AIRA

Aira Outdoor Units

INSTALLATION MANUAL

Aira Outdoor Unit 6 kW HPO-AW-6-230V-1.0
Aira Outdoor Unit 8 kW HPO-AW-8-230V-1.0
Aira Outdoor Unit 12 kW HPO-AW-12-400V-1.0

CONTENT

1. INTRODUCTION

1.1 Welcome to your heat pump system

Congratulations on switching to clean, green home heating. Your Aira heat pump will cut your energy costs and produce less CO_2 than a traditional heating system using oil or gas.

A+++
The highest possible energy class rating

R290, a natural refrigerant.
Non-toxic. Highly efficient.

Remarkably quiet
Designed not to disrupt.

Aira Intelligence
Ultra-connected & intelligent self-learning system

App-controlled
Control your heat pump from anywhere, anytime

1.2 Disclaimer

Proper adherence to the directions provided herein is vital for both the smooth operation of this system, as well as for your safety and the safety of those around you. Aira is not responsible or liable for any losses incurred due to misuse or mishandling of this product, which includes, but is not limited to:

- Purchasing, installing, and/or operating this product with the intention of using it outside of its established, technical purpose.
- Installation, service or repair on the unit or other heat pump system components by anyone other than an Aira trained and licensed professional.
- Negligence of properly worn personal protection equipment (PPE) while performing installation, maintenance, or servicing of this product.
- Disregards of the placement rules for any of the products in the Aira heat pump system.
- The operation of this system during outdoor temperatures which are below or beyond the temperature range intended (-25°C to 45°C).

2. SAFETY

The design of Aira's heat pump products complies and conforms to all necessary and relevant safety regulations and is safe to operate for their intended use according to the User Guide.

Improper and unintended use risks death to the user and others, personal injury and damage to the products and surrounding property. The products are solely intended for domestic use within the limits of the product's operating requirements.

2.1 Safety symbols in the manual

Warnings and related information will be labelled in the manual according to the following principle:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Advises how property damage, or an undesirable result or state, can be avoided.

2.2 Regulations to be observed

- National or regional regulations
- Statutory regulations for accident prevention
- Statutory regulations for environmental protection
- Trade norms

2.3 General Safety information

- Installation, service, repairs, and disposal must comply with all applicable national and international laws and standards.
- The complete Installation Manual must be fully studied before installation, service or repairs and fully adhered to.
- Installation, service, and repair must be performed by qualified specialists trained by Aira.
- Maintenance must be performed by the owner as instructed in the 9.1 Maintenance-chapter to warrant the lifespan of the products.
- Only use product combinations and accessories recommended by Aira.
- No modifications of the products and/or accessories are allowed. The manufacturer is not responsible for any alterations or modifications that are made without explicit, written approval.

WARNING

2.4 Warning

- Check the refrigerant circuit for leaks before the work is initiated as electrostatic discharge and sparks can cause an explosion.
- Ensure that there is sufficient air flow in the work area around the outdoor unit for the duration of the work.
- Do not smoke next to the outdoor unit.
- Do not touch the grill in front of the fan when the motor is running.
- Be aware that the fan blade edges are sharp and can cause damage to fingers when touched carelessly and without the right safety protective gear.
- Do not pour water directly onto the outdoor unit.
- Appropriate personal protective gear (PPE) and tools must be used for transportation, installation, service, and repairs.
- There is a tip-over risk during transportation and storage before the products are properly mounted and secured. Use appropriate measures to prevent tipping accidents as it can harm people, property and damage the products.
- Contact Aira customer support if any products or components show damage or have been tipped over or dropped.
- Do not pierce or burn any components in the system.
- Children under the age of 8 are strictly forbidden to use or play with any products or components in the heat pump systems.

- Children aged from 8 years and above and persons with reduced physical, sensory, or mental capabilities or lack of experience and knowledge can update the heating settings if they have been given supervision or instruction concerning use of the heat pump system in a safe way and understand the hazards involved.
- To avoid electrical shock, disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of the main circuit capacitors or electrical parts before touching to make sure that those voltages are lower than the safety voltage.
- Do not touch any components if a power cord, outlet, or other electrical connection is loose or broken and immediately contact Aira customer support.
- Carefully remove the protective covers of the indoor and outdoor unit and take safety measures to prevent burning accidents from hot surfaces as some components store energy.
- The Aira Outdoor Unit must be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation. Be aware that the refrigerant in the outdoor unit is clear and odourless, making it difficult to detect a leak.
- The outdoor units are heavy (135-172 kg) and require appropriate lifting and transportation support to avoid injury or damage.

2.4.1 Working on the refrigerant circuit

- Check the refrigerant circuit for leaks before the work is initiated as electrostatic discharge and sparks can cause an explosion.
- Ensure that there is sufficient air flow in the work area for the duration of the work.
- Only authorised personnel are allowed to service or remove refrigerant from a system.
- Do not inhale or swallow the refrigerant and avoid direct contact with skin and eyes.
- Use appropriate personal protective gear when handling the refrigerant.
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- Ensure that appropriate mechanical handling equipment, recovery equipment and refrigerant cylinders are available.
- Never use electrical or spark igniting tools on the refrigerant system.
- Never pierce or cut a refrigerant circuit.
- A powder or CO_2 fire extinguisher must be kept ready during any work on the refrigerant circuit.
- Only open the refrigerant circuit after the refrigerant has been completely retracted.
- Never release refrigerant to the air.
- Always carry out work on the open system under constant nitrogen flushing.

CAUTION

2.5 Caution

- Do not use means to accelerate the defrosting process or to clean other than those recommended by the manufacturer.
- Do not stack items against or on top of the outdoor unit as it will affect air intake or damage the unit.
- Do not build a cover around the outdoor unit that can affect airflow as this would decrease system efficiency.
- The outdoor units must be stored and transported upright.
- All products must be weather protected during transportation and storage.
- Check all products for transportation damage and contact Aira Customer Service if any damage is discovered.

2.6 Emergency procedures

WARNING

In case of fire

Do not attempt to extinguish fire. Always prioritise personal safety and immediately contact local rescue services. The outdoor unit contains a flammable high-pressure refrigerant that is explosive when in contact with flame. If the outdoor unit is at risk of catching fire, maintain a safe distance and wait for rescue personnel to extinguish it.

CAUTION

In case of water leakage

If a leak is detected, immediately shut off the water supply and protect the surroundings that could be damaged by the leaked water and contact Aira customer support immediately.

CAUTION

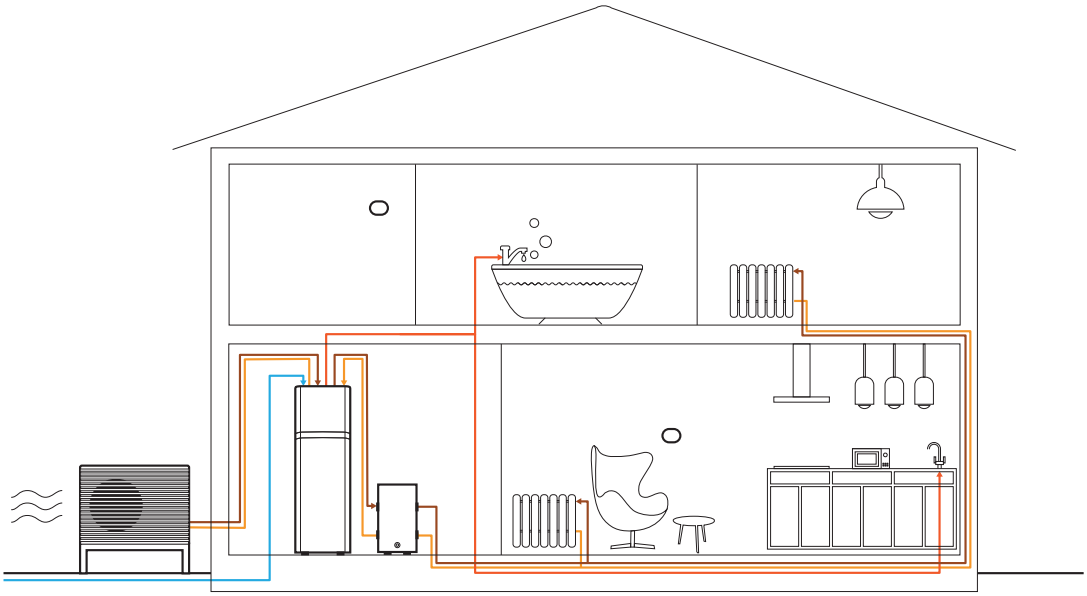
Power shut down in sub-zero temperatures

If the power is shut down for a long period of time in cold weather, there is an elevated risk that the water in the system will freeze and cause permanent damage to the indoor unit, outdoor unit, and the heating system. If the system will be without power for a long period of time, all parts that will be exposed to a sub-zero climate must be drained of water. The risk of freezing is predominantly determined by temperature, time, water volume in relation to surface area and insulation. If you are unsure, please contact Aira customer support.

3. SYSTEM DESCRIPTION

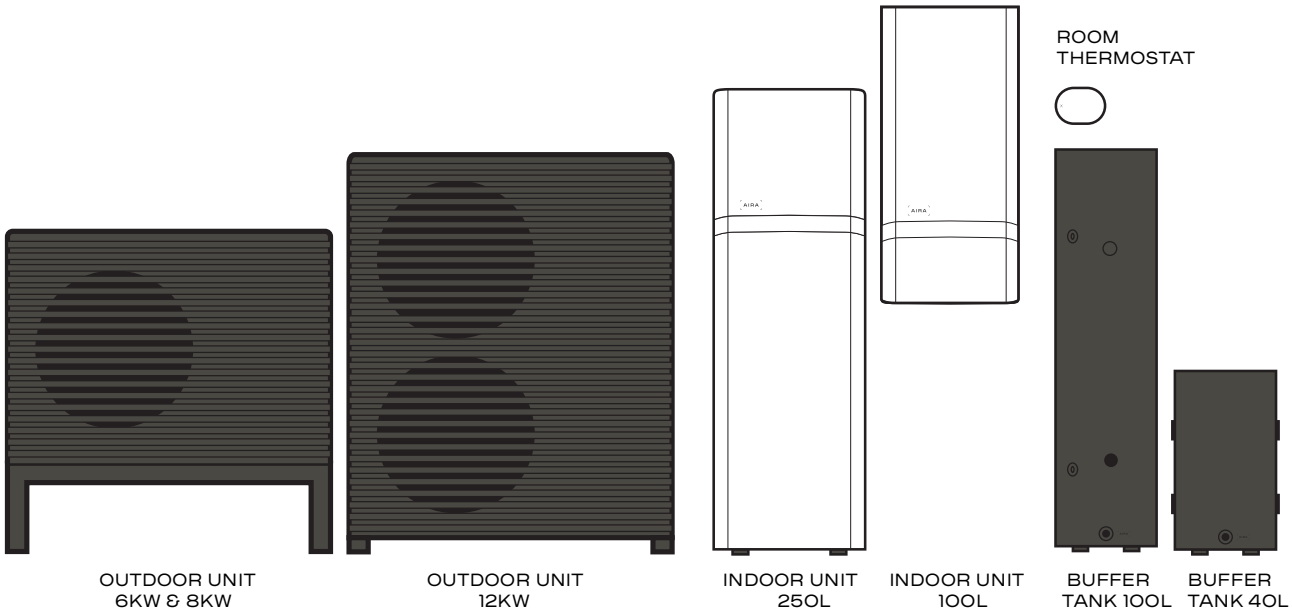
This heat pump is an air-to-water heat pump that extracts energy from the outside air to heat your home and water. The system comes with Aira Intelligence and becomes more and more intelligent over time as it learns and auto-adjusts to each home's unique conditions. The heating can be controlled and personalised in Aira's easy-to-use app and easily changed with Airas Room Thermostat.

HEAT PUMP SYSTEM PRINCIPLE



The heating system is made up of an outdoor unit, an indoor unit, and a buffer tank. They combine for ultimate home energy efficiency and comfort. In fact, Aira's heat pump system is 4 times more efficient than a gas boiler and will deliver a cosy indoor temperature even on cold days.

AIRA'S HEAT PUMP PRODUCT RANGE



3.1 System interaction

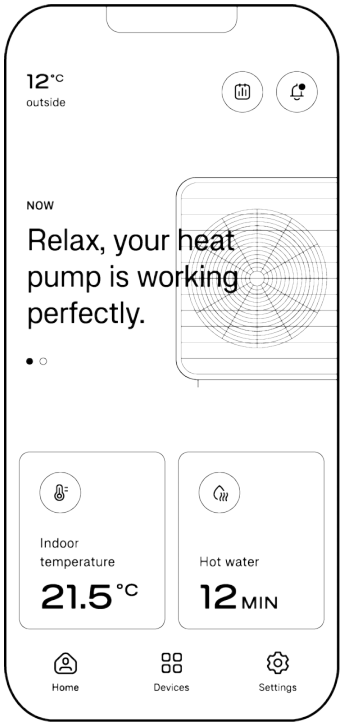
The main point of interaction with the heating system is through the Aira app. The temperature and the most used settings can also be set with the Aira Room Thermostat.

3.1.1 Aira Home Energy app

The app gives the customer complete control over the settings that they want to personalise and provide information about the system.

- √ See and set the room temperature for each heating zone
- √ Manage your hot water preferences
- √ Activate Hot Water Plus for as long as you need it.
- √ Check your consumption
- √ Turn on Away Mode
- √ See your costs and CO_2 savings
- √ Get notifications and messages

The heat pump commissioning and system settings that are fixed for the heat pump system are added in the Installers version of the app during installation.



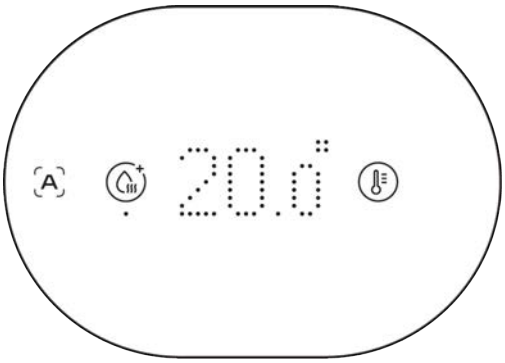
Download the Aira Home Energy app from the Apple App Store, Google Play Store or Huawei AppGallery.

Note: The Aira Home Energy app is subject to change. Visuals and features may be updated to enhance user experience and functionality.

3.1.2 Aira Room Thermostat

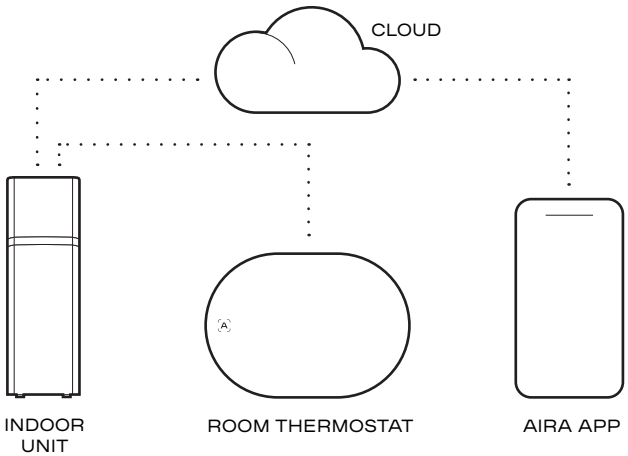
The easy access point for the home.

- √ See and set the target room temperature for the heating zones
- √ Activate Hot Water Plus
- √ Measures the heating zones current temperature



3.2 Aira Intelligence

Aira products work together to create an intelligent ecosystem. It is a self-regulating system that learns each home's unique properties and household routines to precision plan the heating and hot water access. It looks after itself, fine-tunes components, settings, and software for a continuously improved experience.



The cloud store data from the heat pump system through the indoor unit and uses Aira Intelligence to calculate the optimal heating for each home.

The heat pump system must be connected to the internet to utilise all the smart features and to receive the latest software updates. The indoor unit is prepared to be able to establish a connection though ethernet, Wi-Fi or 4G. See the Aira Indoor Units Installation Manual for more information.

3.3 Heating & cooling system regulation

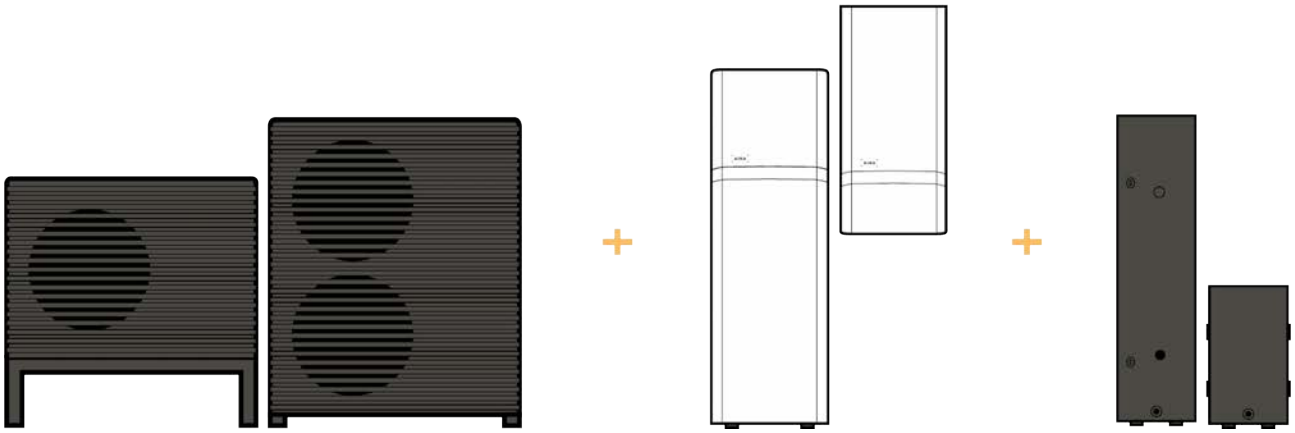
Heat pumps operate differently than traditional gas or oil boilers. They use the latest technology to keep the home warm while using as little energy as possible. Unlike gas or oil boilers, which produce intermittent bursts of heat, heat pumps perform most efficiently when they maintain a more constant indoor temperature and is allowed to optimise the heating without any interference. This means that the user should not turn off the system when they leave the home during the day or alter the target temperature too often. Study the Indoor unit Installation Manual to learn more about the heating system regulation.

3.4 Domestic hot water

The domestic hot water is stored in and distributed from the indoor unit. The tank is primarily heated by the outdoor unit, but the water tank in the indoor unit also contains a complementary immersion heater that can support and push the system heating further if needed. Learn more about the domestic hot water in the indoor unit Installation Manual.

4. SYSTEM DESIGN

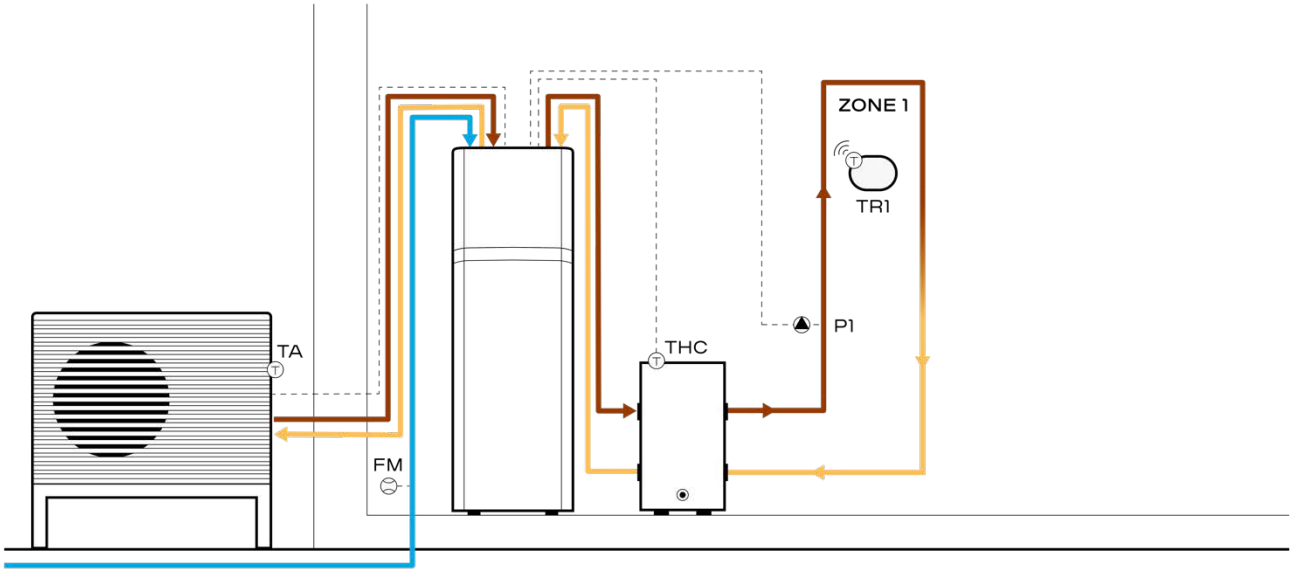
Each home is unique and will get a custom designed heating solution based on all the information that is collected during Aira's Clean Energy Expert home visits. The system dimensioning is mainly determined by size of the home and household, insulation, thickness of walls, window sizes and heating preferences. There are many different ways to combine the product dimensions in the Aira heat pump product range to get the best solution for each home.



4.1 System layout principles

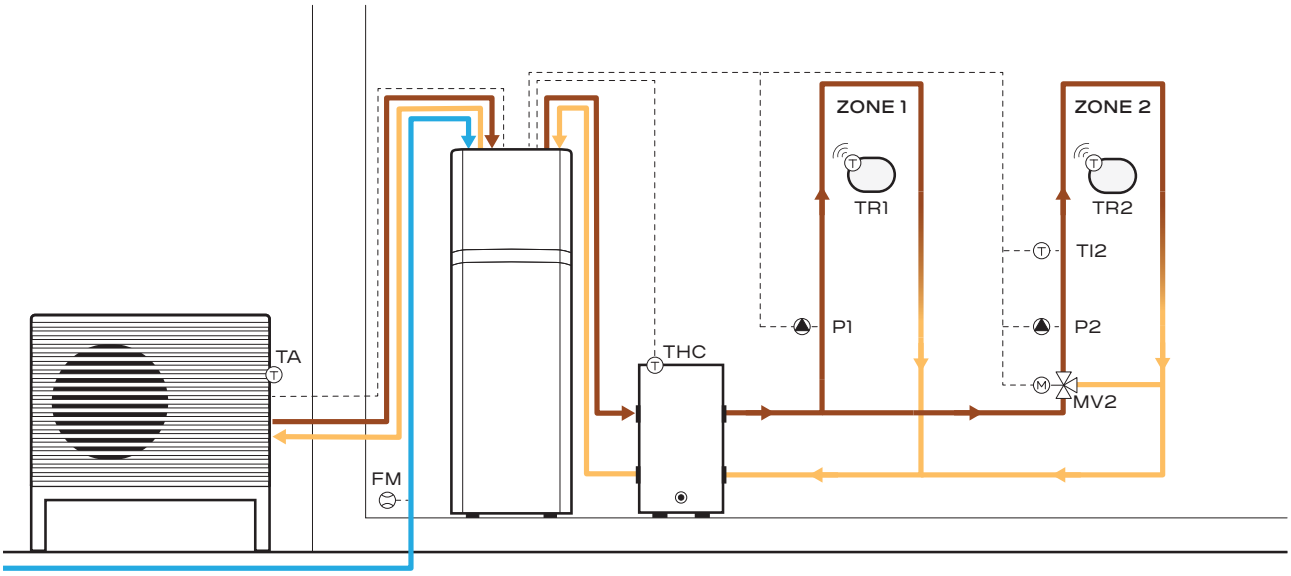
The heating system can be designed in three different ways, independent of the product dimensioning. These different layout principles (A-C) show the principal system set-ups with key components for each version. However, more additional components are installed in all heat pump systems as further detailed in the Installation chapter.

A) One heating/cooling zone without mixing valves



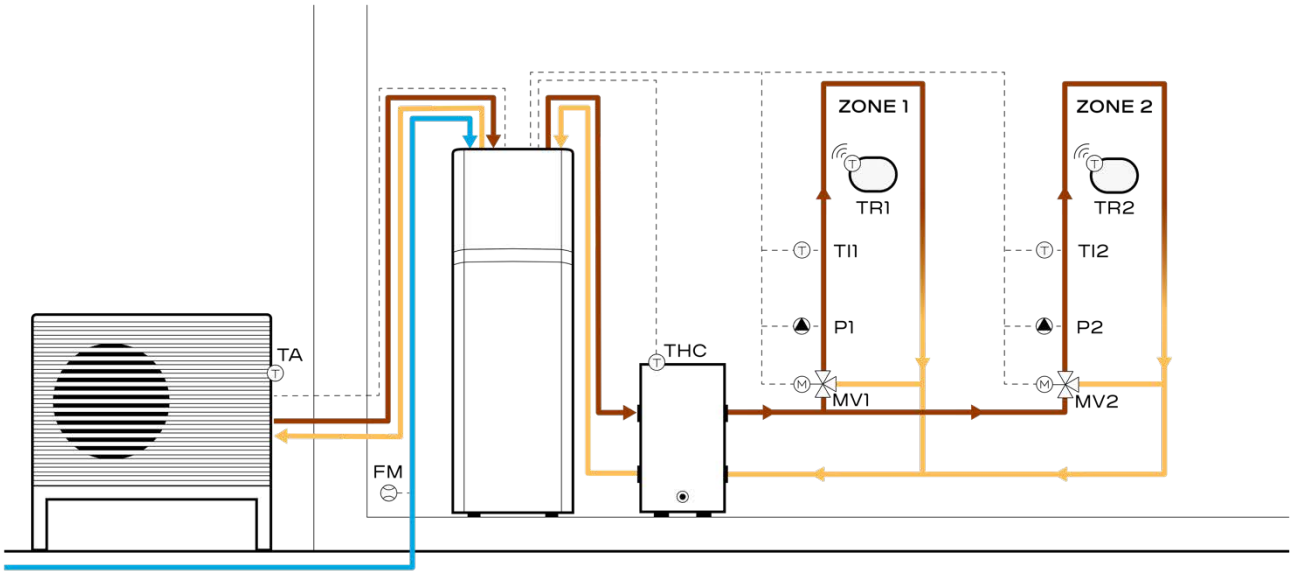
- Outdoor temperature sensor (TA)
- Buffer tank sensor (THC)
- Heating/cooling zone 1 circulation pump (P1)
- Heating/cooling zone 1 room thermostat (TR1)
- Flow meter (FM)

B) Two heating/cooling zones - one direct and one with mixing valve



- Outdoor temperature sensor (TA)
- Buffer tank sensor (THC)
- Heating/cooling zone 1 circulation pump (P1)
- Heating/cooling zone 2 circulation pump (P2)
- Heating/cooling zone 2 primary flow temperature sensor (TI2)
- Heating/cooling zone 2 mixing valve with actuator (MV2)
- Heating/cooling zone 1 room thermostat (TR1)
- Heating/cooling zone 2 room thermostat (TR2)
- Flow meter (FM)

C) Two heating/cooling zones - both with mixing valve



- Outdoor temperature sensor (TA)
- Buffer tank sensor (THC)
- Heating/cooling zone 1 circulation pump (P1)
- Heating/cooling zone 1 primary flow temperature sensor (TI1)
- Heating/cooling zone 1 mixing valve with actuator (MV1)
- Heating/cooling zone 2 circulation pump (P2)
- Heating/cooling zone 2 primary flow sensor (TI2)
- Heating/cooling zone 2 mixing valve with actuator (MV2)
- Heating/cooling zone 1 room thermostat (TR1)
- Heating/cooling zone 2 room thermostat (TR2)
- Flow meter (FM

5. PRODUCT INFORMATION

The outdoor unit collect fresh outside air and turn it into heating energy through compression. This heats the system water which is transported to the indoor unit for distribution and storage.

There are two outdoor unit dimensional sizes, but each size also come with different capacities, and with one or three phases. The standard outdoor unit size comes in 6 kW and 8 kW versions and the large one in 12 kW.

5.1 About Refrigerant R290

R290 (propane) is a natural non-toxic refrigerant with a global warming potential (GWP) of 3, which makes it significantly more eco-friendly compared to other commonly used refrigerants where the GWP can reach over 2000. This refrigerant demonstrates excellent thermodynamic properties and has a high heating efficiency.

It is highly flammable (Security class A3) and the safety distances illustrated in the “Safety and accessibility clearance zones” must be followed. All product and manufacturing safety precautions have been taken by Aira and must also be followed by the technicians and users to minimize the risk of ignition in the case of a leak. R290 is an odourless gas which makes it hard to detect a leak. This is why the safety precautions must be followed during all times.

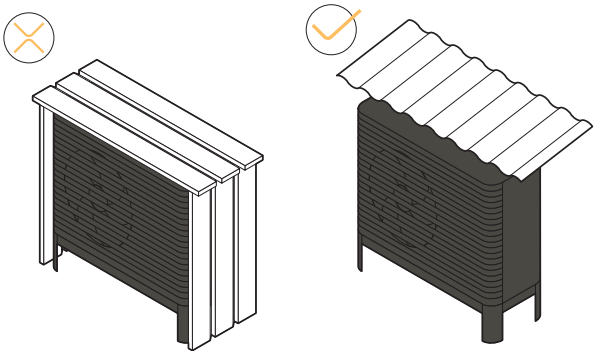
The total volume stored in the Aira Outdoor Unit is approximately 0.8-1.5 kg, resulting in about 500L of gas when mixed with air. For comparison, most common cylinders of propane used for heating & cooling in caravans & motor homes contain 4-13 kg.

5.2 Placement rules

Full compliance with the placement rules for all Aira products is mandatory to prevent damage, system failure, decreased efficiency and is a prerequisite to Aira Comfort Warranty. See each product’s Installation Manual for their placement rules.

The placement of each unit is decided together with the customer when the system is designed. The rules for the outdoor unit are the following:

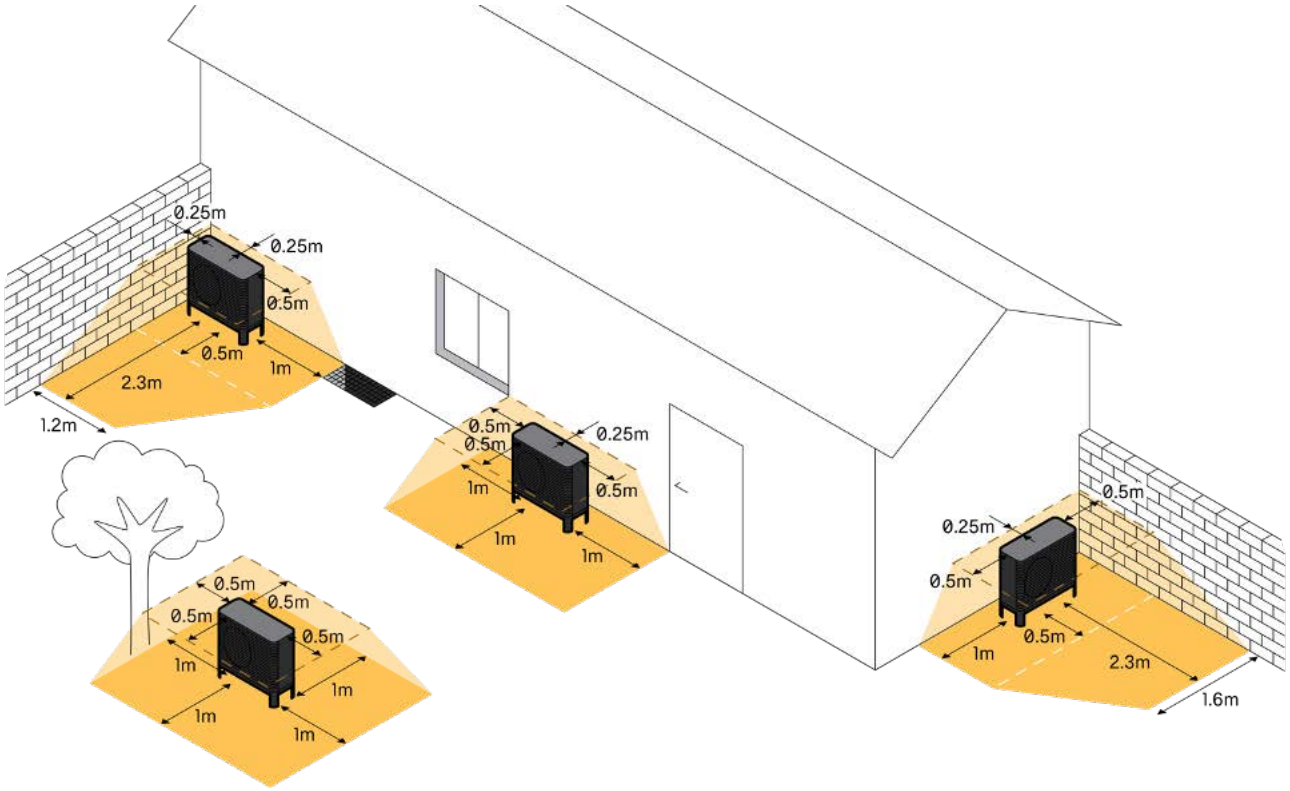
- Adhere to the safety zones stipulated by the refrigerant’s (R290) standard safety protocols and ensure sufficient space for unobstructed air flow as shown in the “Safety and accessibility clearance zones”-illustration.
- Do not place near an air inlet or window (see “Safety and accessibility Clearance zones”).
- Safeguard that there is sufficient space around the outdoor unit for maintenance.
- Do not install in an environment with volatile, corrosive, or flammable liquids or gas.
- Do not install the outdoor unit where ignition sources are placed in the area such as open flames, electrical systems, sockets, lamps, light switches, electrical house connections or sparkling tools.
- Install a protective cover over the outdoor unit if there’s a high risk of substantial snow accumulation on top of it but ensure that the air flow is not restricted.



- The maximum installation height is 2000 m above sea level.
- Ensure that it is positioned where it will not disturb residents or neighbours, in an area that won't produce an echo or near sensitive rooms such as bedrooms.

- If possible, place it by an existing drain to avoid the need to install extra drainage for melt and condensation water.
- Ensure that there will be no risk of blockage to the outdoor unit's air inlet.
- Use the Leg Stand and/or other spacers to elevate the unit above the average local snow depth, or at least 200 mm above the ground.
- Install the outdoor unit on a flat and solid foundation that can hold the weight of the unit. Never place it directly on grass or soil.
- The outdoor unit should be placed as closed as possible to the indoor unit as possible.
-

SAFETY AND ACCESSIBILITY CLEARANCE ZONES



5.3 Product information

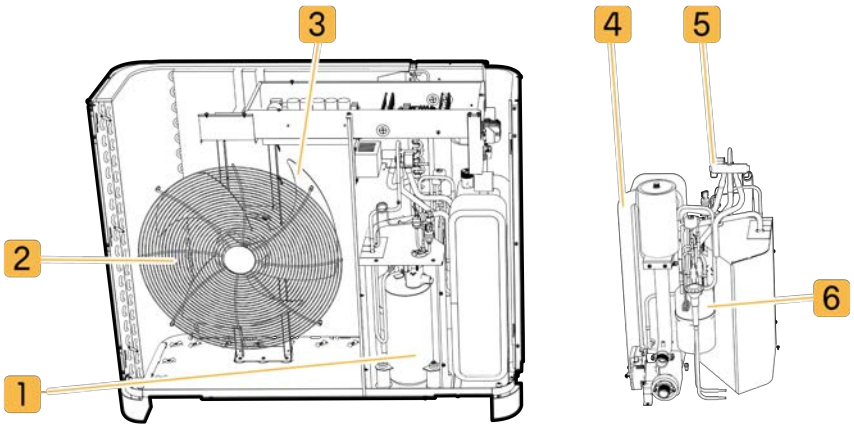
Product information for the following air-to-water combination heat pumps equipped with supplementary electric heater with variable capacity control and measured at medium temperature application.

Model		HPO-AW-6-230V-1.0	HPO-AW-8-230V-1.0
Net dimension		1216×425×1005 mm	1216×425×1005 mm
Net weight		116 kg	126 kg
Packaged weight		135 kg	140 kg
IP-rating		IPX4	IPX4
Operating limits		-25°C to 45°C	-25°C to 45°C
Power supply (grounded)		230 V / 1 N / 50 Hz	230 V / 1 N / 50 Hz
Rated heat output (*Prated*)		5,6 kW	9,2 kW
Seasonal space heating energy efficiency (η_s)		144 %	141 %
Energy efficiency class (55oC / 35oC)		A++ / A+++	A++ / A+++
Declared capacity for heating (*Pdh*) / Declared coefficient of performance (*COPd*)	-7ºC	5,9 kW / 2,50	7,7 kW / 2,40
	2ºC	3,8 kW / 3,69	4,9 kW / 3,58
	7ºC	2,8 kW / 4,52	4,1 kW / 4,73
	12ºC	3,7 kW / 6,40	4,9 kW / 6,46
	T_{biv}	5,9 kW / 2,50	7,7 kW / 2,40
	TOL	6,7 kW / 2,24	6,6 kW / 2,03
Bivalent temperature T_{biv})		-7ºC	-7ºC
Operation limit temperature (TOL)		-10ºC	-10ºC
Cycling interval capacity for heating (P*cych*)		-	-
Degradation co-efficient (*Cdh*)		0,9	0,9
Cycling interval efficiency (COP*cyc*)		-	-
Heating water operating limit temperature (WTOL)		70ºC	70ºC
Power consumption in Off mode (P_{OFF})		0,012 kW	0,011 kW
Thermostat-off mode (P_{TO})		0,041 kW	0,046 kW
Standby mode (P_{SB})		0,012 kW	0,011 kW
Crankcase heater mode (P_{CK})		0,030 kW	0,030 kW
Supplementary heater rated heat output (*Psup*)		1,4 kW (electricity)	2,0 kW (electricity)
Sound power level, indoors/outdoors (L_{wa})		45 dB / 57 dB	45 dB / 56 dB
Rated air flow rate, outdoors		3150 m^3/h	3300 m^3/h
Refrigerant		R290	R290
Global warming potential (GWP)		3	3
CO2 equivalent		0,0021 t	0,0027 t
Max. Operation Pressure		31 bar	31 bar
Min. Operation Pressure		0,4 bar	0,4 bar
Heating system pressure		2,5 bar	2,5 bar

Model		HPO-AW-12-400V-1.0
Net dimension		1152×416×1503 mm
Net weight		172 kg
Packaged weight		192 kg
IP-rating		IPX4
Operating limits		-25°C to 45°C
Power supply (grounded)		230 V / 1 N / 50 Hz
Rated heat output (*Prated*)		12,8 kW
Seasonal space heating energy efficiency (η_s)		136 %
Energy efficiency class (55oC / 35oC)		A++ / A+++
Declared capacity for heating (*Pdh*) / Declared coefficient of performance (*COPd*)	-7ºC	10,3 kW / 2,23
	2ºC	6,3 kW / 3,36
	7ºC	5,5 kW / 4,94
	12ºC	6,6 kW / 6,38
	T_{biv}	10,3 kW / 2,23
	TOL	9,4 kW / 2,03
Bivalent temperature T_{biv})		-7ºC
Operation limit temperature (TOL)		-10ºC
Cycling interval capacity for heating (P*cych*)		-
Degradation co-efficient (*Cdh*)		0,90
Cycling interval efficiency (COP*cyc*)		-
Heating water operating limit temperature (WTOL)		70ºC
Power consumption in Off mode (P_{OFF})		0,022 kW
Thermostat-off mode (P_{TO})		0,056 kW
Standby mode (P_{SB})		0,022 kW
Crankcase heater mode (P_{CK})		0,060 kW
Supplementary heater rated heat output (*Psup*)		2,3 kW (electricity)
Sound power level, indoors/outdoors (L_{wa})		45 dB / 57 dB
Rated air flow rate, outdoors		6300 m³/h
Refrigerant		R290
Global warming potential (GWP)		3
CO2 equivalent		0,0021 t
Max. Operation Pressure		31 bar
Min. Operation Pressure		0,4 bar
Heating system pressure		2,5 bar

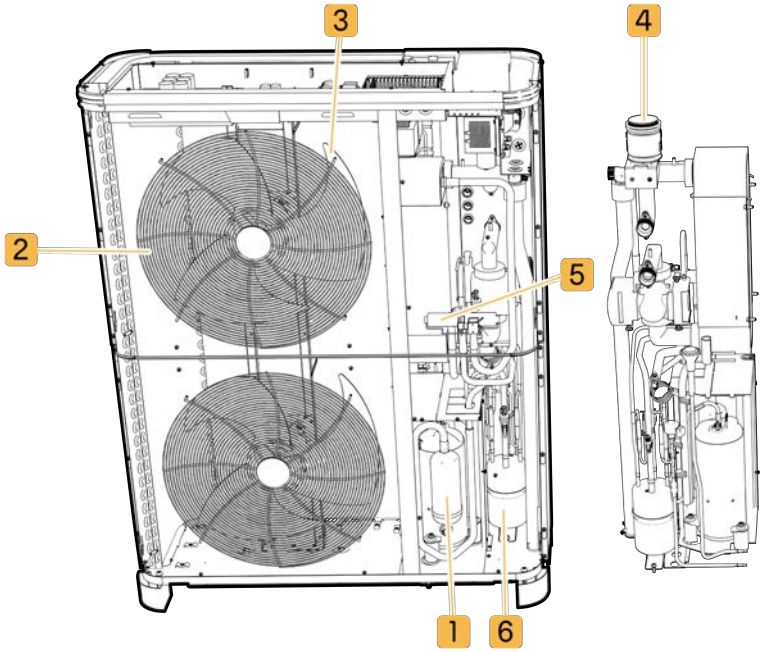
5.4 Product overview

AIRA OUTDOOR UNIT 6KW & 8KW



1. Compressor
2. Fan grill
3. Fan
4. Gas separator kit
5. Four-way valve
6. Liquid receiver

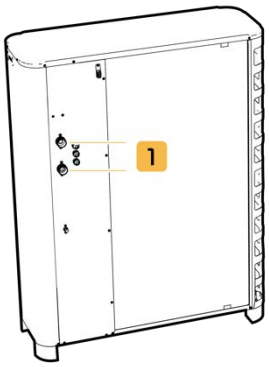
AIRA OUTDOOR UNIT 12KW



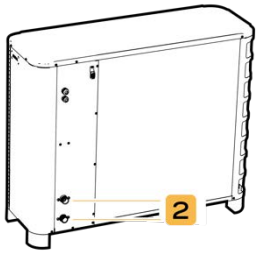
1. Compressor
2. Fan grill
3. Fan
4. Gas separator kit
5. Four-way valve
6. Liquid receiver

5.5 Pipe Connections

AIRA OUTDOOR UNIT 12 KW



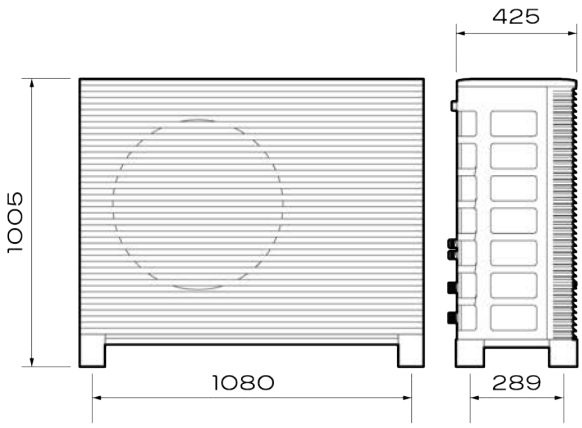
AIRA OUTDOOR UNIT 6KW & 8KW

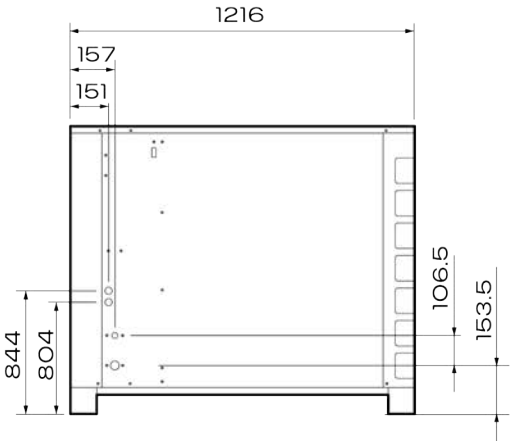


1. Connection type G1 ¼”
2. Connection type G1”

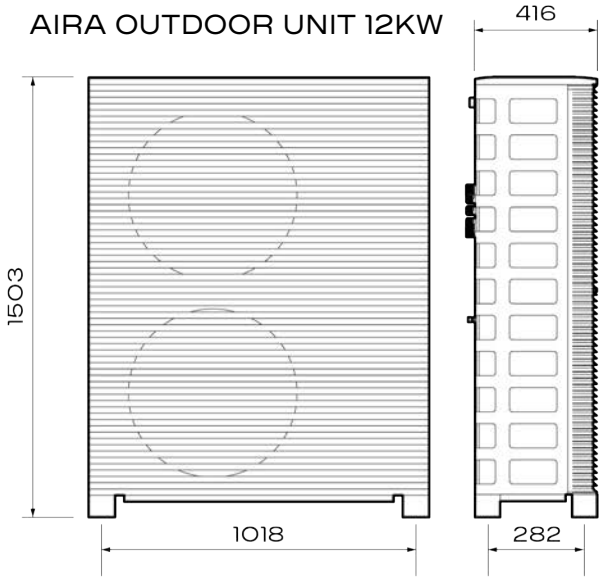
5.6 Dimensions

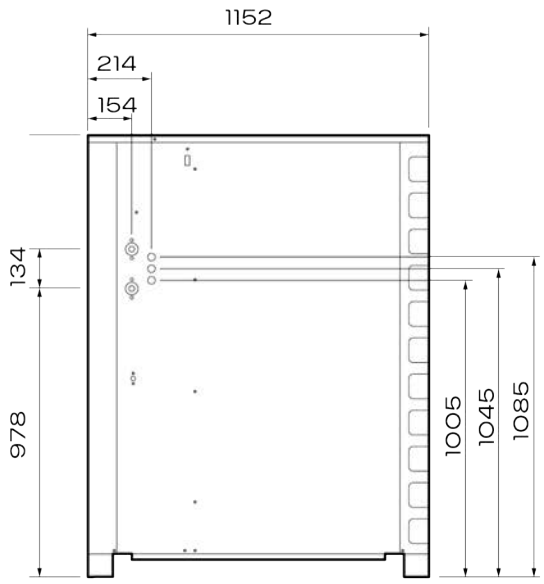
AIRA OUTDOOR UNIT 6KW & 8KW





AIRA OUTDOOR UNIT 12KW



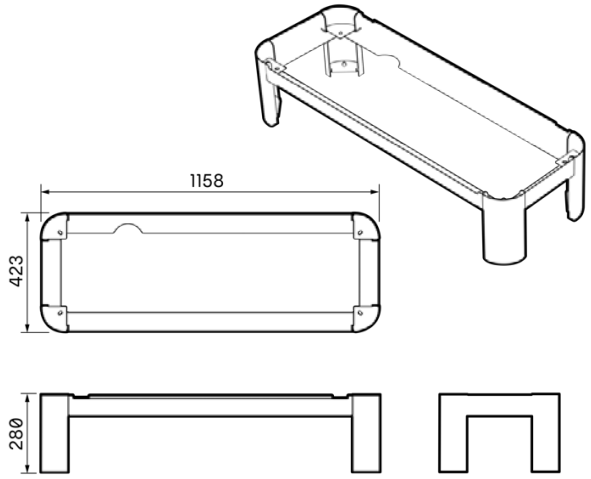


5.8 Leg stands with drain pan

The leg stand is used to lift the Aira Outdoor Unit up above the ground to protect it from snow, leaves and dirt.

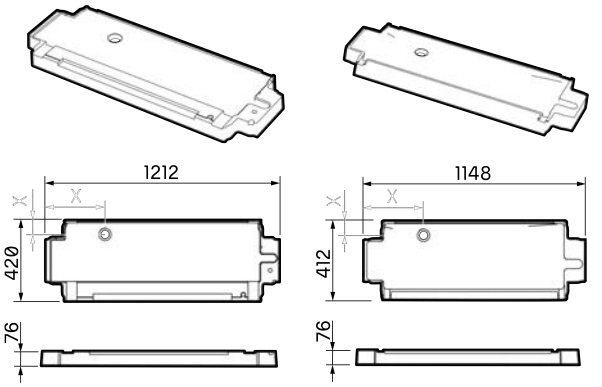
The drain pan is placed inside in the leg stand to collect the condensed water to lead it away in a controlled manner through the condensation pipe.

LEG STAND 6KW & 8KW UNIT

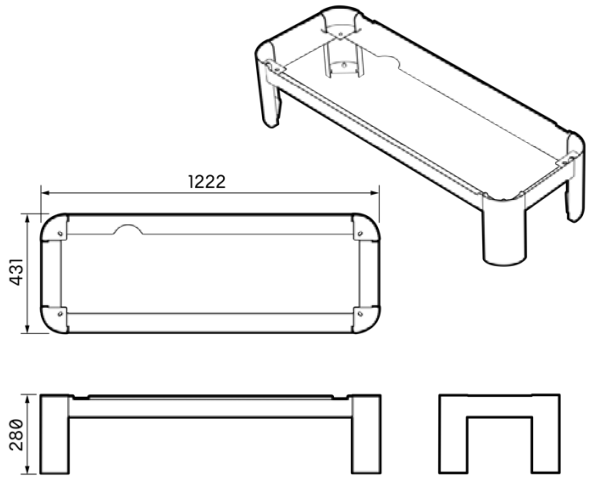


DRAIN PAN FOR 12 KW UNIT

DRAIN PAN FOR 6KW & 8 KW UNIT



LEG STAND FOR 12KW UNIT



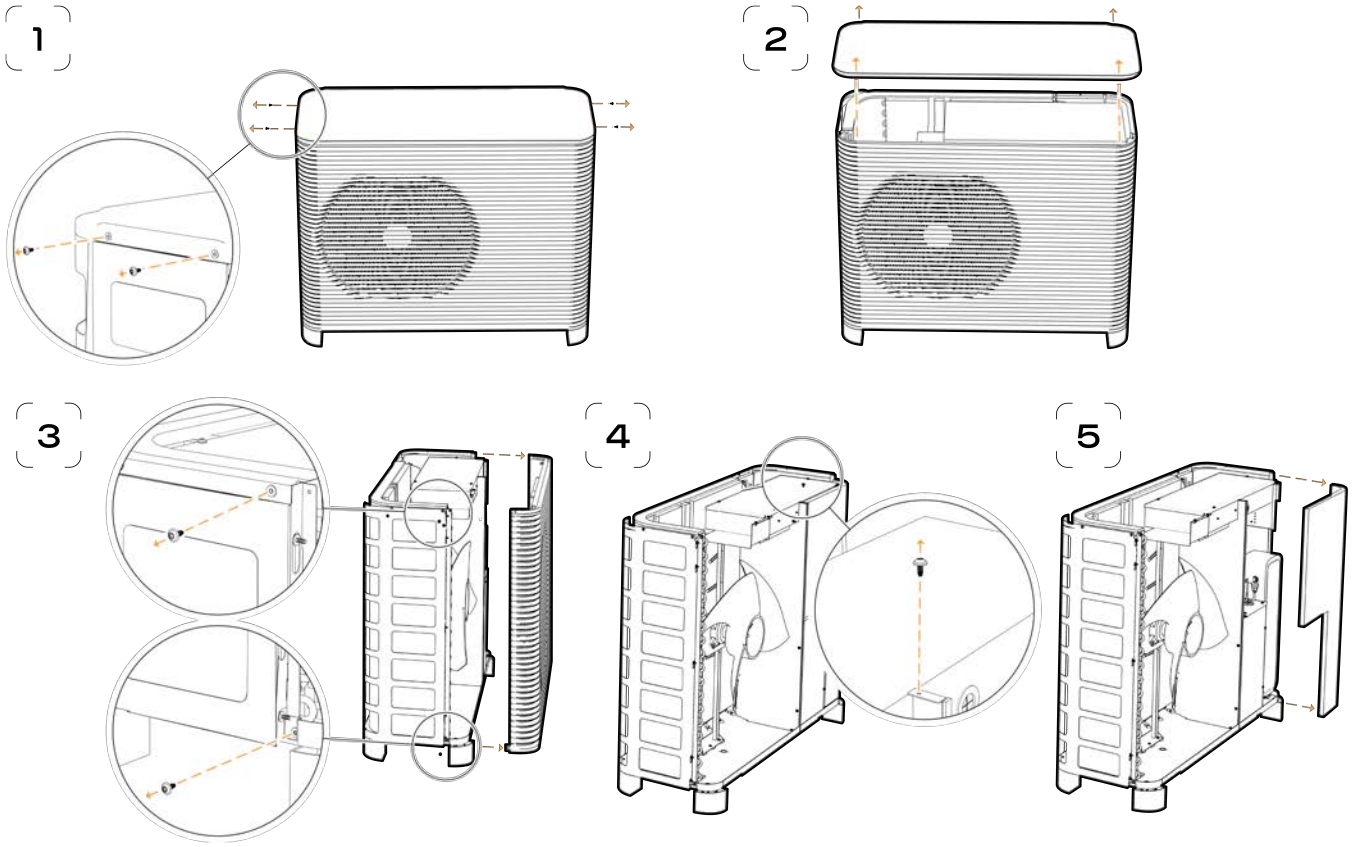
5.9 Heating cable

A heating cable must be installed with the condensation pipe to reduce the risk of water freezing inside the pipe during defrost.

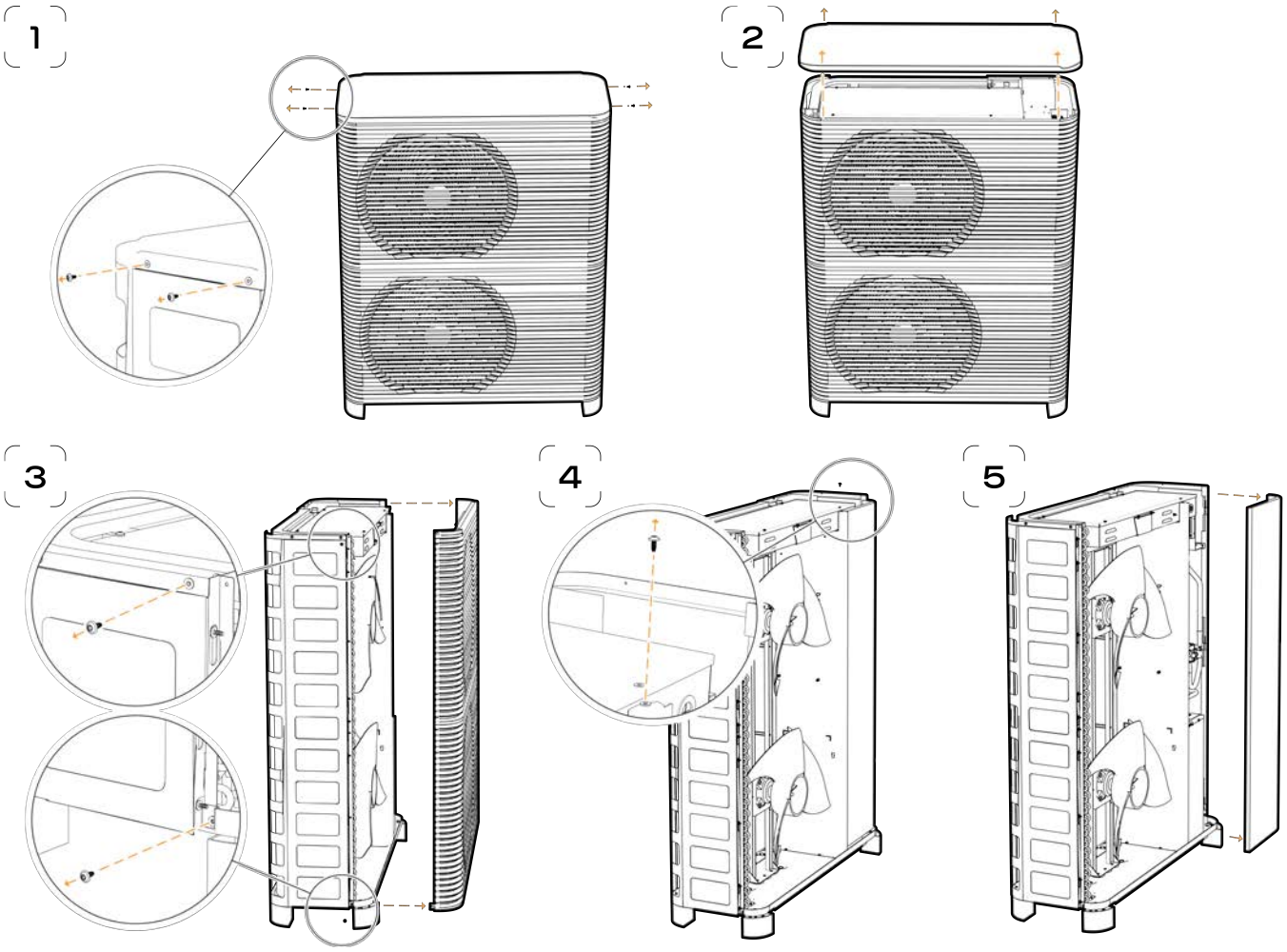
5.10 Removing the cover panels

1. Loosen the four screws on the side of the top plate.
2. Lift the top plate upward.
3. Remove the two screws on the top and bottom of the side panels front and pull the front cover straight out.
4. Remove the screw over the compressor compartment.
5. Pull the compressor compartment cover straight out.

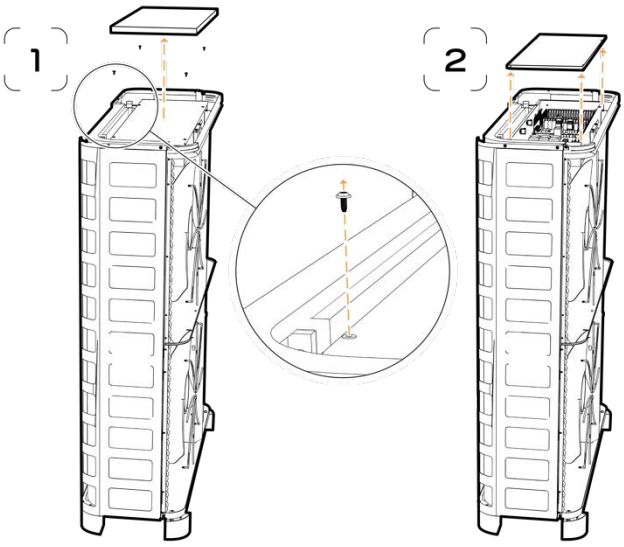
AIRA OUTDOOR UNIT 6KW & 8KW



AIRA OUTDOOR UNIT 12 KW



5.11 Access the electrical box

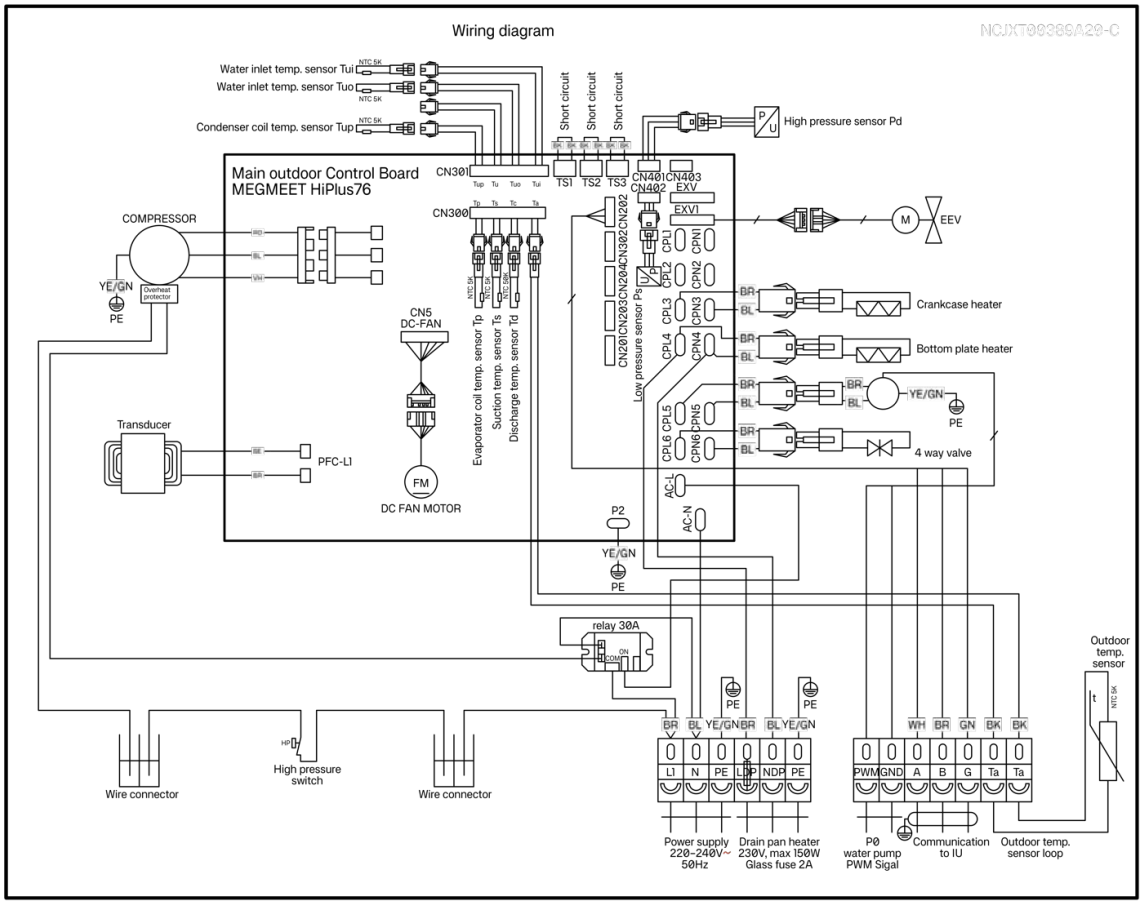


Remove the electric box cover to access the outdoor unit electric box.

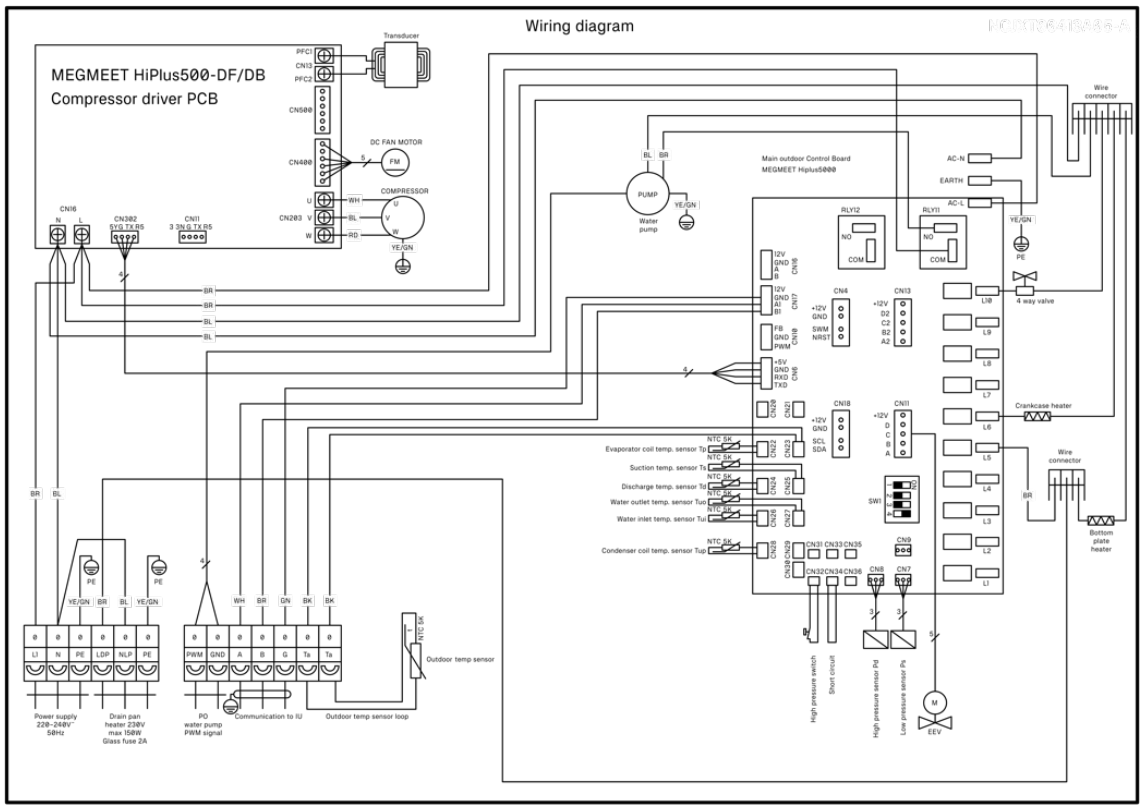
1. Remove the four screws in the cover.
2. Pull the coverer straight up.

5.12 Internal wiring diagrams

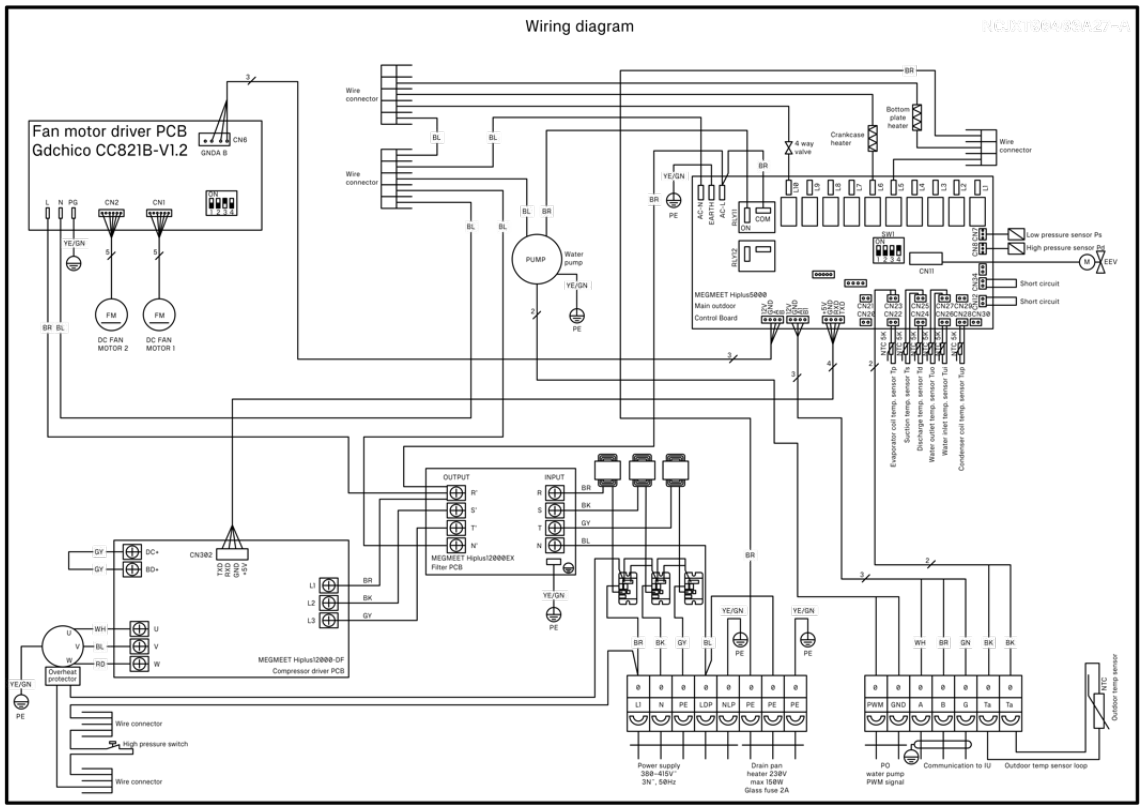
OUTDOOR UNIT 6 KW



OUTDOOR UNIT 8 KW



OUTDOOR UNIT 12 KW



6. INSTALLATION

Study the complete Installation Manual for each product in the system before the installation start. All instructions and safety measures must be followed to ensure personal safety and reduce risk of product or property damage.

6.1 Transportation & Storage

WARNING

- The Aira Outdoor Unit must be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation. Be aware that the refrigerant in the outdoor unit is clear and odourless, making it difficult to detect a leak.
- The outdoor units are heavy and require appropriate lifting and transportation support to avoid injury or damage.
- Use appropriate measures to prevent tip-over accidents until the products are mounted and secured as it can harm people, property and damage the products.

CAUTION

- The outdoor units must be stored and transported upright.
- All products must be weather protected during transportation and storage.
- Check all products for transportation damage and contact Aira Customer Service if any damage is discovered.

6.2 Remove old products

Follow each products' manual for how to detach the old products and disassemble parts if needed to reduce weight. These items must be recycled properly and according to local regulations at a recycling facility for safe disposal.

6.3 Prepare the drainage

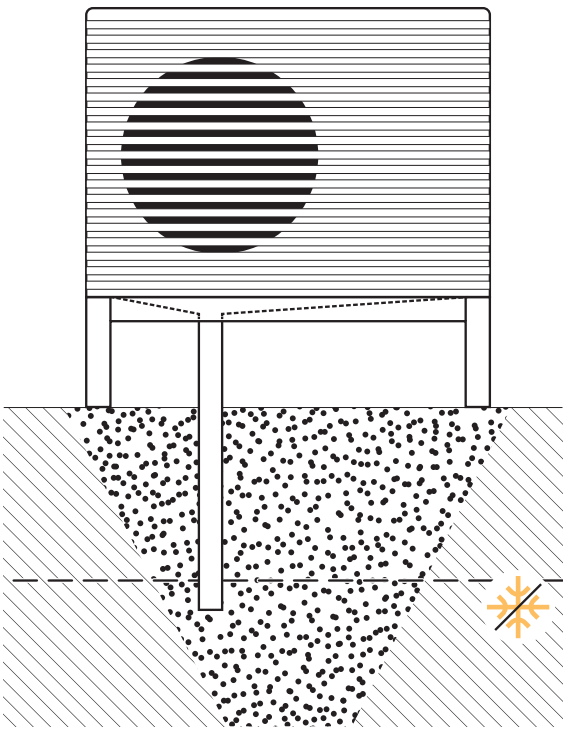
CAUTION

- Make sure that the drainage follows local regulations.
- It is imperative that the drainage is frost-free in all drainage types.
- The drainage for the condensation tray must be installed in a correct way to ensure proper operation. If installed the wrong way, there can be an ice build-up in the condensation tray that might damage the outdoor unit or cause issues with the continuous operation. Any water pipes that risk frost must be installed with a suitable heating cable.

Place the heating cable in the ground drainage when the drainage is prepared. See chapter 7.5 for the electrical connection.

There are two different ways to install the drainage correctly. These are leading the water away straight down through a stone caisson down to frost free depth or connecting it to the home's drain.

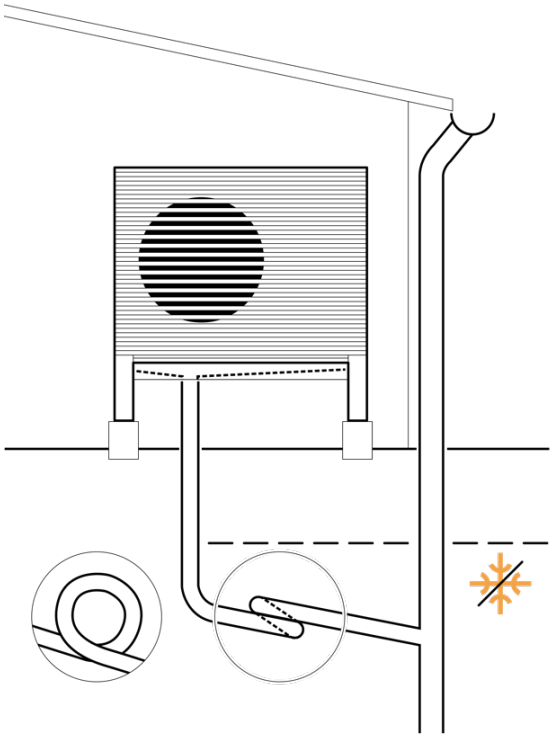
Stone caisson



The stone caisson must be constructed in such a way that it does not affect the house.

- If the house does not have a cellar, then the stone caisson can be placed directly under the outdoor unit.
- If the house has a cellar, then the stone caisson must be placed so that the condensation water is not transported towards the house.

Gutter drainage



When installing the condensation water drainage to a gutter drainage it is critical that the drainage pipe has a water seal to prevent air circulation in the drainage pipe. Ensure that the outlet of the condensation water pipe is at a frost-free depth.

6.4 Placing the outdoor unit

WARNING

- Secure the outdoor unit to avoid tipping accidents.
- Be aware that the outdoor unit is heavy and must be handled accordingly.
- Lifting straps must be used to place the outdoor unit in the leg stand.

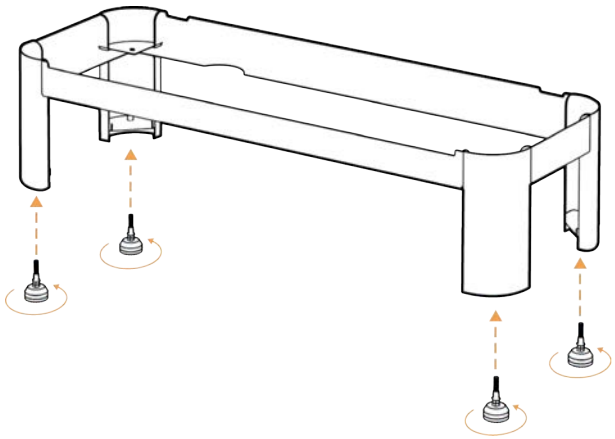
CAUTION

- Tilt the outdoor unit with stand slightly backward to decrease risk of ice build-up.
- The drainage for the condensation tray must be installed in a correct way to ensure proper operation. If installed the wrong way, there can be an ice build-up in the condensation tray that might damage the outdoor unit or cause issues with the continuous operation.

Create a solid flat level surface that can carry the weight of the outdoor unit over the prepared drainage. Position the outdoor unit directly on the foundation, spacers or use the leg stand. If the leg stand is used, start by preparing the drain pan for the stand.

6.4.1 Mount the adjustable feet

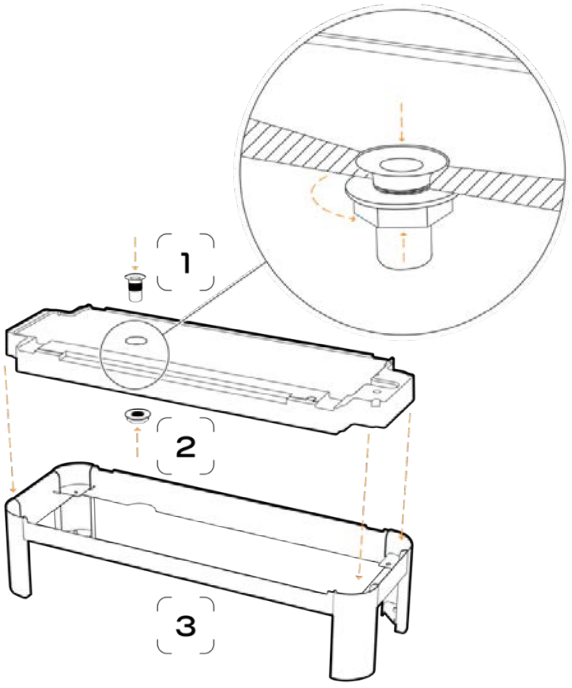
Mount the adjustable feet in the bottom of the outdoor unit or in the leg stand if the leg stand is used. Always screw them in as far as possible as a starting point for the levelling.



Use lifting straps and tilt the outdoor unit backwards to mount the front feet and forward to mount the back feet when the outdoor unit is used without the leg stand.

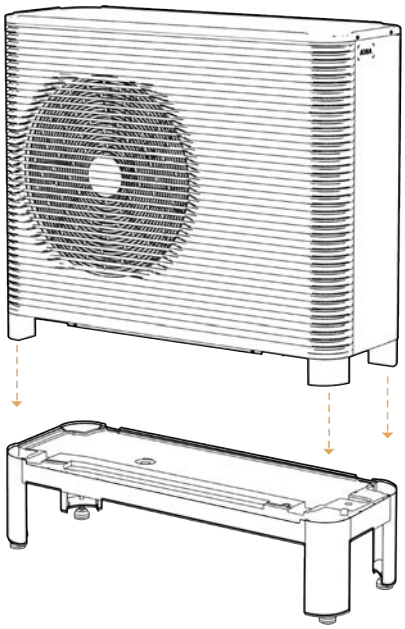
6.4.2 Mount the drain pan

Place the plastic pipe connection in the drain pan from the top (1) and fasten it with the supplied nut from the bottom (2).



Attach the drainpipe to the bottom part of the pipe connection with a hose clamp and place the drain pan in the leg stand (3).

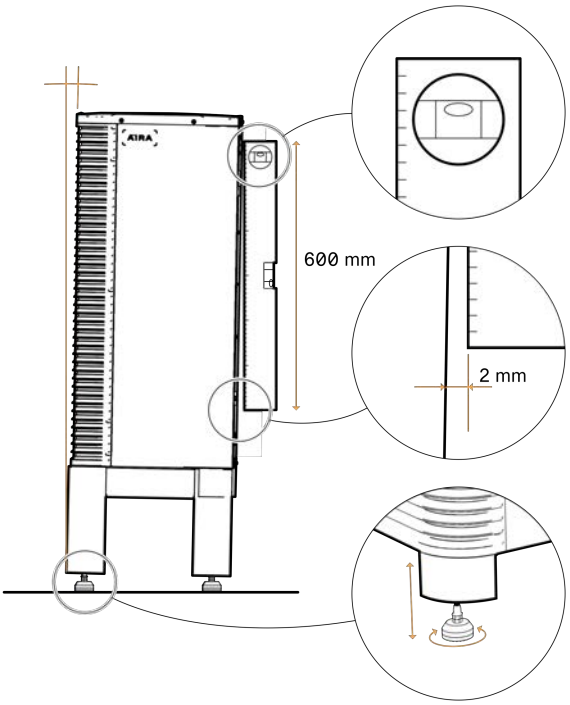
6.4.3 Lift the outdoor unit in place



Lift the outdoor unit in place using lifting straps. Place it on top of the leg stand when that is used. Never attempt to place the outdoor unit in the leg stand without appropriate lifting equipment and keep hands away from the impact area as that risk serious injury.

6.4.4 Level the outdoor unit

The outdoor unit must be slightly tilted backward and be completely level from side to side. Turn the adjustable feet and use a lever from side to side and vertically to achieve approximately 2 mm distance over 600 mm when the lever shows complete level.



The feet should never be screwed out further than maximum 30 mm to prevent bending.

6.4.5 Tip over protection

When the placement is complete, secure the installation in place using a chain or strap if the placement and surrounding environment demand it to prevent tip over accidents. It is possible to use the metal grid in the back right side or one of the pipe connection screws to connect the tip over protection to the outdoor unit.

6.5 Connecting water pipes to the outdoor unit

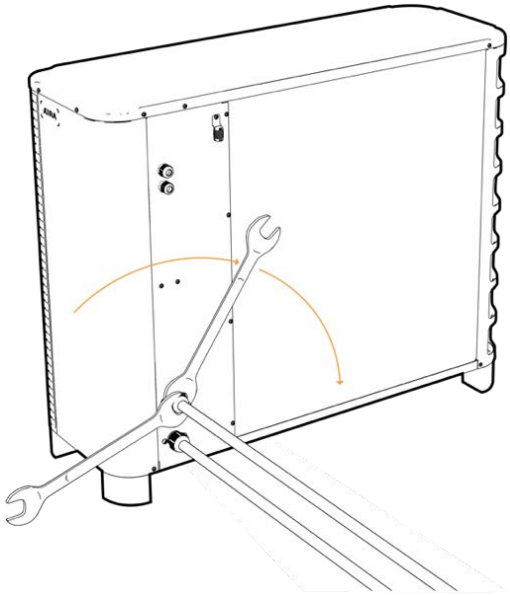
CAUTION

- The piping must be installed in accordance with current norms and directives.
- The system must be flushed, and pressure tested with water before the heat pump is connected to remove any residues that could damage the system.
- Insulate all outdoor and hot water pipes to reduce heat transfer loss and protect them from the cool air outside. The insulation must be tied up tightly without gaps.
- Seal the holes in the walls with fire-rated insulation foam and cover with ducting

Connect pipes to outdoor unit and use type, insulation type and thickness in accordance with national standards.

National piping standards

Italy	Stainless steel pipes all the way from the indoor unit
Germany	Flexible hoses including thick insulation (200% thickness is mandatory in Germany)
UK	Insulated flexible hoses (insulation thickness min. 19mm)



6.6 Filling the system

The hot water tank and system must be filled with clean water. This is safeguarded in Germany by adding clean water from a water tank instead of using the city water to fill the radiator heating system. In the United Kingdom and Italy on the other hand, the city water is deemed clean enough to fill up the system.

The pressure relief valves must be open during filling so that all air in the system is completely emptied.

7. ELECTRICAL INSTALLATION

WARNING

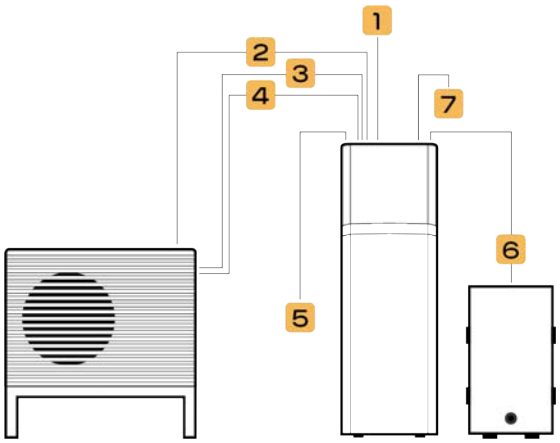
- The unit must be completely disconnected from a power source for more than one minute and voltage checked before any electrical service or installation is performed.
- It is mandatory to use an all-pole circuit breaker for both the indoor and outdoor units.
- Both the indoor and outdoor units are Class 1 units and must be connected to protective earth.
- All electrical wiring, connections and dimensioning must comply to all local standards and regulations.
- The provided galvanic overload protection PCB must be installed on the communication cable between the indoor and outdoor unit.
- Ensure that the power supply cable is not damaged before it is connected. Contact Aira customer support if a damage is detected as replacement must be performed by an authorised technician.
- Make sure no wear, corrosion, excessive pressure, vibration, sharp edges, or any other impact in the surrounding environment will affect the cabling. Consider the effects of aging or continual vibration from sources such as compressors or fans.
- All electrical work must be performed by a licensed professional and comply with local regulations.
- All cables must be properly secured into place.
- It is mandatory to fill in the installation specifications on the information stickers on the indoor unit.

7.1 Wiring overview

The following overview show the standard wiring installation examples for the different heat pump system installation principles (A-C).

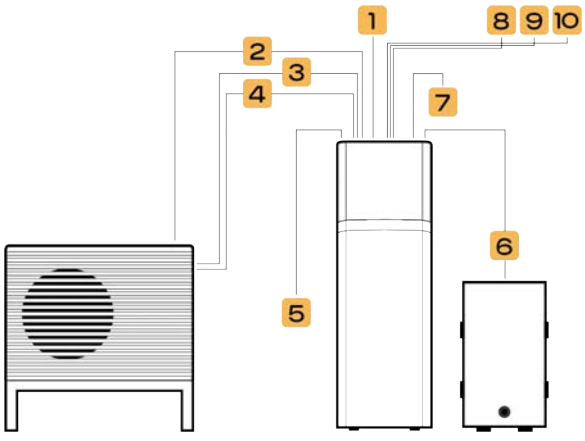
(A) One heating/cooling zone without mixing valve

1. Mains power supply
2. Power supply to the outdoor unit
3. Modbus communication
4. Outdoor unit PWM regulating pump
5. Flow meter
6. Buffer tank temperature sensor
7. Circulation pump (P1)



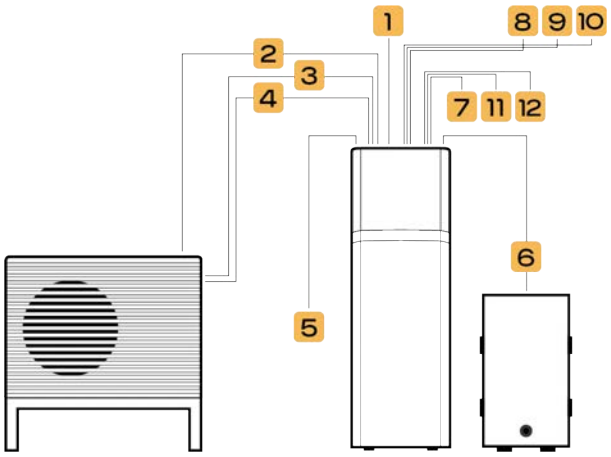
B) Two heating/cooling zones - one direct and one with mixing valve

1. Mains power supply
2. Power supply to the outdoor unit
3. Modbus communication
4. Outdoor unit PWM regulating pump
5. Flow meter
6. Buffer tank temperature sensor
7. Circulation pump (P1)
8. Circulation pump (P2)
9. Mixing valve (MV2)
10. Primary flow temperature sensor (TI2)



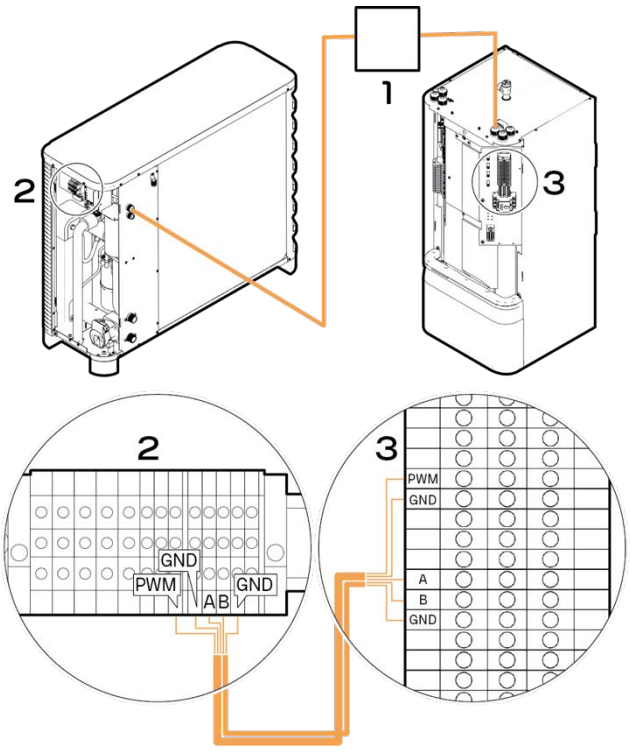
C) Two heating/cooling zones - both with mixing valve

1. Mains power supply
2. Power supply to the outdoor unit
3. Modbus communication
4. Outdoor unit PWM regulating pump
5. Flow meter
6. Buffer tank temperature sensor
7. Circulation pump (P1)
8. Circulation pump (P2)
9. Mixing valve (MV2)
10. Primary flow temperature sensor (TI2)
11. Mixing valve (MV1)
12. Primary flow temperature sensor (TI1)



7.2 Connect the communication cable

Mount an electrical box near the indoor unit to fit a galvanic overload protection PCB. Use the supplied Modbus communication cable with pre-assembled ferrite ends for the outdoor and indoor unit connection.

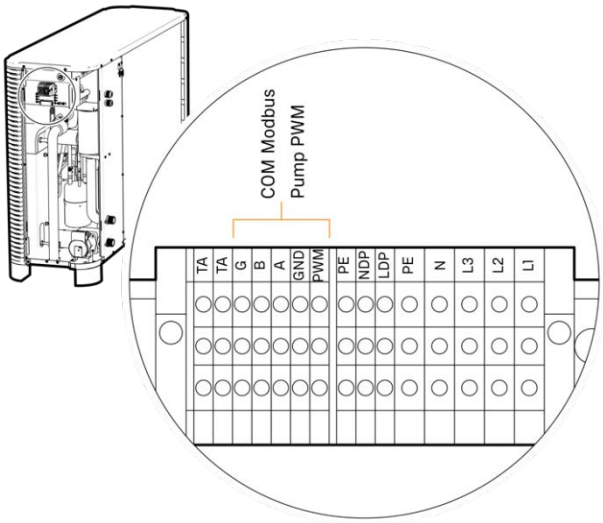


Cut this cable at an appropriate location where both cut ends will be able to reach the electrical box.

Connect the cut ends to the galvanic overload protection PCB in the electrical box (1). Connect the ferrite ends to the outdoor unit (2) and indoor unit (3) connection plinths.

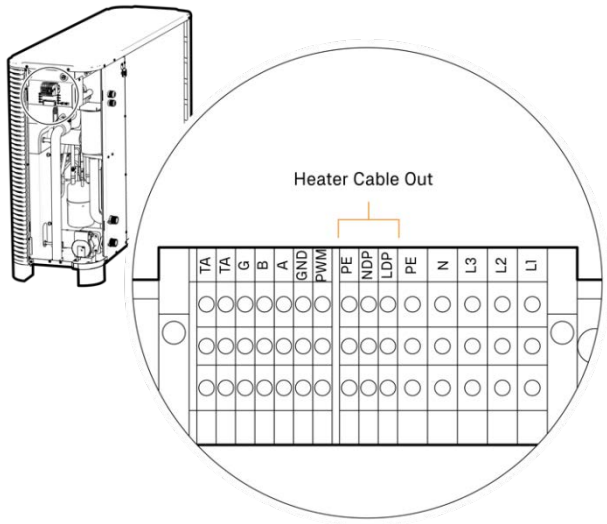
7.3 Connect the regulating pump

The outdoor unit regulating PWM pump (P0) is wired separately to the indoor unit. Use a screened (LiYY 5x0,34mm^2 or equal) communications cable to connect them to the connection plinths.



7.4 Connect the heating cable

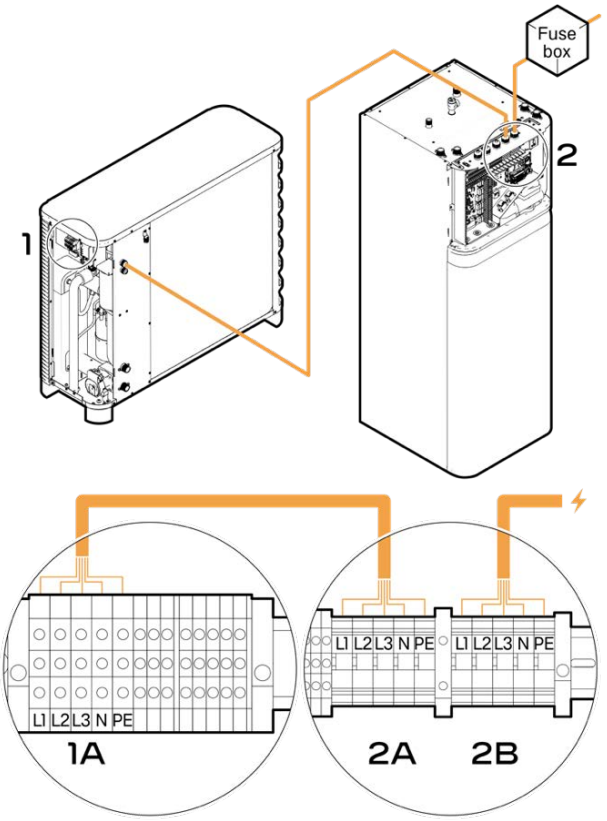
Any water pipes that risk freezing must be installed with a suitable heating cable. Connect the cable to LDP, NDP & PE in the connection plinth. The maximum allowed power for the heating canle is 150W.



7.5 Connect the power supply to the indoor unit

The power supply for the outdoor unit is routed through the indoor unit.

Connect the power supply cable to the outdoor (1A) and indoor (2A) unit connection plinths.

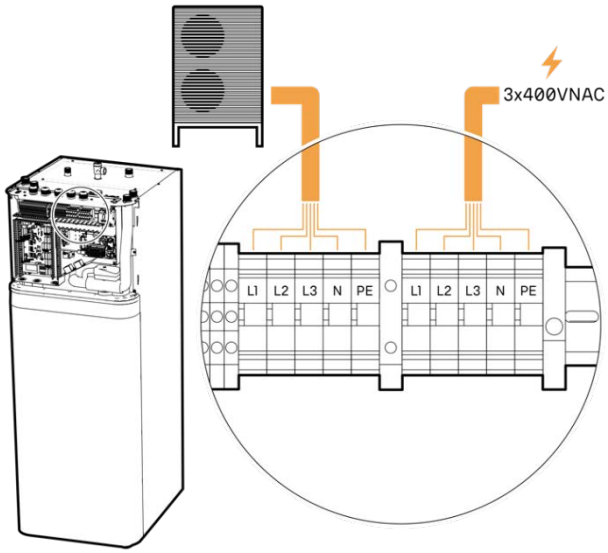


Connect the mains power supply cable from the fuse box to the connection plinth in the indoor unit (2B).

7.5.1 Power supply versions

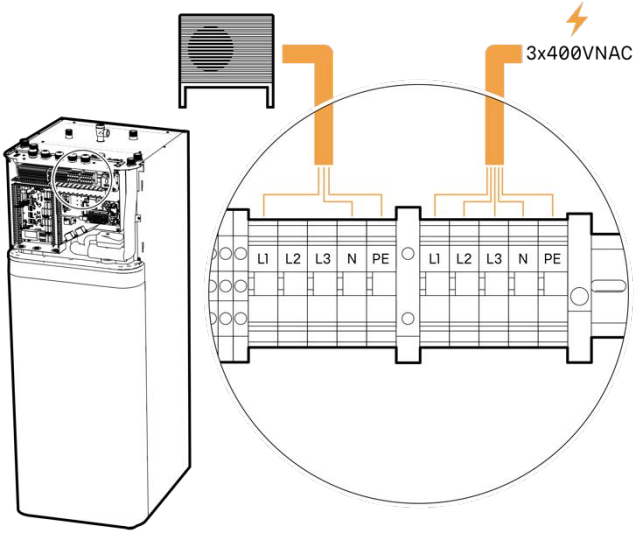
3-PHASES

250L indoor unit 3x400VNAC power supply to outdoor unit 3x400VNAC connection



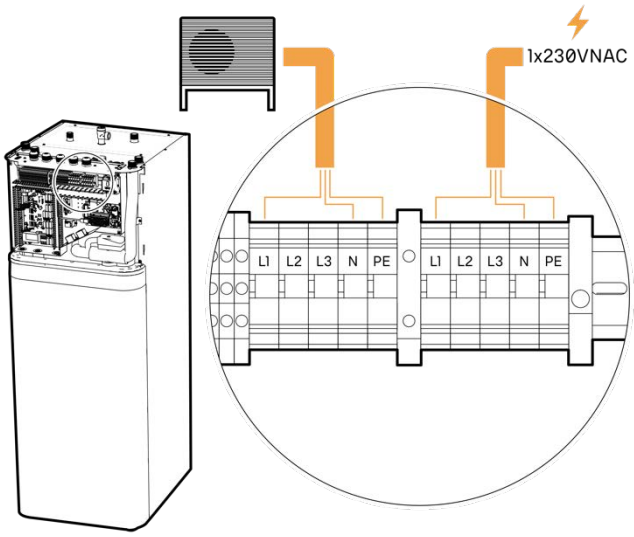
3-PHASES TO 1-PHASE

250L indoor unit 3x400VNAC power supply to outdoor unit 1x230VNAC connection



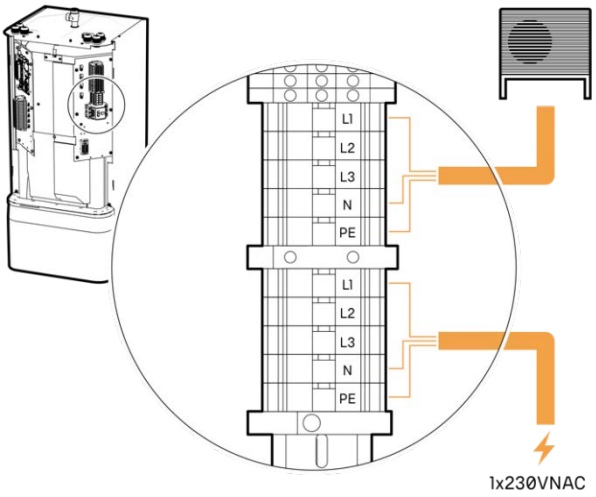
1-PHASE

250L indoor unit 1x230VNAC power supply
to outdoor unit 1x230VNAC connection



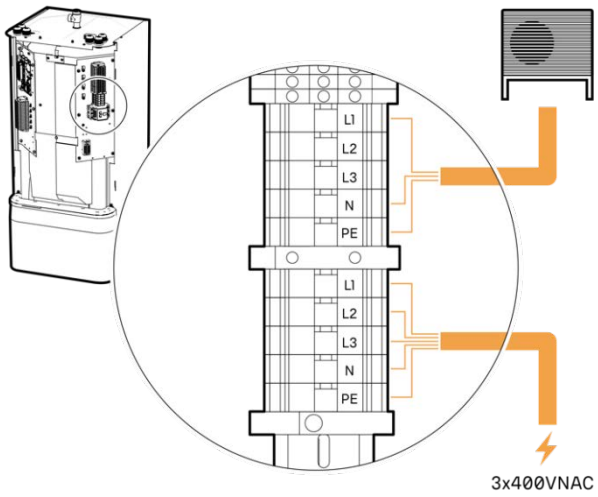
1-PHASE

100L indoor unit 1x230VNAC power supply
to outdoor unit 1x230VNAC connection



3-PHASES TO 1-PHASE

100L indoor unit 3X400VNAC power supply
to outdoor unit 1x230VNAC connection



8. COMMISSIONING

All heat pump product installations must be completed and installed according to each products Installation Manual. Each sub-system must also be inspected before commissioning starts.

8.1 System start-up

Turn on the heat pump system by switching on the power to the indoor unit on the fuse box. Listen carefully for any abnormal noise or vibrations. After the unit has been on for 10 minutes and no abnormalities have occurred, the start-up process is complete.

8.2 System Commissioning

Follow the Aira Indoor Unit Installation Manual to commission the indoor unit with the Aira app and Aira Room thermostat and perform a system check.

8.3 Get the customer started

1. Help the customer download the app and follow the instructions to activate their account if they have not managed this themselves.
2. Assist the customer connecting the indoor unit to the internet through the app.
3. Walk through the app functionality and ask the customer to review/update the target temperature and hot water settings in the app.
4. Inform the customer about the safety measures they must adhere to and what maintenance they must perform for the complete heat pump system. Show how the filters are cleaned and give them an estimation of how often they must do it.
5. Hand over applicable documentation, installation manuals and the user manual digitally or printed. Leave the safety sheets with the customer and instruct them to keep them.

9. SERVICE & MAINTENANCE

WARNING

- Only a qualified Aira technician is allowed to remove any covers of the products or attempt to perform any kind of service or repairs.
- No not touch the grill in front of the fan.

CAUTION

- Maintenance must be performed as recommended by Aira to warrant the lifespan of the products.

9.1 Maintenance

The heat pump owner is responsible for the general maintenance of the heat pump system, such as cleaning and ensuring that the outdoor unit has an unobstructed airflow. Anyone other than a qualified Aira technician should never remove any covers or attempt to perform service or repairs on any part of the heat pump system.

9.1.1 Cleaning

Use a soft dry cloth, or lightly damp cloth with soapy water to clean the surface if needed. Do not use solvents or abrasive detergents and never spray liquids directly onto the product. Never touch or clean the grill in front of the fan.

Clogged filters reduce the system's water flow and decreases efficiency. Clean the water filters after one week of operation. After this, they should be cleaned approximately once every six months depending on the filter type and water quality.

9.1.2 Keep the immediate area around the outdoor unit clear

Trim any vegetation around the outdoor unit to prevent contact or interference. During autumn and winter, regularly check for a build-up of leaves or snow around the outdoor unit as this might affect its operation. If ice is building-up in and around the fan, contact Aira customer support.

Don’t stack things against or on top of the heat pump like bikes, garden furniture, or build a cover around it as this can damage the unit and/or restrict its airflow.

9.2 Alerts in the Aira app

Any error which requires a user action will be displayed as an alert notification in the app. There are two different types of errors:

9.2.1 Errors

These let the owner know that there is an issue with the heat pump system that’s not impacting its ability to heat the home and hot water. The owner will be notified via a push notification from the Aira app. When the app is opened, a prompt to contact customer support will be covering the middle part of the app screen. This prompt can be closed, and the app will work as usual. However, it will display the request to contact customer support on the start screen. This message disappears when the problem has been resolved.

9.2.2 Critical errors

These let you the owner that the heat pump has stopped working and is no longer providing heat or hot water. The owner will be notified via a mobile text message and push notification from the Aira app. When the app is opened, a prompt to contact customer support will be covering the app screen. This prompt cannot be closed and will only disappear when the problem has been remedied, or a customer support agent has removed it.

9.3 Service & Repairs

Aira will continuously monitor the heat pump data remotely and release system updates to improve the efficiency of the heat pump system without the owner having to lift a finger. With Aira Intelligence, it’s possible to read errors, troubleshoot and, in some cases, also resolve them remotely. The Aira customer support team will send out qualified Aira Technicians if a physical service or repair is required.

Service and repairs must be performed by Aira technicians. The complete installation manual must be fully observed before any work on the products and/or system start and carried out accordingly.

WARNING

9.3.1 Warning

Working on the system and products

- Isolate the system from the power supply before a service or repair starts and ‘reconnection-proof’ the system to prevent an accidental reconnection during work.
- Carefully remove the protective covers of the indoor and outdoor unit and take safety measures to prevent burning accidents from hot surfaces as some components store energy.
- Check that any wires that will be touched are not live before work starts.
- Be aware that the fan blade edges are sharp and can cause damage to fingers when touched carelessly and without the right safety protective gear.
- Wear appropriate personal protective equipment when carrying out any work.

Working with the refrigerant circuit

- Check the refrigerant circuit for leaks before the work is initiated as electrostatic discharge and sparks can cause an explosion.
- Ensure that there is sufficient air flow in the work area for the duration of the work.
- Only authorised personnel are allowed to service or remove refrigerant from a system.
- Do not inhale or swallow the refrigerant and avoid direct contact with skin and eyes.
- Use appropriate personal protective gear when handling the refrigerant.
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- Ensure that appropriate mechanical handling equipment, recovery equipment and refrigerant cylinders are available.
- Never use electrical or spark igniting tools on the refrigerant system.
- Never pierce or cut a refrigerant circuit.
- A powder or CO_2 fire extinguisher must be kept ready during any work on the refrigerant circuit.
- Only open the refrigerant circuit after the refrigerant has been completely retracted.
- Never release refrigerant to the air.
- Always carry out work on the open system under constant nitrogen flushing.

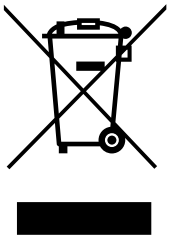
9.3.2 Spare parts

Only use spare parts from or recommended by Aira. Faulty or modified components can compromise the system.

10. END OF USE

Personal data

Personal data can be deleted by contacting Aira customer support in accordance with Aira Privacy Policy.



Product disposal

Care for the environment! No part of the heat pump system is allowed to be discarded with household waste! These products contain electrical or electronic components that should be recycled. Contact Aira customer support, or the local service office responsible for the installation, for environmentally safe recycling.

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