ENGLISH

Panasonic

Installation Manual

AIR-TO-WATER HEATPUMP INDOOR UNIT

WH-S*C09*3E8, WH-S*C12*9E8, WH-S*C16*9E8

Required tools for Installation Works

1	Phillips screw driver	5	Pipe cutter	9 Measuring tape	42 N•m (4.2 kgf•m)
2	Level gauge	6	Reamer	10 Megameter	65 N•m (6.5 kgf•m)
3	Electric drill	7	Knife	11 Multimeter	
4	Spanner	8	Gas leak detector	12 Torque wrench	

SAFETY PRECAUTIONS

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. 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 ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.
- Please leave this installation manual 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:

⃠	Symbol with white background denotes item that is PROHIBITED from doing.
❗ ⏚	Symbol with dark background denotes item that must be carried out.

- 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. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING	
⃠	Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. 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 cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
⃠	Keep plastic bag (packaging material) away from small children, it may cause suffocation.
⃠	Do not use pipe wrench to install refrigerant piping. It might deform the piping and cause the unit to malfunction.
⃠	Do not purchase unauthorized electrical parts for installation, service, maintenance and etc.. They might cause electrical shock or fire.
⃠	Do not modify the wiring of Indoor Unit for installation of other components (i.e. heater, etc). Overloaded wiring or wire connection points may cause electrical shock or fire.
⃠	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
⃠	Do not use joint cable for Indoor / Outdoor Unit connection cable. Use specified Indoor / Outdoor Unit connection cable, refer to instruction 6 **CONNECT THE CABLE TO THE INDOOR UNIT** and connect tightly for Indoor / Outdoor Unit connection. 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.
❗	For electrical work, follow local wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
❗	For water circuit installation work, follow to relevant European and national regulations (including EN61770) and local plumbing and building regulation codes.
❗	Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
❗	• This is a R410A model, when connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A refrigerant. • Thickness for copper pipes used with R410A must be 0.8mm or more. Never use copper pipes thinner than 0.8mm. • It is desirable that the amount of residual oil is less than 40mg/10m.
❗	When install or relocate Indoor Unit, do not let any substance other than the specified refrigerant, e.g. air etc. mix into refrigerant cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.

ENGLISH

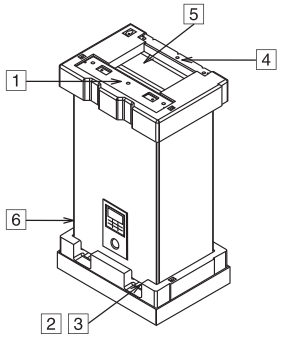
❗	Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
❗	Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
❗	This equipment is strongly recommended to be installed with Residual Current Device (RCD) on-site according to the respective national wiring rules or country–specific safety measures in terms of residual current.
❗	During installation, install the refrigerant piping properly before run the compressor. Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
❗	During pump down operation, stop the compressor before remove the refrigeration piping. Removal of refrigerant piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigerant cycle and result in explosion, injury etc.
❗	Tighten the flare nut with torque wrench according to specified method. If the flare nut is over tightened, after a long period, the flare may break and cause refrigerant gas leakage.
❗	After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
❗	Ventilate the room if there is refrigerant gas leakage during operation. Extinguish all fire sources if present. It may cause toxic gas when the refrigerant contacts with fire.
❗	Only use the supplied or specified installation parts, else, it may cause unit vibrate loose, water leakage, electrical shock or fire.
❗	The unit is only for use in closed water system. Utilization in an open water circuit may lead to excessive corrosion of water piping and risk of incubating bacteria colonies, particularly Legionella, in water.
❗	If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.
❗	Select a location where in case of water leakage, the leakage will not cause damage to other properties.
❗	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 Indoor Unit after removing any panels which is secured by screws, must be carried out under the supervision of authorized dealer and licensed installation contractor.
⏚	This unit must be properly earthed. The electrical earth must not be connected to a gas pipe, water pipe, the earth of lightening rod or a telephone. Otherwise there is a danger of electrical shock in the event of an insulation breakdown or electrical earth fault in the outdoor unit.
	⚠ CAUTION
⊘	Do not install the Indoor 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 during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
⊘	Do not install this appliance in a laundry room or other high humidity location. This condition will cause rust and damage to the unit.
⊘	Make sure the insulation of power supply cord does not contact hot part (i.e. refrigerant piping) to prevent from insulation failure (melt).
⊘	Do not apply excessive force to water pipes that may damage the pipes. If water leakage occurs, it will cause flooding and damage to other properties.
❗	Select an installation location which is easy for maintenance.
❗	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
❗	Power supply connection to Indoor Unit. ● Power supply point should be in easily accessible place for power disconnection in case of emergency. ● Must follow local national wiring standard, regulation and this installation instruction. ● Strongly recommended to make permanent connection to a circuit breaker. - Power Supply 1: Use approved 20A 4-poles circuit breaker with a minimum contact gap of 3.0mm. - Power Supply 2: Use approved 15/16A 2-poles circuit breaker with a minimum contact gap of 3.0mm. (Only applicable for WH-S*C09*3E8) or Use approved 20A 4-poles circuit breaker with a minimum contact gap of 3.0mm. (Only applicable for WH-S*C12*9E8, WH-S*C16*9E8)
❗	Ensure the correct polarity is maintained throughout all wiring. Otherwise, it will cause electrical shock or fire.
❗	After installation, check the water leakage condition in connection area during test run. If leakage occurs, it will cause damage to other properties.
❗	Installation work. It may need two or more people to carry out the installation work. The weight of Indoor Unit might cause injury if carried by one person.

Attached Accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	4	Installation plate 	1
2	Drain elbow 	1	5	Screw 	3
3	Packing 	1	6	Remote Controller Cover 	1

Optional Accessories

No.	Accessories part	Qty.
7	Optional PCB (CZ-NS4P)	1
8	Network Adaptor (CZ-TAW1)	1

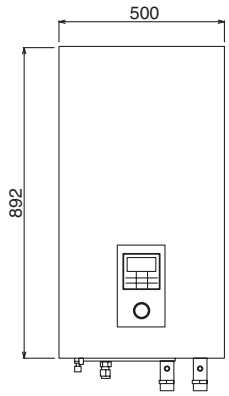


Field Supply Accessories

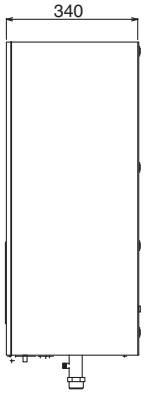
No.	Part		Model	Specification	Maker
i	2-way valve kit *Cooling model	Electromotoric Actuator	SFA21/18	AC230V	Siemens
		2-port Valve	VVI46/25	-	Siemens
ii	3-way valve kit	Electromotoric Actuator	SFA21/18	AC230V	Siemens
		3-port Valve	VVI46/25	-	Siemens
iii	Room thermostat	Wired	PAW-A2W-RTWIRED	AC230V	-
		Wireless	PAW-A2W-RTWIRELESS		
iv	Mixing valve	-	167032	AC230V	Caleffi
v	Pump	-	Yonos 25/6	AC230V	Wilo
vi	Buffer tank sensor	-	PAW-A2W-TSBU	-	-
vii	Outdoor sensor	-	PAW-A2W-TSOD	-	-
viii	Zone water sensor	-	PAW-A2W-TSHC	-	-
ix	Zone room sensor	-	PAW-A2W-TSRT	-	-
x	Solar sensor	-	PAW-A2W-TSSO	-	-

■ It is recommended to purchase the field supply accessories listed in above table.

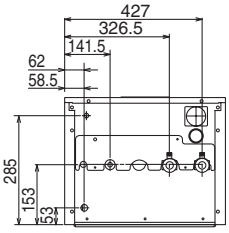
1 DIMENSION DIAGRAM



FRONT VIEW

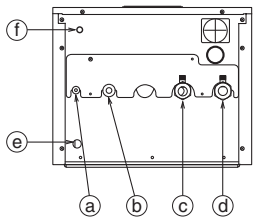


SIDE VIEW



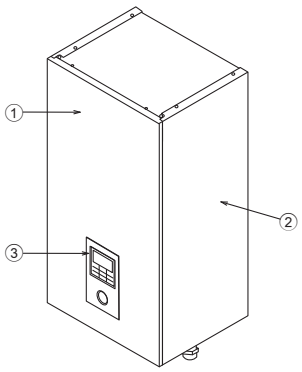
BOTTOM VIEW

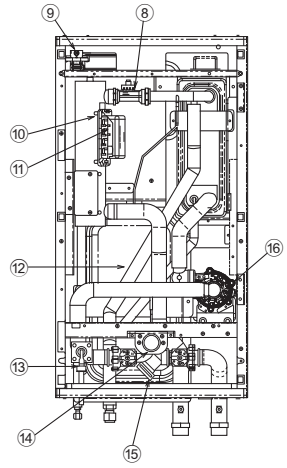
Pipe Position Diagram

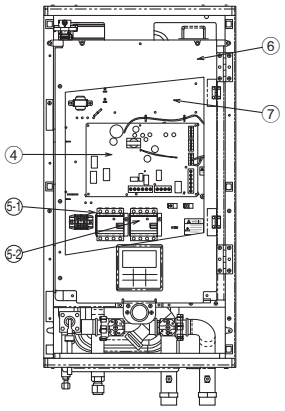


Letter	Pipe Description	Connection Size
ⓐ	Refrigerant liquid	5/8-18UNF
ⓑ	Refrigerant gas	7/8-14UNF
ⓒ	Water outlet	R 1¼"
ⓓ	Water inlet	R 1¼"
ⓔ	Drain water hole	-
ⓕ	Pressure relief valve drainage	3/8"

Main Components



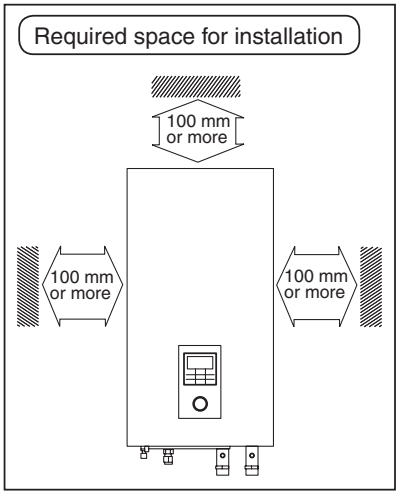




① Cabinet front plate
② Cabinet side plate (2 pieces)
③ Remote controller
④ PCB
⑤-1 3 Phase RCCB/ELCB (Main Power)
⑤-2 Single Phase RCCB/ELCB (Booster Heater)
for WH-S*C09*3E8
3 Phase RCCB/ELCB for WH-S*C12*9E8, WH-S*C16*9E8
⑥ Control board cover
⑦ Control board
⑧ Flow sensor
⑨ Air purge valve
⑩ Backup heater
⑪ Overload protector (4 pieces)
⑫ Expansion vessel
⑬ Pressure relief valve
⑭ Water pressure gauge
⑮ Water filter
⑯ Water pump

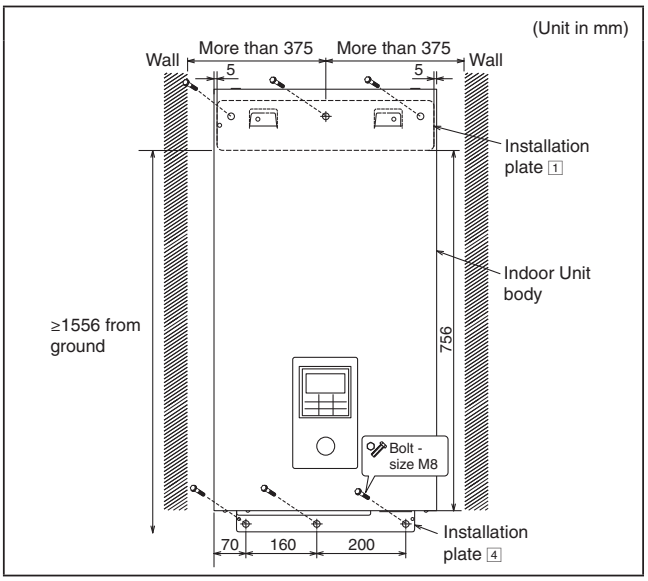
2 SELECT THE BEST LOCATION

- ❏ There should not be any heat source or steam near the unit.
- ❏ A place where air circulation in the room is good.
- ❏ A place where drainage can be easily done.
- ❏ A place where noice prevention is taken into consideration.
- ❏ Do not install the unit near the door way.
- ❏ Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- ❏ Recommended installation height for indoor unit shall be at least 800 mm.
- ❏ Must install on a vertical wall.
- ❏ When install electrical equipment at wooden building of metal lath or wire lath, according to electrical facility technical standard, no electrical contact between equipment and building is allowed. Insulator must be installed in between.
- ❏ Do not install the unit at outdoor. This is designed for indoor installation only.



3 HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from vibration



The centre of installation plate should be at more than 375 mm at right and left of the wall.
The distance from installation plate edge to ground should more than 1556 mm.

- Always mount the installation plate horizontally plate by aligning the marking thread and using a level gauge.
- Mount the installation plate on the wall with 6 sets of plug, bolt and washer (all non-supply) with size M8.

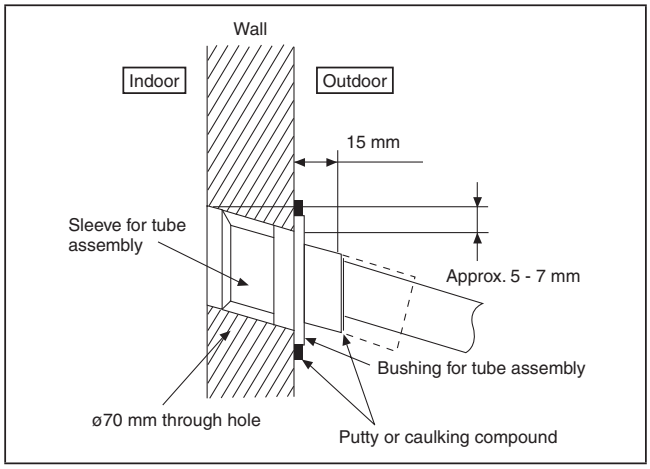
4 TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. 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.

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



5 INDOOR UNIT INSTALLATION

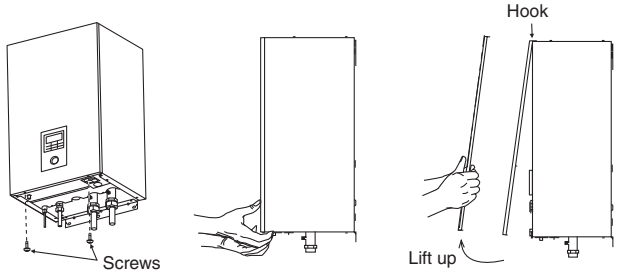
Access to Internal Components

⚠ WARNING

This section is for authorized and licensed electrician/water system installer only. Work behind the front plate secured by screws must only be carried out under supervision of qualified contractor, installation engineer or service person.

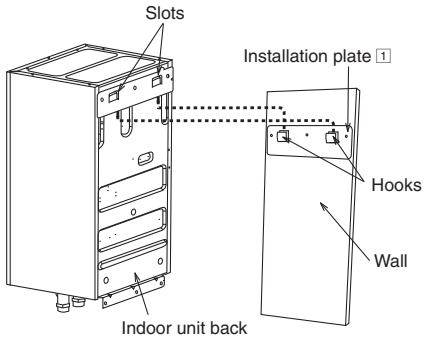
Please follow the steps below for take out front plate. Before removing the front plate of indoor unit, always switch off all power supply (i.e. indoor unit power supply, heater power supply and Tank Unit power supply).

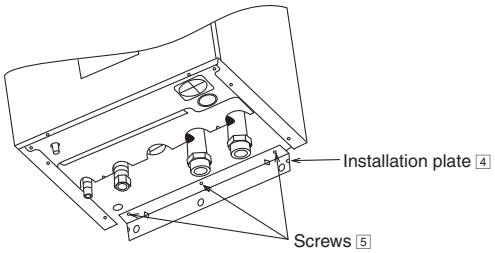
1. Remove the 2 mounting screws which located at bottom of the front plate.
2. Gently pull the lower section of the front plate towards you to remove the front plate from left and right hooks.
3. Hold the left edge and right edge of front plate to lift up front plate from hooks.

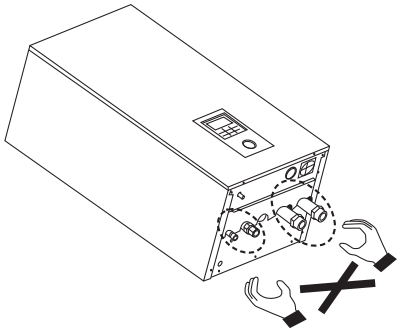


Install the indoor unit

1. Engage the slots on the indoor unit to the hooks of installation plate [1]. Ensure the hooks are properly seated on the installation plate by moving it left and right.
2. Fix the screws [5] to the holes on the hooks of installation plate [4], as illustrated below.



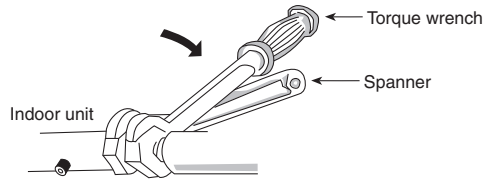




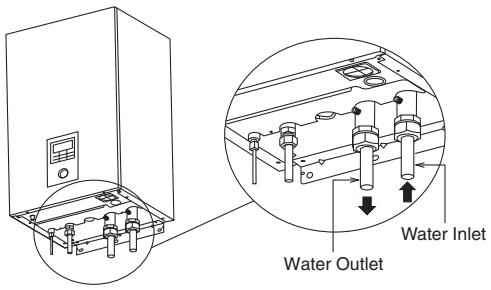
Note: Do not lift the Indoor Unit by holding the refrigerant and water pipes to prevent damage of the pipes.

Water piping installation

- Water inlet and water outlet in indoor unit are used for connection to water circuit. Please request a licensed technician to install this water circuit.
- This water circuit must comply with all relevant European and national regulations, i.e. IEC/EN 61770.
- Be careful not to deform the piping to excessive force when doing piping connection job.
- Use Rp 1¼" nut for both water inlet and outlet connection and clean all pipings with tap water before connecting to the indoor unit.
- Cover the pipe end to prevent dirt and dust when inserting it through a wall.
- Choose proper sealer which can withstand the pressures and temperatures of the system.
- If an existing tank is to be connected to this indoor unit, ensure the pipes are clean before water pipe installation is carried out.
- Be sure to use two spanners to tighten the connection. Tighten the nuts with torque wrench: 117.6N•m.



- If non-brass metallic piping is used for installation, make sure to insulate the pipes to prevent galvanic corrosion.
- 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.

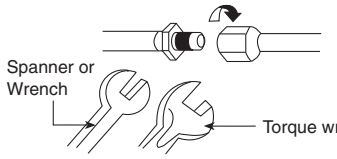


⚠ CAUTION

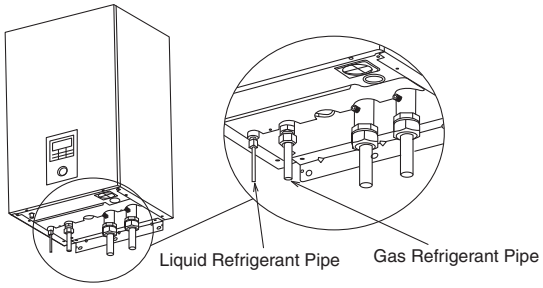
Do not over tighten, over tightening cause water leakage.

Refrigerant pipe installation

1. Please make flare after inserting flare nut (located at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)
2. Do not use pipe wrench to open refrigerant piping. Flare nut may be broken and cause leakage. Use proper spanner or ring wrench.
3. Connect the piping:
   - Align the center of piping and sufficiently tighten the flare nut with fingers.
   - Be sure to use two spanners to tighten the connection. Further tighten the flare nut with torque wrench in specified torque as stated in the table.



Piping size (Torque)	
Gas	Liquid
ø15.88mm (5/8") [65 N•m]	ø9.52mm (3/8") [42 N•m]



⚠ CAUTION

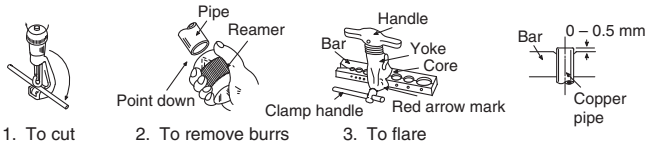
Do not over tighten, over tightening cause water leakage.

⚠ CAUTION

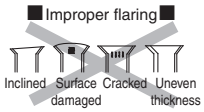
Please take extra precaution when open the control board cover ⑥ and control board ⑦ for indoor unit installation and servicing. Failure to do so may cause injury.

CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



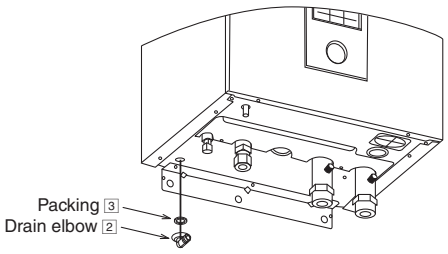
1. To cut 2. To remove burrs 3. To flare



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

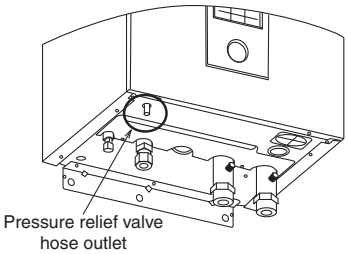
Drain elbow and hose installation

- Fix the drain elbow [2] and packing [3] to the bottom of indoor unit, as shown in below illustration.
- Use inner diameter 17 mm drain hose in the market.
- This hose must to be installed in a continuosly downward direction and in a frost-free environment.
- Guides this hose's outlet to outdoor only.
- Do not insert this hose into sewage or drain pipe that may generate ammonia gas, sulfuric gas, etc.
- If necessary, use hose clamp to further tighten the hose at drain hose connector to prevent leakage.
- Water will drip from this hose, therefore the outlet of this hose must be installed in an area where the outlet cannot become blocked.



Pressure Relief Valve Drainage Pipework

- Connect a drain hose to the pressure relief valve hose outlet.
- This hose must to be installed in a continuosly downward direction and in a frost-free environment.
- Guides this hose's outlet to outdoor only.
- Do not insert this hose into sewage hose or cleaning hose that may generate ammonia gas, sulfuric gas, etc.
- If necessary, use hose clamp to further tighten the hose at drain hose connector to prevent leakage.
- Water will drip from this hose, therefore the outlet of this hose must be installed in an area where the outlet cannot become blocked.



6 CONNECT THE CABLE TO THE INDOOR UNIT

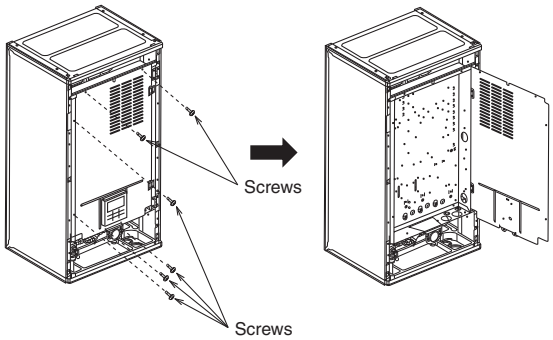
⚠ WARNING

This section is for authorised and licensed electrician only. Work behind the Control Board Cover ⑥ secured by screws must only be carried out under supervision of qualified contractor, installation engineer or service person.

Open the Control Board Cover ⑥

Please follow the steps below to open control board cover. Before opening the control board cover of indoor unit, always switch off all power supply (i.e. indoor unit power supply, heater power supply and Tank Unit power supply).

1. Remove the 6 mounting screws at the control board cover.
2. Swing the control board cover to the right hand side.



Fixing of Power Supply Cord and Connecting Cable

1. Connecting cable between Indoor Unit and Outdoor Unit shall be approved polychloroprene sheathed 6 x min 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord.
   - Ensure the colour of wires of Outdoor Unit and the terminal no. are the same to the Indoor Unit respectively.
   - Earth wire shall be longer than other wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the Holder (Clamper).
2. An isolating device must be connected to the power supply cable.
   - Isolating device (disconnecting means) should have minimum 3.0 mm contact gap.
   - Connect the approved polychloroprene sheathed power supply 1 cord and power supply 2 cord and type designation 60245 IEC 57 or heavier cord to the terminal board, and to the other end of the cord to isolating device (Disconnecting means). See below table for cable size requirement.

For model WH-S*C09*3E8

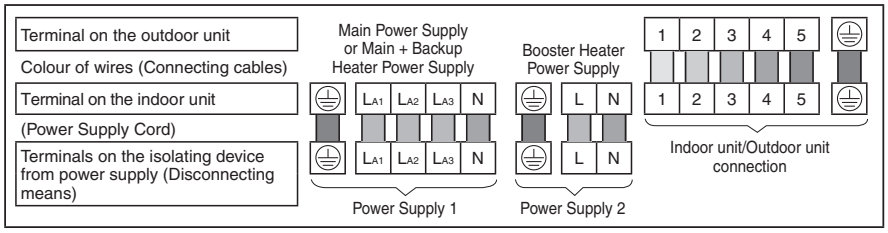
Power Supply Cord	Cable Size	Isolating Devices	Recommended RCD
1	5 x minimum 1.5 mm²	20A	30mA, 4P, type A
2	3 x minimum 1.5 mm²	15/16A	30mA, 2P, type AC

For model WH-S*C12*9E8, WH-S*C16*9E8

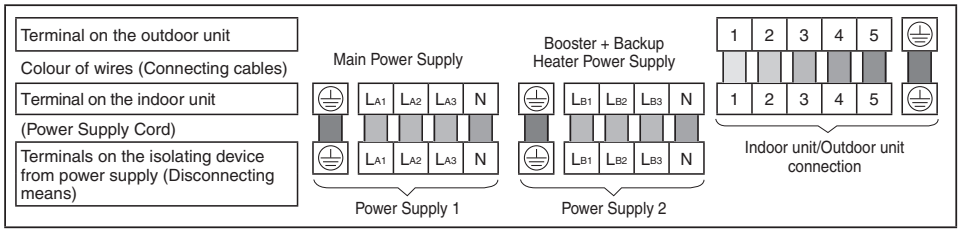
Power Supply Cord	Cable Size	Isolating Devices	Recommended RCD
1	5 x minimum 1.5 mm²	20A	30mA, 4P, type A
2	5 x minimum 1.5 mm²	20A	30mA, 4P, type AC

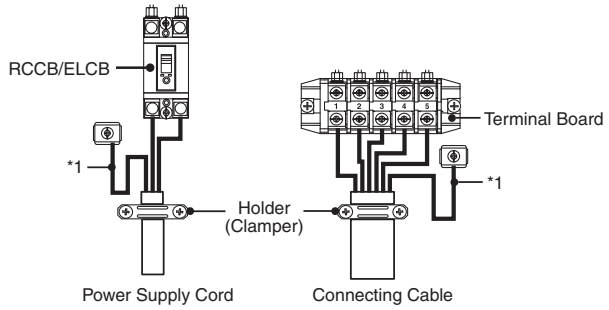
3. To avoid the cable and cord being damaged by sharp edges, the cable and cord must be passed through a bushing (located at the bottom of Control Board) before terminal board. The bushing must be used and must not be removed.

For model WH-S*C09*3E8



For model WH-S*C12*9E8, WH-S*C16*9E8

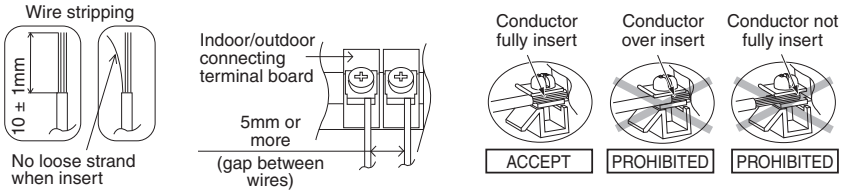




Terminal screw	Tightening torque cN•m {kgf•cm}
M4	157~196 {16~20}
M5	196~245 {20~25}

*1 - Earth wire must be longer than other cables for safety reasons

WIRE STRIPPING AND CONNECTING REQUIREMENT



CONNECTING REQUIREMENT

For WH-S*C09*3E8

- The equipment's Power Supply 1 complies with IEC/EN 61000-3-2.
- The equipment's Power Supply 1 complies with IEC/EN 61000-3-3 and can be connected to current supply network.
- The equipment's Power Supply 2 complies with IEC/EN 61000-3-2.
- The equipment's Power Supply 2 complies with IEC/EN 61000-3-11 and shall be connected to suitable supply network, with the following maximum permissible system impedance Z_{max} = 0.426Ω at the interface. Please liaise with supply authority to ensure that the Power Supply 2 is connected only to a supply of that impedance or less.

For WH-S*C12*9E8, WH-S*C16*9E8

- The equipment's Power Supply 1 complies with IEC/EN 61000-3-2.
- The equipment's Power Supply 1 complies with IEC/EN 61000-3-3 and can be connected to current supply network.
- The equipment's Power Supply 2 complies with IEC/EN 61000-3-2.
- The equipment's Power Supply 2 complies with IEC/EN 61000-3-3 and can be connected to current supply network.

7 INSTALLATION OF REMOTE CONTROLLER AS ROOM THERMOSTAT

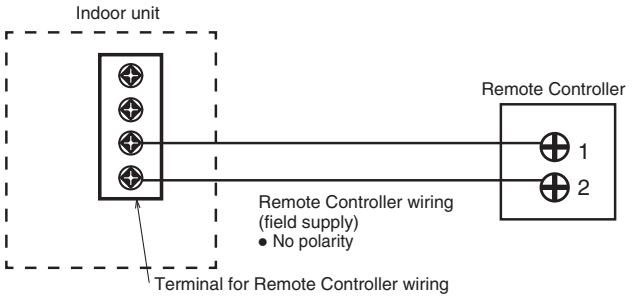
- Remote Controller ③ mounted to the Indoor Unit can be moved to the room and serve as Room Thermostat.

Installation Location

- 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.
  1. By the window, etc. exposed to direct sunlight or direct air.
  2. In the shadow or backside of objects deviated from the room airflow.
  3. Location where condensation occurs (The Remote Controller is not moisture proof or drip proof.)
  4. Location near heat source.
  5. Uneven surface.
- Keep distance of 1 m or more from the TV, radio and PC. (Cause of fuzzy image or noise)

ENGLISH

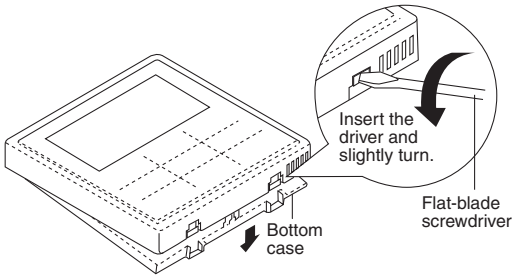
Remote Controller Wiring



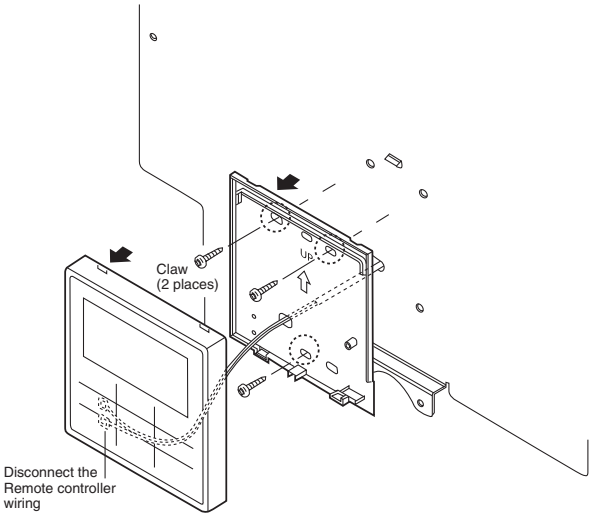
- Remote Controller cable shall be (2 x min 0.3 mm²), of double insulation PVC-sheathed or rubber sheathed cable. Total cable length shall be 50 m or less.
- Be careful not to connect cables to other terminals of Indoor Unit (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together with the power source wiring or store in the same metal tube. Operation error may occur.

Remove The Remote Controller From Indoor Unit

1. Remove the top case from the bottom case.



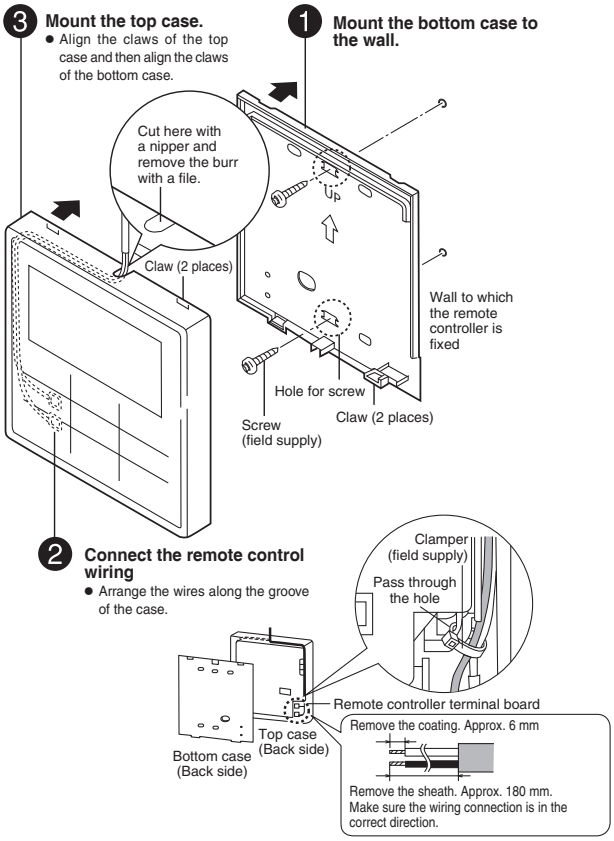
2. Remove the wiring between Remote controller and Indoor Unit terminal. Remove the bottom case from the Control board cover by loosening the screws. (3 pieces)



Mounting The Remote Controller

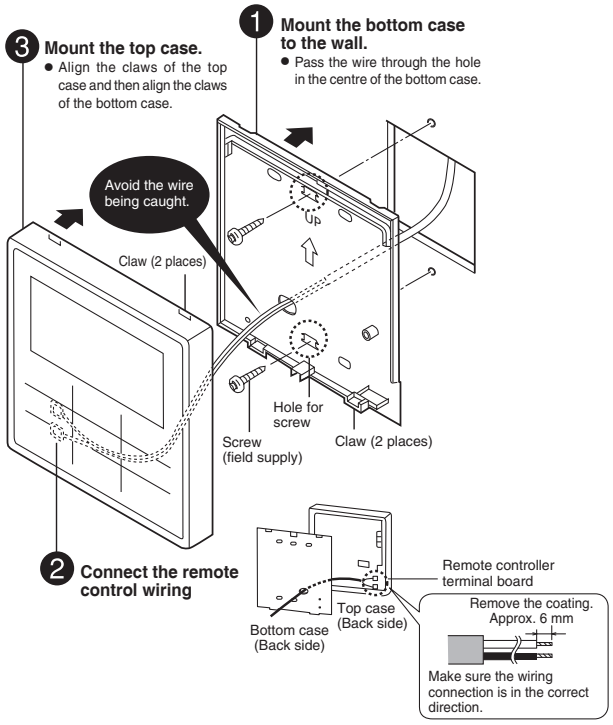
For exposed type

Preparation: Make 2 holes for screws using a driver.



For embedded type

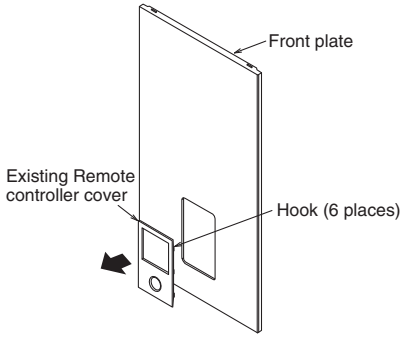
Preparation: Make 2 holes for screws using a driver.



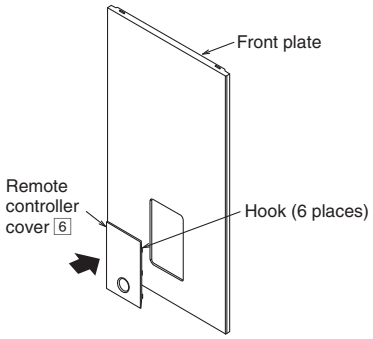
Replace The Remote Controller Cover

- Replace the existing Remote controller cover with Remote controller cover [6] to close the hole left after remove the Remote controller.

1. Release the Remote controller cover's hooks from behind the front plate.



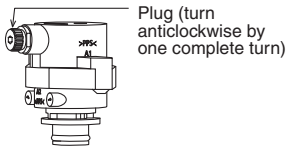
2. Press from front to fix the Remote controller cover [6] on the front plate.



8 CHARGING THE WATER

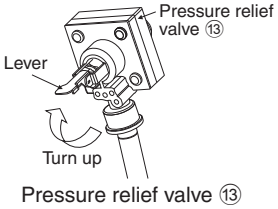
- Make sure all the piping installations are properly done before carry out below steps.

1. Turn the plug on the Air Purge Valve ⑨ outlet anticlockwise by one complete turn from fully closed position.



Air purge valve ⑨

2. Set the Pressure Relief Valve ⑬ level "DOWN".



Pressure relief valve ⑬

3. Start filling water (with pressure more than 0.1 MPa (1 bar)) to the Indoor Unit via water inlet. Stop filling water if the free water flow through Pressure Relief Valve drain hose.
4. Turn ON the power supply and make sure Water Pump ⑯ is running.
5. Check and make sure no water leaking at the tube connecting points.

9 RECONFIRMATION

⚠ WARNING

Be sure to switch off all power supply before performing each of the below checkings. Before obtaining access to terminals, all supply circuits must be disconnected.

CHECK WATER PRESSURE

*(0.1 MPa = 1 bar)

Water pressure should not lower than 0.05 MPa (with inspects the Water Pressure Gauge ⑭). If necessary add tap water into Tank Unit. Refer to Tank unit installation instruction for details on how to add water.

CHECK PRESSURE RELIEF VALVE ⑬

- Check for correct operation of Pressure Relief Valve ⑬ by turning on the lever to become horizontal.
- If you do not hear a clacking sound (due to water drainage), contact your local authorized dealer.
- Push down the lever after finish checking.
- In case the water keeps drained out from the unit, switch off the system, and then contact your local authorized dealer.

EXPANSION VESSEL ⑫ PRE PRESSURE CHECKING

[Upper limit water volume of the system]
The indoor unit has a build-in Expansion Vessel with 10 L air capacity and initial pressure of 1 bar.
Total amount of water in the system should be below 260 L.
If the total amount of water is more than 260 L, please add expansion vessel (field supply).
The expansion vessel capacity required for the system can be calculated from the formula below.

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

V : Required gas volume <expansion vessel volume L>
Vo : System total water volume <L>
ε : Water expansion rate 5 → 60˚C = 0.0171
P_1 : Expansion tank filling pressure = (100) kPa
P_2 : System maximum pressure = 300 kPa

- ( ) Please confirm at actual place
- The gas volume of the sealed type expansion vessel is presented by <V>.

❍ It's advised to add 10% margin for required gas volume of calculation.

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

[Adjustment of the initial pressure of the expansion vessel when there is a difference in installation height]
If the height difference between the indoor unit and the highest point of the system water circuit (H) is more than 7m, please adjust the initial pressure of the expansion vessel (Pg) according to the following formula.

Pg= (H*10+30) kPa

CHECK RCCB/ELCB

Ensure the RCCB/ELCB set to “ON” condition before check RCCB/ELCB.
Turn on the power supply to the Indoor Unit.
This testing could only be done when power is supplied to the Indoor Unit.

> ⚠ WARNING
>
> Be careful not to touch parts other than RCCB/ELCB test button when the power is supplied to Indoor Unit. Else, electrical shock may happen. Before obtaining access to terminals, all supply circuits must be disconnected.

- Push the “TEST” button on the RCCB/ELCB. The lever would turn down and indicate “0”, if it functions normal.
- Contact authorized dealer if the RCCB/ELCB malfunction.
- Turn off the power supply to the Indoor Unit.
- If RCCB/ELCB functions normal, set the lever to “ON” again after testing finish.

This product contains fluorinated greenhouse gasses.
Refrigerant type : R410A (GWP=2088)
Amount : For WH-SXC09*3E8, WH-SXC12*9E8 2.85 kg (5.9508 ton CO_2 equivalent)
For WH-SXC16*9E8 2.90 kg (6.0552 ton CO_2 equivalent)
For WH-SDC09*3E8, WH-SDC12*9E8, WH-SDC16*9E8 2.55kg (5.3244 ton CO_2 equivalent)
(The amount do not include the additional refrigerant when refrigerating piping length extended. Please refer to adhered label on outdoor unit for exact amount of refrigerant used and actual tonnes of CO_2 equivalent.)

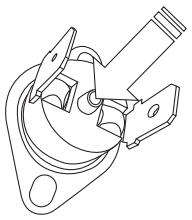
10 TEST RUN

1. Fill up the Tank Unit with water. For details refer to Tank Unit installation instruction and operation instruction.
2. Set ON to the Indoor Unit and RCCB/ELCB. Then, for control panel operation please refers to air-to-water heatpump operation instruction.
3. For normal operation, pressure gauge ⑭ reading should be in between 0.05 MPa and 0.3 MPa.
4. After test run, please clean the Water Filter Set ⑮. Reinstall it after finish cleaning.

RESET OVERLOAD PROTECTOR ⑪

Overload Protector ⑪ serves the safety purpose to prevent the water over heating. When the Overload Protector ⑪ trip at high water temperature, take below steps to reset it.

1. Take out the cover.
2. Use a test pen to push the centre button gently in order to reset the Overload Protector ⑪.
3. Fix the cover to the original fixing condition.



11 MAINTENANCE

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

Maintenance for Water Filter Set ⑮

1. Turn OFF power supply.
2. Set the two valves for the Water Filter Set ⑮ to “CLOSE”.
3. Take off the clip, then gently pull out the mesh. Beware of small amount water drain out from it.
4. Clean the mesh with warm water to remove all the stain. Use soft brush if necessary.
5. Reinstall the mesh to the Water Filter Set ⑮ and set back the clip on it.
6. Set the two valves for the Water Filter Set ⑮ to “OPEN”.
7. Turn ON power supply.

PROPER PUMP DOWN PROCEDURE

> ⚠ WARNING
>
> Strictly follow the steps below for proper pump down procedure. Explosion may occur if the steps are not followed as per sequence.
> 1. When the Indoor Unit is not in operation (standby), enter the Service setup menu in the Remote Controller and select Pump down operation to turn it ON. (See APPENDIX for detail)
> 2. After 10~15 minutes, (after 1 or 2 minutes in case very low ambient temperatures (< 10°C)), fully close 2 way valve on Outdoor Unit.
> 3. After 3 minutes, fully close 3 way valve on Outdoor Unit.
> 4. Press the “OFF/ON” switch on the Remote Controller ③ to stop pump down operation.
> 5. Remove the refrigerant piping.

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting cable fixed to terminal board firmly?
- ☐ Is the connecting cable clamped firmly?
- ☐ Is the earth wire connection properly done?
- ☐ Is water pressure higher than 0.05 MPa?
- ☐ Is the pressure relief valve ⑬ operation normal?
- ☐ Is the RCCB/ELCB operation normal?
- ☐ Is the Indoor Unit properly hooked to the installation plate?
- ☐ Is the power supply voltage within the rated voltage range?
- ☐ Is there any abnormal sound?
- ☐ Is the heating operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote controller ③ LCD operation normal?
- ☐ Is the Indoor Unit water leak free on test run?

APPENDIX

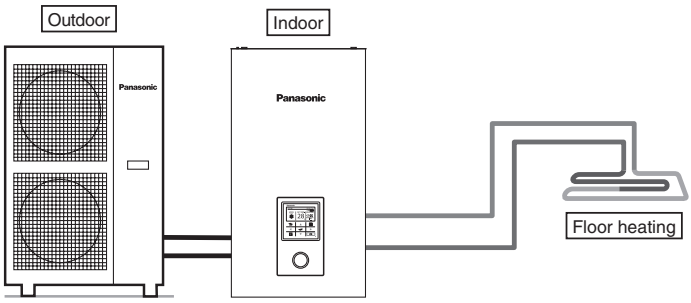
1 Variation of system

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

1-1 Introduce application related to temperature setting.

Temperature setting variation for heating

1. Remote Controller



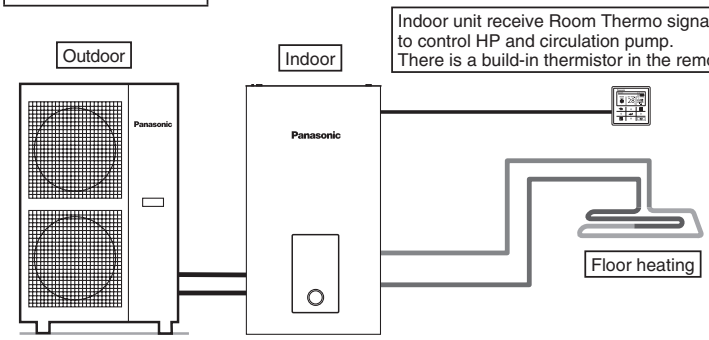
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

Zone & Sensor:
Water temperature

Connect floor heating or radiator directly to the indoor unit.
Remote controller is installed on indoor unit.
This is the basic form of the most simple system.

2. Room Thermostat



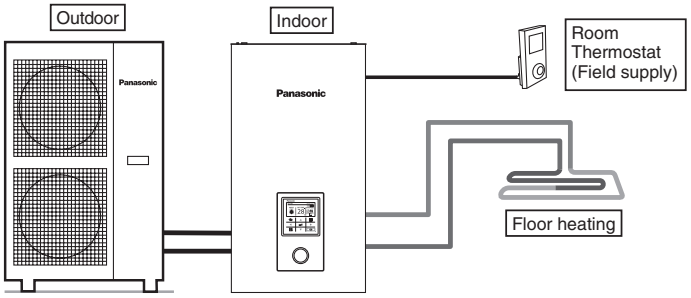
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

Zone & Sensor:
Room thermostat
Internal

Connect floor heating or radiator directly to the indoor unit.
Remove remote controller from indoor unit and install it in the room where floor heating is installed.
This is an application that uses remote controller as Room Thermostat.

3. External Room Thermostat



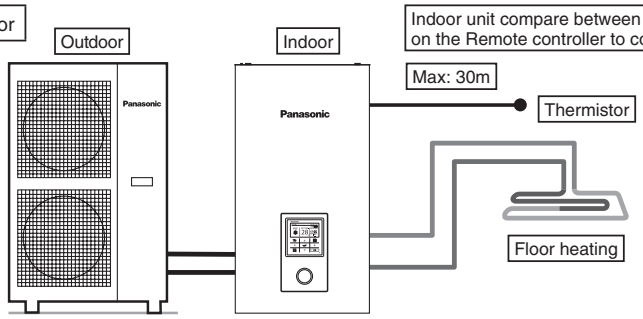
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

Zone & Sensor:
Room thermostat
(External)

Connect floor heating or radiator directly to indoor unit.
Remote controller is installed on indoor unit.
Install separate external Room Thermostat (field supply) in the room where floor heating is installed.
This is an application that uses external Room Thermostat.

4. Room Thermistor



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

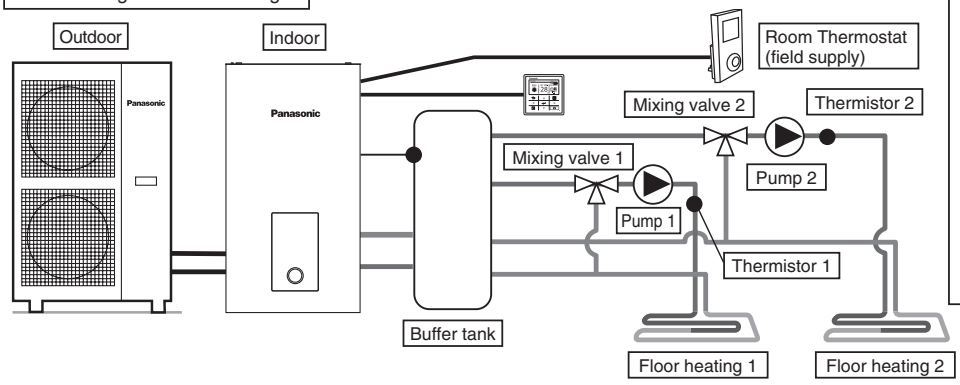
Zone & Sensor:
Room thermistor

Connect floor heating or radiator directly to indoor unit.
Remote controller is installed on indoor unit.
Install separate external room thermistor (specified by Panasonic) in the room where floor heating is installed.
This is an application that uses external room thermistor.

There are 2 kinds of circulation water temperature setting method.
Direct: set direct circulation water temperature (fixed value)
Compensation curve: set circulation water temperature depends on outdoor ambient temperature
In case of Room thermo or Room thermistor, compensation curve can be set.
In this case, compensation curve is shifted according to the thermo ON/OFF situation.
- (Example) If room temperature increasing speed is;
  very slow → shift up the compensation curve
  very fast → shift down the compensation curve

Examples of installations

Floor heating 1 + Floor heating 2



Setting of remote controller

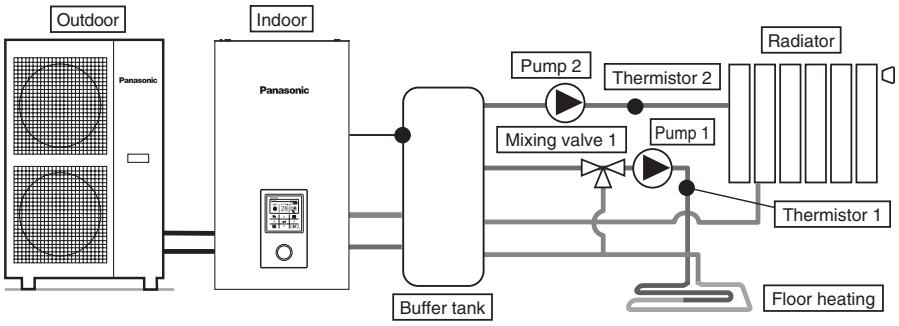
Installer setting
System setup
Optional PCB connectivity - Yes

Zone and Sensor - 2 Zone system
Zone 1:Sensor
Room thermostat
Internal

Zone 2:Sensor
Room
Room thermostat
(External)

Connect floor heating to 2 circuits through buffer tank as shown in the figure.
Install mixing valves, pumps and thermistors (specified by Panasonic) on both circuits.
Remove remote controller from indoor unit, install it in one of the circuit and use it as Room Thermostat.
Install external Room Thermostat (field supply) in another circuit.
Both circuits can set circulation water temperature independently.
Install buffer tank thermistor on buffer tank.
It requires connection setting of buffer tank and ΔT temperature setting at heating operation separately.
This system requires optional PCB (CZ-NS4P).

Floor heating + Radiator



Setting of remote controller

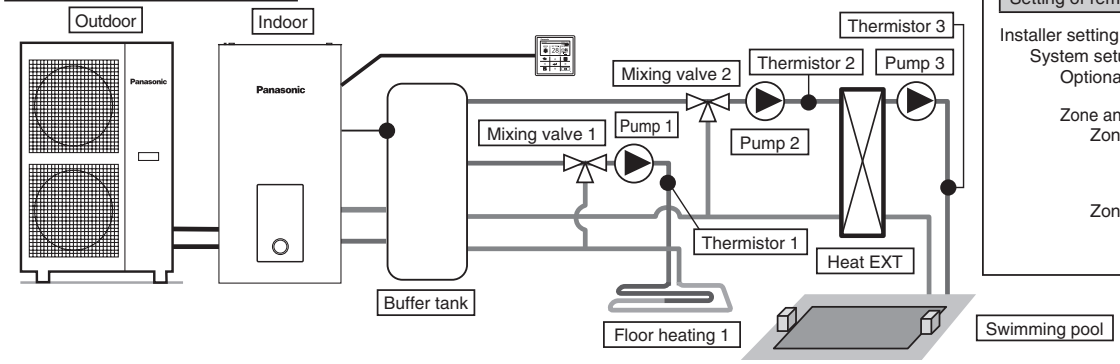
Installer setting
System setup
Optional PCB connectivity - Yes

Zone and Sensor - 2 Zone system
Zone 1:Sensor
Water temperature

Zone 2:Sensor
Room
Water temperature

Connect floor heating or radiator to 2 circuits through buffer tank as shown in figure.
Install pumps and thermistors (specified by Panasonic) on both circuits.
Install mixing valve in the circuit with lower temperature among the 2 circuits.
(Generally, if install floor heating and radiator circuit at 2 zones, install mixing valve in floor heating circuit.)
Remote controller is installed on indoor unit.
For temperature setting, select circulation water temperature for both circuits.
Both circuits can set circulation water temperature independently.
Install buffer tank thermistor on buffer tank.
It requires connection setting of buffer tank and ΔT temperature setting at heating operation separately.
This system requires the optional PCB (CZ-NS4P).
Mind that if there is no mixing valve at the secondary side, the circulation water temperature may get higher than setting temperature.

Floor heating + Swimming pool



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

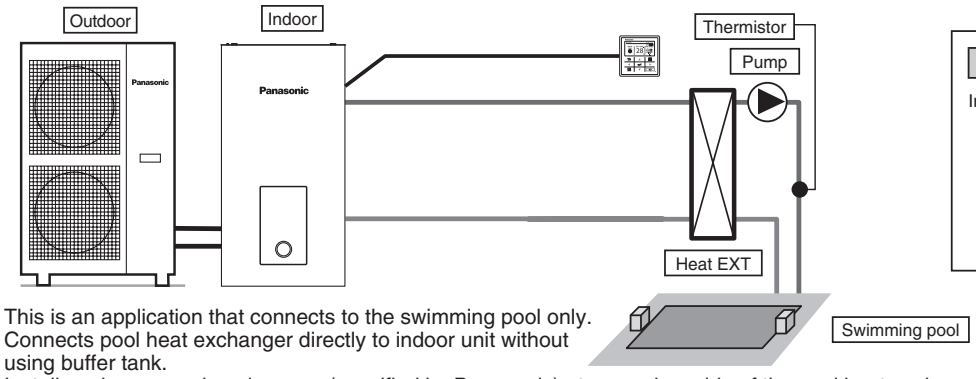
Zone and Sensor - 2 Zone system
Zone 1:Sensor
Room thermostat
Internal

Zone 2
Swimming pool
ΔT

Connect floor heating and swimming pool to 2 circuits through buffer tank as shown in figure.
Install mixing valves, pumps and thermistors (specified by Panasonic) on both circuits.
Then, install additional pool heat exchanger, pool pump and pool sensor on pool circuit.
Remove remote controller from indoor unit and install in room where floor heating is installed. Circulation water temperature of floor heating and swimming pool can be set independently.
Install buffer tank sensor on buffer tank.
It requires connection setting of buffer tank and ΔT temperature setting at heating operation separately. This system requires the optional PCB (CZ-NS4P).

❉ Must connect swimming pool to “Zone 2”.
If it is connected to swimming pool, operation of pool will stop when “Cooling” is operated.

Swimming pool only



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

Zone and Sensor - 1 Zone system

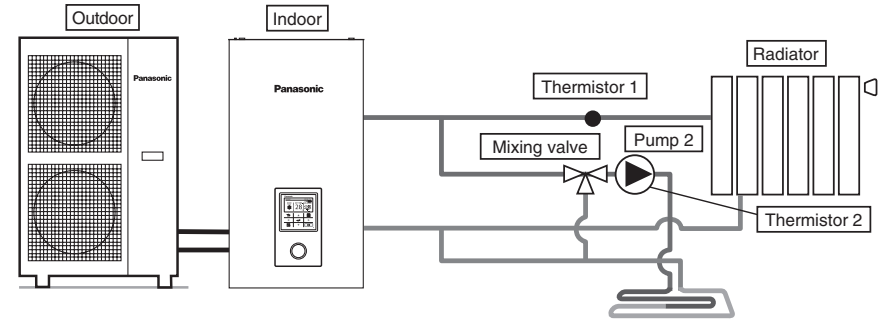
Zone :Swimming pool

ΔT

This is an application that connects to the swimming pool only.
Connects pool heat exchanger directly to indoor unit without using buffer tank.
Install pool pump and pool sensor (specified by Panasonic) at secondary side of the pool heat exchanger.
Remove remote controller from indoor unit and install in room where floor heating is installed.
Temperature of swimming pool can be set independently.
This system requires the optional PCB (CZ-NS4P).

In this application, cooling mode cannot be selected. (not display on remote controller)

Simple 2 zone (Floor heating + Radiator)



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

Zone and Sensor - 2 Zone system
Zone 1:Sensor
Water temperature

Zone 2:Sensor
Room
Water temperature

Operation setup
Heat
ΔT for heating ON – 1°C

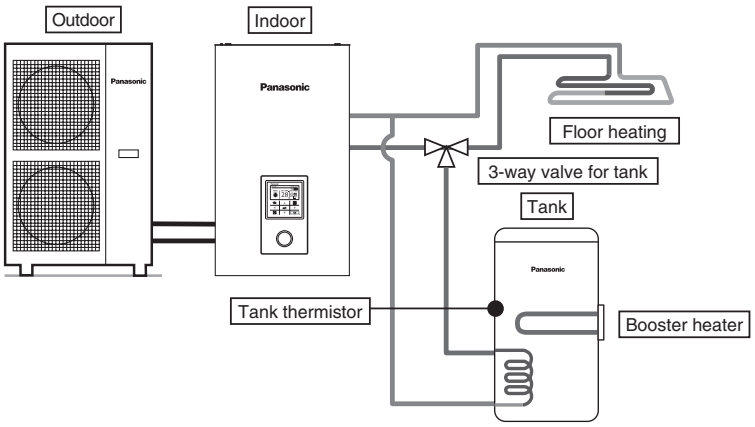
Cool
ΔT for cooling ON – 1°C

This is an example of simple 2 zone control without using buffer tank.
Built-in pump from indoor unit served as a pump in zone 1.
Install mixing valve, pump and thermistor (specified by Panasonic) on zone 2 circuit.
Please be sure to assign high temperature side to zone 1 as temperature of zone 1 cannot be adjusted.
Zone 1 thermistor is required to display temperature of zone 1 on remote controller.
Circulation water temperature of both circuits can be set independently.
(However, temperature of high temperature side and low temperature side cannot be reversed)
This system requires the optional PCB (CZ-NS4P).

(CAUTION)
- Thermistor 1 does not affect operation directly. But error happens if it is not installed.
- Please adjust flow rate of zone 1 and zone 2 to be in balance. If it is not adjusted correctly, it may affects the performance.
  (If zone 2 pump flow rate is too high, there is possibility that no hot water flowing to zone 1.)
  Flow rate can be confirmed by “Actuator Check” from maintenance menu.

1-2. Introduce applications of system that uses optional equipment.

DHW (Domestic Hot Water) Tank connection



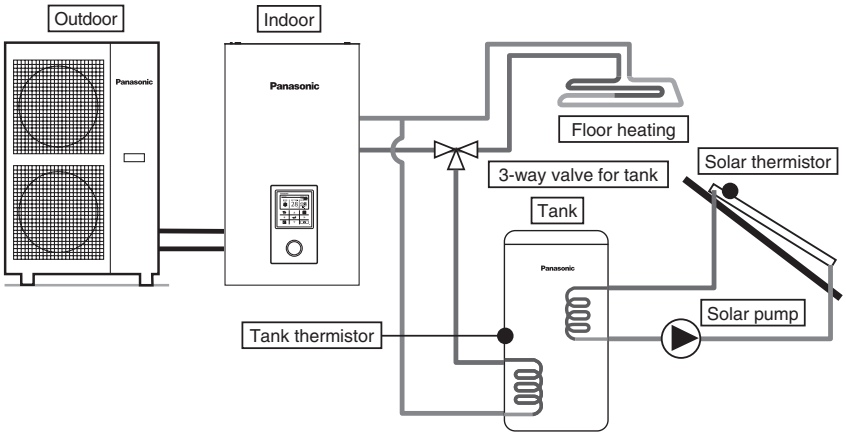
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

Tank connection - Yes

This is an application that connects the DHW tank to the indoor unit through 3-way valve.
DHW tank's temperature is detected by tank thermistor (specified by Panasonic).

Tank + Solar connection



Setting of remote controller

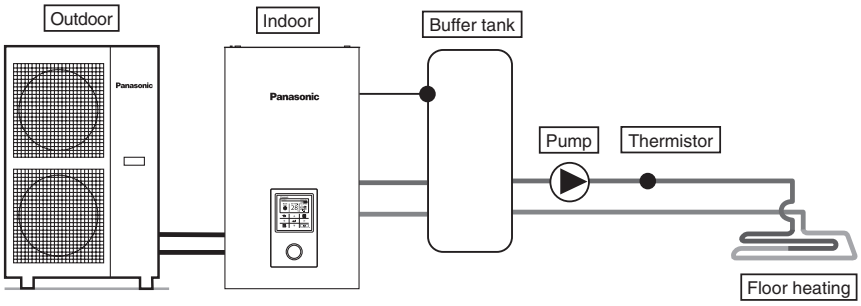
Installer setting
System setup
Optional PCB connectivity - Yes

Tank connection - Yes

Solar connection - Yes
DHW tank
ΔT turn ON
ΔT turn OFF
Antifreeze
Hi limit

This is an application that connects the DHW tank to the indoor unit through 3-way valve before connect the solar water heater to heat up the tank. DHW tank's temperature is detected by tank thermistor (specified by Panasonic). Solar panel's temperature is detected by solar thermistor (specified by Panasonic).
DHW tank shall use tank with built-in solar heat exchange coil independently.
Heat accumulation operates automatically by comparing the temperature of tank thermistor and solar thermistor.
During winter season, solar pump for circuit protection will be activated continuously. If does not want to activate the solar pump operation, please use glycol and set the anti-freezing operation start temperature to -20°C.
This system requires optional PCB (CZ-NS4P).

Buffer tank connection



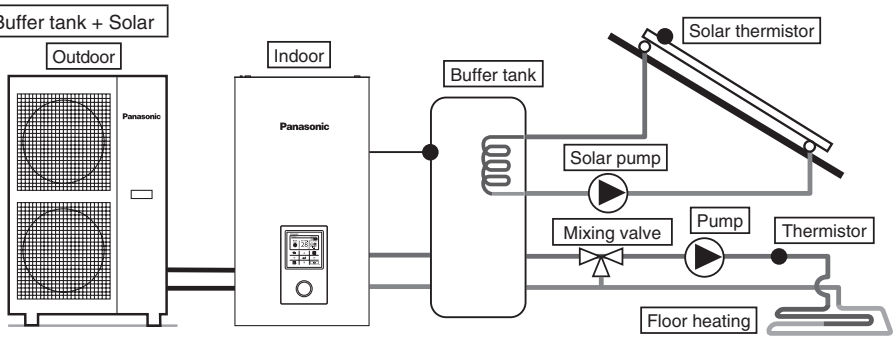
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

Buffer Tank connection - Yes
ΔT for buffer tank

This is an application that connects the buffer tank to the indoor unit.
Buffer tank's temperature is detected by buffer tank thermistor (specified by Panasonic).
This system requires optional PCB (CZ-NS4P).

Buffer tank + Solar

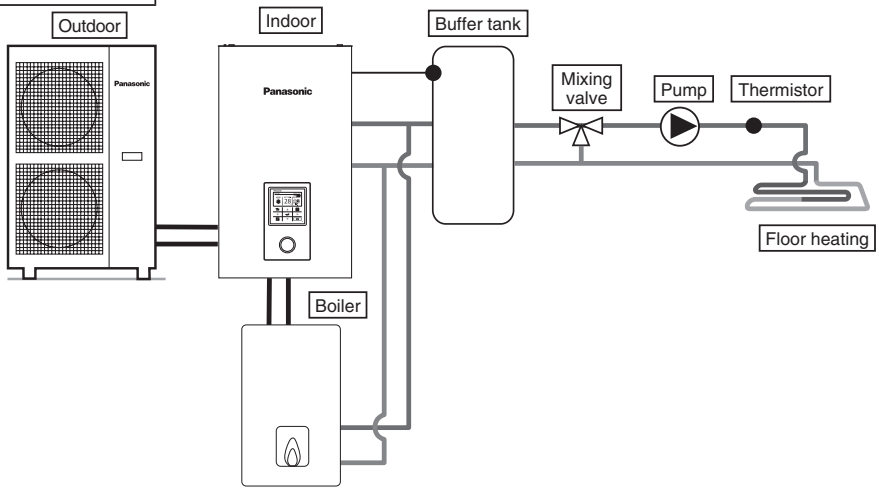


Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes
Buffer Tank connection - Yes
ΔT for buffer tank
Solar connection - Yes
Buffer tank
ΔT turn ON
ΔT turn OFF
Antifreeze
Hi limit

This is an application that connects the buffer tank to the indoor unit before connecting to the solar water heater to heat up the tank.
Buffer tank's temperature is detected by buffer tank thermistor (specified by Panasonic).
Solar panel's temperature is detected by solar thermistor (specified by Panasonic).
Buffer tank shall use tank with built-in solar heat exchange coil independently.
During winter season, solar pump for circuit protection will be activated continuously. If does not want to activate the solar pump operation, please use glycol and set the anti-freezing operation start temperature to -20°C.
Heat accumulation operates automatically by comparing the temperature of tank thermistor and solar thermistor.
This system requires optional PCB (CZ-NS4P).

Boiler connection



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes
Bivalent - Yes
Turn ON: outdoor temp
Control pattern

This is an application that connects the boiler to the indoor 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 against heating circuit.
There are 3 modes selectable by remote controller for boiler connection.
Besides that, an application that connects to the DHW tank's circuit to heat up tank's hot water is also possible.
(Operation setting of boiler shall be responsible by installer.)
This system requires optional PCB (CZ-NS4P).

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 selecting Advanced Parallel setting.)

⚠ 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 indoor unit does NOT exceed 55°C.
Boiler is turned off by safety control when the water temperature of the heating circuit exceed 85°C.

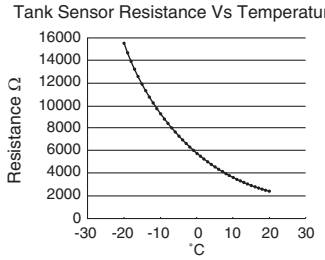
2 How to fix cable

Connecting with external device (optional)

- **All connections shall** follow to the local national wiring standard.
- It is strongly recommended to use manufacturer-recommended parts and accessories for installation.
- For connection to main PCB ④

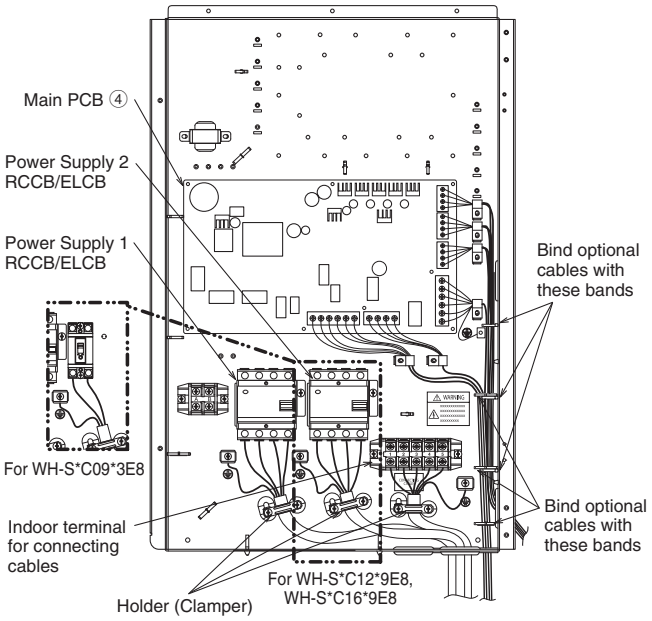
1. Two-way valve shall be spring and electronic type, refer to "Field Supply Accessories" table for details. Valve cable shall be (3 x min 1.5 mm^2), of type designation 60245 IEC 57 or heavier, or similarly double insulation sheathed cable.
   * note: - Two-way Valve shall be CE marking compliance component.
   - Maximum load for the valve is 9.8VA.
2. Three-way valve shall be spring and electronic type. Valve cable shall be (3 x min 1.5 mm^2), of type designation 60245 IEC 57 or heavier, or similarly double insulation sheathed cable.
   * note: - Shall be CE marking compliance component.
   - It shall be directed to heating mode when it is OFF.
   - Maximum load for the valve is 9.8VA.
3. Room thermostat cable must be (4 or 3 x min 0.5 mm^2), of type designation 60245 IEC 57 or heavier cord, or similarly double insulation sheathed cable.
4. Maximum output power of booster heater shall be ≤ 3 kW. Booster heater cable must be (3 x min 1.5 mm^2), of type designation 60245 IEC 57 or heavier.

5. Extra pump cable shall be (2 x min 1.5 mm²), of type designation 60245 IEC 57 or heavier.
6. Boiler contact cable shall be (2 x min 0.5 mm²), of type designation 60245 IEC 57 or heavier.
7. External control shall be connected to 1-pole switch with min 3.0 mm contact gap. Its cable must be (2 x min 0.5 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.
   *note: - Switch used shall be CE compliance component.
   - Maximum operating current shall be less than $3A_{rms}$.
8. Tank sensor shall be resistance type, please refer to Graph 7.1 for the characteristic and details of sensor. Its cable shall be (2 x min 0.3 mm²), double insulation layer (with insulation strength of min 30V) of PVC-sheathed or rubber-sheathed cable.

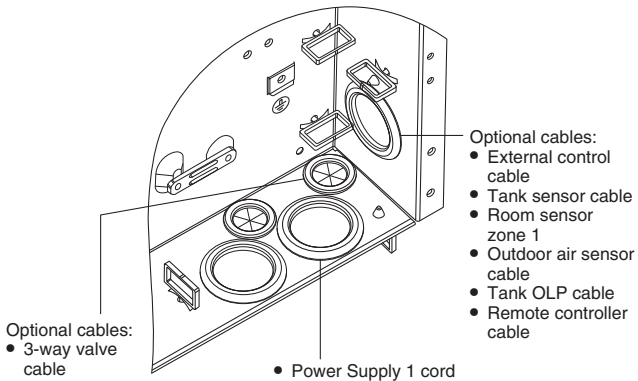


Tank sensor characteristic

9. Room sensor zone 1 cable shall be (2 x min 0.3 mm²) double insulation layer of PVC-sheathed or rubber-sheathed.
10. Outdoor air sensor cable shall be (2 x min 0.3 mm²) double insulation layer of PVC-sheathed or rubber-sheathed.
11. Tank OLP cable must be (2 x min 0.5 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.

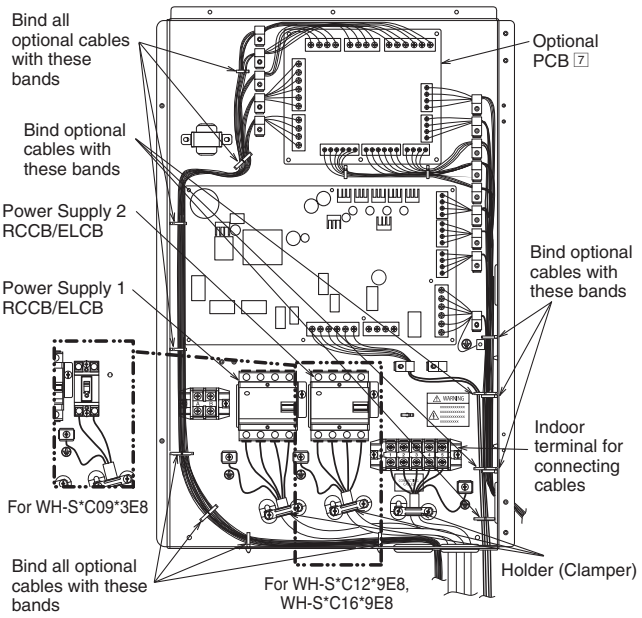


How to guide the optional cables and power supply cord (view without internal wiring)

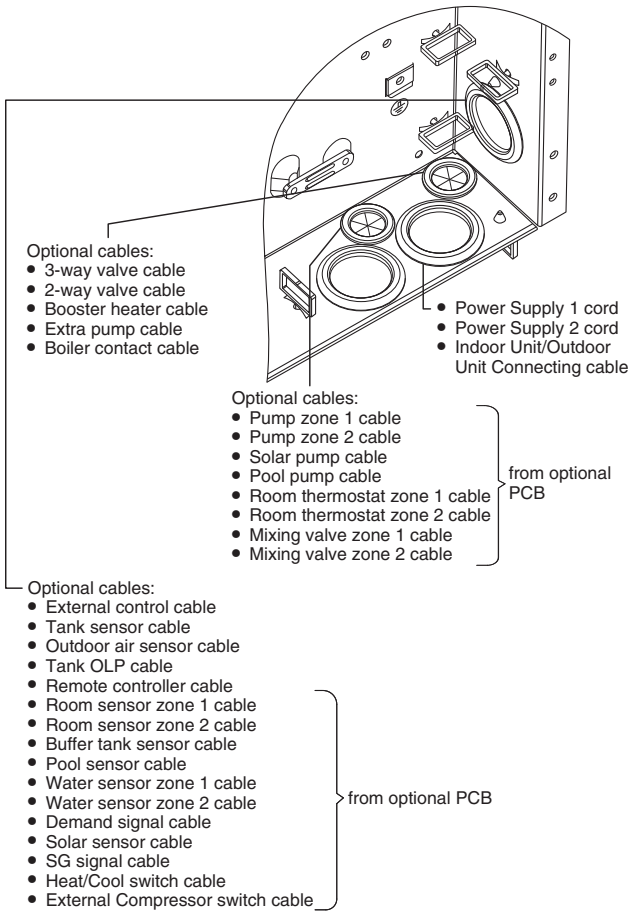


- For connection to optional PCB [7]

1. By connecting optional PCB, 2 Zone temperature control can be achieved. Please connect mixing valves, water pumps and thermistors in zone 1 and zone 2 to each terminals in optional PCB.
   Temperature of each zone can be controlled independently by remote controller.
2. Pump zone 1 and zone 2 cable shall be (2 x min 1.5 mm²), of type designation 60245 IEC 57 or heavier.
3. Solar pump cable shall be (2 x min 1.5 mm²), of type designation 60245 IEC 57 or heavier.
4. Pool pump cable shall be (2 x min 1.5 mm²), of type designation 60245 IEC 57 or heavier.
5. Room thermostat zone 1 and zone 2 cable shall be (4 x min 0.5 mm²), of type designation 60245 IEC 57 or heavier.
6. Mixing valve zone 1 and zone 2 cable shall be (3 x min 1.5 mm²), of type designation 60245 IEC 57 or heavier.
7. Room sensor zone 1 and zone 2 cable shall be (2 x min 0.3 mm²), double insulation layer (with insulation strength of minimum 30V) of PVC-sheathed or rubber-sheathed cable.
8. Buffer tank sensor, pool water sensor and solar sensor cable shall be (2 x min 0.3 mm²), double insulation layer (with insulation strength of minimum 30V) of PVC-sheathed or rubber-sheathed cable.
9. Water sensor zone 1 and zone 2 cable shall be (2 x min 0.3 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.
10. Demand signal cable shall be (2 x min 0.3 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.
11. SG signal cable shall be (3 x min 0.3 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.
12. Heat/Cool switch cable shall be (2 x min 0.3 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.
13. External compressor switch cable shall be (2 x min 0.3 mm²), double insulation layer of PVC-sheathed or rubber-sheathed cable.



How to guide the optional cables and power supply cord (view without internal wiring)



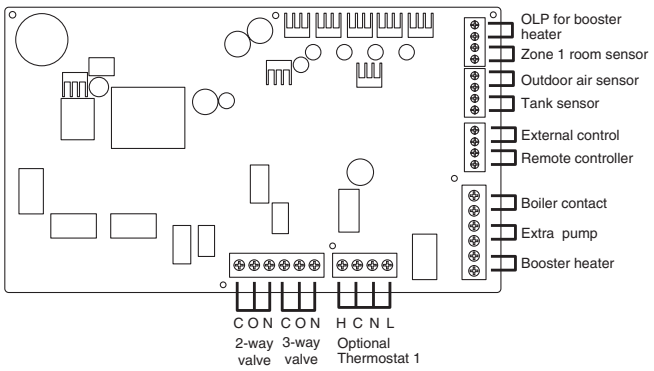
Terminal screw on PCB	Maximum tightening torque cN•m {kgf•cm}
M3	50 {5.1}
M4	120 {12.24}

Connecting Cables Length

When connecting cables between Indoor Unit and external devices, the length of the said cables must not exceed the maximum length as shown in the table.

External device	Maximum cables length (m)
Two-way valve	50
Three-way valve	50
Mixing valve	50
Room thermostat	50
Booster heater	50
Extra pump	50
Solar pump	50
Pool pump	50
Pump	50
Boiler contact	50
External control	50
Tank sensor	30
Room sensor	30
Outdoor air sensor	30
Tank OLP	30
Buffer tank sensor	30
Pool water sensor	30
Solar sensor	30
Water sensor	30
Demand signal	50
SG signal	50
Heat/Cool switch	50
External compressor switch	50

Connection of the main PCB



■ Signal inputs

Optional Thermostat	L N =AC230V, Heat, Cool=Thermostat heat, Cool terminal ❊It does not function when using the optional PCB
OLP for booster heater	Dry contact Vcc-Bit1, Vcc-Bit2 open/short (System setup necessary) It is connected to the safety device (OLP) of DHW tank.
External control	Dry contact Open=not operate, Short=operate (System setup necessary) Able to turn ON/OFF the operation by external switch
Remote controller	Connected (Please use 2 cores wire for relocation and extension. Total cable length shall be 50m or less.)

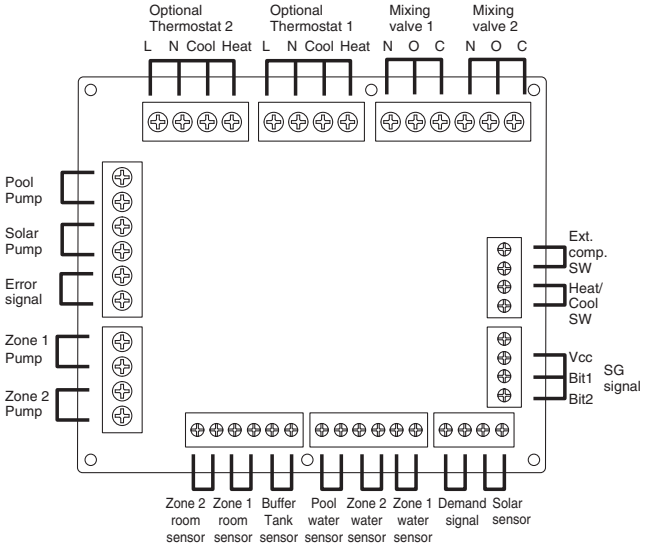
■ Outputs

3-way valve	AC230V N=Neutral Open, Close=direction (For circuit switching when connected to DHW tank)
2-way valve	AC230V N=Neutral Open, Close (Prevent water circuit pass through during cooling mode)
Extra pump	AC230V (Used when indoor unit pump capacity is insufficient)
Booster heater	AC230V (Used when using booster heater in DHW tank)
Boiler contact	Dry contact (System setup necessary)

■ Thermistor inputs

Zone 1 room sensor	PAW-A2W-TSRT ❊It does not work when using the optional PCB
Outdoor air sensor	AW-A2W-TSOD (Total cable length shall be 30m or less)
Tank sensor	Please use Panasonic specified part

Connection of Optional PCB (CZ-NS4P)



■ Signal inputs

Optional Thermostat	L N =AC230V, Heat, Cool=Thermostat heat, Cool terminal
SG signal	Dry contact Vcc-Bit1, Vcc-Bit2 open/short (System setup necessary) Switching SW (Please connect to the 2 contacts controller)
Heat/Cool SW	Dry contact Open=Heat, Short=Cool (System setup necessary)
External comp.SW	Dry contact Open=Comp.ON, Short=Comp.OFF (System setup necessary)
Demand signal	DC 0~10V (System setup necessary) Please connect to the DC 0~10V controller.

■ Outputs

Mixing valve	AC230V N=Neutral Open, Close=mixture direction Operating time: 30s~120s
Pool pump	AC230V
Solar pump	AC230V
Zone pump	AC230V

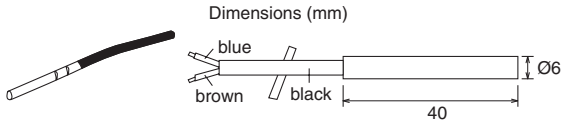
■ Thermistor inputs

Zone room sensor	PAW-A2W-TSRT
Buffer tank sensor	PAW-A2W-TSBU
Pool water sensor	PAW-A2W-TSHC
Zone water sensor	PAW-A2W-TSHC
Solar sensor	PAW-A2W-TSSO

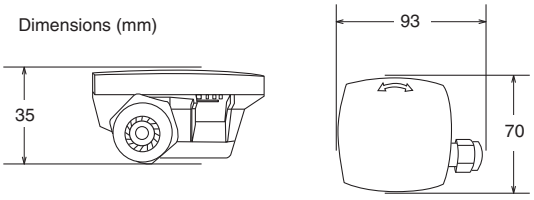
Recommended External Device Specification

- This section explains about the external devices (optional) recommended by Panasonic. Please always ensure to use the correct external device during system installation.
- For optional sensor.

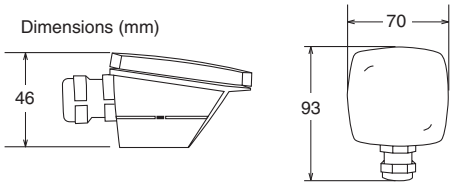
1. Buffer tank sensor: PAW-A2W-TSBU
   Use for measurement of the buffer tank temperature.
   Insert the sensor into the sensor pocket and paste it on the buffer tank surface.



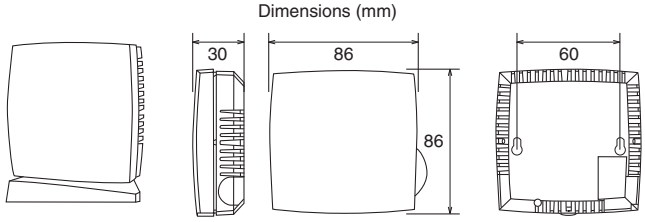
2. Zone water sensor: PAW-A2W- TSHC
   Use to detect the water temperature of the control zone.
   Mount it on the water piping by using the stainless steel metal strap and contact paste (both are included).



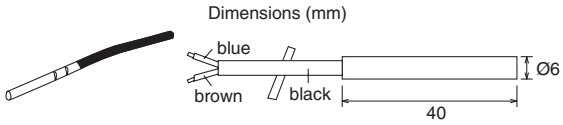
3. Outdoor sensor: PAW-A2W-TSOD
   If the installation location of the outdoor unit is exposed to direct sunlight, the outdoor air temperature sensor will be unable to measure the actual outdoor ambient temperature correctly.
   In this case, optional outdoor temperature sensor can be fixed at a suitable location to more accurately measure ambient temperature.



4. Room sensor: PAW-A2W- TSRT
   Install the room temperature sensor to the room which requires room temperature control.



5. Solar sensor: PAW-A2W-TSSO
   Use for measurement of the solar panel temperature.
   Insert the sensor into the sensor pocket and paste it on the solar panel surface.

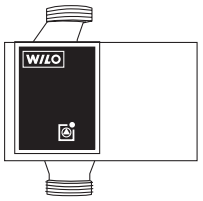


6. Please refer to the table below for sensor characteristic of the sensors mentioned above.

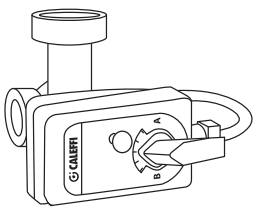
Temperature (°C)	Resistance (kΩ)
30	5.326
25	6.523
20	8.044
15	9.980
10	12.443
5	15.604
0	19.70
-5	25.05
-10	32.10
-15	41.45
-20	53.92
-25	70.53
-30	93.05
-35	124.24
-40	167.82

Temperature (°C)	Resistance (kΩ)
150	0.147
140	0.186
130	0.236
120	0.302
110	0.390
100	0.511
90	0.686
80	0.932
70	1.279
65	1.504
60	1.777
55	2.106
50	2.508
45	3.003
40	3.615
35	4.375

- For optional pump.
  Power supply: AC230V/50Hz, <500W
  Recommended part: Yonos 25/6: made by Wilo



- For optional mixing valve.
  Power supply: AC230V/50Hz (input open/output close)
  Operating time: 30s~120s
  Recommended part: 167032: made by Caleffi



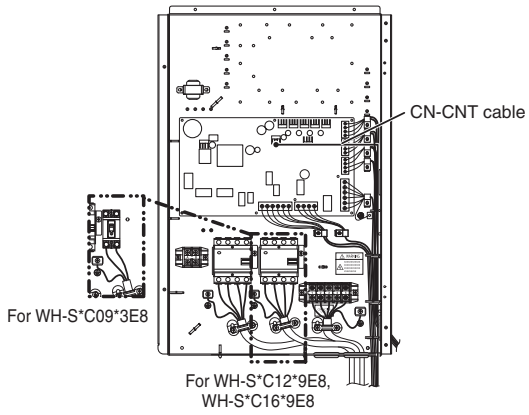
⚠ WARNING

This section is for authorized and licensed electrician/water system installer only. Work behind the front plate secured by screws must only be carried out under supervision of qualified contractor, installation engineer or service person.

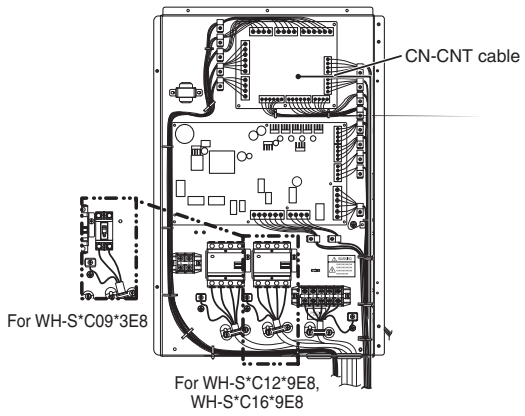
Network Adaptor [8] Installation (Optional)

1. **Open the Control Board Cover ⑥, then connect the cable included with this adaptor to the CN-CNT connector on the printed circuit board.**
   - Pull the cable out of the Indoor Unit so that there is no pinching.
   - If an optional PCB has been install in the Indoor Unit, connect the CN-CNT connector to Optional PCB [7].

   Connection examples: H series

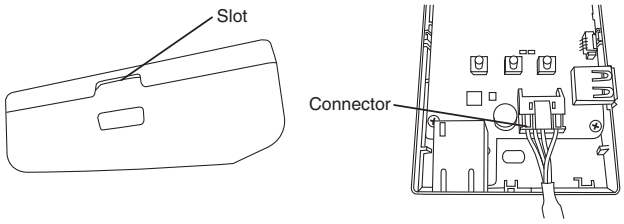


Without Optional PCB

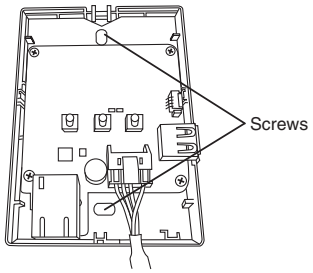


With Optional PCB

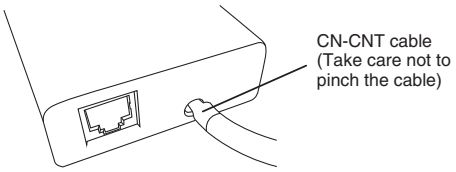
2. **Insert a flat head screwdriver into the slot on the top of the adaptor and remove the cover. Connect the other end of the CN-CNT cable connector to the connector inside the adaptor.**



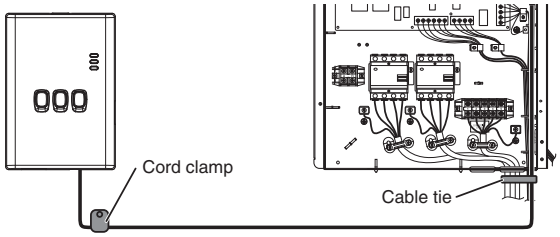
3. **On the wall near the Indoor Unit, attach the adaptor by screwing screws through the holes in the back cover.**



4. **Pull the CN-CNT cable through the hole in the bottom of the adaptor and re-attach the front cover to the back cover.**

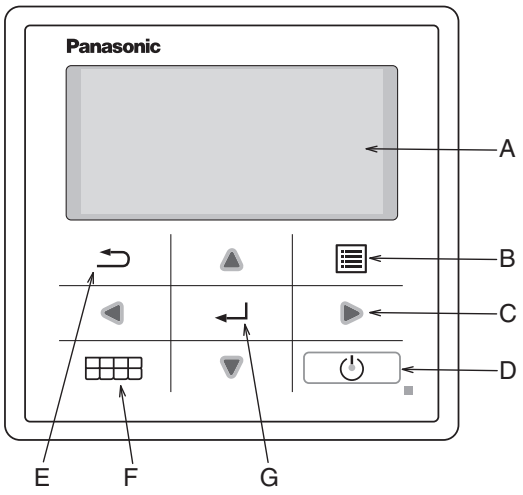


5. **Use the included cord clamp to fix the CN-CNT cable to the wall.**
   Pull the cable around as shown in the diagram so that external forces cannot act on the connector in the adaptor.
   Furthermore, on the Indoor Unit end, use the included cable tie to fix the cables together.

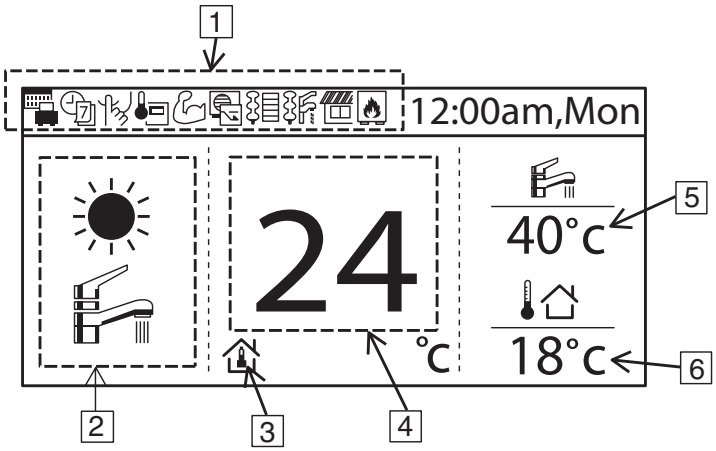


3 System installation

3-1. Remote Controller Outline



	Name	Function
A:	Main screen	Display information
B:	Menu	Open/Close main menu
C:	Triangle (Move)	Select or change item
D:	Operate	Start/Stop operation
E:	Back	Back to previous item
F:	Quick Menu	Open/Close Quick menu
G:	OK	Confirm



	Name	Function
1:	Function icon	Display set function/status

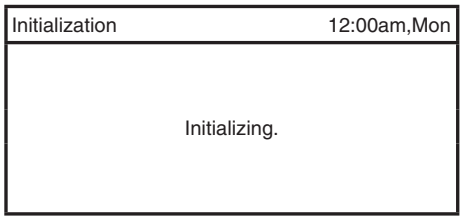
Holiday mode — Demand control
Weekly timer — Room heater
Quiet mode — Tank heater
Remote controller room thermostat — Solar
Powerful mode — Boiler

2:	Mode	Display set mode/current status of mode

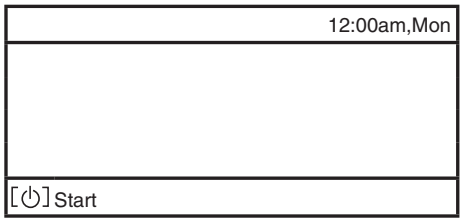
Heating — Cooling
Auto — Hot water supply — Auto heating — Auto cooling
Heat pump operating

3:	Temp setting	Set room temp — Compensation curve — Set direct water temp — Set pool temp
4:	Display Heat temp	Display current heating temperature (it is set temperature when enclosed by line)
5:	Display tank temp	Display current tank temperature (it is set temperature when enclosed by line)
6:	Outdoor temp	Display outdoor temp

First time of power ON (Start of installation)



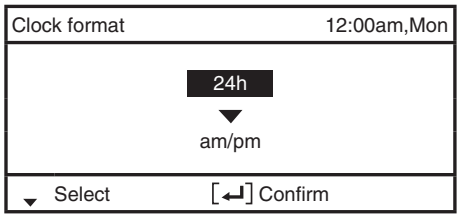
When power is ON, firstly initialization screen appears (10 sec)



When initialization screen ends, it turns to normal screen.

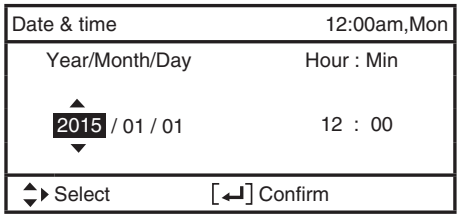
When any button is pressed, language setting screen appears.
(CAUTION) If initial setting is not performed, it does not go into menu.

Set language & confirm



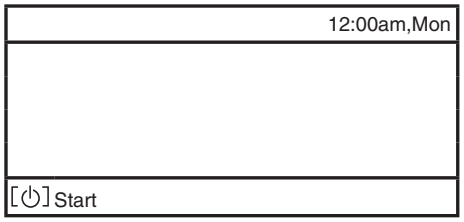
When language is set, setting screen of time display appears (24h/am/pm)

Set time display & confirm



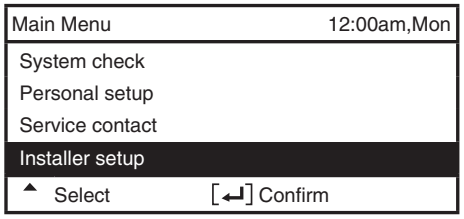
YY/MM/DD/Time setup screen appears

Set YY/MM/DD/Time & confirm



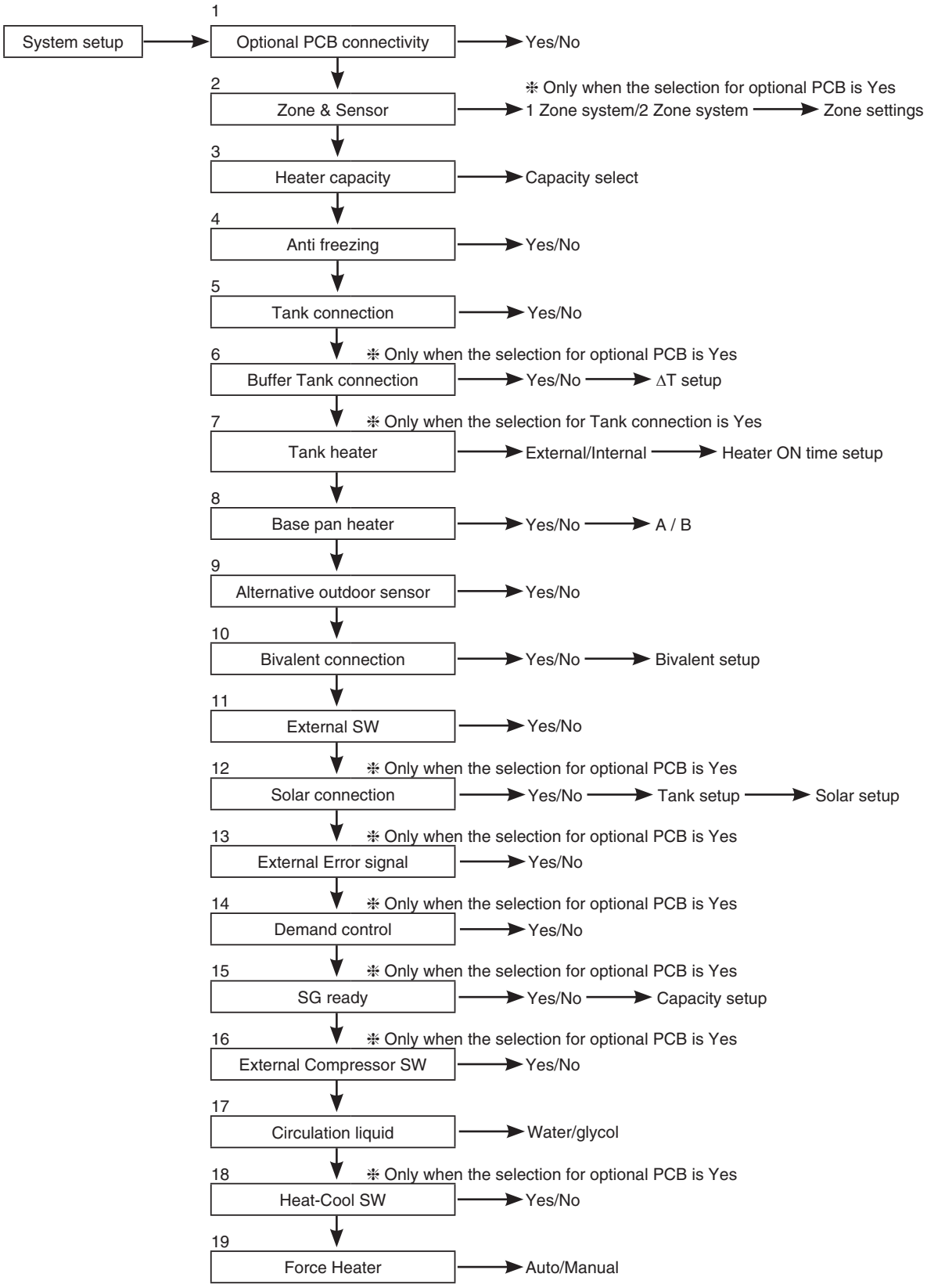
Back to initial screen

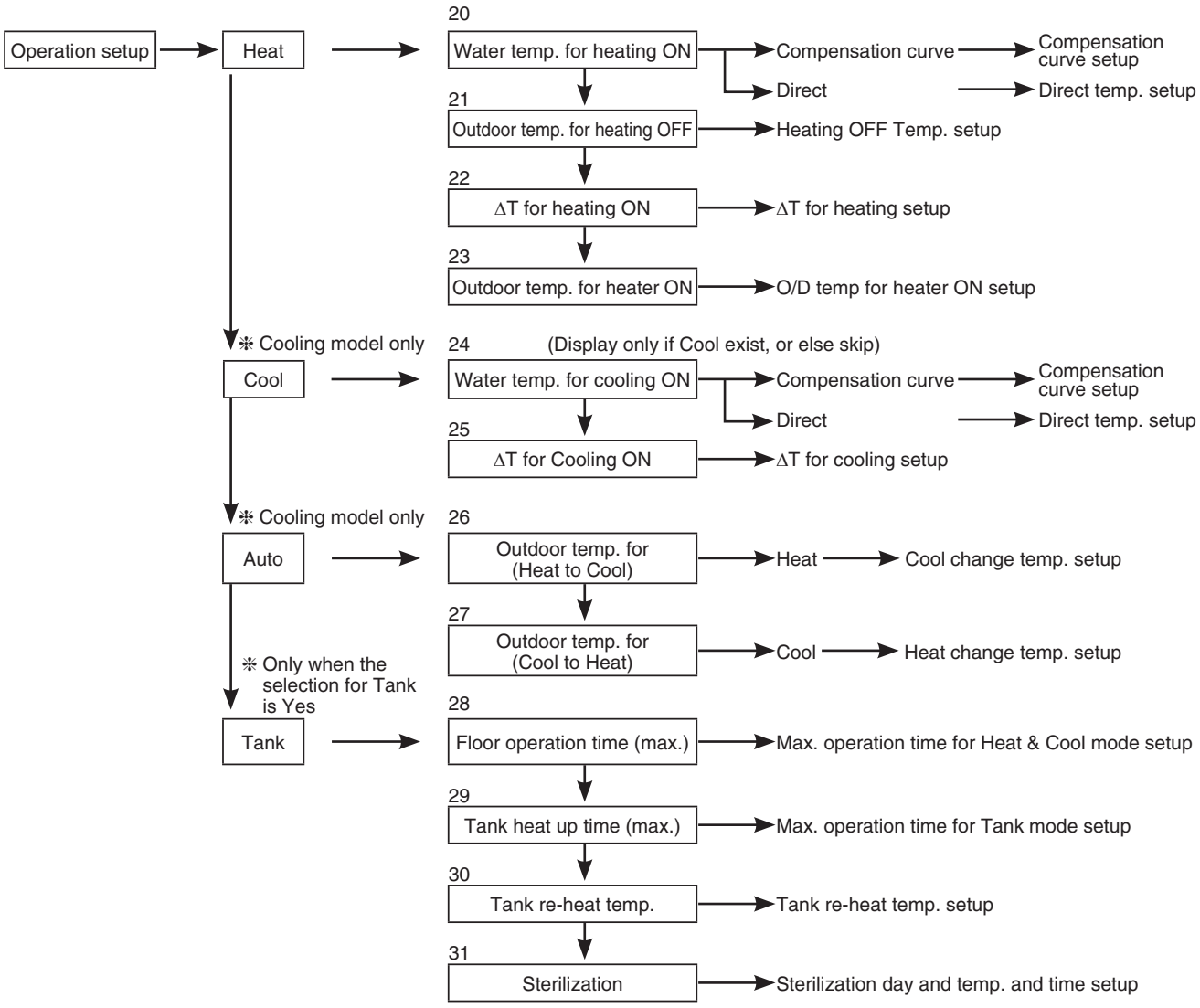
Press menu, select Installer setup

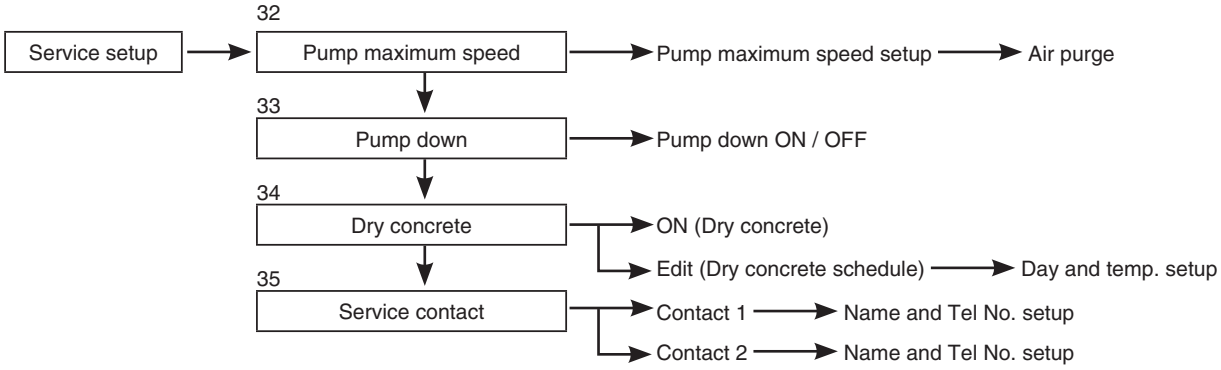


Confirm to go into Installer setup

3-2. Installer Setup




Operation setup
Heat
20
Water temp. for heating ON
Compensation curve
Compensation curve setup
Direct
Direct temp. setup
21
Outdoor temp. for heating OFF
Heating OFF Temp. setup
22
ΔT for heating ON
ΔT for heating setup
23
Outdoor temp. for heater ON
O/D temp for heater ON setup
❊ Cooling model only
Cool
24
(Display only if Cool exist, or else skip)
Water temp. for cooling ON
Compensation curve
Compensation curve setup
Direct
Direct temp. setup
25
ΔT for Cooling ON
ΔT for cooling setup
❊ Cooling model only
Auto
26
Outdoor temp. for (Heat to Cool)
Heat
Cool change temp. setup
27
Outdoor temp. for (Cool to Heat)
Cool
Heat change temp. setup
❊ Only when the selection for Tank is Yes
Tank
28
Floor operation time (max.)
Max. operation time for Heat & Cool mode setup
29
Tank heat up time (max.)
Max. operation time for Tank mode setup
30
Tank re-heat temp.
Tank re-heat temp. setup
31
Sterilization
Sterilization day and temp. and time setup

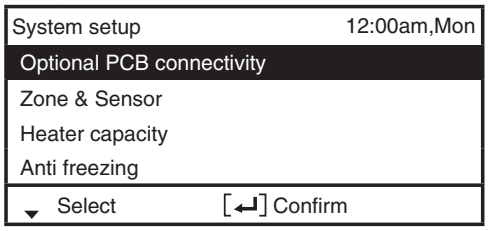

Service setup
32
Pump maximum speed
Pump maximum speed setup
Air purge
33
Pump down
Pump down ON / OFF
34
Dry concrete
ON (Dry concrete)
Edit (Dry concrete schedule)
Day and temp. setup
35
Service contact
Contact 1
Name and Tel No. setup
Contact 2
Name and Tel No. setup

3-3. System Setup

1. Optional PCB connectivity | Initial setting: No

If function below is necessary, please purchase and install optional PCB.
Please select Yes after installing optional PCB.

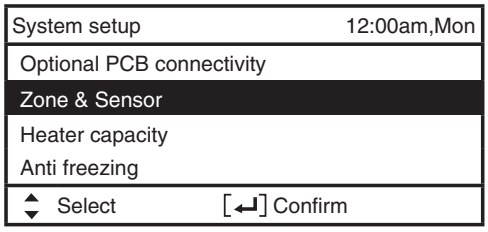
- 2-zone control
- Pool
- Buffer tank
- Solar
- External error signal output
- Demand control
- SG ready
- Stop heat source unit by external SW



2. Zone & Sensor | Initial setting: Room and Water temp.

If no Optional PCB connectivity
Select sensor of room temperature control from the following 3 items
① Water temperature (circulation water temperature)
② Room thermostat (Internal or External)
③ Room thermistor

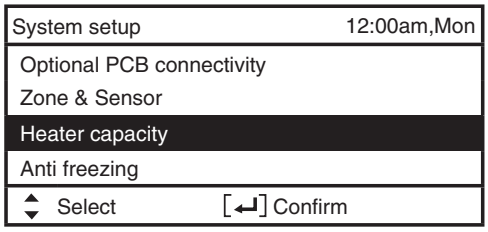
When there is Optional PCB connectivity
① Select either 1 zone control or 2 zone control.
If it is 1 zone, select either room or pool, select sensor
If it is 2 zone, after select sensor of zone 1, select either room or pool for zone 2, select sensor
(CAUTION) In 2 zone system, pool function can be set at zone 2 only.



3. Heater capacity | Initial setting: Depend on model

If there is built-in Heater, set the selectable heater capacity.

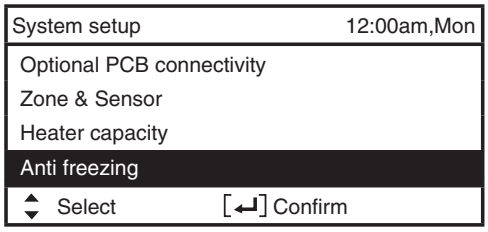
(CAUTION) There are models which cannot select heater.



4. Anti freezing | Initial setting: Yes

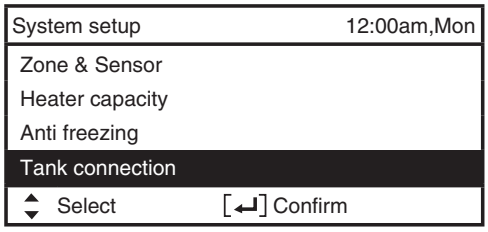
Operate anti-freezing of water circulation circuit.
If select Yes, when the water temperature is reaching its freezing temperature, the circulation pump will start up. If the water temperature does not reach the pump stop temperature, back-up heater will be activated.

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



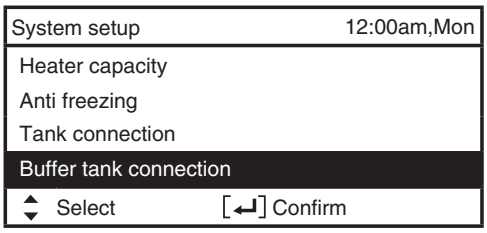
5. Tank connection | Initial setting: No

Select whether it is connected to hot water tank or not.
If set Yes, it becomes setting that uses hot water function.
Hot water temperature of tank can be set from main screen.



6. Buffer Tank connection | Initial setting: No

Select whether it is connected to buffer tank for heating or not.
If buffer tank is used, please set Yes.
Connect buffer tank thermistor and set, ΔT (ΔT use to increase primary side temp against secondary side target temp).
(CAUTION) Does not display if there is no Optional PCB.
If the buffer tank capacity is not so large, please set larger value for ΔT.

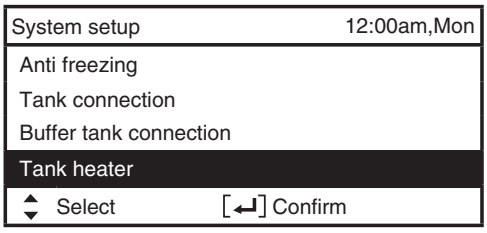


7. Tank heater | Initial setting: Internal

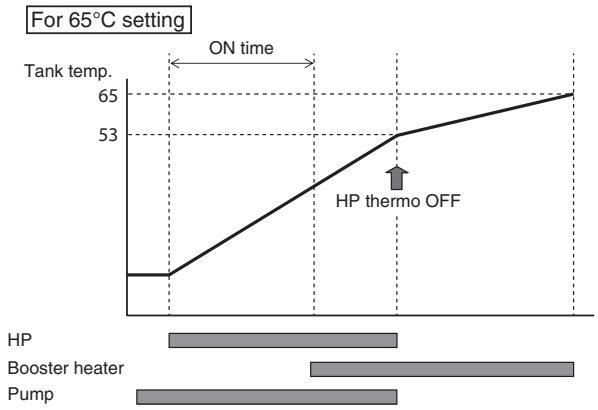
Select to use either built-in heater or external heater as heater for hot water tank.
If heater is installed on tank, please select External.

(CAUTION) Does not display if there is no tank for hot water supply.

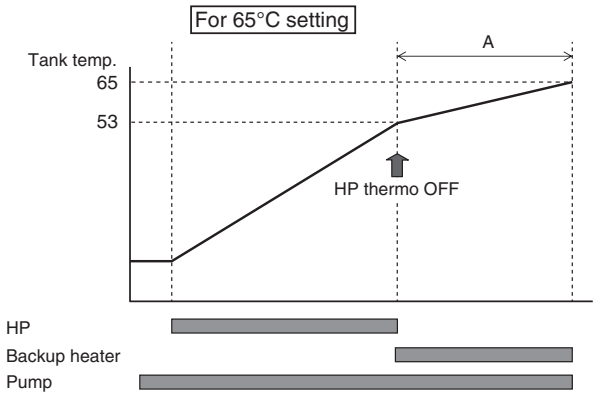
Please set “Tank heater” to “ON” in the “Function setup” from remote controller when using heater to boil the tank.



External A setting which is using booster heater installed on DHW tank to boil the tank.
The permissible heater capacity is 3kW and below.
The operation to boil the tank with heater is as below.
In addition, be sure to set suitable “Tank heater: ON time”



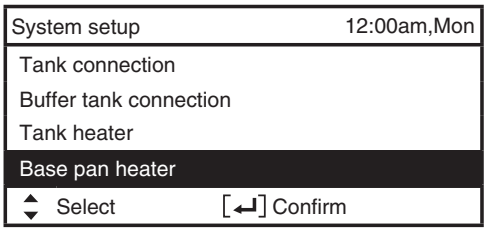
Internal A setting which is using backup heater of indoor unit to boil the tank.
The operation to boil the tank with heater is as below.



8. Base pan heater | Initial setting: No

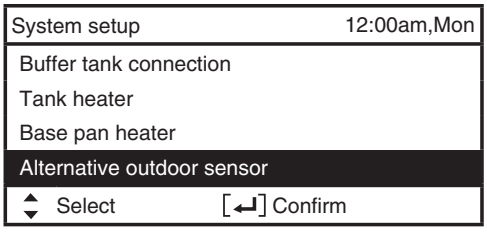
Select whether Base pan heater is installed or not.
If set Yes, select to use either heater A or B.

A: Turn on Heater when heating with defrost operation only
B: Turn on Heater at heating



9. Alternative outdoor sensor | Initial setting: No

Set Yes if outdoor sensor is installed.
Controlled by optional outdoor sensor without reading the outdoor sensor of heat pump unit.



10. Bivalent connection | Initial setting: No

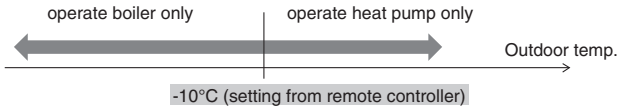
System setup	12:00am,Mon
Tank heater	
Base pan heater	
Alternative outdoor sensor	
Bivalent connection	
▲▼ Select	[↵] Confirm

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

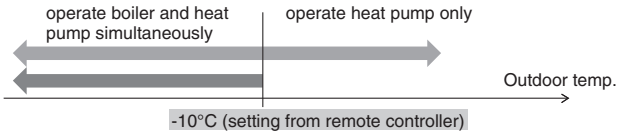
There are 3 different modes in the boiler operation. Movement of each modes are shown below.
① Alternative (switch to boiler operation when drops below setting temperature)
② Parallel (allow boiler operation when drops below setting temperature)
③ Advanced Parallel (able to slightly delay boiler operation 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

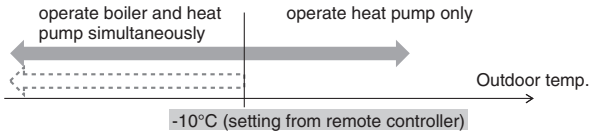


Parallel mode

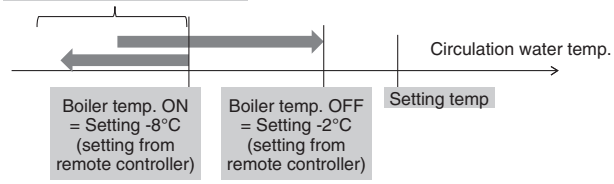


Advanced Parallel mode

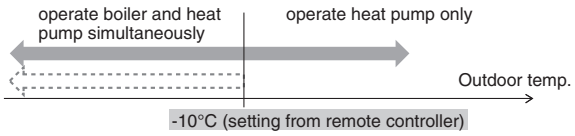
For heating



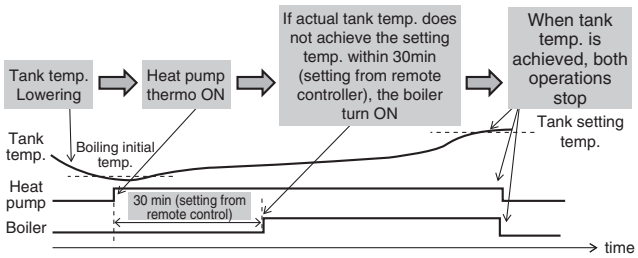
AND



For DHW tank



AND



In Advanced Parallel mode, setting for both heating and tank can be made simultaneously. During operation of "Heating/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.

11. External SW | Initial setting: No

System setup	12:00am,Mon
Base pan heater	
Alternative outdoor sensor	
Bivalent connection	
External SW	
▲▼ Select	[↵] Confirm

Able to turn ON/OFF the operation by external switch.

12. Solar connection | Initial setting: No

System setup	12:00am,Mon
Alternative outdoor sensor	
Bivalent connection	
External SW	
Solar connection	
▲▼ Select	[↵] Confirm

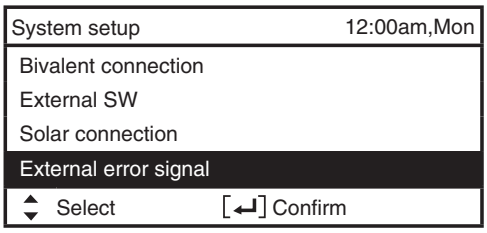
Set when solar water heater is installed.

Setting include items below.
① Set either buffer tank or DHW tank for connection with solar water heater.
② Set temperature difference between solar panel thermistor and buffer tank or DHW tank thermistor to operate the solar pump.
③ Set temperature difference between solar panel thermistor and buffer tank or DHW tank thermistor to stop the solar pump.
④ Anti-freezing operation start temperature (please change setting based on usage of glycol.)
⑤ Solar pump stop operation when it exceeds high limit temperature (when tank temperature exceed designated temperature (70~90°C))

13. External Error Signal | Initial setting: No

Set when external error display unit is installed.
Turn on Dry Contact SW when error happened.

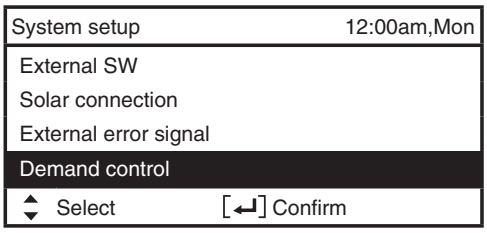
(CAUTION) Does not display when there is no Optional PCB.
When error occurs, error signal will be ON.
After turn off “close” from the display, error signal will still remain ON.



14. Demand control | Initial setting: No

Set when there is demand control.
Adjust terminal voltage within 1 ~ 10 V to change the operating current limit.

(CAUTION) Does not display when there is no Optional PCB.



Analog input [v]	Rate [%]
0.0	not activate
0.1 ~ 0.6	
0.7	10
0.8	not activate
0.9 ~ 1.1	10
1.2	15
1.3	10
1.4 ~ 1.6	15
1.7	20
1.8	15
1.9 ~ 2.1	20
2.2	25
2.3	20
2.4 ~ 2.6	25
2.7	30
2.8	25
2.9 ~ 3.1	30
3.2	35
3.3	30
3.4 ~ 3.6	35
3.7	40
3.8	35

Analog input [v]	Rate [%]
3.9 ~ 4.1	40
4.2	45
4.3	40
4.4 ~ 4.6	45
4.7	50
4.8	45
4.9 ~ 5.1	50
5.2	55
5.3	50
5.4 ~ 5.6	55
5.7	60
5.8	55
5.9 ~ 6.1	60
6.2	65
6.3	60
6.4 ~ 6.6	65
6.7	70
6.8	65
6.9 ~ 7.1	70
7.2	75
7.3	70

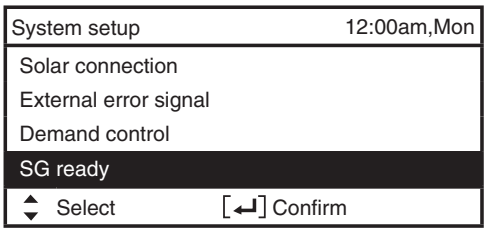
Analog input [v]	Rate [%]
7.4 ~ 7.6	75
7.7	80
7.8	75
7.9 ~ 8.1	80
8.2	85
8.3	80
8.4 ~ 8.6	85
8.7	90
8.8	85
8.9 ~ 9.1	90
9.2	95
9.3	90
9.4 ~ 9.6	95
9.7	100
9.8	95
9.9 ~	100

*A minimum operating current is applied on each model for protection purpose.
*0.2 voltage hysteresis is provided.
* The value of voltage after 2nd decimal point are cut off.

15. SG ready | Initial setting: No

Switch operation of heat pump by open-short of 2 terminals.
Setting belows are possible

SG signal		Working pattern
Vcc-bit1	Vcc-bit2	
Open	Open	Normal
Short	Open	Heat pump and Heater OFF
Open	Short	Capacity 1
Short	Short	Capacity 2



Capacity setting 1
- Heating capacity ___%
- DHW capacity ___%

Capacity setting 2
- Heating capacity ___%
- DHW capacity ___%

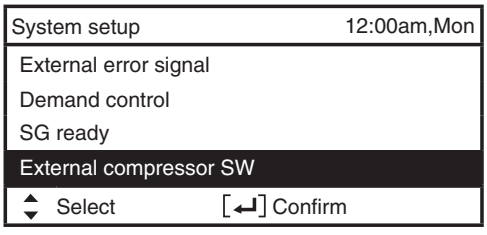
} Set by SG ready setting of remote controller

16. External Compressor SW | Initial setting: No

Set when external compressor SW is connected.
SW is connected to external devices to control power consumption, ON signal will stop compressor’s operation. (Heating operation etc. are not cancelled).

(CAUTION) Does not display if there is no Optional PCB.

If follow Swiss standard power connection, need to turn on DIP SW of main unit PCB. ON/OFF signal used to ON/OFF tank heater (for sterilization purpose)



17. Circulation Liquid | Initial setting: Water

Set circulation of heating water.

There are 2 types of settings, water and anti-freeze function.

(CAUTION) Please set glycol when using anti-freeze function.
It may cause error if setting is wrong.

System setup	12:00am,Mon
Demand control	
SG ready	
External compressor SW	
Circulation liquid	
▲▼ Select	[↵] Confirm

18. Heat-Cool SW | Initial setting: Disable

Able to switch (fix) heating & cooling by external switch.

(Open) : Fix at Heating (Heating +DHW)
(Short) : Fix at Cooling (Cooling +DHW)
(CAUTION) This setting is disabled for model without Cooling.
(CAUTION) Does not display if there is no Optional PCB.

Timer function cannot be used. Cannot use Auto mode.

System setup	12:00am,Mon
SG ready	
External compressor SW	
Circulation liquid	
Heat-Cool SW	
▲ Select	[↵] Confirm

19. Force Heater | Initial setting: Manual

Under manual mode, user can turn on force heater through quick menu.

If selection is 'auto', force heater mode will turn automatically if pop up error happen during operation.
Force heater will operate follow the latest mode selection, mode selection is disable under force heater operation.

Heater source will ON during force heater mode.

System setup	12:00am,Mon
External compressor SW	
Circulation liquid	
Heat-Cool SW	
Force Heater	
▲ Select	[↵] Confirm

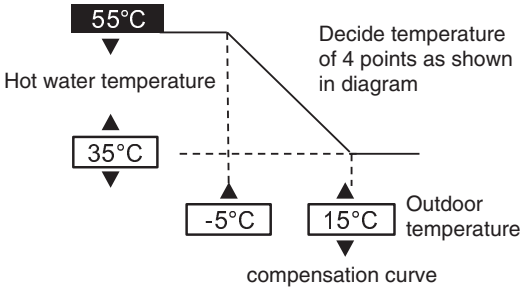
3-4. Operation Setup

Heat

20. Water temp. for heating ON | Initial setting: compensation curve

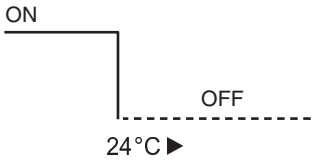
Set target water temperature to operate heating operation.
Compensation curve: Target water temperature change in conjunction with outdoor ambient temperature change.
Direct: Set direct circulation water temperature.

In 2 zone system, zone 1 and zone 2 water temperature can be set separately.



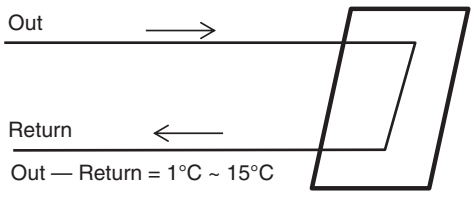
21. Outdoor temp. for heating OFF | Initial setting: 24°C

Set outdoor temp to stop heating.
Setting range is 5°C ~ 35°C



22. ΔT for heating ON | Initial setting: 5°C

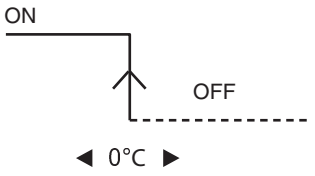
Set temp difference between out temp & return temp of circulating water of Heating operation.
When temp gap is enlarged, it is energy saving but less comfort. When the gap gets smaller, energy saving effect gets worse but it is more comfortable.
Setting range is 1°C ~ 15°C



23. Outdoor temp. for heater ON | Initial setting: 0°C

Set outdoor temp when back-up heater starts to operate.
Setting range is -15°C ~ 20°C

User shall set whether to use or not to use heater.

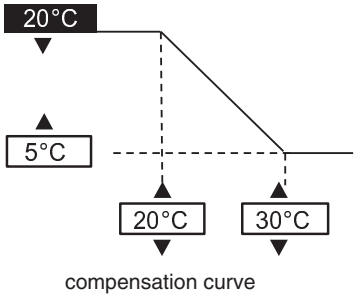


Cool

24. Water temp. for cooling ON | Initial setting: compensation curve

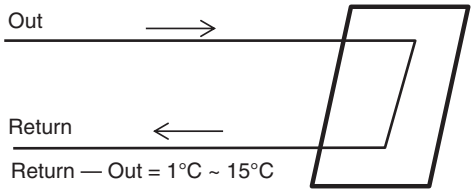
Set target water temperature to operate cooling operation.
Compensation curve: Target water temperature change in conjunction with outdoor ambient temperature change.
Direct: Set direct circulation water temperature.

In 2 zone system, zone 1 and zone 2 water temperature can be set separately.



25. ΔT for cooling ON | Initial setting: 5°C

Set temp difference between out temp & return temp of circulating water of Cooling operation.
When temp gap is enlarged, it is energy saving but less comfort. When the gap gets smaller, energy saving effect gets worse but it is more comfortable.
Setting range is 1°C ~ 15°C

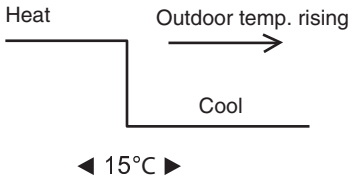


Auto

26. 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 5°C ~ 25°C

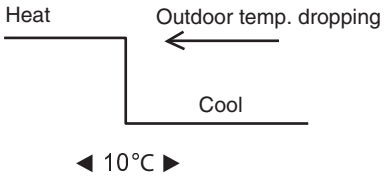
Timing of judgement is every 1 hour



27. 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 ~ 25°C

Timing of judgement is every 1 hour

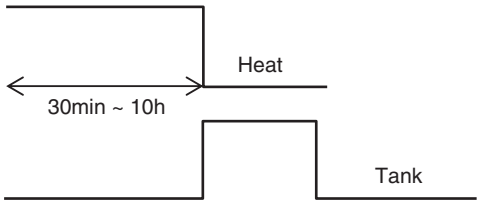


Tank

28. Floor operation time (max) | Initial setting: 8h

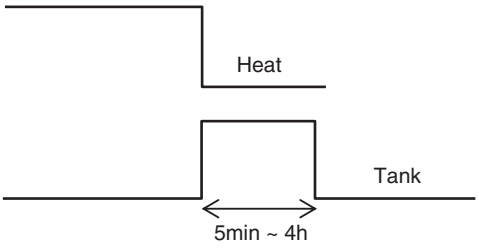
Set max operating hours of heating.
When max operation time is shortened, it can boil the tank more frequently.

It is a function for Heating + Tank operation.



29. Tank heat up time (max) | Initial setting: 60min

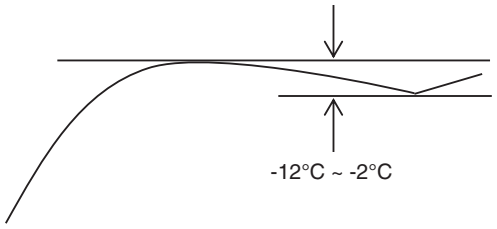
Set max boiling hours of tank.
When max boiling hours are shortened, it immediately returns to Heating operation, but it may not fully boil the tank.



30. Tank re-heat temp. | Initial setting: -8°C

Set temp to perform reboil of tank water.
(When boiled by heat pump only, (51°C – Tank re-heat temp) shall become max temp.)

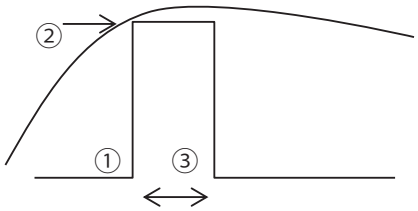
Setting range is -12°C ~ -2°C



31. Sterilization | Initial setting: 65°C 10min

Set timer to perform sterilization.
① Set operating day & time. (Weekly timer format)
② Sterilization temp (55~75°C ❋ If use back-up heater, it is 65°C)
③ Operation time (Time to run sterilization when it reached setting temp 5min ~ 60min)

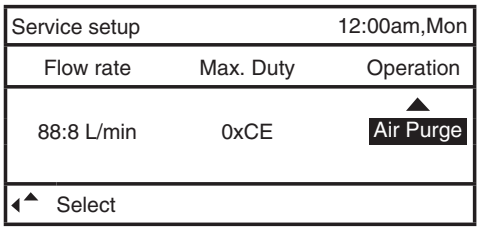
User shall set whether to use or not to use sterilization mode.



3-5. Service Setup

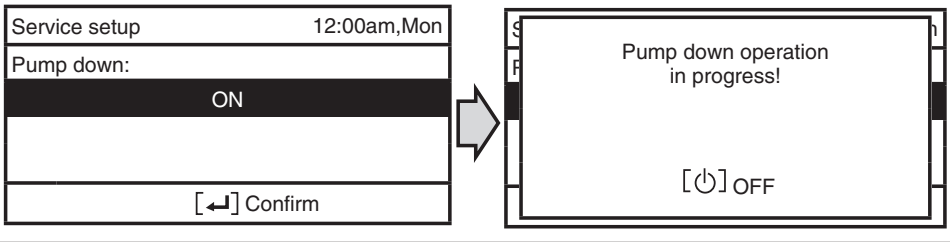
32. Pump maximum speed | Initial setting: Depend on model

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



33. Pump down

Operate pump down operation

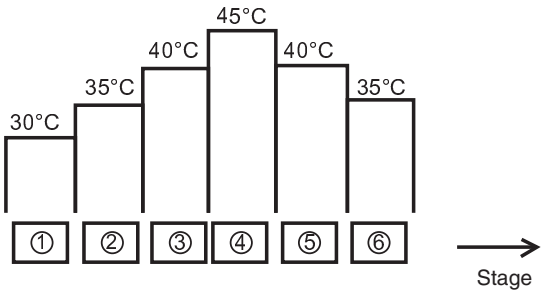


34. Dry concrete

Operate concrete curing operation.
Select Edit, set temp for every stage (1~99 1 is for 1 day).
Setting range is 25~55°C

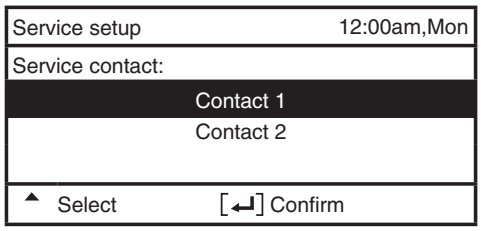
When it is turned ON, dry concrete starts.

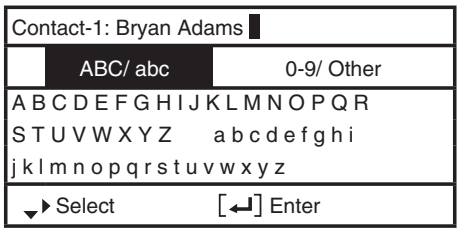
When it is 2 zone, it dries both zones.



35. Service contact

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





4 Service and maintenance

When connect CN-CNT connector with computer

Please use optional USB cable to connect with CN-CNT connector.
After connected, it requests for driver. If PC is under Windows Vista or later version, it automatically installs the driver under internet environment.

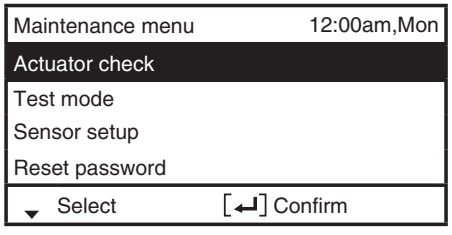
If PC uses Windows XP or earlier version and there is no internet access, please get FTDI Ltd's USB - RS232C conversion IC driver (VCP driver) and install.
http://www.ftdichip.com/Drivers/VCP.htm

If forget Password and cannot operate remote controller

Press ⮌ + ↵ + ▶ for 5 sec.
Password unlock screen appears, press Confirm and it shall reset.
Password will become 0000. Please reset it again.
(CAUTION) Only display when it is locked by password.

Maintenance menu

Setting method of Maintenance menu



Press ⮌ + ↵ + ▶ for 5 sec.

Items that can be set

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

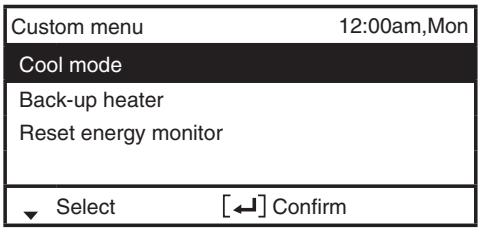
② Test mode (Test run)
Normally it is not used.

③ Sensor setup (offset gap of detected temp of each sensor within -2~2°C range)
(CAUTION) Please use only when sensor is deviated. It affects temperature control.

④ Reset password (Reset password)

Custom menu

Setting method of Custom menu



Please press ☰ + ▼ + ◀ for 10 sec.

Items that can be set

① Cool mode (Set With/Without Cooling function) Default is without
(CAUTION) 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 Back-up heater (Use/Do not use Backup heater)
(CAUTION) It is different from to use/not to use backup heater set by client. When this setting is used, heater power on due to protection against frost will be disabled. (Please use this setting when it is required by utility company.)
By using this setting, it cannot defrost due to low Heating's setting temp and operation may stop (H75)
Please set under the responsibility of installer. When it stops frequently, it may be due to insufficient circulation flow rate, setting temp of heating is too low etc.

③ Reset energy monitor (delete memory of Energy monitor)
Please use when moving house and handover the unit.

Panasonic®

ESPAÑOL

Manual de instalación

UNIDAD INTERIOR DE BOMBA DE CALOR DE AIRE A AGUA

WH-S*C09*3E8, WH-S*C12*9E8, WH-S*C16*9E8

Herramientas Necesarias para Trabajos de Instalación

1 Destornillador de estrella	5 Cortatubos	9 Cinta métrica		42 N•m (4,2 kgf•m)
2 Indicador de Nivel	6 Escariador	10 Megóhmetro		65 N•m (6,5 kgf•m)
3 Taladro Eléctrico	7 Cuchillo	11 Multímetro		
4 Llave Inglesa	8 Detector de fugas	12 Llave Dinamométrica		

MEDIDAS DE SEGURIDAD

- Lea cuidadosamente las siguientes “MEDIDAS DE SEGURIDAD” antes de proceder con la instalación.
- Los trabajos eléctricos deben ser realizados por un electricista calificado. Asegúrese de utilizar la corriente nominal correcta y circuito principal para el modelo que vaya a instalar.
- Los ítems declarados aquí deben ser seguidos ya que estos contenidos importantes están relacionados con la seguridad. El significado de cada indicación usada es como sigue abajo. La instalación incorrecta por no seguirse las instrucciones causará daño o avería, y su gravedad queda clasificada por las siguientes indicaciones.
- Deje este manual de instalación con la unidad después de la instalación.

⚠ ADVERTENCIA	Esta indicación señala la posibilidad de causar la muerte o lesiones de gravedad.
⚠ PRECAUCIÓN	Esta indicación señala la posibilidad de causar lesión o daño a la propiedad únicamente.

Los artículos que deben ser seguidos están clasificados por los siguientes símbolos:

⃠	Este símbolo con el fondo blanco significa algo PROHIBIDO de hacer.
❗ ⏚	Este símbolo con el fondo negro significa un punto a tener en cuenta.

- Lleve a cabo la prueba de funcionamiento para asegurarse de que no existe nada anormal después de la instalación. Luego, explique al usuario el funcionamiento, cuidado y mantenimiento como lo establece el manual. Sírvase recordar al cliente que conserve el manual de funcionamiento para referencias futuras.

⚠ ADVERTENCIA	
⃠	No utilice el cable no especificado, cable modificado, cable con empalmes o cable de extensión para cableado alimentación instalación. No comparta la toma única con otros aparatos eléctricos. Un contacto poco firme, un aislamiento insuficiente o un exceso de corriente pueden causar descargas eléctricas o incendios.
⃠	No sujete el cableado alimentación instalación junto con otros cables. Puede haber un aumento anormal de la temperatura en el cableado alimentación instalación.
⃠	No permita que los niños tengan acceso a la bolsa de plástico (material de embalaje), ya que puede causar asfixia.
⃠	No utilice la llave para tubos para instalar la tubería del refrigerante. Podría deformar la tubería y provocar fallos en la unidad.
⃠	No compre partes eléctricas no autorizadas para instalación, servicio, mantenimiento y etc. Podrían provocar descargas eléctricas o incendios.
⃠	No modifique el cableado de la unidad interior para la instalación de otros componentes (o sea, calentador, etc). Un cableado sobrecargado o puntos de conexión de cable pueden provocar una descarga eléctrica o fuego.
⃠	No añada o sustituya refrigerante diferente del tipo especificado. Puede producer daños al producto, quemaduras y lesiones, etc.
⃠	No haga empalmes en el cable de conexión interior / exterior. Utilice el cable de conexión interior / exterior especificado, consulte la instrucción 6 **CONECTE EL CABLE A LA UNIDAD INTERIOR** y conéctelo con firmeza para la conexión interior / exterior. Sujete el cable con una abrazadera para que no se apliquen fuerzas externas al terminal. Si la conexión o fijación no son perfectas, se originará un sobrecalentamiento o incendio en la conexión.
❗	Para trabajos eléctricos, siga las especificaciones de cableado local y estas instrucciones de instalación. Deberá usarse un circuito independiente y una sola salida. Si la capacidad del circuito eléctrico no es la suficiente o existe avería en el proceso de instalación eléctrica, causará una descarga eléctrica o un incendio.
❗	Para la instalación del circuito hidráulico, siga la regulación nacional y europea correspondiente (incluyendo EN61770) y la normativa local de regulación de edificios y fontanería.
❗	Utilice los servicios del distribuidor o un experto para la instalación. Si la instalación llevada a cabo por el usuario es defectuosa, ello causará escapes de agua, descarga eléctrica o incendio.
❗	• Para los modelos R410A, si está conectando la tubería, no utilice cualquier tubo o tuerca existente (R22). Al utilizar las mismas se puede producir una presión anormalmente alta en el ciclo de refrigeración (tubería), y ocasionar tal vez una explosión y lesiones. Utilice sólo el refrigerante R410A. • El espesor o los tubos de cobre usados con R410A debe ser de 0,8mm o superior. No utilice en ningún caso tubos de cobre de espesor inferior a 0,8mm. • Es conveniente que la cantidad de aceite residual sea menos de 40mg/10m.