Panasonic

Installation Manual
AIR-TO-WATER HYDROMODULE + TANK

WH-ADC0509L3E5, WH-ADC0509L3E5AN, WH-ADC0509L6E5, WH-ADC0509L6E5AN

⚠ CAUTION

R290
REFRIGERANT

This AIR-TO-WATER HYDROMODULE + TANK operates in combination with an outdoor unit containing refrigerant R290.

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

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

Required tools for Installation Works

1 Philips screw driver
2 Level gauge
3 Electric drill, hole core drill
4 Hexagonal wrench (4 mm)
5 Spanner
6 Pipe cutter
7 Reamer
8 Knife
9 Gas leak detector
10 Measuring tape
11 Thermometer
12 Megameter
13 Multimeter
14 Torque wrench
18 N•m (1.8 kgf•m)
55 N•m (5.5 kgf•m)
58.8 N•m (5.8 kgf•m)
65 N•m (6.5 kgf•m)
117.6 N•m (12.0 kgf•m)
15 Hand gloves

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

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

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation of Air-To-Water Hydromodule + Tank (here after referred to as "Tank Unit").
- Electrical works and water installation works must be done by licensed electrician and licensed water system installer respectively. Be sure to use the correct rating and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignorance or negligence of the instructions will cause harm or damage, and the seriousness is classified by the following indications.
- Please 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.
❗ ⏚	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.
- If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.

⚠ WARNING	
⃠	Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit method or using incompatible material may cause product damage, burst and serious injury.
⃠	Do not 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 cling to nose and mouth and prevent breathing.
⃠	Do not purchase unauthorized electrical parts for installation, service, maintenance and etc.. They might cause electrical shock or fire.
⃠	Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources of ignition. Else, it may explode and cause injury or death.

	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
	Do not place containers with liquids on top of the Tank Unit. It may cause Tank Unit damage and/or fire could occurs if they leak or spill onto the Tank Unit.
	Do not use joint cable for Tank Unit / Outdoor Unit connection cable. Use specified Tank Unit / Outdoor Unit connection cable, refer to instruction 4 **CONNECT THE CABLE TO THE TANK UNIT** and connect tightly for Tank Unit / 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 the national regulation, legislation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in the electrical work, it will cause electrical shock or fire.
	For water circuit installation work, follow to relevant European and national regulations (including EN61770) and local plumbing and building regulation codes.
	Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
	Install at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
	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.
	Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
	Only use the supplied or specified installation parts. Else, it may causes unit vibrate, fall, water leakage, electrical shock or fire.
	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 Tank 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 system is multi supply appliance. All circuits must be disconnected before accessing the unit terminals.
	For cold water supply has a backflow regulator, check valve or water meter with check valve, provisions for thermal expansion of water in the hot water system must be provided. Otherwise it will cause water leakage.
	The piping installation work must be flushed before Tank Unit is connected to remove contaminants. Contaminants may damage the Tank Unit components.
	This installation may be subjected to building regulation approval applicable to respective country that may require to notify the local authority before installation.
	The Tank Unit must be shipped and stored in upright condition and dry environment. It may laid on its back when being moved into the building.
	Work done to the Tank Unit after remove the front plate cover that secured by screws, must be carried out under the supervision of authorized dealer, licensed installation contractor, skilled person and instructed person.
	Be aware that refrigerants may not contain an odour.
	This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown.
	⚠ CAUTION
	Do not install the Tank 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.
	Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.
	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. water 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.
	Do not transport the Tank Unit with water inside the unit. It may cause damage to the unit.
	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
	Select an installation location which is easy for maintenance. Incorrect installation, service or repair of this Tank Unit may increase the risk of rupture and this may result in loss damage or injury and/or property.
	Power supply connection to Tank 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. ■ For Tank Unit WH-ADC0509L3E5 and WH-ADC0509L3E5AN: - Power Supply 1: Use approved 25A 2-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. ■ For Tank Unit WH-ADC0509L6E5 and WH-ADC0509L6E5AN: - Power Supply 1: Use approved 25A 2-poles circuit breaker with a minimum contact gap of 3.0mm. - Power Supply 2: Use approved 30A 2-poles circuit breaker with a minimum contact gap of 3.0mm.
	Ensure the correct polarity is maintained throughout all wiring. Otherwise, it will cause electrical shock or fire.
	After installation, check the water leakage condition in connection area during test run. If leakage occurs, it will cause damage to other properties.
	If the Tank Unit not operates for long time, the water inside the Tank Unit should be drained.
	Installation work. It may need three or more people to carry out the installation work. The weight of Tank Unit might cause injury if carried by one person.

Attached accessories

No.	Accessory part	Qty.	No.	Accessory part	Qty.
1	Adjustable Feet 	4	3	Packing for drain 	1
2	Drain Elbow 	1	4	Network Adaptor (CZ-TAW1B) 	1

Optional Accessories

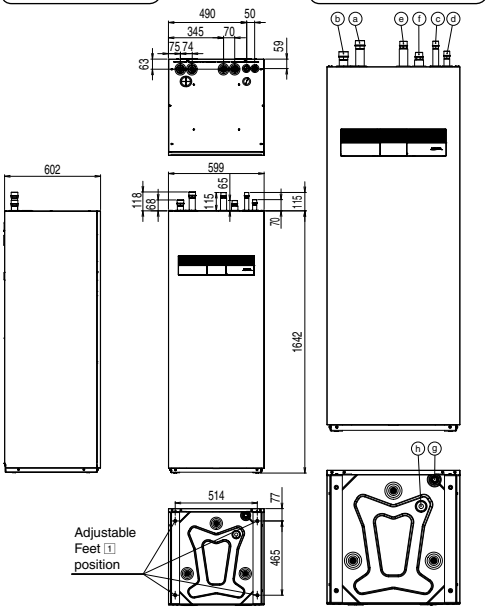
No.	Accessories part	Qty.
5	Remote Controller Case	1
6	Extension Cable (CZ-TAW1-CBL)	1
7	Optional PCB (CZ-NS5P)	1

Field Supply Accessories (Optional)

No.	Part		Model	Specifications	Maker
i	2-way valve kit *Cooling model	Electromotoric Actuator	SFA21/18	AC230V, 12 VA	Siemens
		2-port Valve	VXI46/25		Siemens
ii	Room thermostat	Wired	PAW-A2W-RTWIRED	AC230V	–
		Wireless	PAW-A2W-RTWIRELESS		
iii	Mixing valve	–	167032	AC230V, 6VA	Caleffi
iv	Pump	–	Yonos 25/6	AC 230V, 0.6 A max	Wilo
v	Buffer tank sensor	–	PAW-A2W-TSBU	–	–
vi	Outdoor sensor	–	PAW-A2W-TSOD	–	–
vii	Zone water sensor	–	PAW-A2W-TSHC	–	–
viii	Zone room sensor	–	PAW-A2W-TSRT	–	–
ix	Solar sensor	–	PAW-A2W-TSSO	–	–

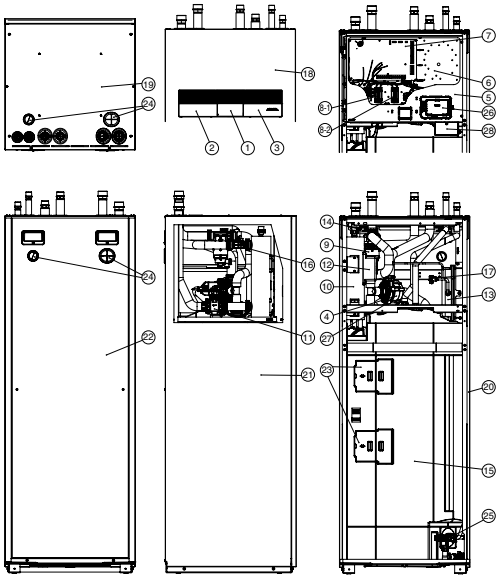
■ It is recommended to purchase the field supply accessories listed in above table.

Dimension Diagram



Tube Position Diagram

Main Components Diagram



Tube Connector	Function	Connector Size
ⓐ	Zone 1 Water Inlet (From Space Heating/Cooling)	R 1¼"
ⓑ	Zone 1 Water Outlet (To Space Heating/Cooling)	R 1¼"
ⓒ	Cold Water Inlet (Domestic Hot Water Tank)	R ¾"
ⓓ	Hot Water Outlet (Domestic Hot Water Tank)	R ¾"
ⓔ	Water Inlet (From Outdoor Unit)	R 1"
ⓕ	Water Outlet (To Outdoor Unit)	R 1"
ⓖ	Domestic Hot Water Tank Discharge (Drain Tap) Type: Ball Valve	Rc 1/2"
ⓗ	Drain Water Hole	---

① Remote Controller
② Left Decoration Panel
③ Right Decoration Panel
④ Water Pump
⑤ Control Board Cover
⑥ Control Board
⑦ Main PCB
⑧-1 Single Phase RCCB/ELCB (Main Power)
⑧-2 Single Phase RCCB/ELCB (Backup Heater)
⑨ Magnetic Water Filter Set
⑩ Heater Assembly
⑪ 3-Way Valve
⑫ Overload Protector (Not Visible)
⑬ Expansion Vessel
⑭ Drain plug
⑮ Tank
⑯ Flow Sensor
⑰ Water Pressure Sensor
⑱ Front Plate
⑲ Top Plate
⑳ Right Plate
㉑ Left Plate
㉒ Rear Plate
㉓ Tank Sensor (Not Visible)
㉔ Bushing (4 pieces)
㉕ Safety Relief Valve
㉖ Network Adaptor Holder
㉗ Electric Anode Bar (Not Visible - Applicable only for WH-ADC0509L3E5AN and WH-ADC0509L6E5AN)
㉘ Electric anode PCB (Not Visible - Applicable only for WH-ADC0509L3E5AN and WH-ADC0509L6E5AN

1 SELECT THE BEST LOCATION

Before choosing the installation site, obtain user approval.

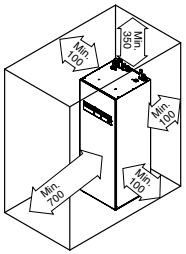
- ☐ Install the Tank Unit in indoors with frost free weather proof location only.
- ☐ Must install on a flat horizontal and solid hard surface.
- ☐ There should not be any heat source or steam near the Tank Unit.
- ☐ A place where air circulation in the room is good.
- ☐ A place where drainage can be easily done (e.g. Utility room).
- ☐ A place where Tank Unit's operation noise will not cause discomfort to the user.
- ☐ A place where Tank Unit is far from door way.
- ☐ A place where accessible for maintenance.
- ☐ Ensure to keep minimum distance of spaces as illustrated below from wall, ceiling, or other obstacles.
- ☐ A place where flammable gas leaking might not occur.
- ☐ Secure the Tank Unit to prevent it being knocked over accidentally or during earthquakes.

Please avoid installations which expose the Tank Unit to any of the following conditions:

- ☐ Extraordinary environment conditions; installation in frost or exposure to unfavorable weather conditions.
- ☐ Voltage input exceeding the specified voltage.

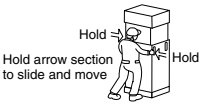
Required space for installation

(Unit : mm)



Transport and Handling

- Be careful during transportating the unit so that it is not damaged by impact.
- Only remove the packaging material once it has reached desired installation location.
- It may need three or more people to carry out the installation work. The weight of Tank Unit might cause injury if carried by one person.
- The Tank Unit can be transported either in vertical or horizontal.
  - If it transported in horizontal, make sure Front of packaging material (printed with "FRONT") must facing upwards.
  - If it transported in vertical, use the hand holes on sides, slide and move to the desired location.



- Fix the Adjustable Feet 1, if the Tank unit installed on a uneven surface.

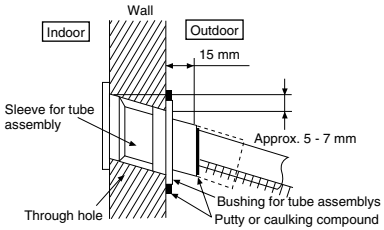
2 TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

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

⚠ CAUTION

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

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

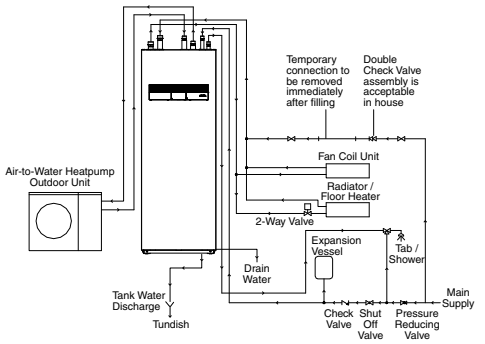


3 PIPING INSTALLATION

WATER QUALITY REQUIREMENT

Must use water that complies with European water quality standard 98/83 EC. The lifespan of the Tank Unit will be shorter if groundwater (include spring water and well water) is used.
The Tank Unit shall not be used with the tap water containing contaminants such as salt, acid, and other impurities which may corrode the tank and its component.

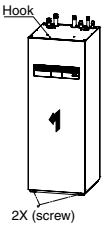
Typical Piping Installation



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.



⚠ CAUTION

Open or close the Front Plate carefully. The heavy Front Plate may injures the fingers.

*The remote control cable is connected to the front panel, so be careful when removing the panel.

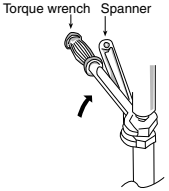
Open and Close Front Plate ⑱

1. Remove the 2 mounting screws of Front Plate ⑱.
2. Slide it upwards to unhook the Front Plate ⑱ hook.
3. Reverse above steps 1~2 for close it.

Water Piping Installation

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

Tube Connector	Nut Size	Torque
ⓐ & ⓑ	RP 1¼"	117.6 N•m
ⓒ & ⓓ	RP ¾"	58.8 N•m
ⓔ & ⓕ	RP 1"	88.2 N•m



⚠ CAUTION

Do not overtighten, overtightening may cause water leakage.

- Make sure to insulate the water circuit pipes to prevent reduction of heating capacity.
- After installation, check the water leakage condition in connection area during test run.
- Failure to connect the tube appropriately might cause the Tank Unit malfunction.
- Protection From Frost:
  If the Tank Unit is being exposed to frost while power supply failure or pump operating failure, drain the system. When water is idle inside the system, freezing up is very likely to happen which could damage the system. Make sure the power supply is turned off before draining. Heater Assembly ⑩ may be damaged under dry heating.
- Corrosion Resistance:
  Duplex stainless steel is naturally corrosion resistant to mains water supply. No specific maintenance is required to maintain this resistance. However, please note that Tank Unit is not guaranteed for use with a private water supply.
- It is recommended to use a tray (field supply) to collect water from the Tank Unit if water leakage occur.

Recommended piping installation sequence:
(a) → (c) → (e) → (f) → (b) → (d)

(A) Space Heating/Cooling Pipework

- Connect Tank Unit Tube Connector ⓐ to outlet connector of Zone 1 Panel/Floor heater.
- Connect Tank Unit Tube Connector ⓑ to inlet connector of Zone 1 Panel/Floor heater.
- Failure to connect the tube appropriately might cause the Tank Unit malfunction.
- Refer below table for the rated flow rate of each particular Outdoor Unit.

Model		Rated Flow Rate (l/min)	
		Cool	Heat
WH-ADC0509L3E5, WH-ADC0509L3E5AN, WH-ADC0509L6E5, WH-ADC0509L6E5AN	WH-WDG05LE5*	14.3	14.3
	WH-WDG07LE5*	20.1	20.1
	WH-WDG09LE5*	23.5	25.8

*Do not install automatic air purge valves on indoor water pipes. In the unlikely event that the R290 refrigerant leaks into the water circuit, there is a risk that the refrigerant will leak indoors.

(B) Circulating Pipework

- Connect Tank unit Tube Connector ⓕ to outdoor unit inlet water socket.
- Connect Tank Unit Tube Connector ⓔ to Outdoor unit outlet water socket.
- Failure to connect results in an error stop the system.

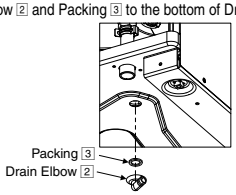
Model	Water piping between outdoor unit and indoor unit			
	Inner diameter	Maximum length	Insulator thickness	Maximum Elevation
WH-WDG05LE5*	ø20	30 m	30 mm or more	10 m
WH-WDG07LE5*	ø25			
WH-WDG09LE5*				

(C) Domestic Hot Water Tank Pipework

- It's strongly recommended to install an expansion vessel (field supply) in the Domestic Hot Water Tank circuit. Refer Typical Piping Installation section to locate the expansion vessel.
  - ❍ Recommended pre-charge pressure of the expansion vessel (field supply) = 3.5bar (0.35MPa)
- In high water pressure or water supply is above 5bar, please install the Pressure Reducing Valve for water supply. If the pressure higher than that, it might damage the Tank Unit.
- A Pressure Reducing Valve (field supply) with below specification is strongly advised to be installed along the line of the tube connector ⓒ of Tank Unit. Refer Typical Piping Installation section to locate both of these valves.
  Recommended Pressure Reducing Valve specifications:
  - Set pressure: 3.5bar (0.35MPa)
- Must connect a faucet to Tank Unit Tube Connector ⓓ and main water supply, in order to supply water with appropriate temperature for shower or tap usage. Failure to do so might cause scalding.
- Failure to connect the tube appropriately might causing the Tank Unit malfunction.

(D) Drain Elbow and Hose Installation

- Fix the Drain Elbow 2 and Packing 3 to the bottom of Drain Water Hole ⓗ.



- Use inner diameter 17 mm drain hose in the market, fix to Drain Elbow 2.
- This hose must to be installed in a continuously downward direction and in a frost-free environment. Improper drain piping may cause water leakage hence damage the furnitures.
- If drain hose is long, use a metal support fixture along the way to eliminate the wavy pattern of drain tube.
- Guide the drain hose to outdoor as illustrated.

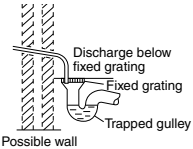


Illustration of guide drain hose to outdoor

- Do not insert this hose into sewage or drain pipe that may generate ammonia gas, sulphuric 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.
- If drain hose is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

(E) Domestic Hot Water Tank Discharge (Drain Tap) and Safety Relief Valve Pipework

- Safety Relief Valve 8bar (0.8MPa) incorporated in Domestic Hot Water Tank.
- Drain Tap and Safety Relief Valve discharge fittings share the same drainage outlet.
- Use R½" male connector for this drainage outlet connection (Tube connector ⓖ).
- Piping must always be installed in a continuously downward direction. It must not be longer than 2m, with no more than 2 elbows, and must not allow condensation to build up or freezing to occur.
- The pipe from this drainage outlet fitting must not be shut off. The discharge must be freed.
- The end of this pipework must be in such a way so that the outlet is visible and can not cause any damage. Keep away from electrical components.
- It is recommended to fit a tundish into this ⓖ pipework. Tundish should be visible and positioned away from frost environment and electrical components.

4 CONNECT THE CABLE TO THE TANK UNIT

⚠ WARNING

This section is for authorized and licensed electrician only. Work behind the Control Board Cover ⑤ secured by screws must only be carried out under supervision of qualified contractor, installation engineer or service person.

⚠ CAUTION

Please take extra precaution when open the control board cover ⑤ and control board ⑥ for unit installation and servicing. Failure to do so may cause injury.

Fixing of Power Supply Cable and Connecting Cable

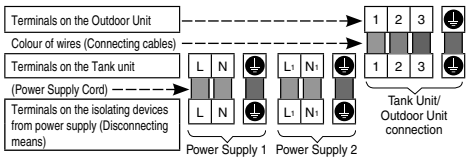
1. Connecting cable between Tank Unit and Outdoor Unit shall be approved polychloroprene sheathed flexible cord, type designation 60245 IEC 57 or heavier cord. See below table for cable size requirement.

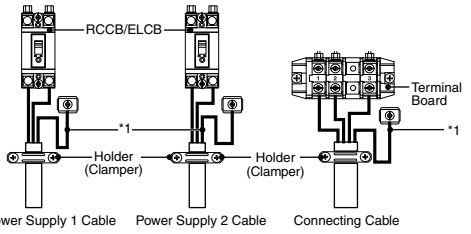
Model		Connecting Cable Size
Tank Unit	Outdoor Unit	
WH-ADC0509L3E5, WH-ADC0509L3E5AN, WH-ADC0509L6E5, WH-ADC0509L6E5AN	WH-WDG05LE5* WH-WDG07LE5* WH-WDG09LE5*	4 x min 2.5 mm²

   - Ensure the colour of wires of Outdoor Unit and the terminal no. are the same to the Tank Unit respectively.
   - Earth wire shall be longer than the 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.

Model		Power Supply Cord	Cable Size	Isolating Devices	Recommended RCD
Tank Unit	Outdoor Unit				
WH-ADC0509L3E5, WH-ADC0509L3E5AN	WH-WDG05LE5*	1	3 x min 2.5 mm²	25A	30mA, 2P, type A
	WH-WDG07LE5* WH-WDG09LE5*	2	3 x min 1.5 mm²	15/16A	30mA, 2P, type AC
WH-ADC0509L6E5, WH-ADC0509L6E5AN	WH-WDG05LE5*	1	3 x min 2.5 mm²	25A	30mA, 2P, type A
	WH-WDG07LE5* WH-WDG09LE5*	2	3 x min 4.0 mm²	30A	30mA, 2P, 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 ⑥) before terminal board. The bushing must be used and must not be removed.

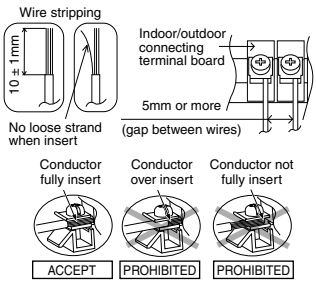




Terminal screw	Tightening torque cN•m {kgf•cm}
M4	157~196 {16~20}
M5	196~245 {20~25}

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

WIRE STRIPPING AND CONNECTING REQUIREMENT



CONNECTING REQUIREMENT

For Tank Unit WH-ADC0509L3E5, WH-ADC0509L3E5AN with WH-WDG05LE5*, WH-WDG07LE5*, WH-WDG09LE5*

- 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.

For Tank Unit WH-ADC0509L6E5, WH-ADC0509L6E5AN with WH-WDG05LE5*, WH-WDG07LE5*, WH-WDG09LE5*

- 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 61000-3-12.
- 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} = 0.123 ohm (Ω) 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.

5 CHARGING AND DISCHARGING THE WATER

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

CHARGE THE WATER

For Domestic Hot Water Tank

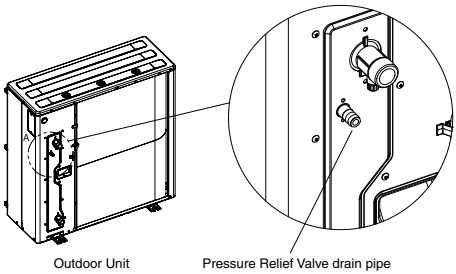
1. Set the Domestic Hot Water Tank Discharge (Drain Tap) ⓖ to "CLOSE".

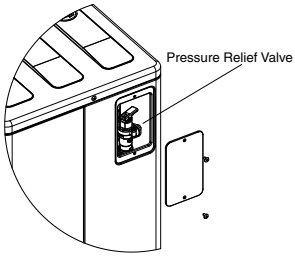
Domestic Hot Water Tank Discharge (Drain Tap) ⓖ

2. Set all Tap / Shower "OPEN".
3. Start filling water to the Domestic Hot Water Tank via Tube Connector ⓒ.
   After 20~40min, water should flow out from Tap / Shower.
   Else, please contact your local authorized dealer.
4. Check and make sure no water leaking at the tube connecting points.
5. Set the Domestic Hot Water Tank Discharge (Drain Tap) ⓖ to "OPEN" for 10 seconds to release air from this pipeline. Then set it "CLOSE".
6. Turn the Safety Relief Valve ㉕ knob counterclockwise slightly and hold for 10 seconds to release air from this pipeline. Then recover the knob to original position.
7. Ensure Step 5 & 6 is carried out each time after charging water to Domestic Hot Water Tank.
8. To prevent back pressure from happening to the Safety Relief Valve ㉕, do turn the Safety Relief Valve ㉕ knob counterclockwise.

For Space Heating / Cooling

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





DISCHARGE THE WATER

For Domestic Hot Water Tank

1. Turn OFF power supply.
2. Set the Domestic Hot Water Tank Discharge (Drain Tap) ⓖ to "OPEN".
3. Open Tap / Shower to allow air inlet.
4. Turn the Safety Relief Valve ㉕ knob counterclockwise slightly and hold it until all air is released from this pipeline. Then recover the knob to original position after ensured the pipeline is emptied.
5. After discharge, set Domestic Hot Water Tank Discharge (Drain Tap) ⓖ to "CLOSE".

6 RECONFIRMATION

⚠ WARNING

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

CHECK WATER PRESSURE

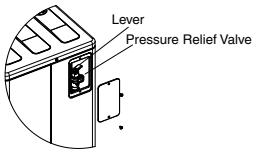
*(1 bar = 0.1MPa)

Water pressure should not lower than 0.5 bar (with inspects the Water Pressure from Remote Controller). If necessary add water into Tank Unit (via Tube Connector ⓐ).

CHECK PRESSURE RELIEF VALVE

*Pressure Relief Valve is mounted in the Outdoor Unit.

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



CHECK AIR ACCUMULATION

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

EXPANSION VESSEL ⑬ PRE PRESSURE CHECKING

For Space Heating / Cooling

- Expansion Vessel ⑬ with 10 L air capacity and initial pressure of 1 bar is installed in this Tank Unit.
- Total amount of water in system should be below 200 L.
  (Inner volume of Tank Unit's piping is about 5 L)
- If total amount of water is over 200 L, please add another expansion vessel. (field supply)
- Please keep the installation height difference of system water circuit within 10 m. (Extra pump may be required)

CHECK RCCB/ELCB

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

⚠ WARNING

Be careful not to touch parts other than RCCB/ELCB test button when the power is supplied to Tank 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 Tank Unit.
- If RCCB/ELCB functions normal, set the lever to "ON" again after testing finish.

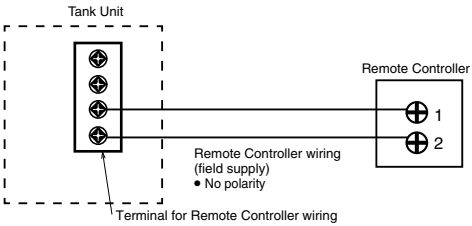
7 INSTALLATION OF REMOTE CONTROLLER AS ROOM THERMOSTAT

- Remote Controller ① mounted to the Tank 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)

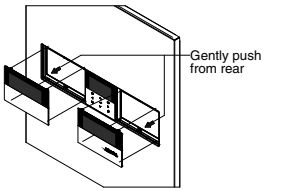
Remote Controller Wiring



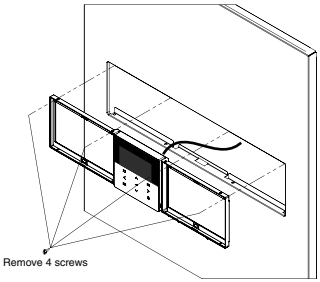
- Remote Controller cable shall be (2 x min 0.3 mm²), of double insulation PVC-sheathed or rubber sheathed cable. Total cable length shall be 50 m or less.
- Be careful not to connect cables to other terminals of Tank Unit (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together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

Remove The Remote Controller From Tank Unit

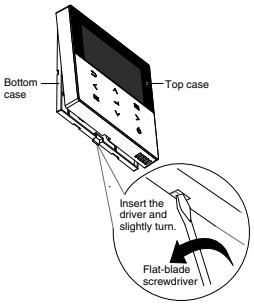
1. Remove both Left Decoration Panel ② and Right Decoration Panel ③ from Front Plate ⑱ with gently push the panels from back.



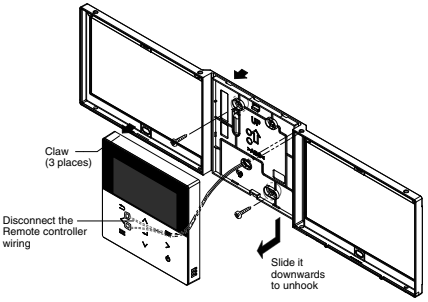
2. Remove the 4 screws and take out the holder with Remote Controller ①.



3. Remove the top case from the bottom case.



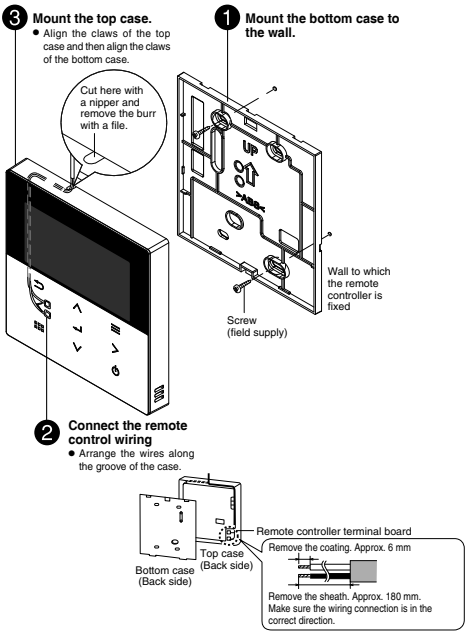
4. Remove the wiring between Remote controller ① and Tank Unit terminal.



Mounting The Remote Controller

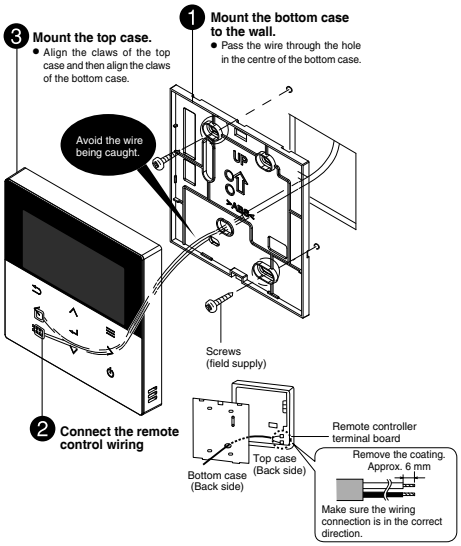
For exposed type

Preparation: Make 2 holes for screws using a driver.



5. For embedded type

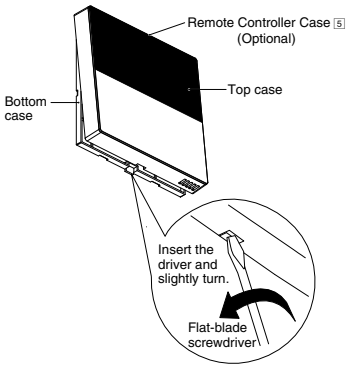
Preparation: Make 2 holes for screws using a driver.



Replace The Remote Controller Cover

- Replace the existing Remote Controller with Remote Controller Case [5] to close the hole left after remove the Remote Controller.

1. Refer Section “Remove The Remote Controller From Tank Unit” for remove Remote Controller.
2. Remove the top case from the bottom case of Remote Controller Case [5].



3. Reverse the steps 1 to 4 of section “Remove The Remote Controller From Tank Unit” to fix Remote Controller Case [5] on Tank Unit.

8 TEST RUN

1. Before test run, make sure below items have been checked:-
   a) Pipework are properly done.
   b) Electric cable connecting work are properly done.
   c) Tank Unit is filled up with water and trapped air is released.
   d) Please turn on the power supply after filling the tank until full.
2. Switch ON the power supply of the Tank Unit. Set the Tank Unit RCCB /ELCB to "ON" condition. Then, please refer to the Operation Instruction for operation of Remote Controller ①.

> Note:
> - During winter, turn on the power supply and standby the unit for at least 15 minutes before test run.
>   Allow sufficient time to warm up refrigerant and prevent wrong error code judgement.

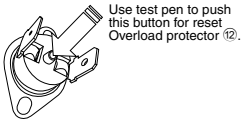
3. For normal operation, Water Pressure reading should be in between 0.5 bar and 3 bar (0.05 MPa and 0.3 MPa). If necessary, adjust the Water Pump ④ SPEED accordingly to obtain normal water pressure operating range. If adjust Water Pump ④ SPEED cannot solve the problem, contact your local authorized dealer.
4. Remove the electric anode cover to check the electric anode PCB ㉘. (AN model only)
   Confirm the LED is green.
   If the LED is red, confirm the tank is full of water.
   If the LED is OFF, please set the electric anode "YES" in the system set up of the R/C.
5. After test run, please clean the Magnetic Water Filter Set ⑨ and Water Filter Set ㉚. Reinstall it after finish cleaning.

CHECK WATER FLOW OF WATER CIRCUIT

Select Installer setup → Service setup → Pump maximum speed → Air purge
Confirm the maximum water flow during main pump operation not less than 15 l/min.
*Water flow can be check through service setup (Pump Max Speed) [Heating operation at low water temperature with lower water flow may trigger "H75" during defrost process.]
*If there is no flow or H62 is displayed, stop operating the pump and release the air (see Checking for Air Accumulation P.8).

RESET OVERLOAD PROTECTOR ⑫

Overload Protector ⑫ a serves the safety purpose to prevent the water over heating. When the Overload Protector ⑫ a 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 ⑫.
3. Fix the cover to the original fixing condition.

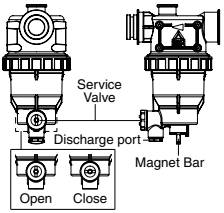


9 MAINTENANCE

- In order to ensure safety and optimal performance of the Tank Unit, seasonal inspections on the Tank 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 Magnetic Water Filter Set ⑨

1. Turn OFF power supply.
2. Place a container below Magnetic Water Filter Set ⑨.
3. Turn to remove the Magnet Bar at bottom of Magnetic Water Filter Set ⑨.
4. By using Allen key (8mm), remove the Cap of Discharge Port.
5. By using Allen Key (4mm), open the Service Valve to release the dirty water from the Discharge Port into a container. Close the service valve when the container is full to avoid spillage in the tank unit. Dispose the dirty water.
6. Reinstall the Cap of Discharge Port and Magnet Bar.
7. Re-charging the water to Space Heating / Cooling circuit if necessary (refer Section 5 for details.)
8. Turn ON power supply.



Maintenance for Safety Relief Valve ㉕

- It is strongly recommended to operate the valve by turn the knob counter clockwise to ensure free water flow through discharge pipe at regular intervals to ensure it is not blocked and to remove lime deposit.

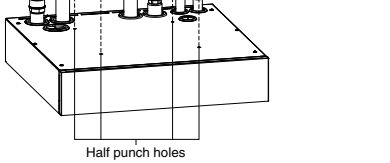
Stagnant water in Tank Unit should be drained if it is not going to be operated for more than 60 days.

Installation of Ventilation Unit on top of Tank Unit (Optional)

- For installation works of Ventilation Unit on top of Tank Unit, refer to the Ventilation Unit Installation Manual.

⚠ CAUTION

Before install Ventilation Unit, fix the Feet that provided by Ventilation Unit to the half punch holes on Top Panel of Tank Unit, Otherwise, heavy Ventilation Unit may fall and cause injury.



CHECK ITEMS

- ☐ Is the Tank Unit properly installed on the concrete floor?
- ☐ Is there any water leakage at water piping connections?
- ☐ Has the heat insulation been carried out at water piping connection?
- ☐ Is the Pressure Relief Valve operation normal?
- ☐ Is water pressure higher than 0.5 bar?
- ☐ Is the water drainage work properly done?
- ☐ Is the power supply voltage within the rated voltage range?
- ☐ Is the cables being fixed to RCCB/ELCB and terminal board firmly?
- ☐ Is the cables being clamped firmly by holder (clamper)?
- ☐ Is the earth wire connection properly done?
- ☐ Is the RCCB/ELCB operation normal?
- ☐ Is the Remote Controller ① LCD operation normal?
- ☐ Is there any abnormal sound?
- ☐ Is the heating operation normal?
- ☐ Is the Tank unit water leak free on test run?
- ☐ Is the Safety Relief Valve ㉕ knob turned for releasing air?

APPENDIX

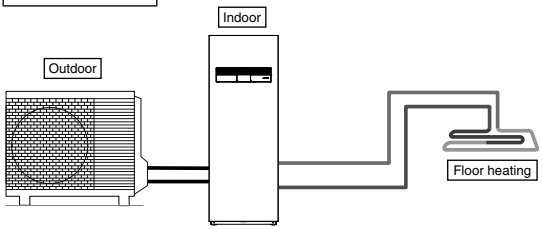
1 Variation of system

This section introduces variation of various systems using Air-To-Water Heatpump and actual setting method.
(NOTE) : For this model, both external room thermistor of Zone 1 and external room thermostat of Zone 1 must always be connected to main indoor PCB only regardless of Optional PCB (CZ-NS5P) connection.

1-1 Introduce application related to temperature setting.

Temperature setting variation for heating

1. Remote Controller



Setting of remote controller

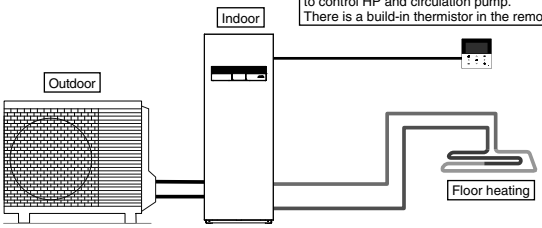
Installer setting
System setup
Optional PCB connectivity - No

Zone & Sensor:
Water temperature

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

2. Room Thermostat

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



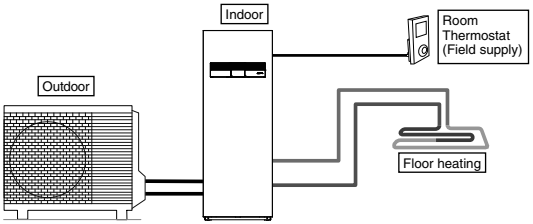
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

Zone & Sensor:
Room thermostat
Internal

Connect floor heating or radiator directly to the Tank Unit.
Remove remote controller from Tank 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



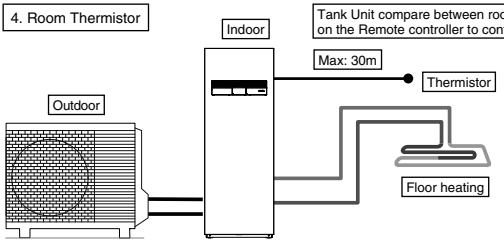
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No

Zone & Sensor:
Room thermostat
(External)

Connect floor heating or radiator directly to Tank Unit.
Remote controller is installed on Tank 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

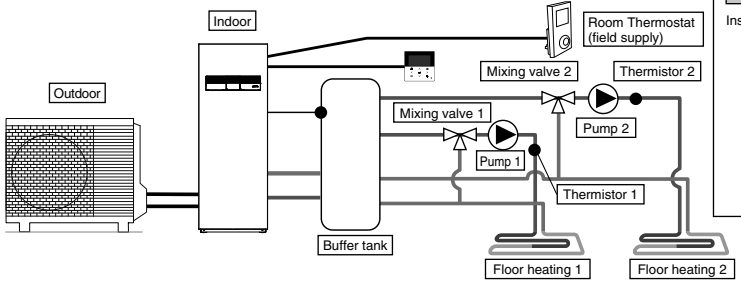
Zone & Sensor:
Room thermistor

Connect floor heating or radiator directly to Tank Unit.
Remote controller is installed on Tank 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

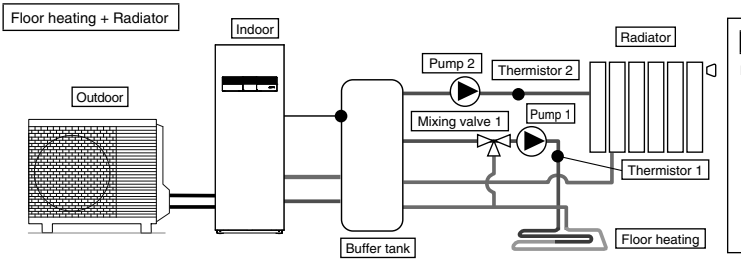
Zone and Sensor - 2 Zone system
Zone 1:Sensor
Room thermostat
Internal

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 Tank 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-NS5P).

Note : Buffer tank thermistor must be connected to main indoor PCB only.

Floor heating + Radiator



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

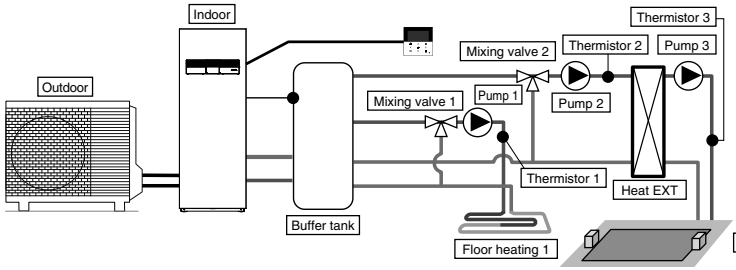
Zone and Sensor - 2 Zone system
Zone 1:Sensor
Water temperature

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 Tank 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-NS5P).
Mind that if there is no mixing valve at the secondary side, the circulation water temperature may get higher than setting temperature.

Note : Buffer tank thermistor must be connected to main indoor PCB only.

Floor heating + Swimming pool



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

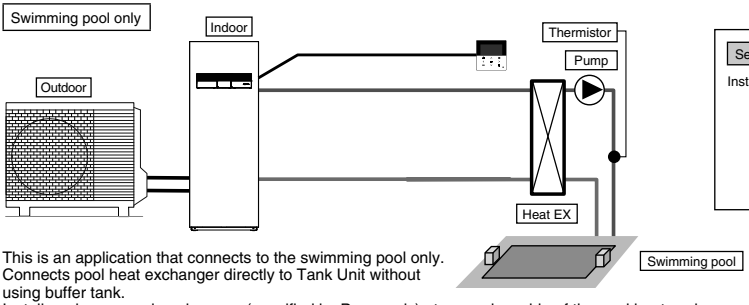
Zone and Sensor - 2 Zone system
Zone 1:Sensor
Room thermostat
Internal

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 Tank 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-NS5P).

❉ Must connect swimming pool to “Zone 2”.
If it is connected to swimming pool, operation of pool will stop when “Cooling” is operated.
Note : Buffer tank thermistor must be connected to main indoor PCB only.

Swimming pool only



Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - Yes

Zone and Sensor - 1 Zone system

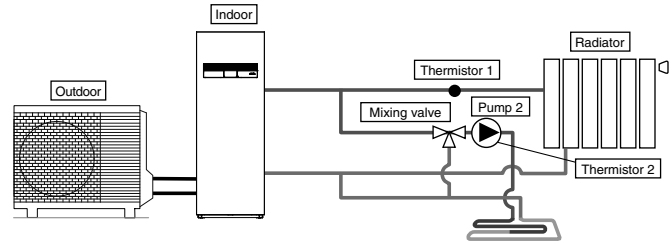
Zone :Swimming pool

ΔT

This is an application that connects to the swimming pool only.
Connects pool heat exchanger directly to Tank 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 Tank 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-NS5P).

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

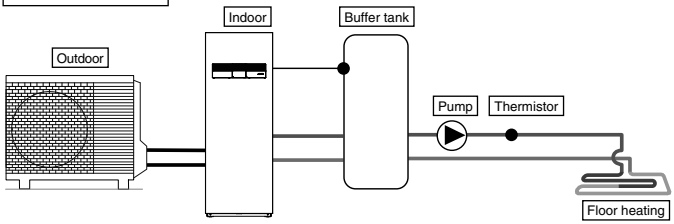
Cool
ΔT for cooling ON – 1°C

This is an example of simple 2 zone control without using buffer tank.
Built-in pump from Tank 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-NS5P).

(NOTE)

- 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.

Buffer tank connection



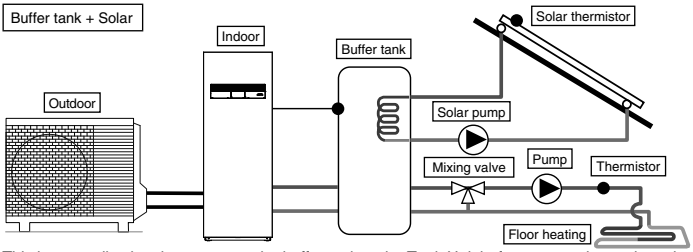
Setting of remote controller

Installer setting
System setup
Optional PCB connectivity - No
Buffer Tank connection - Yes
ΔT for buffer tank

This is an application that connects the buffer tank to the Tank Unit.
Buffer tank's temperature is detected by buffer tank thermistor (specified by Panasonic).
Without connection of Optional PCB, external pump can be used for circulation in the floor heating circuit.

Note : Buffer tank thermistor must be connected to main indoor PCB only.

Buffer tank + Solar



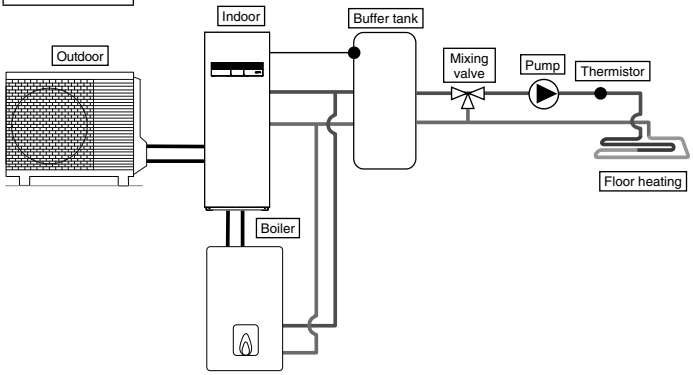
Setting of remote controller

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 Tank 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-NS5P).

Note : Buffer tank thermistor must be connected to main indoor PCB only.

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 Tank 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.
Besides that, an application that connects to the DHW tank's circuit to heat up tank 's hot water is also possible.
Boiler output can be control by either SG ready input from optional PCB or Auto control by 3 modes selection pattern.
(Operation setting of boiler shall be responsible by installer.)
This system requires Optional PCB (CZ-NS5P) for SG ready input control.

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

Note : Buffer tank thermistor must be connected to main indoor PCB only.

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

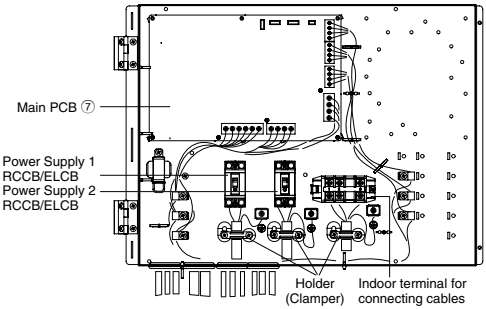
⚠ CAUTION
Make sure the boiler and its integration in the system complies with applicable legislation. Make sure the return water temperature from the heating circuit to the Tank Unit does NOT exceed 70°C. Boiler is turned off by safety control when the water temperature of the heating circuit exceed 85°C.

2 How to fix cable

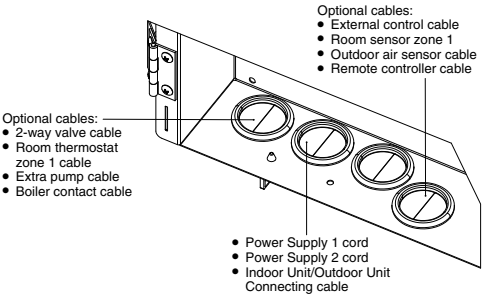
Connecting with external device (optional)

- **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 ⑦

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 mm²), 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 12VA.
2. Room thermostat cable must be (4 or 3 x min 0.5 mm²), of type designation 60245 IEC 57 or heavier cord, or similarly double insulation sheathed cable.
3. Extra pump cable shall be (2 x min 1.5 mm²), of type designation 60245 IEC 57 or heavier.
4. Boiler contact cable shall be (2 x min 0.5 mm²), of type designation 60245 IEC 57 or heavier.
5. 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 $3A_{rms}$.
6. Room sensor zone 1 cable shall be (2 x min 0.3 mm²) double insulation layer of PVC-sheathed or rubber-sheathed.
7. Outdoor air sensor cable shall be (2 x min 0.3 mm²) double insulation layer of PVC-sheathed or rubber-sheathed.

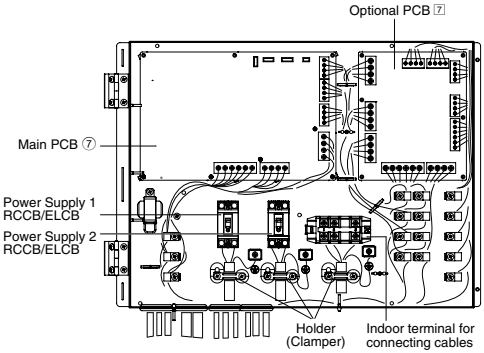


How to guide the optional cables and power supply cord (view without internal wiring)

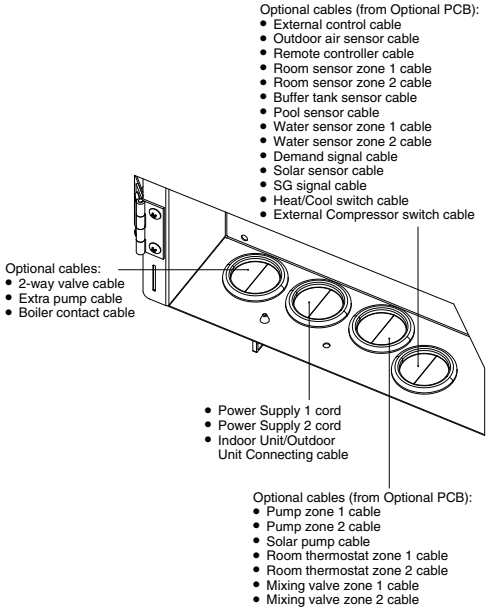


- For connection to Optional PCB 7

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)

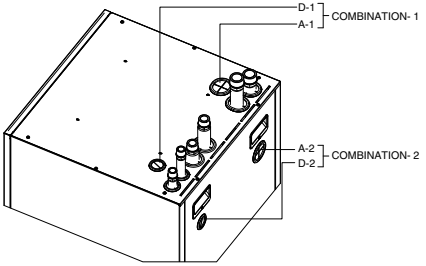


Terminal screw on PCB	Maximum tightening torque cN•m {kgf•cm}
M3	50 {5.1}
M4	120 {12.24}

Guide Optional Cables and Power Supply Cords to Bushings

⚠ CAUTION
Wire guiding shall be free from hot surfaces. Else, cable insulator damage and electrical shock may happen.
Wire ways shall be smooth and free from sharp edges. Else, cable insulator damage and electrical shock may happen.

■ Use either “COMBINATION-1” or “COMBINATION-2” for guiding Optional Cables and Power Supply Cords to Bushings.



■ A-1 and A-2 Bushings are for:

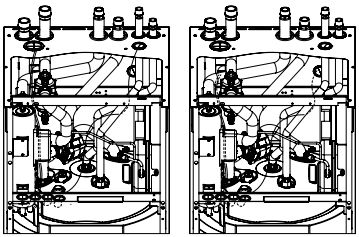
- Power Supply 1 cord
- Power Supply 2 cord
- Indoor Unit/ Outdoor Unit Connecting cable
- Pump zone 1 cable
- Pump zone 2 cable
- Solar pump cable
- Room thermostat zone 1 cable
- Room thermostat zone 2 cable
- Mixing valve zone 1 cable
- Mixing valve zone 2 cable
- 2-way valve cable
- Extra pump cable
- Boiler contact cable

■ D-1 and D-2 Bushings are for:

- External control cable
- Outdoor air sensor cable
- Remote controller cable
- Room sensor zone 1 cable
- Room sensor zone 2 cable
- Buffer tank sensor cable
- Pool sensor cable
- Water sensor zone 1 cable
- Water sensor zone 2 cable
- Demand signal cable
- Solar sensor cable
- SG signal cable
- Heat/Cool switch cable
- External Compressor switch cable

■ Ensure all sensor cables are not touching with Front Panel

■ Guide the wiring inside the unit like below figure.
Once all wiring work done, tie the cable / cord with the banding strap (field supply), to prevent them touching with hot surfaces such as Heater Assembly, bare copper pipes and etc.



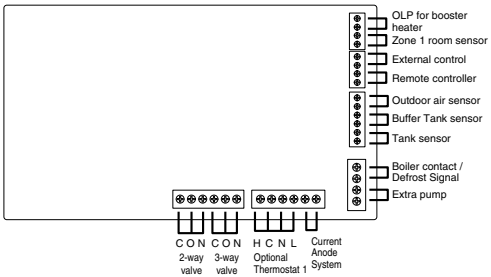
Wiring for “COMBINATION-1” Wiring for “COMBINATION-2”

Connecting Cables Length

When connecting cables between Tank 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
Mixing valve	50
Room thermostat	50
Extra pump	50
Solar pump	50
Pool pump	50
Pump	50
Boiler contact / Defrost signal	50
External control	50
Room sensor	30
Outdoor air sensor	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
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.)

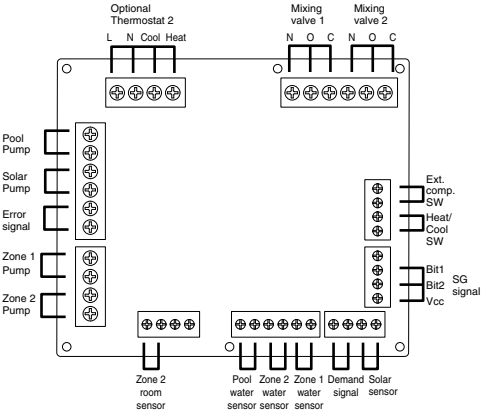
■ Outputs

3-way valve	AC230V N=Neutral Open, Close=direction (For circuit switching when connected to DHW tank)	AC230V, 12 VA
2-way valve	AC230V N=Neutral Open, Close (Prevent water circuit pass through during cooling mode)	AC230V, 12 VA
Extra pump	AC230V (Used when Tank Unit pump capacity is insufficient)	AC 230V, 0.6 A max
Boiler contact / Defrost signal	Dry contact (System setup necessary)	

■ Thermistor inputs

Zone 1 room sensor	PAW-A2W-TSRT
Outdoor air sensor	PAW-A2W-TSOD (Total cable length shall be 30m or less)

Connection of Optional PCB (CZ-NS5P)



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.OFF, Short=Comp.ON (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	AC230V, 6VA
Pool pump	AC230V	AC 230V, 0.6 A max
Solar pump	AC230V	AC 230V, 0.6 A max
Zone pump	AC230V	AC 230V, 0.6 A max

■ Thermistor inputs

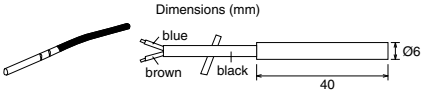
Zone room sensor	PAW-A2W-TSRT
Buffer tank sensor	PAW-A2W-TSBU
Pool water sensor	PAW-A2W-TSHC
Zone water sensor	PAW-A2W-TSHC
Solar sensor	PAW-A2W-TSSO

Recommended External Device Specification

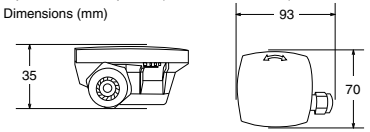
- This section explains about the external devices (optional) recommended by Panasonic. Please always ensure to use the correct external device during system installation.

- For optional sensor.

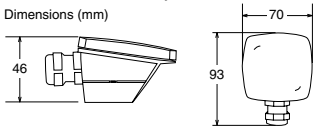
1. Buffer tank sensor: PAW-A2W-TSBU
   Use for measurement of the buffer tank temperature.
   Insert the sensor into the sensor pocket and paste it on the buffer tank surface.



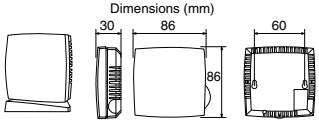
2. Zone water sensor: PAW-A2W- TSHC
   Use to detect the water temperature of the control zone.
   Mount it on the water piping by using the stainless steel metal strap and contact paste (both are included).



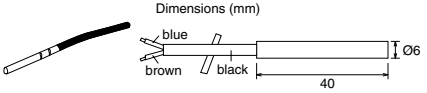
3. Outdoor sensor: PAW-A2W-TSOD
   If the installation location of the outdoor unit is exposed to direct sunlight, the outdoor air temperature sensor will be unable to measure the actual outdoor ambient temperature correctly.
   In this case, optional outdoor temperature sensor can be fixed at a suitable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

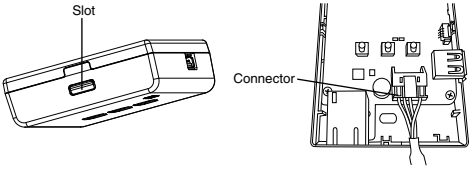
- For optional mixing valve.
  Power supply: AC230V/50Hz (input open/output close)
  Operating time: 30s~120s
  Recommended part: 167032: made by Caleffi

⚠ WARNING

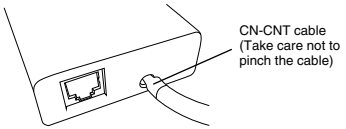
This section is for authorized and licensed electrician/water system installer only. Work behind the front plate secured by screws must only be carried out under supervision of qualified contractor, installation engineer or service person.

Network Adaptor [4] Installation

1. **Remove the Control Board Cover ⑤, then connect the cable included with this adaptor to the CN-CNT connector on the printed circuit board.**
   - Pull the cable out of the Tank Unit so that there is no pinching.
   - If an Optional PCB has been installed in the Tank Unit, connect to the CN-CNT connector of the 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.**

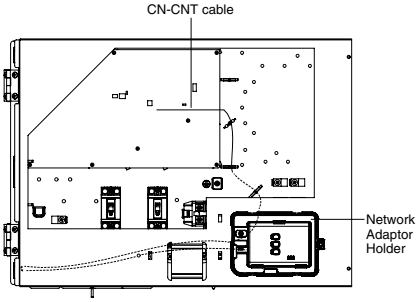


3. **Pull the CN-CNT cable through the hole in the bottom of the adaptor and re-attach the front cover to the back cover.**

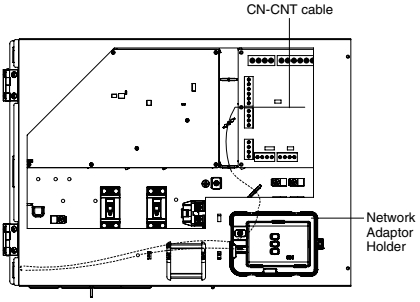


4. **Fix the Network Adaptor [4] to Network Adaptor Holder.**
   Guide the cable as shown in the diagram so that external forces cannot act on the connector in the adaptor.

Connection examples:



Without Optional PCB

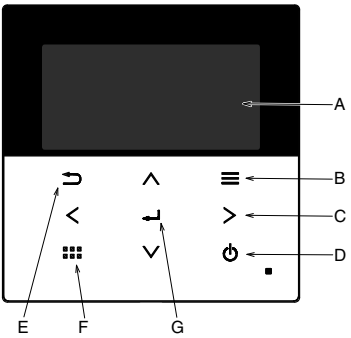


With Optional PCB

3 System installation

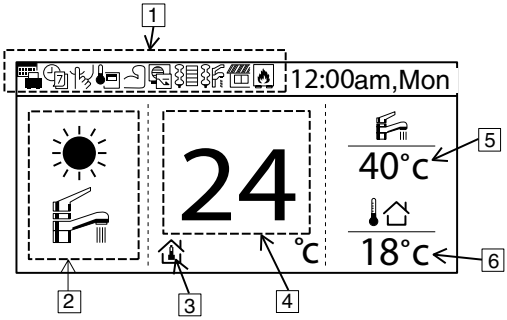
3-1. Remote Controller Outline

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



	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

LCD Display
(Actual - Dark background with white icons)



	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

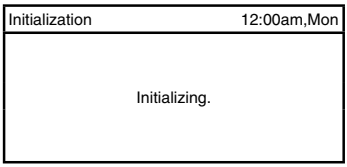
Heating
Cooling
Auto
Hot water supply
Auto heating
Auto cooling
Heat pump operating

3:	Temp setting	Set room temp

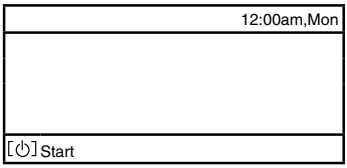
Compensation curve
Set direct water temp
Set pool temp

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

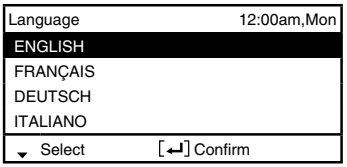
First time of power ON (Start of installation)



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



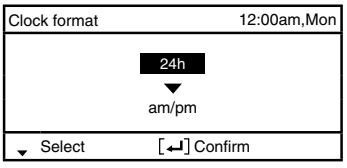
When initialization screen ends, it turns to normal screen.



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

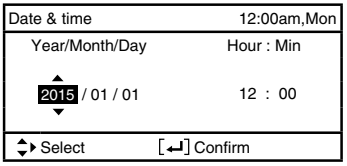
When there are two remote controllers installed from the beginning, the first remote controller to set and confirm language will be recognised as main remote controller.

Set language & confirm



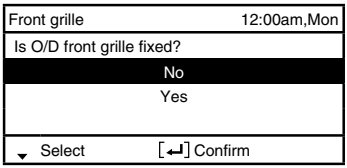
When language is set, setting screen of time display appears (24h/am/pm)

Set time display & confirm

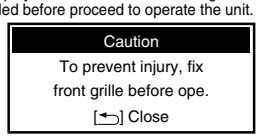


YY/MM/DD/Time setup screen appears

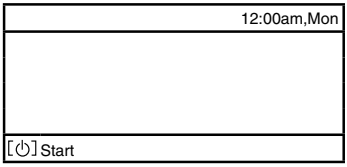
Set YY/MM/DD/Time & confirm



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

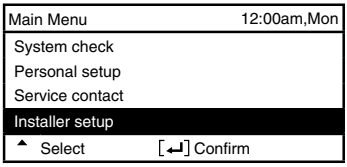


Set Yes & confirm if outdoor front grille has been installed



Back to initial screen

Press menu, select Installer setup



Confirm to go into Installer setup

3-2. Installer Setup

System setup

1 Optional PCB connectivity → Yes/No

2 Zone & Sensor → ❊ Only when the selection for Optional PCB is Yes
1 Zone system / 2 Zone system → Zone settings

3 Heater capacity → Capacity select

4 Anti freezing → Yes/No

5 DHW Capacity → Variable/Standard

6 Buffer Tank connection → Yes/No → ΔT setup

7 Base pan heater → Yes/No → A / B

8 Alternative outdoor sensor → Yes/No

9 Bivalent connection → Yes/No → Bivalent setup

10 External SW → Yes/No

11 Solar connection ❊ Only when the selection for Optional PCB is Yes
→ Yes/No → Tank setup → Solar setup

12 External Error signal ❊ Only when the selection for Optional PCB is Yes
→ Yes/No

13 Demand control ❊ Only when the selection for Optional PCB is Yes
→ Yes/No

14 SG ready ❊ Only when the selection for Optional PCB is Yes
→ Yes/No → Capacity setup

15 External Compressor SW ❊ Only when the selection for Optional PCB is Yes
→ Yes/No

16 Circulation liquid → Water/glycol

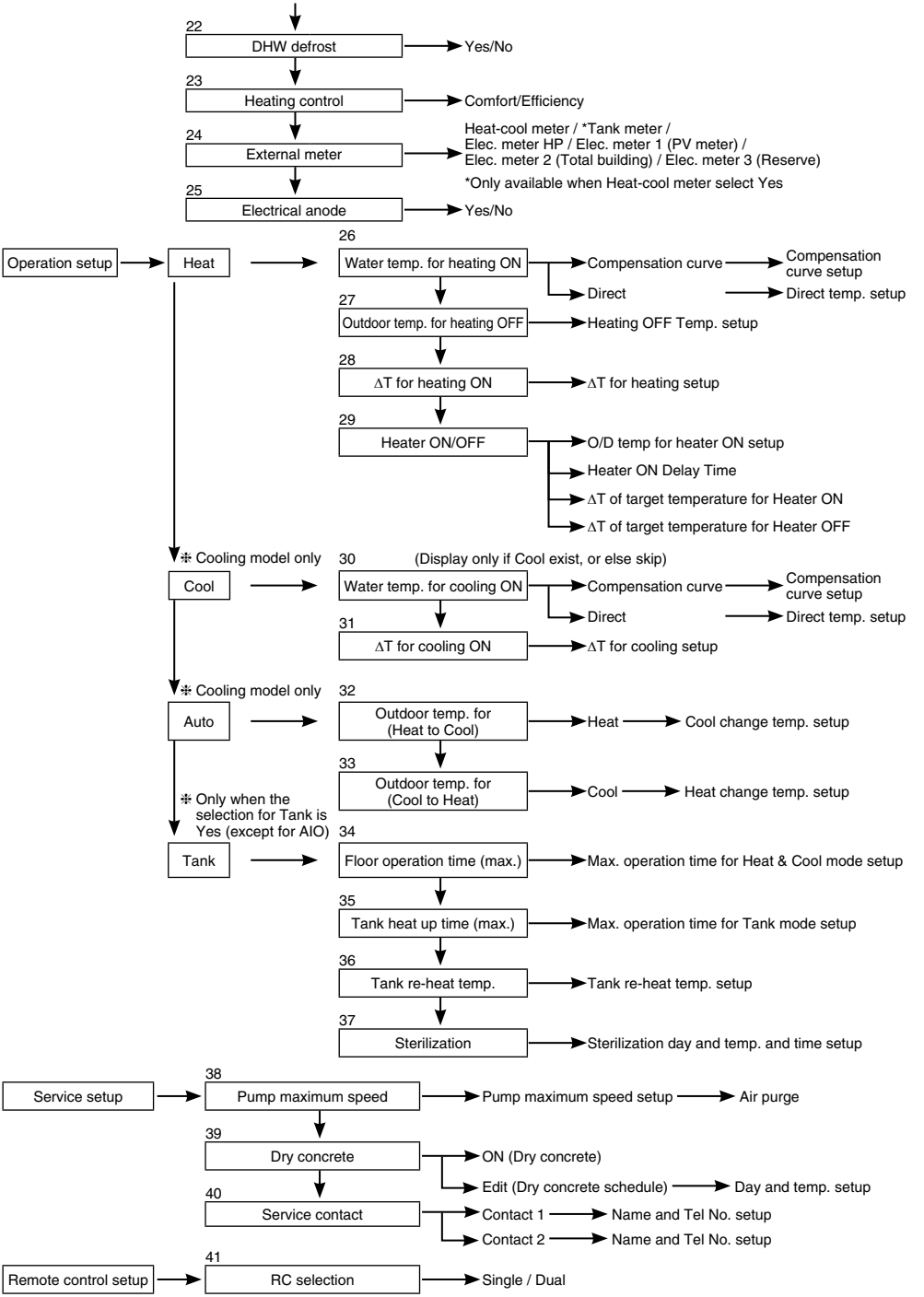
17 Heat-Cool SW ❊ Only when the selection for Optional PCB is Yes
→ Yes/No

18 Force Heater → Auto/Manual

19 Force Defrost → Auto/Manual

20 Defrost Signal → Yes/No

21 Pump flowrate → ΔT/ Max. Duty

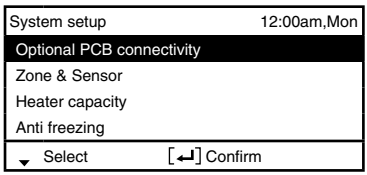

22
DHW defrost
Yes/No
23
Heating control
Comfort/Efficiency
24
External meter
Heat-cool meter / *Tank meter /
Elec. meter HP / Elec. meter 1 (PV meter) /
Elec. meter 2 (Total building) / Elec. meter 3 (Reserve)
*Only available when Heat-cool meter select Yes
25
Electrical anode
Yes/No
Operation setup
Heat
26
Water temp. for heating ON
Compensation curve
Compensation curve setup
Direct
Direct temp. setup
27
Outdoor temp. for heating OFF
Heating OFF Temp. setup
28
ΔT for heating ON
ΔT for heating setup
29
Heater ON/OFF
O/D temp for heater ON setup
Heater ON Delay Time
ΔT of target temperature for Heater ON
ΔT of target temperature for Heater OFF
❊ Cooling model only
Cool
30
(Display only if Cool exist, or else skip)
Water temp. for cooling ON
Compensation curve
Compensation curve setup
Direct
Direct temp. setup
31
ΔT for cooling ON
ΔT for cooling setup
❊ Cooling model only
Auto
32
Outdoor temp. for (Heat to Cool)
Heat
Cool change temp. setup
33
Outdoor temp. for (Cool to Heat)
Cool
Heat change temp. setup
❊ Only when the selection for Tank is Yes (except for AIO)
Tank
34
Floor operation time (max.)
Max. operation time for Heat & Cool mode setup
35
Tank heat up time (max.)
Max. operation time for Tank mode setup
36
Tank re-heat temp.
Tank re-heat temp. setup
37
Sterilization
Sterilization day and temp. and time setup
Service setup
38
Pump maximum speed
Pump maximum speed setup
Air purge
39
Dry concrete
ON (Dry concrete)
Edit (Dry concrete schedule)
Day and temp. setup
40
Service contact
Contact 1
Name and Tel No. setup
Contact 2
Name and Tel No. setup
Remote control setup
41
RC selection
Single / Dual

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.

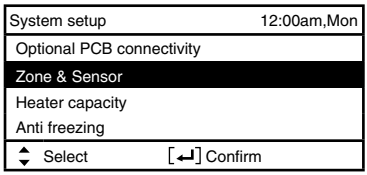
- 2-zone control
- Pool
- Solar
- External error signal output
- Demand control
- SG ready
- Stop heat source unit by external SW



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

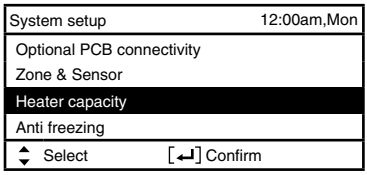
When there is Optional PCB connectivity
① Select either 1 zone control or 2 zone control.
If it is 1 zone, select either room or pool, select sensor
If it is 2 zone, after select sensor of zone 1, select either room or pool for zone 2, select sensor
(NOTE) In 2 zone system, pool function can be set at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



3. Heater capacity | Initial setting: Depend on model

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

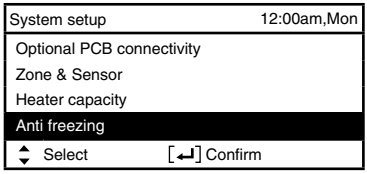
(NOTE) There are models which cannot select Heater capacity.



4. Anti freezing | Initial setting: Yes

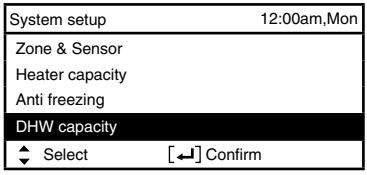
Operate anti-freezing of water circulation circuit.
If select Yes, when the water temperature is reaching its freezing temperature, the circulation pump will start up. If the water temperature does not reach the pump stop temperature, back-up heater will be activated.

(NOTE) 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. DHW Capacity | Initial setting: Variable

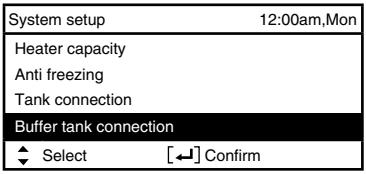
Variable DHW capacity setting normally run with efficient boiling which is energy saving heating. But while hot water usage high and tank water temperature low, variable DHW mode will run with fast heat up which heat up the tank with high heating capacity.
If standard DHW capacity setting is selected,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



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).
If the buffer tank capacity is not so large, please set larger value for ΔT.

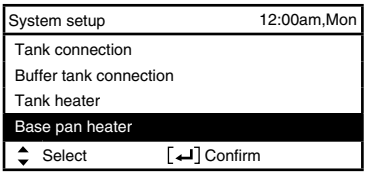


7. Base pan heater

Initial setting: No

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

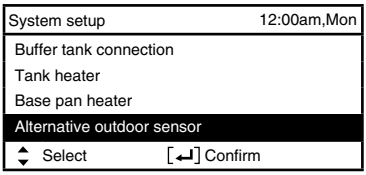
A: Turn on Heater when heating with defrost operation only
B: Turn on Heater at heating



8. Alternative outdoor sensor

Initial setting: No

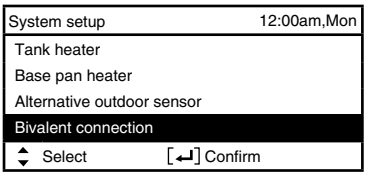
Set Yes if outdoor sensor is installed.
Controlled by optional outdoor sensor without reading the outdoor sensor of heat pump unit.



9. Bivalent connection

Initial setting: No

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.



After Bivalent connection Set YES, there is two option of control pattern to be select, (SG Ready / Auto)
1) SG ready (Only available to set when optional PCB set to YES)
- SG Ready input from optional PCB terminal control ON/OFF of boiler and heat pump as below condition

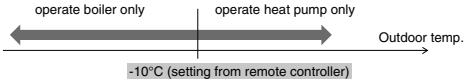
SG signal		Operation pattern
Vcc-bit1	Vcc-bit2	
Open	Open	Heat pump OFF, Boiler OFF
Short	Open	Heat pump ON, Boiler OFF
Open	Short	Heat pump OFF, Boiler ON
Short	Short	Heat pump ON, Boiler ON

* This bivalent SG ready input is sharing same terminal as [14. SG ready] connection. Only one of these two setting can be set at the same time.
When one is set, another setting will reset to not set.

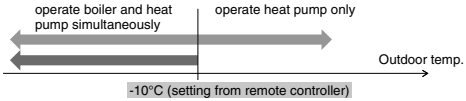
2) Auto
There are 3 different modes in the boiler auto pattern operation. Movement of each modes are shown below.
② Alternative (switch to boiler operation when drops below setting temperature)
③ Parallel (allow boiler operation when drops below setting temperature)
④ Advanced Parallel (able to slightly 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

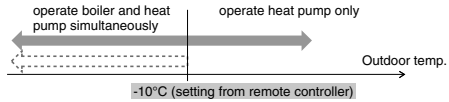


Parallel mode



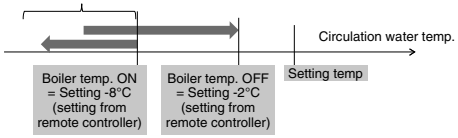
Advanced Parallel mode

For heating

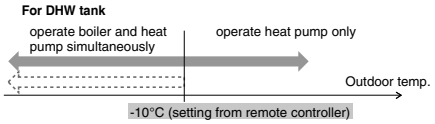


Although heat pump operates but water temperature does not reach this temperature for more than 30 mins (setting from remote controller)

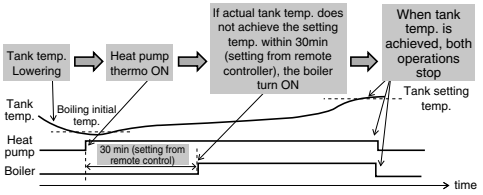
AND



For DHW tank



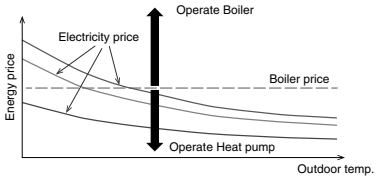
AND



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.

3) Smart

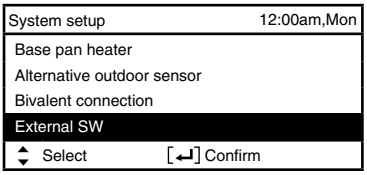
There are Energy price (both electricity and boiler) and Schedule to be set on remote controller.
Operation setting of Energy price and Schedule shall be responsible by installer.
Based on these settings, system will calculate the final price for both electricity and boiler.
When final price of Electricity is lower than Boiler's, heat pump will operate.
When final price of Electricity is higher than Boiler's, boiler will operate.



10. External SW

Initial setting: No

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



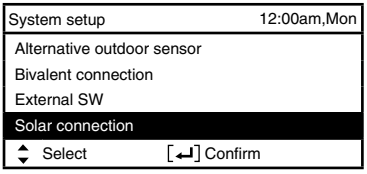
11. Solar connection

Initial setting: No

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))

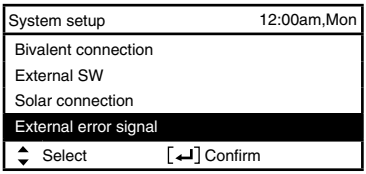


12. External Error Signal

Initial setting: No

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

(NOTE) 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.

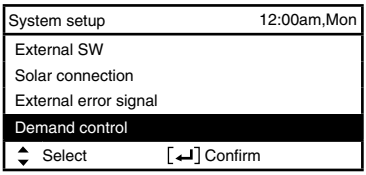


13. Demand control

Initial setting: No

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

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



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

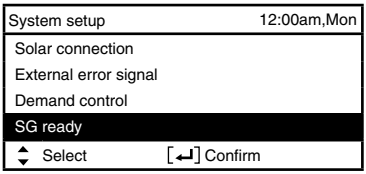
Analog input [v]	Rate [%]	
3.9 ~ 4.1	40	
4.2	45	40
4.3		
4.4 ~ 4.6	45	
4.7	50	45
4.8		
4.9 ~ 5.1	50	
5.2	55	50
5.3		
5.4 ~ 5.6	55	
5.7	60	55
5.8		
5.9 ~ 6.1	60	
6.2	65	60
6.3		
6.4 ~ 6.6	65	
6.7	70	65
6.8		
6.9 ~ 7.1	70	
7.2	75	70
7.3		

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

14. 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
- DHW capacity ___%
- Heating capacity ___%
- Cooling capacity ___°C

Capacity setting 2
- DHW capacity ___%
- Heating capacity ___%
- Cooling capacity ___°C

} Set by SG ready setting of remote controller

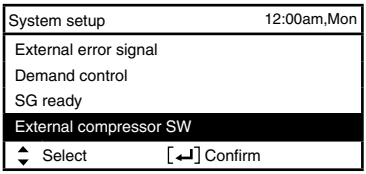
(When SG ready set to YES, Bivalent control pattern will set to Auto.)
(NOTE) Does not display if there is no Optional PCB.

15. External Compressor SW | Initial setting: No

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

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

If follow Swiss standard power connection, need to turn on DIP SW (SW2 pin3) of main unit PCB. Short/Open signal used to ON/OFF tank heater (for sterilization purpose)

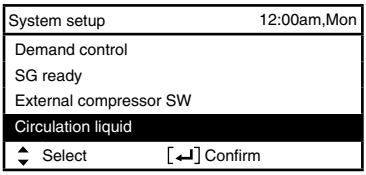


16. Circulation Liquid | Initial setting: Water

Set circulation of heating water.

There are 2 types of settings, water and glycol.

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

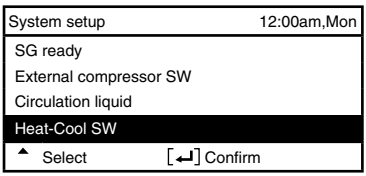


17. Heat-Cool SW | Initial setting: Disable

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

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

Timer function cannot be used. Cannot use Auto mode.

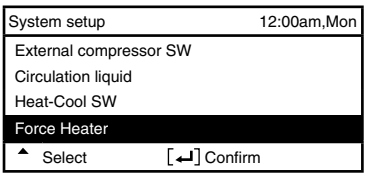


18. Force Heater | Initial setting: Manual

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.

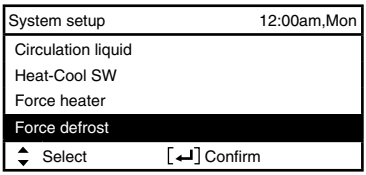
Heater source will ON during force heater mode.



19. Force Defrost | Initial setting: Manual

Under manual code, user can turn on force defrost through quick menu.

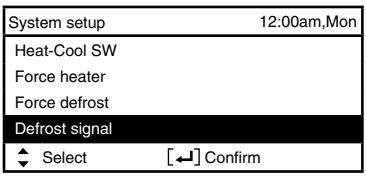
If selection is 'auto', outdoor unit will run defrost operation once if heat pump have long hour of heating without any defrost operation before at low ambient condition. (Even auto is selected, user still can turn on force defrost through quick menu)



20. Defrost signal | Initial setting: No

Defrost signal sharing same terminal as bivalent contact in main board. When defrost signal set to YES, bivalent connection reset to NO. Only one function can be set between defrost signal and bivalent.

When defrost signal set to YES, during defrost operation is running at outdoor unit defrost signal contact turn ON. Defrost signal contact turn OFF after defrost operation end.
(Purpose of this contact output is to stop indoor fan coil or water pump during defrost operation).

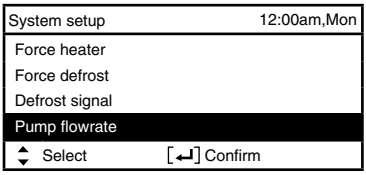


21. Pump flowrate

Initial setting: ΔT

If pump flowrate setting is ΔT, unit adjust pump duty to get different of water inlet and outlet base on setting on * ΔT for heating ON and * ΔT for cooling ON in operation setup menu during room side operation.

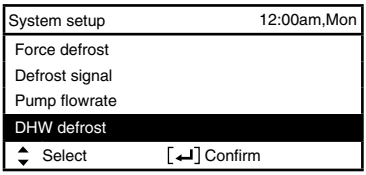
If pump flowrate setting is set to Max. duty, unit will set the pump duty to the set duty at *Pump maximum speed in service setup menu during room side operation.



22. DHW defrost

Initial setting: Yes

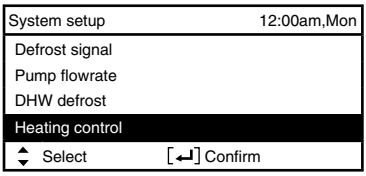
When DHW defrost set to YES, hot water of domestic hot water tank will be used during defrost cycle.
When DHW defrost set to NO, hot water of floor heating circuit will be used during defrost cycle.



23. Heating control

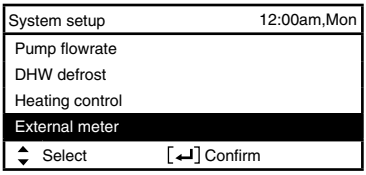
Initial setting : Comfort

There are two modes to select for compressor frequency control : Comfort or Efficiency.
When set to Comfort mode, compressor will run at zone limit maximum frequency to reach set temperature faster.
When set to Efficiency mode, compressor will run at part load frequency at initial stage for energy saving.



24. External meter

Initial setting : [Heat-cool meter : No]
[Tank meter : No] *only available when Heat-cool meter select Yes
[Elec. meter HP : No]
[Elec. meter 1 (PV meter) : No]
[Elec. meter 2 (Total building) : No]
[Elec. meter 3 (Reserve) : No]



There are two systems for generation meter connection : one generation meter system (Heat-cool meter) or two generation meter system (Heat-cool meter and Tank meter)
Both systems can provide all generation data of heating, cooling and DHW directly from external meter.

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

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

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

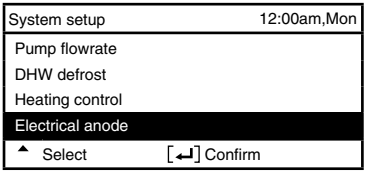
*1 Set Heat-cool meter to Yes and set Tank meter to No when 1 generation meter system is installed.
Set Heat-cool meter to Yes and set Tank meter to Yes when 2 generation meter system is installed.

Remark : Elec. meter HP refers to Electricity meter that measures Heat Pump unit's consumption.
Elec. meter 1 / 2 / 3 refers to Electricity meter no. 1 / no. 2 / no. 3

25. Electrical anode

For WH-ADC0509L3E5AN, WH-ADC0509L6E5AN model, initial setting : Yes
For other models, initial setting : No

When Electrical anode set to YES, anode will be turned on.
When Electrical anode set to NO, anode will not be turned on.



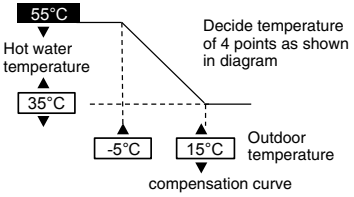
3-4. Operation Setup

Heat

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

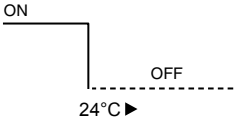
Set target water temperature to operate heating operation.
Compensation curve: Target water temperature change in conjunction with outdoor ambient temperature change.
Direct: Set direct circulation water temperature.

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



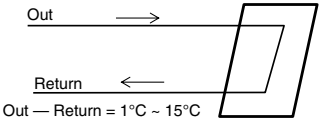
27. Outdoor temp. for heating OFF | Initial setting: 24°C

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



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

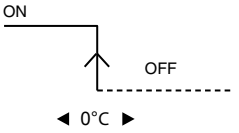
Set temp difference between out temp & return temp of circulating water of Heating operation.
When temp gap is enlarged, it is energy saving but less comfort. When the gap gets smaller, energy saving effect gets worse but it is more comfortable.
Setting range is 1°C ~ 15°C



29. Heater ON/OFF

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

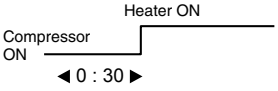
Set outdoor temp when back-up heater starts to operate.
Setting range is -20°C ~ 15°C



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

b. Heater ON delay time | Initial setting: 30 minutes

Set delay time from compressor ON for heater to turn ON if not achieve water set temperature.
Setting range is 10 minutes ~ 60 minutes

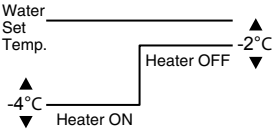


c. Heater ON: ΔT of target Temp | Initial setting: -4°C

Set water temperature for heater to turn on at heat mode.
Setting range is -10°C ~ -2°C

d. Heater OFF: ΔT of target Temp | Initial setting: -2°C

Set water temperature for heater to turn off at heat mode.
Setting range is -3°C ~ 0°C

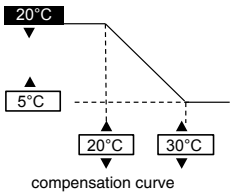


Cool

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

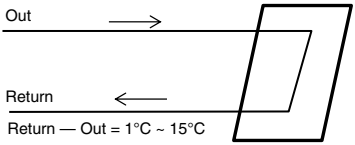
Set target water temperature to operate cooling operation.
Compensation curve: Target water temperature change in conjunction with outdoor ambient temperature change.
Direct: Set direct circulation water temperature.

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



31. 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

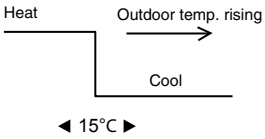


Auto

32. Outdoor temp. for (Heat to Cool) | Initial setting: 15°C

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

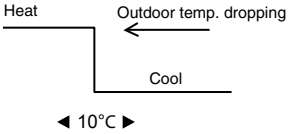
Timing of judgement is every 1 hour



33. Outdoor temp. for (Cool to Heat) | Initial setting: 10°C

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

Timing of judgement is every 1 hour

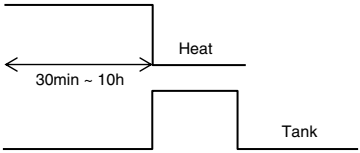


Tank

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

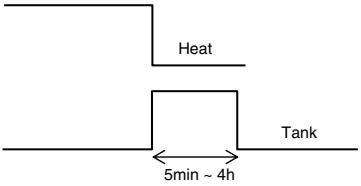
Set max operating hours of heating.
When max operation time is shortened, it can boil the tank more frequently.

It is a function for Heating + Tank operation.



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

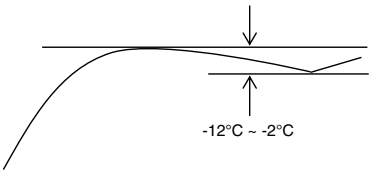
Set max boiling hours of tank.
When max boiling hours are shortened, it immediately returns to Heating operation, but it may not fully boil the tank.



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

Set temp to perform reboil of tank water.

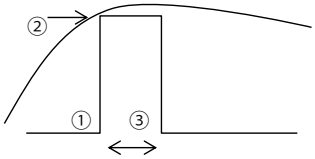
Setting range is -12°C ~ -2°C



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

Set timer to perform sterilization.
① Set operating day & time. (Weekly timer format)
② Sterilization temp (55~65°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.

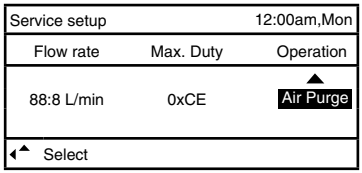


3-5. Service Setup

38. 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.

When *Pump flow setting is Max. Duty, this duty set is the fix pump duty run during room side operation.

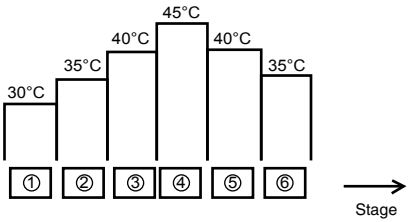


39. Dry concrete

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

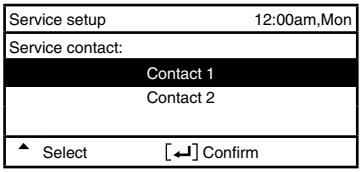
When it is turned ON, dry concrete starts.

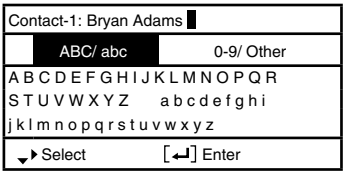
When it is 2 zone, it dries both zones.



40. Service contact

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

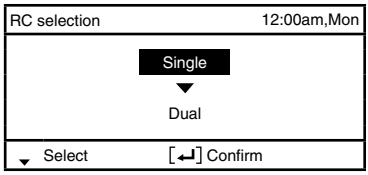




3-6. Remote control setup

41. RC selection | Initial setting : Single

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



4 Service and maintenance

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.
(NOTE) Only display when it is locked by password.

Maintenance menu

Setting method of Maintenance menu

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

Press ⮌ + ↵ + ▶ for 5 sec.

Items that can be set

① Actuator check (Manual ON/OFF all functional parts)
(NOTE) As there is no protection action, please be careful not to cause any error when operating each part (do not turn on pump when there is no water etc.)

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

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

④ Reset password (Reset password)

Custom menu

Setting method of Custom menu

Custom menu	12:00am,Mon
Cool mode	
Back-up heater	
Reset energy monitor	
Reset operation history	
Smart DHW	
▼ Select	[↵] Confirm

Please press ☰ + ▼ + ◀ for 5 sec.

Items that can be set

① Cool mode (Set With/Without Cooling function) Default is without
(NOTE) As with/without Cool mode may affect electricity application, please be careful and do not simply change it. In Cool mode, please be careful if piping is not insulated properly, dew may form on pipe and water may drip on the floor and damage the floor.

② Backup heater (Use/Do not use Backup heater)
(NOTE) 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.

④ Reset operation history (delete memory of operation history)
Please use when moving house and handover the unit.

⑤ Smart DHW (Set Smart DHW mode Parameter)
a) Start time: Tank reboil at lower ON Temp. onward.
b) Stop time: Tank reboil at normal ON Temp. onward.
c) ON Temp.: Tank Reboil Temp when Smart DHW start.

Check Water Pressure from Remote Controller

1. Press ☰ SW and scroll to "System check".
2. Press ↵ and scroll to "System information".
3. Press ↵ and search for "Water pressure".