



Air to Water Heat Pump QUHZ-W40VA

This product **MUST** only be connected with cylinder unit of EHPT20Q -VM2EA model.
Connection with any other cylinder unit model is strictly prohibited.

Refer to the installation manual of the cylinder unit for a test run.

INSTALLATION MANUAL

For safe and correct use, read this manual and the cylinder unit installation manual thoroughly before installing the outdoor unit.

FOR INSTALLER

English

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Note: This symbol mark is for EU countries only.

This symbol mark is according to the directive 2012/19/EU Article 14 Information for users and Annex IX, and/or to the directive 2006/66/EC Article 20 Information for end-users and Annex II.

Your MITSUBISHI ELECTRIC product is designed and manufactured with high quality materials and components which can be recycled and/or reused. This symbol means that electrical and electronic equipment, batteries and accumulators, at their end-of-life, should be disposed of separately from your household waste.

If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:

Hg: mercury (0,0005%), Cd: cadmium (0,002%), Pb: lead (0,004%)

In the European Union there are separate collection systems for used electrical and electronic products, batteries and accumulators.

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

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

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.

⚠ 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 hazard 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 outdoor unit 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 isolating switch must be used. Power lines with insufficient capacity or incorrect electrical work may result in electric shock or fire hazard.
- 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 hazard.
- 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 hazard.
- 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 hazard.

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 earthed.

⚠ Warning:

Carefully read the labels attached to the unit.

- 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 hazard.
- 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 hazard. If the outdoor unit 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.
- Be sure always use the specified antifreeze solution. The deterioration of antifreeze quality may result in the system breakdown or the water leakage.
- Never use anything other than antifreeze as a medium. It may cause a fire hazard or an explosion.
- Do not directly use heated that is produced by the air to water heat pump as drinking and cooking water.
- The appliance shall be installed in accordance with national wiring regulations.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

1.1. Before installation

⚠ Caution:

- Do not use the unit in an unusual environment. If the outdoor unit 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 hazard 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 outdoor unit to malfunction or to breakdown. At the same time, the noise and electronic interference from the outdoor unit may disturb the proper operation of medical equipment, and communications equipment.
- If the unit is connected to deteriorated emitters, it may reduce water quality within heating circuit. And it may cause resulting in a significant decrease in performance of the unit or damages of parts.

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 lift using 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.
- Install the insulation completely and tightly over the water pipe to avoid condensation. Incomplete insulation will result in condensation forming on the pipe surface and drip on ceiling, floor, and other important items.
- Install the drainage pipe by following the installation manual to ensure proper drainage. Cover the drainage pipe with thermal insulation to prevent condensation. Defective plumbing work will result in leakage on ceiling, floor, and other household items.

1.3. Before electric work

⚠ Caution:

- The outdoor unit is powered via the cylinder unit. It is necessary to install a suitable isolating switch onto the power lines connected to terminal S1 and S2 from the cylinder unit.
- For the power lines, use standard cables of sufficient capacity. Otherwise, it may cause a short circuit, overheating, or fire hazard.
- When installing the power lines, do not apply tension to the cables. The cables may be cut or overheated resulting in a fire hazard.

- 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 outdoor unit. You may possibly receive an electric shock.
- Make sure that water flow rate for the water pipe does not exceed the predetermined level. Erosion-corrosion will occur inside the pipe if the water flow rate exceeds the predetermined level (i.e. 1.5 m/s for copper pipe). Install a pipe with the correct diameter to the required flow rate.
- Ensure to implement measures to prevent the water-pipe system from freezing. Freezing may cause water leakage and water supply failure.

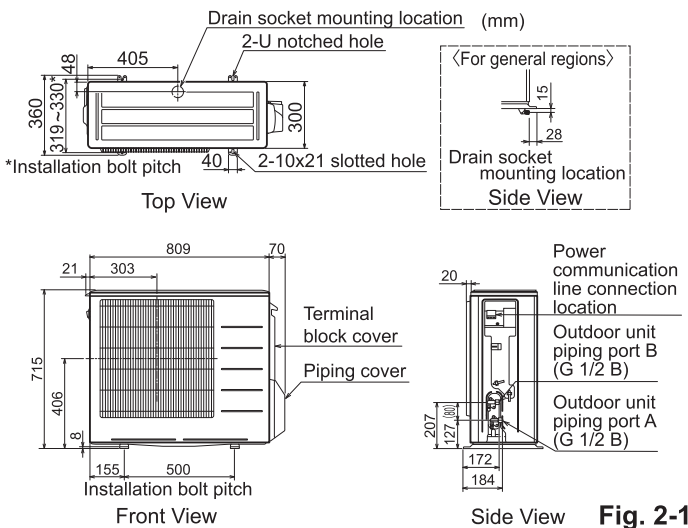
- Make sure to earth the unit. Do not connect the earth wire to gas or water pipes, lightning rods, or telephone earth wires. If the unit is not properly earthed, there may be a risk of electric shock.

2. Installation location

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 neighbours.
- 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 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 and injured.

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



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 prevailing wind direction.

Strong wind entering the air outlet may impede the normal airflow and it may result in a malfunction.

- Installation is not possible when there are obstructions on three of the four sides.
- If the obstruction at the front (discharge side) enables ventilation (such as a wire mesh), installation is possible for the conditions "When there is no obstruction at the front (discharge side)". If the obstruction at the front does not enable ventilation (such as the outer wall of a building), install for the conditions "When there is an obstruction at the front (discharge side)".

■ When there is no obstruction at the front (discharge side) (Top view)(Fig. 2-2)

The area above the unit must be open (clearance of at least 1 m or more).

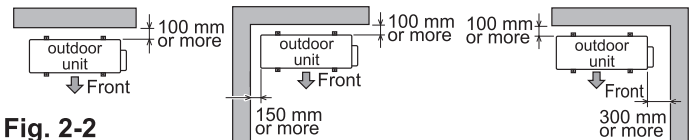


Fig. 2-2

■ When there is no obstruction at the back (suction side) (Top view)(Fig. 2-3)

The upward direction must be open (at least 1 m or more is available).

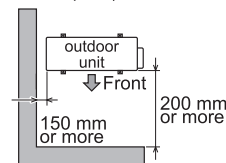


Fig. 2-3

■ When there is an obstruction at the front (discharge side)(Fig. 2-4)

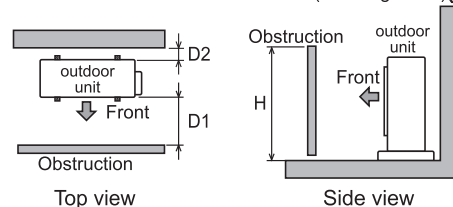


Fig. 2-4

The required clearance (D1 and D2) varies depending on the obstruction height (H). If wind guides are mounted, see the table below.

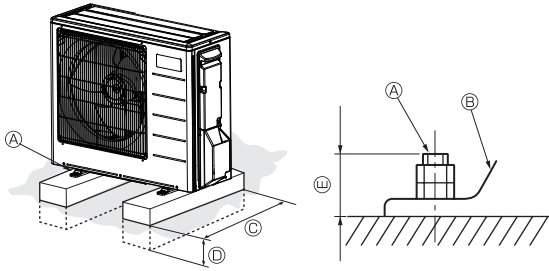
Note that the operating noise levels may increase for certain installation conditions.

Obstruction height (H)	Required clearance (D1/D2)	
	Without wind guides	With wind guides
1200 mm or less	200 mm or more/100 mm or more	185 mm or more/30 mm or more
More than 1200 mm	300 mm or more/100 mm or more	350 mm or more/30 mm or more

*If discharge air is blown against a wall, the wall can become dirty.

*If the area is poorly ventilated and the discharged air becomes sucked in again, heating performance can be reduced by about 10%. Mounting of wind guides (product sold separately) can improve heating performance in certain cases.

3. Installation procedure



- Ⓐ M8 bolt
- Ⓑ Base
- Ⓒ As long as possible
- Ⓓ Set deep in the ground
- Ⓔ Max.30mm

Fig. 3-1

- Be sure to install the unit in a solid, level surface to prevent vibration noises during operation. (Fig. 3-1)
- <Foundation specifications>

Foundation bolt	M8
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×M8 foundation bolts in solid locations.

⚠ 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, extreme weather conditions. An improperly installed unit may fall down and cause damage or injuries.

4. Drainage piping work (Optional)

<Removing the drain socket>

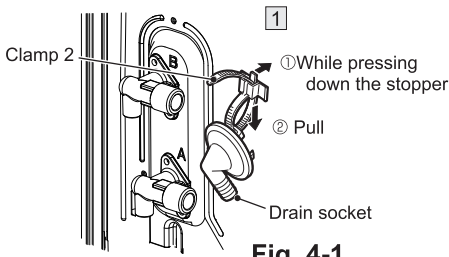


Fig. 4-1

<Mounting the drain socket>

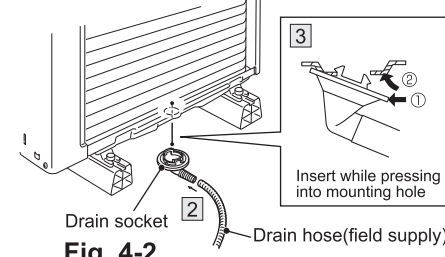


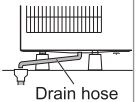
Fig. 4-2

Note: Do not install the drain socket if there is a possibility that drain freezes.

- 1 Remove the piping cover, and remove the provided drain socket from the clamp 2.(Fig. 4-1)
- 2 Mount a drain hose (commercially-available 16 mm diameter hose) to the drain socket.(Fig. 4-2)
- 3 Mount the drain socket to the drain port of the outdoor unit, and route it to a position where the drain hose can be drained.

Notes

- The clamp where the drain socket is secured in place is also used for holding the power communication line, and so do not disconnect it.
- Drain hose is a field supply item.
- Mount firmly in place, and set it so that it has no slack and has a continuous downward slope.
- Guide the drain water to the drain port using a suitable method (method so that it does not freeze).



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 0.5-inch water pipe (ISO 228-1/ G½B))
- Inlet and outlet pipes position is shown on the Fig. 5-1.
- 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.

5.2. Water quality condition

- Be sure always use the specified antifreeze solution.
- Anti-freeze solutions MUST use propylene glycol with toxicity rating of Class 1 as listed in Clinical Toxicology of Commercial Products, 5th Edition.
- 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 : 100mg/L, Chlorine : 100mg/L, Iron/manganese : 0.5mg/L

Note :

1. Ethylene glycol is toxic and must NOT be used in the primary water circuit in case of any cross-contamination of the secondary (potable) circuit.
2. For 2-zone valve ON/OFF control, propylene glycol MUST be used.

5.3. Minimum water quantity

Following water quantity is required in the water circuit.

Minimum water quantity (L)
40

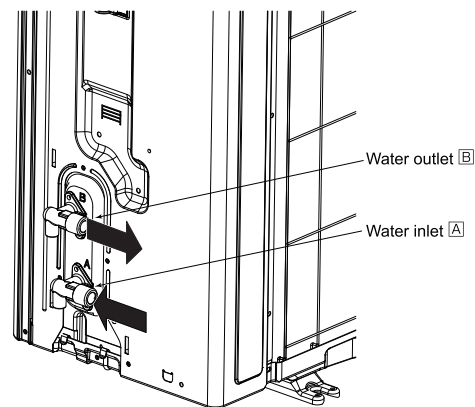


Fig. 5-1

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 water outlet temperature can reach 72°C maximum, do not touch the water piping directly with bare hands to avoid scalding risk.

6. Electrical work

Outdoor unit powered via cylinder unit (Fig. 6-1)

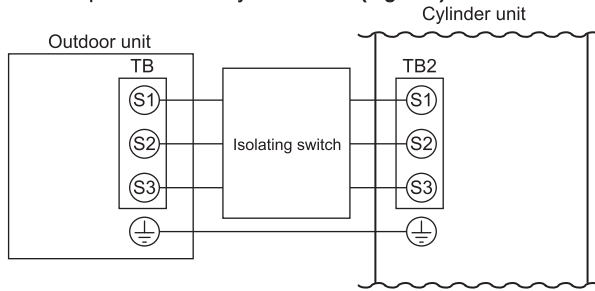


Fig. 6-1

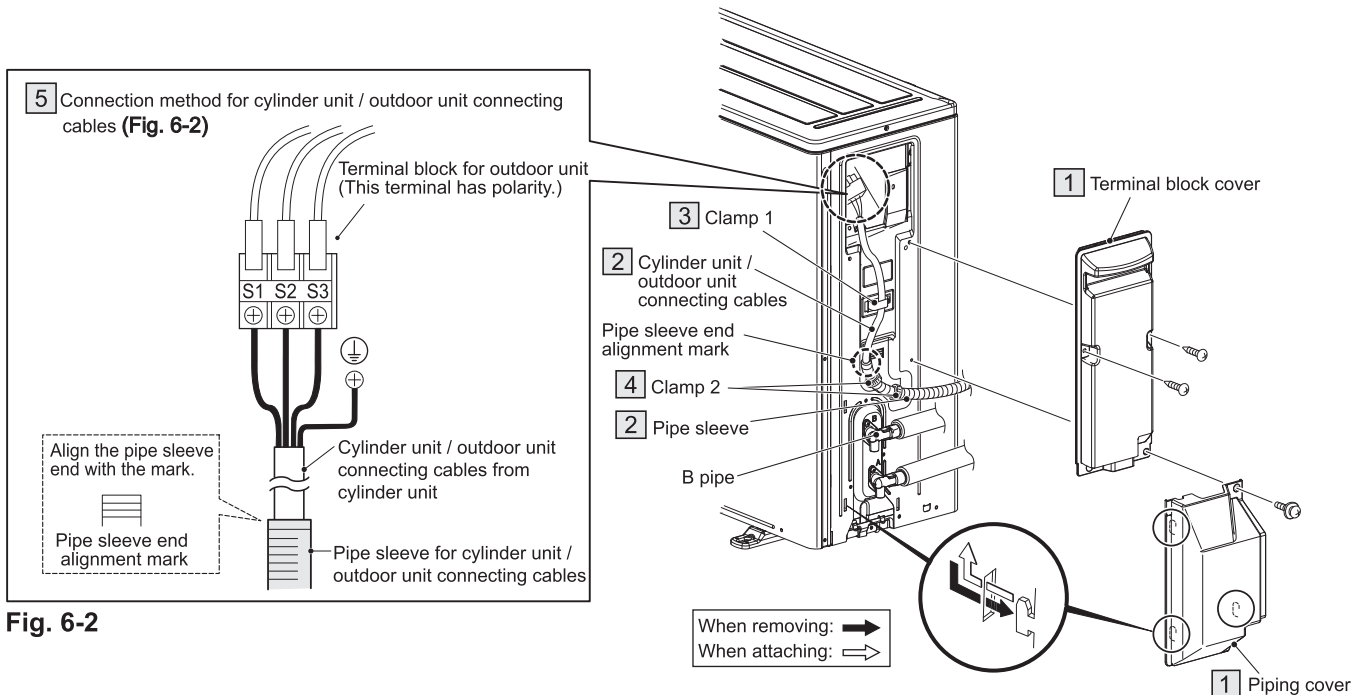
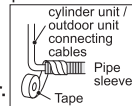


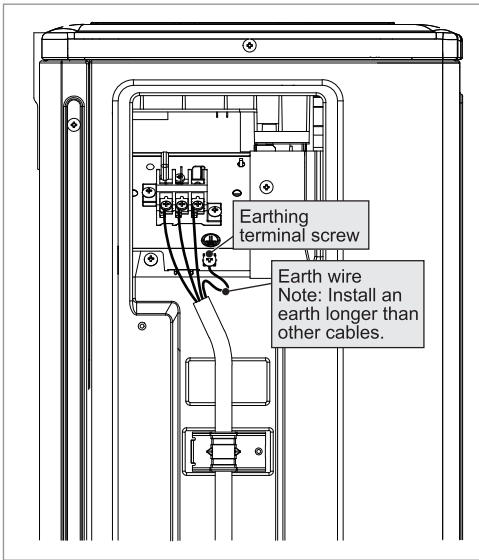
Fig. 6-2

- 1** Remove the piping cover and terminal block cover.
- 2** Pass the cylinder unit / outdoor unit connecting cables from the cylinder unit to the outdoor unit through a pipe sleeve (16 mm diameter).
- 3** Secure the cylinder unit / outdoor unit connecting cables in place using clamp 1.
- 4** Secure the pipe sleeve using clamp 2 (2 locations).
- 5** Connect the cylinder unit / outdoor unit connecting cables to the outdoor unit terminal block of the outdoor unit.
- 6** After the wire routing is completed, attach the terminal block cover and piping cover.

Notes

- Remove the piping cover followed by the terminal block cover, in that order.
- Cylinder unit / outdoor unit connecting cables shall not be lighter than polychloroprene sheathed flexible cable. (Design 60245 IEC 57)
- Secure firmly in place while being careful that no external force is applied directly to the terminal section.
- At factory shipping, the drain socket is secured to clamp 2, and so carefully remove the drain socket, and secure the pipe sleeve.
- **To prevent the entry of water into the pipe sleeve, wrap tape around the pipe sleeve end, align the pipe sleeve end with the alignment mark, and put it inside the terminal block cover.**
- Secure so that the pipe sleeve does not contact the B pipe. (The B pipe can reach temperatures of 72°C or higher.)
- The terminals have polarity, so be sure to match the terminal number when connecting the cables.
- Pull each wire one at a time to check that they are not disconnected.
- Attach the terminal block cover followed by the piping cover, in that order.





- 1 Crimp a ring terminal (available commercially) to the earth wire (available commercially).
- 2 Connect the earth wire to the earthing terminal screw (⊕ mark).
Reference tightening torque: 0.7 to 1.3 N-m

Fig. 6-3

Wiring Wire No. x size (mm ²)	Cylinder unit - Outdoor unit (including earth cable) *1	4 × Min. 2.5
Circuit rating	Cylinder unit - Outdoor unit S1 - S2 *2	230 V AC
	Cylinder unit - Outdoor unit S2 - S3 *2	24 V DC

*1. Max. 15 m

*2. The values given in the table above are not always measured against the ground value.

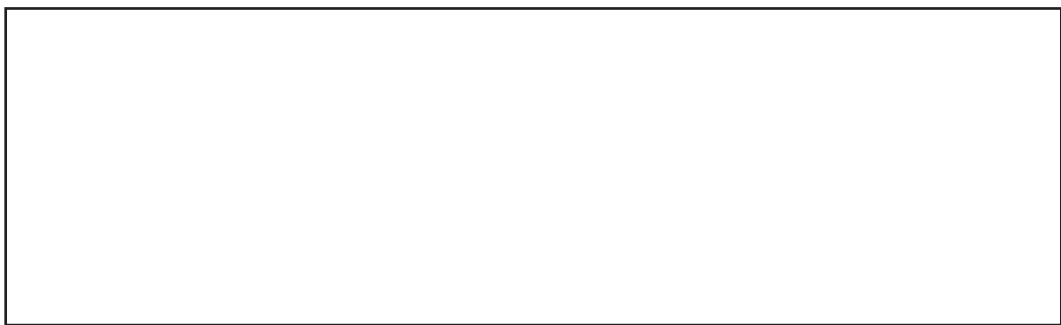
Notes:

1. Wiring size must comply with the applicable local and national cables.
2. Be sure to connect the cables between outdoor unit and cylinder unit directly. (no intermediate connections are allowed). Intermediate connections may result in communication errors. (If an intermediate connection is necessary, be sure to take measures to prevent water from entering the cables.)
If water enters at the intermediate connection point, it may cause insufficient insulation to earth or a poor electrical contact.
3. Install an earth longer than other cables.
4. Do not construct a system with a power supply that is turned ON and OFF frequently.

7. Specifications

		QUHZ-W40VA
Refrigerant		CO ₂ (R744)
	GWP	1
	Amount kg	1.15
Sound Level(Measured under rated operating frequency.)		
SPL	Heating dB(A)	43
PWL	Heating dB(A)	53





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