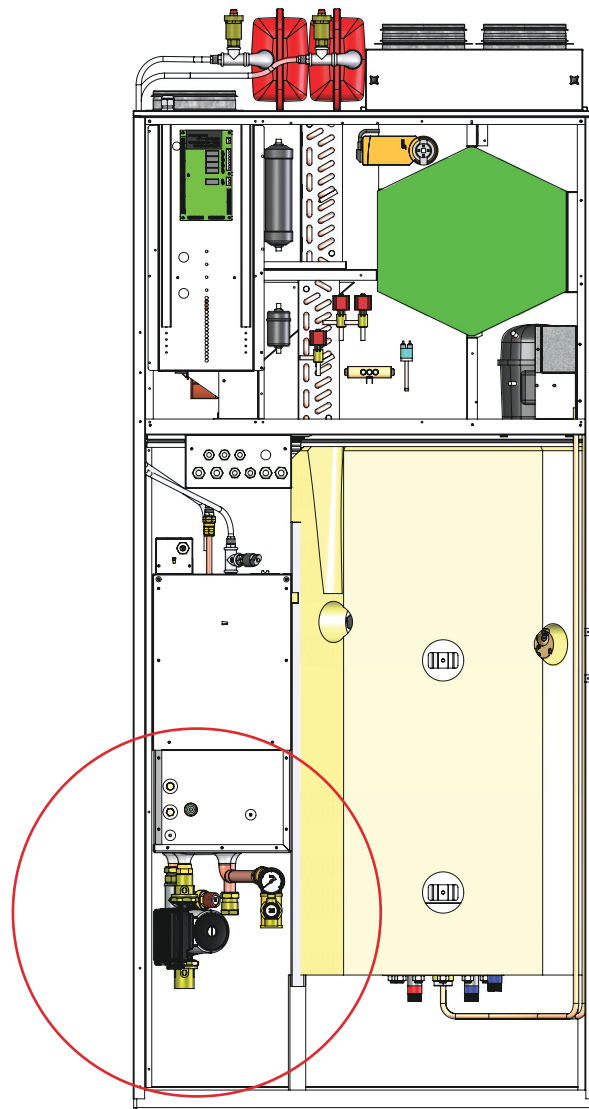


CAUTION

De-mineralised water (double ion exchange) must not be used, as the tank will quickly corrode. De-mineralised is also referred to as desalinated and de-ionised water.

Central heating

Connection overview



1. Supply flow central heating
2. Return flow central heating
3. Supply flow brine (from geothermal tube)
4. Return flow brine (to geothermal tube)

The brine circuit

After a leak test has been conducted and proven, the system can be filled with brine. Filling with brine should be carried out by an authorised installation technician.

It is recommended that pre-mixed brine which has an anti-corrosion agent is purchased. If the brine is mix-yourself, the water quality must be suitable for brine.



CAUTION

Ensure that the brine tubes are empty of air and dirt before the brine is connected to the heating pump.

Insulation of pipes

All pipes to and from the earth tubes/ground collector loop must be insulated all the way into the heating pump so that condensate does not form on the cold pipes.

A collection tray must be established for the brine circuit's safety valve under the heating pump on the brine side.

Safety earth tube system

The ground collectors are equipped with a pressure switch that trips an alarm if there is falling pressure in the earth tube. The alarm will be triggered if the pressure falls below 0.6 bar. The system will close down and cannot be automatically re-started.

The earth tube system must be dimensioned as a closed system with an at-rest pressure of 1.5-2.5 bar.

Flexible hose for the brine circuit must be made from EPDM rubber with woven stainless steel.

Check list for the central heating system prior to start-up

The check list is used when starting and delivering the system, and it should always be filled in. See the other sections in the manual for further information.

Electrical connection and controls	Checked - date	Notes
The power supply is connected and secured in accordance with the wiring diagram and manual		
The control panel is installed in a place that can easily be seen by the user		
Central heating circuit	Checked - date	Notes
The central heating circuit is sealed		
The central heating circuit has been vented after filling		
Central heating circuit pressure, overpressure		Bar
The opening pressure for the central heating circuit 's safety valve is correct		
The circulation pump is rated correctly for the installation		
The circulation pump is in constant operation or is controlled by the heating pump		
Brine circuit	Checked - date	Notes
Brine circuit /earth tubes are sealed		
Brine type		
Brine concentration %		%
Freezing point (recommended -20 °C to -18 °C)		°C
The brine is mixed thoroughly before filling		
The brine circuit is vented after filling		
Pressure of brine circuit		bar
Fluid from the safety valve for the brine circuit cannot run into the sewer		
The brine circuit is connected correctly to the heat pump (the heat pump can be damaged by wrong connection)		
Design flow brine circuit		m3/h
Adjusted flow brine circuit		m3/h

There is a risk of low pressure and frost damage of evaporator in the heat pump, if the conditions for the brine circuit is not met.

Plumbing connections for accessories

Safety group



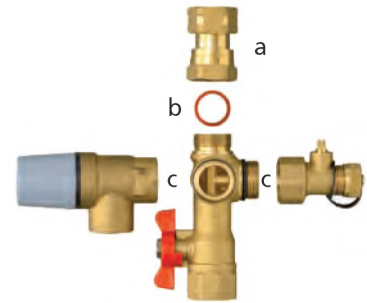
CAUTION

Safety group must be installed in connection with hot water tanks.

When water is heated to 60 °C, it expands by 2%. A pressured tank could burst without a safety valve keeping excess water out. The safety valve should therefore drip during warming up.

Installation:

- The double nut is attached to the water heater 's cold water pipe so that the arrows are pointing in towards the water heater (in the direction of the flow). The joint with the water heater is sealed using a threaded washer.
- The joint between the double nut and the unit is sealed using fibre packing.
- The rubber ring seal (the O-ring) is fitted to the unit so that it can function as a seal between the safety valve and the unit in such a way that the valve is locked.



The end of the overflow pipe must be visible, and it must be able to run out safely via the drain.



ATTENTION

s water expands as it heats up, the safety valve will drip.



ATTENTION

The installer is responsibly to instruct the consumer about the location and function of the safety valve, as well as that the safety group at least twice a year should be tested to avoid overgrowth.

Safety group with anti-scald protection

In the control, a temperature limit for the domestic hot water of 65°C is set as standard. This setting prevents scalding of the users when the hot water tap is opened.

When the unit is in cooling mode, the energy is deposited in the hot domestic water tank instead of leading it out of the house. This also means that if the hot water temperature exceeds 65°C, the unit stops cooling the supply air.

If there is a larger need for cooling, the temperature limit can be raised to 80°C, but then a scalding fuse must be fitted under the hot water tank, which prevents users from scalding when they open the hot water tap.

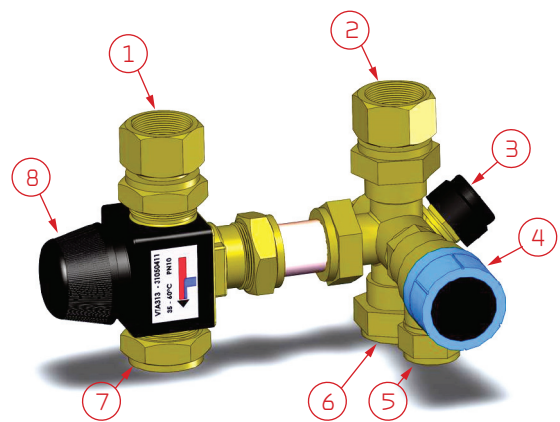
The scald protection mixes the hot water with cold water so that the temperature is lowered and scalding is avoided. This extended the period during which Compact can cool.



CAUTION

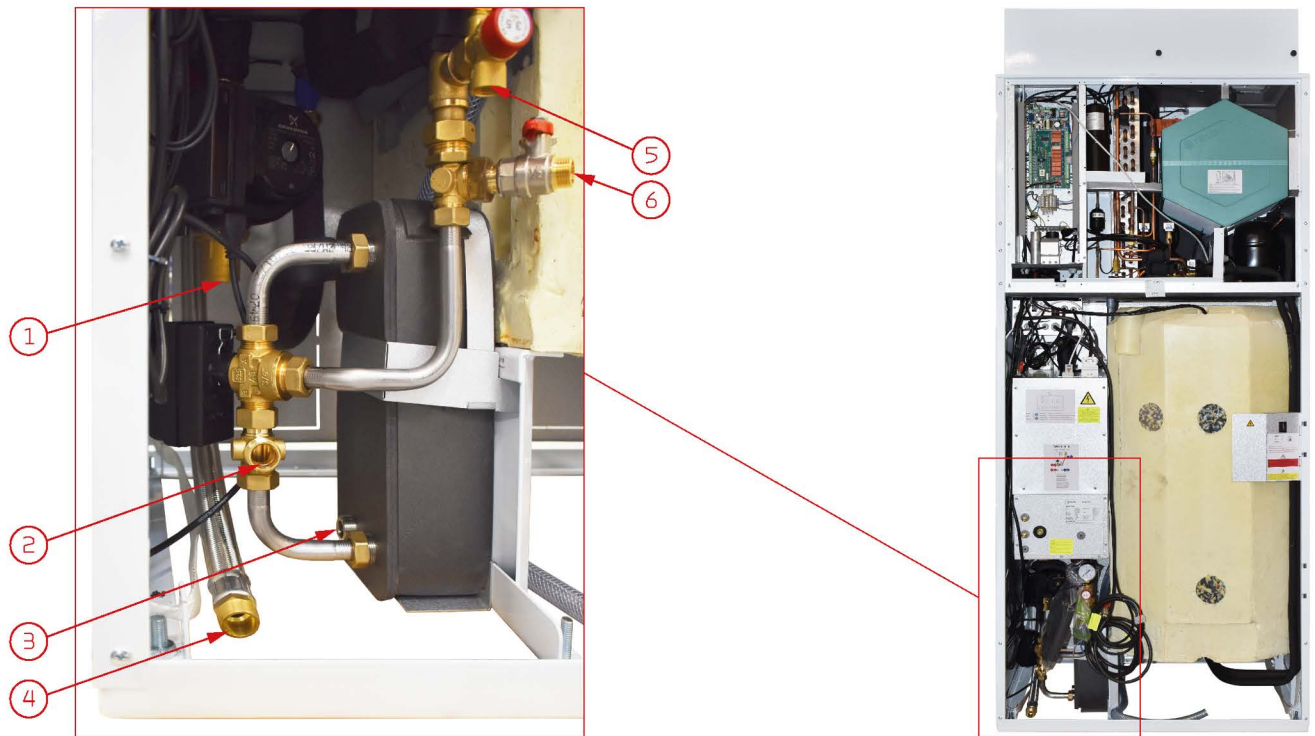
If a solar panel is connected to the hot water tank, an anti-scald device must be mounted.

1. Hot water from the hot water tank
2. Cold water to the hot water tank
3. Stop tap cold water
4. Pressure relief valve (6 bar or 10 bar)
5. The overflows from the safety valve are led to a prominent drain
6. Cold water supply
7. Domestic hot water for the dwelling
8. Mixing valve for domestic hot water for the dwelling (can be set between 35 - 60 °C)



Passive cooling module

It is possible to buy Compact PGE03/6/9 with a passive cooling module, which can cool the home in the summer, should the need arise. The cold brine water is passed through a plate heat exchanger, which cools the water in the central heating system. The cooling module is pre-assembled from the factory and connected to the CTS control.



1. Supply flow brine (from earth tube)
2. Return flow brine (to earth tube)
3. Return flow central heating
4. Supply flow central heating
5. Safety valve 3 bar
6. Filling / emptying tap



ATTENTION

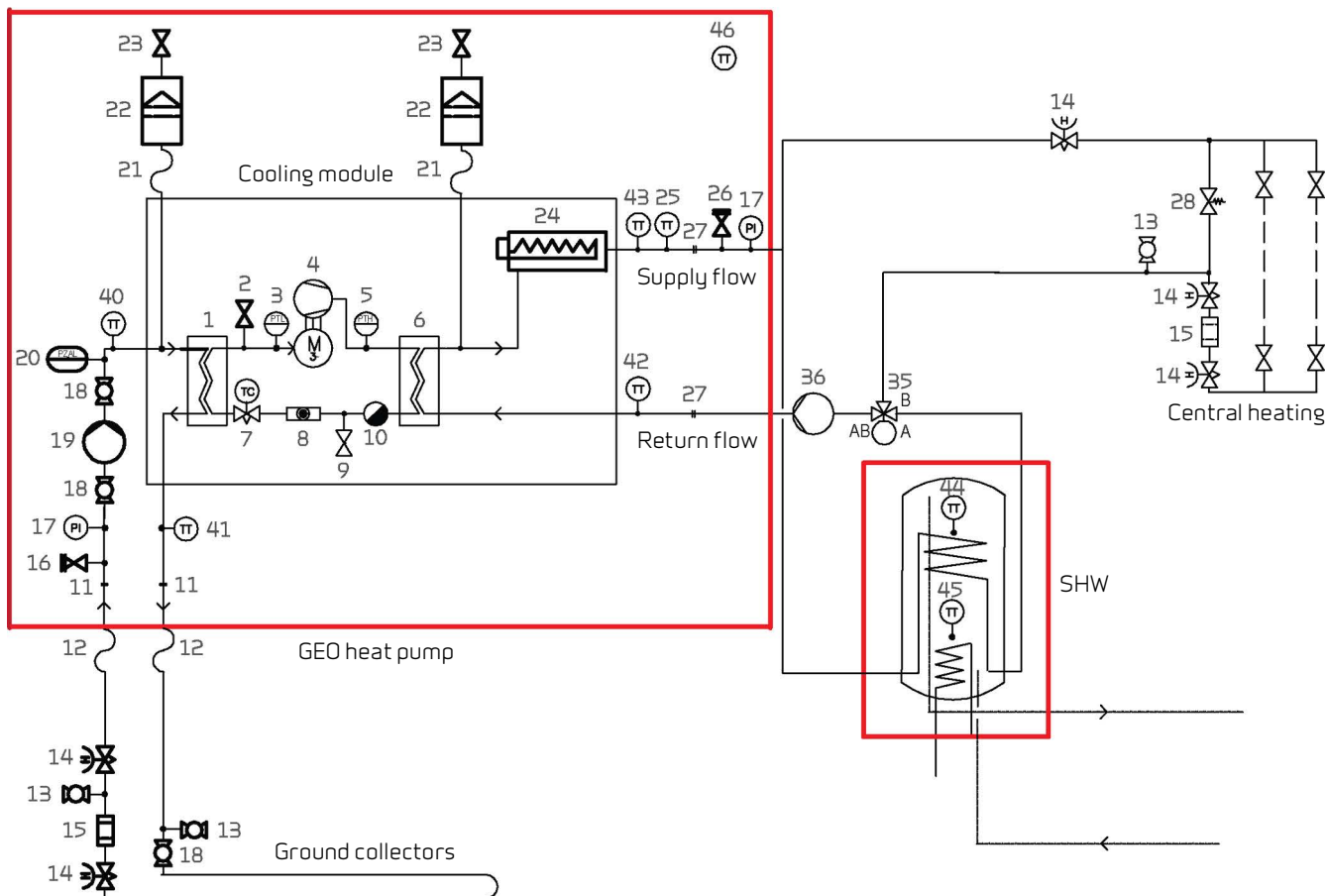
To avoid condensation, all pipes to and from the passive cooling module must be re-insulated. Pipe insulation set is included in a bag.

Pipe insulation set:



Domestic hot water tank

The GEO unit can be connected to an external hot water tank (SHW) and to the hot water tank in the Compact P (DHW). A three-way valve, which can be purchased as an accessory, is required.

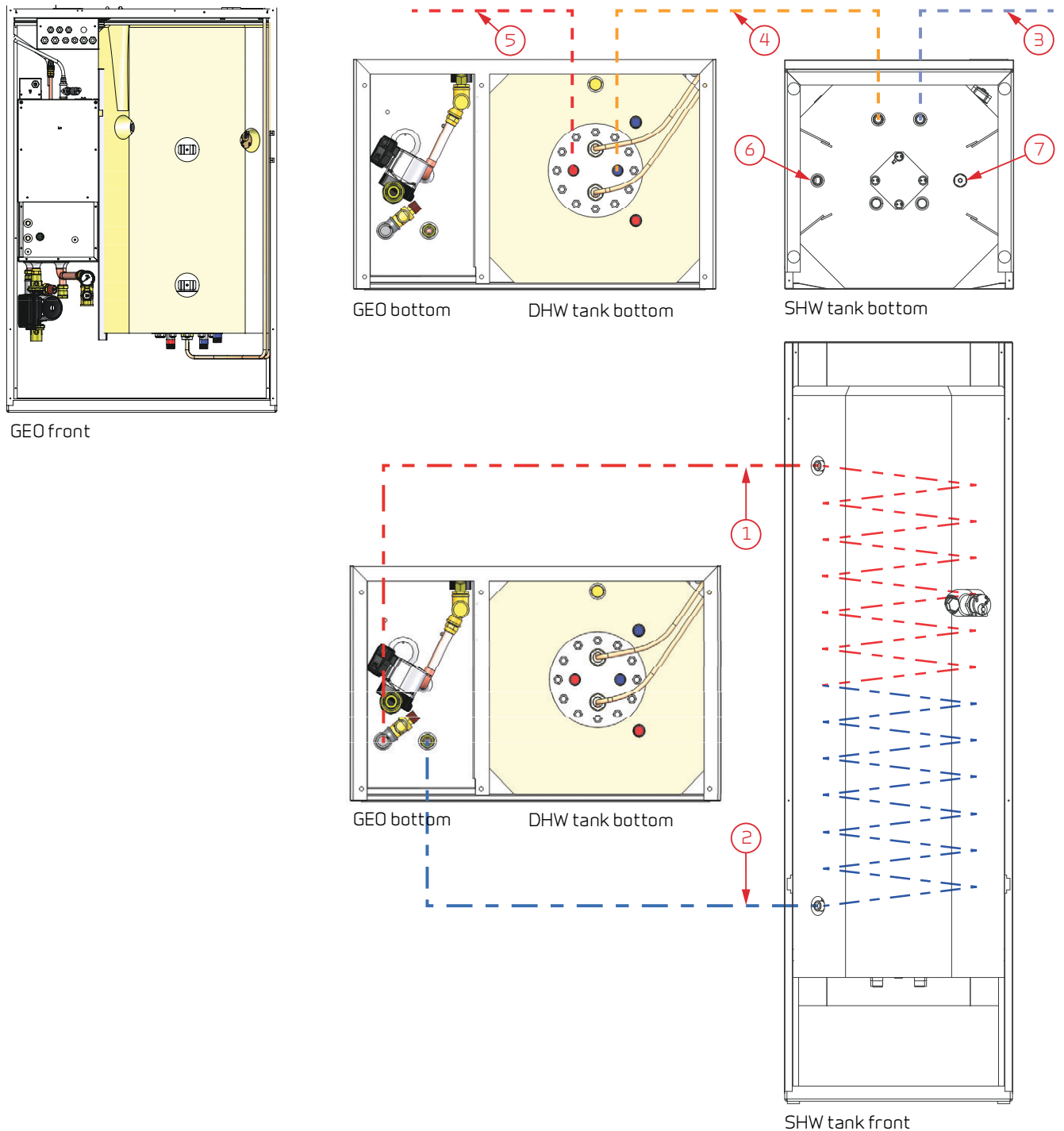


* Everything within the red box is Nilan delivery.

- | | |
|---|--|
| 1. Evaporator | 19. Circulation pump 130 mm |
| 2. Service valve for low pressure | 20. Brine pressure switch 0,5/1,1 bar |
| 3. Low-pressure pressostat | 21. Flexible hose 10 mm |
| 4. Compressor | 22. Expansion vessel 8 L |
| 5. High-pressure pressostat | 23. Automatic control vent 3/8" |
| 6. Condensor | 24. Immersion heater 2 kW |
| 7. Expansion valve | 25. Temperature sensor T18 |
| 8. Sight glass with humidity indicator | 26. Safety valve 2,5 bar (not mounted) |
| 9. Service valve for high pressure | 27. Connection 3/4" (thread) |
| 10. Combi filter | 28. Relief valve |
| 11. Connection 1" (Internal thread) | 35. Three-way valve |
| 12. Flexible hose 1" | 36. Circulation pump |
| 13. Filling tap | 40. Temperature sensor T13 |
| 14. Shut-off valve | 41. Temperature sensor T14 |
| 15. Particle filter | 42. Temperature sensor T16 |
| 16. Safety valve 3,5 bar | 43. Temperature sensor T17 |
| 17. Manometer (not mounted for central heating circuit) | 44. Temperature sensor T21 (top SHW tank) |
| 18. Ball valve | 45. Temperature sensor T22 (bottom SHW tank) |
| | 46. Outdoor temperature sensor T20 |

Connecting to SHW hot water

The cold water from the domestic supply is pre-heated in the GEO heat pump's SHW tank to 45 °C (factory setting 40 °C), after which it is fed to the DHW tank in the Compact P, where it is heated to the desired flow temperature.



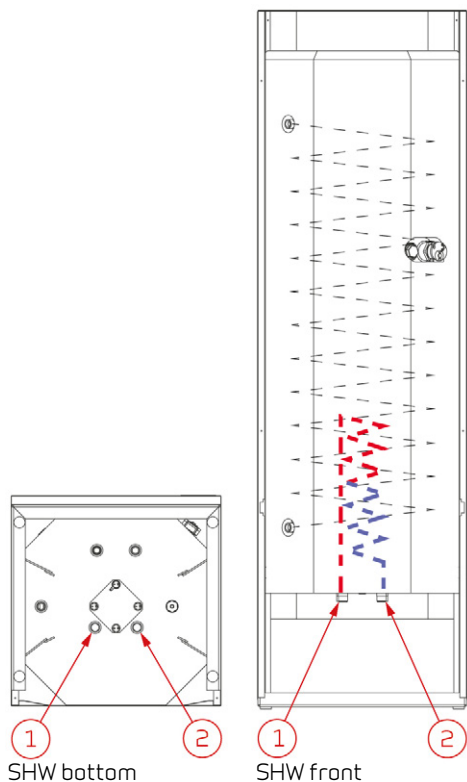
1. Supply flow to the heat pump coil in the SHW tank from GEO heat pump (the three-way-valve is not mounted from factory)
2. Return from the heat pump coil in the SHW tank to the GEO heat pump
3. Connection for domestic cold water supply
4. Supply flow of pre-heated domestic hot water from the SHW tank to the DHW tank in Compact P
5. Supply flow of domestic hot water from the DHW tank
6. Connection for hot water circulation
7. Sensor pocket

Connection to supplementary coil in SHW hot water tank

The SHW container is equipped as standard with a supplementary coil with a length of 8.5m.

The supplementary coil can be connected to a solar panel with external solar heating control (not Nilan supply), or other heat source, which contributes to heating the domestic water.

1. Supply flow to the supplementary coil in the SHW tank
2. Return flow from the supplementary coil in the SHW tank

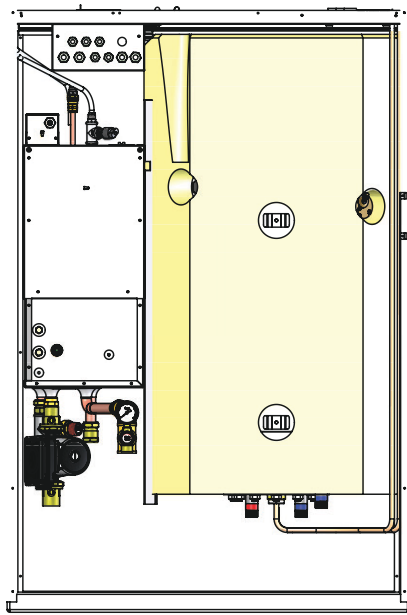


ATTENTION

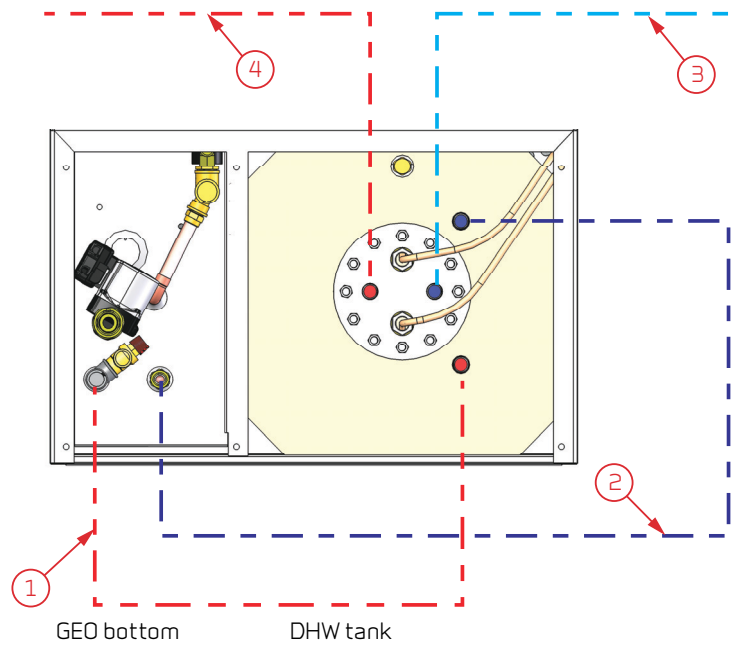
If another container with a shorter supplementary coil is connected, the compressor output in the hot water production must be reduced. See the Software manual

Connecting to DHW hot water

If the demand for domestic hot water is so great that the Compact P unit's heat pump cannot cope, the GEO heat pump can be connected to the DHW tank's solar coil to help heating up the domestic hot water.



GEO front



1. Supply flow to the solar coil in the DHW tank from GEO heat pump (three-way-valve as accessories)
2. Return flow from the solar coil in the DHW tank to GEO heat pump
3. Connection for domestic cold water supply
4. Supply flow of domestic hot water from the DHW tank

Ventilation installation

Duct system

Legislation



ATTENTION

All work must be carried out by qualified persons and in compliance with existing legislation and regulations.

Ducts

There are two systems you can use to lead air through the dwelling.

Spiral ducts

Spiral ducts are made from metal and are cut to size using an angle grinder. They are then connected using ducting bends and manifolds and are fitted in accordance with the blueprint. The ducts are typically placed on the tie beams where they are fixed with perforated band, or they are suspended using suspension band. Avoid unnecessary bending of the ducts.

To prevent sound transmission from room to room, you should install a silencer for each room.

The ducts must be insulated to prevent heat loss and condensation. In some cases this can be avoided if the ducts are run through the standard insulation or inside the climate screen.

NilAIR tubes

NilAIR tubes constitute a flexible system that is easy to install. You can easily cut the tubes to size with a Stanley knife and then situate them in accordance with the blueprint without having to use bends and manifolds. You install a manifold box after the unit and run the tubes from the box out to the individual rooms.

When using NilAIR tubes, you do not have to install silencers for each room. The sound-damping effect of the tubes ensures that sounds and noise will not be transmitted from room to room.

If you install the tubes outside the climate screen, you must insulate them to avoid heat loss and condensation. This is simpler than using spiral ducts as NilAIR tubes are easily led through the standard insulation.

NilAIR tubes are more flexible than spiral ducts and you can therefore run the tubes in places that are unsuitable for ordinary spiral ducts.



ATTENTION

If the unit's cooling function is activated, it is recommended to condensate-insulate the supply air ducts and NilAIR boxes.

Ventilation unit

Nilan recommends installation of flexible connections between the ventilation unit and the duct system.

This is to avoid vibrations from the unit being transmitted to the duct system. It will also make it easier to move the unit, which may be necessary during future services of the unit.

Nilan can supply Soundflex tubes that you can use as flexible connections between the ventilation unit and the duct system. They will also reduce sounds from the system considerably.

The Soundflex tubes are insulated against condensation. It may, however, be necessary with further insulation in order to comply with local requirements with regards to insulation of duct systems.

Extract air

Install the extract air valves in high-humidity rooms and place them strategically where they can extract humid and vitiated air from the dwelling/building most efficiently.

High-humidity rooms are, for example:

- Bathroom
- Lavatory
- Kitchen
- Utility room

Supply air

Install supply air valves in living areas. Place them strategically so they cause minimum discomfort. It is, for instance, not recommended that you install supply air valves in areas where people are inactive, as the supply air may be experienced as draughty.

Living areas may be, for example:

- Living room
- Family room
- Bedroom
- Study

Roof terminals

The position and design of air intake and air discharge should limit pressure oscillations in the ventilation unit caused by wind. Their position should also prevent birds and other animals from getting in. Finally, the position and design should ensure that air intake and the connected duct system are kept free of plants and foreign objects.

You must place the air intake so that the risk of a short-circuit from the discharge air is minimised, and with attention to the prevailing wind direction.

The air intake should be placed at least 50 cm above the roof surface. On black, flat roofs the distance from the roof to the underside of the intake should be at least 1 m. This will ensure that warm air is not drawn into the building during summer. Air intakes should be placed on the northern or eastern sides of pitched roofs.

You should also install a silencer between the unit and the roof stacks to prevent noise disturbance to your surroundings.

Installation example



Balancing

Important information



ATTENTION

To ensure the ventilation system operates optimally, it is important that it is balanced correctly. We recommend that experts do this.

It is important to measure the total supply air and the total extract air. The system must have a minimum vacuum, which means it draw out more air than it blows in. This will prevent dampness from being forced into the constructions of the building.

Balancing connectors

The ventilation unit is equipped with a balancing connectors to measure the air volume for supply air and extract air.

The curve can be used for coarse adjustment of the main air volume during dry operation without condensation.

For the extract air side, the pressure difference dp_{3-4} [Pa] is measured between the holes marked 3 and 4. The air volume qv [m^3/h] is read on the curve.

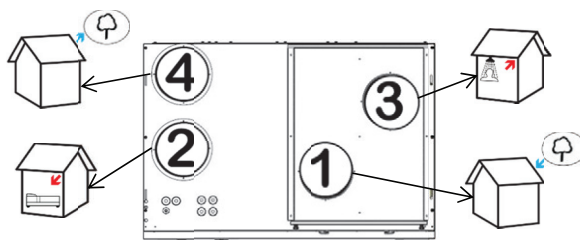
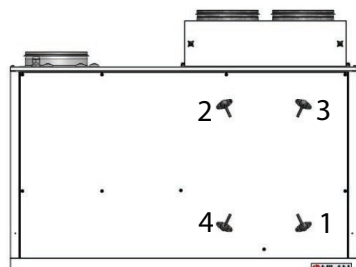
For the supply air side, the pressure difference dp_{1-2} [Pa] is measured between the holes marked 1 and 2. The air volume qv [m^3/h] is read on the curve.



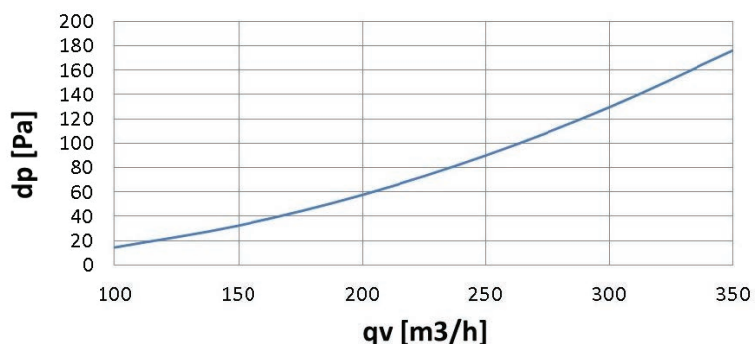
ATTENTION

The capacity in the pressure drop diagram is based on a dry heat exchanger.

Pressure loss diagram



The measuring connectors are inside behind the top front panel.



Start-up

Central heating

Filling with water



ATTENTION

Before starting the heat pump and the circulation pump, the central heating circuit must be filled with water.

Fill central heating circuit with water via the feed tap until the correct water pressure is obtained. It is important that all circuits in the central heating system are open during filling.



ATTENTION

Ordinary water or all common types of antifreeze can be used.

There is an automatic vent fitted, which is activated when filling with water. Check that the cover on the vent is loose.

Once the central heating circuit has been filled to the correct water pressure, the circulation and heat pump can be started.

Topping up water

The water pressure must be carefully checked the first few days, even several times a day. It may be necessary to top up the water in the central heating circuit if the water pressure has dropped.



ATTENTION

It is important that the circulation and heating pump is switched off while topping up the water.

The water pressure will stabilise after a few days, after which the checks can be reduced to once a month.



ATTENTION

If the central heating circuit requires topping up after the start-up phase, it should be checked for leaks.

Check the particle filter

There may be some particulate matter in the central heating circuit, and the heating pump must be checked immediately after being put into operation.

The filter must be checked several times a day just after installation until it stays clean. With normal operation, it is enough to check the filter twice a year.

Cleaning the particle filter:

1. Switch off the heating pump on the control panel (Settings: Central heating / Standby functions / Turn off central heating)
2. Turn the shut-off valve to close off the circulation
3. Remove the filter and rinse until clean
4. Replace the filter
5. Turn the shut-off valve to open up the circulation
6. Switch the heating pump back on

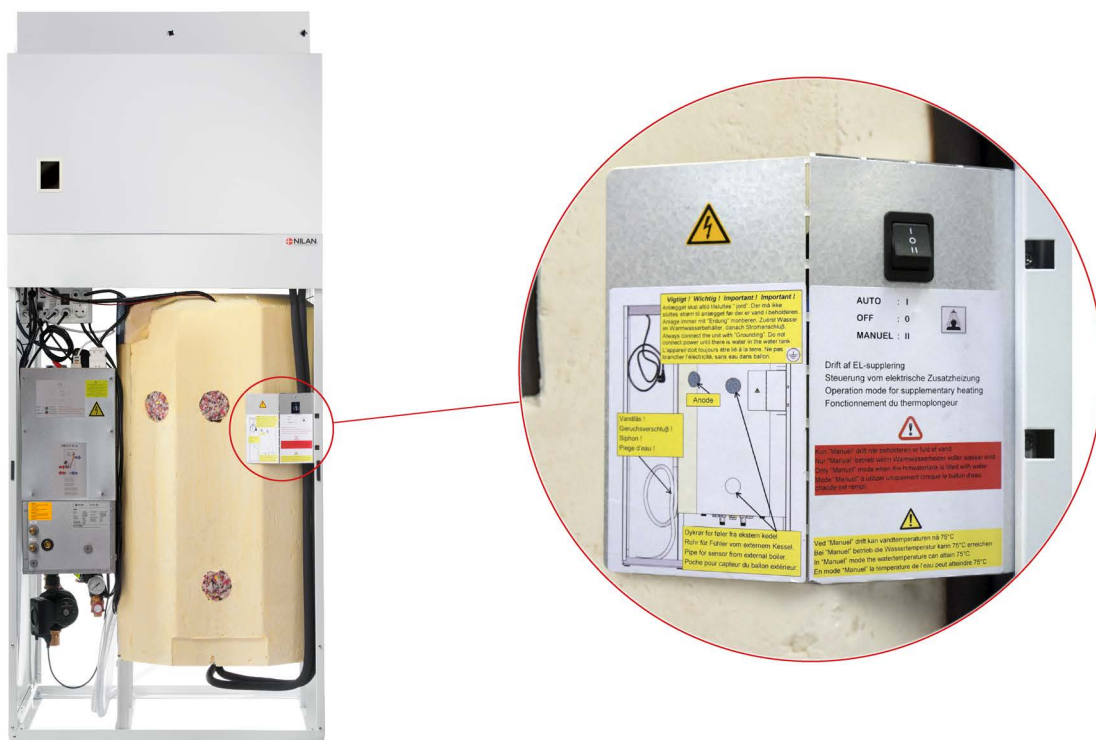
Troubleshooting

Emergency operation

Emergency mode domestic hot water

If an error occurs in the control system or components in the Compact P, and the unit therefore stops, it will not be able to produce domestic hot water.

If the installer is not able to come right away or the error happens outside the opening hours, and you therefore cannot contact the installer, there is a possibility to get hot water by setting the unit into emergency mode.



The button for emergency mode is located behind the large door.

The emergency mode has three settings:

I - Auto:

The supplemental electric heating is controlled by the unit control system (standard setting).

0 - Off:

The supplemental electric heating is turned off and cannot be turned on via the unit control system.

II - Manuel:

The supplemental electric heating is turned on and cannot be turned off via the unit control system (do not turn on if there is no water in the tank).



CAUTION

In manual emergency mode, the water temperature can reach 75 °C, which can cause scalding if you are not careful when switching on the hot water.

Emergency mode central heating

If an error occurs in the control system or components in the GEO heat pump, and the heat pump therefore stops, it will not be able to heat up the house by the central heating.

If the installer is not able to come right away or the error happens outside the opening hours, and you therefore cannot contact the installer, there is a possibility to heat up the house by setting the GEO heat pump into emergency mode.



The button for emergency mode is located behind the large door.

The emergency mode has three settings:

I - Auto:

The supplemental electric heating and circulation pump are controlled by the unit control system (standard setting).

0 - Off:

The supplemental electric heating is turned off and cannot be turned on via the unit control system.

II - Manuel:

The supplemental electric heating and circulation pump are turned on and cannot be turned off via the unit control system.



ATTENTION

In manual mode the supply flow temperature can reach 40 °C.

Domestic hot water

Errors and solutions domestic hot water

Problem	Possible cause	Solution
The unit produces insufficient domestic hot water.	The filters may be blocked so that insufficient air is reaching the unit. This can occur if the filters are not changed frequently. This can occur if the unit has been operated during the building process and the filters are filled with dust and dirt.	Change the filters and, if necessary, change the filter change period to a shorter Interval.

Central heating

Errors and solutions central heating

Problem	Possible cause	Solution
The telestates call for heat, but the heat pump does not start	During the spring and autumn transition periods, some space telestates may call for heat, but the heat pump does not start. This may be because the temperature in the extract air is warm enough compared to the temperature set in the control panel. That is, the exhaust air is an average of the room's room temperatures, as some rooms are hot and others are cold. Since the ventilation section considers the average temperature of the house to be high enough, it blocks the heat pump from running. This does it to save energy and to prevent the ventilation part and the heat pump part from counteracting each other.	If you still want to heat in some rooms, despite the average temperature of the house being warm enough, you can activate this function below: Settings / Central heating in the Menu item: Cooling and heating at the same time. This means that the cooperation between the ventilation part and the heat pump part ends, and if there is a need for heat in some rooms, the heat pump will start even if the ventilation part detects that the house is warm enough.

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