

Panasonic

Air conditioner

Installation Instruction

MODEL NO. :-
CS-XE18, XE24WKUA Series.
CU-XE18, XE24WKUA Series.

Required tools for Installation Works

- | | | | |
|---|---------------------|-------------------------|----------------------------------|
| 1 Phillips screw driver | 7 Reamer | 13 Mallet | 47.9 lb-ft (65 Nm) (8.6 kgf-m) |
| 2 Level gauge | 8 Knife | 14 Torque wrench | 73.8 lb-ft (100 Nm) (10.2 kgf-m) |
| 3 Electric drill, hole core drill (2 1/4" (670 mm)) | 9 Gas leak detector | 15 Vacuum pump | |
| 4 Hexagonal wrench (1/2" (4 mm)) | 10 Measuring tape | 16 Digital Micron Gauge | |
| 5 Spanner | 11 Thermometer | | |
| 6 Pipe cutter | 12 Megameter | | |

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 of the power plug 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.

- WARNING** This indication shows the possibility of causing death or serious injury.
- CAUTION** This indication shows the possibility of causing injury or damage to properties only.
- The items to be followed are classified by the symbols:
- Symbol with white background denotes item that is PROHIBITED.
 - Symbol with dark background denotes item that must be carried out.
- WARNING**
- Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident.
 - Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
 - Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
 - Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
 - Do not sit or step on the unit, you may fall down accidentally.
 - Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
 - When installing or relocating air conditioner, do not let any substance other than the specified refrigerant, eg. air etc mix into refrigeration cycle (piping). Mixing of air etc will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
 - Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
 - For R32/R410A model, use piping, flare nut and tools which is specified for R32/R410A refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the refrigerant cycle (piping), and possibly result in explosion and injury.
 - For R32 and R410A, the same flare nut on the outdoor unit side can be used.
 - Since the working pressure for R32/R410A is higher than that of refrigerant R22 model, replacing conventional piping and flare nuts on the outdoor unit side are not recommended.
 - If reuse piping is unavoidable, refer to instruction "CASE OF REUSING EXISTING REFRIGERANT PIPING".
 - Thickness of copper pipes used with R32/R410A must be more than 1/32" (0.8 mm). Never use copper pipes thinner than 1/32" (0.8 mm).
 - It is desirable that the amount of residual oil is less than 0.00004 ozfl (0.10 mL).
 - Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
 - Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
 - Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
 - Install 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 set will drop and cause injury.
 - For installation work, follow all electrical, building, plumbing, local codes, regulations and these installation instructions. If electrical circuit capacity is not enough or a defect is found in electrical wiring, it will cause electrical shock or fire.
 - Do not use spliced wires for indoor / outdoor connection cable. Use the specified indoor / outdoor connection cable, refer to instruction ⑤ INDOOR/OUTDOOR UNIT ELECTRICAL WIRING and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or loosening is not perfect, it will cause heat-up of fire at the connection.
 - Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock.

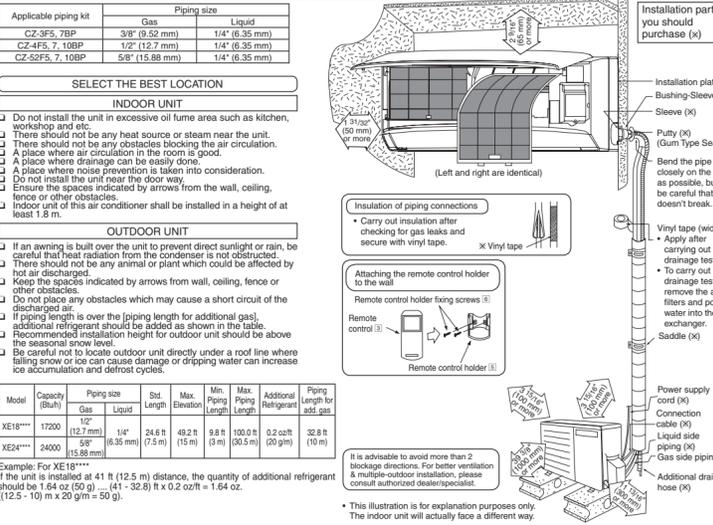
- This equipment must be installed with an Earth Leakage Circuit Breaker (ELCB) or Ground Fault Current Interrupter (GFCI) or Appliance Leakage Current Interrupter (ALCI) that has been certified by an NRTL, Certified Testing Agency and that is suitable for the voltages and amperages involved. Otherwise, it may cause electrical shock and fire in case of equipment breakdown.
- During installation, install properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves 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 removing the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration 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 comes into contact with fire.
- Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant comes into contact with fire.

- CAUTION**
- Do not install the 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 repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
 - Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
 - Do not touch the sharp aluminum fin, sharp parts may cause injury.
 - Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
 - Select an installation location which is easy for maintenance.
 - Power supply connection to the room air conditioner.
Power supply cord shall be UL listed or CSA approved 3 conductor with minimum AWG12 wires.
Power supply point should be in an easily accessible place for power disconnection in case of emergency.
In permanent connection, permanent connection of the power supply is prohibited.
Fix power supply connection to a circuit breaker for permanent connection.
Use NRTL approved fuse or circuit breaker (rating refers to name plate) for permanent connection.
 - Installation work.
It may take two people to carry out the installation work.

- IMPORTANT**
- This product has been designed and manufactured to meet ENERGY STAR criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant gas flow rate is critical to achieve rated capacity and efficiency. Installation of this product should follow the manufacturer's recommended charging and fan speed instructions. Failure to conform to proper charge and air flow may reduce energy efficiency and shorten equipment life. (Only for XE18****)
 - This model is equipped with Room Freeze Protection (RFP) feature. Room Freeze Protection Function (RFP) is used in spaces that are unoccupied during the winter, for the purpose of protecting any equipment within the room from freezing temperatures. When the RFP is selected, the unit will operate the fan at high speed for proper room temperature monitoring. When the sensor detects that the room temperature has dropped below 46°F (8°C), the compressor/pump operation begins. When the room temperature reaches 50°F (10°C), the unit shuts off, then will repeat continuously if the temperature drops below 46°F (8°C) again. The Room Freeze Protection Function (RFP) cannot be used unless the unit is energized and set into the RFP mode. In the event of a power failure this mode will not function. During the RFP mode, POWERFUL OPERATION, QUIET OPERATION AND FAN SPEED selection are all disabled. Please refer to the user manual for more details.

Attached accessories

No.	Accessories part	Qty	No.	Accessories part	Qty	No.	Accessories part	Qty
1	Installation plate	1	4	Battery	1	7	Drain hose adapter	1
2	Installation plate fixing screw	5	5	Remote control holder	1	8	Drain elbow	1
3	Remote Control	1	6	Remote control holder fixing screw	2	9	Rubber cap	4



INDOOR UNIT

1 SELECT THE BEST LOCATION

(Refer to "Select the best location" section)

2 HOW TO FIX INSTALLATION PLATE

The mounting wall shall be strong and solid enough to prevent it from the vibration.

Model

Model	①	②	③	④	⑤
XE18****, XE24****	23 13/16" (605 mm)	3 3/4" (95 mm)	21 21/32" (550 mm)	21 21/32" (550 mm)	10 5/8" (270 mm)

The center of installation plate should be at more than ① at right and left of the wall. The distance from installation plate to ceiling should more than ②. From installation plate center to unit's left side is ③. From installation plate center to unit's right is ④. For left side piping, piping connection for liquid should be about ⑤ from this line.

⑥ : For left side piping, piping connection for gas should be about ⑥ from this line.

- Mount the installation plate on the wall with 5 screws or more (at least 5 screws). (If mounting the unit on the concrete wall, consider using anchor bolts.)
- Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
- Line according to the hole and right side of the installation plate. The meeting point of the extended line is the center of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole center is obtained by measuring the distance namely 5 1/16" (128 mm) for left and right hole respectively.
- Drill the piping hole at either the right or the left and the hole should be slightly slanting to the outdoor side.

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

- Insert the piping sleeve to the hole.
- Fix the bushing to the sleeve.
- Cut the sleeve until it extrudes about 19/32" (15 mm) from the wall.

CAUTION

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

4 INDOOR UNIT INSTALLATION

1. FOR THE RIGHT REAR PIPING

- Pull out the Indoor piping
- Install the Indoor Unit
- Secure the Indoor Unit
- Insert the connection cable

2. FOR THE RIGHT BOTTOM PIPING

- Pull out the Indoor piping
- Install the Indoor Unit
- Insert the connection cable
- Secure the Indoor Unit

3. FOR THE EMBEDDED PIPING

- Replace the drain hose
- Bend the embedded piping
- Pull the connection cable into Indoor Unit
- Cut and flare the embedded piping
- Install the Indoor Unit
- Connect the piping
- Insulate and finish the piping
- Secure the Indoor Unit

WARNING

This equipment must be properly earthed.

5 CONNECT THE CABLE TO THE INDOOR UNIT

- The inside and outside connection cable can be connected without removing the front grille.
- Unscrew the conduit cover and fix the conduit connector to conduit cover with lock nut, then secure it against chassis.
- Connection cable between indoor unit and outdoor unit should be UL listed or CSA approved 4 conductor wires minimum AWG16 in accordance with local electric codes.

Ensure the colour of wires of outdoor unit and terminal number are the same as the indoor's respectively.

Terminals on the indoor unit	1	2	3
Colour of wires (connection cable)	Blue	Red	White

Terminals on the outdoor unit	1	2	3
Colour of wires (connection cable)	Blue	Red	White

6 PIPING INSULATION

- Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
- 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 1/4" (6 mm) or above.

HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

- Set the vertical airflow direction louvers to the horizontal position.
- Remove the 3 caps on the front grille as shown in the illustration at right, and then remove the 4 mounting screws.
- Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louvers to the horizontal position and then carry out above steps 2 - 3 in the reverse order.

AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

- AUTO OPERATION MODE**
The Auto operation will be activated immediately once the Auto Switch is pressed and released before 5 sec.
- TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)**
The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 8 sec.
A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation.
- HEATING TRIAL OPERATION**
Press the "AUTO" switch continuously for more than 8 sec. and release when a "pep" sound is occurred at eighth sec. (However, a "pep" sound is heard at fifth sec.) then press Remote controller "AC Reset" button once. Remote controller signal will activate operation force heating mode.
- REMOTE CONTROLLER RECEIVING SOUND ON/OFF**
The ON/OFF of Remote controller receiving sound can be change over by the following steps:
a) Press "AUTO" switch continuously for more than 16 sec. to below 21 sec.
A "pep", "pep", "pep", "pep" sound will occur at the sixteenth sec.
b) Press the "AC Reset" button once, "pep" sound will occur indicates that Remote controller receiving sound setting mode is activated.
c) Press "AUTO" switch again. Everytime "AUTO" switch is pressed (within 60 sec. interval), Remote controller receiving sound status will be reversed between ON and OFF.
Long "pep" sound indicates that Remote controller receiving sound is ON.
Short "pep" sound indicates that Remote controller receiving sound is OFF.

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

The unit should be mounted on a stand that suits to a local environmental requirement as being stated, please ensure to:

- When the Drain elbow (3) is used, please ensure to:
 - Provide a minimum clearance of 2" (50mm) to access the bottom of base pan.
 - Seal the top 25/32" (20mm) diameter holes with Rubber caps (5) (refer to illustration at right).
 - Use a rigid or flexible PVC pipe (local supply) to dispose drained water from the elbow or use a stainless steel tray (local supplied) to collect and dispose water.
- If the unit is used in an area where temperature falls below 32°F (0°C) for 2 or 3 consecutive days, it is recommended not to use the Drain elbow (3) and Rubber caps (5), water from defrost process will trap, freeze up and obstruct fan rotation. Water may drip from the basepan hole area during defrost function, do not stand or place objects underneath.

CHECK THE DRAINAGE

- Open front panel and remove air filters. (Drainage checking can be carried out without removing the front grille).
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.

EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling/heating operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 46.4°F (8°C) during Cooling operation or more than 57.2°F (14°C) during Heating operation.

WIRE STRIPPING AND CONNECTING REQUIREMENT

Wire stripping

Indoor/outdoor connecting terminal board

Conductor fully inserted

Conductor over inserted

Conductor not inserted

Conductor not fully inserted

No loose strand when inserted

ACCEPT

PROHIBITED

PROHIBITED

CUTTING AND FLARING THE PIPING

- Please cut using pipe cutter and then remove the burrs.
- Remove the burrs by using reamer. If burrs are not removed, gas leakage may be caused. Turn the pipe upside down to avoid the metal powder entering the pipe.
- Make flare after inserting the flare nut onto the copper pipes.

REMARKS

- Make sure indoor unit drain hose is 3/4" (20 mm) nominal PVC pipe size are fully inserted to drain hose adapter (7).
- When properly flared, the internal surface of the flare will evenly chamfer and be free of burrs. Since the flare part comes into contact with the connections, carefully check the flare finish.

OUTDOOR UNIT

1 SELECT THE BEST LOCATION

(Refer to "Select the best location" section)

2 INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
- Fix the unit on concrete or rigid frame firmly and horizontally with a bolt nut ø13/32" (ø10 mm).

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

Model	A	B	C	D
XE18****, XE24****	24 1/8" (613 mm)	5 5/32" (131 mm)	15 1/16" (24 mm)	14 3/16" (350.5 mm)

3 CONNECT THE PIPING

Connecting The Piping to Indoor

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Piping size	Torque
1/4" (6.35 mm)	13.3 lb-ft (18 Nm) (1.8 kgf-m)
3/8" (9.52 mm)	31.0 lb-ft (42 Nm) (4.3 kgf-m)
1/2" (12.7 mm)	40.6 lb-ft (55 Nm) (5.6 kgf-m)
5/8" (15.88 mm)	47.9 lb-ft (65 Nm) (6.6 kgf-m)
3/4" (19.05 mm)	73.8 lb-ft (100 Nm) (10.2 kgf-m)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

Connecting The Piping to Outdoor

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 valve and then tighten with torque wrench to the specified torque as stated in the table.

Gas Leak Checking

Pressure test to system to 400 PSIG with dry nitrogen, in stages. Thoroughly leak check the system. If the pressure holds, release the nitrogen and proceed to stage 4.

4 EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES IN THE FOLLOWING PROCEDURE.

- 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.
- Connect the micron gauge between vacuum pump and service port of outdoor units.
- Turn on the power switch of the vacuum pump and make sure that connect digital micron gauge and to pull down to a value of 500 microns.
- To make sure micron gauge a value 500 microns and close the low side valve of the charging set and turn off the vacuum pump.
- Disconnect the vacuum pump hose from the service port of the 3-way valve.
- Tighten the service port caps of the 3-way valve at a torque of 13.3 lb-ft (18 Nm) with a torque wrench.
- Mount vacuum caps on both of the 2-way valve and 3-way valve. Position both of the valves to "Open" using a hexagonal wrench (5/32" (4 mm)).
- Mount valve caps onto the 2-way valve and the 3-way valve.

WARNING

This equipment must be properly earthed.

- Earth lead wire shall be Yellow/Green (Y/G) in colour and longer than other lead wires for electrical safety in case of the slipping.

6 PIPING INSULATION

- Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
- 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 1/4" (6 mm) or above.

HOW TO REPLACE NETWORK ADAPTER

- Remove the front grille (refer how to take out front grille) from the unit.
- Remove the network adapter box by releasing the hook (Figure 1.0).
- Remove the cover by unclipping it and pulling it out (Figure 1.1).
- Remove the top casing by pressing the side of the network adapter box. (Figure 1.2)
- After that, network adapter can be easily replaced (Figure 1.3).

IN CASE OF REUSING EXISTING REFRIGERANT PIPING

Check the following to decide reusing the existing refrigerant piping.

- Poor refrigerant piping could result in product failure.
- In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.
 - Heat insulation is not provided for either liquid-side or gas-side piping or both.
 - The existing refrigerant pipe has been left in an open condition.
 - The diameter and thickness of the existing refrigerant piping does not meet the requirement.
 - The piping length and elevation does not meet the requirement.
 - The compressor has a failure history.
 - In the circumstances listed below, clean it thoroughly before reuse.
 - Pump down operation cannot be performed for the existing air-conditioner.
 - The compressor has a failure history.
 - Oil color is darker. (ASTM 4.0 and above).
 - The existing air-conditioner is gas-oil heat pump type.
 - Do not reuse the flare to prevent gas leak. Make sure to install a new flare.
 - If there is a welded part on the existing refrigerant piping, conduct a gas leak check on the welded part.
 - Replace deteriorated heat insulating material with a new one.
 - Heat insulating material is required for both liquid-side and gas-side piping.

Proper Pump Down Method

- Operate air conditioner at cooling mode for 10 - 15 minutes.
- After 10 - 15 minutes of pre operation, close 2 way valve. After 3 minutes, close 3 way valve.
- Take out air conditioner unit.
- Install New Refrigerant air conditioner.

Most Important Process

Purpose: To make the oil & refrigerant mix together. They are separated when air conditioner is stopped.

Mixed refrigerant & oil will be collected into outdoor unit.

Only very small amount of oil remain inside piping, which is acceptable.

CHECK ITEMS

<input type="checkbox"/> Is there any gas leakage at flare nut connections?	<input type="checkbox"/> Is the earth wire connection properly done?
<input type="checkbox"/> Has the heat insulation been carried out at flare nut connection?	<input type="checkbox"/> Is the indoor unit properly hooked to the installation plate?
<input type="checkbox"/> Is the connection cable being fixed to terminal board firmly?	<input type="checkbox"/> Is the power supply voltage complied with rated value?
<input type="checkbox"/> Is the connection cable being clamped firmly?	<input type="checkbox"/> Is there any abnormal sound?
<input type="checkbox"/> Is the drainage ok? (Refer to "Check the drainage" section)	<input type="checkbox"/> Is the cooling/heating operation normal?
	<input type="checkbox"/> Is the thermostat operation normal?
	<input type="checkbox"/> Is the remote control's LCD operation normal?

ENGLISH

ACXF60-39140-AA
PRINTED IN MALAYSIA