

Air to Water Heat Pump

PUHZ-W·HA series

PUHZ-HW·HA series

INSTALLATION MANUAL

FOR INSTALLER

For safe and correct use, read this manual as well as the indoor unit installation manual thoroughly before installing the unit. English is original. The other languages versions are translation of the original.

INSTALLATIONSHANDBUCH

FÜR INSTALLATEURE

Aus Sicherheitsgründen und zur richtigen Verwendung vor der Installation die vorliegende Bedienungsanleitung und die Installationsanleitung der Innenanlage gründlich durchlesen die Klimaanlage. Das Original ist in Englisch. Die anderen Sprachversionen sind vom Original übersetzt.

MANUEL D'INSTALLATION

POUR L'INSTALLATEUR

Avant d'installer le climatiseur, lire attentivement ce manuel, ainsi que le manuel d'installation de l'appareil intérieur pour une utilisation sûre et correcte. L'anglais est l'original. Les versions fournies dans d'autres langues sont des traductions de l'original.

INSTALLATIEHANDLEIDING

VOOR DE INSTALLATEUR

Lees deze handleiding en de installatiehandleiding van het binnenapparaat zorgvuldig door voordat u met het installeren van de airconditioner begint. Het Engels is het origineel. De andere taalversies zijn vertalingen van het origineel.

MANUAL DE INSTALACIÓN

PARA EL INSTALADOR

Para un uso correcto y seguro, lea detalladamente este manual y el manual de instalación de la unidad interior antes de instalar la unidad de aire acondicionado. El idioma original del documento es el inglés. Las versiones en los demás idiomas son traducciones del original.

MANUALE DI INSTALLAZIONE

PER L'INSTALLATORE

Per un uso sicuro e corretto, leggere attentamente il presente manuale ed il manuale d'installazione dell'unità interna prima di installare il condizionatore d'aria. Il testo originale è redatto in lingua Inglese. Le altre versioni linguistiche rappresentano traduzioni dell'originale.

ΕΓΧΕΙΡΙΔΙΟ ΟΔΗΓΙΩΝ ΕΓΚΑΤΑΣΤΑΣΗΣ

ΓΙΑ ΑΥΤΟΝ ΠΟΥ ΚΑΝΕΙ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ

Για σωστή και ασφαλή χρήση, διαβάστε προσεκτικά αυτό το εγχειρίδιο καθώς και το εγχειρίδιο εγκατάστασης της εσωτερικής μονάδας, προτού εγκαταστήσετε τη μονάδα του κλιματιστικού. Η γλώσσα του πρωτοτύπου είναι η αγγλική. Οι εκδόσεις άλλων γλωσσών είναι μεταφράσεις του πρωτοτύπου.

MANUAL DE INSTALAÇÃO

PARA O INSTALADOR

Para uma utilização segura e correcta, leia atentamente este manual e o manual de instalação da unidade interior antes de instalar o aparelho de ar condicionado. O idioma original é o inglês. As versões em outros idiomas são traduções do idioma original.

INSTALLATIONSMANUAL

TIL INSTALLATØREN

Læs af sikkerhedshensyn denne manual samt manualen til installation af indendørsenheden grundigt, før du installerer klimaanlægget. Engelsk er originalen. De andre sprogversioner er oversættelser af originalen.

INSTALLATIONSMANUAL

FÖR INSTALLATÖREN

Läs bruksanvisningen och inomhusenhetens installationshandbok noga innan luftkonditioneringen installeras så att den används på ett säkert och korrekt sätt. Engelska är originalspråket. De övriga språkversionerna är översättningar av originalet.

MONTAJ ELKİTABI

MONTÖR İÇİN

Emniyetli ve doğru kullanım için, klima cihazını monte etmeden önce bu kılavuzu ve iç ünite montaj kılavuzunu tamamiyla okuyun. Aslı İngilizce'dir. Diğer dillerdeki sürümler aslının çevirisidir.

РУКОВОДСТВО ПО УСТАНОВКЕ

ДЛЯ УСТАНОВИТЕЛЯ

Для обеспечения безопасной и надежной эксплуатации внимательно прочтите данное руководство и руководство по установке внутреннего прибора перед установкой кондиционера. Языком оригинала является английский. Версии на других языках являются переводом оригинала.

INSTALLASJONSHÅNDBOK

FOR MONTØR

For å sikre trygg og riktig bruk skal denne håndboken samt installasjonshåndboken for innendørsenheten leses grundig igjennom før enheten installeres. Engelsk er originalspråket. De andre språkversjonene er oversettelser av originalen.

ASENNUSOPAS

ASENTAJALLE

Turvallisen ja asianmukaisen käytön varmistamiseksi lue tämä opas sekä sisäyksikön asennusopas huolellisesti ennen yksikön asentamista. Alkuperäiskieli on englanti. Muut kieliversiot ovat alkuperäisen käännöksiä.

English

Deutsch

Français

Nederlands

Español

Italiano

Ελληνικά

Português

Dansk

Svenska

Türkçe

Русский

Norsk

Suomi

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Note: This symbol mark is for EU countries only.

This symbol mark is according to the directive 2002/96/EC Article 10 Information for users and Annex IV.

Your MITSUBISHI ELECTRIC product is designed and manufactured with high quality materials and components which can be recycled and reused.

This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.

Please, dispose of this equipment at your local community waste collection/recycling centre.

In the European Union there are separate collection systems for used electrical and electronic product.

Please, help us to conserve the environment we live in!

⚠ Caution:

• Do not vent R410A into the Atmosphere:

• R410A is a Fluorinated Greenhouse gas, covered by the Kyoto Protocol, with a Global Warming Potential (GWP)=1975.

1. Safety precautions

▶ Before installing the unit, make sure you read all the "Safety precautions".

⚠ Warning:

Precautions that must be observed to prevent injuries or death.

⚠ Caution:

Precautions that must be observed to prevent damages to the unit.

After installation, perform the test run to ensure normal operation. Then explain to your customer the "Safety Precautions," use, and maintenance of the unit based on the information in the Operation Manual. Both the Installation Manual and the Operation Manual must be given to the user. These manuals must always be kept by the actual users.

⚡: Indicates a part which must be grounded.

⚠ Warning:

Carefully read the labels attached to the unit.

⚠ Warning:

- The unit must not be installed by the user. Ask an installer or an authorized technician to install the unit. If the unit is installed improperly, water leakage, electric shock, or fire may be caused.
- The unit must be installed according to the instructions in order to minimize the risk of damages by earthquakes, typhoons, or strong winds. An improperly installed unit may fall down and cause damages or injuries.
- The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down and cause damages or injuries.
- If the air to water heat pump is installed in an enclosed area, measures must be taken to prevent the refrigerant concentration in the room in the event of refrigerant leakage. Consult an installer regarding the appropriate measures. Should the refrigerant leak and cause the concentration oxygen in the room may lack.
- All electric work must be performed by a qualified technician according to local regulations and the instructions given in this manual. The units must be powered by dedicated power lines and the correct voltage and circuit breakers must be used. Power lines with insufficient capacity or incorrect electrical work may result in electric shock or fire.
- Use only specified cables for wiring. The wiring connections must be made securely with no tension applied on the terminal connections. Also, never splice the cables for wiring (unless otherwise indicated in this document). Failure to observe these instructions may result in overheating or a fire.
- Terminal block cover panel of the outdoor unit must be firmly fixed. If the cover panel is mounted improperly, dust and moisture may enter the unit, and it may cause electric shock or fire.
- When installing or moving the air to water heat pump, make sure to use the specified refrigerant (R410A) to charge the refrigerant lines. Do not either mix it with any other refrigerant or allow air to remain within the pipes. Air enclosed in the pipes can cause pressure peaks resulting in a rupture and other hazards.
- Make sure to use accessories authorized by Mitsubishi Electric and ask an installer or an authorized technician to install them. If accessories are improperly installed, it may cause water leakage, electric shock, or fire.

- Do not remodel the unit. Consult an installer for repairs. If alterations or repairs are not performed correctly, it may cause water leakage, electric shock, or fire.
- The user should never attempt to repair the unit or transfer it to another location. If the unit is installed improperly, it may cause water leakage, electric shock, or fire. If the air to water heat pump needs to be repaired or moved, ask an installer or an authorized technician.
- After installation has been completed, make sure that refrigerant does not leak. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, poisonous gases will be released.
- Use clean enough water which meets water quality standards. The deterioration of water quality may result in the system breakdown or the water leakage.
- Never use anything other than water as a medium. It may cause a fire or an explosion.
- Do not directly use heated or cooled water that is produced by the air to water heat pump as drinking and cooking water, or swimming pool. There is a risk to damage your health. There is also a risk that installing the water heat exchanger may corrode if the necessary water quality for the air to water heat pump system cannot be maintained. If you wish to use the heated or cooled water from the heat pump for these purposes, take measure such as to isolate the second heat exchanger within the water piping system.
- When installing or relocating, or servicing the air conditioner, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.

The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.

1.1. Before installation

⚠ Caution:

- Do not use the unit in an unusual environment. If the air to water heat pump is installed exposed to steam, volatile oil (including machine oil), or sulfuric gas, or exposed to briny air, or covered with snow, the performance can be significantly reduced and the internal parts can be damaged.
- Do not install the unit where combustible gases may leak, be produced, flow, or accumulate. If combustible gas accumulates around the unit, it may cause fire or explosion.
- The outdoor unit produces condensate during the heating operation. Make sure to provide drainage around the outdoor unit if such condensate is likely to cause damage.

- When installing the unit in a hospital or in a building where communication equipment is installed, you may need to take measures to reduce noise and electronic interference. Inverters, home appliances, high-frequency medical equipment, and radio communications equipment can cause the air to water heat pump to malfunction or to breakdown. At the same time, the noise and electronic interference from the air to water heat pump unit may disturb the proper operation of medical equipment, and communications equipment.

1. Safety precautions

1.2. Before installation (relocation)

⚠ Caution:

- Be fully careful when moving the units. The unit must be carried by at least 2 people, as it weighs 20 kg or more. Do not hold the packaging bands. Wear protective gloves to unpack and to move or install it, in order to avoid your hands being injured by fins or the edge of other parts.
- Be sure to safely dispose of the packaging materials. Packaging materials, such as nails and other metal or wooden parts may cause injuries.
- The base of the outdoor unit must be periodically checked to ensure it is not loose, cracked or damaged. If such defects are left untreated, the unit may fall down and cause damage or injuries.
- Do not wash the air to water heat pump unit. You may receive an electric shock.

1.3. Before electric work

⚠ Caution:

- Be sure to install a circuit breaker. If it is not installed, there may be a risk of an electric shock.
- For the power lines, use standard cables of sufficient capacity. Otherwise, it may cause a short circuit, overheating, or fire.
- When installing the power lines, do not apply tension to the cables. The cables may be cut or overheated resulting in a fire.
- Make sure to ground the unit. Do not connect the ground wire to gas or water pipes, lightning rods, or telephone grounding lines. If the unit is not properly grounded, there may be a risk to get an electric shock.
- Make sure to use circuit breakers (ground fault interrupter, isolating switch (+B fuse), and molded case circuit breaker) with the specified capacity. If the circuit breaker capacity is larger than the specified capacity, breakdown or fire may result.

1.4. Before starting the test run

⚠ Caution:

- Turn on the main power switch more than 12 hours before starting operation. Starting operation immediately after turning on the power switch can severely damage the internal parts. Keep the main power switch turned on during the operating period.
- Before starting operation, check that all panels, guards and other protective parts are correctly installed. Make sure not to get injured by touching rotating, hot, or high voltage parts.
- Do not touch any switch with wet hands. There may be a risk of an electric shock.
- Do not touch the refrigerant pipes with bare hands while unit is running. The refrigerant pipes can be hot or cold depending on the condition of the flowing refrigerant. There may be a risk to get burn or frostbite.
- After stopping operation, make sure to wait at least five minutes before turning off the main power. Otherwise, it may cause water leakage or breakdown.

1.5. Using R410A refrigerant air to water heat pump

⚠ Caution:

- Use only R410A refrigerant. If another refrigerant is used, the chlorine will let the oil deteriorate.
- Use the following tools specifically designed for R410A refrigerant use. Contact your nearest installer for further details.
- Be sure to use the proper tools. If dust, debris, or moisture enters the refrigerant pipes, the refrigeration oil may deteriorate.
- Do not use a charging cylinder. If a charging cylinder is used, the composition of the refrigerant may change and the efficiency will be worsened.

Tools (for R410A)	
Gauge manifold	Charge hose
Gas leak detector	Vacuum pump adapter
Torque wrench	Electronic refrigerant charging scale

2. Installation location

(mm)

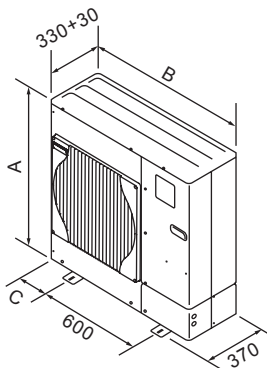


Fig. 2-1

Models	A(mm)	B(mm)	C(mm)
50	740	950	175
85	943	950	175
112	1350	1020	210
140	1350	1020	210

2.1. Choosing the outdoor unit installation location

- Avoid locations where the unit is exposed to direct sunlight or other sources of heat.
- Select a location where noise emitted by the unit does not disturb neighbors.
- Select a location where easy wiring and pipe access to the power source is available.
- Avoid locations where combustible gases may leak, be produced, flow, or accumulate.
- Note that condensate water may be produced by the unit during operation.
- Select a level location that can bear the weight and vibration of the unit.
- Avoid locations where the unit can be covered with snow. In areas where heavy snow fall is anticipated, special precautions must be taken to prevent the snow from blocking the air intake such as to install the unit at higher position or installing a hood on the air intake. This can reduce the airflow and the unit may not operate properly.
- Avoid locations where the unit is exposed to oil, steam, or sulfuric gas.
- Make sure to hold the handles to transport the unit. Do not hold the base of the unit, as there is a risk that hands or fingers may be pinched.

2.2. Outline dimensions (Outdoor unit) (Fig. 2-1)

2. Installation location

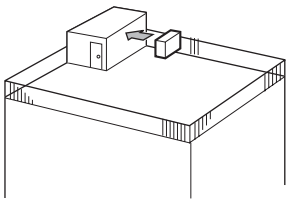


Fig. 2-2

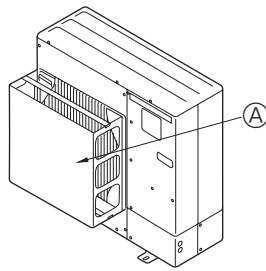


Fig. 2-3

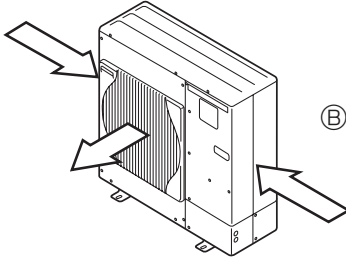


Fig. 2-4

2.3. Windy location installation

When installing the outdoor unit on a rooftop or other location where the unit is exposed to strong wind, do not face the air outlet of the unit directly into the winds. Strong wind entering the air outlet may impede the normal airflow and it may result in a malfunction.

The following shows three examples of precautions against strong winds.

- ① Face the air outlet towards the nearest available wall keeping about 50 cm distance. (Fig. 2-2)
- ② Install an optional air guide if the unit is installed in a location where strong winds such as a typhoon, etc. may directly blow to the air outlet. (Fig. 2-3)
 - Ⓐ Air outlet guide
- ③ Position the unit so that the outlet air can blow at right angle to the seasonal wind direction, if possible. (Fig. 2-4)
 - Ⓑ Wind direction

2.4. NECESSARY SPACE TO INSTALL

2.4.1. When installing a single outdoor unit (Refer to the last page)
Minimum dimensions are as follows, except for Max., meaning Maximum dimensions, indicated.

The figures in parentheses are for 112/140 models.

Refer to the figures for each case.

- ① Obstacles at rear only (Fig. 2-5)
- ② Obstacles at rear and above only (Fig. 2-6)
- ③ Obstacles at rear and sides only (Fig. 2-7)
- ④ Obstacles at front only (Fig. 2-8)
 - * When using an optional air outlet guide, the clearance for 112/140 models is 500 mm or more.
- ⑤ Obstacles at front and rear only (Fig. 2-9)
 - * When using an optional air outlet guide, the clearance for 112/140 models is 500 mm or more.
- ⑥ Obstacles at rear, sides, and above only (Fig. 2-10)
 - Do not install the optional air outlet guides for upward airflow.

2.4.2. When installing multiple outdoor units (Refer to the last page)

Leave 10 mm space or more between the units.

The figures in parentheses are for 112/140 models.

- ① Obstacles at rear only (Fig. 2-11)
- ② Obstacles at rear and above only (Fig. 2-12)
 - No more than 3 units must be installed side by side. In addition, leave space as shown.
 - Do not install the optional air outlet guides for upward airflow.
- ③ Obstacles at front only (Fig. 2-13)
 - * When using an optional air outlet guide, the clearance for 112/140 models is 1000 mm or more.
- ④ Obstacles at front and rear only (Fig. 2-14)
 - * When using an optional air outlet guide, the clearance for 112/140 models is 1000 mm or more.
- ⑤ Single parallel unit arrangement (Fig. 2-15)
 - * When using an optional air outlet guide installed for upward airflow, the clearance is 500 (1000) mm or more.
- ⑥ Multiple parallel unit arrangement (Fig. 2-16)
 - * When using an optional air outlet guide installed for upward airflow, the clearance is 1000 (1500) mm or more.
- ⑦ Stacked unit arrangement (Fig. 2-17)
 - The units can be stacked up to 2 units high.
 - No more than 2 stacked units must be installed side by side. In addition, leave space as shown.

3. Installation procedures

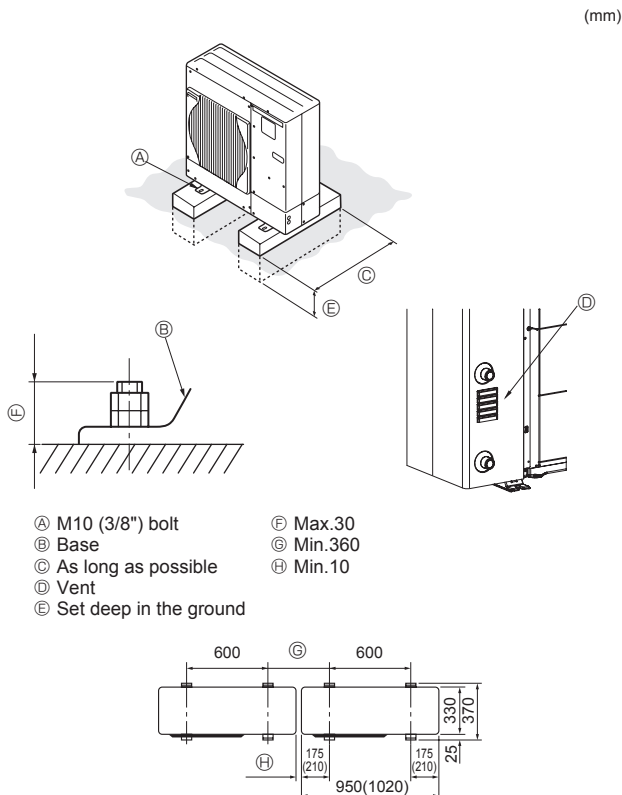


Fig. 3-1

• Be sure to install the unit in a solid, level surface to prevent rattling noises during operation. (Fig. 3-1)

<Foundation specifications>

Foundation bolt	M10 (3/8")
Thickness of concrete	120 mm
Length of bolt	70 mm
Weight-bearing capacity	320 kg

- Make sure that the length of the foundation bolt is within 30 mm from the surface of the base.
- Secure the base of the unit firmly with 4 M10 foundation bolts in solid locations.

Installing the outdoor unit

- Do not block the vent. If the vent is blocked, operation will be hindered and the unit may breakdown.
- If the additional fixation of the unit is necessary, use the installation holes on the back of the unit to attach wires, etc. with self-tapping screws ($\phi 5 \times 15$ mm or less).

⚠ Warning:

- The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down and cause damage or injuries.
- The unit must be installed according to the instructions in order to minimize the risk of damage by earthquakes, typhoons, or strong winds. An improperly installed unit may fall down and cause damage or injuries.

* Figures in parentheses are for 112/140 unit types.

4. Drainage piping work

Outdoor unit pipe connection

When drain piping is necessary, use the drain socket or the drain pan (option).

Optional parts name	Model name
Drain socket	PAC-SG61DS-E
Drain pan for 50/85	PAC-SG64DP-E

*There is no optional drain pan for 112/140.

*The drain socket is applicable only to W50, W85 and W112 and not compatible with HW112 and HW140.

5. Water piping work

5.1. Water piping connection (Fig. 5-1)

- Connect the water pipes to the outlet and inlet pipes.
(Parallel male screw for 1-inch water pipe (ISO 228/1-G1B))
- Inlet and outlet pipes position is shown on the Fig. 5-1.
- Install the hydraulic filter at the water intake.
- Maximum allowable torque at the water piping connection is 50 N·m.
- Check if water leaks after installation.
- Inlet water gauge pressure must be between 0-0.3 MPa.
- Use the inlet water with a temperature lower than 55 °C.

Note :

- The water velocity in pipes should be kept within certain limits of material to avoid erosion, corrosion and excessive noise generation.
Be aware, and take care of, that local velocities in small pipes, bends and similar obstructions can exceed the values above.

e.g.) Copper : 1.5 m/s

- When connecting metal pipes made of different materials, be sure to insulate the joint to prevent electrolytic etching.
- Set up a field system so that the inlet water temperature and water flow rate can be within the allowable range specified in our technical data, etc.
If the unit is used out of the allowable range, the parts of unit might be damaged.

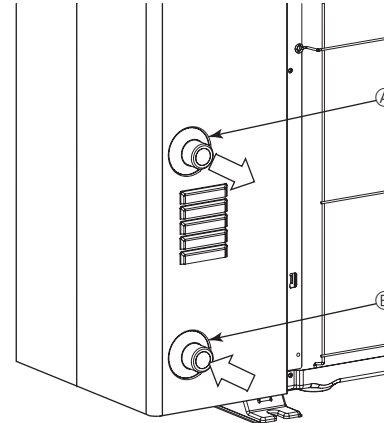


Fig. 5-1

5.2. Water quality condition

- The water in a system should be clean and with a pH value of 6.5-8.0.
- The followings are the maximum values;
Calcium : 100 mg/L
Chlorine : 100 mg/L
Iron/manganese : 0.5 mg/L

[Fig. 5-1]

- Ⓐ Water outlet
- Ⓑ Water inlet

5.3. Minimum water quantity

Following water quantity is required in the water circuit.

Model	Minimum water quantity (L)
W50	40
W85	60
W112	80
HW112	80
HW140	100

Note : Make sure to perform the frozen prevention measure for water pipe system. (Water piping insulation, back-up pump system, using of a certain % ethylene glycol instead of normal water)
Insulate the water piping properly. The performance can be poor if the insulation is insufficient.

⚠ Warning:

As the outlet water temperature can reach 60°C at maximum, do not touch the water piping directly with a bare hand.

6. Electrical work

6.1. Outdoor unit (Fig. 6-1, Fig. 6-2)

- ① Remove the service panel.
- ② Wire the cables referring to the Fig. 6-1 and the Fig. 6-2.

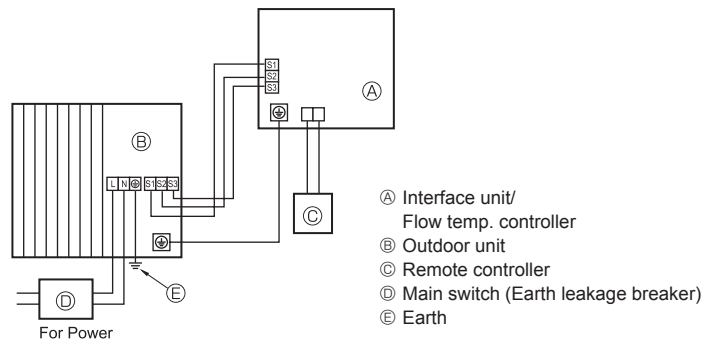
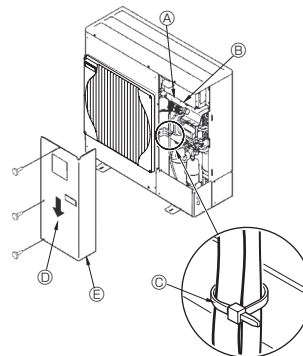


Fig. 6-1

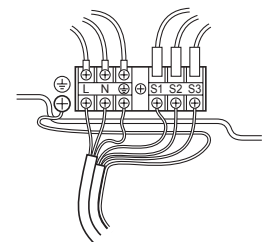
⚠ Caution:

Be sure to install N-Line. Without N-Line, it could cause damage to unit.

- Ⓐ Earth terminal
- Ⓑ Terminal block
- Ⓒ Clamp
- Ⓓ Service panel
- Ⓔ Wire the cables so that they do not contact the center of the service panel.



■ 50-140V (Single phase)



■ 112-140Y (3 phase)

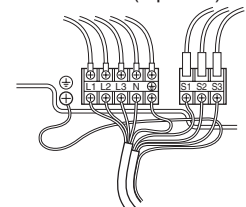


Fig. 6-2

6. Electrical work

6.2. Field electrical wiring

Outdoor unit model		50V	85V	112V	140V	112Y, 140Y
Outdoor unit power supply		~N (single), 50 Hz, 230 V	~N (single), 50 Hz, 230 V	~N (single), 50 Hz, 230 V	~N (single), 50 Hz, 230 V	3N~ (3 phase), 50 Hz, 400 V
Outdoor unit Circuit Breaker capacity *1		16 A	25 A	32 A	40 A	16 A
Wiring Wire No. x size (mm ²)	Outdoor unit power supply, earth	3 × Min. 1.5	3 × Min. 4	3 × Min. 4	3 × Min. 6	5 × Min. 1.5
	Interface unit/Flow temp. controller-Outdoor unit *2	3 × 1.5 (polar)	3 × 1.5 (polar)	3 × 1.5 (polar)	3 × 1.5 (polar)	3 × 1.5 (polar)
	Interface unit/Flow temp. controller-Outdoor unit earth *2	1 × Min. 1.5	1 × Min. 1.5	1 × Min. 1.5	1 × Min. 1.5	1 × Min. 1.5
	Remote controller-Interface unit/Flow temp. controller	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)
Circuit rating	Outdoor unit L-N (single)					
	Outdoor unit L1-N, L2-N, L3-N (3 phase) *3	AC 230 V	AC 230 V	AC 230 V	AC 230 V	AC 230 V
	Interface unit/Flow temp. controller-Outdoor unit S1-S2 *3	AC 230 V	AC 230 V	AC 230 V	AC 230 V	AC 230 V
	Interface unit/Flow temp. controller-Outdoor unit S2-S3 *3	DC 24 V	DC 24 V	DC 24 V	DC 24 V	DC 24 V
	Remote controller-Interface unit/Flow temp. controller *3	DC 12 V	DC 12 V	DC 12 V	DC 12 V	DC 12 V

*1. A breaker with at least 3.0 mm contact separation in each poles shall be provided. Use earth leakage breaker (NV).

*2. Max. 80 m

*3. The figures are NOT always against the ground.

S3 terminal has DC 24 V against S2 terminal. However between S3 and S1, these terminals are NOT electrically insulated by the transformer or other device.

Notes: 1. Wiring size must comply with the applicable local and national codes.

2. Power supply cables and the cables between Interface unit/Flow temp. controller and outdoor unit shall not be lighter than polychloroprene sheathed flexible cables. (Design 60245 IEC 57)

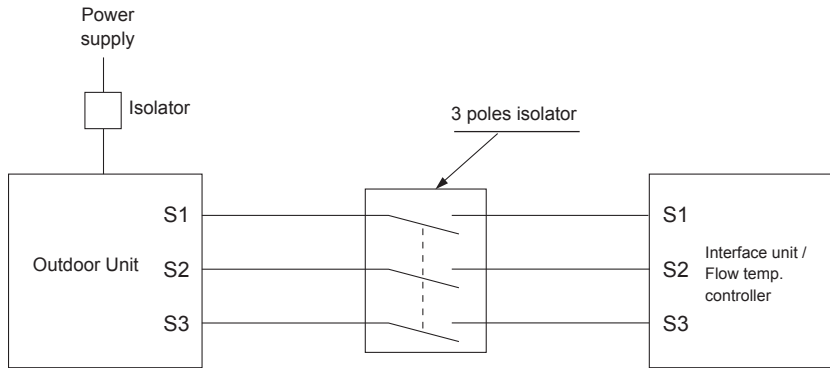
3. Be sure to connect the cables between Interface unit/Flow temp. controller and outdoor unit directly to the units (no intermediate connections are allowed).

Intermediate connections may result in communication errors. If water enters at the intermediate connection point, it may cause insufficient insulation to ground or a poor electrical contact.

(If an intermediate connection is necessary, be sure to take measures to prevent water from entering the cables.)

4. Install an earth longer than other cables.

5. Do not construct a system with a power supply that is turned ON and OFF frequently.



⚠ Warning:

In case of A-control wiring, there is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing. And do not touch the S1, S2, S3 terminals when the power is energized. If isolator should be used between indoor unit and outdoor unit, please use 3-pole type.

Never splice the power cable or the indoor-outdoor connection cable, otherwise it may result in a smoke, a fire or communication failure.

IMPORTANT

Make sure that the current leakage breaker is one compatible with higher harmonics.

Always use a current leakage breaker that is compatible with higher harmonics as this unit is equipped with an inverter.

The use of an inadequate breaker can cause the incorrect operation of inverter.

7. Test run

Before test run

- ▶ After installation works are completed, check if there is no refrigerant leakage, no looseness in the power supply or control wiring, no wrong polarity, and no disconnection of one phase in the supply.
- ▶ Use a 500-volt megohmmeter to check that the resistance between the power supply terminals and ground is at least 1 MΩ.

⚠ Warning:

Do not use the air to water heat pump if the insulation resistance is less than 1 MΩ.

Insulation resistance

When installed the power source to the unit has been cut for an extended period, the insulation resistance may drop below 1 MΩ due to the accumulation of refrigerant within the compressor. This is not a malfunction. Perform the following procedures.

1. Remove the wires from the compressor and measure the insulation resistance of the compressor.
2. If the insulation resistance is below 1 MΩ, the compressor may be faulty or simply the accumulation of refrigerant in the compressor makes the resistance drop.
3. After connecting the wires to the compressor, the compressor starts to warm up once power is supplied. After supplying power for the times indicated below, remove the wires from the compressor and measure the insulation resistance again.

- The insulation resistance drops due to the accumulation of refrigerant in the compressor. The resistance will rise above 1 MΩ after the compressor is warmed up for 4 hours.
(The necessary time to warm up the compressor varies according to atmospheric conditions and refrigerant accumulation.)
 - If the refrigerant accumulates within the compressor, the compressor must be warmed up at least 12 hours before starting the operation to prevent breakdown.
4. If the insulation resistance rises above 1 MΩ, the compressor is not faulty.

⚠ Caution:

- The compressor does not operate if the power supply phase connection is incorrect.
- Turn on the power at least 12 hours before starting operation.
- Starting operation immediately after turning on the main power switch can result in severe damage to internal parts. Keep the power switch turned on during the operating period.

Note : Occasionally, vapor that is made by the defrost operation may seem as if smoke come up from the outdoor unit.

8. Special functions

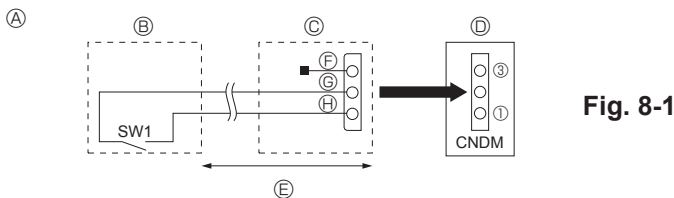


Fig. 8-1

- Ⓐ Circuit diagram example (low noise mode)
- Ⓑ On-site arrangement
- Ⓒ External input adapter (PAC-SC36NA-E)
- Ⓓ Outdoor unit control board
- Ⓔ Max. 10 m
- Ⓕ Red
- Ⓖ Brown
- Ⓗ Orange

8.1. Low noise mode (on-site modification) (Fig. 8-1)

The low noise mode will be activated when a commercially available timer or the contact input of an ON/OFF switch is added to the CNDM connector (option) on the control board of the outdoor unit.

- ① Complete the circuit as shown when using the external input adapter (PAC-SC36NA-E). (Option)
- ② SW1 ON: Low noise mode
SW1 OFF: Normal operation

Note:

- The ability varies according to the outdoor temperature and conditions, etc.
- When the ambient temperature is high, this function may not work.

9. System control

Set the refrigerant address using the Dip switch of the outdoor unit.

SW7 Function Setting

SW7 Setting	Refrigerant address	SW7 Setting	Refrigerant address
ON OFF 3 4 5 6 7	00	ON OFF 3 4 5 6 7	03
ON OFF 3 4 5 6 7	01	ON OFF 3 4 5 6 7	04
ON OFF 3 4 5 6 7	02	ON OFF 3 4 5 6 7	05

Note:

- a) Up to 6 units can be connected.
- b) Select one single model for all units.
- c) SW7 Setting are applicable to the following models.
PUHZ-W50VHA2
PUHZ-W85VHA2
PUHZ-W112VHA
PUHZ-HW112/140YHA2
PUHZ-HW140VHA2
- d) For Dip switch settings for indoor unit, refer to the indoor unit's installation manual.

10. Specifications

		W50VHA	W85VHA(2)	W112VHA	HW112YHA(2)	HW140Y/VHA	HW140Y/VHA2
Refrigerant		R410A					
GWP		1975					
Amount	kg	1.7	2.4	4.0	4.0	4.0	4.3
CO ₂ equivalent	kg	3358	4740	7900	7900	7900	8493
Hermetically sealed							
Sound Level (Measured under rated operating frequency.)							
SPL	Heating	dB(A)	46	48	53	53	53
	Cooling	dB(A)	45	48	53	53	53
PWL	Heating	dB(A)	61	66	69	67	67

This product is designed and intended for use in the residential,
commercial and light-industrial environment.

The product at hand is
based on the following
EU regulations:

- Low Voltage Directive 2006/95/ EC
 - Electromagnetic Compatibility Directive 2004/108/ EC
 - Machinery Directive 2006/42/EC
 - RoHS Directive 2011/65/EU
 - Year Of Manufacture *
- * As indicated in front of the outdoor unit

Please be sure to put the contact address/telephone number on
this manual before handing it to the customer.

Premier Technology Engineering Ltd.,

Shinagh, Bandon, Co. Cork P72 HD29, Ireland.

Tel; 023 8841028.

info@premiertechnology.ie www.premiertechnology.ie

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

Authorized representative in EU: MITSUBISHI ELECTRIC EUROPE B.V.

HARMAN HOUSE, 1 GEORGE STREET, UXBRIDGE, MIDDLESEX UB8 1QQ, U.K.