Air to Water Heat Pump
Installation manual

AE***DXED**

- Thank you for purchasing this Samsung Product.
- Before operating this unit, please read this manual carefully and retain it for future reference.

SAMSUNG

Contents

Correct Disposal of This Product
(Waste Electrical & Electronic Equipment)

(Applicable in countries with separate collection systems)
This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.
Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.
Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

For information on Samsung's environmental commitments and product regulatory obligations, e.g. REACH, visit our sustainability page available via www.samsung.com

※ Please refer to the reference guide for details.

Safety Information

General

- All materials supplied in this manual are indispensable for the safety of the equipment.
  Users shall establish appropriate safety and health practices and determine the applicability of regulatory limitations based on the following descriptions before use.
- Always disconnect the air to water heat pump from the power supply before servicing it or accessing its internal components.
- Verify that installation and testing operations are performed by qualified personnel.
- Verify that the air to water heat pump is not installed in an easily accessible area (vandalism/ sabotage/ other harmful activities).
- Carefully read the content of this manual before installing the air to water heat pump and store the manual in a safe place in order to be able to use it as a reference after the installation.
- For maximum safety, installers shall always carefully read the following warnings.
- Store the user and installation manual in a safe location and remember to hand it over to the new owner if the air to water heat pump is sold or transferred of ownership.
- This manual explains how to install an outdoor unit and connecting it to the indoor part.
  Use of other types of devices with the control system may damage the device and void the warranty.
- The manufacturer shall not be responsible for damages arising from noncompliant units or parts.
- The manufacturer shall not be responsible for damage originating from unauthorized changes or the improper connection of electric and hydraulic lines. Failure to comply with these instructions or to comply with the requirements outlined in the "Operating limits" table included in the manual shall immediately invalidate the warranty.
- To prevent serious system damage and user injuries, precautions and other notices shall be observed.
- Failure to comply with these instructions or to comply with the requirement on the Operating Range (Heat: -25~43 °C/ DHW: -25~43 °C/ Cool: 10~46 °C) outlined in the Product Specification shall immediately invalidate the warranty.
- Do not use the units if you see some damages on the units and recognize something problematic such as loud noise or smell of burning.
- To prevent electric shocks, fires or injuries, always stop the unit, ultimately rendering the product powerless. Contact Samsung's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.
- Always remember to inspect the unit, electric connections, refrigerant pipework and protections regularly.
  These operations shall be performed by qualified personnel only.
- The unit contains moving and electrical parts, which should always be kept out of the reach of children.
- Do not attempt to repair, move, alter or reinstall the unit by unauthorized personnel. These operations may cause product damage, electric shocks, and fires.
- Do not place containers with liquids or other objects on the unit. Never sit or stand on the product.
- All the materials used for the manufacturing and packaging of the air to water heat pump are recyclable.
- The packing material and exhausted batteries of the remote controller(optional) must be disposed of in accordance with local regulations.
- Always make sure that the power supply is compliant with local safety standards.
- For use in Europe: This appliance can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning the use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be done by children without supervision.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the appliance use by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.
- Be sure not to perform power cable modification, extension wiring, and multiple wire connection.
  - It may cause electric shock or fire due to poor connection, poor insulation, or current limit exceedance.
- Do not use means to accelerate the defrosting operation or to clean, other than those recommended by Samsung.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Determine the installation location regarding the conditions cited in this reference guide and obtain the user's approval.
- The outdoor unit must not be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.
- Make sure to safely dispose of packing materials. Packing materials, such as nails and other metal or wooden pallets may cause injuries to humans and animals by unsafe disposal.

Installing the unit

NOTE

- When installing the unit, remember to firstly connect the refrigerant pipework, then the electrical lines. Always disassemble the electric lines before the refrigerant pipework.
- Upon receipt, inspect the product to verify that it has not been damaged during transport. If the product appears damaged, do not install it, as the refrigerant may leak. A leaking product should be moved to a safe outdoor place. There should be no ignition source within 6 meters. Products should be located where the refrigerant can be safely removed or professionally removed and discarded by service technicians. Immediately report the damage to the supplier of the Samsung products (distributor/retailer/ local Samsung branch office)
- After completing the installation, always carry out a functional test (commissioning, including reporting) and provide instructions on how to operate the air to water heat pump to the user.
- Do not use the air to water heat pump in environments with hazardous substances or close to equipment that releases open flames to avoid the occurrence of fires, explosions or injuries.
- While in installation or relocation of the product, do not mix the refrigerant with other gases including air or unspecified refrigerant. Failure to do so may cause pressure increase resulting in an explosion, rupture or injury.
- Do not cut or burn the refrigerant container or pipings.
- Use only suitable and clean service equipment such as the manifold gauge, vacuum pump and charging. Make sure that any pump and leakage detection device must be suitable for safely working.

⚠ WARNING

- Failing to do so, may result in fire, explosion, property damage, personal injury or death.
- Installation must be carried out by qualified persons to handle the refrigerant. Additionally, refer to the regulations and laws.
- Be careful not to let foreign substances (lubricating oil, refrigerant other than R-32, water, etc.) enter the refrigerant circuit.
- Products should be installed outdoors with natural ventilation.
- For disposal of the product, follow the local laws and regulations. (Please refer to the reference guide for details.)
- Do not work in a confined or unvented place.
- The work area must be surveyed and inspected prior to any service work, correctly vented and treated always as if the equipment is leaking. The area around the working space must be sectioned off properly.
- The product and the hydraulic system shall be installed in the position where there are no substances that may result in corrosion.
- The following checks shall be performed for installation:
  - There must be a suitable gas detector to look for refrigerant leaks.
  - Notify all workers of work contents.
  - Install “No smoking” and “Do not enter the area” signs.
  - Receive a work permit from manager and work.
  - Do not store flammable materials in the workplace.
  - There should be no sources of ignition anywhere in the workplace.
  - Appropriate fire extinguishing equipment (CO2 or dry-powder type) should be located nearby and conveniently located.
  - The refrigerant discharged must be sufficiently dispersed and ventilated.
  - The work area should be appropriately ventilated before working on the refrigerant circuit, brazing, or handling electrics.
- Note that the refrigerant has no odour.
- The units are not explosion proof so they must be installed with no risk of explosion.
- Servicing and installation shall be performed as recommended by the manufacturer. In case other skilled persons are joined for servicing, it shall be carried out under supervision of the person who is competent in handling flammable refrigerants.
- Safety checks are required to minimize the ignition risk for servicing the units containing flammable refrigerants.
- Servicing shall be performed following the controlled procedure to minimize the risk of flammable refrigerant or gases.
- Do not install the unit where there is a risk of combustible gas leakage.
- Do not place the unit near heat sources.
- Be cautious not to generate a spark as follows:
  - Do not remove the fuses with power on.
- After installation, check for leakage. Toxic gas may be generated if it comes into contact with an ignition source such as the fan heater, stove, and cooker.
- In order to service the product, collect the refrigerant in vacuumed recovery cylinders.
- Never directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.

Caution of Ignition sources

- Appropriate fire extinguishing equipment should always be available during any type of hot work.
- A dry powder or CO_2 fire extinguisher must be available near the charging area. Please comply with local rules and regulations regarding working with open flames. Always respect waiting times and requirements regarding the type and quantity of the extinguishing equipment.
- Make sure to store the units in a place without continuously operating ignition sources (for example, open flames, an operating gas appliance or an operating electric heater).
- The service engineers shall not use any ignition sources with the risk of fire or explosion.
- Potential ignition sources shall be kept away from the work area where the flammable refrigerant can possibly be released to the surrounding.
- The work area should be checked to ensure that there are no flammable hazards or ignition risks. The "No smoking" sign shall be attached.
- Under no circumstances shall potential sources of ignition be used while in the detection of leakage.
- Make sure that the seals or sealing materials have not degraded.
- Safe parts are the ones with which the worker can work in a flammable atmosphere. Other parts may result in ignition due to leakage.
- Replace components only with parts specified by Samsung. Other parts may result in the ignition of refrigerant in the atmosphere from a leak. In the case of electric components replacement, care should be taken to ensure that electrical terminals, including capacitor terminals, are adequately tightened and secured against loosening and that adequate insulation is provided to avoid live parts shorting together.
- Make sure that the work area is well ventilated before performing a hot work.
- Ventilation of the installation areas must be maintained during the work.
- The ventilation should safely disperse any released gases and preferably expel them into the atmosphere.

Safety Information

Leakage detection and refrigerant recovery

- The leakage detector shall be calibrated in a refrigerant-free area.
- Make sure that the detector is not a potential source of ignition.
- The leakage detector shall be set to the LFL (lower flammability limit).
- The use of detergents containing chlorine shall be avoided for cleaning because the chlorine may react with the refrigerant and corrode the pipings.
- If leakage is suspected, naked flames shall be removed.
- If a leakage is found while in brazing, the entire refrigerant shall be recovered from the product or isolated (e.g. using shut-off valves). It shall not be directly released to the environment. Oxygen free nitrogen (OFN) shall be used for purging the system before and during the brazing process.
- The work area shall be checked with an appropriate refrigerant detector before and during work.
- Ensure that the leakage detector is appropriate for use with flammable refrigerants.

Labelling

- The parts shall be labeled to ensure that they have been decommissioned and emptied of refrigerant.
- The labels shall be dated.
- Make sure that the labels are affixed on the system to notify it contains flammable refrigerant.

Refrigerant recovery

- When removing refrigerant from the system for servicing or decommissioning, it is recommended to remove the entire refrigerant.
- When transferring refrigerant into cylinders, make sure that only the refrigerant recovery cylinders are used.
- All cylinders used for the recovered refrigerant shall be labelled.
- Cylinders shall be equipped with pressure relief valves and shut-off valves in a proper order.
- The recovery system shall operate normally according to the specified instructions and shall be suitable for refrigerant recovery.
- In addition, the calibration scales shall operate normally.
- Hoses shall be equipped with leak-free disconnect couplings.
- Before starting the recovery, check for the status of the recovery system and sealing state. Consult with the manufacturer if suspected.
- The recovered refrigerant shall be returned to the supplier in the correct recovery cylinders with the Waste Transfer Note attached.
- Do not mix refrigerants in the recovery units or cylinders.
- If compressors or compressor oils are to be removed, make sure that they have been evacuated to the acceptable level to ensure that flammable refrigerant does not remain in the lubricant.
- The evacuation process shall be performed before sending the compressor to the suppliers.
- Only the electrical heating to the compressor body is allowed to accelerate the process.
- Oil shall be drained safely from the system.
- Never install a motor-driven equipment to prevent ignition.
- Empty recovery cylinders shall be evacuated and cooled before recovery.

Installation location requirement of outdoor unit

- The outdoor unit shall be installed in an open space that is always ventilated.
- The local gas regulations shall be observed.
- For installation inside a building (this applies either to indoor or outdoor units installed inside) a minimum room floor area of space conditioned is mandatory according to IEC 60335-2-40:2018 (see the reference table into either the indoor or outdoor unit installation manual).
- To handle, purge, and dispose the refrigerant, or break into the refrigerant circuit, the worker should have a certificate from an industry-accredited authority.
- Do not install the indoor unit if it has any drainage problem.

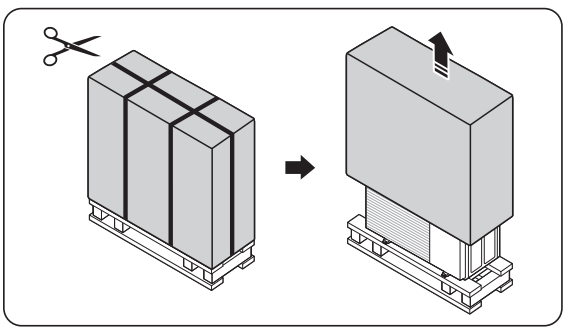
Handling the box

This chapter describes what needs to be done after the boxes with the outdoor and indoor units are delivered on-site.

NOTE

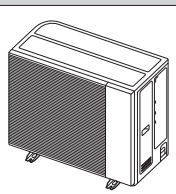
- Directly after delivery, the unit must be checked for (transport) damage. Any damage must be reported immediately to the applicable distributor of the Samsung products. After inspection, the protective wrapping and box must be put back correctly in order to protect the product.
- It is important to protect the product, therefore transport the product in the protective packaging and keep covered until final installation.
- Preparation of both horizontal and vertical transport (routes and equipment) might be required in order to get the product in the correct installation location.

Unpacking the outdoor unit



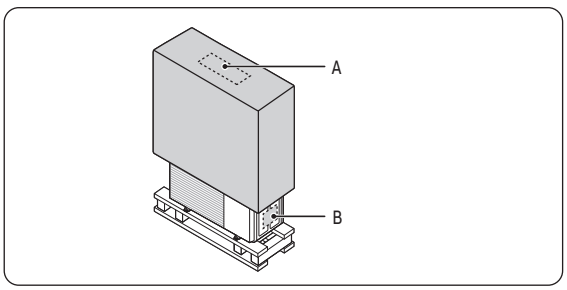
Product line-up and accessories

Product line-up

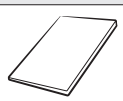
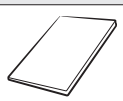
Outdoor unit	
Chassis	
Model name	AE125DXED*G AE160DXED*G

Accessories

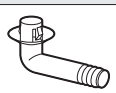
- Keep supplied accessories until the installation is finished.
- Hand the installation manual over to the customer after finishing installation.



Accessories in area A

Installation manual (1)	Instruction manual (1)
	

Accessories in area B

Drain plug (1)	Rubber leg (4)
	

Unit installation

Preparing the installation of the outdoor unit

Choose a sufficient space for carrying the unit to the installation location in advance.

Do not choose a location where a lot of dust is created such as a construction work site.

⚠ WARNING

- Do not install where there is a risk of combustible gas leakage or heat sources.
- To handle, purge, and dispose the refrigerant, or break into the refrigerant circuit, the worker should have a certificate from an industry-accredited authority in order to be compliant with regulations.
- Verify that the air to water heat pump is not installed in an easily accessible area (vandalism/ sabotage/ other harmful activities).

Choosing the installation location

NOTE

- Read the precautions and requirements in the part "General safety information".
- The outdoor unit is designed for outdoor installation only, and for the following ambient temperatures:
  - Space heating mode -25~43 °C
  - Domestic hot water mode -25~43 °C
  - Space cooling mode 10~46 °C

Decide the installation location regarding the following condition and obtain the user's approval.

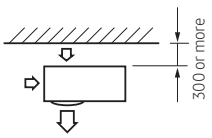
- Choose a location that is dry and sunny, but not exposed to direct sunlight or strong winds.
- Do not block any passageways or thoroughfares.
- Choose a location where the noise of the air to water heat pump when running and the discharged air does not disturb any neighbours.
- Choose a position that enables the pipes and cables to be easily connected to the other hydraulic system.
- Install the outdoor unit on a flat, stable surface that can support its weight and does not generate any unnecessary noise and vibration.
- Position the outdoor unit so that the air flows directly towards the open area.
- Place the outdoor unit where there are no plants and animals because they may cause malfunction of outdoor unit.
- Maintain sufficient clearance around the outdoor unit, especially from a radio, computer, and stereo system.
- The outdoor unit shall be installed in an open space that is always ventilated.

Do not install the air to water Heat Pump in the following locations:

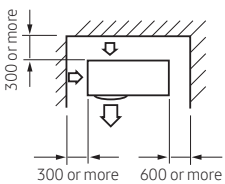
- A location where there are any potential dangerous substances like: combustible gas, carbon fiber, mineral oil, arsenic acid, flammable dust, thinner or gasoline, etc.
- A location where corrosive gas such as sulfurous acid gas generates from the vent pipe or air outlet. The copper pipe or connection pipe may corrode and refrigerant may leak.
- A location where the outdoor unit can easily overheat by solar radiation or if the ambient temperature exceeds 35°C during cooling mode. A larger installation space is required for protection against direct solar radiation.
- A location where strong winds may affect the unit. Please also consider enough clearance to avoid issues with the exhaust air from the unit if directed at people.
- A location where air is trapped and may short circuit over the unit. Or where not enough service space is available.
- A too narrow location, as it can lead to problems and potential damage to the product. Also it can lead to the injuries during installation or service work.
- A location where not enough ventilation space exists, especially when installing multiple outdoor units. Obstacles may disturb the airflow over the unit and can potentially cause short circuiting between exhaust air and inlet air and may lead to malfunction.

When installing 1 outdoor unit

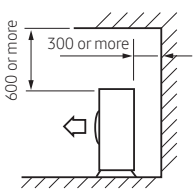
(Unit : mm)



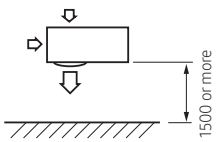
- When the air outlet is opposite the wall



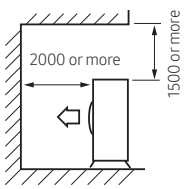
- When 3 sides of the outdoor unit are blocked by the wall



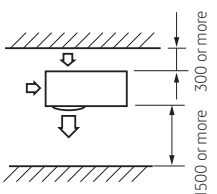
- The upper part of the outdoor unit and the air outlet is opposite the wall



- When the air outlet is towards the wall



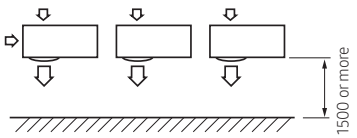
- The upper part of the outdoor unit and the air outlet is towards the wall



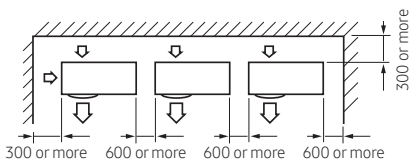
- When front and rear side of the outdoor unit is towards the wall

When installing more than 1 outdoor unit

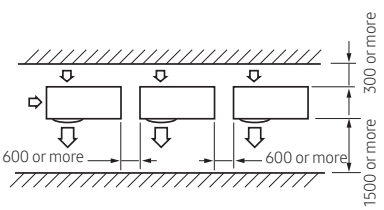
(Unit : mm)



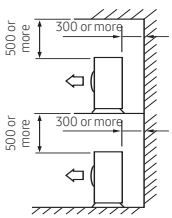
- When the air outlet is towards the wall



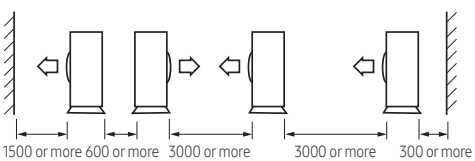
- When 3 sides of the outdoor unit are blocked by the wall



- When front and rear side of the outdoor unit is towards the wall



- The upper part of the outdoor unit and the air outlet is opposite the wall



- When front and rear side of the outdoor unit is towards the wall

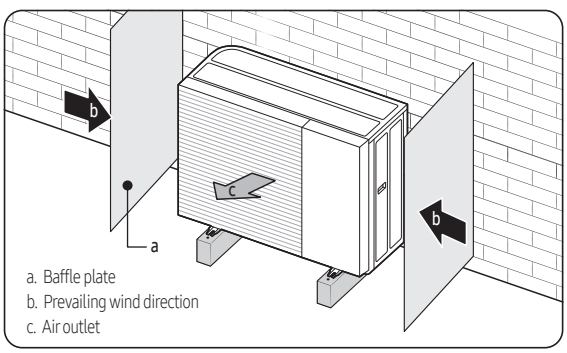
⚠ CAUTION

- The units must be installed according to distances declared, in order to permit accessibility from each side, to guarantee correct operation of maintenance or repairing of the products. The unit's parts must be accessible and serviceable under safe working conditions (for people or things).

Unit installation

Installing the unit at a location with strong winds:

- Outdoor unit must be fixed firmly so that it can withstand the wind speed of the strong wind. If you cannot fix the outdoor unit on the base ground, fixate it sideways or use an extra support structure.
- To prevent exposure to (strong) wind, install a baffle plate on the air discharge side of the unit. (If there is a strong wind facing the outdoor air outlet, it causes a short circuit. This can lead to performance degradation, broken fan (motor), and acceleration of frost.)
- Install a wind protection shielding with anticipation of the dominant wind direction. If the direction of the air discharge part is pointing to the dominant direction of the wind, it could cause performance decrease and potential damage to the product.

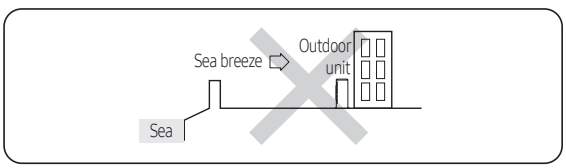


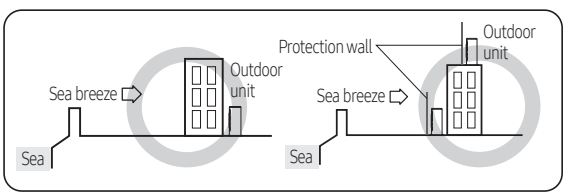
a. Baffle plate
b. Prevailing wind direction
c. Air outlet

Installation guide at the seashore

Make sure to follow the below guides when installing at the seashore.

1 Do not install the product in a place where it is directly exposed to sea water and sea breeze.
   - Make sure to install the product behind a structure (such as a building) that can block sea breeze.





   - A protection wall should be constructed with a solid material that can block the sea breeze and the height and width of the wall should be 1.5 times larger than the size of the outdoor unit. (Please secure more than 700 mm of space between the protection wall and the outdoor unit for air circulation.)

2 Consider that the salt particles clinging to the external panels should be sufficiently washed off
   - When a product is installed at the seashore, periodically clean it with fresh water to remove attached salt deposits.

3 Make sure that the base of the unit is installed at water level and therefore has optimum drainage. Because trapped water at the bottom of the outdoor unit significantly promotes corrosion.
   - Prevent blockage of the drain hole by foreign substances, by cleaning adequately.
   - Make sure to clean the base plate adequately and regularly as dirt, sand and other substances stay moist and promote corrosion.

4 If the product is installed within 500 m of a seashore, special anticorrosion treatment (like special coating) is required.
   - Please contact your local Samsung representative for further details.

5 When the product is installed at a seashore, periodically clean it with water to remove attached salinity.

6 If the (protective) coating or galvanised steel of the product is damaged during the installation or maintenance, make sure to repair it.

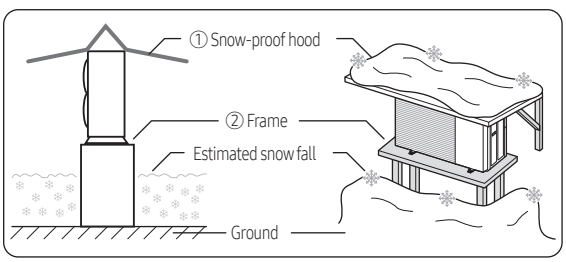
7 Check the condition of the product periodically.
   - Check the installation site every 3 months and perform anticorrosion treatment.

Selecting a location in cold climates

NOTE

- When operating the unit in a low outdoor ambient temperature, be sure to follow the instructions described below.

In heavy snowfall areas it is very important to select an installation location where the snow will not affect the unit. If lateral snowfall is possible, make sure that the heat exchanger coil is not affected by the snow. (If necessary construct a lateral canopy)

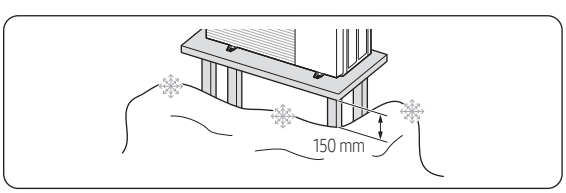


1 Construct a large canopy.
2 Construct a pedestal.
   - Install the unit high enough off the ground to prevent it from being buried under snow.

Heavy snow fall area

If the product is installed in a region of heavy snow, allow enough distance between the product and the ground (or piled up snow).

- In areas with heavy snow fall, piled snow could block the air intake. To avoid this, install a frame that is higher than estimated snow fall. In addition, install a snow-proof hood to avoid snow from piling on the outdoor unit.
- If ice accumulates on the base, it may cause critical damage to the product. (e.g., a lakeside in a cold area, the seashore, an alpine region, etc.)
- In a heavy snowfall area, do not install the drain plug and drain cap in the outdoor unit. And, it may cause frozen ground. Therefore, take appropriate measures to prevent it.
- Make a space more than 150 mm between the bottom of the outdoor unit and the ground for installation.
- Make sure that the product is located at least 150 mm above the maximum expected level of snow.

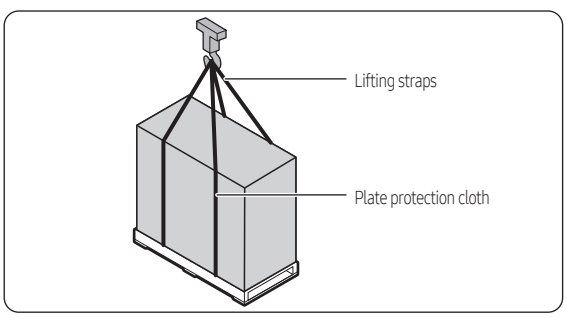


Moving the outdoor unit

- Be sure that the moving route is safe by anticipating the weight of the outdoor unit in advance.
- Do not slant the product more than 30˚when carrying it. (always keeping the unit upright)
- The surface of the heat exchanger is sharp. Be careful not to be injured while moving and installing by wearing your personal protective equipment (gloves, etc.).

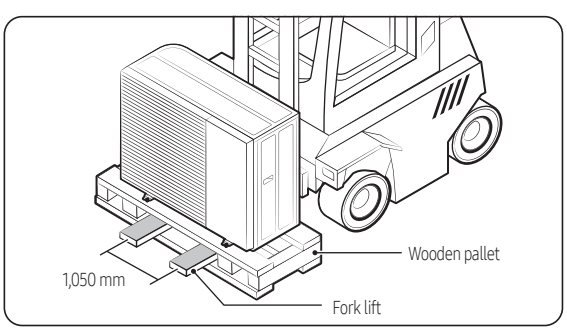
Moving the outdoor unit by hoisting

- Only hoist the product with using approved lifting straps (according to local regulations). Keep long straps to avoid damage to the panels. Always wear personal protective equipment (safety helmet) when hoisting.



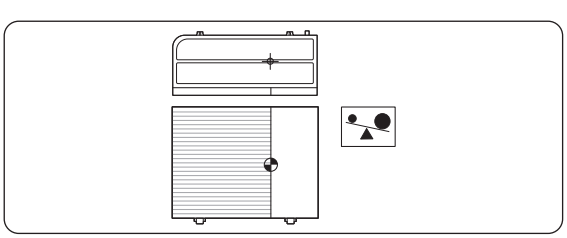
Moving the outdoor unit with a forklift

- Insert the fork into the wooden pallet at the bottom of the outdoor unit carefully. Be careful that the fork does not damage the outdoor unit. Operating a forklift may require special certification or training according to local regulations.



NOTE

- When looking at the product from the front, there is a center of gravity right from the middle of the product.
  Refer to the center of gravity mark attached to the product.



Unit installation

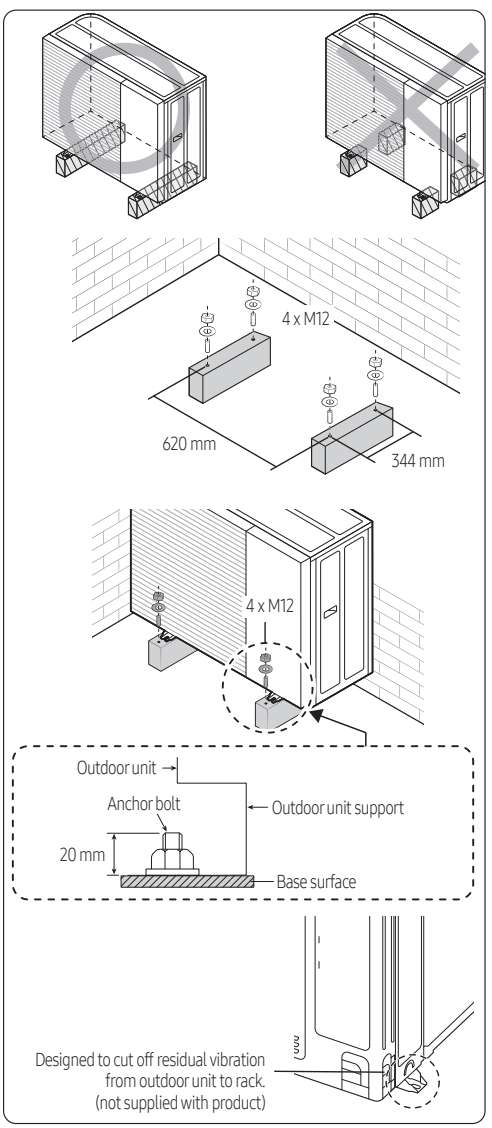
Mounting the outdoor unit

The outdoor unit must be installed on a rigid and stable base to avoid any increase in the noise level and vibration, particularly if the outdoor unit is to be installed in a location exposed to strong winds or at a height, the unit must be fixed to an appropriate support (wall or ground).

⚠ CAUTION

- When tightening the anchor bolt, tighten the rubber washer to prevent the outdoor unit bolt connection part from corroding.
- Make a drain outlet around the base for outdoor unit drainage.
- If the outdoor unit is installed on the roof, you have to check the ceiling strength and waterproof the unit.
- The anchor bolt must be 20 mm or higher from the base surface.

※ In order to prevent freezing of water drains, additional protection such as application of a heating cable may be required.



Outdoor unit drain work

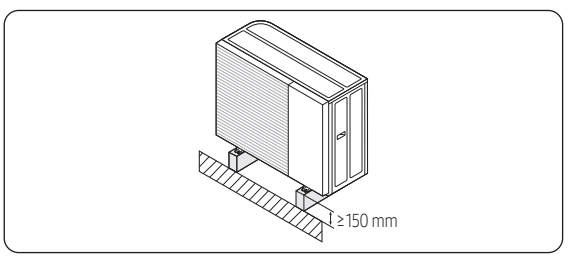
General area

While the air to water heat pump is operating in heating mode, ice can accumulate on the surface of the condenser.

To prevent ice from growing, the system occasionally enters a defrost mode and the ice on the surface thaws off.

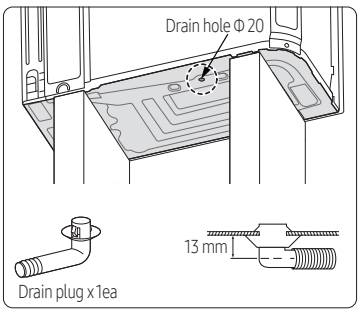
Water dripping from the condenser is guided through the drain holes to prevent ice formation inside the base plate at subzero temperatures.

- In case there is not enough space for natural drainage from the outdoor unit, additional drain work is required.
  Follow the description as per below:
  - Provide a minimum of 150 mm of free space to the floor.
  - Insert the drain plug into the hole at the bottom of the outdoor unit.
  - Connect the drain hose to the drain plug.
  - Make sure dirt and debris cannot block the drain (hose). Clean the base plate whenever needed.
  - For the remaining holes (that do not have the drain plug), insert the drain cap
  - Make sure that the water dripping from the drain hose runs away correctly and safely.

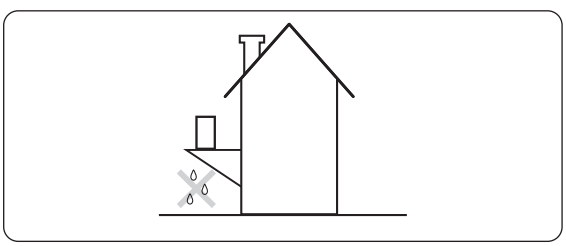


⚠ WARNING

- If the drainage is not adequate, it can lead to stagnant water and ice build-up, causing system performance issues and possible damages.



1 Prepare a water drainage channel around the foundation, to drain waste water from around the unit.
2 If the water drainage from the unit is inadequate, please raise the unit on construction concrete blocks, etc. (the height of the construction should be at least 150 mm).



3 If you install the unit on a frame, please install a slanted waterproof plate within 150 mm of the underside of the unit to prevent water from plashing against the bottom plate from below.
4 When installing the unit in a place frequently exposed to snow, pay special attention to elevating the foundation as high as the average snow height plus the additional required 150 mm.
5 If you install the unit on a wall support bracket, please install drainage pipework. In order to avoid the drain water from dripping on the floor potentially creating a slippery surface or an ice layer under freezing conditions.

※ Please securely mount the outdoor unit before connecting the water piping.

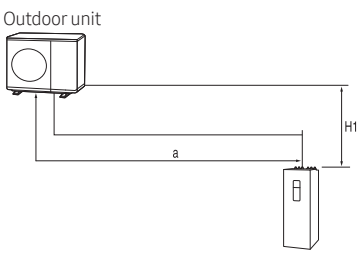
Piping installation

About the piping work

- Install the refrigerant pipe within the maximum allowable length, difference in height and length of after the first branch pipe.
- The pressure of the R-32 is high. Use only rated refrigerant pipe and follow the installation method.
- Use clean refrigerant pipe Where there is no harmful ion, oxide, dust, iron content or moisture.
- Use adequate tools and accessories for R-32.

Manifold gauge	• Use manifold gauge only for R-32 to prevent the inflow of foreign substances.
Vacuum pump	• Use vacuum pump with check valve to prevent pump oil from flowing backward while the vacuum pump is stopped. • Use the vacuum pump that the vacuum induction is available up to 5Torr. (-100.7kPa)
Flare nut	• Use only flare nut supplied with the product.

Allowable length of the refrigerant pipe and the installation examples



Item				Example	Remarks
Maximum allowable length of pipe	Outdoor unit ~ Hydro unit	Total length	Less than 50 m	a ≤ 50 m	
Maximum allowable height	Outdoor unit ~ Hydro unit	Less than 30 m		H1	If outdoor unit is located lower position H1 ≤15 m
Additional refrigerant calculation		R=Basic charge + additional charge by the piping length			

Contact the manufacturer if the length should exceed.

Selecting the refrigerant pipe and Fasten Torque

Outdoor unit capacity (kW)	Liquid side [mm]	Gas side [mm]	Fasten Torque ø 6.35 / ø 12.70 [N·m]
AE125DXEDEG (12.5)	ø6.35	ø12.70	14 ~ 18 / 49 ~ 61
AE125DXEDGG (12.5)	ø6.35	ø12.70	14 ~ 18 / 49 ~ 61
AE160DXEDEG (16.0)	ø6.35	ø12.70	14 ~ 18 / 49 ~ 61
AE160DXEDGG (16.0)	ø6.35	ø12.70	14 ~ 18 / 49 ~ 61

Outer diameter (mm)	Minimum thickness (mm)	Temper grade
ø 6.35	0.7	C1220T-0
ø 9.52	0.7	
ø12.70	0.8	
ø15.88	1.0	
ø15.88	0.8	C1220T-1/2H OR C1220T-H
ø19.05	0.9	
ø22.23	0.9	

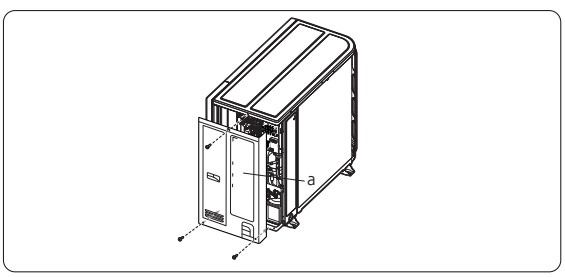
- ▶ Temper grade and minimum thickness of the refrigerant pipe.
- ▶ The material specification (thickness) of the refrigernant pipes must be in accordance with EU and /or local legislation and standards.

Keeping refrigerant pipe clean and dry

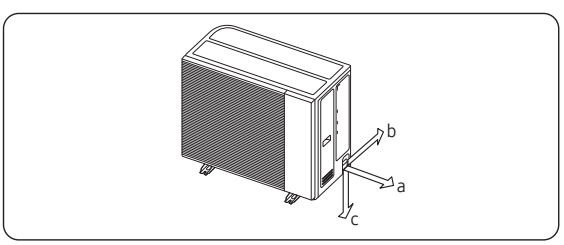
- To prevent foreign materials or water from entering the pipe, pipes shall be sealed by caps.

To connect the refrigerant piping

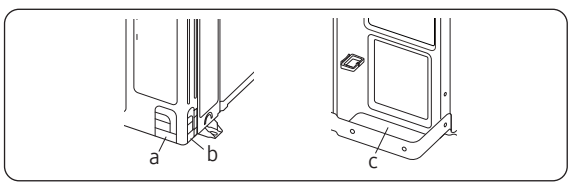
1. Remove the service cover (a)



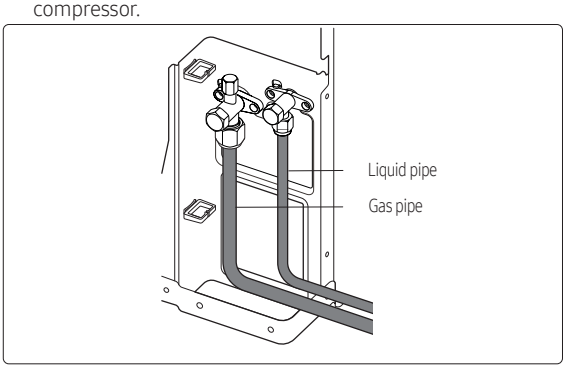
2. Choose a piping route (a, b, c)
   a Side
   b Rear
   c Bottom



3. remove the knock out hole. (a or b or c)
   a side
   b rear
   c bottom (inner bottom surface)
   To remove knockout hole, use a flathead screw driver and hammer to pry it out.



4. Connect the liquid pipe (ø6.35) & gas pipe (ø12.70) to the service port.
   . Cover liquid & gas pipe with insulation.
   . keep the pipe out of contact with vibrating parts such as compressor.



5. Reassemble this service cover.
6. Seal the gaps to prevent snow or small animals from entering.

⚠ CAUTION

- Be sure to remove the burr after making the knockout hole.
- When passing electrical wiring through a knockout hole, be sure to wrap it with protective tape to prevent damage.
- If small animals come into contact with electrical components, there is a risk of malfunction or fire, so be sure to seal them.

Performing the refrigerant gas leak test

- Use a manifold gauge for R-32 to prevent the inflow of foreign substances and resist against the internal pressure.
- Pressure test with dry oxygen free nitrogen only.

Apply pressure to the liquid side pipe and gas side pipe with Nitrogen gas of 4.6 MPa (46.9 kgf/cm²)	If you apply pressure more than 4.6MPa, the pipes may be damaged. Apply pressure using pressure regulator.
Keep it for minimum 24 hours to check if the pressure drops.	After applying Nitrogen gas, check the change of pressure using pressure regulator.
If the pressure drops, check if there is gas leak.	If the pressure is changed, apply soapy water to check the leak. Check the pressure of the Nitrogen gas again.
Maintain 1.0MPa of the pressure before performing vacuum drying and check further gas leak.	After checking first gas leak, maintain 1.0MPa to check further gas leak.

- Make sure to use a recommended bubble test solution for Gas Leak Test. Soap water could cause cracking of the flare nuts or lead to corrosion of flared joints.

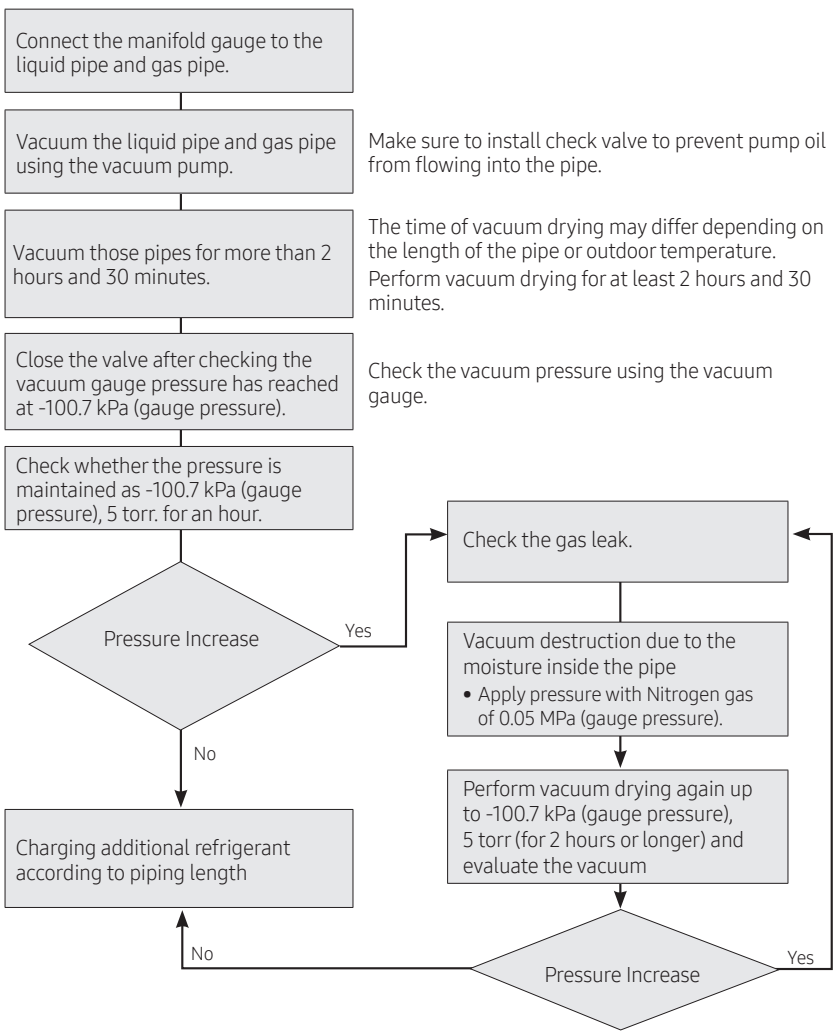
⚠ CAUTION

- You may get injured when the joint on the high pressure side detaches and the gas comes in contact with your body. Make sure to tighten the joint to prevent such accidents.

Piping installation

Vacuum drying

- Use the tools for R-32 only to prevent the inflow of foreign substances and resist against the internal pressure.
- Use the vacuum pump with the check valve to prevent pump oil from flowing backward while the vacuum pump is stopped suddenly.
- Use the vacuum pump that can be vacuumed up to 666.6Pa(5 mmHg).
- Close the service valve of the liquid side pipe, gas side pipe completely when performing air tightening test or vacuum drying.



⚠ CAUTION

- If the pressure rises in an hour, either water remains inside the pipe, or there will be a leak.

Selecting additional refrigerant charge

- Basic charge

The basic amount of refrigerant for outdoor unit charged in factory is:

Outdoor unit	Factory charge(kg)	Chargeless length (m)
AE125DXEDEG	1.84	Heating only : 30m Heating & Cooling :15m
AE125DXEDGG		
AE160DXEDEG		
AE160DXEDGG		

- Charge additional refrigerant according to the total length of the pipe.
  Each factory charging values are determined according to basic pipe length 15m (Heat & Cool mode) or 30m (Heat only mode).
  When extra pipe length are required, additional charging works must be implemented as describes below.

Refrigerant Charging

- Additional charging amount is determined based on liquid pipe specifications.

Mode	Additional charging (g)
Heat	45g/m
Heat & Cool	30g/m

1) Heat mode, Additional Charge(g) = (L1-30)x45

2) Heat&Cool mode, Additional Charge(g) = (L2-15)x30

NOTE

- L1 (m) : Total length of Heat mode (max 50m)
- L2 (m) : Total length of Heat&Cool mode (max 50m)

Ex) Total length of pipe : 50m

1. (50m-30m)x45g/m = 900g (Heat mode)
2. (50m-15m)x30g/m = 1,050g (Heat&Cool mode)

Precautions on adding the R-32 refrigerant

In addition to the conventional charging procedure,. the following requirements shall be kept.

- Make sure that contamination by other refrigerants does not occur for charging.
- To minimize the amount of refrigerant, keep the hoses and lines as short as possible.
- The cylinders shall be kept upright.
- Make sure that the refrigeration system is earthed before charging.
- Label the system after charging, if necessary.
- Extreme care is required not to overcharge the system.
- Before recharging, the pressure shall be checked with nitrogen blowing.
- After charging, check for leakage before commissioning.
- Be sure to check for leakage before leaving the work area.

Piping installation

Important information: regulation regarding the refrigerant used

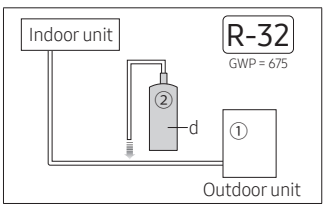
This product contains fluorinated greenhouse gases. Do not vent gases into the atmosphere.

⚠ CAUTION

- Inform user if the system contains 5 tCO_2e or more of fluorinated greenhouse gases. In this case, it must be checked for leakage at least once every 12 months, according to regulation No. 517/2014. This activity must be covered by qualified personnel only. In the case of the situation above, the installer (or authorized person with responsibility for final check) must provide a maintenance book, with all the information recorded, according to REGULATION (EU) No. 517/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on fluorinated greenhouse gases.

Please fill in the following indelible ink on the refrigerant charge label supplied with this product on and on this manual.

- ► ① The factory refrigerant charge of the product.
- ► ② The additional refrigerant amount charged in the field.
- ► ①+② The total refrigerant charge.



NOTE

- a. Factory refrigerant charge of the product: See unit name plate.
- b. Additional refrigerant amount charged in the field. (Refer to the above information for the quantity of refrigerant replenishment.)
- c. Total refrigerant charge.
- d. Refrigerant cylinder and manifold for charging.

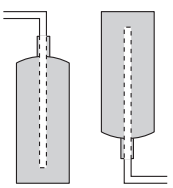
Unit	kg	tCO_2e
①, a		
②, b		
① + ②, c		

Refrigerant type	GWP value
R-32	675

- GWP: Global Warming Potential
- Calculating tCO2e: kg x GWP/1000

► Before charging, check whether the refrigerant cylinder has a siphon attached or not and position the cylinder accordingly.

Charging using a cylinder with a siphon attached
Charge the liquid refrigerant with the cylinder in upright position.



Charging using a cylinder without a siphon attached
Charge the liquid refrigerant with the cylinder in up-side-down position.

⚠ CAUTION

- The filled-out label must be adhered in the proximity of the product charging port (e.g. onto the inside of the stop valve cover).
- Make sure that the total refrigerant charge does not exceed (A), the maximum refrigerant charge, which is calculated in the following formula: Maximum refrigerant charge (A)= factory refrigerant charge (B) + maximum additional refrigerant charge due to piping extension (C).

Selecting the insulator of the refrigerant pipe

- ► According to pipes size, insulate pipes on gas and liquid side by selecting appropriate insulations.
- ► Standard condition is under a temperature of 30 °C and a humidity of 85 %. If the units are installed in extreme weather conditions, select the insulator by table below.

Pipe type	Pipe diameter (mm)	Thickness of insulator		Remarks
		Normal (Under 30 °C, 85 %)	High humidity (Over 30 °C, 85 %)	
		EPDM, NBR		
Liquid	ø6.35~ø19.05	9	9	The material shall has heat resistant over 120 °C
	ø12.70~ø19.05	13	13	
Gas	ø6.35	13	19	
	ø9.52	19	25	
	ø12.70			
	ø15.88			
	ø19.05			

⚠ CAUTION

- Install the insulation not to be get wider and use the adhesives on the connection part of it to prevent moisture entering.
- Wind the refrigerant pipe with insulation tape if it is exposed to outside sunlight.
- Install the refrigerant pipe respecting that the insulation does not get thinner on the bent part or hanger of pipe.

Insulating the refrigerant pipe

▶ You must check if there is a gas leak before completing all the installation process.
▶ Use EPDM insulation which meets the following condition.

Item	Unit	Standard	Remarks
Density	g/cm²	0.048~0.096	KSM 3014-01
Dimension change route by heat	%	-5 or less	
Water absorption rate	g/cm²	0.005 or less	
Thermal conductivity	kcal/m·h·˚C	0.032 or less	KSL 9016-95
Moisture transpiration factor	ng/(m²·s·Pa)	15 or less	KSM 3808-03
Moisture transpiration grade	{g/(m²·24h)}	15 or less	KSA 1013-01
Formaldehyde dispersion	mg/L	-	KSF 3200-02
Oxygen rate	%	25 or less	ISO 4589-2-96

⚠ CAUTION

- Tighten the nuts to the specified torques. If overtightened, the nuts could be broken so refrigerant may leak.
- Protect or enclose refrigerant tubing to avoid mechanical damage.
- Keep the piping length at a minimum to minimize the additional refrigerant charge due to piping extension.
- When connecting the pipes, make sure that surrounding objects do not interfere with or contact them to prevent refrigerant leakage due to physical damage.
- Make sure that the spaces where the refrigerant pipes are installed comply with national gas regulations.
- Be sure to perform works such as additional refrigerant charging and pipe welding under the conditions of good ventilation.
- Be sure to perform welding and piping works for mechanical connections under the conditions that the refrigerant does not circulate.
- When reconnecting the pipes, make sure to perform flared-jointing newly to prevent refrigerant leakage.
- When working on the refrigerant pipes and the flexible refrigerant connectors, be careful that they are not damaged physically by surrounding objects.
- For installation with handling the R-32 refrigerant, use the special tools for the R-32 refrigerant (manifold gauge, vacuum pump, charging hose, etc.).
- During tests never pressurize the appliances with a pressure higher than the maximum allowable pressure(as indicated on the nameplate of the unit).
- Never directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.
- Never install a dryer to this unit in order to guarantee its lifetime.
- If you need a pipe longer than specified in piping codes and standards, you must add refrigerant to the pipe. Otherwise, the indoor unit may freeze.
- While removing burrs, put the pipe face down to make sure that the burrs do not get in to the pipe.

Electrical installation

Precautions when connecting the electrical wiring

⚠ WARNING

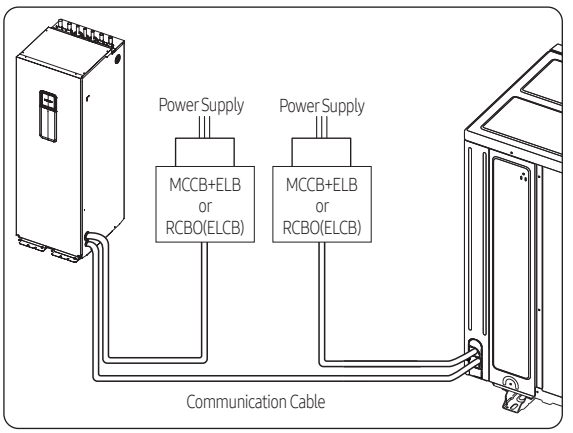
- Make sure first the water piping is connected before the electrical wiring work.
- When removing or relocating the equipment, power off first and then disconnect the electrical wiring.
- Connect the air to water heat pump to a protected earth (PE) before connecting the phase and neutral to the product.
- Follow the local installation standards and regulations when installing electrical wiring.
  Electrical wiring should be installed by a certified electrician or certified installer. Failing to comply, might lead to damaging the product, starting a fire and personal injury, electrocution or death.

- Make sure that wiring work must be done by an authorized electrician.
  The wiring materials and wiring work must comply with the applicable legislation.
- Always verify that a suitable grounding connection is available.
- Verify that the voltage and frequency of the power supply comply with the specifications and that the installed power is sufficient to ensure the operation of any other domestic appliance connected to the same electric lines.
- Always verify that the cut-off and protection switches are suitably dimensioned.
- Verify that the air to water heat pump is connected to the power supply in accordance with the instructions provided in the wiring diagram included in the manual.
- Always verify that electric connections (cable entry, the section of leads, protections...) comply with the electric specifications, local regulations and installation standards and with the instructions provided in the wiring scheme.
  Always verify that all connections comply with the standards applicable to the installation of air to water heat pumps.
- Depending on the condition of power supply, unstable power or voltage may cause malfunction of the parts or control system. (Avoid using power supply from an electric generator, like on a ship etc).

⚠ CAUTION

- Make sure that you earth the cables.
  - Do not connect the earth wire to the gas pipe, water pipe, lighting rod or telephone wire. If earthing is not complete, electric shock or fire may occur.
- Install the circuit breaker.
  - Failing to install a circuit breaking device may result in electric shock and fire occurrence.
- Install the power cable and communication cable of the indoor and outdoor unit according to IEC 60364-1 (Electrical installations and protection against electric shock).
- Be sure to install both an earth leakage detector and circuit breaker with specified capacity in accordance with relevant local and national regulations.
  - If it is not installed properly, it may cause electric shocks and fire.

Electrical wiring diagram



Specification of power cable

- 1 Phase
  - The power cables are not supplied with the air to water heat pump.
  - Power supply cords of parts of appliances for outdoor use shall not be thinner than polychloroprene sheathed flexible cord (Code designation IEC:60245 IEC 57 / CENELEC:H05RN-F)
  - This equipment complies with IEC 61000-3-12.

Outdoor unit	Rated		Voltage Range		MCA	MFA
	Hz	Volts	Min	Max	Min Circuit Amps.	Max Fuse Amps.
AE125DXEDEG	50	220-240	198	264	32.0	35.2
AE160DXEDEG	50	220-240	198	264	32.0	35.2

- 3 Phase
  - The power cables are not supplied with the air to water heat pump.
  - Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (Code designation IEC:60245 IEC 66 / CENELEC:H07RN-F)
  - This equipment complies with IEC 61000-3-12 provided that the short-circuit power (SSC) is greater than or equal to 3.3[MVA] at the interface point between the user's supply and the public system. It is the responsibility of the installer to ensure, by consultation with the energy company if necessary, that the equipment is connected only to a supply with a short-circuit power (SSC) greater than or equal to 3.3[MVA].

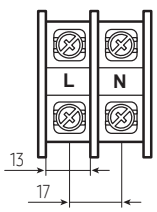
Outdoor unit	Rated		Voltage Range		MCA	MFA
	Hz	Volts	Min	Max	Min Circuit Amps.	Max Fuse Amps.
AE125DXEDGG	50	380-415	342	457	16.1	17.7
AE160DXEDGG	50	380-415	342	457	16.1	17.7

Terminal block specification

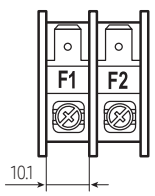
- 1 Phase

(Unit: mm)

AC power: M5 screw



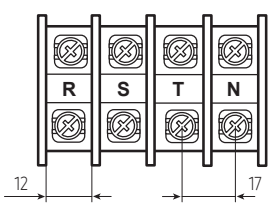
Communication: M4 screw



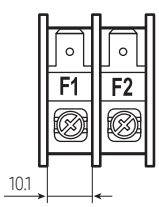
- 3 Phase

(Unit: mm)

AC power: M5 screw



Communication: M4 screw



Connecting the power terminal

- ▶ Connect the cables to the terminal board using the compressed ring terminal.
- ▶ Connect the rated cables only.
- ▶ Connect using a wrench which is able to apply the rated torque to the screws.
- ▶ If the terminal is loose, fire may occur caused by arc. If the terminal is connected too firmly, the terminal may be damaged.

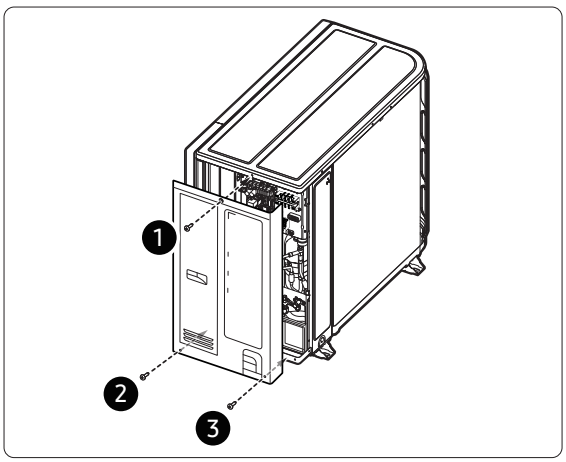
Tightening Torque (kgf.cm)	
M4	12~18
M5	20~30

⚠ CAUTION

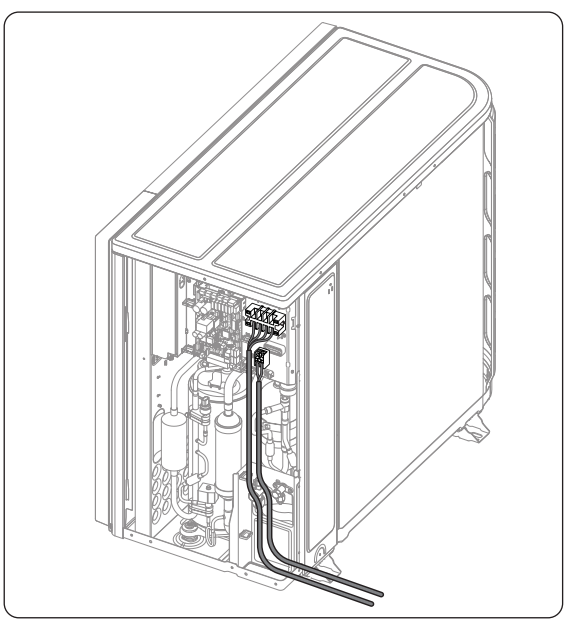
- For the product that uses the R-32 refrigerant, be cautious not to generate a spark by keeping the following requirements:
  - Do not remove the fuses with power on.
  - Do not disconnect the power plug from the wall outlet with power on.
  - It is recommended to locate the outlet in a high position. Place the cords so that they are not tangled.

Outdoor wiring

1 Open the side cover.



2 Insert the cable through the knockout hole and connect the communication and power line.



Power and communication cable configuration

- Power supply cable must be guided through the knock-out hole on the bottom-right or right side of the cabinet.
- Guide the communication cable through the designated knockout hole on the bottom-right side of the front part.
- Install the power and communication cable using a separate cable protection tubing.

Electrical installation

To connect the power supply

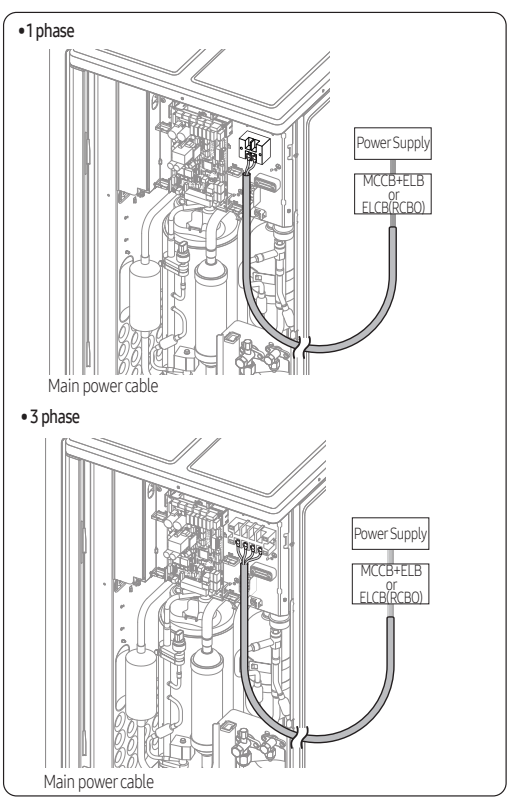
- Two cables must be connected to the outdoor unit
  - The communication cable between the indoor and outdoor unit.
  - The power cable between the outdoor unit and the auxiliary breaker.
- Especially for the Russian and European market, before installation, the supply authority should be consulted to determine the supply system impedance to ensure compliance.

⚠ CAUTION

- You should connect the power cable into the power cable terminal and fasten it with a clamp.
- The unbalanced power must be maintained within 2% of the supply rating.
  - If the power is unbalanced greatly, it may shorten the life of the electrical components.
- To protect the product from water and possible shock, keep the power cable and the connection cord of outdoor units within ducts (with appropriate IP rating and material selection for your application).
- Ensure that the main supply connection is made through a disconnection switch within your arm's reach, that disconnects all poles, with contact gap of a least 3 mm.

Route the cable through the frame

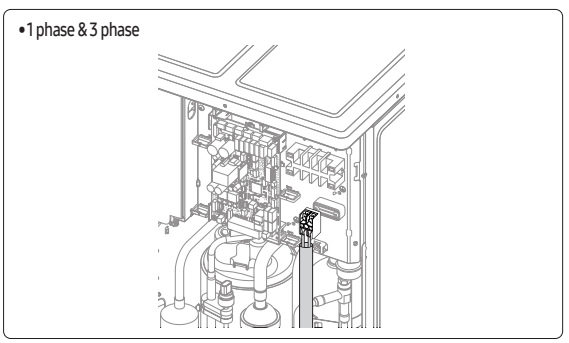
- Connect the wires to the terminal block and fix the cable with the cable tie.



- When installing electrical wiring: tension on the cable(s) must be avoided.
- Earth wire for the indoor unit and outdoor unit cables must be clamped to a suitable ring terminal clamp (not supplied)
- For the power cable, use the grade H07RN-F or H05RN-F materials.
- Power supply cords of parts of appliances for outdoor unit use shall not be thinner than polychloroprene sheathed flexible cord. (Code designation IEC:60245 IEC 57 / CENELEC: H05RN-F or IEC:60245 IEC 66 / CENELEC: H07RN-F)

To connect the communication cable

- The communication cable between the indoor and outdoor unit.
- Route the cable through the frame.
- Connect the wires to the terminal block and the earth screw (single side, the other end of the protective shield is not again connected to earth).
- Fix the cable with a cable tie.

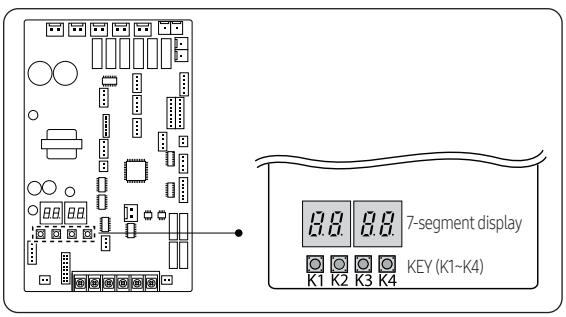


- Specification of communication cable

Communication cable	Specifications
0.75 mm², 2 wires shielded	LiYCY

Setting the outdoor options via K-button tactile switches

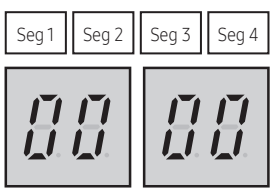
Setting the correct options for the outdoor unit for site specific conditions via K-button tactile switches and explanation of their functions.



Setting the option

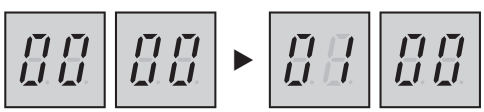
1 Press and hold K2 to enter the option setting. (Only available when the operation is stopped)

- When entering the option setting, the display will show the following:

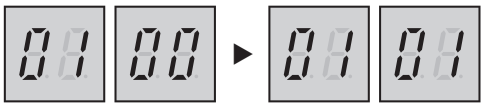


- Seg 1 and Seg 2 will display the number for the selected option.
- Seg 3 and Seg 4 will display the number for the set value of the selected option.

2 After entering the option setting mode, shortly press the K1 switch to go to the desired option to change, indicated by Seg 1, Seg 2 and select the desired option.
Example)



3 After selecting the desired option, you can shortly press the K2 switch to adjust the value of the option, as indicated by Seg 3 and Seg 4, and change the function setting for the selected option.



4 After selecting the function setting for the selected options, press and hold the K2 switch for 2 seconds to store the value. The changed value of the option will be saved when the entire segment display blinks and tracking mode begins.

⚠ CAUTION

- If the above instruction is not exactly followed, there is a risk that changed option settings are not saved.

* To restore the previous setting, press and hold the K1 button.
* To call for the factory default setting, press and hold K4 during the option setting mode.
  – After the factory default value is displayed, it needs to be saved. Press and hold the K2 button. When the segments show that tracking mode is in progress, the setting is saved.

Key Option

Option	SEG1	SEG2	SEG3	SEG4	Function of the option
Current restriction rate	0	0	0	0	100% (Factory default)
			0	1	95%
			0	2	90%
			0	3	85%
			0	4	80%
			0	5	75%
			0	6	70%
			0	7	65%
			0	8	60%
			0	9	55%
			1	0	50%
			1	1	No restriction
Defrost operation	0	1	0	0	Basic
			0	1	Option
Fan speed correction for outdoor unit	0	2	0	0	Basic
			0	1	Option
Quiet mode	0	3	0	0	Low noise (Basic)
			0	1	Level1
			0	2	Level2
			0	3	Level3
Channel address	0	4	A	U	Automatic setting (Factory default)
			0~15		Manual setting for channel 0~15
Snow accumulation prevention control	0	5	0	0	Enabled (Factory default)
			0	1	Disabled

System configuration

Option	SEG1	SEG2	SEG3	SEG4	Function of the option
Base Heater	0	6	0	0	Disabled
			0	1	Enabled (Factory default)
Operation mode	0	7	0	0	Heat pump
			0	1	Cooling only (Disabled)
			0	2	Heating only (Factory default)
Energy saving mode	0	8	0	0	Disabled (Factory default)
			0	1	Enabled

⚠ WARNING

- Incorrect handling of the thermostat, safety valve or other valves may lead to tank rupture or plate heat exchanger damage. When servicing the unit follow the instructions carefully:
  - Always turn off the main power supply when the water supply is being shut off.
  - Test the free operation of the safety valve regularly by opening the valve ensuring the water flows freely.
  - Electrical connection and all servicing of the electrical components should only be carried out by an authorized electrician.
  - Fitting and all servicing of plumbing fixtures should only be carried out by an authorized installer.
  - When replacing the thermostat, safety valve, or any other valve or part supplied with this unit, use only approved parts of the same specification.

Testing operations

1 Check the power supply between the outdoor unit and the auxiliary circuit breaker.
- 1 phase power supply: L, N
- 3 phases power supply: R, S, T, N

2 Check the control panel.
- Check that you have connected the power and communication cables correctly. (If the power cable and communication cables one mixed up or connected incorrectly, the PCB will be damaged.)
- Check the temp. sensor, drain pump/hose, and display are connected correctly.

3 Press K1 or K2 on the outdoor unit PCB to run the test mode and stop.

K1 (Number of Press)	KEY operation	7-segment display
1 time	Trial operation in Heating mode	"K" "1" "BLANK" "BLANK"
2 times	Vacuuming (Outdoor unit address 1)	"K" "2" "BLANK " "1"
3 times	Inverter Fault Detection (Comp #1)	"K" "3" "I " "1"
4 times	End Key operation	-

K2 (Number of Press)	KEY operation	7-segment display
1 time	Trial operation in Cooling mode	"K" "4" "BLANK" "BLANK"
2 times	Discharge mode of DC link voltage	"K" "5" "o" "k"
3 times	Forced defrost operation	"K" "6" "BLANK" "BLANK"
4 times	Inverter compressor1 check	"K" "7" "BLANK" "BLANK"
5 times	End Key operation	-

K3 (Number of Press)	KEY operation	7-segment display
1 time	Intialize (Reset) setting	Same as initial state

4 View Mode: When the K4 switch is pressed, you can see information about our system state as below.

K4 (Number of press)	KEY operation	Display on segment	
		SEG1	SEG 2,3,4
1 time	Capacity of outdoor unit	1	16 HP → 0,1,6
2 times	Order frequency of the compressor	2	120 Hz → 1,2,0
3 times	High pressrue (kg/cm2)	3	15.2 K → 152
4 times	Low pressrue (kg/cm2)	4	4.3 K → 043
5 times	Discharge temperature Compressor	5	87 ˚C → 087
6 times	IPM temperature	6	87 ˚C → 087
7 times	CT sensor value	7	2 A → 020
8 times	Suction temperature	8	-42 ˚C → -42
9 times	COND OUT temperature	9	-42 ˚C → -42
10 times	EVA in temperature	A	87 ˚C → 087
11 times	Compressor top temperature	B	87 ˚C → 087
12 times	Outdoor temperature	C	-42 ˚C → -42
13 times	EVI inlet temperature	D	-42 ˚C → -42
14 times	EVI outlet temperature	E	-42 ˚C → -42
15 times	Main EEV step	F	2000 → 200
16 times	EVI EEV step	G	300 → 300
17 times	Fan step (ssr or bldc)	H	13 Step → 0, 1, 3
18 times	Current frequency Compressor	I	120 Hz → 1, 2, 0
19 times	EVI SOL EEV step	J	300 → 300
20 times	Inverter pump output	K	100 % → 100

K4 (Number of press) Press and hold the K4 to enter the setting	Displayed content	Display on segment		
		Page 1	Page 2	
1 time	Main version	MAIN	Version (ex. 1412)	
2 times	Inverter version	INV	Version (ex. 1412)	
3 times	EEP version	EEP	Version (ex. 1412)	
4 times	Automatically assigned address of the units	AUTO	SEG1,2	SEG3,4
			Indoor unit: "A", "0" MCU: "C", "1"	Address (ex:07)
5 times	Manually assigned address of the units	MANU	SEG1,2	SEG3,4
			Indoor unit: "A", "0"	Address (ex:15)

Troubleshooting

Troubleshooting of error code

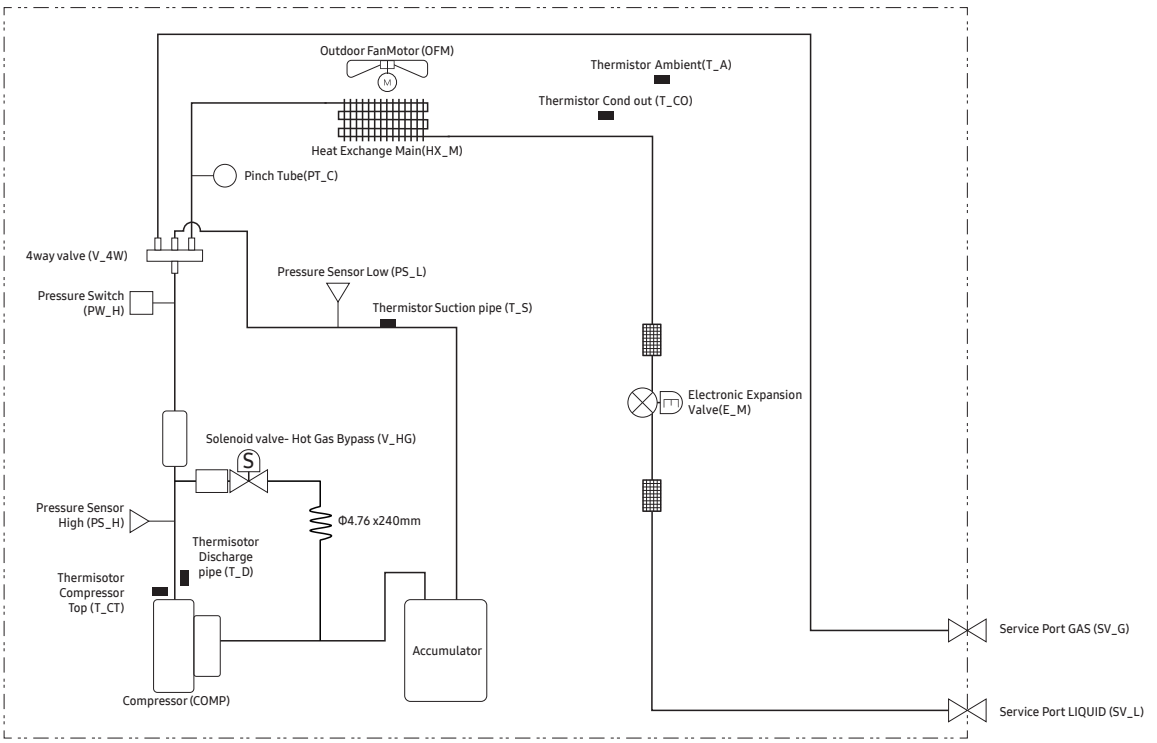
Display	Explanation	Error Source
E108	Setting Address Duplicate Error	OUTDOOR UNIT/ Hydro Unit
E120	Zone2 Indoor Room Temperature Sensor Short/Open	Hydro Unit
E121	Error of ROOM Temperature Sensor in Indoor unit short/open	Hydro Unit
E122	Error of Evaporator_in Sensor of Indoor unit short/open	Hydro Unit
E123	Error of Evaporator_out Sensor of Indoor unit short/open	Hydro Unit
E162	Outdoor UNIT EEPROM Error	OUTDOOR UNIT
E163	EEPROM OPTION SETTING Error	OUTDOOR UNIT
E177	In hydro box, take place emerency signal Error	Hydro Unit
E201	CONTROL KIT / Outdoor UNIT Communication Error (Matching Error)	OUTDOOR UNIT
E202	CONTROL KIT / Outdoor UNIT Communication Error	OUTDOOR UNIT
E205	Communication Error Between Outdoor Unit Inv Micom - Fan Motor Micom	OUTDOOR UNIT
E221	Outdoor Temperature Sensor Error (open/short)	OUTDOOR UNIT
E231	COND_OUT Main Temperature Sensor Error (open/short)	OUTDOOR UNIT
E241	COND OUT Sensor of Outdoor Unit breakaway Error	OUTDOOR UNIT
E251	Discharge Temperature Sensor Error (open/short)	OUTDOOR UNIT
E262	Discharge Sensor breakaway Error	OUTDOOR UNIT
E266	Comp Top Sensor breakaway Error	OUTDOOR UNIT
E269	SUCTION Sensor breakaway Error	OUTDOOR UNIT
E276	Compressor Top Temperature Sensor Error (open/short)	OUTDOOR UNIT
E291	High Pressure Sensor Error (open/short)	OUTDOOR UNIT
E296	Low Pressure Sensor Error (open/short)	OUTDOOR UNIT
E308	Suction Sensor Error (open/short)	OUTDOOR UNIT
E381	Outdoor Inverter1 Controller PCB Overheat	OUTDOOR UNIT
E403	Protect for Freezing Control Error	OUTDOOR UNIT
E407	COMP down due to High PressureSensor Protection Control	OUTDOOR UNIT
E410	COMP down due to Low PressureSensor Protection Control	OUTDOOR UNIT
E416	Comp down due to discharge Temperature	OUTDOOR UNIT
E425	Outdoor Reverse Phase or Missing Phase Detect Error	OUTDOOR UNIT
E428	COMP down by Compression Ratio control Error	OUTDOOR UNIT
E436	Protect for Freezing Burst Control Error	OUTDOOR UNIT
E438	EVI EEV Opening Error	OUTDOOR UNIT
E439	Refrigerant Leakage Error (Detect when the system is not operated)	OUTDOOR UNIT
E440	Forbid Heat mode Operation when Outdoor Temperature is over 43 °C	OUTDOOR UNIT

Display	Explanation	Error Source
E441	Forbid Cooling Mode when Outdoor Temperature is Low 10 °C	OUTDOOR UNIT
E443	No startup due to Low pressure	OUTDOOR UNIT
E458	Outdoor unit Fan Error	OUTDOOR UNIT
E461	[Inverter] COMP Operating failure	OUTDOOR UNIT
E462	All currency control COMP Stop Or CT2 Low currency	OUTDOOR UNIT
E464	[Inverter] DC peak Error	OUTDOOR UNIT
E465	Compressor V limit Error	OUTDOOR UNIT
E466	[Inverter] DC-Link voltage under/over Error	OUTDOOR UNIT
E467	COMP Revolute Error	OUTDOOR UNIT
E468	[Inverter] Comp Current Sensor Error	OUTDOOR UNIT
E469	DC Link Sensor Error	OUTDOOR UNIT
E471	[Inverter] OTP Error → Outdoor unit EEPROM Read/Write Error (OTP error)	OUTDOOR UNIT
E474	[Inverter] IPM Heat Sink Error	OUTDOOR UNIT
E475	Outdoor unit BLDC Fan Error	OUTDOOR UNIT
E483	H/W DC_link over voltage Error	OUTDOOR UNIT
E484	PFC Overload Error	OUTDOOR UNIT
E485	[Inverter] Input Current Sensor Error (open/short)	OUTDOOR UNIT
E488	AC Input Voltage Sensor Error	OUTDOOR UNIT
E500	IPM Overheat Error for Inverter COMP	OUTDOOR UNIT
E507	Comp Down due to high pressure or High Pressure Switch Open	OUTDOOR UNIT
E536	PHE refrigerant leakage error	Outdoor unit
E554	Refrigerant leakage error (detection during system operation)	Outdoor unit
E563	INDOOR UNIT Mixed Install Error	OUTDOOR UNIT
E590	[Inverter] Data flash Error	OUTDOOR UNIT
E897	Water Tank in sensor error(Short/Open)	Indoor unit
E899	Zone1 Tw Temperature Sensor Short/ Open	Hydro Unit
E900	Zone2 Tw Temperature Sensor Short/ Open	Hydro Unit
E901	Water Inlet Sensor Error (open/short)	OUTDOOR UNIT
E902	Water Outlet Sensor Error (open/short)	OUTDOOR UNIT
E904	Water TANK Sensor SHORT / OPEN	Hydro Unit
E906	Outdoor EVA in Sensor Error (open/short)	OUTDOOR UNIT
E910	Water Temperature Sensor on water Outlet pipe is datached	Hydro Unit
E911	FLow Swtich Open Error	Hydro Unit
E912	FLow Swtich Close Error	Hydro Unit
E914	Error due to Incorrect Themostat Connection	Hydro Unit
E916	Mixing Sensor Short/Open	Hydro Unit
E919	Disinfection Operation Incomplete Error	Hydro Unit
E973	Water pressure sensor research (Short/ Open)	Outdoor unit

Technical data

Refrigerant circuit diagram

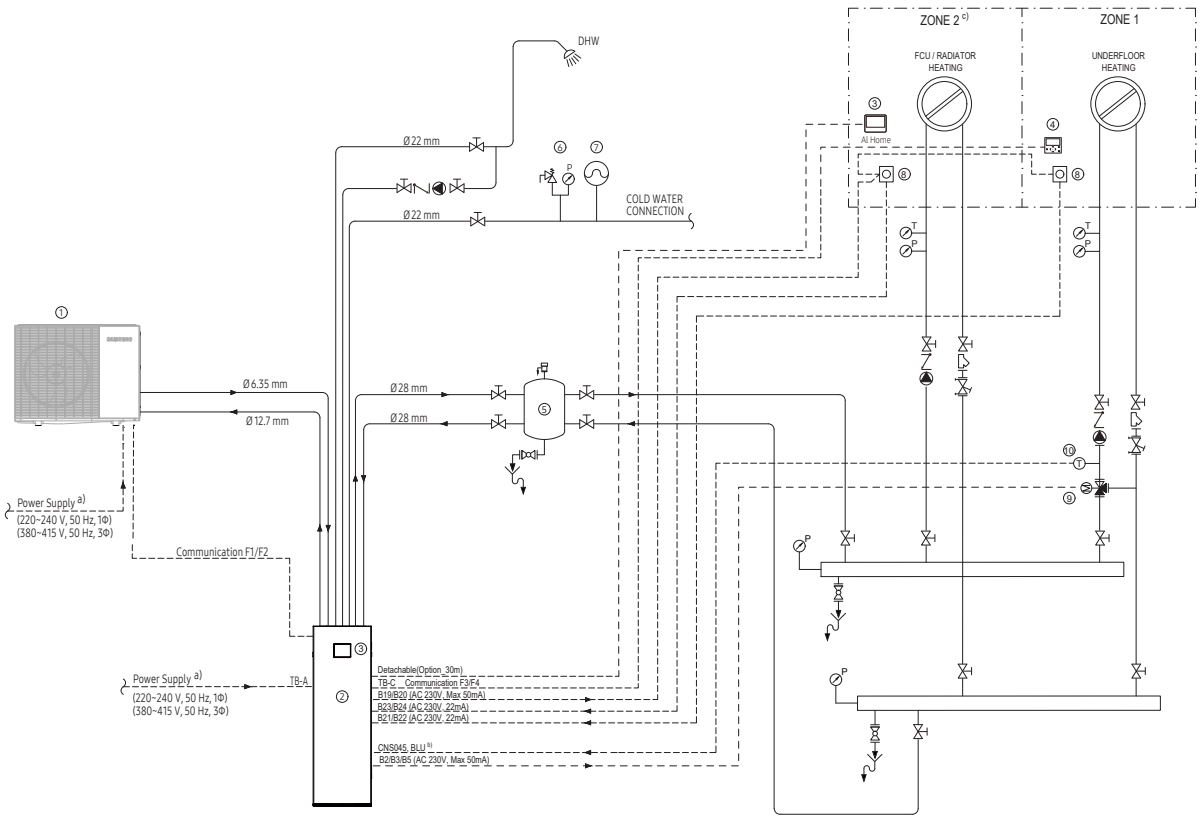
- AE125DXED*G/AE160DXED*G



COMP	Compressor
HX_M	Heat Exchanger - Main (Outdoor Unit)
AC	Accumulator
PS_H	Pressure Sensor - High
PS_L	Pressure Sensor - Low
PW_H	Pressure Switch - High
V_HG	Hot gas Bypass Valve
E_M	Electronic Expansion Valve - Main
V-4W	4Way Valve
T_CT	Thermistor - Compressor Top

COMP	Compressor
T_D	Thermistor - Discharge pipe
T_S	Thermistor - Suction pipe
T_CO	Thermistor - Cond out
T_A	Thermistor - Ambient
OFM	Outdoor Fan Motor
SV_G	Service Port - Gas
SV_L	Service Port - Liquid
PT-C	Pinch tube

Piping & Wiring diagram



a) Samsung EHS ClimateHub is available in 1-phase and 3-phase version.

b) Mixing valve temperature sensor for floor heating comes with tank integrated hydro unit (15 m red cable, blue connector on PBA).

c) When both zones are simultaneously Thermo On, the operation is performed based on Zone 2. Set the zone with the higher set temperature to Zone 2.

d) Air vent included in tank integrated hydro unit. In case that the water piping would be located in a higher position than the air vent of the tank integrated hydro unit, it is necessary to add additional one at the highest position of the water circuit.

e) Pumps for radiator and floor heating can be regulated (on/off) by tank integrated hydro unit (terminals B10/B11 and B14/B15) or their own regulators. Based on the current logic only with two zones control with wired remote controller. Not with thermostat.

f) 200 L tank integrated hydro unit has six connection pipes (water inlet/outlet, space heating inlet/outlet and DHW inlet/outlet).

g) The 4-pipe structure buffer tank shown in this scheme is an example of the installation, and the buffer tank installation in the actual site can differ depending on the project requirements.

Technical data

No.	Legend
①	Samsung EHS ClimateHub outdoor unit
②	Samsung Tank Integrated Hydro unit [f)]
③	Samsung Wi-Fi Module
④	Samsung Wired Remote Controller (MWR-WW10N)
⑤	Balancing vessel (Decoupler)
⑥	Safety group (Safety valve, Manometer)
⑦	Expansion vessel
⑧	3way mixing valve for floor heating (in case of combination with radiators)
⑨	Mixing valve temperature sensor [b)]
⑩	Vibro-isolating mounting bases

Symbols	
	Circulation pump
	Shut off valve
	Ball valve
	Check valve
	Strainer
	Temperature gauge
	Pressure gauge
	Safety valve
	3way mixing valve
	Regulation valve
	Temperature sensor
	Air vent (apply when necessary) [d)]
	Relay

Reference (KEYMARK Certification)

SAMSUNG

This appliance is filled with R-32.