INSTALLATION INSTRUCTIONS

CTS602 HMI BY NILAN



Compact P2 / Compact P2 Polar - AIR9

Gateway

Version 1.10 - 01.11.2023
M24 Compact P2 AIR9 GB

NILAN®
OUTSTANDING INDOOR CLIMATE

Table of contents

General information

Important information 4
Safety 4
Power supply 4
Heat pump domestic hot water 4
Heat pump for central heating 5
Starting the external unit 5
Water quality requirements 5
Requirements to quality of water 5
Introduction 6
Documentation 6
Unit type 7
Product description 7
Unit - the indoor unit 8
Unit - the outdoor unit 9
Temperature sensor overview 10
Dimensional drawing 11
Piping diagram 12
Accessories 13
Electrical pre-heating element for frost protection of the unit 13
CO2 sensor 13
Expansion PCB 13
EM-box 13
DTBU damper 13
Extension cable HMI control panel 14
Cover plate HMI user panel 14
Safety group 14
Safety group with scalding protection 14
Flexible sound damper 14
Pollen filter 15
Trolley 15
SHW hot water tank 15

Set-up

Mounting 16
Transport into the building 16
Positioning the unit 16
Mounting outdoor unit 17
Transport into the building outdoor unit 17
Sound data AIR9 17
Positioning an outdoor unit 18
Fixing an outdoor unit to its supporting surface 18
Foundation 19
Condensate drain 19
Detaching the front doors from the AIR outdoor unit 20

Electrical installation

Safety 21
Connections overview 21
Electrical connection unit 22
Power supply 22
Compact P2 AIR 22
Change from 400V to 230V 23
Circulation pump 24
Connecting a gateway 24
Connecting to the internet 24
Location on the unit 24
HMI Control panel 25
Moving the control panel 25
Wall bracket 25
Electrical connection accessories 26
SHW hot water tank 26
User selection 1 26
Smart Grid 27
External electrical pre-heating element 28
Mounting an expansion PCB on the CTS602 circuit board 29
User selection 2 31
EM-box (damper option) 31
DTBU (damper option) 32

Fire thermostat / external fire automation system 32
Joint alarm 33
External heat supply 33
External underfloor heating control 34
Active cooling function 34

Plumbing installation

Condensate drain 35
Important information 35
Hot water tank 36
Connection overview 36
Plumbing connection 36
Requirements to quality of water 37
Hot water circulation 37
Supplementary coil 37
Softened water 37
Central heating 38
Water connection overview, indoor unit 38
Connections overview outdoor unit 39
Mounting hoses to the outdoor unit 40
Insulation of hoses from the outdoor unit 41
Check list for the central heating system prior to start-up 41
Plumbing connections accessories 42
Safety group 42
Safety group with anti-scald protection 42
Hot water tank 43
Connecting to SHW hot water 44
Connection to supplementary coil in SHW hot water tank 45
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

Start-up

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

Troubleshooting

Emergency mode 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
Problems and solutions central heating 52

General information

Important information



CAUTION
Do not turn on the power supply for the unit until there is water in the hot water tank and the outdoor unit has been connected up to the unit.

If, during the construction phase, you want to have access to ventilation and domestic hot water, but you do not want to connect up the outdoor unit, you must uninstall the circulation pump between the indoor and the outdoor units.

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, alway contact an authorised electrician to rectify the error.



CAUTION
Always disconnect the power to 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 equipped with electronic temperature monitoring.

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

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



ATTENTION

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

- Electronic monitoring of the temperature
- 2,5 bar safety valve for central heating and buffertank
- Frost protection function that ensures that the compressor starts up at low temperatures (requires an undisrupted power supply to the unit)
- 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.

Starting the external unit

The AIR outdoor unit is equipped with a compressor heating element, which heats up the compressor prior to starting and in case of low outdoor temperatures. This facilitates start-up and extends the compressor's service life.



CAUTION

The compressor heating element must be left on for a minimum of 3 hours before starting the compressor for the first time.

Water quality requirements

Requirements to quality of water

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) @ 25 °C
- Chloride must be below 250 mg/L @ 65 °C

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

Introduction

Documentation

The following documents will be supplied with the unit:

- 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 P2 AIR 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 ventilation, and an energy-efficient and low-noise AIR air/water heat pump heats the home via floor heating or low-temperature radiators.

Compact P2 is designed for air flows of up to 425 m3/h at 75 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.

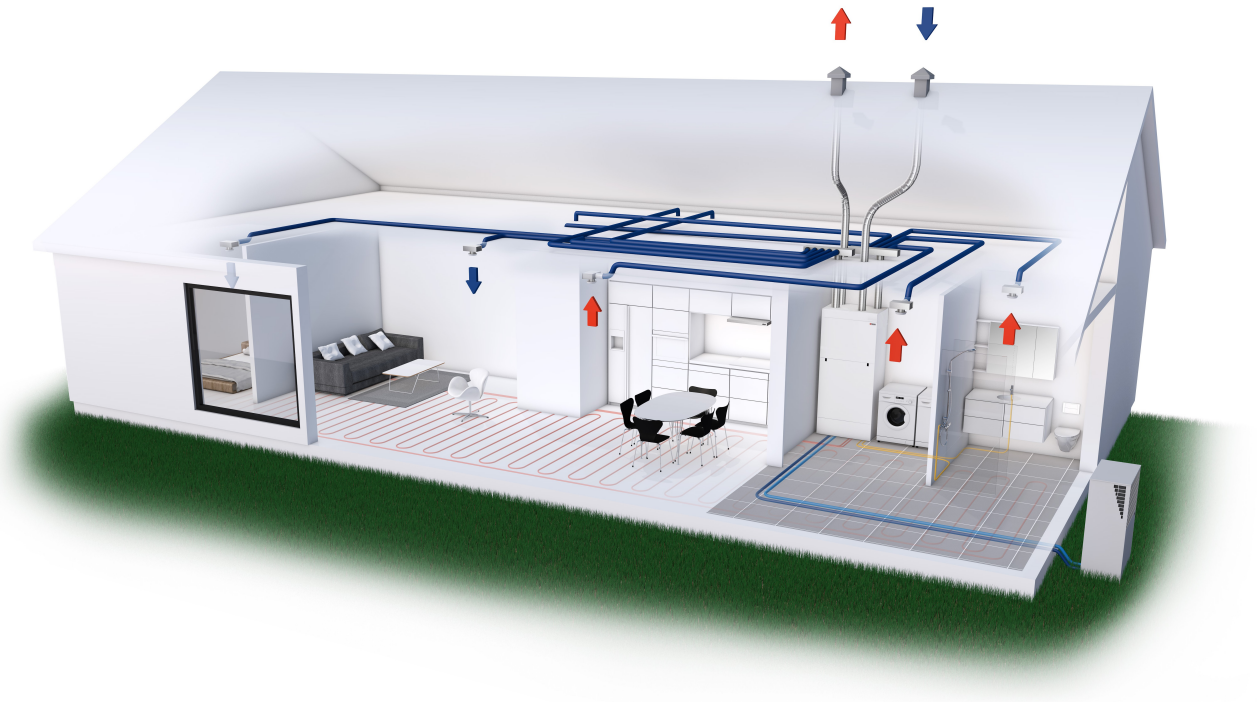
In the winter, the built-in heat pump can heat the supply air up to 34 ° C, and thus contribute to heating the home. When the supply air is heated, at the same time a little heat is deposited in the hot water tank and ensures a constant high hot water temperature.

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 P2 can cool the supply air by up to 20 ° 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.

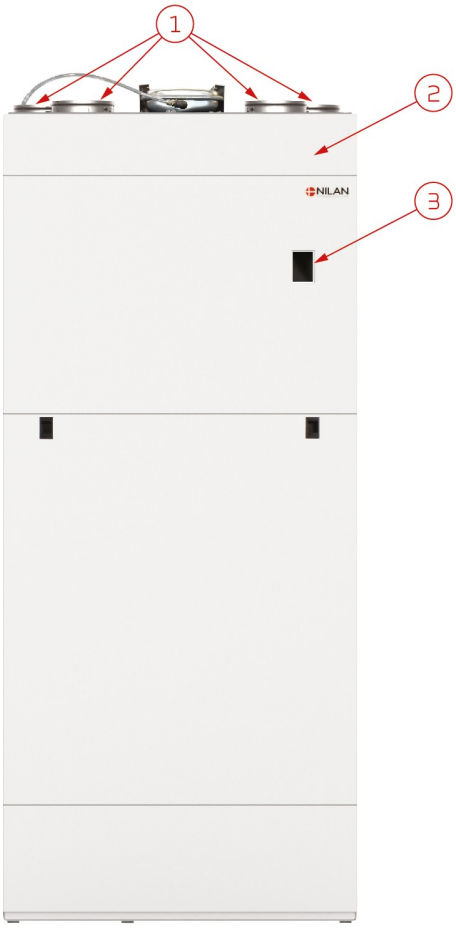
When Compact P2 cools the supply air, the energy is deposited in the hot water tank, and it can thus be said that "free" domestic hot water is produced during those periods.

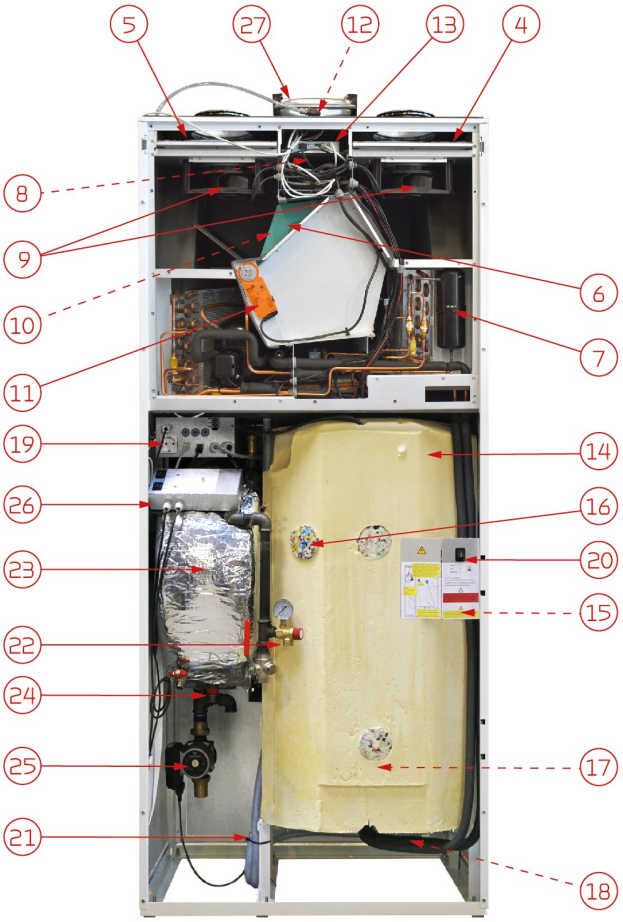
The energy-efficient and low-noise AIR air/water heat pump heats the home via floor heating or low-temperature radiators. It retrieves the energy from outside air and functions at temperatures as low as -17 °C. The heat pump has an electrical power supply to help it to function during very cold periods. AIR can cool the home in the summer with active cooling, either through the underfloor heating system or fan coils.

The AIR air/water heat pump can also be used to help produce hot water for domestic use, either by pre-heating the water in a SHW-tank, or directly in a Compact P2 DHW tank, if bought with a solar coil.



Unit - the indoor unit





Compact P2:

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. Pre-heating element for frost protection (Polar version only)
11. 100% bypass damper
12. Electrical connections accessories
13. Gateway for App option
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 connections panel
20. Emergency mode (DHW)
21. Condensate drain with water trap

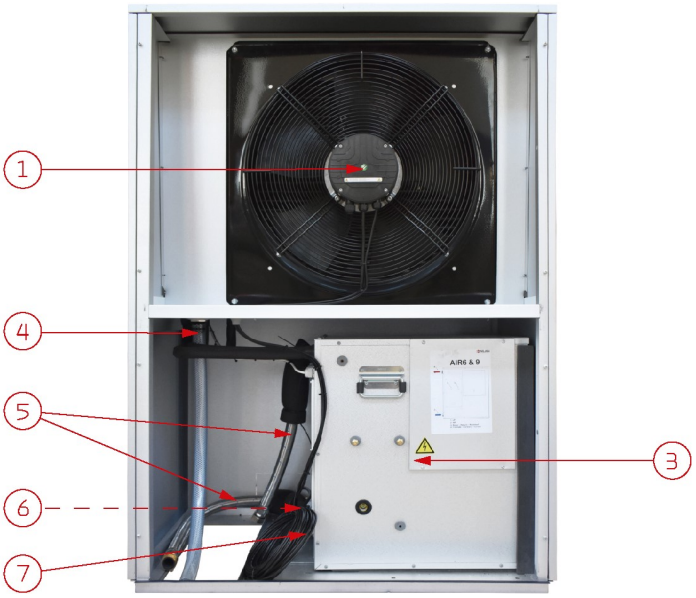
AIR:

22. Safety valve and manometer for the central heating circuit
23. Buffer tank 50 litres
24. Filling tap and particle filter for the central heating circuit
25. Integrated circulation pump for circulation with the outdoor unit
26. Supplemental electric heating for central heating 2 kW & 3 kW
27. Expansion vessel for central heating circuit 10 litres

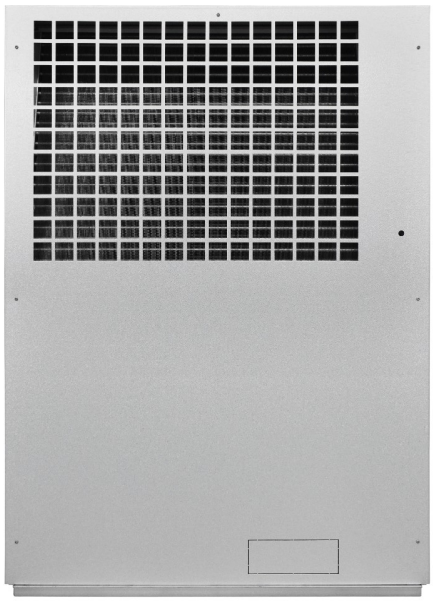
Unit - the outdoor unit

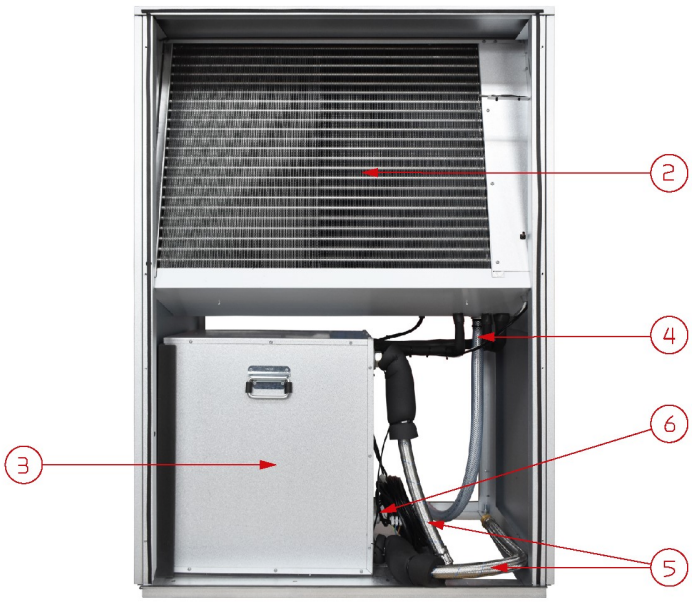
Front: Closed and open



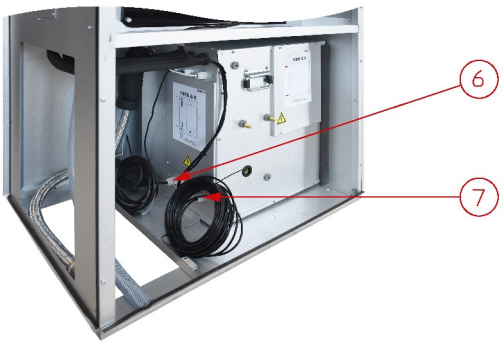


Rear side: Closed and open





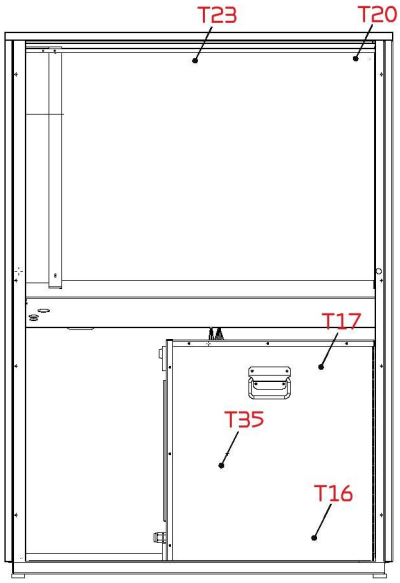
Side: Open

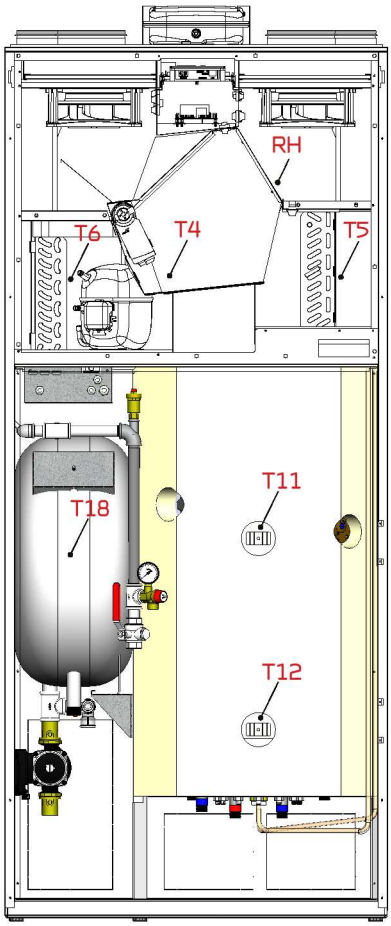


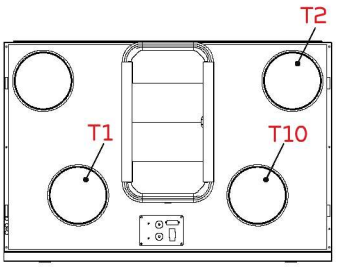
AIR outdoor unit:

28. Fan
29. Evaporator
30. Heat pump
31. Condensate drain with integral heating cable
32. Connections to/from the indoor unit (liquid)
33. Electrical connection cable for AIR heat pump outdoor unit (screw terminal)
34. Communication cable with connector for connection to the indoor unit (RJ45)

Temperature sensor overview







Temperature sensor in the AIR outdoor unit
T16: Before the condenser (to outdoor unit)
T17: After the condenser (from outdoor unit)
T20: Outdoor temperature
T23: Evaporator temperature
T35: Pressure pipe temperature

Temperature sensor in the AIR indoor unit
T18: Buffer tank (supply flow)

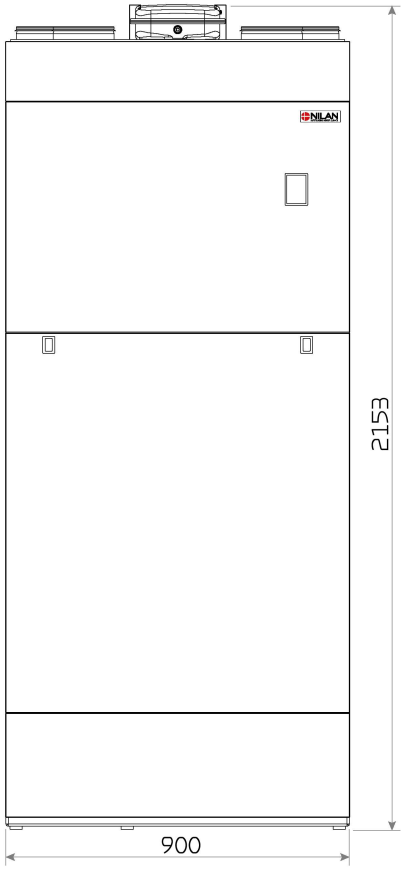
Temperature sensor in Compact P2
T1: Outdoor air
T2: Supply air
T4: Extract air after the exchanger
T5: Condenser
T6: Evaporator
T10: Extract air
RH: Humidity sensor

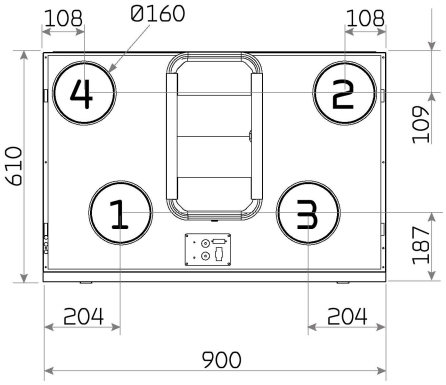
Temperature sensor in the hot water tank
T11: Top of the tank
T12: Bottom of the tank

Temperature sensor outside the unit
T7: Supply air after the after-heating element (accessory)
T8: Outdoor air before pre-heating element (accessory)
T9: On the after-heating element (accessory)

Dimensional drawing

Indoor unit:





Connections:

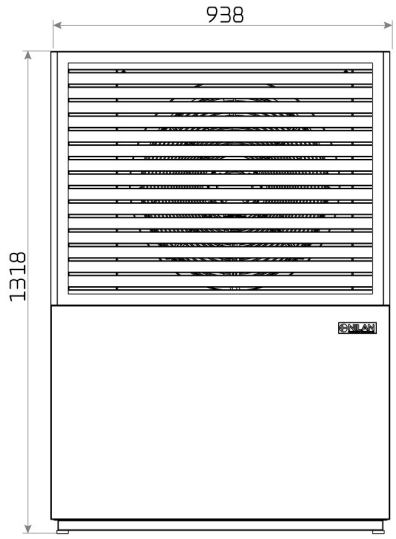
1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

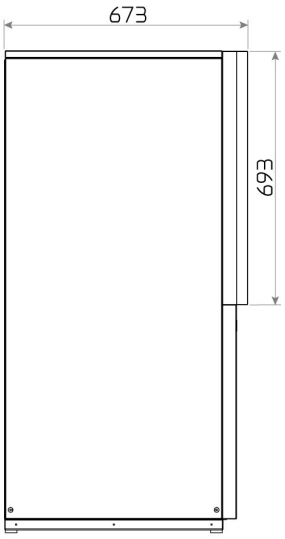
Weight indoor unit: 268 kg

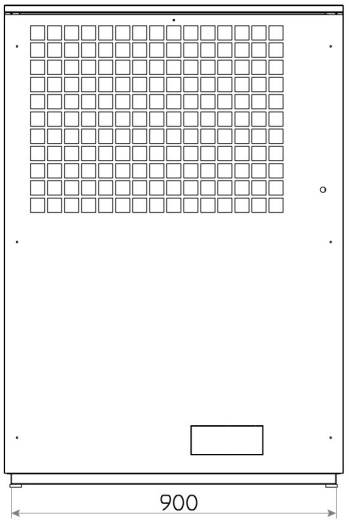
Weight AIR9 outdoor unit: 155 kg

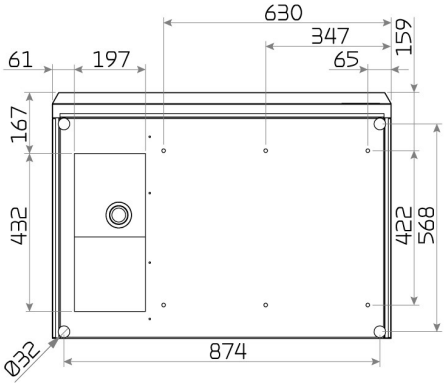
All measurements are indicated in mm.

Outdoor unit AIR9 (2022):

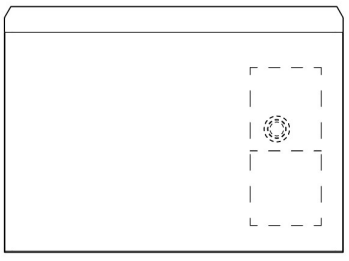






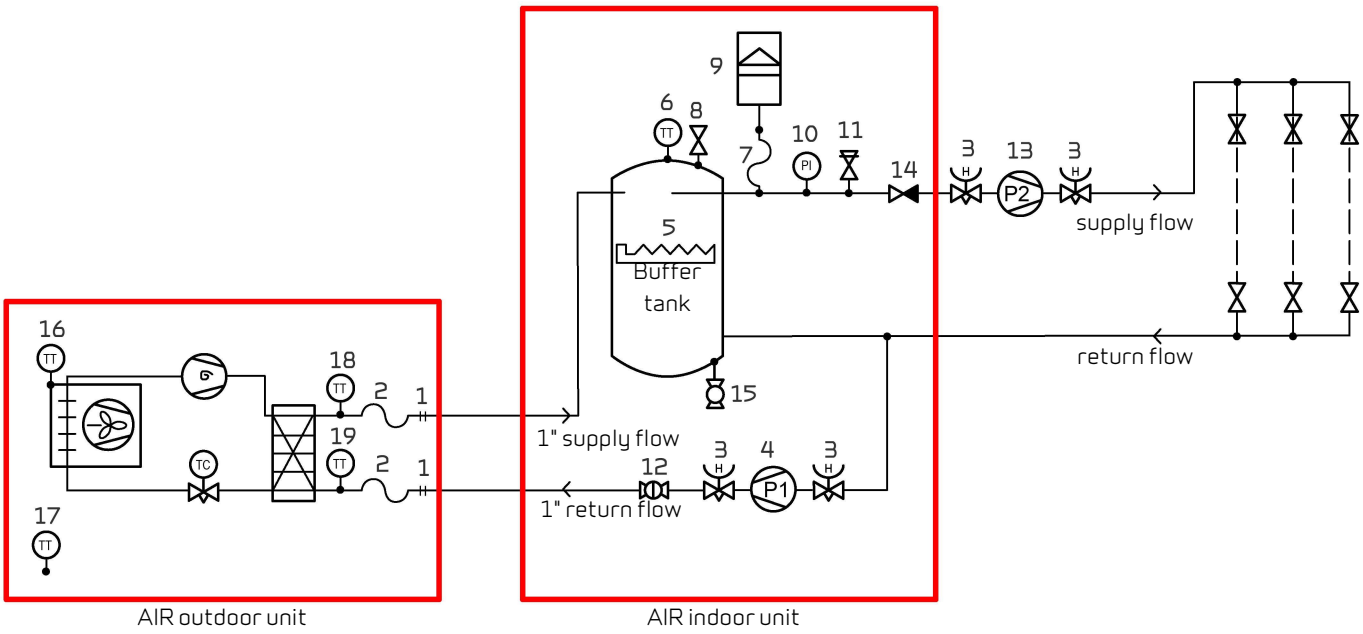


Seen from below



The bottom seen from above

Piping diagram



* Everything within the red box is Nilan delivery.

1. Connection 1"
2. Flexible hose 1"
3. Shut-off valve
4. P1 circulation pump 130 mm
5. Supplemental electric heating (2 kW + 3 kW)
6. Temperature sensor T18 buffer tank (flow)
7. Flexible hose 10 mm
8. Automatic air vent valve 3/8"
9. Expansion vessel 10 litre
10. Manometer
11. Safety valve 2.5 bar
12. Shut-off valve with particle filter (not mounted from factory)
13. P2 circulation pump
14. Check valve 3/4"
15. Filling tap 1/2"
16. Temperature sensor T23 evaporator element
17. Temperature sensor T20 outdoor temperature
18. Temperature sensor T17 after condenser
19. Temperature sensor T16 before condenser

Accessories

Electrical pre-heating element for frost protection of the unit

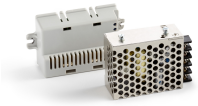


If your ventilation unit is not a Polar version with an integral pre-heating element, we recommend that you purchase an external pre-heating element as frost protection of the ventilation unit.

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.

CO_2 sensor



If you want to adjust the fan speed level in accordance with the level of use of the dwelling/building (amount of people), you can retrofit a CO2 sensor. Nilan's CO_2 sensors calibrate automatically.

On the control panel, you select the CO2 level you want. If this level is exceeded, ventilation will automatically increase.

Expansion PCB



An expansion PCB extends the functions in the control system so you can control various accessories.

Under "Electrical connection accessories" you will be able to see which accessories require an expansion PCB.

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.

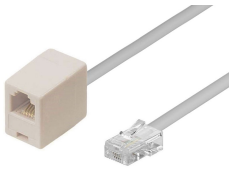
DTBU damper



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 control panel



The control panel for the ventilation unit is connected up with a short wire so it can be installed close to the unit.

If you place the unit so the control panel is out of sight, for instance in a cupboard or in the loft, you can order a 15 m extension cable with plug. This allows you to place the control panel where it is visible to the user.

It is important that the control panel is visible so the user can see alarms when, for example, filters need replacing.

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.

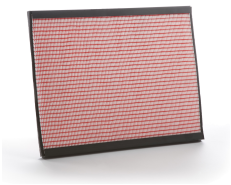
Flexible sound damper



To make it esay 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 m^2.

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

Mounting

Transport into the building

The ventilation unit is delivered fully assembled and wrapped on a pallet.

You can lift the unit from the pallet and transport it into the building by using a Nilan lifting dolly. You thereby avoid heavy lifting.



The unit is delivered from the factory fitted with 4 lifting straps, one in each corner.

This gives you the option of lifting the unit inside using a crane, which can be a considerable advantage, if the ground is not suitable for a lifting dolly.

When lifting the unit using the attached straps, these must be at an angle of 45° from vertical.

Positioning the unit

Set up the unit so it is level on a firm surface free of vibrations. You need to have easy access to the unit for servicing and filter replacement.

ATTENTION

When positioning the unit, you should take into account future services and maintenance. We therefore recommend a minimum of 60 cm of free space in front of the unit.

ATTENTION

The unit must be level to ensure proper drainage from the condensate tray.

ATTENTION

If flashings are fitted above the unit, these must be easily removable.



Near the bottom on the sides and at the back of the unit, the metal has been punched out so you do not have to cut any holes yourself.

If you detach the metal angle from the base frame at the rear side of the unit, you will be able to push the unit closer to the wall and thereby hide connections for water.

Mounting outdoor unit

Transport into the building outdoor unit

The AIR outdoor unit is delivered wrapped in foil and fixed on a transport pallet with strapping bands.

If the surface is suitable, we recommend that you use a lifting dolly to move the unit



ATTENTION

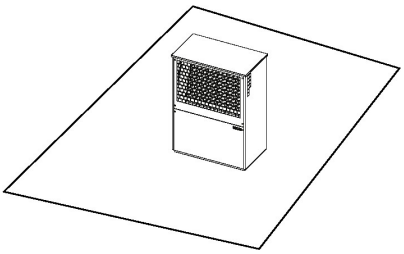
If you use a crane to lift in AIR, please be aware that the weight is not evenly distributed at the front and at the back.

ATTENTION

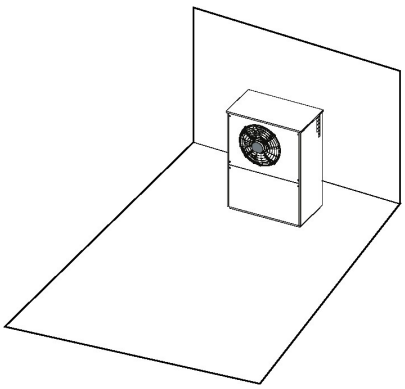
The outdoor unit must not be lifted by the doors, which is why these should be removed during transport.

Sound data AIR9

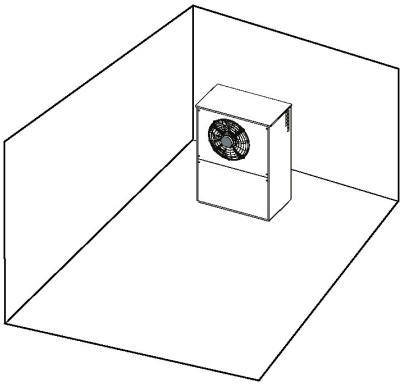
The sound propagation from the AIR outdoor unit depends on the location of the unit in relation to the building, as well as its supporting surface and its surroundings.



Q = 2 (freestanding)



Q = 4 (up against a wall)



Q = 8 (in a corner)

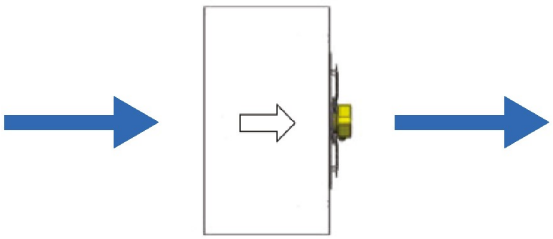
Sound power LWA dB(A) 7/6 °C - 30/35 °C = 46 db(A) in accordance with EN14511, EN12102 and EN3743/1

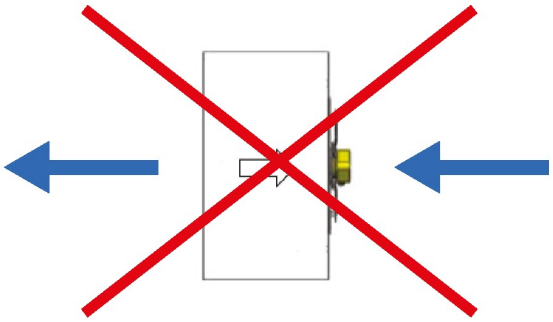
Sound pressure LpA dB(A) calculated in accordance with EN13487:2003:

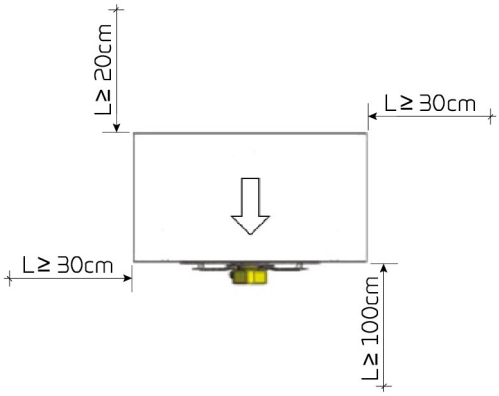
Distance in metres	1	2	6	10	21
Location factor 2	38	32	22	18	12
Location factor 4	41	35	26	21	15
Location factor 8	44	38	28	24	18

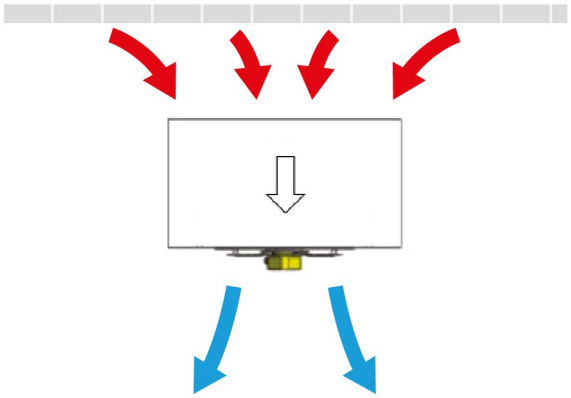
Positioning an outdoor unit

An outdoor unit must always be positioned on a firm, horizontal and vibration free surface. Consider securing it to a fixed base. You should also take into account the prevailing wind direction during the cold months when heating is required, as the performance of the heat pump will be reduced if the outdoor unit is exposed to strong winds.









If required, you can consider putting up a windbreak. However, clearance requirements must be met.

Shown below are the horizontal minimum distances to building parts and sim. that are required for the heat pump to perform properly.

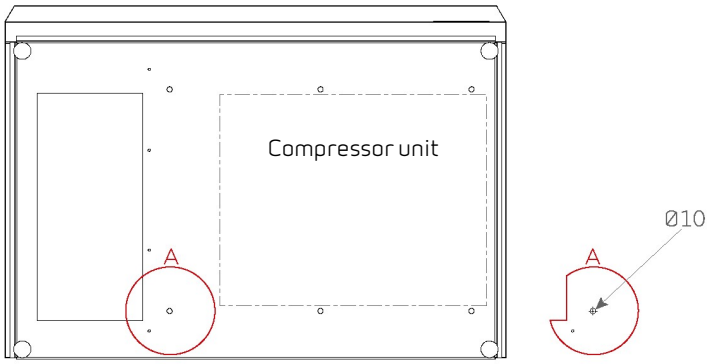
If you want to position AIR up against the building, it is important that you take into account potential noise from the outdoor unit so it does not become a cause of irritation indoors.

Position AIR so air is supplied from the dwelling. The air gains added energy from solar heating of the building walls during the day and from general heat loss from the building. This can then improve the efficiency of the heat pump.

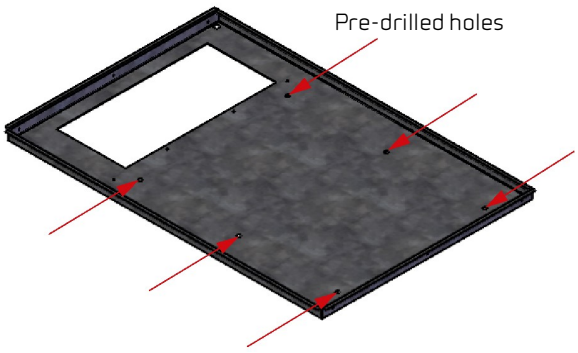
Fixing an outdoor unit to its supporting surface

If you place the outdoor unit in a windy location, e.g. on a roof, you will need to fix it to the supporting surface by using the 6 pre-drilled holes at the bottom.

AIR outdoor unit seen from below:



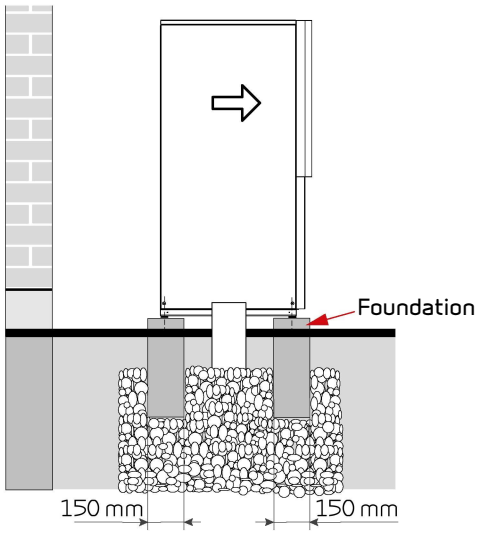
AIR outdoor base plate:

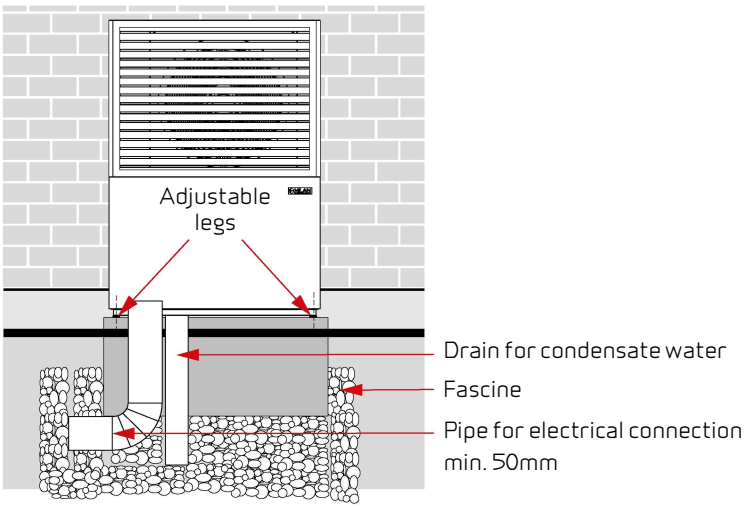


ATTENTION

See the dimensional drawing for details.

Foundation





The illustrations above show an example of an AIR outdoor unit.

ATTENTION
AIR should be placed on a stable surface or a poured foundation.

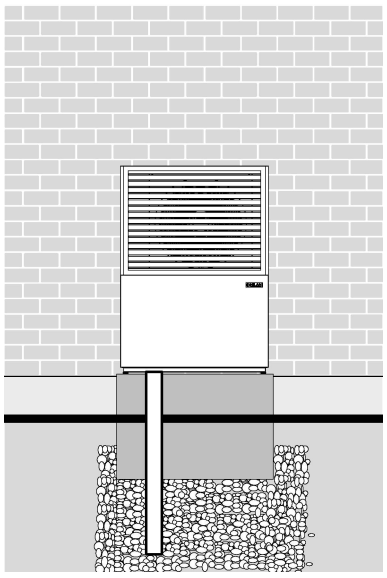
Condensate drain

During operation, condensate water will form in the evaporator of the outdoor unit. It must be able to drain away safely. A 700 mm hose has been fitted to the condensate tray of the evaporator. You run this to a drain.

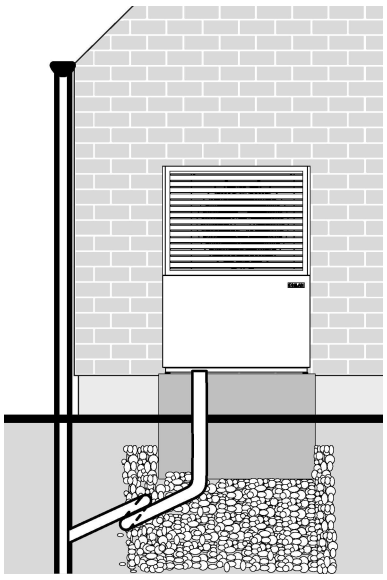
The condensate drain must be protected against frost although the 1.5 m heating cable Ø25/4 mm, included, also helps keep the condensate drain frost free. The heating cable starts heating at an outdoor temperature < 2 °C.

ATTENTION
The condensate water must be able to drain safely so it does not cause damage to the building.

ATTENTION
The condensate drainage system from the outdoor unit must be dimensioned so that it can drain up to 6 litres/hour.



If the condensate water drains into gravel, you must ensure that the drainage system reaches the frost-free subsoil.



If the outdoor unit is placed close to the building, the condensate water can simply drain into one of the downpipes. Remember to install a water trap.

The condensate water can also be led directly to a surface water drainage system.

Detaching the front doors from the AIR outdoor unit

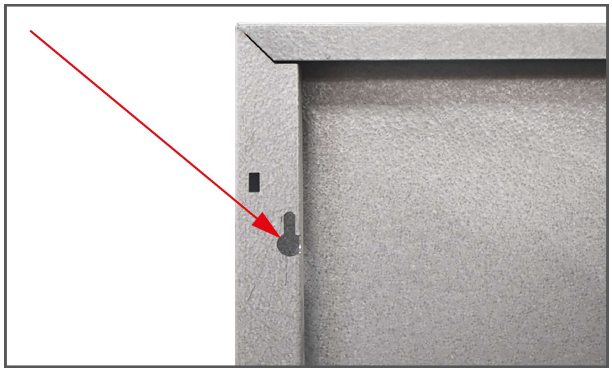
If you need to access the mechanics, electronics or the plumbing connections in the AIR outdoor unit, you can detach the upper and lower metal plates at the front.

WARNING

Always disconnect the power supply to the unit before opening the doors to carry out e.g. installation, inspection, cleaning or maintenance.



1. The AIR outdoor unit has an upper front plate with slats, and a lower front plate with a smooth surface.



2. The two front plates have been mounted using keyhole mounting brackets.



3. Detach the upper front plate by lifting it upwards and off the screws.



4. Next, tilt the plate away from the outdoor unit and detach it completely.



5. Detach the lower front plate in the same way by first lifting the cover plate and then tilting it outwards.



6. The AIR outdoor unit is now open, and you can access the mechanics, the electronics and the plumbing connections.

Electrical installation

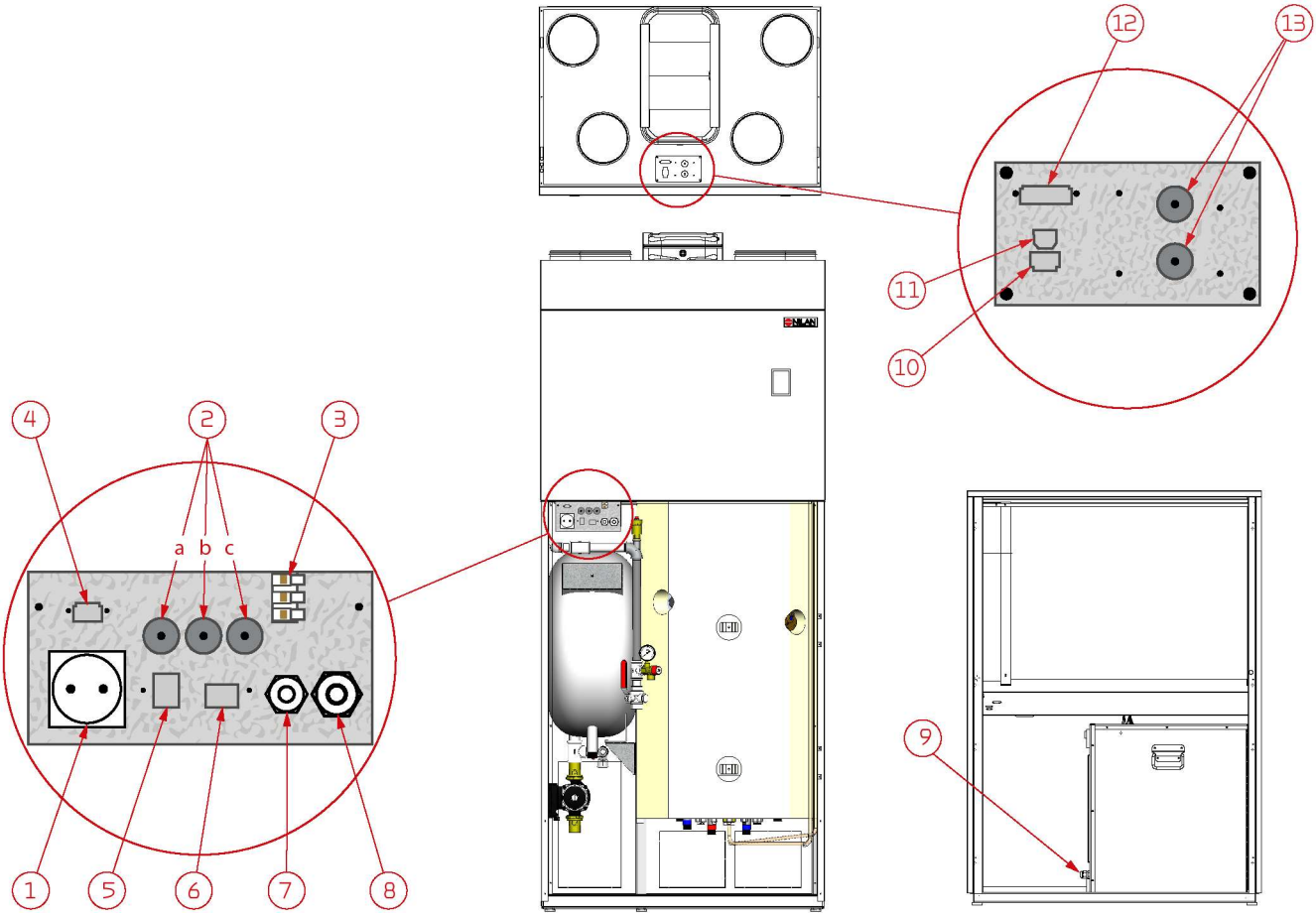
Safety

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. Power supply socket 230V for Compact P2
2. Grommets (a: Transmission cable between indoor unit and Compact P2, b: Sensor T18 for buffer tank, c: 3-way valve for SHW tank)
3. Screw terminal for controlling heating/cooling (HEAT+COM: heating control. COM+COOL: cooling control)
4. Communication cable for AIR heat pump outdoor unit (RJ45)
5. RJ45 port for T21, T22 and anode in SHW tank
6. Port for supplemental electric heating in SHW tank
7. Power supply cable for supplemental electric heating in buffer tank
8. Electrical connection cable for AIR heat pump indoor unit + Compact
9. Electrical connection cable for AIR heat pump outdoor unit
10. Connection for the user's internet router via LAN cable
11. Connection of PC via USB cable
12. 8-pin port with the possibility of connecting accessories (the 8-pin plug is delivered with the instruction manuals)
13. Cable glands for external electrical connections that you install in the terminal blocks at the back of the metal plate.

Electrical connection unit

Power supply

CAUTION

The power supply is plugged into a 230V socket with a safety switch. It is important that the unit has earth 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 Shuko plug and then into a socket with earthing.



Schuko socket with side earth



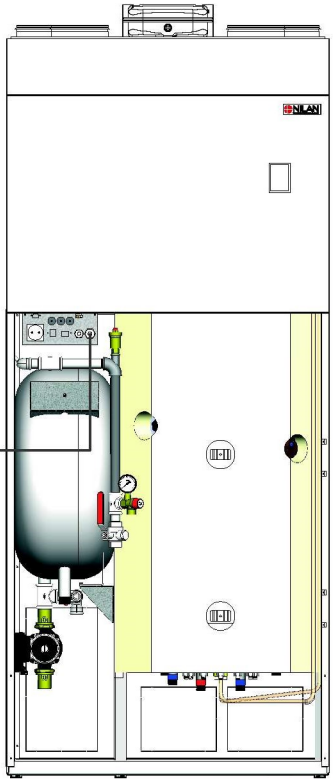
Schuko socket with pin earth



Example of Adapter Schuko plug with pin earth

Compact P2 AIR

Heat pump, AIR indoor unit

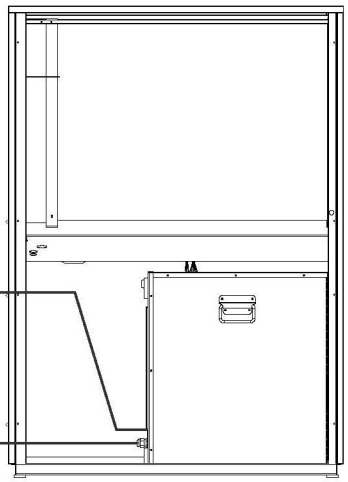


One electrical connection for the whole unit:

3 x 400V, N, Ground, 16 A

Remember Safety switch

Heat pump, AIR outdoor unit



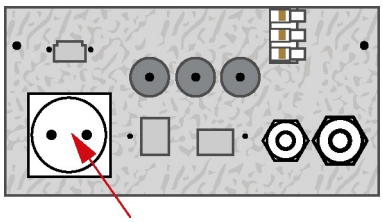
230V 50Hz 16A

Remember Safety switch

20m communications cable with plug connector for indoor unit

ATTENTION

Due to the risk of faults caused by inductive influence, the communication cable must be routed in a separate pipe with a minimum of 100mm distance to other live cables.



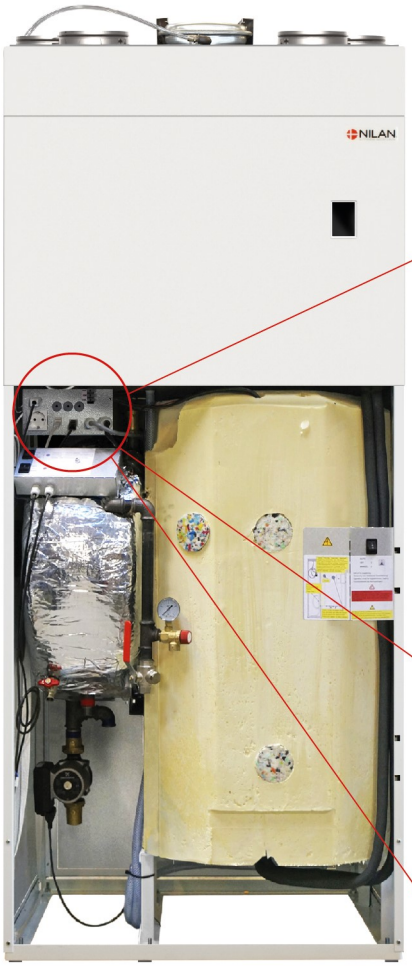
Power connection for Compact P2, ventilation and hot water

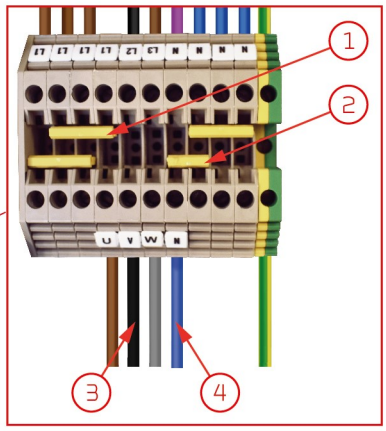
This power connection via Schuko socket allows to measure the power consumption of the ventilation separately, as well as the possibility that the hot water part does not have the same connection as the heat pump.

Change from 400V to 230V

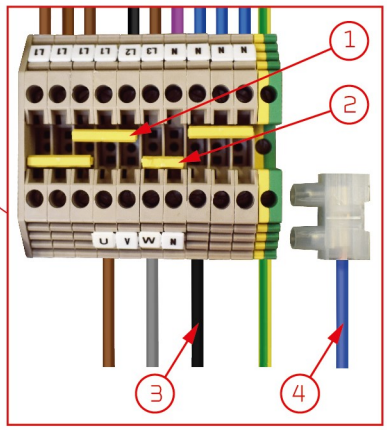
The standard connection in the unit is 3x400V + N + PE. In those countries or areas where this standard is not applicable, the unit can easily be switched to either 3x230V + N + PE or 1x230V+ N + PE.

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





3 x 400V + N + PE



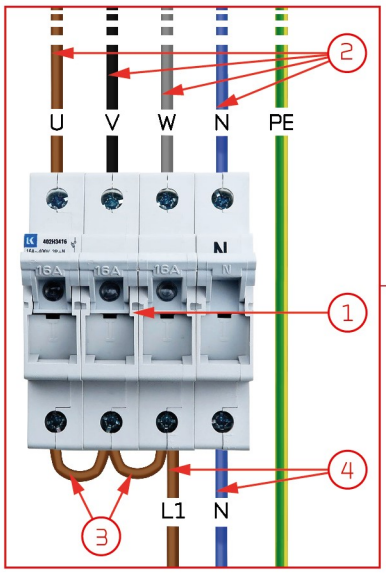
3 x 230V + N + PE

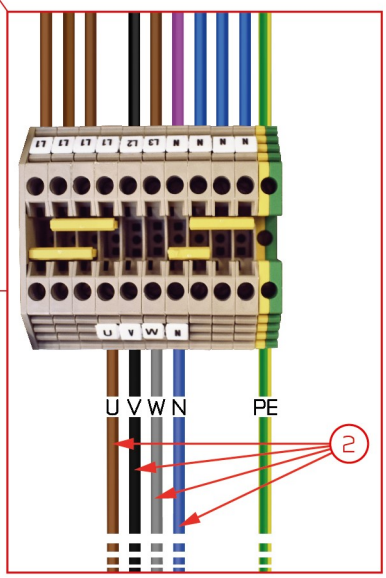
1. Jumper located in L1 + L1 + L2 (terminal block top row)

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

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 P2 AIR and Compact P2 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 P2 AIR

Power supply cable for circulation pump for central circuit

Compact P2 GEO

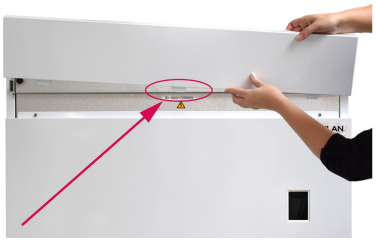
Connecting a gateway

Connecting to the internet

Using an RJ45 LAN cable, you connect the gateway to a router with an internet connection (the cable is not supplied by Nilan). The connection from the gateway is located at the top of the ventilation unit.



Location on the unit



Once a connection to the router has been established, you will have a secure cloud connection. You can now communicate with the gateway via the Nilan User App. Additional information can be found in the user manual.

On Compact P2 (AIR/GEO) units, the gateway is installed in the unit. The ID number of the gateway is situated under the upper door at the front. You pull this outwards and lift it up.

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

HMI Control panel

Moving the control panel

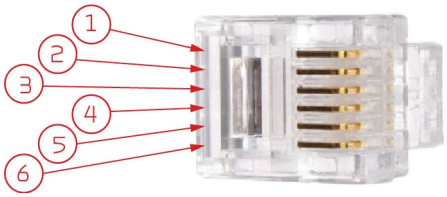
The control panel is from the factory mounted in the front of the unit. It is important that the control panel is located in a visible place so that the user can follow the unit operation and become aware of any alarms. Therefore, it may be necessary to move the control panel to another location. It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

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

The panel is moved out of the unit and the wires are routed through the wire bushing and connected to the terminal block, as shown below.

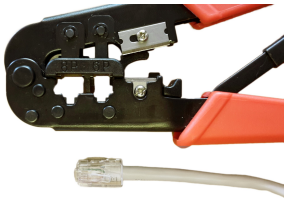
Nilan offers a connection cable with RJ12 plugs of 15 m. It is also possible to customize a cable up to 50 m in length. A standard LAN cable is used for this.

Mounting the RJ12 plug

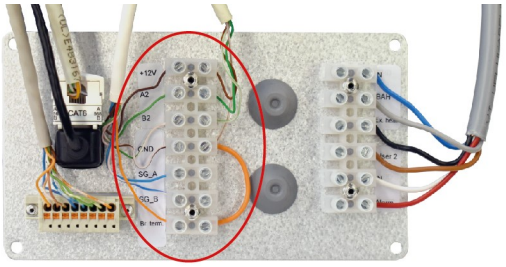


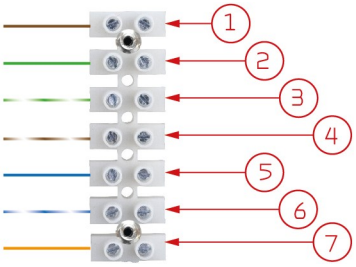
Pin 3: Green (A2)
Pin 4: Green/white(B2)
Pin 5: Brown (12V)
Pin 6: Brown/white (GND)

Use a RJ12 crimping tool



Connection in the 7-pole terminal block





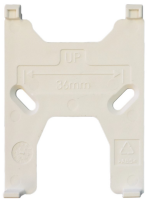
Terminal 1: Brown (12V)
Terminal 2: Green (A2)
Terminal 3: Green/white (B2)
Terminal 4: Brown/white (GND)

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 then remove it.



Mount the wall bracket on the wall using 2 screws.

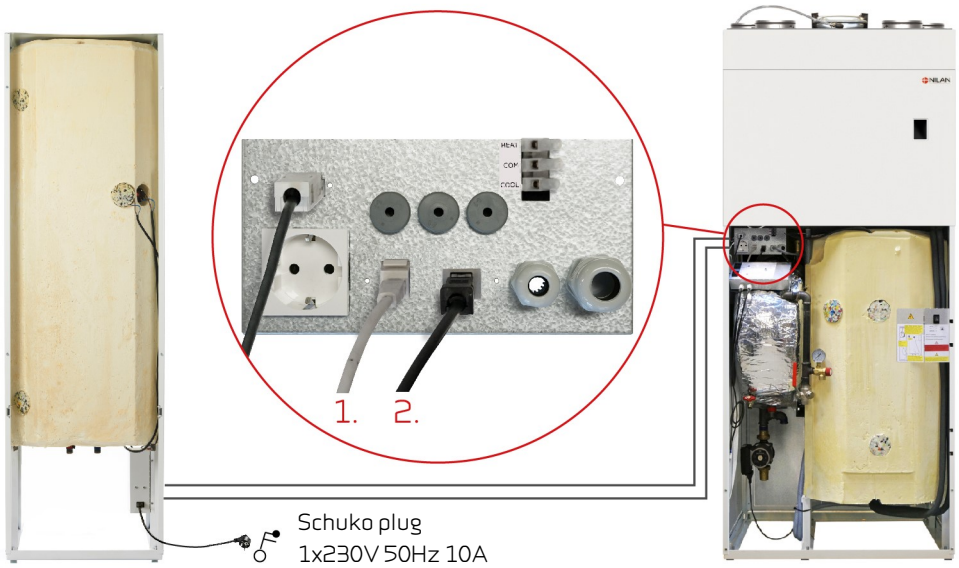


Click the RJ12 plug into place at the bottom of the HMI panel. The wire can run down along the wall, into the wall or through the groove at the back of the panel.

Electrical connection accessories

SHW hot water tank

The SHW hot water tank is connected to Compact P2 AIR connection panel as shown below. The SHW tank has its own power supply via a Schuko plug.



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

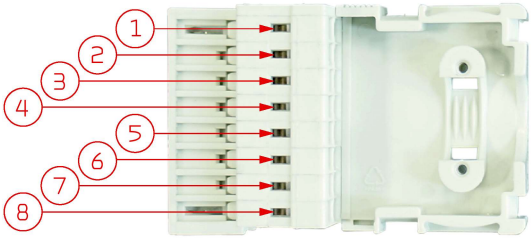
User selection 1

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	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. 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.
Extended operation	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. 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.

Connection via the 8-pin plug:



Pin 4: GND
Pin 5: User selection 1

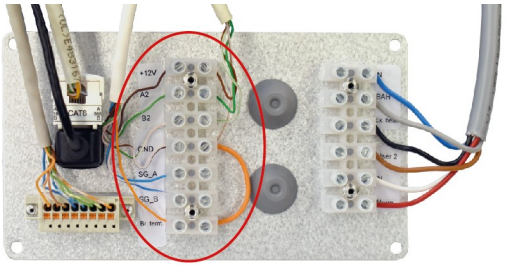
Smart Grid

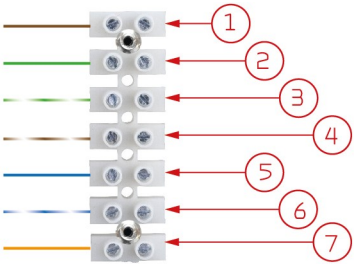
If you want to run Smart Grid, you must connect the Smart Grid modem to the ventilation unit as shown in the picture. The Smart Grid signal is connected to the circuit board in Compact P2, which also controls AIR and GEO if these have been connected up.

Smart Grid can be economically advantageous because it regulates the power consumption of the heat pump in line with the price of electricity as it fluctuates throughout the day. Smart Grid receives an external signal from the power supply company. This determines in which operating setting the unit is to run.

The connection is established via a terminal block that is located at the top of the unit. The connection to the terminal block is carried out at the back of the cover plate. You then run the wires through one of the cable glands. Connect the signal directly without resistors as these are already installed in the wire.
You program Smart Grid in the unit software under 'General settings'. See the options in the Software Instructions.

Connection in 7-pin terminal block





Terminal 4: N (Blue)
Terminal 5: SG-A (Black)
Terminal 6: SG-B (Red)

Smart Grid has four operating settings:

Operating setting	Status	Description
1. The heat pump is turned off	A: Closed B: Open	The power supply for the heat pump is disconnected, as many people are using electricity, which results in the price being high.
2. Normal operation	A: Open B: Open	The heat pump produces domestic hot water in accordance with the values that have been selected in the settings.
3. Low electricity price	A: Open B: Closed	During these periods when the price of electricity is low, it is possible to increase the production of domestic hot water.
4. Overcapacity of electricity	A: Closed B: Closed	There is an overcapacity of electricity, the price of electricity is low, and you therefore have to produce domestic hot water.

External electrical pre-heating element

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

The electrical pre-heating 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 pre-heating element.

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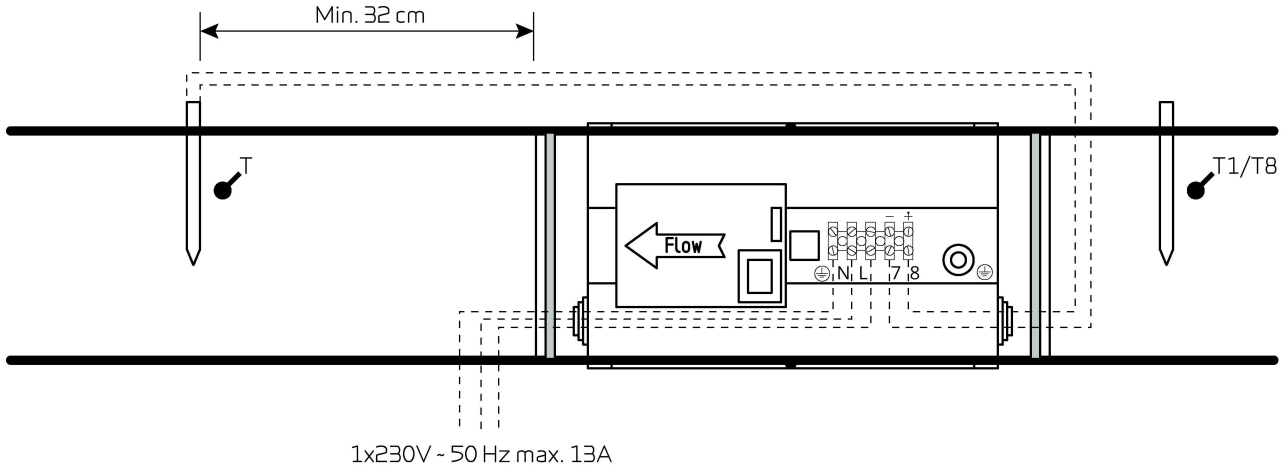


It is important that the sensor is placed at least 32 cm from the pre-heating element to achieve correct regulation.



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

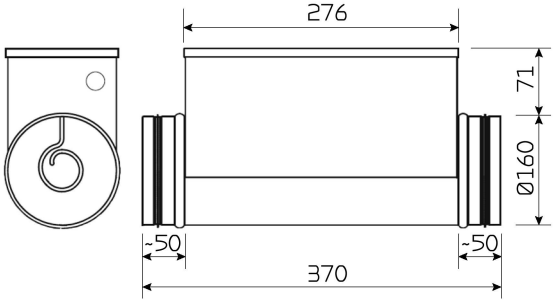
1. An operating thermostat regulates the heating and ensures that the supply air temperature does not fall below -1 °C
2. Should the temperature exceed 50 °C, a max. thermostat switches off the pre-heating element. (If installed vertically with downward airflow, the pre-heating element switches off at 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: 110m^3/h.

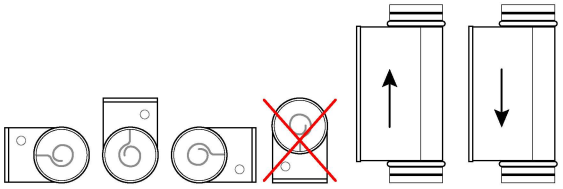
ATTENTION

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:

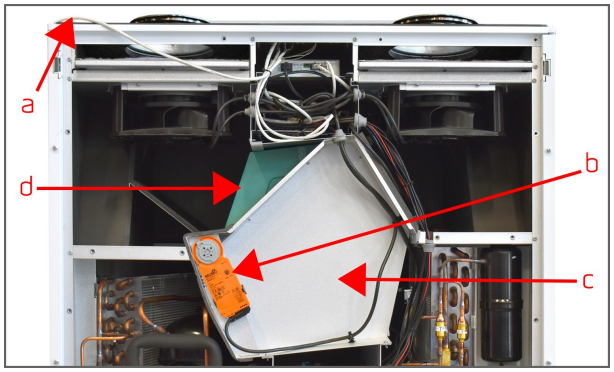


Positioning options:

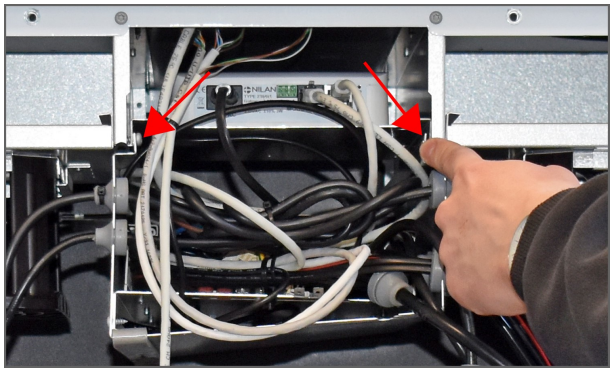


Mounting an expansion PCB on the CTS602 circuit board

An expansion PCB allows you to expand the functions of the control system. It makes it possible for you to add accessories as shown on the following pages.



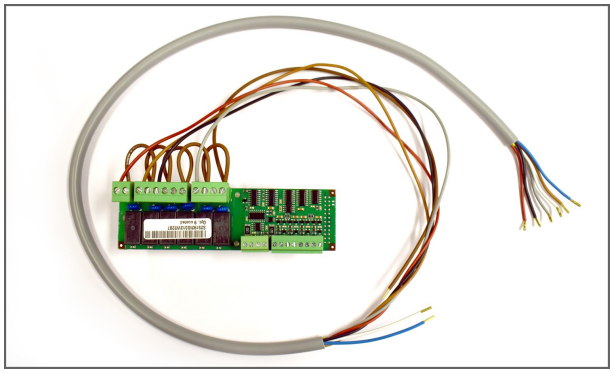
1. In order to access the circuit board on which the expansion PCB is to be installed, you will need to do the following:
a: Detach the HMI panel on the front door from the wire so you can remove the front door. Then remove the rear plate.
b: Detach the bypass damper with a click and loosen the wire from the bypass box.
c: Unscrew the bypass box and remove it.
d: Carefully pull out the counterflow heat exchanger.



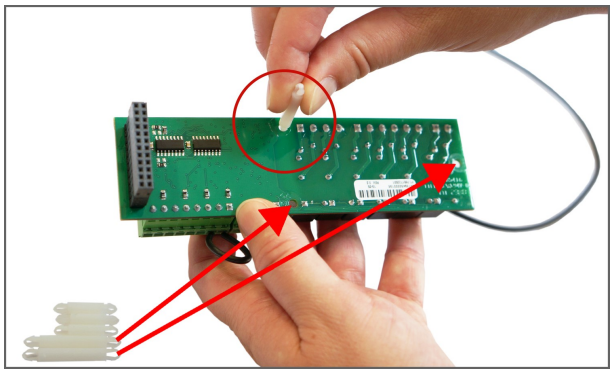
2. Remove the two screws on either side of the box for the control system.



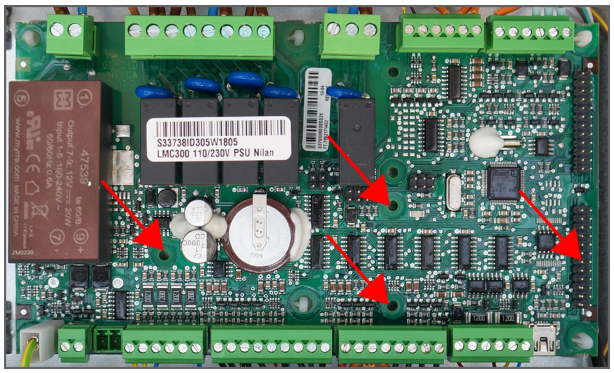
3. Pull the control box forward in the slots, tip it downwards and let it hang in the profile.



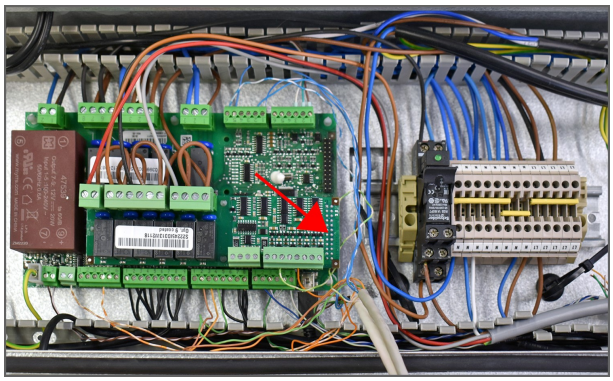
4. A cable has been mounted on the expansion PCB. Connect it up as shown on the wiring diagram.



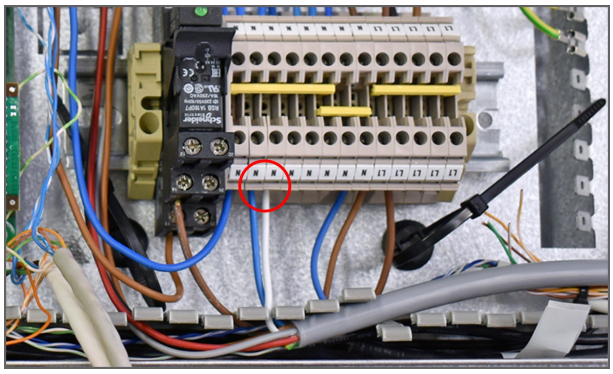
5. Mount the large PCB card supports, provided, in the 3 holes on the expansion PCB.



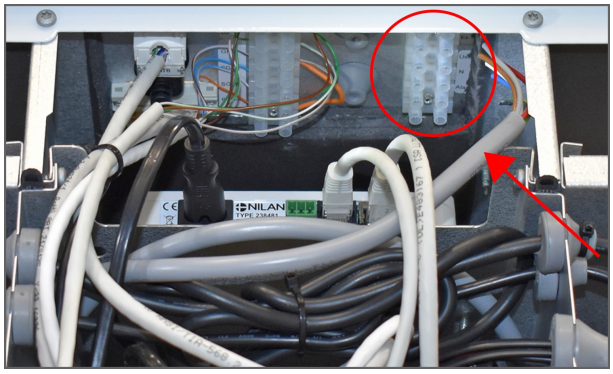
6. Connect the expansion PCB to CN9. Fit the PCB card supports in the holes made for this purpose on the CTS602 circuit board.



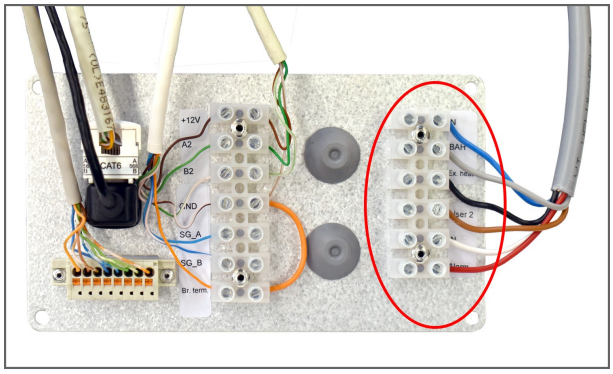
7. Mount the expansion PCB on the CTS602 circuit board. Mount the other wires on the expansion PCB in accordance with the wiring diagram.



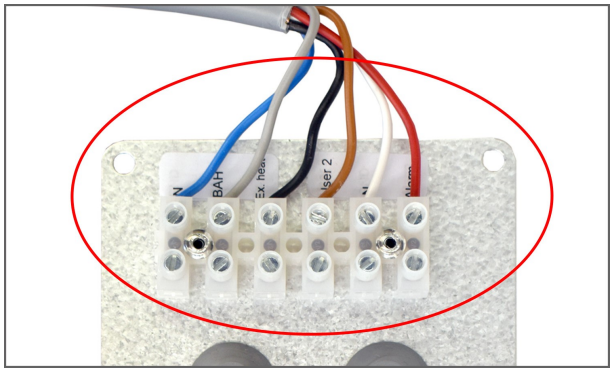
8. Connect up the white and the blue wires to the fuse as shown on the wiring diagram.



9. Run the cable in front of the gateway together with the other wires from the circuit board and mount them in the terminal block situated at the top of the Compact.



10a. Connect up the cable as depicted here. See also the wiring diagram provided. You can loosen the plate and access it from the top of the Compact. This makes installation easier.



10b. Connect up the cable as depicted here. See also the wiring diagram provided. You can loosen the plate and access it from the top of the Compact. This makes installation easier.

ATTENTION

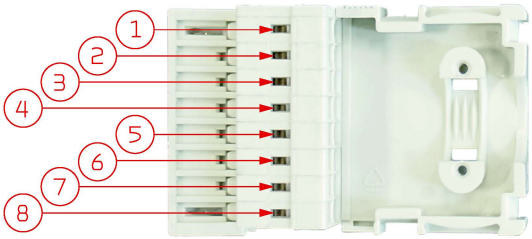
The expansion PCB and the connections must be installed by a certified electrician.
The expansion PCB is an accessory to the CTS602 circuit board. Nilan does not supply external components.

User selection 2

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

The 8-pin plug and the terminal block are located at the top of the unit. You create the connection to the terminal block on the back of the cover plate. You then run the wires through one of the cable glands.

Connection via the 8-pin plug:

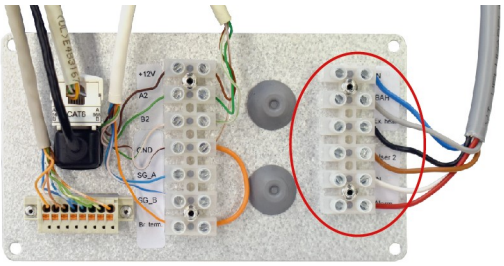


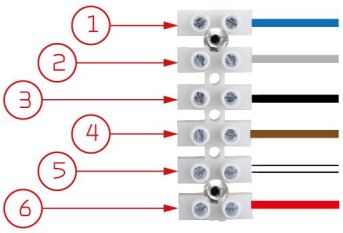
Pin 2: User selection 2

Pin 4: GND

Connection in the 6-pin terminal block

Relay output that can control e.g. a damper or whatever external function you may need to control.





Terminal 4: User selection 2 (Output)
Terminal 5: N (Output)

EM-box (damper option)

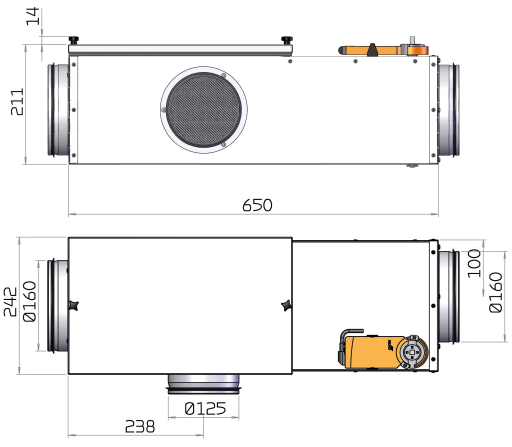


If it is desired to run the cooker hood over the ventilation system, it may in some cases be difficult to get enough air for the cooker hood.

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 is connected to the 8-pin plug. Pin 2: User Selection 2 and Pin 4: GND. The relay output is connected in the 6-pin terminal block. Terminal 4: User selection 2 (Output) and Terminal 5: N (Output) as shown in User selection 2.

DTBU (damper option)



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 8-pin plug. Pin 2: User Selection 2 and Pin 4: GND. The relay output is connected in the 6-pin terminal block. Terminal 4: User selection 2 (Output) and Terminal 5: N (Output) as shown in User selection 2.

Fire thermostat / external fire automation system

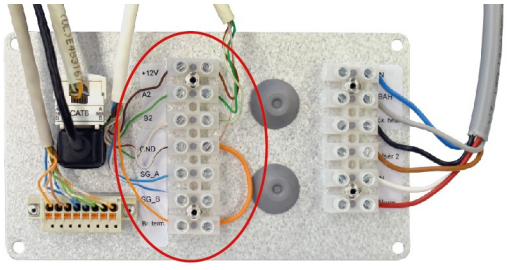
The ventilation unit can be connected up to an external fire thermostat that will stop the ventilation unit in the event of fire. The same input port can be used for connecting an external fire automation system.

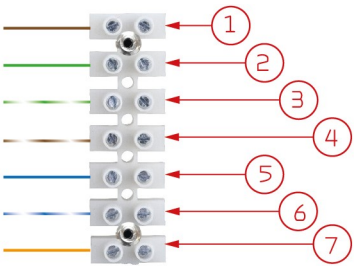
The control system registers any disruption of the input signal as fire, and stops. It will only restart once connection to the fire thermostat has been reestablished or the external fire automation system starts signalling again. This must be done manually via the control panel.

When you connect up an external fire automation system, you will need 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 created via a terminal block that is located at the top of the unit. The connection to the terminal block is carried out at the back of the cover plate. You then run the wires through one of the cable glands.

Connection in the 7-pin terminal block





Terminal 4: GND

Terminal 7: Fire thermostat / external fire automation system

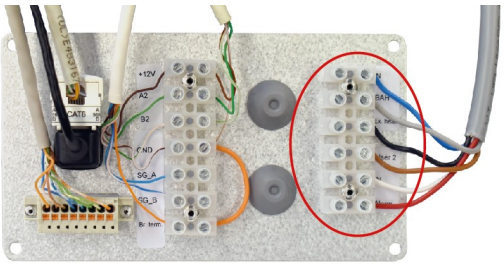
Joint alarm

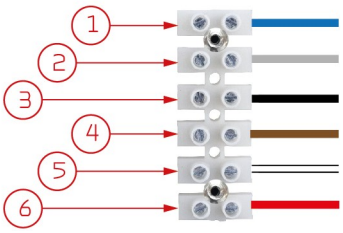
It may be difficult to notice alarms if the unit is located in a place where access is difficult or infrequent, and if the control panel is located in the same place.

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.

The connection is created via a terminal block that is located at the top of the unit. The connection to the terminal block is carried out at the back of the cover plate. You then run the wires through one of the cable glands.

Connection in the 6-pin terminal block





Terminal 5: N
Terminal 6: Joint alarm

External heat supply

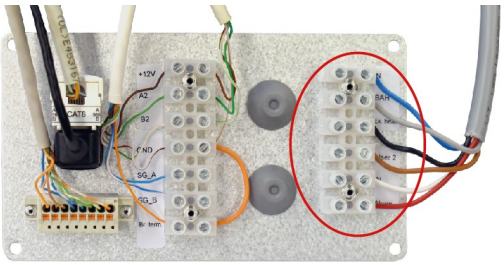
The unit can control an external heat supply such as electric radiators or an underfloor heating system. This function is used when the unit helps heat the dwelling via a heat pump and/or an after-heating element.

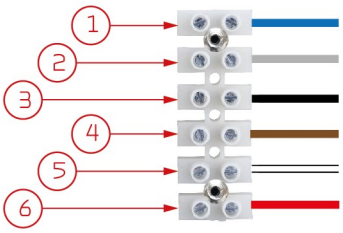
The room temperature is monitored by the control system of the unit. It will only release the external heat supply if the required room temperature in the dwelling/building cannot be reached by means of the unit alone.

The connection is created via a terminal block that is located at the top of the unit. You create the connection to the terminal block on the back of the cover plate. You then run the wires through one of the cable glands.

Select your settings in the control panel. Read the software manual to learn which settings you need to set.

Connection in 6-pin terminal block





Terminal 3: External heat supply

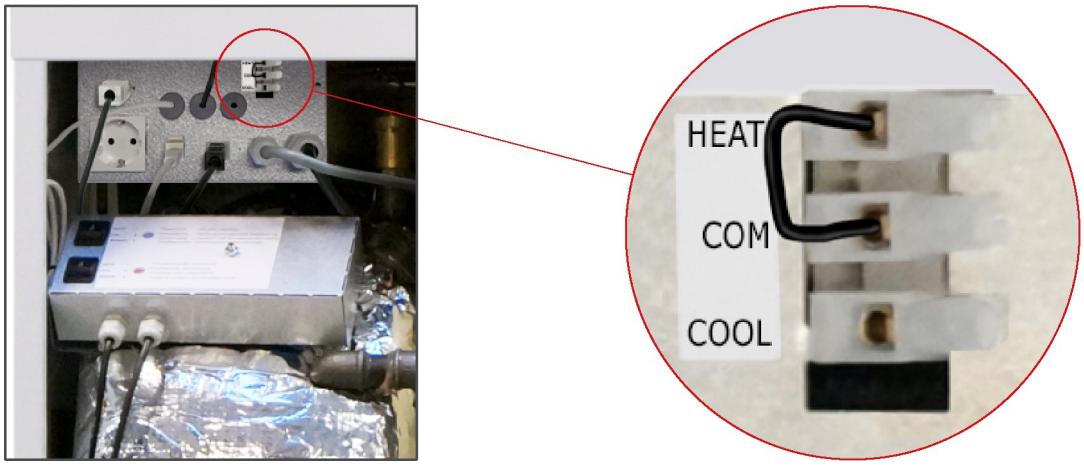
Terminal 5: N

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 telestats to AIR.

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 requiret! Open contact set: no heating required!

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



Active cooling function

The AIR unit has a reversible cold circuit, which means that it can be used to actively cool the home, using either the floor heating system or fan coils.

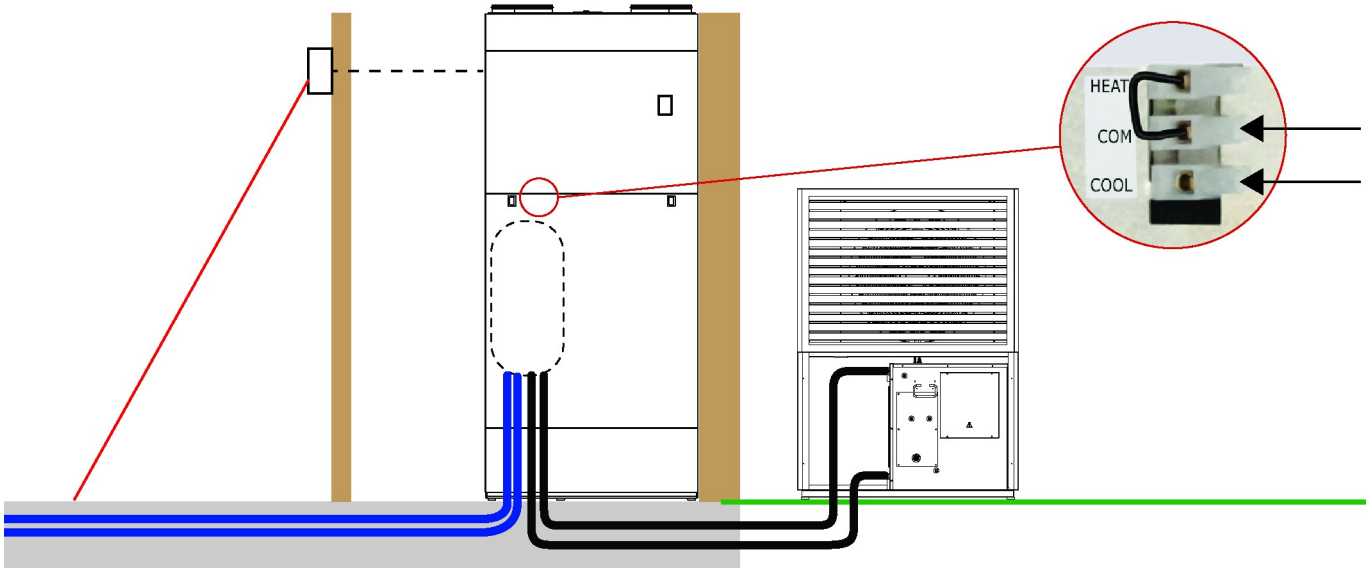
CAUTION

If it is wished to operate with cooling, it is important to use glycol in the brine circuit to avoid icing in the heat pump.

Active cooling using the floor heating

There is an external temperature sensor connected to digital input D3. When the switch is activated, the AIR unit goes into cooling mode and cools the home down to a pre-set value. When the switch is deactivated, the AIR unit returns to normal operation.

The external temperature sensor often has an infra-red sensor, which measures the temperature of the floor and stops the cooling function before condensation forms on the floor.



Plumbing installation

Condensate drain

Important information

Compact P2 is supplied with a reinforced 20 mm condensate drain tube with an integral water trap.

ATTENTION

Run the condensate drain tube 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 clearly visible drain.

ATTENTION

If the unit is set up outside the climate screen, it is important to protect the condensate drain from frost.

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

Once installed, check the function of the water trap in the following way (the unit must be connected up to the duct system):

Fill the condensate tray with water, close the unit door and start the ventilation unit at the highest fan speed level. Allow it to run for several minutes. Open the door and check that the water has drained from the condensate tray.

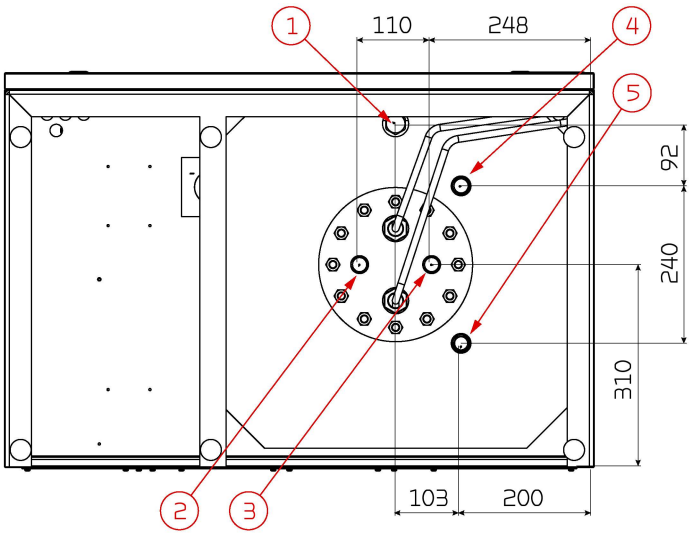


The loop on the tube from the condensate drain functions as a water trap. It has been fastened with tie strips that must not be cut or removed under any circumstances.

Hot water tank

Connection overview

Compact P2 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 P2 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 m^2.

Plumbing connection

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

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 supplemental electric heating deactivated by default and activated via the control panel if required.

ATTENTION
The supplemental electric heating must not be activated before the water tank is full of water.

Requirements to quality of water

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) @ 25 °C
- Chloride must be below 250 mg/L @ 65 °C

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

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 chloride content must be under 250 mg/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.

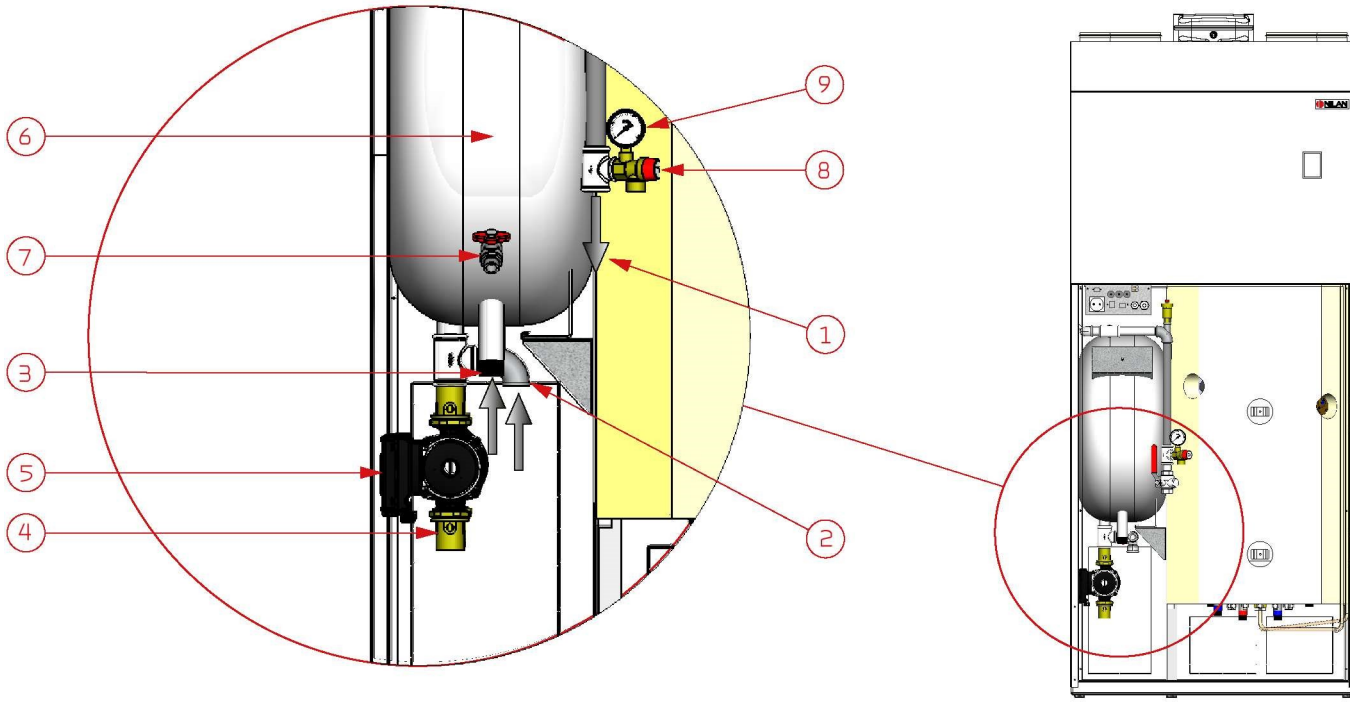


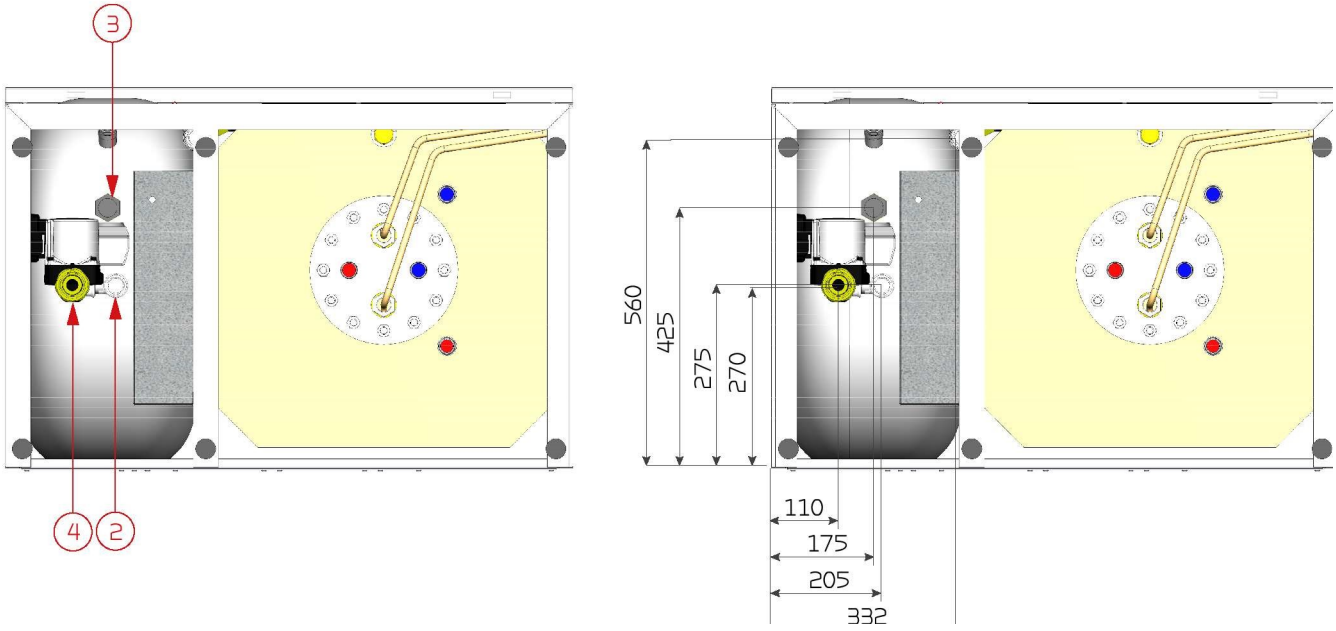
CAUTION

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

Water connection overview, indoor unit

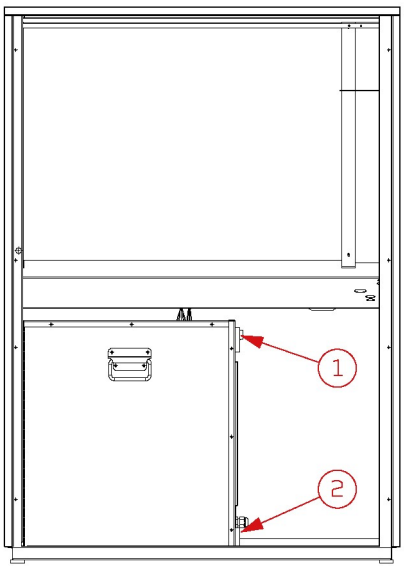




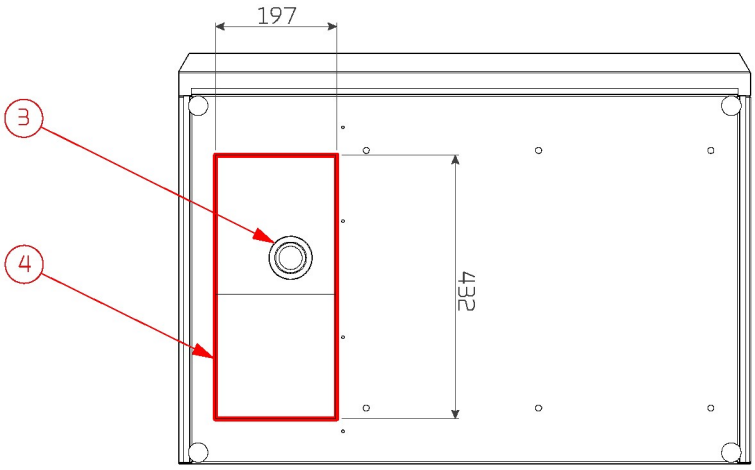
1. Supply flow to central heating, 3/4"
2. Return flow from central heating, 3/4"
3. Supply flow from outdoor unit (hot), 1"
4. Return flow to outdoor unit (cold), 1"
5. Circulation pump between outdoor unit and indoor unit
6. Buffer tank
7. Filling tap and drain valve
8. Safety valve (central heating)
9. Manometer (central heating)

Connections overview outdoor unit

AIR outdoor unit rear side:



AIR9 outdoor unit seen from below:

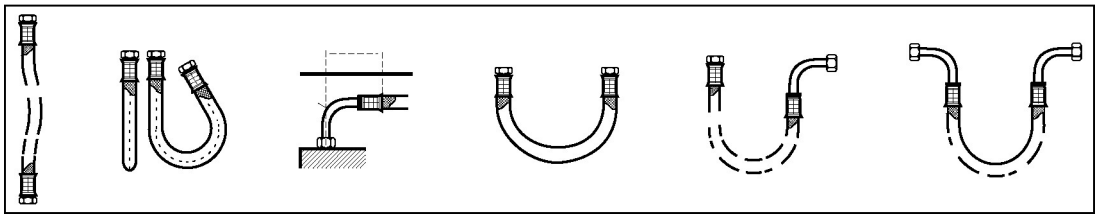


10. Supply flow to indoor unit (hot), fitted with a 1" flexible hose
11. Return flow from indoor unit (cold), fitted with a 1" flexible hose
12. Condensate drain
13. Hole for connections

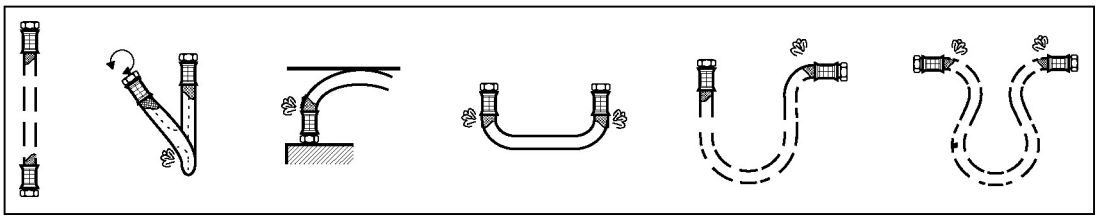
ATTENTION

The illustration above on the left shows an example of an AIR outdoor unit. The outdoor unit is available in different versions. See the dimensional drawing for details.

CORRECT

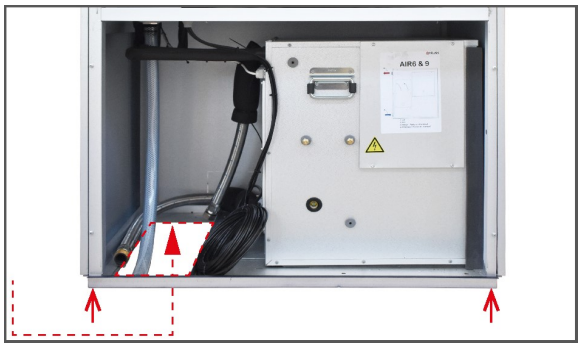


WRONG



Mounting hoses to the outdoor unit

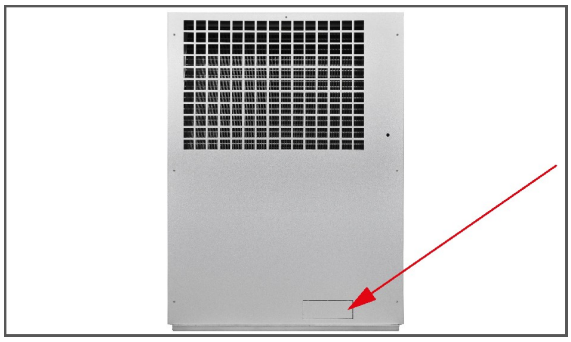
You can mount hoses to the outdoor unit in different ways. Your decision will depend on the available space, and whether you want to be able to access the outdoor unit from the bottom or from the back.



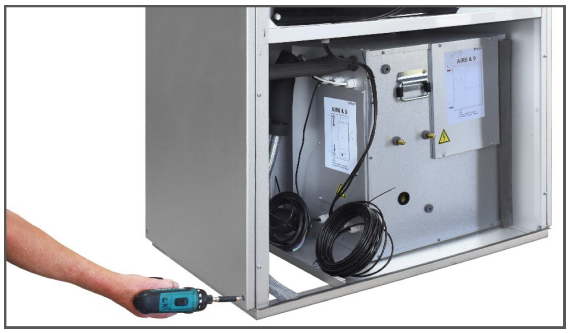
1a. The primary means of access to the AIR outdoor unit is from the bottom.
Place the outdoor unit on a stand so it is raised above foundation level. This leaves room for you to run the hoses underneath the outdoor unit. Remember to use vibration absorbers.



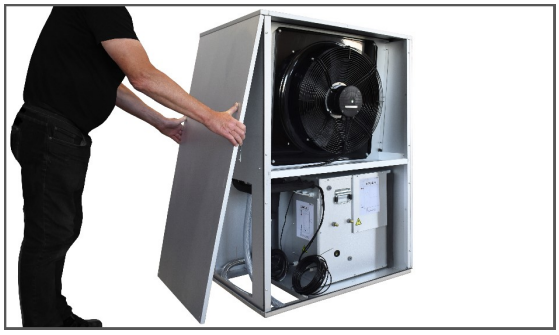
1b. Remove the doors at the front of the outdoor unit. This gives you easy access to the hoses and the electronics.
In order to detach the front doors, please consult the section, "Detaching front doors from the AIR outdoor unit".



2a. If using the primary means of access is not an option, you can access the hoses and the electronics from the rear side.
Remove the metal piece that has been punched out at the back of the outdoor unit, and run the hoses through the opening.



2b. In order to gain maximum space for the installation work, you can detach both the front doors and the metal plate on the left side of the outdoor unit.
In order to detach the front doors, please consult the section, "Detaching front doors from the AIR outdoor unit".
When removing the metal plate at the side, please start by unscrewing the screws at the bottom of the plate.



2c. Remove the metal plate on the side by tilting it out at the bottom and then pulling the plate downwards.



2d. From here you will have access to the hoses and the electronics.

ATTENTION

All plumbing components must be installed by a certified plumber.
All electronics must be installed by a certified electrician.

Insulation of hoses from the outdoor unit

It is important that the brine hoses between the indoor part and the outdoor part are properly insulated. This is done to avoid heat loss and to achieve good operation.





CAUTION

If the brine hoses is not well insulated, the AIR heat pump will use significantly more energy and in worst case, there will not be enough heat in the house.

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 control system	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		

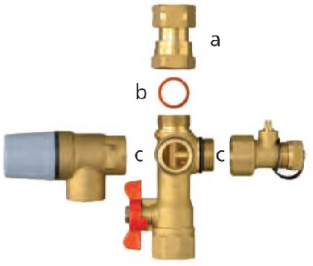
Plumbing connections accessories

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:
a. 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.



b. The joint between the double nut and the unit is sealed using fibre packing.

c. 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
Water expands as it heats up, therefore 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.

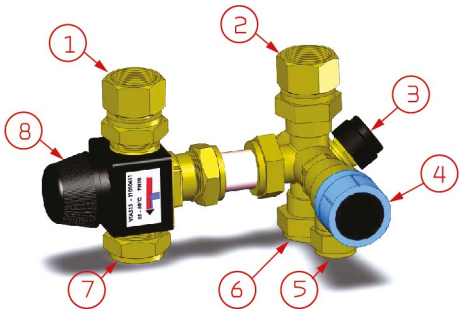
Safety group with anti-scald protection

In the control, a temperature limit for the domestic hot water of 65ºC 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 65ºC, the unit stops cooling the supply air. If there is a larger need for cooling, the temperature limit can be raised to 80ºC, 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.

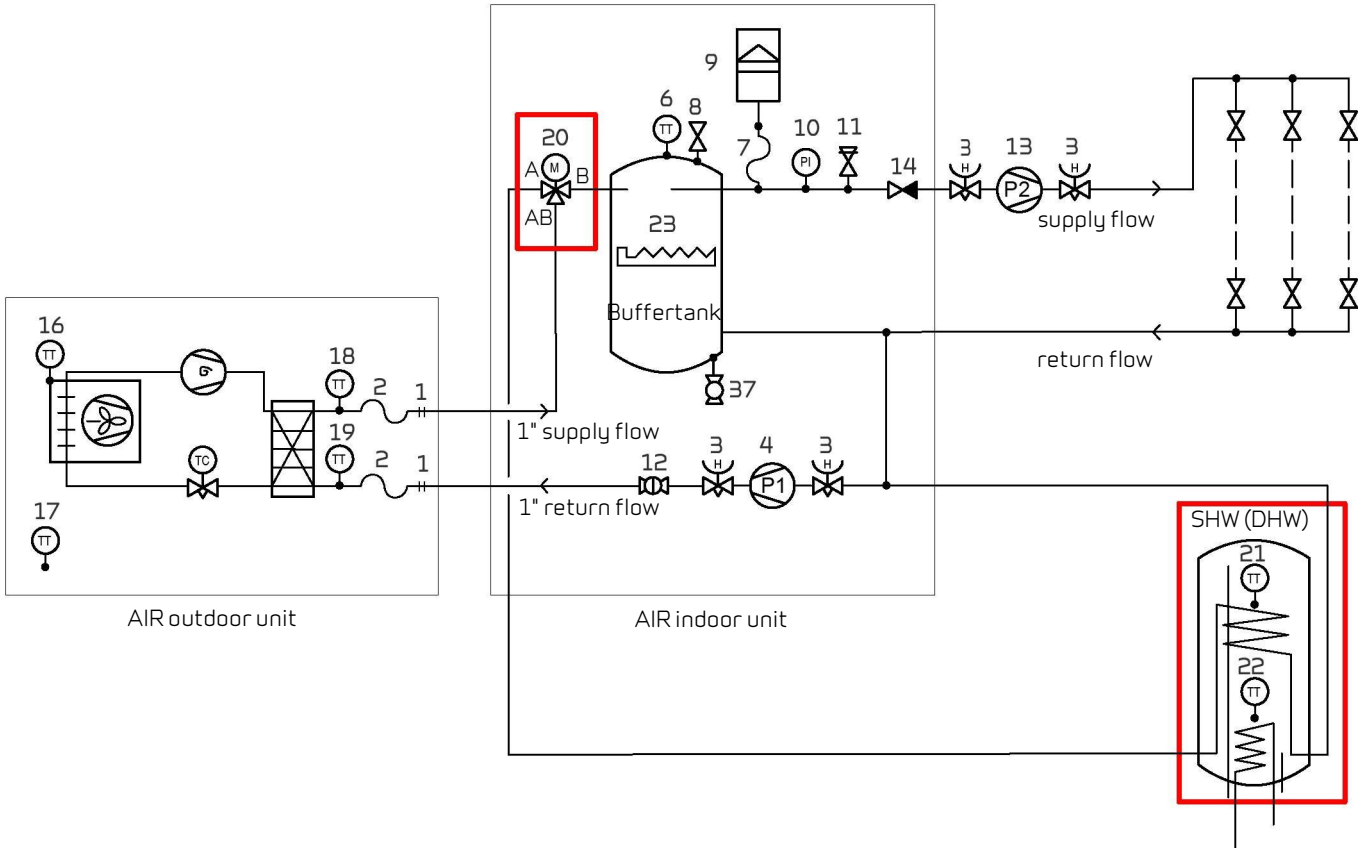
CAUTION
If a solar panel is connected to the hot water tank, an anti-scald device must be mounted.



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
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 ºC)

Hot water tank

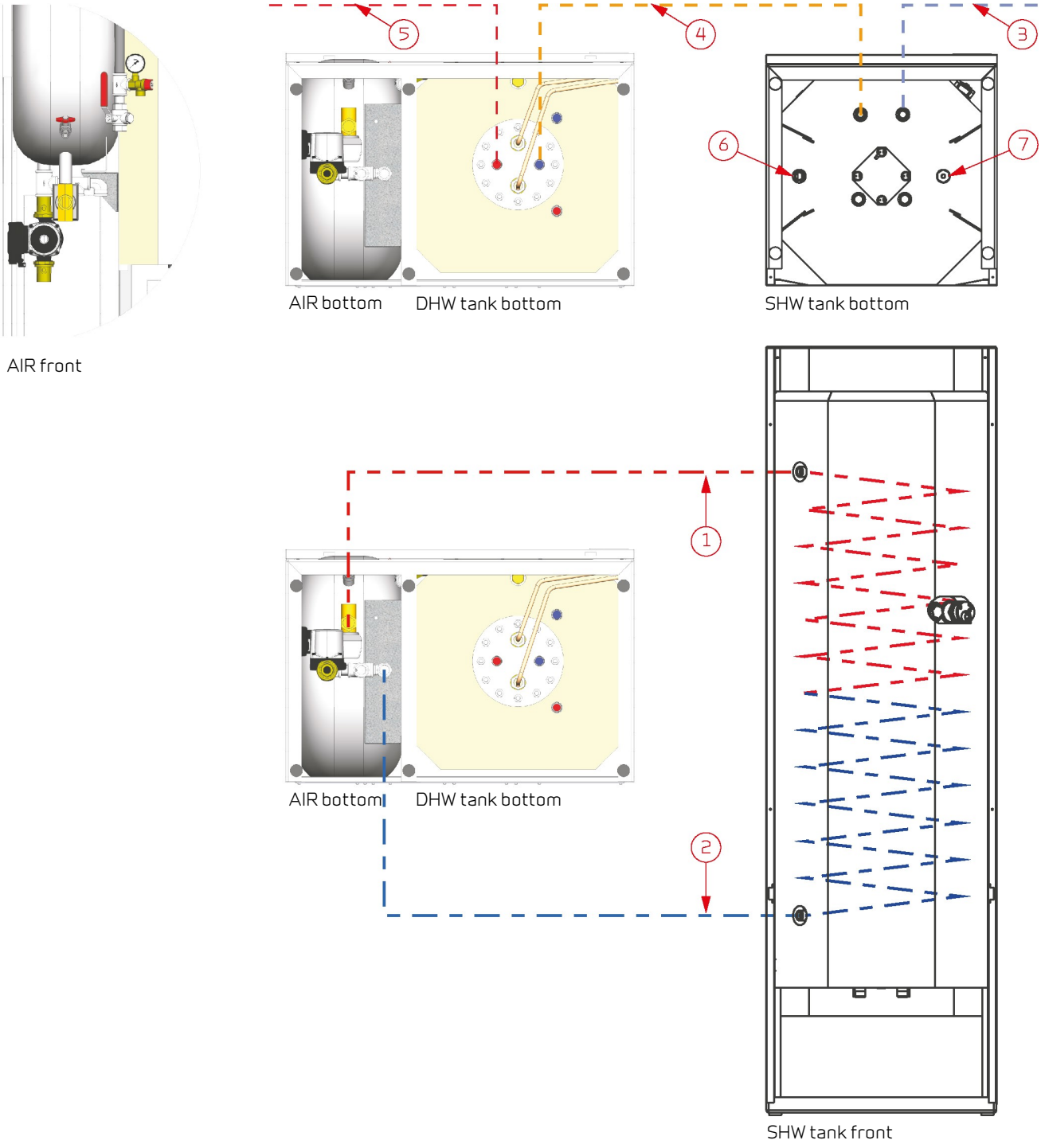
The AIR unit can be connected to an external hot water tank (SHW) or to the hot water tank in the Compact P2 (DHW). A three-way valve, which can be purchased as an accessory, is required.



1. Connection 1"
2. Flexible hose 1"
3. Shut-off valve
4. P1 circulation pump 130 mm
5. Supplemental electric heating 2kW+ 3 kW
6. Temperature sensor T18 buffer tank (supply flow)
7. Flexible hose 10 mm
8. Automatic air vent valve 3/8"
9. Expansion vessel 10 litre
10. Manometer
11. Safety valve 2,5 bar
12. Shut-off valve with particle filter (not mounted from factory)
13. P2 circulation pump
14. Check valve 3/4"
15. Filling tap 1/2"
16. 3-way valve
17. Temperature sensor T21 hot water tank top
18. Temperature sensor T22 hot water tank bottom
19. Temperature sensor T23 evaporator element
20. Temperature sensor T20 outdoor temperature
21. Temperature sensor T17 after condenser
22. Temperature sensor T16 before condenser

Connecting to SHW hot water

The domestic cold water is pre-heated in the SHW tank up to 45 °C by the AIR heat pump (default setting 40 °C) through the heat pump coil. It is then fed to the DHW tank in the Compact P2, where it is heated to the desired hot water temperature.

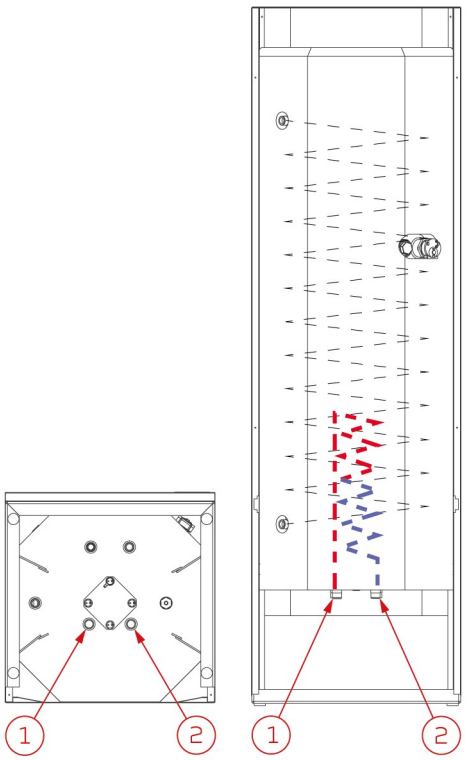


1. Supply flow to the heat pump coil in the SHW tank from the AIR heat pump (three-way valve is purchased separately)
2. Return flow from the heat pump coil in the SHW tank to the AIR heat pump
3. Connection for domestic cold water supply
4. Supply flow of pre-heated domestic hot water from the SHW tank to the DHW tank in Compact P2
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.



SHW bottom SHW front

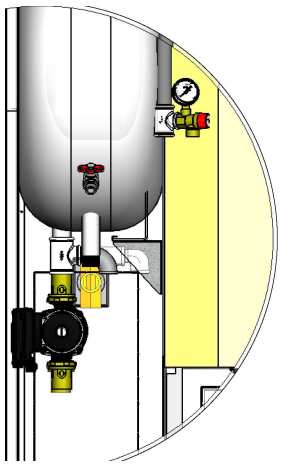
1. Supply flow to the supplementary coil in the SHW tank.
2. Return flow from the supplementary coil in the SHW tank.

ATTENTION

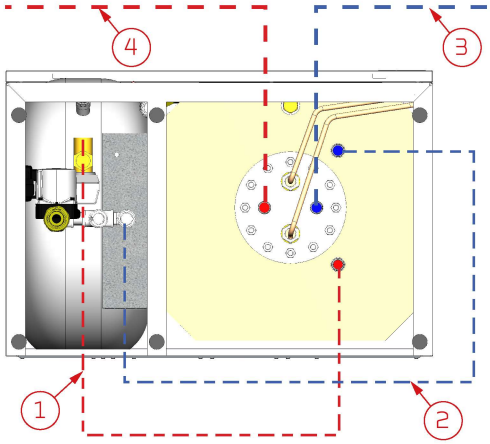
If another container with a shorter supplementary coil is connected, the compressor output in the hot water production must be reduced. See the Software manual.

Connecting to DHW hot water

If the demand for domestic hot water exceeds the capacity of the heat pump in the Compact P unit, AIR can be connected to the solar coil in the DHW tank. It will then help heat the domestic hot water.



AIR front



AIR bottom DHW tank

1. Supply flow from the AIR heat pump to the solar coil in the DHW tank (three-way valve is available as an optional extra)
2. Return flow from the solar coil in the DHW tank to the AIR heat pump
3. Connecting the 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

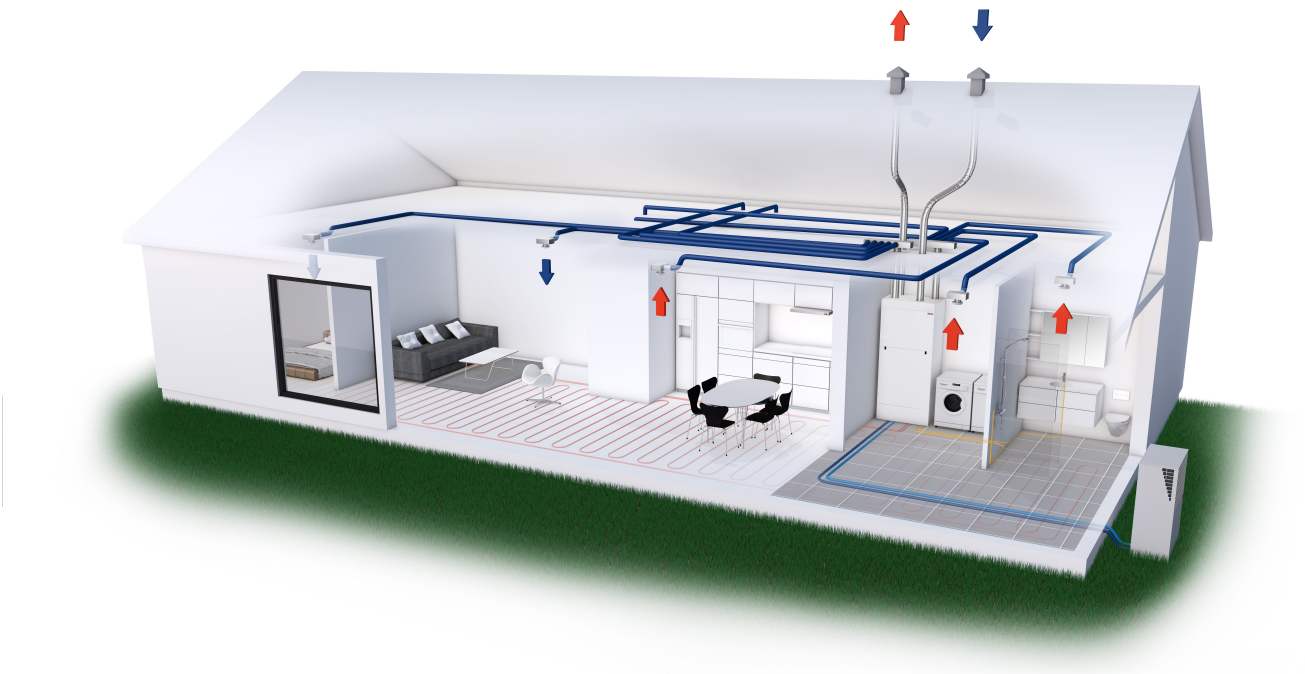
The position and design of air intake and air discharge should limit pressure oscillations in the ventilation unit caused by wind. Their position should also prevent birds and other animals from getting in. Finally, the position and design should ensure that air intake and the connected duct system are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

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 wen 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

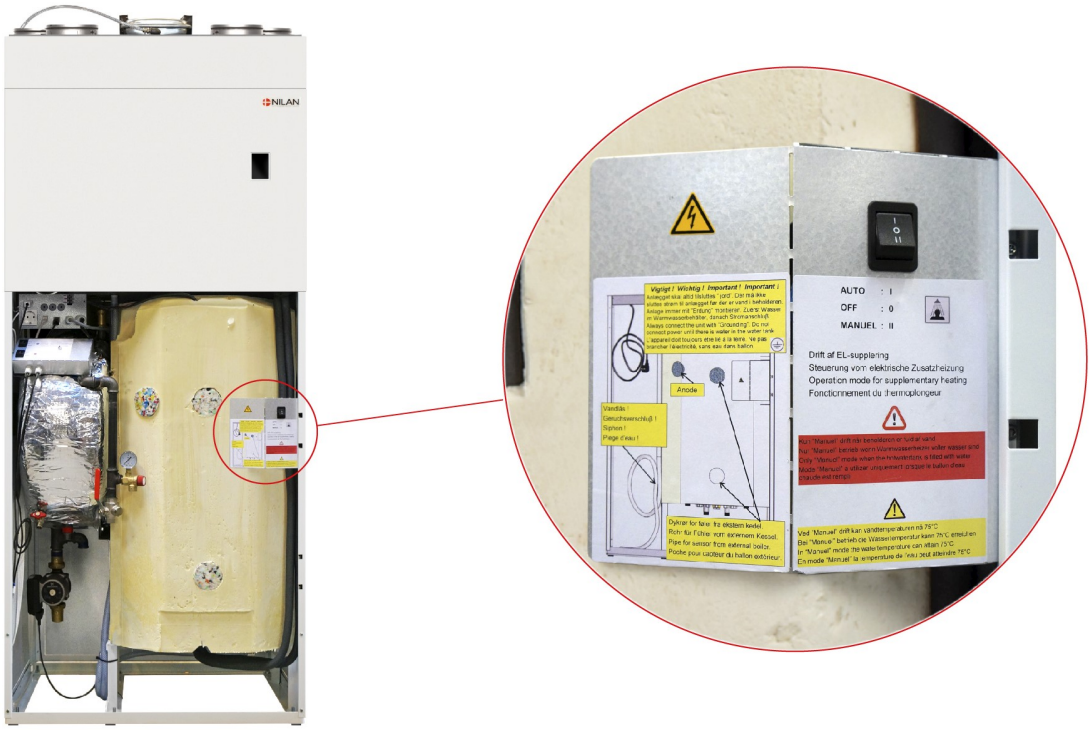
Troubleshooting

Emergency mode

Emergency mode domestic hot water

If an error occurs in the control system or components in the Compact P2, 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.

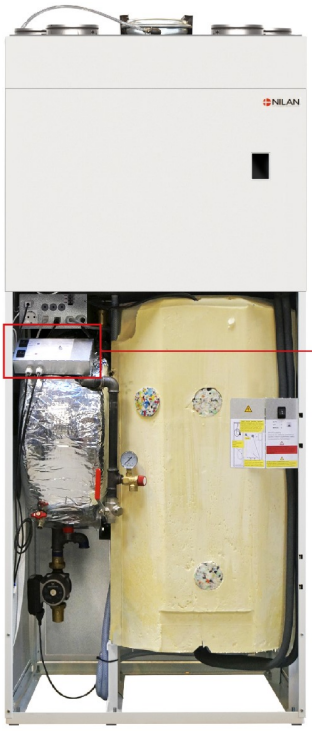
II - Manuel:
The supplemental electric heating is turned on, and cannot be turned off via the unit control system (do not turn it on if there is no water in the tank)

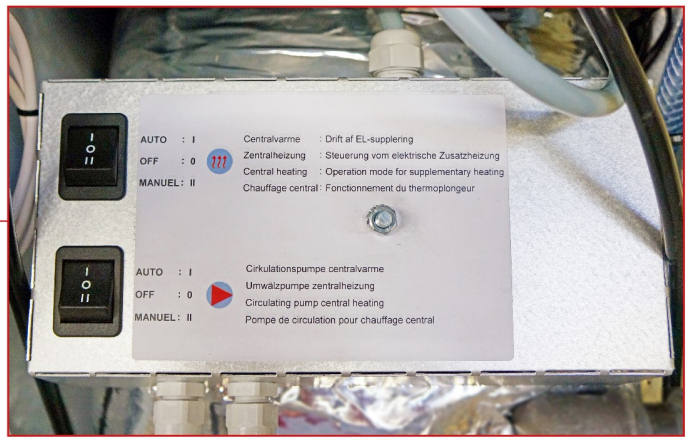
WARNING
In manual emergency mode, the water temperature can reach 75 °C, which can cause scalding, if you are not careful when switching on the hot water.

Emergency mode central heating

If an error occurs in the control system or components in the AIR air/water 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 AIR heat pump into emergency mode.





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

The emergency mode for supplemental electric heating 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 by 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.

The emergency mode for the circulation pump has tree settings:

I - Auto:

The circulation pump is controlled by the unit control system (standard setting).

0 - Off:

The circulation pump is turned off and cannot be turned on via the unit control system.

II - Manuel:

The circulation pump is turned on and cannot be turned off via unit control system.

ATTENTION

When the supplemental electric heating is in I or II the circulation pump must be in the same position.

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

Problems 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.
EI-supplementation is turned on much or always	The heat pump will not work effectively, which may be due to various reasons.	- Check that there is no ice in the evaporator surface in the outdoor unit. It prevents the air from getting through. - Check that the evaporator surface in the outdoor unit is not stopped with leaves and other debris that can prevent the air from getting through. Clean the evaporator surface. - Check that the hoses between the outdoor unit and the indoor unit are properly insulated so that there is no excessive heat loss. - Check that there is a proper flow in the circuit between the outer part and the inner part.
AIR has a large power consumption	One must expect that electricity consumption in the first year will be greater than expected. This is quite natural as the house must dry out. The higher humidity in the first year means that it costs more energy to heat the house. This may also be because the heat pump does not run optimally for various reasons.	- Check that there is no ice in the evaporator surface in the outdoor unit. It prevents the air from getting through. - Check that the evaporator surface in the outdoor unit is not stopped with leaves and other debris that can prevent the air from getting through. Clean the evaporator surface. - Check that the hoses between the outdoor unit and the indoor unit are properly insulated so that there is no excessive heat loss. - Check that there is a proper flow in the circuit between the outer part and the inner part.

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