

### 1. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY

- Please provide an exclusive circuit for the air conditioner and do not connect other electrical appliances to it.
- Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.
- Be sure to observe the cautions specified here as they include important items related to safety.
- The indications and meanings are as follows.

**WARNING**

Could lead to death, serious injury, etc.

**CAUTION**

Could lead to serious injury in particular environments when operated incorrectly.

After reading this manual, be sure to keep it together with the OPERATING INSTRUCTIONS in a handy place on the customer's site.

### 2. SELECTING THE INSTALLATION LOCATION

#### 2-1 INDOOR UNIT

- Do not install the unit by yourself (customer). Incomplete installation could cause injury due to fire, electric shock, the unit falling or leakage of water. Consult the dealer from whom you purchased the unit or special installer.
- Install the unit securely in a place which can bear the weight of the unit. When installed in an insufficient strong place, the unit could fall causing injury.
- Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal block connecting sections so the stress of the wires is not applied to the sections. Incomplete connecting and fixing could cause fire.
- Do not use intermediate connection of the power cord or the extension cord and do not connect many devices to one AC outlet. It could cause a fire or an electric shock due to defective contact, defective insulation, exceeding the permissible current, etc.
- Check that the refrigerant gas does not leak after installation has completed. If refrigerant gas leaks indoors, and comes into contact with the fire of a fan heater, space heater, stove, etc., harmful substances will be generated.
- Perform the installation securely referring to the installation manual. Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.
- Perform electrical work according to the installation manual and be sure to use an exclusive circuit.
- If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.
- Attach the electrical cover to the indoor unit and the service panel to the outdoor unit securely. If the electrical cover of the indoor unit and/or the service panel in the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.
- Be sure to use the part provided or specified parts for the installation work. The use of defective parts could cause an injury or leakage of water due to a fire or an electric shock.
- Be sure to cut off the main power in case of setting up the indoor electronic control P.C. board or wiring works. It could cause an electric shock.
- The appliance shall be installed in accordance with national wiring regulations.
- When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R410A) enters the refrigerant circuit. Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.

#### 2-2 WALL HOLE DRILLING

- 1) Determine the wall hole position.
- 2) Drill a 65 mm hole so that the angle can be lower than inside.
- 3) Insert the wall hole sleeve.

#### 2-3 WIRELESS REMOTE CONTROLLER WIRING

- Place of mounting
  - Where it is easy to operate and easily visible.
  - Where children can not touch.
- Mounting
  - Select a position about 1.2 m above the floor, check that signals from the remote controller are surely received by the indoor unit from that position ("beep" or "beep-beep" receiving tone sounds). After that, attach remote controller holder to a pillar or wall and set the wireless remote controller.
- In rooms where inverter type fluorescent lamps are used, the signal from the wireless remote controller may not be received.

### 3. INSTALLATION DIAGRAM & ACCESSORIES

#### FLARED CONNECTIONS

- This unit has flared connections on both indoor and outdoor sides.
- Remove the outdoor units valve cover, then connect the pipe.
- Refrigerant pipes are used to connect the indoor and outdoor units.
- Be careful not to crush or bend the pipe in pipe bending.

Pipe length	Limits
30 m max.	
Height difference	15 m max.
No. of bends	10 max.

- Refrigerant adjustment ... If pipe length exceeds 7 m, additional refrigerant (R410A) charge is required. (The outdoor unit is charged with refrigerant for pipe length up to 7 m.)

Pipe length	Up to 7 m	No additional charge is required.
Exceeding 7 m		Additional charge is required. (Refer to the table below.)

Refrigerant to be added 20 g/m × (refrigerant piping length (m) - 7)

#### ACCESSORIES

Check the following parts before installation.

Item	Quantity
Installation plate	1
Installation plate fixing screw 4 × 25 mm	5
Remote controller holder	1
Fixing screw for 3.5 × 16 mm (Black)	2
Battery (AAA) for remote controller	2
Wireless remote controller	1
Felt tape (Used for left or left-rear piping)	1

#### PART TO BE PROVIDED AT YOUR SITE

Item	Quantity
Indoor/outdoor unit connecting wire (4-core 1.0 mm <sup>2</sup> )	1
Extension pipe	1
Wall hole sleeve	1
Wall hole cover	1
Pipe fixing band (The quantity depends on the pipe length.)	2 to 5
Fixing screw for 4 × 20 mm (The quantity depends on the pipe length.)	2 to 5
Piping tape	1
Putty	1
Drain hose (or soft PVC hose, 15 mm inner dia.)	1 or 2
Drain cap e33	2
Power supply cord (See the table in 5-1 INDOOR/OUTDOOR UNIT CONNECTING WIRE CONNECTION for the cord size.)	1

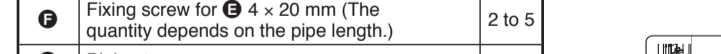
#### OPTIONAL EXTENSION PIPE

Item	Quantity
Indoor/outdoor unit connecting wire (4-core 1.0 mm <sup>2</sup> )	1
Extension pipe	1
Wall hole sleeve	1
Wall hole cover	1
Pipe fixing band (The quantity depends on the pipe length.)	2 to 5
Fixing screw for 4 × 20 mm (The quantity depends on the pipe length.)	2 to 5
Piping tape	1
Putty	1
Drain hose (or soft PVC hose, 15 mm inner dia.)	1 or 2
Drain cap e33	2
Power supply cord (See the table in 5-1 INDOOR/OUTDOOR UNIT CONNECTING WIRE CONNECTION for the cord size.)	1

#### 2. INDOOR UNIT INSTALLATION

##### 4-1 FIXING OF INSTALLATION PLATE

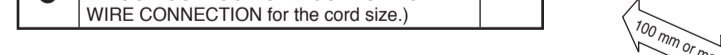
- Find a structural material (such as a stud) in the wall and fix installation plate horizontally.



When bolts recessed in the concrete wall area to be utilized, secure the installation plate using 11 × 20 × 11 × 20 wall hole (450 mm pitch). If the recessed bolt is too long, change it for a shorter one available in the market.

##### 4-2 WALL HOLE DRILLING

- 1) Determine the wall hole position.
- 2) Drill a 65 mm hole so that the angle can be lower than inside.
- 3) Insert the wall hole sleeve.



Be sure to use wall hole sleeve to prevent the outdoor connecting wires from contacting with metal part in the wall and to prevent damage by rain as the wall is hollow.

##### 4-3 INDOOR/OUTDOOR UNIT CONNECTING WIRE CONNECTION

- Use special room air conditioning circuit.

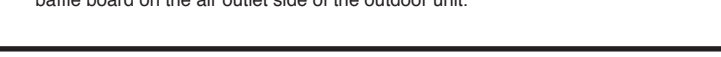
Indoor/outdoor unit connecting wire Specification	Cable 4-core 1.0 mm <sup>2</sup> , in conformity with Design 245 IEC 57.

##### 4-4 AUTO RESTART FUNCTION

- These models are equipped with an auto restart function. If you do not want to use this function, please consult the service representative because the setting of the unit needs to be changed.
- When the indoor unit is controlled with the remote controller, the operation mode, the set temperature, and the fan speed are memorized by the indoor electronic control P.C. board. The auto restart function sets to work the moment the power has restarted after power failure. Then, the unit will restart automatically. If the unit is operated in "AUTO" mode before power failure, the operation mode (COOL, DRY or HEAT) is not stored in the memory. When the main power is turned on, the unit decides the operation mode by the initial room temperature at restart and starts operation again.

##### FOR LEFT OR LEFT-REAR PIPING

- Pipe arrangement: Put the refrigerant piping and the drain hose together, then apply felt tape to them.



##### REACHING DRAIN HOSE

- Be sure to reach the drain hose and the drain cap in case of left or left-rear piping. Otherwise, it could cause drops of water to drop from the drain hose.



##### 4-5 PIPE FORMING

- Place of mounting: Put the refrigerant piping and the drain hose together, then apply piping tape to them.
- Be careful not to make mis-wiring.
- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.
- If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.
- If an earth is incorrect, it may cause an electric shock.
- Make earth wire a little longer than the others. (more than 55 mm)



##### FOR REAR, RIGHT OR DOWNWARD PIPING

- Pipe arrangement: Put the refrigerant piping and the drain hose together, then apply piping tape to them.
- Be careful not to make mis-wiring.
- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.
- If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.
- If an earth is incorrect, it may cause an electric shock.
- Make earth wire a little longer than the others. (more than 55 mm)



##### 5. OUTDOOR UNIT INSTALLATION

#### INDOOR/OUTDOOR UNIT CONNECTING WIRE CONNECTION AND OUTDOOR POWER SUPPLY CORD CONNECTION

- Connect the indoor/outdoor unit connecting wire from the indoor unit correctly on the terminal block.
- For future servicing, give extra length to connecting wire.

Rated Voltage	Breaker capacity	Connect to the supply terminals and leave a contact separation of at least 3 mm at each pole to disconnect the source power pole. (When the power switch is shut off, it must disconnect all poles.)
230 V	20 A	

#### 7-1 HOW TO REMOVE AND INSTALL THE PANEL ASSEMBLY

- 1) Remove the 2 screws which fix the panel assembly.
- 2) Remove the panel assembly. Be sure to remove its bottom end first.



#### 7-2 PUMPING DOWN

- When relocating or disposing of the air conditioner, pump down the system following the procedure below so that no refrigerant is released into the atmosphere.

- 1) Connect the gauge manifold valve to the service port of the stop valve on the gas pipe side of the outdoor unit.
- 2) Fully close the stop valve on the liquid pipe side of the outdoor unit.
- 3) Close the stop valve on the gas pipe side of the outdoor unit almost completely so that it can be easily closed fully when the pressure gauge shows -0.101 MPa (Gauge) (0 atmosphere).
- 4) Start the EMERGENCY COOLING OPERATION.
- 5) To start the EMERGENCY COOLING OPERATION in COOL MODE, disconnect the power supply plug and/or turn off the breaker. After 15 seconds, connect the power supply plug and/or turn on the breaker, and then press the EMERGENCY OPERATION switch once. (The EMERGENCY COOLING OPERATION can be performed continuously for up to 30 minutes.)
- 6) Fully close the stop valve on the gas pipe side of the outdoor unit when the pressure gauge shows 0.05 to 0.20 MPa (Gauge) (approx. 0.5 to 0.4 kgf/cm<sup>2</sup>).
- 7) Stop the EMERGENCY COOLING OPERATION.

#### 7-3 REMOVING THE INDOOR UNIT

- Remove the bottom of the indoor unit from the installation plate.

#### WHEN RELEASING THE CORNER PART

- Release both left and right bottom corner part of indoor unit and pull it downward and forward as below to release the hooks.



#### 7-4 GAS CHARGE

- Do not discharge the refrigerant into the atmosphere. Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- When charging the refrigerant system with additional refrigerant, be sure to use liquid refrigerant. Adding gas refrigerant may change the composition of the refrigerant in the system and affect normal operation of the air conditioner. Also, charge the system slowly, otherwise the compressor will be locked.

Note: In case of adding refrigerant, comply with the quantity specified for the refrigerating cycle.



#### 6-2 FLARING WORK

- Main cause of gas leakage is defect in flaring work. Carry out correct flaring work in the following procedure.

##### 1) Pipe cutting

- Cut the copper pipe correctly with pipe cutter.



##### 2) Burr removal

- Completely remove all burrs from the cut cross section of pipe.
- Put the end of the piping tube to downward direction as you remove burrs in order to avoid to let burrs drop in the piping.



##### INSULATION AND TAPING

- 1) Cover piping joints with pipe cover.
- 2) For outdoor unit side, surely insulate every piping including valves.
- 3) Using piping tape, apply taping starting from the entry of outdoor unit.
- 4) Stop the end of piping tape with tape (with adhesive agent attached).
- 5) When piping have to be arranged through ceiling, closet or where the temperature and humidity are high, wind additional commercially sold insulation for prevention of condensation.



#### 6-3 PIPE CONNECTION

- Note: Fasten a flare nut with a torque wrench as specified in the table below. When fastened too tight, a flare nut may broken after a long period and cause a leakage of refrigerant.

- 1) Indoor unit connection: Connect both liquid and gas pipings to indoor unit.
- 2) Outdoor unit connection: Connect both liquid and gas pipings to outdoor unit.

Pipe diameter	Tightening torque
mm	N·m
mm	kgf·cm
mm	kgf·cm
mm	kgf·cm



#### 6-4 PURGING PROCEDURES-LEAK TEST

##### PURGING PROCEDURES

- Connect the refrigerant pipes (both liquid pipe and the gas pipe) between the indoor and the outdoor unit.
- Remove the service port cap of the stop valve on the side of the outdoor unit gas pipe. (The stop valve will not work in its initial state fresh out of the factory (totally closed with cap on).)
- Connect the gauge manifold valve and a vacuum pump to the service port of the stop valve on the gas pipe side of the outdoor unit.
- Run the vacuum pump. (Vacuumize for more than 15 minutes.)
- Check the vacuum with the gauge manifold valve, then close the gauge manifold valve, and stop the vacuum pump.
- Leave as it is for one or two minutes. Make sure the pointer gauge manifold valve remains in the same position. Confirm that the pressure gauge shows -0.101 MPa (Gauge) (-760 mmHg).



##### PRECAUTIONS WHEN USING THE CONTROL VALVE

- When attaching the control valve to the service port, make sure that the valve core is in closed position, and then tighten part. Do not tighten part or turn the body when valve core is in open position.
- When attaching the control valve to the service port, make sure that the valve core is in closed position, and then tighten part. Do not tighten part or turn the body when valve core is in open position.



##### 6-6 CHECKING AFTER INSTALLATION

- After finishing the installation, check the following items and mark the □ next to each item.
- Is the specified power supply voltage used?
- Is the power line equipped with the circuit breaker?
- Have the ends of the indoor/outdoor connecting wire been properly inserted into the terminal blocks?
- Is the earth wire connecting wire been secured firmly?
- Are the power supply cord and indoor/outdoor connecting wire connected directly to the units (no intermediate connections)?
- Is the earth wire longer than the other wires so that it will not become disconnected when tension is applied?
- Is the earth wire connected properly?
- Are the pipes designed for use with R410A or do they have the specified thickness?
- Has the leak test been carried out for the pipe connections?
- Has air purging been carried out?
- Are the stop valves open fully?
- Is the drain hose properly installed?
- Has water been poured through the drain hose to confirm proper drainage?
- Are the pipes at the rear of the unit bundled with felt tape (for left and left-rear piping only)?
- Can the installation location bear the weight of the unit and not affect its vibration or noise?
- Is the area under the unit free of objects that block the air outlet?
- Are the vertical and horizontal vanes closed securely?
- Is the front panel installed securely?
- Has the test run been carried out properly?
- Has the drain work been performed properly and are there no bubbling sounds?
- Have all of the WARNING and CAUTION items in "1. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" been checked?



#### 6-5 TEST RUN

- Before performing the test run, recheck for any wrong wiring.
- Wrong wiring prevents normal operation or results in blown fuse disabling operation.
- The test run can be started by pressing EMERGENCY OPERATION switch.
- When the EMERGENCY OPERATION switch is once pressed, the unit will start the test run (continuous operation) for 30 minutes.
- A thermostat does not work during this time. After 30 minutes the unit will start the EMERGENCY OPERATION at a fixed temperature setting of 24°C in COOL MODE.
- Perform test run in the following procedure.



#### 6-7 EXPLANATION TO THE CUSTOMER

- Using the OPERATING INSTRUCTIONS, explain the following to the customer, how to control temperature, how to remove the air filters, how to remove or put the remote controller in the remote controller holder, how to clean, precautions for operation, etc.
- Recommend the customer to read the OPERATING INSTRUCTIONS carefully.

#### 7. FOR MOVEMENT AND MAINTENANCE

##### 7-1 HOW TO REMOVE AND INSTALL THE PANEL ASSEMBLY

- 1) Remove the 2 screws which fix the panel assembly.
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##### 7-2 PUMPING DOWN

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- When charging the refrigerant system with additional refrigerant, be sure to use liquid refrigerant. Adding gas refrigerant may change the composition of the refrigerant in the system and affect normal operation of the air conditioner. Also, charge the system slowly, otherwise the compressor will be locked.

Note: In case of adding refrigerant, comply with the quantity specified for the refrigerating cycle.



#### 6. INDOOR/OUTDOOR UNIT CONNECTION FINISHING AND TEST RUN

##### INSTALLATION INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

- This room air conditioner adopts an HFC refrigerant (R410A) which will never destroy the ozone layer.
- Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.
- As R410A has a working pressure approx. 1.6 times as high as that of R22, some special tools and piping parts / materials are required. (Refer to the table below.)
- Take sufficient care not to allow water and other contaminants to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminants than R22.
- For refrigerant piping, use clean, pressure-proof parts / materials specifically designed for R410A.
- Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

##### 6-1 TOOLS DEDICATED FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

- The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.
- The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. (Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.)

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measurement range of existing gauges. Port diameters have been changed to prevent any other refrigerant from being charged into the unit.
Charge hose	No	Use hose material and cap size have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	1/4