Panasonic

Installation Manual

AIR-TO-WATER HEATPUMP OUTDOOR UNIT

UD03*E5*, UD05*E5*, UD07*E5*, UD09*E5*

	Required tools for Installation Works					
1	Philips screw driver	5	Spanner	10 Measuring tape	18 N•m (1.8 kgf•m)	
2	Level gauge	6	Pipe cutter	11 Thermometer	55 N•m (5.5 kgf•m)	
3	Electric drill, hole core drill	7	Reamer	12 Megameter	65 N•m (6.5 kgf•m)	
	(ø70 mm)	8	Knife	13 Multimeter	15 Vacuum pump	

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation. Electrical work must be installed by a licensed electrician. Be sure to use the correct rating and main circuit for the model to be installed.
 The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.
- Please leave this installation manual with the unit after installation.

4 Hexagonal wrench (4 mm) 9 Gas leak detector

⚠ WARNING	MARNING This indication shows the possibility of causing death or serious injury.					
⚠ CAUTION	CAUTION					
The items to be followed are classified by the symbols:						
\Diamond	Symbol with white background denotes item that is PROHIBITED from doing.					
0 0	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.						

,	Symbol with dark background denotes item that must be carried out.
	y out test run to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance a d in instructions. Please remind the customer to keep the operating instructions for future reference.
	<u></u> WARNING
0	Do not install outdoor unit near handrail of veranda. When installing outdoor unit at veranda of high rise building, child may climb up to outdoor unit and cross over the handrail and causing accident.
\Diamond	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.
\Diamond	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
\Diamond	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
\Diamond	Do not sit or step on the unit, you may fall down accidentally.
\Diamond	Keep plastic bag (packaging material) away from small children, it may cause suffocation.
\Diamond	Do not use pipe wrench to install refrigerant piping. It might deform the piping and cause the unit to malfunction.
0	Do not purchase unauthorized electrical parts for installation, service, maintenance and etc They might cause electrical shock or fire.
0	Do not modify the wiring of outdoor unit for installation of other components (i.e. heater, etc). Overloaded wiring or wire connection points may cause electrical shock or fire.
0	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
0	For electrical work, follow local wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used if electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
a	Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.

Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire. nstall at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the o not use joint cable for outdoor connection cable. Use specified outdoor connection cable, refer to instruction (5) CONNECT THE CABLE Do not use joint cable for outdoor connection cable. Use specified outdoor connection cable, feller to instruction a 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. During installation, install the refrigerant piping properly before run the compressor. Operation of compressor without fixing refrigeration piping and alves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc. During pump down operation, stop the compressor before remove the refrigeration piping. Removal of refrigerant piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigerant cycle and result in explosion, injury etc. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over tightened, after a long period, the flare may break and cause refrigerant gas leakage. After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire. Ventilate the room if there is refrigerant gas leakage during operation. Extinguish all fire sources if present. It may cause toxic gas when th refrigerant contacts with fire. Only use the supplied or specified installation parts, else, it may cause unit vibrate loose, water leakage, electrical shock or fire. If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information Select a location where in case of water leakage, the leakage will not cause damage to other properties. When installing electrical equipment at wooden building of metal lath or wire lath, in accordance with electrical facility standard, no electrical ontact between equipment and building is allowed. Insulator must be installed in between. Any work carried out on the outdoor unit after removing any panels which is secured by screws, must be carried out under the supervision of This unit must be properly earthed. The electrical earth must not be connected to a gas pipe, water pipe, the earth of lightening rod or a telephone of the property earthed. The electrical earth must not be connected to a gas pipe, water pipe, the earth of lightening rod or a telephone of the property earth fault in the outdoor unit. ⚠ CAUTION Do not install the outdoor unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire. Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite. Make sure the insulation of power supply cord does not contact hot part (i.e. refrigerant piping) to prevent from insulation failure (melt). Do not touch the sharp aluminium fin, sharp parts may cause injury. Select an installation location which is easy for maintenance. Ensure the correct polarity is maintained throughout all wiring. Otherwise, it will cause electrical shock or fire. Installation work.

It may need two or more people to carry out the installation work. The weight of outdoor unit might cause injury if carried by one person.

This is a R410A model, when connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A refrigerant.
Thickness or copper pipes used with R410A must be 0.8mm or more. Never use copper pipes thinner than 0.8mm.
It is desirable that the amount of residual oil is less than 40mg/10m.

lixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc

When install or relocate outdoor unit, do not let any substance other than the specified refrigerant, e.g. air etc. mix into refrigerant cycle (piping).

(For UD07*E5* and UD09*E5* only 7 or 8 \oplus @ (For UD07*E5* and

CZ-NE2P (For UD03*E5* and UD05*E5* only)
CZ-NE3P (For UD07*E5* and UD09*E5* only) • It is strongly recommended to install a Base Pan Heater (optional) if the outdoor unit is install in cold climate area. Refer the Base Pan Heater (optional) installation instruction for details of installation.

• Applicable Piping Kit (For UD07*E5* and UD09*E5* only)

2

1 SELECT THE BEST LOCATION

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed. Avoid installations in areas where the ambient temperature may drop below -20°C.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
 Do not place any obstacles which may cause a short circuit of the discharged air.
- If outdoor unit installed near sea, region with high content of sulphur or oily location (e.g. machinary oil, etc.), it lifespan maybe shorten.
- When installing the product in a place where it will be affected by typhoon or strong wind such as wind blowing between buildings, including the rooftop of a building and a place where there is no building in surroundings, fix the product with an overturn prevention wire, etc. (Overturn prevention fitting model number: K-KYZP15C)(For UD07*E5* and UD09*E5* only)

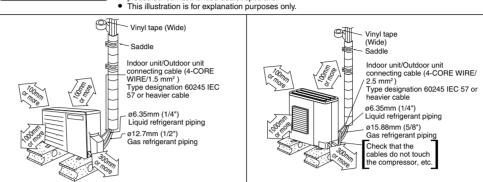
■ If piping length is over 10 m, additional refrigerant should be added as shown in the table

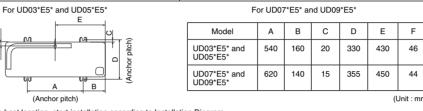
	Piping size		Rated Length (m)		Max.	Min Pining	Max. Piping	Additional
Model	Gas	Liquid	For Heat Pump Indoor Unit	For Hydromodule + Tank	Elevation (m)	Length (m)	Length (m)	Refrigerant (g/m)
UD03*E5* and UD05*E5*	ø12.7mm (1/2")	ø6.35mm (1/4")	7	5	5	3	15	20
UD07FE5* and UD09FE5*	ø15.88mm (5/8")	ø6.35mm (1/4")	7	5	20	3	30	30
UD07HE5* and UD09HE5*	ø15.88mm (5/8")	ø6.35mm (1/4")	7	5	30	3	40	30
Evennels, For IID02*E5*								

If piping length is 15m, the quantity of additional refrigerant should be 100g. [(15-10)m x 20 g/m = 100g]

2 INSTALL THE OUTDOOR UNIT

It is advisable to avoid more than 2 blockage directions. For better ventilation & multiple-outdoor installation, please consult authorized dealer/specialist.
 This illustration is for explanation purposes only.





· After selecting the best location, start installation according to Installation Diagram



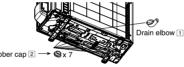
UD03*E5* and UD05*E5*

Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (a10 mm).

When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- When a Drain elbow is used, please ensure to follow below:
 the unit should be placed on a stand which is taller than 50 mm.
 cover the e20mm holes with Rubber cap [2] (refer to illustration below).
 use a tray (field supply) when necessary to dispose the outdoor unit drain water.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 consecutive days, it is recommended not to use the Drain elbow 1 and Rubber cap 2, for the drain water freezes and the fan will not rotate.





3 CONNECTING THE PIPING

(CONNECTING THE PIPING TO OUTDOOR UNIT

Model

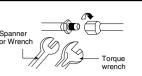
UD03*E5* and

UD07*E5* and

UD05*E5*

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (locate at valve) onto the copper pipe. Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

Piping size	e (Torque)	Do ours to use two enemous to tish
Gas	Liquid	Be sure to use two spanners to tigh (If the nuts are overtightened, it ma
ø12.7mm (1/2") [55 N•m]	ø6.35mm (1/4") [18 N•m]	leak.)
ø15.88mm (5/8") [65 N•m]	ø6.35mm (1/4") [18 N•m]	Close the tube joining area with putty heat insulator (local supply)
		without any gap as shown in right



ay cause the flares to break or

figure. (To prevent insects or small (For UD07*E5* and UD09*E5* only)

CUTTING AND FLARING THE PIPING

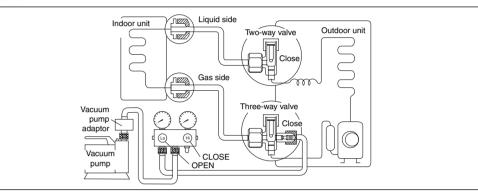
- Please cut using pipe cutter and then remove the burrs.
 Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.





4 EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AN AIR-TO-WATER HEAT PUMP, BE SURE TO EVACUATE THE AIR INSIDE THE UNIT AND PIPES in the following

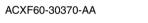


- 1. Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
- Be sure to connect the end of the charging hose with the push pin to the service port.

 Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump and vacuum pump adaptor.
- Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.
 Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after
- approximately five minutes.

 Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
- 5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
 6. Tighten the service port caps of the 3-way valve at a torque of 18 N•m with a torque wrench.
- 7. Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to "OPEN" using a hexagonal wrench

- 8. Mount valve caps onto the 2-way valve and the 3-way valve.
- · Be sure to check for gas leakage





- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step ③ above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step ③
 If the leak does not stop when the connections are retightened, repair location of leak. Do not release refrigerant during piping work for installation and reinstallation. Take care of the liquid refrigerant, it may cause frostbite.

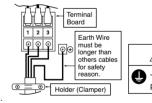
5 CONNECT THE CABLE TO THE OUTDOOR UNIT

(FOR DETAIL REFER TO WIRING DIAGRAM AT UNIT)

 Remove the control board cover from the unit by loosening the screw. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed flexible cable (see below table), type designation 60245 IEC 57 or heavier cable.

3					
Models	Flexible cable specification				
UD03*E5* and UD05*E5*	4 x (1.5 mm²)				
UD07*E5* and UD09*E5*	4 x (2.5 mm²)				
Terminals on the indoor ur	nit 1 2 3 🖶				
Colour of wires					

Terminals on the outdoor unit 1 2 3

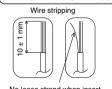




16 Gauge manifold

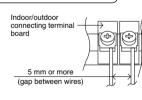
3. Secure the cable onto the control board with the holder (clamper). 4. Attach the control board cover back to the original position with screw

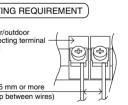
WIRE STRIPPING AND CONNECTING REQUIREMENT

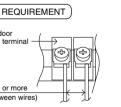


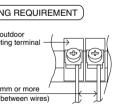
Outdoor Unit

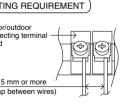
(For UD07*E5* and UD09*E5* only)

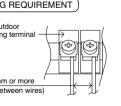


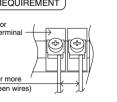


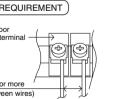


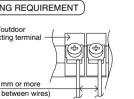


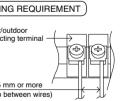


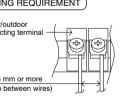


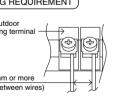


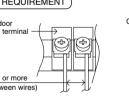


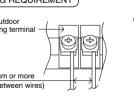


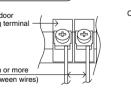


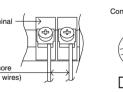






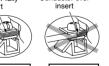


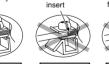




















Select required direction and apply protective bushing provided in accessories to protect cables from sharp edges.
 Once all wiring work has been completed, tie the cable and cord together with the binding strap so that they do not touch other parts such as the compressor and bare copper pipes.

DETAIL OF CONNECTING CABLE GUIDING

6 PIPE INSULATION

- 1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the

diagram for its

- insulated piping end to prevent water from going inside the piping.

 2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.





