Installation manual of the remote control for heat pump water heater

1. Safety precautions

- Please read this manual carefully before the installation work to install the unit properly.
- Every one of the following instructions is important to be observed strictly.
- Failure to follow these instructions may result in serious consequences such as death, severe injury, etc.
- If the pictograms used in the text have following meanings.
- The pictograms used in the text have following meanings.
- Keep this manual at a safe place where you can consult with whenever necessary.
- When the ownership of this unit is transferred, this "Installation Manual" should be given to a new owner.

**WARNING**
- The appliance shall be installed in accordance with national wiring regulations.
- Improper installation work may result in electric shocks, fire or break-down.
- Shut off the main power before starting electrical work. Otherwise, it could result in electric shocks, break-down or malfunction.
- Do not install the unit in inappropriate environment or where inflammable gas could generate, flow in, accumulate or leak.
- If the unit is used at places where air contains dense oil mist, steam, organic solvent vapor, corrosive gas (ammonium, sulfuric compound, acid, etc) or where acidic or alkaline solution, special spray, etc are used, it could cause electric shocks, break-down, smoke or fire as a result of significant deterioration of its performance or corrosion.
- Do not install the unit where water vapor is generated excessively or condensation occurs.
- It could cause electric shocks, fire or break-down.
- Use the specified cables for wiring, and connect them securely with care to protect electronic parts from external force
- Improper connections or fixing could cause heat generation, fire, etc.
- Seal the inlet hole for remote control cable with putty.
- If moisture, water, insect, etc. enters through the hole, it could cause electric shocks, fire or break-down.
- When installing the unit at a hospital, telecommunication facility, etc., take measures to suppress noises.
- It could cause malfunction or break-down due to hazardous effects on the inverter, in-house power generator, high frequency medical equipment, etc.
- The influences transmitted from the remote control to medical or communication equipment could disrupt medical activities, video broadcasting or cause noise interference.

**CAUTION**
- Do not install the remote control at following places.
- It could cause break-down or deformation of remote control.
  1. Where it is exposed to direct sunlight
  2. Near the equipment to generate heat
  3. Where the surface is not flat.
- Do not leave the remote control with its upper case removed.
- When the upper case is removed, put it in a packing box or packing bag to protect PCBs or other parts inside of it from dust, moisture, etc.
- The appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children shall be supervised not to play with appliance.

2. Accessories & parts prepared at site

<table>
<thead>
<tr>
<th>Item name</th>
<th>Qty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch box</td>
<td>1pc</td>
<td></td>
</tr>
<tr>
<td>Thin steel conduit tube (JIS C8330)</td>
<td>As required</td>
<td>There are not necessary when installing R/C directly on a wall</td>
</tr>
<tr>
<td>Lock nut, bushing (JIS C8336)</td>
<td>As required</td>
<td>Necessary to run R/C cable on the wall</td>
</tr>
<tr>
<td>Cable cover</td>
<td>As required</td>
<td>Be sure to ground both ends. See right table when longer than 100m</td>
</tr>
<tr>
<td>Putty</td>
<td>Suitable</td>
<td></td>
</tr>
<tr>
<td>Molly anchor</td>
<td>As required</td>
<td></td>
</tr>
<tr>
<td>R/C cable (0.3mm² x 2-core) shielding wire (MVVS)</td>
<td>As required</td>
<td></td>
</tr>
</tbody>
</table>

3. Installation place

- Installing method: With using a switch box
- Installing directly on a wall
- Wiring direction: [Backward]
- [Upper center] or [Upper left]
- Cautions for selecting installation place
  1. Installation surface must be flat and sufficiently strong.
  2. R/C case must not be deformed.

Request
- Do not install the R/C at a place where it is exposed to direct sunlight or surrounding air temp exceeds 40°C or drop below 0°C.
- It could cause discoloration, deformation, malfunction or break-down.
4. Installation and wiring work

Dimensions (View from front side)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixing hole 1</td>
<td>37 x 23 x 23</td>
</tr>
<tr>
<td>Fixing hole 2</td>
<td>19</td>
</tr>
<tr>
<td>PCB side (View from rear side)</td>
<td></td>
</tr>
<tr>
<td>Sensor</td>
<td>Terminal</td>
</tr>
</tbody>
</table>

1. To remove the upper case from the bottom case of R/C:
   - Insert the tip of a flat head screwdriver or the like in the recess at the lower part of R/C and twist it lightly to remove.
   - Take care to protect the removed upper case from moisture or dust.

2. Connect the wires from X and Y terminals of R/C to X and Y terminals of heat pump unit.
   - There is no polarity of R/C wiring (X and Y).

3. Embed the switch box and the R/C wires beforehand.
   - Seal the inlet hole for the R/C wiring with putty.

4. When wires are passed through the bottom case, fix the bottom case on the switch box at 2 places.
   - Switch box for 1
   - Switch box for 2

5. When fixing the bottom case diagonally at 2 places, cut out the thin wall part of the case.

6. Fix wires such that they will run around the terminal screws on the upper case of R/C.

7. Install the upper case with care not to pinch wires of R/C.

8. In case of embedding wiring (When the wiring is retrieved backward):
   - Cut out the thin wall part of the cases for the hole size to fit to the wire size.

   - Fix wires such that the wires will run around the terminal screws of the upper case of R/C.

   - Install the upper case with care not to pinch wires of R/C.

9. When fixing the bottom case diagonally at 2 places, cut out the thin wall part of the case.

10. Fix wires such that they will run around the terminal screws on the upper case of R/C.

11. Install the upper case with care not to pinch wires of R/C.

12. When taking the wiring out from the upper center, open a hole before separating the upper and bottom cases. This will reduce risk of damaging the PCB and facilitate subsequent work.

13. When taking the wiring out from the upper left, take care not to damage the PCB and not to leave any chips inside.

14. If the hole is cut too large, moisture, dust or insects may enter.
   - Seal gaps with putty or the like.

15. Fix the bottom case on a flat surface with wood screws.

16. In case of the upper center, pass the wiring behind the bottom case (hatched section).

17. Fix wires such that the wires will run around the terminal screws of the upper case of R/C.

18. Install the upper case with care not to pinch wires of R/C.

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5. Main/Sub setting when more than one remote controls are used.

Up to two units of R/C can be used at the maximum for one heat pump unit or one group.
Operation range is different depending on the main or sub R/C.

<table>
<thead>
<tr>
<th>R/C function</th>
<th>Main</th>
<th>Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run/Pause</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting of hot water temp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting of hot water amount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usage of hot water amount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schedule setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation to fill up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test run</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error history display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R/C function setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Set the "Main" and "Sub" with same procedure as shown in Section 6.

Note: Initializing of password

Administrator password (for daily setting items) and service password (for installation, test run and maintenance) are used.

- Default setting of Administrator password is "0000". This setting can be changed (Refer to the Instruction Manual).
  - If the administrator password is forgotten, it can be initialized by pressing [Schedule setting] switch and [Operation to fill up] switch on the administrator password input screen simultaneously for 5 seconds.
- Service password is "9999", which cannot be changed. When inputting the administrator password, the service password is also acceptable.

Note: Test run

When starting operation of the heat pump unit for the first time, [Water pump test run] and [Primary setting of operation] shall be done in advance.
Regarding the way for test run, please refer to the item [7. installation setting and test run] in this manual.

6. Power supply and initial setting

Set the main and sub R/C according to the display at the power on

1. If the main and sub are not set yet, [Select Main/sub set input] screen is displayed. (Screen 3)
   When tapping the [Main] or [Sub] button, the initial setting starts.

   Caution
   If only one set of R/C is used, tap [Main] button. In the state of initial setting, it will keep on waiting till either one of the buttons is selected.
   If two sets of R/Cs are used, when either one of them is tapped, the setting starts.

2. If the main and sub have been set already, [Set continue acknowledge] screen is displayed. (Screen 3)

3. When using 2 sets of R/C, if the first one is set for the main, the other is set for the sub automatically.
7. Installation settings and Test run

When operating the unit initially, [Water pump test run] and [Primary setting of operation] is required.

1. Prepare for the test run according to instruction described on the installation manual of the heat pump unit.
2. Tap the [Start] button on the [Water pump test run] screen of item 7 [Installation settings and Test run].
3. The actual hot water temperature during primary operation is different from the displayed hot water temperature on the TOP screen, because the heat pump unit is operated by changing the hot water temperature during primary operation.
4. After the end of [Water pump test run], please stop the water pump. When pushing the [Run/Pause] switch, the [Water pump test run] is stopped.
5. Tap the [Start] button on the [Primary setting of operation] screen of item 7 [Installation settings and Test run].
6. Return to the TOP screen. When the [Primary setting of operation] starts, the message of “In primary operation” is displayed. (Screen 5)
7. After the end of [Primary setting of operation], please clean up strainers in the water circuit. After finishing the cleaning of strainers, please check no leakage in the system and purge air again.

Caution
• Because of the risk for the heat pump unit to have failure, after the completion of the [Water pump test run] and [Primary setting of operation], please start operation to top up.
• After the completion of the [Primary setting of operation], it does not start operation to top up, because the heat pump unit is pausing.
• Despite pausing, the water pump and compressor may start operation for preventing water in the water pipe from freezing.
8. User environment (Simplified setting for operation pattern)

This heat pump unit is operated to top up hot water according to the target hot water amount set at each time zone. By selecting the operation pattern for the typical business type which is similar to your actual usage pattern of hot water, you can set the operation pattern easily.

Setting method

(1) [TOP screen] ⇒ [Menu] ⇒ [Administrator password (Service password "9999") ⇒ [Admin settings] ⇒ [User environment]

And then select the business model, and tap YES on the [User Environment acknowledge] screen.

Factory default: "0000"
Service password "9999" is also acceptable.

(2) To edit the operation pattern set by [User environment], please edit it by following procedure. Push the Schedule setting switch on the panel ⇒ [Setting of weekly operation pattern]

Target water level for the business model

<table>
<thead>
<tr>
<th>Time</th>
<th>Default</th>
<th>Care home/ hospital</th>
<th>Canteen/ cafeteria</th>
<th>Restaurant</th>
<th>Hotel</th>
<th>Business hotel</th>
<th>Sports Club/ gym</th>
</tr>
</thead>
<tbody>
<tr>
<td>22:00</td>
<td>100%</td>
<td>60%</td>
<td>60%</td>
<td>60%</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>0:00</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>4:00</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>8:00</td>
<td>100%</td>
<td>50%</td>
<td>80%</td>
<td>50%</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>10:00</td>
<td>30%</td>
<td>50%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>13:00</td>
<td>30%</td>
<td>30%</td>
<td>40%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>16:00</td>
<td>30%</td>
<td>30%</td>
<td>20%</td>
<td>40%</td>
<td>50%</td>
<td>40%</td>
<td>40%</td>
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<tr>
<td>19:00</td>
<td>30%</td>
<td>30%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

By selecting the business type whose operation pattern is similar to yours, the operation pattern can be set easily.

9. R/C function settings

[TOP screen] ⇒ [Menu] ⇒ [R/C function settings]

The service password is "9999" (Unable to change)

When several heat pump unit is connected, with this function, the range to apply the external input can be set.

[Valid]: It returns to the state before power failure, soon after power recovery.
[Individual]: This is applied only to the HP Unit received the input signal
[All units]: This is applied to all HP Units connected in the system.

Factory default: [Valid]

Information

What is the Auto-restart? This is the function to restart the unit automatically under the same operating state as that before power failure, when power is recovered. If the setting of [Auto-restart] is [Valid], even though the power failure occurs, the unit can restart automatically after power recovery.

Factory default: [Valid]

Information

Regarding the following settings for daily use, please refer to the user's manual.

• Initial settings
  Clock setting, Date and Time display, Contrast, Backlight and Controller sound.
• Schedule setting
  Setting of weekly operation pattern, Setting of day off, Setting of peak-cut and Changing of operation pattern.
• Administrator settings
  Enable/Disable setting, Step size of HW temp, R/C display setting, Night tariff setting, HW unit selection, User environment and Change administrator password.
10. Service & Maintenance

When tapping Yes, all HP Units connected are stopped. With this, anti-freezing operation cannot work. If leaving the hot water supply system for long period, be sure to drain off.

When tapping Yes, the following data is transferred to the heat pump unit selected
• Hot water set temp
• Cumulative operation hours of compressor
• Cumulative operation hours of water pump
• HP 7seg P01, P78, P79 data
• CW FV1 compensation value
• Upper limit of HW temp

When several heat pump units are connected, the time to save automatically can be set. If several heat pump units are connected, the unit to be sent the saved data can be selected.

When tapping Yes, the setting of the heat pump unit connected is saved. After setting the time and tapping Set, the time to save automatically can be set.

Move to the screen of a selected menu.

Date and time of error occurrence, HP unit address and Error code are displayed.

When tapping Yes, history is deleted.

The service password is "9999" (Unable to change)

The remote controller can save the cumulative operation hours of the components for water and refrigerant circuit memorized in the heat pump unit as backup. If the PCB of the heat pump unit has malfunction, the data saved in R/C can be written in the new PCB of the heat pump unit with the [Transfer the saved data] function.