

Installation Manual AIR-TO-WATER HEATPUMP OUTDOOR UNIT

WH-WXG20ME8, WH-WXG25ME8, WH-WXG30ME8



CAUTION

R290 REFRIGERANT

This AIR-TO-WATER HEATPUMP contains and operates with refrigerant R290.

THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.

Refer to National, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

Required tools for Installation Works

1 Phillips screw driver	11 Thermometer
2 Level gauge	12 Megameter
3 Electric drill, hole core drill	13 Multimeter
4 Hexagonal wrench (4 mm)	14 Torque wrench
5 Spanner	15 Hand gloves
6 Pipe cutter	16 Vacuum pump
7 Reamer	17 Gauge manifold
8 Knife	18 Recovery machine
9 Gas leak detector	19 Recovery cylinder
10 Measuring tape	20 Torque Phillips Screw Driver

Explanation of symbols displayed on the indoor unit or outdoor unit.

	WARNING	This symbol shows that this equipment uses a flammable refrigerant with safety A3 group per ISO 817. If the refrigerant is leaked, together with an external ignition source, there is a possibility of fire / explosion.
	CAUTION	This symbol shows that the Installation Manual should be read carefully.
	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the Installation Manual.
	CAUTION	This symbol shows that there is information included in the Operation Manual and/or Installation Manual.

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Electrical works and water installation works must be done by licensed electrician and licensed water system installer respectively. Be sure to use the correct rating and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignorance or negligence of the instructions will cause harm or damage, and the seriousness is classified by the following indications.
- Please keep the operation and installation manuals with the unit after installation.

	WARNING	This indication shows the possibility of causing death or serious injury.
	CAUTION	This indication shows the possibility of causing injury or damage to properties only.












































The items to be followed are classified by the symbols:

	Symbols with white background indicate prohibited items.
	Symbols with dark background must be executed.

- Carry out test run to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions.
- If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.

WARNING










	Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit method or using incompatible material may cause product damage, burst and serious injury.
	Do not install outdoor unit near balcony railings. If the outdoor unit is installed on the balcony of a high-rise building, small children may climb onto the outdoor unit and climb over the railing, which may lead to an accident.
	Do not use unspecified cable or joint cable for power supply cable. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
	Do not tie up the power supply cable into a bundle by band. Abnormal temperature rise on power supply cable may happen.

	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury. 
	Do not sit on or step on the unit, you may fall down accidentally. 
	Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
	Do not purchase unauthorized electrical parts for installation, service, maintenance and etc.. They might cause electrical shock or fire.
	Do not modify wires of Outdoor Unit for installation of other components (such as heaters). Overloading of wires or wire connection points may cause electrical shock or fire.
	Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat above 360°C, flame, sparks, or other sources of ignition. Else, it may explode and cause injury or death.
	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
	For water circuit installation work, follow to relevant European and national regulations (including EN61770) and local plumbing and building regulation codes.
	For electrical work, follow local wiring standards and regulations and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in the electrical work, it will cause electrical shock or fire.
	Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
	Only use the supplied or specified installation parts. Else, it may cause unit vibrate, fall, water leakage, electrical shock, or fire.
	<ul style="list-style-type: none"> • The refrigerant cycle is completed inside the outdoor unit. • No refrigerant pipework is required. • Also, no pump-down operation is required.
	For installation of refrigeration system, strictly follow this installation procedures. Incorrect installation may cause water leakage, which may lead to electrical shock or fire.
	Install at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
	Do not use joint cable for outdoor connection cable. For outdoor connections, use the specified outdoor connection cable. Refer to instruction 6 CONNECT THE CABLE TO THE OUTDOOR UNIT and connect tightly. Clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.
	Wiring must be properly routed to ensure that the control board cover is correctly secured. If the control board cover is not fully secured, it will cause fire or electrical shock.
	After installation is complete, make sure that there is no refrigerant gas leak. There is a risk of fire or explosion if the refrigerant contacts fire.
	If refrigerant gas leaks during operation, ventilate the room. Extinguish all sources of fire, if any. If the refrigerant contacts fire, there is a possibility of fire / explosion.
	This installation may be subjected to building regulation approval applicable to respective country that may require to notify the local authority before installation.
	If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.
	When installing electrical equipment at wooden building of metal lath or wire lath, in accordance with electrical facility standard, no electrical contact between equipment and building is allowed. Insulator must be installed in between.
	Any work carried out on the outdoor unit after removing any panels which is secured by screws, must be carried out under the supervision of authorized dealer and licensed installation contractor.
	Be aware that R290 Refrigerant is odourless and flammable.
	This equipment must be installed with Residual Current Device(RCD) on power-line(grid) according to the respective national wiring rules or country-specific safety measures in terms of residual current.
	This equipment must be properly earthed. Electrical earth must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of insulation breakdown or earth fault of the outdoor unit.
 CAUTION	
	Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.
	Do not install the outdoor unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
	Do not release refrigerant while repairing refrigeration components. Be careful of liquid refrigerants as it can cause frostbite.
	Make sure the insulation of power supply cable does not contact hot part (i.e. refrigerant piping) to prevent from insulation failure (melt).
	Do not touch the sharp aluminium fins. Sharp edges may cause injury. 
	Select an installation location which is easy for maintenance. Incorrect installation, service or repair of this outdoor unit may increase the risk of rupture and this may result in loss, damage or injury and/or property.
	Power supply connection <ul style="list-style-type: none"> • Power supply point should be in easily accessible place for power disconnection in case of emergency. • Comply with local national wiring standard, regulation, and this installation instruction. • Strongly recommended to make permanent connection to a circuit breaker. <ul style="list-style-type: none"> - Power supply: Use approved 20A 4-poles circuit breaker with a minimum contact gap of 3.0mm.
	Ensure the correct polarity is maintained throughout all wiring. Otherwise, it will cause electrical shock or fire.
	Installation work. It may need two or more people to carry out the installation work. The weight of outdoor unit might cause injury if carried by one person.
	Ensure that the required ventilation openings are free from obstacles.
	Water piping in the occupied space should be installed in such a way as to prevent accidental damage during operation and service.
	Be careful not to subject the water piping to excessive vibration or pulsation.
	Protect water piping from accidental burst that may be caused by moving furniture or rebuilding activities.
	<ul style="list-style-type: none"> • The water piping should be routed to the shortest possible length. Avoid using dented pipes and avoid sharp bending. • It must be ensured that water piping is protected from physical damage.



Precautions for use of R290 refrigerant

- Pay close attention to the following points:

WARNING

	Mixing different types of refrigerants in the system is prohibited.
	Do not place any part of the refrigeration circuit (evaporator, air cooler, AHU, condenser, or liquid receiver) or pipework near heat source, naked flame, or gas appliance or electric heater in operation.
	Operation, maintenance, repair and recovery of refrigerants must be carried out by personnel trained and certified in the use of flammable refrigerants and in accordance with the manufacturer's recommendations. Personnel who operate, service or maintain the relevant parts of the system or equipment must be trained and certified.
	The user, owner or their authorised representative shall, where required by national regulations, regularly check alarms, mechanical ventilation, and detectors at least once a year to ensure they are functioning correctly.
	A logbook shall be maintained. The results of these checks shall be recorded in the logbook.
	In case of occupied space ventilation, it must be ensured that there are no obstacles.
	Before operating a new refrigeration system, the person responsible for operating the system must ensure that trained and certified operators are instructed in the construction, supervision, operation and maintenance of the refrigeration system, as well as the safety measures to be observed and the properties and handling of the refrigerants used in accordance with the operating manual.
	The general requirements for trained and certified personnel are as follows: a) Knowledge of legislation, regulations and standards relating to flammable refrigerants. b) Detailed knowledge and skills in handling flammable refrigerants, personal protective equipment, refrigerant leak prevention, cylinder handling, charging, leak detection, recovery, and disposal. c) Able to understand and apply in practice the requirements of national laws, regulations and standards. d) Continuously undergoing regular and further training to maintain the expertise.
	Ensure that protective devices, refrigeration circuits and accessories are adequately protected against adverse environmental effects (e.g. risk of water freezing in the relief pipe or accumulation of dirt and debris).

CAUTION

	<p>1. Installation</p> <ul style="list-style-type: none"> • Must comply with national gas regulations, state and local laws and regulations. Notify the relevant authorities in accordance with all applicable regulations. • It must be ensured that the mechanical connections are accessible for maintenance. • If mechanical ventilation is required, the ventilation openings must be kept free from obstacles. • For disposal of the product, follow the precautions in #12 and comply with national regulations. • Always contact your local municipal office for appropriate handling.
	<p>2. Servicing</p> <p>2-1. Service personnel</p> <ul style="list-style-type: none"> • Qualified personnel engaged in work or entry into refrigerant circuits must have a valid qualification from an industry-recognised assessment body. This assessment body certifies the ability to safely handle refrigerants according to the industry-accepted assessment specifications. • Maintenance should only be carried out in accordance with the equipment manufacturer's recommendations. Maintenance and repairs requiring the assistance of other skilled persons shall be carried out under the supervision of persons competent in the use of flammable refrigerants. • Maintenance should only be carried out in accordance with the manufacturer's recommendations. • The system is inspected, regularly supervised, and maintained by trained and certified service personnel employed by the user or responsible party. • Make sure that the charged refrigerant do not leak. <p>2-2. Work procedures</p> <ul style="list-style-type: none"> • As the system contains flammable refrigerant, a safety inspection is required before commencing work on the system to ensure that the risk of ignition has been minimised. When repairing refrigeration unit, follow the precautions in 2-2 through 2-8. • To minimise the risk of flammable gas or vapour being present during the execution of the work, the work must be carried out under controlled procedures. • All maintenance and other staff working on site shall be instructed and supervised as to the nature of the work being carried out. • Avoid working in enclosed spaces. Always keep away from the source, and maintain a safety distance of at least 2 metres or perform zoning of open space areas of at least a 2-metre radius. • Wear suitable protective equipment, including respiratory protection, depending on the situation. • Keep ignition sources and hot metal surfaces away. <p>2-3. Checking for presence of refrigerant</p> <ul style="list-style-type: none"> • The area should be checked with a suitable refrigerant detector before and during the work to ensure that the technician is aware of potential flammable atmosphere. • Ensure that the leak detection device used is suitable for use with flammable refrigerants, i.e. that it is not producing sparks, properly sealed or intrinsically safe. • If a leak/spill occurs, ventilate the area immediately and stay upwind and away from the leak/spill. • In the event of a leak/spill, notify persons downwind of the leak/spill, isolate the imminent danger area and ensure that unauthorised persons do not enter the area. <p>2-4. Availability of fire extinguishers</p> <ul style="list-style-type: none"> • When performing high-temperature work on refrigeration unit or related components, suitable fire extinguishing equipment must be prepared at hand. • Provide a powder fire extinguisher or CO₂ extinguisher near the charging area. <p>2-5. No ignition sources</p> <ul style="list-style-type: none"> • Personnel carrying out work related to refrigeration systems must not use ignition sources in such a way as to create a fire or explosion hazard. Smoking is not allowed when carrying out such work. • All possible ignition sources, including cigarette smoking, must be kept well away from the site of installation, repair or removal. While performing such works, flammable refrigerants may be released into the surrounding space. • Before carrying out any work, check the surroundings of the equipment to ensure that there are no flammability and/or ignition hazards. • "No Smoking" signs must be displayed.

2-6. Well-ventilated areas

- Before work into refrigerant circuit or working with fire, ensure that the area is outdoor or adequately ventilated.
- Some degree of ventilation shall be maintained while the work is being carried out.
- Ventilation must safely disperse the released refrigerant, preferably to the outside atmosphere.

2-7. Checking refrigeration equipment

- In case of change of electrical components, the changed components must be fit for the purpose and to the correct specification.
- Always follow the manufacturer's maintenance and service guidelines.
- If there is any doubt, contact the manufacturer's technical department.
- The following checks must be applied to equipment using flammable refrigerants:
 - Ventilators and exhaust vents are in good working order and free from obstacles.
 - If an indirect refrigeration circuit is used, the presence of refrigerant in the secondary circuit should be checked.
 - Keep equipment markings remain visible and legible. Any illegible signs or markings should be corrected.
 - Refrigeration piping and components are installed in a position where they are less exposed to substances that may corrode the refrigerant, unless the components are made of inherently corrosion-resistant materials or are adequately protected against corrosion.

2-8. Checking electrical equipment

- Repair and maintenance of electrical components must include initial safety checks and component inspection procedures.
- Initial safety checks must include, but are not limited to:
 - Capacitor has been discharged: This check must be carried out in a safe manner to avoid the possibility of sparks.
 - No live electrical components or wiring are exposed during charging, recovery or purging of the system.
 - Earth connection is continuous.
- Always follow the manufacturer's maintenance and service guidelines.
- If there is any doubt, contact the manufacturer's technical department.
- If a fault exists that could compromise safety, power supply must not be connected to the circuit until the problem has been resolved.
- If the fault cannot be corrected immediately but the operation needs to continue, a suitable temporary solution should be used.
- Then, the owner of the equipment must be notified or reported so that all parties are subsequently informed.

3. Repairing sealed components

- During repair of sealed components, all power supply must be disconnected from the equipment being worked on before removing sealed covers, etc.
- If it is absolutely necessary to supply power to equipment during servicing, a permanently operating form of leak detection should be located at the most critical points to warn of potentially hazardous situations.
- Particular attention must be paid to the following points to ensure that work on electrical components does not alter the casing in such a way as to affect the level of protection: These include damaged cables, excessive numbers of connections, terminals that differ from the original specifications, damaged seals and improperly fitted glands.
- Ensure that the equipment is securely fitted.
- Ensure that seals and sealing materials have not deteriorated to such an extent that they no longer serve the purpose of preventing the ingress of flammable atmosphere.
- Replacement parts shall be in accordance with the manufacturer's specifications.

Note: Use of silicone sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe explosion-proof components do not need to be isolated before work.

4. Repairing intrinsically safe components

- Do not apply any permanent inductive or capacitive loads to the circuit without ensuring that this will not exceed the permissible voltage and current for the equipment in use.
- Intrinsically safe components are the only type that can work in the presence of a flammable atmosphere.
- The test equipment must be at the correct rating.
- Replace components only with parts specified by the manufacturer. Use of parts not specified by the manufacturer may result in refrigerant leakage and ignition of the refrigerant in the atmosphere.

5. Cabling

- Ensure that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or other adverse environmental effects.
- The checks should also take into account the effects of ageing and continuous vibration from sources such as compressors and fans.

6. Detection of flammable refrigerants.




- Under no circumstances should potential ignition sources be used to search for or detect refrigerant leaks.
- Do not use halide torches (or other detectors that use naked flames).

7. The following leak detection methods are considered acceptable for all refrigerant systems

- No leakage shall be detected if a detection device with a sensitivity of 5 grams or more of refrigerant per year is used under a pressure of at least 0.25 times the maximum permissible pressure (>0.98 MPa, max 3.90 MPa). An example is universal sniffer.
- Electronic leak detectors can be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need recalibration. (Calibration of the detector should be carried out in an area free from refrigerant.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection device must be set to a percentage of the LFL of the refrigerant, calibrated to the refrigerant used, and the appropriate percentage of gas (up to 25%) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants, including bubble and fluorescent agents. Avoid using detergents containing chlorine, as chlorine may react with refrigerants and corrode copper tubes.
- If a leak is suspected, all ignition sources must be removed or extinguished.
- If a refrigerant leak which requires brazing is found, all refrigerant must be recovered from the system. To remove the refrigerant, precautions #8 must be followed.

<p>8.</p> <p>!</p>	<p>8. Removal and evacuation</p> <ul style="list-style-type: none"> Conventional procedures shall be used when working into the refrigerant circuit for repair or for any other purpose. However, it is important to follow best practice since flammability is a consideration. The following procedures must be followed: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <ul style="list-style-type: none"> Remove refrigerant -> • Purge the circuit with inert gas -> • Create vacuum -> • Purge with inert gas -> Open the circuit by cutting. Do not use brazing. </div> <ul style="list-style-type: none"> The charged refrigerant shall be recovered in the correct recovery cylinder. The system must be purged with OFN to secure the appliance safe. (Remarks: OFN = oxygen-free nitrogen, a type of inert gas) This process may need to be repeated several times. Do not use compressed air or oxygen for this task. Purging must be achieved by breaking the vacuum in the system with OFN, continuing to fill until the working pressure is reached, then venting to atmosphere, and finally reducing the pressure to vacuum. This process must be repeated until there is no refrigerant in the system. (until the purge gas concentration detected by the leak detector is below 0.25 LFL) * 0.25 LFL = 0.525 Vol% When the final OFN charge is used, the system must be vented to atmospheric pressure to allow work to be carried out. This operation is absolutely essential when brazing pipes. Ensure that the outlet of the vacuum pump is not near an ignition source and that ventilation is available.
<p>9.</p> <p>!</p>	<p>9. Charging procedures</p> <ul style="list-style-type: none"> In addition to conventional charging procedures, the following requirements must be followed: <ul style="list-style-type: none"> When charging equipment is used, ensure that contamination of different refrigerants does not occur. Hoses and lines should be as short as possible to minimise the amount of refrigerant contained in them. Cylinders must be stored in the appropriate position according to instructions. Ensure that the refrigeration system is earthed before charging refrigerant into the system. <ul style="list-style-type: none"> Label the system, once the charging is complete. (if not yet completed) Extreme care must be taken not to overfill the cooling system. Before refilling the system, a pressure test must be carried out with OFN. (See #8) The system must be leak tested after completion of charging and before commissioning. A follow-up leak test must be carried out before leaving the site. Static build-up may occur while charging and purging refrigerant and it can cause hazardous conditions. To avoid fire and/or explosion, earth the containers and equipment before charging/releasing to dissipate static electricity during transport.
<p>10.</p> <p>!</p>	<p>10. Decommissioning</p> <ul style="list-style-type: none"> Before carrying out this procedure, it is important that the technician is familiar with the equipment and all its details. It is recommended to recover all refrigerants safely. Reuse of recovered refrigerants is prohibited. It is important that electrical power is available before commencing the work. <ol style="list-style-type: none"> Become familiar with the equipment and its operation. Electrically isolate the system. Before carrying out the procedure, ensure that: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <ul style="list-style-type: none"> If required, mechanical handling equipment can be used for handling refrigerant cylinders. All personal protective equipment and leak detectors are available and used correctly. The recovery process is always supervised by a competent person. Recovery devices and cylinders comply with appropriate standards. </div> Make sure that the cylinder is placed on the scale before commencing recovery. Start the recovery machine and operate it according to the instructions. Do not overfill the cylinder. (No more than 80 % volume liquid charge) Do not exceed the maximum working pressure of the cylinder, even temporarily. Once the cylinder has been correctly filled and the process completed, ensure that the cylinder and equipment are promptly removed from the site and that all shut-off valves on the equipment are closed. Static build-up may occur while charging and purging refrigerant and it can cause hazardous conditions. To avoid fire and explosion, earth the containers and equipment before charging/releasing to dissipate static electricity during transport.
<p>11.</p> <p>!</p>	<p>11. labelling</p> <ul style="list-style-type: none"> The equipment shall be labelled to indicate that it has been decommissioned and empty of refrigerant. Labels shall be dated and signed. Ensure that a label is attached to the equipment indicating that the equipment contains flammable refrigerants.
<p>12.</p> <p>!</p>	<p>12. Recovery</p> <ul style="list-style-type: none"> When removing refrigerant from a system for maintenance or decommissioning, it is recommended to remove all refrigerant safely. When transferring refrigerant into cylinders, always use only suitable refrigerant recovery cylinders. Ensure that the correct number of cylinders are available to accommodate the total charge of the system. All cylinders used are designated for recovered refrigerants and labelled for that refrigerant. (i.e. special cylinders for recovery of refrigerant) The cylinder must be equipped with a pressure relief valve and associated shut-off valve in good working order. Before recovery is commenced, the recovery cylinder is vented and, if possible, cooled. Recovery equipment must have a set of instructions on the equipment at hand, be in good working order and be suitable for the recovery of flammable refrigerants. Ensure that the recovery equipment is not a potential source of ignition and is suitable for the refrigerant being used. In addition, a set of calibrated scales must be available and in good working order. Hoses must be in good condition with leak-free disconnect couplings. Before using the recovery machine, make sure that it is fully operational and properly maintained, and that relevant electrical components are sealed to prevent ignition in the event of a refrigerant release. If there is any doubt, contact the manufacturer. The recovered refrigerant should be returned to the refrigerant supplier in a suitable recovery cylinder and the relevant waste transfer note should be prepared. Do not mix refrigerants in the recovery unit, especially in the cylinder. When removing compressor or compressor oil, ensure that it is exhausted to an acceptable level so that no flammable refrigerant remains in the lubricant. The exhaust process must be carried out before the compressor is returned to the supplier. To facilitate this process, only electrical heating to the compressor body is used. Any draining of oil from the system must be carried out safely.

Attached accessories

No.	Accessories part	Qty.
1	Drain Elbow 	1
2	Rubber Cap 	6
3	Rubber Cap 	15

Optional Accessories

No.	Accessories part	Qty.
4	Remote Controller set (CZ-RTW2TAW1C) *Include Remote Controller + Network adapter with 10m cable	1
5	Remote Controller (CZ-RTW2)	1
6	Base Pan Heater CZ-NE5P	1
7	Mod Bus	1

- When you purchase an indoor unit, the remote controller and network adapter are included.
- When the outdoor unit is used alone, either 4 or 5 is always required.
- If you need the 2nd remote controller, purchase 5 and set it up as the 2nd remote controller.
- When installing the outdoor units in cold climates, it is strongly recommended to install a base pan heater (optional). For installation details, refer to the installation manual of the base pan heater (optional).

1 SELECT THE BEST LOCATION (Outdoor Unit)

- If an awning is placed over the unit to avoid direct sunlight or rain, be careful not to disturb the heat dissipation from the capacitor.
- Avoid installation where the ambient temperature may fall below -25°C.
- A protective zone is defined in the area close to the perimeter of the product. Refer to **2 PROTECTIVE ZONE** section.
- Do not place obstacles that could short-circuit the discharge air.
- The lifespan of Outdoor Unit may be shorter if it is installed near the sea, in areas with high sulphur content or high oil content (e.g. machine oil).
- For maximum length and elevation between outdoor unit and Tank, refer to "Cooling/Heating Pipework" in **5 PIPING INSTALLATION**.
- Must be installed at an altitude of 2000m or less

2 PROTECTIVE ZONE

This outdoor unit is filled with R290(Extremely flammable gas, safety A3 group per ISO 817). Note that this refrigerant has a higher density than air. In case of a refrigerant leak, the leaked refrigerant may accumulate near the ground.

Prevent accumulation of refrigerant in any way that is potentially dangerous, explosive or risk suffocation. Prevent refrigerant from entering the building through building openings. Prevent accumulation of refrigerant in the drain grooves.

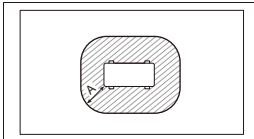
A protective zone is defined around this outdoor unit. There must be no building openings, windows, doors, light shafts, cellar entrances, escape hatches, flat-roof windows or ventilation openings in the protective zone.

There must be no ignition sources, such as heat above 360°C, sparks, open flame, plug sockets, light switches, lamps, electrical switches or other permanent ignitions sources, in the protective zone.

The protective zone must not extend to adjacent buildings or public traffic areas (boundaries of neighbors, the public road, neighbor's private roads, subsidence area, depressions, pump shafts, sewers intakes, waste water shafts and so on.).

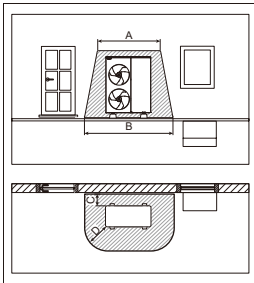
In the protective zone, you are not permitted to make any subsequent structural alterations which infringe the stated rules for the protective zone.

1) Protective zone for ground installation (or flat-roof installation) at the open areas



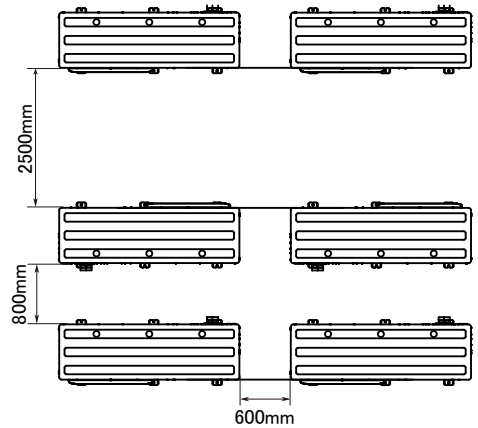
A 1500mm

2) Protective zone for ground installation in front of a building wall

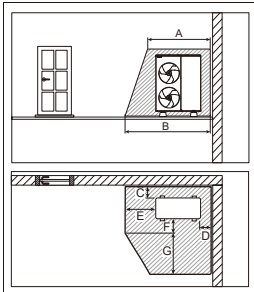


A 2400 mm
B 4500 mm
C 500 mm
D 1500 mm

4) Minimum distance when units are connected in close proximity



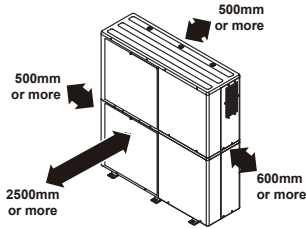
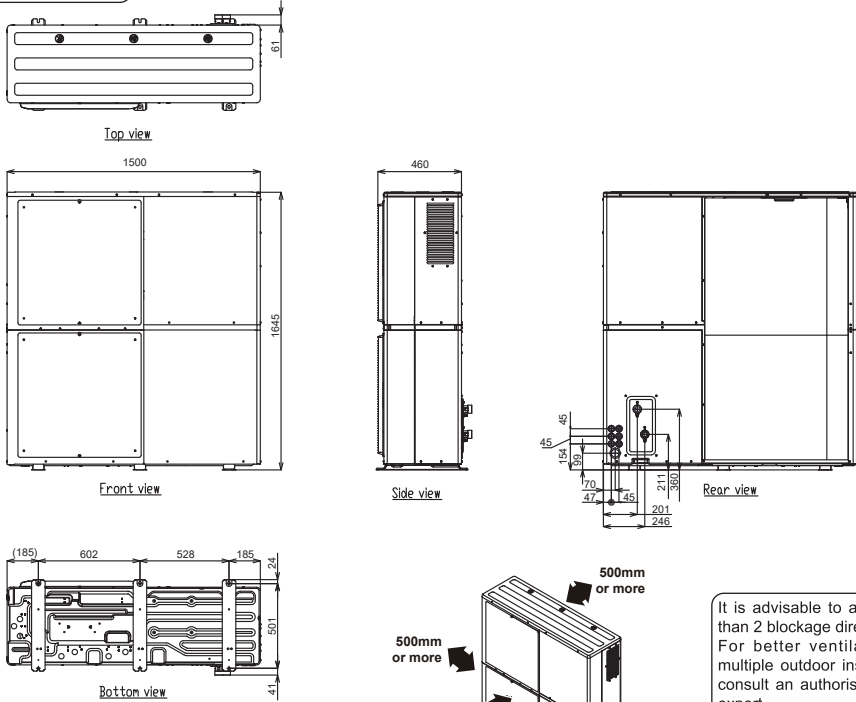
3) Protective zone for ground installation in a building corner



A 2400 mm
B 3600 mm
C 500 mm
D 600 mm
E 1500 mm
F 500 mm
G 2000 mm

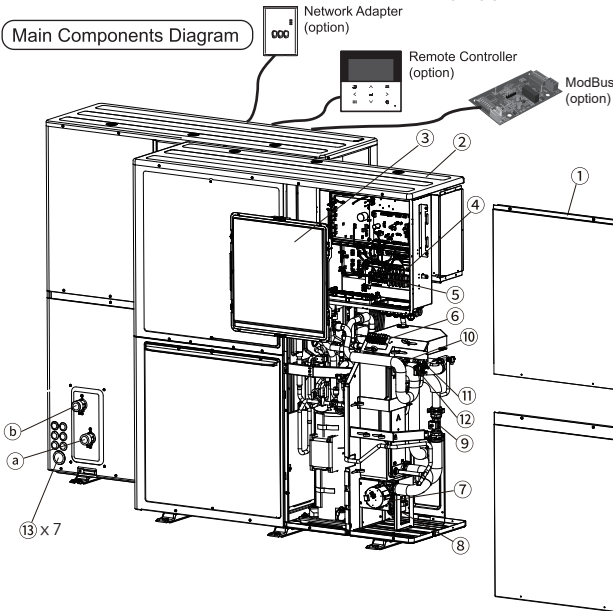
3 INSTALL OUTDOOR UNIT

Dimension Diagram



It is advisable to avoid more than 2 blockage directions. For better ventilation and multiple outdoor installations, consult an authorised dealer/expert.

Main Components Diagram

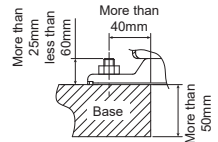


- ① Front plate
- ② Top plate
- ③ Terminal board cover
- ④ Terminal board
- ⑤ Optional terminal board
- ⑥ Indoor/outdoor connecting terminal
- ⑦ Water pump
- ⑧ Magnetic water filter
- ⑨ Flow sensor
- ⑩ Gas-liquid separator
- ⑪ Water pressure sensor (back side board)
- ⑫ Pressure relief valve
- ⑬ Connecting Cable Hole

Tube Connector	Function	
	Connector size	
a	Zone 1 Water Inlet (From Space Heating/Cooling)	
	R 1½"	
b	Zone 1 Water Outlet (To Space Heating/Cooling)	
	R 1½"	

INSTALL THE OUTDOOR UNIT

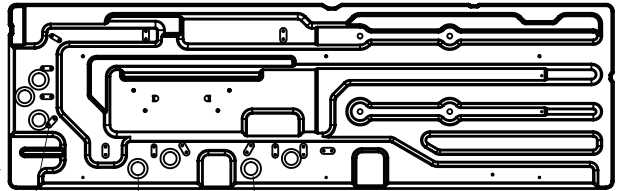
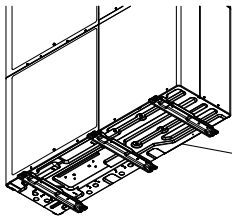
- After selecting the best location, start installation according to the Installation Diagram.
1. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.
 2. For mounting on concrete or solid surfaces, fix the unit using M10 or W 3/8 bolts and nuts. Make sure that the unit is installed vertically against the horizontal plane.
(Install the unit using anchor bolt as shown right.)
 3. Install the outdoor unit outdoors
 4. Install the outdoor unit so that it is tilted horizontally.



DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- When the Drain elbow [1] is used, please ensure to:
 - The unit must be mounted on a stand at least 50 mm high.
 - Seal the $\varnothing 32$ mm holes with Rubber caps [3]. (Refer to the diagram below and install from the outside)
 - If drain water leaks, attach rubber caps [4] when necessary. (Refer to the diagram below and install from the outside)
 - When disposing drain water from the outdoor unit, use a tray (field supply) if necessary.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 consecutive days, it is recommended not to use the Drain elbow [1] Rubber caps [3] and Rubber caps [4] since drain water will freeze up and obstruct fan rotation.

FRONT SIDE



Rubber Cap [3] Rubber Cap [2] Drain Elbow [1]

REAR SIDE

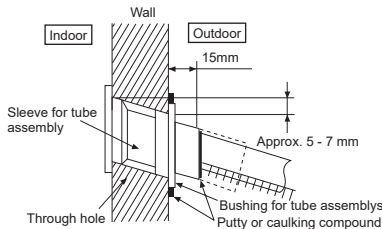
4 INSTALL A SLEEVE OF PIPING (DRILL A HOLE IN THE WALL)

1. Make a through hole. (Check pipe diameter and insulation thickness)
2. Insert the piping sleeve into the hole.
3. Fix the bushing to the sleeve.
4. Cut the sleeve until it extrudes about 15 mm from the wall.

CAUTION

- ! When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.

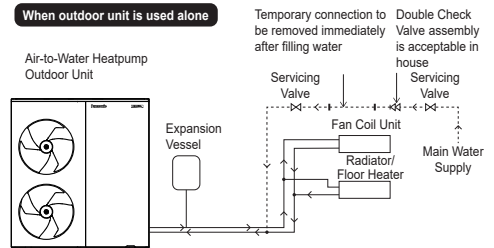
5. Finish by sealing the sleeve with putty or caulking compound at the final stage.



5 PIPING INSTALLATION

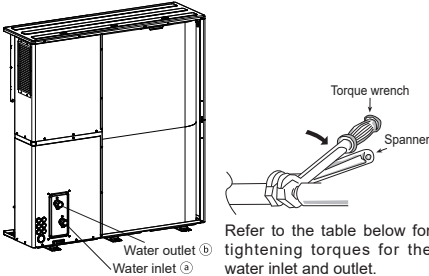
Typical Piping Installation

When outdoor unit is used alone



Water Piping Installation

- Please engage a licensed water circuit installer to install this water circuit.
- This water circuit must comply with relevant European and national regulations (including EN61770), and local building regulation codes.
- Ensure the components installed in the water circuit could withstand water pressure during operation.
- Do not use worn out tube or detachable hose set.
- Do not apply excessive force to the pipe. There is a risk of damage.
- Choose proper sealer which can withstand the pressures and temperatures of the system.
- Make sure to use two spanners to tighten the connection. Further tighten the nuts with torque wrench to the specified torque as stated in the table.
- Cover the pipe end to prevent dirt and dust when inserting it through a wall.
- If non-brass metallic piping is used for installation, make sure to insulate the pipes to prevent galvanic corrosion.
- Do not connect galvanised pipes. This may cause galvanic corrosion.
- Use correct nut for all Outdoor Unit tube connections and clean all tubes with tap water before installation.



	Size	Torque
Water Inlet Port (a)	R 1-1/2"	150 N•m
Water Outlet Port (b)		

⚠ CAUTION

Do not overtighten, overtightening may cause water leakage.

- Make sure to insulate the water circuit pipes to prevent reduction of heating capacity.
- After installation, check the water leakage condition in connection area during test run.
- Failure to connect the tube appropriately might cause the Outdoor Unit malfunction.
- Protection from frost:
When water is left inside the system, freezing up is very likely to happen, which could damage the system.
Make sure the power supply is turned off before draining.

When outdoor unit is used alone

Install an expansion tank (set pressure: 1 bar) to the circulation circuit. For capacity, refer to **RECONFIRMATION**.

Space Cooling/Heating Pipework

- Failure to connect the tube appropriately might cause the Outdoor Unit malfunction.
- Refer to the table below for the rated flow rate of each particular Outdoor Unit.

Model	Rated flow rate (L/min)		
	Cooling(Efficiency)	Cooling(Comfort)	Heating
WH-WXG20ME8	43.0	57.3	57.3
WH-WXG25ME8	43.0	71.6	71.6
WH-WXG30ME8	43.0	74.5	86.0

When outdoor unit is used alone

- Connect Outdoor unit Zone 1 Water inlet (a) to outlet connector of Zone 1 Panel/Floor heater.
- Connect Outdoor unit Zone 1 Water outlet (b) to inlet connector of Zone 1 Panel/Floor heater.

When connected to indoor unit

Refer to the Indoor Unit Installation Manual.

- * In the case of Control Module model, it is the same as outdoor unit alone case.

Pipe diameter and length

Refer to **Special Installation Patterns** in next page.

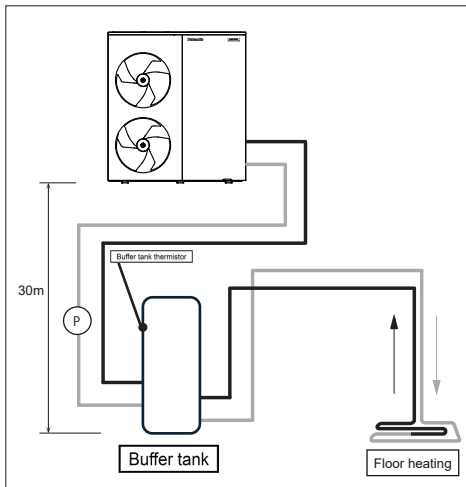
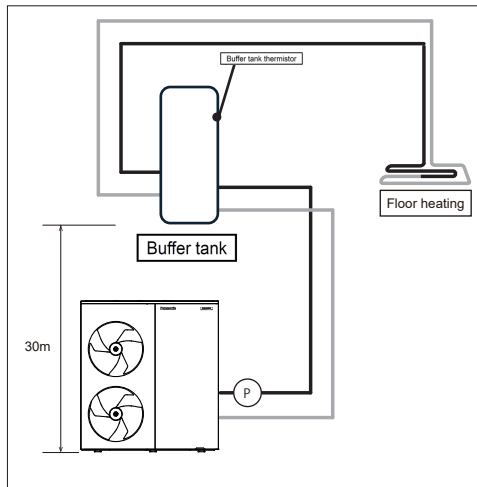
Model	Water piping (When outdoor unit is used alone)		
	Inner diameter	Insulation thickness	Maximum elevation between outdoor unit and Panel/Floor heater
WH-WXG20ME8	ø 32 mm	30 mm or more	10m
WH-WXG25ME8	ø 40mm		
WH-WXG30ME8			

- * WH-WXG30ME8 may require installation of an extra pump depending on piping length.

Special Installation Patterns

Special construction patterns mentioned here refer to the case where there is a substantial difference in elevation (e.g. more than 10 m) between the outdoor unit installation and the Panel/Floor heater (or indoor unit). In this case, attention must be paid since incorrect water filling during installation may prevent the system from operating correctly and may cause water leak.

- ① When outdoor unit is located below and Panel/Floor heater is 30 m above it
- ② When outdoor unit is located above and Panel/Floor heater is 30 m below it



- Pressure checked by remote controller: 3.5 ~ 4 bar. (at an elevation difference of 30 m)
- When installing an extra pump, connect it to the water outlet of the outdoor unit. (If installed to the water inlet, the safety valve is activated and the water is drained) Indoor unit is required to install an extra pump.
- Pressure checked by remote controller: 0.5 ~ 1 bar. (at an elevation difference of 30 m)
- When installing an extra pump, connect it to the water outlet of the indoor unit.
- Indoor unit is required to install an extra pump.

Elevation difference between outdoor unit and tank unit	Water pressure in outdoor unit	
	Outdoor unit above the tank unit	Up to 30m
Up to 20m		1.0~2.0bar
Up to 10m		1.0~3.0bar
Outdoor unit below the tank unit	Up to 10m	1.5~4.0bar
	Up to 20m	2.5~4.0bar
	Up to 30m	3.5~4.0bar

6 CONNECT THE CABLE TO THE OUTDOOR UNIT

⚠ WARNING

This section is intended for licensed electricians. Work inside terminal board covers ③ fixed with work screws must be carried out by an installer or service personnel under the supervision of qualified personnel.

Fixing of Power Supply Cable and Connecting Cable

- An isolating device must be connected to the power supply cable.
 - Isolating device (disconnecting means) should have minimum 3.0 mm contact gap.
 - Use approved polychloroprene sheathed flexible cable of type designation 60245 IEC 57, H07RN-F or heavier. Connect the other end of the cable to isolating device (Disconnecting means). See table below for cable size requirements.

Power Supply Cable

Model	WH-WXG20ME8 WH-WXG25ME8 WH-WXG30ME8
Cable specification	5X10mm ² ~5X16mm ²
Cable Diameter	∅ 5~8.8mm
Cable gland to be used (see diagram in 2 below)	A
Isolating Devices	50A
Recommended RCD	30mA, 4P, typeA

- Earth wire shall be longer than the other wires as shown in the figure 3 for the electrical safety in case of the slipping out of the cord from the Holder (Clamper).
This equipment complies with IEC 61000-3-12 provided that the short-circuit power S_{sc} is greater than or equal to 5300kVA (30kW model)/4500kVA(25kWmodel)/3600kVAw(20kW model) at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power S_{sc} greater than or equal to 5300kVA(30kW model)/4500kVA (25kWmodel)/3600kVAw(20kW model) at the interface .

- Connecting cable must be an approved polychloroprene sheathed flexible cable (see table below), type designation 60245 IEC 57, H07RN-F or heavier. The sheath diameter of some connecting cables must be within specification compatible with the cable gland.

	Tank temperature sensor	Remote controller
Cable Specifications	2 × min 0.75 mm ²	2×min 0.5mm ² or more, double insulation sheathed (PVC or rubber) and shielded cable

	3-Way Valv	Boiler	EXTRA PUMP
Cable Specifications	3 × min 1.0 mm ²	2 × min 1.5 mm ²	
Cable Diameter	∅ 6.5~10.0mm		
Cable gland to be used (see diagram in 2 below)	B		

- Route the cables as follows.

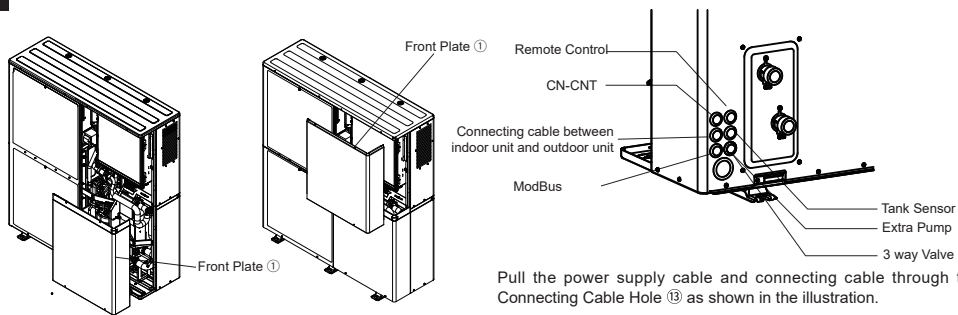
- Do not damage the cables by sharp edges.

- Remove the front plate ① and pull the power cable (cabletyre cable *1) and connection cable through into the rear bushing. Be sure to use the bushing and do not lose it.
- Remove the terminal board cover ③ and cable gland cap and insert the cables into the cable gland on the bottom of the electrical control unit box.
- Connect to Terminal board ④ and optional terminal board ⑤.
- Fix the cable gland by referring to [Figure 2]*2
- Set the terminal board cover ③ by referring to [Figure 2] *2

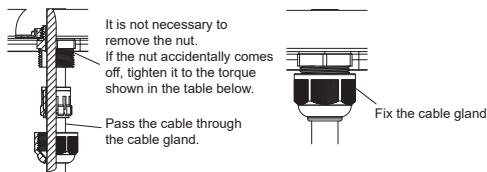
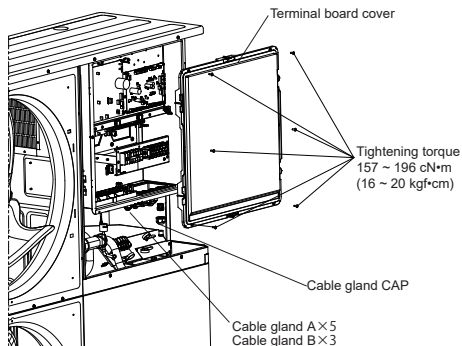
*1 Locally procure the specified cabletyre cable.

*2 Screws of cable gland and terminal board cover ③ must be tightened to the specified tightening torque to prevent ingress of gas.

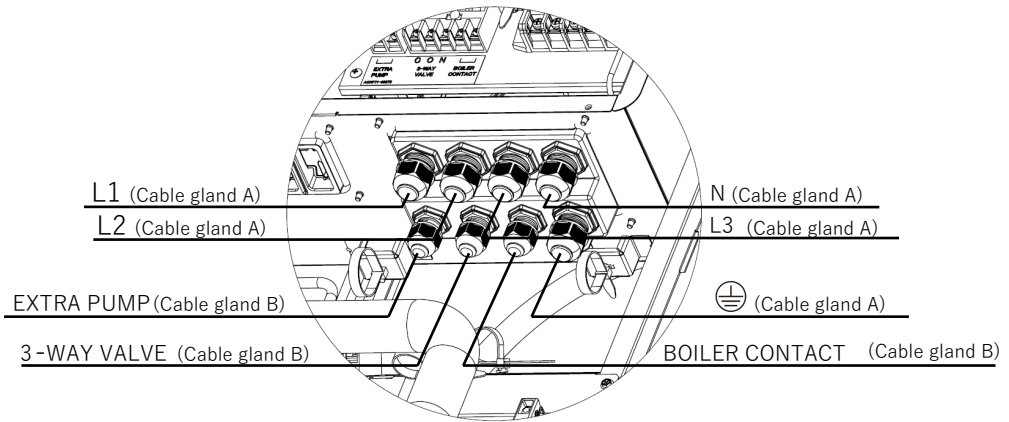
1



2

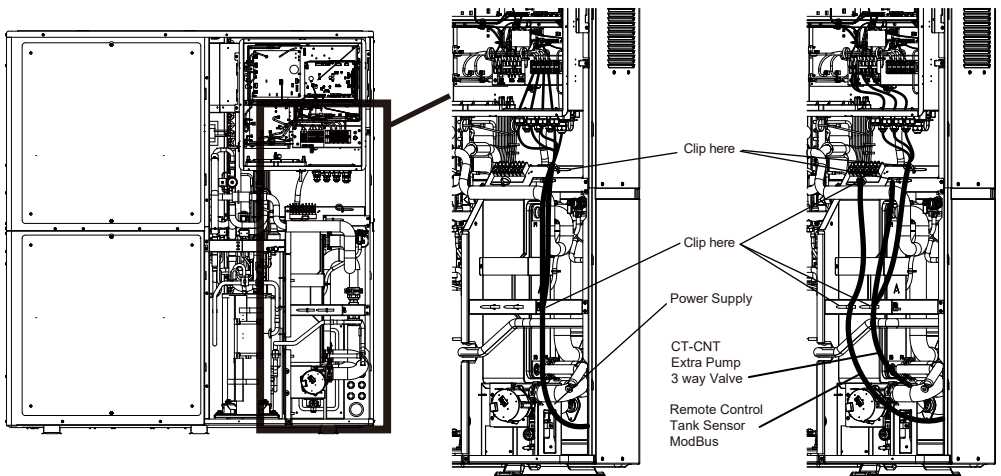


	Cable gland	Nut
Cable gland A	1.8~ 2.5 N·m (18.4 ~ 25.5 kgf·cm)	2.2~ 3.0 N·m (22.4 ~ 30.6 kgf·cm)
Cable gland B	1.2~ 1.8 N·m (12.2 ~ 18.4 kgf·cm)	1.5~ 2.2 N·m (15.3 ~ 22.4 kgf·cm)




Overall view

2 3



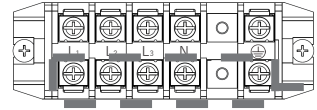
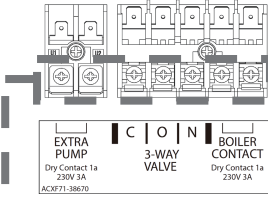
3

WARNING

 This equipment must be properly earthed.

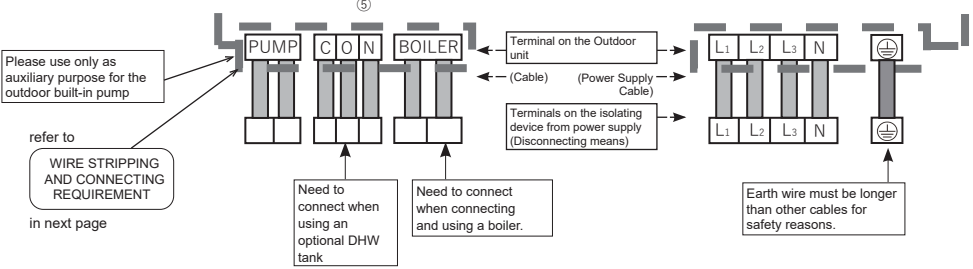
• OUTPUT

3-way valve	AC230V C : Close O : Open N : Neutral
Boiler contact	Dry contact 1a AC230V 3 A (System setup necessary)
EXTRA PUMP	Dry contact 1a AC230V 3 A



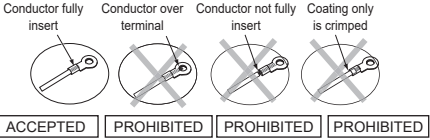
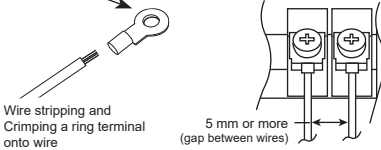
Terminal Block

Optional Terminal Block



WIRE STRIPPING AND CONNECTING REQUIREMENT

M4: I.D. Ø 4.2 or more O.D. Ø 10.0 or less
M5: I.D.: Ø 5.2 or more O.D.: Ø 12.5 or less



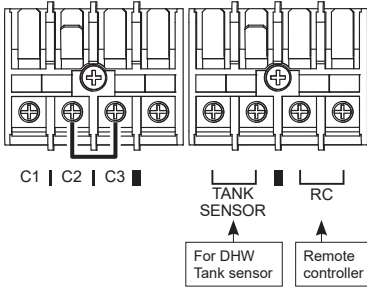
Terminal screw	Tightening torque cN·m {kgf·cm}
M4	157 ~ 196 {16 ~ 20}
M5	196 ~ 245 {20 ~ 25}

(Refer to the overall diagram on previous page)

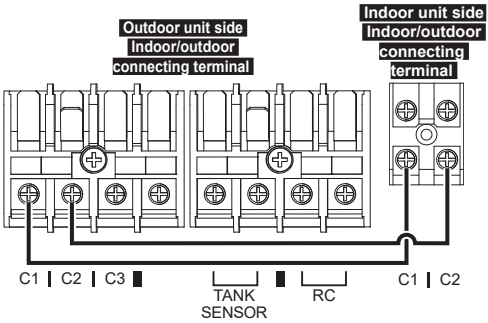


Connection between Indoor unit and Outdoor unit

When outdoor unit is used alone, leave the short-circuit wires "C2" and "C3" attached as shown in the diagram below.

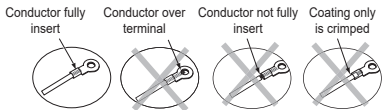
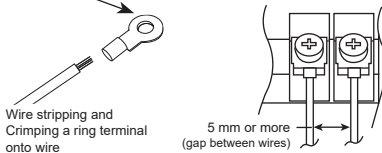


When connecting to an indoor unit, remove the short-circuit wires "C2" and "C3" and connect as shown in the diagram below.



WIRE STRIPPING AND CONNECTING REQUIREMENT

M4: I.D. ≥ 4.2 or more
M5: I.D. ≥ 5.2 or more
O.D. ≤ 10.0 or less
O.D.: ≤ 12.5 or less



ACCEPTED PROHIBITED PROHIBITED PROHIBITED

Terminal screw	Tightening torque cN·m (kgf·cm)
M4	157 ~ 196 (16 ~ 20)
M5	196 ~ 245 (20 ~ 25)

CONNECTION REQUIREMENT

For model WH-WXG20ME8, WH-WXG25ME8, WH-WXG30ME8

- The equipment's Power Supply complies with IEC/EN 61000-3-12 provided that the short-circuit power S_{sc} is greater than or equal to 5300kVA(30kW model)/4500kVA(25kW model)/3600kVA(20kW model) at the interface point between the user's supply and the public system.
- The equipment's Power Supply complies with IEC/EN 61000-3-3 and can be connected to current supply network.

7 INSTALL REMOTE CONTROLLER

- Remote controller is an optional item.**

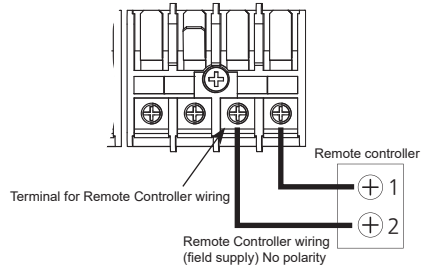
Be sure to purchase it if the outdoor unit is used alone. If you have purchased an indoor unit, it is included.

When relocating the remote controller, install in accordance with its Installation Manual.

INSTALLATION LOCATION

- When using as Room Thermostat, install at the height of 1 to 1.5 m from the floor (Location where average room temperature can be detected).
- Install vertically against the wall.
- Avoid the following locations for installation.
 - By the window, etc. where is exposed to direct sunlight or direct air
 - In the shadow or backside of objects deviated from the room airflow
 - Location where condensation occurs (Remote Controller is not moisture proof or drip proof)
 - Location near heat source
 - Uneven surface
 - Outdoors
- Keep distance of 1 m or more from the TV, radio and PC. (Cause of fuzzy image or noise)

REMOTE CONTROLLER WIRING (if the outdoor unit is used alone)



- Remote Controller cable shall be $2 \times \min 0.5 \text{mm}^2$ or more, double insulation sheathed (PVC or rubber) and shielded cable.

Total cable length shall be 50 m or less.

(UV protection should be provided for the portion exposed to the outdoors)

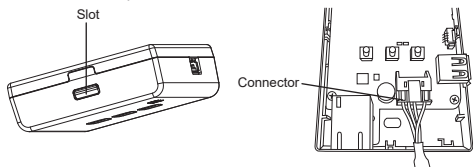
Shield/foil must be floated from chassis. (Not to connect shield/foil any where.)

- Be careful not to connect cables to other terminals of Outdoor Unit (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together with the power source wiring or store in the same metal tube. Operation error may occur.
- When using the 2nd Remote Controller (optional), connect it to the terminal by tightening it together.

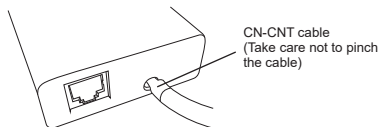
8 NETWORK ADAPTOR INSTALLATION

8-1.NETWORK ADAPTOR(Optional)

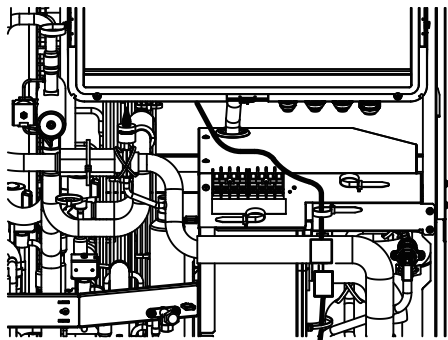
1. Insert a flat head screwdriver into the slot on the top of the adaptor and remove the cover. Connect the CN-CNT cable to the connector inside the adaptor.



2. Pull the CN-CNT cable through the hole at the bottom of the adaptor and reattach the cover.



3. Connect the CN-CNT cable to the CN-CNT connector on the outdoor unit.



For details, refer to the instructions supplied with the network adaptor.
For installation location, refer to "Installation location" in **7 INSTALL REMOTE CONTROLLER**.

8-2MoBus(Optional)

Wiring is for ModBus.Use of RS-485 bus cable.

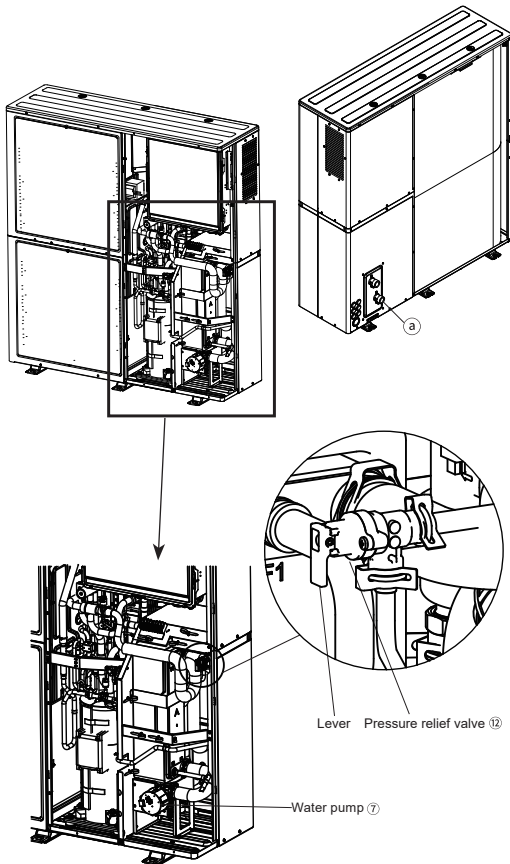
9 PIPING INSULATION

- Carry out insulation of pipe connections according to "Space Cooling/Heating Pipework" in **6 PIPING INSTALLATION**. Wrap the pipes end-to-end with insulation to prevent condensation.

10 CHARGING THE WATER

- Make sure all the piping installations are properly done before carrying out the steps below.

1. Start filling water to the Space Heating /Cooling circuit via Zone 1 Water inlet ③ (with pressure more than 1 bar (0.1MPa))
2. Stop filling water if the free water flow through Drain pipe of Pressure Relief Valve ⑫. (Check the Outdoor Unit)
3. Turn ON the Outdoor Unit.
4. Remote control menu → Installer setup → Service setup → Pump maximum speed → Turn on the pump.
5. Make sure Water Pump ⑦ is running.
6. Check and make sure no water leaking at the tube connecting points.



11 RECONFIRMATION

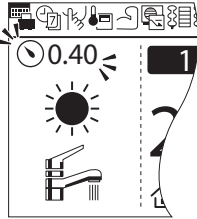
⚠ WARNING

Be sure to switch off all power supply before performing each of the below checks.

CHECK WATER PRESSURE * (0.50 bar = 0.05 MPa)

Water pressure should not be lower than 0.5 bar. (Check the water pressure by the remote controller) If necessary, add water into Space Heating /Cooling pipes (through the Zone 1 water inlet ②).

Icon flashes if dropped below "0.50 bar"



CHECK PRESSURE RELIEF VALVE

1. Pull the lever in the horizontal direction and confirm that the pressure relief valve works properly.
2. Release the lever when water comes out of the drain pipe of the pressure relief valve. (While the air continues to come out of the drain pipe, keep raising the lever to completely discharge the air)
3. Confirm that the water from the drain pipe stops.
4. If water is leaking, pull the lever several times and return it to make sure the water stops.
5. If water keeps coming out of the drain, drain water. Turn off the system and contact your local authorized dealer.

CHECK AIR ACCUMULATION

- Open the air vent plugs on the heating panel, fan convactor, etc., and remove the air accumulated in the equipment and piping.
- If the outdoor unit and the indoor unit are installed on different floors, open the air vent plug on the water plug of the outdoor unit and the air vent plug on the heater bottle inside the indoor unit to remove the air. (Be careful, water will come out)

EXPANSION VESSEL VOLUME AND SET PRESSURE

- This outdoor unit does not have a built-in expansion tank.
 - Capacity of expansion vessel should be calculated using the formula below:
 - Install an expansion vessel (set pressure: 1 bar) to the circulation circuit.
- See formula below for capacity:

$$V = \frac{\varepsilon \times V_0}{1 - \frac{98 + P_1}{98 + P_2}}$$

V : Required gas amount <expansion vessel volume: L>

V₀ : System total water volume <L>

ε : Water expansion rate 5 x 80°C = 0.0219

P1 : Expansion tank charging pressure P1 = 100 kPa

P2 : Maximum system pressure P2 = 400 kPa

○ It is recommended to calculate the required volume of vessel with a margin of approximately 10%.

Water expansion rate table

Water temperature (°C)	Water expansion rate ε
10	0.0003
20	0.0019
30	0.0044
40	0.0078
50	0.0121
60	0.0171
70	0.0228
80	0.0291
90	0.0360

【 When an indoor unit is introduced and it is installed more than 7m lower than the outdoor unit 】

Increase the initial pressure in the expansion tank as per the calculations below.

$$P_g = (H \times 10 + 30) \text{ kPa}$$

P_g : Initial pressure of expansion tank (kPa)

H : Difference in elevation (m)

12 TEST RUN

1. Before test run, make sure below items have been checked: -
 - a) Pipework are properly done.
 - b) Electric cable connecting work are properly done.
 - c) The Space Heating/Cooling circuit is filled up with water and trapped air is released.
 - d) Ensure that the water circulates through the water circuit as designed. Do not short circuit. Check that valves in the circuit are open and do not block the water flow.
2. For normal operation, the water pressure reading should be in between 0.5 bar and 4 bar (0.05 MPa and 0.4 MPa). If necessary, adjust the speed of the water pump ⑦ accordingly to obtain normal water pressure operating range.
If adjusting the speed of the water pump ⑦ does not solve the problem, contact a local authorized dealer.
3. After test run, please clean the magnetic water filter ⑧. Reinstall it after the cleaning is finished. (Refer to ⑬ MAINTENANCE)

CHECK WATER FLOW OF WATER CIRCUIT

Select Installer setup → Service setup → Pump maximum speed → Air purge.

Confirm the rated flow rate has been reached. If don't reach, change max duty or install the extra pump.

*Water flow can be check in Service setup (Pump maximum speed) [Heating operation at low water temperature with lower water flow may trigger "H75" during defrost process.]

*If there is no flow or H62 is displayed, stop operating the pump and release the air. (See "CHECK AIR ACCUMULATION" in ⑪ RECONFIRMATION)

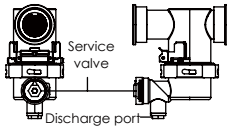
13 MAINTENANCE

13-1 Maintenance for Magnetic Water Filter[®]

- In order to ensure safety and optimal performance of the Outdoor Unit, seasonal inspections, functional check of RCCB/ELCB, field wiring and piping have to be carried out at regular intervals. This maintenance and scheduled inspection should be carried out by authorized dealer.

Maintenance for Magnetic Water Filter[®]

- Turn OFF the power supply.
- Place a container or hose below Magnetic Water Filter[®]
- Dismount magnet holder at side of Magnetic Water Filter[®]
- Remove the Cap of Discharge Port with Allen key (6mm).
- Open the Service Valve with Allen key (6mm) to release the dirty water from the Discharge Port into a container.
- Close the service valve when the container is full to avoid spillage in the outdoor unit.
- Dispose the dirty water.
- Reinstall the Cap of Discharge Port and Magnet holder.
- Re-charge the water to Space Heating / Cooling circuit if necessary. (For details, refer to 10 CHARGING THE WATER)
- Turn ON the power supply.



Open



Close



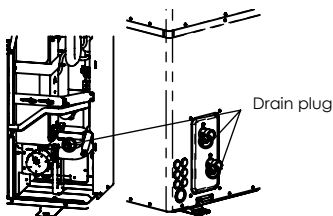
Dismount Magnet holder

13-2 Water circuit freezing protection

- Be sure to have Anti-Freeze protection when outdoor temperature drops below the freezing point (0 °C) as the water in the system may freeze. Recommended; Propylene glycol 40% (for -20°C)
- In order to prevent damage to the equipment due to freezing, be sure to drain water from the equipment when storing it with the power off, such as after construction or immediately after the completion of the test run. Drain when the outside temperature is above the freezing point (0 °C) to prevent freezing during drainage.

Water circuit freezing protection

- Turn OFF the power supply.
- Loose the drain plug(3 places) and drain the inside water. Do not remove the drain plug.
- Make sure that all drain ports have finished water drain.
- Tighten the drain plug (3 places)



⚠ CAUTION

Do not clean the outdoor unit with hydrocarbon solvents when Outdoor Unit needs to be cleaned during installation or servicing.

CHECK ITEMS

- Is there any water leakage at water piping connections?
- Has the heat insulation been carried out at water piping connection?
- Is the Pressure Relief Valve operation normal?
- Is water pressure higher than 0.5 bar?
- Is the water drainage work properly done?
- Is the power supply voltage within the rated voltage range?
- Is the cables being fixed to terminal board firmly?
- Is the cables being clamped firmly by holder (clammer)?
- Is the earth wire connection properly done?
- Is the Remote Controller LCD operation normal?
- Is there any abnormal sound?
- Is the heating operation normal?
- Is the Tank unit free from water leak during test run? (if tank unit connected)
- Check for incorrect wiring at the connection points

APPENDIX

1. Variation of system

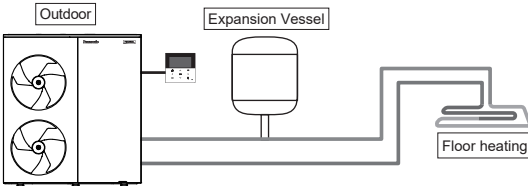
This section introduces variation of various systems using Air-To-Water Heatpump and actual setting method.

(NOTE) : This model does not have a built-in expansion vessel to prevent the pressure in the water circuit from rising in the event of temperature rise.
Be sure to purchase in the market and install it.

1-1. Introduce applications related to temperature setting

Temperature setting variation for heating

1. Remote controller



Connect floor heating or radiator directly to the Outdoor Unit.

Install remote controller on the wall of the room.

This is the basic form of the simplest system.

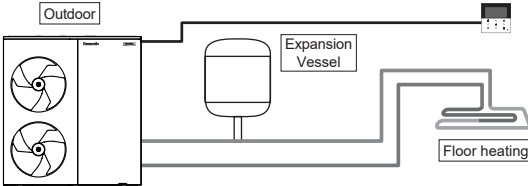
Setting of remote controller

Installer setup
System setup

Zone & Sensor:
Water temperature

2. Room Thermostat

Outdoor Unit receives Room Thermo signal (ON/OFF) from Remote controller to control HP and circulation pump. There is a built-in thermistor in the remote controller.



Connect floor heating or radiator directly to the Outdoor Unit.

Install the remote controller in the room where floor heating is installed.

This is an application that uses remote controller as Room Thermostat.

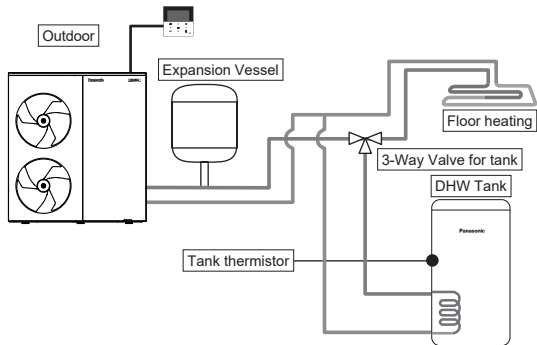
Setting of remote controller

Installer setup
System setup

Zone & Sensor:
Room Thermostat
Internal

Examples of installations

1. DHW (Domestic Hot Water) Tank connection

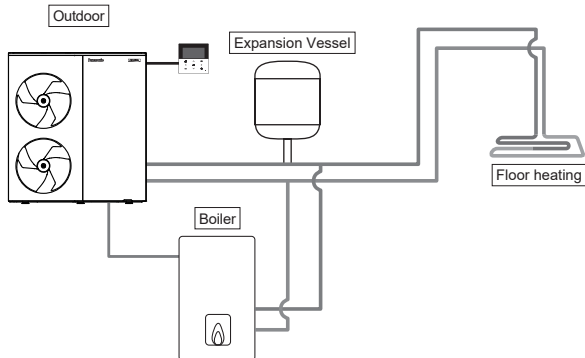


Setting of remote controller

Installer setup
System setup

Tank connection:
Yes

2. Boiler connection



Setting of remote controller

Installer setup
System setup

Bivalent - Yes
Turn ON: outdoor temp
Control pattern

This is an application that connects the boiler to the Outdoor Unit, to compensate for insufficient capacity by operate boiler when outdoor temperature drops & heat pump capacity is insufficient.

Boiler is connected parallel with heat pump and used as heating circuit.

Besides that, an application that connects to the DHW tank's circuit to heat up tank's hot water is also possible.

Boiler output can be control by either SG ready input from Control Module unit or Auto control by 3 modes selection pattern.

(Operation setting of boiler shall be responsible by installer.)

Depending on the settings of the boiler, it is recommended to install buffer tank as temperature of circulating water may get higher. (It must connect to buffer tank especially when select Advanced Parallel setting) However, buffer tank connection requires Control Module unit.

Note: Buffer tank thermistor must be connected to Control Module unit PCB.

⚠ WARNING

Panasonic is NOT responsible for incorrect or unsafe situation of the boiler system.

⚠ CAUTION

Make sure the boiler and its integration in the system complies with applicable legislation.

Make sure the return water temperature from the heating circuit to the Outdoor Unit does NOT exceed 70°C.

Boiler is turned off by safety control when the water temperature of the heating circuit exceed 85°C.

If you wish to use optional features other than connecting DHW tank or boiler, purchase an optional indoor unit or Control Module unit.

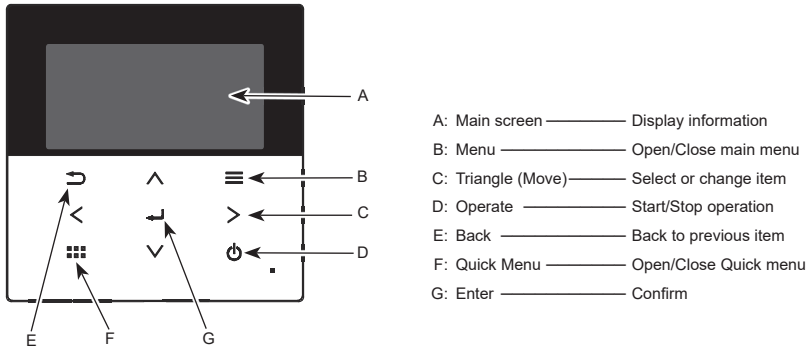
Functions that become available by purchasing an indoor unit, etc. include:

- Buffer tank connection
 - 2-zone control
 - Solar connection
 - SG Ready
 - Demand control
 - and others
- } Optional PCB is required

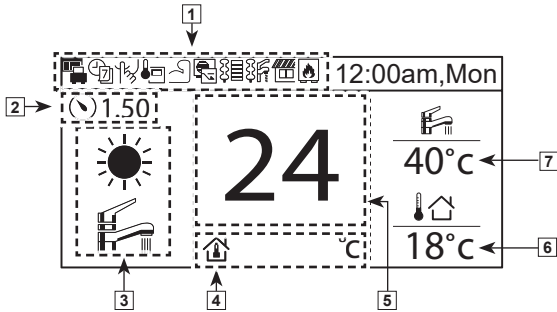
2. System Installation

2-1. Remote Controller Outline

The LCD display as shown in this manual are for instructional purpose only, and may differ from the actual unit.



LCD Display (Actual - Dark background with white icons)



1] Function icon ———— Displays the set functions/status.

- | | |
|-----------------------------------|----------------|
| Holiday mode | Demand control |
| Weekly timer | Room heater |
| Quiet mode | Tank heater |
| Remote controller room thermostat | Solar |
| Powerful mode | Boiler |

2] Water pressure (circulation circuit)

[bar]

3] Mode ———— Display set mode / current status of mode.

- | | | | |
|---------------------|------------------|--------------|--------------|
| Heating | Cooling | | |
| Auto | Hot water supply | Auto heating | Auto cooling |
| Heat pump operating | | | |

4] Temp setting ———— Set room temp Compensation curve Set direct water temp Set pool temp

5] Display Heat temp ———— Displays current heating temperature (it is set temperature when enclosed by line)

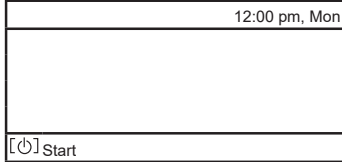
6] Outdoor temp ———— Displays outdoor temperature

7] Display tank temp ———— Displays current tank temperature (it is set temperature when enclosed by line)

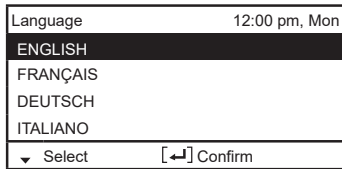
2-2. First time of power ON (Start of installation)



When the power is ON, firstly the initialization screen appears (10 sec)



When the initialization screen ends, it turns to normal screen.

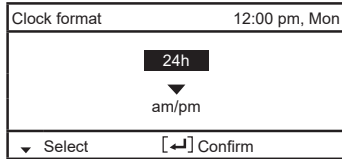


When any button is pressed, language setting screen appears.
(NOTE) If initial setting is not performed, it does not go into menu.

When there are two remote controllers installed from the beginning, the first remote controller which set language will be recognised as the main remote controller.



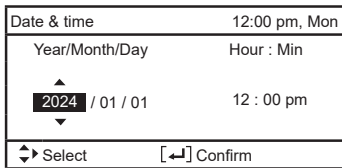
Set language & confirm



When language is set, setting screen of time display appears (24h/am/pm)



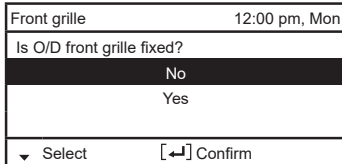
Set time display & confirm



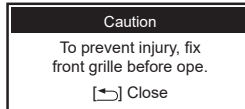
YY/MM/DD/Time setup screen appears



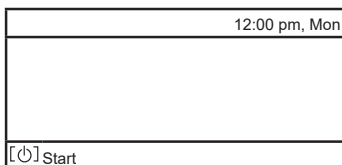
Set YY/MM/DD/Time & confirm



If set to No & confirm, a caution message will be displayed to ensure outdoor front grille is installed before proceeding to operate the unit.



Set Yes & confirm if outdoor front grille has been installed



Back to initial screen



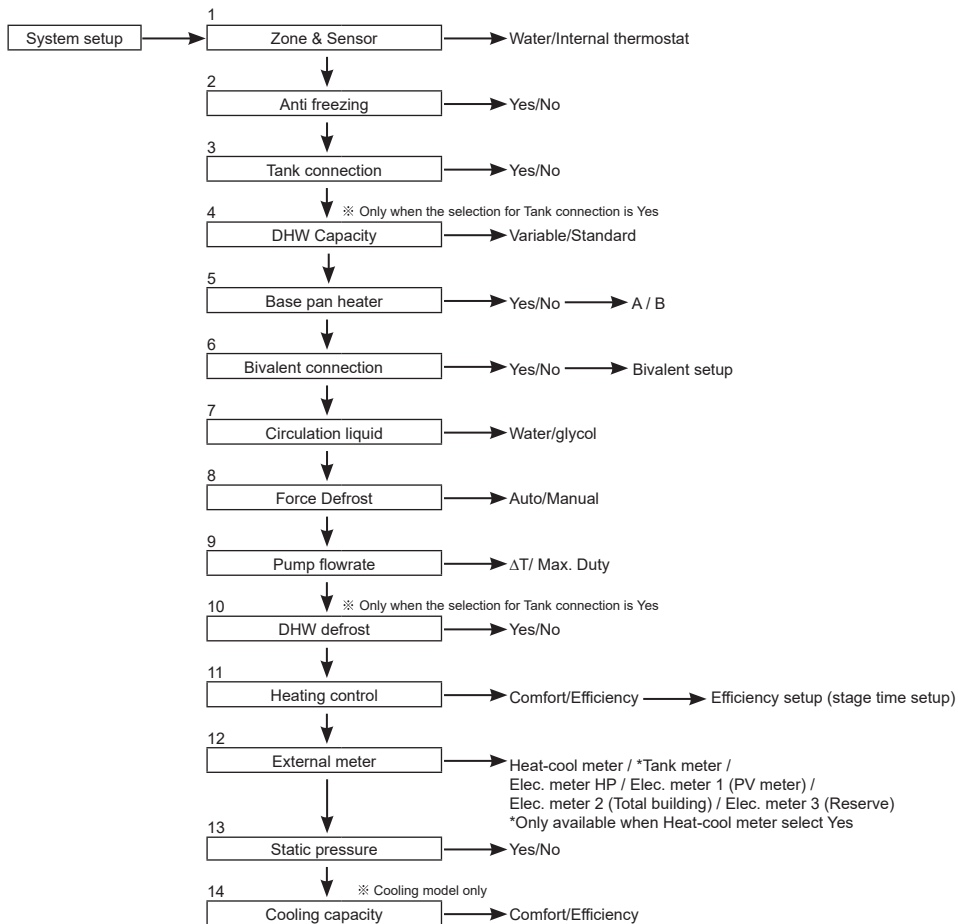
Press Menu and select Installer setup

Main Menu	12:00 pm, Mon
System check	
Personal setup	
Service contact	
Installer setup	
▲ Select	[←→] Confirm

↓ Confirm to go into Installer setup

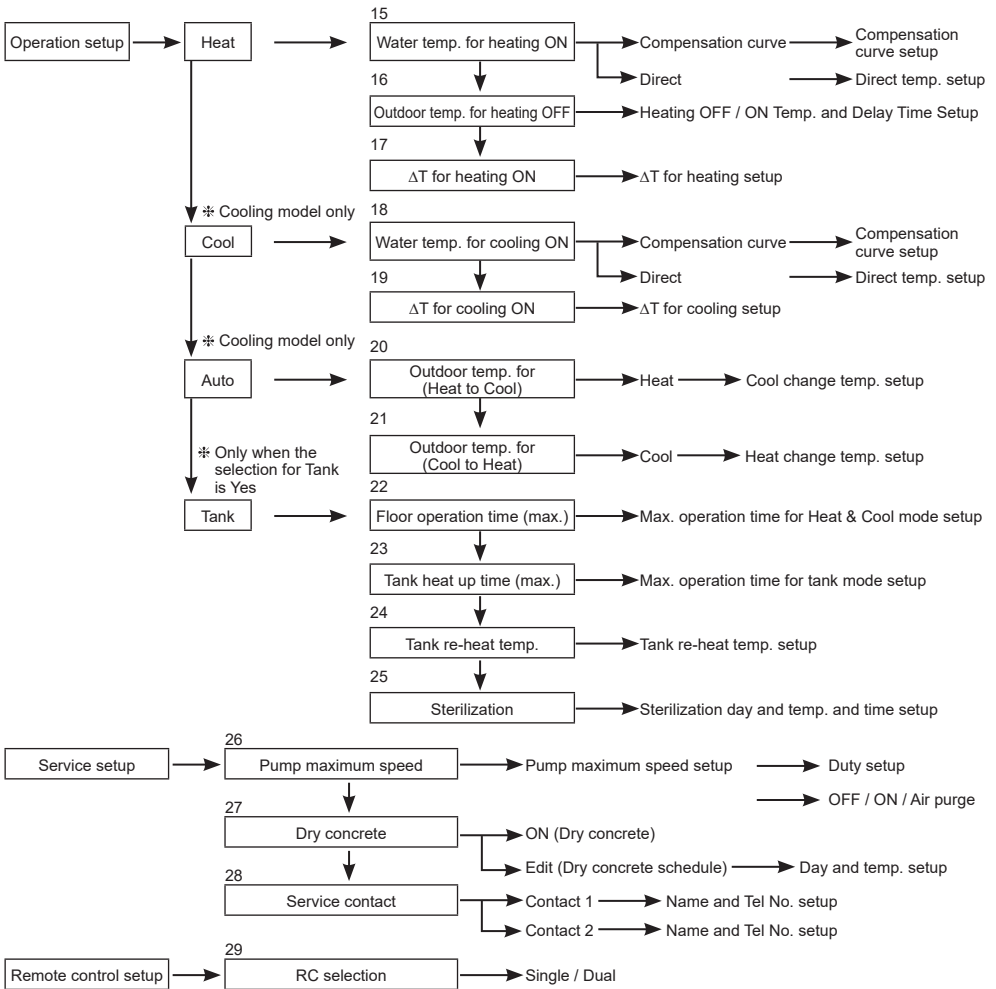
3. Setup

3-1. Installer Setup



※ The above description is for outdoor unit alone case.

For indoor units, please refer to the installation manual supplied with the indoor unit.



※ The above description is for outdoor unit alone case.

For indoor units, please refer to the installation manual supplied with the indoor unit.

3-2. System setup

<div style="border: 1px solid black; padding: 2px; display: inline-block;">1. Zone & Sensor</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Initial setting: Water temp.</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">System setup</td> <td style="text-align: left;">12:00am, Mon</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Zone & Sensor</td> </tr> <tr> <td colspan="2">Anti freezing</td> </tr> <tr> <td colspan="2">Tank connection</td> </tr> <tr> <td colspan="2">DHW capacity</td> </tr> <tr> <td style="text-align: right;">▼ Select</td> <td style="text-align: left;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Zone & Sensor		Anti freezing		Tank connection		DHW capacity		▼ Select	[↵] Confirm
System setup	12:00am, Mon													
Zone & Sensor														
Anti freezing														
Tank connection														
DHW capacity														
▼ Select	[↵] Confirm													

Select sensor of room temperature control from the following 2 items:

- 1 Water temperature (circulation water temperature)
- 2 Room thermostat (Internal)

<div style="border: 1px solid black; padding: 2px; display: inline-block;">2. Anti freezing</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Initial setting: Yes</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">System setup</td> <td style="text-align: left;">12:00am, Mon</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Zone & Sensor</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Anti freezing</td> </tr> <tr> <td colspan="2">Tank connection</td> </tr> <tr> <td colspan="2">DHW capacity</td> </tr> <tr> <td style="text-align: right;">⬇ Select</td> <td style="text-align: left;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Zone & Sensor		Anti freezing		Tank connection		DHW capacity		⬇ Select	[↵] Confirm
System setup	12:00am, Mon													
Zone & Sensor														
Anti freezing														
Tank connection														
DHW capacity														
⬇ Select	[↵] Confirm													

Operate anti-freezing of water circulation circuit.
If select "Yes", when the water temperature is reaching its freezing temperature, the circulation pump will start up. If the water temperature does not reach the pump stop temperature, heat pump will be activated.

(NOTE) If set to "No", when the water temperature is reaching its freezing temperature or below 0°C, the water circulation circuit may freeze and cause malfunction.

<div style="border: 1px solid black; padding: 2px; display: inline-block;">3. Tank connection</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Initial setting: No</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">System setup</td> <td style="text-align: left;">12:00am, Mon</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Zone & Sensor</td> </tr> <tr> <td colspan="2">Anti freezing</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Tank connection</td> </tr> <tr> <td colspan="2">DHW capacity</td> </tr> <tr> <td style="text-align: right;">⬆ Select</td> <td style="text-align: left;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Zone & Sensor		Anti freezing		Tank connection		DHW capacity		⬆ Select	[↵] Confirm
System setup	12:00am, Mon													
Zone & Sensor														
Anti freezing														
Tank connection														
DHW capacity														
⬆ Select	[↵] Confirm													

Select whether a hot water storage tank is connected or not.
If set to "Yes", the water heating function is set to be used.
The tank water temperature can be set from the main screen.

<div style="border: 1px solid black; padding: 2px; display: inline-block;">4. DHW capacity</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Initial setting: Variable</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">System setup</td> <td style="text-align: left;">12:00am, Mon</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Zone & Sensor</td> </tr> <tr> <td colspan="2">Anti freezing</td> </tr> <tr> <td colspan="2">Tank connection</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">DHW capacity</td> </tr> <tr> <td style="text-align: right;">⬆ Select</td> <td style="text-align: left;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Zone & Sensor		Anti freezing		Tank connection		DHW capacity		⬆ Select	[↵] Confirm
System setup	12:00am, Mon													
Zone & Sensor														
Anti freezing														
Tank connection														
DHW capacity														
⬆ Select	[↵] Confirm													

Variable DHW capacity setting normally runs with efficient boiling which is energy saving heating. But while hot water usage is high and tank water temperature is low, variable DHW mode will run with fast heat up which heat up the tank with high heating capacity.
If standard DHW capacity setting is selected, heat pump runs with heating rated capacity at tank heat up operation.

※ Only when "Yes" is selected for tank connection

<div style="border: 1px solid black; padding: 2px; display: inline-block;">5. Base pan heater</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Initial setting: No</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">System setup</td> <td style="text-align: left;">12:00am, Mon</td> </tr> <tr> <td colspan="2">Anti freezing</td> </tr> <tr> <td colspan="2">Tank connection</td> </tr> <tr> <td colspan="2">DHW capacity</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Base pan heater</td> </tr> <tr> <td style="text-align: right;">⬆ Select</td> <td style="text-align: left;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Anti freezing		Tank connection		DHW capacity		Base pan heater		⬆ Select	[↵] Confirm
System setup	12:00am, Mon													
Anti freezing														
Tank connection														
DHW capacity														
Base pan heater														
⬆ Select	[↵] Confirm													

Select whether Base pan heater is installed or not.
If set to "Yes", select to use either heater A or B.

A: Turn on Heater when heating with defrost operation only
B: Turn on Heater during heating operation when outside temperature is below 5 °C .

※ The above description is for outdoor unit alone case.
For indoor units, please refer to the installation manual supplied with the indoor unit.

6. Bivalent connection

Initial setting: No

System setup	12:00am, Mon
Tank connection	
DHW capacity	
Base pan heater	
Bivalent connection	
◀ Select	[↵] Confirm

Set if heat pump is linked with boiler operation.
 Connect the start signal of the boiler to the boiler contact terminal (main PCB).
 Set Bivalent connection to "Yes".
 Then, begin setting according to remote controller instruction.
 Boiler icon will be displayed on remote controller top screen.

• Auto

There are 3 different modes in the boiler auto pattern operation. Movement of each mode is as shown below:

- ① Alternative (switch to boiler operation when drops below setting temperature)
- ② Parallel (allow boiler operation when drops below setting temperature)
- ③ Advanced Parallel (able to slightly delay boiler operation time of parallel operation)

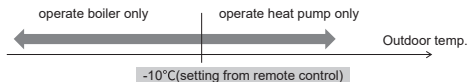
When the boiler operation is "ON", "boiler contact" is "ON", "_" (underscore) will be displayed below the boiler icon.

Please set target temperature of boiler to be the same as heat pump temperature.

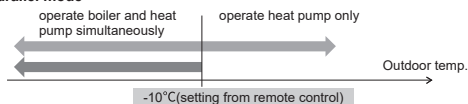
When boiler temperature is higher than heat pump temperature, zone temperature cannot be achieved if mixing valve is not installed.

This product only allows one signal to control the boiler operation. Operation setting of boiler shall be responsible by installer.

Alternative mode

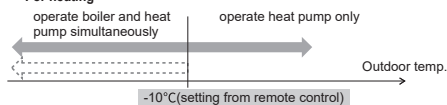


Parallel mode

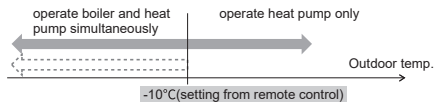


Advanced Parallel mode

For heating

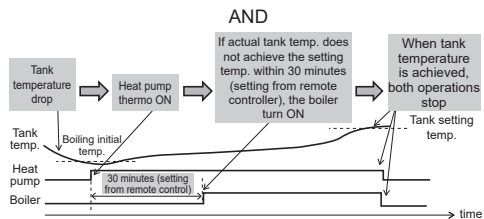
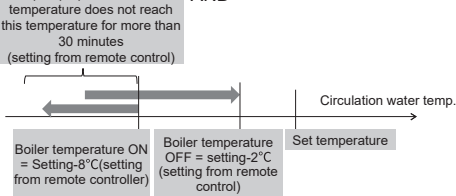


For DHW tank



Heat pump operates but water temperature does not reach this temperature for more than 30 minutes (setting from remote control)

AND



In Advanced Parallel mode, setting for both Heat and Tank can be made simultaneously. During operation of "Heat/Tank" mode, when each time the mode is switched, the boiler output will be reset to OFF. Please have good understanding on the boiler control characteristic in order to select the optimal setting for the system.

• Smart

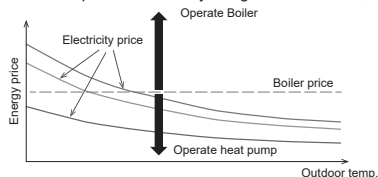
There are Energy price (both electricity and boiler) and Schedule to be set on remote controller.

Operation setting of Energy price and Schedule shall be responsible by installer.

Based on these settings, system will calculate the final price for both electricity and boiler.

When final price of Electricity is lower than Boiler's, heat pump will operate.

When final price of Electricity is higher than Boiler's, boiler will operate.



※ The above description is for outdoor unit alone case.

For indoor units, please refer to the installation manual supplied with the indoor unit.

7. Circulation Liquid	Initial setting: Water	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">System setup</td> <td style="width: 30%; text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="2">DHW capacity</td> </tr> <tr> <td colspan="2">Base pan heater</td> </tr> <tr> <td colspan="2">Bivalent connection</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Circulation Liquid</td> </tr> <tr> <td style="text-align: left;">⏴ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	DHW capacity		Base pan heater		Bivalent connection		Circulation Liquid		⏴ Select	[↵] Confirm
System setup	12:00am, Mon													
DHW capacity														
Base pan heater														
Bivalent connection														
Circulation Liquid														
⏴ Select	[↵] Confirm													
<p>Set circulation of heating water.</p> <p>There are 2 types of settings: water and glycol.</p> <p>(NOTE) Please set glycol when using anti-freeze liquid. It may cause error if setting is wrong.</p>														

8. Force Defrost	Initial setting: Manual	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">System setup</td> <td style="width: 30%; text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="2">Base pan heater</td> </tr> <tr> <td colspan="2">Bivalent connection</td> </tr> <tr> <td colspan="2">Circulation Liquid</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Force Defrost</td> </tr> <tr> <td style="text-align: left;">⏴ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Base pan heater		Bivalent connection		Circulation Liquid		Force Defrost		⏴ Select	[↵] Confirm
System setup	12:00am, Mon													
Base pan heater														
Bivalent connection														
Circulation Liquid														
Force Defrost														
⏴ Select	[↵] Confirm													
<p>Under manual mode, user can turn on force defrost through quick menu.</p> <p>If 'Auto' is selected, the outdoor unit will run defrost operation once if heat pump have long hour of heating without any defrost operation at low ambient condition. (Even when Auto is selected, user still can turn on force defrost through quick menu)</p>														

9. Pump flowrate	Initial setting: ΔT	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">System setup</td> <td style="width: 30%; text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="2">Bivalent connection</td> </tr> <tr> <td colspan="2">Circulation Liquid</td> </tr> <tr> <td colspan="2">Force Defrost</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Pump flowrate</td> </tr> <tr> <td style="text-align: left;">⏴ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Bivalent connection		Circulation Liquid		Force Defrost		Pump flowrate		⏴ Select	[↵] Confirm
System setup	12:00am, Mon													
Bivalent connection														
Circulation Liquid														
Force Defrost														
Pump flowrate														
⏴ Select	[↵] Confirm													
<p>If pump flowrate setting is *ΔT, the unit adjusts pump duty to use different water inlet and outlet based on the setting of *ΔT for heating ON and *ΔT for cooling ON in operation setup menu during indoor operation.</p> <p>If pump flowrate setting is set to Max. duty, the unit will set the pump duty at *Pump maximum speed in the service setup menu during room side operation.</p>														

*1

10. DHW Defrost	Initial setting: Yes	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">System setup</td> <td style="width: 30%; text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="2">Circulation Liquid</td> </tr> <tr> <td colspan="2">Force Defrost</td> </tr> <tr> <td colspan="2">Pump flowrate</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">DHW Defrost</td> </tr> <tr> <td style="text-align: left;">⏴ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Circulation Liquid		Force Defrost		Pump flowrate		DHW Defrost		⏴ Select	[↵] Confirm
System setup	12:00am, Mon													
Circulation Liquid														
Force Defrost														
Pump flowrate														
DHW Defrost														
⏴ Select	[↵] Confirm													
<p>When DHW defrost set to "YES", hot water of domestic hot water tank will be used during defrost cycle.</p> <p>When DHW defrost set to "NO", hot water of floor heating circuit will be used during defrost cycle.</p>														

11. Heating control	Initial setting: Comfort	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">System setup</td> <td style="width: 30%; text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="2">Force Defrost</td> </tr> <tr> <td colspan="2">Pump flowrate</td> </tr> <tr> <td colspan="2">DHW Defrost</td> </tr> <tr> <td colspan="2" style="background-color: #f0f0f0;">Heating control</td> </tr> <tr> <td style="text-align: left;">⏴ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Force Defrost		Pump flowrate		DHW Defrost		Heating control		⏴ Select	[↵] Confirm
System setup	12:00am, Mon													
Force Defrost														
Pump flowrate														
DHW Defrost														
Heating control														
⏴ Select	[↵] Confirm													
<p>There are two modes to select for compressor frequency control: "Comfort" or "Efficiency". When set to Comfort mode, the compressor will run at the zone limit maximum frequency to reach the set temperature faster.</p> <p>When set to Efficiency mode, the compressor will run at part load frequency at initial stage for energy saving.</p> <p>When "Efficiency" is selected, the time setting will transition to 1st, 2nd, and 3rd stage. Increasing the time will slowly increase the capacity.</p>														

*1 Only when the selection for Tank connection is Yes

※ The above description is for outdoor unit alone case.

For indoor units, please refer to the installation manual supplied with the indoor unit.

12. External meter	Initial setting: [Heat-cool meter : No] [Tank meter : No] *only available when Heat-cool meter select Yes [Elec. meter HP : No] [Elec. meter 1 (PV meter) : No] [Elec. meter 2 (Total building) : No] [Elec. meter 3 (Reserve) : No]	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">System setup</td> <td style="text-align: right; padding: 2px;">12:00am, Mon</td> </tr> <tr> <td style="padding: 2px;">Pump flowrate</td> <td></td> </tr> <tr> <td style="padding: 2px;">DHW Defrost</td> <td></td> </tr> <tr> <td style="padding: 2px;">Heating control</td> <td></td> </tr> <tr style="background-color: #e0e0e0;"> <td style="padding: 2px;">External meter</td> <td></td> </tr> <tr> <td style="padding: 2px;"> <div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div> </td> <td></td> </tr> </table>	System setup	12:00am, Mon	Pump flowrate		DHW Defrost		Heating control		External meter		<div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div>	
System setup	12:00am, Mon													
Pump flowrate														
DHW Defrost														
Heating control														
External meter														
<div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div>														

There are two systems for generation meter connection: single generation meter system (Heat-cool meter) or two generation meter system (Heat-cool meter and Tank meter)

Both systems can provide all generation data of heating, cooling and DHW directly from external meter.

If Heat-cool meter is set to "Yes", it will read from external meter for heat pump's energy generation data during heating, cooling and DHW operation^{*1}.
 If Heat-cool meter is set to "No", it will base on unit's calculation for heat pump's energy generation data during heating, cooling and DHW operation.
 If Heat-cool meter is set to "Yes", it will read from external meter for heat pump's energy generation data during heating, cooling and DHW operation^{*1}.

If Elec. meter HP is set to "Yes", it will read from external meter for heat pump's energy consumption data.
 If Elec. meter HP is set to "No", it will base on unit's calculation for heat pump's energy consumption data.

If Elec. meter 1 (PV meter) is set to "Yes", it will read from external meter for energy generation data of solar system and display it on Cloud system.
 If Elec. meter 2 (Building) is set to "Yes", it will read from external meter for energy consumption data of the building and display it on Cloud system.
 If Elec. meter 3 (Reserve) is set to "Yes", it will read from external meter for energy consumption data obtained from reserved electricity meter and display it on Cloud system.

^{*1} Set Heat-cool meter to Yes and set Tank meter to No when the 1 generation meter system is installed.
 Set Heat-cool meter to Yes and set Tank meter to Yes when the 2 generation meter system is installed.

Remarks: Elec. meter HP refers to the electricity meter that measures Heat Pump unit's consumption.
 Elec. meter 1 / 2 / 3 refers to the Electricity meter No. 1 / No. 2 / No. 3.

13. Static pressure	Initial setting: No	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">System setup</td> <td style="text-align: right; padding: 2px;">12:00am, Mon</td> </tr> <tr> <td style="padding: 2px;">DHW Defrost</td> <td></td> </tr> <tr> <td style="padding: 2px;">Heating control</td> <td></td> </tr> <tr> <td style="padding: 2px;">External meter</td> <td></td> </tr> <tr style="background-color: #e0e0e0;"> <td style="padding: 2px;">Static pressure</td> <td></td> </tr> <tr> <td style="padding: 2px;"> <div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div> </td> <td></td> </tr> </table>	System setup	12:00am, Mon	DHW Defrost		Heating control		External meter		Static pressure		<div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div>	
System setup	12:00am, Mon													
DHW Defrost														
Heating control														
External meter														
Static pressure														
<div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div>														

If set to "No", the outdoor fan motor operates at a normal speed.
 If set to "YES", the outdoor fan motor operates at a higher speed in response to high static pressure.

14. Cooling Capacity	Initial setting: Efficiency	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">System setup</td> <td style="text-align: right; padding: 2px;">12:00am, Mon</td> </tr> <tr> <td style="padding: 2px;">Heating control</td> <td></td> </tr> <tr> <td style="padding: 2px;">External meter</td> <td></td> </tr> <tr> <td style="padding: 2px;">Static pressure</td> <td></td> </tr> <tr style="background-color: #e0e0e0;"> <td style="padding: 2px;">Cooling capacity</td> <td></td> </tr> <tr> <td style="padding: 2px;"> <div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div> </td> <td></td> </tr> </table>	System setup	12:00am, Mon	Heating control		External meter		Static pressure		Cooling capacity		<div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div>	
System setup	12:00am, Mon													
Heating control														
External meter														
Static pressure														
Cooling capacity														
<div style="display: flex; justify-content: space-between;"> ⏴ Select [↵] Confirm </div>														

Select the cooling capacity.

If set to "Efficiency", the unit performs cooling operation efficiently at rated capacity.
 If set to "Comfort", the cooling operation is performed at maximum capacity.

※ The above description is for outdoor unit alone case.
 For indoor units, please refer to the installation manual supplied with the indoor unit.

3-3. Operation Setup

Heat

15. Water temp. for heating ON Initial setting: compensation curve

Set the target water temperature to perform heating operation.
 Compensation curve: Target water temperature change in conjunction with outdoor temperature change.
 Direct: Set the circulation water temperature directly.

16. Outdoor temp. for heating OFF

If the operation of the outdoor unit is frequently switched on and off depending on the outdoor air temperature, the following settings can be used to reduce the frequency.

a. Outdoor temp. for heating OFF Initial setting: 24°C

Set outdoor temp. to stop heating
 Setting range is 6°C~35°C

b. Outdoor temp. for heating ON Initial setting: 23°C

Set outdoor temp. to start heating.
 Setting range is 5°C~X°C (X is heating OFF temp. -1)

c. Heating ON delay time Initial setting: 0:30min

Set delay time from heating OFF to heating ON.

17. ΔT for heating ON Initial setting: 5°C

Set temp diff erence between out temperature and return temperature of circulating water during Heating operation.
 When the temperature gap is enlarged, it is energy saving but less comfort. When the gap gets smaller, energy saving eff ect gets worse but it is more comfortable.
 Setting range is 1°C ~ 15°C

Cool ※ Cooling model only

18. Water temp. for cooling ON Initial setting: compensation curve

Set target water temperature to perform cooling operation.
 Compensation curve: Target water temperature change in conjunction with outdoor ambient temperature change.
 Direct: Set the circulation water temperature directly.

19. ΔT for cooling ON Initial setting: 5°C

Set temp diff erence between out temperature and return temperature of circulating water during Cooling operation.
 When the temperature gap is enlarged, it is energy saving but less comfort. When the gap gets smaller, energy saving eff ect gets worse but it is more comfortable.
 Setting range is 1°C ~ 15°C

※ The above description is for outdoor unit alone case.
 For indoor units, please refer to the installation manual supplied with the indoor unit.

Auto ※ Cooling model only

20. Outdoor temp. for (Heat to Cool)

Initial setting: 15°C

Set outdoor temp that switches from Heating to Cooling by Auto setting.
Setting range is 11°C ~ 25°C

Timing of judgement is every 1 hour

21. Outdoor temp. for (Cool to Heat)

Initial setting: 10°C

Set outdoor temp that switches from Cooling to Heating by Auto setting.
Setting range is 5°C ~ 14°C

Timing of judgement is every 1 hour

Tank ※ Only when the selection for Tank connection is Yes

22. Floor operation time (max.)

Initial setting: 8h

Set the max. operating hours of heating.
When max. operation time is shortened, it can boil the tank more frequently.

It is a function for Heating + Tank operation.

23. Tank heat up time (max.)

Initial setting: 1h

Set the max. boiling hours of tank.
When the max. boiling hours are shortened, it immediately returns to Heating operation, but it may not fully boil the tank.

24. Tank re-heat temp.

Initial setting: -8°C

Set the temperature to re-boil the tank water.

Setting range is -12°C ~ -2°C

25. Sterilization

Initial setting: 65°C 10min.

Set timer to perform sterilization.

- 1 Set operating day & time. (Weekly timer format)
- 2 Sterilization temperature (* 55~65°C)
- 3 Operation time (Time to run sterilization when it reached setting temperature. (5 ~ 60 minutes))

* When the outdoor air temperature is below -15°C
The Tank temperature may only rise to about 55°C.
(Turn on the external heater to perform sterilization. Need Indoor unit).
Sterilization temperature varies depending on the model.

The use/non-use of the sterilization mode must be set.

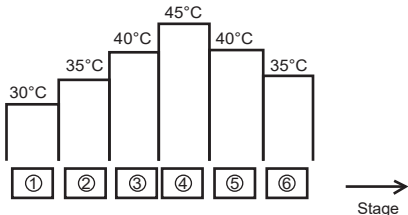
※ The above description is for outdoor unit alone case.
For indoor units, please refer to the installation manual supplied with the indoor unit.

3-4. Service Setup

26. Pump maximum speed	Initial setting: Depend on model	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Service setup</td> <td style="text-align: right;">12:00am, Mon</td> </tr> <tr> <td style="text-align: center;">Flow rate</td> <td style="text-align: center;">Max. Duty</td> <td style="text-align: center;">Operation</td> </tr> <tr> <td style="text-align: center;">34.4 L/min</td> <td style="text-align: center;">0xCE</td> <td style="text-align: center;">▲ Air Purge</td> </tr> <tr> <td colspan="3" style="text-align: left;">◀ Select</td> </tr> </table>	Service setup		12:00am, Mon	Flow rate	Max. Duty	Operation	34.4 L/min	0xCE	▲ Air Purge	◀ Select		
Service setup		12:00am, Mon												
Flow rate	Max. Duty	Operation												
34.4 L/min	0xCE	▲ Air Purge												
◀ Select														

Normally setting is not necessary.
Please adjust when needed to reduce the pump sound, etc.
Besides that, the unit has Air Purge function.

When the Pump flow setting is Max. Duty, this duty setting is the duty of fixed pump that runs during room-side operation.

27. Dry concrete	
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Operate concrete curing operation.
Select Edit and set the temperature for every stage (1~99
1 is for 1 day).
Setting range is 25~55°C
When it is turned ON, dry concrete starts.

28. Service contact	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Service setup</td> <td style="text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="3">Service contact:</td> </tr> <tr> <td colspan="3" style="text-align: center;">Contact 1</td> </tr> <tr> <td colspan="3" style="text-align: center;">Contact 2</td> </tr> <tr> <td colspan="2" style="text-align: left;">▲ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	Service setup		12:00am, Mon	Service contact:			Contact 1			Contact 2			▲ Select		[↵] Confirm	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Contact-1: Bryan Adams</td> </tr> <tr> <td style="text-align: center;">ABC/ abc</td> <td style="text-align: center;">0-9/ Other</td> </tr> <tr> <td colspan="2">A B C D E F G H I J K L M N O P Q R</td> </tr> <tr> <td colspan="2">S T U V W X Y Z a b c d e f g h i</td> </tr> <tr> <td colspan="2">j k l m n o p q r s t u v w x y z</td> </tr> <tr> <td style="text-align: left;">▶ Select</td> <td style="text-align: right;">[↵] Enter</td> </tr> </table>	Contact-1: Bryan Adams		ABC/ abc	0-9/ Other	A B C D E F G H I J K L M N O P Q R		S T U V W X Y Z a b c d e f g h i		j k l m n o p q r s t u v w x y z		▶ Select	[↵] Enter
Service setup		12:00am, Mon																											
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S T U V W X Y Z a b c d e f g h i																													
j k l m n o p q r s t u v w x y z																													
▶ Select	[↵] Enter																												

Able to set the name & tel. no.
of contact person when there is
breakdown etc. or client has trouble.
(2 items)

3-5. Remote control setup

29. RC selection	Initial setting : Single	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">RC selection</td> <td style="text-align: right;">12:00am, Mon</td> </tr> <tr> <td colspan="3" style="text-align: center;">Single</td> </tr> <tr> <td colspan="3" style="text-align: center;">▼</td> </tr> <tr> <td colspan="3" style="text-align: center;">Dual</td> </tr> <tr> <td colspan="2" style="text-align: left;">▼ Select</td> <td style="text-align: right;">[↵] Confirm</td> </tr> </table>	RC selection		12:00am, Mon	Single			▼			Dual			▼ Select		[↵] Confirm
RC selection		12:00am, Mon															
Single																	
▼																	
Dual																	
▼ Select		[↵] Confirm															

Set to "Single" when only one remote controller is installed.
Set to "Dual" when two remote controllers are installed.

※ The above description is for outdoor unit alone case.
For indoor units, please refer to the installation manual supplied with the indoor unit.

4. Service and maintenance

If forget Password and cannot operate remote controller

↶ + ↵ + > Press for 5 seconds.

Password unlock screen appears, press Confirm and it shall reset.

Password will become 0000. Please reset it again.

(NOTE) This is displayed only when the remote controller is password-locked.

Maintenance menu

Setting method of Maintenance menu

Maintenance menu	12:00am, Mon
Actuator check	
Test mode	
Sensor setup	
Reset password	
▼ Select	[↵] Confirm

↶ + ↵ + > Press for 5 seconds.

Items that can be set

- ① Actuator check (Manual ON/OFF all functional parts)

(NOTE) As there is no protection action, please be careful not to cause any error when operating each part (do not turn on pump when there is no water etc.)

- ② Test mode (Test run)

Normally it is not used.

- ③ Sensor setup (offset gap of detected temp of each sensor can be set within -3~3°C range)

(NOTE) Please use only when sensor is deviated.
It affects temperature control.

- ④ Reset password (password reset)

Custom menu

Setting method of Custom menu

Custom menu	12:00am, Mon
Cool mode	
Reset energy monitor	
Reset operation history	
Anti-stick mode	
▼ Select	[↵] Confirm

≡ + ∨ + < Press for 5 seconds.

Items that can be set

- 1 Cool mode (Set With/Without Cooling function) Default is without

(NOTE) As with/without Cool mode may affect electricity application, please be careful and do not simply change it.
In Cool mode, please be careful if piping is not insulated properly, dew may form on pipe and water may drip on the floor and damage the floor.

- 2 Reset energy monitor (delete memory of Energy monitor)

Please use this when moving house and handover the unit.

- 3 Reset operation history (delete memory of operation history)

Please use this when moving house and handover the unit.

- 4 Anti-stick mode (select Anti-stick mode Enable/Disable)

Default is Anti-stick mode /Enable Every Monday at 3:00 AM the actuator is activated periodically to prevent sticking of the operating parts.

Select Disable if you wish to stop the part being activated periodically.

Parts and other components that may not operate if Disable is selected may stick if not operated for a long period of time.

※ The above description is for outdoor unit alone case.

For indoor units, please refer to the installation manual supplied with the indoor unit.